REPUBLIC OF KENYA

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) STUDY REPORT FOR THE PROPOSED CONSTRUCTION OF SOCIAL HOUSING AND ASSOCIATED INFRASTRUCTURE IN SOUTHLANDS LANGATA CONSTITUENCY

(KIBRA LOT 2)



Proponent	State Department for Housing and Urban Development, Ministry of Lands, Public Works, Housing and Urban Development
Consultant	REDSSED COMPANY LTD Purity Muthoni (Reg. No. 7136)
Report Version	Final ESIA Study Report
Date	August 2026

REDSSED LIMITED

REDSSED COMPANY
P.0. Box 22675-00100
Nairobi, Kenya
+254 725 896 329 / 0725 055 540
https://redssed.co.ke

CERTIFICATION

CERTIFICATION

Declaration by the ESIA Expert

We, the undersigned, hereby certify that the information contained in this ESIA Study Report for the Proposed Construction of Social Housing and Associated Infrastructure in Southlands, Lang'ata Constituency, Nairobi County (KIBRA LOT 2), is accurate, complete, and truthful to the best of our knowledge. The assessment has been conducted in accordance with the Environmental Management and Coordination Act (EMCA) 1999 and the Environmental (Impact Assessment and Audit) Regulations, 2003.

Name	Dr Purity Muthoni (Reg. No. 7136)
Designation	Lead Expert
Signature	
Date	19/8/2026

Declaration by the Proponent

We, the State Department for Housing and Urban Development, the proponent of the Proposed Construction of Social Housing and Associated Infrastructure in Southlands, Lang'ata Constituency, Nairobi County (KIBRA LOT 2), hereby certify that the particulars provided in this Environmental and Social Impact Assessment Study Report are correct and true to the best of our knowledge.

Name	Mary Ndungu
Designation	Director
Organization	State Department for Housing and Urban Development
P.O. Box	30119-00100, Nairobi, Kenya
Signature	
Date	20/8/2025

Contents

CERTIFICATION ii
LIST OF ABBREVIATIONS AND ACRONYMS iv
EXECUTIVE SUMMARY v
CHAPTER ONE: INTRODUCTION 8
1.1 Background 8
1.2 Project Objectives 8
1.3 Project Justification 9
1.4 Project Scope 9
1.5 Need for the Fresh ESIA Process 9
1.6 Purpose of the ESIA Study 10
1.7 ESIA Study Approach 10
1.8 Structure of the ESIA Report 11
CHAPTER TWO: PROJECT DESCRIPTION 12
2.1 Introduction 12
2.2 Project Location and Site Coordinates 12
Map 2-1: Google Earth Map showing boundary of Lot 2 12
Map 2-2: Location of Langata Constituency in Nairobi County 14
Map 2-3: Location of Mugumo-ini Ward in Langata Constituency 15
Map 2-4: Location of Lot 2 in Mugumo-ini Ward 15
2.3 Land Size 16
2.4 Zoning and Development Control 16
2.5 Existing Site Conditions 16
Plate 2-1: Water-logged areas on Lot 2 17
Plate 2-2: Private developer 18
Plate 2-3: Southlands Estate residential blocks 18
Plate 2-4: Access to the site 18
2.6 Proposed Development 19
2.7 Housing Components 19
Plate 2-5: Social Housing 1 Room 20
Plate 2-6: Social Housing 2 Room 20
Plate 2-7: Social Housing 3 room 20
Plate 2-8: Affordable Housing Studio 20
Plate 2-9: Affordable Housing 2 bedroom 20
Plate 2-10: Affordable Housing 3 bedroom 20
2.8 Construction Activities 21
2.9 Construction Materials and Resources 21
2.10 Labour Requirements 22
2.11 Total Project Cost 22
2.12 Project Implementation Schedule 22
2.13 Operation and Maintenance 22

2.14 Project Decommissioning....23
CHAPTER THREE: POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK....24
3.1 Introduction....24
3.2 National Policy Framework....24
3.3 Legal Framework....25
3.4 Institutional Framework....27
CHAPTER FOUR: DESCRIPTION OF THE BASELINE ENVIRONMENT....30
4.1 Introduction....30
4.2 Physical Environment....30
4.2.1 Topography....30
Map 4-3: Elevation level of Mugumo-ini Ward....31
4.2.2 Soils....32
4.2.3 Hydrology....32
Map 4-2: Hydrology of Mugumo-ini Ward....34
Map 4-3: Hydrology features in Lot 2 area....34
4.2.4 Climate....35
Figure 4-1: Annual Rainfall Ranges....35
Figure 4-2: Annual Temperature Ranges....36
Figure 4-3: Annual Humidity Ranges....36
Figure 4-4: Annual Wind Ranges....37
4.3 Biological Environment....37
4.3.1 Flora....37
Plate 4-1: Cardiospermum grandiflorum....37
Plate 4-2: Grevillea Trees....37
4.3.2 Fauna....37
4.4 Socio-Economic Environment....38
4.4.1 Population....38
Table 4-1: Population Distribution in Langata Constituency Wards (KNBS 2019)....38
4.4.2 Land Use....38
4.4.3 Infrastructure....38
4.5 Cultural/Religious Features....39
4.6 Sensitive Receptors....39
4.7 Existing Environmental and Social Challenges....39
4.8.1 Relationship to Head of Household....40
Figure 4-6: Relationship to Head of Household....40
4.8.2 Gender of Respondent....40
Figure 4-7: Gender of Respondent....41
4.8.3 Age of Respondent....41
Figure 4-8: Age of Respondent....42
4.8.4 Highest Education Level Completed....42
Figure 4-10: Highest Education Level Completed....42

4.8.5 Main Occupation/Source of Income 42
Figure 4-11: Main Occupation/Source of Income 43
4.8.6 Monthly Household Income Bracket 43
Figure 4-12: Monthly Household Income Bracket 44
4.8.7 Total Members of the Household 44
4.8.8 Number of Adults (18+ years) 44
Figure 4-14: Number of Adults (18+ years) 45
4.8.9 Children (Under 18 years) 45
Figure 4-15: Children (Under 18 years) 46
4.8.10 Vulnerable Members in the Household 46
Figure 4-17: Vulnerable Members in the Household 46
4.8.11 Support for Vulnerable Members 46
Figure 4-18: Support for Vulnerable Members 47
4.8.12 Length of Residence in Area 47
Figure 4-19: Length of Residence in Area 48
4.8.13 Type of Dwelling Unit 48
4.8.14 Main Source of Water Supply 48
Figure 4-22: Main Source of Water Supply 49
4.8.15 Regularity of Water Supply 49
Figure 4-23: Regularity of Water Supply 50
4.8.16 Main Source of Energy for Cooking 50
Figure 4-24: Main Source of Energy for Cooking 50
4.8.17 Main Source of Energy for Lighting 50
Figure 4-25: Main Source of Energy for Lighting 51
4.8.18 Type of Sanitation Facility 51
Figure 4-26: Type of Sanitation Facility 52
4.8.19 Solid Waste Disposal Method 52
Figure 4-27: Solid Waste Disposal Method 52
4.8.20 House Location Near Environmental Hazards 52
Figure 4-28: House Location Near Environmental Hazards 53
4.8.21 Distance to Primary School in Kilometers 53
Figure 4-33: Distance to Primary School in Kilometers 54
4.8.22 Distance to Secondary School in Kilometers 54
Figure 4-34: Distance to Secondary School in Kilometers 55
4.8.23 Distance to Health Facility in Kilometers 55
Figure 4-35: Distance to Health Facility in Kilometers 56
4.8.24 Distance to Market/Shopping Centre in Kilometers 56
Figure 4-36: Distance to Market/Shopping Centre in Kilometers 57
4.8.25 Distance to Police Post/Station in Kilometers 57
4.8.26 Distance to Water Point (if not piped) in Kilometers 58
Figure 4-38: Distance to Water Point (if not piped) in Kilometers 59

4.8.27 Distance to Public Transport Stop in Kilometers 59
Figure 4-39: Distance to Public Transport Stop in Kilometers 60
4.8.28 Distance to Place of Worship in Kilometers 60
Figure 4-40: Distance to Place of Worship in Kilometers 61
4.8.29 Mode of Transport to Work 61
Figure 4-41: Mode of Transport to Work 62
4.8.30 Challenges Experienced While Accessing Services 62
Figure 4-42: Challenges Experienced While Accessing Services 63
4.8.31 Services Lacking in the Area 63
Figure 4-46: Services Lacking in the Area 64
4.8.32 Specific Lacking Services 64
Figure 4-47: Specific Lacking Services 64
4.8.33 Awareness of Proposed Social Housing Project 64
Figure 4-48: Awareness of Proposed Social Housing Project 65
4.8.34 Mode of Spreading Awareness of the Project 65
Figure 4-49: Mode of Spreading Awareness of the Project 66
4.8.35 Benefits Expected from the Project 66
Figure 4-50: Benefits Expected from the Project 66
4.8.36 Concerns or Risks About the Project 66
Figure 4-51: Concerns or Risks About the Project 67
4.8.37 Environmental Improvements That Should be Supported by the Housing Project 67
Figure 4-52: Environmental Improvements That Should be Supported by the Housing Project 68
4.8.38 Environmental Problems Anticipated from the Construction of the Housing Project 68
Figure 4-53: Environmental Problems Anticipated from the Construction of the Housing Project 69
CHAPTER FIVE: STAKEHOLDER ENGAGEMENT AND PUBLIC PARTICIPATION 70
5.1 Introduction 70
5.2 Objectives of Public Participation 70
5.3 Stakeholder Identification and Analysis 70
5.4 Stakeholder Engagement Methodology 71
5.5 Public Participation Program 72
5.6 Notices and Publicity 72
5.7 Meetings Conducted 72
5.7.1 Persons with Disabilities (PWDs) Meeting – 31 July 2026 73
Plate 5-1: Ongoing PWD meeting 73
5.7.2 Residential Associations Officials Meeting – 1 August 2026 73
5.7.3 Youth Meeting – 3 August 2026 73
Plate 5-2: Youth meeting 74
5.7.4 Women Meeting – 3 August 2026 74
Plate 5-3 Women meeting 75
5.7.5 Business Community Meeting – 4 August 2026 75

Plate 5-4: ESIA Consultant engaging the Business Community Representatives 75
5.7.6 Public Baraza (Community Members) – 5 August 2026 75
Plate 5-5: Public Baraza 76
5.7.7 Project Affected Persons (PAPs) Meeting – 6 August 2026 76
Plate 5-6: One of the PAPs from southlands estate raising a concern 77
5.7.8 Institutions Meeting – 7 August 2026 77
Plate 5-7: Institutions meeting 78
5.8 Issues and Concerns Raised 78
5.9 Lot 2-Specific Concerns 80
5.10 Responses from the Proponent/Consultant 80
5.11 Issues Not Accepted and Reasons 81
5.12 Stakeholder Engagement Matrix 82
5.13 Grievance Redress Mechanism 83
CHAPTER SIX: ANALYSIS OF PROJECT ALTERNATIVES 84
CHAPTER SEVEN: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT 89
7.1 Introduction 89
7.2 Pre-Construction Impacts 89
7.3 Construction Phase Impacts 89
7.3.1 Positive Impacts 90
7.3.2 Negative Impacts and their Respective Mitigation Measures 90
7.4 Operational Phase Impacts 93
7.4.1 Positive Impacts 94
7.4.2 Negative Impacts and their Respective Mitigation Measures 94
7.5 Decommissioning Impacts 97
7.5.1 Positive Impacts 97
7.5.2 Negative Impacts and their Respective Mitigation Measures 97
7.6 Cumulative Impacts 99
7.7 Residual Impacts 100
CHAPTER EIGHT: SOCIAL IMPACTS AND RESETTLEMENT / PAP ISSUES 101
8.1 Introduction 101
8.2 Identification of Project Affected Persons 101
8.3 Existing Livelihoods 101
8.4 Informal Businesses 102
8.5 Farmers / Urban Agriculture 102
8.6 Impacts on Neighbouring Residents 103
8.7 Vulnerable Groups 103
8.8 Livelihood Restoration Framework 104
8.9 Resettlement / Facilitation Principles 104
CHAPTER NINE: TRAFFIC IMPACT ASSESSMENT 105
CHAPTER TEN: CLIMATE CHANGE AND DISASTER RISK ASSESSMENT 109
CHAPTER ELEVEN: ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN — ESMP 115

11.1 Introduction....115
11.2 Construction Phase ESMP....115
11.3 Operational Phase ESMP....122
11.4 Decommissioning Phase ESMP....126
11.5 Emergency Preparedness and Response....133
11.6 Stakeholder Engagement / Communication Plan....133
11.7 Institutional Responsibilities....134
CHAPTER TWELVE: ENVIRONMENTAL AND SOCIAL MONITORING PLAN....136
CHAPTER THIRTEEN: CONCLUSION AND RECOMMENDATIONS....142
13.1 Conclusion....142
13.2 Recommendations....143
REFERENCES....144

LIST OF ABBREVIATIONS AND ACRONYMS

Abbreviation / Acronym	Full Meaning
BQ	Bill of Quantities
C-ESMP	Contractor's Environmental and Social Management Plan
CLO	Community Liaison Officer
CTMP	Construction Traffic Management Plan
DOSHS	Directorate of Occupational Safety and Health Services
EPRP	Emergency Preparedness and Response Plan
ESMP	Environmental and Social Management and Monitoring Plan
ESO	Environmental and Social Officer
GHG	Greenhouse Gas
GRM	Grievance Redress Mechanism
NCCAP	National Climate Change Action Plan
OHS	Occupational Health and Safety
OLS	Obstacle Limitation Surfaces
OSHA	Occupational Safety and Health Act
PAP	Project Affected Person(s)
PLUPA	Physical and Land Use Planning Act
PPE	Personal Protective Equipment

EXECUTIVE SUMMARY

1. Introduction

This Environmental and Social Impact Assessment (ESIA) Study Report has been prepared for the proposed construction of social and affordable housing and associated infrastructure on **Kibra Lot 2**, located in Mugumo-ini Ward, Lang'ata Constituency, Nairobi County. The project forms part of the national Affordable Housing Program and responds directly to Article 43(1)(b) of the Constitution of Kenya, 2010, which guarantees every person the right to accessible and adequate housing and to reasonable standards of sanitation. Across the five Southlands (Kibra) Lots, the program aims to deliver approximately 7,000 housing units. This ESIA addresses only Lot 2.

2. Project Description

Kibra Lot 2 occupies approximately **6 acres** of land along the Southern Bypass. The approximate geographic coordinates of the site are **–1.319962, 36.789645**.

The proposed development comprises: Sixteen (16) multi-storey residential blocks configured as **Ground plus eight floors (G+8)**; A total of **1,584 housing units** comprising a mix of social housing (one-roomed, two-roomed and three-roomed units) and affordable housing (studio, two-bedroom and three-bedroom units); Supporting infrastructure including cabro-paved internal roads and parking, storm-water and foul drainage systems, water supply (boreholes, underground and overhead storage tanks and reticulation), power supply with backup generator and street lighting, solid-waste management facilities, green spaces, children's play areas, commercial stalls, and perimeter chain-link fencing with two gates and gate houses. The maximum building height of 29 metres has been formally cleared by the Kenya Civil Aviation Authority (KCAA) in view of the site's location within the Wilson Airport Obstacle Limitation Surfaces. Construction is planned to take approximately 24 months.

3. Need for a Fresh ESIA Process

An earlier Environmental Impact Assessment process for the wider Southlands development was invalidated by the Environment and Land Court at Nairobi in **ELC Petition E052 of 2025** (judgment delivered 29 May 2026). The Court directed that a fresh, fully compliant Environmental and Social Impact Assessment be undertaken before any further construction or operations could resume.

New Terms of Reference for Lot 2 were submitted and approved by NEMA, subject to conditions that include inclusive public participation, KCAA height clearance, a Traffic Impact Assessment, detailed baseline studies, greenhouse-gas and climate-change risk assessment, and signature of the final report by the multi-disciplinary expert team. This ESIA Study Report has been prepared entirely afresh in accordance with those approved Terms of Reference, the Environmental Management and Coordination Act (EMCA), Cap 387, and the Environmental (Impact Assessment and Audit) Regulations, 2003 (as amended).

Because the project exceeds the 100-unit threshold, it is classified as a high-risk undertaking under the Second Schedule of EMCA and therefore requires a full ESIA Study before implementation.

4. Project Objectives and Justification

The principal objectives of the Lot 2 development are to: Deliver 1,584 units of social and affordable housing, thereby contributing to the reduction of Kenya's urban housing deficit;

Provide the full range of associated infrastructure and amenities; Ensure the development is environmentally sustainable, socially inclusive and climate-resilient; Generate temporary and longer-term employment and business opportunities for the surrounding community; and Support orderly urban development within Lang'ata Constituency while remaining fully compliant with applicable planning, environmental and aviation-safety requirements.

Nairobi continues to experience a large annual housing deficit (estimated at approximately 200,000 units). The Affordable Housing Programme targets households earning up to KSh 20,000 per month (social housing), between KSh 20,000 and KSh 149,000 (affordable housing), and above KSh 150,000 (affordable market housing). Lot 2 is intended to supply a substantial number of units in a location with strong demand for affordable accommodation.

5. Policy, Legal and Institutional Framework

The project is governed by a comprehensive framework that includes the Constitution of Kenya 2010, EMCA Cap 387, the EIA/EA Regulations 2003 (as amended), the Affordable Housing Act 2024, the Climate Change Act 2016, the Physical and Land Use Planning Act 2019, the Water Act 2016, the Occupational Safety and Health Act 2007, and related regulations on air quality, noise, water quality and waste management. Key institutions include NEMA, the State Department for Housing and Urban Development, the Affordable Housing Board, KCAA, KeNHA, WRA, NCWSC, KPLC and local administration.

6. Baseline Environmental and Social Conditions

Physical environment: The site exhibits elevations ranging from approximately 1,510 m to 1,790 m above sea level with a gentle gradient. Soils are predominantly red residual soil mixed with clay, contributing to observed water-logged areas. The site lies approximately 450 m from River Motoine and 820 m from River Ngong; both rivers drain into Nairobi Dam (about 1 km away).

Biological environment: Vegetation includes approximately 25 mature trees (grevillea, cypress, pine and eucalyptus), immature trees, Napier grass and common weeds.

Socio-economic environment: Neighbouring receptors include Southlands Estate residential blocks and a private developer who asserts ownership claims over part of the parcel. Access is currently through an unpaved earth road branching off Langata Link Road. Existing utilities (electricity, water and limited sewerage) will require coordination with the respective providers.

7. Stakeholder Engagement and Public Participation

A structured stakeholder identification, analysis and public participation process was undertaken in accordance with Regulation 17 of the EIA/EA Regulations 2003. Engagement involved Project Affected Persons, neighbouring residential associations (including Southlands Estate), youth, women, persons with disabilities, business-community representatives, institutions and the wider community. Issues raised have been documented and addressed through design refinements, mitigation measures and the Grievance Redress Mechanism.

8. Project Alternatives

Alternatives considered included the "no-project" option, alternative sites, alternative housing densities and configurations, and alternative construction methods and technologies. The proposed G+8 high-density configuration on the current site, within the KCAA height limit and consistent with the Langata Estates zoning (High Density / Mixed

Residential Development), was determined to be the most feasible option for meeting the project objectives while minimising environmental and social impacts.

9. Key Environmental and Social Impacts

Positive impacts include: Delivery of 1,584 decent, affordable housing units; Temporary and longer-term employment (with a target of approximately 90 % local labour where skills permit); Improved infrastructure and amenities; and Contribution to orderly urban development and the national housing agenda.

Potential negative impacts (pre-construction, construction, operation and decommissioning) include dust and air emissions, noise and vibration, traffic disruption, temporary loss of vegetation and trees, risks to surface and groundwater quality (particularly given water-logged areas and proximity to rivers), occupational health and safety hazards, solid-waste generation, and social concerns related to neighbouring residents and residual ownership claims.

10. Mitigation Measures and Environmental & Social Management Plan

All significant adverse impacts can be avoided, minimised or offset to acceptable levels through the comprehensive Environmental and Social Management and Monitoring Plan (ESMP) presented in Chapters Eleven and Twelve. Key measures address site preparation and drainage of water-logged areas, tree protection and compensatory planting, dust and noise control, traffic management (in coordination with KeNHA), waste management, occupational health and safety, water-resource protection, aviation-safety compliance, local employment, and continuous operation of an accessible Grievance Redress Mechanism.

An Emergency Preparedness and Response Plan and a Stakeholder Engagement / Communication Plan will be maintained throughout the project life cycle.

11. Monitoring Program

A detailed Environmental and Social Monitoring Plan has been prepared covering vegetation and trees, soil erosion and sediment, storm-water drainage, waste, energy and fuel use, air quality, noise, water quality, traffic, occupational health and safety, Project Affected Persons facilitation, local employment, and grievance redress. Clear reporting requirements to the Proponent, NEMA and relevant lead agencies are specified.

CHAPTER ONE: INTRODUCTION

1.1 Background

The Government of Kenya, acting through the State Department for Housing and Urban Development within the Ministry of Lands, Public Works, Housing and Urban Development, is rolling out the national Affordable Housing Programme. This initiative responds directly to Article 43(1)(b) of the Constitution of Kenya, 2010, which affirms every person's right to accessible and adequate housing and to reasonable standards of sanitation. The programme aims to close the large urban housing gap by delivering decent, affordable units for low- and middle-income households.

Within this framework the State Department is advancing the construction of social and affordable housing together with supporting infrastructure on five distinct parcels in Mugumo-ini Ward, Lang'ata Constituency, Nairobi County. These parcels are collectively known as the Southlands (Kibra) Lots 1–5. Across the five lots the programme is designed to deliver in the region of 7,000 housing units plus associated amenities and services.

This Environmental and Social Impact Assessment (ESIA) Study Report addresses only Kibra Lot 2. The proposed development on Lot 2 comprises sixteen (16) multi-storey residential blocks configured as Ground plus eight floors (G+8). The blocks will provide a total of 1,584 housing units, comprising a mix of social housing (one-roomed, two-roomed and three-roomed units) and affordable housing (studio, two-bedroom and three-bedroom units), together with the full suite of supporting infrastructure, utilities and ancillary facilities.

Because the project exceeds the 100-unit threshold, it is classified as a high-risk undertaking under the Second Schedule of the Environmental Management and Coordination Act (EMCA), Cap 387 (as amended by Legal Notice No. 31 of 2019). A full Environmental and Social Impact Assessment Study is therefore required before any further implementation can lawfully proceed.

1.2 Project Objectives

The principal objectives of the proposed Southlands Kibra Lot 2 development are to:

a) Deliver 1,584 units of social and affordable housing, thereby contributing to the reduction of Kenya's urban housing deficit and improving living conditions for low- and middle-income households.

b) Provide the full range of associated infrastructure and amenities, including cabro-paved access roads and parking, storm-water and foul drainage systems, water supply (including boreholes and storage), power supply with backup generation, solid-waste management facilities, green spaces, children's play areas, commercial stalls, and perimeter security infrastructure.

c) Ensure that the development is environmentally sustainable, socially inclusive and climate-resilient.

d) Generate temporary and longer-term employment and business opportunities for residents of the surrounding community during both the construction and operational phases.

e) Support orderly urban development within Lang'ata Constituency while remaining fully compliant with applicable planning controls, environmental standards and aviation-safety requirements.

1.3 Project Justification

Nairobi County continues to experience rapid urban growth accompanied by a persistent shortage of decent housing, especially for low- and middle-income households. National estimates place annual housing demand at approximately 250,000 units, while current formal supply remains in the region of 50,000 units, most of which serve the higher end of the market. The resulting annual deficit of roughly 200,000 units falls disproportionately on lower-income segments.

The Affordable Housing Programme addresses this gap by offering Social Housing for households earning up to KSh 20,000 per month, Affordable Housing for those earning between KSh 20,000 and KSh 149,000 per month, and Affordable Market Housing for those earning above KSh 150,000 per month. Lot 2 forms an integral part of the wider Southlands development and is intended to supply a substantial number of units in a location that exhibits strong demand for affordable accommodation.

1.4 Project Scope

The scope of the proposed Southlands Kibra Lot 2 project comprises:

- Construction of sixteen (16) residential blocks of G+8 configuration, delivering 1,584 housing units (a mix of social and affordable units) on approximately 6 acres of land (approximately 264 units per acre).
- Provision of supporting civil works, including cabro-paved internal roads and parking areas, storm-water drainage and foul sewerage systems.
- Development of water-supply infrastructure, including boreholes, underground and overhead storage tanks, and associated reticulation.
- Installation of power-supply infrastructure, including a power house with backup generator and street lighting.
- Provision of solid-waste management facilities (garbage receptacles).
- Creation of green spaces, landscaping, outdoor children's play areas and commercial/shopping stalls.
- Construction of perimeter chain-link fencing with two gates and gate houses for security.
- All associated site clearance, earthworks and ancillary facilities required for a complete and functional housing estate.

The construction period is planned to last approximately 24 months from the date of commencement of works following receipt of all statutory approvals.

1.5 Need for the Fresh ESIA Process

An earlier Environmental Impact Assessment process was undertaken for the wider Southlands (Kibra Lots) development. Following judicial review, the Environment and Land Court at Nairobi (ELC Petition E052 of 2025, judgment delivered 29 May 2026) held that the previous EIA licence was invalid. The Court directed that a fresh, fully compliant Environmental and Social Impact Assessment be carried out before any further construction or operations could resume.

In response, the proponent prepared and submitted new Terms of Reference for Lot 2. NEMA approved those Terms of Reference subject to a set of conditions that mirror those imposed on the other lots. The conditions include, among others: inclusive and detailed stakeholder engagement and public participation fully compliant with Regulation 17 of the

EIA/EA Regulations 2003; clearance from the Kenya Civil Aviation Authority confirming height and aviation-safety requirements; a Traffic Impact Assessment; detailed baseline environmental assessments (water quality, soil, hydrogeology, ambient air, noise and biodiversity); identification of greenhouse-gas emission sources and a Climate Change Risk and Vulnerability Assessment; and the requirement that the final ESIA Study Report be signed by all members of the multi-disciplinary expert team.

This ESIA Study Report has therefore been prepared entirely afresh in accordance with the approved Terms of Reference, the Environmental Management and Coordination Act and the Environmental (Impact Assessment and Audit) Regulations, 2003.

1.6 Purpose of the ESIA Study

The purpose of this ESIA Study is to:

i. Identify, predict and evaluate the potential positive and negative environmental and social impacts of the proposed Kibra Lot 2 development across its full life cycle (pre-construction, construction, operation and decommissioning).

ii. Assess the significance of those impacts in the context of the existing baseline environment and the sensitivity of neighbouring receptors.

iii. Propose practical and effective mitigation measures to avoid, minimise or offset adverse impacts and to enhance beneficial ones.

iv. Develop a comprehensive Environmental and Social Management and Monitoring Plan (ESMP) to guide implementation and ongoing monitoring.

v. Demonstrate compliance with the approved Terms of Reference, the Environmental Management and Coordination Act, the EIA/EA Regulations and related legislation and policies.

vi. Provide NEMA and other decision-makers with sufficient information to determine whether the project should be approved and under what conditions.

1.7 ESIA Study Approach

The ESIA study was conducted in accordance with the approved Terms of Reference and the requirements of the Environmental (Impact Assessment and Audit) Regulations, 2003. The principal steps comprised:

- Desk review of project documentation, previous studies, the Environment and Land Court judgment of 29 May 2026, and all relevant legislation, policies and guidelines.
- Detailed description of the proposed Lot 2 development and systematic analysis of project alternatives.
- Collection and analysis of baseline environmental and social data covering the physical, biological and socio-economic characteristics of the project area and its immediate surroundings.
- Stakeholder identification, analysis and structured public participation involving Project Affected Persons, neighbouring residential associations, youth, women, persons with disabilities, business-community representatives, institutions and the wider community.
- Identification and assessment of potential impacts using standard significance criteria (magnitude, spatial extent, duration, reversibility and probability).

- Formulation of mitigation measures and preparation of the Environmental and Social Management and Monitoring Plan.
- Integration of the specialised assessments required by the TOR approval (traffic impact, climate-change risk and vulnerability, and greenhouse-gas considerations).
- Preparation of this comprehensive ESIA Study Report for submission to NEMA.

1.8 Structure of the ESIA Report

This ESIA Study Report is organised as follows:

- **Executive Summary** – provides a concise overview of the entire report.
- **Chapter One** – presents the introduction, project background, objectives, justification, scope, the need for a fresh ESIA process, the purpose of the study, the approach adopted, and the structure of the report.
- **Chapter Two** – describes the proposed Lot 2 development, including location, existing site conditions, housing components, supporting infrastructure, construction activities and project phases.
- **Chapter Three** – outlines the applicable policy, legal and institutional framework.
- **Chapter Four** – describes the baseline environmental and social conditions of the project area.
- **Chapter Five** – documents the stakeholder engagement and public participation process, the issues raised and how they have been addressed.
- **Chapter Six** – analyses project alternatives.
- **Chapter Seven** – presents the assessment of environmental and social impacts.
- **Chapter Eight** – addresses social impacts and issues relating to Project Affected Persons.
- **Chapter Nine** – presents the Traffic Impact Assessment.
- **Chapter Ten** – addresses climate change and disaster-risk considerations.
- **Chapter Eleven** – sets out the Environmental and Social Management and Monitoring Plan (ESMP).
- **Chapter Twelve** – details the environmental and social monitoring programme.
- **Chapter Thirteen** – presents the conclusions and recommendations.

The report is supported by a list of references and a comprehensive set of annexes containing technical studies, public-participation records and other supporting documentation.

CHAPTER TWO: PROJECT DESCRIPTION

2.1 Introduction

This chapter presents a detailed description of the proposed Kibra Lot 2 development. It covers the project location and coordinates, land size, existing site conditions, the proposed housing and infrastructure components, construction activities, materials and labour requirements, implementation schedule, and the operational and decommissioning phases.

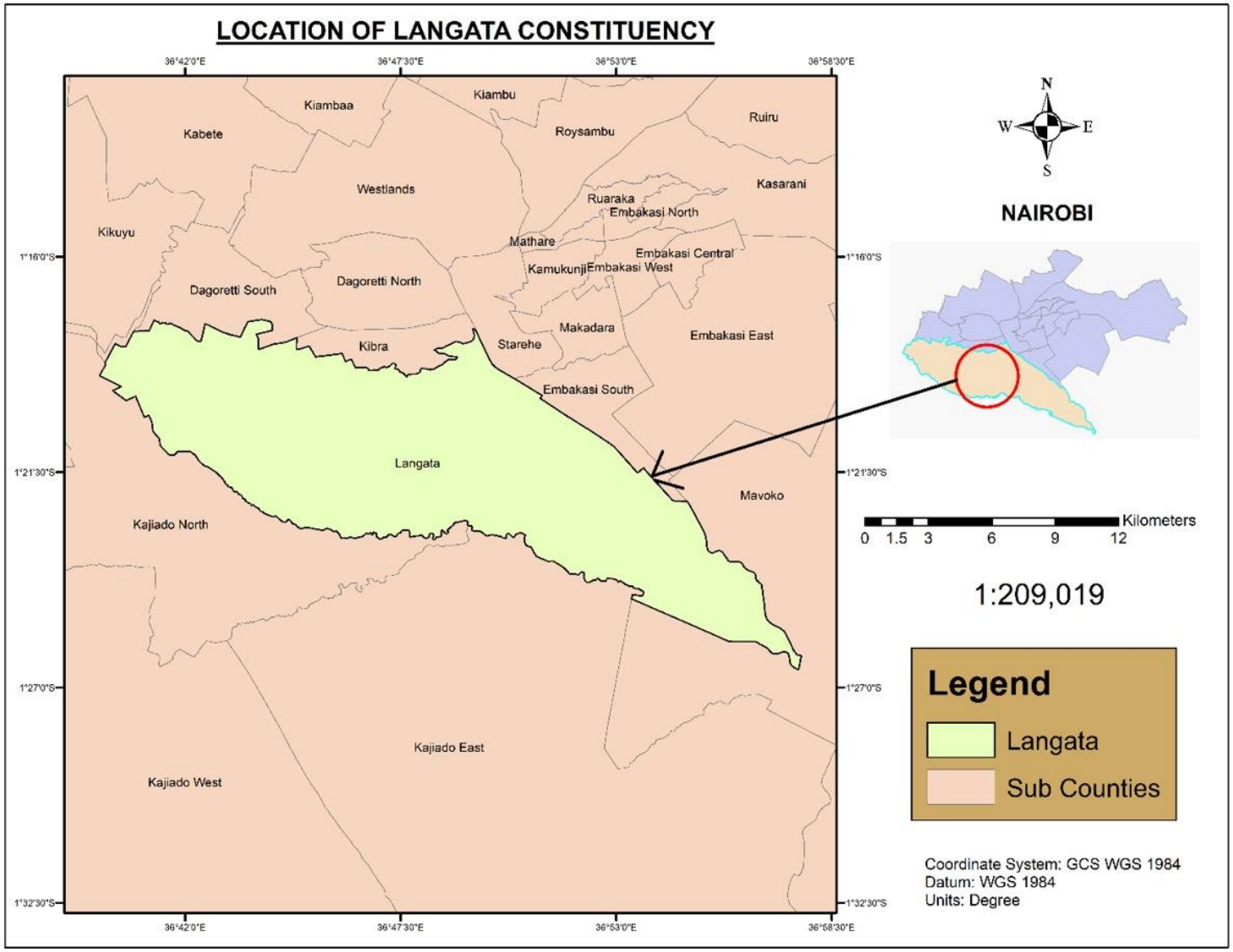
2.2 Project Location and Site Coordinates

Kibra Lot 2 is located in Mugumo-ini Ward, Lang'ata Constituency, Nairobi County, along the Southern Bypass. The approximate geographic coordinates of the site are -1.319962, 36.789645.

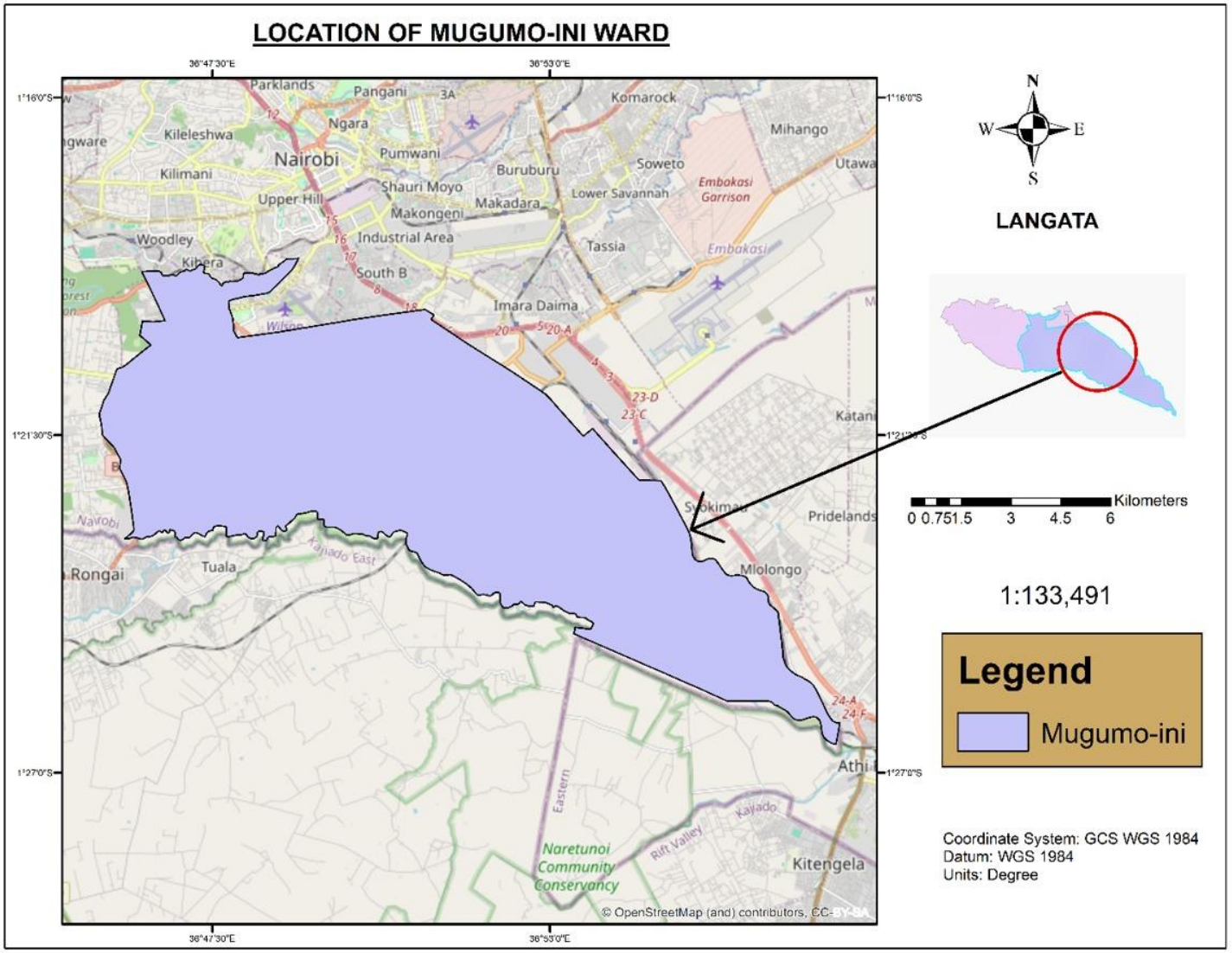
Lang'ata Constituency is bordered by several neighbouring constituencies: to the north by Kibra and Dagoretti North; to the northwest by Dagoretti South and Kikuyu; to the west by Kajiado North; to the south by Kajiado East; and to the northeast and east by Embakasi South, Starehe and Mavoko (Machakos County). The constituency comprises five wards: South C, Nairobi West, Mugumo-ini, Highrise and Karen.



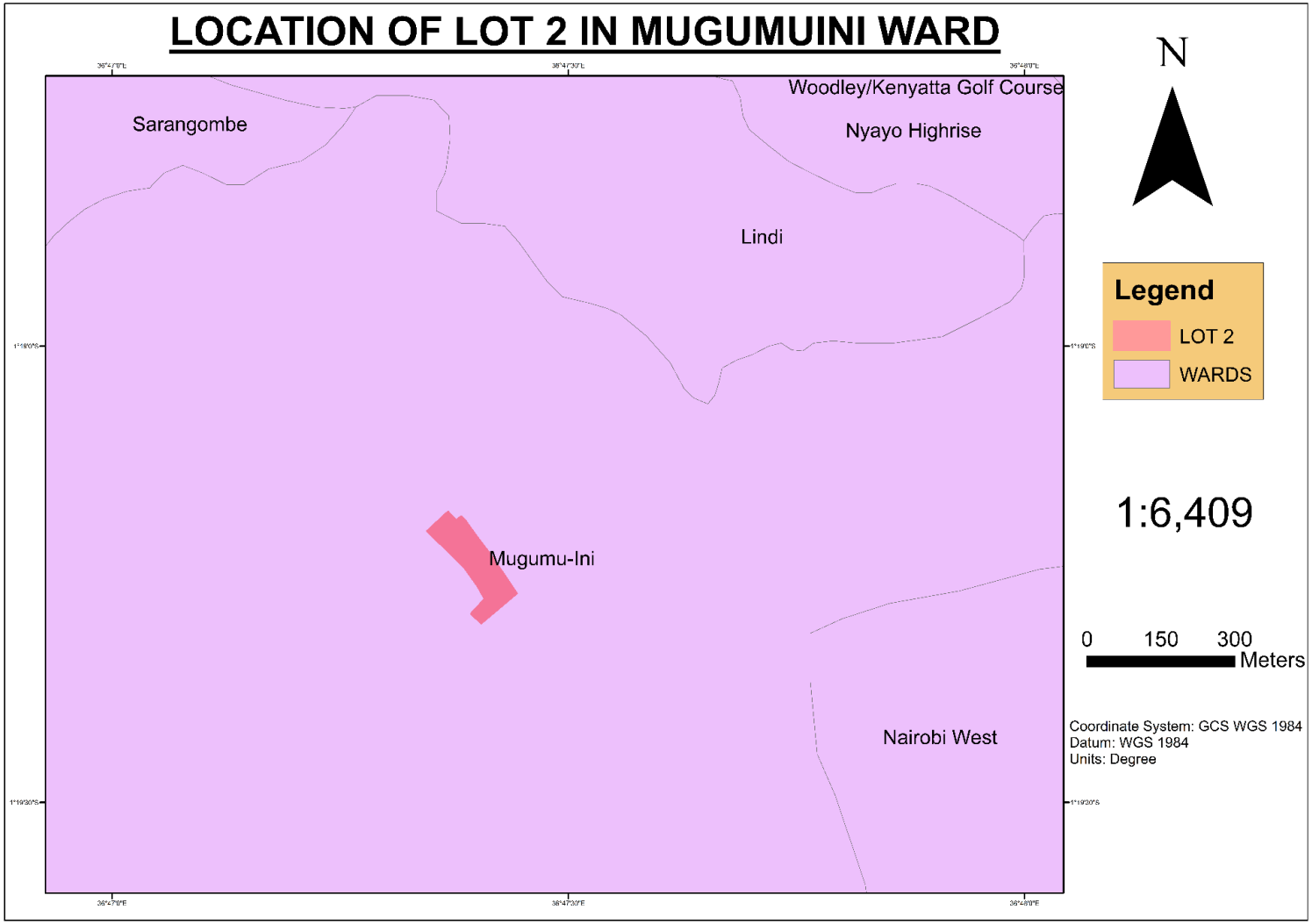
Map 2-1: Google Earth Map showing boundary of Lot 2


LOCATION OF LANGATA CONSTITUENCY
36°42'0"E
36°47'30"E
36°53'0"E
36°58'30"E
1°16'0"S
1°21'30"S
1°27'0"S
1°32'30"S
Kiambaa
Kiambu
Kabete
Roysambu
Ruiru
Westlands
Kasarani
Ruaraka
Embakasi North
Kikuyu
Mathare
Embakasi Central
Kamukunji
Embakasi West
Dagoretti South
Dagoretti North
Makadara
Kibra
Starehe
Embakasi East
Embakasi South
Langata
Mavoko
Kajiado North
Kajiado East
Kajiado West
N
W
E
S
NAIROBI
Kilometers
0 1.5 3 6 9 12
1:209,019
Legend
Langata
Sub Counties
Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree

Map 2-2: Location of Langata Constituency in Nairobi County



Map 2-3: Location of Mugumo-ini Ward in Langata Constituency



Map 2-4: Location of Lot 2 in Mugumo-ini Ward

2.3 Land Size

The project site for Lot 2 measures approximately 6 acres.

2.4 Zoning and Development Control

According to the Nairobi City County Development Control Ordinances, the project site falls within the Langata Estates zoning area (which includes Southlands, Otiende, Ngei 1 & 2, Onyonka, Masai, Uhuru Gardens and Jonathan Ngeno). The designated land use for this zone is High Density Residential Development / Mixed Residential Development. The proposed residential flats are consistent with the permitted land uses in the zone; no change of use is therefore required.

10	**Highview** **Magiwa** **Golf Course**	50	75	CP/FP/XX	High Density Residential Development Mixed Residential Development • Flats, • Maisonettes • Bungalows	0.5
	Langata Estates • Southlands • Otiende • Ngei 1&2 • Onyonka • Masai • Uhuru Gardens • Jonathan Ngeno	50	75	CP/FP/XX		

Owing to the site's proximity to Wilson Airport and its location within the airport's Obstacle Limitation Surfaces (OLS), building height and density are further regulated by aviation safety requirements. The project has obtained formal height clearance from the Kenya Civil Aviation Authority (KCAA), which has approved a maximum height of 29 metres, corresponding to the proposed G+8 configuration.

