

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)

FOR THE PROPOSED INDOOR SPORTS ARENA, SERVICED APARTMENTS, HOTEL AND SUPPORTING INFRASTRUCTURES ON LAND REFERENCE NO: 209/12180, NAIROBI CITY COUNTY, KENYA



Prepared For



Royal Avenue, 1 Royal Plaza, GY1 St. Peter Port,
Guernsey
Local Partner: Metroarena Development Company
Limited
P.O. Box. 764 00606 Sarit Centre, Nairobi, Kenya

Prepared By



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Submitted To:

National Environment Management Authority (NEMA) In accordance with Environmental Management and Coordination Act Cap 387 and Environmental (Impact Assessment and Audit) Regulations, 2003 (as amended)

Location GPS Coordinates: **Latitude: -1.296837, and Longitude: 36.825132**

© August 2026

Certification

Earthcare Services Limited also known as (EARS) hereby submits this Environmental and Social Impact Assessment (ESIA) Full Study Report (FSR) for the proposed development of the Nairobi Railway City Phase MICE Core Centre, comprising Indoor Sports Arena, Serviced Apartments, Hotel and Supporting Infrastructures, located at Nairobi Railways (Landimawe area) on L.R. No: 209/12180, Nairobi City County, Kenya. This report has been prepared in accordance with the requirements of the Environmental Management and Coordination Act (EMCA), Cap. 387, and the Environmental (Impact Assessment and Audit) Regulations, 2003, as well as relevant international environmental and social safeguards, including the World Bank Environmental and Social Framework (ESF) Standards. We hereby certify that the information provided herein is accurate, and truthful to the best of our knowledge and belief.

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Proponent:

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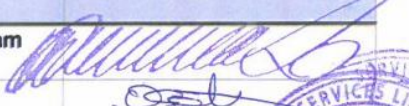
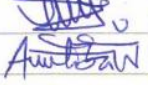
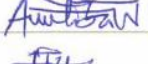
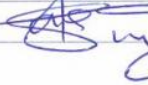
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Description	Prepared by	Reviewed by	Date Reviewed	Approved by
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Revised Draft (after Initial Client Comment)	Earthcare Services (EARS): Elly Orwe	Daniel Macharia	5 th August 2026	Grace Bako
Final Version	Earthcare Services (EARS): Elly Orwe	Grace Bako	4 th September 2026	Grace Bako and John Kuloba

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Team of Expert

Expert Name	Expertise	Signature
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Mr. Oscar Wafula	Civil Engineer	
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Mr. Elly Orwe	Environmental Expert (Lead Expert)	
Mr. Abraham Kuloba	Cultural Expert/Sociologist	
Ms. Purity Jeruto	Environmental/ sustainability specialist	
Mr. Isaac Nyonje	EHS and Air Quality expert	



Abbreviations

AOI	Area of Influence
BOD	Biochemical Oxygen Demand, water quality measure
BoQ	Bill of Quantity
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
CAP	Climate Action Plan
CBD	Central Business District
CCTV	Closed-Circuit Television
CITES	Convention on International Trade in Endangered Species of Wild Fauna & Flora
CO	Carbon Oxides
CPP	Community Public Participation
CVRA	Vulnerability and Risk Assessment
dBa	A-weighted Decibels
DBH	Diameter at Breast Height
EHSg	Environmental, Health and Safety Guidelines
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Coordination Act
E&S	Environmental and Social
ESF	Environmental and Social Framework
ESH	Environmental Safety and Health
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Safeguards
ETM	Enhanced Thematic Mapper
FAO	Food and Agriculture Organization
FoH	Front House
FSR	Full Study Report
GBV	Gender Based Violence
GCA	Gross Covered Area
GCM	Global Climate Model
GDP	Gross Domestic Product
GFA	Ground Floor Area
GHG	Greenhouse Gas
GIS	Geographic Information System
GoK	Government of Kenya
GPS	Global Positioning System
GRC	Grievance Redress Committee
HAPCA	Health and Pollution Control Act
HIV	Human Immunodeficiency Virus
HSSE	Health, Safety, Security and Environment
HVAC	Heating, Ventilation, and Air Conditioning
IPP	Indigenous People Plan
IUCN	International Union for Conservation of Nature
KEBS	Kenya Bureau of Standards
KPIs	Key Performance Indicators
KPLC	Kenya Power and Lighting Company
KRC	Kenya Railways Corporation
KURA	Kenya Urban Roads Authority
KVA	Kilovolt-Ampere
LED	Light-Emitting Diode
LPG	Liquefied Petroleum Gas
MEP	Mechanical, Electrical, and Plumbing
MICE	Meetings, Incentives, Conferences, and Exhibitions
NCA	National Construction Authority
NCCG	Nairobi City County Government

NCWSC	Nairobi City Water and Sewerage Company
NEAP	National Environment Action Plan
NEMA	National Environment Management Authority
NGAO	National Government Administration Officers
NIUPLAN	Nairobi Integrated Urban Development Master Plan
NMK	National Museum of Kenya
OSHA	Occupational Safety and Health Act
PAHs	Polycyclic Aromatic Hydrocarbons
PAI	Project Action Impact
PAPs	Project Affected Persons
PMU	Project Management Unit
PPE	Personal Protective Equipment
PWDs	Persons with Disabilities
RAP	Resettlement Action Plan
RCDA	Railway City Development Authority
RCP	Representative Concentration Pathway
SDHUD	State Department of Housing and Urban Development
SEA	Strategic Environmental Assessment
SEP	Stakeholder Engagement Plan
SPA	Special Planning Area
ToR	Terms of Reference
TPH	Total Petroleum Hydrocarbons
TVET	Technical and Vocational Education and Training
UNFCCC	United Nations Framework Convention on Climate Change
USD (\$)	United States Dollars
USEPA	United States Environmental Protection Agency
VEC	Valued Environmental Components
VMGs	Vulnerable and Marginalized Groups
WBG	World Bank Group
WHO	World Health Organization
WIBA	Work Injury Benefits Act, Kenya
WMP	Waste Management Plan
WRA	Water Resources Authority, Kenya
WWF	World-Wide Fund for Nature

Executive Summary

The Government of Kenya through the State Department for Housing and Urban Development (SDHUD) under the Ministry of Lands, Public Works, Housing and Urban Development is spearheading the development of the Nairobi Railway City as a flagship urban regeneration initiative. In this regard, the Government of Kenya is committed to collaborating with the private sector to facilitate delivery of the Railway City by engagement of the Strategic Partners to undertake the development and related amenities¹.

In partnership with the Kenya Railways Corporation (KRC) and the Railway City Development Authority, SDHUD intends to redevelop the Nairobi Central Railway Station and its surrounding zones into a modern, multi-modal, transit-oriented urban development known as the Nairobi Railway City. Owing to its strategic location, the Nairobi Station Area will be developed into an iconic nerve centre for the Nairobi multimodal transport system with a world class new central station incorporating mixed use commercial developments, housing and intermodal facilities. Key among these components is the proposed Phase-1 MICE Core Arena and its supporting infrastructure, designed to position Nairobi as a premier regional destination for meetings, conferences, exhibitions, sporting events, and entertainment.

The proposed project is of great national significance as it forms part of core strategy for regeneration of Nairobi City, and the area has been designated as Special Planning Area (SPA) in line with the Physical and Land Use Planning Act 2019 and a project of strategic national importance. It is also one of the priority projects identified in the NIUPLAN as a strategy for expansion of Nairobi's Central Business District (CBD). The redevelopment will create equilibrium between social benefits for the city and economic returns. It will reduce pressure on CBD growth by opening up the large area to the south and integrating the northern and southern CBD. In particular, the project sub-component under consideration the MICE Core Arena and its supporting infrastructure is located immediately south of the Nairobi Central Business District along Uhuru Highway. The site occupies a strategic position within the broader Railway City zone and is bounded by the Industrial Area to the south-east, the CBD to the north, established residential neighborhoods to the east, and the Upper Hill to the west, across Uhuru Highway.

The MICE-Core Centre site covers approximately 6.82 hectares (68,210m²), forming part of the larger 172-hectare (approximately 425-acre) Nairobi Railway City redevelopment area. Its location within this high-value urban interface positions it as a catalytic anchor project intended to drive commercial vibrancy, enhance connectivity, and support the transit-oriented development vision of the Railway City. Pursuant to Section 58 of the Environmental Management and Co-ordination Act (EMCA), Cap. 387 of the Laws of Kenya and Legal Notice No. 31 of 2019, the proposed developments are listed as **High-Risks** projects (*Urban Development including (i) Other related urban developments*) and are therefore subject to the Environmental Impact Assessment (EIA) study prior to implementation. Therefore, pursuant to compliance with established environmental and social safeguards, The **Zaria Group** herein referred as the proponent through MaceYMR appointed **Earthcare Services Limited**, an independent environmental firm of experts, to undertake the Scoping Study (Screening) and Environmental and Social Impact Assessment (ESIA) Full Study Report (FSR) for consideration by NEMA.

Structure of the Report: The report is organized into eleven (11) chapters. Chapter 1 introduces the MICE Core Project – Railway City. Chapter 2 presents a detailed description of the proposed project, including its location, components, design, construction, and operational activities. Chapter 3 outlines the relevant policy, legal, and regulatory framework governing environmental and social management in Kenya, including applicable international standards. Chapter 4 describes the existing environmental and social baseline conditions of the project area and its area of influence, covering physical, biological, and socio-economic aspects. Chapter 5 details the impact assessment methodology used in the study. Chapter 6 provides an analysis of alternatives, including the “No Project” scenario. Chapter 7 documents the stakeholder and public engagement process. Chapter 8 assesses the potential positive and negative environmental and social impacts. Chapter 9 presents the climate risk and vulnerability assessment. Chapter 10 details the Environmental and Social Management Plan (ESMP), including mitigation measures, monitoring programs, institutional responsibilities, and the Decommissioning Plan. Finally, Chapter 11 provides the conclusion and recommendations.

¹ State Department for Housing and Urban Development Ministry of Transport, Infrastructure, Housing & Urban Development and Public Works 2020.

Project Description: The proposed development is being conceptualized as a Design & Build project and shall comprise the following key components, all of which will be implemented in phased stages. Phase 1 will primarily focus on the Indoor Sports Arena together with its supporting infrastructure, as outlined below:

- Phase 1: 10,000-seat multi-purpose indoor arena:

The proposed development shall feature podium's public walkway as a raised pedestrian boulevard lined on all sides with retail and commercial functions. Along its length, carefully placed patches of landscaping and a variety of floor textures for interaction, relaxation and recreation, echoing the sport- and activity-focused character of the overall development. The total area for the proposed site development is approximately 54 706m². Other components shall comprise:

- 140-key branded hotel;
- 70-key serviced apartment tower;
- Ancillary retail to support the plaza, arena, hotel, apartments and daily precinct users;
- Restaurant, food and beverage and leisure use;
- Sports-related public activation zones;
- Public plaza and spectator gathering space;
- Green pedestrian boulevard;
- Amphitheatre, event steps and/or public performance space;
- Parking structures forming part of, below, or integrated with the podium;
- Vertical circulation;
- Servicing, loading, emergency access and back-of-house infrastructure; and
- Landscape, shading, lighting, wayfinding, public art and smart infrastructure.

Project Objectives:

The proposed development Indoor Sports Arena seeks to achieve the following broader objectives:

- To catalyze urban regeneration, enhance connectivity and contribute to the ongoing transformation of Nairobi's CBD and Railway City precinct;
- To strengthen Kenya's Meetings, Incentives, Conferences, and Exhibitions (MICE) tourism sector by providing modern, high-capacity infrastructure capable of hosting international and local events.
- To contribute to the economic development of Railway City and its surrounding areas through job creation, increased commercial activity, and enhanced revenue generation.

Location: The proposed project will be located within Nairobi City at the Railway Station area besides the active rail line, covering an approximate site area of 68,210m² (**approximately 6.8 hectares**), forming part of the MICE-Core centre zone. The site is bounded by the active rail corridors to the North and Kenya Power substation to the east. Surrounding neighborhoods include Upper Hill to the east across expressway and Nairobi Central Business District. The site is also accessible via major transport corridors, including Haile Selassie Avenue via railway bridge near Technical University of Kenya, Workshop Road through Bunyala road and Uhuru Highway/expressway. The GPS Coordinates of the project site are **Latitude: -1.296837S**, and **Longitude: 36.825132E**.

Station	Y-Northings in UTM (Latitude in WGS 84)	X - Eastings in UTM (Longitude in WGS 84)
RW1	9856778.34 (-1.297537)	258123.50 (36.827160)
RW2	9856833.69 (-1.297036)	258095.75 (36.826911)
RW3	9856826.99 (-1.297097)	258081.55 (36.826783)
RW4	9856998.67 (-1.295544)	257997.98 (36.826034)
RW5	9856960.47 (-1.295889)	257921.83 (36.825349)
RW6	9857000.69 (-1.295525)	257901.66 (36.825169)
RW7	9856915.74 (-1.296292)	257732.32 (36.823647)
RW8	9856682.03 (-1.298406)	257930.99 (36.825430)

Relevant Legislative and Regulatory Framework: The national environmental and social legislative and regulatory framework applicable to the proposed Railway City MICE-Core Project has been comprehensively identified and described. The project will be implemented in strict compliance with Kenya's national policies, laws, and regulations, while also adhering to international best practices and standards, particularly the World Bank's Environmental and Social Framework (ESF). A detailed discussion of these frameworks is presented in Chapter 3 of this report.

Project Alternatives: The assessment of alternatives is a crucial component of the Environmental and Social Impact Assessment (ESIA) process, following good international industry practices (GIIP) as outlined by the International Finance Corporation (IFC) and World Bank Group (WBG). The assessment considered different aspects such as location, design, and technology, as well as the "No Go" alternative, which evaluates the implications of not implementing the proposed project as outlined in Chapter 6. The result of comparison of project alternatives concludes that pursuing the proposed project at Railway City site remains the most feasible alternative, supporting Nairobi and Railway urban regeneration programme while avoiding the drawbacks associated with the "No Go" scenario.

Summary of Impacts

Assessment of Impact Significance: The Environmental and Social Impact Assessment (ESIA) entails identifying and assessing potential environmental and social impacts of the Project. Impact significance is determined by evaluating the magnitude of change and the sensitivity of the affected receptors. The assessment methodologies vary by aspect, particularly in health and safety, climate resilience, and greenhouse gas emissions.

The proposed development is envisioned to significantly transform the physical and economic landscape of Nairobi by introducing a uniquely designed, integrated mixed-use complex within the Nairobi Railway City. The Project will comprise a modern, world-class arena for sporting conference and entertainment events, complemented by high-end boutique retail, hotel and conference facilities, premium office spaces, and residential accommodation within a vibrant, contemporary intra-city environment. This development is expected to redefine the city's skyline, strengthen Nairobi's position as a regional hub for business and events tourism, and enhance the overall urban experience. Beyond its architectural and economic contribution, the Project is anticipated to generate substantial social benefits, including but not limited to:

- a) **Employment Generation:** The development will create significant employment (estimated **20,000+** direct and indirect) job opportunities per year across multiple phases (construction, operations, hospitality, and the SME supply chain).
 - **Construction Phase Employment:** Direct jobs for engineers, architects, contractors, skilled and semi-skilled labourers, machine operators, and support staff. Indirect employment will also arise through demand for construction materials, logistics, catering, security, and other auxiliary services.
 - **Operational Phase Employment:** Long-term jobs in facility management, hospitality, retail, event management, maintenance, security, administration, and technical operations.
- b) **Indirect and Induced Employment:** Growth in surrounding businesses such as transport services, suppliers, informal trade (where permitted), and tourism-related enterprises.

In addition to the social benefits, the proposed development is expected to generate significant economic and fiscal benefits at both National and County levels. Revenue generation: The Project will contribute to increased government revenue through various tax streams and statutory levies associated with both the construction and operational phases of the proposed development plus long-term land-lease revenue and a gross revenue share to Kenya Railways Corporation (KRC).

By stimulating commercial activity and attracting local and international events, the MICE-Core Arena is expected to catalyze growth in the tourism and MICE economy and investment in the surrounding precincts. Current estimated economic multiplier of 2x. These fiscal benefits will support public service delivery and infrastructure development, thereby reinforcing the Project's strategic importance within Nairobi's urban regeneration framework as set out in the SPA.

Summary of Negative Impacts

Project Phase	Project Activity	Potential Impact	Nature of Impact	Duration	Reversibility
Pre-Construction	Land acquisition	Land loss and displacement	Negative, Direct	Long-term	Irreversible
		Change in land use	Negative, Direct	Long-term	Irreversible
		Legal disputes	Negative, Indirect	Short-term	Reversible
	Mobilization	Traffic accidents	Negative, Direct	Short-term	Reversible
		Noise nuisance	Negative, Direct	Short-term	Reversible
		Air quality deterioration	Negative, Direct	Short-term	Reversible
		Biodiversity disturbance	Negative, Direct	Long-term	Reversible
	Site preparation	Soil erosion	Negative, Direct	Short-term	Reversible
		Drainage blockage	Negative, Direct	Short-term	Reversible
		Soil contamination	Negative, Direct	Long-term	Reversible
Construction Phase	Transportation	Habitat alteration	Negative, Direct	Long-term	Partly reversible
		Occupational accidents	Negative, Direct	Short-term	Reversible
		Road traffic accidents	Negative, Direct	Short-term	Reversible
		Noise and vibration	Negative, Direct	Short-term	Reversible
		Air emissions	Negative, Direct	Short-term	Reversible
	Civil works	Vegetation loss	Negative, Direct	Long-term	Partly reversible
		Waste generation	Negative, Direct	Short-term	Reversible
		Oil spills/soil contamination	Negative, Direct	Long-term	Reversible
		Water pollution	Negative, Direct	Short-term	Reversible
		Worker injuries	Negative, Direct	Short-term	Reversible
	Welding/Fabrication	Burns and eye injuries	Negative, Direct	Short-term	Reversible
		Metal scrap generation	Negative, Direct	Short-term	Reversible
	Concrete works	Dust emissions	Negative, Direct	Short-term	Reversible
		Noise and vibration	Negative, Direct	Short-term	Reversible
		Construction waste	Negative, Direct	Short-term	Reversible
	Coating/Painting	Hazardous waste	Negative, Direct	Short-term	Reversible
		Soil contamination	Negative, Direct	Long-term	Reversible

Project Phase	Project Activity	Potential Impact	Nature of Impact	Duration	Reversibility
	Backfilling	Surface runoff and erosion	Negative, Direct	Short-term	Reversible
	Electrical installation	Electrocution	Negative, Direct	Short-term	Reversible
		Falls from height	Negative, Direct	Short-term	Reversible
	Labour influx	Spread of communicable diseases	Negative, Indirect	Short-term	Reversible
		Gender-based violence/SEA/SH risks	Negative, Indirect	Short-term	Reversible
	Local employment	Employment creation	Positive, Direct	Long-term	-
Operation & Maintenance	Arena operation	Employment opportunities	Positive, Direct	Long-term	-
		Business opportunities	Positive, Indirect	Long-term	-
		Noise from spectators/events	Negative, Direct	Long-term	Reversible
		Generator emissions	Negative, Direct	Long-term	Reversible
		Traffic congestion	Negative, Direct	Long-term	Reversible
		Waste generation	Negative, Direct	Long-term	Reversible
		Security risks	Negative, Direct	Long-term	Reversible
		Fire and explosion hazards	Negative, Direct	Long-term	Reversible
		Artificial lighting impacts on fauna	Negative, Direct	Long-term	Partly reversible
	Maintenance	Oil/fuel spills	Negative, Direct	Long-term	Reversible
		Electrocution	Negative, Direct	Short-term	Reversible
		Workplace accidents	Negative, Direct	Short-term	Reversible
Decommissioning	Demolition	Traffic disruption	Negative, Direct	Short-term	Reversible
		Dust emissions	Negative, Direct	Short-term	Reversible
		Noise and vibration	Negative, Direct	Short-term	Reversible
		Groundwater and soil contamination	Negative, Direct	Long-term	Reversible
		Demolition waste	Negative, Direct	Short-term	Reversible
		Worker injuries/fatalities	Negative, Direct	Short-term	Reversible
		Falls from height	Negative, Direct	Short-term	Reversible
		Electrocution	Negative, Direct	Short-term	Reversible

Project Phase	Project Activity	Potential Impact	Nature of Impact	Duration	Reversibility
		Loss of employment	Negative, Indirect	Long-term	Irreversible

Environmental and Social Monitoring Plan

An Environmental and Social Monitoring Plan (ESMoP) has been developed to systematically track the implementation and effectiveness of the mitigation measures contained in the ESMP. The monitoring program will focus on key environmental and social parameters to ensure compliance with regulatory requirements, early detection of adverse impacts, and timely implementation of corrective actions.

- Air Quality and Noise: Monthly measurements during high-activity periods,
- Waste Management: Monthly tracking of waste handling,
- Flora and Fauna: Monthly monitoring of plants and animals' species presence.,
- Traffic Safety: Daily checks on traffic-related behaviours.

Public Consultation and Stakeholder Engagement: Stakeholder engagement strategy embodies a commitment to transparency, accountability, and inclusive participation, ultimately aiming to enhance the sustainability and acceptance of the proposed project within local communities. Stakeholders are defined as individuals or organizations with a vested interest in the project, may have varying degrees of impact and influence. Engaging in transparent consultation allows these stakeholders to understand the associated risks, benefits, and impacts, thereby promoting community involvement in decision-making and risk management. The Kenyan legislation on Environmental Impact Assessment Procedures under EMCA Cap 387 and EIA/EA Regulations 2003 mandate that stakeholders be consulted throughout the ESIA process, and during the review of the ESIA report by the National Environment Management Authority (NEMA).

A stakeholder identification matrix was developed to categorize stakeholders by their interests, influence, and the project's impact on each of them. This framework is expected to facilitate a constructive dialogue among the various groups and promote transparency throughout the ESIA process. Furthermore, stakeholder Engagement Plan (SEP) attached would ensure ongoing communication and feedback mechanisms to enhance trust and address grievances.

Stakeholder Engagement Methods/Approaches: Various consultation methods and approaches were and will be employed. These included the following three major approaches:

- Meetings with Government Agencies: Direct discussions/workshops.
- Community Engagement: Meetings and focus group discussions involving local leaders and community-based organizations to address community interests and concerns.
- Inception and Kick off meeting with KRC Technical Project team and the proponent

Kick-off Meeting

A virtual kick-off meeting was held on **27th February 2026** between the project proponent, the Kenya Railways Corporation (KRC) Environmental and Social Team, and the ESIA Consultant. A follow-up meeting was also held on **27th April 2026** between the KRC Environmental and Social Departments and the ESIA team. These meetings focused on discussing the project deliverables, timelines, and the subsequent steps required to undertake and complete the ESIA study.

Consultations and Public Participation Meetings

The Consultant conducted three comprehensive consultative meetings with the Project Affected Persons (PAPs), primarily consisting of Kenya Railways Corporation staff, National key stakeholders (government agencies) as well as with the broader residents and business communities whose properties and livelihoods border the project area. These stakeholder engagement sessions, held as part of the project's Environmental and Social Impact Assessment (ESIA) processes provided a platform for open dialogue, information sharing, and the collection of feedback, concerns, and suggestions regarding the proposed development. Three consultative forums were conducted to engage project-affected persons (PAPs) and

key policy decision-makers from relevant Government agencies. The meetings were held on the following dates:

- **11th May 2026:** Meeting with KRC staff members (Project-Affected Persons)-Venue Project Site Railways Regional Offices.
- **21st July 2026:** Meeting with the wider Landimawe community; and
- **22nd July 2026:** Meeting with government agencies (Policy makers).

Feedback and concerns raised across the three meetings primarily centered on the following key areas:

- a) Job opportunities for local community;
- b) Loss of livelihood due to displacement and evictions;
- c) Environmental conservation; and
- d) Community capacity building.

The meetings proceedings were properly documented with main issues of concern, contributions, queries and opinions summarized in Appendix 3.

Conclusion

The main objective of this assignment was to carry out an Environmental and Social Impact Assessment (ESIA) study for the proposed project (MICE-Core) and other support infrastructures. The ESIA Study was carried out in accordance with the Environmental Management and Coordination Act Cap 387 which govern the process of carrying out of ESIA studies in Kenya. The study was also undertaken in compliance with World Bank Environmental and Social Framework (ESF) standards. The scope of this ESIA study covered various project aspects/activities related to construction, operation and decommissioning of the proposed project infrastructures. The steps followed by the study team involved the baseline studies and impacts identification and analysis of the various alternatives. A scoping report and TORs approved by NEMA provided basic guidance on key issues and stakeholders engagements protocol and procedures. The content of this report has duly followed the requirements of the NEMA and World Bank guidelines. As with any large-scale urban development such as the proposed Nairobi Railway City and its components, the project is expected to generate various environmental and social impacts during both the construction and operational phases. The impact assessment conducted for this report indicates a wide range of potential effects across nearly all biophysical and socio-economic aspects. The main positive impacts during the construction phase will stem from direct and indirect economic contributions through construction spending, local procurement, and employment opportunities.

The study has identified several potential negative impacts likely to result from the proposed development. These impacts primarily arise from construction and operational activities and are largely confined to the project site and its immediate surroundings. Key impacts include noise and vibration, dust and air emissions, safety risks, and waste generation. Impacts on the biological environment are mainly associated with habitat degradation and modification (vegetation removal). Approximately 16 acres of land will be cleared for construction activities, resulting in habitat loss and fragmentation. This is expected to affect terrestrial biodiversity, particularly lower taxa (small organisms) that depend on the affected habitat.

Additional risks to the biological environment include pollution from construction activities, such as sedimentation of the Ngong River and potential spills of hazardous materials. Impacts on the human environment are primarily linked to the influx of construction workers, which may increase the risks of gender-based violence (GBV) and the spread of HIV/AIDS and other sexually transmitted infections within local communities and additional pressure on the existing utilities. Following a rigorous risk assessment of these potential adverse impacts, appropriate mitigation measures have been developed and integrated into the Environmental and Social Management Plan (ESMP). The ESMP outlines specific mitigation actions required to address the identified impacts. It also defines the institutional arrangements, implementation responsibilities, timelines, and resource needs for the proposed interventions. The ESMP further emphasizes the importance of continuous monitoring, regular review, and adaptive management of mitigation strategies to effectively minimize risks and ensure compliance with environmental and social standards throughout the project lifecycle.

Recommendation

Based on the assessment findings and the robust contingent mitigation measures detailed in the Environmental and Social Management Plan (ESMP), we strongly recommend the issuance of the EIA License to enable the implementation of the proposed development. In addition to the commitments outlined in the ESMP, the following key recommendations should form an integral part of the project implementation program to ensure effective environmental and social management throughout the project lifecycle:

- Strengthening of community engagement by providing more opportunities for local communities in terms of employment and supplies;
- Adopt and publicly display a formal Zero-Tolerance Policy on GBV and SEA covering all, contractors, sub-contractors, vendors, security personnel during construction phase;
- Explicitly prohibit sexual harassment, sexual exploitation, sexual abuse, gender-based violence (GBV/SEA), and any form of transactional sex linked to arena construction and operations;
- Make the policy a binding contractual requirement for all service, contractors, sub-contractors, and event promoters;
- Continuous engagement with local communities, stakeholders and relevant authorities to discuss any evolving concerns and their potential mitigation measures,
- Implement a comprehensive Environmental Sustainability Programme with measurable annual targets for energy, water, waste diversion, and greenhouse-gas intensity; and
- Develop adaptive management strategies to respond to unforeseen impacts and changes in the project's context.

By implementing the recommended actions, the proposed project (MICE-Core) can further enhance its impact on the local community and the environment, ensuring that the benefits of the project are realized while minimizing negative impacts

Project Cost: The proposed development is estimated at USD(\$ 294,490,000 covering all costs related to procurement, construction, and associated works, as detailed in the Bill of Quantities (BoQ) provided in the annexure of this report.

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1. INTRODUCTION

1.1. Project Background

The Government of Kenya through the State Department for Housing and Urban Development (SDHUD) under the Ministry of Lands, Public Works, Housing and Urban Development is spearheading the development of the Nairobi Railway City as a flagship urban regeneration initiative. In this regard, the Government of Kenya is committed to collaborating with the private sector to facilitate delivery of the Railway City by engagement of the Strategic Partners to undertake the development and related amenities².

In partnership with the Kenya Railways Corporation (KRC) and the Railway City Development Authority (RCDA), SDHUD intends to redevelop the Nairobi Central Railway Station and its surrounding zones into a modern, multi-modal, transit-oriented urban development known as the Nairobi Railway City. Owing to its strategic location, the Nairobi Station Area will be developed into an iconic nerve centre for the Nairobi multimodal transport system with a world class new central station incorporating mixed use commercial developments, housing and intermodal facilities. Key among these components is the proposed Phase-1 MICE Core Arena and its supporting infrastructure, designed to position Nairobi as a premier regional destination for meetings, conferences, exhibitions, sporting events, and entertainment.

The proposed project is of great national significance as it forms part of core strategy for regeneration of Nairobi City, and the area has been designated as Special Planning Area (SPA) in line with the Physical and Land Use Planning Act 2019 and a project of strategic national importance. It is also one of the priority projects identified in the NIUPLAN as a strategy for expansion of Nairobi's Central Business District (CBD). The redevelopment will create equilibrium between social benefits for the city and economic returns. It will reduce pressure on CBD growth by opening up the large area to the south and integrating the northern and southern CBD. In particular, the project sub-component under consideration the MICE Core (Indoor Sports Arena) and its supporting infrastructure is located immediately south of the Nairobi Central Business District along Uhuru Highway and in close proximity to other sports facilities, namely Nyayo National Stadium, the KRC Golf Course. The site occupies a strategic position within the broader Railway City zone and is bounded by the Industrial Area to the south-east, the CBD to the north, established residential neighborhoods to the east, and the Upper Hill to the west, across Uhuru Highway.

The MICE-Core Centre site covers approximately 6.82 hectares (68,210m²), forming part of the larger 172-hectare (approximately 425-acre) Nairobi Railway City redevelopment area. Its location within this high-value urban interface positions it as a catalytic anchor project intended to drive commercial vibrancy, enhance connectivity, and support the transit-oriented development vision of the Railway City. Pursuant to Section 58 of the Environmental Management and Co-ordination Act (EMCA), Cap. 387 of the Laws of Kenya and Legal Notice No. 31 of 2019, the proposed developments are listed as **High-Risks** projects (*Urban Development including (i) Other related urban developments*) and are therefore subject to the Environmental Impact Assessment (EIA) study prior to implementation. Therefore, pursuant to compliance with established environmental and social safeguards, The **Zaria Group** herein referred as the proponent through MaceYMR appointed **Earthcare Services Limited**, an independent environmental firm of experts, to undertake the Scoping Study (Screening) and Environmental and Social Impact Assessment (ESIA) Full Study Report (FSR) for consideration by NEMA.

1.2. Proponent Profile (Zaria Group)

The Zaria Group is a company headquartered at Royal Avenue, 1 Royal Plaza, GY1 St. Peter Port, Guernsey, focused on developing sports, entertainment, and cultural infrastructure across Africa. Backed by high-profile partners including Masai Ujiri and Helios Sports & Entertainment Group, the company aims to revolutionize the sports and entertainment industry on the continent. Zaria Group is the proponent of the project and has established a local subsidiary, **Metroarena Development Company Limited**, registered as a private company under the Companies Act. Metroarena will serve as the development partner of Zaria Group.

² State Department for Housing and Urban Development Ministry of Transport, Infrastructure, Housing & Urban Development and Public Works 2020.

1.3. Project Objectives

The proposed development of the State-of-the-art Indoor Sports Arena and supporting facilities seeks to achieve the following broader objectives:

- To catalyze urban regeneration, enhance connectivity and contribute to the ongoing transformation of Nairobi's CBD and Railway City precinct;
- To strengthen Kenya's Meetings, Incentives, Conferences, and Exhibitions (MICE) tourism sector by providing modern, high-capacity infrastructure capable of hosting international and local events.
- To contribute to the economic development of Railway City and its surrounding areas through job creation, increased commercial activity, and enhanced revenue generation.

The proposed project shall comprise the following key components: an arena, a boutique hotel and serviced apartments, a business hotel, and retail and office spaces. A detailed description of the project components is presented in [Chapter 2](#) of this report

1.4. ESIA Rationale

This Environmental and Social Impact Assessment (ESIA) Full Study Report has been prepared as part of the Kenyan Environmental Impact Assessment (EIA) Process in accordance with regulatory requirements stipulated in the Environmental Management and Coordination Act (EMCA), Cap 387, and the Environmental (Impact Assessment and Audit) Regulations, 2003 (as amended). The ESIA has also been undertaken in line with the requirements of World Bank Environmental and Social Framework (ESF).

1.4.1. Objectives and Scope of the ESIA Project Study

The overall objective of the ESIA is to ensure the proposed Nairobi Railway City *MICE-Core* project is sustainable, socially and environmentally sound. The study ensured that all positive and adverse Environmental and Social (E&S) risks and impacts associated with the construction and operation of the proposed Project, including associated /ancillary works and linked activities, if any, are assessed, evaluated and addressed as part of the mitigation measures incorporated into the project's design, as applicable.

The specific objectives of the assignment were to:

- a) Carry out a full study ESIA for the proposed Nairobi Railway City development MICE Core arena and supporting infrastructures;
- b) Prepare Environmental Social Management Plan (ESMP), Grievance Redress Mechanism (GRM) and Stakeholder Engagement Plan (SEP);
- c) Propose mitigation measures for the potential significant adverse E&S impacts and safety risks associated with the proposed Project site and activities;
- d) Conduct and analyze baseline environmental studies,
- e) Undertake Stakeholder engagement and public participation; and
- f) Preparation of ESIA (report) submissible to National Environment Management Authority (NEMA).

1.5. Terms of Reference (TOR) for the ESIA

The Terms of Reference (TORs) for the proposed Project Environmental and Social Impact Assessment (ESIA) were submitted to the National Environment Management Authority (NEMA) for review and approval in accordance with the provisions of the Environmental Management and Co-ordination Act (EMCA), Cap 387, and the Environmental (Impact Assessment and Audit) Regulations, 2003 regulation 17. Key specific TOR were as follows:

- Review and establish all relevant baseline information covering ambient air, noise, hydrology interpretation, soil screening and urban biodiversity;
- Develop an ESMP detailing mitigation measures, KPIs, monitoring plan, responsibilities, capacity building and ESMP cost;

- Development of Stakeholder Engagement Plan (SEP) covering stakeholder mapping, engagement methods, vulnerable group approach, disclosure plan, consultation schedule, and documentation standards;
- Carry out Consultation and Public Participation (CPP): Identify key stakeholders and affected persons; and hold a public meeting (*Barazas*) and provide written evidence i.e. minutes/questionnaires/Photos/Schedules;
- Undertake an in-depth description of the proposed project and associated works together with the requirements for carrying out the works;
- Describe and analyze the policy, legal and institutional framework including but not limited to Kenyan policies, laws, regulation and guidelines; international guidelines including World Bank Group (ESF) related to the proposed project;
- Prepare a draft Full ESIA study report in accordance with EMCA, Cap 387 and legislation under it as well as the lender standards and submit a draft report to the client for review; and
- Submit final ESIA report to NEMA for review and approval.

The Terms of Reference (TOR) guided this ESIA study, including the preparation of the environmental and social safeguard framework plan, namely the Environmental and Social Management Plan (ESMP).

1.6. Study Approach

The approach used in undertaking this study combined several methodologies, including desktop review, biodiversity assessment, geospatial analysis, field sampling and laboratory analysis, as well as stakeholder engagement. The study was guided by both national regulatory requirements and standards, including the Environmental (Impact Assessment and Audit) Regulations, 2003 and associated administrative procedures, as well as relevant international environmental and social standards. A detailed description of the methodology is provided in Chapter 5 of this report.

1.7. Justification

The proposed MICE Core Centre Phase -1 project, comprising arena and supporting infrastructure is justified on the basis of its national significance and strategic role in urban regeneration. The project forms a key component of Nairobi Railway City broader redevelopment strategy and is located within an area designated as a Special Planning Area (SPA) under the *Physical and Land Use Planning Act, 2019*, reflecting its status as a project of strategic national importance. Furthermore, the development is identified as a priority project in the Nairobi Integrated Urban Development Master Plan (NIUPLAN), aimed at guiding the planned expansion and modernization of Nairobi's Central Business District (CBD). By integrating commercial, residential, and mixed-use facilities with a world-class Arena facility, the redevelopment will foster a balance between social benefits, including improved urban living and access to cultural and recreational amenities, and economic returns, through enhanced business activity, employment generation, and investment attraction.

1.8. ESIA Project Team

The study team comprised a multidisciplinary group of professionals, including environmental specialists, sustainability and climate change experts, GIS analysts, sociologists and anthropologists, urban planners, engineers, as well as Environmental, Health, Safety (EHS), and quality experts, as outlined in the table below.

Table 1: Project Team

Expert Name	Expertise
Mr. John Kuloba	Environmental specialist and team leader
Mr. Oscar Wafula	Civil Engineer
Mr. Daniel Macharia	GIS specialist
Mr. Elly Orwe	Environmental Expert (Associate)
Mr. Ibrahim Busolo Namunaba	Cultural Expert/Archaeologist
Mr. Abraham Kuloba	Sociologist
Mr. Samuel Mureithi Kioni	Hydrologist
Ms. Purity Jeruto	Environmental/ sustainability specialist
Mr. Isaac Nyonje	EHS and Air Quality expert

1.9. Cost Estimates

The proposed development is estimated at USD\$ 294,490,000 covering all costs related to procurement, construction, and associated works, as detailed in the Bill of Quantities (BoQ) provided in the annexure of this report.

2. PROJECT DESCRIPTION

This chapter provides a comprehensive description of the proposed project and outlines its background, including the context, rationale, and key components of the development. It presents an overview of the project concept, its strategic importance, and how it aligns with broader Nairobi urban regeneration development and economic planning frameworks of the Nairobi Railway City Master Plan.

2.1. Project location

The proposed project will be located within Nairobi City at the Railway Station area besides the active rail line, covering an approximate site area of 68,210m² (**approximately 6.8 hectares**), forming part of the MICE-Core centre zone. The site is bounded by the active rail corridors to the North and Kenya Power substation to the east. Surrounding neighborhoods include Upper Hill to the east across expressway and Nairobi Central Business District. The site is also accessible via major transport corridors, including Haile Selassie Avenue via railway bridge near Technical University of Kenya, Workshop Road through Bunyala road and Uhuru Highway/expressway. The GPS Coordinates of the project site are **Latitude: -1.296837S**, and **Longitude: 36.825132E**.

Table 2: Proposed Project Location Boundary Point Coordinates

Station	Y-Northings in UTM (Latitude in WGS 84)	X - Eastings in UTM (Longitude in WGS 84)
RW1	9856778.34 (-1.297537)	258123.50 (36.827160)
RW2	9856833.69 (-1.297036)	258095.75 (36.826911)
RW3	9856826.99 (-1.297097)	258081.55 (36.826783)
RW4	9856998.67 (-1.295544)	257997.98 (36.826034)
RW5	9856960.47 (-1.295889)	257921.83 (36.825349)
RW6	9857000.69 (-1.295525)	257901.66 (36.825169)
RW7	9856915.74 (-1.296292)	257732.32 (36.823647)
RW8	9856682.03 (-1.298406)	257930.99 (36.825430)



Plate 1: Current State of the Proposed Site Location

Currently, the proposed project site is largely undeveloped in terms of modern infrastructure. The existing land uses within and around the site are predominantly characterized by railway-related activities, including workshops operated by Kenya Railways Corporation (KRC). Portions of the site are also occupied by a concrete batching plant located near the 220 kVA Kenya Power substation. In addition, the surrounding

area hosts several auto garages and automobile sales yards, particularly along Bunyala Road, which abuts the project boundary to the south. These existing uses reflect a mix of industrial and commercial activities within the immediate project area.



Figure 1: Proposed Project Location (Base map: Google Satellite Imagery)

2.2. Project Components and Design

The proposed development is being conceptualized as a Design & Build project and shall comprise the following key components, all of which will be implemented in phased stages. Phase 1 will primarily focus on the Indoor Sports Arena together with its supporting infrastructure, as outlined below:

- **Phase 1:** 10,000-seat multi-purpose indoor arena.

2.2.1. Other Amenities

The proposed development shall feature podium's public walkway as a raised pedestrian boulevard lined on all sides with retail and commercial functions. Along its length, carefully placed patches of landscaping and a variety of floor textures for interaction, relaxation and recreation, echoing the sport- and activity-focused character of the overall development. The total area for the proposed site development is approximately 54 706 m². Other components shall comprise:

- 140-key branded hotel;
- 70-key serviced apartment tower;
- Ancillary retail to support the plaza, arena, hotel, apartments and daily precinct users;
- Restaurant, food and beverage and leisure use;
- Sports-related public activation zones;
- Public plaza and spectator gathering space;
- Green pedestrian boulevard;
- Amphitheatre, event steps and/or public performance space;
- Parking structures forming part of, below, or integrated with the podium;
- Vertical circulation;
- Servicing, loading, emergency access and back-of-house infrastructure; and
- Landscape, shading, lighting, wayfinding, public art and smart infrastructure

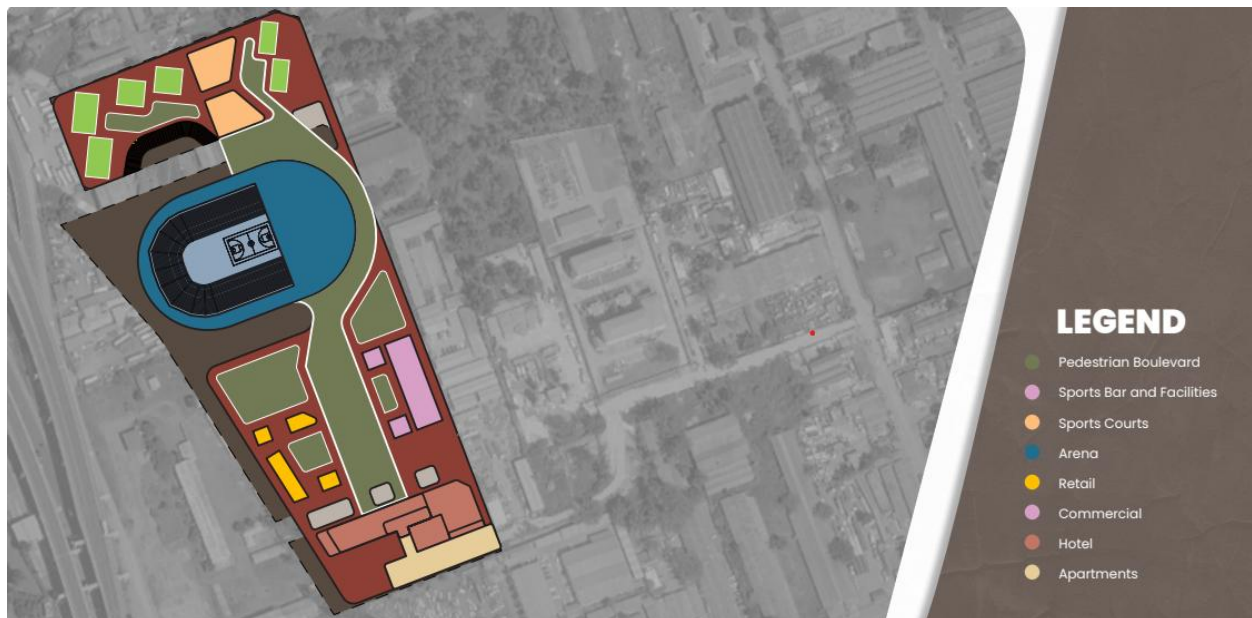


Figure 2: Project Site Layout Plan/Zoning

2.3. Structural Design of the Proposed Project

2.3.1. Sub Project Detailed Area and Floor Plan

a) Indoor Sports Arena (Seating)

The proposed Indoor Sport Arena is a level 5 storey world-class, multi-purpose indoor facility. It will feature highly flexible seating configurations with a capacity ranging from 10,000 persons, depending on the type of event. Despite the focus on sporting activities such as basketball, the arena is designed to be used for a variety of functions including conferencing and banquets.

Category	Description	Quantity
Approximate Built Areas	Seating and Arena	5 575 m ²
	Back of House	4 045 m ²
	Total Area	11 680 m²
Seating Capacity	Total Capacity	10 000 seats



Figure 3: Impression/Visualization of the Proposed Arena

b) Public Podium

The public podium comprises three levels (3). The ground and first floors shall be primarily dedicated to parking, while the second floor shall accommodate the main exterior public realm. A central boulevard will run through the space, linking the various zones via a generous, pedestrianized corridor that incorporates walkways, landscaping, and areas for people to pause and rest. The podium will accommodate a retail cluster and a mixed-use commercial building, together with a sports park that features a sports bar, multiple sports courts and fields, a fan park, and an Amphitheatre space closely integrated with the arena.

Table 3: Built Area for Public Podium

Category	Description	Quantity
Approximate Built Areas	Commercial / Mixed-Use	1 080 m ²
	Retail	1 040 m ²
	Sport Ablutions	750 m ²
	Sports Bar	750 m ²
	Total Built Area	3 620 m²
Parking Capability		
	Ground Floor	897 bays
	First Floor	815 bays
	Total Parking	1 712 bays

c) Serviced Hotel

The proposed facility will feature 140-key hotel offering temporary accommodation for visitors to the city. It will be linked to the public podium and arena, with direct access from the boulevard. In addition to guest rooms, the hotel will provide a restaurant and bar, conference facilities, a gym and spa, retail outlets, and outdoor amenities including a courtyard, padel courts, and a rooftop terrace. The proposed Hotel development will occupy an approximate site area of 3660 m². In addition, the Serviced Apartments component will consist of 77 keys, with an estimated total floor area of approximately 4745m². Both the Hotel and Serviced Apartments will utilize a shared basement parking facility 4347,00m². The total site area available for the development is approximately 3660m². The apartment block will have 70 smaller 1-bedroom apartments, including a luxury penthouse suite, and 7 larger 2-bedroom apartments. The Table below highlight key component and measurements of the proposed Apartment and Hotel facilities.

Table 4: Hotel Narrative

Category	Description	Quantity
Approximate Built Areas	Hotel Rooms	3 370 m ²
	Ancillary Spaces	290 m ²
	Total Area	3 660 m²
Rooms	Standard Rooms	138 rooms
	MIP Accessible Rooms	2 rooms
	Total Rooms	140 rooms
Conferencing Areas	Conference Rooms	1 345 m ²
	Ancillary Spaces	265 m ²
	Total Area	1 610 m²
Additional Spaces Shared with Apartments	Retail Space	2 285 m ²
	Lounge and Reception	340 m ²
	Ancillary Spaces	1 135 m ²
	Total Area	3 760 m²
Parking Capacity	Ground Floor	72 bays
	MIP Accessible	168 bays
	Total Bays	240 bays



Figure 4: Floor Plan

Services Apartment

The Service apartment shall be a seven-storey building comprising the following features as outline in the table below.

Table 5: Service Apartment Narratives

Category	Description	Quantity
Approximate Built Areas	Apartments	4 045 m ²
	Ancillary Spaces	700 m ²
	Total Area	4 745 m²
Apartment Types	1-Bed Apartments	69 apartments
	1-Bed Luxury Apartment	1 apartment
	2-Bed Apartments	7 apartments
	Total Apartments	77 apartments
Additional Spaces Shared with Hotel	Retail Space	2 285 m ²
	Lounge and Reception	340 m ²
	Ancillary Spaces	1 135 m ²
	Total Area	3 760 m²
Parking Capacity	Ground Floor	72 bays
	MIP Accessible	168 bays
	Total Bays	240 bays

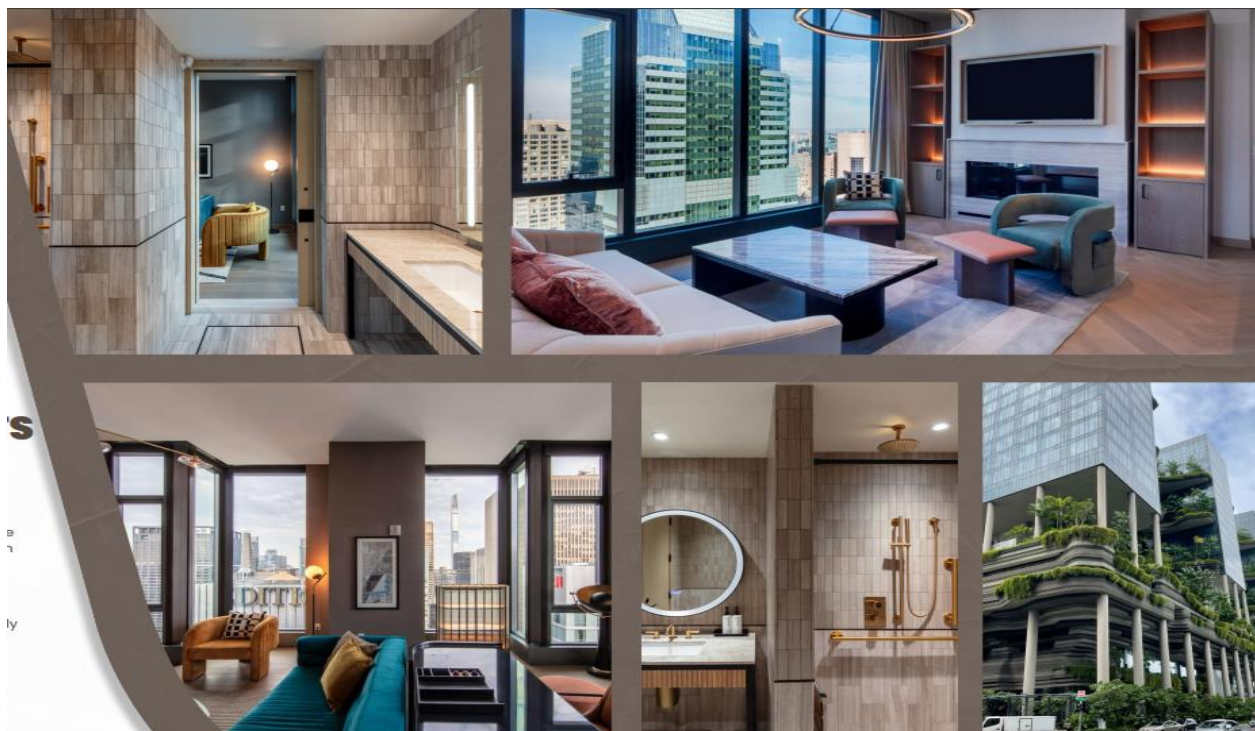


Figure 5: Apartment Theming

d) Sports Park

The northern end of the proposed site will be dedicated for sport and recreation. It will accommodate a range of sports fields and courts, together with a sports bar. Recreational designed as a sports-focused recreational hub that engages the community through the shared experience of watching and playing sport at various levels.

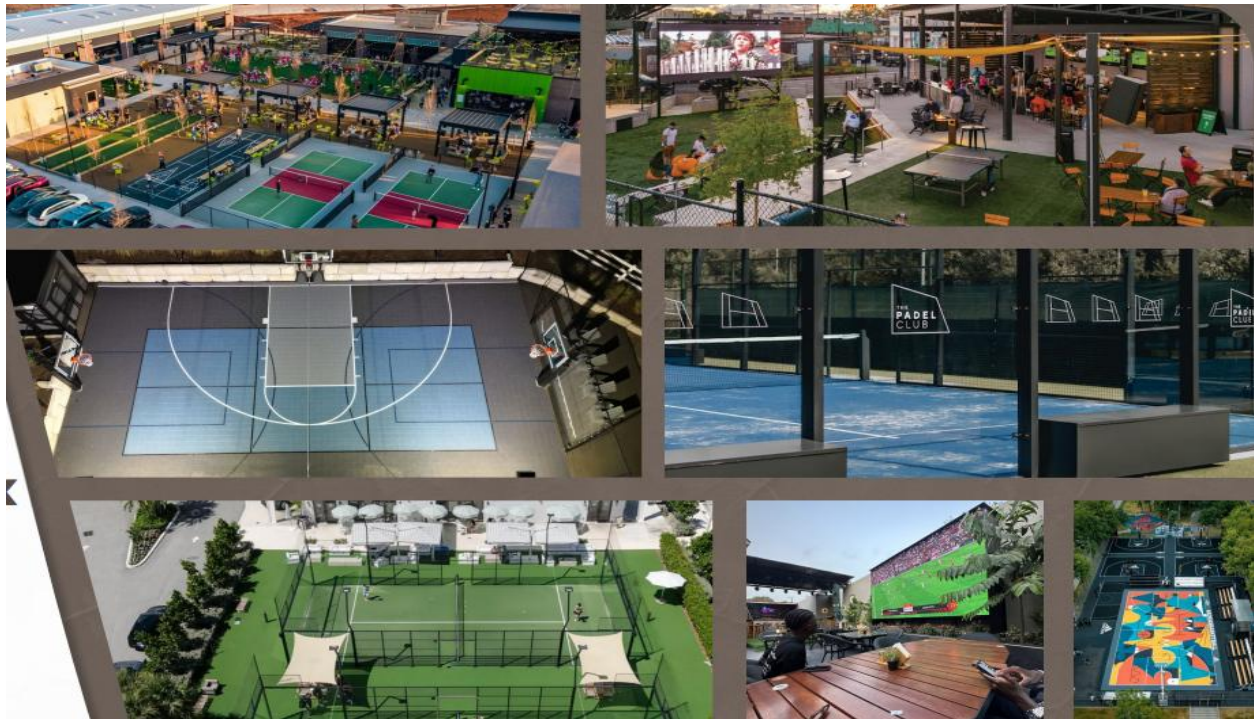


Figure 6: Visualization of Sports Park

e) Parking Lot

The proposed Arena District will feature a well-designed parking facility that enhances access to and from the venue. On-site collector roads will connect directly to preferred and general parking zones while providing dedicated, safe pedestrian passageways to the Arena. These pathways will separate attendees from inbound and outbound traffic flows. Approximately 800px reserved parking spaces will be provided for cars and buses. In addition, the Arena District will incorporate thoughtful design features that improve the overall attendee experience, including integrated pedestrian linkages supported by a layered security strategy.

2.4. Construction Activities

The proposed development Indoor Sport Arena under MICE-Core Centre, together with its supporting infrastructure, will involve a wide range of activities aimed at ensuring the project is fully functional and operational. Broadly, these activities are categorized into four main phases: pre-construction, construction, operation, and decommissioning.

- Pre-Construction Phase;
- Mobilization Phase;
- Construction Phase;
- Operation and Monitoring Phase; and
- Decommissioning Phase

2.4.1. Pre-Construction Phase

This phase shall involve all preparatory activities before physical construction begins. Key activities shall include but not limited to:

- a) Feasibility studies and design finalization: Reviewing architectural, structural, and MEP (mechanical, electrical, plumbing) designs to ensure they meet project objectives and regulatory standards.
- b) Permitting and approvals: Obtaining environmental permits, building approvals, and other statutory clearances.

- c) Site surveys and baseline studies: Assessing environmental, social, and geotechnical conditions to inform construction planning.
- d) Stakeholder engagement: Conducting consultations with local communities, authorities, and other stakeholders to address concerns and integrate feedback into the final design and ESIA.

2.4.2. Mobilization Phase

This phase will include setting up the project site for construction and implementation. Key activities shall include:

- a) Transport and delivery of equipment and materials;
- b) Site preparation: Establishing site offices, storage areas, site boundary fencing (Hoarding) and access roads;
- c) Installation of utilities: Temporary water supply, electricity, and sanitation facilities for construction worker force,
- d) Health, safety, and environmental setup: Implementing site safety plans, emergency response procedures, and initial environmental mitigation measures.

2.4.3. Construction Phase

The construction technologies will be proposed based on each type of structure (project component), technical characteristics, construction conditions at the project location, and construction requirements. The implementation of design and construction will strictly comply with the current Kenyan standards, building codes, regulations, and construction specifications, with reference to foreign standards (World Bank Group (WBG), codes, and regulations permitted for application in Kenya. During this phase key activities shall include, but are not limited to:

- a) Site preparation: Handover of the construction site to the construction Contractor;
- b) Mobilization of works force: Mobilization of human resources and construction equipment;
- c) Site clearance: Removal of all obstacles and existing structures within the construction boundaries;
- d) Construction of site office and establishment of equipment stockpiling yards;
- e) Structural works; (Erection of the arena, supporting infrastructure, and related facilities);
- f) Installation of systems and finishes; (Mechanical, electrical, plumbing, firefighting equipment and interior finishes); and
- g) Landscaping and external works: (Roads, parking, green spaces, and stormwater management systems).

2.4.4. Construction Equipment

Construction machinery and equipment for earthworks and construction activities shall comply with the construction and acceptance procedures applicable to each work item. The main equipment shall include but not limited to:

- | | |
|----------------------------|---|
| • Rollers, | • Steel cutting machine, |
| • Bulldozers, | • Dump trucks, |
| • Excavators, | • Water spraying truck |
| • Cranes, | • Concrete placing equipment (Concrete Batching Plant), and |
| • Compactor, | • Erection equipment etc. |
| • Mortar and cement mixer, | |
| • Welding machine 250A, | |

The construction shall combine both mechanized and manual methods.

2.4.5. Construction Materials (Inputs)

The estimated demand for the main construction materials and fuels required for the Phase 1 components of the proposed project is summarized in the list below. These estimates are based on preliminary design specifications and are intended to guide planning, procurement, and logistics during the construction phase. The quantities may be refined during detailed design and implementation stages to reflect actual site conditions and final engineering requirements:

- Crushed stone aggregate,
- Building stone blocks (various types),
- Construction sand (all types),
- Cement and cement products,
- Steel (reinforcement steel),
- Asphalt concrete (all types),

All materials required for the proposed development shall, to the greatest extent possible, be sourced locally in order to support local industries, reduce transportation costs, and minimize environmental impacts associated with long-distance hauling. Priority will be given to locally available resources that meet the specified quality and technical standards. However, in instances where certain materials, equipment, or specialized components are not available within the local market or do not meet the required specifications, such items shall be procured through importation.

2.5. Utilities

2.5.1. Electricity Supply

The project area is well served by the national electricity grid operated by Kenya Power and Lighting Company (KPLC) 220kVA substation. Electricity for construction activities will therefore be readily available and easily accessible from the grid. To ensure continuity of operations, especially during potential power outages, backup generators will be provided on-site.

2.5.2. Water Supply

The proposed facility (MIC-Core sub-components) will source its water supply from the Nairobi City Water and Sewerage Company (NCWSC). A raw water storage tank with a capacity capable of supporting the project construction will be provided, offering sufficient buffer storage for several days in the event of any disruption to the main supply. Additionally, two dedicated fire/service water storage tanks of adequate capacity will be installed to support fire protection and operational needs.

The project does not anticipate any abstraction of water from natural sources such as rivers or boreholes during all phases of the proposed project. For domestic use, including workers' sanitation and welfare water will be sourced from the existing centralized water supply infrastructure within or near the project area, subject to site-specific conditions.

2.6. Description of the Project's Operational Activities

This is the final phase of the project, focusing on the full operationalization and lifecycle management of the facility and its supporting infrastructure. During this phase, the project transitions from construction to routine operations, ensuring that all systems, infrastructure, and services function effectively, efficiently, and sustainably. Key activities include:

- h) **Facility Operation:** Day-to-day management of the Arena, supporting infrastructure, hotels, serviced apartments, offices, and commercial retail spaces. This will include scheduling and coordinating events, guest services, tenant management, and retail operations to maximize utilization and service quality.
- i) **Maintenance Activities:** Regular inspections, preventive maintenance, and timely repairs of all buildings, systems, and equipment to ensure safety, operational efficiency, and long-term durability.
- j) **Environmental Monitoring:** Continuous assessment to ensure compliance with the Environmental and Social Management Plan (ESMP) and the implementation of mitigation measures.
- k) **Community Engagement:** Ongoing communication with stakeholders to address operational concerns, gather feedback, and promote positive social outcomes.
- l) **Safety and Security Management:** Implementation of health, safety, and security protocols across all facilities, including public areas, event venues, residential units, offices, and retail spaces to protect occupants and visitors.

The operation of the Arena will involve hosting a wide range of sporting and entertainment events. These activities will include organized sports competitions, concerts, exhibitions, conferences, and other social or recreational gatherings. During such events, the facility is expected to attract large numbers of spectators, participants, and support staff, leading to increased human traffic within and around the venue. Operational activities will therefore encompass event management, crowd control, ticketing, security services, maintenance of infrastructure, and provision of amenities such as lighting, sound systems, sanitation, and waste management. Additionally, supporting services such as parking, food and beverage vending, and emergency response preparedness will be integral to the smooth running of the arena.

2.6.1. Drainage System

A well-constructed and well-maintained drainage system will be installed to effectively manage stormwater and accommodate potential flood events. Drainage channels will run along the entire perimeter of the Arena and other sub project facilities, ensuring efficient conveyance of surface runoff away from the facility. The design of the drainage system will be informed by detailed topographic maps and the existing drainage infrastructure within the broader Landimawe area. In addition to the perimeter drainage channels, the project will incorporate retaining structures designed specifically for stormwater control. These structures will help contain and temporarily hold stormwater runoff, reducing peak flow rates, minimizing erosion, and preventing downstream flooding. Retained water shall be used for grass lawn and toilet cleaning.

The retaining structures will be engineered based on detailed topographic surveys, soil conditions, and hydraulic modeling to ensure they effectively manage stormwater while integrating seamlessly with the overall drainage system.

2.7. Description of the Project's Decommissioning Activities

Decommissioning is a critical final phase in the project lifecycle. It involves the systematic closure and dismantling of the facility at the end of its operational lifespan. This phase includes the safe removal and disposal of all structures, equipment, and materials resulting from the demolition or decommissioning of the site. The primary objectives of decommissioning are to protect public health and safety while rehabilitating the project site to a stable condition suitable for future development or alternative uses.

Key activities during this phase will include:

- a) **Preparation of a Detailed Decommissioning Plan:** Developing a comprehensive plan that outlines procedures, timelines, safety measures, and environmental safeguards.
- b) **Mobilization of the Workforce:** Assembling qualified personnel and resources required for safe and efficient decommissioning activities.
- c) **Demolition of Structures and Infrastructure:** Systematic dismantling and removal of buildings, facilities, and supporting infrastructure in accordance with safety and environmental standards.
- d) **Safe Disposal of Waste:** Collection, segregation, and transportation of all generated waste to authorized disposal sites, ensuring compliance with environmental regulations.
- e) **Site Rehabilitation:** Restoration of the project area, including soil stabilization, landscaping, and other measures to return the site to a state suitable for future development or ecological purposes.

2.8. Waste Management Plan

The proposed project Waste Management Plan (WMP) will focus on the handling, storage, and disposal of waste/hazardous materials. As the first step of the management plan, types of waste and its possible sources shall be identified. For each identified waste component and its source, a possible control method and disposal plan shall be worked out. Table 6 below presents a synopsis of the WMP.

Table 6: WMP for Stadium Construction and Operational Activities

Waste Type / Activity	Description / Source	Control / Disposal Plan
Construction Phase		
General Construction and Demolition Waste	Soil, blocks, concrete, etc.	– Reused for site levelling and landscaping where suitable.

Waste Type / Activity	Description / Source	Control / Disposal Plan
		– Remaining inert waste to be stockpiled temporarily and disposed of through NEMA-accredited waste handlers.
Municipal / Domestic Waste	Kitchen waste, paper, wood scrap, metal scrap, empty non-hazardous drums	– Collected in designated bins, segregated at source, and disposed of through NEMA-accredited waste management contractors in accordance with Kenyan regulations EMCA (Waste Management) Regulation 2024.
Hazardous Waste	Paint residue containers, waste oil from DG sets	– Collected in specially designated hazardous waste bins and disposed of through NEMA-accredited hazardous waste handlers. – Waste oil shall be sold to approved third-party recyclers.
Service and Maintenance Yard Waste	Usable and non-usable scrap materials	– Segregated into usable and non-usable categories. – Non-usable scrap released to approved scrap buyers.
Machinery Cleaning Wastewater	Oily cleaning water from service yard	– Oil skimmed off in a sump pit, stored in waste oil drums, and sold to approved third-party vendors for reuse or recycling.
Operation Phase		
Domestic Waste	Organic and general domestic waste	– Handed over to Nairobi City County Government (NCCG) or collected by NEMA-accredited waste handlers for proper disposal as per EMCA (Waste Management) Regulation 2024.
Waste from Sport Activities	Biodegradable and non-biodegradable waste	– Segregated at source and disposed of through NEMA-accredited waste management contractors.
Domestic Wastewater	Wastewater from facility operations	– Directed to existing sewer trunk operated by Nairobi Water and Sewerage Company (NCWSC).
Used Oil from DG Sets	Waste oil from standby generators	– Collected and sold to approved third-party recyclers in compliance with NEMA regulations.

2.9. Project Health, Safety, Security and Environment (HSSE) Activities

The appointed contractor will appoint a dedicated HSSE Team for the project construction activities. This team will be responsible for achieving the Project's Health, Safety, Security, and Environmental objectives through the effective implementation of procedures, standards, and technical activities. The HSSE Team will maintain close coordination and interface with all relevant departments to ensure that all documents produced, and activities undertaken during the design, construction, and execution phases fully comply with the Project HSSE Plan, applicable HSE requirements, and set objectives.

2.10. Traffic Management Plan

An appropriate Traffic Management Plan will be developed to effectively manage vehicular movements of goods, materials, equipment, and personnel into and out of the project site. The plan will aim to mitigate potential traffic impacts on the existing road network and ensure the safety and efficiency of both project-related and public traffic. Key measures shall include:

- Designation of a dedicated parking and staging area for trucks and heavy-duty lorries within the project site;
- Scheduling and routing of truck and lorry movements to minimize disruption to existing traffic flows.
- Implementation of traffic control measures, including signage, flagmen, and speed restrictions where necessary.

The site can be accessed via three main road arteries (*Bunyala Road, Workshop Road and Uhuru Highway*). Traffic management strategies will pay special attention to these corridors to prevent congestion and maintain smooth traffic flow along these critical arteries. A detailed Traffic Impact Assessment and Traffic Management Plan has been prepared and is attached for reference. All traffic management activities will be implemented in close coordination with relevant county and national road authorities.

2.11. Site Security

The project site will be fully secured with a robust perimeter fence and controlled access gates. Security will be provided on a 24-hour basis to ensure continuous protection of the project site. An integrated access control system combined with 24-hour CCTV surveillance cameras will be installed to prevent unauthorized entry, theft, and sabotage.

2.12. Manpower Requirement

The World Bank Environmental and Social Standard-2 (ESS2) classifies project workers into four categories: direct workers, contracted workers, community workers, and primary supply workers. The workforce for the proposed development is expected to comprise all these categories of workers. Direct workers will include individuals employed directly by the project proponent for core project activities. Contracted workers will consist of personnel engaged through third-party contractors and subcontractors to undertake specific tasks such as construction and specialized services. The inclusion of all these worker categories ensures that the project will align with the ESS2 requirements on labor and working conditions, and appropriate measures will be implemented to safeguard workers' rights, health, and safety throughout the project lifecycle. The total estimated manpower is approximately 20,000+ direct and indirect job opportunities per year across construction, operations, hospitality, and the SME supply chain with deliberate investment in women- and youth-led enterprise and employment.

2.13. Sustainable Design

The proposed project (MICE-Core components) will incorporate sustainable design principles, including energy efficiency, water conservation, low-impact development, and other green building practices. These features will be fully integrated into the final design standards. Energy conservation measures will include solar photovoltaic systems. When paired with parking shade canopies, the photovoltaic arrays will provide essential shading while generating clean electricity. Additional energy-saving strategies will include the use of energy-efficient LED lighting throughout the facility interior and exterior. A comprehensive energy management system, utilizing motion sensors and photocells, will be implemented to prevent over-lighting and optimize overall energy performance.

3. POLICY, REGULATORY AND INSTITUTIONAL FRAMEWORK

This chapter outlines the policy, legal, regulatory and institutional frameworks for Environmental Management and Impact Assessment in Kenya including the requirements of the World Bank Environment and Social Standards (ESS), as well as Environment, Health and Safety Guidelines (EHSGs), and other international guidelines and best practices.

3.1. National Policy Framework

3.1.1. Vision 2030

Kenya Vision 2030 is the country's long-term development blueprint covering the period 2008 to 2030. It was formulated following the successful implementation of the Economic Recovery Strategy for Wealth and Employment Creation (2003–2007), which restored macroeconomic stability and placed the country back on a path of sustained economic growth. The overarching objective of Vision 2030 is to transform Kenya into a newly industrializing, middle-income country providing a high quality of life to all its citizens in a clean and secure environment. The Vision targets an average annual economic growth rate of 10 percent through the implementation of flagship projects under its three pillars: Economic, Social, and Political.

With regard to urban development, Vision 2030 aspires to achieve *“a well-housed population living in an environmentally secure urban environment.”* This objective is to be realized through the provision of adequate housing, improved infrastructure, integrated land use planning, enhanced urban mobility, and sustainable environmental management systems. The proposed Nairobi Railway City MICE Core Arena and supporting infrastructure development directly aligns with this national blueprint by promoting integrated, well-planned urban regeneration within Nairobi's central area. The Project contributes to the Vision by:

- Supporting modern infrastructure development;
- Enhancing urban aesthetics and functionality;
- Promoting mixed-use, transit-oriented development;
- Stimulating economic growth through tourism, business, and events; and
- Contributing to improved service delivery and environmental management within the city.

Accordingly, the proposed development is consistent with the strategic direction of Kenya Vision 2030 and represents a practical step toward achieving sustainable, planned urban transformation in Nairobi.

3.1.2. Sessional Paper No. 6 of 1999 on Environment and Development

Following the first National Environment Action Plan (NEAP) in 1996, the Government developed Sessional Paper No. 6 on Environment and Development in 1999 to harmonize environmental management and socio-economic development in pursuit of sustainable development. The Policy established a comprehensive framework of strategies and guidelines to ensure that environmental considerations are integrated into national planning and decision-making processes.

The key objectives of the Policy include:

- Ensuring that all development policies, programmes, and projects incorporate environmental considerations from the outset;
- Requiring the preparation of an independent Environmental Impact Assessment (EIA) report for industrial and other major development projects prior to implementation;
- Establishing effluent discharge standards that conform to acceptable public health and environmental protection guidelines.

The Policy further emphasizes a sustainable development approach across broad categories of development activities. In the context of the proposed Nairobi Railway City MICE Core Arena and support infrastructures, the Project will align with the principles of Sessional Paper No. 6 by integrating environmental safeguards at the design stage, undertaking a comprehensive ESIA, promoting resource efficiency, implementing waste minimization measures, and ensuring stakeholder engagement throughout the project lifecycle.

3.1.3. The Kenya Constitutional 2010

Kenya's Constitution of 2010 provides a strong legal and institutional framework for environmental protection, sustainable development, and the promotion of social and economic rights. Central to this framework is Article 42, which guarantees every person the right to a clean, safe, and healthy environment. This right encompasses access to clean water, safe and adequate housing, reasonable standards of sanitation, sufficient and safe food, health care services including reproductive health and social security.

Under Sections 69 and 70 of the Constitution articulate the State's obligations in environmental stewardship and the mechanisms for enforcement of environmental rights. Section 69 requires the State to ensure the sustainable exploitation, utilization, management, and conservation of natural resources, maintain a minimum tree cover of ten percent of the land area, protect biodiversity and indigenous knowledge, promote public participation in environmental management, and establish systems for environmental impact assessment, auditing, and monitoring. It also imposes a duty on all individuals to cooperate with State organs and others to conserve the environment and ensure ecologically sustainable development.

Section 70 empowers any person to seek judicial redress if their right to a clean and healthy environment is violated or threatened. Courts may issue orders to prevent or stop harmful acts, compel public officers to act, or award compensation to victims, without the need to demonstrate actual loss or injury. Overall, the 2010 Constitution reinforces and builds upon the principles of the Environmental Management and Coordination Act (EMCA) 1999, embedding environmental protection as a core national priority.

Relevance: For the proposed MICE Core project, these constitutional provisions provide a critical legal foundation, ensuring that the planning, design, and implementation of the development uphold the right to a safe, clean, and healthy urban environment while promoting sustainable growth and social well-being.

3.2. National Legislative and Regulatory Framework

3.2.1. The Environment Management and Coordination Act (EMCA) Cap 387

The Environmental Management and Coordination Act (EMCA), Cap 387 is the Kenya's principal legislation governing environmental protection and management. Enacted in 2000, EMCA was designed to harmonize environmental legislation that was previously fragmented across over 77 national laws, providing a single, comprehensive legal framework for environmental governance. The Act establishes the National Environment Management Authority (NEMA) as the principal agency responsible for oversight, regulation, and coordination of environmental matters in Kenya.

EMCA Cap 387 sets out the fundamental principles for sustainable development, including the prevention of environmental degradation, the integration of environmental considerations into planning and development, and the promotion of public participation in environmental decision-making. It also provides for environmental planning, environmental impact assessments (EIAs), environmental audits, pollution control, and conservation of natural resources. In 2015, EMCA was amended to align its provisions with the Constitution of Kenya 2010, particularly with Articles 42, 69, and 70, which recognize the right of every person to a clean, safe, and healthy environment and establish obligations for environmental protection and sustainable resource use. These amendments strengthened regulatory provisions, enhanced compliance and enforcement mechanisms, and incorporated requirements for public participation, environmental monitoring, and access to information.

Under section 58 of EMCA, the law requires that an Environmental Impact Assessment (EIA) study precede all development activities and obtain approval from NEMA before undertaking projects that may significantly affect the environment. The Act also provides guidance on the management of hazardous substances, waste management, biodiversity conservation, and environmental reporting.

Relevance: For the proposed development, EMCA provides the legal and regulatory framework ensuring that the Project is planned, designed, and implemented in a manner that minimizes environmental and social risks, safeguards public health, promotes sustainable use of resources, and aligns with Kenya's constitutional and international obligations on environmental management. To operationalize EMCA Cap 387, a number of subsidiary legislation (Regulations) have been developed, key among them relevant to the proposed development include:

3.2.2. Environmental Impact Assessments and Environmental Audits) Regulations, 2003

The Environmental (Impact Assessment and Audit) Regulations, 2003 (as amended), apply to all policies, plans, programmes, projects, and activities specified under the Environmental Management and Coordination Act (EMCA), Cap. 387. Under Part II on Environmental Impact Assessment, Regulation 4 stipulates that no proponent shall implement a project that is likely:

- a) To have a negative environmental impact; or
- b) To require an environmental assessment under the Act or these Regulations,

unless the proponent has undertaken, or caused to be undertaken, an integrated Environmental Impact Assessment (EIA) and has obtained an EIA license from the National Environment Management Authority (NEMA) in accordance with the provisions of EMCA. In line with the regulations, the proposed Development has been classified as a **High-risk** project due to its nature, and potential environmental and social interactions. Consequently, the law requires the preparation of a Full Environmental and Social Impact Assessment (ESIA) Study Report, which must be submitted to NEMA for review and licensing before project implementation can commence.

This provision establishes a clear legal requirement for the preparation, review, and approval of EIAs, ensuring that projects such as the Nairobi Railway City MICE Core Arena are designed and implemented in a manner that identifies, assesses, and mitigates potential environmental and social impacts prior to commencement.

3.2.3. Environmental Management and Coordination Act (Water Quality Regulations) 2024

The Environmental Management and Coordination (Water Quality) Regulations, 2024 (Legal Notice No. 177 of 2024) provide the legal framework for the prevention of water pollution and the protection of water sources in Kenya. These regulations apply to all water uses, including drinking water, industrial water, agricultural water, recreational water, fisheries and wildlife, and any other designated uses. They establish standards for wastewater management to ensure that water resources remain clean, safe, and suitable for their intended purposes. Under Section 5, all waste generators are required to collect, segregate, and dispose of waste in accordance with the procedures outlined in Regulation 6, ensuring proper handling and minimization of environmental contamination.

Relevance: For the proposed Nairobi Railway City Phase-1 MICE Core Centre Arena, the project proponents will engage qualified site operators to carry out regular site inspections and monitoring. This will ensure that all environmental and social parameters including water quality, wastewater management, and pollution control are effectively managed in line with the Environmental Management Plan (EMP) presented in this report.

3.2.4. EMCA (Waste Management) Regulations, 2024 (Legal Notice No. 178 of 2024)

The Environmental Management and Coordination (Waste Management) Regulations, 2024 (Legal Notice No. 178 of 2024) are enacted under the Environmental Management and Coordination Act (EMCA) Cap 387 to provide a comprehensive framework for the management of waste and the abatement of pollution,

in alignment with Article 42 of the Constitution of Kenya, which guarantees every person the right to a clean, safe, and healthy environment.

Regulation 5 (1) provides categories of cleaner production methods that should be adopted by waste generators in order to minimize the amount of waste generated and they include: improvement of the production processes, monitoring the product cycle from beginning to end, and incorporating environmental concerns in the product design and disposal.

These regulations cover all aspects of waste management, including the handling, storage, transportation, segregation, treatment, and disposal of waste, and provide clear guidance, procedures, and standards for compliance in the sector. Their purpose is to ensure sustainable and environmentally sound practices that protect public health and natural resources. **Relevance:** For the proposed project, the proponent will develop and implement a Waste Management Plan (WMP) in full compliance with the provisions of these regulations. This plan will guide the safe handling, segregation, storage, and disposal of construction and operational wastes, ensuring that all project activities minimize environmental impacts and uphold statutory environmental and social responsibilities.

3.2.5.EMCA (Air Quality) Regulations, 2024 (Legal Notice No. 180 of 2024

The Environmental Management and Coordination (Air Quality) Regulations provide a legal framework for the prevention, control, and abatement of air pollution to safeguard clean and healthy air, in line with the requirements of EMCA Cap 387. These regulations apply to emissions from internal combustion engines, industrial premises, processes, operations, and other works covered under EMCA. The 2024 update represents a significant improvement over the 2014 regulations, introducing enhanced measures such as emission testing from mobile sources and stricter compliance requirements for air quality management.

Relevance: The project implementers will ensure full compliance with the Air Quality Regulations. This will include regular maintenance of construction machinery and equipment, as well as routine monitoring and measurement of atmospheric emissions, to ensure that air quality remains within the permissible limits and to minimize impacts on workers, nearby communities, and the environment.

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

The Environmental Management and Coordination (*Noise and Excessive Vibration Control*) Regulations prohibit any person from causing unreasonable, unnecessary, or unusual noise that may annoy, disturb, injure, or endanger the comfort, repose, health, or safety of others or the environment. Under Part II, Section 6(1), no person is permitted to generate noise from any source that exceeds the maximum permissible sound levels specified in the First Schedule of the Regulations.

Section 14 relates to noise, excessive vibrations from construction, demolition, mining or quarrying sites, and states that: where defined work of construction, demolition, mining or quarrying is to be carried out in an area, the Authority may impose requirements on how the work is to be carried out including but not limited to requirements regarding (a) machinery that may be used, and (b) the permitted levels of noise as stipulated in the Second and Third Schedules to these Regulations.

Table 7: Maximum Permissible Noise Levels

Area / Activity (Kenya context)	NEMA: Maximum Permissible Noise Level (dB)A
Construction Sites / Mines / Quarries	75 dB (daytime, 6:00–18:00)
Residential Areas – Indoor	35 dB (daytime), 30 dB (nighttime, 18:00–6:00)
Residential Areas – Outdoor	50 dB (daytime), 40 dB (nighttime)
Mixed Residential / Commercial Areas	55 dB (daytime), 35 dB (nighttime)
Commercial Areas (Urban centers, Nairobi CBD, malls, offices)	60 dB (daytime), 35 dB (nighttime)

Area / Activity (Kenya context)	NEMA: Maximum Permissible Noise Level (dB)A
Silent Zones / Hospitals / Schools / Places of Worship	40 dB (daytime), 35 dB (nighttime)
Industrial Areas (Light & Heavy Industry Zones, e.g., Industrial Area, Nairobi)	75 dB (daytime), 65 dB (nighttime)

The Regulations establish noise standards for a variety of settings, including construction sites, mines, quarries, silent zones, places of worship, residential areas (indoor and outdoor), mixed-use areas, and commercial zones, ensuring protection of human health and well-being. **Relevance:** *For the proposed, all construction and operational activities will be planned and implemented to minimize excessive noise and vibration, particularly near sensitive receptors such as residential areas, schools, hospitals, and places of worship. Noise monitoring and management measures will be implemented in accordance with the regulations to ensure compliance and reduce potential disturbance to surrounding communities.*

3.2.7. County Government Act, 2012

The County Governments Act, 2012, which repealed the previous Local Government Act, establishes the framework for county-level governance and urban planning in Kenya. The Act outlines the responsibilities of County Governments in overseeing, coordinating, and guiding the preparation and implementation of integrated development plans for cities and municipalities within their jurisdiction. In particular, Section 37 mandates County Executive Committees to monitor the planning process, assist in the formulation and review of development plans, ensure alignment of plans across cities and with national and county strategies, and resolve any disputes arising during plan preparation or adoption.

Furthermore, the Act requires counties to undertake spatial planning as part of their mandate. Section 110 specifies that county spatial plans must include a strategic assessment of environmental impacts associated with proposed development frameworks. In line with these obligations, County Governments are responsible for maintaining a clean, safe, and sustainable environment within their jurisdictions. **Relevance:** This legal framework ensures that the project will align with Nairobi County's urban and environmental planning priorities, promoting sustainable development, environmental protection, and social well-being.

3.2.7.1. Nairobi City County Solid Waste Management Act, 2015

The Nairobi City County Solid Waste Management Act 2015 provides the primary county-level legal framework for solid waste management in Nairobi. The key objectives of the Act are to establish a comprehensive legal framework for solid waste management, promote shared responsibility among the County Government, owners and occupiers of premises, and service providers, and ensure a clean and healthy environment in line with Article 42 of the Constitution of Kenya.

Under this Act, owners, occupiers, and developers have specific duties. These include providing and maintaining appropriate, approved waste containers at their premises; segregating waste where possible; placing the containers in accessible and approved locations for easy collection; and ensuring that all waste generated from the premises is properly stored and collected without any illegal dumping. Additionally, shop owners and businesses are required to clean and maintain a 10-metre radius around their premises.

Waste generators, including contractors working on construction or renovation projects, are responsible for arranging the collection of their waste through licensed service providers. The County Government is responsible for licensing waste collectors and transporters. Any breach of the Act, such as illegal dumping, failure to provide or maintain waste containers, or general non-compliance, constitutes an offence. These offences attract fines or other sanctions, and enforcement is carried out by authorized county officers. **Relevance:** Nairobi Railway City (MICE Core) development must treat the project site as "premises" under the Act. This requires strict housekeeping, proper waste storage, segregation, and regular collection by licensed operators throughout the construction and operational phases.

3.2.7.2. Nairobi City County Air Quality Act, 2022 No. 4 of 2022

This is an Act of the Nairobi City County Assembly to provide a legislative framework on air quality in order to protect the right to a clean and healthy environment by providing reasonable measures for the prevention of air pollution and for connected purposes. The objects and purpose of this Act is to establish a legal and institutional framework for-

- a) Protection of the right to a clean and healthy environment within Nairobi City County;
- b) provision of reasonable measures for
- c) (i) the protection and enhancement of the quality of air in the Nairobi city County; and (ii) the prevention of air pollution; to give effect to section 19 (4) of the Climate Change Act, 2023.

To give effect to paragraph 3 of part 2, of the Fourth Schedule of The Constitution of Kenya and part VIII of The Environment and Coordination Act, Cap. 387 and the Public Health Act, Cap. 242 laws of Kenya, in order to enhance the quality of ambient air for the sake of securing an environment that is not harmful to the health and wellbeing of people. Section (2) of the Act state that, an owner or occupier of every existing premises engaged in any industrial activity as specified in the Regulations, including that which is not subject to any condition on limit values for air pollutants whether on the license issued or approval granted for the operation of the existing facility, shall, on or before twelve (12) months from the date on which this Act comes into operation, take such measures as may be necessary to comply with the requirement of this Act.

Under section 5 sub regulation (1) the owner or occupier of the new premises shall comply with the limit values and technical standards specified in this Act. (2) An owner of every existing premise, including that which is not subject to any condition on limit values for air pollutants whether on the license issued or approval granted for the operation of the existing facility, shall, on or before the expiry of six (6) months from the date on which this Act come into operation, take such measures as may be necessary to comply with the prescribed limit values as specified in the Regulations.

Section 9. (1) Subject to section 49 on exemptions, no person shall discharge a pollutant into the air from any source without a license. sub regulation (2) No person shall discharge a pollutant into the air from any source or equipment which causes a concentration in the ambient air which is greater than the maximum concentration specified in a license. Under the prohibition section 11 sub regulation (1) Every premise shall be equipped with an air pollution control system installed in accordance with the specifications as shall be determined by the Regulations. **Relevance:** *The project proponent shall adhere to the provisions of this act in order to maintain good air quality.*

3.2.8. The Water Act, 2016

The Water Act, 2016 operationalizes Articles 43 and 62 of the Constitution of Kenya, providing the framework for the regulation, management, and conservation of water resources, and the provision of water and sanitation services. It establishes the Water Resources Authority (WRA) as the principal regulator of water resources in Kenya, with the mandate to ensure sustainable, equitable, and efficient utilization of water. Under the Act, any abstraction of surface or groundwater, construction of water works, or discharge of effluent into a water body requires a water use permit from the WRA. The Act also provides guidelines for the protection of water catchments and riparian reserves to maintain ecological integrity.

Section 94(1) of the Water Act, 2016 provides that: *"Nothing in this Act shall deprive any person or community of water services on the grounds only that provision of such services is not commercially viable."*

This clause reinforces the constitutional right to accessible and adequate water (Article 43(1)(d) of the Constitution of Kenya, 2010) and safeguards communities particularly those in underserved rural or arid areas from being excluded from water services purely on economic grounds. In relation to the proposed project, this provision will ensure that:

- Any water use for the project will not limit or restrict existing resident access to water sources;

- Where project water abstraction is necessary, priority will be given to sustaining local domestic needs before other use; and
- The project will adopt water conservation technologies to minimize water demand, thereby safeguarding the community's water security.

By aligning with Section 94(1), the project will not only comply with statutory provisions but also upholds social responsibility commitments to protect community welfare.

3.2.9. The Occupational Safety and Health Act, 2007

The Occupational Safety and Health Act, 2007 (OSHA 2007) provides a comprehensive legal framework to safeguard the safety, health, and welfare of workers and other persons lawfully present at workplaces in Kenya. The Act applies to all workplaces, whether temporary or permanent, including construction sites, offices, factories, schools, plantations, and academic institutions. The key objectives of OSHA 2007 are to ensure that hazards in the workplace are identified, eliminated, or controlled (Sections 3 and 14), protect non-workers from risks arising from workplace activities (Sections 3 and 12), and establish institutional mechanisms for enforcement through the National Council for Occupational Safety and Health and the Directorate of Occupational Safety and Health Services (DOSHS) (Sections 7–10).

Relevance: The project proponent and contractors are required to comply fully with OSHA 2007 throughout all phases of the project, including design, construction, operation, and eventual decommissioning. This includes conducting initial and periodic risk assessments (Sections 12 and 13), providing adequate and well-maintained personal protective equipment (PPE) to all personnel (Sections 15 and 16), and ensuring safe working conditions for workers, subcontractors, and visitors (Sections 12–16). Additionally, all personnel must receive training on occupational safety, health, and environmental protection (Section 19), and any workplace accidents, incidents, or occupational diseases must be reported to DOSHS as required by law (Sections 24 and 25).

By adhering to OSHA 2007, the project will not only meet statutory requirements but also safeguard worker welfare, minimize operational risks, and enhance the overall sustainability of the MICE-Core Arena development.

3.2.10. The Physical and Land Use Planning Act, 2019 (No. 13 of 2019)

The Physical and Land Use Planning Act, 2019 consolidates laws relating to the planning, regulation, and development of land in Kenya. It operationalizes key provisions of the Constitution of Kenya, 2010, particularly Article 60, which sets out the principles of land policy, and Article 66, which governs the regulation of land use. The Act aligns land use and planning with broader sustainable development objectives, providing a clear framework for national, county, and inter-county spatial planning. Under this framework, the Act requires the preparation and approval of a hierarchy of spatial plans, including:

- National Physical and Land Use Development Plan, guiding spatial development at the national level;
- County Physical and Land Use Development Plans, integrating land use planning with infrastructure provision, environmental management, and socio-economic priorities at the county level; and
- Local Physical and Land Use Plans, covering towns, trading centres, rural settlements, and designated Special Planning Areas (SPAs).

The proposed Nairobi Railway City and its supporting infrastructure fall within a Special Planning Area (SPA) designated under the Nairobi Railway City spatial framework. The SPA designation is intended to support high-density, mixed-use development while promoting sustainable urban growth, infrastructure integration, and environmental protection. Under Section 56 of the Act, any development within an SPA requires development permission from the relevant County Physical and Land Use Planning Authority, ensuring that all project activities comply with land-use regulations, planning standards, and environmental safeguards. The SPA status thus provides a legal and planning framework that guides the design,

construction, and operation of the Nairobi Railway City, while enabling alignment with Nairobi County's broader urban development and regeneration objectives.

3.2.11. *The Employment Amendment Act of 2022*

This Act establishes the minimum terms and conditions of employment. The Act sets forth the relationship between an employer and a worker. It defines the benefits, duties and obligations of the employer and the worker, which includes contract of service, prohibition against forced labour, discrimination in employment, sexual harassment, payment of wages, leave, termination, and living amenities.

The Act requires written contracts for jobs longer than three months (Section 9–10), outlining terms like wages, working hours, and duties. Wages must be paid in legal tender and on time, with no unauthorized deductions (Sections 17–20). Employees are entitled to equal pay for equal work (Section 5(5)). (Section 27) and provides for 21 days of annual leave (Section 28), 90 days maternity and 2 weeks paternity leave (Section 29). Termination must be fair and follow due process (Sections 35–46), with notice or pay in lieu. Redundancy requires proper notice and severance pay (Section 40). Child labour is restricted, with strict limits on work by persons under 18 (Sections 56–61). Disputes are handled by the Employment and Labour Relations Court (Sections 87–90), and employers must keep records for at least five years (Section 74). Penalties apply for violations of the Act. **Relevance:** *During the project implementation phase, the proponent will engage a combination of full-time and casual workers to support various project activities. In line with national labour laws and international labour standards (Environmental and Social Standard 2), the contractor shall be required to strictly observe the prevailing basic minimum conditions of employment, as provided under the Employment Act, 2022 to prevent Child labour.*

3.2.12. *The Sexual Offences Act 2006*

The Sexual Offences Act, 2006 provides a comprehensive legal framework for the prevention, prosecution, and punishment of all forms of sexual offences in Kenya. The Act criminalizes a wide range of sexual violations, including rape, defilement, sexual harassment, sexual exploitation, and indecent acts. Under the Act, employers, including project contractors and implementing agencies, have a legal duty to:

- Prevent and respond to any form of sexual offence occurring within the project environment;
- Implement Codes of Conduct for all workers that explicitly prohibit sexual harassment (SH), sexual exploitation and abuse (SEA), and other forms of gender-based violence (GBV); and
- Establish confidential and accessible Grievance Redress Mechanisms (GRMs) to enable victims or witnesses to report sexual offences safely.

The Act is particularly relevant during the construction and implementation phases of the proposed project, where interactions between project workers and local community members including vulnerable groups such as women, girls, and children may increase the risk of SH, SEA, and GBV. Compliance with the Act is critical not only to meet legal obligations but also to ensure the safety, dignity, and protection of all individuals within the project area.

3.2.13. *HIV/AIDS Prevention and Control Act (Act No.14 of 2006, Revised in 2012)*

The HIV and AIDS Prevention and Control Act (HAPCA), 2006, as revised in 2012, provides a comprehensive legal framework to address the HIV/AIDS epidemic in Kenya. The Act mandates the government to promote public awareness through education campaigns in schools, workplaces, prisons, and communities, using scientifically proven methods while upholding human rights. It also emphasizes voluntary testing and counselling, ensuring that all testing is conducted with informed consent.

Key provisions relevant to project implementation include Section 3, which requires the government to create awareness and provide education on HIV/AIDS prevention and control; Section 4, which encourages voluntary counselling and testing (VCT); and Section 5, which obliges workplaces to adopt measures for HIV/AIDS prevention, including staff training and awareness programs. **Relevance:** The project proponent,

contractors will be required to implement comprehensive HIV/AIDS awareness programs for all workers and local communities. This will include VCT services, ongoing training sessions on prevention and treatment, and educational campaigns throughout the project lifecycle. Adhering to HAPCA not only fulfills legal obligations but also supports the health and wellbeing of workers and nearby communities, reducing the risk of HIV transmission and contributing to Kenya's broader public health goals.

3.2.14. The Work Injury Benefits Act of (WIBA), 2007

The Work Injury Benefits Act (WIBA), 2007 provides a legal framework to ensure that employees who suffer injuries, occupational diseases, or death arising from their work are adequately compensated. The Act applies to all employees in Kenya, whether permanent, casual, or contract staff, with the exception of members of the armed forces.

Under Section 7, employers are required to obtain and maintain insurance covering all employees against work-related injuries and diseases, and failure to do so is an offence. Sections 10 to 13 obligate employers to report any workplace injuries or accidents to the Director of Occupational Safety and Health Services (DOSHS) within seven days, with immediate notification required in the event of a fatality. Sections 16 to 24 specify the types and extent of compensation payable, including medical expenses, temporary or permanent disability benefits, and payments to dependents in the event of death. For permanent total disability, an employee may receive up to 80% of monthly earnings for a period of up to 96 months, subject to statutory limits.

Relevance: The proponent will ensure that all employees are covered under appropriate insurance in compliance with WIBA. This guarantees that workers are protected and compensated for any work-related injuries, illnesses, or fatalities, thereby safeguarding their welfare and ensuring legal compliance throughout the project lifecycle.

3.2.15. National Museums and Heritage Act (Cap 216)

This Act consolidates previous laws (repealing the Antiquities and Monuments Act and the National Museums Act) and provides a comprehensive framework for the establishment, management, and development of national museums, as well as the identification, protection, conservation, and transmission of Kenya's cultural and natural heritage. The Act establishes the National Museums of Kenya (NMK) as a body corporate and outlines its core functions under section 4:

- The national Museum of Kenya (NMK) serves as repositories, research/dissemination centres, identifies/protects/conserves/transmits heritage, and promotes cultural resources for socio-economic development

Part IV Heritage Declarations (Sections 25–26): The Minister (in consultation with NMK) can declare buildings, structures, or sites as monuments, protected buildings, or protected areas if they have historical, architectural, or cultural value. The Nairobi Railway Station building and related structures are typically treated as heritage assets under this framework. Sections 40–46 and 52–55; Protection and Permits: No person may alter, damage, destroy, export, or significantly modify a protected object, monument, or building without NMK approval or permits. Renovations require prior consultation, heritage impact assessments, and approvals for any alterations. Relevance: Nairobi Railway City (Phase 1) works MICE-Core centre (Arena) will fully comply with the National Museums and Heritage Act, 2006 (Cap. 216) during implementation.

3.3. International Convention and Treaties

Kenya is a signatory to a number of international conventions, treaties, and agreements that establish frameworks for environmental protection, sustainable development, and climate action. These instruments provide guidance on managing natural resources, conserving biodiversity, mitigating climate change, controlling pollution, and addressing environmental risks associated with development projects. Compliance with these international commitments ensures that national policies and projects, including

infrastructure developments such as the Nairobi Railway City Phase-1 (MICE-Core Arena), align with globally recognized environmental and social standards.

The table below summarizes the key treaties and agreements to which Kenya is a party, highlighting their objectives and relevance to environmental and social impact management.

Table 8: International Treaties

Treaty / Convention	Year	Relevance to Environmental Management / ESIA
Convention on Biological Diversity (CBD)	1992	– Guides biodiversity conservation, sustainable use of ecosystems, and integration of biodiversity into development planning. Often seen as the key document regarding sustainable development.
United Nations Framework Convention on Climate Change (UNFCCC)	1992	– Provides framework for climate change mitigation and adaptation, influencing environmental impact assessments regarding emissions and climate resilience.
Kyoto Protocol (under UNFCCC)	1997	– Sets legally binding targets for greenhouse gas (GHGs) emissions reduction, relevant for energy-intensive projects.
Paris Agreement (under UNFCCC)	2016	– Strengthens climate change mitigation and adaptation efforts; projects are expected to consider greenhouse gas impacts and resilience.
Ramsar Convention on Wetlands	1971	– Promotes the conservation and wise use of wetlands; critical for projects near wetlands or water bodies.
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	1973	– Ensures that development does not threaten endangered species through trade or habitat disruption. ensure that international trade in specimens of wild animals and plants does not threaten their survival and it accords varying degrees of protection. The project proponent shall ensure that CITES objectives are respected.
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes	1989	– Regulates the management and disposal of hazardous wastes, including during construction and industrial activities.
Stockholm Convention on Persistent Organic Pollutants (POPs)	2001	– Controls the production, use, and disposal of harmful chemicals; relevant for construction and industrial processes.
United Nations Convention to Combat Desertification (UNCCD)	1994	– Guides land degradation control, soil conservation, and sustainable land management.
Vienna Convention for the Protection of the Ozone Layer & Montreal Protocol	1985 / 1987	– Protects the ozone layer, regulates substances that deplete it (e.g., refrigerants in HVAC systems). The proponent should alternative friendly refrigerants –

3.4. World Bank ESF, Environmental and Social Standards (ESSs), and WBG EHS Guidelines

The World Bank Environmental and Social Framework (ESF) sets out the World Bank's commitment to sustainable development, through a Bank Policy and a set of Environmental and Social Standards (ESS) that are designed to support Borrower's projects through the project life cycle. The Environmental and Social Standards set out the requirements for Borrowers relating to the identification and assessment of environmental and social risks and impacts associated with projects. There are 10 Environmental and Social Standard (ESSs) reviewed for this ESIA as listed below:

- [Environmental and Social Standard 1](#): Assessment and Management of Environmental and Social Risks and Impacts;
- [Environmental and Social Standard 2](#): Labor and Working Conditions;
- [Environmental and Social Standard 3](#): Resource Efficiency and Pollution Prevention and Management;
- [Environmental and Social Standard 4](#): Community Health and Safety;
- [Environmental and Social Standard 5](#): Land Acquisition, Restrictions on Land Use and Involuntary Resettlement;
- [Environmental and Social Standard 6](#): Biodiversity Conservation and Sustainable Management of Living Natural Resources;
- [Environmental and Social Standard 7](#): Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities;
- [Environmental and Social Standard 8](#): Cultural Heritage;
- [Environmental and Social Standard 9](#): Financial Intermediaries; and
- [Environmental and Social Standard 10](#): Stakeholder Engagement and Information Disclosure.

All of the above standards are relevant to the proposed project, except for ESS7 and ESS9. The standards establish objectives and requirements to avoid, minimize, reduce and mitigate environmental and social risks and impacts, and to compensate for or offset any residual impacts. In the context of Nairobi Railway City Phase-1 MICE- Core component, this ESIA has addressed the environmental and social risks as part of the Environmental and Social Assessment process, in accordance with ESS1. ESS2–10 excluding 7 and 9.

The applicability of these standards has been determined through a preliminary screening process that considered project activities, location, potential environmental sensitivities, stakeholder characteristics, and regulatory requirements. The relevant ESSs will guide the identification, assessment, and management of risks and impacts throughout the project lifecycle, including design, construction, operation, and decommissioning phases. Compliance with the applicable ESSs will be integrated into project planning and implementation to ensure that environmental and social risks are effectively avoided, minimized, mitigated, or compensated, while enhancing positive outcomes for affected communities and the environment.

Table 9: Relevant World Bank Environmental and Social Standards

ESS No.	ESS Title	Key Requirements	Relevance to the MICE Core Arena Project
ESS1	Assessment and Management of Environmental and Social Risks and Impacts	The ESSs1 is designed to help Borrowers to manage the risks and impacts of a project, and improve their environmental and social performance, through a risk and outcomes-based approach. Requirement – Assessment, management, and monitoring of environmental and social (E&S) risks using a risk- and outcomes-based approach. Application of mitigation hierarchy (avoid, minimize, mitigate, compensate). – Stakeholder engagement and disclose appropriate information in accordance with ESS10; – Conducting monitoring and reporting on the environmental and social performance of the project against the ESSs. – Preparation and implementation of an Environmental and Social Commitment Plan (ESCP) to achieve compliance with the ESSs.	Relevant. The construction and operation of the MICE Core Arena and associated infrastructure (access roads, utilities, parking, landscaping, and support facilities) present potential environmental and social risks including noise, dust, waste generation, traffic, occupational risks, and community disturbance. An ESIA and ESMP are required to assess, manage, and monitor these risks throughout the project lifecycle. Zaria Group commissioned this ESIA to assess, manage and monitor E&S risks and impacts of the proposed project throughout the project Lifecycle. The project implementation is anticipated to potentially cause environmental and social risks and impacts associated with construction and operation activities of the project, so ESS1 is relevant.
ESS2	Labour and Working Conditions	ESS2 recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. Requirement – Promote safety and health at work. – Development of Labour Management Procedures (LMP) including clear employment terms and conditions. – Prohibition of child and forced labour. – Non-discrimination and equal opportunity. – Occupational Health and Safety (OHS) measures. – Worker Grievance Redress Mechanism (GRM).	Relevant. The project implementation shall require direct workers, contracted workers (e.g. skilled and non-skilled construction workers engaged by contractors) and primary supply workers (e.g. workers engaged for essential construction materials to be purchased for the project, as defined in ESS2). Use of workers will potentially give rise to social issues relating to labour force as mentioned in the objectives of ESS2. Therefore, ESS2 is relevant.
ESS3	Resource Efficiency and Pollution Prevention and Management	ESS3 recognizes that economic activity and urbanization often generate pollution to air, water, and land, and consume finite resources that may threaten people, eco system services and the environment at the local, regional, and global levels. Requirements – Efficient use of energy, water, and raw materials. – Pollution prevention and control in line with national standards and EHS Guidelines.	Relevant. Construction and operation of the proposed project will require significant energy and water use. Activities may generate construction waste, wastewater, emissions (dust and exhaust), and hazardous materials (fuels, oils, paints). Appropriate measures will be required to promote energy efficiency, sustainable building practices, and proper waste management, thus, ESS3 is relevant.

ESS No.	ESS Title	Key Requirements	Relevance to the MICE Core Arena Project
		– Proper management of solid, liquid, and hazardous waste.	
ESS4	Community Health, Safety and Security	ESS4 recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. Requirements – Identification and evaluation of the potential traffic and road safety risks to workers, affected communities, and road users, and requires development of measures and plans to address them. – Avoid or minimize exposure to hazardous materials and control the safety of storage, transportation and disposal of hazardous materials – Identify and implement measures to address emergency events	Relevant. The project implementation is anticipated to cause adverse risks and impacts on community health and safety. The project activities will likely cause (i) air, soil and water pollution due to wastes, (ii) traffic safety risk, (iii) health hazards those relating to poor sanitation and living conditions, (iv) sexual transmission, and potential transmission of diseases like HIV/AIDS due to labor mobility. Therefore, ESS4 is relevant.
ESS5	Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	ESS5 recognizes that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons. Project-related land acquisition or restrictions on land use may cause physical displacement (relocation, loss of residential land or loss of shelter), economic displacement (loss of land, assets or access to assets, leading to loss of income sources or other means of livelihood), or both. Requirement – Avoid or minimize involuntary resettlement wherever feasible by exploring alternative project designs. – Avoid forced eviction. – Where land acquisition or restrictions on land use are unavoidable, conduct a social assessment to identify affected persons and impacts. – Provide compensation for loss of land and assets at full replacement cost prior to displacement. – Provide assistance for displaced persons to improve, or at least restore, their livelihoods and standards of living. – Develop and implement a Resettlement Action Plan (RAP) or Livelihood Restoration Plan (LRP), proportionate to the nature and scale of impacts.	Relevant: Not triggered. The proposed site is located on public land owned by the Kenya Railway Corporation (KRC). As no people are living within the site, no involuntary resettlement or relocation is anticipated.

ESS No.	ESS Title	Key Requirements	Relevance to the MICE Core Arena Project
ESS6	Biodiversity Conservation and Sustainable Management of Living Natural Resources	ESS6 recognizes that protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development. ESS recognizes the importance of maintaining core ecological functions of habitats, including forests, and the biodiversity they support. Requirements – Protection and conservation of biodiversity and habitats – Identification of project-related impacts on habitats and biodiversity. – Prevention of pollution that may affect ecosystems. – Conservation of biodiversity and habitats	Relevant. The project implementation will not cause significant risks and adverse impacts on biodiversity due to limited biodiversity at the project site. However, site clearance, landscaping, and supporting infrastructure development may affect existing vegetation and urban biodiversity. Improper waste disposal or runoff could impact surrounding ecosystems. Biodiversity considerations and site restoration measures will be integrated into project planning. Therefore, ESS6 is relevant.
ESS7	Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	This ESS applies to a distinct social and cultural group identified in accordance with paragraphs 8 and 9 of ESS . The terminology used for such groups varies from country to country and often reflects national considerations. The objectives of this ESS is to ensure that the development process fosters full respect for the human rights, dignity, aspirations, identity, culture, and natural resource-based livelihoods of Indigenous Peoples/ Sub-Saharan African Historically Underserved Traditional Local Communities Requirement – Conduct a screening and social assessment to determine the presence of Indigenous Peoples / Historically Underserved Traditional Local Communities – Obtain Free, Prior, and Informed Consent (FPIC) in circumstances involving: - o Impacts on land and natural resources subject to traditional ownership or customary use; – Prepare and implement an Indigenous Peoples Plan (IPP) or include relevant measures within the ESMP/ESCP where impacts are identified.	Relevant: Not Triggered; the proposed project location is not inhabited by and indigenous or undeserved communities.
ESS8	Cultural heritage	This ESS recognizes that cultural heritage provides continuity in tangible and intangible forms between the past, present and future People identify with cultural heritage as a reflection and expression of their constantly evolving values, beliefs, knowledge and traditions. This ESS sets out general provisions on risks and impacts to cultural heritage from project activities. Requirements – Stakeholder consultation and identification of cultural heritage,	Relevant: The broader Railway City development footprint interfaces with portions of the Railway Museum, which houses historically significant rail wagons and locomotives of high cultural and heritage value. Given the presence of these tangible heritage assets, ESS8 is considered relevant to the project. Any construction activities undertaken in proximity to the Railway Museum will require careful planning to avoid direct

ESS No.	ESS Title	Key Requirements	Relevance to the MICE Core Arena Project
		– Protection of Legally Protected Heritage; – commercial use of cultural heritage	or indirect impacts on heritage structures, artifacts, and their setting. Appropriate measures, including heritage impact assessment, and stakeholder consultation with relevant heritage authorities shall be undertaken.
ESS10	Stakeholder Engagement and Information Disclosure	This ESS recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice . Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation. Requirements – Requires identification of stakeholders and vulnerable groups. – Preparation and implementation of a Stakeholder Engagement Plan (SEP). – Accessible and culturally appropriate information disclosure. – Establishment of a project-level GRM.	Relevant. The proposed development may affect nearby residents, businesses, transport operators, and other stakeholders. Continuous engagement during ESIA preparation and project implementation is necessary to address concerns related to construction disturbance, traffic, land use, and community safety. A SEP and GRM will guide stakeholder engagement. The project implementation requires engagement of many parties, including government agencies, County government departments, state corporations, business associations, and local area residents (Communities) will be benefit and/or affected by the project implementation. The project proponent has recognized the importance of open and transparent engagement between the project implementers (Proponent) and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation. Elaborate stakeholder management process has been and will be carried out during and after ESIA process. Therefore, ESS10 is relevant.

3.5. Alignment of World Bank ESS and GoK Policies

The environmental assessment framework under the Environmental Management and Coordination Act (EMCA), Cap 387 is broadly consistent with the World Bank's Environmental and Social Standards (ESS). Both frameworks share common objectives and principles, including the requirement for environmental assessment prior to project implementation, the need to assess social impacts, and the conduct of stakeholder engagement. The Table below give inferences to both Kenyan Policies and World Bank Standards.

Table 10: Policies Comparison Alignment

ESS	Relevant GoK Laws/Regulations	Relevance to Nairobi Railway City Project
ESS1 – Assessment and Management of E&S Risks and Impacts	Environmental Management and Coordination Act (EMCA Cap 387) Environmental (Impact Assessment and Audit) Regulations, 2003	Full ESIA and ESMP prepared to identify, assess, and manage environmental, social, health, and safety risks for the proposed project, including residual impacts and mitigation measures.
ESS2 – Labor and Working Conditions	Occupational Safety and Health Act (OSHA) 2007; Work Injury Benefits Act (WIBA) 2007; Employment Act 2007	Ensures worker health and safety on construction sites, provision of PPE, risk assessments, safe working conditions, reporting of incidents, and compensation for injuries or work-related illness.
ESS3 – Resource Efficiency and Pollution Prevention and Management	EMCA (Air Quality) Regulations 2024; EMCA (Waste Management) Regulations 2024; EMCA (Water Quality) Regulations 2024; EMCA Noise and Excessive Vibration Pollution Control Regulations	Ensures management of air, water, and soil quality, waste handling, and noise control during construction and operation. Includes monitoring and mitigation measures for dust, emissions, wastewater, and solid/hazardous waste.
ESS4 – Community Health and Safety	EMCA 1999; Environmental (Impact Assessment and Audit) Regulations 2003; Public Health Act Cap 242; Traffic Act; Sexual Offences Act 2006; HIV/AIDS Prevention and Control Act 2006	Protects surrounding communities from construction-related hazards such as traffic, dust, noise, communicable diseases, SH/SEA risks, and HIV/AIDS exposure. Includes grievance mechanisms for community complaints.
ESS5 – Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Physical and Land Use Planning Act 2019; Land Act 2012;	Ensures compliance with land-use planning regulations and SPA designation for Nairobi Railway City. Addresses potential displacement, compensation, and

ESS	Relevant GoK Laws/Regulations	Relevance to Nairobi Railway City Project
	Constitution of Kenya 2010 (Articles 60, 66)	restoration of livelihoods if any land acquisition occurs.
ESS6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources	EMCA Cap 387; Wildlife Conservation and Management Act 2013; Forest Conservation and Management Act 2016	Ensures protection of flora and fauna during construction, avoiding degradation of critical habitats, and monitoring impacts from borrow pits, quarries, and landscaping.
ESS7 – Indigenous Peoples / Vulnerable Groups	Constitution of Kenya 2010 (Articles 27, 56, 259); National Cohesion and Integration Commission Act 2008	Protects marginalized, vulnerable, or minority groups potentially affected by project activities, including labor influx and community engagement considerations.
ESS8 – Cultural Heritage	Antiquities and Monuments Act Cap 215; Constitution of Kenya 2010 (Article 44)	Ensures chance-find procedures for historical or cultural artifacts, prevents damage to heritage sites, and incorporates mitigation measures if archaeological resources are uncovered.
ESS9 – Financial Intermediaries	Not applicable (N/A for this project)	N/A-project is directly implemented by Kenya Railway Corporation (KRC) and associated contractors.
ESS10 – Stakeholder Engagement and Information Disclosure	EMCA Cap 387; Environmental (Impact Assessment and Audit) Regulations 2003; Constitution of Kenya 2010 (Article 42)	Ensure continuous stakeholder engagement through public hearings, consultations, household visits, information dissemination, and grievance mechanisms. SEP and ESIA reports were disclosed for 40 days.

3.6. WBG Environmental, Health and Safety Guidelines (EHSGs)

The ESF requires all projects to apply the relevant requirements of the World Bank Group Environmental, Health and Safety Guidelines (EHSGs). EHSGs are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP) that addresses the Bank's expectations regarding the Environmental Health and Safety (EHS) performance of projects. They define acceptable pollution prevention and abatement measures and emission levels in the World Bank financed projects. In the context of proposed project (MICE-Core Arena and supporting infrastructures), Zaria Group will use both the General and Construction and Decommissioning EHSGs.

3.6.1. General EHSGs

The World Bank Group (WBG) General Environmental Health and Safety Guidelines (EHSGs) cover environmental, occupational health and safety, and community health and safety related risks. General EHS Guidelines exist which contain information on cross-cutting EHS issues potentially applicable to all industry sectors; these are listed in the Table below.

Table 11: World Bank General EHS Guidelines

Category	Sub-Topic
Environmental	Air Emissions and Ambient Air Quality
	Energy Conservation
	Wastewater and Ambient Water Quality
	Water Conservation

Category	Sub-Topic
	Hazardous Materials Management
	Waste Management
	Noise
	Contaminated Land
Occupational Health and Safety (OHS)	General Facility Design and Operation
	Communication and Training
	Physical Hazards
	Chemical Hazards
	Biological Hazards
	Radiological Hazards
	Personal Protective Equipment (PPE)
	Special Hazard Environments
	Monitoring
Community Health and Safety	Water Quality and Availability
	Structural Safety of Project Infrastructure
	Life and Fire Safety (L&FS)
	Traffic Safety
	Transport of Hazardous Materials
	Disease Prevention
	Emergency Preparedness and Response
Construction and Decommissioning	Environmental Management
	Occupational Health and Safety
	Community Health and Safety

3.6.2. Construction and Decommissioning EHSs

The Construction and Decommissioning section of the General EHSs outlines good international industry practice (GIIP) measures to prevent, minimize, and control adverse environmental, health, and safety impacts arising from site preparation, earthworks, civil works, installation of infrastructure, and eventual site closure or rehabilitation. The Guidelines emphasize application of the mitigation hierarchy avoidance, minimization, mitigation, and compensation and promote proactive risk management through proper design, contractor management, supervision, and performance monitoring.

Table 12: World Bank Construction and Decommissioning EHS Guidelines

Category	Aspect
Environment	Noise and Vibration
	Soil Erosion
	Air Quality
	Solid Waste
	Hazardous Materials
	Wastewater Discharges
	Contaminated Land
Occupational Health and Safety	Worker Health and Safety Management
Community Health and Safety	General Site Hazards
	Disease Prevention
	Traffic Safety

Where applicable, the above-mentioned Environmental, Health and Safety Guidelines (EHSs) will be adopted and applied throughout the implementation of the proposed project. These Guidelines will inform the development of site-specific management plans, mitigation measures, monitoring programs, and performance standards to ensure compliance with national regulatory requirements and alignment with Good International Industry Practice (GIIP).

3.7. World Bank Labor Influx Guidance Note

The World Bank's Environmental and Social Framework (ESF) requires that Borrowers assess and manage the environmental and social risks and impacts associated with projects supported through Investment Project Financing (IPF). This Good Practice Note provides guidance on identifying, assessing, and managing the risks of adverse social and environmental impacts arising from the influx of labor to Bank supported IPF projects. The Note outlines guiding principles and recommendations for the design, preparation, and implementation of projects involving civil works that require labor from outside the project area. It does not introduce new requirements but rather provides good practice on how to address such issues as part of the environmental and social assessment process and throughout the project lifecycle.

3.7.1. *Determinant of Population Influx*

The proposed Nairobi Railway City Phase-1 project (MICE-Core Centre and Arena) will involve the construction of civil works for which the required labor force and associated goods and services cannot be fully sourced amongst the residents (Community) due to factors such as worker unavailability or limited technical skills and capacity. In such cases, part or all of the workforce may need to be brought in from outside the project area including the larger Nairobi Metropolitan area.

This influx of workers is frequently accompanied by additional individuals, often referred to as “followers,” who come to the area seeking to provide goods and services to the workforce or pursue employment and business opportunities. The rapid arrival and temporary settlement of workers and followers in the project vicinity referred to as labor influx can, under certain conditions, place pressure on local infrastructure, utilities, housing, natural resources, and social dynamics. This guidance specifically addresses labor influx issues in the context of Bank-financed investment projects, such as the proposed project construction phase and does not cover general labor movement outside of such projects.

Key principles that will be pursued to mitigate the impacts of population influx during project implementation shall include, but are not limited to, the following:

- Prioritizing the use of local labor (immediate neighbours) to reduce the need for incoming workers;
- Assessing and managing labor influx risks through appropriate environmental and social instruments; and
- Incorporating social and environmental mitigation measures directly into civil works contracts to ensure compliance by contractors and subcontractors.

3.7.2. *Management of Adverse Risks and Impacts*

Where labour influx is anticipated, the Borrower is required to assess the associated environmental and social risks and impacts in accordance with the World Bank Environmental and Social Standard 1 (ESS1) on Assessment and Management of Environmental and Social Risks and Impacts. This assessment ensures that potential adverse effects are identified early and appropriate mitigation measures are put in place. The table below presents a summary of the key impacts associated with labour influx, together with the corresponding mitigation measures proposed to address them in a structured and effective manner.

Table 13: Mitigation Measures by Impacts During Project Implementation

Assessed Risk and Impact				
	Contractor	Potential Mitigation Measures Environment	Enabling	World Bank Guidance
Social Risks				
All		– Establishment and operation of an effective GRM accessible to community members to facilitate early identification of problems and targeted mitigating interventions; – Provision of information to communities on how to use the GRM to report issues; – Monitoring and taking appropriate actions to ensure C- ESMP provisions are met; – Inclusion of relevant provisions in the ESMP.		– Inclusion of relevant provisions in the ESMP and Legal Agreement; – Provision of advice on expected or likely issues based on Bank experience; – Implementation support to verify compliance with the ESMP and C- ESMP; – Monitoring of GRM resolution rates and identification of recurring issues.
Risk of social conflict	– Provision of training and socialization of Code of Conduct for workers in local language(s); – Provision of cultural sensitization training for workers regarding engagement with local community.	– Consultations with and involvement of local communities in project planning and implementation; – Awareness-raising among local community and workers.		
Increased risk of Code of Conduct	– Paying adequate salaries for workers to reduce incentive for theft; – Paying salaries into workers' bank accounts rather than in cash;	– Reinforcement of local law enforcement staff; – Enforcement of laws on drug abuse and traffic;		

Assessed Risk and Impact				
	Contractor	Potential Mitigation Measures Environment	Enabling	World Bank Guidance
Violations, including inappropriate behavior and crime (including prostitution, theft and substance abuse)	– Sourcing of local workforce; – Cooperation with local law (NGAO) enforcement; – Introduction of sanctions (e.g., dismissal) for workers involved in criminal activities; – Provision of substance abuse prevention and management programs.	– Police monitoring to prevent drugs trafficking; – Sensitization campaigns both for workers and local communities.		
Influx of Additional Population	– Contractor to hire workers through recruitment offices and avoid hiring “at the gate” to discourage spontaneous influx of job seekers.	– Communications campaign to manage expectations and discourage spontaneous influx of job seekers;		
Increased burden on public service Provision	– Identification of authorized water supply source and prohibition of use from other community sources; – Separate service providers for community and workers’ camp/construction site; – Code of Conduct or worksite procedures on personal water and electricity consumption.	Contingency plans for temporary rise in demand for utilities and public service provision.	Investment in and capacity building of local public service providers.	

Assessed Risk and Impact				
	Contractor	Potential Mitigation Measures Environment	Enabling	World Bank Guidance
Increased risk of communicable diseases (including STDs and HIV/AIDS)	– Screening worker influx for communicable disease and providing treatment, as appropriate, to reduce exposure to local population – Vaccinating workers against common and endemic (locally prevalent) diseases; – Contracting of an HIV service provider to be available on-site; – Implementation of HIV/AIDS education program; – Information campaigns on STDs among the workers and local community; – Education about the transmission of diseases, age of consent in project area, and reminder about Code of Conduct	– Establishment or upgrade of health centers at construction sites (unless designated as contractor responsibility); – Free testing facilities; – Provision of condoms; – Monitoring of local population health data, in particular for transmissible diseases.	Community sensitization campaigns; Awareness raising about public health impacts from labor influx.	
Gender-based violence, including sexual harassment, child abuse and exploitation	– Contractor Code of Conduct developed, incorporated into workers' contracts, and training and socialization on it provided to workers – Mandatory and regular training for workers on required lawful conduct in local community and legal consequences for failure to comply with laws; – Commitment / policy to cooperate with law enforcement agencies investigating perpetrators of gender-based violence; – Creation of partnership with local civil society organization to report workers' misconduct and complaints/reports on gender-based violence or harassment through the GRM;	– Instruction and equipping local law enforcement to act on community complaints; – Information and awareness-raising campaigns for community members, specifically women and girls; – Provision of information to local community about the contractor's policies and Code of Conduct (where applicable).	Increased security presence in nearby communities; Reinforcement of police force where needed; Deployment of female police officers in project area; Application of long-term community-based approaches to address the issue; Enforcement of laws on sexual violence and human trafficking.	

Assessed Risk and Impact				
	Contractor	Potential Mitigation Measures Environment	Enabling	World Bank Guidance
Child labor and school drop out	- Local community provided with information on contractor's policies and Code of Conduct - Ensuring that children and minors are not employed directly or indirectly on the project.	Communication on hiring criteria, minimum age, and applicable laws.	Enforcement of legislation on child labor.	
Increased traffic and rise in accidents	- Preparation and implementation of a traffic management plan to be approved by supervision engineer; - Building additional/separate roads to project and workers' construction sites; - Road safety training and defensive driving training for staff; - Sanctions for reckless driving, speed limits on project vehicles, and route/time management where in proximity to populations, such as lower speed limits near schools and avoidance of certain times of day when more pedestrians are on the road.	Local government engagement with contractor and communities to identify accident hotspots and formulation of solutions.	Upgrading and maintaining roads affected by project (unless designated as contractor responsibility).	
Environmental Risks				
Inadequate waste disposal and creation of illegal waste disposal sites	- Reduction of waste generation; - Sound practices for waste disposal.	Inspection of waste disposal arrangements.		
Increased demand on freshwater resources	- Assessment of local water capacity and mitigation, as appropriate; - Water conservation and recycling of water; - Consideration of use of rainwater where feasible; - Avoiding contamination of freshwater sources.	Inclusion in contract of requirement for rainwater capture, use of non-potable water for construction works, etc.		

3.8. World Bank Access to Information Policy

The World Bank's policy on disclosure of information establishes a mandatory procedure that must be followed by both the Borrower and the Bank to ensure transparency and public access to information on the environmental and social aspects of Bank-supported projects. This policy is intended to promote informed participation, accountability, and trust among stakeholders, including affected communities, government authorities, and other interested parties.

Relevance

The policy is directly applicable to the proposed Nairobi Railway City Phase 1 (MICE Core Arena) project, as it requires the disclosure of key environmental and social instruments, including the Environmental and Social Impact Assessment (ESIA) report, Environmental and Social Management Plan (ESMP), and other relevant documentation in line with ESS10 on stakeholder engagement and information disclosure. Public disclosure ensures that stakeholders such as nearby residents, businesses, transport operators, and relevant government authorities have timely access to information on anticipated environmental and social impacts, proposed mitigation measures, and available grievance redress mechanisms. This process promotes transparency and accountability throughout the project lifecycle.

By facilitating open access to information, the policy supports meaningful stakeholder engagement, enabling affected communities and interested parties to raise concerns, provide feedback, and contribute to informed decision-making. It also helps to build trust and strengthen relationships between the project proponent, local communities, and regulatory institutions. Compliance with this policy will further ensure alignment with the World Bank Environmental and Social Framework (ESF), demonstrating the project's commitment to international best practices in environmental and social governance.