2.5 Existing Site Conditions

Water-logged Areas Portions of the site are water-logged, with stagnant water observed in several areas. These conditions reflect local drainage constraints and soil characteristics. They will influence site preparation, earthworks design and the storm-water management system for the proposed development.



Plate 2-1: Water-logged areas on Lot 2

Trees and Vegetation Vegetation on the site includes 25 mature trees (species recorded include grevillea, cypress, pine and eucalyptus), immature trees, Napier grass and a variety of common weeds. The presence of mature trees will require careful consideration during site clearance and any necessary tree-removal or transplantation arrangements.

Existing Neighbouring Developments The principal neighbouring receptors include a private developer who asserts ownership claims over part of the parcel, the residential blocks of Southlands Estate are also a key neighbor. Other residential apartments and estates in the wider Southlands area also border the site. The proximity of established residential properties is a key sensitivity consideration, particularly with respect to privacy, visual impact, noise, dust, traffic and potential overshadowing.

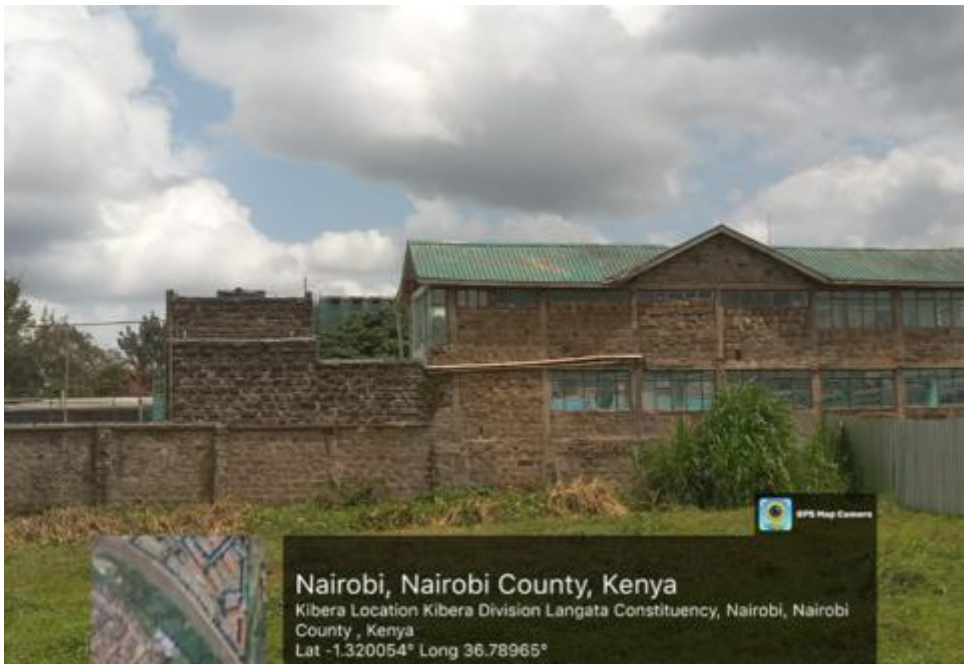


Plate 2-2: Private developer

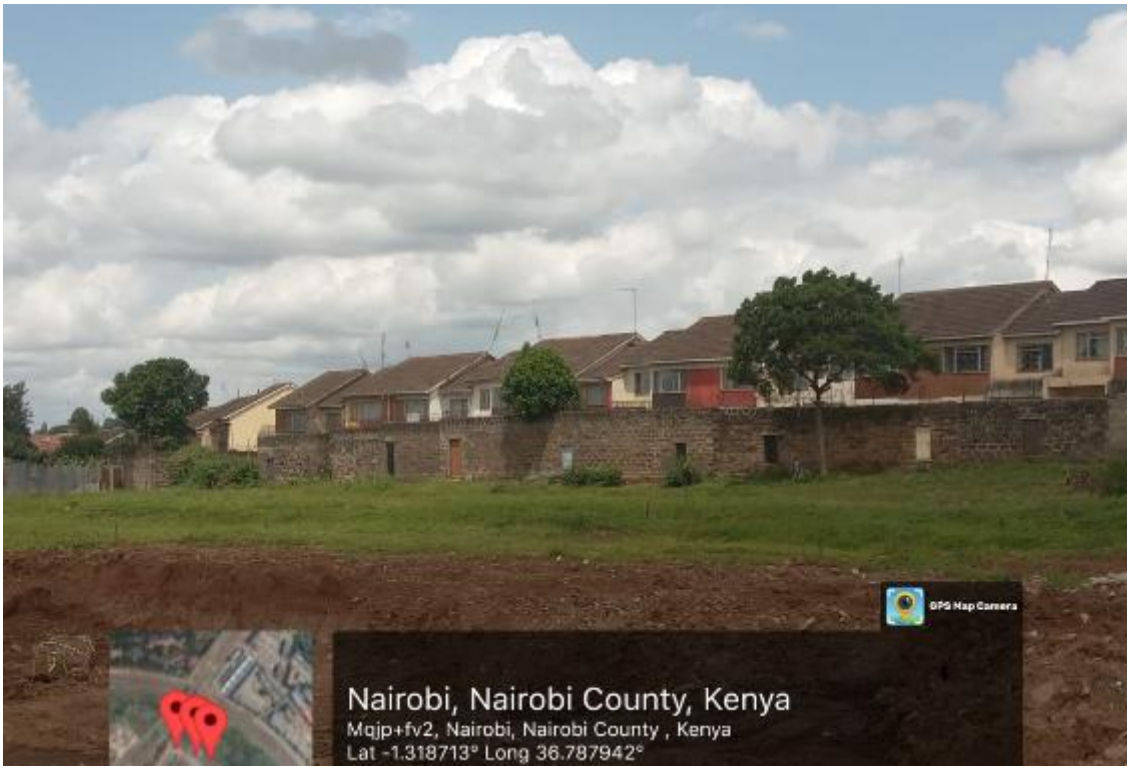


Plate 2-3: Southlands Estate residential blocks

Existing Access Access to the Kibra Lot 2 project site is primarily through an earth road branching off Langata Link Road, which connects to the Southern Bypass. This earth road, currently unpaved, poses significant accessibility challenges. The Southern Bypass is a controlled-access highway under the jurisdiction of the Kenya National Highways Authority (KeNHA). Access arrangements will be coordinated with the relevant road authorities to ensure safety and minimise disruption to through traffic.



Plate 2-4: Access to the site

Utilities Existing utilities in the vicinity include electricity distribution lines (some of which may require relocation or protection), water-supply infrastructure under the Nairobi City

Water and Sewerage Company, and limited sewerage networks. Coordination with the respective utility providers will be required prior to and during construction.

2.6 Proposed Development

The proposed development comprises the construction of a high-density social and affordable housing estate consisting of sixteen (16) multi-storey residential blocks. The development is designed to deliver a total of 1,584 housing units on approximately 6 acres of land, equating to a density of approximately 264 units per acre.

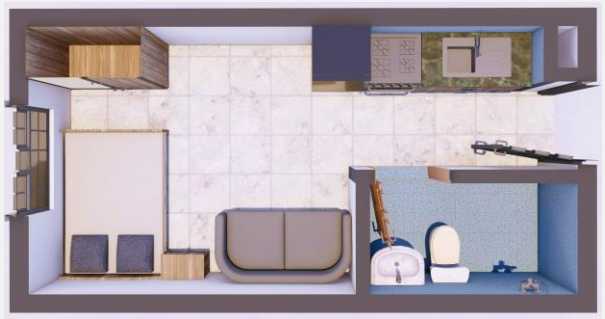
The project adopts a Ground plus eight floors (G+8) configuration. This height has been determined following consultations with the Kenya Civil Aviation Authority (KCAA) and is consistent with the maximum permissible height of 29 metres applicable to the site because of its location within the Wilson Airport flight path and associated Obstacle Limitation Surfaces.

The development will integrate the residential blocks with internal access roads, parking areas, water-supply and storage systems, foul and storm-water drainage, power supply with backup generation, solid-waste management facilities, green spaces, children's play areas, commercial stalls and perimeter security infrastructure.

2.7 Housing Components

The 1,584 housing units will comprise a mix of social housing and affordable housing units. Social housing units (one-roomed, two-roomed and three-roomed categories) are intended to serve lower-income households, while the studio, two-bedroom and three-bedroom units fall under the affordable housing category. The mix is designed to respond to varied household sizes and income levels within the target market.

Access to the units will be managed through the national Affordable Housing Programme systems, including registration and application through the *832# USSD platform or the eCitizen portal (Boma Yangu services). Allocation and payment modalities (including tenant purchase, mortgage and cash options) will be administered in accordance with the applicable housing regulations and the Affordable Housing Board processes.

SOCIAL HOUSING		
		
Plate 2-5: Social Housing 1 Room	***Plate 2-6: Social Housing 2 Room***	***Plate 2-7: Social Housing 3 room***
AFFORDABLE HOUSING		
		
Plate 2-8: Affordable Housing Studio	***Plate 2-9: Affordable Housing 2 bedroom***	***Plate 2-10: Affordable Housing 3 bedroom***

2.8 Construction Activities

Construction activities are expected to include:

- Site mobilisation and establishment of temporary site facilities (site offices, material storage yards, worker welfare facilities and security installations).
- Demolition and clearance of any existing structures or temporary features on site, and removal of vegetation, following completion of Project Affected Persons documentation, valuation and any required facilitation processes.
- Site preparation works, including stripping of topsoil, excavation, levelling and treatment of water-logged areas.
- Earthworks and foundation construction for the 16 residential blocks and associated infrastructure.
- Structural works comprising reinforced-concrete frames, floor slabs, staircases, lift shafts and roof structures for the G+8 blocks.
- Building-envelope works, including external and internal walls, windows, doors and roofing.
- Installation of building services (electrical, plumbing, drainage and lift systems).
- Construction of supporting civil infrastructure: internal roads and parking areas, storm-water drainage, foul sewerage, water reticulation, power infrastructure and solid-waste facilities.
- Landscaping, establishment of green spaces and children's play areas, and construction of commercial stalls, perimeter fencing, gates and gate houses.
- External works, street lighting and final site finishing.
- Testing, commissioning and handover of the completed development.

2.9 Construction Materials and Resources

The principal construction materials and resources required will include:

- Aggregates (sand, ballast and crushed stone) for concrete and road works
- Cement
- Reinforcement steel and structural steel
- Concrete
- Building blocks, bricks or alternative walling materials
- Timber and formwork materials (with preference for sustainably sourced options where feasible)
- Roofing materials, windows, doors and finishes
- Plumbing, electrical and mechanical fittings and fixtures
- Cabro paving blocks or equivalent for roads and parking areas
- Water for construction purposes (sourced in accordance with Water Resources Authority requirements and project water-management measures)

- Fuel and energy for plant, equipment and temporary site power
- Landscaping materials (soil, seedlings, grass and hard-landscape elements)

Materials will be sourced from licensed suppliers and quarries. The contractor will be required to implement measures to minimise waste generation, promote material efficiency and ensure that borrow areas and material sources operate under valid environmental approvals. Hazardous materials, if any, will be handled in accordance with applicable regulations.

2.10 Labour Requirements

Labour requirements will include:

- Skilled labour (engineers, supervisors, artisans such as masons, carpenters, electricians, plumbers and plant operators).
- Semi-skilled and unskilled labour for general construction, earthworks, material handling and site-support activities.

In line with commitments made during public participation, priority will be given to the employment of qualified local residents from the surrounding community, with a target of approximately 90 percent local labour where skills and availability permit. Recruitment will be coordinated through established local administration channels (including the area Chief) to enhance transparency and community benefit. Appropriate worker welfare facilities, personal protective equipment and occupational health and safety measures will be provided on site.

2.11 Total Project Cost

Total Project cost is KSH 3,277,440,000 (Attached in BQ)

2.12 Project Implementation Schedule

The overall construction period for Kibra Lot 2 is estimated at 24 months from the date of commencement of works, following receipt of all statutory approvals.

2.13 Operation and Maintenance

Upon completion and handover, the Lot 2 development will operate as a residential housing estate under the framework of the national Affordable Housing Programme. Key operational aspects will include:

i. Occupation and management of the 1,584 housing units in accordance with the applicable allocation, tenancy and ownership arrangements administered through the Affordable Housing Board and related systems.

ii. Operation and maintenance of shared infrastructure, including water-supply and storage systems, sewerage, storm-water drainage, internal roads, parking, solid-waste facilities, power infrastructure (including the backup generator), street lighting, green spaces, play areas and commercial facilities.

iii. Security management through controlled access at the gates and coordination with local security arrangements.

iv. Routine maintenance, repairs and periodic upgrading of buildings and infrastructure to ensure serviceability and longevity.

v. Implementation of estate-level environmental and social management measures, including waste management, water conservation, landscaping maintenance and the Grievance Redress Mechanism.

Responsibility for day-to-day management and maintenance will rest with the designated estate management entity or committee established in accordance with the applicable housing regulations, with oversight from the proponent.

2.14 Project Decommissioning

Decommissioning of the Lot 2 development is not anticipated in the near to medium term, given that the housing estate is designed for long-term residential use with a service life measured in decades. Should decommissioning become necessary at the end of the project's useful life, or in the event of unforeseen circumstances requiring permanent cessation of operations, the following general approach would apply:

i. Preparation of a Decommissioning Plan in accordance with NEMA requirements and the prevailing environmental regulations at the time.

ii. Safe dismantling or adaptive re-use of structures, removal of hazardous materials (if any), and rehabilitation of the site to a condition compatible with the surrounding land use and environmental standards.

iii. Engagement with relevant authorities and stakeholders, and implementation of any required environmental remediation measures.

CHAPTER THREE: POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

3.1 Introduction

This chapter sets out the policy, legal and institutional framework that governs the proposed Kibra Lot 2 social and affordable housing development. The framework provides the basis for planning, environmental and social assessment, approval and implementation of the project. It ensures that environmental protection, social inclusion, land-use planning, housing delivery, climate considerations and related requirements are properly addressed throughout the project cycle.

3.2 National Policy Framework

Policy	Relevant Provisions	Relevance to the Project
Constitution of Kenya, 2010	Article 42 – Right to a clean and healthy environment. Article 43(1)(b) – Right to accessible and adequate housing and reasonable standards of sanitation. Articles 10, 69 and 70 – National values, environmental obligations and enforcement of environmental rights. Article 40 – Protection of right to property. Article 47 – Fair administrative action. Article 60 – Principles of land policy.	The development advances the constitutional right to housing. The ESIA process and associated mitigation measures give practical effect to the right to a clean and healthy environment, meaningful public participation and sustainable land-use principles.
Kenya Vision 2030	Social Pillar – Housing and urbanization goals aimed at providing adequate and decent housing and improving living conditions. Economic and political pillars supporting infrastructure development and good governance.	Positions affordable and social housing as a national development priority. Lot 2 contributes directly to the Vision 2030 objective of expanding the supply of affordable housing units in urban areas.
National Environmental Policy (Sessional Paper No. 10 of 2014)	Promotes sustainable management of the environment and natural resources. Requires environmental impact assessment for projects likely to have significant effects. Emphasizes integration of environmental considerations into development planning and application of the precautionary and polluter-pays principles.	Underpins the requirement for a comprehensive ESIA. Guides impact identification, formulation of mitigation measures and preparation of the ESMP for Lot 2.
National Housing Policy (Sessional Paper No. 3 of 2016)	Seeks to facilitate access to adequate and affordable housing for all Kenyans. Promotes public and private sector participation in housing delivery. Supports social housing for low-income groups and the development of associated infrastructure.	Provides the policy justification for the Kibra Lot 2 development as part of the national Affordable Housing Programme. Informs the mix of social and affordable units and the provision of supporting amenities.

National Climate Change Action Plan (NCCAP) 2023–2027	Requires integration of climate change adaptation and mitigation into development planning. Promotes climate-resilient infrastructure and low-carbon development pathways. Calls for assessment of greenhouse gas emissions and climate risks.	Directly informs the Climate Change Risk and Vulnerability Assessment and the identification of GHG emission sources. Supports the design of climate-resilient measures for Lot 2 (drainage, water supply, energy and green spaces).
National Land Policy (Sessional Paper No. 3 of 2009)	Promotes equitable access to land, sustainable land use and security of tenure. Requires orderly planning and development of land. Emphasizes protection of public land and environmentally sensitive areas.	Supports the requirement for clear land ownership or authorization documentation and orderly high-density development consistent with planning law.
National Urban Development Policy (2016)	Promotes sustainable urbanization, integrated urban planning, and provision of adequate housing and infrastructure in urban areas. Encourages compact, mixed-use and transit-oriented development where appropriate.	Supports the high-density residential approach adopted for Lot 2 within the Nairobi urban context and the integration of housing with supporting infrastructure and amenities.
National Policy on Gender and Development (2019)	Promotes gender equality and the mainstreaming of gender considerations in all development processes. Requires inclusive participation of women and men and the removal of barriers to equal access to opportunities and resources.	Informs the design of inclusive public participation, prioritisation of women in employment and business opportunities, and gender-sensitive mitigation and livelihood measures within the Lot 2 ESIA and ESMP.

3.3 Legal Framework

Legislation / Regulation	Relevant Provisions	Relevance to the Project
Environmental Management and Coordination Act (EMCA), Cap 387	Establishes the legal framework for environmental management in Kenya. Requires Environmental Impact Assessment for projects listed in the Second Schedule. Provides for environmental quality standards, licensing and enforcement by NEMA. Anchors the principles of sustainable development, public participation and the precautionary principle.	Primary statute governing the ESIA process for Lot 2. The project is a high-risk Second Schedule undertaking (housing estate exceeding 100 units) and therefore requires a full ESIA Study Report and NEMA licence before commencement of works.
Environmental (Impact Assessment and Audit) Regulations, 2003 (as amended, including Legal Notices 31 & 32 of 2019)	Prescribe the procedure for project reports, Terms of Reference, ESIA studies, public participation (Regulation 17), submission, review and decision-making by NEMA. Require circulation to lead agencies, public comments and consideration of hearings.	Directly governs the preparation of this ESIA Study Report and the stakeholder engagement requirements applicable to Lot 2.
Sustainable Waste Management Act, 2022	Provides for sustainable waste management, extended producer responsibility, and the hierarchy of waste prevention, reuse, recycling and safe disposal. Requires	Guides the design of solid-waste management facilities on Lot 2, construction-phase waste

	waste management plans and compliance with county and national standards.	handling, and operational waste systems for the housing estate.
Water Act, 2016	Establishes the institutional and legal framework for water resources management, water services, and regulation by the Water Resources Authority (WRA) and water services boards/companies. Requires permits for water abstraction (including boreholes) and protection of water resources.	Applicable to borehole development, water storage and reticulation, protection of River Motoine and River Ngong, and coordination with Nairobi City Water and Sewerage Company.
Physical and Land Use Planning Act (PLUPA), 2019	Provides for the planning, use, regulation and development of land. Section 69 requires that development permission for strategic national projects be granted by the Cabinet Secretary. Requires compliance with zoning, development control and approved plans.	Development permission must be obtained from the Cabinet Secretary rather than the County Government. Also informs zoning, density and layout considerations for Lot 2.
Climate Change Act, 2016	Establishes a legal framework for climate change response, including mitigation, adaptation, and mainstreaming of climate change into planning and implementation of projects. Supports preparation of climate risk assessments and low-carbon measures.	Supports the requirement for identification of GHG emission sources, projected emissions, and a Climate Change Risk and Vulnerability Assessment for Lot 2.
Occupational Safety and Health Act, 2007	Requires employers to ensure the safety, health and welfare of workers. Mandates risk assessments, provision of PPE, safe systems of work, and notification of accidents.	Governs construction-phase occupational health and safety management, worker welfare facilities, and the contractor's OSH obligations on the Lot 2 site.
Public Health Act, Cap 242	Provides for the protection of public health, including sanitation, prevention of nuisances, and control of conditions injurious to health.	Relevant to sanitation, wastewater management, solid waste, dust and noise control, and prevention of public-health nuisances during construction and operation of Lot 2.
Traffic Act, Cap 403 and Kenya Roads Act, 2007	Regulate road use, traffic management, and the development and protection of road reserves. Require coordination with road authorities for access and impacts on classified roads.	Applicable to construction and operational traffic and access to/from the Southern Bypass (KeNHA).
Land Act, 2012; Land Registration Act, 2012	Govern land ownership, allocation, administration, compulsory acquisition, and registration of title. Require clear legal authority for development on any land.	Underpin the requirement to provide evidence of land ownership, allocation or legal authorization for the Lot 2 site.
Affordable Housing Act, 2024	Provides the legal framework for the Affordable Housing Programme, including registration, allocation, financing	Governs the delivery, allocation and management of the social and affordable

	modalities, and institutional arrangements under the Affordable Housing Board.	housing units on Lot 2, including application systems (*832# / eCitizen) and payment arrangements.
Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009	Set permissible noise levels for different zones and times of day. Require measures to control construction and operational noise and vibration.	Directly applicable to construction noise and vibration impacts on neighbouring residential estates.
Environmental Management and Coordination (Air Quality) Regulations, 2014	Establish ambient air quality standards and emission limits. Require control of dust and other air pollutants from construction and other activities.	Guides mitigation of dust and exhaust emissions during construction and any operational air-quality considerations for Lot 2.
Environmental Management and Coordination (Water Quality) Regulations, 2006	Set water quality standards for different uses and discharge limits for effluent. Protect surface and groundwater resources.	Applicable to protection of River Motoine, River Ngong and Nairobi Dam, borehole water quality, and any wastewater discharges from the project.
Environmental Management and Coordination (Waste Management) Regulations, 2006	Regulate the handling, storage, transportation and disposal of various categories of waste. Require licensed waste handlers and appropriate facilities.	Complements the Sustainable Waste Management Act in guiding construction and operational solid-waste management for Lot 2.
Wildlife Conservation and Management Act, 2013 and Forest Conservation and Management Act, 2016 (biodiversity-related)	Provide for the conservation of wildlife and forests and the protection of biodiversity. Require assessment and mitigation of impacts on flora and fauna.	Relevant to the assessment and management of vegetation clearance (including mature trees) and any biodiversity values on or near the Lot 2 site.
National Building Code / Building regulations and standards	Prescribe minimum standards for building design, structural safety, fire safety, accessibility and construction quality.	Guide the structural design, fire safety, accessibility (including for persons with disabilities), and overall quality of the G+8 residential blocks on Lot 2.

3.4 Institutional Framework

Institution	Mandate / Role	Relevance to Lot 2

National Environment Management Authority (NEMA)	Lead agency for environmental management and coordination under EMCA. Responsible for review and approval of Terms of Reference, ESIA Study Reports, issuance of EIA licences, and environmental monitoring and enforcement.	Approves the TOR and the ESIA Study Report, issues the EIA licence, and oversees compliance with environmental conditions for Lot 2.
State Department for Housing and Urban Development	Proponent and implementing agency for the national Affordable Housing Programme. Responsible for project design, financing coordination, construction oversight and delivery of social and affordable housing.	Project proponent for Lot 2. Responsible for ensuring full compliance with the ESIA process, land documentation, public participation, and implementation of the ESMP.
Affordable Housing Board	Statutory body responsible for oversight, registration, allocation and management frameworks under the Affordable Housing Programme.	Oversees allocation systems (*832# / eCitizen – Boma Yangu), payment modalities and estate management arrangements for the 1,584 units on Lot 2.
Kenya Civil Aviation Authority (KCAA)	Responsible for aviation safety, regulation of obstacle limitation surfaces, and height restrictions in the vicinity of airports.	Critical for Lot 2 due to its location within the Wilson Airport flight path. Provides height clearance (maximum 29 m / G+8) and conditions relating to Obstacle Limitation Surfaces, lighting, reflectivity and construction safety.
Kenya Airports Authority (KAA)	Manages airports (including Wilson Airport) and advises on operational safety, bird hazard management, and aviation-related environmental issues.	Relevant to aviation safety considerations, bird attraction risks (e.g., from stagnant water), glare, and emergency provisions associated with the Lot 2 site.
Water Resources Authority (WRA)	Regulates water resources, issues abstraction permits (including for boreholes), and protects water catchment and riparian areas.	Issues permits for boreholes on Lot 2, oversees hydrogeological assessments, and protects downstream water resources (River Motoine, River Ngong and Nairobi Dam).
Nairobi City Water and Sewerage Company (NCWSC) / Athi Water Works Development Agency	Responsible for water supply and sewerage services within Nairobi, including network expansion, connections and wastewater management.	Key for water supply augmentation, sewer connections or upgrades, and coordination on existing infrastructure capacity and any required network improvements serving Lot 2.
Kenya National Highways Authority (KeNHA)	Manages national trunk roads, including controlled-access highways such as the Southern Bypass. Regulates access, road reserves and impacts on classified roads.	Critical for access design, traffic management, and protection of the Southern Bypass Road reserve and corridor in relation to Lot 2.

Kenya Power and Lighting Company (KPLC)	Responsible for electricity distribution, connections, and management of power line wayleaves.	Relevant to power supply connection, relocation or protection of existing high-voltage lines crossing or adjacent to the site, and coordination on wayleave requirements.
Nairobi City County Government	Responsible for county-level planning, development control, public health, solid waste management and local infrastructure.	Provides input on zoning, local services and county-level permits.
National Land Commission (NLC)	Manages public land, advises on land allocation and compulsorily acquired land, and oversees land administration matters.	Relevant to confirmation of land status, ownership/allocation documentation and any public land issues.
Directorate of Occupational Safety and Health Services (DOSHS)	Enforces the Occupational Safety and Health Act, registers workplaces, and oversees workplace safety and health standards.	Oversees construction-phase occupational health and safety compliance, workplace registration and accident prevention on the Lot 2 site.
Local Administration (Deputy County Commissioner, Assistant County Commissioner, Chiefs and Assistant Chiefs)	Responsible for local coordination, public order, facilitation of public participation, and community liaison.	Play a central role in organising and authenticating public participation meetings, mobilising stakeholders, and supporting the Grievance Redress Mechanism for Lot 2.

CHAPTER FOUR: DESCRIPTION OF THE BASELINE ENVIRONMENT

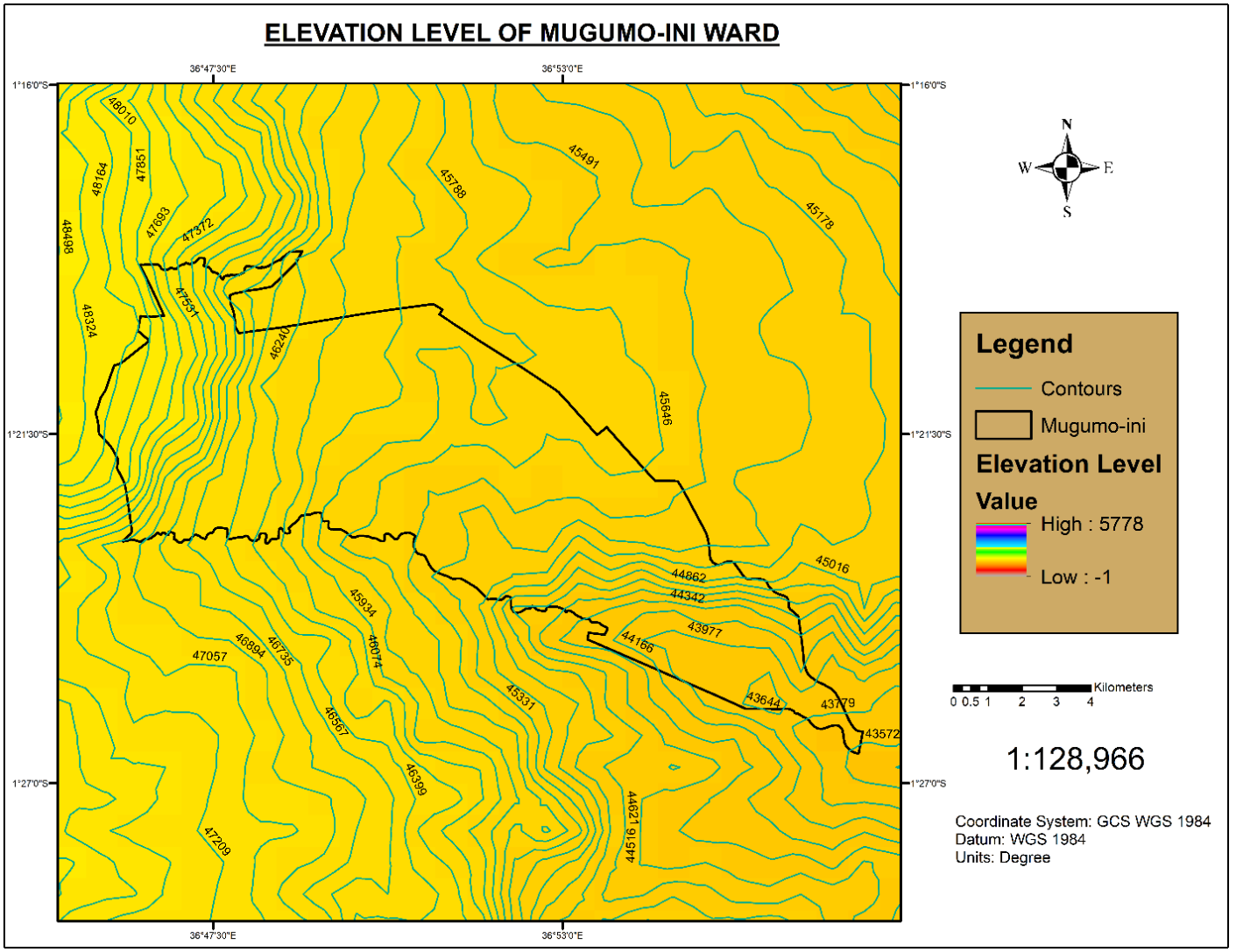
4.1 Introduction

This chapter describes the existing biophysical and socio-economic baseline conditions of the proposed Kibra Lot 2 site and its immediate surroundings. The baseline provides the reference against which potential environmental and social impacts of the proposed social and affordable housing development can be identified, predicted, evaluated and mitigated.

4.2 Physical Environment

4.2.1 Topography

The project site, located in the northwestern part of Mugumo-ini Ward, features elevations ranging from approximately 1,510 meters to 1,790 meters above sea level. The landscape exhibits a gentle gradient, with the northwestern section of the site at the highest elevation (1,790 meters) and the southeastern section at the lowest (1,510 meters). The northern part of the site is at an intermediate elevation of approximately 1,640 meters. Contour lines indicate a relatively flat terrain in the southeastern portion of the site, where contours are more widely spaced. The northwestern portion, where the project is situated, has closer contour lines, indicating a slightly steeper slope that may require minor grading or leveling during site preparation to ensure structural stability and accessibility for the planned civil works.



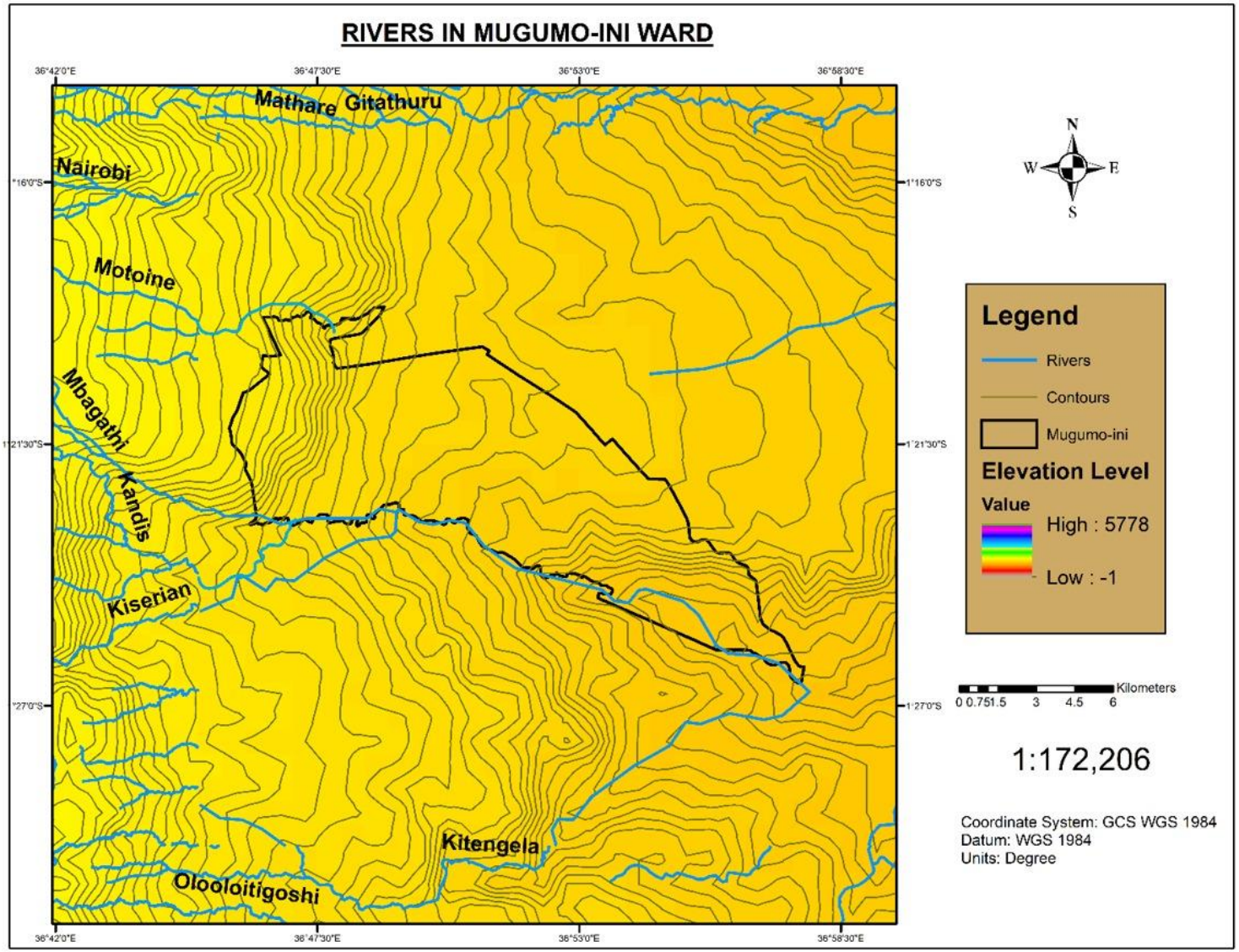
Map 4-3: Elevation level of Mugumo-ini Ward

4.2.2 Soils

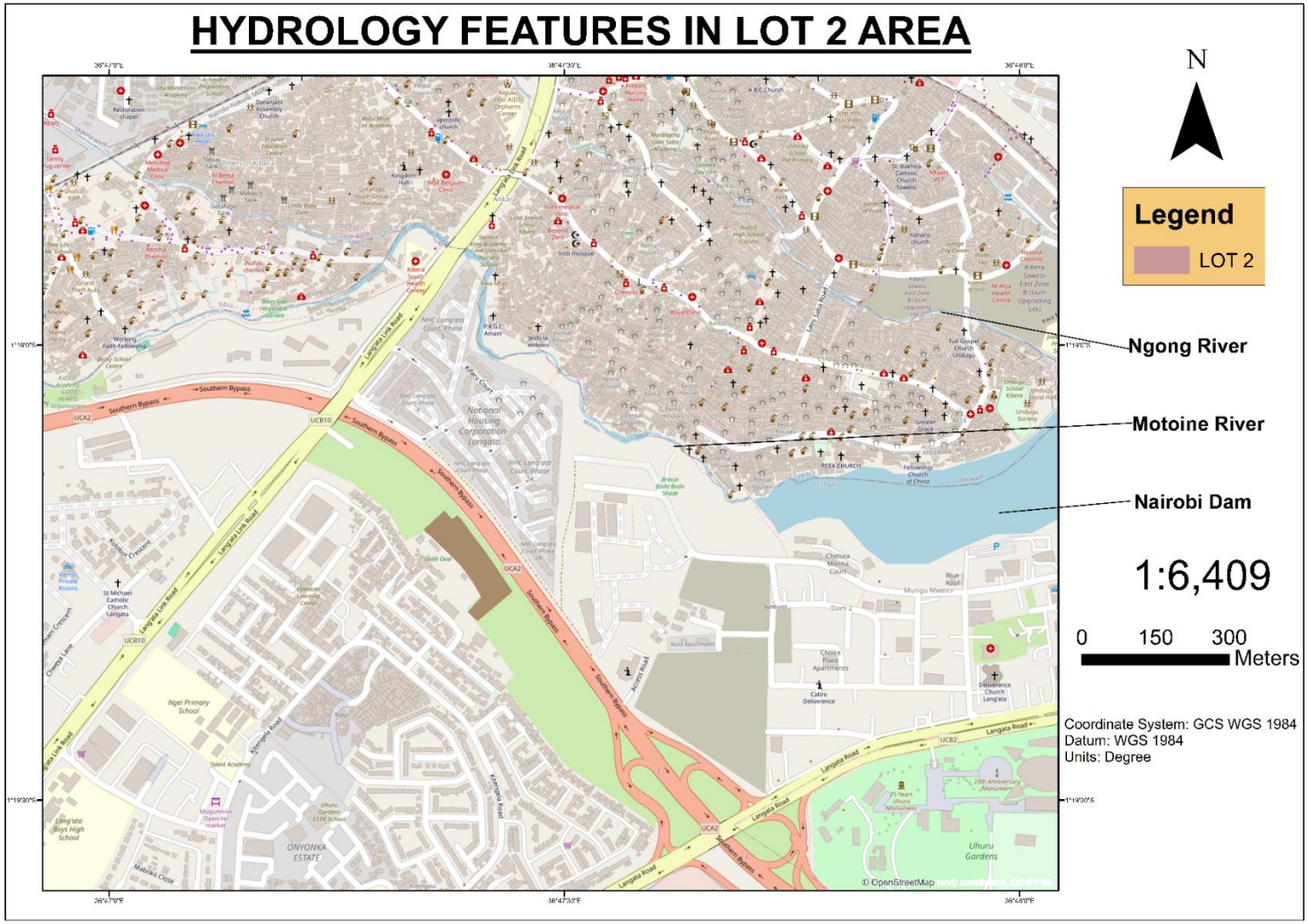
Field observations indicate that the dominant surface soil on Lot 2 is red residual soil mixed with clay. The clay content contributes to the water-holding capacity of the soil and helps explain the presence of water-logged zones observed on parts of the site. This soil characteristic will influence earthworks design, foundation engineering and the storm-water management system.

4.2.3 Hydrology

Mugumo-ini ward is characterized by several key rivers, including the Mbagathi, Kiserian, Motoine, Ngong River, Nairobi River and Kandis rivers. The site project site is located in proximity to two significant rivers: River Motoine, approximately 450 meters away, and River Ngong (a tributary of the Nairobi River), approximately 820 meters away. Both rivers drain into the Nairobi Dam, located about 1 kilometer from the site. These water bodies may be affected by construction activities, particularly through sediment runoff or improper waste management. Careful management of construction activities will be necessary to avoid contamination of nearby water bodies.


RIVERS IN MUGUMO-INI WARD
36°42'0"E
36°47'30"E
36°53'0"E
36°58'30"E
1°16'0"S
1°21'30"S
1°27'0"S
Mathare
Gitathuru
Nairobi
Motoine
Mbagathi
Kandis
Kiserian
Kitengela
Oloolaitigoshi
N
W
E
S
Legend
Rivers
Contours
Mugumo-ini
Elevation Level
Value
High : 5778
Low : -1
Kilometers
0 0.751.5 3 4.5 6
1:172,206
Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree

Map 4-2: Hydrology of Mugumo-ini Ward



Map 4-3: Hydrology features in Lot 2 area

4.2.4 Climate

Rainfall

Nairobi experiences a bimodal rainfall pattern with two distinct rainy seasons. Long rains occurring from March to June, this season is associated with the ITCZ, where northeast and southeast trade winds converge. The heaviest rainfall typically occurs in April, contributing significantly to the annual total. Short rains falling between October and December, this season is less intense but still significant for stormwater management.

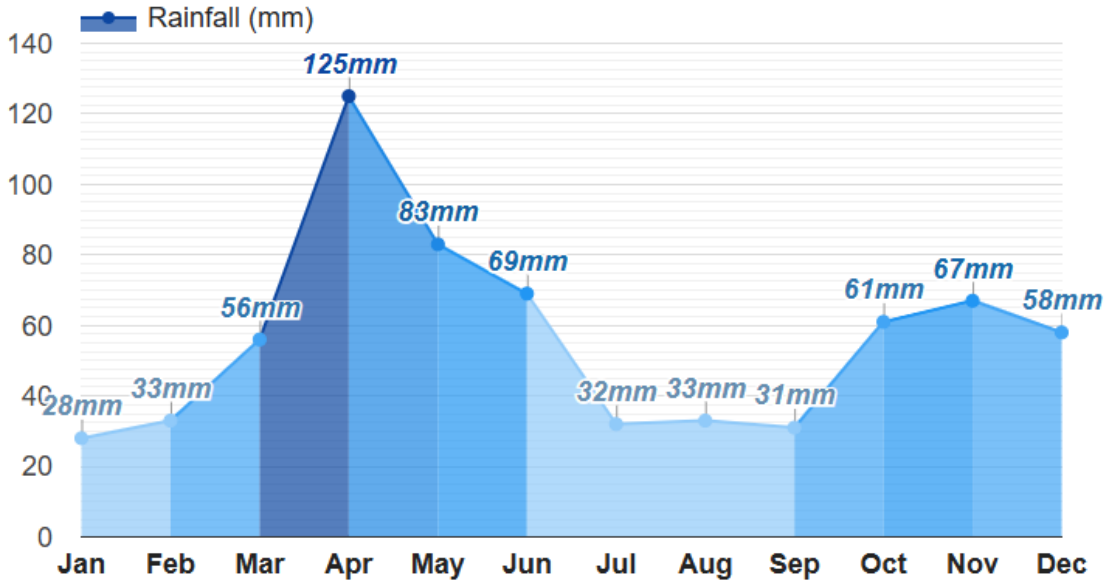


Figure 4-1: Annual Rainfall Ranges

Temperature

Temperatures are moderate due to the highland elevation. Key temperature characteristics include; Annual range daily temperatures typically range from a low of 10°C to a high of 29°C. Mean maximum, the warmest period is from December to March, with daytime temperatures averaging in the mid-twenties Celsius, and a mean maximum of 24°C. Cool periods, evenings can be cool, particularly during the June/July dry season, when temperatures may drop to 9°C. The urban setting of Langata may result in slightly elevated daytime temperatures due to the urban heat island effect from surrounding built-up areas.