3.9. Institutional Framework Arrangement

The institutional framework refers to the set of defined institutions and sectors with which the proposed project shall interact throughout its lifecycle. In the Kenyan context, this includes the project developer, implementing partners, and relevant government ministries, agencies, and regulatory bodies. It also encompasses sectors and authorities identified based on political boundaries, legislation, regulations, and institutional mandates and structures. This framework ensures that the project aligns with national policies, statutory requirements, and sectoral responsibilities while facilitating coordination among stakeholders.

Table 14: Relevant Institutional

Institution	Core Functions	Relevance to the Project
National Environment Management Authority (NEMA)	NEMA is the principal government agency established under the Environmental Management and Coordination Act (EMCA), Cap 387, and is responsible for overall environmental management and coordination in Kenya. Its core functions include: • Reviewing and approving ESIA reports, • Issuing environmental licenses, • Conducting environmental audits and inspections, • Enforcing compliance with environmental regulations, and • Monitoring environmental quality (air, water, and waste).	The proponent and contractor will engage with NEMA throughout the project lifecycle. This includes ESIA licensing, compliance monitoring, environmental audits, site inspections, and submission of periodic reports such as effluent discharge analysis and air quality monitoring results. NEMA approval is mandatory prior to project implementation.

Institution	Core Functions	Relevance to the Project
Nairobi City County Government	Nairobi City County Government is established under the Constitution of Kenya, which provides for the creation of county governments as part of the devolved system of governance. Its establishment and operational framework are further elaborated in the County Governments Act, which mirrors the constitutional provisions by outlining the structure, powers, and functions of county governments. The functions of Nairobi City County, as provided in the Constitution (Fourth Schedule) and operationalized through the County Governments Act, include • Urban planning and development control, provision of infrastructure and public services, • Management of county transport, public health services, and • Coordination of utilities such as water and sewage through associated entities.	The proponent, contractor, and facility managers will interact with various county departments to obtain development approvals, building permits, and occupation certificates. Engagement will also involve inspections, compliance with zoning regulations, and coordination on infrastructure such as roads, drainage, and waste management.
National Construction Authority (NCA)	Established under the NCA Act No. 41 of 2011, the Authority regulates, streamlines, and builds capacity within the construction industry. Its functions include contractor registration and accreditation, project registration, quality assurance, and site inspections to ensure compliance with construction standards.	The contractor and proponent are required to register the project with National Construction Authority prior to commencement. Only NCA-registered contractors will be engaged. The Authority will conduct inspections to ensure adherence to construction standards, safety, and quality requirements throughout the project implementation phase.
Directorate of Occupational Safety and Health Services (DOSH)	DOSH is mandated under the Occupational Safety and Health Act (OSHA, 2007) to promote and enforce workplace safety, health, and welfare. Its functions include workplace registration, safety audits, risk assessments, accident investigations, inspection of machinery and equipment, and approval of safety measures and training programs.	The project will be required to register the workplace with DOSH and comply with occupational health and safety requirements. This includes conducting regular safety audits, implementing health and safety plans, training workers, and ensuring safe operation of machinery and equipment. DOSH will carry out periodic inspections to ensure compliance.
Nairobi City Water and Sewerage Company (NCWSC)	NCWSC is responsible for the provision, management, and maintenance of water supply and sewerage services within Nairobi City County. Its functions include water distribution, wastewater collection and treatment, infrastructure maintenance, and ensuring water quality standards.	The proponent and contractor will coordinate with NCWSC for connection to water supply and sewerage systems. The company will be involved in ensuring adequate provision of potable water, proper wastewater management, and compliance with discharge standards during both construction and operational phases of the project.
State Department for Housing and	State Department for Housing and Urban Development is a national government	The State Department shall provide policy direction and regulatory oversight for urban

Institution	Core Functions	Relevance to the Project
Urban Development (SDHUD)	entity established under the Ministry of Lands, Public Works, Housing and Urban Development, with a mandate to coordinate and oversee urban development and planning across the country. Its core functions include • Formulation and implementation of national urban development policies, development and regulation of housing programmes, preparation of physical and land use planning guidelines, • Promotion of sustainable urban infrastructure, and provision of technical support to county governments on planning and development matters.	development initiatives. It will ensure that the project aligns with national spatial planning frameworks, urban development standards, and housing policies. Additionally, it may offer technical guidance, approve certain large-scale developments, and support coordination between national and county governments to ensure compliance with planning and development requirements.
Kenya Railways Corporation (KRC)	Kenya Railways Corporation (KRC) is a state corporation established under the Kenya Railways Corporation Act (Cap 397) with the mandate to manage, operate, and develop the national railway network and associated infrastructure in Kenya. Its core functions include • The provision and maintenance of railway transport services, • Management of railway assets and land, development of rail infrastructure, and facilitation of integrated transport systems to support economic growth and regional connectivity. • KRC also plays a key role in safeguarding railway reserves and ensuring that developments within or adjacent to railway land comply with established safety and operational standards.	KRC is directly relevant to the proposed project as the custodian of the land on which the development is located. The corporation leases railway land to the project proponent and provides oversight to ensure that any development within the railway corridor aligns with railway safety requirements, operational needs, and long-term infrastructure plans. Additionally, KRC will coordinate with the proponent on issues such as access, land use compatibility, and protection of existing and planned railway infrastructure.
National Museums of Kenya (NMK)	National Museums of Kenya (NMK) is a state corporation established under the National Museums and Heritage Act, with the mandate to collect, document, conserve, and research Kenya's cultural and natural heritage. Its core functions include the identification, protection, and management of national monuments and heritage sites; archaeological research and documentation; preservation of cultural and	NMK is relevant to the proposed project in ensuring that no archaeological, historical, or cultural heritage resources are negatively affected during project planning and implementation. The institution may be involved in reviewing project designs where necessary and providing guidance on the protection of any chance finds during excavation or construction activities.

Institution	Core Functions	Relevance to the Project
	natural history collections; and provision of advisory services on matters related to heritage conservation. NMK also regulates activities that may affect protected heritage resources and undertakes.	

4. ENVIRONMENTAL AND SOCIO-ECONOMIC BASELINE CONDITIONS

This chapter presents the baseline environmental, ecological and socioeconomic conditions of the general project area, which provides a reference condition for the identification and assessment of impacts in later sections of the ESIA. The baseline characterization provides a benchmark against which any future changes to environmental quality, attributable to the project, can be measured. Data collection was therefore guided by the need to:

- Identify sensitive environmental receptors within and around the project area;
- Quantify existing environmental quality parameters; and
- Provide a scientifically defensible reference for impact prediction and management.

4.1. Physical Environmental (Natural Conditions)

Nairobi, the capital city of Kenya, is situated between latitudes 1°09'S and 1°28'S and longitudes 36°04'E and 37°10'E. Generally, the topographical features of Nairobi area and its surrounding are controlled by the effects of volcanic activity that dominated the geological history of Nairobi since Miocene times. Volcanic lava flows originating from the Rift flanks gave rise to prominent physiographic units namely the Kikuyu Highlands, the Rift flanks the Ngong Hills and the Eastern Lava plains of Athi and Kapiti.

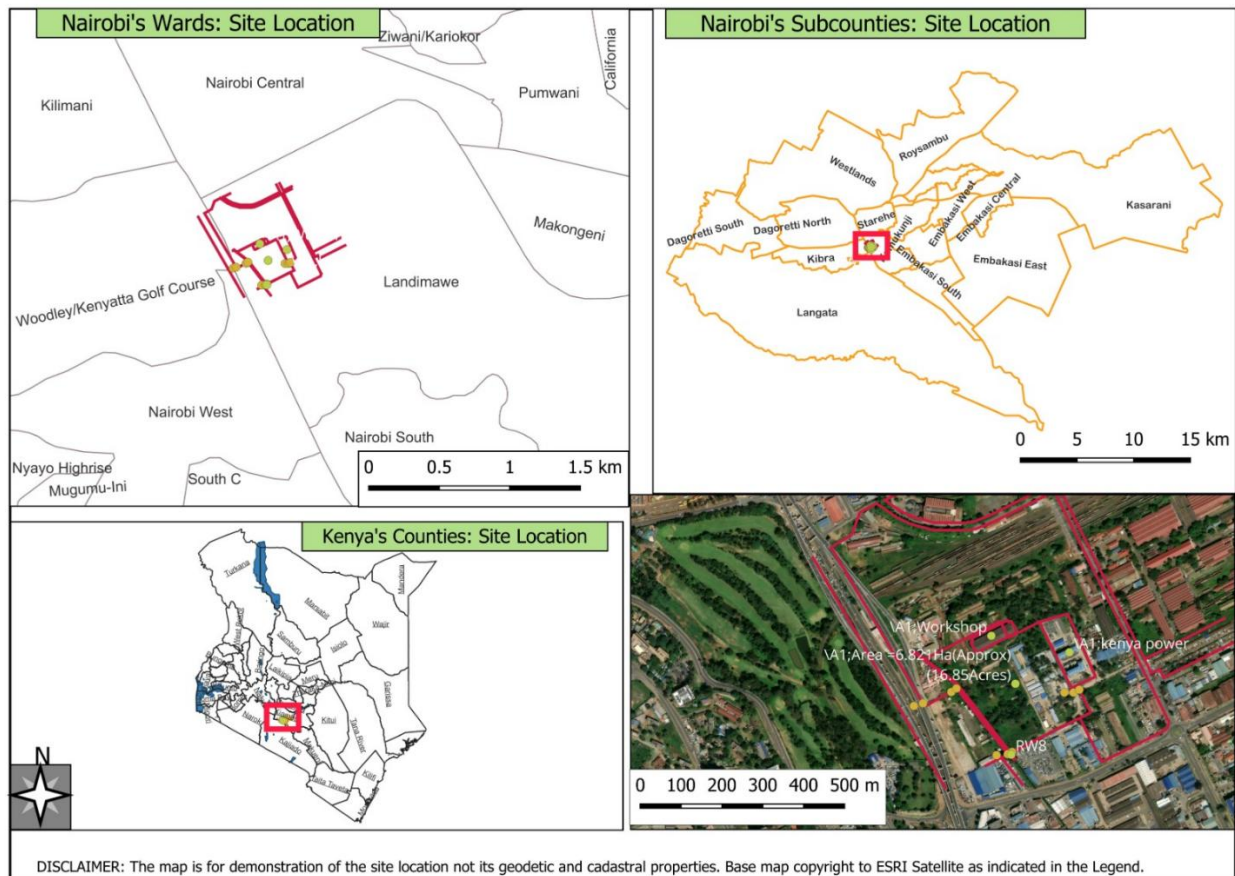


Figure 7: Proposed Site Administrative Location (Source: ESIA GIS Expert Dan Macharia)

4.2. Physical Features

4.2.1. Topography

Nairobi City is underlain by extensive lava plains, notably the Athi Plains and the northern section of the Kapiti Plains, with an elevation difference of over 400 metres between Athi River and the foothills of Ngong Hills. These plains are generally flat, extending across Nairobi National Park, the Central Business District, Jomo Kenyatta International Airport, and the Dandora area. Although largely level, the terrain exhibits a gentle eastward slope. In contrast, the topography of Kabete and Westlands is characterized by pronounced ridges composed of Pleistocene volcanic trachytes. These ridges generally slope eastward toward the Nairobi City Centre and rise gradually westward toward the eastern margins of the Great Rift Valley escarpment.

The Kabete–Parklands area displays abrupt beginnings and terminations of several unconnected valley depressions, indicating a predominantly parallel and consequent drainage pattern. This geomorphology is associated with the southeast-sloping surface formed by the deposition of the Kirichwa Valley Tuffs, which outcrop along sections of the Nairobi River valleys. Notable steep scarps are evident around the Nairobi National Museum area and Upper Hill, further reflecting the city's complex volcanic and erosional history. The proposed Railway City site is situated within the gently sloping lava plain that characterizes much of Nairobi. The terrain inclines gradually eastwards, forming part of the broader physiographic unit that transitions into and connects with the Kapiti Plains.

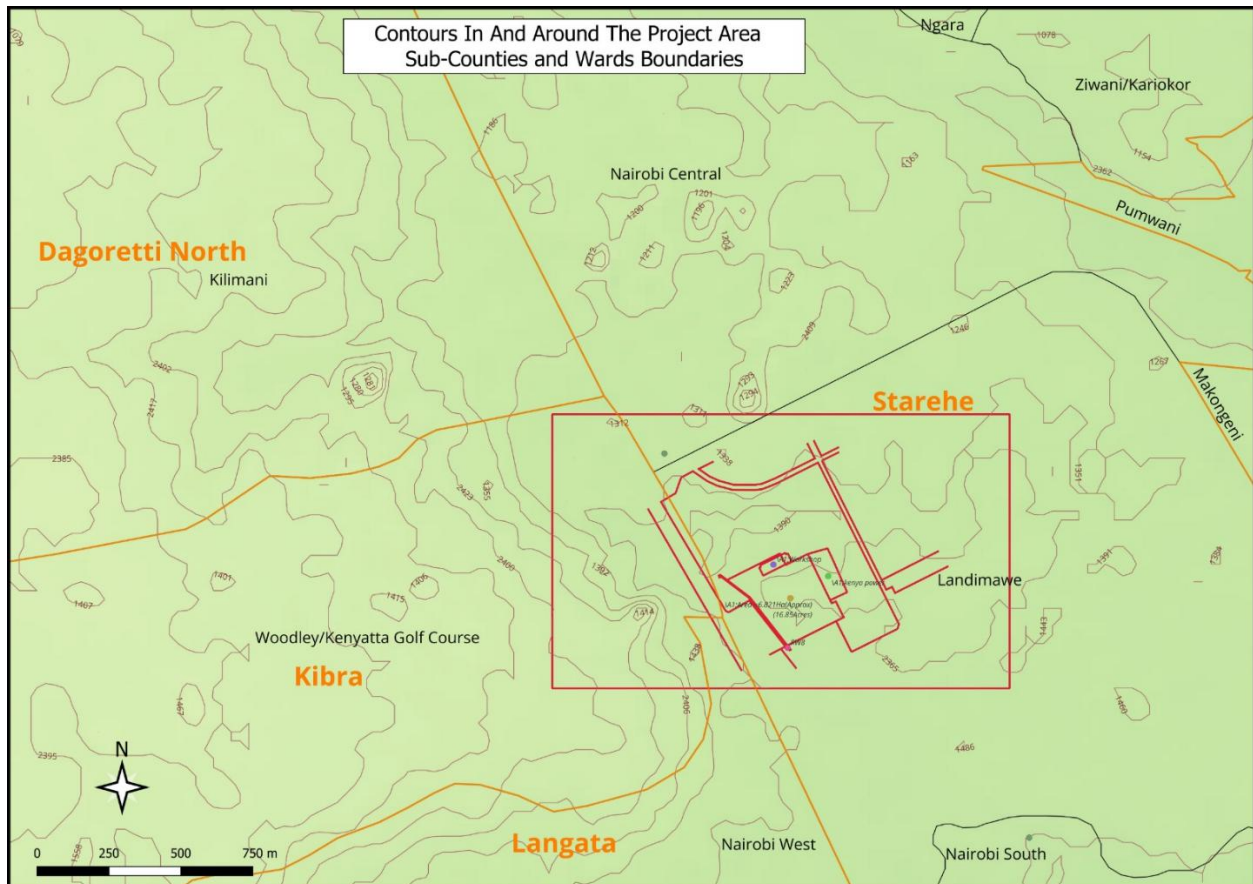


Figure 8: Contour Map (Source: ESIA GIS Expert Dan Macharia)

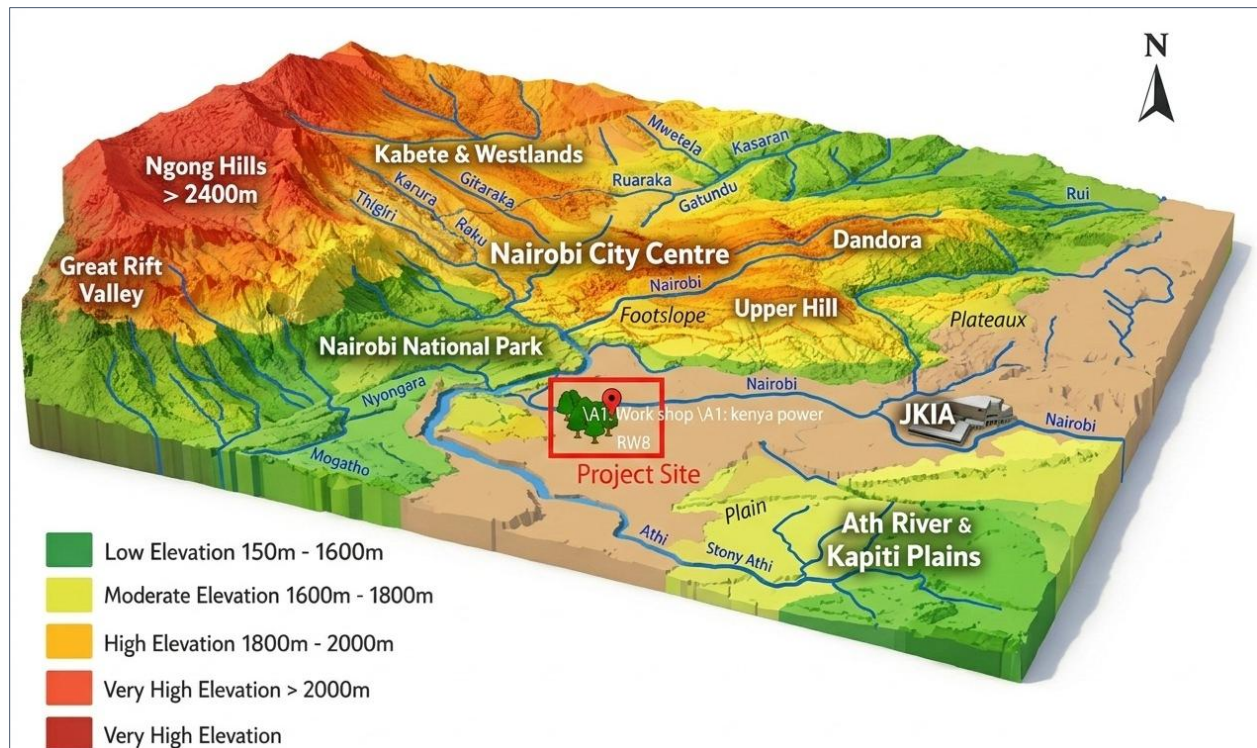


Figure 9: Nairobi Region Topographical Features 3D Model

4.2.2. Geological Conditions

Nairobi City is founded on a crystalline Precambrian basement complex composed predominantly of highly weathered metamorphic rocks, mainly gneisses and schists. These rocks are exposed in the Kitengela Valley within Nairobi National Park and occur near the surface in parts of Embakasi. The same basement rocks extend beneath the western highlands, including the Ngong Hills, as evidenced by gneissic fragments found in tributaries of the Kandizi River. The basement surface is irregular and deeply eroded, forming the structural foundation upon which younger volcanic formations were deposited. Following metamorphism, folding, and faulting of the basement complex, the Nairobi region experienced prolonged volcanic activity accompanied by intermittent erosion. This phase resulted in the accumulation of a thick volcanic succession consisting of phonolitic lavas, trachytic flows, pyroclastics, and tuffs. Older erosion surfaces occur beneath younger phonolitic units, reflecting repeated episodes of volcanic emplacement and landscape modification.

The earliest volcanic unit overlying the basement is the Kapiti Phonolite, which rests unconformably on the irregular eroded surface of the Precambrian rocks. It is exposed in the southeastern part of the region near Athi River, particularly along the Athi River valley west of Nairobi National Park and extending southwards into the Stony Athi valley. This unit marks the initial volcanic cover across the Nairobi area. Overlying the Kapiti Phonolite are the Athi Tuffs and associated lacustrine (lake) beds. These deposits consist of fine-to-coarse yellowish-grey tuffs, bentonitic clays, pyroclastic materials, and fossiliferous horizons containing chert and obsidian bands. The lake beds comprise well-bedded clays, sandstones, grits, and conglomerates with calcareous and siliceous interbeds, largely derived from volcanic sources. These units occur between the Kapiti Phonolite and younger volcanic formations and are exposed near the Athi River along Mombasa Road.

The Mbagathi Phonolitic Trachyte overlies parts of the older volcanic units and is well exposed along the Mbagathi River valley. Borehole data indicate that this formation attains a thickness of approximately 70 metres in Karen and parts of Nairobi National Park, thinning to about 10 metres in Lang'ata. The unit becomes thinner near basement outcrops, indicating palaeotopographic control during its emplacement. The Nairobi Trachyte overlies the Nairobi Phonolite and is separated by a thin agglomeratic tuff horizon. It outcrops along stream courses in the vicinity of the city centre and extends eastward from the Dagoretti–

Karen area toward the Central Business District and northwards toward Kiambu. Borehole investigations reveal thicknesses of approximately 90metres at Upper Hill and about 60metres at Ruaraka.

Subsequent to the emplacement of the Nairobi Trachyte, a significant erosional phase incised deep river valleys into the lava surface. Renewed volcanic activity then infilled these valleys, including the Mbagathi River valley, with welded trachytic pyroclastic deposits known as the Kirichwa Valley Tuffs. These tuffs overlie the Nairobi Trachyte and attain thicknesses of between 10 and 20metres within the city centre. They are prominently exposed at Museum Hill along the Nairobi River valley and are widely quarried as building stone. The formation comprises three principal flow units: an upper greyish-brown tuff, a middle greenish-blue tuff commonly used as Nairobi building stone, and a lower greyish-black ashy tuff resting upon a grey-green agglomeratic layer that separates it from the underlying trachyte. In general, Nairobi's geology is defined by a Precambrian metamorphic basement overlain by a thick and complex Cenozoic volcanic succession. This stratigraphic framework, shaped by tectonic deformation, repeated volcanic activity, erosion, and valley infilling, governs the city's present-day topography, groundwater occurrence, foundation conditions, and the availability of construction materials.

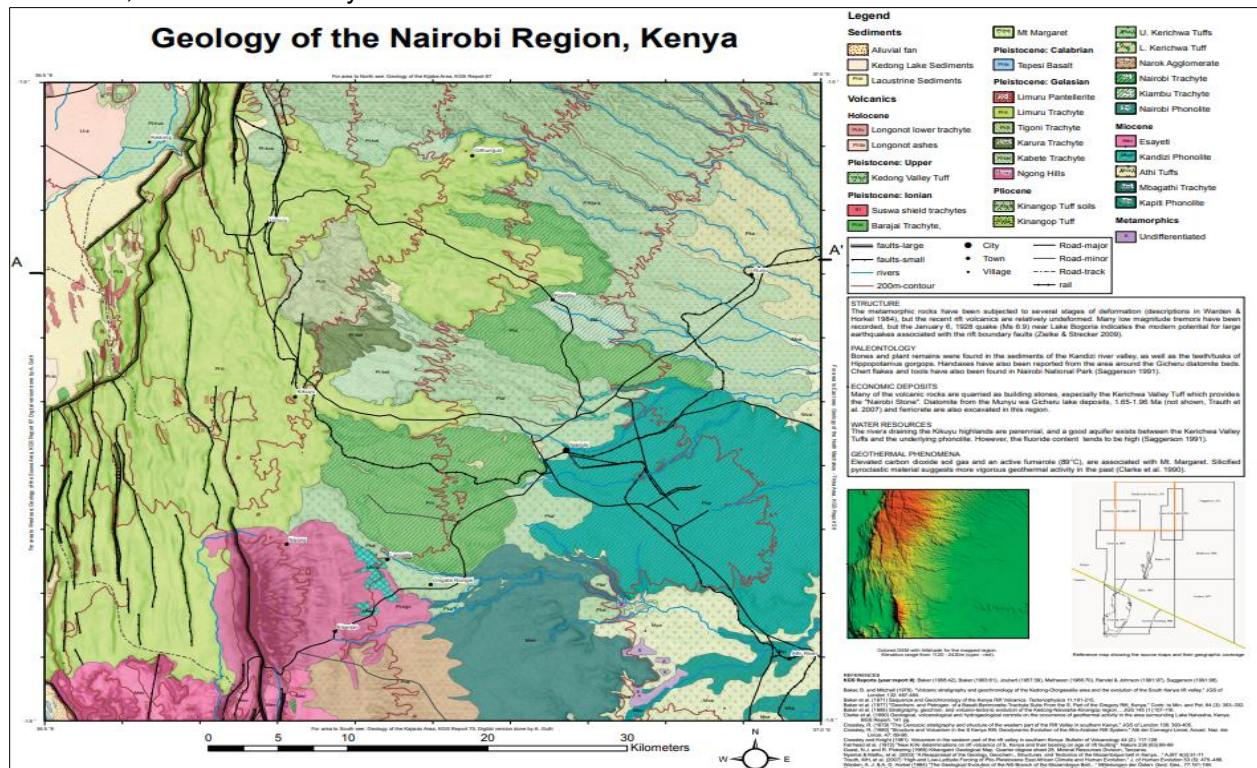


Figure 10: Geological Formation of Nairobi Region (Source: https://www.geosociety.org/maps/2014/DMCH016/DMCH016_S2e_Nairobi.pdf)

4.2.3. Soils

The soils of Nairobi County are predominantly derived from the weathering of volcanic rocks under warm and humid climatic conditions. Their distribution reflects variations in topography, drainage, and the underlying volcanic formations, particularly the Nairobi and Kapiti Phonolites. In the well-drained western highlands, including the Kikuyu area, the dominant soils are deep red, friable clays. These are mainly Andosol-like and latosolic soils characterized by high humus content, good structure, and relatively high agricultural potential. Their development is associated with prolonged weathering of volcanic parent materials under conditions of good drainage and moderate to high rainfall.

Across the Ruiru–Kahawa–Nairobi corridor, soils are generally shallow yellowish-brown clays, frequently underlain by lateritic horizons. These soils tend to have moderate fertility but may present limitations for deep foundations due to the presence of hardened laterite layers. Toward the eastern sector, particularly within the Athi Plains, poorly drained conditions give rise to expansive black cotton soils (grumosols). These occur in both calcareous and non-calcareous forms and are characterized by high clay content and

significant shrink–swell behavior. Such soils present notable geotechnical challenges for infrastructure development due to seasonal volume changes. They commonly overlie the Nairobi and Kapiti Phonolites. Localized poorly drained areas, including parts of Ngong and low-lying sections of Nairobi, contain dark greyish-brown mottled clays classified as gley and vlei soils. These soils reflect periodic waterlogging and fluctuating groundwater conditions. Alluvial deposits also occur along river valleys, consisting of variable mixtures of silts, sands, and clays deposited by fluvial processes. The Nairobi County’s soils demonstrate a clear relationship with volcanic parent materials, drainage regime, and geomorphology, factors that are critical in land-use planning, agricultural productivity, and engineering design considerations. The attached geotechnical investigation report provides a detailed assessment of the subsurface conditions and soil characteristics at the proposed project site. The site soil is characterized by very poorly drained soils exhibiting Montmorillonite-rich clay properties.

4.2.4. Soil Physicochemical Analysis

The analysis was conducted using certified SAS-TM-CHEM methods, and the results were evaluated against the Dutch Standards for Soils and Sediments and WHO/USEPA/FAO Standards. Currently, in the Kenyan context, the National Environment Management Authority (NEMA) and Kenya Bureau of Standards (KEBS) does not have specific reference standards for soil quality assessment (No Guideline). Therefore, this evaluation was based on internationally recognized standards, which may be adopted and applied in Kenya pursuant to Articles 2(5) and 2(6) of the Constitution of Kenya.

Table 15: Summary of Physical, Chemical and Microbiological Properties of the Soil sampled

Test Parameter	Test Method	Result	Unit	Dutch Standards (Soils and Sediments) – Maximum Limit	WHO/USEPA (Allowable Limits) Residential Soil Screening
BTEX					
Benzene	SAS-TM-CHEM-96	0.39	mg/kg	1.1 Max	1.2
Ethylbenzene	SAS-TM-CHEM-96	0.34	mg/kg	110 Max	5.8
Toluene	SAS-TM-CHEM-96	0.46	mg/kg	32 Max	4900
Xylene	SAS-TM-CHEM-96	0.41	mg/kg	17 Max	58
Total Petroleum Hydrocarbons (TPH)					
F1 Light (C6–C10)	SAS-TM-CHEM-272	1.59	mg/kg	Not Provided	300
F1 Diesel (C10–C10)	SAS-TM-CHEM-272	1.59	mg/kg	Not Provided	220
PAH (Polycyclic Aromatic Hydrocarbons (PAHs))					
Nathalene	SAS-TM-CHEM-60	0.26	mg/kg	70 Max	20
Acenaphthene	SAS-TM-CHEM-60	0.35	mg/kg	Not Provided	5
Fluorene	SAS-TM-CHEM-60	0.31	mg/kg	Not Provided	11
Anthracene	SAS-TM-CHEM-60	0.30	mg/kg	5 Max	1.4
Phenanthrene	SAS-TM-CHEM-60	0.25	mg/kg	5 Max	1

Table 16: Heavy Metal Analysis

Parameter	Method	Result (Mg/kg)	Dutch Standards Maximum Limit (Target Value (Mg/kg))	WHO/FAO Permissible Limit (Mg/kg)
Chromium (Cr)	SAS-TM-CHEM-17	0.02	100	100
Cadmium (Cd)	SAS-TM-CHEM-18	<0.001	0.8	3
Lead (Pb)	SAS-TM-CHEM-18	0.05	85	60
Arsenic (As)	SAS-TM-CHEM-18	<0.05	29	50
Selenium (Se)	SAS-TM-CHEM-18	<0.05	0.7	Not provided
Mercury (Hg)	SAS-TM-CHEM-18	<0.01	0.3	80
Nickel (Ni)	SAS-TM-CHEM-18	<0.02	35	50

Based on the laboratory analysis results, all tested heavy metals and other parameters including **PHA, BTEX** and **TPH** were below the **WHO/FAO/USEPA** permissible and Dutch guideline limits. The measured concentrations are well below the maximum allowable values, which indicates that the soil at the proposed project site is not contaminated and complies with the referenced international standards. In practical terms, this means there is no evidence of significant contamination at the site. The levels of heavy metals and other analyzed substances are low and fall within acceptable environmental thresholds. Therefore, the soil does not show signs of pollution above internationally recognized standards.

4.3. Hydrology Conditions

4.3.1. Hydrogeology

The hydro-geology of Nairobi City and its environs is controlled by the nature and morphological set up of various volcanic lava flows and the configuration of the old land surface of the basement rock system. The river drainage system and indeed the groundwater table gradient closely follows the easterly direction of the lava flows. Aquifers occur within the Kirichwa valley tuffs and sediments, and the interface between Nairobi phonolite and Kapiti phonolite within the Athi series of tuffs and lake sediments. In the southern part of the Nairobi area, deep aquifers are encountered within the old land surface of the basement rocks. The old lava flows, namely trachytes and phonolite, are compact and impermeable and are as such aquicludes. The main streams and rivers draining the Kikuyu Highlands towards the Nairobi area are perennial but are fed by springs that issue within the contacts of the Kirichwa valley tuffs and the trachytic lavas. The Nairobi River is fed by the Kikuyu springs and Ondiri Swamp at the headwaters while Mbagathi springs in Ololua forest feed the Mbagathi river, which later becomes Athi River. Numerous springs issue between lava flows where the trachytes and tuffs are relatively porous and permeable.

In the City Center, water draining eastwards from the permeable tuffs and sediments accumulates above the Nairobi phonolite to form a shallow perched water table. The Kirichwa Valley tuffs lying to the east of the Uhuru Highway are so porous and pervious that the contact between them and the underlying impermeable Nairobi phonolite is a good aquifer. Thus, a number of buried channels containing groundwater occur beneath the Nairobi City centre. These channels represent the old river courses of the Nairobi River and its tributaries. The subsurface geological conditions underlying the City Centre and the Industrial area as far as Ngong River reveal that the Nairobi phonolite is overlain by Kirichwa valley tuffs and sediments. The proposed site lies adjacent to a natural drainage channel within the broader Ngong River tributary system. The stream experiences high flood flows with peak discharge occurring over a short duration during the rainy season, while exhibiting low discharge during the dry season. Given the slope of the proposed site, surface runoff is directed into this stream, alongside additional storm drainage channels that traverse the project area. The stream shall be conserved and the area used as a passive recreation area according to Railway City Development Master Plan.



Plate 2: Drainage System (Tributary of Ngong River Canal) along the Project Boundary

4.3.2. Groundwater Baseline Description and Analysis

Sample collection, handling, storage, transportation to the laboratory, data coding, and documentation were conducted in accordance with the Water Resources Authority (WRA) standards and relevant Kenyan laboratory protocols. Field water samples were collected from borehole sample. All samples collected in the field were preserved in ice chests and promptly transported to the laboratory. Upon arrival, the samples were adequately stored as follows:

- Sediment samples were stored in designated freezers at -4°C.
- Water samples were stored in well-cooled refrigerators prior to analysis.



Plate 3: Borehole Sampling

Table 17: Summary of Physical, Chemical and Microbiological Properties of the Groundwater Sampled

 WATER RESOURCES AUTHORITY		FORM F/9/1/3	
NHIF building, 9th floor, Wing B P.O. Box 45250-00100, Ngong Road, Nairobi Tel: +254-020-2732291/2729048/9 Email: wra@wra.go.ke, Website: www.wra.go.ke		Central Water Testing Laboratories P.O. Box 45250, 00100, Off Dunga Road, Nairobi Tel: +254 20 790 7833 Email: cwtl@wra.go.ke; centralwatertestinglabs@gmail.com	
			
Physical-Chemical Laboratory Results Certificate			
Report Issue Date:	25/03/2026	Sample No:	WRA/HQ/CWTL-36507
Name of Customer:	Geocon Ltd	Date Received:	12/03/2026
Email Address:	stephen.mwania@geocon.co.ke	Type of Sample:	Borehole water
Telephone Number:	0721976550	Date of Sampling:	12/03/2026
Sample submitted by:	Geocon Ltd	Source of sample:	Sphere Drilling Ltd Borehole - Land Mawe
Purpose of Sampling:	Domestic	Received by:	Prisila Julia
County:	NAIROBI CITY		

PARAMETERS	UNIT	ANALYTICAL METHOD	RESULTS	KS EAS 12:2018 STANDARDS (MAX.)
pH	pH Scale	APHA 4500-H+ B	7.3	6.5-9.5
Conductivity	µS/cm	APHA 2510 B	919	2500 (1500)*
Alkalinity	mg CaCO ₃ /L	APHA 2320 B	308	500**
Turbidity	N.T.U	APHA 2130 B	65	25 (5)*
Total Suspended Solids	mg/l	APHA 2540 D	40	Not Detectable
Sulphates	mg/l	APHA 4500-SO42- E	277	400
Chlorides	mg/l	APHA 4500-Cl- B	51	250
Phosphates as P2O5	mg/l	APHA 4500 P E	0.4	Not Specified
Nitrates as NO3	mg/l	APHA 4500-NO3- D	1.2	45

Interpretation: The borehole water is generally of good chemical quality for domestic use, with most parameters well within the Kenyan Bureau of Standards (KS EAS 12:2018) limits. Main Concern:

- Turbidity (65 NTU) is significantly above the acceptable limit of 25 NTU

Laboratory analysis was carried out within the recommended holding times for each parameter. Analyses were performed in accordance with standard methods, primarily guided by APHA 2005 (Standard Methods for the Examination of Water and Wastewater) and WHO guidelines for drinking water quality.

4.3.3.Flood Risks

Any risk hazard is directly proportional to the product of the magnitude of the hazard and vulnerability of the target; and inversely proportional to the coping mechanism or adaptive capacity. Thus, the flood hazard is analyzed in the context of the following issues. The project site at Railway City site is situated along Ngong River tributary and low-lying area with significant runoff. The runoff generated from upstream catchment drains towards the project site as indicated in plate 2 above. Hence the site is located in an area where the risk of flooding hazards and vulnerability to flooding from upstream is prominent. The highest seasonal rainfall in Nairobi City County was recorded during the long rains of March to May 2018, when approximately 1,013 mm was measured at the Kabete meteorological station. This season is widely regarded as the wettest on record for the city, far exceeding typical seasonal averages. In terms of short-duration extremes, one of the highest daily rainfall amounts occurred in May 2015, when about 189 mm of rain fell within a 24-hour period. Such an event is exceptionally rare for Nairobi, as it surpasses the city's average monthly rainfall for April, which is usually around 120–130 mm. More recently, in March 2026, Nairobi recorded about 112 mm of rainfall in a single day, again highlighting the increasing occurrence of

intense rainfall events. Therefore, considering the recurrent flooding events in Nairobi City and their environs, as evidenced by the high-water flood levels recorded during the March 2026 flooding (shown in the plate above), the project shall incorporate appropriate flood risk mitigation measures. These measures are critical to minimize potential flood impacts and ensure the long-term resilience and safety of the MICE Core Project.

The hydrological modelling framework followed a localized raster-to-vector spatial workflow conducted entirely within QGIS, utilizing the specialized Rain to Flood Toolkit, Rain Flood Analysis Plugin (Pandey, 2026). The process was structured into four main technical segments:

- a) **Terrain and Catchment Processing:** A high-resolution Digital Elevation Model (DEM) of Nairobi County was prepared in the native projected coordinate system of **Arc 1960/UTM zone 37S (EPSG:21037)** to ensure horizontal and vertical units maintain consistency in meters. The toolkit's *DEM and Slope Processing* module was executed to extract regional slope gradients, outline the contributing sub-catchments, and map the river networks flowing from the high-elevation western ridges (e.g., Upper Hill, Hurlingham, and Lenana Road) toward the project area footprint.
- b) **Rainfall Characterization:** To baseline the extreme events, rainfall parameters from the February 1st to May 8th 2026 season were evaluated. The *Rainfall Data Downloader* module integrated historical climatic variations and real-time alerts to define the boundaries of 24-hour design storms.
- c) **Runoff and Flood Simulation:** The *Standard 24-Hour Flood Analysis* module was executed using the US Soil Conservation Service Curve Number (SCS-CN) method. Runoff potential was calculated by factoring in Nairobi's high-runoff "Black Cotton" soils Hydrologic Soil Group D (Sithamparanathan, 2013) and the heavy urban impervious surface coefficients of the CBD.
- d) **Scenario Mapping:** Hydrodynamic simulations were run to output four distinct flood inundation depth raster's corresponding to statistical return periods of **10-year, 25-year, 50-year, and 100-year events**.

4.3.4. Flood Map and Return Periods

The generated flood inundation maps represent the statistical annual probability of specific storm intensities manifest as physical water depths across Band 1 of the output raster's.

- **10-Year Return Period:** Possesses a 10% probability of occurring in any single year. The model indicates maximum depths of up to 14.4 meters at the core channel discharge zones, translating to localized "nuisance" pluvial flooding across internal transport corridors during typical heavy seasonal rain events.



Figure 11 Flash Flood 24hr - flood_depth_10.0yr: (Source: ESIA GIS Expert Dan Macharia)

25-Year Return Period: Possesses a 4% annual probability. The inundation footprint expands horizontally, defining the maximum safety threshold for secondary drainage mains and perimeter access pathways.

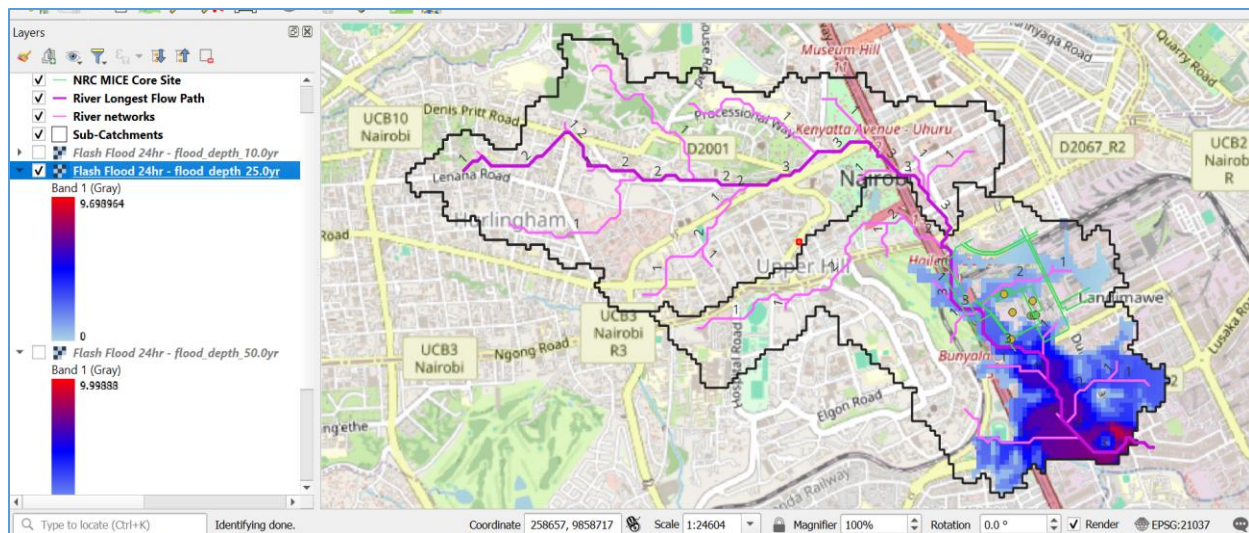


Figure 12 Flash Flood 24hr - Flood_Depth_25.0yr (Source: ESIA GIS Expert Dan Macharia)

4.4. Atmospheric Conditions

4.4.1. Meteorological Conditions

The temperature patterns in Kenya are highly variable in time and space, with the highest temperatures ranging from 35°C to 40°C occurring in Northwestern and Northeastern regions during the months of January to March, while the months of June to August are characterized by cooler temperatures in most parts of the country. The lowest temperatures (ranging from 3°C-6°C) are observed in central regions of Kenya particularly, Nyahururu.

At 1,795 meters above sea level, Nairobi City County experiences a moderate climate. Under the Koppen climate classification, Nairobi has a subtropical highland climate. The altitude makes for some cold evenings, especially in the June/July season when the temperature can drop to 10°C (50°F). The sunniest and warmest parts of the year are from December to March, when temperatures average the mid-twenties during the day. The mean maximum temperature for this period is 24°C (75°F). There are two rainy seasons, but rainfall can be moderate. The long rains form the first season and fall in the months of March to May, and the short rains forming the second rainy season, fall between October and December. The cloudiest part of the year is just after the first rainy season, when, until September, conditions are usually overcast with light drizzles. The mean annual rainfall ranges between 850- 1050mm. As Nairobi is located close to the Equator, the differences between the seasons are minimal. During EIA study process, instrumental measurements were done to establish the baseline meteorological conditions (targeting ambient temperature, relative humidity and wind speed etc.).

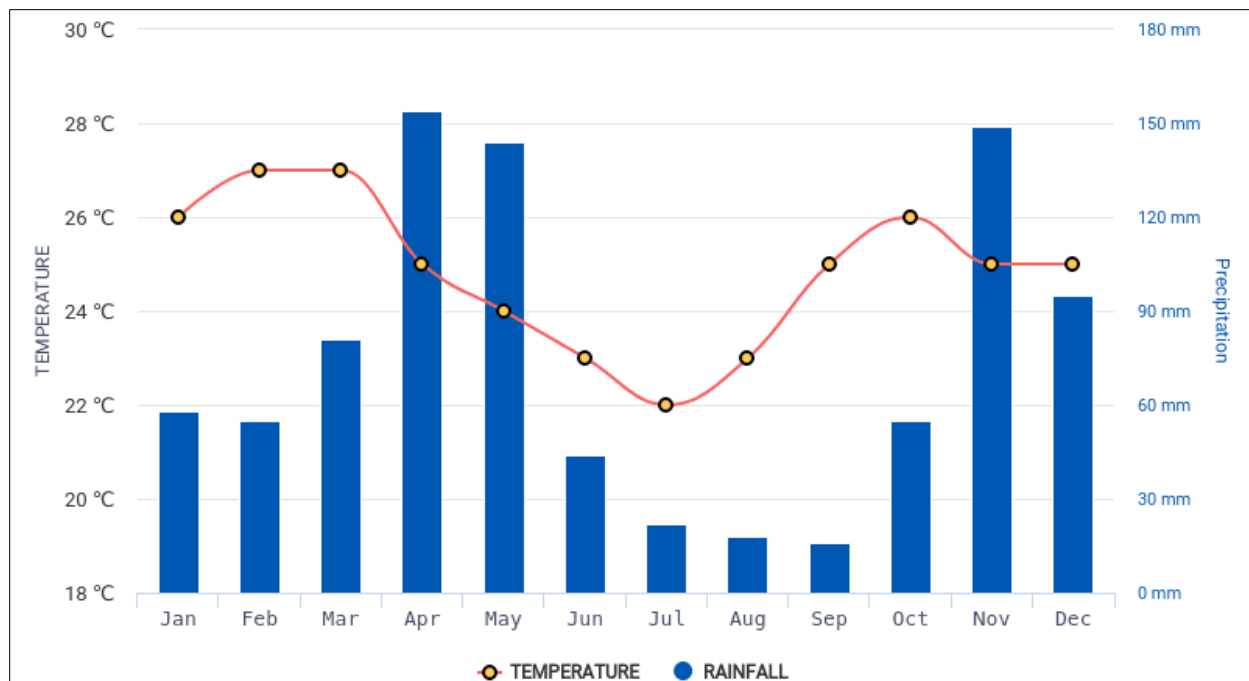


Figure 13: <https://hikersbay.com/climate-conditions/kenya/nairobi/climate-conditions-in-nairobi.html?lang=en>

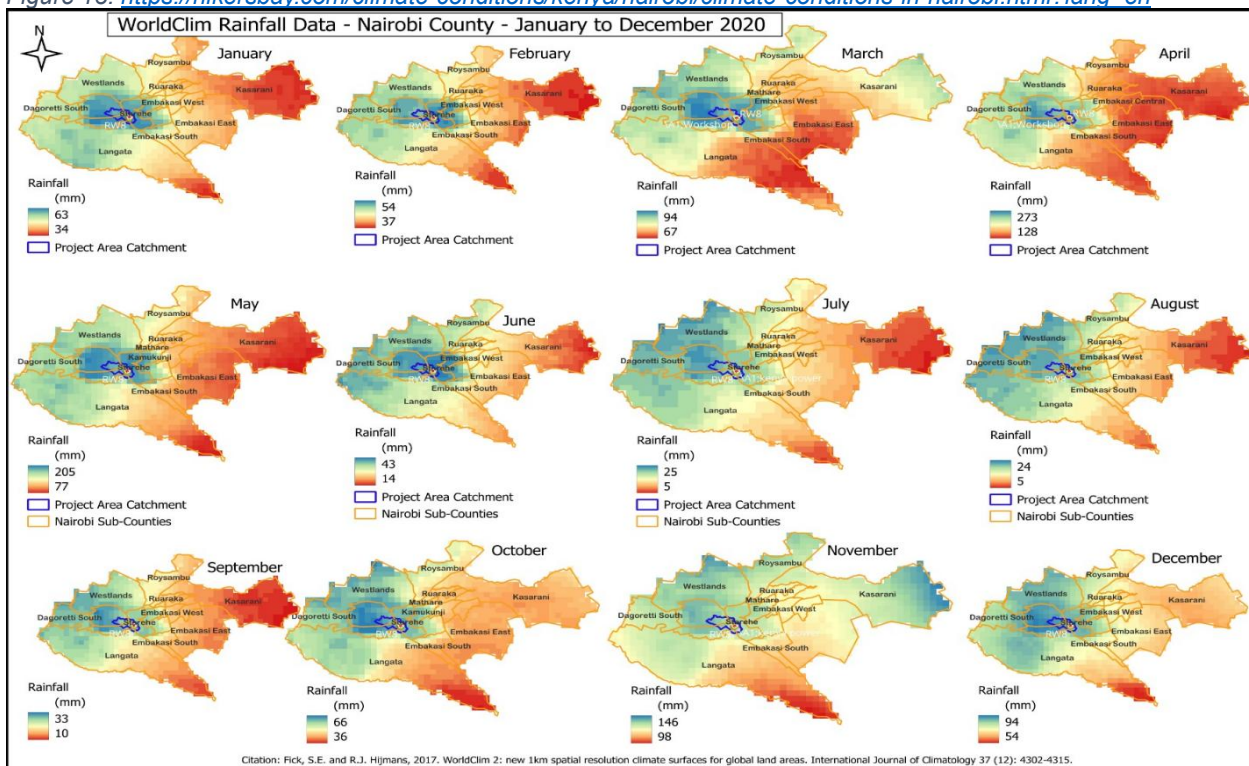


Figure 14: Rainfall Distribution Map Per Month (Year 2020) (Source: ESIA GIS Expert Dan Macharia)

4.4.2. Wind Regime

The wind climate over Nairobi is largely dominated by easterly winds, reflecting the regional atmospheric circulation patterns influenced by the equatorial positioning of the city and the surrounding topography (Opijah et al., 2007; Ongoma et al., 2013). Observational studies conducted within Nairobi, including the work of Ongoma et al. (2013b), indicate that while the direction of the prevailing winds has remained largely consistent, the wind speeds have shown a gradual decrease over time. This trend may be influenced by urbanization, changes in land cover, and local climate variability.

Nairobi experiences a distinct seasonal wind regime. From September to April, the city is subject to moderate to strong winds, with average speeds ranging between 14 and 17 km/h. These winds are often associated with the dry season and the movement of continental air masses from the east, which can contribute to dust transport and influence local microclimates. Conversely, during the period from April to September, winds tend to be calmer, with speeds averaging 10 km/h or less, coinciding with the long rains and cooler atmospheric conditions that reduce the momentum of surface winds. The wind patterns over Nairobi are also shaped by topographical features, including the Ngong Hills to the southwest and the elevated western highlands. These features can locally channel and accelerate winds, creating areas of higher wind velocity, while low-lying regions and built-up areas can experience reduced wind speeds due to surface roughness and urban canopy effect.

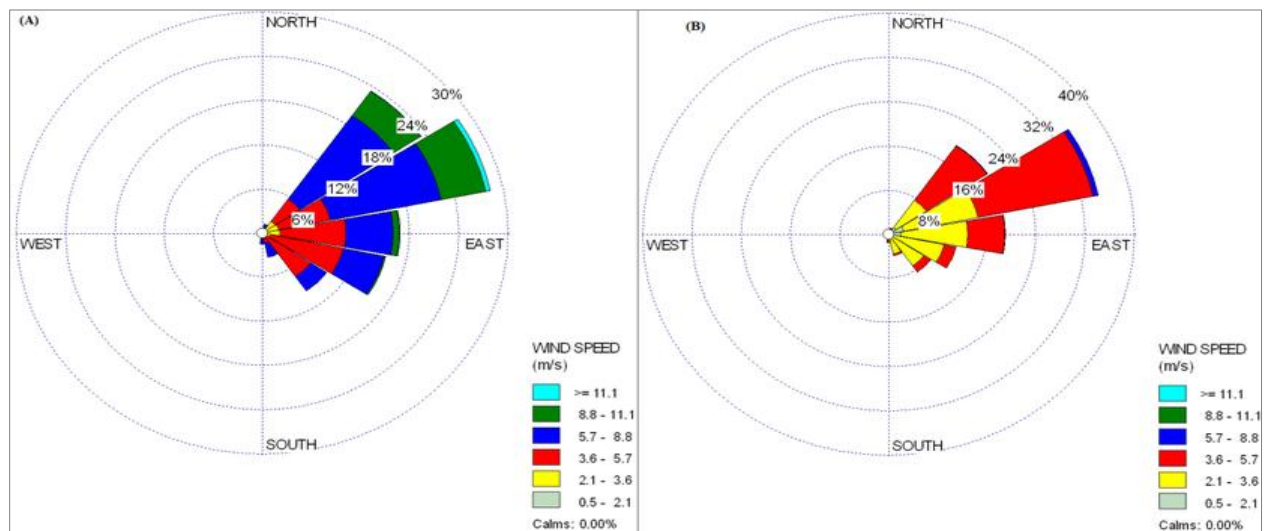


Figure 15: Nairobi City Windrose Diagram (Source: <https://www.researchgate.net/figure/Wind-Roses-of-Nairobi-City>)

4.4.3. Microclimatic Conditions

Microclimatic data refers to short-term weather conditions, typically on a daily basis, as opposed to macroclimatic data which covers long-term patterns over years. The baseline microclimatic description of the study area was established through in-situ field measurements conducted around the proposed project site Landimawe, Nairobi. The microclimatic conditions recorded are consistent with historical data from the Kenya Meteorological Department (KMD). Ambient temperature is a key weather variable that may experience temporary localized influence from the proposed project activities (Heat Island). Field measurements were carried out between 8:00 a.m. and 6:00 p.m. to capture representative daytime conditions. The study recorded a mean ambient temperature of 24.4°C for the project area (Month of April and May). Temperature variation was observed to follow a clear daily pattern. Temperatures were generally lower in the morning, gradually rising and reaching a maximum just after noon, before declining again towards the evening.

Table 18: Baseline Microclimatic Data of The Study Area

AT(°C)	RH(%)	DP(°C)
28.4	45.6	16.2
24.7	54.3	15.5
23.7	54.3	14.6
24.2	54.5	15.1
23.7	55	14.8
23.4	55.9	14.8
24	55	15.1
23.6	53.7	14.4
23.6	55.2	14.8

AT(°C)	RH(%)	DP(°C)
24.9	52.2	15.1

4.4.4. Air Quality Baseline Assessment

A limited spot-check air quality survey was undertaken at the project site as part of the ESIA process to establish baseline ambient air quality conditions in accordance with the approved Terms of Reference (ToR). The objective of the baseline assessment was to generate representative environmental data to inform impact prediction, design of mitigation measures, and development of a robust Environmental and Social Management Plan (ESMP), including a monitoring framework for both construction and operational phases. The assessment involved in-situ measurements of key criteria pollutants, namely Particulate Matter (PM_{2.5} and PM₁₀), Sulphur Dioxide (SO₂), and Nitrogen Dioxide (NO₂), at the proposed site and its immediate surroundings. These parameters were selected due to their relevance to urban environments influenced by high vehicular traffic, railway operations, commercial activities, and nearby industrial emissions. PM₁₀ was prioritized given its association with dust from unpaved surfaces, construction activities, and combustion processes, while SO₂ and NO₂ were measured as indicators of fossil fuel combustion from transport and stationary sources.

The measurements were conducted using calibrated portable air quality monitoring equipment, following standard sampling procedures to ensure reliability and consistency of data. Meteorological observations such as wind direction, wind speed, and ambient temperature were also considered to contextualize pollutant dispersion patterns at the time of sampling. Given the dynamic urban setting of the project area, which is influenced by traffic emissions, railway activities, and commercial operations, the spot-check survey provides an indicative snapshot of prevailing conditions. However, it also highlights the need for periodic monitoring during peak construction activities to track trends in particulate matter and gaseous emissions. The results obtained from the field measurements were evaluated against WHO and Kenyan standards; Environmental Management and Coordination (Air Quality) Regulations 2024. The result is presented on the table below.

Legislation and Guidelines: The Ambient air quality criteria applicable to the proposed project location are derived from the Environmental Management and Coordination Act (EMCA) Air Quality Regulation, 2024. These air quality standards set out the requirements for managing and accessing Ambient Air Quality Guidelines (AAQ) in Kenya. The proposed project can be classified as commercial and industrial area, thus the standards used to evaluate the measured values are derived from the EMCA (Air Quality) Regulations 2024 for Industrial Zone.

Table 19: Ambient Air Quality Tolerance Limits

Pollutant	Averaging Time	Industrial Area	Residential, Rural & Other Area	Controlled Areas*
Sulphur Dioxide (SO ₂)	Annual Average	80 µg/m ³	60 µg/m ³	15 µg/m ³
	24-hour	125 µg/m ³	80 µg/m ³	30 µg/m ³
Oxides of Nitrogen (NO _x)	Annual Average	80 µg/m ³	60 µg/m ³	15 µg/m ³
	24-hour	150 µg/m ³	80 µg/m ³	30 µg/m ³
Nitrogen Dioxide (NO ₂)	Annual Average	150 µg/m ³	—	—
	24-hour	100 µg/m ³	—	—
Suspended Particulate Matter (SPM)	Annual Average	360 µg/m ³	140 µg/m ³	70 µg/m ³
	24-hour	500 µg/m ³	200 µg/m ³	100 µg/m ³
Respirable Particulate Matter (RPM, <10 µm, PM ₁₀)	Annual Average	70 µg/m ³	50 µg/m ³	50 µg/m ³
	24-hour	150 µg/m ³	100 µg/m ³	75 µg/m ³
Fine Particulate Matter (PM _{2.5})	Annual Average	25 µg/m ³	15 µg/m ³	10 µg/m ³
	24-hour	50 µg/m ³	25 µg/m ³	15 µg/m ³

Sample Location



Figure 16: Sampling Points

Table 20: GPS Coordinates of Sampling Points

	Latitude	Longitude
1	1°1746.66"S (-1.296294)	36°49'26.92"E (36.824144)
2	1°1749.57"S (-1.297103)	36°49'30.75"E (36.825208)
3	1°1750.85"S (-1.297458)	36°49'29.98"E (36.824994)
4	1°1748.64"S (-1.296844)	36°49'32.11"E (36.825586)
5	1°1750.78"S (-1.297439)	36°49'33.03"E (36.825842)

Result: Gaseous pollutants (Methane, Carbon Monoxide, and Hydrogen Sulphide) were not detected at any point, indicating clear and non-polluted air with respect to these parameters. According to spot sampling, the values of Methane (CH₄), Oxygen (O₂), Carbon Monoxide (CO), and Hydrogen Sulphide (H₂S) remained constant across all five measurement points, indicating clear and non-polluted air as indicated in the table.

Table 21: Gas Air Quality Results

Parameter	Measured Value (All 5 Points)	WHO 2021 Guideline	EMCA 2024 Kenya Ambient Air Quality Limit
Methane (CH ₄)	0%	No specific short-term ambient guideline	No specific numerical limit (regulated as greenhouse gas)
Oxygen (O ₂)	20.9%	Normal range: 20.8 – 21.0%	No specific limit (normal background expected)
Carbon Monoxide (CO)	0 ppm	24-hr: 4 mg/m ³ (~3.5 ppm)	8-hr: 5.0 mg/m ³ (Industrial) 2.0 mg/m ³ (Residential)
Hydrogen Sulphide (H ₂ S)	0 ppm	No short-term ambient guideline	24-hr: 150 µg/m ³ (Industrial) 50 µg/m ³ (Residential/Property boundary)

Particulate Matter

Particulate Matter sampling was done using Extech Air Quality monitoring equipment. The device is used to measure airborne particles and simultaneously measures TSP, PM₁₀ and PM_{2.5} particles with a resolution of 0.1 µg/m³. Air samples are continuously drawn through the nephelometer, which analyses individual

particles as they pass through a laser beam. The table below shows the results obtained from spot sampling. Dust levels were generally low at all measurement points. However, the low-velocity wind flow contributed to the picking up and dispersion of fine particles, particularly PM_{2.5}, which are easily lifted and transported. The operation of a concrete ballast at the adjacent site was noted as the main contributor to the elevated PM_{2.5} concentrations recorded.



Plate 4: VPC 300 Counter Exeter During Spot Sampling

4.4.5. Ambient Noise Levels

Noise surveys were undertaken as part of this ESIA to establish the baseline environmental noise levels at the project site and at nearby sensitive receptors. The measured noise levels were compared against both national standards (Environmental Management and Coordination (Noise and Excessive Vibration Pollution) Regulations, 2009) and relevant international guidelines (primarily WHO Community Noise Guidelines). The scope of work undertaken includes:

- Assessment of the baseline Noise,
- Identification of potential noise receptors, and
- Preparation of Baseline Noise Measurement reports.

The measurements were conducted at a representative monitoring point within the project area using calibrated integrated sound level meters (3M sound level). The equipment used complies with internationally recognized standards for sound level meter performance and accuracy, including ISO- Standards for the measurement and assessment of environmental noise. The monitoring methodology adhered to best practice procedures for environmental noise assessment, including appropriate microphone positioning, calibration before and after measurements, and consideration of prevailing site conditions. The baseline noise levels measured during the survey were evaluated against the maximum permissible noise levels stipulated in the First Schedule of the Environmental Management and Coordination (Noise and Excessive Vibration Pollution) Regulations, 2009 (Legal Notice No. 61 of 2009) as presented in the Table below.

Table 22: Maximum Permissible Ambient Noise Levels

Zone	Description	Sound Level Limits dB(A) (L _{Aeq})		Noise Rating Level (NR) (L _{Aeq})	
		Day 6:01 am – 8:00 pm (14 hours)	Night 8:01 pm – 6:00 am (10 hours)	Day	Night
A	Residential: Outdoor	50	35	40	25

Zone	Description	Sound Level Limits dB(A) (L _{Aeq})		Noise Rating Level (NR) (L _{Aeq})	
B	Mixed Residential (with some commercial and places of entertainment)	55	35	50	25
C	Commercial	60	35	55	25

The analysis of average noise levels across the five sampling points indicates that daytime maximum noise levels ranged between approximately 72dB(A) and 82dB(A), while nighttime maximum levels ranged between 64 dB(A) and 72 dB(A). These values exceed both the EMCA (Noise and Excessive Vibration Pollution Control) Regulations, 2009 permissible limits (60 dB(A) daytime and 35 dB(A) nighttime for mixed-use areas) and the WHO community noise guidelines (55 dB(A) daytime and 45 dB(A) nighttime). The highest noise levels were recorded at Point 3, likely due to its proximity to major transport corridors and active construction activities. Lower noise levels were observed at Point 5, indicating relatively reduced disturbance in that area. Overall, the elevated noise levels confirm significant influence from traffic, railway operations, and ongoing construction yard activities within and around the project area.

Table 23: Baseline Noise Levels Assessment (dB(A) Results

Sampling Point	Sample Run	Day Min dB(A)	Day Max dB(A)	Night Min dB(A)	Night Max dB(A)
1	1	48.7	68.6	48.3	71.0
	2	49.8	71.5	49.2	72.9
	3	46.9	69.8	50.4	70.7
	4	46.2	77.6	48.3	68.3
	5	48.6	74.9	48.7	66.7
2	1	48.3	75.4	48.4	72.4
	2	50.1	81.4	48.0	74.9
	3	58.2	93.8	48.6	75.5
	4	50.5	79.5	49.5	68.6
	5	51.1	65.7	46.8	64.9
3	1	49.9	83.8	48.4	74.5
	2	49.2	89.3	48.0	76.9
	3	49.8	69.8	48.6	69.5
	4	48.6	85.5	49.5	70.1
	5	50.3	80.6	46.8	68.6
4	1	45.6	73.7	48.8	70.8
	2	45.4	62.9	48.2	71.9
	3	50.1	74.1	48.2	72.3
	4	46.2	87.7	49.2	68.5
	5	45.9	65.4	43.8	65.9
5	1	48.9	80.0	48.0	68.8
	2	51.5	76.8	47.8	69.4
	3	46.8	69.2	49.0	66.5
	4	49.9	60.8	49.8	56.4
	5	47.8	71.1	49.9	59.4

4.5. Biological Conditions

The natural vegetation in Nairobi County has been extensively modified due to rapid urbanization and the increasing demand for space to accommodate expansion and infrastructure development. In most parts of the county, it is now difficult to visually ascertain the nature of the original native vegetation. The city streets are lined with trees and gardens predominantly composed of introduced exotic ornamental species. Nevertheless, small and increasingly diminishing pockets of indigenous vegetation and forest remain relatively undisturbed in areas such as Karura, the Arboretum, City Park, Dagoretti, and Ngong/Ololu forests. These remnants serve as critical ecological habitats, biodiversity reserves, and recreational spaces for residents. Remote sensing techniques were employed to generate high-resolution, consistent satellite imagery for analyzing the spatial and temporal dynamics of forest and vegetation cover in Nairobi City and its surrounding areas with emphasis on the proposed site location.

4.5.1. Terrestrial Environment (Biodiversity Baseline)

The team conducted a field survey at the project site. The biodiversity survey was restricted and limited to the project site. The survey includes the inventory and study of:

- a) Terrestrial Species of flora (plants) and fauna (animals)
- b) Alien and invasive species within the AOI, and
- c) Vegetation types (ecosystems) within the AOI.

Prior to initiating the flora and fauna (biodiversity) assessment, key spatial boundaries for baseline conditions were identified. The site was subsequently mapped using Google Earth imagery, GPS tracking, and GIS tools, including QGIS and ArcMap. A reconnaissance survey was undertaken to provide an initial understanding of the project area. This exercise informed the selection of appropriate data collection tools and methodologies for the study. Project boundaries were delineated through both in-situ surveys and ex-situ analysis using digital maps, satellite imagery, GPS data, and a review of relevant literature. Information on soil characteristics, flora, human activities, landscape features, and farming practices was systematically recorded and documented. The biodiversity survey was systematically structured into four key phases to ensure comprehensive data collection and analysis:

- a) **Field Surveys:** Detailed field assessments were conducted across three distinct stratified zones core, buffer, and outer areas of the project site using stratified block design. This stratification approach enabled a thorough evaluation of habitat conditions, species distribution, and ecological variations within and around the project area.
- b) **Community Consultative Meetings:** Engagements with railway community were undertaken to gather indigenous knowledge and insights on the status and trends of biodiversity. These consultations provided valuable information on historical changes, species presence, and human environment interactions within the area.
- c) **Institutional Stakeholder Consultations:** Relevant institutions and sector stakeholders were consulted, with a particular focus on the identification and inventory of species of conservation significance. These engagements helped validate field findings and ensured alignment with existing conservation data and priorities.
- d) **Inventory and Documentation:** A systematic inventory and documentation process was carried out for both flora and fauna. This involved recording species types, abundance, conservation status, and ecological characteristics.

The Mice-Core is located within the direct impact zone of the proposed project and is anticipated to be the area most affected by project activities. The majority of expected environmental and social impacts are localized within the project footprint. Prior to fieldwork, a desktop study of the biodiversity baseline in Nairobi County was undertaken to identify data gaps and inform the design of the field survey programme. This was supplemented by a detailed desktop review focused on compiling a thorough inventory of flora and fauna species potentially occurring within the project's Area of Influence (AOI). From all the data and information sources, we synthesized relevant information species of fauna and flora considered associated with AOI at any given time. Information on conservation, migratory, feeding, and breeding status were also documented. Previous environmental impact assessment, scoping study, and feasibility study reports associated with Railway City project were also reviewed.

4.5.1.1. Survey Method

A four-day survey was conducted in March 2026 to collect site-specific biodiversity data, focusing on major taxonomic groups (flora, mammals, birds, herpetofauna, and invertebrates). The timing coincided with the onset of wet season, allowing observation of wet-adapted species and habitat conditions. Because of safety concern no physical night surveys were conducted. The sampling strategy adopted for the floral survey was the stratified random quadrat sampling along transects. Data taken were species identification, vegetation structure and invasive species occurrence. The method is a modification of the Braun-Blanquet method for vegetation surveys. The table below summarizes methods, techniques and tools used during the surveys.

Biodiversity Component	Method Applied	Tools/Equipment	Identification Approach
Flora (Plant Species)	Plotless transect survey	Visual enumeration & specimen collection	NMK Herbarium comparison

Biodiversity Component	Method Applied	Tools/Equipment	Identification Approach
Invasive Alien Plants	Inventory and mapping	Handheld GPS	Field identification & GPS recording
Terrestrial Invertebrates	Direct search		Morphological identification.
Birds	Point counts & opportunistic observations	Binoculars	Verified by experienced ornithologist
Mammals	Multi-method approach (trapping, sign)		Field identification of tracks, signs, dung, scats, and direct sightings.

Field data were collected via a plot-less method involving randomized walks as developed by Hall and Swaine (1981). The plant species encountered during the survey were recorded. While most plant species were identified on site, the difficult ones were collected for confirmation using East Africa field guide by Najma Dharani. Identification was done using taxonomic literature by Agnew (2013), Beentje (1994) and the Flora of Tropical East Africa (Various Authors; 1952 – 2012). The recorded plant checklist was compared with the IUCN Red List of threatened plants (2022), LEAP (2011), CITES for threatened, endemic, traded and invasive species respectively appendices as presented in Table 24.

According to the biodiversity assessment conducted, the proposed project site (Railways) represents a highly urbanized and fragmented ecosystem, with no areas of biodiversity considered nationally significant or under formal conservation, largely due to extensive development and built infrastructure (anthropogenic activities). The vegetation within the site comprises a mix of exotic and indigenous tree species, reflecting the urban landscape rather than natural forest.

4.5.2. Baseline of the Proposed Project Area

Nairobi City County lies within the Agro-Ecological Zones Upper Midland 4 (UM 4) and Upper Midland 3 (UM 3), commonly referred to as the main Coffee Zone. The Starehe Sub-County (the area surrounding Nairobi's Central Business District) falls under the Lower Midland 3 (LM 3) zone, which shares similar ecological characteristics. However, due to varying degrees of anthropogenic disturbance across Nairobi County, the ecological conditions differ significantly between zones. The project location is a fragmented and modified environment, in contrast to more intact ecosystems such as Karura and Ngong Forests.

The area (Project site) is generally characterized by a bush-like ecosystem with scattered standalone mature woody trees. These trees range from indigenous to exotic species and support varied bird and insect life. The understory consists of a mix of herbs and grasses.

Table 24: Observed Indigenous Plant Species

Plant Species (Local Name)	Scientific Name	IUCN Red List Status	GPS Location
Umbrella Thorn	<i>Vachellia abyssinica</i>	Not Evaluated	-1.296504, 36.825280
Sudan Teak	<i>Cordia africana</i>	Least Concern	-1.298100, 36.825906
Java Plum (Mzambarau)	<i>Syzygium cumini</i>	Least Concern	-1.296306, 36.825213
Mkuyu	<i>Ficus sycomorus</i>	Least Concern	-1.296351, 36.825347
Strangler Fig	<i>Ficus thonningii</i>	Least Concern	-1.297725, 36.826726 -1.296819, 36.824856
Black Wattle	<i>Acacia mearnsii</i>	Not Evaluated	-1.297831, 36.826052

According to the IUCN Red List and Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), all these trees' species observed are currently categorized as **Least Concern**, indicating that they are not under immediate threat of extinction. In general, the site's biodiversity is limited, with the ecological value largely constrained to scattered urban trees rather than intact natural habitat. Overall, the vegetation survey indicates a relatively high prevalence of exotic tree species compared to indigenous species in the area.



Plate 5: Some of the Observed Indigenous Plant Species Recommended to be Conserved

Other equally important plant species identified included but not limited to:

- Avocado (*Persea americana*) at -1.296554°, 36.824590°
- Mango (*Mangifera indica*) at -1.296595°, 36.824706°
- Blue Gum *Eucalyptus equisetifolia*
- *Jacaranda mimosifolia* (Jacaranda)
-

Finally, the project site also contains some invasive plant species, such as *Lantana camara* which requires careful management during site preparation to prevent further spread. Other important shrubs observed include *Solanum incanum*. Various tough urban grasses such as *Cynodon dactylon* (Bermuda Grass) and *Pennisetum clandestinum* (Kikuyu Grass) in fragmented patches were also recorded.

4.5.3. Fauna

The project area contains only limited remnant vegetation capable of supporting common mammal and bird species. Faunal presence is strictly limited to synanthropic species animals that benefit from living in close proximity to human habitats and can tolerate the high ambient noise, artificial light, and continuous movement associated with the adjacent Nairobi CBD and expressway corridor. No special or critical habitats for wildlife (mammals, birds, reptiles, or amphibians) were identified within the project site. Furthermore, the project site is located far from any protected wildlife areas, such as Nairobi National Park with no known wildlife corridor. Consequently, only a small number of bird species which are also found elsewhere in the Nairobi metropolitan area were recorded (see the plates below). However, given the bush-like characteristics of the site, several insect species and lower mammal taxa cannot be ruled out, even though they were not directly observed and captured during the survey.

Transects walked were done to identify the species present and to estimate animal densities within the project area. This was done primarily through direct sightings of animals, as well as indirect observations, including the detection of signs, tracks, and nests of mammals across the project area of influence. Due to extensive anthropogenic activities within the proposed project site, including the active railway line, industrial operations, and other human disturbances, the presence of large wildlife species was considered highly unlikely, and no signs of such species were observed. Despite the clearance of vegetation and ongoing human disturbance, the project area still provides suitable habitat for lower trophic fauna such as rodents, birds, reptiles, amphibians, and invertebrates. Species recorded during the survey, including birds, reptiles, insects, and lower mammals, as presented below.

Avifauna Species

Although bird species are not confined by fences and can move freely across the landscape, important ecosystems such as the Nairobi Arboretum and the National Museums Garden continue to support a wide variety of resident and migratory bird species. The Arboretum's diverse habitats and microclimates ranging from shady, dense tree cover to sunny open grassy meadows and the cool, moist banks of the Kirichwa Kubwa River attract and sustain this rich avian diversity. Notable species include the European Grey Wagtail (a migrant), Eurasian Cuckoo, Willow Warbler, African Paradise Flycatcher (*Terpsiphone viridis*), Bronze Sunbird (*Nectarinia kilimensis*), Hadada Ibis (*Bostrychia hagedash*), and many others. Therefore, further development in Nairobi County will continue to fragment habitats, thereby affecting the free movement of bird species across the city. The study area, located within the Nairobi CBD urban environment, supports a relatively limited population of avian species. This is primarily attributed to high human activity and the built-up nature of the area. The dominant avian species recorded during the survey are presented in the table and plates below



Plate 6: Marabou Stork (*Leptoptilos crumenifer*)



Plate 7: Sacred Africa Ibis (*Threskiornis aethiopicus*)



Plate 8: Hadada Ibis (*Bostrychia hagedash*) (Red Arrow) and two Sacred Africa Ibises

Table 25: Bird Species Observed

Common Name	Scientific Name	IUCN Red List Status
Marabou Stork	<i>Leptoptilos crumenifer</i>	Least Concern
Sacred Ibis (African Sacred Ibis)	<i>Threskiornis aethiopicus</i>	Least Concern
Hadada Ibis	<i>Bostrychia hagedash</i>	Least Concern
Eurasian Cuckoo	<i>Cuculus canorus</i>	Least Concern
Willow Warbler	<i>Phylloscopus trochilus</i>	Least Concern
African Paradise Flycatcher	<i>Terpsiphone viridis</i>	Least Concern
Bronze Sunbird	<i>Nectarinia kilimensis</i>	Least Concern

Note: All listed observed species within the project site are currently classified as Least Concern (LC) on the IUCN Red List, indicating they are not considered threatened with extinction at a global level.

Invertebrates

Several terrestrial gastropods, including African land snails, were observed within the project area. Their presence is largely attributed to the moist environmental conditions that provide suitable habitats for these species. At least five individual snails were recorded during the site survey. This indicates the existence of localized microhabitats with adequate soil moisture, organic matter, and vegetation cover.



Plate 9: Giant African Land Snail (*Lissachatina* species)

4.5.4. Mammals and Invertebrates

Small and urban-adapted mammals are expected to occur on the site. These include the Roof Rat (*Rattus rattus*) and House Mouse (*Mus musculus*), which are likely to be found around older structures, storage yards, and municipal drainage lines. The Natal Multimammate Mouse (*Mastomys natalensis*) may inhabit uncultivated, overgrown grassy patches along the rail easement, while small, transient insectivorous bats (e.g., *Pipistrellus* spp.) could occasionally forage in the area, utilizing structural crevices for roosting. Common reptiles and amphibians are also anticipated. The Red-headed Rock Agama (*Agama agama*) is likely to bask on concrete walls, old rail infrastructure, and stone foundations, while the Tropical House Gecko (*Hemidactylus mabouia*) is expected on both interior and exterior walls of surrounding structures. The African Common Toad (*Sclerophrys regularis*) may occupy temporary puddles or damp areas along drainage fringes during periods of high rainfall. A typical range of urban invertebrates is likely to be present, including butterflies such as the African Monarch (*Danaus chrysippus*), various ant species (Formicidae), domestic flies (*Musca domestica*), and mosquitoes (*Anopheles* and *Culex* spp.). None of these species were directly observed during the site survey. Their potential presence is inferred from the availability of suitable habitat and their known distribution in similar urban environments within Nairobi City.

4.5.5. Status of Biodiversity (Project Site)

The biodiversity status of the site, the occurrence of threatened species (including IUCN Red List flora and fauna), and the presence and status of protected areas within 500m radius of the proposed project site were assessed. The desktop review, field surveys, and consultations with stakeholders (including KRC staff) have ensured the following findings:

- No protected biodiversity sites within 500m radius of the proposed project;
- Except the watercourses (Ngong River tributary) that pass along the proposed project site (Western edge), no sensitive areas, like wetlands, are found within the project site;
- No endangered nor threatened species listed under IUCN red list fauna and flora species are found within the proposed project site;
- No potential sensitive biodiversity resources are within and around the proposed project site.

4.6. Land

4.6.1. Land Use

Nairobi City serves as Kenya's principal hub for population, commerce, and socio-economic activity, functioning as the national center for transportation, communication, industry, and political administration. Its urban spatial structure reflects distinct patterns of socio-economic stratification shaped by historical development, topography, and planning policies.

- The western and northern upland areas, including neighborhoods such as Karen, Runda, and Muthaiga, are characterized by low-density, high-income residential developments;
- The areas surrounding the Central Business District (CBD) northern section exhibit high-density commercial and mixed-use development, accommodating offices, retail, and transport infrastructure, forming the economic core of the city;
- The northern and northeastern suburbs, including areas such as Kahawa, Ruiru, and parts of Eastlands, are predominantly middle-income residential communities, with moderate plot sizes and mixed housing typologies.

According to Sessional Paper No. 1 of 2023 on Nairobi City County Development Control Policy, Nairobi County has been divided into 20 planning zones, each with distinct land-use guidelines to regulate development and ensure sustainable urban growth. Analysis of land cover changes within the city indicates that these transformations result from the interplay of physiographic, demographic, and socio-economic factors, with rapid urbanization being a key driver. Nairobi's urbanization rate has averaged 4.7% per annum since independence, surpassing the 3.5% average for other major African cities (*UN-Habitat, 2010; Obudho and Juma, 2002*). Several factors have contributed to this accelerated urbanization, including moderate national economic growth, high rural-to-urban migration, natural population increase, and the city's favorable physiographic base. The analysis of urban expansion and land-use change was supported by digital image processing of multispectral Landsat TM and Landsat ETM and imagery from 2000, 2005, 2010, and 2015, complemented by topographical maps and other secondary data sources.

According to the Nairobi Development Control Policy, the proposed project site is located within a zone designated for mixed-use development, encompassing commercial, office, institutional, and Railway City Mixed-Use Zone-1 (Zone 1B) activities. In addition, the Railway City development precinct has been officially gazetted as a Special Planning Area (SPA). As such, all development within this area must comply with both the County's Development Control Policy and the specific guidelines established for SPAs. This will ensure orderly, coordinated, and sustainable land use in line with Nairobi's overall urban planning framework.

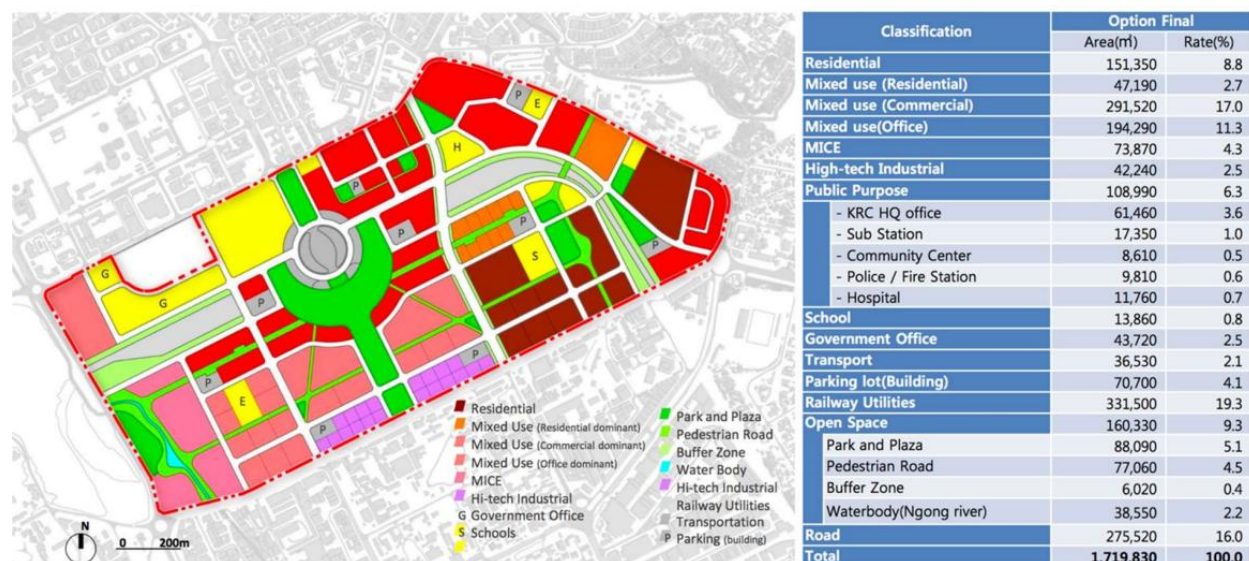


Figure 17: Proposed Land Use Planning for Railway City Development (Source: SDHUD)

The project site is located within a light industrial zone characterized by a mix of industrial operations and warehouse (Godown) facilities. The surrounding area is served by key infrastructural amenities and features, including a 220 kV Kenya Power substation, a concrete batching plant, and an operational railway line with active rail traffic. Other notable developments in the vicinity include several auto garages, active Kenya Railways Corporation (KRC) workshops, a place of worship (church), and residential developments in the Landimawe area to the east of the project site. In addition, the Nairobi Railway Museum is located at the far corner outside the project boundary near Neno Evangelism Centre. The proposed development has been carefully designed to integrate with both the existing land use and the planned urban redevelopment framework, ensuring compatibility with the current and future zoning and land use plans for the area.

Land Uses		Percentage of Footprints	Percentage of built-up area	Total Development and apportionment across land uses
Commercial	- Exhibition Hall, - Conference rooms, - Meeting spaces, - Specialized retail shops, - Restaurants, Cafes and bars, - Office, - Hotel	25 %	50	180,276m ²
Green and Open spaces	- Outdoor seating areas, - Public plazas, - Courtyards, - Landscaped gardens	25%		Not classified development
Recreational & Entertainment,	- Halls and Event spaces, - Theatres and Auditoriums, - Casinos	20%	40	144,221m ²
Transport & Infrastructure	- Parking lots, - Silo Park, - Taxi Stands, - Pedestrian routes	25%		Not Classified development
Residential	if serviced apartments are included	5 %	10	36,055m ²
TOTAL		100%	100	360,552m²

Figure 18: Conceptual Land Use (Source: Kenya Railway Master Plan)



Plate 10: Different Facilities Around the Project Site



Plate 11: Existing Concrete Batching Plant (Source: Fieldwork by Orwe Elly)

4.6.2. Land Rights and Tenure

Land tenure within the proposed project site is classified as public land under the ownership of the Government of Kenya (GoK) and is managed by the Kenya Railways Corporation (KRC). The land is governed by the national land laws, particularly the Land Act, 2012 (No. 6 of 2012). The proponent, Zaria Group, has acquired the project site through a formal lease agreement.

4.7. Socio-Economic Condition

This section presents a holistic overview of the socio-economic baseline conditions of Nairobi County and within the target area (Project site). It outlines the objectives of the socio-economic baseline survey, the methodology employed in conducting the assessment, and the key target groups and stakeholders involved, as detailed in [Chapter 7](#). The scope of the assessment is confined to Nairobi County, providing context for understanding the social and economic dynamics that may influence, or be influenced by, the proposed project.

4.7.1. Socio-Economic Data Collection

Socio-economic data was gathered using a combination of participatory techniques, including structured interview schedules, questionnaire administration, key informant interviews, and Focus Group Discussions (FGDs). These methods are recognized as effective tools in participatory rural appraisal (PRA) and participatory learning and action approaches. The field survey was conducted across all identified project-affected communities. The exercise was facilitated by community representatives who participated in the pre-field mobilization meeting and scoping workshop, as well as local residents familiar with the data collection process. Both qualitative and quantitative approaches were employed during data collection. Community consultations and Focus Group Discussions served as primary techniques, complemented by engagement with community leaders and other relevant stakeholders.

In analyzing the primary and secondary data, simple descriptive methods and summary statistics like mean, range, mode and percentage were used. Also, some of the data were presented in tables and graphs. The population of the host communities was projected using result of the 2019 National census.

4.7.2. Demographics

As of the 2019 Housing and Population Census (KPHC), Nairobi had a population of 4,397,073, with females slightly outnumbering males (2,204,376 compared to 2,192,452), and a recorded intersex population of 245. The city's population is estimated to have grown to 4,671,906 by 2022, with an additional one million people commuting into the city. Nairobi hosts nearly 10% of Kenya's national population, despite its limited land area, making it the most densely populated region in the country. The city spans a total area of 703.9 square kilometers, with a population density of approximately 6,237 people per square kilometer in 2019 census. The projected density is expected to increase further to 7,163 people per square kilometer by 2027. This is significantly higher than the national population density, which stands at 82 people per square kilometer. Nairobi is home to approximately 1,506,888 households, with an average household size of 2.9.

Table 26: Nairobi Population per Sub County 2019 and Projected Growth

Sub-County	Population					
	Male	Female	Total 2019	2022	2032	2042
Dagoretti	217,651	216,526	434,177	480,404	673,088	943,055
Embakasi	492,476	496,270	988,746	1,094,018	1,532,814	2,147,607
Kamukunji	136,670	131,599	268,269	296,832	415,887	582,694
Kasarani	381,234	399,285	780,519	863,621	1,210,008	1,695,327
Kibra	94,199	91,569	185,768	205,547	287,989	403,498
Lang'ata	96,698	100,774	197,472	218,497	306,133	428,919
Makadara	96,369	93,157	189,526	209,705	293,815	411,660
Mathare	106,522	100,028	206,550	228,541	320,206	448,637
Njiru	307,642	318,809	626,451	693,149	971,163	1,360,684
Starehe	109,173	101,238	210,411	232,813	326,192	457,023
Westlands	153,818	155,021	308,839	341,721	478,781	670,814
Total	2,192,452	2,204,376	4,397,073	4,865,229	6,816,611	9,550,668

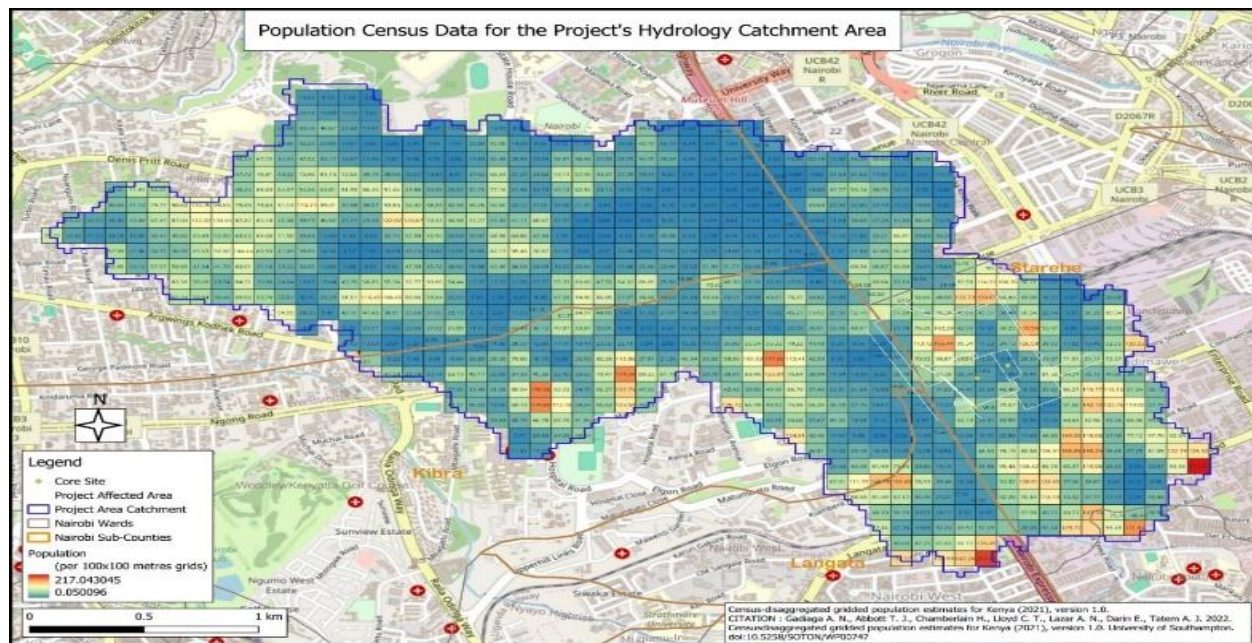


Figure 19: Population Projection of Nairobi County (Source: ESIA GIS Expert Dan Macharia)

4.7.3. Gender Dynamics

Gender dynamics in Nairobi City reflect the ways in which gender shapes roles, rights, and access to opportunities within the urban socio-economic context. Understanding these dynamics is critical for assessing potential project impacts and ensuring inclusive development outcomes under the Environmental

and Social Impact Assessment (ESIA). In Nairobi, as in much of Kenya, gender inequalities persist across multiple sectors, including education, employment, healthcare, and political participation. These disparities can limit economic growth, social progress, and equitable access to urban services, making it essential to integrate gender considerations into urban development projects. Within the workforce, women in Nairobi are often concentrated in low-paid, informal, or precarious employment, including domestic work, small-scale trade, and casual labor. Their participation in formal employment is generally lower than that of men, reflecting structural barriers such as limited access to education and vocational training, unequal access to financial and land resources, societal expectations, and workplace gender norms. For projects such as the proposed Nairobi Railway City development (MICE-Core component), understanding these gender dynamics is vital to:

- Promote equal employment opportunities for women during construction and operation phases; and
- Support targeted capacity-building and skill development initiatives to enhance women's participation in urban economic activities.

Integrating gender considerations into project planning will help to enhance social equity, local economic empowerment, and sustainability within Nairobi's urban environment.

4.7.4. Housing

During the survey, most of the houses and premises visited were being used for commercial purposes. The occupants are not the owners; rather, they live there as tenants under lease arrangements with Kenya Railways Corporation (KRC). Most of the structures are old Godowns, some of which have been converted into churches, while others are used as garages.

The adjacent community is situated approximately 500 metres east of the centre of the MICE core project site, along Factory Street in Landimawe. Due to this separation, the settlements are not expected to experience any direct physical or socioeconomic impacts from the proposed development, such as land acquisition, displacement, or significant disruption to daily activities and livelihoods. In addition, social survey findings indicate a positive correlation between housing type and household income levels among residents living around the project site.



Plate 12: Typical Housing Type at Landimawe Residential Area



Plate 13: Godowns Along Workshop Road

4.7.5. Employment and Labour

The majority of the population residing and operating around the proposed Nairobi Railway City project area is engaged in both formal and informal employment activities, reflecting the mixed commercial industrial character of the locality. A significant proportion of residents are formally employed within the railway sector, particularly by the Kenya Railways Corporation (KRC), as well as associated logistics, transport, and support services linked to railway operations. The long-standing presence of railway infrastructure has historically shaped settlement patterns and economic activities in the area, resulting in a workforce with technical, mechanical, and administrative skills related to rail transport.

In addition to formal railway employment, the area hosts a vibrant informal economy. Many residents operate small and medium-sized enterprises (SMEs), including retail shops, food kiosks, workshops, and service-oriented businesses that cater to railway staff, and nearby commercial establishments. These enterprises provide critical livelihoods and contribute significantly to local income generation. The locality is also characterized by light industrial activities, including small-scale manufacturing, concrete batching plant, fabrication workshops, motor vehicle repair garages, and car yard businesses specializing in vehicle sales and spare parts. These operations benefit from proximity to major transport corridors and the central business district, enhancing accessibility for suppliers and customers. In general, the socio-economic setting around the project area reflects a dynamic urban environment with strong linkages to transport, trade, and small-scale industry. The proposed project is therefore expected to interact closely with existing formal and informal employment structures, necessitating appropriate stakeholder engagement, livelihood considerations, and economic inclusion strategies during both construction and operational phases.

4.7.6. Markets

Muthurwa Open Market and Wakulima Market host one of the largest daily markets in Nairobi CBD. Some traders, especially those in Wakulima Market, were recently relocated to the newly completed Kangundo Road Market. These markets (Muthurwa and Wakulima) are located approximately 1.5km east of the project site. However, there are scattered small shops and kiosks along Workshop Road, especially in Landimawe, where people sell various food items and other household goods.



Plate 14: Ariel View of Muthurwa and Wakulima Open Air Market

4.8. Infrastructures, Social and Utility Services

4.8.1. Education

Nairobi County functions as Kenya's principal hub of education and training, hosting a diverse range of both public and private institutions across all levels of learning. The County has approximately 225 primary schools, distributed throughout its urban and peri-urban areas. In addition, Nairobi accommodates numerous secondary schools and an extensive network of tertiary institutions, including universities, Technical and Vocational Education and Training (TVET) centres, colleges, and specialized professional institutes. This high concentration of educational facilities reinforces Nairobi's status as the country's leading centre for academic excellence, research, innovation, and professional development. The education sector significantly contributes to the city's socio-economic profile by attracting students from across Kenya and the wider East African region, thereby stimulating demand for housing, transport, retail, and other urban services.

The proposed project site is located in close proximity to The Technical University of Kenya (TUK), a major public institution situated within the Central Business District. The university hosts a substantial student and staff population, resulting in high levels of pedestrian movement within the surrounding area. A significant proportion of students reside within the nearby Landi-Mawe precinct, an area that was historically developed as a high-end, low-rise residential estate for Kenya Railways staff. Appropriate mitigation measures such as scheduling high-noise activities outside peak academic hours, implementing dust suppression strategies, ensuring safe pedestrian diversions, and coordinating with university management will be essential to minimize disruption and safeguard the educational environment during project implementation phase.



Plate 15: The Technical University of Kenya (TUK) (Source: University Website)

4.8.2. Healthcare Services

Healthcare service delivery within the project area falls under the devolved health function of the Nairobi City County Government, in accordance with the Constitution of Kenya (2010). The County Government is responsible for the provision, management, and regulation of primary and secondary healthcare services, including dispensaries, health centres, maternity services, and county referral hospitals. These facilities provide preventive, promotive, curative, and rehabilitative services to the local population. Referral services beyond the county level particularly specialized and national referral healthcare are managed by the Ministry of Health under the National Government. National referral hospitals provide advanced diagnostic, surgical, and specialist care and serve as apex facilities within the healthcare system.

Within the immediate project area of the Nairobi Railway City development, **Loco Dispensary** serves as the primary healthcare facility. The dispensary mainly provides outpatient services, treatment of common illnesses, basic laboratory services, immunization, child health services, and health education. It plays a critical role in meeting the day-to-day healthcare needs of railway workers, local residents, and individuals engaged in surrounding commercial and light industrial activities. Given the anticipated construction workforce and increased human activity associated with the proposed project, there may be additional demand placed on existing healthcare facilities, particularly for occupational health services, minor injuries, and communicable disease management. It will therefore be important for the project proponent to collaborate with county health authorities to support public health planning, occupational health and safety measures, and emergency response preparedness during both the construction and operational phases.



Plate 16: Loco Health Centre Near Over Pass Bridge-Workshop Road

4.8.3. Water and Sanitation

Nairobi faces water and sanitation problems common to many cities of the developing world which grow too fast. The water supply is simply unable to meet fast-growing demand. Over the decades, Nairobi's rapidly growing population, coupled with the effects of climate change, have put the city's water infrastructure under increasing pressure. Nairobi currently has a total installed water production capacity of 525,000m³/day. However, the supply is insufficient to meet the current demand estimated at 669,888 m³/day with non-Revenue water estimated at 40%. During drought periods, water production is 418,000m³/day. The main water supply to the city is from four sources as outlined:

- a) Thika Dam/Ngethu Water Treatment Plant – 440,000m³/day (83.7%),
- b) Sasumua Dam – 61,000 m³/day (11.6%),
- c) Ruiru dam/Kabete Water Treatment Plant – 20,600 m³/day (3.9%), and
- d) Kikuyu Springs – 4,000m³/day (0.8%)

Nairobi County does not have a major water tower of its own and relies on neighboring counties such as Kiambu, Murang'a, and Nyandarua, for its water supply. However, this supply is unreliable during drought periods and is further endangered by siltation of reservoirs due to deforestation in the catchment areas. The situation is exacerbated by a poorly managed water distribution system, resulting in nearly 38% water loss due to leakage, illegal connections, and inefficient or wasteful use by some consumers. The project site and the surrounding Nairobi Railways area are currently connected to and supplied with water by the Nairobi City Water and Sewerage Company (NCWSC). Nairobi City Water & Sewerage Company Limited is the primary water service provider, with approximately 80% of the city having piped water connections. In areas that receive only intermittent supply, boreholes are operated by large private consumers or individual residential owners. Based on the scale and anticipated water demand of the proposed project during both the construction and operational phases, there is potential for increased pressure on the existing municipal water supply system. To minimize strain on surrounding communities and promote sustainable resource use, the proponent should integrate advanced water conservation and efficiency measures into the project design.

4.8.4. Waste Management

Nairobi's current waste disposal system is plagued by several issues, including the failure to prioritize solid waste management, inadequate infrastructure, and the involvement of multiple actors whose activities are not adequately regulated. There is a pressing need to shift from traditional methods of waste disposal, such as dumping and burning, to more sustainable practices like recycling. In terms of sanitation infrastructure, approximately 61.5% of the population utilize flush toilet systems, while 32.1% depend on pit latrines. The remaining 4.8% of the population lacks access to formal waste disposal methods. With regard to solid waste

management, approximately 36.1% of households benefit from private waste collection services, while a comparable proportion relies on community-based collection initiatives operating within neighborhoods. All collected waste is ultimately deposited at the Dandora landfill and other designated dumpsites. However, the Nairobi City and Metropolitan Region continue to face escalating levels of environmental pollution, primarily driven by inadequate wastewater and solid waste disposal systems. The Nairobi City Water and Sewerage Company (NCWSC) currently operates four municipal sewage treatment facilities:

- a) Dandora Estate Wastewater Treatment Plant with an installed capacity of 160,000 m³/day,
- b) Kariobangi Treatment Plant with a capacity of 32,000 m³/day,
- c) Kahawa West Plant at 1,750 m³/day, and
- d) Karen Plant at 455 m³/day.

The combined installed capacity of 194,205m³/day is significantly below the anticipated wastewater generation projections for the year 2042, which are expected to exceed twice the current capacity. The current wastewater generation for Nairobi is estimated at 501,501m³/day with an ultimate generation of 1,046,948 m³/day in the year 2042 as outlined in the table below³.

Table 27: Projected Wastewater Discharge

Population category	Generation Factor	Connection factor	Projected Water Demand (m ³ /day) 2022	Wastewater discharge (m ³ /day)		
				2022	2032	2042
Domestic	80%	75%	506,566	303,939	445,635	652,100
Students	85%	80%	49,323	33,540	46,671	64,944
Livestock	75%	75%	181	102	92	83
Commercial, Institutional and Industrial	80%	100%	204,901	163,920	241,702	329,821
			760.971	501.501	734.100	1.046.948

The proposed project site is located within a sewerage area and is connected to the main sewer trunk operated by the Nairobi City Water and Sewerage Company (NCWSC). The proposed development will connect to this existing sewer infrastructure for the conveyance and treatment of wastewater arising from the project construction and operations and if need be the existing capacity needs to be expanded to accommodate the expected load during peak operations.

4.8.5. Transportation

The Nairobi Metropolitan Area remains Kenya's most dynamic engine of economic growth and employment creation, contributing more than 30% of the national Gross Domestic Product (GDP). However, rapid urbanization, coupled with a significant increase in motorization, has placed considerable pressure on the city's transportation system. The existing transport network comprising urban arterials and major corridors linking the Central Business District (CBD) to suburbs and satellite towns faces persistent congestion and capacity constraints. The inadequacy of the public transport system has increasingly become a limiting factor to economic efficiency and urban mobility.

Road transport is the dominant mode of movement in Kenya, accounting for approximately 85% of total domestic transportation. Nationally, the road network comprises about 63,300 km of classified roads and 114,500 km of unclassified roads. Of the classified network, only about 14% (approximately 9,100 km) is paved, with the remainder consisting of gravel or earth surfaces. Within Nairobi County, the overall road length density is approximately 0.98km per square kilometre, though this includes low-density peripheral

³ Nairobi City County ICDP 2022-2027

areas. In terms of population, the road length density stands at about 0.22km per 1,000 people, reflecting the high pressure placed on urban roads.

Spatially, Nairobi's densely populated zones extend predominantly toward the west and east of the CBD, resulting in greater traffic demand along the west–east axis compared to the north–south direction. Consequently, major corridors across the northern and central sections of the city experience chronic congestion, particularly during peak hours. The proposed project area is strategically located and well served by key transport infrastructure. It benefits from direct connectivity via Workshop Road and Bunyala Road, which links the site to the CBD, the Industrial Area, and other parts of the metropolitan region. Additionally, Uhuru Highway forms the western boundary of the project site, serving as a major arterial route that channels significant volumes of vehicular traffic through the city. The site is also traversed by active railway lines running between sections of the development area, further reinforcing its role within Nairobi's multimodal transport network.



Plate 17: Active Railway Line (Source: Kenya Railway)



Plate 18: Bunyala Road to South of Project Site

4.8.6. Energy Sources

Nairobi County relies on a diverse mix of energy sources, including electricity, solar energy, liquefied petroleum gas (LPG), biogas, paraffin, charcoal, and firewood. Access to clean, reliable, and affordable energy remains a critical factor in sustainable development. Limited access to modern energy sources has been associated with negative health outcomes, particularly respiratory complications linked to indoor air pollution from biomass fuels such as firewood and charcoal. Energy use patterns are closely linked to household socio-economic status, with higher-income households predominantly using cleaner but more expensive energy options such as LPG and electricity, while lower-income households often rely on firewood and charcoal. According to the Kenya National Bureau of Statistics (KNBS, 2022):

- Paraffin is used by approximately 63.2% of households for cooking in low-income areas,
- LPG accounts for 20.2%, reflecting its growing adoption among middle- and upper-income households,
- Charcoal contributes 10.5%, while firewood represents 1.8% of household cooking fuel,
- About 68.2% of households in Nairobi have access to electricity, with some complementing grid supply with solar as an alternative or back-up energy source.

The project area is highly urbanized and is already served by a well-established Kenya Power and Lighting Company (KPLC) distribution network. The proposed development will be integrated into the existing KPLC power grid, ensuring reliable energy supply for Arena and supporting infrastructure operations. To enhance sustainability and resilience, the project may also incorporate solar energy systems (Green energy) as a supplementary or backup source, reducing reliance on the national grid and contributing to Kenya's clean energy transition as envisioned in the Vision 2030.



Plate 19: Kenya Power 220KV Substation (Source: Fieldwork by Orwe Elly)

4.8.7. Cultural Heritage and Archeological Sites

Kenya has, in recent decades, experienced rapid industrialization and sustained population growth, trends that have placed increasing pressure on both natural and cultural heritage resources. Urban expansion, infrastructure development, and changing land-use patterns have the potential to affect historically significant sites, cultural landscapes, and environmentally sensitive areas. The protection and conservation of Kenya's cultural and natural heritage are governed by the National Museums and Heritage Act (2006), which mandates the National Museums of Kenya (NMK) to safeguard, conserve, and transmit heritage resources for present and future generations. The Act recognizes the role of Environmental Impact Assessment (EIA), undertaken within the framework of the Environmental Management and Coordination

Act (EMCA) Cap 387, as a key mechanism for identifying and mitigating potential impacts on heritage resources. It requires that development projects consider heritage conservation and, where necessary, undertake appropriate assessments and approvals through NMK. At the international level, World Heritage Sites are recognized as having outstanding universal value to humanity, underscoring the importance of integrating heritage protection into sustainable development planning. Conservation of cultural and natural heritage is also aligned with the broader Sustainable Development Agenda, particularly in promoting inclusive, resilient, and culturally sensitive urban growth.

The Nairobi Railway City Master Plan incorporates areas in proximity to the Kenya Railway Museum, which preserves and interprets Kenya's railway heritage. However, the proposed development site itself is located at a considerable distance from the museum. The subject site under the consideration (MIC-Core) does not contain any known cultural or archaeological heritage resources. Nevertheless, during construction, the project will comply with the provisions of the National Museums and Heritage Act and the World Bank Environmental and Social Standard 8 (ESS8) on Cultural Heritage. This includes implementing a Chance Finds Procedure, ensuring that any unexpected discovery of cultural or archaeological materials is promptly reported to the National Museums of Kenya and handled in accordance with statutory and international best practice requirements including conducting Heritage Impact Assessment if need be. The Proponent shall implement the annexed Chance Finds Procedure to manage any undocumented cultural heritage that may be encountered within the project area. The procedure shall guide the identification, protection, documentation, and reporting of any archaeological, historical, or cultural materials discovered during project activities, in compliance with applicable national legislation and international best practice.



Plate 20: Locomotive Assemblage at The Nairobi Railway Museum (Source: Fieldwork)

4.9. Existing Site Environmental, Social Threats and Risks

During the site walkover survey, several environmental and occupational safety risks were identified within the proposed project area. Key environmental concerns included a potentially contaminated drainage system, with effluent observed flowing across the plot, posing risks to soil and groundwater quality as well as public health. In addition, several unmarked manholes and suspected underground storage structures were encountered, presenting significant safety hazards to workers and site users, including risks of accidental falls, exposure to hazardous substances, and structural instability. Additional risks were associated with existing energy infrastructure. A high-voltage Kenya Power and Lighting Company (KPLC) transmission underground line running along the southern boundary of the core project area. This presents potential dangers such as electrocution, restrictions on excavation activities, and long-term safety considerations that must be addressed during project design and implementation.



Plate 21: Exposed Section of High-voltage KPLC Underground Transmission Line (Source: Fieldwork by Orwe Elly)

5. IMPACT ASSESSMENT METHODOLOGY

5.1. Introduction

The impact assessment process started with the identification of project “aspects” that arise as a result of the potential interaction between a project “activity” and a natural or socio-economic environment “receptor”. Potential changes (neutral i.e. no change, positive or negative) to any given receptor were then evaluated and where a positive or negative change was predicted and ranked via an impact significance ranking process.

5.2. Approach and Methodology

The ESIA process constituted a systematic approach to the evaluation of a project and its associated activities throughout the project lifecycle. The process included but not limited to;

- Screening and Scoping
- Project Alternatives and Design;
- Existing Environmental and Socio-Economic Conditions;
- Impact Significance Assessment;
- Mitigation and Monitoring;
- Residual Impacts; and
- Disclosure and Stakeholder Consultation.

5.3. Approach and Methodology

5.3.1. Screening

The Project was subjected to a screening process to determine the requirement for undertaking an Environmental and Social Impact Assessment (ESIA), the screening was based:

- Project characteristics;
- Project Activity and Impact (PAI) Characteristics;
- The Second Schedule of EMCA and the Environmental (Impact Assessment and Audit) Regulations of 2003, which lists the projects that must undergo an EIA; and
- World Bank Environmental and Social Standards (ESSs).

Based on the above criteria, it was concluded that an ESIA resulting in the preparation of an EIA Full Study Report would be required for the proposed project due to the following aspects:

- The scale, complexity, and high-rise nature of the proposed MICE Core Arena and associated mixed-use infrastructure;
- The Project's location is within a densely developed urban environment, in close proximity to commercial, residential, heritage and industrial land uses;
- The anticipated significant construction and operational impacts, including increased traffic, noise levels, air emissions, solid and liquid waste generation, and demand for utilities; and
- The potential for cumulative impacts arising from its integration within the larger Nairobi Railway City redevelopment.

5.3.2. Desktop Reviews

A literature review was undertaken based on the proposed project design and reconnaissance process, which involved reviewing legislation and policies, World Bank ESSs, Zaria Group Project Design Document (PDD), Nairobi City Railway Master Plan (NCRMP) and the County Integrated Development Plans (CIDPs), and previous studies carried out in the area (especially those on road and industrial construction) to determine the baseline conditions and establish the legal, institutional, and biophysical/socio economic environmental setting of the Project area. The desk-based study also included the development of fieldwork tools, fieldwork schedules as well as the approach to stakeholder engagement.

5.3.3. Geospatial Mapping and GIS Analysis

Satellite imagery, topographic maps, and Geographic Information System (GIS) tools were applied as integral components of the ESIA spatial analysis methodology to ensure accurate delineation and evidence-based impact prediction. Spatial data was obtained from multiple credible sources to enhance accuracy and reliability. These included:

- High-resolution satellite imagery to capture current land use, built-up areas, infrastructure networks, vegetation cover, and surface features within and around the Project site;
- Topographic maps and cadastral data to determine elevation profiles, drainage patterns, property boundaries, and site contours;
- Review and analysis of approved planning and zoning maps were undertaken to verify the current land use designations and applicable development controls within the Project area. Particular reference was made to the Special Planning Area (SPA) framework developed for the Nairobi Railway City;
- Field ground-truthing exercises to validate remote sensing outputs and confirm on-site environmental and socio-economic features, including sensitive receptors such as surface water bodies; residential developments, transport corridors, utilities, and public facilities.

5.3.4. Baseline Environmental Analysis

Baseline environmental analysis was conducted to establish the existing physical, biological, and socio-economic conditions within the Project Area of Influence (Aoi) prior to the commencement of construction activities. This provided a reference framework against which potential project impacts were assessed and mitigation measures designed. Key elements of the baseline information included but are not limited to the aspects listed in the table below:

Table 28: Baseline assessment Methodology

Aspect	Methodology
Ambient Air Quality Monitoring	Ambient air quality monitoring was conducted to determine concentrations of key pollutants, including particulate matter (PM_{2.5} and PM₁₀), sulphur dioxide (SO₂), nitrogen oxides (NO_x), carbon monoxide (CO), and volatile organic compounds (VOCs). • <i>Methodology:</i> Use of calibrated portable air quality monitoring equipment at selected representative sampling locations. • <i>Standards:</i> Compared against the Environmental Management and Co-ordination (Air Quality) Regulations, 2014 and WHO Air Quality Guidelines.
Noise Level Measurements	Noise measurements were undertaken to establish baseline ambient noise levels within and around the project site. • <i>Methodology:</i> Use of a calibrated sound level meter to measure day-time and night-time noise levels (Leq values). • <i>Standards:</i> Compared against the Environmental Management and Co-ordination (Noise and Excessive Vibration Pollution) Regulations, 2009.
Water Quality Monitoring	Water quality analysis was conducted for both surface and groundwater sources in the vicinity of the project area. • <i>Parameters:</i> pH, turbidity, electrical conductivity, dissolved oxygen (DO), biochemical oxygen demand (BOD), chemical oxygen demand (COD), heavy metals, and microbial contaminants (e.g., total coliforms). • <i>Methodology:</i> Collection of water samples and laboratory analysis following standard procedures (e.g., APHA methods).

Aspect	Methodology
	Standards: Compared against the Environmental Management and Co-ordination (Water Quality) Regulations, 2006, KS EAS 12:2018 specification for natural potable water and WHO drinking water guidelines.
Soil Quality Analysis	Soil sampling and analysis were conducted to determine baseline soil characteristics and contamination levels. Parameters: pH, BTEX, Polycyclic Aromatic Hydrocarbons (PAH) & Total Petroleum Hydrocarbon (TPH), nutrient levels, and presence of heavy metals. Methodology: Collection of composite soil samples from selected locations and laboratory testing. Standards: Benchmarked against FAO guidelines and relevant national environmental standards.
Biodiversity Assessment	A biodiversity survey was undertaken to document existing flora and fauna within the project area and its surroundings. Methodology: Field observations, species identification, habitat assessment, and consultations with local communities. Focus Areas: Vegetation types, wildlife presence, ecological sensitivity, and any endangered or protected species. Standards: Guided by national conservation regulations and international conventions where applicable (e.g., IUCN Red List).

5.3.5. Stakeholder Engagement and Public Consultation

Structured consultations were conducted with Kenya Railways Corporation (KRC), project-affected persons (PAPs), relevant government agencies, and other key stakeholders to identify concerns, opinions and incorporate stakeholder perspectives into project planning. This engagement process was designed to ensure compliance with the public participation requirements of the Environmental Management and Coordination Act Cap 387 and the Strategic Environmental (Impact Assessment and Audit) Regulations, 2025, and World Bank ESF in particular (ESSs10) while promoting transparency, inclusivity, and social acceptability of the proposed development.

A detailed public engagement methodology, including the planning, implementation, and documentation of stakeholder consultations, is presented in [Chapter 7](#) of this report and stakeholder mapping as annexure. The methodology encompassed a combination of approaches, including:

- Stakeholder Mapping and Identification;
- Community Meetings and Barazas;
- Key Informant Interviews (KIIs); and
- Questionnaires and Surveys.

5.3.6. Impact Identification

The identified impacts were classified according to their Effect Level to ensure a transparent, consistent, and systematic assessment framework. Each adverse impact was first assigned an effect level classification, categorized as **Low/Negligible, Minor, Moderate, or Major/High**, taking into account the effectiveness of feasible mitigation measures. This approach evaluates impacts not only in their raw or unmitigated form but also in terms of their residual effect after the implementation of mitigation measures ([Refer to Chapter 8](#)).

5.4. Environmental and Social (E&S) Safeguards Screening Process

In line with World Bank requirements, the proposed MICE Core Arena project underwent a Safeguards Screening process to identify and assess potential environmental and social risks and impacts. This process, guided by **Environmental and Social Standard (ESS1)** Assessment and Management of Environmental and Social Risks and Impacts, ensures that risks are systematically identified, evaluated, and managed from the earliest stages of project planning. Under the World Bank Environmental and Social Framework (ESF), all projects including those involving Financial Intermediaries (FIs) are classified according to their environmental and social risk levels into one of four categories:

- *High Risk*
- *Substantial Risk*
- *Moderate Risk*
- *Low Risk*

The Environmental and Social Impact Assessment for the proposed project also took into account risks and impacts associated with primary suppliers and contractors, in accordance with the requirements of ESS2 (***Labor and Working Conditions***), ESS6 (***Biodiversity Conservation and Sustainable Management of Living Natural Resources***) and ESS10-(***Stakeholder Engagement and Information Disclosure***).

5.5. Environmental and Social Parameters Assessed and Approach Used

In order to identify potential impacts on environmental and social receptors, it was necessary to establish the existing baseline conditions prior to the commencement of project activities. Earthcare Services Limited assessed the parameters outlined in the tables below to determine both the baseline status and the anticipated status following potential impacts from the construction activities.

Table 29: Parameters

Environmental Component		
Issues	Method	
Water	• Principle water-courses, surfaces within the study area (including water quality).	• Field observations and GIS-based mapping from existing water sources, • Water quality through field sampling and subsequent analysis at the Water Resources Authority (WRA) Water Testing Laboratory.
Habitat and Biodiversity	• Biodiversity assessment with specific focus on: • Significance of the biodiversity in regional, national and international terms. • Designated sites and the potential for protected species within the study area.	• Review of existing literature on habitat and biodiversity prior to field visit including importance at regional, national and international levels. • Biodiversity assessment based on literature review and field data
Infrastructure	• Existing infrastructure within the study area and within a 5km radius of the study area perimeter. • Traffic and roads (quality of roads, types of traffic). • Main public roads	• Field survey and GIS mapping of existing infrastructure including industries. • Road quality through field observations and official classification categories. • Types of day traffic by monitoring at key specific points (needs assistance of local personnel as this is a stationary activity).
Archaeology	• Archaeological and sensitive cultural sites.	• Review of existing literature. • Interviews with knowledgeable locals. • Physical observations in the field.
Topography and Geology	• Topography and Geology.	• Use of topographic maps, Google earth, free remotely-sensed satellite images. • Generation of Digital Elevation Model (scale will be constrained by existing information). • Literature review and field survey of geology of the area.
Noise	• Noise levels at various locations in and around the study area.	• Using a Noise Dosimeter to take readings of the noise levels at specific areas within the study area that will be impacted by the project activities. The meter was set on 'Fast' response and the 'A-weighted' frequency characteristic to determine continuous sound expressed as the equivalent continuous sound pressure level (SPL) in the unit of dBA. • At each location, SPL values were recorded at one-minute intervals for a period of 30 minutes

Environmental Component		
Issues	Method	
		Determination of location of sensitive receptors in relation to potential noise sources and were pegged on where sensitive receptors such as households, industries, abandoned areas with the potential for resettlement.
Air Quality	- Ambient air quality. - Generation of dust, smoke, odorous fumes, and other toxic gaseous emissions. - Identification of project components that can lower air quality	- Establishment of baseline conditions. - Assessment of project impacts on air quality - Identification and prioritisation of factors requiring mitigation.

Table 30: Socio-Economic Assessment methods

Social Component			
KEY ASPECTS		ISSUES	METHODS
1	Social set up	- Social organization and administration of the communities. - Types of community addressing urban/rural, size, ethnically homogenous/heterogeneous, size and spatial extent of ethnic groups, settled, nomadic and migration patterns. - Vulnerable groups and human rights. - Economic enterprise, value chains. - Availability and skill of labour force.	All issues were addressed through: - Focus group discussions incorporating the various aspects. Questionnaire-administered interviews for the public and key informants. - Available data from other sources e.g. Government reports, and others. - Field verification.
2	Economic aspects	- Development trend over the last 30 years. - Livelihood systems, sources of income and levels of income. - Labour requirements with regard to gender, age, season. - Community expectation with regard to opportunities and development resulting from construction activities.	All issues were addressed through: - Focus group discussions incorporating the various aspects. - Questionnaire-administered interviews for the public and key informants capturing key issues of interest. - Available data from other sources e.g. Government reports, and others.
3	Cultural and Religious aspects	- Leadership (traditional, county, national) and hierarchical power structure. - Religious and cultural beliefs, including the importance of livestock or other in dowry, security, etc. - Key social institutions and customary systems for decision making, conflict resolution and peace building mechanisms. - Cultural property, moveable and fixed, architecture, art, archaeology, graves, shrines.	All issues were addressed through: - Focus group discussions incorporating the various aspects. - Questionnaire-administered interviews for the public and key informants capturing key issues of interest. - Available data from other sources e.g. Government reports, and others; field verification.
4	Land use aspects	- General land use and land ownership patterns. - Land use and ecosystem services, land tenure, control and access	All issues were addressed through: - Focus group discussions incorporating the various aspects. - Questionnaire-administered interviews for the public and key

Social Component			
KEY ASPECTS		ISSUES	METHODS
			informants capturing key issues of interest. • Available data from other sources e.g. Government reports, and others. • Physical observations and verification in the field
5	Social support infrastructure	• Waste treatment and disposal facilities, NEMA license. • Transportation – roads, public transport. • Access to energy sources. Educational facilities, quality of education, level of education by age and gender. • Sensitive periods (times of day/night) with regard to traffic and noise (with respect to learning institution, places of worship, community.	• Identification of key agencies and persons and interviews. • Physical survey in the field. • Focus group discussions and/or questionnaire administered interviews to capture key factors
	General Aspects		All the above items 1 to 5 will be supported by GIS mapping where applicable, photographs and (georeferenced), Background literature review of prior study products, including those already done and relevant to the area will be undertaken and pertinent information incorporated.

5.5.1. Environmental Impacts

Criteria and Ratings

Earthcare Services assessed the impacts that may result from planned and unplanned events for the proposed project and used the following criteria for determining the need for and level of environmental impact assessment, and based the risk/impacts determination on the criteria and ratings specified:

Table 31: Rating Criterion

Assessment Category	Key Considerations / Guiding Questions
Character of the Receiving Environment	– Is the site part of, or likely to become part of, a conservation area or subject to an international treaty? – Is it an existing or potentially environmentally significant area? – Is it vulnerable to major natural or induced hazards? – Is it designated as a special-purpose area? – Are human communities within the area vulnerable? – Does the project involve renewable or non-renewable resources? – Is the site degraded, at significant risk, or potentially contaminated?
Potential Impacts	– Will construction, operation, and/or decommissioning cause significant environmental or social changes (on-site/off-site, short-term/long-term)? – Could the proposed activities give rise to health risks or unsafe conditions? – Will the project significantly divert natural resources (e.g., water) to the detriment of other users? – Consider magnitude, spatial extent, duration, intensity, lifecycle impacts, and manageability of impacts.

Assessment Category	Key Considerations / Guiding Questions
Resilience of Natural and Human Environments	– Can the receiving environment absorb predicted impacts without irreversible change? – Can existing land uses be sustained? – Can sustainable use of the area continue beyond the construction phase? – Are contingency and emergency response plans proposed or in place? – Are cumulative impacts considered alongside individual impacts?
Confidence in Impact Predictions	– What level of knowledge exists regarding ecosystem resilience? – Is the project design and technology sufficiently detailed to determine impacts? – Is the extent of change to natural and human environments sufficiently understood? – Is it practicable to monitor predicted effects? – Are community land use and resource values likely to change?
Planning, Policy and Statutory Framework	– Is the project consistent with existing zoning and long-term policy frameworks? – Are there other statutory approval processes to assess and manage impacts? – What legislation, codes, standards, or guidelines govern monitoring and operational control?
Degree of Public Interest	– Is the project controversial or likely to generate community concern? – Will community amenity, values, or lifestyle be adversely affected? – Will the proposal result in inequities among different community groups?

5.5.2.Event Magnitude

Event magnitude was determined based on the following parameters, which were equally weighted and were each assigned a rating of "1", "2", or "3".

Table 32: Impact Rating Criterion

Criteria	Rating	Description
Extent / Scale	1 (Low)	– Impact affecting an area up to 500m from the source or covering less than 50 hectares.
	2 (Medium)	– Impact affecting an area greater than 500 m and up to 1 km from the source or covering between 50–100 hectares.
	3 (High)	– Impact affecting an area greater than 1 km from the source or covering more than 100 hectares.
Frequency	1 (Low)	– Event occurring once.
	2 (Medium)	– Event occurring up to 50 times.
	3 (High)	– Event occurring more than 50 times or continuously.
Duration	1 (Short-term)	– Impact lasting up to one week.
	2 (Medium-term)	– Impact lasting more than one week and up to one month.
	3 (Long-term)	– Impact lasting longer than one month to permanent.

Intensity: Concentration of an emission or discharge or noise level with respect to standards of acceptability that include applicable legislation and international guidance. Degree/permanence of disturbance or physical impacts (e.g. disturbance to species, loss of habitat or damage to cultural heritage). Ranges from:

- 1- A low intensity event; to

- 2- A moderate intensity event; to
- 3- A high intensity event.

Overall event magnitude was scored on a spectrum from low (1) to high (12) by adding the individual parameter scores:



Resulting individual ratings were summed up to give the overall event magnitude ranking. The score ranges for magnitude rankings were: "Low", "Medium" and "High". Event Magnitude Score (Summed Parameter Rankings).

Table 33: Event Magnitude Score (Summed Parameter Rankings)

Event Magnitude	Score (Summed Parameter Rankings)
Low	4
Medium	5-8
High	9-12

5.5.3. Receptor Sensitivity

Receptor sensitivity was determined based on the following parameters, which were equally weighted and were each assigned a rating of "1", "2", or "3".