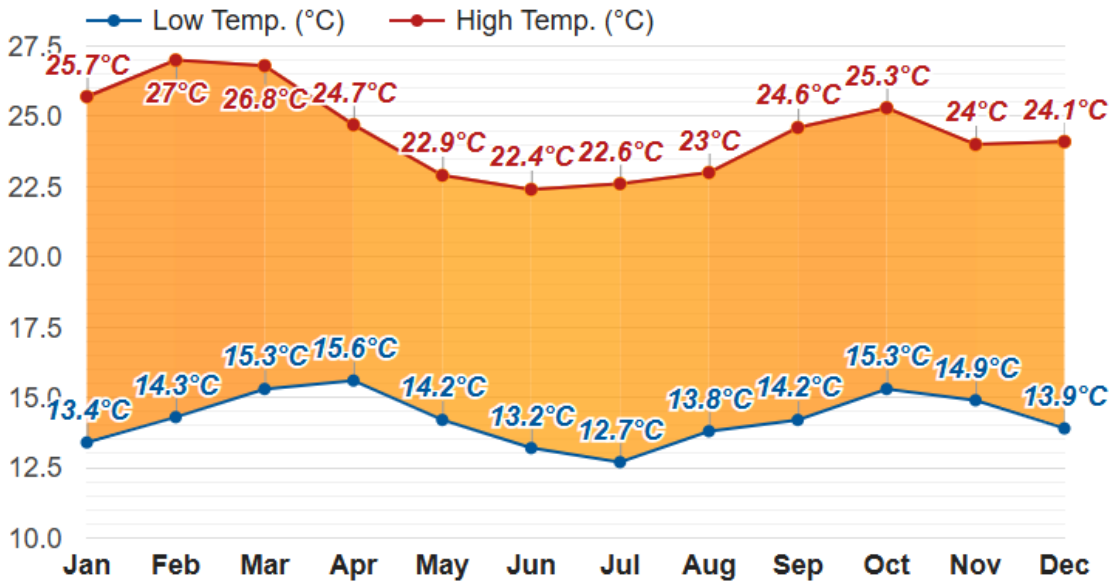


Figure 4-2: Annual Temperature Ranges

Humidity

Relative humidity varies with the seasons, typically ranging between 60% and 80%, with higher levels during the rainy seasons (March–June and October–December).

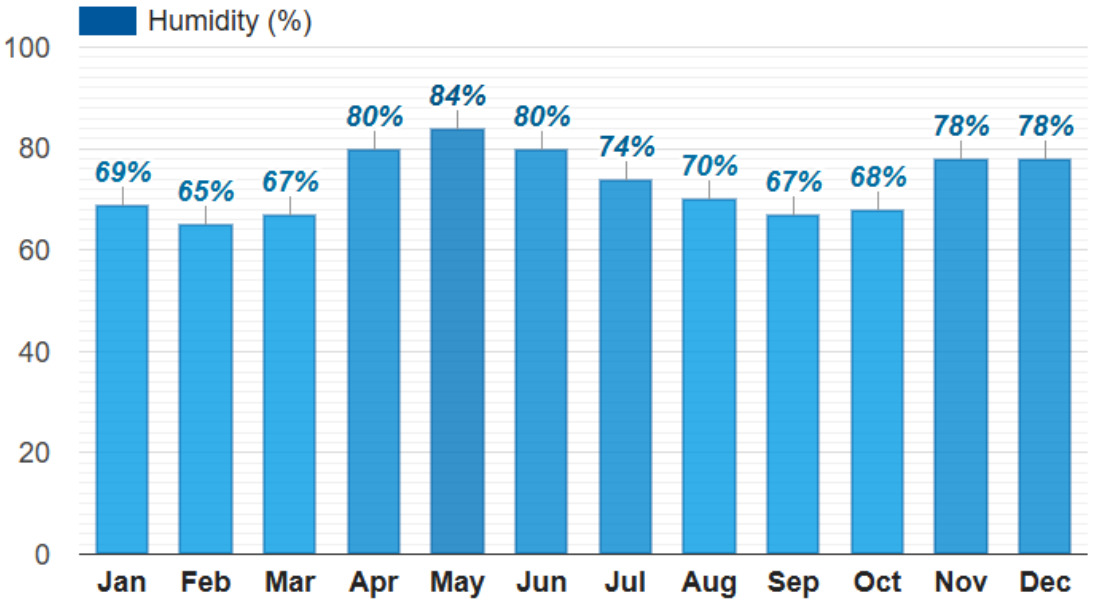


Figure 4-3: Annual Humidity Ranges

Wind

Prevailing winds are generally from the east, with speeds ranging from 2 to 5 m/s. These winds influence dust dispersion during construction activities in the dry seasons (January–February and June–September) and should be considered in the design of ventilation systems for the proposed 8-floor buildings.

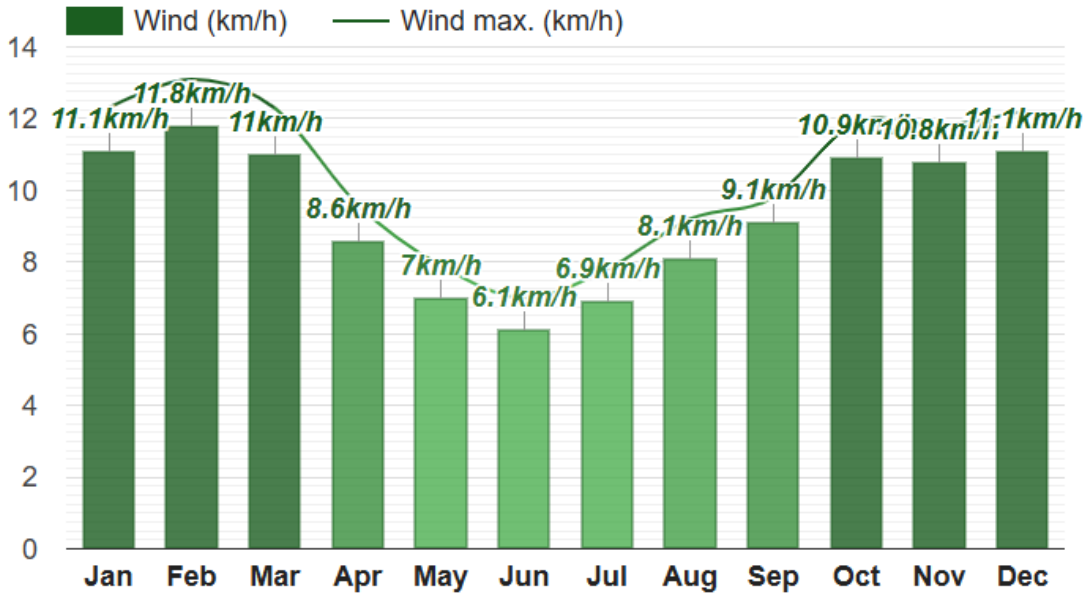


Figure 4-4: Annual Wind Ranges

4.3 Biological Environment

4.3.1 Flora

Vegetation on Lot 2 includes 25 mature trees (species recorded include grevillea (*Grevillea robusta*), cypress (*Cupressus* spp.), pine (*Pinus* spp.) and eucalyptus (*Eucalyptus* spp.)), immature trees, Napier grass (*Pennisetum purpureum*) and a variety of common weeds.

Plate 4-1: Cardiospermum grandiflorum

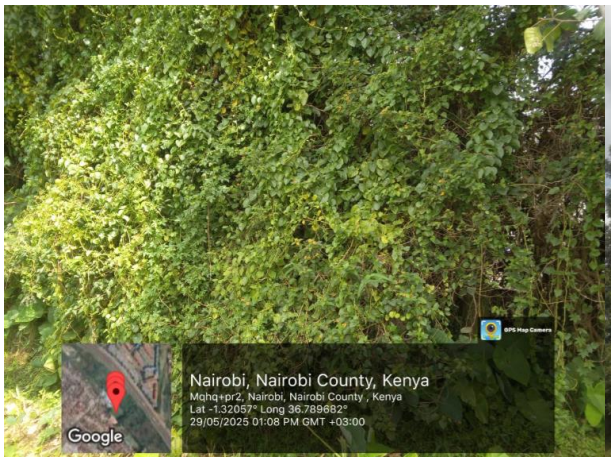
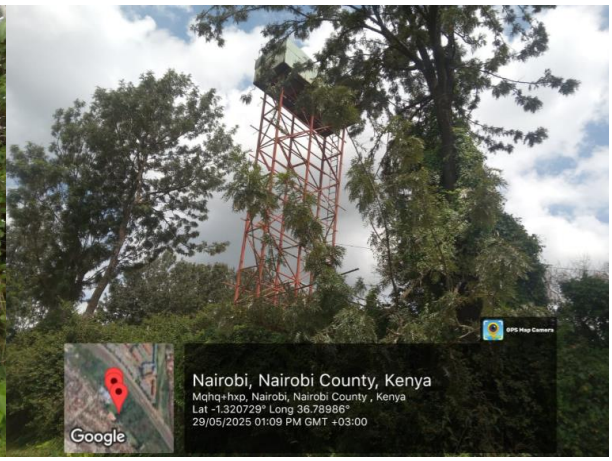


Plate 4-2: Grevillea Trees



No nationally or internationally protected tree species have been recorded on the site during the current baseline observations. A full tree inventory (species, size class, condition and location) will form part of the biodiversity assessment and will inform any necessary translocation, compensation planting or landscape design.

4.3.2 Fauna

No significant fauna was observed on the site during baseline surveys. The location is an urbanised setting dominated by residential development, roads and associated human activity, which limits the presence of larger wildlife. Any small urban-adapted species present will be considered in the biodiversity assessment and mitigation measures.

4.4 Socio-Economic Environment

4.4.1 Population

According to the Kenya National Bureau of Statistics (KNBS) 2019 Census, Langata Constituency, has a total population of 197,489 people across an area of 216.8 km², resulting in a population density of 911 persons per km². The constituency comprises five wards: South C, Nairobi West, Mugumo-ini, Karen, and Highrise. Mugumo-ini Ward, the project's specific location, has a population of 58,272, with 27,347 males and 30,918 females, indicating a slightly higher female population. (*Highlighted is Mugumo-ini ward where the project is located*). Table 4-1 below summarizes the population data for Langata Constituency and its wards. The proposed development of 1,386 units is expected to introduce a significant new residential population, placing additional demand on local services and infrastructure.

Table 4-1: Population Distribution in Langata Constituency Wards (KNBS 2019)

Ward	Total Population	Male Population	Female Population
South C	29,529	13,657	15,871
Nairobi West	35,156	16,001	19,151
Mugumo-ini	58,272	27,347	30,918
Karen	35,190	18,697	16,489
Highrise	39,342	20,996	18,345
Total	**197,489**	**96,698**	**100,774**

4.4.2 Land Use

Current land use on Lot 2 is mixed and includes open / under-utilised ground with vegetation, water-logged patches, and residual livelihood or informal uses. Surrounding land use is dominated by residential estates (particularly Southlands Estate), a private developer parcel with ownership claims, the Southern Bypass road reserve, and other institutional or residential developments in the wider Southlands area.

4.4.3 Infrastructure

Existing infrastructure serving the area is under pressure. Key components are summarised below.

Water supply The area relies primarily on Nairobi City Water and Sewerage Company (NCWSC) supply, which is subject to rationing. Residents of Southlands and neighbouring estates have consistently reported intermittent supply, low pressure and seasonal shortages. Illegal connections and high demand exacerbate the problem. The project proposes boreholes (with associated storage) as a supplementary source, subject to hydrogeological confirmation and WRA permitting.

Sewerage Existing sewer infrastructure is limited and, in places, damaged or overloaded. Overflows and blockages have been reported. The project will require connection to, or upgrading of, formal sewerage systems. Broader Nairobi Rivers regeneration initiatives are expected to improve trunk capacity over time, but local reticulation and treatment capacity remain constraints.

Electricity The site and surroundings are served by the Kenya Power network. Existing electricity lines in the wider project corridor (Lots 1–5) may require relocation or protection

(coordination with KPLC). Illegal connections have been noted as an issue. The project design includes a power house with backup generator and street lighting.

Education Nearby educational facilities include Langata Primary, Ngei Primary and other local schools. CSR commitments linked to the wider Southlands project include support to selected local schools. Increased residential population will place additional demand on education services.

4.5 Cultural/Religious Features

No major cultural or religious structures of national significance have been identified as standing on the Lot 2 parcel itself during baseline observations. The wider Southlands corridor does contain places of worship (including churches and a mosque) that were raised during public participation as important community assets. Chance-find procedures for any unexpected cultural or archaeological materials will be included in the ESMP.

4.6 Sensitive Receptors

Sensitive receptors in the immediate vicinity of Lot 2 include:

- Southlands Estate residential blocks (privacy, sunlight, noise, dust, visual intrusion, property value and traffic concerns)
- Neighbouring private developer parcel and other residential apartments
- Users of the Langata Link Road, Southern Bypass and connecting roads (traffic safety and congestion)
- Downstream water users and ecological systems linked to River Motoine, River Ngong and Nairobi Dam
- Any remaining informal settlers or livelihood operators on or immediately adjacent to the site (displacement and livelihood restoration considerations)
- Vulnerable groups (persons with disabilities, widows, elderly and low-income households) who may face particular challenges in accessing housing or coping with construction impacts

Aircraft operations associated with Wilson Airport constitute a regional sensitivity, primarily addressed through KCAA height restrictions (maximum 29 m / G+8) and related Obstacle Limitation Surface requirements.

4.7 Existing Environmental and Social Challenges

The baseline environment of Lot 2 and its surroundings is characterised by a number of pre-existing challenges that the project both inherits and has the potential to exacerbate:

a) Water scarcity and unreliable supply — rationing, low pressure and illegal connections.

b) Inadequate sewerage and drainage — overloaded or damaged systems, overflows, blocked drains, flooding and water-logging.

c) Traffic congestion and limited access — pressure on the Southern Bypass and Langata Link Road; safety concerns for pedestrians and residents.

d) Loss of open / green space — progressive conversion of open land to built form; residual mature trees and vegetation provide limited amenity.

e) Informal settlement and livelihood displacement — presence of residual uses that may be affected.

f) Pressure on social services — education, health and security systems already serving a dense urban population.

g) Environmental quality issues — dust, noise from traffic and previous site activities, solid-waste management gaps, and downstream water-pollution risks.

h) Land-use and planning tensions — resident concerns about height, density, privacy, sunlight, property values and the characterisation of the project as "Kibra" rather than Southlands.

Many of these challenges were raised during the inclusive public participation programme (PWDs, Residential Associations, Youth, Women, Business Community, Community Baraza, PAPs and Institutions meetings held 31 July – 7 August 2026) and will be carried forward into the impact assessment, alternatives analysis and Environmental and Social Management Plan.

4.8 SOCIO-ECONOMIC STUDY FINDINGS

4.8.1 Relationship to Head of Household

Household representation shows diverse composition with heads comprising 38% of respondents, while tenants account for 22% and spouses 24%, indicating significant rental participation and spousal involvement. As depicted in Figure 4-6 below, children and relatives represent minimal proportions at 10% and 6% respectively. The balanced distribution between household heads, spouses, and tenants reflects the complex housing dynamics in Kibra's informal settlements. This varied representation ensures multiple perspectives are captured across Laini Saba, Kisumu Ndogo, and other villages. The social housing project must address both ownership aspirations and rental market needs, incorporating flexible tenure arrangements that accommodate Kibra's diverse household structures and decision-making patterns.

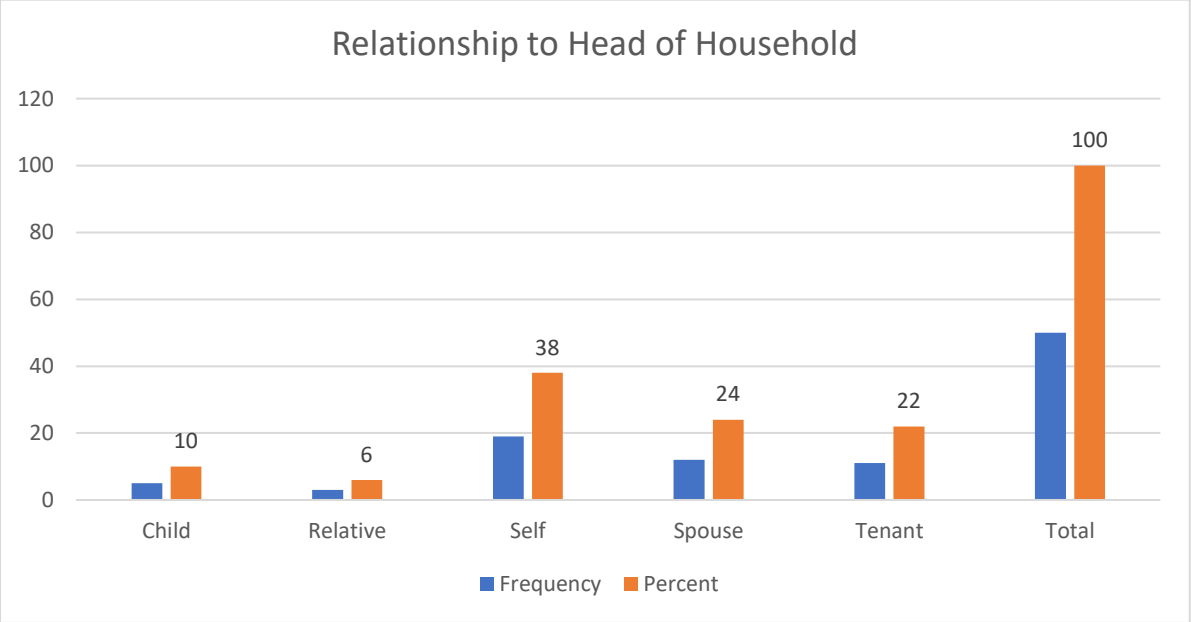


Figure 4-6: Relationship to Head of Household

4.8.2 Gender of Respondent

Gender distribution demonstrates exceptional female representation at 58% compared to 42% male respondents, marking a significant departure from typical informal settlement surveys. This female-majority participation ensures women's perspectives are comprehensively captured in the assessment, addressing a common gap in community

consultations. As shown in Figure 4-7 below, this balanced gender representation provides valuable insights into household needs from both perspectives. The social housing project benefits from this strong female voice, enabling better design considerations for safety, childcare facilities, and spaces that address women's specific needs while maintaining inclusive development approaches for all residents.

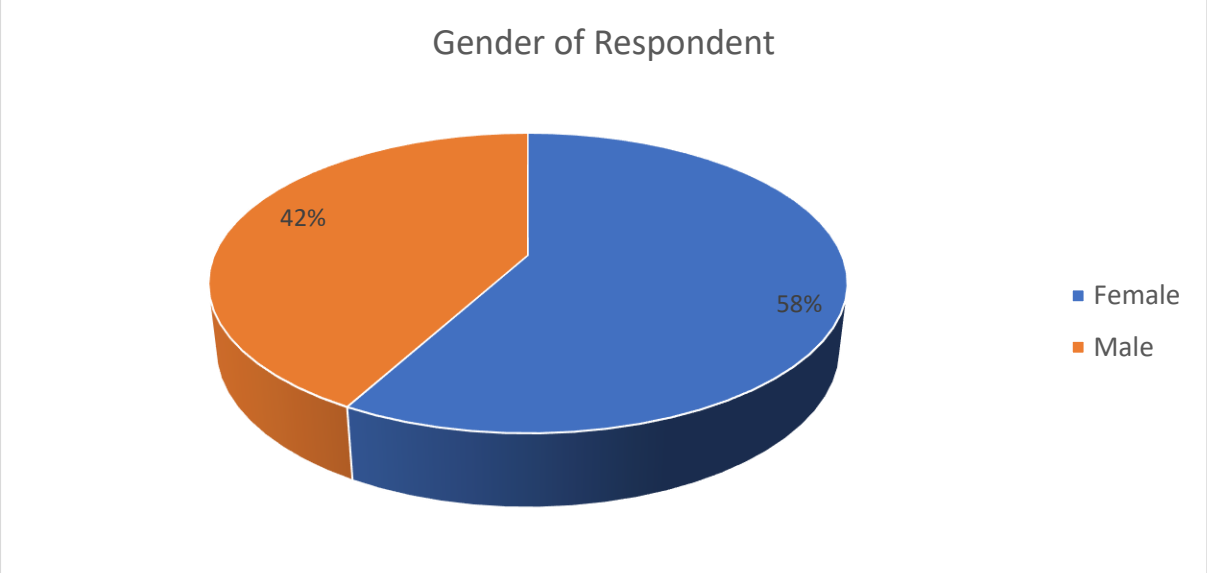


Figure 4-7: Gender of Respondent

4.8.3 Age of Respondent

As illustrated in Figure 4-8 below, the youthful demographic profile reveals productive age groups dominating with 20-30 years leading at 36%, followed by 31-40 years at 28%, and 41-50 years at 14%. Elderly residents over 60 comprise 12%, while those aged 51-60 represent 6%, with minimal representation under 20 years at 4%. This vibrant, economically active population indicates substantial family formation needs and employment demands across Kibra's villages. The concentration in prime working ages suggests strong potential for economic development and housing demand. The social housing project should prioritize multi-bedroom family units, incorporate youth-friendly amenities and recreational spaces, while ensuring accessibility features for elderly residents who require specialized support.

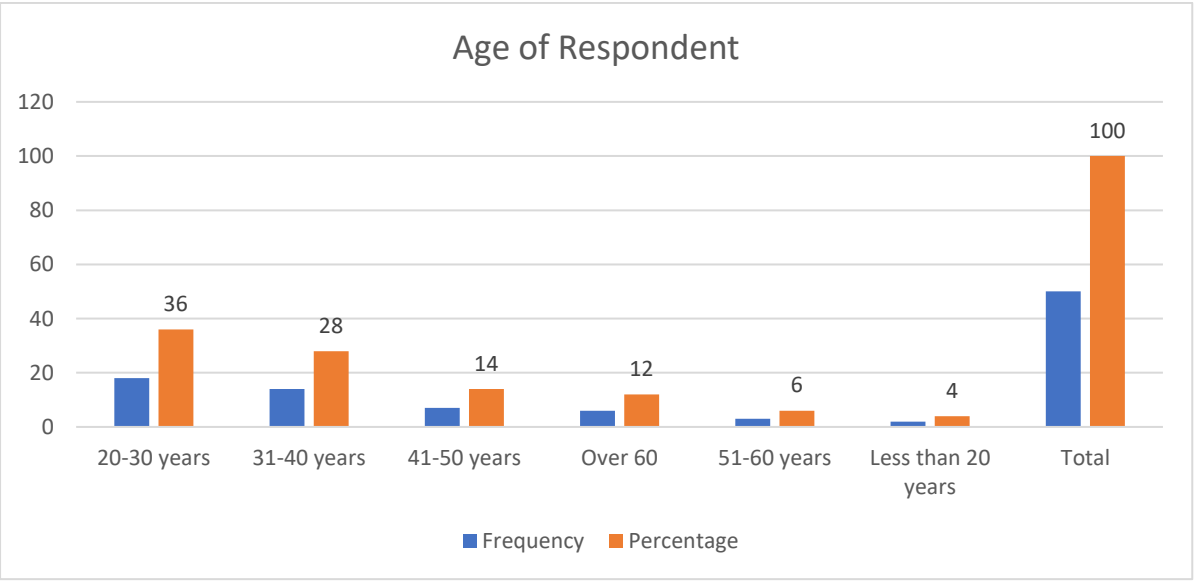


Figure 4-8: Age of Respondent

4.8.4 Highest Education Level Completed

Educational achievement shows encouraging levels with primary education leading at 36%, secondary at 32%, and tertiary education reaching 26%. As shown in Figure 4-10 below, only 4% lack formal education, while vocational training represents 2%, indicating a strong educational foundation in the Kibra constituency. This balanced educational distribution across primary, secondary, and tertiary levels demonstrates significant human capital potential within the community. The high literacy rates and substantial tertiary education suggest capacity for skills-based employment and entrepreneurship. The social housing project should leverage this educational diversity through business incubation spaces, continued learning facilities, and skills development programs while ensuring affordable housing options that accommodate the varied income levels resulting from different educational backgrounds.

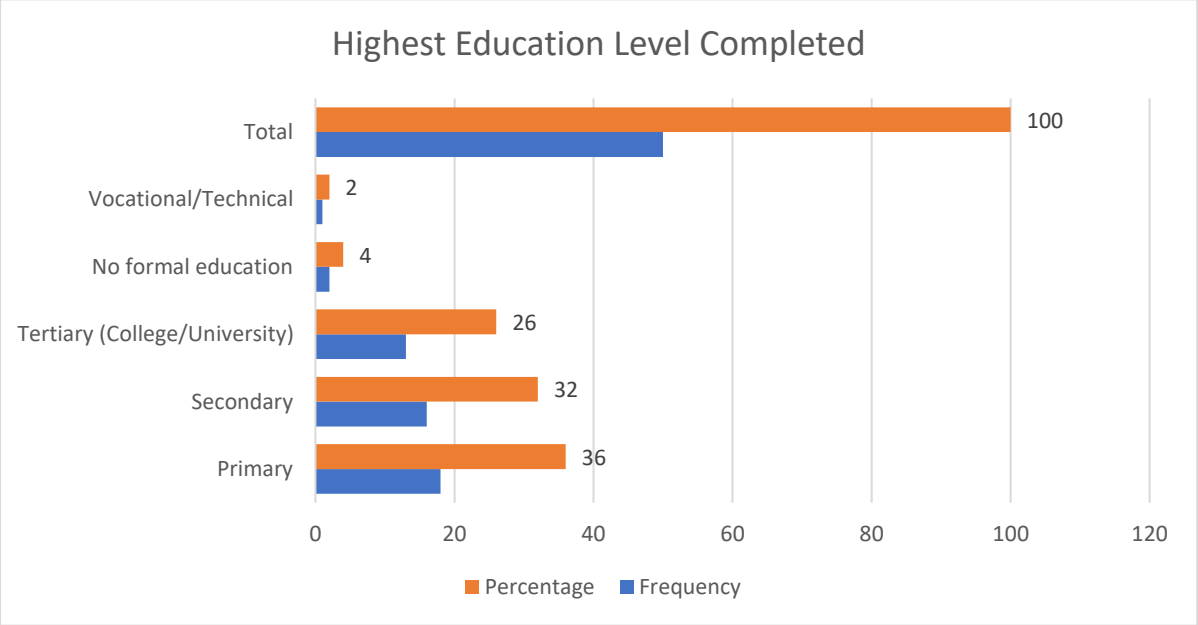


Figure 4-10: Highest Education Level Completed

4.8.5 Main Occupation/Source of Income

Educational achievement shows encouraging levels with primary education leading at 36%, secondary at 32%, and tertiary education reaching 26%. As shown in Figure 4-11 below, only 4% lack formal education, while vocational training represents 2%, indicating a strong educational foundation in the Kibra constituency. This balanced educational distribution across primary, secondary, and tertiary levels demonstrates significant human capital potential within the community. The high literacy rates and substantial tertiary education suggest capacity for skills-based employment and entrepreneurship. The social housing project should leverage this educational diversity through business incubation spaces, continued learning facilities, and skills development programs while ensuring affordable housing options that accommodate the varied income levels resulting from different educational backgrounds.

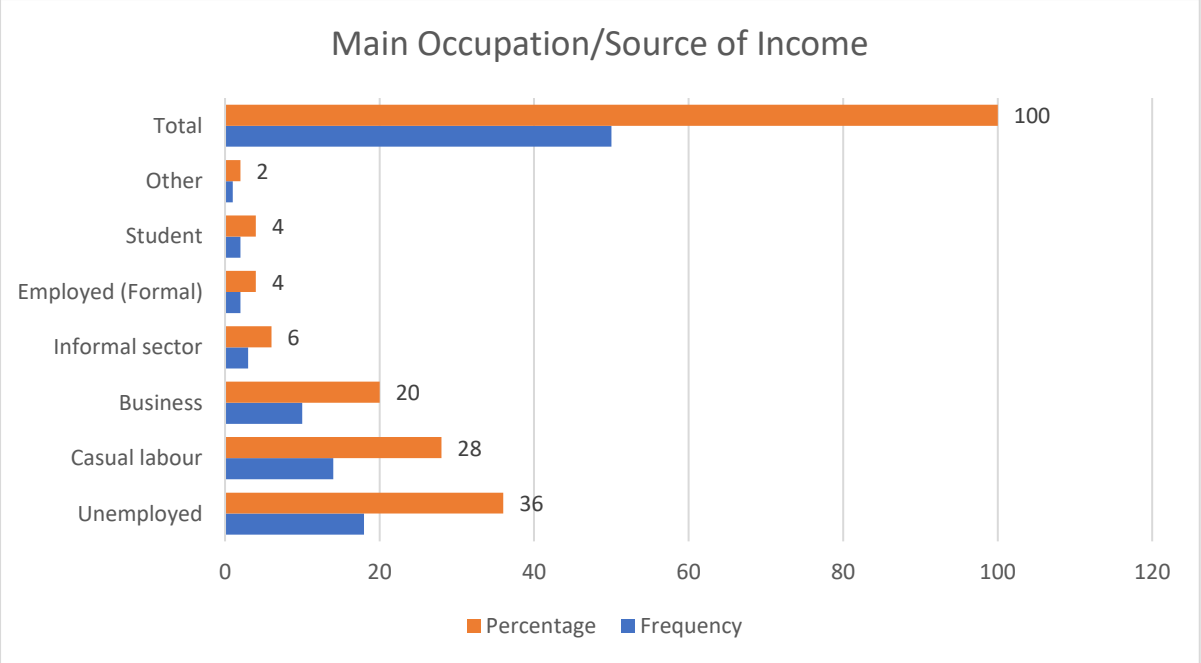


Figure 4-11: Main Occupation/Source of Income

4.8.6 Monthly Household Income Bracket

Income distribution reveals extreme poverty with 52% earning below KES 10,000 monthly and 36% in the KES 10,001-20,000 range, totalling 88% surviving on less than KES 20,000. As depicted in Figure 4-12 below, only 6% reach KES 20,001-30,000, while 4% earn KES 30,001-40,000, and 2% achieve KES 40,001-50,000. This income profile emphasises the urgent need for heavily subsidised housing options in the Kibra constituency. The overwhelming concentration in the lowest income brackets demands ultra-affordable housing solutions with flexible payment arrangements. The social housing project must prioritise cost-effective construction, implement rent-to-own schemes, and integrate income-generating opportunities to ensure housing remains accessible while supporting residents' economic advancement through comprehensive poverty alleviation strategies.

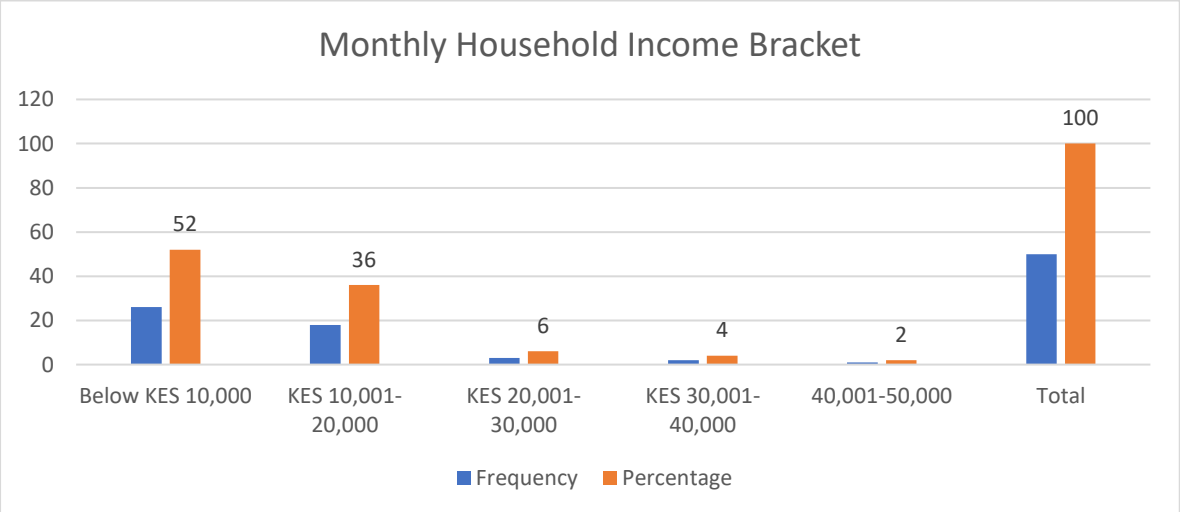


Figure 4-12: Monthly Household Income Bracket

4.8.7 Total Members of the Household

Household size distribution shows 5-member families leading at 20%, while various configurations from 1-8 members demonstrate diverse family structures. As shown in Figure 4-13 below, three and six-member households each represent 18%, followed by 2 and 4-member households at 14% each. Single-person households comprise 12%, while larger families of 7-8 members account for 4% combined. This varied household composition requires flexible housing solutions accommodating different family sizes across Kibra's villages. The predominance of medium-sized families (3-6 members) suggests demand for 2–3-bedroom units, while significant single-person representation necessitates studio options. The social housing project must provide diverse unit configurations that serve this complex household structure while maintaining affordability across all categories.

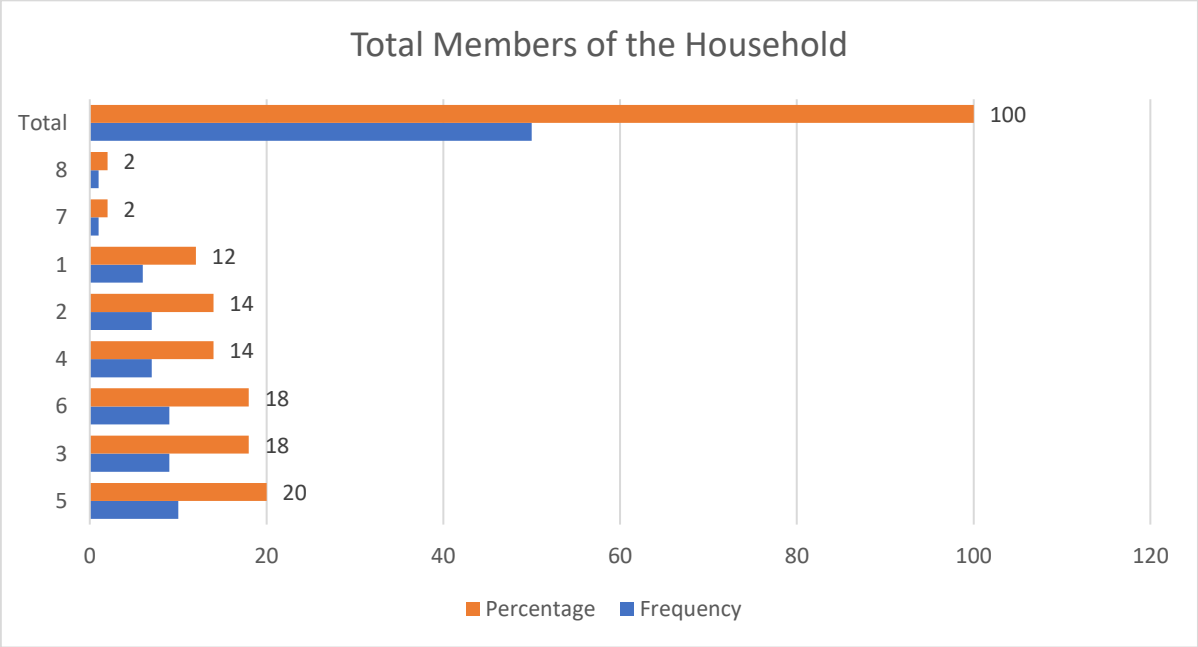


Figure 4-13: Total Members of the Household

4.8.8 Number of Adults (18+ years)

Adult household composition reveals 2-adult households dominating at 48%, followed by 3-adult arrangements at 22% and single-adult households at 20%. As illustrated in Figure 4-14 below, larger adult groups of 4-5 adults comprise 8% combined, with minimal representation of 20-adult households at 2%. This distribution indicates predominantly nuclear family structures with some extended family arrangements in the Kibra constituency. The prevalence of 2-adult households suggests couples or single parents with adult children requiring appropriate privacy and space allocation. The social housing project should prioritise units designed for multiple adults while maintaining affordability. Flexible interior designs accommodating various adult household compositions will address the diverse living arrangements common in Kibra's informal settlements.

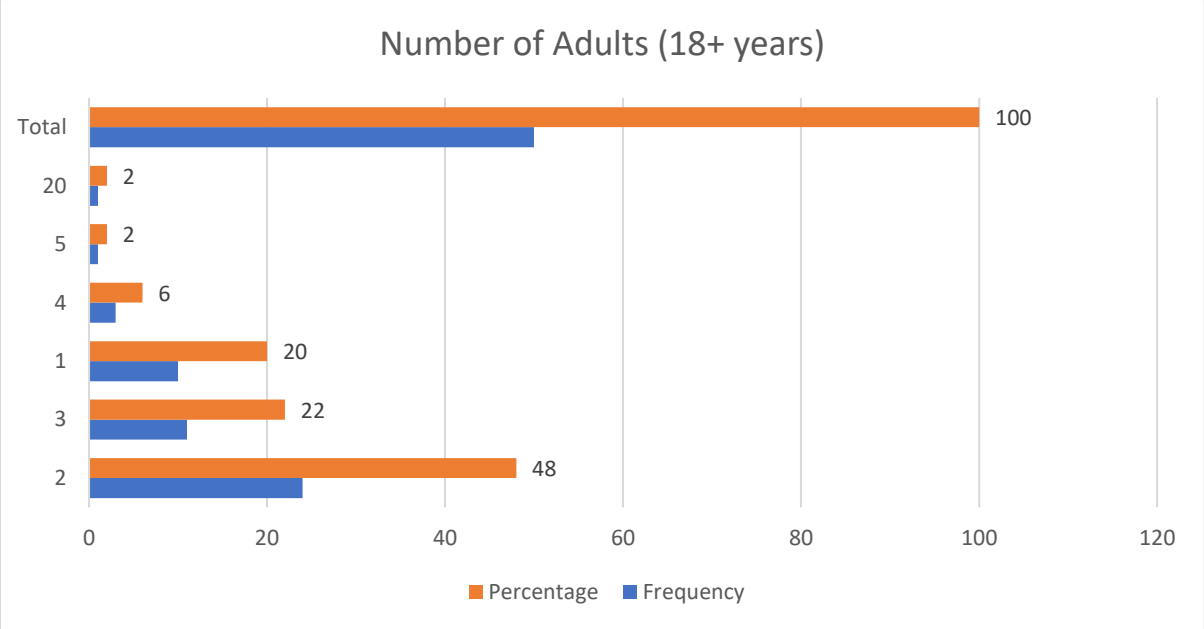


Figure 4-14: Number of Adults (18+ years)

4.8.9 Children (Under 18 years)

Child distribution shows significant variation, with 26% having no children and an equal 26% having 2 children. As depicted in Figure 4-15 below, three-child families represent 22%, single-child households 18%, and four-child families 8%. This pattern indicates that 74% of households have at least one child, emphasizing strong demand for family-oriented housing features across Laini Saba and surrounding villages. The prevalence of families with multiple children requires larger living spaces and comprehensive child-friendly infrastructure. The social housing project must incorporate safe play areas, proximity to educational facilities, and child-centered design features, including secure balconies, traffic-calmed streets, and supervised recreational spaces that support the predominantly family-oriented community in Kibra constituency.

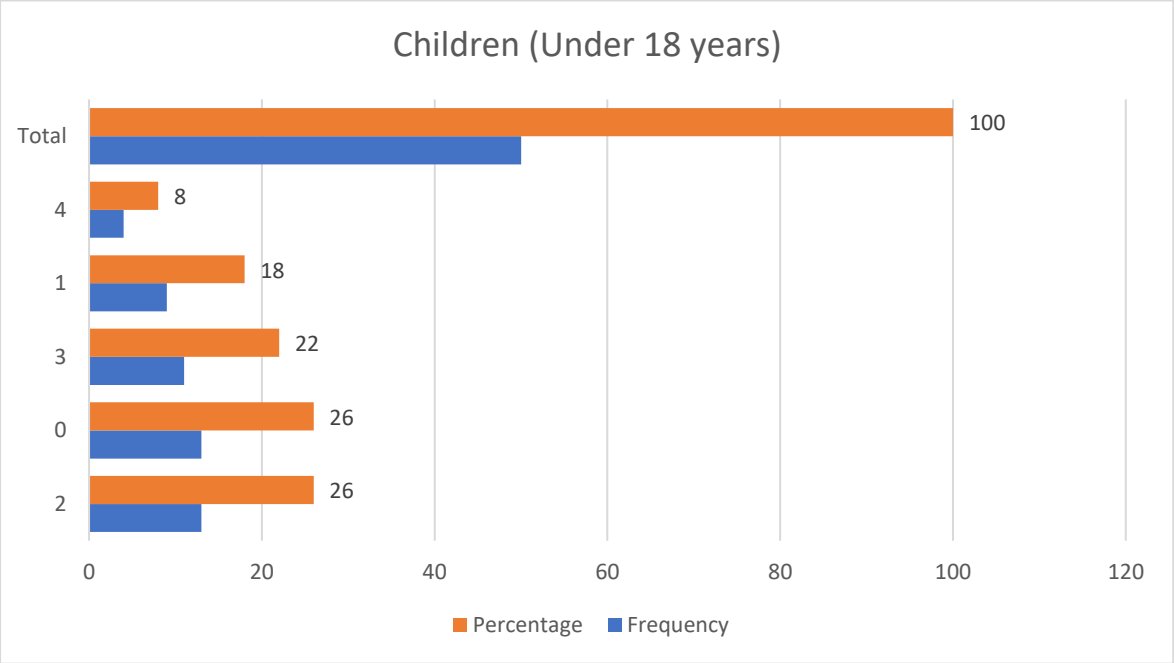


Figure 4-15: Children (Under 18 years)

4.8.10 Vulnerable Members in the Household

Vulnerable population presence shows 62% of households without vulnerable members, while pregnant or lactating women represent the largest vulnerable group at 14%. As illustrated in Figure 4-17 below, elderly residents comprise 10%, persons with disabilities 6%, chronically ill individuals 4%, and both pregnant women and widowed single parents each represent 2%. This distribution indicates moderate vulnerability levels requiring targeted support services across the Kibra constituency. The significant presence of pregnant women emphasizes the need for accessible healthcare and maternal support services. The social housing project must ensure universal accessibility features, proximity to health facilities, specialized support for vulnerable populations, and inclusive design that accommodates elderly residents and persons with disabilities while providing comprehensive social protection networks.

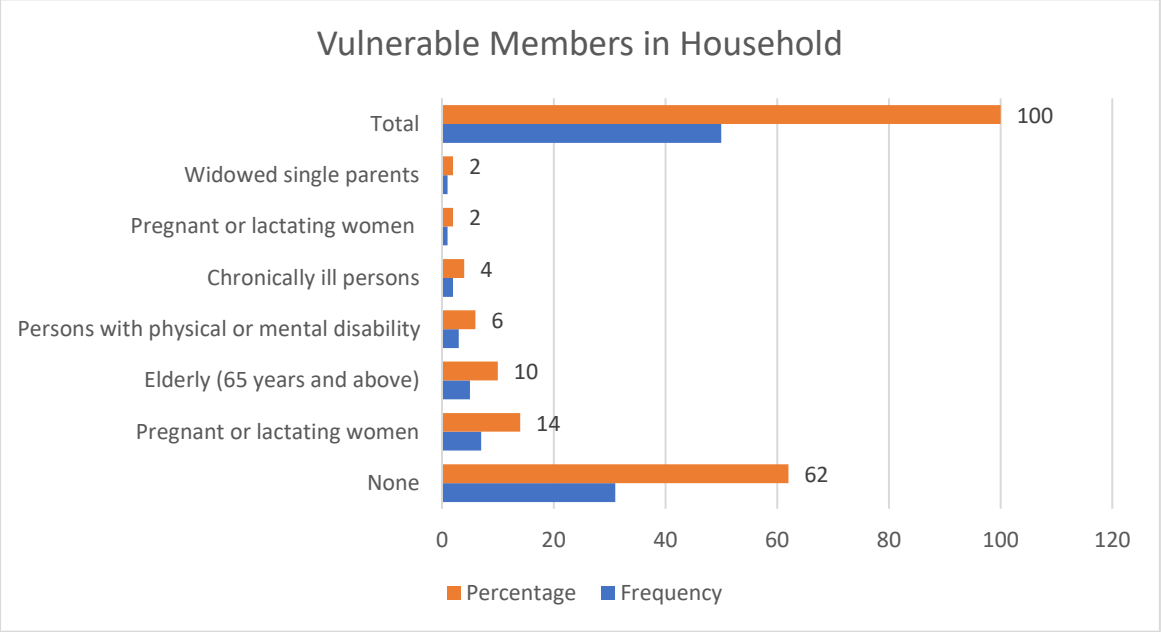


Figure 4-17: Vulnerable Members in the Household

4.8.11 Support for Vulnerable Members

As shown in Figure 4-18 below, 62% of households report no vulnerable members, while a concerning 36% with vulnerable members receive no support, and only 2% access external assistance across Laini Saba and surrounding villages. This alarming support gap reveals critical service deficiencies affecting vulnerable residents throughout the informal settlements. The minimal 2% receiving support rely exclusively on non-governmental organizations, highlighting the absence of government intervention. The social housing project must establish comprehensive support networks connecting vulnerable residents with essential services, implementing specialized facilities for elderly, disabled, and pregnant women, while creating integrated referral systems to government programs and NGO services, ensuring no vulnerable household remains without appropriate assistance throughout all phases of development implementation.