Table 34: Biological/Ecological Receptors Sensitivity Criterion

Criteria	Rating	Description
Presence	3 (High Sensitivity)	– Routine, regular, or reliably predictable presence of a unique, threatened, or legally protected species.
	2 (Moderate Sensitivity)	– Regionally rare species, species largely confined to the project area, or species sensitive to industrial emissions/disturbances.
	1 (Low Sensitivity)	– Species not falling within the above categories and therefore assessed at community level only.
Resilience (to Identified Stressor)	1 (High Resilience)	– Species or community unaffected or only marginally affected by the stressor.
	2 (Moderate Resilience)	– Species undergoing moderate but sustainable change that stabilizes under continued impact, with ecological functionality maintained.
	3 (Low Resilience / High Vulnerability)	– Substantial loss of ecological functionality (e.g., loss of key species groups, significantly reduced abundance and diversity).

5.5.4. Human Receptors

Table 35: Human Receptor Sensitivity Criteria

Criteria	Rating	Description
	3 (High Sensitivity)	– People permanently present within the geographical area of anticipated impact (e.g., residential properties).

Criteria	Rating	Description
Presence (Human Receptors in Area of Impact)	2 (Moderate Sensitivity)	– People present intermittently or during working hours (e.g., commercial or institutional properties).
	1 (Low Sensitivity)	– People uncommon or rarely present within the geographical area of anticipated impact.
Resilience (to Identified Stressor)	1 (High Resilience / Low Exposure)	– People least exposed to change or disturbance (ambient conditions such as air quality and noise are well below applicable legislation and international guidance thresholds).
	2 (Moderate Resilience / Moderate Exposure)	– People exposed to change or disturbance (ambient conditions are below adopted standards but may approach guideline limits).
	3 (Low Resilience / High Exposure)	– People most exposed to change or disturbance (ambient conditions are at or above adopted standards or regulatory limits).

5.5.5. Physical Receptor/Features

Table 36: Cultural / Heritage Receptor Sensitivity Criteria

Criteria	Rating	Description
Presence (Cultural / Heritage Importance)	3 (High Value)	– Presence of any feature with national or international significance (e.g., state-protected monuments).
	2 (Moderate Value)	– Feature with local or regional significance.
	1 (Low Value)	– Feature not of recognized local, regional, national, or international value.
Resilience (to Identified Stressor)	1 (High Resilience / Low Vulnerability)	– Feature or receptor is unaffected or only marginally affected; resilient to change.
	2 (Moderate Resilience / Moderate Vulnerability)	– Feature undergoes moderate but sustainable change that stabilizes under continuous impact, with physical integrity maintained.
	3 (Low Resilience / High Vulnerability)	– Feature is highly vulnerable; potential for substantial damage or loss of physical integrity.

Overall receptor sensitivity was then scored on a spectrum from low (1) to high (6) by adding the individual parameter scores:



The table below presents the score ranges for sensitivity rankings of; “Low,” “Medium” and “High.”

Receptor Sensitivity	Score (Summed Parameter Rankings)
Low	2
Medium	3-4
High	5-6

5.5.6. Environmental Impact Significance Matrix

Impact significance, as a function of event magnitude and receptor sensitivity is subsequently ranked as “Negligible”, “Minor”, “Moderate” or “Major” as presented in the matrix below. Impacts can be “positive” or “negative”.

Table 37: Impact Significance Matrix

		Receptor Sensitivity			
		Negligible	Low	Moderate	High
Impact Magnitude	Negligible	Not Significant	Not Significant	Not Significant	Not Significant / Low ³⁵
	Minor	Not Significant	Low	Low / Moderate	Moderate
	Moderate	Not Significant	Low / Moderate	Moderate	High
	Major	Low	Moderate	High	High

Any impact classified as “Major” is considered to be significant and where the impact is negative, requires additional mitigation. Impacts of negligible, minor or moderate significance are considered as being mitigated as far as necessary, and therefore, do not require further mitigation.

5.5.7. Socio-Economic Impacts

Magnitude and sensitivity: The socio-economic impact assessment identified and evaluated the significance of impacts associated with the project, including: The identification of all socio-economic impacts (direct and indirect, positive and negative) that are linked to the proposed project. The measurement (and where possible, monetization) of socio-economic impacts, including the following:

- ❖ The numbers and characteristics of people affected (number of property owners, affected people and/or those subjected directly to changes in their socioeconomic conditions and living environment);
- ❖ Changes in people's access to, or changes in the status of: employment, commercial, recreational, cultural and social services and facilities;
- ❖ Direct loss of land, or change in people's access to land;
- ❖ Social patterns and linkages: changes in how areas function as a community with respect to levels of social interaction; personal relationships; feeling of belonging to the area or aspects relating to self-identification; and
- ❖ General amenity (perceived and actual) and change in the physical conditions that affect the quality of the environment and residential amenity; change in aesthetic values; change in recreation development and opportunities.

The socio-economic impact assessment assessed the significance of potential direct impacts based on probability, magnitude and receptor sensitivity. **Probability:** The likelihood that the impact will occur, and degrees of uncertainty, based on the following criteria:

- ❖ **Highly likely** - almost certain to occur or may have already occurred.
- ❖ **Likely** - some substantiated evidence that the impact is likely to occur or has previously occurred in a similar context.
- ❖ **Possible** - could occur without intervention.
- ❖ **Unlikely** - some evidence that impact could occur, no such incident in the region but may have occurred elsewhere.
- ❖ **Highly unlikely** - no evidence to suggest impact will occur.

Magnitude: Determined based on: **Spatial Scope:** The geographical scope of the impact relative to local community receptors:

- ❖ **Local** – effects extending to the communities in the immediate areas
- ❖ **Regional** – effects extending to the entire county; and
- ❖ **National** - effects extending to Kenya.

Timing and Duration: The likely timing and duration of the impact (including whether the impact would be temporary or permanent in nature) and how this links to activities undertaken by Zaria Group or Kenya Railway Corporation (KRC).

Receptor Sensitivity: The groups of people or populations most likely to be affected and, in particular, whether impacts are likely to be disproportionately experienced by vulnerable groups.

Magnitude: Determined based on:

Spatial Scope: The geographical scope of the impact relative to local community receptors:

- ❖ **Local** – effects extending to the communities in the immediate areas
- ❖ **Regional** – effects extending to the entire county; and
- ❖ **National** - effects extending to Kenya

Table 38: Socio-economic Impact Significance

Event	Magnitude		Probability	Receptor Sensitivity	Significance
	Spatial Scope	Timing and Duration			

Significance is based on judgement taking into account the likelihood and magnitude of the impact and the sensitivity of the population or group of people that may be affected. The significance of impact (taking into account existing controls) is categorized as follows:

- **Major Positive** – a substantial positive change.
- **Positive** - some positive change.
- **Negligible** - very little change or no change.
- **Negative** - measurable negative change.
- **Major Negative** - considerable negative change.

Any impact classified as “Major Negative” is considered to be significant and requires additional mitigation. Impacts of “Negligible”, “Major Positive” or “Positive” significance are not considered to require mitigation. Indirect impacts i.e. induced effects, cannot be readily assessed using the same approach. A qualitative assessment is therefore made based on judgement and taking into account existing controls.

5.5.8. Impact Mitigation

Mitigation measures are developed as necessary or appropriate to minimize the risk intensity and/or impact probability and therefore make the impact or risk less significant. Assessment of significance of potential impact/risk has been assessed during the ESIA process based on potential and residual impacts, using the criteria mentioned above. As part of the Environmental and Social Impact Assessment (ESIA) process, when adverse impacts are identified, measures for mitigation, minimization and control of risks, and monitoring of residual impacts are developed (as necessary or appropriate). A residual impact is the impact that remains following the application of mitigation measures.

The process of identifying design controls and mitigation measures must follow the sequence of the mitigation hierarchy as specified in the ESS1, all project controls and mitigation measures must follow a strict, prioritized sequence:

- a) Anticipate and avoid risks/impacts,
- b) Minimize/reduce risks to acceptable levels,
- c) Mitigate (remedy/rectify) residual impacts, and
- d) Compensate/offset for remaining significant adverse impacts

First, efforts are made to avoid or prevent, then minimize or reduce adverse impacts. If the impact cannot be fully avoided by application of design controls, they are supplemented by further engineering measures for minimization and mitigation of the adverse impacts. These measures are supplemented by additional mitigation measures to be applied through the effective management of project-related activities during construction, operation and decommissioning. Any remaining residual impacts are then addressed via

mitigation measures such as restoration and remediation (e.g. at the end of construction) and/or offsetting and compensation. The measures are developed and implemented in the same order as they are listed below.



Figure 20: Mitigation Hierarchy

Development of mitigation measures will be primarily focused on minimization of the impacts of “High” significance. However, where possible and appropriate, mitigations are also proposed for the impacts of “Moderate” and “Low” significance, in order to reduce environmental and social effects / risks to the lowest level.

5.5.9. Cumulative Impacts

The cumulative impact of the project is the incremental impact of the project when added to impacts from other relevant past, present, and reasonably foreseeable developments, as well as unplanned but predictable activities enabled by the project that may occur later or at a different location. Cumulative impacts can result from individually minor but collectively significant activities taking place over a period of time. The environmental and social assessment has considered cumulative impacts that are recognized as important on the basis of scientific concerns and/or reflect the concerns of project-affected parties” as per the ESS1.

5.5.10. Assessment of Cumulative Impacts

The Project has adopted a valued environmental and social components (VEC) centric approach, VECs are those receptors that are considered to be important when assessing the risks posed from cumulative impacts. VECs have been identified /determined then the impacts from various activities on these VECs were assessed. The assessment presented considers only the residual impacts associated with the Project, i.e. the impacts that will persist after implementation of the planned mitigation measures.

Residual impact			
Insignificant	Low	Moderate	High
Not included in CIA	Considered for assessing the potential cumulative impact	Included in CIA	Included in CIA

Predicted future conditions for VECs were analyzed taking into consideration all impact factors, including the contribution of the proposed project to the overall cumulative impacts. Due to the inherent uncertainties in the nature of cumulative impacts, the cumulative impact has by necessity been performed in a qualitative manner but nevertheless provides useful context for determining the significance of the Project's contribution to the overall impacts.

6. ANALYSIS OF ALTERNATIVES

In accordance with the Strategic Environmental (Impact Assessment and Audit) Regulations, 2003, it is necessary to consider alternatives to the proposed project activities. This includes evaluating alternative technologies, designs, and processes, and providing clear justification for the selection of the proposed options. The analysis of alternatives should cover the project site (location), design, No project option, and technologies, with a rationale for preferring the proposed site, design, and technological approaches over other feasible options.

6.1. No Project Option

The “**No Project**” alternative refers to a scenario in which the proposed MICE Core under the Railway City development and its associated infrastructure are not implemented, thereby maintaining the current status quo at the project site. This option was comprehensively evaluated as part of the ESIA study to provide a baseline against which all other project alternatives were assessed. Under this alternative, no development plans would be undertaken. Such a scenario would only be considered viable if the anticipated negative environmental and social impacts of the project outweigh the benefits and incapable of being mitigated to acceptable levels. However, the assessment indicates otherwise. Failure to implement the proposed development would result in the loss of significant anticipated social, environmental, and economic benefits. These include improved urban planning and infrastructure as envisioned under the Railway City Master Plan, enhanced land use efficiency, job creation, provision of sporting arena and conference facility, and stimulation of local economic activities. In addition, opportunities for modernization and regeneration of the project area would not be realized.

While the “No Project” option would maintain the current environmental conditions and avoid any project-related disturbances, it is important to note that the site currently does not support sensitive or critical biodiversity of high conservation value. Therefore, the environmental benefits of maintaining the status quo are limited. Furthermore, the “No Project” alternative is inconsistent with national development priorities, particularly those outlined in Kenya Vision 2030, which seeks to transform the country into a middle-income economy through infrastructure development and sustainable urbanization. It also fails to support the core objectives of the Railway City initiative, including enhancing the aesthetic, functional, and economic value of the area.

Based on the above considerations, the “No Project” alternative is not deemed viable and has therefore been excluded from further analysis.

6.2. Alternative Site

An analysis of alternative sites for the proposed project was undertaken as part of the ESIA process. The project site is located within the Nairobi Railway area in Landimawe, abutting the Expressway, Workshop Road, Bunyala Road, and an active railway line. The total site area is approximately 16.71 acres (about 64,750 m²). In accordance with the proposed project design, the built-up area will cover a total of 56,601m², representing approximately 87.4% of the total project area. The land is public property owned by Kenya Railways Corporation (KRC), and its planned land use is designated for mixed-use development. The proposed project is therefore consistent with the intended land use and aligns with ongoing urban regeneration initiatives within the railway corridor.

The site’s strategic location adjacent to an active railway line, as well as its proximity to major transport infrastructure, enhances accessibility and supports integration with existing utilities and services. This makes the site highly suitable for the proposed development, particularly in terms of mobility, connectivity, and efficient land utilization. Given the scarcity of available public land in Nairobi City, coupled with the high costs and complexities associated with land acquisition, relocation, and infrastructure development, no alternative site was considered feasible. Based on these factors, the selected site is deemed the most appropriate for the proposed project.

6.3. Technology and Design Alternative

The design of the proposed project has been approved by both the national government and Kenya Railway Corporation for implementation. The proposed development concept comprises a five-storey sports arena integrated with a mix of commercial and residential components, including retail shops, office spaces, and apartments. The project will also incorporate supporting and ancillary external infrastructure such as waste management facilities, parking areas, and a dedicated powerhouse. Upon completion, the development is expected to provide a wide range of amenities that promote social cohesion, offer functional working spaces, and support sporting, recreational, and conference activities. The overall design is intended to create a vibrant, multi-functional urban space that meets diverse user needs. Two key design approaches underpin the project:

- **Conventional Building Design:** This approach focuses on the application of established construction techniques and materials, while integrating sustainability considerations. It emphasizes durability, functionality, and compliance with current building standards and codes, and
- **Green Building Design:** This concept promotes the use of environmentally friendly materials and sustainable construction practices aimed at minimizing environmental impacts. It also enhances energy efficiency, resource conservation, and indoor environmental quality, thereby supporting human health and well-being.

Jointly, these design approaches will ensure that the proposed development achieves a balance between modern functionality, environmental sustainability, and long-term resilience.

6.4. Alternative Land Use

The proposed project site is currently underutilized, with existing activities largely limited to workshop operations that support ongoing railway functions. These uses occupy only a portion of the land and do not maximize the site's full potential, particularly given its strategic location within the urban core of Nairobi. Alternative land use options were considered but found to be unsuitable. Agricultural use, for instance, is not viable due to the highly urbanized setting, characterized by air, and soil pollution associated with dense traffic, industrial activities, and railway operations. In addition, the relatively limited land area (approximately 16 acres) constrains the feasibility of undertaking any meaningful or economically viable agricultural production.

Similarly, wildlife-based land use was deemed impractical. The site is located within the central business district and is surrounded by intensive human activity, infrastructure, and transport networks. Such an environment cannot support wildlife habitats or conservation initiatives, as it lacks the ecological conditions necessary for biodiversity to thrive and would expose wildlife to significant disturbance and risk. Other potential land uses were also assessed in light of zoning, accessibility, and infrastructure availability. Given the site's designation for mixed-use development and its proximity to major transport corridors, utilities, and the railway line, the proposed development aligns well with the intended planning framework.

The mixed-use concept optimizes land utilization by integrating residential, commercial, and recreational functions within a single development. This approach not only enhances economic value but also supports sustainable urban growth by reducing the need for urban sprawl and promoting efficient use of existing infrastructure. Therefore, the proposed mixed-use development represents the most appropriate and practical land use for the site. It is compatible with the surrounding urban environment and is not expected to result in significant adverse environmental degradation, provided that appropriate mitigation measures are implemented during construction and operation phases.

6.5. Proceed with Proposed Development

Considering the comprehensive analysis of all alternatives including the **No Project option, alternative sites, technology and design options**, and **alternative land uses**, the proposed development has been found to be both feasible and viable. The assessment demonstrates that proceeding with the project offers significant socio-economic and environmental benefits. These include optimal land utilization, improved urban infrastructure, enhanced economic activities, job creation, and promotion of sustainable development principles through integrated design approaches.

Additionally, the proposed development is well aligned with national and sectoral development frameworks, particularly Kenya Vision 2030 and the Kenya Railway City Development Master Plan. These frameworks emphasize modernization of urban infrastructure, promotion of mixed-use developments, and transformation of key economic zones into vibrant, efficient, and sustainable urban centers. In conclusion, based on the analysis undertaken, proceeding with the proposed development is justified as it supports strategic development goals while ensuring environmental sustainability and socio-economic advancement.

7. STAKEHOLDER ENGAGEMENT, DISCLOSURE, & GRIEVANCE REDRESS MECHANISM

7.1. Introduction

This Chapter presents the key stakeholder consultation and community engagement activities undertaken for the proposed project, together with their outcomes. It also outlines the measures adopted to ensure the validity and reliability of the data collected during the consultation process. Stakeholder consultation facilitates meaningful community participation and provides a platform for obtaining feedback on anticipated project impacts and perceived benefits. It enables Project Affected Persons (PAPs) and other interested parties to access relevant project information, raise concerns, seek clarification, and offer suggestions that may inform and improve project design and implementation.

In accordance with the safeguard policies of the World Bank Group (WBG), specifically Environmental and Social Standard (ESS:10) on Stakeholder Engagement and Information Disclosure, stakeholder consultations constitute a mandatory component of the environmental and social assessment process for all projects financed by the institution. These consultations are designed to promote transparency, strengthen accountability, and ensure inclusive and meaningful participation of stakeholders throughout the entire project lifecycle, from planning and design to implementation and monitoring⁴.

In addition, the national regulatory framework provides for public participation and information disclosure. The Constitution of Kenya, under Article 10, enshrines public participation as a national value and principle of governance. This obligates both public and private entities undertaking development projects to ensure meaningful stakeholder engagement. Further, the Environmental Management and Coordination Act (EMCA), Cap 387, through its subsidiary legislation the Environmental (Impact Assessment and Audit) Regulations, 2003 specifically Regulations 17(1) and 17(2), requires project proponents to undertake structured public consultation and disclosure as an integral component of the environmental assessment process.

The subsequent sections of this Chapter, together with Annex 3, elaborate on the stakeholder identification process, the consultation methodology adopted, the specific engagement activities undertaken, and provide a summary of the outcomes of the stakeholder engagement process. The Chapter concludes with an overview of the proposed Grievance Redress Mechanism (GRM).

7.2. Stakeholder Identification and Analysis

Stakeholders are individuals, groups, or organizations that have an interest in, or may be affected by, the Project. This includes persons, institutions, and entities with relevant knowledge or expertise that may inform Project planning, implementation, and decision-making. Broadly, stakeholders are categorized into two main types: primary stakeholders and secondary stakeholders:

- a) Primary stakeholders comprise Project Affected Persons (PAPs) and members of the public residing within the Project area of influence who are considered vulnerable to, or are anticipated to be directly affected by, the construction and operation of the proposed project (Nairobi Railway City-MICE Core “Arena”), and
- b) Secondary stakeholders include individuals, groups, and institutions that may not be directly affected by the Project but have the capacity to influence its planning, design, implementation, or operation, or have an interest in its outcomes.

7.3. Stakeholder Mapping

Stakeholders were identified based on the spatial analysis as illustrated in the diagram below, which delineates buffer zones around the proposed project site and highlights the areas likely to experience direct

⁴ <https://documents1.worldbank.org/curated/en/310111580773271712/pdf/Environmental-and-Social-Impact-Assessment-Western-Economic-Corridor>

and indirect project impacts. These buffer zones were used to systematically map out and categorize stakeholders according to their proximity to the project and the extent to which they may be affected.

The identification process considered both primary and secondary impact zones. Primary stakeholders include those located within the immediate project footprint and adjacent areas, who are more likely to experience direct impacts such as noise, dust, traffic disruptions, and changes in land use. Secondary stakeholders comprise those within the wider buffer zones who may experience indirect or cumulative impacts. Based on this spatial analysis key stakeholders identified are annexed in this report.

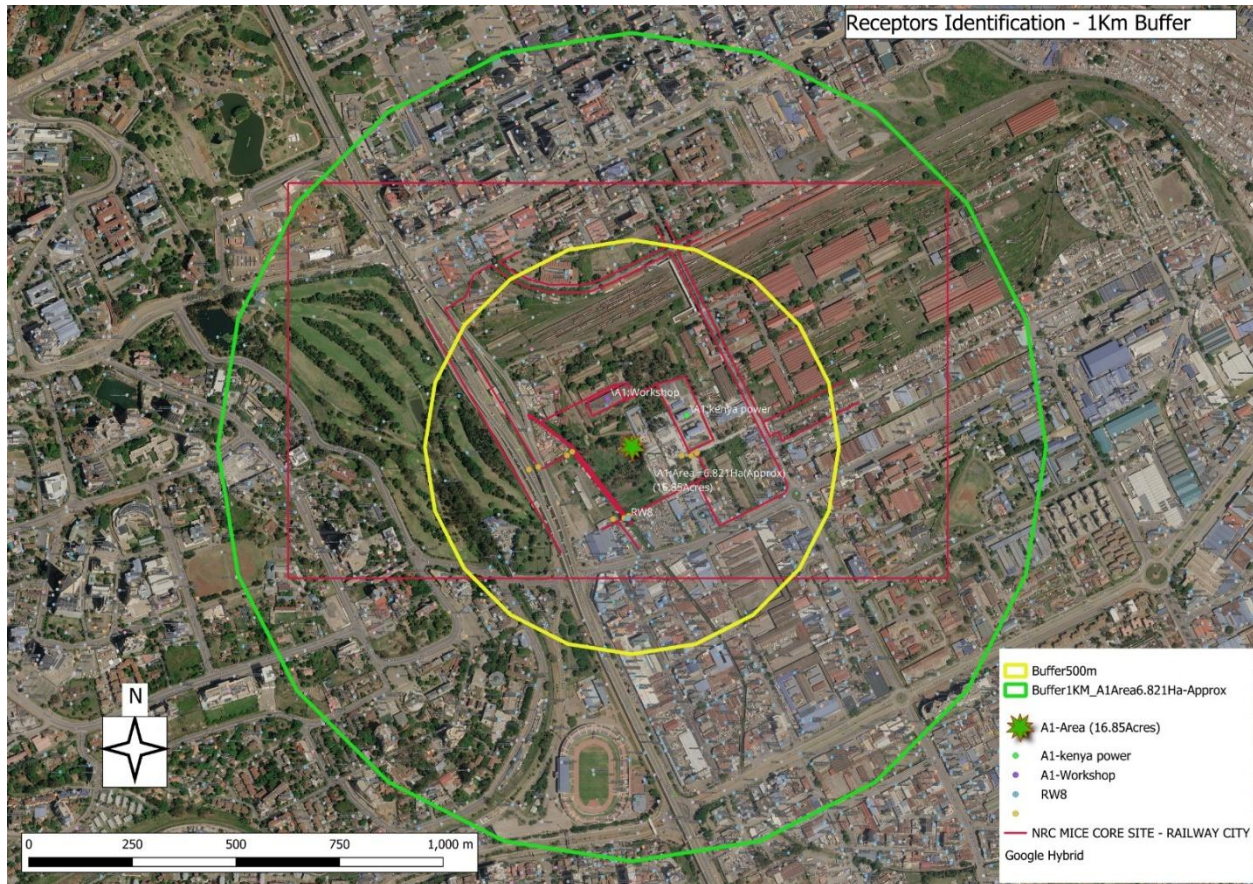


Figure 21: Project Affected Mapping (Source: ESIA GIS Expert Dan Macharia)

7.4. Stakeholder Engagement Plan (SEP)

The overall objective of the Stakeholder Engagement Plan (SEP) is to define a program for stakeholder engagement, including public information disclosure and consultation, throughout the entire project cycle. In the context of the proposed project (MICE-Core Phase1) will implement a Stakeholder Engagement Plan (SEP) proportionate to the nature and scale of the project and its potential risks and impacts. The SEP will:

- Describe the timing and methods of engagement with stakeholders throughout the life cycle;
- Describe the range and timing of information to be communicated to project-affected parties and other interested parties;
- Take into account the main characteristics and interests of the stakeholders, and the different levels of engagement and consultation that will be appropriate for different stakeholders;
- Describe the measures that will be used to remove obstacles to participation, and how the views of differently affected groups will be captured.

An overview of the key stakeholders identified and consulted during the Environmental Impact Assessment (EIA) process is presented in the table below. A detailed analysis of stakeholder engagement is provided in Annex 3 of this report.

Table 39: Key Project Stakeholder

Category	Stakeholder Group	Connection to the Project	Stakeholders to be Consulted	Level of Influence
Core Category	National Government Departments	Policy oversight and technical support	State Department for Public Works	High
	National Regulatory Bodies and Agencies	They establish policy, grant permits or other approvals for the proposed development, and monitoring and enforcing compliance with Kenyan law throughout all stages of the Project lifecycle.	- National Environment Management Authority (NEMA), - National Construction Authority (NCA), - National Museum of Kenya (NMK)	High
	County Government	The County government is responsible for implementation of legislation, and development plans and policies at the county level. They also have a role in issuing permits and processing applications. Finally, they have a role in ensuring the views of the communities it represents are presented to the project.	Nairobi City County Government (NCCG) Respective departments (Built Environment and Urban Planning Department) and other relevant departments.	High
	Implementing Agency	Responsible for design and supervision of the construction activities as per the master plan	Kenya Railways Corporation (KRC)	High
	Road agencies and Service Providers	Primary regulator and implementing agency for urban roads within Nairobi County; will be responsible for project approval, road classification, design standards, and construction oversight.	Kenya Urban Roads Authority (KURA)	High
	Service Providers	The owners of water and sewer infrastructure in the county. They are relevant since they provide approval for connection and critical for relocation of sewer line	Nairobi City Water & Sewerage Company (NCWSC)	Medium
		Owners of the electricity infrastructure (poles, lines, transformers); essential for approvals and relocation of power lines within the project site.	Kenya Power and Lighting Company (KPLC)	Medium

Category	Stakeholder Group	Connection to the Project	Stakeholders to be Consulted	Level of Influence
		Owners of fibre optic and underground telecom cables. They will be engaged for protection or relocation of cables during excavation	Telecom Companies (Safaricom, Telkom, Airtel, Jamii Telkom etc.)	Medium
Project Affected Parties (PAPs)	Project Affected persons (PAPs)	Directly affected by construction activities, traffic disruption, access restrictions, noise, dust, and potential economic impacts or benefits.	- Project affected persons, Local/impacted communities (Railway Staff) - Tenants	Low
	Vulnerable and Marginalized Groups (VMGs)	Likely to experience disproportionate impacts or have specific needs related to safety, accessibility, and livelihood restoration.	Vulnerable and marginalized groups (VMGs), including persons with disabilities (PWDs), women, youth, the elderly and other vulnerable persons	Low

7.5. Engagement Methods and Tools

The ESIA team employed a variety of stakeholder engagement methods to ensure continuous and meaningful interaction with all relevant parties throughout the project lifecycle. Public consultations were undertaken through a structured notification process directed at the relevant stakeholders (as tabulated above and detailed in Annexure 3) prior to all scheduled meetings. Notification methods were tailored to the location and category of each stakeholder group. To promote inclusivity, notifications were issued in both English and Swahili, where appropriate. The objective was to provide timely and adequate information, enabling all affected and interested parties to prepare for and participate effectively in the meetings. In compliance with the statutory requirements under Regulation 20 of EIA, stakeholders received notices at least fourteen (14) days in advance. These notifications were disseminated through a combination of formal invitation letters, emails, and posters displayed at strategic locations as well as WhatsApp groups. In accordance with international standards and guidelines, including the World Bank Group Environmental and Social Framework and Environmental and Social Standard 10 (ESS10), environmental and social safeguard planning and implementation follow a consultative and participatory approach, supported by accessible grievance mechanisms. Stakeholder consultations were therefore conducted through various methods to ensure that different stakeholder groups were effectively reached and meaningfully involved in the processes of consultation, decision-making, and the development of impact management solutions (mitigation measures). Primarily consultation was done through:

- *Advance public notification of an upcoming consultation meeting (distribution of invitation letters) as well as dissemination of posters/ advertisements in public place including Chief Notice Boards,*
- *Public Barazas,*
- *Semi-Structured Interviews,*
- *Key Informant Interviews (KIIs) and*
- *Focus Group Discussions (FGDs-vulnerable).*

Table 40: Methods, Tools and Techniques for Stakeholder Engagement

Method / Tool	Dissemination Methodology	Target Groups
Information Provision		

Method / Tool	Dissemination Methodology	Target Groups
Printed Materials (Leaflets, Brochures, Fact Sheets)	– Distributed during consultation meetings and public barazas – Shared during household visits – Placed at local administration offices, commercial premises, and within the Railway City precinct	– Households within the Project Area of Influence (Industrial Area, Upper Hill, CBD fringe) – Business operators and tenants near the project site – Commuters and transport users – Wider Nairobi stakeholders
Printed Media	– Placement in local and national newspapers and – Gazette notice publications	– Nairobi residents – Investors and business community – General public
Visual Presentations	– Delivered during public hearings, stakeholder forums, and technical meetings	– Project-affected persons (PAPs) – Kenya Railways Corporation (KRC) – Nairobi City County officials (NCCG) – National Government agencies – Business associations
Notice Boards	– Displayed at accessible public locations including KRC offices, local administration offices, and within the project site perimeter	– Directly affected communities – Workers and nearby businesses – Transport operators
Surveys, Interviews, Questionnaires	– Conducted through household visits and targeted stakeholder interviews	– Directly affected households – Informal traders (if any) – Adjacent property owners
Consultation & Participation		
Public Hearings	– Widely announced through oral, public notices, and formal invitations	– Directly affected communities – Kenya Railways Corporation (KRC) staff members, – Nairobi City County Government (NCCG) – National Environment Management Authority (NEMA) – Regulatory bodies and agencies – Civil society organizations
Household Visits	– Periodic visits conducted by ESIA team and designated stakeholder engagement officers	– Directly affected households – Vulnerable groups – Small-scale business operators
Focus Group Discussions / Roundtables	– Advance announcements and targeted invitations	– Youth groups – Women groups – Persons with disabilities (PWDs) – Business associations (CBD & Upper Hill) – Transport sector representatives

7.6. Description of Information Disclosure Methods

The World Bank ESS10 is about Stakeholder Engagement and Information Disclosure. The Environmental and Social Impact Assessment for the proposed project (MICE-Core Phase-1) has been conducted involving consultation and engagement with relevant key stakeholders. ESS10 requires the project proponent (Borrower) to disclose project information to allow stakeholders to understand the risks and impacts of the project and potential opportunities. The ESIA Report, together with the associated Environmental and Social Management Plan (ESMP), will be disclosed for public review for a period of forty-five (45) days, in accordance with the requirements of the Environmental Management and Coordination Act Cap 387 and best international practice standards. In addition, the Stakeholder Engagement Plan (SEP) will be disclosed concurrently with the ESIA and ESMP. The SEP will be placed in the public domain at the same time and will remain available for stakeholder review throughout the same forty-five (45) day disclosure period.

Disclosure materials will be made accessible through placement at strategically selected venues frequented by the community and at locations where the public has unhindered access. Copies will also be submitted to the National Environment Management Authority (NEMA) for statutory review and public reference. This approach is intended to promote transparency, facilitate informed participation, and ensure meaningful stakeholder engagement in the decision-making process. The SEP will remain in the public domain for the entire period of project development and will be updated on a regular basis as the project progresses through its various phases, in order to ensure timely identification of any new stakeholders and interested parties and their involvement in the process of collaboration with the project.

7.7. Disclosure Activities

Proposed project disclosure was carried out during the public consultation meetings. During the meeting, attendees were provided with a detailed presentation outlining the scope, objectives, and anticipated impacts of the proposed Project. This presentation served as a basis for participants to provide comments, raise concerns, and offer feedback on the Project. Following the completion and approval of the Environmental Impact Assessment (EIA), further project disclosure will be carried out through targeted dissemination channels, including:

- a) Community notices, public postings at strategic locations and online social media sites;
- b) Distribution of information materials, and updates to relevant institutional stakeholders to ensure continued transparency and stakeholder engagement throughout the Project lifecycle.

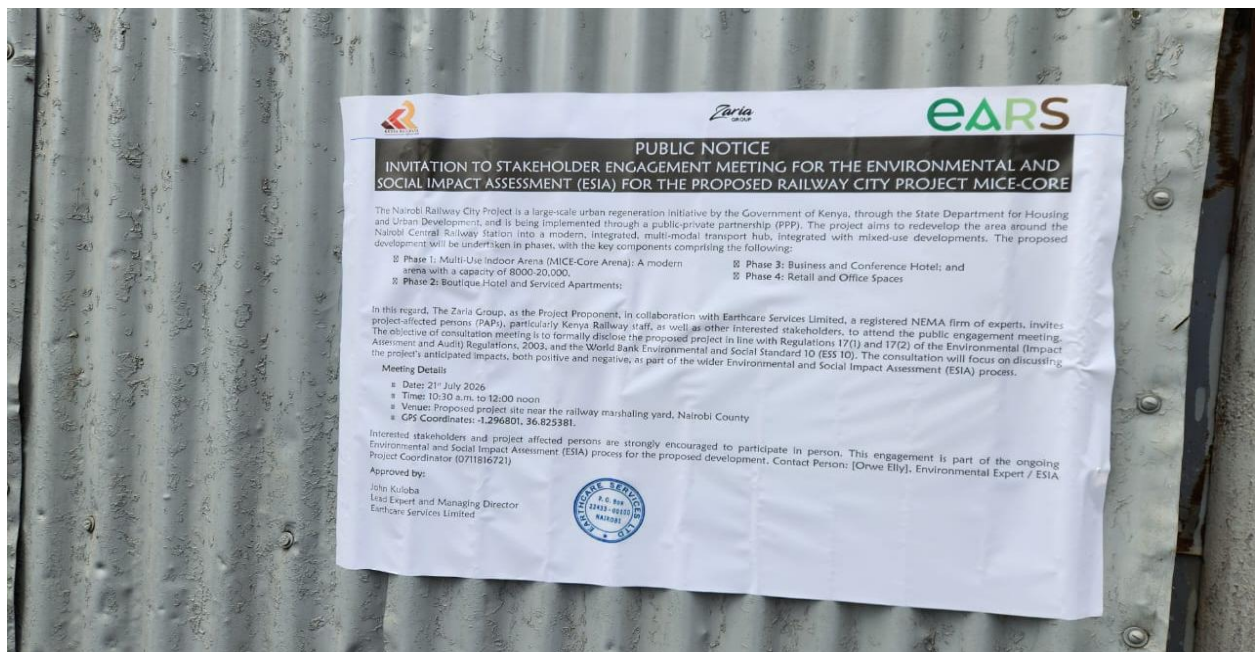


Plate 22: Public Notice Place Along Workshop Road

7.7.1.Kick-off Meeting

A virtual kick-off meeting was held on **27th February 2026** between the project proponent, the Kenya Railways Corporation (KRC) Environmental and Social Team, and the ESIA Consultant. A follow-up meeting was also held on **27th April 2026** between the KRC Environmental and Social Departments and the ESIA team. These meetings focused on discussing the project deliverables, timelines, and the subsequent steps required to undertake and complete the ESIA study.

7.7.2.Consultations and Public Participation Meetings

The Consultant conducted three comprehensive consultative meetings with the Project Affected Persons (PAPs), primarily consisting of Kenya Railways Corporation staff, National key stakeholders (government agencies) as well as with the broader residents and business communities whose properties and livelihoods border the project area. These stakeholder engagement sessions, held as part of the project's Environmental and Social Impact Assessment (ESIA) processes provided a platform for open dialogue, information sharing, and the collection of feedback, concerns, and suggestions regarding the proposed development. Three consultative forums were conducted to engage project-affected persons (PAPs) and key policy decision-makers from relevant Government agencies. The meetings were held on the following dates:

11th May 2026: Meeting with KRC staff members (Project-Affected Persons)-Venue Project Site Railways Regional Offices;

21st July 2026: Meeting with the wider Landimawe community; and

22nd July 2026: Meeting with government agencies (Policy makers).

Feedback and concerns raised across the three meetings primarily centered on the following key areas:

- e) Job opportunities for local community;
- f) Loss of livelihood due to displacement and evictions;
- g) Environmental conservation; and
- h) Community capacity building.



Plate 23: Engaging with KRC Staff at the Project Site



Plate 24: KRC Staff Members During 11th May 2026 Consultation Meeting

Feedback Summary (Community Engagement Meeting) Held on 22nd July 2026

Key Issue	Raised by	Response
Project commencement date, duration and effects on existing businesses	Mr. Walter Owino (Business community representative)	Mr. CJ Manning (Zaria Group): Construction is expected to commence before the end of 2026, subject to completion of statutory approvals. The full development is expected to take approximately 24–36 months, with the arena constructed first, followed by the hotel, apartments, retail facilities and other supporting infrastructure.
Clarification of project boundaries and scope	Several participants, including Pastor James Mwaura (Christian Foundation Fellowship (K))	The current ESIA covers only Phase One (Arena District / MICE-CORE). The site extends from the Kenya Power substation along the existing wall towards the river within the designated railway property. Areas including the Bazaar, Workshop Road, Landimawe residential area and other neighbouring developments fall outside the current project boundary. Mr. Elly Orwe (Earthcare Services Limited) and Mr. CJ Manning clarified.

Key Issue	Raised by	Response
Potential displacement of businesses near the Bazaar and General Road, and the community behind the Chinese premises	Stakeholder (Bazaar/General Road) and Mr. Walter Owino	Businesses near the Bazaar and General Road are located outside the defined project boundary and will not be directly affected. The selected site contains very limited existing occupation, primarily the temporary Chinese expressway contractor and certain Kenya Railways maintenance facilities.
Existing drainage challenges and risk of increased flooding	Miss Sally (Landimawe resident) and representative of Falcom Holdings	Comprehensive topographical surveys have been undertaken to inform the project design and ensure appropriate consideration of site drainage and surface-water flow patterns. The project design incorporates improved stormwater management measures, detention areas, and appropriate riparian setbacks to minimize the risk of flooding, erosion, and disruption of natural drainage. The specific concern regarding the obstructed drainage channel will be formally referred to the relevant department of the Kenya Railways Corporation for assessment and appropriate action. Mr. Naftali, representing Kenya Railways Corporation, provided assurance that the matter would be brought to the attention of the relevant department for resolution.
Priority employment opportunities for local residents	Mr. Elvis Mulama	The development is expected to generate approximately 20,000+ employment opportunities across various sectors. Priority will be given to qualified members of the surrounding communities, with public announcements made before recruitment begins. – Project proponent (Zaria Group)
Project ownership, land acquisition and inclusion of railway connectivity	Mr. Martin Owuor and Miss Sally	The Arena District is a privately financed development with no government funding. Kenya Railways remains the landowner under a long-term lease agreement with Zaria Group. Railway connectivity is not included in this MICE-CORE phase. Mr. CJ Manning
Priority for local entrepreneurs and suppliers	Mr. Mwangi Muruthi	Wherever feasible, the project will partner with qualified local suppliers capable of meeting the required standards and specifications. Interested community members are encouraged to engage with the project team once procurement processes commence. Project proponent
Priority allocation of retail and commercial spaces for affected persons	Mr. Patrick Matindi	The development will include approximately 4,000–5,000 square metres of retail space. The developer intends to engage members of the surrounding community before opening the leasing process to the wider market, with a retail management team overseeing allocations subject to applicable requirements. Mr. CJ Manning

Key Issue	Raised by	Response
Relocation of tenants and provision of adequate notice periods	Mr. Daron Mang'are and Ms. Jessi (tenants)	Relocation timelines will be communicated officially. Tenants requiring longer notice, including the Chinese contractor, have already been notified. Formal notices will be issued in accordance with Kenya Railways procedures. A Resettlement Action Plan is being prepared; Kenya Railways will facilitate and support the relocation process for affected occupants. Mr. Naftali (Kenya Railways Corporation)
Potential noise impacts on churches, the mosque and neighbouring community	Ms. Cynthia (church representative), Mr. Ibrahim Luta (tenant) and Mr. Omar Abdallah (Landimawe Mosque)	Comprehensive noise mitigation measures have been incorporated into the ESIA. Construction will ordinarily be undertaken during approved working hours under the Environmental Management and Coordination Act. Night-time or continuous works will require prior regulatory approval. The contractor will be contractually required to implement all mitigation measures, and efforts will be made to avoid unnecessarily prolonging the construction period. Mr. Elly Orwe (Earthcare Services Limited)
Impact on existing casual labourers and livelihood restoration	Mr. Aladwa John (Casual labourer)	Individuals currently engaged as casual labourers within the project area will be given priority for casual employment opportunities arising during project implementation, provided they possess the required skills and qualifications. Mr. Elly Orwe (Earthcare Services Limited)



Plate 25: Zaria Group Development Director (CJ Manning) Presenting Project Concept

Government Agencies and Key Stakeholder Present

- Local Administration (Senior Chief, Assistant Chief, ACC Starehe Sub-County, village elders)
- Water Resources Authority (WRA);
- Nairobi City County (Urban Renewal, Environment & Planning departments; County Secretary's Office)
- State Department for Housing and Urban Development (SDHUD);
- State Department for Sports;
- Technical University of Kenya (TU-K);
- Kenya Railways (Urban Renewal, Environment, Social & Civil Engineering Departments)
- Kenya Urban Roads Authority (KURA); and
- CPF

Summary of Issues and Concern Raised

Table 41: Key Stakeholder Concerns (Government Agencies)

No.	Issue/Concern	Raised By	Response
1	Ownership structure, funding arrangements, operations and management of the project, and clarification of how a privately owned facility could be described as a "Civic Asset"	Mr. Musa Abdi of the State Department for Sports	Mr. CJ Manning confirmed that the land is owned by Kenya Railways and is being leased to Zaria Group under a 45-year renewable lease. The arrangement is not structured as a public-private partnership; the project will be fully privately funded with no financial contribution from the government. After construction, the arena will be operated by QA Venue Solutions, Zaria Group's management affiliate, which already manages the BK Arena and Amaharo Stadium in Kigali, Rwanda. Management contracts are set on renewable 15-year terms, with the intention that QA Venue Solutions will continue to manage the facility indefinitely. On the description of the facility as a "Civic asset," he explained that the term refers to the intended public accessibility and continuous public use of the space rather than to ownership itself.
2	Limitation of the arena capacity to 10,000 seats given the size of Nairobi's population, and concerns about potential noise impacts on surrounding areas	Eng. Charles of the State Department for Housing and Urban Development	Mr. CJ Manning explained that the 10,000-seat capacity was determined through a detailed market study that balanced expected event frequency, revenue potential and overall construction cost. Only a relatively small number of events each year would require the venue to operate at full capacity; Regarding noise, he distinguished clearly between an enclosed arena fitted with a roof, which contains sound, and an open stadium. The roofed design of the proposed arena would prevent amplified noise from escaping into the neighbouring community.
3	Existing city-wide stormwater and flooding challenges; provision of green space; air-quality and biodiversity impacts	Eng. Charles of the State Department for Housing and	The proponent's team acknowledged the stormwater and flooding problem and stated that it is already engaging with Kenya Railways as the owner of the wider master

No.	Issue/Concern	Raised By	Response
	during construction; and the risk of an urban heat-island effect arising from increased built-up and paved surfaces	Urban Development; Miss Jennifer Kinoti of Kenya Railways; Mr. Kelvin of Nairobi City County	plan, on both temporary and permanent stormwater mitigation measures, because the drainage issues also affect the project site itself. It was confirmed that a river corridor running along the western boundary of the site is designated in the master plan as a future public park, and that the pedestrian corridors within the project are designed to connect directly to this future green space even though it lies outside the immediate project boundary. Mr. Elly Orwe, the environmental expert from Earthcare Services, responded on air quality and biodiversity. He confirmed that a baseline ambient air-quality survey had already been completed, and that continuous monitoring would be undertaken throughout the construction period against this baseline and against the EMCA Air Quality Regulations of 2024. Comprehensive mitigation measures would be included in the ESIA report. A biodiversity assessment had likewise been carried out and had identified at least five indigenous trees that are recommended for retention and incorporation into the landscaping design; In response to the urban heat-island concern raised by Miss Jennifer Kinoti, Mr. Elly confirmed that the matter would be addressed in the climate-change chapter of the ESIA. Mr. Kelvin of Nairobi City County recommended the creation of pockets of landscaped greenery using hardy, low-maintenance local species in order to reduce noise, moderate land-surface temperatures and improve air quality, and he also drew attention to the Nairobi City County Ambient Air Quality Regulation (gazetted in 2025) as an additional compliance requirement alongside the national EMCA regulations.
4	Presence of a watercourse along the western boundary, the risk of increased flood volumes after construction, the statutory requirement for a minimum ten-metre riparian buffer, and the need for on-site stormwater management rather than full discharge into the watercourse	Ms. Mercy Wambugu of the Water Resources Authority (WRA); Eng. Charles of the State Department for Housing and	The proponent confirmed that the current design already incorporates a full ten-metre riparian setback along the site's western boundary in compliance with the Water Resources Authority's requirement. Kenya Railways-owned land on the opposite bank of the watercourse would be encouraged to observe the same standard (it is currently understood to provide only a six-metre buffer).

No.	Issue/Concern	Raised By	Response
		Urban Development	Mr. Dan Macharia, Earthcare's GIS specialist, added that detailed flood modelling had already been undertaken using both the February–May 2026 seasonal rainfall data and the extreme 1997/98 El Niño rainfall event, and that the arena's covered design had been factored into the model. Recommendations arising from this modelling would be included in the ESIA report. In response to the further question on on-site stormwater management, the proponent confirmed that the design includes on-site detention facilities together with grey-water harvesting systems that will be used for landscape irrigation.
5	Importance of local employment, skills transfer and broader community investment, particularly for neighbouring informal settlements	Representatives of the Technical University of Kenya (TU-K) and community-based organizations; Mr. Kelvin of Nairobi City County	The proponent described an existing training initiative known as Backstage Academy, through which interns rotate across departments such as production, marketing and business development in order to gain practical venue-management experience with a view to eventual employment. Drawing on its experience in Kigali, where 98 percent of venue staff are Rwandan, the proponent committed to prioritizing Kenyan employment. Only a small number of specialized leadership roles would initially be filled by staff experienced in arena management; their explicit responsibility would include the training of Kenyan successors before they move on to other markets. In response to Mr. Kelvin's question concerning broader community investment and capacity-building for neighbouring informal settlements (including circular-economy practices and riparian compliance), the proponent indicated that community and workforce training programmes would extend beyond the project's own staff and would be delivered in partnership with external training organizations, thereby supporting skills development within the surrounding area.
6	County-level compliance requirements for excavation, transportation, backfilling and solid-waste dumping; the condition of existing utilities (particularly sewerage); traffic management; and the fate of the adjacent Kenya Power substation	Ms. Mary of Nairobi City County Mr. Godfrey Ngugi (NCCG)	Mr. Elly Orwe responded that the specific permit requirements for excavation, transportation, backfilling and solid-waste disposal would primarily apply to the appointed contractor rather than directly to the client. He confirmed that the Nairobi Railway City master plan has been gazetted as a Special Planning Area, which affects the precise approvals required from Nairobi City County. Mr. Elly noted that the existing sewer infrastructure serving the area is aged and

No.	Issue/Concern	Raised By	Response
			would require upgrading in consultation with Kenya Railways in order to accommodate the increased capacity generated by the development. The proponent is expected to provide standby power generation to cover outages and is actively considering rooftop solar energy generation, given the large scale of the arena roof, so as to reduce pressure on the local grid. Multiple pedestrian access routes have been incorporated in line with the wider master plan, together with vehicle parking provisions, to manage anticipated traffic impacts. Mr. Godfrey Ngugi's specific question, it was confirmed that the Kenya Power substation Located adjacent to the site would not be demolished or relocated; the project has been designed to abut the substation rather than to displace it.
7	Risks of gender-based violence and child labour associated with the influx of construction-phase labour		Mr. Elly explained that a Grievance Redress Mechanism (GRM) would be established through which members of the public could report complaints and concerns. At the community level the mechanism would be coordinated with the local administration to ensure timely handling of grievances. In addition, the contractor would be required to develop and enforce a formal Code of Conduct governing workers' behaviour towards the surrounding community, including explicit protections against harassment, bullying, exploitation and other forms of misconduct. These requirements align with the IFC standards that apply to the project because of its international financing context.
8	Sustainability certifications, the use of green energy throughout the project, and the publication of annual ESG or sustainability reports	Mr. Kelvin of Nairobi City County	Mr. CJ Manning confirmed that the development are being designed to achieve at least EDGE certification standards. Technical studies are currently under way to assess the potential for rooftop solar photovoltaic generation to offset a portion of grid demand. The question concerning the publication of annual ESG or sustainability reports was formally noted by the proponent's team for follow-up.



Plate 27: Upstanding Development Director (CJ Manning) Presentation During Key Government Stakeholder Meeting



Plate 28: Landimawe Ward Administrator (NCCG) Giving Comment



Plate 29: Mr. Dan Macharia Earthcare Services ESIA & GIS Expert Giving Welcoming Note

7.7.3. Detailed Outcome of Public Consultations

The meetings proceedings were properly documented with main issues of concern, contributions, queries and opinions summarized in Appendix 3 and in the table below.

7.8. Grievance Redress Mechanism (GRM)

ESS5 and ESS10 requires that the proponent propose and implement a grievance redress mechanism to receive and facilitate resolution of concerns and grievances of project-affected parties related to the environmental and social performance of the project in a timely manner. The grievance mechanism (GM) required by ESS10 must be proportionate to the potential risks and impacts of the project and will be accessible and inclusive. Where feasible and suitable for the project, the grievance mechanism will utilize existing formal or informal Grievance Redress Mechanisms, augmented as needed with project-specific arrangements.

- Project-affected parties will be informed about the grievance process through ongoing stakeholder engagement activities, and a publicly accessible record of grievances and corresponding responses will be maintained, and
- Grievances will be handled discreetly, objectively, and sensitively, ensuring responsiveness to the specific needs and concerns of affected stakeholders. The mechanism will also provide an option for submitting anonymous complaints, which will be duly reviewed and addressed.

The construction-related Grievance Redress Mechanisms (GRMs) will be incorporated into the Contractor's Terms of Reference and contractual agreements. The Contractor will be required to publicly disclose the GRMs on clearly visible and legible boards at all worksites to ensure accessibility for all stakeholders. Where necessary, the Project will implement separate GRMs: an external GRM to address community grievances and an internal GRM to address worker-related concerns. The GRMs will provide accessible procedures for the resolution of disputes, including options for third-party settlement, while taking into account available avenues for official judicial recourse as well as traditional or community-based dispute resolution mechanisms.

7.8.1. Objective of the Grievance Redress Mechanism

The Grievance Redress Mechanism (GRM) is important for resolving conflicts, addressing concerns and fears and ensuring agreements by aggrieved parties and aggressors for the benefit of the project. The main aim of project grievance redress mechanism is to provide a convenient platform for community members and project stakeholders to express their concerns, feedback, and grievances regarding the project's activities and their impacts on the local environment, livelihoods, and well-being. The GRM will seek to achieve several key goals to effectively handle grievances and concerns within the community.

- Facilitate dialogue between the project and local communities in the project areas,
- Ensure inclusivity by providing a mechanism that allows all community members, especially those from vulnerable and marginalized groups, easy access to the grievance process,
- Recognize and protect the rights of project-affected people, ensuring confidentiality and inclusivity, and
- Prioritize mediation and dialogue to foster constructive engagement between project stakeholders, including local communities and project implementers, aiming to resolve conflicts amicably and build trust among all involved parties.

7.8.2. Scope

The GRM will address a wide range of issues related to the proposed Project, including environmental impacts, land use conflicts, socio-economic disruptions, inequities in benefit sharing, and the preservation of cultural heritage. This framework is designed to receive, manage, and resolve complaints and concerns, which may include, but are not limited to:

- a) Misconduct of project workers towards communities,
- b) Gender Based Violence\Sexual Exploitation Abuse and Harassment (GBV\SEAH),
- c) Misconduct of project contractors,
- d) Water and land pollution,
- e) Noise and Dust Pollution,
- f) Damage to private assets, community, and public infrastructure,
- g) Inappropriate waste disposal,
- h) Environmental degradation,
- i) Social inclusion and labour issues,
- j) Livelihood and land issues, and
- k) Other project related concerns.

While the GRM will impartially accept all complaints from affected communities pending investigation, it will not address complaints that:

- Arise from other projects in the area;
- Relate to government policy and institutions;
- Are of a criminal nature, which should be directed to the judicial system;
- Involve complex labor issues covered by the Labor Management Act;
- Pertain to contractors' contractual agreements or professional obligations.

7.8.3. Principles

The Grievance Redress Mechanism (GRM) has been designed to uphold effectiveness, fairness, transparency, and accessibility, ensuring it is easily accessible, transparent, and culturally appropriate, while also guaranteeing confidentiality and protection against retaliation for complainants. The key principles that will guide GRM implementation include:

- Accessibility and Inclusivity,
- Transparency,
- Accountability,
- Fairness and Impartiality,
- Cultural Sensitivity,
- Timeliness, and
- Capacity Building

7.8.4. GRM Structure

The GRM will set up structures at National and Project Site (Community) level. The lead Project Coordinating Unit (PCU) from the project team and other stakeholders will establish project Grievance Redress Committee (GRC). The GRC will set the terms of reference and how the grievances will be handled and addressed. Community Project Implementing Units will handle grievances arising from the communities or escalating from the community levels. The composition of the committees will ensure a balance between men and women.

The grievance redress structure shall be of a 3 tier of amicable review and settlement of disputes. The tiers shall consist of; Site–Level Grievance Redress Committee, NGAO level and Joint Project Supervising Committee. In spite of having different tiers, an aggrieved party is free to lodge a complaint at any level. Though it's encouraged that the complaint should be made at the lowest level possible for quick and prompt response and only escalated if the issue is complex and cannot be handed at such a level.

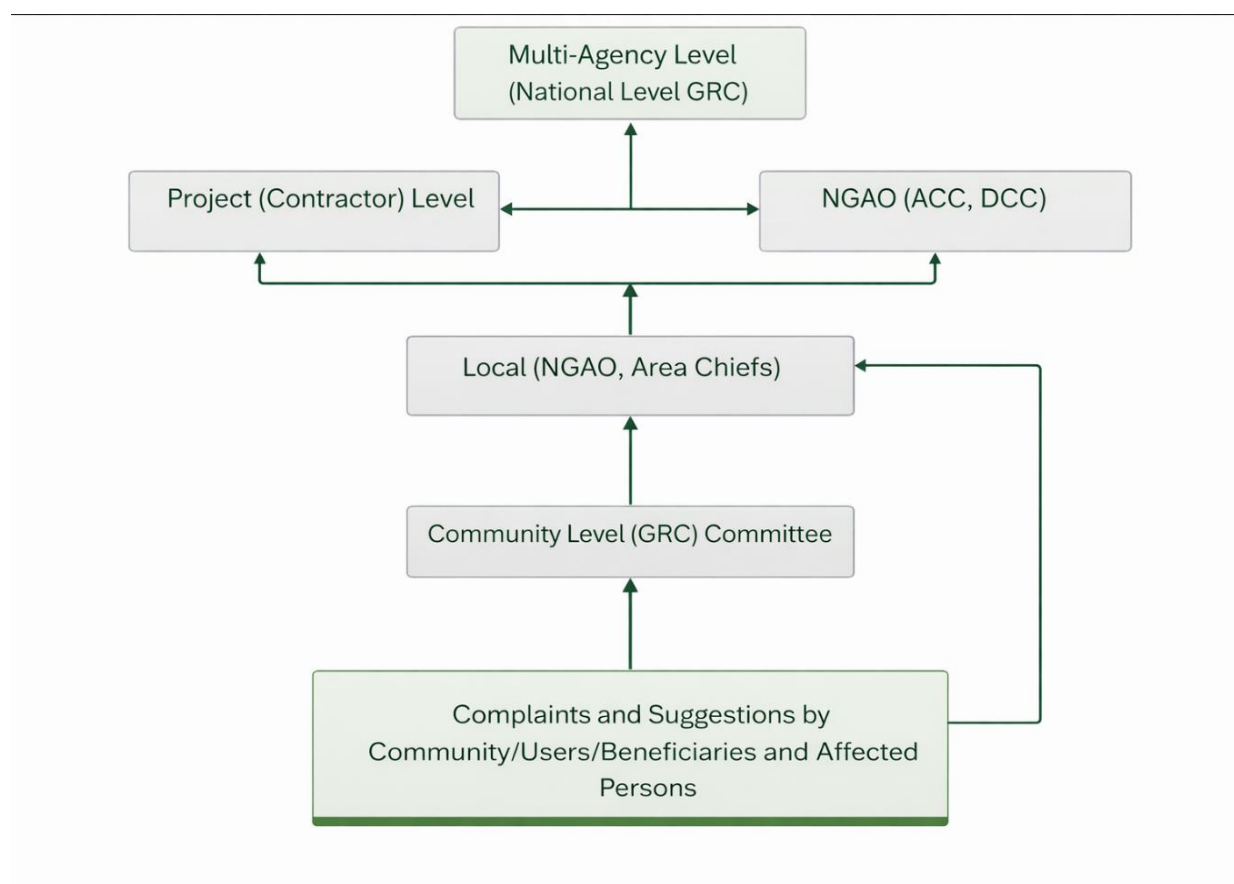


Figure 22: Proposed GRM Structure

7.8.5. Complaint Submission Procedure

Grievances will be submitted through various channels such as oral submissions, written notes, audio voice notes, text messages, phone calls, email, dedicated social media account (WhatsApp) and online forms. Each proposed grievance committee at the national and community level will have a designated focal person responsible for receiving and recording submissions. The committees will establish an email address at both the National levels and agree on contact numbers for grievance submissions. At the local level, it is expected that the contact numbers of focal persons will be widely shared to ensure accessibility. All complaints will be registered, and the designated grievance mechanism committee personnel will complete a form (Annex-5). The complaint will include relevant details, such as the nature of grievance, date, location, and any supporting evidence. Special attention will be given to the issues of GBV/SEAH.

Section	Process	Details / Actions
Complaint Receipt	Acknowledgement & Logging	- Complaint acknowledged promptly by the grievance handling team. - Unique reference number assigned for tracking. - Complainant receives confirmation and expected resolution timeframe. - Complaint logged using the grievance log form (Annex 6).
Investigating Grievances and Reviewing	Investigation & Review	- Grievance handling team conducts thorough review and investigation. May include gathering additional information, consulting stakeholders, site visits. - Impartiality and confidentiality ensured on GBV & SEAH cases: - Impartial investigation by specialized team (may include government bodies, NGOs, legal experts). - Structured protocol followed: evidence gathering, witness interviews, credibility assessment. - Principles of due process and rights of all parties respected.
Grievance Resolution	Resolution Options & Communication	- Grievance handling team presents resolution options: mediation, compensation, corrective actions, policy changes. - Proposed resolution communicated to complainant; feedback sought before finalizing. - GBV & SEAH: Actions aligned with zero-tolerance policy, addressed decisively.
Decision Appeals	Appeals Process	- Complainant may appeal if not satisfied. - Community-level appeals managed by PCU GRM sub-committee. - Unresolved cases escalated to national GRC. - GRC may involve technical experts and government legal professionals. - Complainant informed appeals process is final; no additional resources allocated. - If national GRC fails, recourse may be sought through national institutions (e.g., judicial courts).

Table 42: GRM Process Steps

Step	Description of process	Timeframe	Responsibility
Step 1: Grievance uptake	Grievances can be submitted via the following channels: Emails, letters, text messages, phone calls, verbal narrations, visits to the site office.	1-2 days	The focal point person receiving the grievances and providing feedback at the community level (Community liaison office) will have a dedicated telephone with a toll-free line where the aggrieved should channel their grievances. The

Step	Description of process	Timeframe	Responsibility
			stakeholder Liaison officer will be in charge of collecting grievances as well as providing feedback to National government officials, Senior government officials and political leadership
Step 2: Sorting, processing	All grievances are logged into the GRM complaint form either in writing or verbally. The database included during registration should have: Unique reference number, Date and time received, Contact information (if provided), Nature of grievance, Location, Gender and age of complainant (if provided), Category (environmental, social, labor, SEA/SH, other).	Upon receipt of complaint	Local grievance focal points
Step 3: Acknowledgement and follow-up	Upon receipt of the grievance, the project acknowledges the grievance with the reference number in writing. This is a participatory process where the aggrieved can spell out their wishes as part of the resolution process. An assessment is done to ascertain the type of grievance before relevant management is notified. Assessment of the grievance helps in the determination of the magnitude and intervention paths to be adopted and assigning responsibilities. A grievance log is updated to assist in monitoring the status of the recorded grievance. The assessment of the grievance is undertaken to: Assess urgency and severity, Determine appropriate level for escalation for resolution (Sub-County, or National level), Assign to appropriate staff/committee for investigation, Flag sensitive cases (SEA/SH, violence, child protection) for immediate attention.	Within 2 days of receipt	Local grievance focal points or escalated to appropriate level
Step 4: Verification, investigation, action	Investigation of the complaint is led by [investigation officer]. A proposed resolution is formulated by and communicated to the complainant by. Complaints that are straight forward should be addressed upon receipt. However, grievances that require investigation as well as gathering relevant information, documents review, engagement with stakeholders, interviews with the complainant, risk assessment,	Within 10 – 15 working days	Complaint Committee at various levels

Step	Description of process	Timeframe	Responsibility
	follow up meetings analysis of evidence will require time. The investigation should be carried out within 15 days. The investigation outcome includes an investigation report highlighting the steps, procedures and recommendations to be undertaken towards grievance resolution.		
Step 5: Resolution and Response	Based on investigation findings, and severity of the complaint, the GRC develops a proposed resolution, which may include: Explanation or clarification, Corrective actions, Compensation or remediation (where applicable), Changes to project activities or procedures, Referral to other services (e.g., health, legal, psychosocial). Upon Completion of the investigation, a resolution to the grievance is decided. Written feedback and response are communicated within five days upon completion of the investigation and report done. Note: Grievances related to Gender Based violence, Sexual Exploitation and Sexual Abuse will be referred to an independent consultant managing or relevant state agencies managing the Social risks associated with the project. Care should be taken to ensure the security, safety and confidentiality of the survivor is upheld.	7-14 days after investigation	Complaint Committee at various levels
Step 6: Appeal (if complainant is dissatisfied)	If the complainant is not satisfied with the resolution, they are given an option to appeal or consider recourse. Before consideration for a recourse, the project team should review and ascertain whether additional reasonable actions are appropriate. The grievance mechanism is required to incorporate any appeals provision for complaints that cannot be solved through the grievance mechanism project. The process shall require continuous communication to the aggrieved. Note: Complainants always retain right to pursue judicial or administrative remedies.	When required	Complaint Committee at various levels
Step 7: Implementation, Follow-up and closure	Agreed actions shall be implemented with specific timelines. The safeguards team is required to monitor implementation and follow up with the complainant to confirm satisfaction. Upon implementation of all recommendations and satisfaction of the complainant, the grievance is considered closed. Additionally, Once the aggrieved party is satisfied with resolution a	When required	Complaint Committee at various levels

Step	Description of process	Timeframe	Responsibility
	Grievance settlement form is signed to log in satisfaction/ resolution and the case is considered closed.		

SEA/SH Grievances Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH) cases require special handling to ensure survivor safety, security, confidentiality, and appropriate support. An independent consultant and relevant state agencies managing the social risks of the project will be engaged to provide dedicated services.

- a) The consultant should establish a dedicated SEA/SH Hotline: A separate, confidential hotline will be established for SEA/SH complaints, operated by trained experts;
- b) Survivor-Centered Approach: All responses prioritize survivor dignity, safety, confidentiality, and informed choice.
- c) Immediate Referral: the service provider will be required to establish a referral system to support the survivor in the following:
 - i. Survivors are immediately referred to appropriate services;
 - ii. Medical care (post-exposure prophylaxis, emergency contraception;
 - iii. Psychosocial support and counseling;
 - iv. Legal assistance; and
 - v. Safety and security support
- d) Trained Staff: Designated staff at all levels of the GRM/SEAH structures will receive specialized training on handling SEA/SH cases with sensitivity and confidentiality.
- e) Referral Pathways: Established referral pathways connect survivors to service providers (health facilities, GBV recovery centers, legal aid providers, police gender desks).
- f) Investigation: If the survivor wishes, an investigation will be conducted with utmost confidentiality. Perpetrators will face disciplinary action or contract termination and referral to police for prosecution, as appropriate with consent of the survivor.
- g) Confidentiality: SEA/SH cases must be kept in separate, secure files with restricted access. No identifying information is shared without explicit survivor consent.
- h) Dissemination of GBV/SEA/SH channels: Community meetings will be held in settlement areas to sensitize them on what constitute GBV/SEA/SH, referral pathways, toll free numbers will be provided, community watch committees will be formed and sensitized so that they report and receive survivors. A GBV technical working groups comprising social risks and stakeholder engagement, county department of health, police gender desk, county gender and children office and Judiciary working on GBV issues will be formed and engaged on GBV/SEA/SH issues.

Labour GRM

An effective Labour Grievance Redress Mechanism (GRM) is essential to ensuring that workers' complaints and concerns are addressed promptly, transparently, and fairly. This mechanism will address any labour and working conditions grievances, such as treatment by supervisors, pay, health and safety, or other employment-related matters. The workers have the right to join a trade union of their choice and form a workers' committee to assist in addressing workers' grievances. The Labour Management Plan of this project, prepared separately, provides details of the mechanisms, including actors, and the expected turnaround time for grievance handling.

7.8.6. Monitoring, Auditing and Reporting

The monitoring, auditing, and reporting processes for the GRM are crucial for ensuring transparency, accountability, and effectiveness. Monitoring will involve regular assessment of grievance submissions, response times, and resolution outcomes to ensure grievances are addressed promptly and adequately.

Auditing entails periodic reviews of the Grievance Redress Mechanism's procedures and compliance with established protocols and legal requirements, ensuring fairness and impartiality.

Reporting involves documenting and communicating grievance data, trends, and outcomes to stakeholders, including community members, project partners, and relevant authorities, fostering transparency and accountability in grievance resolution efforts. Additionally, continuous stakeholder engagement and feedback mechanisms are essential to improve the grievance redress mechanism's responsiveness and effectiveness in addressing community concerns. In addition, conduct community and stakeholder satisfaction surveys independent monitoring of GRM operations and provide any corrective measures for the project grievance redress committee.

8. POTENTIAL SIGNIFICANT IMPACTS & HAZARD RISKS MITIGATION MEASURES

8.1. Introduction

This chapter presents a comprehensive assessment of the potential Environmental, Social (including labour), Health, and Safety (ESHS) risks and impacts associated with the proposed MICE Core Arena development within the precinct of Nairobi Railway City. The key objective of an ESIA is to predict changes (adverse or beneficial, whole or partial) in the ecological and socio-economic environment resulting from a proposed development project or activity as well as recommend mitigation measures to minimize, eliminate or offset those aspects that adversely impact on the environment. The assessment approach generally involves matching the various activities of the project (as described in [Chapter 2](#) of this report) with the components of the existing environment. Consequently, the interaction may lead to changes in or impacts on the environment, hence mitigation measures are proffered to reduce, offset, or enhance such changes.

The assessment of the associated and potential impacts of the proposed Arena District activities as well as the mitigation measures required for reducing the identified significant and residual impacts to as low as reasonably practicable is presented in subsequent sections.

8.2. Potential Impacts and ESS Relevance

Impact Assessment Methodology

The overall intent of the ESIA study is to identify and characterize all the associated and potential impacts or effects that will be caused by the proposed development. Though there are several approaches for the prediction and evaluation of project environmental impacts, Chapter 5 of this report detailed the methodology employed to predict and evaluate potential project impacts.

8.3. Positive Social Significant Impacts

The proposed development is envisioned to significantly transform the physical and economic landscape of Nairobi by introducing a uniquely designed, integrated mixed-use complex within the Nairobi Railway City. The Project will comprise a modern, world-class arena for sporting conference and entertainment events, complemented by high-end boutique retail, hotel and conference facilities, premium office spaces, and residential accommodation within a vibrant, contemporary intra-city environment. This development is expected to redefine the city's skyline, strengthen Nairobi's position as a regional hub for business and events tourism, and enhance the overall urban experience.

Beyond its architectural and economic contribution, the Project is anticipated to generate substantial social benefits, including but not limited to:

- c) **Employment Generation:** The development will create significant employment (estimated **20,000+** direct and indirect) job opportunities per year across multiple phases (construction, operations, hospitality, and the SME supply chain).
 - **Construction Phase Employment:** Direct jobs for engineers, architects, contractors, skilled and semi-skilled labourers, machine operators, and support staff. Indirect employment will also arise through demand for construction materials, logistics, catering, security, and other auxiliary services.
 - **Operational Phase Employment:** Long-term jobs in facility management, hospitality, retail, event management, maintenance, security, administration, and technical operations.
- d) **Indirect and Induced Employment:** Growth in surrounding businesses such as transport services, suppliers, informal trade (where permitted), and tourism-related enterprises.

In addition to the social benefits, the proposed development is expected to generate significant economic and fiscal benefits at both National and County levels. Revenue generation; The Project will contribute to increased government revenue through various tax streams and statutory levies associated with both the

construction and operational phases of the proposed development plus long-term land-lease revenue and a gross revenue share to Kenya Railways Corporation (KRC).

By stimulating commercial activity and attracting local and international events, the MICE-Core Arena is expected to catalyze growth in the tourism and MICE economy and investment in the surrounding precinct. Current estimated economic multiplier of 2x. These fiscal benefits will support public service delivery and infrastructure development, thereby reinforcing the Project's strategic importance within Nairobi's urban regeneration framework as set out in the SPA.

The process and pathways followed in the identification and assessment of the associated and potential impacts of the proposed project are illustrated in the Table 42.

Table 43: Impact Pathway Identification

		Receptor Sensitivity			
		Negligible	Low	Moderate	High
Impact Magnitude	Negligible	Not Significant	Not Significant	Not Significant	Not Significant / Low ³⁵
	Minor	Not Significant	Low	Low / Moderate	Moderate
	Moderate	Not Significant	Low / Moderate	Moderate	High
	Major	Low	Moderate	High	High

Table 44: Environmental Components and Potential Impact Indicators

Project Phase	Project Activity	Potential Impact	Nature of Impact	Duration	Reversibility
Pre-Construction	Land acquisition	Land loss and displacement	Negative, Direct	Long-term	Irreversible
		Change in land use	Negative, Direct	Long-term	Irreversible
		Legal disputes	Negative, Indirect	Short-term	Reversible
	Mobilization	Traffic accidents	Negative, Direct	Short-term	Reversible
		Noise nuisance	Negative, Direct	Short-term	Reversible
		Air quality deterioration	Negative, Direct	Short-term	Reversible
		Biodiversity disturbance	Negative, Direct	Long-term	Reversible
	Site preparation	Soil erosion	Negative, Direct	Short-term	Reversible
		Drainage blockage	Negative, Direct	Short-term	Reversible
		Soil contamination	Negative, Direct	Long-term	Reversible
Construction Phase	Transportation	Habitat alteration	Negative, Direct	Long-term	Partly reversible
		Occupational accidents	Negative, Direct	Short-term	Reversible
		Road traffic accidents	Negative, Direct	Short-term	Reversible

Project Phase	Project Activity	Potential Impact	Nature of Impact	Duration	Reversibility
		Noise and vibration	Negative, Direct	Short-term	Reversible
		Air emissions	Negative, Direct	Short-term	Reversible
	Civil works	Vegetation loss	Negative, Direct	Long-term	Partly reversible
		Waste generation	Negative, Direct	Short-term	Reversible
		Oil spills/soil contamination	Negative, Direct	Long-term	Reversible
		Water pollution	Negative, Direct	Short-term	Reversible
		Worker injuries	Negative, Direct	Short-term	Reversible
	Welding/Fabrication	Burns and eye injuries	Negative, Direct	Short-term	Reversible
		Metal scrap generation	Negative, Direct	Short-term	Reversible
	Concrete works	Dust emissions	Negative, Direct	Short-term	Reversible
		Noise and vibration	Negative, Direct	Short-term	Reversible
		Construction waste	Negative, Direct	Short-term	Reversible
	Coating/Painting	Hazardous waste	Negative, Direct	Short-term	Reversible
		Soil contamination	Negative, Direct	Long-term	Reversible
	Backfilling	Surface runoff and erosion	Negative, Direct	Short-term	Reversible
	Electrical installation	Electrocution	Negative, Direct	Short-term	Reversible
		Falls from height	Negative, Direct	Short-term	Reversible
	Labour influx	Spread of communicable diseases	Negative, Indirect	Short-term	Reversible
		Gender-based violence/SEA/SH risks	Negative, Indirect	Short-term	Reversible
	Local employment	Employment creation	Positive, Direct	Long-term	-
Operation & Maintenance	Arena operation	Employment opportunities	Positive, Direct	Long-term	-
		Business opportunities	Positive, Indirect	Long-term	-
		Noise from spectators/events	Negative, Direct	Long-term	Reversible
		Generator emissions	Negative, Direct	Long-term	Reversible
		Traffic congestion	Negative, Direct	Long-term	Reversible
		Waste generation	Negative, Direct	Long-term	Reversible

Project Phase	Project Activity	Potential Impact	Nature of Impact	Duration	Reversibility
	Maintenance	Security risks	Negative, Direct	Long-term	Reversible
		Fire and explosion hazards	Negative, Direct	Long-term	Reversible
		Artificial lighting impacts on fauna	Negative, Direct	Long-term	Partly reversible
		Oil/fuel spills	Negative, Direct	Long-term	Reversible
		Electrocution	Negative, Direct	Short-term	Reversible
		Workplace accidents	Negative, Direct	Short-term	Reversible
Decommissioning	Demolition	Traffic disruption	Negative, Direct	Short-term	Reversible
		Dust emissions	Negative, Direct	Short-term	Reversible
		Noise and vibration	Negative, Direct	Short-term	Reversible
		Groundwater and soil contamination	Negative, Direct	Long-term	Reversible
		Demolition waste	Negative, Direct	Short-term	Reversible
		Worker injuries/fatalities	Negative, Direct	Short-term	Reversible
		Falls from height	Negative, Direct	Short-term	Reversible
		Electrocution	Negative, Direct	Short-term	Reversible
		Loss of employment	Negative, Indirect	Long-term	Irreversible

8.4. Environmental Impacts During Construction

These construction-related risks or impacts will be mitigated by requiring that the contractor or sub-contractors meet a detailed set of Environmental, Social, Health, and Safety (ESHS) requirements. The Requirements are largely based on the General EHS Guidelines, and other World Bank ESHGs Guideline. The potential negative impacts rated either high or medium are further herein described as underlying the assessment.

8.4.1. Pre-Construction Phase (Lesser Works)

The pre-construction phase is expected to generate both positive and negative environmental and social impacts of varying significance. The medium negative impacts include changes in land use and water use resulting from site establishment and preparatory activities. Mobilization of construction equipment, personnel, and construction materials to the project site is expected to result in noise nuisance, increased traffic volumes, and temporary interference with road transportation and accessibility. The provision of energy for pre-construction activities will also contribute to localized deterioration of ambient air quality through exhaust emissions from generators and construction vehicles, as well as increased noise and vibration levels. Labour mobilization during this phase may give rise to several medium-significance social impacts, including an increased risk of sexually transmitted infections (STIs), including HIV/AIDS, increased pressure on existing social infrastructure and services, and an influx of migrant workers and job seekers into the project area. These impacts may affect community health, safety, and social cohesion if not properly managed.

Site preparation activities, including vegetation clearance, land clearing, excavation, grading, and backfilling, are anticipated to result in several high-significance negative impacts. These include

accelerated soil erosion, deterioration of ambient air quality due to dust emissions, elevated noise and vibration levels from construction equipment, and occupational exposure to heat, intense light, and radiation during welding and cutting activities, including exposure to welding flash.

The mobilization and operation of heavy machinery also increase the likelihood of road traffic accidents, while excavation and construction activities pose risks of injuries and fatalities resulting from falling objects, equipment operation, and general worksite accidents. These impacts require strict implementation of occupational health and safety measures in accordance with national legislation and the World Bank Environmental and Social Standards (ESS2 and ESS4).

Conversely, the pre-construction phase is expected to generate several positive socio-economic impacts. Mobilization activities will:

- Create temporary employment opportunities and increase household incomes through local hiring and procurement.
- Provision of energy and associated support services will stimulate local businesses supplying fuel, equipment, transport, and other logistics.
- Labour recruitment will further enhance employment opportunities, increase household incomes, improve livelihoods, and
- Stimulate local economic growth through increased demand for goods and services. Similarly, site demobilization at the completion of preparatory works will continue to provide short-term income opportunities for transporters and service providers.

It is also important to note that preliminary site investigations identified the presence of a limited number of structures containing Asbestos-Containing Materials (ACMs). Any demolition, or removal of these materials must be undertaken in accordance with the Occupational Safety and Health Act (OSHA, 2007), the Environmental Management and Coordination Act (EMCA), the Sustainable Waste Management Act, 2022, and internationally recognized good international industry practice (GIIP), including the World Bank Environmental, Health and Safety (EHS) Guidelines. Asbestos removal should only be undertaken by competent and licensed personnel using approved asbestos management procedures, including material identification, controlled removal, appropriate personal protective equipment (PPE), air quality monitoring where necessary, safe packaging and labeling, transportation by licensed hazardous waste transporters, and disposal at a NEMA-approved hazardous waste disposal facility.



Plate 30: Site Structure with Asbestos Containing Material

8.4.2. Impacts on Wildlife and Habitat

The proposed MICE Sub-Component of the Nairobi Railway City will be developed within a highly urbanized and fully built-up environment characterized by extensive infrastructure, paved surfaces, existing buildings, active railway lines, and industrial land uses. The biodiversity assessment established that the project area comprises modified habitats with limited ecological value. No ecologically sensitive habitats, protected areas, critical habitats, or species of conservation concern were identified within or immediately adjacent to the project footprint. Vegetation within the site is largely composed of planted ornamental species and scattered mature trees typical of Nairobi's urban landscape as outlined in **Chapter 4 section 4.5.1**. Furthermore, no rare, threatened, endangered, or endemic flora or fauna species were recorded during the field assessment.

Despite the relatively low ecological sensitivity of the site, vegetation clearance required for construction will result in the loss of existing vegetation and the ecosystem services it provides. These services include carbon sequestration, air quality improvement through dust interception, soil stabilization and erosion control, microclimate regulation, and provision of shelter, nesting, and foraging habitats for birds, insects, and other small urban wildlife. Consequently, wildlife currently utilizing the vegetation for habitat and refuge will be displaced. Secondary impacts associated with vegetation removal include increased ambient temperatures due to the reduction in vegetative cover, intensification of the urban heat island effect, reduced carbon storage capacity, increased levels of particulate matter in the atmosphere resulting from diminished dust filtration, and localized deterioration of environmental quality and urban aesthetics.

Considering the extent of vegetation removal and the permanent conversion of the site to the proposed development, the impact is assessed as direct, negative, local, long-term, and irreversible, with an overall high significance prior to mitigation. However, given that the project is located within a modified urban environment and does not affect critical habitats or protected biodiversity areas, the impact can be substantially reduced through the implementation of the mitigation hierarchy.

Impact Significance Assessment

Criteria	Rating	Description	Score
Magnitude	Medium	Vegetation clearance and land conversion (land use change) will cause notable but localized ecological impacts.	2
Extent / Scale	Low	Impacts will be confined within the Project boundaries (on-site).	1
Duration	Long-term	Impacts will persist throughout the Project lifecycle, with potential reversibility only after decommissioning and rehabilitation.	3
Intensity	High	Significant disturbance and alteration of the existing habitat during construction.	3
Total Score	-	Sum of individual scores	9
Significance Rating	High	(9 - 12 = High)	High

Mitigation Measures

- The contractor shall comply with the Wildlife Conservation and Management Act and adhere to the requirements of ESS6 on Biodiversity Conservation and Sustainable Management of Living Natural Resources to ensure protection of wildlife and responsible environmental management throughout project implementation;
- Selective site clearance shall be undertaken, ensuring that mature indigenous trees are retained and incorporated into the project design and landscaping plan wherever feasible;
- All areas disturbed or damaged during construction shall be rehabilitated and revegetated upon completion of the Works to restore site stability, aesthetic value, and ecological function; and
- The contractor, in consultation with an ornithologist, shall inspect areas earmarked for clearance prior to vegetation removal and implement appropriate mitigation measures where active nests are identified to prevent disturbance to breeding birds.

Residual impacts. By implementing the above mitigation measures, the potential impacts of the project on wildlife and habitat are likely to be adequately addressed and hence the residual impact is likely to be medium to low.

8.4.3. Generation of Construction Waste (Spoils)

It is expected that construction activities will generate both hazardous and non-hazardous wastes. The potential effects will be of aesthetics as well as a nuisance. Non-hazardous waste will mainly come from excavated soils and debris woodpiles, discarded packaging materials such as paper cartons, and empty plastic water bottle, cans containers while hazardous wastes could come from grease trap pumping, used oil, waste lubricants, paints, maintenance-related wastes, used air and liquid filtration media, and empty or partially full chemical containers. Although the impact of this non-hazardous waste is expected to be minimal, poor disposal methods can lead to environmental problems due to their non-biodegradable nature.

Criteria	Rating	Description	Score
Magnitude	Medium	Moderate volumes of excavated material (spoils) will be generated, requiring handling, storage, and disposal.	2
Extent / Scale	Low	Impacts will primarily occur within the project site and immediate surroundings (local).	1
Duration	Short-term	Limited to the construction phase.	1
Intensity	Medium	Potential for localized visual impact, dust generation, and risk of improper disposal affecting soil and drainage.	2
Total Score	-	Sum of individual scores	6
Significance Rating	Medium	(5 – 8 = Medium)	Medium

The impact will be short term, negative and irreversible, so considered medium. However, hazardous wastes are expected to be high if they are not treated and disposed of well which can lead to environmental degradation due to their non-biodegradable nature. The impact can be long term, negative and irreversible, so considered high if appropriate mitigation measures are strictly adhered to.

Mitigation Measures

- All unused excavated spoil material shall be managed in accordance with the provisions of the Environmental Management and Coordination Act (EMCA) Waste Management Regulations 2024, and the Sustainable Waste Management Act, 2022, ensuring environmentally safe handling, storage, and disposal,
- Temporarily stockpile excavated spoils in designated areas away from watercourses, drainage channels, and sensitive ecosystems;
- Reuse spoil material onsite for backfilling, landscaping, or road sub-base where suitable; and
- Regularly monitor nearby streams or rivers for sedimentation and increased turbidity during excavation and construction activities to ensure early detection of potential water pollution and turbidity.

Residual impacts: With implementing the above mitigation measures, the potential impacts associated with spoil generation are likely to be adequately addressed and hence the residual impact is likely to be of negligible insignificance.

8.4.4. Soil Pollution

During the construction phase, there is a risk of accidental spills and leakages from fuel and oil tanks, construction machinery and vehicles, as well as from the storage of chemicals in construction areas, yards, and batching plants. Such spills can lead to soil contamination and may also pollute surface water and groundwater in the project area. In addition, waste effluents from temporary facilities, including construction sanitation units, can infiltrate the soil or be carried by surface runoff, further contributing to environmental contamination. The potential impacts on soil, including pollution from spills and effluents, as well as erosion due to excavation and runoff, have been assessed as **medium** in significance.

Criteria	Rating	Description	Score
Magnitude	Medium	Moderate potential for localized soil contamination from accidental spills and improper handling of hazardous materials.	2
Extent / Scale	Low	Impacts will be confined to the project site and immediate surrounding areas (local).	1
Duration	Medium-term	Primarily during construction; however, if contamination occurs, effects may persist until remediation is completed.	2
Intensity	Medium	Can result in reduced soil quality, impact on soil organisms, and potential migration to groundwater.	2
Total Score	-	Sum of individual scores	7
Significance Rating	Medium	(5 – 8 = Medium)	Medium

Mitigation Measures

- The contractor shall prepare and implement a Pollution Prevention Plan prior to the commencement of construction activities to ensure compliance with environmental regulations and best management practices;
- All areas designated for the storage of hazardous materials shall be enclosed, secured, and bunded with concrete and equipped with adequate facilities to manage emergency situations;
- All construction vehicles and machinery shall be serviced within a designated concrete-bunded area to contain oils, lubricants, and other hazardous fluids, preventing soil and water contamination; and
- Effluent wastewater from construction sanitation facilities shall be properly collected and channeled into the Nairobi City Water and Sewerage Company (NCWSC) sewer system to prevent contamination of soil and surface water.

Residual Impacts. After the implementation of the above mitigation measures, the potential impacts on soil pollution are expected to be adequately controlled. Consequently, the significance of the residual impacts on soil is assessed as Minor/low.

8.4.5. Surface Water Contamination (Pollution)

A tributary of the Ngong River runs adjacent to the project site, making it particularly sensitive to construction-related impacts. Activities such as excavation, spoil generation, vehicle and machinery operation, and storage of fuels and chemicals can increase the risk of water pollution. Potential impacts include sedimentation from soil runoff, accidental spillage of hydrocarbons or chemicals, and contamination from construction effluents. These pollutants can degrade water quality, harm aquatic life, and affect downstream users.

Criteria	Rating	Description	Score
Magnitude	High	High potential for release of sediments, pollutants, and contaminants into nearby surface water.	3
Extent / Scale	Low	Impacts primarily limited to surface water features within and immediately downstream of the project site (local).	1
Duration	Short-term	Occurs mainly during the construction phase; recoverable after mitigation and cessation of activities.	1
Intensity	High	This can cause increased turbidity, reduced water quality, and temporary effects on aquatic ecosystems.	3
Total Score	-	Sum of individual scores	8
Significance Rating	Medium	(5 – 8 = Medium)	Medium

The potential impact of surface water pollution from construction activities is assessed as Medium in significance. This negative impact may arise from sediment-laden runoff, accidental spills of fuels, oils,

lubricants, and concrete washout entering nearby drainage channels or water bodies (Ngong River tributary).

Mitigation Measures

- Sedimentation ponds shall be constructed along the project boundary to capture runoff from construction areas. Discharge from these ponds will be carefully regulated to ensure compliance with allowable turbidity limits;
- The contractor shall be required to implement appropriate measures to prevent, control, and contain any accidental spillage or pollution of water resources during construction;
- Where appropriate, oil-water separators and settling ponds shall be installed to intercept polluted construction runoff;

Residual Impacts: After implementation of the above mitigation measures, the potential impacts of the Project on water quality are expected to be adequately controlled. Consequently, the significance of residual impacts on water resources is assessed as Low.

8.4.6. Dust and Air Pollution

During the construction phase, air quality is expected to be affected due to dust and emissions generated from construction activities. Major sources include drilling, excavations, and emissions from construction vehicles and equipment. These activities can generate significant amounts of airborne dust and particulate matter, which may negatively impact vegetation and pose health risks to workers and nearby communities.

Impact Significance Assessment

Criteria	Rating	Description	Score
Magnitude	Medium	Air pollution from dust (excavation) and exhaust fumes (machinery/vehicles).	2
Extent / Scale	Low	Primarily limited to the Project Site, with slight potential to spread beyond boundaries to 500m outside the project boundary (local).	1
Duration	Short-term	Persists only during construction activities.	1
Intensity	Medium	Temporary but noticeable reduction in local air quality.	2
Total Score	-	Sum of individual scores	6
Significance Rating	Medium	(5 – 8 = Medium)	Medium

The impact on air quality resulting from dust generation during construction and exhaust emissions from construction machinery and vehicles is assessed as Medium (Moderate) in significance. Although the impact is negative, it is localized, temporary, and confined mainly to the construction phase.

Mitigation Measures

- All construction vehicles and equipment shall comply with the Environmental Management and Coordination Act (EMCA) Air Quality Regulations, 2024, as well as the World Bank Group (WBG) EHS Guidelines on emission standards;
- Concrete batching and asphalt plants shall be located at least 500 meters away from sensitive receptors. In addition, they will be equipped with appropriate dust and emission suppression mechanisms, such as wet scrubbers, to minimize air quality impacts on nearby communities and the environment;
- The contractor shall implement dust prevention measures during construction, including regular watering of roads near residential areas and spraying water on loose materials where necessary;
- The contractor shall provide appropriate personal protective equipment (PPE), such as masks and respirators, to protect construction workers from excessive dust exposure and ensure their health and safety on-site;
- The construction site shall be hoarded with at least a 2.5 m high curtain net to minimize dust dispersion and reduce the impact of airborne particulate matter on surrounding areas;
- Continuous air quality monitoring shall be carried out near sensitive receptors to ensure that ambient air remains within the limits specified by the Environmental Management and Coordination Act (EMCA) Air Quality Regulations, 2024, and the World Bank Group (WBG) EHS Guidelines.

Residual Impacts: After implementation of the above mitigation measures, the potential impacts of the Project on air quality are expected to be adequately controlled. Consequently, the significance of residual impacts on air quality is assessed as Low/minor.

8.4.7.Noise and Vibration

The construction of the proposed project has the potential to generate significant noise and vibrations, particularly from excavation, casting, piling, and other heavy construction activities. Additionally, the off-site movement of construction vehicles and equipment can contribute to elevated noise levels in the surrounding area. During baseline assessments, ambient noise in the project vicinity was found to exceed the permissible residential limits as specified under the Environmental Management and Coordination Act (EMCA) Noise and Vibration Regulations, 2009 due to its land use characteristics. Elevated noise and vibration levels may affect nearby residents, sensitive receptors such as schools and health facilities, and local fauna.

Criteria	Rating	Description	Score
Magnitude	High	Moderate levels of noise and vibration will be generated by construction equipment and vehicle movements.	3
Extent / Scale	Low	Impacts will primarily affect areas within and immediately around the project site (up to approximately 500–800 m) (local).	1
Duration	Short-term	Limited to the construction phase only.	1
Intensity	High	Temporary disturbance and nuisance to nearby sensitive receptors (residents, workers, and wildlife).	3
Total Score	-	Sum of individual scores	8
Significance Rating	Medium	(5 – 8 = Medium)	Medium

The impact of noise and vibration generated during construction activities is assessed as High in significance. This negative impact will result from the operation of heavy machinery, excavation equipment, trucks, and other construction activities. While the extent is localized and the duration is short-term (restricted to the construction period), the high magnitude and intensity may cause temporary nuisance, and annoyance to nearby communities.

Mitigation Measures

- All construction equipment and vehicles shall comply with national standards as well as the World Bank Group (WBG) EHS Guidelines on noise emissions;
- The contractor shall implement appropriate noise attenuation measures to reduce noise generated during construction activities. These measures will include:
 - *Fitting high-efficiency mufflers to all noise-generating equipment, and*
 - *Installing acoustic enclosures around drilling and other high-noise machinery*
- Construction activities near settlements or sensitive receptors shall be restricted to daytime hours, and no work will be carried out at night unless permitted by the Authority (NEMA);
- The contractor shall provide appropriate personal protective equipment (PPE), such as earplugs or earmuffs, to all workers exposed to elevated noise levels during construction; and
- A Grievance Redress Mechanism (GRM) shall be established to receive and address complaints from the public regarding environmental issues, including noise pollution.

8.4.8.Generation of Solid Waste and Hazardous Waste

Construction activities for the proposed project are expected to generate large quantities of excess materials and general waste from construction sites, including concrete, steel cuttings, discarded materials, and debris from construction yards. This includes biodegradable waste such as food waste and other organic materials, as well as recyclable waste. In addition, small quantities of hazardous waste will be produced, primarily from vehicle and machinery maintenance activities. This includes liquid fuels, lubricants, hydraulic oils, chemicals, contaminated soil, oil filters, spent machine/engine filter cartridges, oily rags, and spillage control materials used to absorb oil and chemical spills. All waste generated during construction will be managed and responsibly disposed of to prevent adverse impacts on the environment, human

health, and the visual amenity of the project area, in line with applicable environmental regulations and best management practices. The potential impact of construction activities on waste generation has been assessed as **medium**.

Criteria	Rating	Description	Score
Magnitude	Medium	Moderate quantities of both general solid waste and hazardous waste will be generated throughout the construction phase.	2
Extent / Scale	Low	Impacts will primarily occur within the project site and immediate surroundings, including temporary waste storage areas (local).	1
Duration	Short-term	Limited to the construction phase.	1
Intensity	High	Potential for environmental contamination, soil and water pollution, and health risks if waste is not properly segregated, stored, or disposed.	3
Total Score	-	Sum of individual scores	7
Significance Rating	Medium	(5 – 8 = Medium)	Medium

Mitigation Measures

- The contractor shall prepare and implement a Pollution Prevention Plan and a Waste Management Plan (WMP) prior to the commencement of construction activities. (These plans will outline procedures for the segregation, storage, handling, recycling, and safe disposal of both general and hazardous wastes);
- The contractor shall subcontract registered and licensed NEMA waste handlers for the disposal of both hazardous and non-hazardous waste, in accordance with the Environmental Management and Coordination Act (EMCA) Waste Management Regulations, 2024;
- The contractor shall provide adequate waste collection bins at designated locations to facilitate proper waste segregation at source (e.g., biodegradable, recyclable, and hazardous waste), thereby enhancing efficient collection, management, and safe disposal;
- Establish secure, weather-protected, and clearly marked temporary waste storage areas to prevent littering, scavenging, and wind dispersion;
- Open burning of waste materials at the construction site shall be strictly prohibited;
- Ensure timely collection and transportation of waste to avoid accumulation and associated health risks;
- Conduct regular training for workers on waste segregation, hazardous waste handling, and environmental compliance requirements; and
- Maintain waste tracking records, including quantities generated, recycled, and disposed off, as required under the Environmental Management and Coordination Act (EMCA) Waste Management Regulations, 2024.

Residual Impact: After implementation of appropriate waste management measures, including segregation, recycling, safe handling of hazardous waste, and disposal at licensed sites, the potential impacts of the project on solid and hazardous waste generation are expected to be significantly reduced. Consequently, the significance of residual impacts is assessed as Low.

8.4.9. Traffic Impacts

Construction activities associated with the proposed project have the potential to temporarily block or restrict access to local roads and routes due to movement of heavy machinery, delivery of construction materials, and excavation works. Such disruptions may adversely affect local communities, particularly in areas where accessibility is already constrained (*Bunyala Road and Uhuru highway*). Reduced access can impact on residents, businesses, emergency services, and public transport operations. Furthermore, prolonged or poorly managed access restrictions may lead to community grievances, which could in turn disrupt construction activities and affect project timelines.

Impact Significance Assessment

Criteria	Rating	Description	Score
Magnitude	Medium	Construction activities increasing traffic, resulting in negative direct impacts on road users along the transport route.	3
Extent / Scale	Medium	Regional – impacts extend along the selected transport route.	2
Duration	Short-term	Short-term – limited to the construction phase.	1

Criteria	Rating	Description	Score
Intensity	Medium	Medium – temporary nuisance and safety risk; frequency of Project vehicles is generally low.	3
Total Score	-	Sum of individual scores	10
Significance Rating	Medium	(9– 12 = Medium)	Medium

The impact on road users due to increased traffic from construction vehicles and activities is assessed as High in significance. The impact is negative and will occur along the transport route with definite likelihood, as the increase in heavy vehicle movements is unavoidable during the construction phase. However, occurrence will only be short-term duration and medium intensity.

Mitigation Measures

- The contractor shall prepare and implement a Traffic Management Plan (TMP) in consultation and coordination with the local community, the Nairobi City County Traffic Department, and the Traffic Police Department;
- The local community shall be informed in advance about the nature and schedule of construction activities, including any potential road or route blockages. Where temporary access restrictions are unavoidable, alternative routes shall be identified in consultation with relevant authorities;
- The contractor shall install visible directional signage, warning signs, and information boards at strategic locations to guide motorists and pedestrians safely around construction zones;
- The contractor shall deploy trained traffic marshals at key points to control vehicle movement, assist pedestrians, and enhance road safety during peak hours;
- Schedule delivery of construction materials and movement of heavy vehicles during off-peak hours to reduce congestion;
- Provide temporary access roads, footbridges, or pedestrian walkways where necessary to maintain community mobility; and
- Utilize the established GRM to promptly address complaints related to traffic disruption and access issues.

Residual impacts. After implementing the above-listed mitigation measures, the impacts of the project associated with blockage of routes will be adequately mitigated. Hence the significance of residual impacts will be Low/Minor.

8.5. Significant Social Impacts During Construction

8.5.1. Project Induced Labor Influx

Social impacts associated with the project are critical to address, as even a modest labor influx during the construction phase may result in adverse effects on the host community. Pre-existing social challenges within the project area could be exacerbated by the presence of non-resident workers. Potential impacts include increased social tension between local residents and workers, heightened risk of illicit behavior and crime, and increased vulnerability to diseases spread. Additionally, the influx of labor may place added pressure on local infrastructure and public services, including water supply, sanitation, and healthcare services. If not properly managed, these impacts could affect community cohesion, public health, and overall project acceptance. Therefore, appropriate mitigation and community engagement measures will be essential to minimize social risks and promote positive relations between the project and host communities.

Impact Significant Rating			
Criteria	Rating	Description	Score
Magnitude	Medium	Moderate number of external workers expected, resulting in noticeable pressure on local resources and social dynamics.	2
Extent / Scale	Low	Impacts primarily confined to communities surrounding the project site and nearby settlements (local).	1
Duration	Medium-term	Persists throughout the construction phase (expected to last 12–36 months depending on project schedule).	2
Intensity	Medium	Can result in strain on water supply, sanitation, health services, and potential increase in social tensions.	2
Total Score	-	Sum of individual scores	7
Significance Rating	Medium	(5 – 8 = Medium)	Medium

The project-induced labor influx during the construction phase is rated direct, negative, short-term, local reversible, and assessed as Medium (Moderate) in significance. This negative impact will occur as the project attracts external workers and job seekers to the area. However, because the project site is located within Nairobi's Central Business District (CBD), which is predominantly commercial with limited residential housing, the pressure on local residential communities, housing, and social services (such as schools and health facilities) is expected to be significantly lower compared to projects located in suburban or peri-urban residential areas.

Mitigation Measures

- The contractor shall implement a Code of Conduct requiring all workers to behave ethically, respect community norms, and avoid involvement in crime, illicit activities, or anti-social behavior;
- All construction staff shall receive training and awareness programs on ethical conduct, social responsibility, and the consequences of unethical or illegal behavior;
- Ensure adequate security at construction sites to protect both workers and the host community;
- Maintain regular communication with the host community regarding labor influx and construction activities. Use the Grievance Redress Mechanism (GRM) to promptly address any community complaints related to social issues or labor interactions;
- Encourage cooperative engagement between workers and local communities through outreach programs, community activities, and awareness campaigns; and
- Encourage host residents are given priority for employment in construction-related jobs wherever possible.

Residual Impact: With the effective implementation of the proposed mitigation measures including a Local Content and Recruitment Plan (prioritizing local Nairobi labour where possible), strict Worker Code of Conduct, stakeholder engagement with CBD associations, and traffic management the residual significance is expected to be reduced to Minor/low.

8.5.2. Gender-Based Violence (GBV)

Construction activities associated with the proposed Nairobi Railway City Phase-1 (MICE-Core) project will require engagement of a sizeable workforce. A proportion of this workforce may be sourced from other estates within Nairobi and the wider metropolitan region. Labour influx of this nature has the potential to increase social risks, including Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH), affecting both workers and surrounding communities. Gender-Based Violence (GBV) refers to any harmful act perpetrated against a person's will that is based on socially ascribed gender differences between males and females. It encompasses physical, sexual, psychological, and economic harm occurring in both public and private spheres.

Sexual Harassment (SH), on the other hand, includes unwelcome sexual advances, requests for sexual favours, and other verbal, non-verbal, or physical conduct of a sexual nature. Such behaviour may reasonably be perceived as offensive, humiliating, or intimidating, particularly where it interferes with an individual's work performance, is made a condition of employment, or creates a hostile or unsafe working environment. Given these risks, the project will implement appropriate measures, including strict enforcement of Code of Conduct for all workers, mandatory GBV/SEA/SH awareness training, confidential grievance redress mechanisms, collaboration with local service providers, and strict enforcement of disciplinary procedures.

Impact Significant Rating			
Criteria	Rating	Description	Score
Magnitude	Medium	Moderate risk due to influx of predominantly male workers and potential power imbalances.	2
Extent / Scale	Low	Primarily within the project site, worker accommodation areas, and immediate Nairobi CBD surroundings (local).	1
Duration	Medium-term	Persists throughout the construction phase.	2
Intensity	Medium	Can cause significant physical, psychological, and social harm to victims, with ripple effects on families and communities.	2
Total Score	-	Sum of individual scores	7
Significance Rating	Medium	(5 – 8 = Medium)	Medium

The risk of Gender-Based Violence (GBV) associated with the project is assessed as Medium (Moderate) in significance. This negative impact may arise from the influx of construction workers into the project site, where interactions between workers, local residents, business operators, and vulnerable groups (particularly women and girls) could increase the potential for sexual harassment, exploitation, and abuse.

Mitigation Measures

- The contractor shall be required to deploy qualified key personnel responsible for managing and addressing specific project-related risks, including Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH);
- All project firms engaged in the proposed project shall be required to prepare and implement a Code of Conduct (CoC) for their staff and personnel. The CoC will include clear provisions to prevent and address Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH), ensuring ethical behavior and compliance with national laws and World Bank Group (WBG) Environmental, Health, and Safety Guidelines;
- The contractor will be required to establish anti-sexual harassment policies that govern conduct in the workplace;
- The contractor will be required to provide mandatory and repeated training to workers on sexual exploitation and abuse and HIV/AIDS prevention;
- The contractor shall ensure strict compliance with Kenya's Employment Act, 2007, including the minimum working age of above 18 years, and all other provisions relating to the employment of workers;
- The contractor shall conduct awareness and training programs for the construction workers on Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH); and

- A Grievance Redress Mechanism (GRM) responsive to Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) shall be established and maintained throughout the construction phase.

Residual Impact: After implementation of the above mitigation measures including the deployment of qualified key personnel, Codes of Conduct for workers, and Redress Mechanism (GRM) the risks of Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH) are expected to be significantly reduced. Consequently, the significance of residual impacts is assessed as Low.

8.5.2.1. Child Labor

Large construction sites and activities often attract a substantial number of workers, which can increase the risk of employment of underage workers. In the Kenyan context, the Employment Act, 2007 sets the minimum working age at 18 years under section 56. (1) of the Act. Failure to comply with these regulations could expose children and adolescents to hazardous work conditions, adversely affecting their health, education, and well-being. The risk of child labor associated with the proposed project is assessed as Medium (Moderate) in significance.

Impact Significant Rating

Criteria	Rating	Description	Score
Magnitude	Low to Medium	Limited scale expected, but any occurrence involves a serious violation of labour rights and international standards.	2
Extent / Scale	Low	Primarily within the project site, and immediate Nairobi CBD vicinity (local).	1
Duration	Medium-term	Persists throughout the construction phase.	2
Intensity	High	Severe potential consequences on the physical and psychological well-being of children, including denial of education and long-term developmental harm.	3
Total Score	-	Sum of individual scores	8
Significance Rating	Medium	(5 – 8 = Medium)	Medium

Mitigation Measures

- The contractor shall require all prospective workers to provide valid identification documents (e.g., national ID, birth certificate) to verify that they meet the minimum working age of 18 years as per the Employment Act, 2007;
- The contractor shall ensure that all labor recruitment processes fully comply with Kenyan labor laws, as well as World Bank Environmental and Social Standard 2 (ESS2) on Labor and Working Conditions;
- Include clauses in contractor and subcontractor agreements that prohibit employment of underage workers and stipulate penalties for violations;
- Conduct regular audits and inspections of the workforce to ensure compliance with age requirements; and
- Engage local communities to discourage the use of children in construction work and raise awareness of labor laws protecting children and adolescents.

Residual Impact: With the strict implementation of the proposed mitigation measures including prohibition of child labor in all contracts, age verification during recruitment, regular labour audits and monitoring, worker awareness training, and collaboration with the Ministry of Labour and relevant child protection agencies the residual significance is expected to be reduced to negligible/low.

8.6. Impacts on Sites of Cultural and Heritage Significance

Although desktop studies and site surveys conducted as part of this assessment have not identified any sites or places of religious or cultural importance, such as graves or shrines, that would be directly affected by project activities, there remains a possibility of inadvertent damage during construction. The Railway Museum, which houses historical locomotives, is located at a considerable distance from the project site. All project activities will comply with the National Museums and Heritage Act (2006), World Bank Environmental and Social Standard 8 (ESS8) on Cultural Heritage, and the established Chance Find

Procedure to ensure that any unexpected discoveries of cultural or heritage value are properly managed and protected.

Criteria	Rating	Description	Score
Magnitude	Low to Medium	Potential for direct or indirect impacts on known or unknown heritage resources within or near the project site.	2
Extent / Scale	Low	Limited to the project site and immediate surrounding areas within the Nairobi Railway area (local).	1
Duration	Long-term	Impacts on heritage resources, if damaged or destroyed, are generally irreversible.	3
Intensity	Medium	Can result in loss of cultural value, historical authenticity, or visual intrusion on heritage settings.	2
Total Score	-	Sum of individual scores	8
Significance Rating	Medium	(5 – 8 = Medium)	Medium

The potential impacts of the proposed project on sites of cultural heritage significance, including graves, shrines, museum, and other places of religious or cultural importance, are assessed as Low in magnitude. This rating is informed by the findings of the Cultural Heritage Impact Assessment, which is annexed to this report.

Mitigation Measures

- All construction personnel shall be trained on the Chance Find Procedure, which requires immediate cessation of work and reporting if any suspected cultural, archaeological, or heritage materials are discovered;
- Any discovered items shall be reported promptly to the National Museums of Kenya (NMK) and relevant authorities for verification and appropriate management, in line with the National Museums and Heritage Act (2006);
- If a heritage or cultural site is discovered, it shall be secured and cordoned off to prevent damage until proper assessment and handling are completed;
- Conduct regular training sessions for construction workers and supervisors on the importance of cultural heritage and proper handling of potential finds; and
- Assign a designated cultural heritage officer or focal person to monitor construction activities in sensitive areas and ensure compliance with the Chance Find Procedure.

Residual Impact: After implementing the above-listed mitigation measures, the impacts of the project associated with cultural importance will be adequately mitigated. Hence the significance of residual impacts will be negligible.

8.7. Significant OHS Hazard Risks

Construction sites are inherently high-risk environments, and the proposed project is no exception. To ensure the health and safety of all workers and site visitors, all construction activities will comply with the World Bank Group General Environmental, Health, and Safety (EHSGs) Guidelines, 2007, as well as relevant International Labour Organization (ILO) and World Health Organization (WHO) standards and local regulation OSHA Act 2007. This will provide a robust framework for managing occupational health and safety (OHS) risks throughout the construction phase.

8.7.1. Working at Height

Working at height during construction activities presents inherent risks to construction workers, including the potential for falls, injuries, and fatalities. Activities such as scaffolding, ladder use, roof works, formwork erection, and elevated equipment operation increase the likelihood of accidents if proper safety measures are not implemented. In addition to physical hazards, working at height may also expose workers to environmental risks, such as strong winds, slippery surfaces, or unstable structures. Without effective control measures, these risks can lead to serious occupational injuries, loss of life, and disruption of construction activities. The potential impact of working at height during construction is assessed as high magnitude.

Mitigation Measures

- Install guardrails with mid-rails and toe boards at the edge of any area where there is a fall hazard to prevent accidental falls;
- Provide and enforce the use of fall prevention devices, including:
 - Safety belts and lanyards,
 - Travel-limiting devices to prevent access to fall hazard areas, and
 - Fall arrest devices, such as full-body harnesses used with shock-absorbing lanyards or self-retracting inertial fall arrest devices, attached to fixed anchor points or horizontal lifelines
- Define controlled access zones around areas where leading-edge and other high-risk operations are taking place (e.g., slopes, elevated platforms) using control lines or equivalent barriers,
- The contractor shall designate a competent person to monitor the safety of employees working at height. The designated safety inspector shall ensure:
 - Compliance with all fall protection measures,
 - Proper use of personal protective equipment (PPE)
 - Safe erection and maintenance of guardrails, lifelines, and controlled access zones
 - Immediate reporting and corrective action for any unsafe conditions.
- Each employee working in a controlled access zone will be directed to comply promptly with fall hazard warnings from safety inspector.

Residual Impact: After implementation of the above mitigation measures including installation of guardrails with mid-rails and toe boards, use of fall prevention and fall arrest devices, establishment of controlled access zones, and supervision by competent safety personnel the risks associated with working at height are expected to be significantly reduced. Consequently, the significance of residual impacts is assessed as low.

8.7.2. Machinery Handling

The operation and handling of construction machinery present several occupational health and safety risks. Heavy equipment such as excavators, bulldozers, cranes, loaders, compactors, and concrete mixers can pose physical hazards to both operators and nearby workers. There is a risk of crushing, entrapment, or collision, particularly when moving loads, swinging equipment, or rotating machinery components are involved. Workers may also be struck by moving equipment, especially in areas with limited visibility or poor communication.

In addition to physical hazards, the prolonged operation of heavy machinery can expose workers to high levels of noise and vibration, potentially causing hearing loss, fatigue, or musculoskeletal disorders. Mechanical failures or hydraulic malfunctions may lead to sudden uncontrolled movements, increasing the likelihood of accidents. Leaks of fuel, lubricants, or hydraulic oil present fire and chemical exposure risks, while limited visibility around large equipment can result in collisions with personnel, other machinery, or structures if proper signaling and supervision are not in place. Without effective risk management, construction machinery handling can lead to serious injuries, fatalities, and disruption of construction activities, highlighting the need for stringent occupational health and safety measures throughout the project. The potential impact of construction machinery handling is assessed as high magnitude.

Mitigation Measures

- All machinery operators shall be properly trained and certified to operate specific equipment safely. Operators will also be trained on emergency procedures and safe operating practices;
- Workers operating or working near machinery shall be provided with and required to use appropriate PPE, including helmets, high-visibility vests, safety boots, gloves, ear protection, and eye protection as necessary;
- All machinery shall undergo regular maintenance and inspections to ensure proper functioning and prevent mechanical failures that could lead to accidents;
- Safe operating zones shall be established, with clear signage, barriers, and traffic management plans to separate machinery movement from pedestrian areas and other work zones;
- A competent safety officer shall be assigned to monitor machinery operations, ensure compliance with safety procedures, and immediately address unsafe conditions; and
- Emergency response plans (ERP), including first aid, spill containment, and fire response, shall be in place and communicated to all personnel on site.

Criteria	Rating	Description	Score
Magnitude	High	Multiple high-risk activities are inherent to construction works with potential for serious injury or fatality.	3
Extent / Scale	Low	Impacts primarily limited to the project site and immediate work areas within Nairobi City (on-site).	1
Duration	Short-term	Limited to the construction phase.	1
Intensity	High	Can result in severe consequences including permanent disability, loss of life, and psychological trauma.	4
Total Score	-	Sum of individual scores	9
Significance Rating	Medium	(9 – 12 = Medium)	High

The occupational health and safety (OHS) hazard risks during the construction phase are assessed as High (Major) in significance. Construction activities involve numerous inherent hazards such as working at heights on multi-storey structures, excavation works, heavy lifting, operation of machinery and vehicles, electrical installations, and exposure to dust, noise, and hazardous materials. These risks have the potential to cause serious injuries, occupational illnesses, or even fatalities if not effectively managed.

Residual Impacts: Through rigorous implementation of the proposed mitigation measures including developing comprehensive OHS Management Plan, and full adherence to the World Bank Environmental and Social Standards (ESS), particularly ESS2 (Labor and Working Conditions) and ESS4 (Community Health and Safety), as well as the OSHA 2007 requirements, provision of appropriate PPE, regular safety training and inductions, competent supervision, risk assessments, permit-to-work systems, emergency response planning, and regular OHS audits. The residual significance is expected to be reduced to Medium (Moderate).

8.8. Environmental Impacts During Operation

The proposed (MICE-Core) Phase 1 project will comprise a mix of amenities and support infrastructure that are designed to serve both residents and visitors. Key components of the project include a sporting arena, a hotel and boutique facilities, residential apartments, and other complementary developments such as commercial and recreational spaces. While these facilities will provide significant social and economic benefits, they are also expected to generate a range of operational impacts, including increased traffic, water and energy demand, waste generation, noise, and potential pressures on local public services. These operational impacts will require careful planning and management to ensure the long-term sustainability and minimal disruption to the surrounding environment and community.

8.8.1. Audible Noise During Sporting and Entertainment Events

During operation, entertainment and sporting events held at the sporting arena, or other recreational facilities are expected to generate audible noise that may affect nearby residents, businesses, and sensitive receptors. Noise sources include amplified music, crowd cheering, public address systems, and vehicular movements associated with event arrivals and departures. Without appropriate mitigation, these noise levels could result in disturbance, reduced comfort, and potential health impacts for the surrounding community. The generation of audible noise during sporting and entertainment events is assessed as Medium to High in significance. This negative impact will arise from large crowds, amplified sound systems, cheering, music performances, and occasional fireworks or special effects associated with events held at the facility.

Criteria	Rating	Description	Score
Magnitude	Medium to High	Significant noise levels generated during events, particularly during peak cheering, music, and announcements.	3
Extent / Scale	Low	Noise will primarily affect the immediate project site and surrounding areas within the Railway Landimawe (up to 500–800 m radius) (local).	1
Duration	Short-term (Recurrent)	Noise occurs only during event periods but will be recurrent throughout the operational phase.	2
Intensity	High	Can cause significant disturbance, annoyance, and sleep disruption to nearby receptors, especially at night.	3
Total Score	-	Sum of individual scores	9

Criteria	Rating	Description	Score
Significance Rating	High	(9 – 12 = High)	High

Mitigation Measures

- Use directional speaker systems to focus sound within the venue and reduce noise spillover;
- Install acoustic barriers or soundproofing around the arena, and other high-noise facilities to contain amplified sound;
- Limit the maximum volume levels of public address systems and amplified music;
- Conduct regular noise monitoring at sensitive receptors during major events to ensure compliance with EMCA (Noise and Vibration) Regulations, 2009; and
- Inform nearby residents and businesses in advance of major events through social media, or appropriate channels.

Residual Impact: After implementing the above mitigation measures including event scheduling, sound management and control, traffic noise management, regular monitoring, and community engagement the impact of audible noise from entertainment and sporting events is expected to be significantly reduced. Consequently, the residual impact on nearby residents and sensitive receptors is assessed as medium.

8.8.2. Solid Waste Generation

The operation of the MICE-Core Phase-1 sub-component project including the sporting arena, hotel and boutique facilities, residential apartments, and other commercial and recreational areas is expected to generate significant and substantial quantities of solid waste. This includes biodegradable waste such as food from restaurants, hotels, and residential units, as well as non-biodegradable waste including plastics, packaging materials, paper, and glass. Additionally, small quantities of hazardous waste (e.g., cleaning chemicals, and lubricants) may be generated from facility maintenance and operations. If not properly managed, these wastes could lead to environmental degradation, attract pests, create public health hazards, and adversely affect the aesthetic and operational quality of the project and its surroundings. The significance of this impact is influenced by waste volumes, frequency of generation, proximity to sensitive receptors, and the effectiveness of existing waste management systems.

Criteria	Rating	Description	Score
Magnitude	Medium to High	Large volumes of solid waste (food waste, plastics, paper, cans, and general litter) are expected during high-attendance events and daily operation of other facilities like hotel, commercial and hotel.	2
Extent	Local	Impacts primarily within the project site and immediate surrounding areas in the Nairobi CBD.	1
Duration	Long term	Waste shall be generated throughout the project lifetime.	3
Intensity	Medium	Potential for littering, odour, visual pollution, and strain on waste collection systems if not well managed.	2
Likelihood	Definite	Significant waste generation is unavoidable during events with large crowds.	
Total Score	-	Sum of individual scores	8
Significance Rating	High	(5– 8 = Medium)	Medium

Mitigation Measures

- Hazardous waste, including oils, chemicals, and cleaning agents, shall be collected separately and disposed of through licensed service providers in compliance with EMCA (Waste Management) Regulations, 2024;
- Clearly labeled waste bins for biodegradable, recyclable, and hazardous shall be provided to all facilities, including the sporting arena, hotel, residential apartments, and commercial areas;
- Identify opportunities to recycle materials such as plastics, paper, and metals through licensed recycling vendors;

- Engage residents and facility users to encourage responsible disposal practices and reduce littering;
- Implement a routine waste collection schedule to prevent accumulation of waste on-site;
- Store waste in designated secure areas away from public access and sensitive receptors until disposal; and
- Keep a waste log that tracks the amounts of waste generated, collected, recycled, and disposed off, ensuring compliance with regulations.

Residual Impact: With the effective implementation of the proposed mitigation measures cited above including development of an Integrated Solid Waste Management Plan, provision of adequate waste bins and segregation stations, engagement of licensed waste handlers, promotion of waste reduction, recycling, and regular clean-up after every events the residual significance is expected to be reduced to Low.

8.8.3. Pressure on Existing Utilities

The operation of the project, with its mix of residential apartments, hotel and boutique facilities, sporting arena, and commercial amenities, is expected to attract a significant number of residents, workers, and visitors. This increased population will place additional demand on existing utility services, including water supply, electricity, sewage and sanitation systems, and solid waste management infrastructure. Without adequate planning and management, the surge in demand could result in overloading utility networks, intermittent service, reduced water and energy availability, sewage blockages, and strain on waste disposal systems. These pressures may not only impact on the operational efficiency of the project but also affect the surrounding communities, leading to potential social and environmental consequences. The magnitude of this impact is influenced by the number of users, the capacity of existing utility infrastructure, and the efficiency of service provision and is assessed as high magnitude.

Impact Significant Rating

Criteria	Rating	Description	Score
Magnitude	Medium to High	Significant spike in demand for water, electricity, sanitation, and waste handling during events with high attendance.	2
Extent	Local to Regional	Impacts will be felt within the project site and surrounding Nairobi CBD areas, potentially affecting utility networks.	2
Duration	Long term	High spike will occur only during event days but will continue throughout the operational phase due to other amenities.	4
Intensity	High	This can cause strain, reduced service quality, overloading, or outages in the existing utility systems.	4
Likelihood	Definite	Pressure on utilities is unavoidable during large sporting and entertainment events as well as normal operation of other amenities.	3
Total Score	-	Sum of individual scores	15
Significance Rating	High	(9– 12 = High)	High

Mitigation Measures

- Install water storage tanks and booster systems to ensure reliable supply to residential, commercial, and recreational facilities;
- Implement water-saving technologies such as low-flow taps, dual-flush toilets systems;
- Use energy-efficient lighting, appliances, and HVAC systems to reduce electricity demand;
- Install on-site backup generators or explore renewable energy options such as solar PV to supplement the grid during peak loads;
- Conduct integrated infrastructure capacity assessments during detailed design in collaboration with Nairobi City Water & Sewerage Company (NCWSC), Kenya Power (KPLC), and Kenya Urban Roads Authority (KURA),
- Plan phased upgrades or reinforcements of utilities, including relocation of existing lines where necessary,
- Promote shared infrastructure corridors (e.g., combined utility ducts) to minimize repeated excavation, and
- Implement a utility management plan with continuous monitoring.

Residual Impact: With the effective implementation of the proposed mitigation measures including a Utilities Management Plan, installation of on-site water storage systems, backup generators, efficient drainage design, and close coordination with utilities providers like the Nairobi City Water & Sewerage Company (NCWSC) and the Kenya Power (KPLC) the residual significance impact is expected to be reduced to Minor to Medium.

8.8.4. Occupational Safety and Health Risks

The operation of the Project, which comprises a sporting arena, hotel and boutique facilities, residential and associated mixed-use facilities will expose workers to a range of occupational health and safety hazards arising from facility maintenance, crowd management, electrical systems, mechanical equipment preparation, food preparation, housekeeping, waste management, emergency response, and security operations. Risks include slips, trips and falls, fire and electrical incidents, manual handling injuries, exposure to hazardous substances, workplace violence during crowd control, and ergonomic injuries. Given the complexity of operations and the large workforce required to support the operations, the impact is assessed as High significance.

Criteria	Rating	Description	Score
Magnitude	High	Arena operations will expose employees, contractors, security personnel, maintenance staff, cleaners, vendors, and emergency responders to occupational hazards including slips, trips and falls, manual handling injuries, electrical hazards, fire incidents, crowd-related injuries, equipment accidents, and ergonomic risks.	3
Extent	Site-wide	Occupational health and safety risks will affect all operational areas, including the arena, hotels, conference facilities, retail outlets, parking areas, loading bays, plant rooms, kitchens, and maintenance workshops.	2
Duration	Long-term	OHS risks will persist throughout the operational life of the project due to continuous facility management, maintenance activities, and routine operations.	4
Intensity	High	Poorly managed occupational hazards could result in serious injuries, fatalities, lost work time, property damage, legal liabilities, and operational disruptions.	4
Likelihood	Probable	Occupational hazards are likely to occur during normal operations if appropriate health and safety management systems, training, supervision, and emergency preparedness measures are not effectively implemented.	2
Total Score		Sum of individual scores	15
Significance Rating	High	(13–16 = High)	High

Mitigation Measures

- The Proponent shall establish, implement, and maintain a comprehensive Occupational Health and Safety Management System (OHSMS) in compliance with the Occupational Safety and Health Act, 2007, and international good industry practice;
- Conduct routine occupational risk assessments and Job Hazard Analyses for all operational activities and update control measures whenever work processes or equipment change;
- Develop and enforce Standard Operating Procedures (SOPs) for all routine and high-risk activities, including maintenance, electrical works, confined space entry, working at heights, and crowd management;
- Provide comprehensive induction and periodic refresher training on occupational health and safety, emergency response, fire safety, first aid, manual handling, and the safe use of equipment and machinery;
- Ensure all employees, contractors, and service providers are provided with appropriate Personal Protective Equipment (PPE) and that its proper use is enforced at all times;
- Install and maintain adequate fire detection, alarm, suppression, and firefighting systems, including portable fire extinguishers, hydrants, sprinklers, smoke detectors, and clearly marked emergency exits;

- Develop and regularly test an Emergency Preparedness and Response Plan covering fire, medical emergencies, structural failure, crowd-related incidents, hazardous material spills, and security threats;
- Conduct regular inspection, testing, and preventive maintenance of electrical installations, mechanical systems, lifts, escalators, HVAC systems, generators, and other operational equipment;
- Implement effective crowd management measures, including trained security personnel, adequate stewarding, controlled access points, surveillance systems, and emergency evacuation procedures;
- Establish a comprehensive incident and near-miss reporting system to facilitate investigation, corrective actions, and continuous improvement;
- Conduct periodic occupational health surveillance for employees exposed to specific workplace hazards, including excessive noise, chemicals, or repetitive physical tasks;
- Restrict access to hazardous operational areas through appropriate signage, barriers, permit-to-work systems, and authorized personnel control;
- Maintain effective communication and coordination with emergency services, including hospitals, fire and rescue services, police, and disaster management agencies; and
- Monitor and review the effectiveness of OHS mitigation measures regularly and update the Occupational Health and Safety Management System based on audit findings, incident investigations, and changes in operational activities.