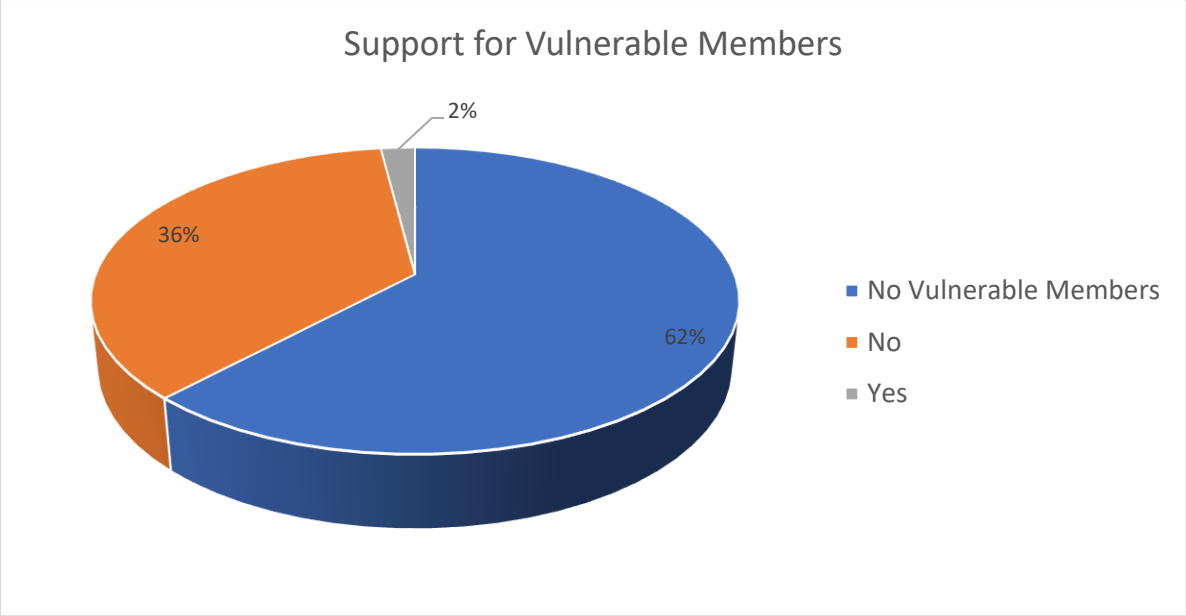


Figure 4-18: Support for Vulnerable Members

4.8.12 Length of Residence in Area

Residential tenure patterns demonstrate balanced distribution with recent arrivals (1-5 years) and long-term residents (more than 10 years) each comprising 34% of the population. As shown in Figure 4-19 below, medium-term residents (6-10 years) account for 22%, lifetime residents 6%, and new arrivals (less than one year) 4%. This mixed tenure suggests both established community roots and ongoing migration to the Kibra constituency. The equal representation of newer and long-term residents indicates a dynamic community composition requiring inclusive planning approaches. The social housing project should accommodate both established residents with strong local networks and newcomers seeking community integration, ensuring development preserves existing social bonds while welcoming new community members across Laini Saba and surrounding villages.

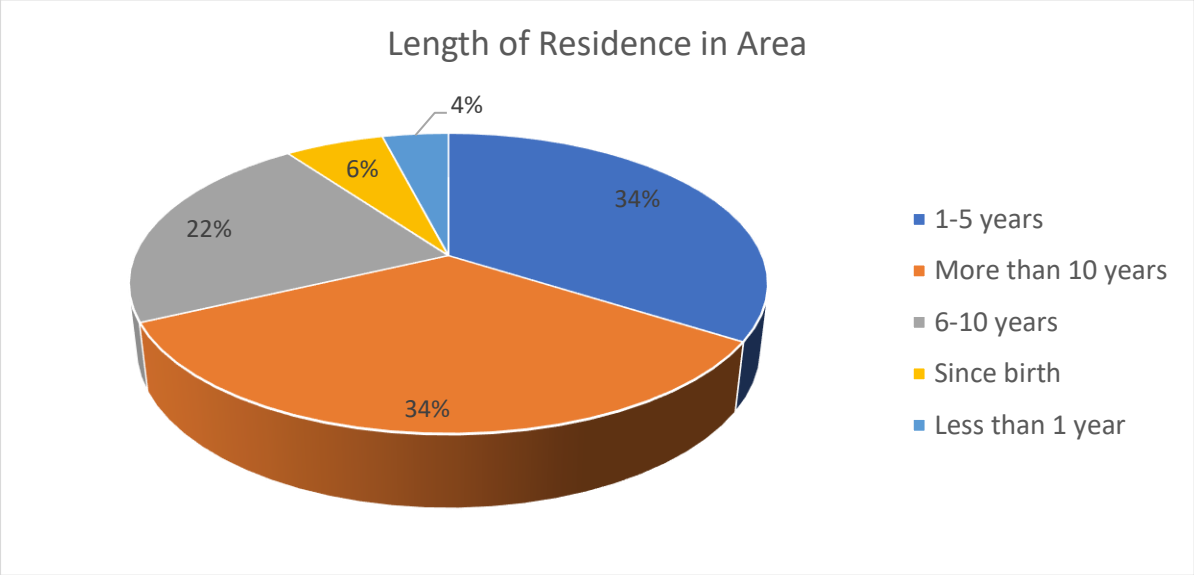


Figure 4-19: Length of Residence in Area

4.8.13 Type of Dwelling Unit

Housing quality reveals predominantly poor conditions with 68% living in semi-permanent structures, 22% in permanent buildings, and 10% in temporary makeshift dwellings, as illustrated in Figure 4-20 below. This distribution indicates widespread housing vulnerability across Kibra's informal settlements, with over two-thirds residing in inadequate shelters requiring immediate intervention. The prevalence of semi-permanent and temporary structures emphasizes the urgent need for improved housing solutions. The minimal permanent housing stock demonstrates the transformative potential of the social housing project. Development must prioritize transitioning residents from vulnerable structures to dignified permanent housing, dramatically improving living standards while ensuring structural safety, durability, and weather resistance for all households across the constituency.

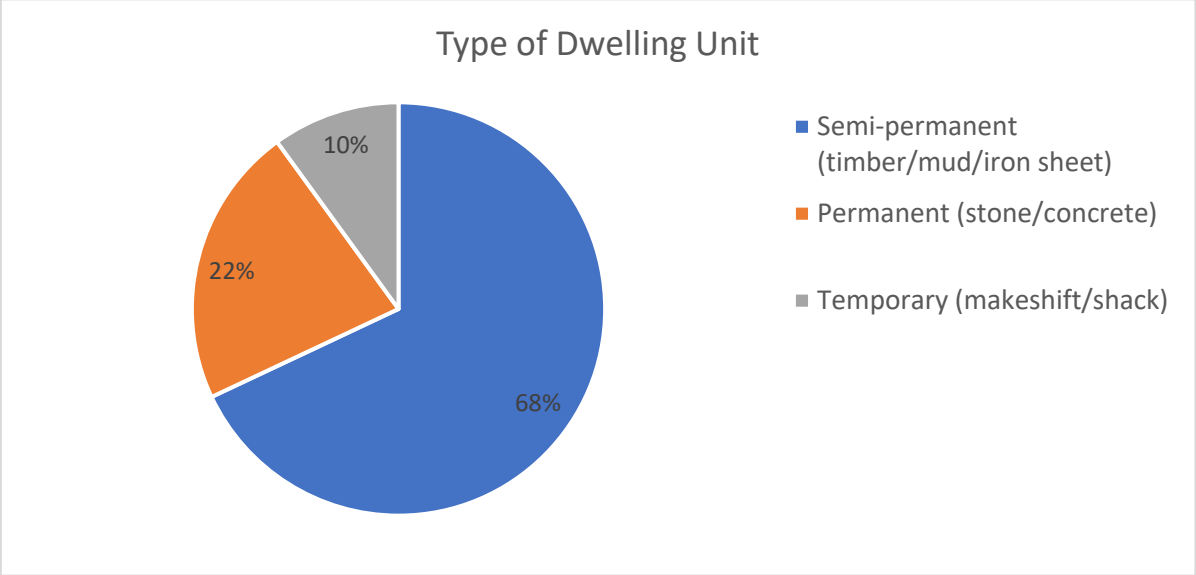


Figure 4-20: Type of Dwelling Unit

4.8.14 Main Source of Water Supply

Water access patterns show piped connections serving 46% of households (30% into dwellings, 16% to yards), while public taps provide for 26% and water vendors serve 24%. As shown in Figure 4-22 below, alternative sources include river/stream and rainwater harvesting at 2% each. This mixed water infrastructure indicates partial development with significant vendor dependence, creating financial burdens for nearly a quarter of residents across the Kibra constituency. The substantial piped water presence suggests that the existing infrastructure requires expansion and optimization. The social housing development must ensure universal piped connections to all units, eliminating expensive vendor dependence and unreliable alternative sources while establishing adequate water storage, pressure systems, and reliable supply for improved quality of life and reduced household expenses.

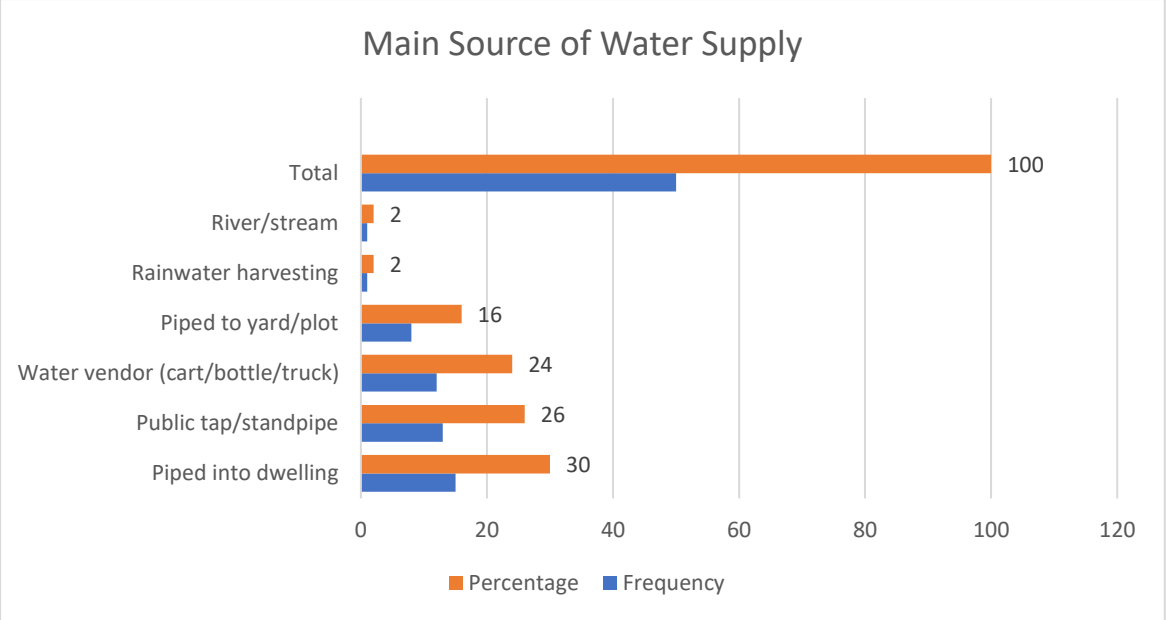


Figure 4-22: Main Source of Water Supply

4.8.15 Regularity of Water Supply

Water supply reliability shows twice weekly access leading at 32%, followed by daily supply at 24%, and other patterns (primarily no access to water) at 16%. As illustrated in Figure 4-23 below, thrice weekly, four times weekly, and once weekly access represent 12%, 8%, and 8% respectively. This irregular supply pattern indicates significant infrastructure challenges, with only a quarter enjoying daily water access across Kibra's villages. The substantial proportion experiencing inconsistent or no water access creates health and sanitation risks requiring urgent intervention. The social housing project must guarantee daily water availability through improved infrastructure, distribution systems, and storage facilities. Addressing supply inconsistency for the 76% facing irregular access is crucial for health, hygiene, and quality of life improvements throughout the constituency.

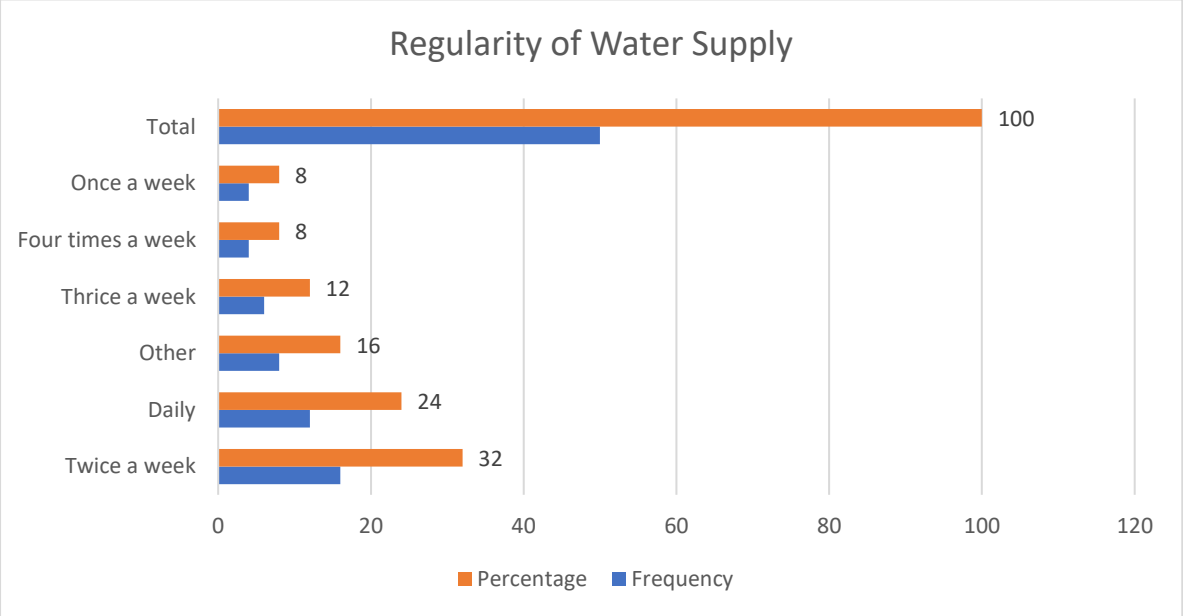


Figure 4-23: Regularity of Water Supply

4.8.16 Main Source of Energy for Cooking

Cooking energy demonstrates a positive transition toward cleaner fuels, with LPG gas leading at 60%, followed by electricity at 18% and charcoal at 12%. As depicted in Figure 4-24 below, biogas represents 8%, while other sources (primarily kerosene) account for 2%. This substantial gas adoption indicates community willingness to use modern energy despite income constraints in the Kibra constituency. The high LPG usage suggests a successful transition from traditional fuels, improving indoor air quality and reducing environmental impact. The social housing project should complete the transition to clean cooking through gas-ready kitchens, electrical connections, and safety training. Eliminating remaining charcoal and kerosene use will further enhance household health while supporting environmental sustainability across the development.

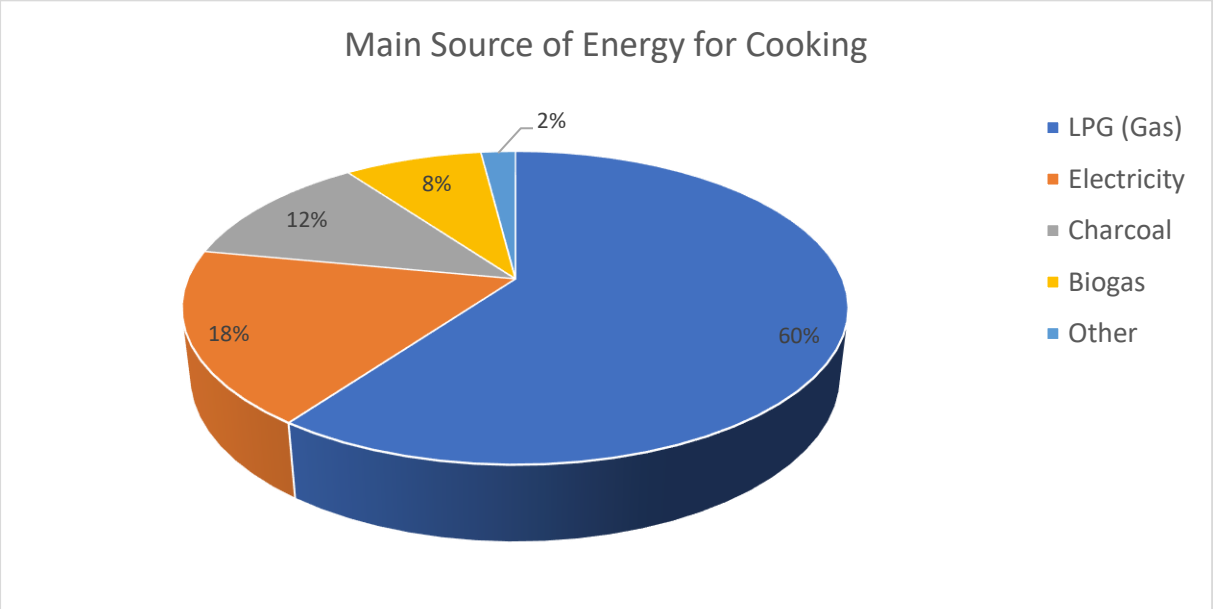


Figure 4-24: Main Source of Energy for Cooking

4.8.17 Main Source of Energy for Lighting

Electricity access demonstrates exceptional progress, with 90% connected to the main grid, while solar power serves the remaining 10% of households, as shown in Figure 4-25 below. This near-universal grid connectivity represents a significant infrastructure achievement in the Kibra constituency, far exceeding typical informal settlement standards. The substantial electricity access indicates successful utility expansion efforts across Laini Saba, Kisumu Ndogo, and surrounding villages. This impressive grid coverage provides a strong foundation for the social housing project, eliminating fire risks associated with dangerous lighting alternatives. The development should maintain this 100% modern energy access while potentially incorporating solar backup systems to ensure reliable lighting and support economic activities requiring a consistent power supply.

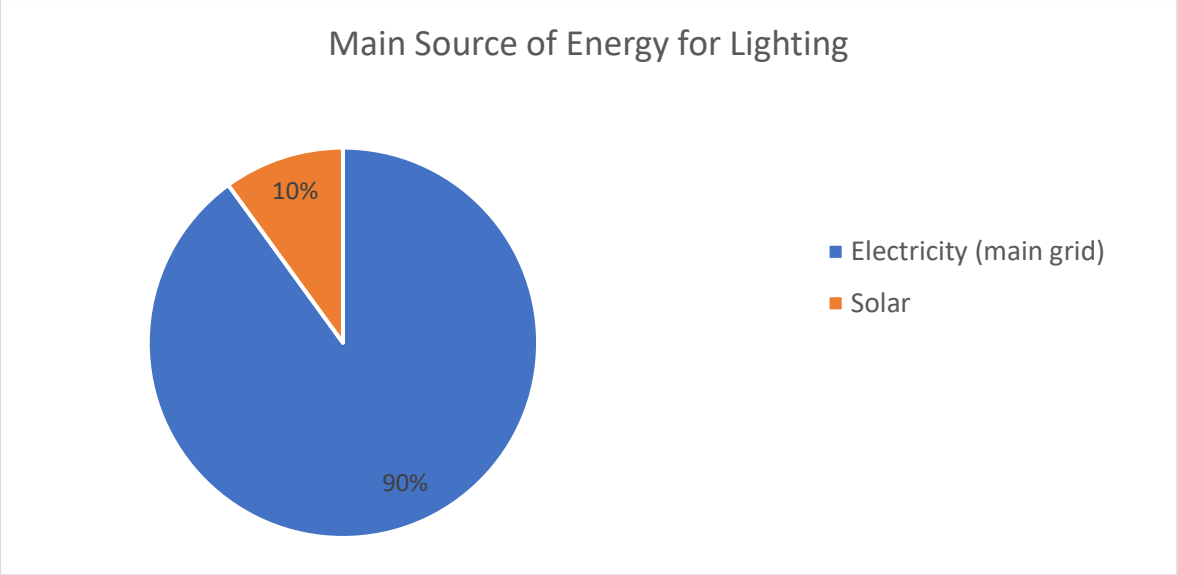


Figure 4-25: Main Source of Energy for Lighting

4.8.18 Type of Sanitation Facility

Sanitation infrastructure reveals mixed conditions with pit latrines with slabs leading at 38%, followed by flush toilets at 38% combined (20% sewer-connected, 18% septic). As illustrated in Figure 4-26 below, pit latrines without slabs comprise 12%, shared/public toilets 6%, ventilated improved pit latrines 4%, and open defecation 2%. This distribution shows better sanitation access than many informal settlements, though significant improvements remain necessary across the Kibra constituency. The substantial flush toilet presence indicates that the existing infrastructure requires expansion and optimization. The social housing project must provide individual household flush toilets connected to proper sewer systems for all units, representing a transformative improvement in living conditions and public health for residents across all villages.

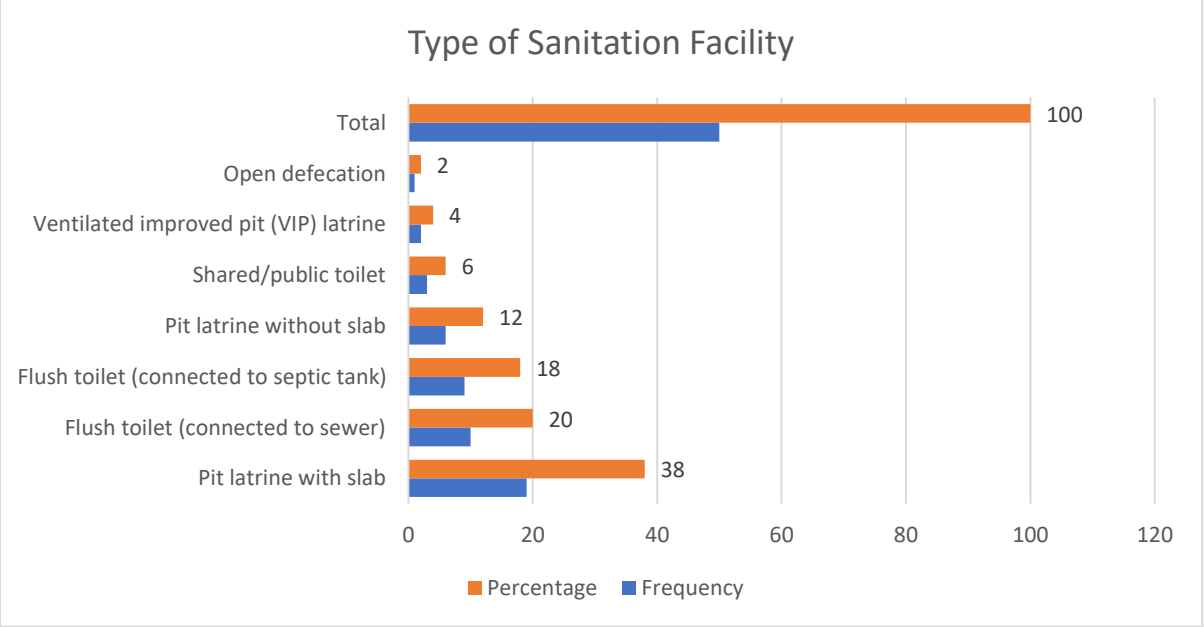


Figure 4-26: Type of Sanitation Facility

4.8.19 Solid Waste Disposal Method

Waste management shows critical service gaps, with 50% dumping waste in open areas, while 38% access formal collection services. As depicted in Figure 4-27 below, burning accounts for 10%, and other methods (primarily dumping in the river) represent 2%. This heavy reliance on open dumping creates severe environmental and health hazards throughout Kibra's informal settlements. The lack of comprehensive waste management contributes to disease spread, environmental degradation, and water pollution from river dumping. The social housing project must establish comprehensive waste collection systems with 100% coverage, including designated collection points, regular pickup schedules, and recycling programs. Eliminating open dumping and river contamination is essential for creating healthy, sustainable living environments while protecting Kibra's water resources.

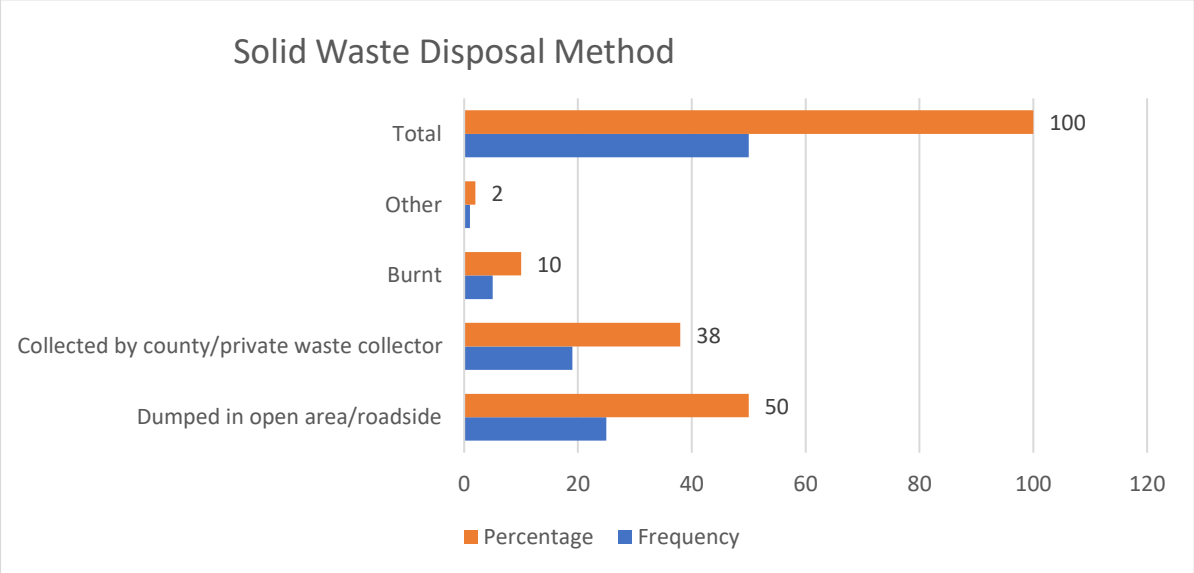


Figure 4-27: Solid Waste Disposal Method

4.8.20 House Location Near Environmental Hazards

Environmental hazards significantly affect residents, with open sewers impacting 43.6% of households, followed by dumpsites at 21.8% and flooding risks affecting 20%. As shown in Figure 4-28 below, high-voltage lines and industrial facilities each pose risks to 7.3% of residents. These multiple hazards create unhealthy living conditions and safety risks throughout Laini Saba and surrounding villages. The prevalence of open sewers and dumpsites indicates severe infrastructure failures requiring comprehensive intervention. The social housing project must ensure safe site selection away from environmental hazards, implement proper drainage systems to address flooding, maintain safe distances from electrical infrastructure, and establish buffer zones from industrial facilities to create healthy living environments for all residents.

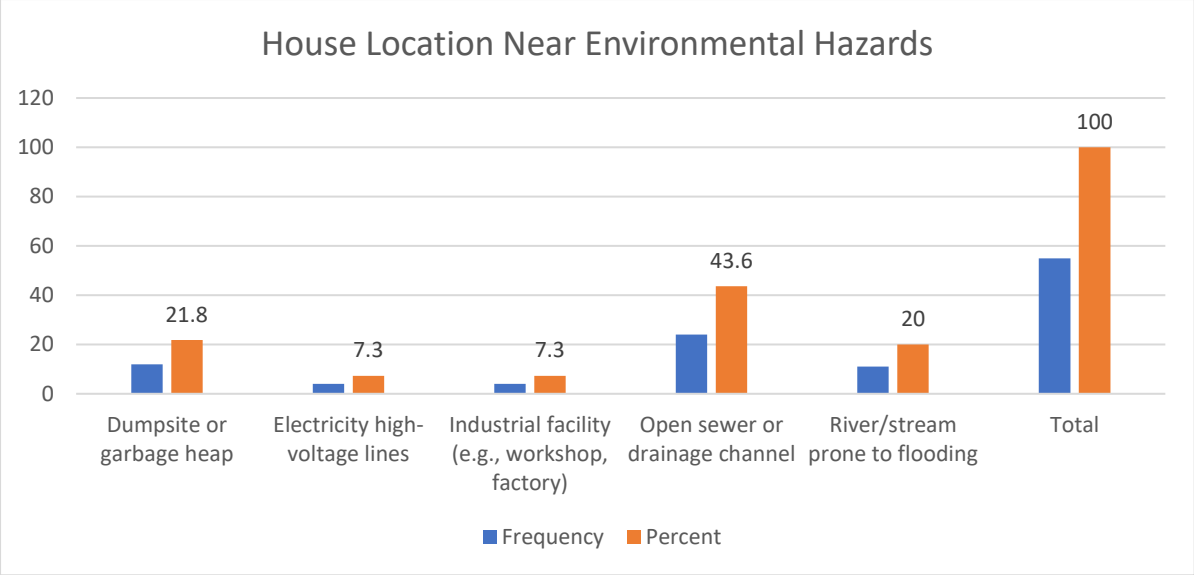


Figure 4-28: House Location Near Environmental Hazards

4.8.21 Distance to Primary School in Kilometers

Primary education access shows excellent coverage, with 46% of households within 1 kilometer and 18% within 2 kilometers, totaling 64% with convenient access. As depicted in Figure 4-33 below, various distances from 0.5 to 4 kilometers serve the remaining population, with most maintaining reasonable proximity to schools. This generally strong educational infrastructure provides a solid foundation for children's learning across the Kibra constituency. The concentrated access within 1-2 kilometers benefits most families in Laini Saba, Kisumu Ndogo, and surrounding villages. The social housing project benefits from existing educational infrastructure but should enhance safe walking routes, improve street lighting for security, and potentially advocate for additional school capacity to serve increased population density while maintaining these favorable access patterns for all residents.

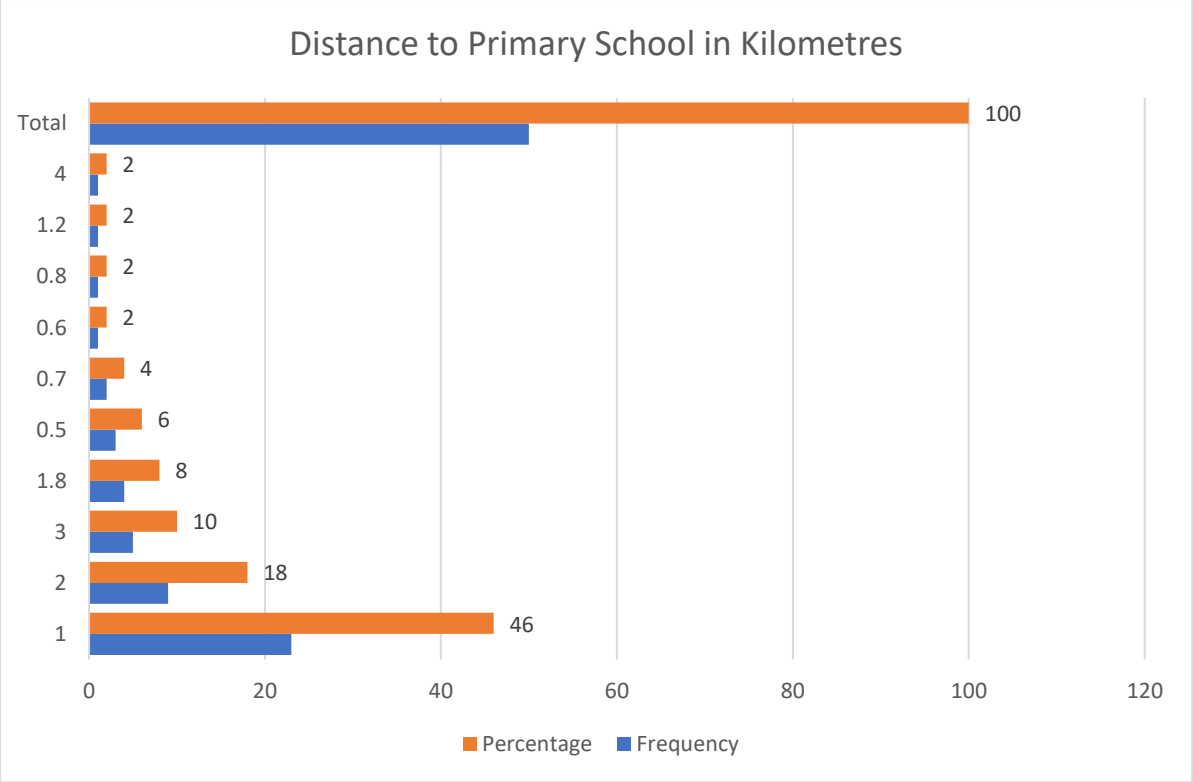


Figure 4-33: Distance to Primary School in Kilometers

4.8.22 Distance to Secondary School in Kilometers

Secondary education proximity reveals good access with 34% within 1 kilometer and 26% at 2 kilometers, providing 60% of students with convenient school access. As shown in Figure 4-34 below, additional distances ranging from 0.3 to 5 kilometers serve remaining students, indicating varied but generally manageable commuting requirements. This educational infrastructure supports continued learning opportunities across Kibra's informal settlements. The concentration within 1-2 kilometers benefits most adolescents, though some face longer journeys to reach secondary schools. The housing development should maintain these educational access patterns through preserved school locations and improved transport connectivity while addressing the needs of students traveling longer distances through subsidized transport programs or bicycle schemes to ensure educational continuity.

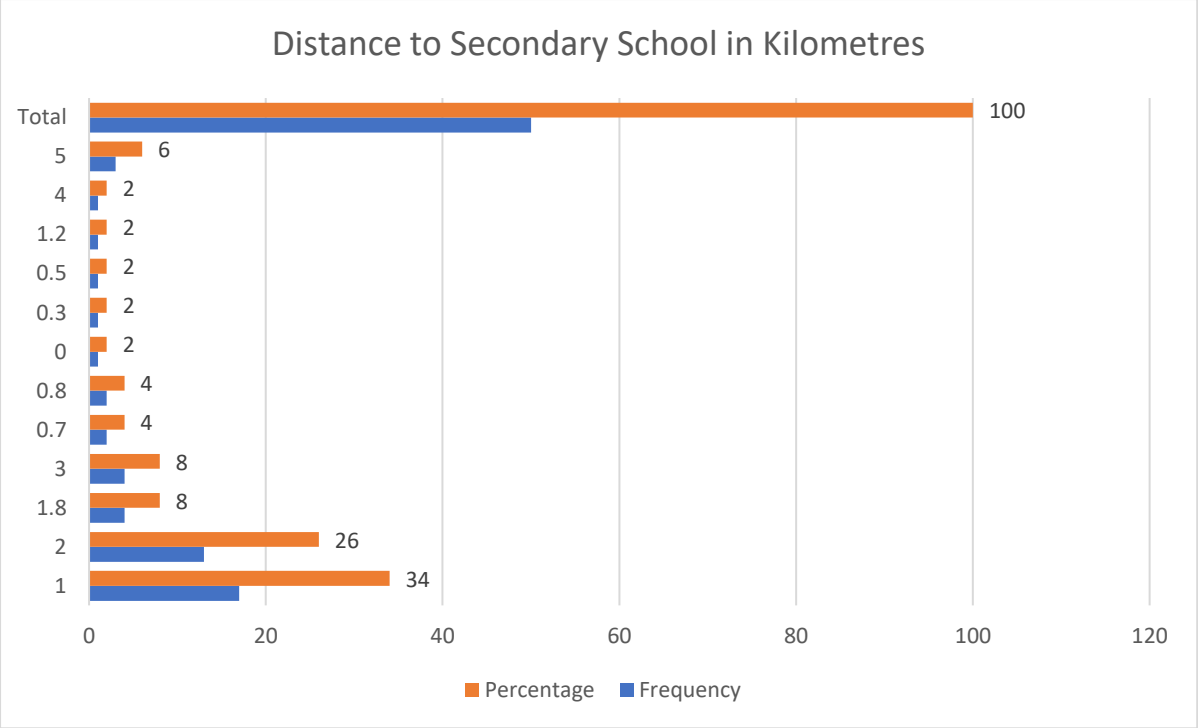


Figure 4-34: Distance to Secondary School in Kilometers

4.8.23 Distance to Health Facility in Kilometers

Healthcare accessibility shows concerning patterns with 22% traveling 1 kilometer, 18% at 0.5 kilometers, and 14% at 0.2 kilometers, while various longer distances up to 7 kilometers affect the remaining residents, as illustrated in Figure 4-35 below. This scattered distribution indicates inadequate health infrastructure density serving the Kibra constituency, with many residents facing significant travel for medical care. The varied distances suggest uneven healthcare coverage across Laini Saba and surrounding villages, potentially compromising emergency response and routine health services. The housing project should include an on-site health clinic or partner with providers to establish regular services, dramatically reducing travel burdens and improving health outcomes. Enhanced healthcare access will address the critical gap affecting residents traveling longer distances for essential medical services.

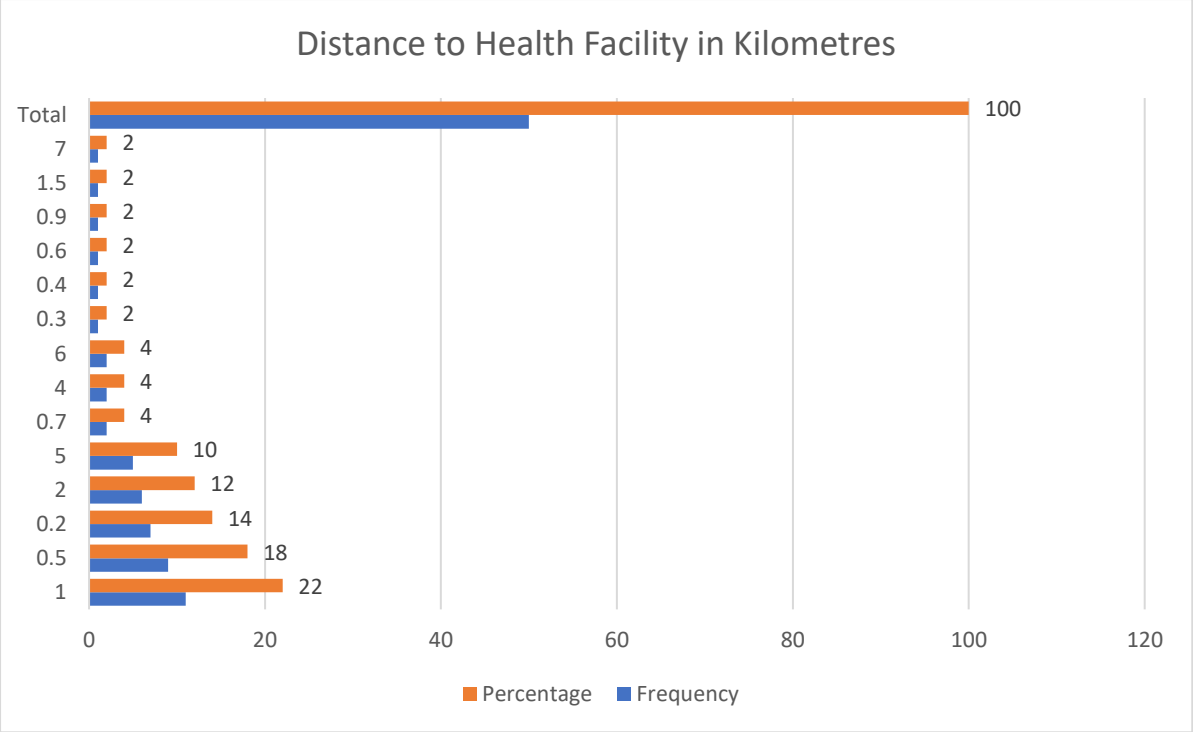


Figure 4-35: Distance to Health Facility in Kilometers

4.8.24 Distance to Market/Shopping Centre in Kilometers

Market access reveals concerning patterns with residents traveling various distances from 0.2 to 8 kilometers, with concentration at 1-2 kilometers serving 46% of households. As depicted in Figure 4-36 below, this scattered distribution indicates inadequate commercial infrastructure within Kibra's informal settlements, forcing residents to travel significant distances for essential goods and services. The varied market access patterns suggest limited local economic opportunities and increased transportation costs for daily shopping needs. The social housing development should incorporate commercial spaces, weekly markets, or shopping facilities to serve residents' daily needs. Reducing these travel distances will save time and transport costs while supporting local entrepreneurship and economic activity, creating vibrant commercial centers within Laini Saba and surrounding villages.

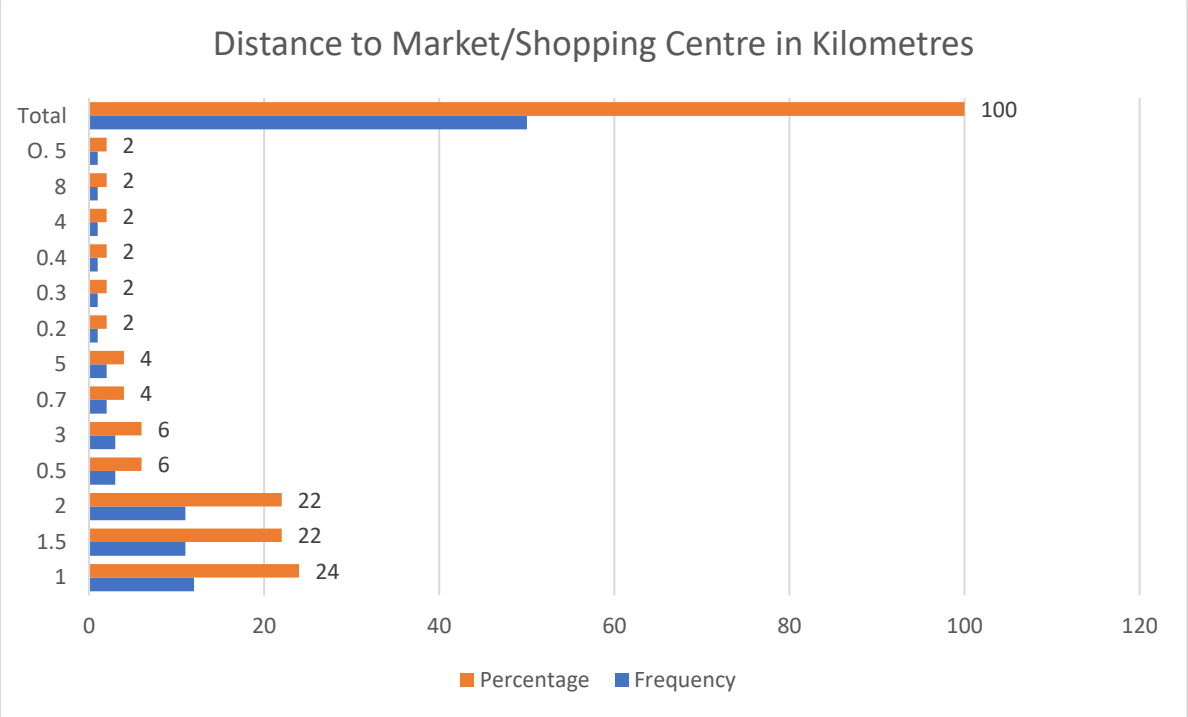


Figure 4-36: Distance to Market/Shopping Centre in Kilometers

4.8.25 Distance to Police Post/Station in Kilometers

Security infrastructure reveals highly dispersed police access patterns, with 30% of households traveling exactly 1 kilometer to reach police facilities. Significant portions travel much longer distances, with 16% at 2 kilometers and 12% at 10 kilometers. Closer access points show minimal coverage, with only 6% at 500 meters and smaller percentages scattered across various distances from 200 meters to 7 kilometers, as depicted in Figure 4-37 below. This fragmented distribution indicates a severely inadequate police presence across the surveyed areas. The concentration at 1 kilometer, combined with substantial long-distance travel, demonstrates critical security infrastructure gaps. The housing project must prioritize establishing a police post within the development to dramatically improve response times and community safety for residents currently underserved by security services.