8.8.5. Traffic Congestions

The operation of the proposed project is expected to generate significant traffic volumes, particularly during peak hours and during events at the sporting arena or hotel. The influx of residents, visitors, staff, and service vehicles could result in increased congestion on nearby roads, and higher demand for parking and public transport facilities. If not properly managed, operational traffic could contribute to delays for local residents, increased vehicular emissions, heightened risk of road accidents, and strain on Nairobi's existing transport infrastructure, particularly in areas where road capacity is already limited. Considering the anticipated frequency of events and the strategic location of the project abutting Nairobi's Central Business District, the impact is assessed as direct, negative, long-term, local, reversible, and of High significance prior to mitigation.

Criteria	Rating	Description	Score
Magnitude	High	Large numbers of spectators, employees, service vehicles, taxis, ride-hailing services, and buses will significantly increase traffic volumes before, during, and after events, resulting in congestion on surrounding roads.	3
Extent	Local to Regional	Traffic impacts will occur within the project site, adjacent roads, Nairobi Railway City precinct, and major connecting routes including Haile Selassie Avenue, Uhuru Highway, Bunyala Road, and Nairobi CBD road network.	2
Duration	Long-term	Traffic surges will occur during major events but will persist throughout the operational life of the arena due to daily activities associated with hotels, retail outlets, offices, conference facilities, and other mixed-use developments.	4
Intensity	High	Congestion may lead to longer travel times, increased accident risks, pedestrian-vehicle conflicts, illegal parking, reduced emergency access, and increased vehicle emissions if not effectively managed.	4
Likelihood	Definite	Increased traffic demand is inevitable during arena events and regular operation of the mixed-use development unless comprehensive traffic management measures are implemented.	3
Total Score		Sum of individual scores	16
Significance Rating	High	(13–16 = High)	High

Mitigation Measures

- Develop and implement a Traffic Management Plan (TMP) in consultation with the Kenya Urban Roads Authority (KURA), Nairobi City County, Kenya Railways Corporation, and the National Police Service (Traffic department);
- Encourage the use of public transport, the Nairobi Commuter Rail System, Bus Rapid Transit (BRT) services, walking, cycling, and other non-motorized transport options;
- Provide adequate on-site parking, designated bus bays, taxi and ride-hailing pick-up/drop-off zones, and service vehicle loading areas;
- Introduce intelligent parking guidance systems and real-time traffic information during major events;
- Stagger event start and finish times where feasible to reduce peak-hour traffic demand;
- Deploy trained traffic marshals during large events to direct vehicles and pedestrians;
- Install appropriate traffic signage, road markings, pedestrian crossings, speed-calming measures, and street lighting;
- Promote travel demand management measures, including advance ticketing linked to public transport incentives and employee car-pooling programmes;
- Implement measures outlined in the Traffic Impact Assessment (TIA) Report; and
- Continuously monitor traffic performance and coordinate with relevant road authorities to implement additional improvements where necessary.

8.8.6. Fire Safety

The Fire and Gas (F&G) System is designed and installed to provide rapid and reliable detection of fire and flammable gas leaks. It continuously monitors all areas where fire or the accumulation of flammable or explosive gas mixtures may occur.

The F&G system is not tied to any specific process but is instead organized into discrete fire areas based on location. Each fire area is self-contained, incorporating multiple types of sensors for fire and gas detection, along with associated fire protection and firefighting devices to contain and suppress fires within that zone. A fire area protection datasheet defines the specific detection devices installed in each area and the corresponding fire protection actions to be taken in the event of an incident. The type and quantity of detection, protection, and suppression devices are determined by the nature of the equipment and the size of the fire area and therefore vary across different process zones. Key features of the F&G detection system will include:

- **Gas Detection:** Combustible and toxic gas detectors (electro-catalytic or optical infrared (IR) type);
- **Flame Detection:** Ultraviolet (UV) or infrared (IR) optical detectors; and
- **Fire Detection:** Heat and ionic smoke detectors.

8.8.7. Collapse of Seating Stands

The operation of the Arena District will involve accommodating large crowds during sporting events, concerts, exhibitions, and other public gatherings. Structural failure or collapse of seating stands, whether due to design defects, inadequate maintenance, overloading, material deterioration, unauthorized modifications, or extreme loading conditions, could result in multiple injuries, fatalities, property damage, panic, and disruption of operations. Although such an event is unlikely where the facility is properly designed and maintained, the consequences would be catastrophic, making this a significant occupational and public safety risk requiring robust preventive measures. The impact has very high consequences but a low likelihood if the arena is properly designed, constructed, certified, and maintained.

Criteria	Rating	Description	Score
Magnitude	Very High	Structural collapse could result in multiple fatalities, serious injuries, extensive property damage, and major disruption of operations.	4
Extent	Site-wide	The impact would primarily affect spectators, workers, athletes, and visitors within the arena.	2
Duration	Long-term	The risk exists throughout the operational life of the arena if structural integrity is not adequately maintained.	4

Criteria	Rating	Description	Score
Intensity	Very High	Consequences would be catastrophic, including mass casualties, legal liability, reputational damage, and prolonged closure of the facility.	4
Likelihood	Rare	The event is unlikely where the arena is designed, constructed, inspected, and maintained in accordance with applicable engineering standards and building codes.	1
Total Score		Sum of individual scores	15
Significance Rating	High	(13–16 = High)	High

Mitigation Measures

- Design, construct, and operate the arena in accordance with applicable Kenyan building regulations (Building codes), international structural engineering standards, and venue safety guidelines;
- Obtain structural certification from qualified and registered structural engineers before commissioning the facility and following any major alterations;
- Develop and implement a Structural Integrity Management Plan covering routine inspections, preventive maintenance, and periodic structural assessments;
- Conduct periodic structural inspections of seating stands, stairways, handrails, barriers, platforms, and supporting members by qualified structural engineers;
- Establish and strictly enforce the maximum occupancy limits for each seating section through ticketing controls and access management;
- Install real-time crowd monitoring systems to prevent overcrowding and unsafe loading of seating areas;
- Prohibit unauthorized structural modifications, installation of temporary structures, or removal of structural elements without professional approval;
- Immediately repair or replace any damaged, corroded, cracked, or weakened structural components identified during inspections;
- Develop and regularly test emergency evacuation procedures for structural emergencies and crowd incidents; and
- Conduct periodic independent structural safety audits throughout the operational life of the arena and implement recommendations promptly.

8.9. Cumulative Impacts

Cumulative impacts are changes to the environment that are caused by certain activity in combination with other past, present, and future human activities or developments. The objective of the cumulative impact assessment is to identify the environmental and/or socio-economic aspects that may not on their own constitute a significant impact but when combined with impacts from past, present, or reasonably foreseeable future activities associated with this and/or other projects result in larger and more significant impacts.

Cumulative effects/impacts were considered taking into account other projects or actions planned in the project/study area. Considering that there are a number of proposed projects within Railway City Master Plan. The assessment of cumulative impacts has taken these projects into account. Some of the projects include:

- a) New station and rail line improvement,
- b) East core (eastern side of the site bordering the Muthurwa area), and
- c) Centre core (next to the new station area)
- d) Any other initiatives in the project area that may result in positive or negative cumulative impacts were included in the ESIA Study.

The proposed Railway City development comprises multiple interconnected components, including new proposed developments as well as existing operational elements such as the active rail line, industrial

zones, and other commercial businesses. The new components include a sporting arena with a seating capacity of 10,000, and a hotel, commercial and office buildings. When assessed in combination with other existing and reasonably foreseeable future developments in the vicinity, the project has the potential to generate cumulative impacts on the biophysical and socio-economic environment of the area.

Using the VEC-centric approach (identification of Valued Environmental and Social Components as key receptors, assessing project-specific residual impacts after mitigation, and then evaluating the Project's contribution to broader cumulative impacts in a qualitative manner. VECs are the most important receptors (e.g., air quality, water resources, biodiversity, traffic/mobility, community livelihoods, cultural heritage, urban landscape, public health, etc.) that matter most for cumulative effects in the proposed project area and surrounding areas. This assessment is based on qualitative due to uncertainties in future developments and interactions of other planned projects in the area.

8.9.1. Likely Residual Impacts

Residual effects can be considered as those that remain significant following the application of mitigation measures, although they are likely to have been reduced in magnitude as a result of the mitigation measure implemented. The Project's contribution to cumulative impacts is assessed within the context of predicted future conditions, considering other existing, planned, or reasonably foreseeable projects and activities in the Railway City precinct and Nairobi CBD. Positive residual impacts include substantial job creation, urban regeneration, and enhanced public spaces. Negative residual impacts are expected to remain low to moderate, encompassing temporary construction-related dust, noise and traffic disruptions, localized waste generation, minor land-use changes, potential livelihood effects, and increased pressure on utilities during operation.

The cumulative impact assessment examines how the Railway City project particularly its MICE Core (Arena, commercial, hotel, office, and residential developments) interacts with other initiatives such as CBD redevelopments, SGR and commuter rail upgrades, road projects, private developments, population growth, and climate-related pressures as outlined in the Table below.

Table 45: Summary of the Likely Potential Cumulative Impacts

VEC Category	Project's Residual Contribution	Other Key Impact Factors in Project area	Overall Cumulative Impact Level	Project's Contribution to Cumulative Impact	Key Rationale & Context
Air Quality	Low to Moderate (short-term negative from construction activities)	High traffic volumes, multiple construction booms, industrial & vehicle emissions	Moderate to High (negative)	Low to Moderate (slightly beneficial long-term)	The arena and commercial/hotel uses will generate traffic and events-related emissions. However, integration with the new station will promote public transport, helping offset vehicle use. Dense residential and offices will increase localized demand but enable compact development.
Traffic & Mobility	Moderate to High (positive from railway integration, but negative peak from arena events)	Severe existing CBD congestion, matatu/PSV operations, multiple infrastructure projects	High	Moderate to High (net positive if well managed)	The arena will cause significant peak-hour and event-day surges. Hotels, offices, and residential will add daily trips. Strong positive synergy with the multimodal station and BRT can reduce overall CBD congestion.
Noise & Vibration	Moderate (arena events & construction; low after mitigation)	Traffic, rail operations, construction across CBD	Moderate to High	Moderate	Large arena events (sports, concerts) will introduce periodic high noise. Commercial, hotel, and residential uses add steady operational noise. Cumulative noise in a densifying CBD is a concern.
Water Resources & Drainage	Low to Moderate (increased runoff from impervious surfaces; mitigated by green design & harvesting)	Urban flooding, increased hard surfaces from city-wide development	Moderate	Low to Moderate	New buildings (arena, hotels, offices, residential blocks) add impervious area and water demand. Good stormwater design and reuse (as planned in the masterplan) limits the addition to cumulative flooding risk.
Waste Management	Moderate (high during construction, operational waste from commercial, hotel, arena, residential)	Nairobi's existing solid waste collection challenges	High (negative)	Moderate	High visitor numbers at the arena, commercial/retail hotels will generate substantial waste. Residential adds daily household waste. This incrementally adds pressure on city waste management systems.
Socio-Economic (Jobs, Economy, Livelihoods)	High positive (500 jobs claimed from arena alone; plus, construction & operations across components)	Urban growth, inequality, other mega-projects	High positive	High positive	Strong job creation in construction, hospitality, retail, entertainment, and creative sectors. However, can contribute to gentrification and rising living costs for existing communities.
Biodiversity & Green Space	Low to Moderate (loss of open land offset by new green/public realm)	Progressive loss of green areas due to CBD densification	Moderate	Low	The project includes new green spaces, but overall densification (arena and buildings) reduces permeable surfaces. Cumulative green space deficit in Nairobi is notable.
Community & Social, public health, culture	Moderate (positive vibrancy, potential negative from displacement & event crowds)	In-migration, social pressures, public health strains	Moderate	Moderate (mixed)	Arena brings cultural/entertainment benefits and community events. Residential and commercial can displace informal uses or raise rents. Increased population density adds pressure on services and health.

In general, the proposed project (comprising the multi-purpose Arena, commercial facilities, hotels, offices, and residential components) gives the Railway City development project a Moderate overall contribution to cumulative impacts, with strong positive effects on the economy and employment creation, but added pressure on traffic, noise, waste, and social services. The arena stands out as a high-intensity use that can drive event-related cumulative peaks (traffic, noise, waste, security), while the residential, offices, and hotel components drive steady, long-term increases in population and economic activities.

8.10. Enhancing Positive Impacts

8.10.1. Job Creation

The project is expected to create employment opportunities throughout its construction and operational phases of at least (20,000+). These opportunities will include both skilled and unskilled jobs in areas such as construction, engineering, facility management, hospitality, security, retail, maintenance, administration, and event management. In addition to direct employment, the project will generate indirect and induced jobs through demand for goods and services along the supply chain. To maximize employment benefits, the Proponent together with the contractor:

- a) Shall prioritize the recruitment of suitably qualified personnel from the local community, where skills are available, in accordance with the Constitution of Kenya, the Employment Act, 2007, and applicable labour laws.
- b) Contractors and subcontractors shall also be encouraged to source labour locally to the greatest extent practicable;
- c) The Proponent shall support skills development through apprenticeship programmes, on-the-job training, internships, and capacity-building initiatives to enhance the employability of local residents during and beyond the project lifecycle.

8.10.2. Business and Economic Opportunities

The implementation and operation of the project will stimulate local economic growth by increasing demand for goods and services. The presence of workers, visitors, spectators, conference delegates, and tourists will create business opportunities for local enterprises, including food vendors, hotels, restaurants, retail outlets, transport operators, cleaning services, event management companies, security firms, suppliers of construction materials, and other small and medium-sized enterprises (SMEs). The project will also contribute to increased government revenue through taxes, levies, and business licensing. To enhance these positive impacts:

- The Proponent is encouraged to adopt a local procurement policy that gives preference to locally available goods, materials, and services where they meet the required quality, safety, and cost standards.
- The Proponent shall also collaborate with relevant National Government agencies, Nairobi City County, technical and vocational education institutions, and business development organizations to strengthen local enterprise development, promote entrepreneurship, and build the capacity of local suppliers to participate effectively in project-related opportunities.
- Continuous stakeholder engagement shall be maintained to ensure that economic benefits are equitably shared among affected communities and other stakeholders.

9. CLIMATE CHANGE RISK AND VULNERABILITY ASSESSMENT

9.1. Introduction

Climate change is one of the greatest threats facing the world in the 21st century. If not addressed, it will have significant and long-lasting impacts on the lives of people around the globe. Taking action to mitigate and adapt to climate change is therefore not optional, but an urgent necessity. While the effects of climate change are already being observed, it is generally accepted that if the global temperature rise reaches 1.5°C above pre-industrial levels, the impacts on natural and human systems will be severe and potentially irreversible⁵. These impacts include: -

- Loss of ecosystems, sea-level rise, and more frequent,
- Severe weather events, such as droughts, and
- Heatwaves, and storms,

The adoption of the Paris Agreement on Climate Change, followed by its signing by nearly 200 countries, marked a historic turning point in global climate action. Under the Paris Agreement, signatory nations committed to limiting the average global temperature increase to well below 2°C, aiming for 1.5°C. In line with this global goal, Kenya has committed to developing and implementing an ambitious Climate Action Plan (CAP) under C40's Deadline 2020 programme⁶. This plan will align with international climate targets and contribute to mitigating climate change impacts at both the national and global levels.

9.2. Approach and Methodology

A Climate Vulnerability and Risk Assessment (CVRA) consist of two distinct components: a **Vulnerability Assessment** and a **Risk Assessment**. The vulnerability assessment evaluates the degree to which a population group, asset, system, or sector is susceptible to climate-related hazards or lacks the capacity to cope with their impacts. This assessment helps identify potential areas of concern and highlights the range and scope of possible vulnerabilities.

The risk assessment, on the other hand, builds on the findings of the vulnerability assessment by prioritizing the identified vulnerabilities. It does so by evaluating the likelihood of specific climate hazards occurring and estimating the potential social, economic, and environmental consequences if those hazards interact with the affected population, asset, system, or sector. Together, these two components provide a structured approach to understanding climate-related threats and support informed decision-making for climate adaptation and resilience planning. **Climate Change Vulnerability**; is the degree to which geophysical, biological and socio-economic systems are susceptible to and unable to cope with adverse impacts of climate change, including climate variability and extremes (*Füssel and Klein, 2006*). Vulnerability is an integrated measure of the expected magnitude of adverse effects to a system caused by a given level of certain external stressors to generate risk under the Figure below:



Figure 23: Climate Vulnerability & Risk Assessment Framework

⁵ PCC. (2023). Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (Core Writing Team, H. Lee, & J. Romero, Eds.). Intergovernmental Panel on Climate Change (IPCC). <https://doi.org/10.59327/IPCC/AR6-9789291691647>

⁶ United Nations Framework Convention on Climate Change (UNFCCC). (2015). Adoption of the Paris Agreement (Report No. FCCC/CP/2015/L.9/Rev.1). United Nations. <https://unfccc.int/process-and-meetings/the-paris-agreement>

The approach and methodology adopted for this assessment was based on the Representative Concentration Pathway (RCP) scenario a globally accepted climate models (GCMs) and regional climate models (RCMs) to simulate future temperature and precipitation. RCP 4.5 (moderate) and RCP 8.5 (high) serve as inputs for global climate models, such as those in the Coupled Model Intercomparison Project Phase 5 (CMIP5), to simulate future climate conditions like temperature rise, precipitation changes, sea-level rise, and extreme events. For Kenya, climate projections under RCP 4.5 (moderate) and RCP 8.5 (high) are used and indicate several important trends relevant to vulnerability and risk analysis for this study. These include:

- More intense rainfall leading to flooding.
- Longer dry spells and higher temperatures, and
- Increased risk of heat stress and water stress.

The climate change assessment examined key climate variables including temperature, rainfall, and extreme precipitation, as well as secondary risks such as flooding. Climate projections for Nairobi were obtained from established global repositories, including the IIASA RCP Database and the Earth System Grid Federation (ESGF) nodes for CMIP5 model outputs. Projections were reviewed for the project lifespan under two Representative Concentration Pathways (RCPs):

- RCP 4.5 (moderate emissions scenario with some mitigation)
- RCP 8.5 (high emissions scenario with limited mitigation)

Projections were analyzed for the 2030s, 2050s, and 2080s.es). The data analyzed indicate the following expected changes in Nairobi and its environs:

- **Temperature:** A clear upward trend is projected under both scenarios, with more pronounced increases under RCP 8.5. This will lead to higher average temperatures, more frequent hot days and nights, and increased risk of heatwaves.
- **Rainfall patterns:** Overall annual rainfall is projected to increase modestly. However, the distribution is expected to become more variable, with potential for both drier periods and more intense wet seasons.
- **Extreme events:** An increase in the frequency and intensity of extreme precipitation events (heavy rainfall) is anticipated. This is likely to raise the risk of flooding in low-lying and poorly drained areas of Nairobi. Projections also suggest possible increases in drought conditions during certain periods, alongside more intense heatwaves.

These changes are consistent with broader climate trends observed and projected for Kenya's central highlands, including Nairobi. The findings highlight the need for the proposed project to incorporate climate-resilient design measures, particularly with regard to stormwater drainage, flood risk management, heat stress on infrastructure and workers, and water resource planning.

9.2.1. Priority Impacts by Sector

The Climate Vulnerability and Risk Assessment (CVRA) methodology evaluated potential climate-related risks across several time horizons, including the baseline period, 2021–2050 (mid-century), and 2041–2080 (late-century). These timeframes were selected to capture both current climate conditions and projected future climate trends relevant to planning and decision-making.

Considering multiple future periods is particularly important due to the increasing variability in rainfall patterns, rising temperatures, and the growing frequency of extreme events such as droughts and floods, which affect key sectors including *infrastructure, water resources, and urban development*. Evaluating risks across these time horizons enables a more comprehensive understanding of how climate hazards may evolve and affect project assets and surrounding communities over time. For the purpose of prioritization, risks were assessed for each time period and compared across the assessment horizon. Where different risk ratings were identified across the timeframes, the highest risk rating was adopted to ensure a precautionary and forward-looking approach to climate resilience. This approach aligns with climate risk

management practices in Kenya, where planning frameworks emphasize integrating future climate projections into project design and environmental assessments. The use of this methodology ensures that both current and long-term climate risks are adequately considered, thereby supporting the development of appropriate adaptation and mitigation measures to enhance the resilience of the proposed project and surrounding systems.

Risk was calculated by combining **Climate Hazard Likelihood (L)** with **Vulnerability (V)**.

$$\text{Risk} = \text{Likelihood} \times \text{Vulnerability}$$

Table 46: Climate Vulnerability and Risk Assessment (CVRA) Scoring Framework and Rating Criteria

Table 4b: Climate Vulnerability and Risk Assessment (CVRRA) Scoring Framework and Rating Criteria				
Component	Definition	Rating Scale	Interpretation	
Vulnerability (V)	Measure of susceptibility of the system to climate impacts based on exposure, sensitivity, and adaptive capacity.	Result ranges from 1–5	Higher score indicates greater vulnerability	
Likelihood (L)	Probability of the climate hazard occurring within the assessment period (Baseline, 2021–2050, 2041–2080).	1–5	1 = Rare, 2 = Unlikely, 3 = Possible, 4 = Likely, 5 = Almost Certain	
Risk Score (R)	Overall climate risk resulting from the interaction between hazard likelihood and vulnerability.	1–25	Higher score indicates higher climate risk	
Negligible	Low	Medium	High	Very High
1-2	3-4	5-6	7-8	9-10

9.3. Kenya Climate

Kenya's climate is highly diverse, with variations primarily influenced by altitude. The highlands experience a moderate mean annual temperature of around 15°C, while the lowland areas in northern and eastern Kenya can reach temperatures as high as 29°C. In contrast, the coastal region and the shores of Lake Victoria in the far west enjoy a tropical climate, with temperatures typically ranging between 23°C and 27°C. Annual precipitation in Kenya varies significantly across the country, with amounts ranging from as low as 200mm in the arid northern and eastern regions, characterized by steppe landscapes, to more than 1,600 mm in the western areas. The highland regions of Kenya experience a more moderate climate, with annual precipitation totals ranging between 800 mm and 1,000 mm. Kenya has two rainy seasons (bimodal precipitation regime) a major one from March to May and a minor one from October to December⁷.

9.3.1. Kenya's Climate-Related Natural Hazards (Geographic Risks)

Overview Kenya is highly exposed to many natural hazards, the most common being floods and droughts. It is estimated that over 70% of natural disasters in Kenya are attributable to extreme climatic events. Typically, major droughts occur approximately every ten years, and moderate droughts or floods every three to four years. Repeating patterns of floods and droughts in the country have had large socio-economic impacts and high economic costs. For example, the 1998 to 2000 drought cost an estimated \$2.8 billion, principally due to crops and livestock loss, as well as forest fires, damage to fisheries, reduced hydropower generation, reduced industrial production and reduced water supplies.⁵¹ Droughts have affected more people and had the greatest economic impact (8% of GDP every five years⁸).

9.3.2. Key Trends

Climate change is expected to increase the risk and intensity of flood events, as well as increase average annual rainfall amounts, while also furthering drought likelihoods for some areas across Kenya. Intense rainfall and flooding may increase the likelihood of mudslides and landslides, particularly in mountainous

⁷ Climate Risk Profile: Kenya

⁸ Convention on Climate Change. URL: <https://unfccc.int/sites/default/files/resource/Kennc2.pdf>

areas. As the incidence of extreme rainfall rises, additional soil erosion and water logging of crops is likely to reduce yields and increase food insecurity. Rising temperatures are also likely to increase the periods of aridity in the northwest regions. Furthermore, as temperatures rise and droughts are prolonged, water storage capacities will likely be reduced. This may result in significant economic losses, damage to agricultural lands and infrastructure as well as human casualties. Additionally, land degradation and soil erosion, exacerbated by recurrent floods will negatively impact agricultural productivity, disproportionately affecting the livelihoods of the rural poor⁹. Recurring disasters, particularly droughts and floods, have significantly impacted livelihoods and the country's economic development agenda. Flood and drought events are becoming more frequent, with drought cycles occurring every 2–3 years instead of every 5–10 years. A severe and prolonged drought from 2008–2011 affected 3.7 million people, caused \$12.1 billion in damages and losses, and cost over \$1.7 billion in recovery and reconstruction needs¹⁰.

Additionally, deforestation, watershed degradation, land use changes, urbanization and poor management of settlements have exacerbated the likelihood of and impact from floods and droughts. These conditions contribute to water scarcity and pollution, which limit water for drinking, agriculture, and other uses. Heavy rainfall can also trigger riverine, coastal and flash floods. Flash floods are common in the country's high plateau areas and can also trigger mudflows. Increasing urbanization, particularly into flood plains and/or low-lying areas also has increased flood risk, as water drainage systems fail.

9.3.3. Projected Climate Changes

In response to rising greenhouse gas (GHG) concentrations, air temperatures over Kenya are projected to increase by 1.2 to 3.2°C (very likely range) by 2080, relative to the baseline year of 1876. The extent of this temperature rise will depend on the future GHG emissions scenario (Figure below). Compared to pre-industrial levels, median climate model projections indicate a temperature increase of approximately 1.4°C by 2030, and 1.7°C by both 2050 and 2080, under the low emissions scenario (RCP2.6). Under the medium to high emissions scenario (RCP6.0), median temperature increases are projected to reach 1.3°C by 2030, 1.6°C by 2050, and 2.2°C by 2080.

9.3.4. Very Hot Days

In line with rising mean annual temperatures, the annual number of very hot days (days with daily maximum temperature above 35°C) is projected to rise substantially and with high certainty, in particular over central and eastern Kenya. Under the medium/high emissions scenario RCP6.0, the multi-model median, averaged over the whole country, projects 25 more very hot days per year in 2030 than in 2000, 36 more in 2050 and 59 more in 2080. In some parts, especially in northern and eastern Kenya, this amounts to about 300 days per year by 2080.

⁹ Ministry of Environment and Natural Resources (2016). Kenya National Adaptation Plan, 2015–2030. URL: <https://www4.unfccc.org>

¹⁰ GFDRR (2020). Kenya Overview. URL: <https://www.gfdr.org/en/kenya>

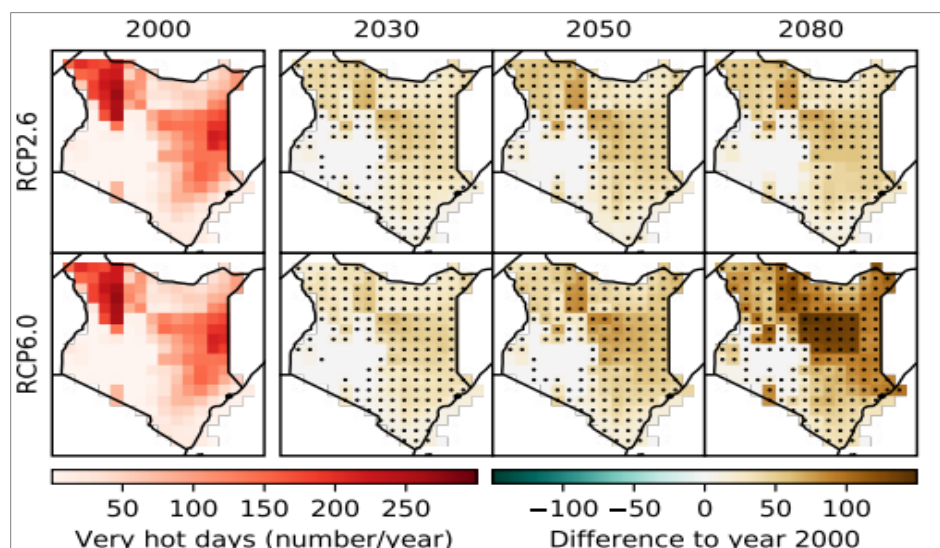


Figure 24: Projections of the annual number of very hot days (daily maximum temperature above 35 °C) for Kenya for different GHG emissions scenarios.

9.3.5. Sea Level Rise

In response to globally increasing temperatures, the sea level off the coast of Kenya is projected to rise (Figure 4). Until 2050, very similar sea levels are projected under both emissions scenarios. Under RCP6.0 and compared to year 2000 levels, the median climate model projects a sea level rise by 10 cm in 2030, 21 cm in 2050, and 40 cm in 2080. This threatens Kenya's coastal communities and may cause saline intrusion in coastal waterways and groundwater reservoirs.

9.3.6. Precipitation

Future projections of precipitation in Kenya are less certain than those for temperature change, primarily due to the high natural year-to-year variability in rainfall patterns. Among the three climate models used for this analysis, one model predicts either no change or a slight decrease in mean annual precipitation under the RCP6.0 scenario, while the other two models project an increase under the same emissions scenario. For the RCP2.6 scenario, median model projections suggest a slight increase in precipitation towards 2030, followed by an overall decrease towards the end of the century. Under RCP6.0, however, the projected increase in precipitation is expected to intensify after 2050, with an estimated rise of 53 mm per year by the end of the century, compared to 2000 levels. Higher emissions pathways indicate an overall wetter future for Kenya, with increased rainfall likely in certain regions.

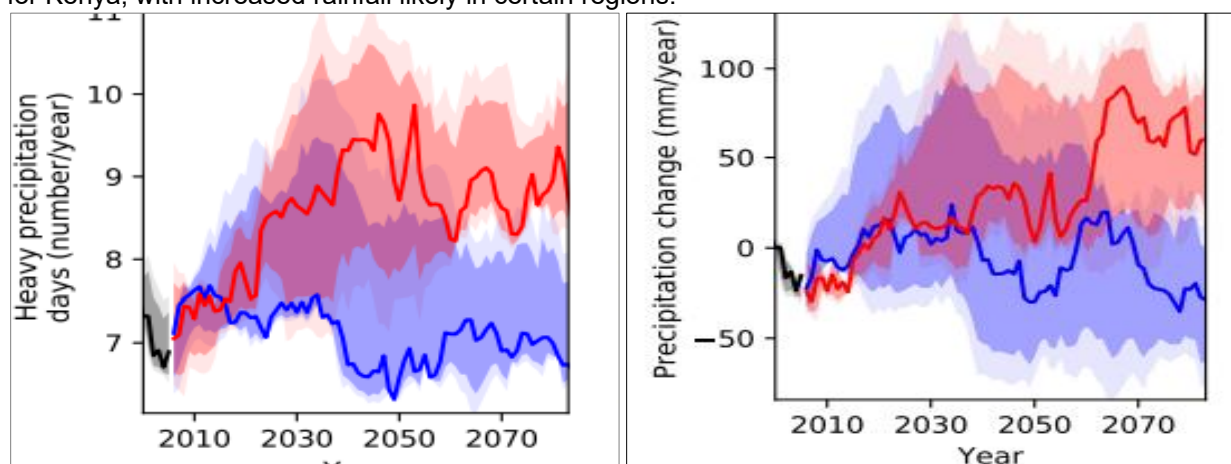


Figure 25: Projections of the number of days with heavy precipitation over Kenya for different GHG emissions scenarios, relative to the year 2000 (Source: Climate Risk Profile: Kenya Published and implemented by: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH In cooperation with: KfW Development Bank)

In response to global warming, heavy precipitation events are expected to become more intense in many parts of the world due to the increased water vapour holding capacity of a warmer atmosphere. At the same time, the number of days with heavy precipitation events is expected to increase. This tendency is also found in climate projections for Kenya as outlined in the Figure above, with climate models projecting an increase in the number of days with heavy precipitation, from 7 days per year in 2000 to 9 days per year in 2080 under RCP6.0. Under RCP2.6, the number of days with heavy precipitation remains unchanged.

9.4. Climate Change Impacts to Key Sectors

9.4.1. Infrastructure

Climate change is projected to severely impact Kenya's transport infrastructure through extreme weather events like floods and droughts. High precipitation and temperatures will cause infrastructure damage, leading to increased maintenance costs. Since road transport is vital for agriculture, trade, and access to services, especially in rural areas, investing in climate-resilient road networks is essential. Additionally, road transport accounts for 99% of non-aviation transport GHG emissions in Kenya.

Extreme weather events will have devastating impacts on human settlements and economic sites, particularly in densely populated urban areas like Nairobi and Mombasa. Informal settlements, which often lack stable infrastructure and are built in high-risk areas such as riverbanks and coastal zones, are especially vulnerable. These areas experience severe flooding, leading to loss of housing, water contamination, and even death. Residents, who typically have low adaptive capacity due to poverty and lack of infrastructure, are particularly affected. In Nairobi's Kibera settlement, for instance, over 50% of residents reported flooding during the 2015 rainy season, resulting in deaths, disease outbreaks, and destruction of property.

9.4.2. Ecosystems

Climate change is expected to significantly impact tropical ecosystems, though the exact extent remains uncertain. Rising temperatures, more frequent and intense droughts, and changing conditions are putting wetlands, river systems, and forests at risk of transformation. These changes can lead to habitat loss for both plants and animals, disrupt forest succession, and increase the spread of invasive species. Additionally, factors such as low agricultural production and population growth may drive further agricultural expansion, leading to deforestation, land degradation, and forest fires, which will negatively affect biodiversity.

9.4.3. Agriculture

Smallholder farmers in Kenya face growing challenges due to the unpredictability of weather patterns caused by climate change. Since most crops rely on rainwater, yields are increasingly affected by erratic rainfall, while the limited use of irrigation (only 28% of the potential irrigated area in 2003) further exacerbates the situation. This is due to poor extension services, irrigation management, lack of credit, and technical equipment. The primary irrigated crops are vegetables, fruit, coffee, rice, and maize. The uncertainty in water availability projections translates into high variability in drought predictions. According to median projections, the national crop land area exposed to drought annually will only slightly increase due to global warming, though other models predict a much stronger rise. Under RCP6.0, the range of drought exposure for crop land widens from 0-0.8% in 2000 to 0-1.6% in 2080, with the very likely range increasing from 0-1.9% to 0-9.8%. Some models project a fivefold increase in drought exposure, while others show no change. Climate change will have a negative impact on yields of millet and sorghum.

9.4.4. Energy

Extreme weather events such as heavy rains can damage infrastructure, roads, communication networks and disrupt supply lines. An increase in the frequency of heat waves in urban centers like Nairobi could translate into higher demand for air conditioning and cooling systems, putting power plants under severe stress and reducing their efficiency. In coastal areas, sea level rise and storm surge threaten water and electricity infrastructure with inundation and salinity damage. Given increasing temperatures and the increased energy demand that will coincide, change in cooling degree days provides insight into the potential for extended seasons of power demand or periods in which cooling demand (power demands) might increase. Mitigation strategies should collectively target:

- a) Adoption of energy-efficiency technologies that require less energy for the same functionality;
- b) Energy conservation by encouraging change in the behavior of electricity consumers behaviors;
- c) Adaptive policy, planning and investments for sustainable bioenergy use; and
- d) Deployment of solar PV systems in off-grid electrification towards.

9.4.5. Water Resources

Current projections of water availability in Kenya show high uncertainty, with median models suggesting an increase under RCP6.0 and no change under RCP2.6. However, when factoring in population growth (SSP2 projections), per capita water availability is projected to decline significantly by 73% under RCP2.6 and 63% under RCP6.0 by 2080, compared to 2000 levels. While population growth is the primary driver, these projections emphasize the need for investment in water-saving measures. Regional projections show varying trends: under RCP2.6, water availability will decrease by up to 25% in western Kenya and increase by up to 25% in southern Kenya by 2080. Under RCP6.0, the focus shifts to eastern Kenya, where water availability is expected to increase by up to 80%.

9.4.6. Health Sector

Climate change is the ultimate systemic health crisis. Rising global temperatures and erratic weather patterns directly exacerbate heat-related illnesses, expand the geographical spread of vector-borne diseases like malaria and dengue, and increase the prevalence of waterborne illnesses such as cholera during severe floods. These cascading effects severely burden healthcare infrastructure and supply chains, while driving malnutrition and psychological trauma within vulnerable communities.

Key impacts on the health sector include:

- **Infectious and Vector-Borne Diseases:** Warmer temperatures allow disease-carrying mosquitoes to survive at higher altitudes and latitudes. Regions—including in East Africa—face expanding seasonal zones for malaria, dengue, and Rift Valley fever
- **Water and Food Insecurity:** Flooding events contaminate drinking water systems, escalating rates of bacterial diseases like cholera and dysentery. Conversely, prolonged droughts destroy crop yields, leading to malnutrition and stunting, particularly in children.
- **Extreme Heat Stress:** Prolonged heatwaves increase mortality from cardiovascular and respiratory conditions. Outdoor workers, children, the elderly, and informal settlement residents bear the brunt of urban heat island effects]
- **Healthcare Infrastructure Strain:** Climate-driven disasters, such as severe flash floods, physically destroy health facilities, disrupt cold-chain vaccine storage, and paralyze medical supply chains. Because the climate crisis compounds pre-existing health disparities, comprehensive adaptation strategies—such as integrating climate data into early warning systems—are critical for health resilience. To explore these risks in greater detail, review the WHO Climate Change and Health Overview or examine targeted regional frameworks like the Kenya Climate Change and Health Strategy

9.5. Nairobi City County

Nairobi acknowledges both the current and future threats posed by climate change and the urgent need for targeted action at the city level. The Nairobi Climate Action Plan (CAP) is a direct response to this climate crisis, aiming to achieve its goals through a transformational approach. The plan focuses on leveraging the city's unique strengths and capacities while considering the broader context of regional and global climate challenges.

9.5.1. Nairobi Current Situation

Results from the Nairobi City inventory indicated that, in 2016, the total greenhouse gas (GHG) emissions in Nairobi amounted to 4.7 million metric tons of CO₂ equivalent (MtCO₂e), which translates to approximately 1.2 tons of CO₂ equivalent (tCO₂e) per person. The transport sector was identified as the largest contributor to these emissions, accounting for a significant portion of the city's overall carbon footprint. This highlights the urgent need for targeted action in reducing emissions from transportation, which is a major driver of air pollution and climate change in Nairobi. Efforts to transition to cleaner and more sustainable transport systems will be crucial for reducing GHG emissions and achieving the city's climate goals. Through the analysis of future climate projections and historical trends, three key climate

hazards have been identified as prominent drivers of change in Nairobi: flooding and storms, extreme heat, and drought. A Climate Rapid Assessment (CRA) has further highlighted the potential impacts of these hazards, which may pose significant risks to the city's social, natural, and economic capital. These risks include damage to infrastructure, disruption of livelihoods, loss of biodiversity, and strain on water resources.

9.6. Identification of the Potential Climate-Related Hazards

The sensitivity of the proposed project was and will be determined in relation to a range of climate hazards. The following table presents a short description of each one of the climate hazards as well as the climate related hazards which will be considered for the specific project. Under a changing climate over the next century, many of Kenya's climate vulnerabilities and associated risks are expected to intensify. Without proactive mitigation measures, these risks could lead to significant economic, environmental, and social impacts on the organization. The results of the risk assessment highlight areas where attention is needed, particularly regarding key internal structures and processes, to enhance overall resilience. If climate risks are not actively managed, the proposed project will be required to implement more extensive adaptive measures in the future. Based on the assessed vulnerability and risk levels, the study identified that:

- Short duration/high intensity and sustained precipitation event (flooding, & storms); and
- Extreme Urban heat.

These hazards exhibit very high vulnerability and very high risk requiring prioritized adaptive strategies to reduce potential impacts.

Table 47: Identification of Climate-Related Hazards

No	Hazard	Description	Relevance
1	Average air temperature increase	Increases in average temperatures over time	Yes
2	Extreme temperature increases and heat waves	Changes in the frequency and intensity of periods of high temperatures, including heat waves (periods of extremely high maximum and minimum temperatures)	Yes
3	Extreme rainfall change	Changes in the frequency and intensity of periods of intense rainfall or other precipitation	Yes
4	Flooding	Flooding from the storm water or Ngong River tributaries	Yes
5	Maximum wind speed	Increases in the maximum force of gusts of wind	Yes
6	Air quality	Increased concentrations of pollutants locally, including incidents such as smog	Yes
7	Urban heat island effect	Cities or metropolitan areas which are significantly warmer than the surrounding rural area, caused by higher absorption of solar energy by materials in the urban area, such as asphalt	Yes
8	Cold spells	Prolonged periods of extremely cold temperatures	Yes

9.6.1. Assessment Outcome

Different types of projects are exposed to varying climate hazards depending on their location, design, and functional role. Based on the information gathered during the assessment of the project context, it is possible to understand how the project operates, its level of criticality within the broader system or network and consequently identify the most relevant climate hazards and the reasons for their significance. The assessment results presented in the table below are informed by geographic modelling and the analysis of available Kenya climatic data (**RCP 4.5 (moderate)** and **RCP 8.5 (high)**). These results highlight the key hazards to which the project is susceptible, taking into account spatial variability, historical climate patterns, and projected future climate scenarios.

Table 48: Climate Risk Vulnerability Scenarios

No	Hazard	Sensitivity (Magnitude)	Description
1	Extreme temperature increases and heat waves	Medium	High temperature degrades materials used in infrastructure and equipment. Infrastructure and equipment aging may be accelerated. This may require more frequent repair and higher maintenance budgets.
2	Extreme rainfall change	High	Intense rainfall events may damage critical infrastructure, resulting in disruptions to power supply and associated services. Such impacts can compromise the functionality of supporting infrastructure systems, leading to reduced operational capacity or, in severe cases, temporary cessation of service.
3	Flooding	High	Increase in storms and flooding could: a) Lead to damage to buildings and site closure, b) Lead to increased incidences of runoff litter and debris. The proposed MICE Core is situated along a tributary of the Ngong River. Although bank protection measures exist, the residual flood risk is, for the purposes of this assessment, considered to remain high.
4	Maximum wind speed	High	Maximum wind speed can cause damage to the infrastructures
5	Air quality	High	The increased energy consumption indirectly contributes to air emissions from power generating plants (thermal). These air pollutants can have a harmful impact on public health.
6	Urban heat island effect	High	Infrastructural development will intensifies the Urban Heat Island Effect by replacing natural land cover with impervious surfaces (e.g., asphalt and concrete) that have high thermal mass, resulting in increased absorption, storage, and re-radiation of solar energy compared to untouched surrounding environments.
7	Cold spells	Low	Use of energy to heat the premises can lead to greenhouse emissions.

9.6.2. Project Adaptation and Pathway

The development of the Climate Adaptation Strategy (CAS) for Railway City Phase project (MICE-Core) will involve close engagement with Zaria Group staff to identify, assess, and prioritize adaptation actions aimed at minimizing the project's vulnerability to climate change while enhancing overall resilience. The CAS will focus on the key components of the development, including residential apartments, a sporting arena, hotels, and commercial facilities, ensuring that each is designed and managed to withstand projected climate hazards. The timing and prioritization of these adaptation measures will be directly informed by the vulnerabilities and gaps identified and as outlined in the table above.

In general, adaptation options often involve a mix of structural and non-structural options. The former includes modifications to the design or specification of physical assets and infrastructure, or the adoption of alternative or improved solutions. The latter includes improved monitoring or emergency response programmes, staff training and skills transfer activities, development of strategic or corporate climate risk assessment frameworks, financial solutions such as insurance against structural failure or alternative services.

- **High temperatures** have been identified as a potential risk to the proposed project, particularly due to their impact on infrastructure durability and performance. Prolonged exposure to elevated temperatures may accelerate material degradation and reduce the lifespan of key infrastructure components. It is therefore recommended that the project proponent develop and implement a policy to manage this risk. Such a policy should outline appropriate adaptation and mitigation measures, including the use of heat-resistant materials, climate-responsive design considerations, and routine maintenance strategies to enhance the resilience of the infrastructure.

- **Flood:** Effective adaptation strategies to address flood risks are required for the proposed project, including its core facilities and associated infrastructure such as drainage, power supply, sewerage systems and water supply. These strategies should integrate a combination of engineered flood protection measures, nature-based solutions, and risk management approaches to reduce exposure and mitigate potential impacts. Given the project's location along a tributary of the Ngong River and the residual high flood risk, a diversified approach to adaptation is necessary. This may include:
 - Structural flood protection interventions (e.g., enhanced drainage systems, flood barriers, and elevation of critical infrastructure), implementation of early warning systems. In addition, nature-based solutions such as riparian buffer restoration and improved stormwater infiltration can help attenuate flood flows. Complementary measures, including emergency preparedness planning, social protection mechanisms, and risk financing instruments (e.g., insurance), should also be considered to enhance the project's overall resilience and reduce potential economic losses.
- **Air quality,** one effective strategy for reducing the project's carbon footprint of the project is the integration of renewable energy sources, particularly solar power, to supply electricity for the operation of selected facility components. This approach would reduce reliance on fossil fuel-based energy, thereby lowering greenhouse gas emissions and improving overall environmental performance of the project.
- **Heat Island effect:** The heat island effect refers to the localized increase in temperature experienced in urban areas compared to surrounding rural environments, primarily due to the concentration of heat-absorbing materials such as concrete, asphalt, and roofing surfaces, as well as reduced vegetation cover. In the context of the proposed project, the heat island effect may be intensified by extensive built-up surfaces and limited green space, leading to elevated ambient temperatures within and around the site. This can contribute to increased energy demand for cooling, reduced thermal comfort for users, and accelerated wear and degradation of infrastructure materials. Incorporating mitigation measures such as:
 - Urban greening,
 - Use of reflective building materials, and
 - Improved site landscaping.

As part of its commitment the (Zaria Group) to achieving EDGE (Excellence in Design for Greater Efficiencies) certification and reducing greenhouse gas emissions, the proposed development will incorporate renewable energy technologies into its design and operation. Specifically, the Proponent is considering the installation a solar photovoltaic (PV) system to supplement electricity supplied from the national grid. The adoption of solar energy will reduce dependence on conventional grid electricity, lower operational carbon emissions, enhance energy efficiency, and improve the resilience and reliability of the facility's power supply. The integration of renewable energy will also contribute to reduced operating costs over the long term, support Kenya's transition to a low-carbon economy, and align the project with the Climate Change Act, 2023 (as amended), the Energy Act, 2019, Kenya's Nationally Determined Contributions (NDCs) under the Paris Agreement, and the country's Vision 2030 and Bottom-Up Economic Transformation Agenda (BETA).

In conclusion, the selection of appropriate materials and design should consider the risk presented by climate change and how this may change over the design life of the primary project components, in addition to the cost, feasibility, and contribution to the outcomes of the adaptation measures. This should not be limited by design standards as these may, unintentionally, make the primary project components vulnerable in the long-term. Overall, operation and maintenance of assets associated with the primary project components should be reviewed to take account of climate risks and changes in these risks over time. Maintenance of structures and surfaces will provide a degree of resilience to climate risks. These activities will also provide the opportunity to assess vulnerability and impacts and make improvements as part of maintenance, modification, or replacement regimes. Retrofitting measures to reduce vulnerability can be undertaken during asset management/maintenance activities.

10. ENVIRONMENTAL & SOCIAL MANAGEMENT PLAN (ESMP)

10.1. Introduction

The Environmental and Social Management Plan (ESMP) is a key environmental management tool designed to ensure that the adverse impacts of a project during construction, operation, and decommissioning are avoided or reasonably mitigated, while enhancing the positive benefits of the project. This ESMP has been prepared to ensure compliance with Kenyan legislation and the World Bank Environmental and Social Framework (ESF). The ESMP provides a framework for assessing the accuracy of predicted project impacts and for monitoring the effectiveness of the mitigation measures proposed in the ESIA report. It therefore outlines how the environmental and social concerns identified in the ESIA will be managed throughout the project lifecycle.

10.2. Objective of ESMP

The Environmental and Social Management Plan (ESMP) is designed to ensure that the project complies with all relevant legal, regulatory, and institutional environmental requirements. It integrates environmental management into the project's design, construction, operation, and decommissioning phases, while clearly communicating responsibilities and objectives to all stakeholders, including workers, contractors, and sub-contractors. The ESMP provides:

- A framework for implementing the mitigation measures identified in the ESIA, and
- Establishing monitoring, record-keeping, and reporting systems to track environmental performance.

10.3. Roles and Responsibilities

Zaria Group will be responsible for the overall implementation, monitoring, and quality assurance/quality control (QA/QC) of this Environmental and Social Management Plan (ESMP). The company will work in close collaboration with relevant government agencies in particular Kenya Railway Corporation (KRC) and other stakeholders to ensure effective execution. Zaria Group shall ensure that all policies, management plans, and actions designed to avoid, minimize, mitigate, or compensate for adverse environmental and social impacts are strictly adhered to. To achieve this, the proponent will establish a clear chain-of-command framework that clearly defines employee responsibilities, reporting lines, and incident management procedures. The company, through the appointed contractor will also ensure that all staff are adequately trained and fully understand their respective roles and responsibilities within this framework.

Roles and Responsibilities:

- Contractor: Primary implementer for construction, training, and mitigation measures.
- PMU: Oversees planning, monitoring, and GRM; coordinates with stakeholders.
- NEMA: Regulatory role for environmental compliance
- Local administration in collaboration with Ministry of labour to ensure labour and gender compliance.
- DOSH: Compliance with Health and Safety
- KRC: Monitoring and compliance

10.4. Compliance Monitoring

As a contractual requirement, the contractor will be required to demonstrate compliance of their activities against the ESMP. This will include provision of resources to ensure compliance. The contractor and sub-contractors will be responsible for performing all work: In compliance with relevant national and international HSE legislation and regulations, and with other requirements to which the Project subscribes. In conformance with the Project ESMP, and related management plans for specific aspects; and in accordance with contractual technical and quality specifications. The Project's ESMP and related documentation will be the main contractual documentation to which the contractor(s) will be bound.

Contractors will be required to develop their own management plans which show how they will comply with these environmental and social requirements. In this way, the ESMP will be implemented and controlled using both PMU and the contractor management systems. The contractor management systems will therefore:

- Provide the framework that regulates their activities.
- Define responsibilities and reporting relationships for expediting, mitigation and monitoring actions detailed in the ESMP; and
- Specify the mechanisms for inspecting and auditing to ensure that the agreed actions are implemented.

The Contractor shall be required to self-monitor its performance against its approved Environmental and Social Management Plan (or Contractor's ESMP). Compliance with the plan will be routinely monitored by the Project Management Unit (PMU), either directly or through appointed third-party monitors. Contractors will be required to submit regular monitoring reports, which the Project will review on a periodic basis. All Contractors must be reviewed and approved by the PMU prior to mobilization. In addition, an independent external audit and assurance process of the Contractor's Health, Safety, and Environment (HSE) documentation and performance will be conducted on an annual basis. The results of these audits will be formally disclosed upon completion of the audit process.

10.4.1. Environmental Code of Conduct

One of the objectives of the ESMP is to ensure that all the workforce, contractors, subcontractors, and construction staff understand environmental issues and potential impacts of site activities. It is recommended that a site-specific Code of Conduct be developed and be translated into the local language for the construction workers and site operators and be readily accessible and visible at the site. It is the responsibility of the Site Manager to ensure that each contractor, sub-contractor, and workforce understand and adhere to the Code of Conduct.

10.4.2. Contractor Management

The Proponent shall engage qualified and competent contractors to undertake the various project activities. All contractors shall be responsible for executing their works in full compliance with applicable Kenyan laws and regulations, international Environmental, Health and Safety (EHS) standards, and the Project's Environmental and Social Management Plan (ESMP), Occupational Health and Safety Management System (OHSMS), and other project-specific management plans. As a contractual requirement, each contractor shall provide adequate financial, technical, and human resources to effectively manage environmental, social, health, and safety (ESHS) risks associated with their activities. Contractors shall ensure that all subcontractors comply with the project's ESHS requirements, contractual obligations, and relevant statutory provisions. The Proponent shall require contractors to:

- Develop and implement Contractor Environmental, Health and Safety (EHS) Plans consistent with the project's ESMP and applicable legal requirements;
- Appoint competent Environmental, Health and Safety personnel to oversee implementation of ESHS measures on site; and
- Establish and implement an emergency preparedness and response system, including a stop-work authority, empowering any worker or supervisor to suspend activities where there is an imminent risk to human health, safety, property, or the environment until appropriate corrective actions have been implemented.

The Proponent (*Zaria Group*) shall continuously monitor contractor performance through regular inspections, compliance audits, and performance reviews to ensure adherence to contractual ESHS obligations, Kenyan regulatory requirements, and international good industry practice (WB-EHSGs). Persistent non-compliance shall attract corrective actions, contractual sanctions, or suspension of works until compliance is achieved.

Table 49: Environmental and Social Management Plan (ESMP)

Parameters/Aspects	Mitigation Measures	Responsibility	Monitoring Indicators	Frequency of Monitoring	Cost Estimate (Ksh)
Construction Phase					
Loss of Wildlife and Habitat Degradation	- The contractor shall comply with the Wildlife Conservation and Management Act and adhere to the requirements of ESS6 on Biodiversity Conservation and Sustainable Management of Living Natural Resources to ensure protection of wildlife and responsible environmental management throughout project implementation; - Selective site clearance shall be undertaken, ensuring that mature indigenous trees are retained and incorporated into the project design and landscaping plan wherever feasible; - All areas disturbed or damaged during construction shall be rehabilitated and revegetated upon completion of the Works to restore site stability, aesthetic value, and ecological function; and - The contractor, in consultation with an ornithologist, shall inspect areas earmarked for clearance prior to vegetation removal and implement appropriate mitigation measures where active nests are identified to prevent disturbance to breeding birds	Contractor/ Environmental Officer/Proponent	Area of vegetation cleared vs approved project footprint (ha) Percentage of disturbed habitat rehabilitated (Biodiversity monitoring records)	Monthly	500,000
Generation of Construction Wastes (Spoils)	- All unused excavated spoil material shall be managed in accordance with the provisions of the Environmental Management and Coordination Act (EMCA) Waste Management Regulations 2024, and the Sustainable Waste Management Act, 2022, ensuring environmentally safe handling, storage, and disposal, - Temporarily stockpile excavated spoils in designated areas away from watercourses, drainage channels, and sensitive ecosystems; - Reuse spoil material onsite for backfilling, landscaping, or road sub-base where suitable; and	Contractor	Volume of spoil generated and reused (m ³);	Weekly	2,000,000

Parameters/Aspects	Mitigation Measures	Responsibility	Monitoring Indicators	Frequency of Monitoring	Cost Estimate (Ksh)
	Regularly monitor nearby streams or rivers for sedimentation and increased turbidity during excavation and construction activities to ensure early detection of potential water pollution				
Soil Pollution	- The contractor shall prepare and implement a Pollution Prevention Plan prior to the commencement of construction activities to ensure compliance with environmental regulations and best management practices; - All areas designated for the storage of hazardous materials shall be enclosed, secured, and bunded with concrete and equipped with adequate facilities to manage emergency situations; - All construction vehicles and machinery shall be serviced within a designated concrete-bunded area to contain oils, lubricants, and other hazardous fluids, preventing soil and water contamination; and - Effluent wastewater from construction sanitation facilities shall be properly collected and channeled into the Nairobi City Water and Sewerage Company (NCWSC) sewer system to prevent contamination of soil and surface water	Contractor	Number of spill incidents recorded; Soil contamination test results	Monthly	500,000
Surface Water Contamination	- Sedimentation ponds shall be constructed along the project boundary to capture runoff from construction areas. Discharge from these ponds will be carefully regulated to ensure compliance with allowable turbidity limits; - The contractor shall be required to implement appropriate measures to prevent, control, and contain any accidental spillage or pollution of water resources during construction; - Where appropriate, oil-water separators and settling ponds shall be installed to intercept polluted construction runoff	Contractor / EHS Officer	Water quality parameters (turbidity, oil/grease levels);	Weekly	200,000
Air Quality (Dust emission)	- Coordination Act (EMCA) Air Quality Regulations, 2024, as well as the World Bank Group (WBG) EHS Guidelines on emission standards; - Concrete batching and asphalt plants shall be located at least 500 meters away from sensitive receptors. In addition, they will be equipped with appropriate dust and emission suppression mechanisms, such as wet	Contractor	PM ₁₀ and PM _{2.5} levels; PPE usage compliance	Weekly	500,000

Parameters/Aspects	Mitigation Measures	Responsibility	Monitoring Indicators	Frequency of Monitoring	Cost Estimate (Ksh)
	scrubbers, to minimize air quality impacts on nearby communities and the environment; - The contractor shall implement dust prevention measures during construction, including regular watering of roads near residential areas and spraying water on loose materials where necessary; - The contractor shall provide appropriate personal protective equipment (PPE), such as masks and respirators, to protect construction workers from excessive dust exposure and ensure their health and safety on-site; - The construction site shall be hoarded with at least a 2.5 m high curtain net to minimize dust dispersion and reduce the impact of airborne particulate matter on surrounding areas; - Continuous air quality monitoring shall be carried out near sensitive receptors to ensure that ambient air remains within the limits specified by the Environmental Management and Coordination Act (EMCA) Air Quality Regulations, 2024, and the World Bank Group (WBG) EHS Guidelines				
Noise and Vibration	- All construction equipment and vehicles shall comply with national standards as well as the World Bank Group (WBG) EHS Guidelines on noise emissions; - The contractor shall implement appropriate noise attenuation measures to reduce noise generated during construction activities. These measures will include: <i>Fitting high-efficiency mufflers to all noise-generating equipment, and</i> <i>Installing acoustic enclosures around drilling and other high-noise machinery</i> - Construction activities near settlements or sensitive receptors shall be restricted to daytime hours, and no work will be carried out at night unless permitted by the Authority (NEMA); - The contractor shall provide appropriate personal protective equipment (PPE), such as earplugs or earmuffs, to all workers exposed to elevated noise levels during construction; and - A Grievance Redress Mechanism (GRM) shall be established to receive and address complaints from	Contractor	Noise levels (dB); Number of complaints received; Compliance with working hours	Weekly	400,000

Parameters/Aspects	Mitigation Measures	Responsibility	Monitoring Indicators	Frequency of Monitoring	Cost Estimate (Ksh)
Generation of Solid and Hazardous Wastes	the public regarding environmental issues, including noise pollution - The contractor shall prepare and implement a Pollution Prevention Plan and a Waste Management Plan (WMP) prior to the commencement of construction activities. (These plans will outline procedures for the segregation, storage, handling, recycling, and safe disposal of both general and hazardous wastes); - The contractor shall subcontract registered and licensed NEMA waste handlers for the disposal of both hazardous and non-hazardous waste, in accordance with the Environmental Management and Coordination Act (EMCA) Waste Management Regulations, 2024; - The contractor shall provide adequate waste collection bins at designated locations to facilitate proper waste segregation at source (e.g., biodegradable, recyclable, and hazardous waste), thereby enhancing efficient collection, management, and safe disposal; - Establish secure, weather-protected, and clearly marked temporary waste storage areas to prevent littering, scavenging, and wind dispersion; - Open burning of waste materials at the construction site shall be strictly prohibited; - Ensure timely collection and transportation of waste to avoid accumulation and associated health risks; - Conduct regular training for workers on waste segregation, hazardous waste handling, and environmental compliance requirements; and - Maintain waste tracking records, including quantities generated, recycled, and disposed off, as required under the Environmental Management and Coordination Act (EMCA) Waste Management Regulations, 2024	Contractor / EHS Officer / NEMA Licensed Waste Handler	Waste segregation records; Waste transfer notes; Quantity of hazardous waste safely disposed (kg)	Weekly	600,000
Traffic Related Impacts	- The contractor shall prepare and implement a Traffic Management Plan (TMP) in consultation and coordination with the local community, the Nairobi City County Traffic Department, and the Traffic Police Department; - The local community shall be informed in advance about the nature and schedule of construction	Contractor / Traffic Police / County Government	Number of traffic incidents; Signage and traffic control measures; Complaints recorded	Daily	400,000

Parameters/Aspects	Mitigation Measures	Responsibility	Monitoring Indicators	Frequency of Monitoring	Cost Estimate (Ksh)
	activities, including any potential road or route blockages. Where temporary access restrictions are unavoidable, alternative routes shall be identified in consultation with relevant authorities; - The contractor shall install visible directional signage, warning signs, and information boards at strategic locations to guide motorists and pedestrians safely around construction zones; - The contractor shall deploy trained traffic marshals at key points to control vehicle movement, assist pedestrians, and enhance road safety during peak hours; - Schedule delivery of construction materials and movement of heavy vehicles during off-peak hours to reduce congestion; - Provide temporary access roads, footbridges, or pedestrian walkways where necessary to maintain community mobility; and - Utilize the established GRM to promptly address complaints related to traffic disruption and access issues				
Population Labour induced Influx	- The contractor shall implement a Code of Conduct requiring all workers to behave ethically, respect community norms, and avoid involvement in crime, illicit activities, or anti-social behavior; - All construction staff shall receive training and awareness programs on ethical conduct, social responsibility, and the consequences of unethical or illegal behavior; - Ensure adequate security at construction sites to protect both workers and the host community; - Maintain regular communication with the host community regarding labor influx and construction activities. Use the Grievance Redress Mechanism (GRM) to promptly address any community complaints related to social issues or labor interactions; - Encourage cooperative engagement between workers and local communities through outreach programs, community activities, and awareness campaigns; and	Contractor / Proponent / Local Administration/Ministry of labour	Number of local workers employed (%); Reported social conflicts; GRM cases resolved	Monthly	350,000