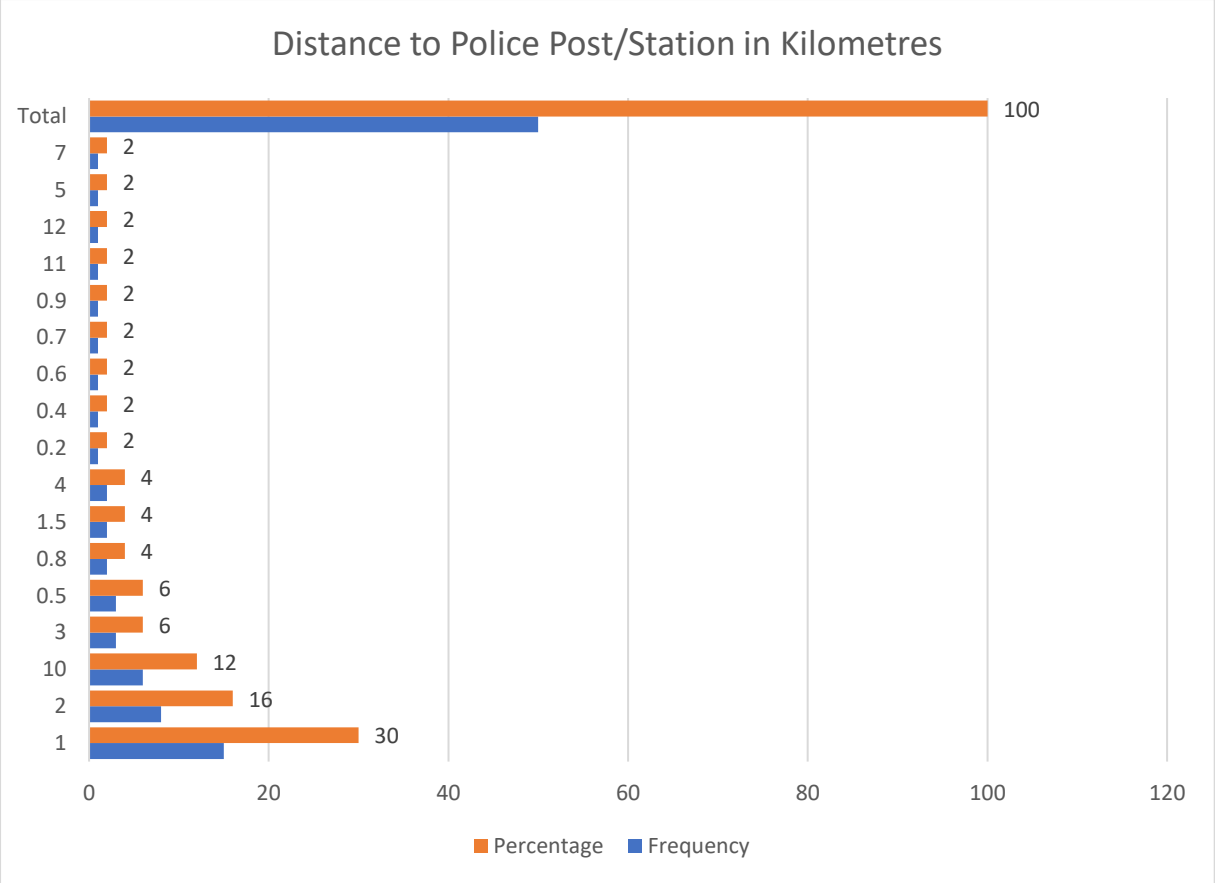


Figure 4-37: Distance to Police Post/Station in Kilometers

4.8.26 Distance to Water Point (if not piped) in Kilometers

Water point access demonstrates mixed patterns, with 30% traveling 1 kilometer 22% accessing water at 0.5, 16% at 2 kilometers. As illustrated in Figure 4-38 below, various distances up to 5 kilometers serve remaining residents, reflecting earlier findings of mixed water infrastructure across the Kibra constituency. This variation indicates uneven water point distribution, forcing some residents to travel significant distances for water collection when piped connections are unavailable. The need for water point access highlights gaps in household connections requiring immediate intervention. The housing project must provide in-house water connections for all units, eliminating the need for water point trips and ensuring convenient, reliable water access that reduces time and labor burdens, particularly for women and children responsible for water collection.

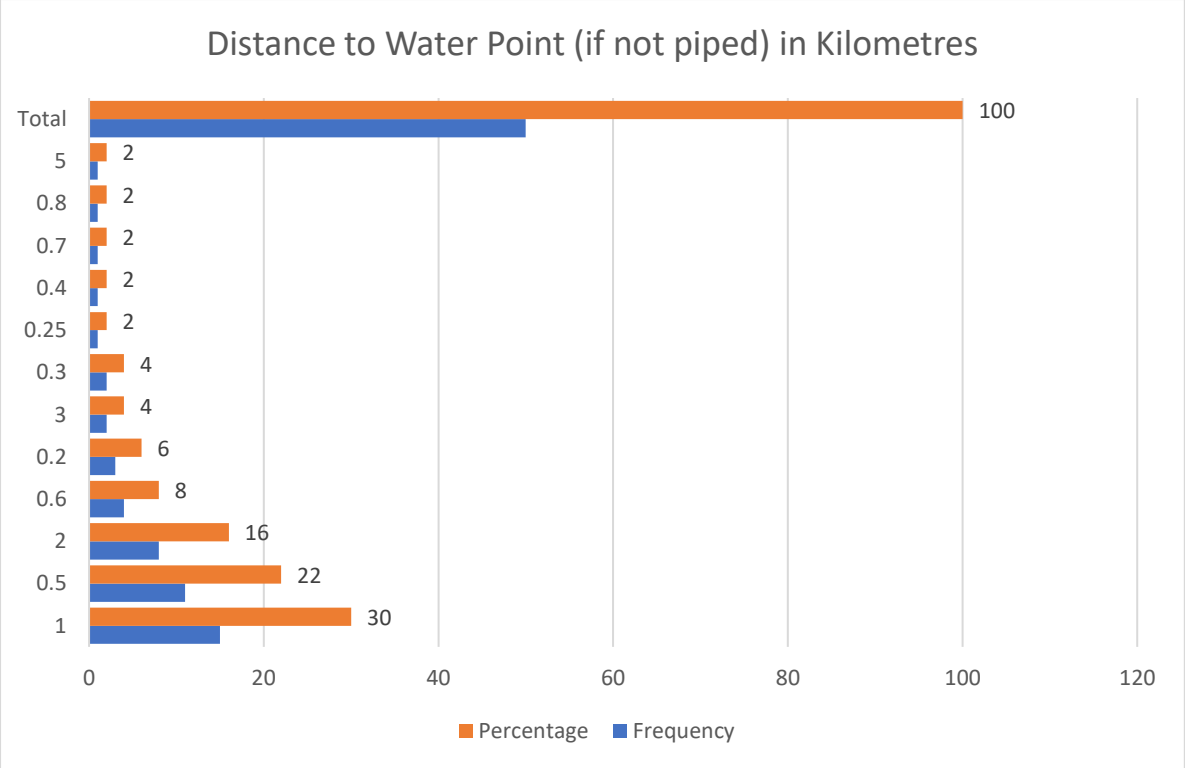


Figure 4-38: Distance to Water Point (if not piped) in Kilometers

4.8.27 Distance to Public Transport Stop in Kilometers

Public transport access shows favorable patterns with 28% within 1 kilometer and 24% at 0.5 kilometers, totaling 52% with convenient access. As depicted in Figure 4-39 below, additional concentrations at 2-3 kilometers serve another 20%, while various distances up to 2 kilometers affect the remaining residents. This generally good transport connectivity provides a solid foundation for resident mobility across the Kibra constituency. The majority of people who enjoy convenient access to matatu stops and bus stages support economic activities and employment opportunities. The social housing development should maintain and enhance these transport links through designated stops, improved waiting areas, and safe pedestrian access while addressing the needs of residents facing longer distances through feeder services or improved walkway connections to existing transport infrastructure.

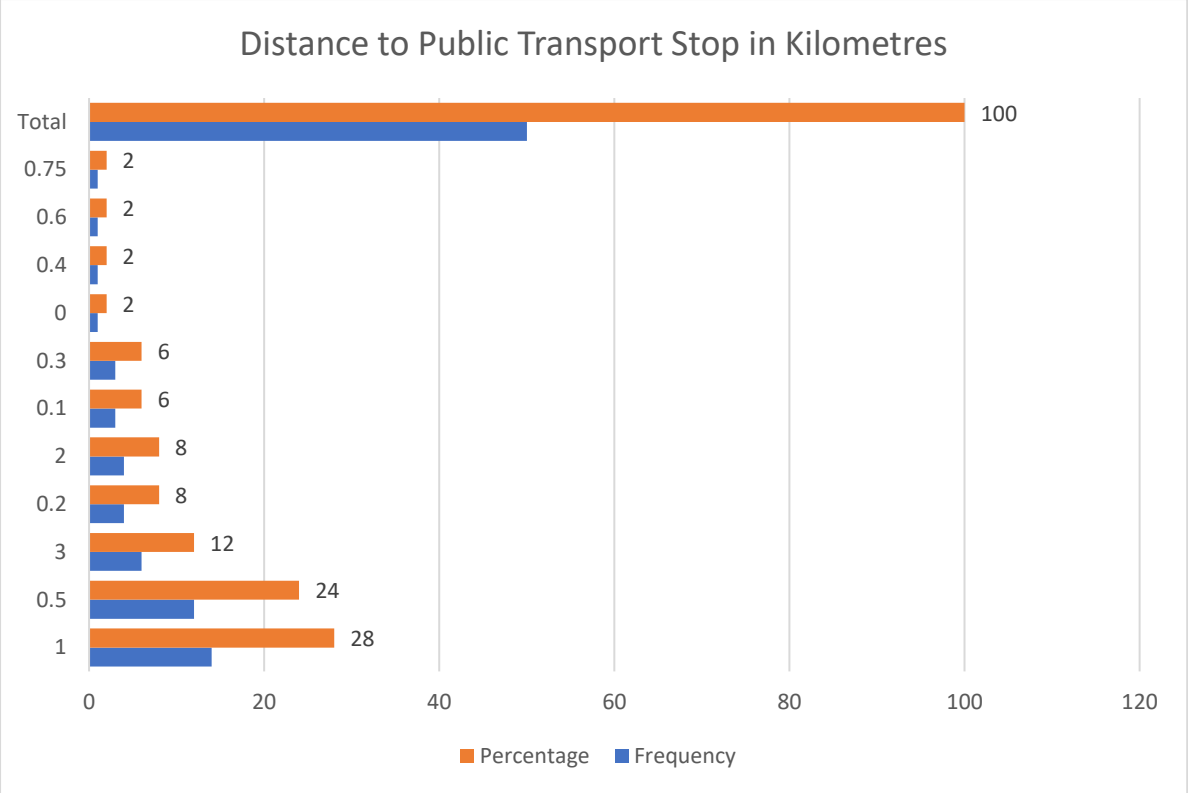


Figure 4-39: Distance to Public Transport Stop in Kilometers

4.8.28 Distance to Place of Worship in Kilometers

Religious facility access demonstrates excellent proximity with 46% within 1 kilometer, while various distances from 0.2 to 10 kilometers serve the remaining residents, showing widespread availability across the Kibra constituency, as shown in Figure 4-40 below. The concentration within 1 kilometer reflects the importance of faith in community life, providing accessible spiritual and social support networks. Some residents travel longer distances, possibly for specific denominational preferences or established religious communities. This strong religious infrastructure supports community cohesion and should be preserved through adequate planning. The housing project should maintain spiritual accessibility by allocating spaces for worship or ensuring continued access to existing facilities while respecting the diverse religious needs across Laini Saba and surrounding villages.

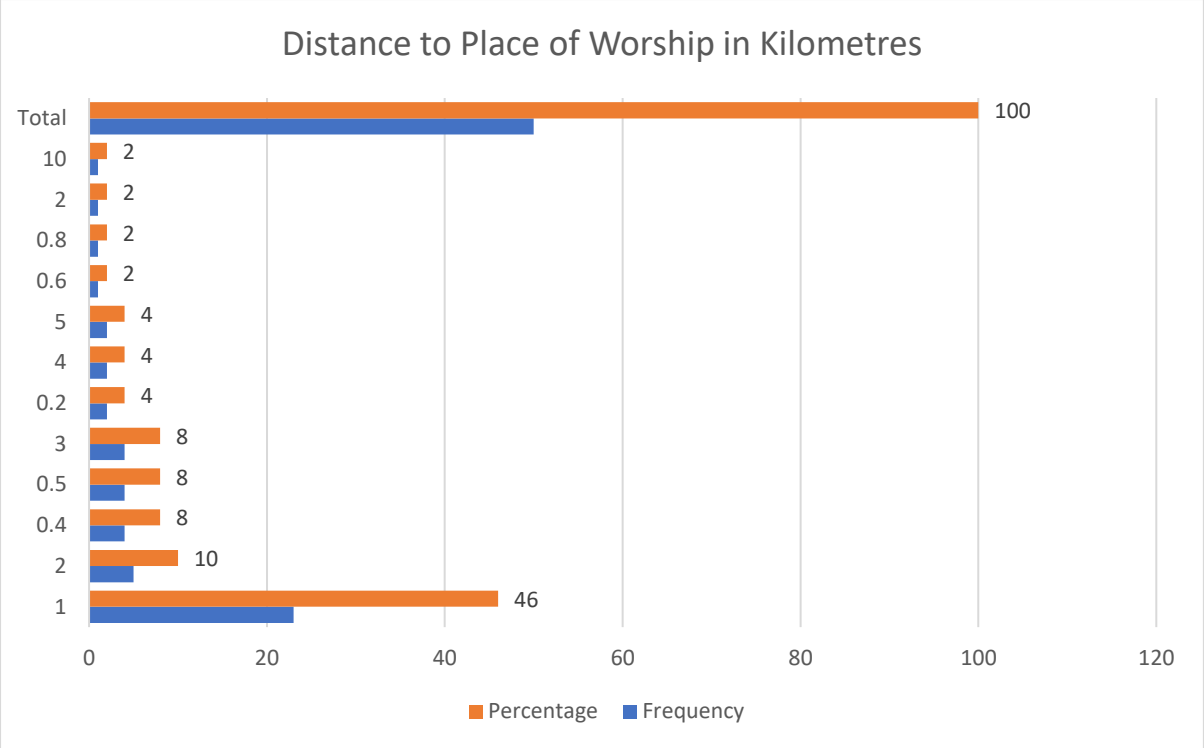


Figure 4-40: Distance to Place of Worship in Kilometers

4.8.29 Mode of Transport to Work

Transportation patterns reveal balanced reliance between walking at 42% and matatu/bus usage at 38%, indicating mixed mobility needs across the Kibra constituency. As illustrated in Figure 4-41 below, private vehicles serve 12% of workers, while bicycles and motorcycles represent minimal usage at 6% and 2% respectively. This balanced walking and public transport dependence suggests varied work locations requiring different transport strategies. The substantial matatu usage indicates employment beyond walking distance, necessitating reliable public transport connections. The housing project should enhance transport infrastructure through dedicated bus stops, safe pedestrian walkways, and potentially subsidized travel programs. Improving both walking routes and public transport access will support diverse employment patterns while reducing transportation costs for Kibra residents.

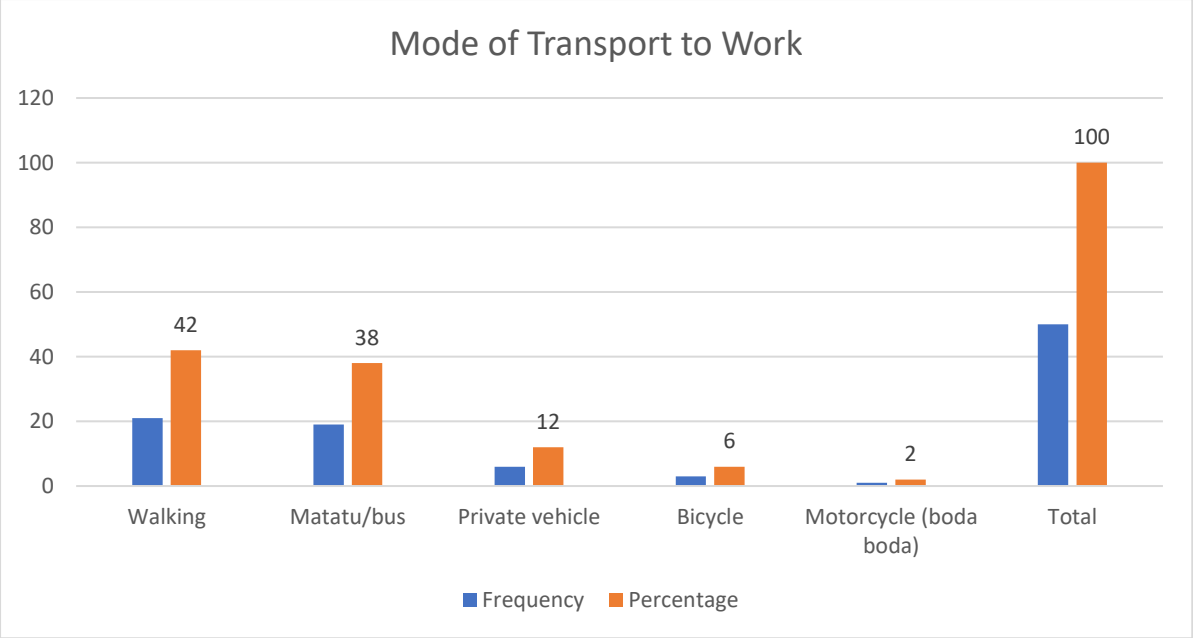


Figure 4-41: Mode of Transport to Work

4.8.30 Challenges Experienced While Accessing Services

Service accessibility challenges reveal healthcare concerns, leading at 21.7%, followed by multiple issues at 16.4% each, including water supply, security, and sanitation problems. As depicted in Figure 4-42 below, education challenges affect 9.2%, transport issues 7.2%, and market access 1.8%, while a minimal residents (0.7%) report no challenges. This pattern indicates widespread service delivery problems requiring comprehensive intervention across the Kibra constituency. The predominance of healthcare, water, security, and sanitation challenges reflects critical infrastructure gaps affecting daily life. The social housing project must address these interconnected service challenges through integrated planning, ensuring new housing includes accessible healthcare, reliable water systems, enhanced security measures, and proper sanitation to comprehensively improve living conditions for residents throughout Laini Saba and surrounding villages.

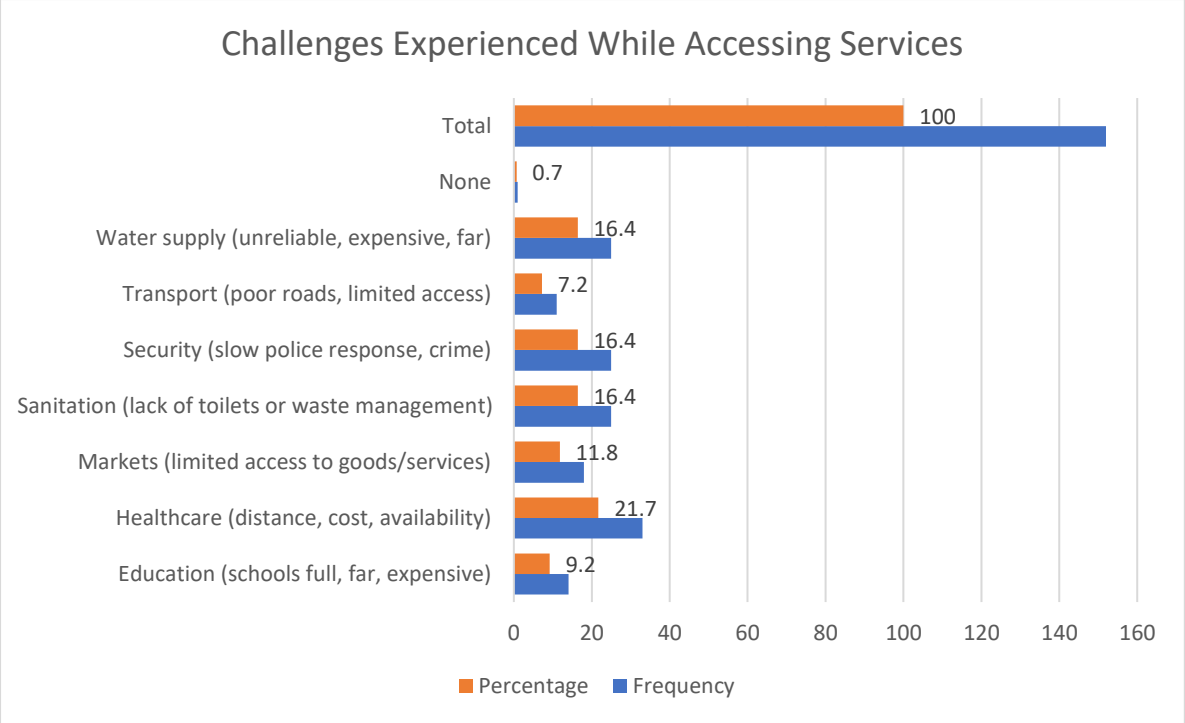


Figure 4-42: Challenges Experienced While Accessing Services

4.8.31 Services Lacking in the Area

Service availability assessment reveals 60% of households report no lacking services, while 40% identify specific service gaps in their areas. This majority satisfaction with existing services suggests better infrastructure coverage compared to typical informal settlements. However, the substantial 40% experiencing service deficiencies still indicates significant room for improvement. Figure 4-46 below demonstrates that while basic services reach most residents, gaps remain that affect a considerable portion of the community. The housing project should build upon this relatively strong service foundation while strategically addressing identified gaps to achieve comprehensive service coverage for all residents.

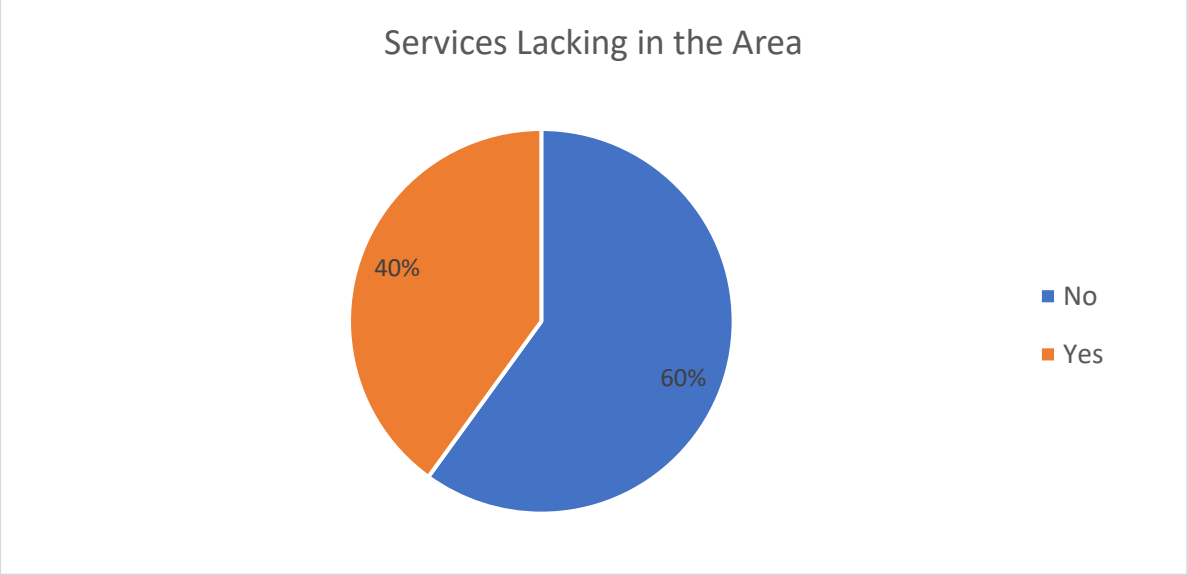


Figure 4-46: Services Lacking in the Area

4.8.32 Specific Lacking Services

As depicted in Figure 4-47 below, 60% of households report no lacking services, indicating relatively good baseline coverage. Among those identifying gaps, healthcare facilities and services lead at 20%, followed by security services at 14%. Waste management affects 4% while water infrastructure concerns 2% of residents. This service gap pattern reveals healthcare and security as primary deficiencies requiring urgent attention. The housing project must incorporate health facilities or partner with providers while enhancing security infrastructure to address these specific service delivery gaps comprehensively.

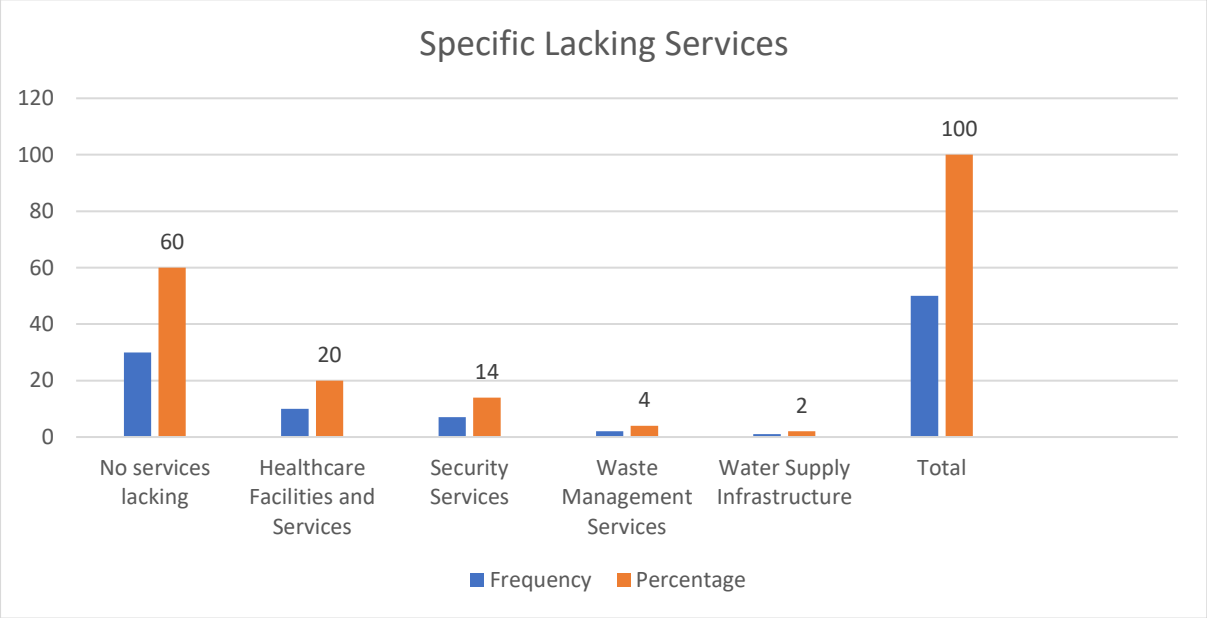


Figure 4-47: Specific Lacking Services

4.8.33 Awareness of Proposed Social Housing Project

Project awareness demonstrates exceptional community engagement, with 90% informed about the proposed development and only 10% unaware, as illustrated in Figure 4-48 below. This high awareness indicates effective communication and outreach efforts across the Kibra constituency, providing an excellent foundation for meaningful participation and community buy-in. The comprehensive awareness level enables informed decision-making and reduces potential conflicts during implementation phases. Maintaining this strong awareness throughout project implementation will be crucial for sustained community support. The project team should continue robust communication strategies, ensuring the small, unaware minority receives information while keeping the informed majority updated on progress, milestones, and opportunities for participation throughout Laini Saba and surrounding villages.

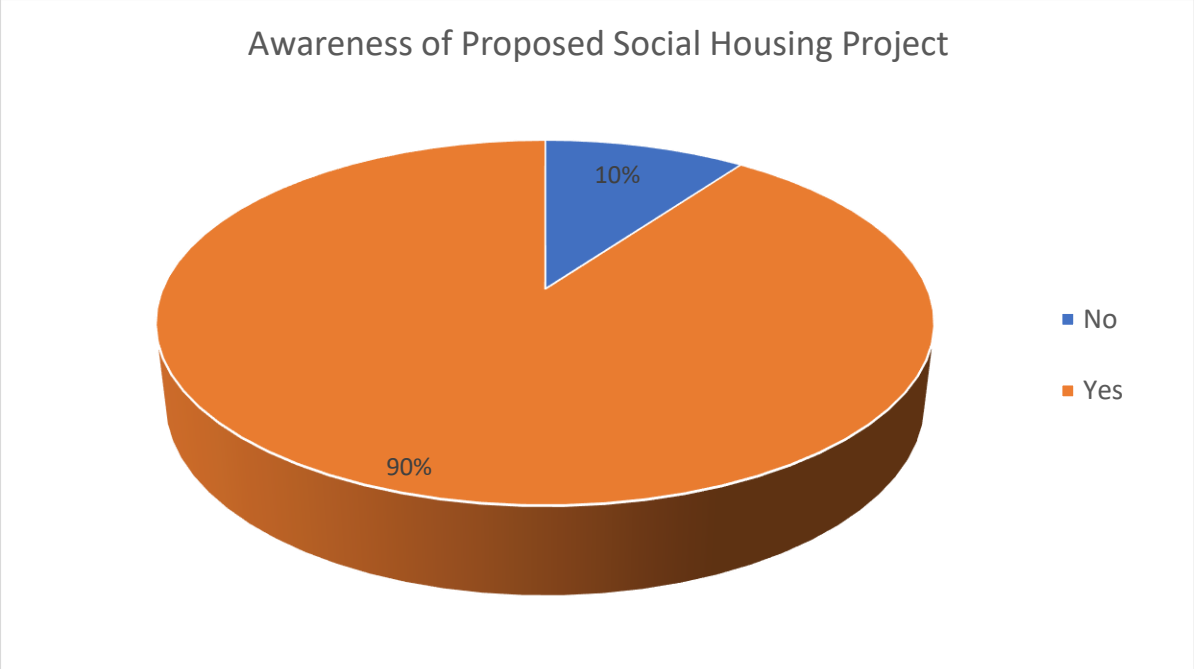


Figure 4-48: Awareness of Proposed Social Housing Project

4.8.34 Mode of Spreading Awareness of the Project

Information dissemination patterns show radio or TV leading at 38.3%, followed by word of mouth at 33.3% and social media at 13.3%. As depicted in Figure 4-49 below, local leaders account for 8.3%, while Chief's Baraza, NGO/CBO, and public notices each represent minimal channels at 1.7% to 3.3%. This multi-channel approach demonstrates effective use of both traditional mass media and interpersonal communication networks throughout the Kibra constituency. The dominance of radio/TV and informal communication reflects information flow patterns in informal settlements. Future project communications should maintain this balanced approach, leveraging mass media for broad reach while utilising social networks and word-of-mouth for detailed discussions and community feedback across Laini Saba and surrounding villages.

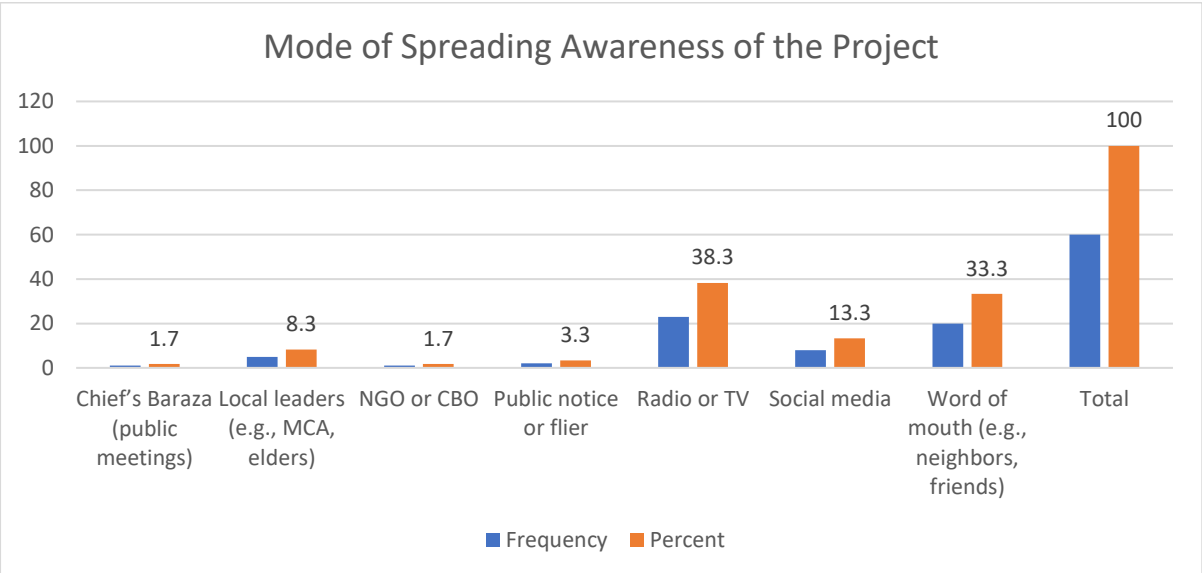


Figure 4-49: Mode of Spreading Awareness of the Project

4.8.35 Benefits Expected from the Project

Community expectations reveal employment opportunities as the primary anticipated benefit at 16.7%, followed closely by improved housing at 13.6% and enhanced security at 13.1%. As shown in Figure 4-50 below, health service improvements are concerned with 11.8%, while youth empowerment, transport improvements, water/sanitation access, and economic benefits range from 7.2% to 10%. This balanced distribution demonstrates diverse community priorities across the Kibra constituency, with employment slightly leading other concerns. The emphasis on job creation alongside housing improvements indicates understanding that sustainable development requires both shelter and economic opportunities. The housing project must deliver quality housing units while maximising employment during construction, addressing security concerns through design, and improving infrastructure connectivity to meet these comprehensive community expectations throughout Laini Saba and surrounding villages.

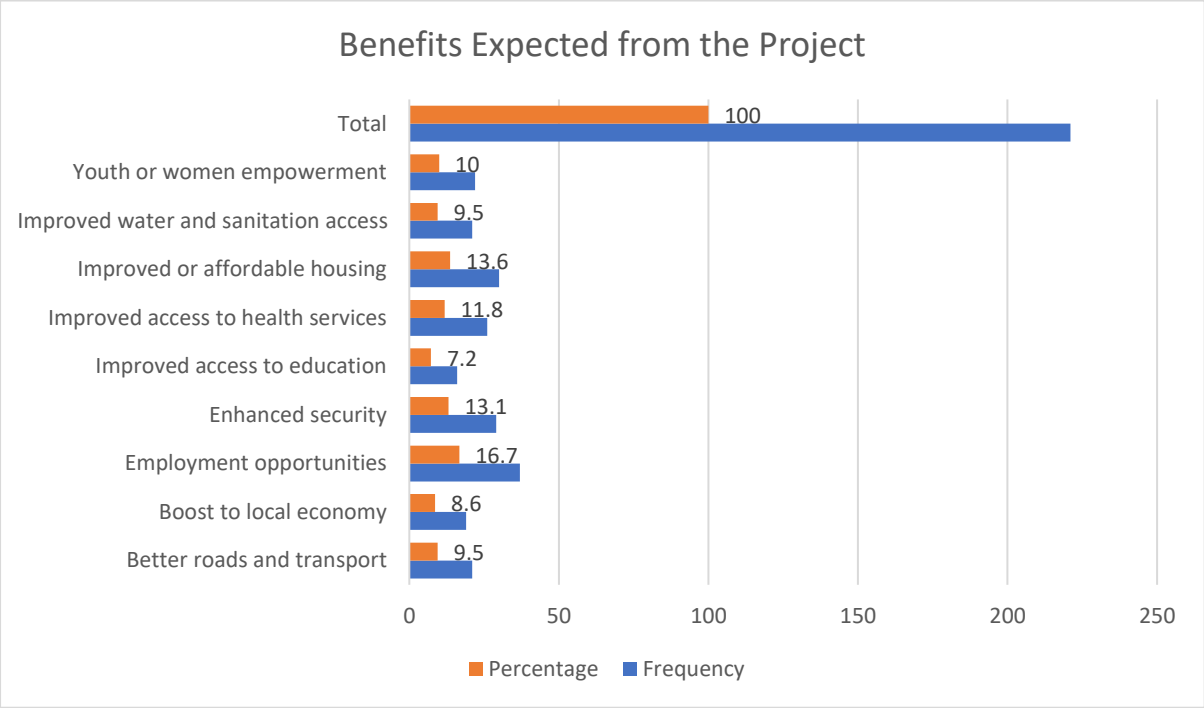


Figure 4-50: Benefits Expected from the Project

4.8.36 Concerns or Risks About the Project

Project concerns show increased rent or living costs leading at 18.5%, followed by livelihood loss at 17.6% and displacement fears at 16.8%. As illustrated in Figure 4-51 below, construction impacts are concerned at 14.3%, while utility pressure affects 11.8%, and crime increases are concerned at 10.1%. Transparency concerns represent 6.7%, while cultural disruption affects 4.2%. This pattern reveals affordability and economic displacement as primary anxieties requiring immediate attention across the Kibra constituency. The concentration on cost and livelihood concerns indicates residents' vulnerability to gentrification and economic exclusion. The project must prioritise affordability assurance, transparent allocation processes, livelihood protection measures, and construction mitigation strategies. Addressing these significant community anxieties through clear policies and comprehensive support systems is essential for maintaining community trust and project success.

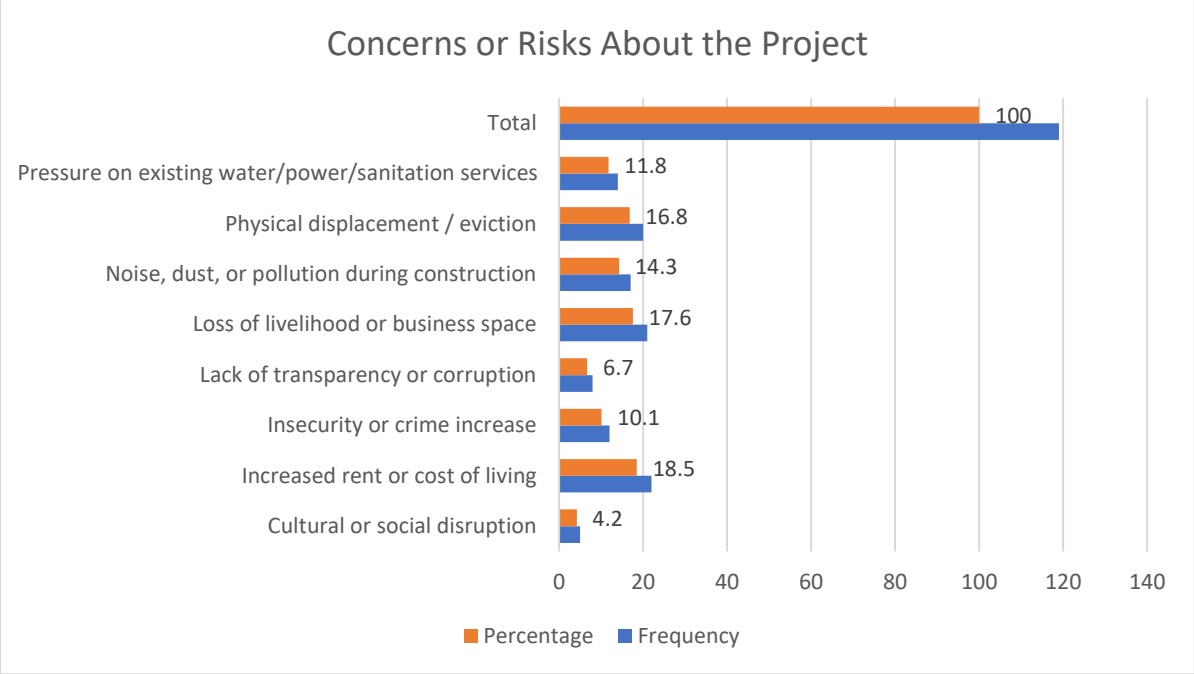


Figure 4-51: Concerns or Risks About the Project

4.8.37 Environmental Improvements That Should be Supported by the Housing Project

Environmental priorities show waste management systems and improved drainage each leading at 21.1%, followed by clean water access at 18.7% and improved sanitation at 17%. As depicted in Figure 4-52 below, pollution reduction concerns 10.5%, while greening initiatives represent 9.9%, with other improvements at 1.8%. These priorities reflect current environmental challenges, with waste management and drainage dominating concerns due to frequent flooding and poor waste disposal across the Kibra constituency. The emphasis on basic infrastructure indicates an urgent need for fundamental environmental improvements. The project must prioritise comprehensive waste collection systems, proper drainage infrastructure to prevent flooding, reliable piped water access, and adequate sanitation facilities. These improvements will dramatically enhance environmental conditions and public health throughout Laini Saba and surrounding villages.