Parameters/Aspects	Mitigation Measures	Responsibility	Monitoring Indicators	Frequency of Monitoring	Cost Estimate (Ksh)
	Encourage host residents are given priority for employment in construction-related jobs wherever possible.				
Gender Base Violence (GBV)	- The contractor shall be required to deploy qualified key personnel responsible for managing and addressing specific project-related risks, including Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH); - All project firms engaged in the proposed project shall be required to prepare and implement a Code of Conduct (CoC) for their staff and personnel. The CoC will include clear provisions to prevent and address Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH), ensuring ethical behavior and compliance with national laws and World Bank Group (WBG) Environmental, Health, and Safety Guidelines; - The contractor will be required to establish anti-sexual harassment policies that govern conduct in the workplace; - The contractor will be required to provide mandatory and repeated training to workers on sexual exploitation and abuse and HIV/AIDS prevention; - The contractor shall ensure strict compliance with Kenya's Employment Act, 2007, including the minimum working age of above 18 years, and all other provisions relating to the employment of workers; - The contractor shall conduct awareness and training programs for the construction workers on Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH); and - A Grievance Redress Mechanism (GRM) responsive to Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) shall be established and maintained throughout the construction phase	Contractor / GBV Specialist / Proponent	Number of GBV/SEA trainings conducted; Reported cases and resolution rate; Signed Code of Conduct forms	Monthly	300,000
Child Labour	The contractor shall require all prospective workers to provide valid identification documents (e.g., national ID, birth certificate) to verify that they meet the minimum working age of 18 years as per the Employment Act, 2007;	Contractor / Proponent/local administration/ministry of labour	Age verification records; Number of audits conducted;	Weekly	200,000

Parameters/Aspects	Mitigation Measures	Responsibility	Monitoring Indicators	Frequency of Monitoring	Cost Estimate (Ksh)
	- The contractor shall ensure that all labor recruitment processes fully comply with Kenyan labor laws, as well as World Bank Environmental and Social Standard 2 (ESS2) on Labor and Working Conditions; - Include clauses in contractor and subcontractor agreements that prohibit employment of underage workers and stipulate penalties for violations; - Conduct regular audits and inspections of the workforce to ensure compliance with age requirements; and - Engage local communities to discourage the use of children in construction work and raise awareness of labor laws protecting children and adolescents		Non-compliance incidents reported		
Impact on Cultural and Heritage	- All construction personnel shall be trained on the Chance Find Procedure, which requires immediate cessation of work and reporting if any suspected cultural, archaeological, or heritage materials are discovered; - Any discovered items shall be reported promptly to the National Museums of Kenya (NMK) and relevant authorities for verification and appropriate management, in line with the National Museums and Heritage Act (2006); - If a heritage or cultural site is discovered, it shall be secured and cordoned off to prevent damage until proper assessment and handling are completed; - Conduct regular training sessions for construction workers and supervisors on the importance of cultural heritage and proper handling of potential finds; and - Assign a designated cultural heritage officer or focal person to monitor construction activities in sensitive areas and ensure compliance with the Chance Find Procedure	Contractor/ NMK	Chance finds procedures Number of physical cultural resources encountered	Daily	500,000
Health and Safety Risks	- All contractors should develop and implement an Occupational Health and Safety Management System (OHSMS) in line with good international industry practice (GIIP), including the requirements of the World Bank ESS2, and in accordance with Kenya's Occupational Health and Safety Act (OSHA). - The management system will also include emergency response plans that tie in with existing emergency response procedures of the KRC;	Contractor / Health & Safety Officer / Proponent/ DOSH	Number of accidents/incidents reported PPE compliance rate (%) Number of toolbox talks conducted	Daily / Weekly / Monthly	1,200,000

Parameters/Aspects	Mitigation Measures	Responsibility	Monitoring Indicators	Frequency of Monitoring	Cost Estimate (Ksh)
	- Install guardrails with mid-rails and toe boards at the edge of any area where there is a fall hazard to prevent accidental falls; - Provide and enforce the use of fall prevention devices, including: - Safety belts and lanyards, - Travel-limiting devices to prevent access to fall hazard areas, and - Fall arrest devices, such as full-body harnesses used with shock-absorbing lanyards or self-retracting inertial fall arrest devices, attached to fixed anchor points or horizontal lifelines - Define controlled access zones around areas where leading-edge and other high-risk operations are taking place (e.g., slopes, elevated platforms) using control lines or equivalent barriers, - The contractor shall designate a competent person to monitor the safety of employees working at height. The designated safety inspector shall ensure: - Compliance with all fall protection measures, - Proper use of personal protective equipment (PPE) - Safe erection and maintenance of guardrails, lifelines, and controlled access zones - Immediate reporting and corrective action for any unsafe conditions. - Each employee working in a controlled access zone will be directed to comply promptly with fall hazard warnings from safety inspector		Number of safety inspections and audits conducted Number of workers trained Emergency drill frequency and response effectiveness		
	- All machinery operators shall be properly trained and certified to operate specific equipment safely. Operators will also be trained on emergency procedures and safe operating practices; - Workers operating or working near machinery shall be provided with and required to use appropriate PPE, including helmets, high-visibility vests, safety boots, gloves, ear protection, and eye protection as necessary; - All machinery shall undergo regular maintenance and inspections to ensure proper functioning and prevent mechanical failures that could lead to accidents;				

Parameters/Aspects	Mitigation Measures	Responsibility	Monitoring Indicators	Frequency of Monitoring	Cost Estimate (Ksh)
	- Safe operating zones shall be established, with clear signage, barriers, and traffic management plans to separate machinery movement from pedestrian areas and other work zones; - A competent safety officer shall be assigned to monitor machinery operations, ensure compliance with safety procedures, and immediately address unsafe conditions; and - Emergency response plans (ERP), including first aid, spill containment, and fire response, shall be in place and communicated to all personnel on site.				
Operational Phase					
Audible Noise During Event	- Use directional speaker systems to focus sound within the venue and reduce noise spillover; - Install acoustic barriers or soundproofing around the arena, and other high-noise facilities to contain amplified sound; - Limit the maximum volume levels of public address systems and amplified music; - Conduct regular noise monitoring at sensitive receptors during major events to ensure compliance with EMCA (<i>Noise and Vibration</i>) Regulations, 2009; and - Inform nearby residents and businesses in advance of major events through social media, or appropriate channels	Facility Manager	Noise levels at boundary (dBA); Number of complaints received;	Per Event	500,000
Solid Waste Generation	- Hazardous waste, including oils, chemicals, and cleaning agents, shall be collected separately and disposed of through licensed service providers in compliance with EMCA (Waste Management) Regulations, 2024; - Clearly labeled waste bins for biodegradable, recyclable, and hazardous shall be provided to all facilities, including the sporting arena, hotel, residential apartments, and commercial areas; - Identify opportunities to recycle materials such as plastics, paper, and metals through licensed recycling vendors; - Engage residents and facility users to encourage responsible disposal practices and reduce littering;	Facility Manager / NEMA Licensed Waste Handler	Waste volumes generated and recycled; Cleanliness of site; Waste collection record Waste collection bins	Weekly	500,000

Parameters/Aspects	Mitigation Measures	Responsibility	Monitoring Indicators	Frequency of Monitoring	Cost Estimate (Ksh)
	- Implement a routine waste collection schedule to prevent accumulation of waste on-site; - Store waste in designated secure areas away from public access and sensitive receptors until disposal; and - Keep a waste log that tracks the amounts of waste generated, collected, recycled, and disposed off, ensuring compliance with regulations				
Pressure on Existing Utilities	- Install water storage tanks and booster systems to ensure reliable supply to residential, commercial, and recreational facilities; - Implement water-saving technologies such as low-flow taps, dual-flush toilets systems; - Use energy-efficient lighting, appliances, and HVAC systems to reduce electricity demand; - Install on-site backup generators or explore renewable energy options such as solar PV to supplement the grid during peak loads; - Conduct integrated infrastructure capacity assessments during detailed design in collaboration with Nairobi City Water & Sewerage Company (NCWSC), Kenya Power (KPLC), and Kenya Urban Roads Authority (KURA), - Plan phased upgrades or reinforcements of utilities, including relocation of existing lines where necessary, - Promote shared infrastructure corridors (e.g., combined utility ducts) to minimize repeated excavation, and - Implement a utility management plan with continuous monitoring.	Facility Manager / NCWSC / KPLC	Water consumption rates; Power usage levels (Kilowatts – kW)	Monthly	1,000,000
Occupational Safety and Health Risks	- All employees, contractors, and service personnel will receive comprehensive training on workplace safety, hazard recognition, emergency procedures, and safe use of equipment; - Any work involving confined spaces will require a permit-to-work system; - Machinery and equipment will undergo routine inspections and maintenance to ensure safe operation, and workers will be trained in proper handling procedures;	Facility Manager / Health & Safety Officer	Number of workplace accidents/incidents reported Number of safety trainings conducted Number of safety inspections/audits conducted Emergency drill frequency and	Monthly	2,000,000

Parameters/Aspects	Mitigation Measures	Responsibility	Monitoring Indicators	Frequency of Monitoring	Cost Estimate (Ksh)
	- Safety signage and restricted access zones will be implemented around operational machinery to prevent accidents; - Fire and electrical hazards will be addressed through the installation of fire detection and suppression systems, proper grounding of electrical installations, safe storage of fuel, and routine maintenance of generators and electrical equipment; - Emergency response plans (ERP) will be in place, including fire drills, first aid, and evacuation procedures; and - Dedicated health and safety officer will oversee compliance with these measures, conduct regular site inspections, and ensure reporting and corrective action in case of unsafe conditions		response time conducted		
Traffic Related Impacts	- Develop and implement a Traffic Management Plan (TMP) in consultation with the Kenya Urban Roads Authority (KURA), Nairobi City County, Kenya Railways Corporation, and the National Police Service (Traffic department); - Encourage the use of public transport, the Nairobi Commuter Rail System, Bus Rapid Transit (BRT) services, walking, cycling, and other non-motorized transport options; - Provide adequate on-site parking, designated bus bays, taxi and ride-hailing pick-up/drop-off zones, and service vehicle loading areas; - Introduce intelligent parking guidance systems and real-time traffic information during major events; - Stagger event start and finish times where feasible to reduce peak-hour traffic demand; - Deploy trained traffic marshals during large events to direct vehicles and pedestrians; - Install appropriate traffic signage, road markings, pedestrian crossings, speed-calming measures, and street lighting; - Promote travel demand management measures, including advance ticketing linked to public transport incentives and employee car-pooling programmes; - Implement measures outlined in the Traffic Impact Assessment (TIA) Report; and	Facility Manager / Traffic Police / County Government	Number of incidents; Effectiveness of traffic control measures (Number of Road Signages)	Per Event	2,000,000

Parameters/Aspects	Mitigation Measures	Responsibility	Monitoring Indicators	Frequency of Monitoring	Cost Estimate (Ksh)
	Continuously monitor traffic performance and coordinate with relevant road authorities to implement additional improvements where necessary.				
Collapse of Seating Stand	- Design, construct, and operate the arena in accordance with applicable Kenyan building regulations (Building codes), international structural engineering standards, and venue safety guidelines; - Obtain structural certification from qualified and registered structural engineers before commissioning the facility and following any major alterations; - Develop and implement a Structural Integrity Management Plan covering routine inspections, preventive maintenance, and periodic structural assessments; - Conduct periodic structural inspections of seating stands, stairways, handrails, barriers, platforms, and supporting members by qualified structural engineers; - Establish and strictly enforce the maximum occupancy limits for each seating section through ticketing controls and access management; - Install real-time crowd monitoring systems to prevent overcrowding and unsafe loading of seating areas; - Prohibit unauthorized structural modifications, installation of temporary structures, or removal of structural elements without professional approval; - Immediately repair or replace any damaged, corroded, cracked, or weakened structural components identified during inspections; - Develop and regularly test emergency evacuation procedures for structural emergencies and crowd incidents; and - Conduct periodic independent structural safety audits throughout the operational life of the arena and implement recommendations promptly.	Proponent,/ Design Engineer/ Structural Engineer/ Contractor	Structural design approvals and structural completion certificates available	Once before commissioning and after any major structural modifications.	5,000,000

10.5. Occupational Health and Safety Plan

The Project contractor will prepare a project-specific Occupational Health and Safety (OHS) Plan guided by the general World Bank ESHGs in consultation with the Project Management Unit to ensure the protection of workers against adverse safety impacts related to activities associated with the construction of the project. The contractor will create and execute an Occupational Health and Safety Management Plan, an Emergency Preparedness and Response Plan, and a Code of Conduct. This shall include immediate notification within 24 hours of any serious injuries or fatalities to DOSH, regular toolbox talks and training sessions for workers, and the use of barricade tape to clearly mark active working zones and prevent unauthorized access by passers-by, among other measures. These procedures shall outline controls required to manage the risks. The Project contractor shall select and implement controls in line with the hierarchy of control principle following this priority:

- a) Hazard elimination by removing the activity from the work process
- b) Hazard control at the source using engineering control mechanism.
- c) Hazard minimization through the design of safe systems of work, and the implementation of administered control measures; and
- d) Provision of appropriate Personal Protective Equipment (PPE) in conjunction with training and continual maintenance.

The project's OHS Plan will include preventive measures covering all hazards identified including as a minimum the following areas and requirements.

10.5.1. General Workplace Health, Welfare and Safety Provisions

The Project shall ensure the construction site is designed and equipped to promote occupational safety and health, with adequate workspace for safe execution of all activities and clear passage to emergency exit. Additionally, The Project will ensure the following are in place:

- Site office is structurally safe, and provides appropriate protection,
- Adequate ablution (lavatory) facilities (toilets and washing areas) shall be provided for the number of people expected to work on-site

10.5.2. Workplace Exposure Monitoring

The working environment shall be monitored for occupational hazards relevant to the specific activities. Near misses and incidents will be recorded and reported weekly to the Site Manager so that preventative measures can be considered to reduce the occurrence of such events.

10.5.3. Permit to Work

The Project shall implement a “permit to work” system for conducting potentially hazardous activities and ensure that appropriate measures are in place to eliminate, as far as reasonably practicable, the risks associated with those activities. Examples of hazardous activities include:

- Hot work activities e.g., welding, cutting, and heating.
- Confined space work activity.
- Working with electricity; and
- Working at heights (e.g., roof areas).

Measures shall be implemented for the elimination or prevention of accidents and damage to people or property where foreseeable hazardous work is envisaged. It is recommended that the following measures be considered:

- The project contractor shall ensure, prior to work in any of the activities listed above, that adequate and appropriate training has been received by all workers involved.
- Arrangements on how to act in case of accident shall be defined before conducting any of the activities listed below, or any other task classified as hazardous, according to the risk assessment performed; and

- The Project shall have in place a system of work that identifies, assesses, and minimizes the hazards and risks in relation to lone working. The system of working alone and isolated workers includes the procedure to ensure that all the necessary PPE and safety measures, including emergency plans, are in place before and during lone work.

10.5.4. Basic OHS Training

A basic occupational training program and specialty courses should be provided, as needed, to ensure that workers are oriented to the specific hazards of individual work assignments. Training should generally be provided for management, supervisors, workers, and occasional visitors to areas of risks and hazards. Designated personnel should be appointed as fire wardens and first aiders and provided with dedicated training as appropriate. Through appropriate contract specifications and monitoring, The Project contractor will ensure that sub-contractors have been sufficiently trained prior to construction activities commencing. The contractor will also ensure that all site personnel, prior to commencement of new assignments, have received adequate training and information enabling them to understand potential risks and hazards associated with the assignment and understand what equipment and protocols are required.

10.5.5. Working at Heights

The Project contractor will put in place a “safe system of work” that identifies, assesses, and minimizes the hazards and risks in relation to working at height. This will incorporate fall prevention measures that are implemented, as far as reasonably practicable, utilizing personal harnesses and the correct use of scaffolding or ladders. Additionally, the contractor will ensure that all construction site personnel are made aware of the danger of working at heights.

10.5.6. First Aid

Emergency first aid and medical treatment provisions shall include the following provisions:

- First aid services and supplies shall always be readily available on site. Appropriately equipped first-aid stations shall be established and easily accessible throughout the workplace.
- Eye-wash stations and/or emergency showers shall be provided in close proximity to all workstations where immediate flushing with water is the recommended first-aid response.
- First aid kits, appropriate for the number of personnel present in each work area, shall be provided and clearly marked.
- All personnel shall be informed of the location of first aid kits and trained on their basic use. The Site Manager shall be responsible for regularly inspecting, maintaining, and restocking the first aid kits to ensure they remain fully equipped at all times.

10.5.7. Emergency Preparedness and Response

The Project proponent together with the contractor shall develop an Emergency Preparedness and Response Plan (EPRP), incorporating contingency measures to be implemented in case of an emergency which may result in the loss of property, water supplies, or power. The Project will ensure that relevant information is communicated to all site personnel, and the local or County government. The EPRP will be checked periodically and revised and updated as appropriate. It is recommended that practical exercises or drills are conducted. The Emergency Response Plan shall include, as a minimum, the following information:

- Details of fire services, including contact numbers and response procedures;
- Details of medical services, including nearest hospitals, clinics, ambulance services, and emergency contact numbers;
- Information on the availability of internal and external resources (e.g., emergency equipment, spill response materials, and specialized personnel); and
- An up-to-date emergency contact list, including key personnel, relevant authorities, and support organizations.

10.6. Community Health and Safety

The project contractor will develop a range of community health and safety procedures to minimise any risk to the public from adverse impacts related to project activities. These procedures will describe the required controls to manage identified risks, based on the hierarchy of control principle, including, but not limited to, physical/ engineered controls (e.g., containment for storage of hazardous materials) and management/ administrative controls (e.g., training, audits, and inspections). Overall responsibility will reside with the Site Manager and PMU, however; responsibility for specified controls may be delegated to specific on-site personnel, who will then assume responsibility for implementing and checking the effectiveness of the specified controls. Communications regarding the parties responsible for each specified control, must be made to all on-site personnel, and the County government.

10.7. Decommissioning

Decommissioning covers the MICE Core project cessation of operations and the removal of infrastructure to obtain a state of original status. This phase though quite unlikely should be discussed for completeness of this report. In other words, during the planning of any project, it is important to put in place plans to recover and/or restore the project site to its original state after the project is closed or decommissioned. This requires then good understanding of all the environmental components of the project on the ecosystem during its lifespan. It is therefore environmentally wise to take into cognizance this component during the planning stage. The decommissioning will aligns with NEMA (National Environment Management Authority) requirements under the Environmental Management and Coordination Act (EMCA) Cap 387, EIA/EA Regulations, and relevant sector guidelines.

10.7.1. Decommissioning Activities

At the end of the project lifecycle, the Project Management Unit (PMU) or designated Project Team shall comply with all relevant national regulatory standards and procedures for decommissioning. A dedicated Decommissioning Team shall be established to plan and implement the decommissioning process in accordance with the approved Decommissioning Plan by National Environment Management Authority (NEMA): The following key activities will typically be involved in the decommissioning phase:

- Demolition or dismantling of project infrastructure (buildings, foundations, etc.)
- Removal and disposal/recycling of equipment and machinery
- Excavation and removal of underground structures, tanks, and contaminated soil (if any)
- Waste segregation, handling, transportation, and final disposal
- Management of hazardous materials,
- Site remediation and rehabilitation (soil treatment, re-vegetation, landscaping)
- Restoration of the site to its original or agreed-after-use condition
- Monitoring and verification of site cleanliness before handover.

Table 50: Decommissioning Plan

Phase / Activity	Potential Impacts	Mitigation Measures	Key Monitoring Indicators
Pre-Decommissioning (Planning) Audit, inventory, stakeholder notification, permits	Incomplete identification of hazards Poor planning leading to accidents and pollution	- Conduct detailed site audit and hazardous materials inventory - Engage licensed experts for material assessment - Notify NEMA, DOSHS, County Government and stakeholders early - Secure all required permits before starting works	- Completion of Hazardous Material Register - Number of stakeholder consultation meetings held - All necessary permits obtained and on file
Mobilization Site preparation, equipment staging	Dust generation Increased traffic and accident risk Soil compaction and erosion	- Prepare site access and staging areas with minimal vegetation clearance - Install dust suppression systems (water spraying) - Implement traffic management plan - Use designated access routes	- Dust levels (PM₁₀) within permissible limits - No. of traffic incidents - Visual inspection for erosion/sediment control
Dismantling & Demolition Removal of structures, equipment, above/underground infrastructure	High noise and vibration Dust and air emissions Risk of structural collapse and worker injuries Generation of demolition waste	- Use controlled demolition techniques (e.g., mechanical dismantling over explosive where possible) - Install noise barriers and vibration monitoring - Provide full PPE and conduct daily toolbox talks - Wet demolition surfaces to suppress dust	- Noise levels (dB(A)) - Vibration levels (PPV) - Air quality (PM₁₀)
Waste Management Segregation, recycling, hazardous waste disposal	Decommissioning wastes (C&D waste, hazardous waste) Soil and groundwater contamination from poor handling - Illegal dumping	- Implement Waste Management Hierarchy (Reduce, Reuse, Recycle, Recover, Dispose) - Segregate waste at source into inert, recyclable, hazardous and general waste - Transporting of hazardous waste only by NEMA-licensed transporters to approved disposal sites - Maximize recycling of scrap metal, concrete and timber	% of waste recycled/reused - Volume of hazardous waste disposed with manifests - No. of waste-related incidents or spills

Phase / Activity	Potential Impacts	Mitigation Measures	Key Monitoring Indicators
Site Remediation Soil/groundwater treatment, contamination cleanup	Residual soil and groundwater contamination Mobilization of contaminants during excavation	- Excavate and treat/dispose contaminated soil as identified in the pre-decommissioning audit - Apply bioremediation or other approved techniques where suitable - Install temporary containment barriers during works - Conduct confirmatory sampling after remediation	- Soil and groundwater test results against NEMA standards - Contaminant concentrations below target cleanup levels
Restoration & Rehabilitation Re-vegetation, landscaping, soil stabilization	Soil erosion and loss of topsoil Poor site aesthetics and long-term instability Loss of biodiversity	- Re-spread saved topsoil and apply soil stabilization measures - Plant indigenous vegetation species suitable for the area in consultation with KFS - Implement progressive rehabilitation where possible - Create stable landforms compatible with agreed end-use	% of site area successfully re-vegetated - Vegetation survival rate after 6 and 12 months
Demobilization & Handover Monitoring setup, site verification, closure report	Incomplete site cleanup Residual hazards left on site	- Conduct final site inspection and independent verification audit - Remove all temporary facilities and waste - Submit Final Decommissioning Closure Report to NEMA - Establish post-closure monitoring program	- Independent audit report confirming compliance - All waste and equipment removed (photographic evidence) - Handover certificate issued

11. CONCLUSION AND RECOMMENDATIONS

The main objective of this assignment was to carry out an Environmental and Social Impact Assessment (ESIA) study for the proposed project (MICE-Core) and other support infrastructures. The ESIA Study was carried out in accordance with the Environmental Management and Coordination Act Cap 387 which govern the process of carrying out of ESIA studies in Kenya. The study was also undertaken in compliance with World Bank Environmental and Social Framework (ESF) standards. The scope of this ESIA study covered various project aspects/activities related to construction, operation and decommissioning of the proposed project infrastructures. The steps followed by the study team involved the baseline studies and impacts identification and analysis of the various alternatives. A scoping report and TORs approved by NEMA provided basic guidance on key issues and stakeholders engagements protocol and procedures. The content of this report has duly followed the requirements of the NEMA and World Bank guidelines.

As with any large-scale urban development such as the proposed Nairobi Railway City and its components, the project is expected to generate various environmental and social impacts during both the construction and operational phases. The impact assessment conducted for this report indicates a wide range of potential effects across nearly all biophysical and socio-economic aspects. The main positive impacts during the construction phase will stem from direct and indirect economic contributions through construction spending, local procurement, and employment opportunities.

The study has identified several potential negative impacts likely to result from the proposed development. These impacts primarily arise from construction and operational activities and are largely confined to the project site and its immediate surroundings. Key impacts include noise and vibration, dust and air emissions, safety risks, and waste generation. Impacts on the biological environment are mainly associated with habitat degradation and modification (Vegetation removal). Approximately 16 acres of land will be cleared for construction activities, resulting in habitat loss and fragmentation. This is expected to affect terrestrial biodiversity, particularly lower taxa (small organisms) that depend on the affected habitat.

Additional risks to the biological environment include pollution from construction activities, such as sedimentation of the Ngong River and potential spills of hazardous materials. Impacts on the human environment are primarily linked to the influx of construction workers, which may increase the risks of gender-based violence (GBV) and the spread of HIV/AIDS and other sexually transmitted infections within local communities and additional pressure on the existing utilities. Following a rigorous risk assessment of these potential adverse impacts, appropriate mitigation measures have been developed and integrated into the Environmental and Social Management Plan (ESMP). The ESMP outlines specific mitigation actions required to address the identified impacts. It also defines the institutional arrangements, implementation responsibilities, timelines, and resource needs for the proposed interventions. The ESMP further emphasizes the importance of continuous monitoring, regular review, and adaptive management of mitigation strategies to effectively minimize risks and ensure compliance with environmental and social standards throughout the project lifecycle.

Recommendation

Based on the assessment findings and the robust contingent mitigation measures detailed in the Environmental and Social Management Plan (ESMP), we strongly recommend the issuance of the EIA License to enable the implementation of the proposed development. In addition to the commitments outlined in the ESMP, the following key recommendations should form an integral part of the project implementation program to ensure effective environmental and social management throughout the project lifecycle:

- Strengthening of community engagement by providing more opportunities for local communities in terms of employment and supplies;
- Adopt and publicly display a formal Zero-Tolerance Policy on GBV and SEA covering all, contractors, sub-contractors, vendors, security personnel during construction phase;
- Explicitly prohibit sexual harassment, sexual exploitation, sexual abuse, gender-based violence (GBV/SEA), and any form of transactional sex linked to arena construction and operations;

- Make the policy a binding contractual requirement for all service, contractors, sub-contractors, and event promoters;
- Continuous engagement with local communities, stakeholders and relevant authorities to discuss any evolving concerns and their potential mitigation measures,
- Implement a comprehensive Environmental Sustainability Programme with measurable annual targets for energy, water, waste diversion, and greenhouse-gas intensity; and
- Develop adaptive management strategies to respond to unforeseen impacts and changes in the project's context.

By implementing the recommended actions, the proposed project (MICE-Core) can further enhance its impact on the local community and the environment, ensuring that the benefits of the project are realized while minimizing negative impacts.

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13. APPENDICES

APPENDIX 1: Impact Significance Determination (With Mitigation)

A) Determination Of Event Magnitude

Parameter	Impact Source	Receptor	Extent /Scale	Frequency	Duration	Intensity	Magnitude	Event Magnitude
Physiography and Geology	Access road construction	Ground	2	1	1	1	5	4 (Medium)
	Rig site preparation and site clearance	Ground	1	1	1	2	5	
	Improper handling of solid and liquid waste generated.	Human, soil and surface and ground water resources.	1	1	1	1	4	
	Total							14/3
Soils	Construction activities	Ground	1	1	2	1	5	5 (Medium)
	Clearing of vegetation and excavation of surface soil	Soil Human	1	1	1	2	5	
	Vehicular movement during operation	Ground	3	3	2	1	9	
	Oil or chemical leaks from vehicles, Machinery garage and storage areas.	Soil, ground and surface water	1	1	1	1	4	
	Effluent leaks and/or contamination from waste pits	Soil, ground and surface water	1	1	1	3	6	
	Total							29/5
Air Quality	Construction activities	Air Ground	1	1	1	1	5	5 (Medium)
	Construction site clearance.	Ground Plants (Flora)	1	1	2	1	5	
	Total							10/2
Surface and Ground Water Resources	Construction site preparation and clearance.	Ground	1	1	1	1	4	3 (Medium)
	Waste; hazardous. Waste; Non-hazardous; Waste; wastewater and other effluent discharges and drilling waste.	Soil; ground and surface water and human	1	1	1	1	4	
	Site operations	Ground human	1	1	2	1	6	
	Total							14/4
Terrestrial Environment (Habitat, Flora and Fauna)	Construction site preparation and site clearance.	Flora and Fauna	1	1	1	2	5	5 (Medium)
	Construction wastes	Soil and Ground	1	1	2	2	6	
	Air emissions from engines, generation.	Human and Air	1	1	1	2	5	
	Noise and vibration.	Human and Ground	1	1	2	1	5	
	Total							21/4
Aquatic Environment	Effluent and solid waste from the construction site.	Soil; ground and surface water. Human	1	1	1	1	4	4

Parameter	Impact Source	Receptor	Extent /Scale	Frequency	Duration	Intensity	Magnitude	Event Magnitude
	Fuel and oil leakages from vehicles.	Soil	1	1	1	1	4	(Low)
	Total							8/2
Noise and Vibration	Construction activities.	Ground/ Human	1	1	2	1	5	6 (Medium)
	Power generators	Ground/human	1	3	2	1	7	
	Vehicular noise pollution.	Human	1	2	2	1	6	
	Total							18/3
Solid and Liquid Wastes	Construction site operations.	Ground/Human	1	1	2	2	4	4 (Low)
	Total							4/1
Occupational Health and Safety	Construction site operation activities.	Ground Human	1	1	2	2	6	5 (Medium)
	Air emissions from engines, generators.	Air	1	1	2	1	5	
	Noise and vibration	Human	1	1	2	1	5	
	Impact sources associated with accidents, road accidents, spills.	Human Ground	1	1	1	1	4	
	Total							20/4

B) Determination Of Receptor Sensitivity

Parameter	Impact Source	Receptor	Presence	Resilience	Total	Average	Receptor sensitivity
Physiography and Geology	Site preparation and camp site clearance	Ground	2	2	4	3	Medium
	Improper handling of solid and liquid waste generated.	Human	3	1	4		
		Soil	2	1	3		
		Surface and Underground water resources.	3	1	4		
	Total					15/4	
Soils	Construction site	Soil	2	1	3	3	Medium
	Clearing of vegetation and excavation of surface soil	Vegetation	1	1	2		
		Human	3	1	4		
	Vehicular movement during operation	Ground	2	1	3		
		Soil	2	1	3		

Parameter	Impact Source	Receptor	Presence	Resilience	Total	Average	Receptor sensitivity
	Oil or chemical leaks from vehicles, Machinery garage and storage areas.	Underground and surface water	3	1	4		
	Effluent leaks and/or contamination from waste pits	Soil,	2	1	3		
		Underground and surface water	3	1	4		
	Total					26/8	
Air Quality	Construction activities	Air	3	3	6	4	Medium
		Ground	2	1	3		
	Site preparation and site clearance.	Soil	2	1	3		
		Plants (Flora)	1	1	2		
	Construction and operation sanitary facilities.	Ground		1	3		
		Human	3	1	4		
						22/6	
Surface and Ground Water Resources	Rig site preparation and camp clearance	Ground	2	1	3	3	Medium
	Waste; hazardous. Waste; Non-hazardous; Waste; wastewater.	Soil	2	1	3		
		Underground and surface water	3	1	4		
		human	3	1	4		
	Site operations	Ground	2	1	3		
		human	3	1	4		
	Total					23/6	
Terrestrial Environment (Habitat, Flora and Fauna)	Site preparation and camp site clearance.	Flora and Fauna	1	1	2	3	Medium
	Waste generation	Soil and Ground	2	1	3		
	Air emissions from engines, generation	Human	3	1	4		
		Air	3	3	6		
	Noise and vibration.	Human	3	1	4		
		Ground	2	1	3		
						22/6	
Aquatic Environment	Effluent and solid waste from the construction camp operation.	Soil	2	1	3	4	Medium
		Underground and surface water.	3	1	4		
		Human	3	1	4		
	Fuel and oil leakages from vehicles.	Soil	2	1	3		
	Total					14/4	
Noise and Vibration	Construction operation.	Ground	2	1	3	4	Medium
		Human	3	1	4		
	Power generators	Ground	2	1	3		

Parameter	Impact Source	Receptor	Presence	Resilience	Total	Average	Receptor sensitivity
		human	3	1	4		
	Vehicular noise pollution.	Human	3	1	4		
	Total						18/5
Solid and Liquid Wastes	Construction camp site operations.	Ground	2	1	3	4	
		Human	3	1	4		
	Total						7/2
Occupational Health and Safety	Construction activities	Ground	2	1	3	3	Medium
	Campsite operation.	Ground	2	1	3		
		Human	3	1	4		
	Air emissions from engines, generators,	Air	1	1	2		
	Noise and vibration	Human	3	1	4		
	Impact sources associated with accidents, road accidents, spills,	Human	3	1	4		
		Ground	2	1	3		
	Total					26/8	

APPENDIX 2: Chance Find Procedure

Scope of the chance find procedure

This procedure is applicable to all activities conducted by the personnel, including contractors, that have the potential to uncover a heritage item/site. The procedure details the actions to be taken when a previously unidentified and potential heritage item/site is found during construction activities. Procedure outlines the roles and responsibilities and the response times required from both project staff, and any relevant heritage authority.

Chance find procedure

If any person discovers a physical cultural resource, such as (but not limited to) archaeological sites, historical sites, remains and objects, or a cemetery and/or individual graves during excavation or construction, the following steps shall be taken:

1. Stop all works in the vicinity of the find, until a solution is found for the preservation of these artefacts, or advice from the relevant authorities is obtained;
2. Immediately notify a foreman. The foreman will then notify the Construction Manager and the Environment Officer (EO)/Environmental Manager (EM);
3. Record details in Incident Report and take photos of the find;
4. Delineate the discovered site or area; secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the local responsible authorities take over;
5. Preliminary evaluation of the findings by archaeologists. The archaeologist must make a rapid assessment of the site or find to determine its importance. Based on this assessment the appropriate strategy can be implemented. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage such as aesthetic, historic, scientific or research, social and economic values of the find;
6. Sites of minor significance (such as isolated or unclear features, and isolated finds) should be recorded immediately by the archaeologist, thus causing a minimum disruption to the work schedule of the Contractor. The results of all archaeological work must be reported to the National Museum of Kenya (NMK), once completed;
7. In case of significant find the (National Museum of Kenya (NMK), shall be informed immediately and in writing within 7 days from the find
8. Decisions on how to handle the finding shall be taken by the responsible authorities. This could include changes in the layout (such as when finding an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage;
9. Construction works could resume only after permission is granted from the responsible authorities

Stakeholder Engagement Plan (SEP)

**PROPOSED MICE CORE CENTRE (ARENA,
BOUTIQUE HOTEL, SERVICED APARTMENTS,
COMMERCIAL & HOTEL FACILITIES) AND
SUPPORTING INFRASTRUCTURE NAIROBI CITY
COUNTY, KENYA**

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August 2026

Key Standards and Legislation Guiding Stakeholder Engagement

Introduction

The stakeholder engagement process has been carefully designed to ensure compliance with applicable Kenyan laws and regulations, as well as the World Bank's Environmental and Social Framework (ESF). This Stakeholder Engagement Plan (SEP) outlines the relevant national legislation and World Bank standards, identifying the key requirements for effective and inclusive stakeholder engagement.

National Requirements for Stakeholder Engagement

The Kenyan Constitution 2010

The Constitution of Kenya, 2010, firmly establishes public participation as a fundamental aspect of governance and the exercise of sovereignty. According to Article 1(2), all sovereign power belongs to the people of Kenya, who may exercise this power either directly through public participation or indirectly through their elected representatives. This principle is reinforced by Article 10(2), which recognizes public participation as one of the national values and principles of governance.

The Constitution further supports public participation through several key rights. Article 33 guarantees freedom of expression, including the freedom to seek, receive, or impart information and ideas, thereby empowering citizens to actively share their views during public participation processes. Article 35 complements this by granting every citizen the right to access information held by the State, and requires the State to publish and publicize any important information affecting the nation, ensuring citizens are well-informed to engage effectively.

In the context of devolution, Article 174(c) and (d) emphasize the importance of self-governance and the right of communities to manage their own affairs and further their development. Meaningful public participation contributes to this by providing decision-makers with additional facts, values, and perspectives from the public. Article 184 specifically requires national legislation to facilitate participation by residents in the governance and management of urban areas and cities.

Additionally, Article 232(1)(d) and (f) highlight the involvement of the people in policy-making and the need for transparency through the provision of timely and accurate information to the public. Article 201(a) reinforces this by requiring openness, accountability, and public participation in public finance matters. To protect these rights, Articles 37 and 104 provide grievance mechanisms, including the rights to assemble, demonstrate, picket, present petitions, and seek judicial redress.

In essence, the Constitution of Kenya empowers citizens with both the right and the practical means to participate meaningfully in governance, making public participation a constitutional imperative for achieving transparent, accountable, and legitimate decision-making across all levels of government.

The Environmental Management Coordination Act (EMCA), Cap 387

The EMCA, Cap 387 and the Environmental (Impact Assessment and Audit) Regulations, 2003 define the legal basis for and the requirements of environmental impact assessment and management. National Environmental Management Authority (NEMA) assumes primary responsibility for overseeing the implementation of the requirements of the Act. Part 2 of EMCA consists of General principles:

- Principle of public participation in the development of plans, policies and processes for the management of the environment; and
- Involving the community to employ their cultural and traditional social principle of managing the environment and natural resources provided it is not repugnant to the justice and morality and not inconsistent with the law.

The EMCA and its supporting legislation set out requirements for public disclosure and consultation in tandem with the ESIA process. The ESIA must include a fully inclusive public/stakeholder consultation process to ensure that the affected community is engaged throughout the ESIA process and their issues and concerns addressed. Specifically, the proponent is required to:

- Publicize the Project and its anticipated effects and benefits by placing posters in strategic public places in the vicinity of the site of the proposed Project informing the affected parties and communities of the proposed Project;
- Issue Project notification in a nationwide newspaper for two successive weeks;
- Arrange for a radio announcement in both local and official languages with a nationwide coverage for at least once a week for two successive weeks;
- Hold at least 3 public meetings with the affected parties and communities to explain the Project and its effects, and to receive their oral or written comments;
- Send out notice of consultations at least one week prior to the meetings; and
- Ensure, in consultation with the Authority that a suitably qualified coordinator is appointed to receive and record both written and oral comments.

The Urban Areas and Cities Act, 2011

The Urban Areas and Cities Act of 2011 make further provisions for public participation. In sub section 2, the Act provides for a Citizen Fora as a 'forum for citizens organized for purposes of participating in the affairs of an urban area or a city.

- In Sub Section 3 (c), it identifies 'participation by the residents in the governance of urban areas and cities.
- In Sub Section 11 (d), it establishes 'institutionalized active participation by its residents in the management of the urban area and city affairs' as one of the principles of governance and management of urban areas and cities.

The rights of, and participation by residents in affairs of their city or urban area are elaborated in the Second Schedule of the Act. It obligates the authorities in an urban area or city to 'develop a system of governance that encourages participation by residents in its affairs' through creating 'appropriate conditions for participation in the preparation, implementation and review of the integrated development plan, the establishment, implementation and review of its performance management system, the monitoring and review of its performance, including the outcomes and impact of its performance and making of strategic decisions relating to delivery of service.

World Bank Environmental and Social Framework (ESF)

The proposed project is not directly financed by the World Bank Group (WBG). However, it is being aligned with the Bank's Environmental and Social Framework (ESF). In particular, the public engagement process will adhere to the requirements of Environmental and Social Standard 10 (ESS10) on Stakeholder Engagement and Information Disclosure. ESS10 requires implementing agencies to provide stakeholders with timely, relevant, understandable, and accessible information, and to consult with them in a culturally appropriate manner. Such engagement must be conducted free of any form of manipulation, interference, coercion, discrimination, or intimidation.

Objective of Stakeholder Engagement Plan (SEP)

The overall objective of this SEP is to define a program for stakeholder engagement, including public information disclosure and consultation throughout the entire project cycle. The SEP outlines the ways in which Zaria Group will communicate with stakeholders and includes a mechanism by which people can raise concerns, provide feedback, or make complaints about project activities or any activities related to the project.

Stakeholder Identification, Analysis and Communication Methods

Overview Stakeholder analysis (also referred to as stakeholder mapping) is the process of identifying a project's key stakeholders and assessing their interests in the project. Stakeholder analysis provides the foundation for development of the project's Stakeholder Engagement Plan and facilitates prioritization of engagement activities with stakeholder groups and individuals. Stakeholder analysis seeks answers to the following fundamental questions:

- Who are the key stakeholders of the proposed project?
- What are the interests of these stakeholders related to the project?

- How will stakeholders' interests be affected (positively/negatively) by the project?
- Which stakeholders are the most vulnerable and subject to potential adverse impacts?
- Which stakeholders wield the most influence to affect project outcomes?
- Whose capacity needs to be supported to enable them to participate?

A systematic approach is needed to ensure that all potential stakeholders are identified and their interests well understood so that they will be appropriately engaged throughout the project. Various methodologies exist for undertaking stakeholder analysis.

The stakeholder analysis initially relied on secondary data, including desk studies and a review of past consultations conducted during the Environmental and Social Impact Assessment (ESIA) process. During the fieldwork phase, direct engagement with key stakeholder groups will be undertaken to accurately identify stakeholders, understand their interests, concerns, and influence, and to effectively plan for their meaningful participation. A combination of methods will be used to collect primary data, including workshops, public meetings, focus group discussions (FGDs), in-depth interviews, questionnaires, and other appropriate tools.

Stakeholder analysis typically involves three main steps: identifying stakeholders; specifying stakeholder interests and mapping power relations and influence; and prioritizing engagement across different stakeholder groups. The Stakeholder Engagement Plan is critical to this success, outlining the specific engagement activities to be carried out over the course of the project. While the stakeholder engagement process will involve a wide range of participants, three broad categories of stakeholders are especially critical: those who need to approve or support the project, and those whose views should be taken into account as outlined below.

Core Category

Stakeholder groups who are directly responsible for aspects of project decision-making:

- This category comprises national government agencies and county governments that are directly responsible for project approval processes, regulatory permits, and formal decision-making including but not limited to:
 - State Department of Housing and Urban Development;
 - Kenya Railways Corporation (KRC),
 - Kenya Urban Roads Authority (KURA),
 - National Environment Management Authority (NEMA),
 - National Construction Authority (NCA),
 - Water Resources Authority (WRA),
 - Nairobi City Water and Sewerage Company (NCWSC)
 - Kenya Power and Lighting Company (KPLC),
 - Nairobi City County Government (NCCG),
 - National Museums of Kenya (NMK),
 - Kenya Power and Lighting Company (KPLC),

Project Affected Parties (PAPs)

Project Affected Parties (PAPs) These are stakeholder groups that are directly affected by the proposed project, either positively or negatively. This category includes:

- Project affected persons, (Railway workers);
- Residents, business entities, and individual entrepreneurs neighbouring the project area; and
- Community based groups (Vulnerable groups within the communities affected by the project).

Other Interested Parties

Broader category of stakeholders who may have an interest in the project or may influence it. This category may include:

- Service providers like (Private sector companies including Internet Service Providers (ISPs);
- National Government Administrative Officers (NGAO);
- Community opinion leaders;
- NGOs/CSOs/FBOs (local), Women and Youth organizations;
- Learning institutions (Technical University of Kenya);
- Organized interest groups (business associations, trade unions, others); and
- MP and Member of County Assembly).

Stakeholder Interest Identification in the Project

Following the identification of relevant stakeholder groups, a detailed analysis will be conducted to better understand their relationship with the Project, including their interests, needs, and expectations concerning consultation and engagement. The Table below presents the key stakeholder groups identified and explains their respective connections to the proposed Project.

Stakeholder Category	Stakeholder Group	Connection to the Project	Stakeholders to be Consulted	Level of Influence
Core Category	National Government Departments	Policy oversight and technical support	State Department for Public Works	High
	National Regulatory Bodies and Agencies	They establish policy, grant permits or other approvals for the proposed development, and monitoring and enforcing compliance with Kenyan law throughout all stages of the Project lifecycle.	- National Environment Management Authority (NEMA), - National Construction Authority (NCA), - National Museum of Kenya (NMK)	High
	County Government	The County government is responsible for implementation of legislation, and development plans and policies at the county level. They also have a role in issuing permits and processing applications. Finally, they have a role in ensuring the views of the communities it represents are presented to the project.	Nairobi City County Government (NCCG) Respective departments (Built Environment and Urban Planning Department) and other relevant departments.	High
	Implementing Agency	Responsible for design and supervision of the construction activities as per the master plan	Kenya Railways Corporation (KRC)	High
	Road agencies and Service Providers	Primary regulator and implementing agency for urban roads within Nairobi County; will be responsible for project approval, road classification, design standards, and construction oversight.	Kenya Urban Roads Authority (KURA)	High
	Service Providers	The owners of water and sewer infrastructure in the county. They are relevant since they provide approval for connection and critical for relocation of sewer line	Nairobi City Water & Sewerage Company (NCWSC)	Medium
		Owners of the electricity infrastructure (poles, lines, transformers); essential for approvals and relocation of power lines within the project site.	Kenya Power and Lighting Company (KPLC)	Medium
		Owners of fibre optic and underground telecom cables. They will be engaged for protection or relocation of cables during excavation	Telecom Companies (Safaricom, Telkom, Airtel, Jamii Telecom etc.)	Medium
Project Affected Parties	Project Affected persons (PAPs)	Directly affected by construction activities, traffic disruption, access restrictions, noise, dust, and potential economic impacts or benefits.	- Project affected persons, Local/impacted communities (Railway Workers).	Medium

Stakeholder Category	Stakeholder Group	Connection to the Project	Stakeholders to be Consulted	Level of Influence
	Vulnerable and Marginalized Groups (VMGs)	Likely to experience disproportionate impacts or have specific needs related to safety, accessibility, and livelihood restoration.	Vulnerable and marginalized groups (VMGs), including persons with disabilities (PWDs), women, youth, the elderly and other vulnerable persons	Medium
	Other government agencies and institutions	Contribute to the project implementation e.g. provide security to project workers and infrastructure, assist in community mobilization, etc.	- Ministry of Interior and National Administration, - Area Chief, - Sub-Chief, - Community village elders - MCAs - MP	Medium
	Special Interest Groups (SIG)	Represents the interests of different interested parties and vulnerable groups. Lobby and advocate for VMGs rights.	- CBOs - FBOs - NGOs - Women and Youth organizations	Medium
	Private sector	May suffer disruptions during construction phase	Businesses, traders, learning institution (TUK) and industries near the site.	Medium

Stakeholders Prioritization

The potential stakeholder groups and their interests will naturally be quite diverse. It may be neither practical nor warranted that the same level of engagement be sustained for each stakeholder group throughout the project. Prioritization between stakeholders may be necessary. To be clear, prioritization is not equivalent to exclusion or discrimination but is objectively based on the identified rights, interests, and influence of each stakeholder. Prioritization facilitates identifying appropriate forms of engagement for different stakeholder groups. Key questions to address include:

- What is the degree influence of each stakeholder group to affect project outcomes?
- What is the importance of each stakeholder group to the success of the project?
- What are the relationships between different stakeholders/groups of stakeholders?
- What type of stakeholder engagement is mandated by national law, international obligations or other requirements?
- Who are the project's targeted primary beneficiaries?
- Who may be adversely impacted by the project?
- Who is it critical to engage with first, and why? (e.g. enhance project design, assist in early project scoping, avoid adverse impacts)
- Are special measures needed to protect the interests of marginalized stakeholder groups?
- Does opposition from any of the stakeholders or stakeholder groups put the project at risk? If so, are there ways to engage with them to ensure that their concerns are being addressed?

A simple matrix that organizes stakeholders according to “impact” and “influence” will assist in this prioritization. Impact in this respect relates to who the project is most likely to affect (adversely or positively), which may be different from the level of influence they may have to affect project outcomes. The above stakeholder analysis and prioritization exercise will facilitate the development of tailored engagement approaches for specified stakeholder groups.

Stakeholder Engagement Process/Communication Plan

Objectives of the Communication Plan

The objective of this communication plan is to define the communication requirements for the proposed project and how information will be shared. This plan describes the following:

- Information that will be communicated including the level of detail and format;
- How the information will be communicated – face to face meetings, in email, telephone, web portal, WhatsApp, etc.
- When information will be distributed, the frequency of communication, both formal and informal;
- Who is responsible for communicating project information;
- Communication requirements for all project stakeholders;
- How sensitive or confidential information is communicated and who must authorize this;
- How changes in communication or the communication process will be managed;
- Any constraints, internal or external, which may affect project communication; and
- The escalation process for resolving any communication-based conflicts or issues.

Key Issues that should be communicated

The following are some of the important messages that will be communicated to the Stakeholders:

- Background of the proposed project;
- Project description;
- Project activities;
- The potential project benefits and impacts;
- The process that will be followed to engage with stakeholders;
- The Grievance Redress Mechanism (GRM) for the project; and
- How and when stakeholders can participate in the project.

It is also important that the following information shall be communicated to the project stakeholders on a needs-basis:

- Construction activities;
- Any interruptions of service utilities;
- Potential impacts of construction and operation activities; and

This would ensure that the stakeholders are not relying on rumors as their main source of project information. Particularly, there will be need to inform the Stakeholders of all planned project activities and potential risks and impacts on them, as well as opportunities.

When to communicate

Project communication will be structured and offered regularly but with the flexibility of responding to issues as they emerge. Broadly, stakeholder engagement for the proposed project has been categorized into ESIA and Post-ESIA engagement activities.

Communication Methods

Stakeholder engagement aims at making information about the project accessible to interested and affected parties. Communicating such information in a manner that is understandable to the project stakeholders is an important first (and ongoing) step in the process of stakeholder engagement. A variety of communication methods shall be used to engage with stakeholders reflecting their level of authority, socio-economic context, and cultural and intellectual factors such as level of education and literacy. Therefore, for all the stakeholder engagements, particularly with local community members, the main mode of communication will be through the Swahili language for better understanding. For official meetings and communication, English will be the main mode of communication given that it is the official language of the country.

Several common methods that will be used to disseminate information to stakeholders depending on the stakeholder group and literacy levels shall include but not limited:

- Focus Group Discussion: Targeted discussion with a group of individuals with similar characteristics such as women, men, youth, PWDs, and PAPs to capture targeted information that may not be captured in an open space. These meetings also create a platform for VMGs to freely voice their opinions and concerns. Other mode of engagements shall include but not limited to:
 - Key Informant Interview;
 - Formal Meeting (Workshops);
 - Community Meeting/ Barazas;
 - Questionnaires; and
 - Media (social media platforms) and advertisements.

ESIA Phase Stakeholder Engagement

The table below summarizes the key stakeholder engagement activities that have been planned, scheduled, and undertaken to date. The activities are estimated to take approximately three weeks to complete.

No.	Stakeholder	Mode of Engagement	Date	Location	Participants
1	KRC Project team, Proponent (Zaria Group) and ESIA lead consultant (Earthcare Services Limited)	Virtual meeting	27 th Feb 2026		5
2	Project Affected Persons (PAPs) (Railway workers)	Formal Meeting/separate face to face interviews	11 th April 2026	Proposed Site location	-

No.	Stakeholder	Mode of Engagement	Date	Location	Participants
3	The public and other key stakeholders	Joint public/community	To be communicated		

No.	Stakeholder	Mode of Engagement	Date	Location	Participants
	(business and traders) (Vulnerable groups)	meetings/separate meetings for women and vulnerable (Face to-face meetings)			
4	Multi-stakeholders (all relevant government agencies, Interested groups)	Workshop meeting	6 th May 2026	To be communicated	-

Post ESIA Stakeholder Engagement

To exemplify commitment to continuous engagement with stakeholders throughout the life of the Project, plans and activities implemented after acquisition of ESIA license from NEMA will feed into and inform on- going stakeholder engagement as the proposed project moves into these stages, ensuring that two-way dialogue with those affected, both positively and negatively by the project is maintained. The aim will be to ensure that the project remains in contact with all interested parties and cognizant of their concerns, and that these are addressed in an effective and timely manner. At each stage a detailed schedule of activities and events will be developed and widely disseminated so that people know how to interact with and participate in the project. The project will have a dedicated Grievance Redress Mechanism (GRM).

Monitoring and Reporting

The Stakeholder Engagement Plan will be periodically revised and updated as necessary in the course of MICE Core Centre (Arena) project implementations in order to ensure that the information presented herein is consistent and is the most recent, and that the identified methods of engagement remain appropriate and effective in relation to the project context and specific phases of the development. Any major changes to the project-related activities and to its schedule will be duly reflected in the SEP. Monthly summaries and internal reports on public grievances, enquiries and related incidents, together with the status of implementation of associated corrective/preventative actions will be collated by responsible staff and referred to the senior management of the project(s).

Resources/Responsibility

The Zaria Group will oversee all stakeholder engagement activities and may engage an independent firm to lead the implementation of the SEP.

List Of Neighbouring Community

Receptor Identification				
	Name	Within-500m	Within-1Km	Category
1	Nairobi Railway Museum	✓		Cultural
2	Kenya Railways Training Institute	✓		School
3	Vape Matrix Kenya (Vaporizer store)	✓		Business
4	Dee Natural's (Beauty Supply Store)	✓		Business
5	Simotwo Investment kco	✓		Business
6	Numerical Machining Complex			Business
7	City Council Stalls			Business
8	Collo Garage			Business
9	CMC Holdings Limited			Business
10	The GoDown Arts Centre			Business
11	Amazon Motors			Business
12	OLA Energy			Business
13	Ngong River			Natural
14	Cosmos Coffee House and Restaurant			Business
15	Vinodeep Towers			Business
16	Homeboyz Entertainment Ltd			Business
17	Food Court Highway Mall			Business
18	Chase			Business
19	Bank of Africa			Business
20	Highway Mall			Business
21	Agri-Quest Limited			Business
22	Plessy House			Business
23	Nissan			Business
24	Pelican Signs Building			Business
25	Newday Motors			Business
26	Christian Foundation Fellowship			Church
27	Panafrican Equipment (Kenya) Limited			Business
28	Peugeot Car Dealer			Business
29	Le-Vans Restaurant			Business
30	Auto-Planet			Business
31	Tahmeed Yard			Business
32	Railway Golf Course			Sports
33	Nairobi South Cemetery (The Commonwealth War Graves Commission)			Cultural
34	One Stop Garage			Business
35	Tallying center (Shopping Mall)			Business
36	Peep The Whip Cars (Used car dealer)			Business
37	SmartHub Ventures Limited (Car dealer)			Business
38	Unique Biz Hub			Business
39	The Bike Village (Bicycle store)			Business

	Receptor Identification			
	Name	Within-500m	Within-1Km	Category
40	Daco Motors Limited (Motor vehicle dealer)			Business
41	Tok investment Nairobi	✓		Business
42	Terava motors (car dealer)	✓		Business
43	DK Law Advocates			Business
44	Josam Trust			Business
45	Quo-Vadis E.A.			Business
46	Japlink Homes			Business
47	Flex2.0 Cars (Car dealer)			Business
48	Al-Ikhlās Motors (Car dealer)			Business
49	Safiri Shop (Shoe store)			Business
50	Kasamani & Co. Advocates			Business
51	Athletics Kenya			Business
52	Silnik Motors			Business
53	Flex B Motors (Motor vehicle dealer)			Business
54	Nails Deco			Business
55	Manhar Brothers (K)			Business
56	A Gill & Co			Business
57	Safes & Office Security Systems (Safe & Vault Shop)			Business
58	Liberty Auto Mart Ltd - Nairobi			Business
59	Mighty My Tee Nakumatt Mega Clothing Store			Business
60	Ellies Aerials			Business
61	RDF Gym & Spa			Business
62	Locs Avenue Dreadlocks Salon			Business
63	Amal Carpets (Outlet Mall)			Business
64	Sparks Motor Spares (Auto parts store)			Business
65	The Legend			Business
66	Axe Adventures			Business
67	Calmost Liquor Store			Business
68	Malip Studios			Business
69	Clicks Bar			Business
70	Masaku Prestige Auto Spares			Business
71	Nairobi Glass & Motor Hse			Business
72	Trinity Express Bus Nairobi Office			Business
73	Kalsi Architects Kenya			Business
74	Oriental General Stores (Hardware store)			Business
75	Grocery Store			Business
76	Autobros Car Parts (Auto parts store)			Business
77	Axar			Business
78	Afro Industrial Agencies Ltd (Hardware store)			Business
79	Reliance Racing/Reliance Auto Centre			Business
80	Eurotech Industrial Supplies Ltd			Business

	Receptor Identification			
	Name	Within-500m	Within-1Km	Category
81	Centigrees Car air conditioning parts store			Business
82	Kirti Enterprises Roofing Supply store			Business
83	Autoskill Limited			Business
84	Blue Chip Spare Parts (Auto Spare store)			Business
85	Platinum Square (Shopping Mall)			Business
86	Vinrover Direct Services Limited (Landrover dealer)			Business
87	Performance Auto Centre			Business
88	Risco Alarm Installers Kenya			Business
89	Solutions Auto Hire Services			Business
90	Buckley Stores			Business
91	Masaku Eurotech Limited			Business
92	Capital Laundry			Business
93	Huduma Cyber			Business
94	Sunspot Energy Company			Business
95	Shamas Windscreen Fitting Centre (Motor vehicle dealer)			Business
96	Lampshade Agency			Business
97	Oil Libya Bunyala Road			Business
98	Crystal Ball Appraisers			Business
99	M'Spares			Business
100	Alfa Trading			Business
101	Auto bliss parts			Business
102	Ckitchen Hardware (Kitchen supply store)			Business
103	Auto Lamps Traders			Business
104	Jat Auto Parts Kenya Ltd (Auto parts store)			Business
105	Kai Assessment Centre (Motor vehicle dealer)			Business
106	Brand World Clothing Store			Business
107	Jeski Collective Make Up Kit			Business
108	Zigep Auto Spares and Accessories			Business
109	Best Drive Car Dealer			Business
110	Urysia Limited - Head Office Car Dealer			Business
111	Endustrial Support			Business
112	Africore Interactive Limited			Business
113	Car Wash Bar and Restaurant			Business
114	Yaya Pet Shop (Pet store)			Business
115	Free Bazaar Shopping Mall			Business
116	Kasimolo Auto Masters			Business
117	Kwaho Butere Mumias Watson Project			Business
118	Motor Care and Services			Business
119	Top Pub Bar and Restaurant			Business
120	Insignia Auto Care			Business
121	Zedex Fabricators			Business
122	African Food Palace			Business

	Receptor Identification			
	Name	Within-500m	Within-1Km	Category
123	Jeymgah Radiator Services			Business
124	Salvage Kenya Used Car dealer			Business
125	Ramesa Adventures			Business
126	American Tourister Luggage store			Business
127	Select Clean Restaurant			Business
128	Macher Autocare Motor Vehicle dealer			Business
129	Zeta Softwares			Business
130	Grill 53 Fast Food			Business
131	Kenya Power KPLC Workshop Road			Business
132	Mjr. Rtd. Wuala			Business
133	Chrisco New Life Church			Business
134	Simba Cement Company Kenya			Business
135	Pork masters Inn (Butcher shop)			Business
136	Asonic Moto Kenya (Motorcycle shop)			Business
137	Samper Gardens			Business
138	Biznet Connect Shoe Store			Business
139	Perfect Fit Boot Store			Business
140	Malaika Beauty Parlour			Business
141	The Still Waters Tabernacle			Business
142	Forest Restaurant			Business
143	Citran Enterprises			Business
144	Phone Trends 254			Business
145	Solomon Kuria			Business
146	Longelesia Retail Shop			Business
147	Bossnet			Business
148	Mantra			Business
149	Faraja Online Store			Business
150	Zedco Autocool (Car accessories store)			Business
151	Aurora ICT & Distribution Ltd			Business
152	Godwill Hotel			Business
153	Phema Technology			Business
154	Watene's AirBNB			Business
155	Fairview B Railways			Business
156	WOW! Kids Toys (Toy store)			Business
157	Liam Garage			Business
158	Layco Studios & Consultants			Business
159	Wooria Supplies (Computer accessories store)			Business
160	Kenmbura Enterprise			Business
161	Caren Electronics (Electronic store)			Business
162	Kitale Petroleum Dealers Limited			Business
163	Jungle Motor World (Auto parts store)			Business
164	Sunhill Ventures Limited			Business

Receptor Identification				
	Name	Within-500m	Within-1Km	Category
165	Kenya Medical Supplies Agency			Business
166	Pelican Signs (Sign shop)			Business
167	Suzuki Parts Boniface (Auto parts store)	✓		Business
168	Chloride Exide Sales Bunyala Road (Car battery store)	✓		Business
169	Nasi Real Investment			Business
170	Velocity Limited			Business
171	Current Sign & Display			Business
172	Spares Hub (Auto parts store)			Business
173	Power Africa Solar			Business
174	Hoist Refrigeration Sales and Services (Refrigerator store)			Business
175	Maisha Tools (Welding supply store)			Business
176	Advanced Healthcare Technologies (Medical supply store)			Business
177	Switchgear Limited			Business
178	The Kingstar Entertainment			Business
179	Ramco Printing Works Ltd - UNO (Printing shop)			Business
180	Battery Victory (Car battery store)			Business
181	T&L Transport			Business
182	Plascon Colour Your World (Building material store)			Business
183	George's Fashions Wear			Business
184	Travellers Bar & Butchery (Butcher shop)			Business
185	Regal Press (K)			Business
186	T&G Cornice Artcarvature			Business
187	TNL Motors Bunyala rd (Motor vehicle dealer)			Business
188	Water Worth Technologies			Business
189	Bobs garage			Business
190	Switch Power Controls (Auto parts store)			Business
191	CarBatt254 (Car battery store)			Business
192	Nora Auto Spares			Business
193	Boraqs Centre			Business
194	Mattbeads Jewellery store			Business
195	Architects and Quantity Surveyors			Business
196	Pizzeria da Mauronzi Rabio Pizza			Business
197	Makos Hybrid Autotech (Car repair and maintenance service)			Business
198	Cake Corner			Business
199	Maridadi Building firm			Business
200	Good Times Fashion (Clothing store)			Business
201	Carbacid (CO2) Ltd (Head Office)			Business
202	Basco Paints (Paint store)			Business
203	Chianos Hub (Stationery store)			Business
204	Bridge Walk Bar & Restaurant			Business
205	Dajos Bar & Restaurant			Business

	Receptor Identification			
	Name	Within-500m	Within-1Km	Category
206	Faculty Auto Garage			Business
207	Mwaken Bookshop (Book store)			Business
208	Motor Tech Solutions			Business