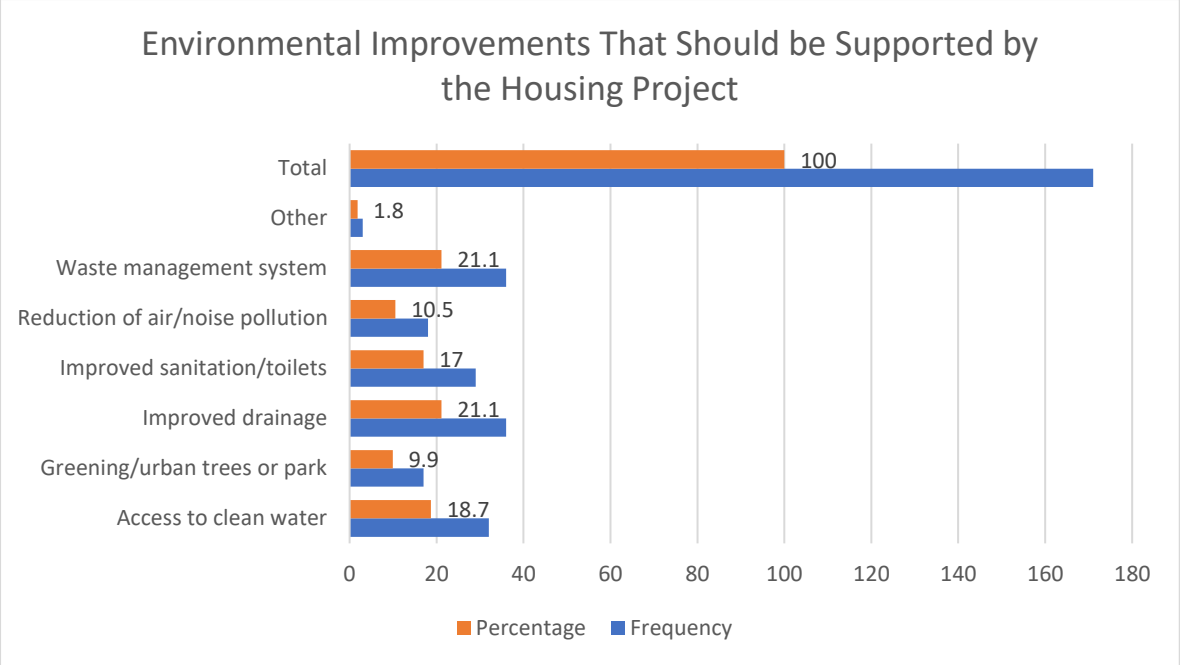


Figure 4-52: Environmental Improvements That Should be Supported by the Housing Project

4.8.38 Environmental Problems Anticipated from the Construction of the Housing Project

Construction concerns show dust and air pollution leading at 33.6%, followed by noise at 27.1%, waste accumulation at 16.8%, increased traffic at 13.1%, and river/vegetation impacts at 9.3% as shown in Figure 4-53 below. These anticipated impacts reflect previous construction experiences in dense urban settlements and environmental sensitivity within the Kibra constituency. The concentration on air quality issues indicates particular concern about dust in the informal settlement environment. The project requires comprehensive mitigation, including dust suppression systems, controlled working hours, proper construction waste management, traffic management plans, and environmental protection measures. Proactive environmental controls will maintain community support while minimizing health impacts during construction phases, ensuring responsible development that protects residents and surrounding ecosystems throughout the implementation period.

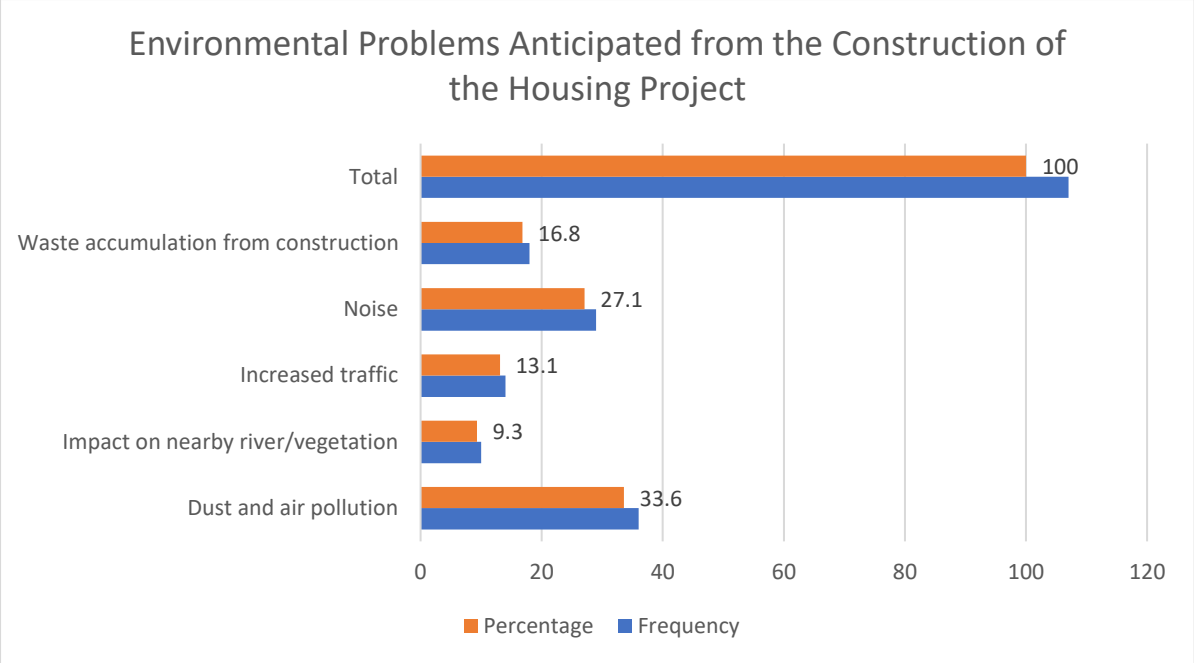


Figure 4-53: Environmental Problems Anticipated from the Construction of the Housing Project

CHAPTER FIVE: STAKEHOLDER ENGAGEMENT AND PUBLIC PARTICIPATION

5.1 Introduction

This chapter documents the inclusive, structured and transparent public participation and stakeholder engagement process undertaken for the proposed Kibra Lot 2 social and affordable housing development. The process was designed to meet the requirements of the Environmental Management and Coordination Act (EMCA), the Environmental (Impact Assessment and Audit) Regulations, 2003 (particularly Regulation 17), the constitutional principles of public participation under Articles 10 and 47 of the Constitution of Kenya, 2010, and the directions of the Environment and Land Court judgment of 29 May 2026 that mandated a fresh and meaningful public participation exercise.

The engagement formed part of a coordinated programme covering the wider Southlands (Kibra Lots 1–5) project, with all meetings held at a central and accessible venue (Lot 3) to enable participation by stakeholders from across the five lots, including those specifically affected by or neighbouring Lot 2.

5.2 Objectives of Public Participation

The objectives of the public participation and stakeholder engagement process were to:

a) Inform stakeholders about the proposed Lot 2 development, its design, location, potential impacts and the ESIA process.

b) Provide meaningful opportunities for Project Affected Persons (PAPs), neighbouring communities, special interest groups and institutions to raise concerns, ask questions and make recommendations.

c) Gather local knowledge on baseline conditions, sensitive receptors and existing challenges relevant to Lot 2.

d) Identify potential positive and negative impacts from the perspective of those who live, work or operate near the site.

e) Analyse public comments and incorporate them into the ESIA Study Report, the project design where feasible, and the Environmental and Social Management Plan (ESMP).

f) Establish and publicise a transparent Grievance Redress Mechanism (GRM) for the project lifecycle.

g) Comply fully with Regulation 17 of the EIA/EA Regulations 2003 and the constitutional requirements for meaningful public participation under Articles 10 and 47.

h) Build trust and social licence for the project by demonstrating that the process is a genuine opportunity for dialogue and influence on project outcomes rather than a formality.

5.3 Stakeholder Identification and Analysis

Stakeholder identification was undertaken through a combination of desk review of the project site context, field reconnaissance, consultation with the local administration (County Commissioner, Deputy County Commissioner, Assistant County Commissioner, Chief and Assistant Chief of Mugumo-ini Location), review of the Environment and Land Court judgment, and analysis of the receptors identified in the project description for Lot 2.

The main stakeholder categories relevant to Lot 2 are:

Primary Stakeholders (directly affected)

- Project Affected Persons (PAPs) – including any informal settlers, livelihood operators or residual users on or immediately adjacent to the site, and persons whose livelihoods may be affected.
- Neighbouring residential communities – particularly Southlands Estate residents and other residential blocks in close proximity to Lot 2.
- Persons with Disabilities (PWDs) living in or near the project area.
- Women, youth and elderly persons within the affected communities.

Secondary Stakeholders (interested or influential)

- Local administration (DCC, ACC, Chief, Assistant Chief).
- Nairobi City County Government departments (Planning, Water and Sewerage, Environment).
- Lead agencies and utilities – Kenya Civil Aviation Authority (KCAA), Kenya Airports Authority (Wilson Airport), Kenya National Highways Authority (KeNHA), Water Resources Authority (WRA), Nairobi City Water and Sewerage Company (NCWSC), Kenya Power (KPLC).
- Business community representatives operating in the vicinity.
- Faith-based organisations and educational institutions.

Tertiary / Institutional Stakeholders

- National Environment Management Authority (NEMA).
- Affordable Housing Board / State Department for Housing and Urban Development.

Stakeholder analysis considered interest, influence, potential impact of the project on the group, and the group's ability to influence project outcomes. Priority was given to PAPs and neighbouring residents who raised concerns about proximity, privacy, infrastructure capacity, height, green space and process integrity during the engagement meetings.

5.4 Stakeholder Engagement Methodology

The engagement methodology combined formal and informal approaches to maximise inclusivity and accessibility:

- Focus Group Discussions (FGDs) with homogeneous groups (PWDs, Residential Association officials, Youth, Women, Business Community, PAPs) to allow free expression of group-specific concerns.
- Community Baraza (open public meeting) for the wider community.
- Institutional consultation meeting bringing together relevant government agencies and utilities.
- Structured presentations by the ESIA consultant and the site engineer on project design, location maps, unit mix, access arrangements, employment opportunities and the ESIA process.
- Collection of written memoranda, signed attendance lists and photographs (with prior request for consent to take minutes, photographs and attendance lists at the start of each meeting).

- Use of local languages and simple language alongside English/Kiswahili to ensure comprehension.
- Advance notice through local administration channels.

All meetings were held on-site at Lot 3 (used as a central and accessible venue for the wider project engagement) under the facilitation of the local Chief and Assistant Chief, with the presence of the ESIA consultant, the contractor's site engineer, and a representative of the State Department for Housing and Urban Development.

5.5 Public Participation Program

The public participation programme was structured as a progressive series of targeted meetings building towards a community baraza and institutional consultation, as follows:

Date	Stakeholder Group	Venue	Approximate Number of Participants	Duration
31 July 2026	Persons with Disabilities (PWDs)	Lot 3	31	11:50 am – 2:00 pm
1 August 2026	Residential Associations Officials	Lot 3	18	11:35 am – 2:00 pm
3 August 2026	Youth	Lot 3	45	11:30 am – 1:30 pm
3 August 2026	Women	Lot 3	32	4:30 pm – 6:00 pm
4 August 2026	Business Community	Lot 3	33	11:50 am – 1:50 pm
5 August 2026	Public Baraza (Community Members)	Lot 3	107	11:16 am – 1:50 pm
6 August 2026	Project Affected Persons (PAPs)	Lot 3	32	12:20 pm – 2:20 pm
7 August 2026	Institutions	Lot 3	30	11:05 am – 1:50 pm

This schedule provided multiple entry points for different categories of stakeholders and allowed issues raised in earlier meetings to be escalated and addressed in subsequent sessions (particularly the institutions meeting of 7 August 2026).

5.6 Notices and Publicity

In compliance with Regulation 17 of the EIA/EA Regulations 2003:

A formal notice was issued through the Deputy County Commissioner's office (dated 29 July 2026) giving at least seven days' advance notice for the main community Public Baraza held on 5 August 2026. Targeted stakeholder consultations and Focus Group Discussions were conducted before the Public Baraza as preparatory engagements. These consultations enabled the project team to engage specific stakeholder groups and gather stakeholder-specific concerns, which informed discussions during the Public Baraza and the subsequent ESIA assessment. Project information, including location maps and design explanations, was presented during the meetings to facilitate informed discussion.

5.7 Meetings Conducted

The following meetings were conducted. Minutes, attendance lists (signed and stamped by the area local administrator), photographs (where consent was granted), and written submissions are compiled in the Annexes.

5.7.1 Persons with Disabilities (PWDs) Meeting – 31 July 2026

The meeting was held at Lot 3 from 11:50 am to 2:00 pm with 31 participants. It was facilitated by the Assistant Chief and Chief, with presentations by the ESIA consultant and the contractor's site engineer. Key themes included accessibility features (ramps, lifts, preference for ground and first floors), employment opportunities, deposit and payment arrangements for housing units, and the overall ESIA process. Consent was obtained for minutes, photographs and attendance recording.



Plate 5-1: Ongoing PWD meeting

5.7.2 Residential Associations Officials Meeting – 1 August 2026

Held at Lot 3 from 11:35 am to 2:00 pm with 18 participants. The Assistant County Commissioner clarified the project naming (Southlands rather than Kibra) and the court ruling context. A formal written memorandum was presented by the Residential Associations opposing the project on grounds of pressure on water and sewerage infrastructure, traffic, dust/noise from previous works, lack of prior access to the ESIA report, and process concerns. Additional issues raised included privacy, property devaluation, sunlight/shadow, green space/buffer, zoning, and the need for feasibility studies and longer preparation time. Consent for photographs was declined by the group.

5.7.3 Youth Meeting – 3 August 2026

Held at Lot 3 from 11:30 am to 1:30 pm with 45 participants. Presentations covered project design, unit access through *832# / eCitizen, employment prioritisation (target 90 % local), and amenities. Youth raised questions on floor height (request for higher floors constrained by the KCAA 29 m limit), employment, recreation space, privacy, sunlight, beneficiary prioritisation, and the need for written assurances and education on the Boma Yangu registration process.



Plate 5-2: Youth meeting

5.7.4 Women Meeting – 3 August 2026

Held at Lot 3 from 4:30 pm to 6:00 pm with 32 participants. Discussions focused on payment affordability (especially for widows and vulnerable women), employment without discrimination, health and safety, project timelines, and accessibility for persons with disabilities. Support mechanisms such as merry-go-rounds/chamas for deposit mobilisation and different payment modes were explained.



Plate 5-3 Women meeting

5.7.5 Business Community Meeting – 4 August 2026

The meeting was held at Lot 3 from 11:50 am to 1:50 pm with 33 participants. Issues centred on opportunities for local businesses (food vending, commercial stalls), prioritisation of displaced or nearby traders, registration and management of commercial spaces, and avoidance of congestion outside the site. The project team indicated that commercial spaces would be managed through a committee and that further registration meetings would be organised.



Plate 5-4: ESIA Consultant engaging the Business Community Representatives

5.7.6 Public Baraza (Community Members) – 5 August 2026

Held at Lot 3 from 11:16 am to 1:50 pm with 107 participants. This open meeting allowed broader community input. Key concerns included employment processes and local prioritisation, formation of a community committee/representatives, facilitation for demolition for affected businesses and structures, transparency and accountability, clarification of social versus affordable housing, deposit requirements, and the need for continuous communication. Representatives of PAPs (farmers, garage operators, churches, mosques, informal settlements) were identified for follow-up.



Plate 5-5: Public Baraza

5.7.7 Project Affected Persons (PAPs) Meeting – 6 August 2026

Held at Lot 3 from 12:20 pm to 2:20 pm with 32 participants. This meeting focused on directly affected persons, including church owners/operators, garage members, farmers/urban cultivators, and neighbouring residents. Dominant issues were infrastructure (water, sewer, stormwater drainage, roads, power lines) before construction, buffer zones and height (preference for lower density or alternative layout), facilitation for demolition processes, formation of a representative committee, privacy, CSR prioritisation for Lang'ata institutions, and the need for clear, early communication. The Grievance Redress Mechanism was presented and explained in detail.



Plate 5-6: One of the PAPs from southlands estate raising a concern

5.7.8 Institutions Meeting – 7 August 2026

Held at Lot 3 from 11:05 am to 1:50 pm with 30 participants, including representatives from Nairobi City County (Planning and Engineering), KCAA, Kenya Airports Authority (Wilson), KeNHA, KPLC, WRA, Nairobi City Water and Sewerage Company, Kenya Prisons, and local administration. The meeting addressed issues escalated from earlier community meetings, including height restrictions (KCAA confirmation of the 29 m limit based on aeronautical study), access and road reserve matters (KeNHA), water and sewerage capacity and ongoing projects (NCWSC/Athi Water), borehole regulation and riparian protection (WRA), power line relocation (KPLC), zoning and planning approvals (Nairobi City County), and the multi-agency nature of approvals. Residents present emphasised concerns about buffer, naming, infrastructure sequencing and process integrity.



Plate 5-7: Institutions meeting

5.8 Issues and Concerns Raised

The public participation meetings generated a wide range of environmental, social, economic, procedural and design-related concerns. These have been systematically recorded from the minutes of the eight meetings held between 31 July and 7 August 2026. The issues are presented below under thematic categories for clarity. Many concerns were raised across multiple stakeholder groups and are therefore treated as project-wide issues with specific relevance to Lot 2.

A. Process and Participation Concerns

a) Inadequate previous public participation and the need for a genuine, inclusive process following the court ruling.

b) Short notice and insufficient time to prepare informed comments.

c) Lack of prior access to the full ESIA report, feasibility studies, drawings and plans.

d) Request for written agreements, transparent documentation and continuous feedback.

e) Call for formation of a representative community/PAP committee to act as an intermediary with the Ministry.

B. Infrastructure and Service Capacity

a) Existing and projected pressure on water supply, sewerage systems, stormwater drainage and electricity.

b) Water scarcity, rationing, illegal connections and risk of borehole contamination or over-abstraction.

c) Inadequate existing sewer lines and risk of overflows with increased population.

d) Stormwater drainage challenges, flooding, erosion and blocked drains.

e) Power line relocation requirements and capacity of the local network.

f) Traffic congestion, limited access/exit points, road safety and the need for a Traffic Impact Assessment.

g) Demand that infrastructure upgrades (water, sewer, drainage, roads) precede or accompany construction.

C. Design, Layout, Height and Amenity

a) Building height (G+8 / 29 m limit set by KCAA) considered excessive relative to the surrounding low-rise character.

b) Preference for lower height (e.g., G+3) or alternative layout that retains a buffer/open space between the development and neighbouring Southlands estates.

c) Loss of privacy, overlooking, shadowing/sunlight obstruction and potential property devaluation.

d) Loss of green/open space and recreational areas previously used by the community.

e) Visual impact and character change of the area.

f) Zoning concerns (perceived conflict with existing residential character).

D. Project Affected Persons and Livelihoods

a) Demolition of structures including churches, garages and informal businesses without clear prior communication or facilitation arrangements.

b) Impacts on urban farmers/cultivators who depended on the land.

c) Need for a verified PAP register, fair valuation, facilitation support for demolition and livelihood restoration.

d) Prioritisation of affected persons for housing units or employment.

e) Request for CSR interventions to benefit Lang'ata institutions rather than distant locations.

E. Social and Economic Issues

a) Affordability of deposits and monthly payments, especially for vulnerable groups (widows, PWDs, low-income households).

b) Clarity on social versus affordable housing categories, registration process (*832# / eCitizen / Boma Yangu) and eligibility.

c) Employment opportunities during construction and operation, with strong demand for local (90 %) prioritisation through the Chief.

d) Opportunities for local businesses (food vending, commercial stalls) and management of commercial spaces.

e) Security concerns arising from increased population density.

f) Health, safety and nuisance impacts (dust, noise, vibration, night-time works, construction lighting).

F. Naming and Identity

• Strong objection to referring to the project as “Kibra”; preference for “Southlands” or “Lang’ata” to reflect the actual location and community identity.

G. Institutional and Approval Matters

a) Need for multi-agency coordination and clear sequencing of approvals (KCAA height, KeNHA access, WRA boreholes, NCWSC sewer/water, Nairobi City County planning/zoning, KPLC power relocation).

5.9 Lot 2-Specific Concerns

While many issues are common across the five lots, the following concerns have particular relevance to Lot 2:

a) Proximity to Southlands Estate residential blocks and a private developer parcel with ownership claims, raising heightened concerns about privacy, overlooking, shadowing, noise, dust and property values.

b) Presence of water-logged portions of the site with stagnant water, increasing sensitivity to stormwater management, drainage design and potential contamination risks.

c) Existing mature trees (25 specimens of grevillea, cypress, pine and eucalyptus) whose loss requires mitigation through landscaping and compensatory planting.

d) Location along the Southern Bypass (KeNHA controlled-access corridor), necessitating careful design of access, exit, road-reserve compliance and traffic safety.

e) Potential cumulative pressure on local water, sewer and drainage infrastructure serving the immediate Southlands neighbourhood.

f) Red residual soil mixed with clay and associated drainage constraints that influence earthworks and foundation design.

These Lot 2-specific sensitivities have been given particular weight in the impact assessment, alternatives analysis and ESMP.

5.10 Responses from the Proponent/Consultant

During and after the meetings, the project team (ESIA consultant, site engineer and Housing representative) provided the following responses:

a) The current process provides for a fresh ESIA to be undertaken in compliance with the court orders and previous works have been halted. There is therefore no reference ESIA document since this public participation response forms part of the new ESIA.

b) Building height has been reduced from earlier G+14/G+18 proposals to G+8 (maximum 29 m) following KCAA aeronautical study and Obstacle Limitation Surfaces requirements.

c) Two boreholes per lot are proposed, subject to WRA hydrological assessment, permitting and quality testing; water storage (overhead and underground tanks) and reticulation plans will be developed with Nairobi City Water and Sewerage Company.

d) Sewerage will connect to the wider Nairobi Rivers Regeneration Project and existing/upgraded trunk infrastructure; designs will be submitted to the relevant agencies.

e) Stormwater drainage will be designed to manage site runoff and interface with county drainage systems.

f) Power lines will be relocated in coordination with KPLC; wayleave and clearance distances will be observed.

g) Access arrangements will comply with KeNHA requirements for the Southern Bypass corridor.

h) Employment will prioritise the local community (target 90 %) through the office of the Chief; contractors will be required to adhere to this.

i) Housing access is through the official Boma Yangu / *832# / eCitizen platforms; registration fee is KSh 200; deposit is 5 % of unit cost; multiple payment modes exist; vulnerable applicants can submit details for Board consideration.

j) Commercial spaces will be managed through a future management committee; local businesses will be given opportunity to register.

k) CSR initiatives will prioritise Lang'ata institutions (e.g., Lang'ata Primary, Ngei Primary and Undugu Complex).

l) A Grievance Redress Mechanism has been established and was explained at the meetings; notices were distributed through the Chief.

m) A representative list of PAP categories (churches, garages, farmers, informal settlements) was noted for follow-up on facilitation and livelihood support.

n) Drawings, layout alternatives (including buffer considerations) and specialised studies (Traffic Impact Assessment, hydrogeology, geotechnical, etc.) form part of the current ESIA process.

5.11 Issues Not Accepted and Reasons

Certain proposals were carefully considered but not adopted in full, for the following reasons:

Issue Raised	Reason for Non-Acceptance / Partial Acceptance
Complete cancellation or relocation of the project	The project is a Strategic National Project under the Affordable Housing Programme with a legitimate public purpose (Article 43). The court confirmed the purpose is lawful; the remedy is a compliant process, not abandonment.
Reduction of height to G+3 or single-unit dwelling character	KCAA has determined a maximum of 29 m based on aeronautical study and Obstacle Limitation Surfaces for the Wilson Airport flight path. Lower height would significantly reduce the number of units and undermine the project's housing delivery objective. Layout alternatives with buffers are being examined.
Formation of a formal management/PAP committee before construction	Affordable Housing regulations and project governance structures provide for representation and GRM during implementation; a formal estate management committee is typically constituted after completion and occupation. Interim representative structures and continuous engagement are provided for.
Immediate full infrastructure upgrades by the housing project alone	Water, sewer and drainage upgrades form part of wider city and national programmes (Nairobi Rivers Regeneration, Athi Water, county projects). The project will coordinate and contribute its site-specific infrastructure but cannot unilaterally deliver city-wide upgrades.

5.12 Stakeholder Engagement Matrix

Stakeholder Group	Key Issue / Concern	Response Provided	Proposed Mitigation / Action	Responsible Party
Neighbouring residents (Southlands / private developer)	Privacy, overlooking, shadowing, property values, buffer	Height limited to 29 m by KCAA; layout alternatives under review	Setbacks, landscaping, orientation, screening; buffer examination in alternatives	Proponent / Design Team
Neighbouring residents	Water, sewer, drainage pressure	Coordination with NCWSC, Athi Water, WRA, county	Site reticulation, storage, connection to upgraded systems; Traffic Impact Assessment and drainage design	Proponent / NCWSC / County
PAPs (churches, garages, farmers)	Demolition, facilitation, livelihood loss	Facilitation support; PAP register; GRM	Verified register, valuation/facilitation, livelihood restoration measures	Proponent / Valuers / Ministry
Youth & Community	Local employment prioritisation	90 % local target through Chief	Contractor contractual obligation; monitoring through Chief and GRM	Contractor / Chief / Proponent
Women & Vulnerable groups	Affordability, deposit, accessibility	5 % deposit, multiple payment modes, Board consideration; ramps/lifts	Support for chamas; vulnerable applicant pathway; accessible design	Housing Board / Proponent
Business community	Commercial space access and local priority	Registration opportunity; management committee	Fair allocation process for stalls; local business registration	Proponent / Future Management Committee
Institutions (KCAA, KeNHA, WRA, NCWSC, KPLC, County)	Height, access, water, power, planning approvals	Multi-agency coordination ongoing	Compliance with all lead-agency conditions before works resume	Proponent / Lead Agencies
All groups	Process integrity, transparency, feedback	Fresh ESIA; GRM; disclosure	Full documentation, ongoing engagement, public disclosure of reports	Proponent / Consultant / NEMA

5.13 Grievance Redress Mechanism

A transparent, accessible and responsive Grievance Redress Mechanism has been established for the project lifecycle. It was presented and explained during the public meetings (particularly the Baraza and PAPs meetings) and notices were distributed through the Chief.

Official channels for reporting a grievance:

i. Visit the Area Chief's Office and record the complaint in the official Register.

ii. Raise the concern during public participation meetings or community barazas.

iii. Write an email, call or visit the State Department for Housing and Urban Development:

- Telephone: +254 (0) 20 2718050
- Email: slumupgrading@housingandurban.go.ke
- Address: Ardhi House, 1st Ngong Avenue, P.O. Box 30119-00100, Nairobi

Key features of the GRM

a) Reporting is completely free of charge.

b) Multiple accessible channels (local administration, public meetings, and direct contact with the State Department).

c) Clear and simple procedures that allow any affected person to lodge a concern, complaint or suggestion.

d) Designated focal points at both the local (Area Chief) and national (State Department) levels.

e) Protection against retaliation for anyone who uses the mechanism in good faith.

f) Systematic recording of all grievances and their outcomes to support monitoring, learning and reporting.

g) Escalation pathway available if a grievance is not resolved at the project or departmental level (including to the Affordable Housing Board, NEMA or the courts as appropriate).

h) Special attention given to vulnerable groups and Project Affected Persons to ensure they can access and use the mechanism without barriers.

The GRM operates in accordance with the Environmental Management and Coordination Act (EMCA). It will remain active throughout pre-construction, construction, operation and any future decommissioning phases. The mechanism is already operational and will continue to be publicised before any works resume.

CHAPTER SIX: ANALYSIS OF PROJECT ALTERNATIVES

6.1 Introduction

This chapter examines the reasonable alternatives considered for the Proposed Construction of Social Housing and Associated Infrastructure on Kibra Lot 2. The analysis covers the no-project option, alternative sites, alternative designs, building heights, site layouts, access arrangements, water supply, wastewater management, stormwater management and energy sources. The evaluation draws on the project description, baseline conditions, stakeholder concerns raised during public participation, aviation safety constraints, and the strategic objectives of the national Affordable Housing Programme.

6.2 No-Project Alternative

Under the No-Project Alternative, the proposed development on Lot 2 would not proceed. The site would remain in its current state, characterised by water-logged portions with stagnant water, 25 mature trees (grevillea, cypress, pine and eucalyptus), residual vegetation, and proximity to Southlands Estate residential blocks, a private developer parcel and the Southern Bypass.

Advantages

- Avoidance of all construction-phase impacts (dust, noise, vibration, traffic, vegetation clearance and temporary disruption).
- No increase in local population density or associated pressure on water, sewerage, drainage and traffic infrastructure.
- Retention of existing open land, mature trees and any residual recreational or livelihood uses of the land.
- No privacy, overlooking or visual impacts on neighbouring Southlands residents or the adjacent private developer parcel.

Disadvantages

- Failure to contribute 1,584 housing units toward Kenya's affordable and social housing deficit, contrary to Article 43 of the Constitution and the objectives of the Affordable Housing Act and Kenya Vision 2030.
- Continued under-utilisation of public land designated for housing development.
- Lost employment and local economic opportunities during construction and operation.
- No contribution to planned infrastructure upgrades or CSR initiatives in Lang'ata.
- The wider housing and urban development objectives of the State Department would remain unmet on this parcel.

Conclusion The No-Project Alternative is not preferred. While it avoids site-specific impacts, it fails to address the legitimate public-purpose housing need confirmed by the Environment and Land Court and national policy. Residual environmental and social risks associated with informal or unplanned use of the land would also remain unaddressed.

6.3 Alternative Site

Alternative sites within Lang'ata or elsewhere in Nairobi County were considered at the programme level. Lot 2 forms part of a strategically selected cluster of public land parcels

along the Southern Bypass that have been identified for the Southlands (Kibra Lots) housing programme.

Key considerations a) Availability of alternative public land of comparable size (approximately 6 acres) with secure tenure and suitability for multi-storey housing is limited within the immediate area. b) Any new site would still require a full ESIA, lead-agency clearances (including KCAA if within the flight path), and public participation, without guaranteeing lower environmental or social impacts.

Conclusion No feasible alternative site of equivalent suitability and strategic alignment has been identified. The current location is retained, with impacts managed through design, layout and mitigation measures.

6.4 Alternative Project Designs

Alternative design approaches examined include:

- Lower-density walk-up housing or maisonettes;
- Mixed-use development with a higher commercial component;
- Phased development of fewer blocks; and
- Higher proportion of social versus affordable units (or vice versa).

Lower-density designs would significantly reduce the number of units achievable on 6 acres, undermining the project's contribution to housing targets. A substantially higher commercial component would shift the primary purpose away from housing. Phased construction remains possible within the preferred design and can be used to sequence infrastructure delivery. The current mix of social and affordable units (studios, one-roomed, two-roomed, two-bedroom and three-roomed configurations) is retained as it aligns with the Affordable Housing Programme parameters and responds to varying household needs identified during public engagement.

6.5 Alternative Building Height

Three height scenarios were evaluated:

- Original higher proposals (G+14 / G+18) – Rejected following KCAA aeronautical assessment. These heights would infringe Obstacle Limitation Surfaces associated with Wilson Airport flight paths and turning points.
- Proposed G+8 (maximum 29 metres) – Compliant with the KCAA clearance issued after multi-agency aeronautical study. Delivers the target 1,584 units.
- Lower height (G+3 or similar) – Requested by some neighbouring residents from Southlands to better match surrounding character, reduce visual impact, privacy concerns and shadowing.

Evaluation of lower height A G+3 scheme would roughly halve the number of units achievable on the site, substantially reducing the project's housing delivery contribution. It would also increase the land footprint required per unit, limiting space for green areas, play spaces and circulation. While lower height would reduce certain visual and amenity impacts on immediate neighbours, it is not compatible with the strategic housing objectives or the efficient use of scarce urban public land.

Conclusion The G+8 / 29 m height is the maximum permissible under aviation safety requirements and is retained. Residual visual, privacy and shadowing impacts will be

addressed through setbacks, orientation, landscaping and screening (see Section 6.6 below).

6.6 Alternative Site Layout

Public participation (particularly Residential Associations and PAPs meetings) strongly advocated an alternative layout that concentrates blocks on one portion of the site (preferably toward the Southern Bypass) and retains a substantial buffer/open-space corridor adjacent to the Southlands residential estates.

Options considered

- Uniform distribution of 16 blocks across the site (baseline concept);
- Concentrated layout with blocks clustered toward the Bypass side and a landscaped buffer zone of varying width along the residential estate boundary; and
- Linear or perimeter layout maximising internal courtyards and green space.

Evaluation A concentrated layout with a meaningful buffer offers several advantages:

- Reduced direct overlooking and privacy impacts on neighbouring estates;
- Creation of a green/open-space amenity that can serve both new residents and, potentially, the wider community;
- Improved opportunities for tree retention or compensatory planting; and
- Better interface with the Southern Bypass while maintaining required road-reserve setbacks (KeNHA).

Challenges include ensuring adequate internal circulation, emergency access, solar orientation, and that the buffer does not compromise the achievable unit numbers or create under-utilised, poorly surveilled space.

Conclusion The preferred layout incorporates a landscaped buffer/setback zone along the boundary with neighbouring residential estates, with the majority of blocks oriented toward the Southern Bypass side where feasible. Architectural drawings will optimise this arrangement while meeting unit targets, fire safety, accessibility and amenity standards. This directly responds to a key public concern raised during the engagement process.

6.7 Alternative Access Arrangements

Lot 2 lies along the Southern Bypass, a controlled-access corridor under KeNHA. Alternative access options include:

- Direct access from the Southern Bypass (subject to KeNHA approval and safety design);
- Access through existing local roads (Lang'ata Link Road and internal estate roads);
- Combined primary and secondary access points; and
- Restricted construction-phase access routes to minimise disruption to neighbours.

The preferred arrangement will prioritise safe, signalised or appropriately designed access that complies with KeNHA corridor requirements, minimises conflict with through-traffic, and provides adequate pedestrian facilities. Construction traffic will be managed through a Traffic Management Plan that avoids or limits use of sensitive residential streets where practicable.

6.8 Alternative Water Supply

Options evaluated:

- Reliance on Nairobi City Water and Sewerage Company (NCWSC) supply;
- On-site boreholes (proposed: two per lot) with storage;
- Combination of municipal supply, boreholes and rainwater harvesting; and
- Dual plumbing for non-potable uses.

Given existing water rationing and pressure concerns raised by residents, reliance on the municipal system alone is insufficient. The preferred approach is a hybrid system: connection to the municipal network (coordinated with ongoing Athi Water / NCWSC upgrading projects), supplemented by WRA-permitted boreholes, adequate overhead and underground storage, and incorporation of rainwater harvesting for landscaping and non-potable uses where feasible. Borehole siting, abstraction rates and quality monitoring will be subject to full hydrogeological assessment and WRA approval.

6.9 Alternative Wastewater Management

Options:

- On-site treatment (package plants or septic systems);
- Connection to the existing municipal sewer network; and
- Connection to upgraded trunk sewers under the Nairobi Rivers Regeneration Project.

On-site treatment for 1,584 units is technically complex, land-intensive and carries higher long-term operational and environmental risk. The preferred option is connection to the municipal / trunk sewer system, coordinated with NCWSC and the Nairobi Rivers Regeneration Project, with appropriate on-site collection, pumping (if required) and pre-treatment as necessary. This addresses public concerns about sewer capacity.

6.10 Alternative Stormwater Management

Given water-logged areas on site and proximity to River Motoine and River Ngong, alternatives include:

- Conventional piped drainage discharging to existing systems;
- Sustainable Urban Drainage Systems (SUDS) incorporating retention/detention, swales, permeable paving and infiltration where soil conditions allow; and
- Combination of engineered drainage and SUDS with quality treatment.

The preferred approach is an integrated stormwater management system that combines engineered conveyance with SUDS principles to reduce peak runoff, improve water quality, and minimise downstream impacts on the rivers and Nairobi Dam. Design will be informed by topographical and geotechnical data and coordinated with county drainage plans.

6.11 Alternative Energy Sources

Options:

- Conventional grid electricity only;
- Grid supply with backup diesel generator (baseline); and

- Hybrid system incorporating solar photovoltaic (rooftop or selected areas) for common areas and lighting, with battery storage where feasible.

The preferred solution is grid connection supplemented by backup generation for critical loads, with progressive incorporation of solar PV for street lighting, common areas and selected facilities. This reduces operational greenhouse gas emissions and operating costs while remaining technically and economically practical. Diesel generator use will be minimised and subject to noise and emission controls.

6.12 Preferred Alternative

The preferred alternative for Lot 2 is the proposed G+8 development of 16 blocks delivering 1,584 social and affordable housing units, refined as follows:

a) **Height**: Maximum 29 metres (G+8) in compliance with KCAA requirements.

b) **Layout**: Optimised site plan that concentrates built form toward the Southern Bypass side where practicable and incorporates a landscaped buffer/setback zone along the interface with Southlands residential estates, directly responding to public requests for separation and green space.

c) **Access**: KeNHA-compliant access arrangements with pedestrian facilities and a construction traffic management plan.

d) **Water**: Hybrid municipal + borehole + storage + rainwater harvesting system, subject to WRA and NCWSC approvals.

e) **Wastewater**: Connection to municipal / trunk sewer infrastructure coordinated with city-wide upgrading programmes.

f) **Stormwater**: Integrated engineered + SUDS system designed to address on-site water-logging and downstream risks.

g) **Energy**: Grid supply with backup generation and incorporation of solar PV for appropriate loads.

This preferred alternative balances the strategic housing delivery objective with the environmental, social and aviation-safety constraints applicable to the site, while incorporating key recommendations arising from the public participation process.

CHAPTER SEVEN: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

7.1 Introduction

This chapter presents an assessment of the potential environmental and social impacts associated with the Proposed Construction of Social Housing and Associated Infrastructure on Kibra Lot 2. The assessment covers the pre-construction, construction, operational and decommissioning phases. It draws on the project description (Chapter 2), baseline environmental and social conditions (Chapter 4), outcomes of the stakeholder engagement process (Chapter 5), and the analysis of alternatives (Chapter 6). Particular attention is given to Lot 2-specific receptors, including the neighbouring Southlands Estate residential blocks, the adjacent private developer parcel with ownership claims, water-logged portions of the site, 25 mature trees, the Southern Bypass corridor, and the nearby River Motoine (approximately 450 m) and River Ngong (approximately 820 m) systems.

7.2 Pre-Construction Impacts

Pre-construction activities include final surveys, design finalisation, site investigations (geotechnical, hydrogeological), land clearance preparation, contractor mobilisation planning, and completion of outstanding statutory approvals.

Positive impacts

a) Creation of limited short-term professional and semi-skilled employment (surveyors, technicians, community liaison).

b) Opportunity for early engagement and finalisation of the PAP register and facilitation arrangements.

c) Generation of baseline data that strengthens the overall ESIA and design.

Negative impacts and mitigation

a) Minor vegetation disturbance and soil compaction from survey and investigation activities.

Mitigation: Restrict investigation footprints; reinstate disturbed areas immediately; avoid unnecessary tree removal.

b) Temporary increase in local expectations and potential anxiety among neighbouring residents and PAPs.

Mitigation: Maintain transparent communication through the established Grievance Redress Mechanism (GRM) and local administration; provide clear timelines.

c) Risk of speculative or unauthorised activities on site.

Mitigation: Secure the site perimeter; maintain presence of local administration and security.

Overall pre-construction impacts are of low significance and short duration when properly managed.

7.3 Construction Phase Impacts

The construction phase is expected to last approximately 24 months from commencement of works following receipt of all statutory approvals. Key activities include site clearance, excavation, foundation works, structural construction of 16 G+8 blocks (1,584 units), installation of services, external works, landscaping and finishing.

7.3.1 Positive Impacts

a) **Employment creation:** Direct and indirect employment opportunities during the 24-month construction period. The project commits to prioritising local residents (target of approximately 90 % of unskilled and semi-skilled labour) through the office of the Chief. Women and youth will be encouraged to participate in suitable roles (e.g., site support, water sprinkling for dust control, catering).

b) **Local economic benefits:** Increased demand for goods and services (food, transport, construction materials, accommodation) benefiting local businesses and vendors, subject to health, safety and site access controls.

c) **Skills transfer:** On-the-job training and exposure to modern construction methods for local workers.

d) **Infrastructure improvements:** Installation of on-site roads, drainage, water storage, power infrastructure and landscaping that will remain as long-term assets.

e) **CSR contributions:** Planned improvements to selected local schools and facilities in Lang'ata as part of contractor and proponent social responsibility commitments.

f) **Advancement of housing objectives:** Progress toward delivery of 1,584 social and affordable housing units, contributing to national and constitutional housing goals.

7.3.2 Negative Impacts and their Respective Mitigation Measures

7.3.2.1 Vegetation Clearance and Loss of Trees

Clearance of existing vegetation, including 25 mature trees (grevillea, cypress, pine, eucalyptus) and residual undergrowth, will result in loss of local biodiversity, shade, carbon sequestration and visual amenity.

Mitigation: a) Conduct a pre-clearance tree inventory and retain trees of high value where structurally and design-feasible. b) Implement compensatory planting at a minimum ratio of 1:3 (or higher for mature specimens) using indigenous or suitable native species within the site landscaping and buffer zones. c) Protect retained trees during construction with fencing and root-zone protection. d) Integrate green spaces, landscaping and children's play areas into the final design as committed in the project description.

7.3.2.2 Soil Disturbance, Excavation and Erosion

Excavation for foundations, services and levelling will disturb soils, particularly in water-logged areas with red residual soil mixed with clay, increasing the risk of erosion, sedimentation and dust.

Mitigation: a) Minimise excavation footprint and duration. b) Implement progressive erosion and sediment control (silt fences, sediment traps, temporary drainage). c) Stockpile topsoil separately for reuse in landscaping. d) Avoid works in heavy rainfall where practicable; stabilise exposed surfaces promptly. e) Conduct geotechnical investigations to inform foundation design and reduce over-excavation.

7.3.2.3 Dust (Air Quality)

Earthworks, vehicle movements, material handling and concrete works will generate dust, potentially affecting neighbouring Southlands Estate residents, the private developer parcel and workers.

Mitigation: a) Regular water spraying of active areas, haul roads and stockpiles (especially in dry conditions) at least three times a day. b) Cover trucks transporting fine materials. c) Limit vehicle speeds on site. d) Erect dust screens/hoarding along boundaries adjacent to

residential properties and sensitive receptors. e) Monitor dust levels at boundary locations and respond to exceedances or complaints through the GRM. f) Comply with the Environmental Management and Coordination (Air Quality) Regulations, 2014: **PM_{10} ≤ 50 µg/m³ (24-hour average)** at sensitive receptors.

7.3.2.4 Noise

Construction equipment, vehicles, piling (if required), concrete mixing and general site activity will elevate noise levels, particularly affecting immediate neighbours.

Mitigation: a) Restrict noisy works to daytime hours (07:00–18:00 on weekdays; limited Saturday working; no noisy works at night, on Sundays and public holidays unless under exceptional approved circumstances). b) Use well-maintained equipment fitted with silencers/mufflers. c) Locate static noisy equipment away from residential boundaries. d) Install temporary noise barriers/screens along sensitive boundaries. e) Inform neighbours in advance of particularly noisy phases. f) Monitor noise at receptors and maintain a responsive GRM. g) Comply with the Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009: – Residential outdoor: **50 dB(A) daytime / 35 dB(A) night-time**; – Mixed residential: **55 dB(A) daytime / 35 dB(A) night-time**. Construction noise at the boundary should preferably not exceed **60 dB(A)**.

7.3.2.5 Vibration

Heavy machinery, compaction and any piling may generate vibration that could affect nearby structures or cause nuisance.

Mitigation: a) Select low-vibration equipment and methods where feasible. b) Conduct pre-construction condition surveys of nearby structures (including residential buildings on the private developer parcel and Southlands Estate) where risk is identified. c) Monitor vibration at sensitive locations during high-risk activities and limit continuous vibration at the property boundary / nearest structures to **Peak Particle Velocity (PPV) ≤ 0.5 cm/s (5 mm/s)**. d) Notify neighbours of works that generate significant vibrations 14 days prior through gate notices, the liaison officer and the Chief's office. e) Maintain open communication with affected owners and respond promptly to claims through the GRM.

7.3.2.6 Construction Traffic

Movement of construction vehicles, delivery trucks and workforce transport will increase traffic on the Southern Bypass and local access roads, with potential for congestion, road safety risks and nuisance.

Mitigation: a) Implement a Construction Traffic Management Plan in consultation with KeNHA and the county. b) Schedule deliveries outside peak hours where practicable. c) Provide adequate on-site parking and holding areas to avoid queuing on public roads. d) Ensure clear signage, trained flagmen and pedestrian segregation. e) Use designated construction access points that minimise intrusion into residential streets. f) Require contractors to maintain vehicles in roadworthy condition.

7.3.2.7 Occupational Health and Safety (OHS)

Construction activities carry inherent risks of injury, falls, electrical hazards, plant-related incidents and exposure to dust/noise.

Mitigation: a) Enforce compliance with the Occupational Safety and Health Act, 2007 and subsidiary regulations. b) Prepare and implement a site-specific OHS Management Plan and method statements. c) Provide appropriate Personal Protective Equipment (PPE) and enforce its use. d) Conduct induction training, toolbox talks and competency checks. e)

Maintain first-aid facilities, emergency response procedures and incident reporting. f) Ensure welfare facilities (drinking water, sanitation, rest areas) meet standards. g) Appoint qualified safety personnel and conduct regular audits.

7.3.2.8 Community Health and Safety

Risks to the public include unauthorised site access, traffic accidents, dust/noise nuisance, and potential social tensions.

Mitigation: a) Secure the site with appropriate fencing, controlled access points and security personnel. b) Maintain clear separation between construction zones and public areas. c) Implement the dust, noise and traffic measures listed above. d) Operate an accessible and responsive GRM. e) Conduct community awareness on site safety and emergency contacts. f) Prohibit or strictly control night-time works near residential boundaries.

7.3.2.9 Waste Generation

Construction will generate excavated material, concrete waste, packaging, timber, metals, hazardous wastes (oils, paints, chemicals) and general refuse.

Mitigation: a) Implement a site Waste Management Plan following the waste hierarchy (reduce, reuse, recycle, dispose). b) Provide segregated bins and secure storage for hazardous wastes. c) Engage licensed waste contractors for disposal at approved facilities. d) Prohibit burning of waste on site. e) Maintain records of waste quantities and disposal destinations. f) Reuse suitable excavated material on site for fill or landscaping where possible.

7.3.2.10 Water Demand

Construction water for concrete, dust suppression, curing and worker welfare will increase local demand.

Mitigation: a) Source construction water preferentially from permitted boreholes or authorised municipal supply; avoid illegal connections. b) Maximise water efficiency and recycling of process water where feasible. c) Provide adequate storage to buffer peak demand. d) Monitor usage and comply with any WRA or NCWSC conditions.

7.3.2.11 Wastewater

Worker sanitation and process wastewater (if any) require proper management to avoid pollution.

Mitigation: a) Provide adequate, well-maintained mobile or fixed sanitation facilities for the workforce. b) Prohibit discharge of untreated wastewater into the environment or drainage systems. c) Manage any process wastewater according to a site environmental management procedure.

7.3.2.12 Stormwater and Drainage

Exposed surfaces and altered topography can increase runoff volume and sediment load, worsen local drainage issues and potentially affect downstream watercourses (River Motoine approximately 450 m and River Ngong approximately 820 m).

Mitigation: a) Install temporary and progressive drainage controls from the outset. b) Protect existing drainage channels and prevent blockage by construction materials. c) Design and construct permanent stormwater systems (including SUDS elements) in parallel with building works. d) Avoid directing concentrated untreated runoff toward neighbouring properties or rivers.

7.3.2.13 Employment

While overall positive, there is a risk of local dissatisfaction if employment opportunities are perceived as captured by outsiders.

Mitigation: a) Formalise local recruitment through the Chief's office. b) Maintain transparent records. c) Address complaints through the GRM. d) Include local employment targets (70–90 % local workforce where skills match) in contractor contracts.

7.3.2.14 Local Businesses

Temporary disruption to nearby businesses (access, dust, noise) may occur, alongside opportunities for supply of goods and services.

Mitigation: a) Maintain access where possible. b) Prioritise local suppliers for suitable contracts. c) Communicate works schedules. d) Provide GRM access for business operators.

7.3.2.15 Project Affected Persons (PAPs)

Construction will require clearance of residual structures and termination of informal uses, directly affecting any remaining informal livelihoods (farmers, traders) and interfacing with neighbouring properties.

Mitigation: a) Complete verified PAP register and facilitation support prior to displacement. b) Provide adequate notice. c) Maintain dedicated engagement and GRM access for PAPs. d) Coordinate timing of clearance with support measures.

7.3.2.16 Community Conflict

Differences in expectations regarding employment, facilitation, design or process can generate tension.

Mitigation: a) Transparent communication. b) Operationalise a fully functional GRM system. c) Visible local benefits (employment, CSR). d) Continuous engagement through local administration and project liaison officers.

7.3.2.17 Security

Influx of workers and materials can increase risks of theft, social disruption or opportunistic crime.

Mitigation: a) Deploy site security personnel. b) Controlled access. c) Coordination with local police and administration. d) Worker Code of Conduct. e) Lighting of key areas.

7.3.2.18 Privacy and Visual Impacts

Multi-storey construction and the eventual buildings will alter views and reduce privacy for adjacent residents (Southlands Estate and the private developer parcel).

Mitigation: a) Implement the preferred layout with landscaped buffer/setback along residential boundaries (Chapter 6). b) Use temporary screening during construction. c) Orient buildings and design façades to minimise direct overlooking where practicable. d) Establish rapid-growing screen planting as early as possible. e) Maintain dialogue with affected residents through the GRM.

7.4 Operational Phase Impacts

The operational phase begins upon completion and occupation of the 16 G+8 residential blocks (1,584 units) and associated infrastructure. It is expected to be long-term (decades). During this phase the primary activities will be residential occupation, operation and

maintenance of buildings and services, management of common areas, and ongoing interaction with the surrounding community and infrastructure networks.

7.4.1 Positive Impacts

a) **Provision of adequate housing:** Delivery of 1,584 social and affordable housing units directly advances the constitutional right to accessible and adequate housing (Article 43) and national housing policy objectives. The mix of unit types (studios, one-roomed, two-roomed, two-bedroom and three-roomed) responds to varied household needs.

b) **Improved living conditions for occupants:** Modern units with access to water storage, sanitation, electricity (with backup), solid waste facilities, green spaces and children's play areas will offer higher standards of habitation than many informal or inadequate dwellings.

c) **Local employment and economic opportunities:** Permanent and semi-permanent jobs will be created in estate management, security, cleaning, landscaping, maintenance and operation of commercial/shopping stalls. Local residents will be prioritised where skills match. Occupants and visitors will generate sustained demand for nearby goods and services, benefiting local businesses.

d) **Enhanced security and urban management:** Formal occupation, controlled access (gates and gatehouses), street lighting and on-site security presence are expected to improve overall security in the immediate area compared with the previous open or informal condition of the site.

e) **Green and recreational amenities:** Dedicated green spaces, attractive landscaping and outdoor children's play areas will provide recreational and social benefits for residents and, subject to management rules, potentially limited controlled access for the wider community.

f) **Contribution to orderly urban development:** Replacement of under-utilised or informally used land with planned, serviced multi-storey housing supports more efficient land use along the Southern Bypass corridor.

g) **CSR and community facilities:** Ongoing or completed CSR interventions (school improvements and other local initiatives) will leave lasting social benefits in Lang'ata.

h) **Climate and resilience co-benefits:** Incorporation of water storage, potential rainwater harvesting, solar elements for common areas, and landscaped surfaces will contribute modestly to local climate resilience and reduced operational emissions.

7.4.2 Negative Impacts and their Respective Mitigation Measures

Population Increase

Occupation of 1,584 units is projected to accommodate several thousand residents (depending on average household size). This represents a significant and permanent increase in local population density.

Mitigation: a) Design and operate the development with adequate internal open space, circulation and service capacity. b) Coordinate with Nairobi City County and relevant agencies on broader infrastructure and service planning. c) Implement the preferred layout with buffer zones to reduce pressure on immediately adjacent estates (Southlands Estate and the private developer parcel). d) Maintain continuous engagement with neighbouring communities through the estate management structure and GRM. e) Monitor actual occupancy and service performance and adapt management measures as needed.

Water Demand

The occupied development will generate substantial additional demand for potable and non-potable water. Existing rationing and pressure concerns in the Lang'ata/Southlands area make this a high-priority issue.

Mitigation: a) Implement the hybrid water supply system (municipal connection + WRA-permitted boreholes + adequate overhead and underground storage). b) Incorporate water-efficient fixtures and fittings in all units and common areas. c) Promote rainwater harvesting for landscaping and selected non-potable uses. d) Establish clear water management rules for residents and monitor consumption. e) Maintain close coordination with Nairobi City Water and Sewerage Company (NCWSC) and Athi Water on supply reliability and any required network reinforcements. f) Conduct regular water quality monitoring of borehole and municipal sources (quarterly or as required by WRA permit conditions) to ensure compliance with applicable drinking-water standards.

Sewerage

Increased wastewater generation will place additional load on the municipal sewer network and downstream treatment systems.

Mitigation: a) Ensure full connection to the municipal/trunk sewer system as coordinated with NCWSC and the Nairobi Rivers Regeneration Project. b) Design on-site collection and any required pumping stations to appropriate standards with redundancy. c) Prohibit illegal connections or discharges. d) Include sewer infrastructure inspection and maintenance in the estate management plan. e) Support wider network upgrading efforts through information sharing and, where appropriate, financial or technical contribution proportional to the development's impact.

Solid Waste

Residential occupation will generate significant volumes of domestic solid waste (organic, recyclable and residual). Inadequate management could lead to nuisances, pests and environmental pollution.

Mitigation: a) Provide adequate, well-designed garbage receptacles and collection points within the development. b) Implement source segregation (at minimum organic, recyclable and residual streams). c) Engage licensed waste service providers under formal contracts aligned with Nairobi City County systems. d) Educate residents on proper waste handling through induction and ongoing awareness. e) Prohibit open burning or illegal dumping. f) Include waste management performance in routine estate monitoring and the GRM.

Traffic

Operational traffic (residents' vehicles, visitors, service vehicles, public transport interfaces) will increase movements on the Southern Bypass and local access roads.

Mitigation: a) Implement the recommendations of the Traffic Impact Assessment, including any required junction improvements, signage or traffic management measures. b) Provide adequate on-site parking in accordance with planning standards. c) Design safe pedestrian routes and crossings within and at the interface of the development. d) Encourage non-motorised transport and public transport use through design and management measures. e) Coordinate with KeNHA and county transport authorities on corridor performance. f) Monitor traffic conditions post-occupation (especially during the first 12–24 months) and adapt measures if required.

Stormwater

Increased impermeable surfaces will alter runoff patterns. Without proper management this could worsen local flooding, erosion or downstream impacts on River Motoine (approximately 450 m), River Ngong (approximately 820 m) and Nairobi Dam.

Mitigation: a) Operate and maintain the integrated stormwater drainage system (engineered drains + SUDS elements) designed during construction. b) Keep drains, swales, retention facilities and outlets clear of debris. c) Maintain landscaped and permeable areas to maximise infiltration where soil conditions allow. d) Prohibit obstruction of drainage routes by residents or management. e) Coordinate with county drainage authorities on downstream system performance. f) Include drainage inspection in routine maintenance schedules (monthly and after heavy rainfall events).

Security

Higher population density and the presence of new assets can attract opportunistic crime or create perceptions of insecurity among both new residents and neighbours if not well managed.

Mitigation: a) Operate controlled access through the designed gates and gatehouses. b) Maintain functional street and compound lighting. c) Deploy professional security personnel and CCTV where appropriate. d) Establish clear resident rules and a code of conduct. e) Foster good relations with neighbouring communities and local police. f) Include security performance in estate management reporting and respond promptly to incidents through the GRM and security protocols.

Social Services

Additional population will increase demand on local education, health, recreational and administrative services.

Mitigation: a) Design includes children's play areas and green spaces to meet basic recreational needs on site. b) Support selected local schools and facilities through CSR commitments. c) Share occupancy projections with Nairobi City County and relevant service providers to inform planning. d) Facilitate access to information on available public services for new residents. e) Monitor service-related grievances through the GRM and escalate systemic issues to the appropriate authorities.

Green/Open Spaces

While the project includes dedicated green spaces and landscaping, intensive residential use can lead to degradation if not properly managed. Neighbouring residents also expressed concern about overall loss of open space.

Mitigation: a) Maintain the landscaped buffer, green spaces and play areas to a high standard under the estate management plan. b) Use appropriate indigenous or well-adapted species and replace failed planting promptly. c) Establish clear rules for use of common open spaces. d) Protect and nurture compensatory trees planted during construction (minimum 1:3 ratio). e) Explore limited, managed access arrangements for neighbouring community members where security and management capacity allow.

Community Health and Safety

Potential issues include inadequate maintenance of buildings and services, vector breeding in poorly managed drainage or waste areas, social tensions, and interface risks with neighbouring communities.

Mitigation: a) Enforce high standards of building, infrastructure and grounds maintenance through the estate management structure. b) Implement integrated vector and pest

control as part of routine management. c) Maintain functional lighting, secure boundaries and responsive security. d) Operate an accessible GRM and community liaison function. e) Promote resident awareness of health, safety and neighbourly conduct. f) Coordinate with public health authorities on any area-wide health concerns.

Noise (Operational)

Residential occupation, commercial stalls, backup generator operation and communal activities will generate ongoing noise that could affect neighbouring Southlands Estate and the private developer parcel if not managed.

Mitigation: a) Enforce house rules and quiet hours (preferably 22:00 – 06:00). b) House the backup generator in an acoustically treated power house and operate it only when necessary. c) Maintain landscaped buffer and screen planting along residential boundaries. d) Comply with the Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 at the property boundary / nearest receptors: – Residential outdoor: **50 dB(A) daytime / 35 dB(A) night-time**; – Mixed residential: **55 dB(A) daytime / 35 dB(A) night-time**. e) Respond promptly to noise complaints through the GRM.

7.5 Decommissioning Impacts

Decommissioning refers to the eventual end-of-life phase of the development, which may involve major renovation, partial demolition, or complete removal of structures and infrastructure at the end of the buildings' design life (typically 50–100 years or more) or in the event of a future change of use. Given the long-term nature of residential housing, decommissioning is considered a distant and currently hypothetical phase.

7.5.1 Positive Impacts

a) Opportunity to remediate any residual contamination or degraded areas and restore the site to a higher environmental standard.

b) Potential for recycling and reuse of building materials (steel, concrete aggregates, fixtures), contributing to circular economy objectives.

c) Creation of temporary employment during demolition, material recovery and site restoration works.

d) Possibility of redeveloping the site for alternative or improved land uses aligned with future urban planning needs.

e) Removal of structures that may have become outdated, unsafe or incompatible with evolving neighbourhood character.

7.5.2 Negative Impacts and their Respective Mitigation Measures

7.5.2.1 Demolition-related Nuisances (Dust, Noise, Vibration)

Demolition of multi-storey structures will generate significant dust, noise and vibration, affecting neighbouring residential estates (Southlands Estate and the private developer parcel), remaining occupants (if phased) and the wider area.

Mitigation: a) Prepare and implement a Decommissioning and Demolition Management Plan, including method statements for controlled demolition. b) Use dust suppression (water sprays, enclosures), noise barriers and vibration monitoring. c) Restrict high-impact works to approved daytime hours (07:00–18:00) and provide advance notice to neighbours (minimum 48 hours for noisy activities; 14 days for major demolition phases). d) Conduct pre-demolition condition surveys of adjacent properties. e) Comply with the following

quantitative standards at the property boundary / nearest receptors: – Noise: Residential outdoor **50 dB(A) daytime / 35 dB(A) night-time**; Mixed residential **55 dB(A) daytime / 35 dB(A) night-time** (EMCA Noise Regulations, 2009). – Vibration: Continuous Peak Particle Velocity (PPV) **≤ 0.5 cm/s (5 mm/s)**. – Dust: **PM_{10} ≤ 50 µg/m³ (24-hour average)** at sensitive receptors (NEMA Air Quality Regulations, 2014).

7.5.2.2 Waste Generation

Large volumes of construction and demolition waste (concrete, steel, timber, fixtures, potential hazardous materials such as residual oils or asbestos-containing materials if present in future modifications) will be produced.

Mitigation: a) Apply the waste hierarchy: maximise recovery, recycling and reuse of materials (target ≥ 80 % recovery/recycling of recyclable streams where feasible). b) Engage licensed demolition and waste contractors. c) Characterise and manage any hazardous wastes in accordance with the Sustainable Waste Management Act, 2022 and subsidiary regulations; dispose only through NEMA-licensed hazardous-waste handlers with full manifests. d) Maintain full records of waste streams and disposal/recovery destinations. e) Prohibit open burning and illegal dumping.

7.5.2.3 Traffic and Access Disruption

Movement of heavy demolition equipment and waste haulage vehicles will temporarily increase traffic and may disrupt local access on the Southern Bypass and local roads.

Mitigation: a) Implement a Traffic Management Plan coordinated with KeNHA and the county. b) Schedule movements to avoid peak hours where practicable. c) Provide on-site holding areas to prevent queuing on public roads. d) Deploy trained flagmen/marshals and maintain clear signage. e) Provide temporary alternative access where required. f) Enforce wheel-washing, covered loads and speed controls.

7.5.2.4 Occupational and Community Health & Safety

Demolition carries elevated risks of structural collapse, falls, falling objects and exposure to dust or hazardous substances.

Mitigation: a) Enforce strict OHS protocols in full compliance with the Occupational Safety and Health Act, 2007. b) Use only competent personnel and approved methods. c) Establish exclusion zones, secure scaffolding/temporary works and fall protection. d) Enforce PPE usage (including respiratory protection where required). e) Maintain first-aid facilities, emergency response plan and regular drills. f) Secure the site with fencing/hoarding and controlled access; prevent unauthorised public access. g) Provide advance notice and maintain an active GRM and Community Liaison function throughout the works.

7.5.2.5 Loss of Housing and Livelihood Disruption

Removal of occupied units would displace residents and terminate on-site employment and business opportunities.

Mitigation: a) Any future decommissioning must be preceded by a full social impact assessment. b) Prepare and implement relocation planning and livelihood restoration measures consistent with national law and good practice at that time. c) Provide adequate notice and support to all verified affected persons before displacement. d) Maintain continuous engagement with affected persons and operate a fully functional GRM.

7.5.2.6 Environmental Restoration Requirements

Failure to properly reinstate the site could leave residual contamination, unstable ground or loss of amenity.

Mitigation: a) Implement progressive restoration, soil remediation if needed, and re-vegetation with appropriate indigenous or climate-resilient species. b) Remove all temporary works, debris and contaminated materials. c) Aim for a stable, safe and environmentally acceptable end-state consistent with the approved end-use or handover requirements. d) Prepare and submit a final decommissioning and restoration report to NEMA and the Proponent.

7.6 Cumulative Impacts

Cumulative impacts arise from the incremental effects of the Lot 2 project when added to other past, present and reasonably foreseeable future actions in the same geographic and social area.

Key cumulative pathways identified for Lot 2 include:

a) **Housing and population density:** Concurrent or sequential development of Kibra Lots 1–5 (collectively approximately 7,000+ units) will produce a substantial increase in population in the Southlands/Mugumo-ini area. This amplifies demand on all shared infrastructure and services.

b) **Water resources:** Combined borehole abstraction and municipal demand from all five lots, together with existing users and other developments, may stress local groundwater and the already constrained municipal supply system.

c) **Sewerage and wastewater:** Cumulative wastewater flows will increase pressure on trunk sewers and the Nairobi Rivers / Ruai treatment systems.

d) **Traffic and transport:** Construction and operational traffic from multiple lots, interacting with Southern Bypass volumes and other Lang'ata developments, may produce significant congestion and safety impacts at key junctions and access points.

e) **Stormwater and drainage:** Increased impermeable area across the cluster of lots will elevate cumulative runoff volumes entering the River Motoine–River Ngong–Nairobi Dam system, potentially exacerbating flooding and water-quality risks.

f) **Social and amenity impacts:** Collective effects on privacy, visual character, green space availability, security perceptions and social service demand for neighbouring estates.

g) **Aviation safety and noise:** Although individual lots comply with the 29 m height limit, the cluster of multi-storey buildings within the Wilson Airport flight path corridor requires ongoing attention to Obstacle Limitation Surfaces, lighting, glare and bird-attraction risks.

h) **Construction-phase nuisances:** If several lots are under construction simultaneously, dust, noise, vibration and traffic impacts on shared receptors will be intensified.

Mitigation of cumulative impacts

a) Programme-level coordination among the five lots on infrastructure sequencing, traffic management, water and sewer planning, and construction scheduling.

b) Joint or aligned Traffic Impact Assessments and stormwater master planning.

c) Collective engagement with NCWSC, Athi Water, WRA, KeNHA, KCAA and Nairobi City County on capacity upgrades.

d) Harmonised environmental and social management standards, GRM systems and community liaison across the lots.

e) Monitoring of cumulative indicators (water levels/quality, traffic, complaints) and adaptive management.

7.7 Residual Impacts

Residual impacts are those that remain after the full application of the proposed mitigation measures.

Construction Phase Residual Impacts a) Temporary dust, noise and visual intrusion on immediate neighbours. b) Loss of individual mature trees (despite compensatory planting). c) PAP displacement and livelihood disruption (mitigated through facilitation and livelihood support). d) Construction traffic disruption.

Operational Phase Residual Impacts a) Increased demand on municipal water and sewer systems. b) Additional traffic generation. c) Permanent change in visual character and partial reduction in privacy for the closest neighbouring properties. d) Increased population density and associated social service pressure. e) Residual security and social cohesion risks.

Decommissioning Phase Residual Impacts a) Temporary demolition nuisances and waste. b) Social displacement (if occupied at the time).

Cumulative Residual Impacts a) Combined infrastructure demand (water, sewer, traffic) across Lots 1–5.

CHAPTER EIGHT: SOCIAL IMPACTS AND RESETTLEMENT / PAP ISSUES

8.1 Introduction

This chapter addresses the social impacts of the Proposed Construction of Social Housing and Associated Infrastructure on Kibra Lot 2, with particular focus on Project Affected Persons (PAPs), livelihood disruption, displacement of residual structures and activities, and the measures required to avoid, minimise and mitigate these impacts. Although Lot 2 is located on public land, the site and its immediate surroundings host or interface with residual livelihoods, informal uses and the amenity of neighbouring residential estates (particularly Southlands Estate and an adjacent private developer parcel with ownership claims).

The approach adopted follows the mitigation hierarchy: avoid displacement where feasible, minimise unavoidable impacts through design (including the preferred buffer layout), and provide fair facilitation, livelihood support and continuous engagement where impacts cannot be avoided. A verified PAP register, valuation (where applicable) and livelihood restoration measures will be completed prior to any displacement.

8.2 Identification of Project Affected Persons

Project Affected Persons for Lot 2 have been identified through:

a) Field observations and project description data;

b) Stakeholder engagement meetings (particularly the PAPs meeting of 6 August 2026, Residential Associations meeting, community baraza and institutions meeting);

c) Information provided by local administration (DCC, ACC, Chief and Assistant Chief); and

d) Identification of farmer, trader and community representatives presented during the meetings.

Categories of PAPs relevant to Lot 2 and its immediate interface include:

a) Operators of informal or semi-formal businesses that have used or bordered the site (including residual trading activities).

b) Urban farmers / cultivators who have grown crops on portions of the land or adjacent open areas.

c) Neighbouring residents of Southlands Estate and the adjacent private developer parcel whose privacy, amenity, access or property values may be affected by the proximity of the multi-storey development.

d) Any residual structure owners or users identified during the verified PAP census.

A formal, verified PAP census and register will be completed as a pre-construction priority. This register will record names, identification details, nature of interest or loss, vulnerability status, and preferred assistance options. Representatives identified during the August 2026 meetings will be engaged in the verification process.

8.3 Existing Livelihoods

Prior to project commencement, portions of Lot 2 and its immediate surroundings supported a mix of livelihood activities:

- Small-scale urban agriculture (cultivation of crops on available open or water-adjacent land);

- Residual informal trading and service activities; and
- Indirect livelihood support derived from the open space (recreation, social gathering, temporary material collection in some cases).

These livelihoods are generally low-income, vulnerable to displacement, and in many cases lack formal tenure security. Women, elderly persons and persons with limited alternative skills are likely to be disproportionately affected. The loss of these livelihood sources, even if informal, constitutes a significant social impact that requires structured support rather than simple eviction.

8.4 Informal Businesses

Informal and semi-formal businesses operating on or immediately adjacent to Lot 2 (and the wider Southlands cluster) include small-scale trading, service provision and residual commercial activities. During public participation, business operators and community members raised concerns about:

- Loss of trading space and customer base;
- Lack of prior notice;
- Desire for prioritisation in the allocation of new commercial/shopping stalls within the completed development; and
- Need for transitional support.

Impacts Displacement will result in temporary or permanent loss of income, disruption of business networks, and potential impoverishment if alternative sites or support are not provided.

Proposed measures a) Inclusion of all verified informal business operators in the PAP register. b) Provision of adequate notice and facilitation support for displacement. c) Fair opportunity to apply for commercial stalls within the new development through a transparent allocation process. d) Linkage to local economic empowerment or short-term livelihood support programmes where feasible. e) Continuous engagement through the GRM and designated PAP representatives.

8.5 Farmers / Urban Agriculture

Portions of Lot 2 and neighbouring open land have been used for small-scale urban agriculture. Farmers and cultivators participated in the PAPs meeting and related consultations, noting that they depended on the land for food and supplementary income and, in some cases, held informal claims related to their use.

Impacts a) Permanent loss of cultivated land and standing crops. b) Loss of a source of food security and cash income for low-income households. c) Disproportionate impact on women and elderly cultivators who often dominate urban agriculture.

Proposed measures a) Identification and verification of all cultivators through the PAP census. b) Recording of crop types, areas and estimated values for facilitation purposes. c) Provision of notice and opportunity to harvest standing crops before clearance. d) Facilitation support that may include cash assistance for lost crops, linkage to alternative urban agriculture opportunities, or short-term livelihood transition support. e) Priority consideration for affected farming households in relevant project benefits (employment, information on housing application processes). f) Documentation of all support provided.

8.6 Impacts on Neighbouring Residents

Although neighbouring residents of Southlands Estate and the adjacent private developer parcel are not necessarily subject to physical displacement, they constitute a significant category of project-affected persons in social terms. Key impacts identified during the Residential Associations meeting, PAPs meeting and community baraza include:

- Loss of privacy and overlooking from multi-storey blocks;
- Potential shadowing and reduced sunlight;
- Perceived property devaluation;
- Increased pressure on shared infrastructure (water, sewer, drainage, traffic);
- Visual change and loss of open-space character; and
- Construction-phase nuisances (dust, noise, vibration, traffic).

Proposed measures a) Implementation of the preferred layout incorporating a landscaped buffer/setback zone along residential boundaries (Chapter 6). b) Strict adherence to the quantitative noise, dust and vibration standards set out in Chapter 7. c) Continuous engagement through the GRM and estate management structures. d) Transparent communication on construction schedules and operational management. e) Monitoring of amenity-related grievances and adaptive management.

8.7 Vulnerable Groups

Vulnerable groups within the PAP population require particular attention because they face heightened risk of impoverishment, exclusion or inability to recover from project-related losses.

Categories of vulnerability relevant to Lot 2 include:

- Persons with disabilities (PWDs), including those who may have difficulty accessing information, participating in meetings or relocating independently;
- Women-headed households, widows and single mothers who often depend on informal livelihoods or urban agriculture;
- Elderly persons with limited alternative income sources or physical capacity;
- Orphans and child-headed households (if identified during the census);
- Extremely poor households with no formal safety net;
- Persons living with chronic illness; and
- Members of farming or trading groups who may lose critical social support networks in addition to physical assets.

Specific measures for vulnerable PAPs a) Priority identification and registration during the PAP census, with appropriate support persons or translators where needed. b) Tailored communication (simplified language, home visits if necessary, involvement of trusted local leaders or PWD representatives). c) Preferential access to livelihood restoration options that match their capacity (e.g., lighter employment roles, support for chama/merry-go-round contributions toward housing deposits, or linkage to existing social protection programmes). d) Physical accessibility considerations in any transitional arrangements and in the design of the new housing (ramps, lifts, ground-floor priority as already committed).

e) Close monitoring of vulnerable households through the GRM and dedicated social specialists to ensure they do not fall through support gaps.

8.8 Livelihood Restoration Framework

A livelihood restoration framework will be implemented for all verified PAPs. Key elements include:

a) Completion of a verified PAP census and socio-economic baseline prior to any displacement. b) Categorisation of losses (land use, structures, crops, business income, access). c) Provision of adequate notice (minimum periods consistent with national law and good practice). d) Facilitation support tailored to the nature of loss (cash or in-kind assistance for crops/structures; transitional support for businesses; priority access to commercial stalls and employment opportunities). e) Special measures for vulnerable households. f) Documentation of all entitlements and support provided. g) Monitoring of livelihood restoration outcomes and adaptive support where needed. h) Full access to the project Grievance Redress Mechanism throughout the process.

8.9 Resettlement / Facilitation Principles

The following principles will guide all resettlement and facilitation actions for Lot 2:

a) Avoidance of displacement where feasible through design optimisation. b) Minimisation of unavoidable impacts through the preferred buffer layout and sequencing. c) Fair and transparent facilitation based on verified losses. d) Priority attention to vulnerable groups. e) Continuous consultation and information disclosure. f) Accessible and responsive grievance redress. g) Monitoring and evaluation of outcomes until livelihoods are restored to at least pre-project levels.

CHAPTER NINE: TRAFFIC IMPACT ASSESSMENT

9.1 Introduction

This chapter presents the Traffic Impact Assessment (TIA) for the Proposed Construction of Social Housing and Associated Infrastructure on Kibra Lot 2. The assessment evaluates the potential effects of construction and operational traffic generated by the 16 G+8 blocks (1,584 units) on the surrounding road network, with particular attention to the Southern Bypass (a KeNHA controlled-access corridor), local access roads, pedestrian safety, parking and cumulative effects arising from the wider Southlands (Lots 1–5) programme. The findings and recommendations will inform access design, the Construction Traffic Management Plan (CTMP) and operational management measures.

9.2 Existing Road Network

Lot 2 is located along the Southern Bypass, a major controlled-access dual-carriageway under the jurisdiction of the Kenya National Highways Authority (KeNHA). The site is also served by local roads linking to Lang'ata Link Road and the internal road network of Southlands Estate and neighbouring residential areas.

Key network characteristics include:

- High-speed through traffic on the Southern Bypass, including private vehicles, public service vehicles and heavy goods vehicles.
- Limited formal entry/exit opportunities along the Bypass frontage.
- Mixed-use local roads serving residential estates with incomplete pedestrian facilities in places.
- Significant pedestrian activity, particularly during peak periods and school hours.

9.3 Existing Traffic Conditions

Qualitative observations and stakeholder feedback indicate the following existing conditions:

i. The Southern Bypass carries high volumes of through traffic. Peak-period congestion occurs, particularly at interchanges and merges.

ii. Local access roads experience moderate to heavy traffic, especially during morning and evening peaks, school hours and weekends.

iii. Pedestrian activity is significant along local roads and at informal crossing points, with limited formal pedestrian facilities in some sections.

iv. Non-motorised transport (walking and limited cycling) is common among lower-income residents.

v. Stakeholders (Residential Associations, community baraza and institutions meeting) reported existing traffic congestion, delays and safety concerns that they fear will be worsened by the proposed development and the wider Lots 1–5 programme.

vi. No major formal public transport interchange exists immediately adjacent to Lot 2; residents currently rely on matatus and other services operating on the surrounding network.

Baseline traffic data (Average Daily Traffic, peak-hour volumes, level-of-service at key junctions, and pedestrian counts) should be established through classified counts and

turning-movement surveys at the following critical locations before finalisation of the detailed TIA: Southern Bypass mainline near the site frontage; proposed or existing access points; junctions of local access roads with the Bypass; and key local estate road intersections serving Southlands Estate and neighbouring areas.

9.4 Construction Traffic

During the approximately 24-month construction period, traffic will comprise: delivery of materials (cement, steel, aggregates, precast elements, timber, finishes); movement of construction plant and equipment; workforce transport (buses, matatus, private vehicles); removal of excavated material and construction waste; and occasional abnormal loads (e.g., tower cranes, large plant).

Estimated construction traffic Peak daily construction vehicle movements are expected in the range of 80–150 trucks/deliveries plus workforce transport, varying by construction stage (highest during structural and external works phases).

Key characteristics and risks a) Heavy vehicles will interact with high-speed traffic on the Southern Bypass. b) Potential queuing on the Bypass or local roads if site access and holding areas are inadequate. c) Dust, tracking of mud, and noise along haul routes. d) Safety risks to pedestrians and local traffic on local access roads and estate roads. e) Cumulative construction traffic if multiple Lots (1–5) are under construction concurrently.

Management principles a) Construction access point(s) designed to KeNHA standards; b) On-site holding/parking areas to prevent queuing on public roads; c) Delivery scheduling outside network peak hours where practicable; d) Wheel-washing and covered loads; e) Coordinated Traffic Management Plan across lots if concurrent construction occurs.

9.5 Operational Traffic

Key operational characteristics include:

a) Directional distribution is expected to favour the Southern Bypass for longer trips, with a portion using local access roads for shorter local journeys. b) Peak-hour flows will coincide with the existing network peaks, adding incremental volume to already busy sections. c) Internal circulation, parking demand and pick-up/drop-off activity will occur within the site; inadequate design could spill queues onto external roads. d) Pedestrian movements between the development, neighbouring estates, public transport stops and local facilities will increase. e) Service vehicles (waste collection, deliveries, maintenance) will add a smaller but regular component.

Potential operational impacts a) Incremental increase in delay and reduction in level of service at access points and nearby junctions. b) Increased conflict between turning vehicles and through traffic on the Southern Bypass if access design is sub-standard. c) Greater pedestrian–vehicle conflict on local roads if crossing facilities remain inadequate. d) Parking overspill onto neighbouring streets if on-site provision is insufficient or poorly managed. e) Cumulative operational traffic from Lots 1–5 producing more significant network effects than any single lot in isolation.

Access design, internal layout, parking provision and pedestrian facilities will be critical determinants of the severity of these impacts. All access arrangements must receive prior approval from KeNHA and, where relevant, Nairobi City County.

9.6 Access and Egress

Proposed access strategy Primary access will be taken from the Southern Bypass or local access roads through a carefully designed connection that meets controlled-access

standards. Any direct access onto the Bypass will require formal KeNHA approval and must satisfy geometric design criteria (sight distance, deceleration/acceleration lanes, turning radii, gradient and channelisation). The number of access points will be minimised to reduce conflict points on the Bypass while ensuring adequate capacity and emergency access. Access design will incorporate separate entry and exit lanes where volumes warrant, clear signage, and adequate throat length to prevent queues from spilling onto the main carriageway.

Design considerations raised during consultations Stakeholders and KeNHA representatives highlighted the limited number of existing entry/exit opportunities and the safety risks associated with additional turning movements on a high-speed corridor. The final access layout must therefore prioritise: adequate sight lines in both directions; protection of through traffic; safe accommodation of public service vehicles and pedestrians; and compatibility with any future upgrades of the Southern Bypass.

Access drawings will be submitted to KeNHA for approval prior to construction. No works affecting the road reserve or creating new access will commence without written authorisation.

9.7 Pedestrian Safety

Key pedestrian issues Crossing the Southern Bypass or local access roads is inherently hazardous because of high vehicle speeds and limited formal crossing facilities. Local roads serving Southlands Estate have mixed traffic and incomplete sidewalks in places. Construction-phase pedestrian–vehicle conflict risk is elevated along haul routes and site access points.

Design and management response a) Provision of continuous, well-lit pedestrian walkways within the development linking residential blocks, commercial stalls, play areas, gates and public transport boarding points. b) Safe crossing facilities (zebra crossings, raised tables or signalised crossings where warranted) at the main access points and along local road interfaces. c) Clear segregation of pedestrian and vehicular movements at the site gates and internal roads. d) Adequate street lighting along pedestrian desire lines. e) During construction: dedicated pedestrian routes, barriers, flagmen at conflict points, and clear signage. f) Inclusion of pedestrian safety in the Construction Traffic Management Plan and the operational estate management plan.

9.8 Parking

Parking strategy Parking will be provided in accordance with Nairobi City County planning standards and the specific requirements for social and affordable housing developments. A combination of surface parking courts, limited basement or podium parking (where design allows), and designated visitor/short-stay bays will be used. Separate provision will be made for commercial stall customers and service vehicles. Motorcycle and non-motorised transport parking will be included. Parking areas will be designed with clear circulation, adequate turning space, lighting and security.

Management a) Estate rules will regulate resident and visitor parking to prevent obstruction of internal roads, emergency access and neighbouring streets. b) Enforcement will be the responsibility of the estate management body. c) Monitoring of on-street parking conditions in adjacent estates will be undertaken post-occupation; additional management measures will be introduced if significant overspill occurs.

9.9 Traffic Impacts

Construction-phase impacts a) Temporary increase in heavy vehicle movements on the Southern Bypass and local access roads. b) Potential short-term congestion and delay at

access points if not properly managed. c) Safety risks associated with slow-moving construction vehicles interacting with high-speed traffic. d) Mud tracking, dust and noise along haul routes. e) Cumulative impacts if several of Lots 1–5 are under construction at the same time.

Operational-phase impacts a) Addition of several hundred peak-hour vehicle trips to the local network. b) Incremental increase in delay at the site access and nearby junctions. c) Possible reduction in level of service on short sections of the Southern Bypass near the access points during peaks. d) Increased pedestrian activity and potential conflict if crossing facilities are inadequate. e) Risk of parking overspill onto neighbouring estate roads. f) Cumulative operational traffic from the full Southlands (Lots 1–5) programme producing more pronounced network effects than Lot 2 alone.

9.10 Mitigation Measures

The following mitigation and management measures will be implemented:

Design and approval stage a) Finalise access design to full KeNHA standards and obtain written approval before construction. b) Incorporate adequate on-site parking, internal circulation and pedestrian facilities into the architectural and civil drawings. c) Coordinate access and traffic proposals across Lots 1–5 where concurrent development is planned.

Construction phase a) Prepare and implement a Construction Traffic Management Plan (CTMP) for approval by KeNHA and the county. b) Provide dedicated construction access with sufficient holding area inside the site boundary. c) Schedule bulk material deliveries outside network peak hours where practicable. d) Deploy trained flagmen, temporary signage and traffic control at all public road interfaces. e) Enforce wheel-washing, covered loads and speed limits on haul routes. f) Maintain continuous liaison with KeNHA, county transport officers and local administration. g) Monitor construction traffic complaints through the GRM and adjust the CTMP as needed.

Operational phase a) Commission the access junctions and internal roads to the approved design. b) Implement estate parking rules and enforce them. c) Maintain pedestrian facilities, lighting and signage in good condition. d) Monitor traffic conditions and parking overspill for the first 12–24 months of full occupation and introduce additional measures if required. e) Support wider corridor improvements through information sharing and, where appropriate, proportional contributions coordinated at programme level. f) Include traffic and access performance in routine estate management reporting.

Cumulative / programme level a) Establish a joint traffic coordination mechanism among the five lots during both construction and early operation. b) Share traffic data and align CTMPs and operational management plans. c) Engage KeNHA and Nairobi City County on any network upgrades necessitated by the cumulative development.

CHAPTER TEN: CLIMATE CHANGE AND DISASTER RISK ASSESSMENT

10.1 Climate Change Context

Kenya is highly vulnerable to the impacts of climate change. The country is already experiencing rising temperatures, changing rainfall patterns, increased frequency and intensity of extreme weather events (including floods and droughts), and growing pressure on water resources and urban infrastructure. The Climate Change Act, 2016 provides the primary legal framework for mainstreaming climate change into development planning, requiring public and private entities to integrate climate risk assessment, adaptation and mitigation measures into their operations.

Lot 2 is located in a rapidly urbanising area characterised by existing water stress, periodic flooding along the River Motoine–River Ngong–Nairobi Dam system, and high population density. The development of 1,584 multi-storey housing units will both contribute to greenhouse gas (GHG) emissions and be exposed to climate-related hazards over its multi-decade lifespan. This chapter therefore assesses the project's GHG profile and its vulnerability to climate hazards, and identifies measures to enhance resilience and reduce emissions.

10.2 Project GHG Sources

Construction phase

- Embodied carbon in construction materials (cement, steel, aggregates, aluminium, finishes);
- Fuel combustion by construction plant, machinery and delivery vehicles (diesel and petrol);
- Electricity use on site (grid and generator);
- Land-use change and loss of vegetation (including 25 mature trees) that previously provided limited carbon sequestration; and
- Waste transport and disposal.

Operational phase

- Electricity consumption in residential units and common areas (lighting, appliances, lifts, water pumping, street lighting);
- Backup diesel generator use during power outages;
- Resident and visitor vehicle trips (Scope 3 emissions);
- Wastewater treatment and solid waste management (indirect emissions); and
- Maintenance activities and minor works.

Decommissioning phase

- Demolition plant fuel use and transportation of demolition waste; and
- Potential release of embodied carbon if materials are not recycled.

Indicative emission profile A quantitative GHG inventory should be prepared as part of the final specialist studies. In qualitative terms: Construction-phase emissions will be front-loaded and dominated by embodied carbon in concrete and steel and by diesel plant.

Operational-phase emissions will dominate the lifecycle total and will be driven primarily by electricity consumption and transport. Opportunities to reduce emissions exist through material efficiency, low-carbon material choices, energy-efficient design, incorporation of solar PV for common areas, water efficiency (reducing pumping energy), and promotion of non-motorised and public transport.

10.3 Climate Hazards

a) Intense rainfall and flooding — increasing frequency and intensity of heavy rainfall events leading to flash flooding, drainage overload and waterlogging.

b) Rising temperatures and heatwaves — higher average and extreme temperatures, with urban heat-island amplification in dense built-up areas.

c) Stormwater and drainage failure — already observed problems of blocked drains, erosion and overflow, expected to worsen with more intense rainfall.

d) Secondary hazards — including increased vector-borne disease risk, damage to infrastructure from extreme events, and potential disruption of energy and transport systems.

These hazards interact with existing site conditions (water-logged areas, proximity to River Motoine approximately 450 m and River Ngong approximately 820 m) and with the cumulative development of the wider Southlands housing cluster.

10.4 Flooding and Stormwater Risks

Flooding and stormwater management constitute the most immediate and significant climate-related risk for Lot 2.

Current vulnerability Portions of the site are already described as water-logged with stagnant water. The surrounding Lang'ata area experiences regular drainage problems, blocked drains and periodic flooding. Stakeholders repeatedly raised concerns about stormwater overflow, erosion and the capacity of existing drainage systems. Downstream receptors (River Motoine, River Ngong and Nairobi Dam) are sensitive to increased runoff volume and sediment/pollutant loads.

Projected climate influence Climate models for the Nairobi region indicate a likely increase in the intensity of extreme rainfall events even if annual totals change only moderately. This will raise the probability of: on-site waterlogging and flooding of low-lying areas; overwhelming of conventional drainage systems; increased peak discharges into the river system; erosion of unprotected surfaces and sedimentation downstream; and damage to buildings, roads and services if floor levels and drainage design are inadequate.

Implications for the project Buildings and critical infrastructure (electrical rooms, water storage, access roads) must be elevated above expected flood levels and designed for the increased rainfall intensities projected over the asset life. Stormwater systems must be sized for higher return-period events and should incorporate Sustainable Urban Drainage Systems (SUDS) principles (retention, detention, infiltration where feasible, and quality treatment). Cumulative runoff from Lots 1–5 must be considered in drainage design. Failure to address these risks would expose residents to repeated flooding, health hazards and property damage, and could generate significant grievance and liability. A hydrological and hydraulic modelling exercise using future climate rainfall scenarios is recommended to finalise drainage design levels and storage volumes.

10.5 Heat Risks

Rising temperatures and the urban heat-island effect pose growing risks to occupant health, comfort and energy demand.

Current and projected conditions Nairobi is already experiencing a warming trend. Dense multi-storey development with extensive hard surfaces can further elevate local temperatures, especially during calm, clear conditions. Heatwaves are projected to become more frequent and intense.

Vulnerability factors for Lot 2 High residential density and limited private outdoor space; potential for heat build-up in upper floors of G+8 blocks if passive design is inadequate; presence of vulnerable groups (elderly, children, persons with pre-existing health conditions, outdoor workers); increased demand for cooling (fans or air-conditioning), which would raise electricity consumption and GHG emissions; and reduced thermal comfort in units that are poorly oriented or lack adequate shading and ventilation.

Implications a) Building design must prioritise passive cooling: optimal orientation, cross-ventilation, shading of windows and façades, reflective or green roof elements where feasible, and use of materials with favourable thermal properties. b) Landscaping and the proposed buffer green spaces should be designed to provide shade and evaporative cooling. c) Common areas and circulation spaces should remain comfortable without heavy reliance on mechanical cooling. d) Heat-health awareness and early-warning linkages with public health systems should form part of estate management in the longer term.

10.6 Water Availability Risks

Water scarcity is already a pressing concern in the Lang'ata / Southlands area. Residents and institutional stakeholders repeatedly highlighted rationing, low pressure, illegal connections and the fragile state of existing supply infrastructure during the public participation process.

Climate influence on water availability Climate projections for the Nairobi region indicate: increased rainfall variability and longer dry spells; higher potential evapotranspiration due to rising temperatures; possible reduction in reliable surface-water yields and slower groundwater recharge in some seasons; and greater competition for limited water resources as urban population and economic activity grow.

Project-specific risks Heavy reliance on the municipal system (already under stress) would expose residents to frequent shortages. Over-abstraction from the proposed on-site boreholes could lower local groundwater tables, affect neighbouring abstractors, or reduce base-flow to nearby rivers if not properly regulated. Increased operational demand from 1,584 units will add permanent pressure to both surface and groundwater resources. Drought periods would simultaneously raise demand (higher outdoor and cooling use) and reduce supply reliability. Cumulative demand from Lots 1–5 would significantly amplify these risks.

Implications Water security must be treated as a core design and operational issue. A diversified, efficient and climate-resilient water supply strategy is essential to protect resident well-being and to avoid exacerbating existing community tensions over water.

10.7 Climate Vulnerability

Vulnerability is a function of exposure, sensitivity and adaptive capacity.

Exposure Lot 2 is exposed to intensifying rainfall extremes, rising temperatures, and water-stress conditions. Its location in a partially water-logged area near the River Motoine–Ngong system increases flood exposure. The wider Southlands cluster multiplies exposure through cumulative hard-surface area and population.

Sensitivity High residential density and the presence of vulnerable groups (children, elderly, PWDs, low-income households) increase sensitivity to heat, flooding and water shortages. Dependence on external infrastructure (municipal water, sewer, power, roads) that is itself climate-vulnerable. Limited private outdoor space and potential heat build-up in multi-storey blocks. Social sensitivity arising from pre-existing water and drainage grievances in the neighbouring community.

Adaptive capacity Current adaptive capacity of the surrounding area is relatively low due to infrastructure deficits and high poverty levels among some resident groups. The project itself can raise adaptive capacity by incorporating resilient design, diversified water sources, green infrastructure, energy efficiency and strong estate management systems. Institutional adaptive capacity depends on effective coordination with NCWSC, WRA, the county, KeNHA and other agencies.

10.8 Adaptation Measures

Adaptation measures aim to reduce the project's vulnerability and increase its resilience to current and future climate conditions. The following measures will be integrated into design, construction and operation:

Flooding and stormwater a) Set finished floor levels and critical infrastructure above design flood elevations informed by climate-adjusted hydrological analysis. b) Size stormwater drainage for higher-intensity rainfall events and incorporate SUDS (retention/detention basins, swales, permeable paving, infiltration where geotechnically feasible). c) Maintain and protect the landscaped buffer and green spaces as part of the stormwater management system. d) Ensure overland flow paths remain clear and do not direct floodwater toward neighbouring properties.

Heat a) Optimise building orientation, window placement and shading devices for passive cooling. b) Use materials and colours with favourable thermal performance. c) Maximise cross-ventilation in units and common areas. d) Implement extensive landscaping and tree planting for shade and micro-climate cooling. e) Avoid excessive hard surfacing; retain or create permeable and vegetated areas.

Water security a) Implement the hybrid water supply system (municipal connection + WRA-permitted boreholes + storage + rainwater harvesting). b) Install water-efficient fixtures and fittings throughout. c) Design dual plumbing or dedicated non-potable networks for landscaping and selected uses where feasible. d) Establish clear water conservation rules and monitoring for residents. e) Coordinate with NCWSC and Athi Water on supply reliability and network reinforcement.

Broader resilience a) Diversify energy supply with solar PV for common areas and critical loads to reduce vulnerability to grid outages. b) Design access roads and emergency routes to remain passable under extreme weather conditions. c) Include climate risk in estate management plans and emergency preparedness procedures. d) Support community-level awareness on heat-health and flood preparedness.

10.9 Mitigation Measures

Mitigation measures aim to reduce the project's contribution to greenhouse gas emissions:

Design and materials

- Optimise structural design to reduce material quantities (especially concrete and steel).

- Specify lower-carbon concrete mixes and explore supplementary cementitious materials where technically acceptable.
- Source materials locally where possible to reduce transport emissions.

Energy

- Design for high energy efficiency (lighting, appliances, lifts, pumps).
- Incorporate solar photovoltaic systems for street lighting, common areas and selected facilities.
- Minimise reliance on diesel generators through solar + storage for critical loads where feasible.
- Promote passive design to reduce cooling demand.

Water and waste

- Water efficiency measures reduce energy used for pumping and treatment.
- Source segregation and recycling of solid waste reduce landfill methane emissions.
- Efficient wastewater management lowers downstream treatment emissions.

Transport

- Provide safe pedestrian and non-motorised transport facilities.
- Design to facilitate public transport access.
- Adequate on-site parking combined with management measures to avoid unnecessary circulating traffic.

Construction practices

- Efficient plant and logistics planning to reduce fuel use.
- Progressive rehabilitation and protection of retained vegetation.
- Waste minimisation and on-site reuse of materials.

10.10 Climate Resilience Measures

Climate resilience is achieved by combining the adaptation and mitigation measures above into an integrated approach that allows the project to withstand, respond to and recover from climate-related stresses while minimising its own contribution to the problem.

1. Climate-informed drainage and flood design (higher design standards + SUDS).
2. Diversified and efficient water supply with strong conservation.
3. Passive and low-energy building design plus solar supplementation.
4. Extensive green infrastructure for cooling, stormwater management and amenity.
5. Estate management systems that include climate monitoring, maintenance of resilient features, and emergency response.
6. Programme-level coordination with Lots 1–5 and relevant agencies on cumulative water, drainage and infrastructure resilience.

7. Continuous learning and adaptive management as new climate data and technologies become available.

Implementation and governance Climate resilience requirements will be embedded in design specifications, contractor contracts and the Environmental and Social Management Plan. Performance indicators (e.g., water consumption per capita, flood incidents, energy use intensity, green-space condition) will be monitored and reported. The Grievance Redress Mechanism will capture climate-related complaints (flooding, water shortage, heat discomfort) for rapid response. Periodic review of climate risks will be undertaken as part of environmental audits and management plan updates.

CHAPTER ELEVEN: ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN — ESMP

11.1 Introduction

This Environmental and Social Management and Monitoring Plan (ESMP) sets out the practical measures required to avoid, minimise, mitigate and manage the environmental and social impacts identified in this ESIA Study Report for Kibra Lot 2. It translates the impact assessment and climate resilience findings into actionable commitments with clear responsibilities, timelines, monitoring indicators and indicative costs.

11.2 Construction Phase ESMP

1. NOISE MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
Noise from construction equipment, excavation, piling and concreting	- Use low-noise equipment fitted with mufflers and silencers. - Restrict high-noise activities (piling, excavation, demolition, concrete pouring) to daytime hours only (7:00 AM – 6:00 PM). - Erect temporary acoustic barriers / sound screens facing Southlands Estate residential blocks and the private developer's claimed parcel boundary. - Maintain all machinery regularly. - Comply with EMCA Noise and Excessive Vibration Pollution (Control) Regulations, 2009: Residential areas – Daytime ≤ 55 dB(A), Night-time ≤ 35 dB(A).	Throughout construction (24 months)	- Weekly noise measurements at site boundaries and key receptors (Southlands Estate blocks, adjacent properties). - Log all noise complaints in the GRM. - Bi-weekly inspection of acoustic barriers.	Main Contractor, Environmental & Social Officer (ESO), Community Liaison Officer (CLO)	- Noise levels within EMCA limits (≤55 dB day / ≤35 dB night). - No unresolved noise complaints. - Barriers installed and maintained (100%).

Noise from construction traffic and material delivery	- Schedule deliveries during off-peak hours (9:00 AM – 3:00 PM). - Ensure all vehicles have functional mufflers. - Deploy traffic marshals to minimise idling and unnecessary honking. - Notify neighbouring receptors (Southlands Estate and private developer) 48 hours in advance of major delivery periods.	Throughout construction	- Daily monitoring of delivery schedules. - Weekly vehicle maintenance logs. - Record traffic-related noise complaints in GRM.	Main Contractor, Transport Supervisor, CLO	- No unresolved traffic noise complaints. - 100% of vehicles compliant with muffler requirements.
Disturbance to neighbouring residential receptors (Southlands Estate and adjacent properties)	- Provide advance written notice (minimum 48 hours) of high-noise activities. - Install dedicated acoustic screens facing Southlands Estate blocks. - Avoid high-noise works on Sundays and during peak residential quiet hours where possible.	Throughout construction	- Review notification records. - Weekly noise monitoring specifically at Southlands Estate boundaries.	Main Contractor, ESO, CLO	- No unresolved complaints from Southlands Estate residents or private developer. - Evidence of notifications and targeted barriers.

2. AIR QUALITY AND DUST MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
Dust from excavation, earthworks, stockpiles and vehicle movement	- Water spraying of exposed surfaces, access roads and stockpiles at least twice daily (more frequently in dry/windy conditions). - Cover stockpiles with tarpaulins when not in use. - Enforce 20 km/h speed limit on unpaved internal roads. - Install dust screens / netting facing sensitive receptors (Southlands Estate residential blocks and private	Throughout construction	- Daily verification of water spraying. - Weekly inspection of stockpile covers and dust screens. - Bi-weekly ambient air quality monitoring (PM_{10} & $PM_{2.5}$) at receptors.	Main Contractor, ESO	- Dust levels within NEMA Ambient Air Quality Standards (PM_{10} ≤ 100 µg/m³ 24-hr mean; $PM_{2.5}$ ≤ 75 µg/m³ 24-hr mean, or current NEMA limits). - No unresolved dust complaints. - 100% compliance with watering and covering.

	developer boundary). - Provide dust masks to workers.				
Emissions from vehicles, machinery and generators	- Use well-maintained equipment with efficient engines. - Limit idling time to maximum 5 minutes. - Conduct regular servicing of all plant and vehicles. - Use low-sulphur diesel where possible.	Throughout construction	- Weekly maintenance logs. - Daily observation of idling practices. - Quarterly stack emission tests on generators.	Main Contractor, Transport Supervisor, ESO	- No visible excessive emissions. - Maintenance records 100% up to date. - Emissions within NEMA limits.

3. VIBRATION MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
Vibration from piling, excavation and heavy machinery	- Conduct pre-construction structural condition survey of nearby buildings (Southlands Estate residential blocks and any structures on the private developer's claimed parcel). - Prefer low-vibration methods (bored piles / hydraulic hammers) over driven piles where feasible. - Monitor vibration levels during critical activities. - Stop works immediately if vibration exceeds safe thresholds and investigate.	During foundation and piling works	- Pre-construction structural survey reports. - Continuous or daily vibration monitoring during piling. - Log any vibration complaints in GRM.	Main Contractor, Structural Engineer, ESO	- No structural damage to neighbouring properties. - Vibration levels within safe limits (as per NEMA / BS standards, typically ≤ 5–15 mm/s peak particle velocity depending on receptor sensitivity). - Pre- and post-construction survey records available.

4. BIODIVERSITY AND VEGETATION MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
Clearance of vegetation (25 mature trees – grevillea, cypress,	- Limit clearance strictly to the project footprint. - Identify and mark mature trees for possible transplanting	Site clearance and early construction	- Pre-clearance biodiversity walkover survey. - Record number of	Main Contractor, ESO, Environmental Consultant	- No unnecessary vegetation loss outside footprint. - ≥70% survival rate of transplanted

pine, eucalyptus; immature trees; Napier grass; weeds)	(especially grevillea, cypress, pine, eucalyptus). - Transplant viable mature trees where feasible. - Develop and implement a post-construction landscaping and replanting plan using native species.		trees transplanted and survival rate. - Monthly inspection of remaining vegetation.		trees. - Replanting plan approved and ready for implementation.
Disturbance to local fauna	- Minimise night-time works. - Maintain temporary buffer zones around any remaining vegetation until clearance is complete.	Throughout construction	- Monitor working hours. - Inspect buffer zones bi-weekly.	Main Contractor, ESO	- No significant fauna mortality or disturbance reported.

5. WASTE MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
Construction debris and general solid waste	- Develop and implement a site-specific Waste Management Plan. - Segregate waste at source (recyclable, reusable, residual). - Store waste in designated, labelled areas. - Dispose of waste only through NEMA-licensed waste handlers. - Conduct daily site housekeeping.	Throughout construction	- Weekly inspection of waste storage areas. - Review disposal manifests monthly. - Log waste-related complaints in GRM.	Main Contractor, ESO, Waste Contractor	- ≥60% of construction waste recycled or reused. - 100% of residual waste disposed through licensed handlers. - No illegal dumping.
Hazardous waste (used oil, solvents, batteries, empty chemical containers)	- Store hazardous waste in secure, bunded, labelled areas with impermeable floors. - Engage licensed hazardous waste contractors for disposal. - Train workers on hazardous waste handling.	Throughout construction	- Weekly inspection of hazardous storage areas. - Quarterly training records and disposal certificates.	Main Contractor, ESO	- Zero contamination incidents. - All hazardous waste tracked and disposed correctly.

6. WATER RESOURCES, DRAINAGE AND EROSION MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator

Stormwater runoff, erosion and sedimentation (site has water-logged areas with stagnant water)	- Install silt fences, sediment traps and temporary drainage channels before major earthworks. - Protect stockpiles from rain. - Direct clean runoff away from water-logged zones and neighbouring properties (Southlands Estate). - Re-vegetate disturbed areas progressively. - Treat water-logged areas with appropriate drainage / fill measures prior to foundation works.	Throughout construction (especially rainy seasons)	- Weekly inspection of silt traps and drains. - Bi-weekly monitoring of runoff quality if discharging off-site.	Main Contractor, ESO	- No significant sedimentation of neighbouring areas or drainage channels. - Silt traps functional at all times. - Water-logged areas stabilised before structural works.
Water pollution from spills and wastewater	- Store fuels and oils in bunded areas (110% capacity). - Provide spill kits at strategic locations and train workers on spill response. - Direct wastewater from washing and curing to settlement tanks before disposal.	Throughout construction	- Daily visual checks of storage areas. - Immediate reporting and clean-up of any spills.	Main Contractor, ESO	- Zero significant spill incidents reaching soil or water. - Spill kits always available and complete.
Water demand for construction	- Source construction water preferentially from bowsers or approved sources to avoid straining local supply. - Promote water-efficient construction methods.	Throughout construction	- Monthly water consumption records. - Log any community water complaints.	Main Contractor, ESO, CLO	- No unresolved complaints of water shortage linked to the project.

7. TRAFFIC AND ROAD SAFETY MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
Construction vehicle movements and congestion	- Prepare and implement a Traffic Management Plan (TMP) / Construction Traffic Management Plan (CTMP). - Schedule heavy deliveries during off-peak hours	Throughout construction	- Daily monitoring of delivery schedules and marshal deployment. - Weekly inspection of access	Main Contractor, Transport Supervisor, CLO	- No unresolved congestion complaints. - Marshals present

	(9:00 AM – 3:00 PM). - Deploy trained traffic marshals at access points (Southern Bypass / local access) and along internal routes. - Improve and maintain the access road surface.		road condition. - Log traffic complaints in GRM.		during all delivery periods (≥95%).
Accident risk to pedestrians and other road users	- Install clear warning signage, speed limit signs (20 km/h) and temporary pedestrian walkways where needed. - Enforce vehicle speed limits strictly. - Conduct toolbox talks on road safety.	Throughout construction	- Weekly inspection of signage and walkways. - Record of any accidents or near-misses.	Main Contractor, Safety Officer, CLO	- Zero serious accidents involving community members. - Signage and walkways maintained (100%).

8. COMMUNITY HEALTH, SAFETY AND SECURITY MANAGEMENT PLAN (including Social/PAP measures)

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
Dust, noise and safety risks to neighbouring communities (Southlands Estate and private developer)	- Implement all dust and noise controls listed above. - Maintain secure fencing and controlled access to the site. - Provide clear GRM channels for community complaints.	Throughout construction	- Weekly site security and fencing inspections. - Monthly review of GRM records.	Main Contractor, ESO, CLO, Security	- No unresolved health or safety complaints from neighbours. - Site fully secured at all times.
Security and social risks from worker influx	- Register and issue identification to all workers. - Prefer local labour (target ≥70–90% unskilled from the community through the Chief / local administration). - Collaborate with local administration and police. - Enforce a strict code of conduct for workers.	Throughout construction	- Weekly review of worker register. - Monthly meetings with local administration.	Main Contractor, CLO, ESO	- ≥70–90% local unskilled labour achieved. - No major security or social incidents linked to workers.

Public health (HIV/AIDS, COVID-19, sanitation)	- Provide adequate toilet and washing facilities for workers. - Conduct awareness sessions on HIV/AIDS and other communicable diseases. - Ensure proper sanitation and waste management.	Throughout construction	- Monthly inspection of worker facilities. - Records of awareness sessions.	Main Contractor, ESO, CLO	- Adequate facilities always available. - Awareness sessions conducted at least quarterly.
PAP facilitation, livelihood restoration and engagement (private developer claim, any informal users, urban agriculture if present, neighbouring amenity impacts)	- Complete verified PAP register, valuation and facilitation before any demolition or displacement. - Provide livelihood restoration support as required under Chapter 8 measures. - Maintain continuous engagement with PAPs and neighbouring residents through the CLO and GRM. - Prioritise vulnerable groups for targeted support.	Pre-construction and throughout construction	- PAP register and facilitation records verified before works commence. - Monthly PAP engagement logs and GRM tracking. - Quarterly review of livelihood restoration progress.	Proponent (State Department), Main Contractor, CLO, ESO, Valuation Consultant	- 100% of identified PAPs facilitated before displacement. - No unresolved PAP grievances at handover of site for works. - Evidence of continuous engagement and livelihood support.

9. OCCUPATIONAL HEALTH AND SAFETY (OHS) MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
General construction hazards (falls, falling objects, machinery)	- Enforce OSHA 2007 requirements fully. - Provide and enforce use of appropriate PPE (helmets, safety boots, high-visibility vests, gloves, harnesses, etc.). - Install guardrails, safety nets and proper scaffolding. - Conduct daily toolbox talks and regular safety training. - Establish on-site first-aid station and emergency response procedures.	Throughout construction	- Daily PPE compliance checks. - Weekly safety inspections. - Monthly review of incident and near-miss reports.	Main Contractor, Safety Officer	- Zero fatalities. - Lost Time Injury Frequency Rate (LTIFR) kept as low as reasonably practicable. - 100% PPE compliance observed.

Working at height (G+8 structures)	- Use certified scaffolding and mobile elevated work platforms. - Mandatory use of safety harnesses above 2 metres. - Restrict work at height during strong winds or bad weather.	During superstructure works	- Daily inspection of scaffolding and harnesses. - Toolbox talks specific to work at height.	Main Contractor, Safety Officer	- No falls from height. - All height work equipment certified and inspected.

10. GENDER AND SOCIAL INCLUSION MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
Employment opportunities for women, youth and PWDs	- Target minimum 30% women in unskilled and semi-skilled roles. - Actively recruit local youth and persons with disabilities through the Chief and community structures. - Provide separate sanitary facilities for women.	Throughout construction	- Monthly gender and local employment statistics. - Review of recruitment records.	Main Contractor, CLO, ESO	- ≥30% female participation in unskilled/semi-skilled roles. - Evidence of inclusive recruitment.
Prevention of gender-based violence and harassment	- Enforce a clear zero-tolerance policy on sexual harassment and GBV. - Conduct mandatory induction on the code of conduct. - Provide confidential reporting channels through the GRM.	Throughout construction	- Quarterly review of any GBV/harassment cases. - Training attendance records.	Main Contractor, CLO, ESO	- Zero unresolved GBV/harassment cases. - All workers inducted on the code of conduct.

11.3 Operational Phase ESMP

1. NOISE MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
Noise from residential activities, generators and mechanical equipment	- Restrict use of backup generators to emergency periods only. - Ensure all generators and pumps are fitted with acoustic enclosures and mufflers. -	Throughout operation	- Quarterly noise measurements at site boundary and sensitive receptors (Southlands Estate residential blocks and adjacent properties).	Facility Management Company / Estate Manager, Environmental &	- Noise levels within EMCA limits (≤55 dB day / ≤35 dB night). - No unresolved noise complaints. - 100%

	Enforce quiet hours (10:00 PM – 6:00 AM). - Maintain all mechanical equipment regularly. - Comply with EMCA Noise and Excessive Vibration Pollution (Control) Regulations, 2009: Residential areas – Daytime ≤ 55 dB(A), Night-time ≤ 35 dB(A).		- Log all noise complaints in GRM. - Review generator operation logs monthly.	Social Officer (ESO)	compliance with quiet hours.
Noise from commercial stalls and community activities	- Restrict commercial activities (music, loading) to 7:00 AM – 8:00 PM. - Prohibit use of loudspeakers after 8:00 PM. - Sensitize stall operators and residents on noise regulations.	Throughout operation	- Monthly inspections of commercial areas. - Record complaints in GRM.	Estate Manager, CLO	- No unresolved complaints from Southlands Estate or neighbouring properties. - Evidence of sensitization meetings.

2. AIR QUALITY MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
Emissions from backup generators and cooking	- Use low-sulphur diesel for generators. - Ensure regular servicing of generators. - Promote LPG for cooking (as provided in the design). - Prohibit open burning of waste.	Throughout operation	- Quarterly stack emission tests on generators. - Visual inspection of cooking areas monthly. - Ambient air quality monitoring (PM_{10}, $PM_{2.5}$, NO_2, SO_2) twice a year near receptors.	Facility Management, ESO	- Emissions within NEMA Ambient Air Quality Standards ($PM_{10} \leq 100$ µg/m³ 24-hr mean; $PM_{2.5} \leq 75$ µg/m³ 24-hr mean, or current NEMA limits). - No open burning observed. - No unresolved air quality complaints.
Dust from internal roads and parking areas	- Maintain cabro roads and parking areas in good condition. - Sweep and water internal roads during dry seasons as needed.	Throughout operation	- Monthly inspection of road surfaces. - Record dust complaints in GRM.	Estate Manager	- Roads maintained (no significant dust). - No unresolved dust complaints.

3. SOLID WASTE MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
Domestic and commercial solid waste generation	- Provide adequate, colour-coded waste bins (organic, recyclable, residual) at each block and commercial stalls. - Contract a NEMA-licensed waste collector for daily/regular collection. - Promote source segregation and recycling. - Prohibit dumping or burning of waste on site or nearby.	Throughout operation	- Weekly inspection of waste collection points. - Review waste collection contracts and disposal manifests monthly. - Log waste-related complaints in GRM.	Facility Management, Waste Contractor, ESO	- 100% of waste collected by licensed contractor. - No illegal dumping observed. - ≥40% waste diverted for recycling (target). - No unresolved waste complaints.
Hazardous household waste (batteries, e-waste, used oil)	- Provide designated collection points for hazardous waste. - Partner with licensed hazardous waste handlers.	Throughout operation	- Quarterly audit of hazardous waste records.	Facility Management, ESO	- All hazardous waste disposed through licensed handlers. - Records available.

4. WATER RESOURCES AND WASTEWATER MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
High water demand and potential strain on supply	- Maintain borehole(s) and storage tanks in good working condition. - Implement water metering for each block/household where feasible. - Promote water-saving fixtures and resident awareness. - Monitor borehole yields and water quality quarterly.	Throughout operation	- Monthly water consumption records. - Quarterly borehole yield and water quality tests (as per WRA requirements). - Log water shortage complaints in GRM.	Facility Management, ESO	- No prolonged water shortages. - Water quality meets KEBS/WHO standards. - Borehole yields stable.
Wastewater and sewer management	- Ensure proper connection and maintenance of foul sewer system. - Prevent blockages through resident education. - Monitor for overflows, especially during rains (site has water-logged areas).	Throughout operation	- Weekly inspection of drainage and sewer manholes. - Immediate response to any overflow reported through the GRM.	Facility Management, ESO	- No sewer overflows. - 100% of wastewater directed to approved system. - No unresolved sewer complaints.

Stormwater drainage	- Maintain stormwater drains free of debris. - Ensure no blockage of natural drainage paths. - Address residual water-logging risks through ongoing maintenance of SUDS / drainage features.	Throughout operation (especially rainy seasons)	- Pre-rainy season and monthly inspections of drains.	Facility Management	- No flooding of internal roads or neighbouring properties (Southlands Estate). - Drains clear.

5. TRAFFIC AND ACCESS MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
Increased traffic from residents and visitors	- Maintain clear internal circulation and adequate parking. - Enforce one-way systems and speed limits (20 km/h) inside the estate. - Coordinate with KeNHA on access from Southern Bypass / local access roads.	Throughout operation	- Quarterly traffic observations at access points. - Log congestion/accident complaints in GRM.	Facility Management, Security	- No unresolved congestion complaints. - Internal roads free-flowing. - Zero serious accidents inside the estate.
Pedestrian and cyclist safety	- Maintain pedestrian walkways and lighting. - Ensure clear signage at entrances and exits.	Throughout operation	- Monthly inspection of walkways and lighting.	Facility Management	- Walkways and lighting functional (100%).

6. COMMUNITY HEALTH, SAFETY AND SECURITY MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
Security and social cohesion within the estate and with neighbours	- Maintain functional perimeter fencing, gates, gatehouses and security lighting. - Operate controlled access systems. - Continue engagement with Southlands Estate residents and the private developer through the CLO / GRM. - Enforce estate rules on noise, waste and behaviour.	Throughout operation	- Monthly security and fencing inspections. - Quarterly community liaison meetings and GRM review.	Facility Management, Security, CLO	- Site secured at all times. - No unresolved security or neighbour complaints linked to the estate.

Public health and sanitation	- Maintain adequate sanitation facilities and waste collection systems. - Conduct periodic resident awareness on hygiene, disease prevention and waste segregation.	Throughout operation	- Monthly inspection of sanitation and waste facilities. - Records of awareness sessions.	Facility Management, ESO	- Facilities functional and clean. - Awareness sessions held at least twice a year.
Residual PAP / livelihood and amenity impacts	- Maintain open GRM channels for any residual claims related to the private developer ownership issue or neighbouring amenity impacts. - Ensure any outstanding livelihood restoration commitments from construction phase are completed and monitored.	Throughout operation (first 2–3 years intensively)	- Quarterly GRM and PAP follow-up reports. - Annual review of residual impact status.	Facility Management / Proponent, CLO, ESO	- No outstanding unresolved PAP claims at end of monitoring period. - Evidence of continued engagement.

11.4 Decommissioning Phase ESMP

1. NOISE MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
Noise from demolition of multi-storey structures, breaking of concrete and heavy machinery	- Use low-noise equipment fitted with mufflers and silencers. - Restrict high-noise demolition activities to daytime hours only (7:00 AM – 6:00 PM). - Erect temporary acoustic barriers facing Southlands Estate residential blocks and the private developer's claimed parcel boundary. - Notify neighbouring receptors at least 7 days in advance of major demolition works. -	Throughout decommissioning	- Weekly noise measurements at site boundaries and key receptors (Southlands Estate blocks and adjacent properties). - Log all noise complaints in the GRM. - Bi-weekly inspection of acoustic barriers.	Main Contractor, ESO, CLO	- Noise levels within EMCA limits (≤55 dB day / ≤35 dB night). - No unresolved noise complaints. - Barriers installed and maintained (100%).

	Comply with EMCA Noise and Excessive Vibration Pollution (Control) Regulations, 2009: Residential areas – Daytime ≤ 55 dB(A), Night-time ≤ 35 dB(A).				
Noise from debris transportation	- Schedule debris removal trucks during off-peak hours (9:00 AM – 3:00 PM). - Ensure all trucks have functional mufflers. - Deploy traffic marshals to reduce unnecessary idling and honking.	Throughout decommissioning	- Daily monitoring of haulage schedules. - Record traffic-related noise complaints in GRM.	Main Contractor, Transport Supervisor, CLO	- No unresolved traffic noise complaints. - 100% of haulage vehicles compliant.

2. AIR QUALITY AND DUST MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
Dust from demolition, breaking of structures and debris handling	- Apply continuous water spraying / misting during demolition and debris handling. - Use dust screens and netting around active demolition zones, especially facing sensitive receptors (Southlands Estate and private developer boundary). - Cover debris stockpiles and loaded trucks with tarpaulins. - Prohibit dry sweeping; use wet methods only. - Provide appropriate dust masks (N95 or equivalent) to all workers.	Throughout decommissioning	- Daily verification of water spraying and dust suppression. - Weekly inspection of dust screens and stockpile covers. - Bi-weekly ambient air quality monitoring (PM_{10} & $PM_{2.5}$) at receptors.	Main Contractor, ESO	- Dust levels within NEMA Ambient Air Quality Standards (PM_{10} ≤ 100 µg/m³ 24-hr mean; $PM_{2.5}$ ≤ 75 µg/m³ 24-hr mean, or current NEMA limits). - No unresolved dust complaints from Southlands Estate or neighbouring properties. - 100% compliance with dust suppression measures.

Emissions from machinery and trucks	- Use well-maintained equipment and vehicles. - Limit idling time. - Conduct regular servicing of all plant.	Throughout decommissioning	- Weekly maintenance logs. - Daily observation of idling practices.	Main Contractor, Transport Supervisor, ESO	- No visible excessive emissions. - Maintenance records fully up to date.

3. VIBRATION MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
Vibration from demolition of multi-storey structures	- Conduct pre-demolition structural condition survey of neighbouring buildings (Southlands Estate residential blocks and any structures on the private developer's claimed parcel). - Use controlled demolition methods (e.g. sequential dismantling rather than explosive methods). - Monitor vibration levels during critical demolition stages. - Stop works immediately if vibration approaches damage thresholds.	During structural demolition	- Pre- and post-demolition structural survey reports. - Continuous or daily vibration monitoring during high-impact activities. - Log any vibration complaints in GRM.	Main Contractor, Structural Engineer, ESO	- No structural damage to neighbouring properties. - Vibration levels within safe limits (as per NEMA / BS standards). - Complete survey records available.

4. WASTE MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
Demolition debris (concrete, steel, timber, masonry, etc.)	- Develop a detailed Demolition Waste Management Plan before works begin. - Maximise recovery and recycling of materials (steel, concrete aggregate, timber). - Segregate waste at source. - Store debris in designated areas pending removal. -	Throughout decommissioning	- Weekly inspection of waste segregation and storage areas. - Review of recycling and disposal manifests monthly. - Log waste-related complaints in GRM.	Main Contractor, ESO, Waste Contractor	- ≥70% of demolition waste recycled or reused. - 100% of residual waste disposed through licensed handlers. - No illegal dumping.

	Dispose of residual waste only through NEMA-licensed facilities.				
Hazardous materials (asbestos if present, residual oils, chemicals, e-waste, fluorescent tubes)	- Conduct a pre-demolition hazardous materials survey. - Remove and handle hazardous materials only by licensed specialists under controlled conditions. - Store hazardous waste in secure, bunded, labelled areas. - Dispose through licensed hazardous waste contractors.	Before and during decommissioning	- Pre-demolition hazardous materials survey report. - Weekly inspection of hazardous storage. - Disposal certificates retained.	Main Contractor, ESO, Licensed Hazardous Waste Contractor	- Zero uncontrolled release of hazardous materials. - All hazardous waste fully tracked and disposed correctly.

5. WATER RESOURCES, DRAINAGE, EROSION AND CONTAMINATION MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
Stormwater runoff, erosion and sedimentation (site has water-logged areas)	- Maintain silt fences, sediment traps and temporary drainage throughout the works. - Protect exposed surfaces and stockpiles from rainfall. - Progressively stabilise and re-vegetate disturbed areas.	Throughout decommissioning (especially rainy seasons)	- Weekly inspection of silt traps and drainage. - Monitoring of runoff if discharging off-site.	Main Contractor, ESO	- No significant sedimentation of neighbouring properties or drainage systems. - Silt controls functional at all times.
Potential contamination from spills or residual materials	- Store any remaining fuels, oils and chemicals in bunded areas. - Provide spill kits and train workers on spill response. - Clean all residual contamination before site handover.	Throughout decommissioning	- Daily visual checks of storage areas. - Soil and water quality testing if contamination is suspected.	Main Contractor, ESO	- Zero significant contamination incidents. - Site left free of residual pollution.

Management of existing boreholes and water infrastructure	- Protect or properly decommission boreholes in accordance with WRA requirements. - Avoid damage to any remaining water supply or drainage infrastructure serving neighbouring areas.	During utility removal	- Records of borehole decommissioning (if applicable). - Coordination records with water authorities.	Main Contractor, ESO	- Boreholes properly decommissioned or protected. - No disruption to neighbouring water systems.

6. TRAFFIC AND ROAD SAFETY MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
Movement of heavy trucks removing debris	- Prepare and implement a Traffic Management Plan for the decommissioning phase. - Schedule haulage during off-peak hours (9:00 AM – 3:00 PM). - Deploy trained traffic marshals at all access points (Southern Bypass / local access). - Maintain the access road in a safe and dust-free condition.	Throughout decommissioning	- Daily monitoring of haulage schedules and marshal presence. - Weekly inspection of access road. - Log traffic complaints in GRM.	Main Contractor, Transport Supervisor, CLO	- No unresolved congestion or safety complaints. - Marshals present during all haulage periods (≥95%).
Pedestrian and community safety	- Install clear warning signage, temporary pedestrian routes and barriers. - Enforce strict speed limits (20 km/h) on site and access roads.	Throughout decommissioning	- Weekly inspection of signage, barriers and walkways. - Record of any accidents or near-misses.	Main Contractor, Safety Officer, CLO	- Zero serious accidents involving community members. - Signage and barriers maintained (100%).

7. COMMUNITY HEALTH, SAFETY AND SECURITY MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
Risks to neighbouring communities from	- Maintain secure fencing and controlled access at all times. - Implement all dust, noise and	Throughout decommissioning	- Weekly security and fencing inspections. -	Main Contractor, ESO, CLO, Security	- No unresolved health, safety or nuisance

demolition activities	vibration controls listed above. - Provide clear and accessible GRM channels. - Give advance notice of major demolition stages to Southlands Estate residents and the private developer.		Monthly review of GRM records and community notifications.		complaints from neighbours. - Site remains fully secured.
Security and social risks	- Register all workers and issue identification. - Enforce a strict code of conduct. - Collaborate with local administration and police.	Throughout decommissioning	- Weekly review of worker register. - Records of coordination with local authorities.	Main Contractor, CLO, ESO	- No major security or social incidents linked to the works.

8. OCCUPATIONAL HEALTH AND SAFETY (OHS) MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
Hazards associated with demolition of multi-storey buildings	- Enforce full compliance with OSHA 2007 and all applicable demolition safety standards. - Provide and enforce appropriate PPE (including respiratory protection, harnesses, helmets, safety boots, etc.). - Use only certified scaffolding, platforms and lifting equipment. - Conduct daily toolbox talks focused on demolition risks. - Maintain on-site first-aid and emergency response capability.	Throughout decommissioning	- Daily PPE and equipment compliance checks. - Weekly safety inspections. - Monthly review of incident and near-miss reports.	Main Contractor, Safety Officer	- Zero fatalities. - Lost Time Injury Frequency Rate kept as low as reasonably practicable. - 100% PPE compliance.
Working at height and structural collapse risks	- Implement a detailed Method Statement for sequential and controlled demolition. - Restrict access to active demolition zones. - Use safety nets, catch platforms and exclusion zones.	During structural demolition	- Daily inspection of exclusion zones and safety systems. - Method statements approved before works.	Main Contractor, Safety Officer, Structural Engineer	- No uncontrolled collapses or falls from height.

9. BIODIVERSITY AND SITE RESTORATION MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
Final site restoration and landscaping	- Remove all debris, temporary structures and contamination. - Regrade the site to stable contours. - Implement a comprehensive landscaping and re-vegetation plan using appropriate native species. - Restore or improve green spaces where feasible.	Final stage of decommissioning	- Post-demolition site inspection. - Verification of landscaping implementation and survival rates (3–6 months after planting).	Main Contractor, ESO	- Site left clean, stable and free of debris. - Landscaping successfully established (≥80% survival).
Protection of any remaining mature trees	- Protect any trees designated for retention during the entire decommissioning process.	Throughout decommissioning	- Regular inspection of tree protection measures.	Main Contractor, ESO	- No damage to trees marked for retention.

10. SOCIO-ECONOMIC AND GRIEVANCE MANAGEMENT PLAN

Aspect/Activity	Management Measures	Timing	Monitoring Measure	Responsibility	Performance Indicator
Grievance Redress	- Maintain a fully functional and accessible GRM throughout the decommissioning period. - Acknowledge complaints within 7 days and aim to resolve within 30 days.	Throughout decommissioning	- Monthly GRM performance reports. - Community feedback meetings as needed.	Main Contractor, CLO, ESO	- ≥90% of grievances resolved within 30 days. - GRM remains accessible and known to the community.
Communication and stakeholder engagement	- Provide regular updates to Southlands Estate residents, the private developer, local administration and other stakeholders on the decommissioning programme and timelines.	Throughout decommissioning	- Records of notifications and meetings.	Main Contractor, CLO	- Evidence of timely and transparent communication.

11.5 Emergency Preparedness and Response

An Emergency Preparedness and Response Plan (EPRP) shall be prepared by the Contractor (for the construction and decommissioning phases) and by the Estate Management Body (for the operational phase) and kept up to date throughout the project life cycle.

Core elements

a) Identification of potential emergencies (fire, medical emergency, structural failure, flooding related to the site's water-logged areas, hazardous material spill, security incident, extreme weather events).

b) Clear roles, responsibilities and communication protocols.

c) Emergency contact list (site management, Proponent – State Department for Housing and Urban Development, local administration, police, fire service, ambulance, nearest hospitals).

d) Evacuation routes, assembly points and procedures.

e) Location and maintenance of first-aid equipment, fire-fighting equipment and spill kits.

f) Training and drills for workers (construction and decommissioning phases) and for estate staff and resident representatives (operational phase).

g) Coordination arrangements with external emergency services.

h) Special provisions for vulnerable persons (Persons with Disabilities, elderly, children, and any residual Project Affected Persons).

i) Post-incident reporting, investigation and corrective action.

The EPRP will be communicated to all workers during induction and to residents during move-in orientation. Drills will be conducted at defined intervals. Any significant incident will be reported to the Proponent, NEMA and relevant authorities within the required timeframes.

Given Lot 2's location along the Southern Bypass and the presence of water-logged areas, particular attention will be paid to flood-related emergencies and safe access/egress for emergency vehicles.

11.6 Stakeholder Engagement / Communication Plan

Stakeholder engagement does not end with the ESIA public participation process. A structured Stakeholder Engagement and Communication Plan will be maintained throughout construction, operation and decommissioning of Kibra Lot 2.

Objectives

a) Keep Project Affected Persons (including the private developer claiming ownership of the parcel), neighbouring residents of Southlands Estate, local administration and other stakeholders informed of project progress, schedules and opportunities.

b) Provide regular feedback on how concerns are being addressed.

c) Maintain trust and reduce the risk of conflict or misinformation.

d) Facilitate continued input into adaptive management.

Key activities

a) Regular progress updates through the Chief's office, notice boards, and periodic community meetings.

b) Dedicated follow-up meetings with PAP representatives (including the private developer) and Southlands Estate Residential Association officials at key milestones (pre-clearance, start of construction, during major phases, at handover, and during decommissioning).

c) Timely notification of particularly disruptive activities (heavy lifts, extended working hours, utility interruptions, major demolition stages).

d) Disclosure of monitoring summaries and GRM performance in accessible formats.

e) Maintenance of open communication channels through the GRM and designated Community Liaison Officers.

f) Coordination of messaging across Lots 1–5 to ensure consistency of information provided to the wider Southlands community.

All engagement activities will be recorded (attendance lists, issues raised, responses given) and used to improve project performance. Special attention will be given to residual ownership claims and amenity concerns raised by neighbouring Southlands Estate residents.

11.7 Institutional Responsibilities

Clear allocation of responsibilities is essential for effective ESMP implementation on Lot 2.

Entity	Main Responsibilities
Proponent (State Department for Housing and Urban Development)	Overall accountability for ESMP implementation; provision of resources; PAP facilitation and livelihood restoration (including any residual claims related to the private developer); maintenance of the GRM at project level; reporting to NEMA and lead agencies; coordination across Lots 1–5; appointment of environmental and social specialists.
Supervising Consultant	Day-to-day supervision of Contractor compliance with the ESMP and C-ESMP; review and approval of method statements; regular inspections and reporting; verification of monitoring data; recommendation of corrective actions.
Contractor	Full implementation of the C-ESMP and all construction- and decommissioning-phase mitigation measures; preparation of supporting plans (OHS, Waste, Traffic, Emergency); training of workers; daily/weekly monitoring and reporting; immediate corrective action on non-conformances.
Estate Management Body (Operational Phase)	Implementation of operational ESMP measures; maintenance of buildings, infrastructure, green spaces and security; enforcement of resident rules; operation of the GRM at estate level; coordination with service providers (water, waste, security).
Local Administration (Chief / ACC)	Support for community liaison, local employment recruitment, dissemination of information, and first-line grievance uptake (particularly with Southlands Estate residents and the private developer).
NEMA	Regulatory oversight, review of monitoring reports, inspections, and enforcement as required.
Lead Agencies (KCAA, KeNHA, WRA, NCWSC,	Issuance and monitoring of their respective permits and conditions; technical input on specialized issues (including

KPLC, Nairobi City County, etc.)	aviation height clearance, access from Southern Bypass, water resources and drainage).
Affordable Housing Board	Oversight of housing allocation processes and higher-level grievance escalation where relevant.

The Proponent remains ultimately accountable for ensuring that all parties fulfil their responsibilities and that the ESMP objectives are achieved for Lot 2.

CHAPTER TWELVE: ENVIRONMENTAL AND SOCIAL MONITORING PLAN

12.1 Monitoring Objectives

The Environmental and Social Monitoring Plan provides a structured framework for tracking the implementation and effectiveness of the mitigation measures set out in the ESMP for Kibra Lot 2. Its specific objectives are to:

a) Verify that all environmental and social commitments made in this ESIA Study Report and the ESMP are implemented in a timely and effective manner;

b) Detect any unforeseen impacts or non-conformances at an early stage so that corrective action can be taken;

c) Measure actual changes in key environmental and social parameters against baseline conditions and predicted impacts;

d) Provide transparent, verifiable data for reporting to NEMA, lead agencies, the Proponent and other stakeholders;

e) Support adaptive management and continuous improvement throughout construction, operation and decommissioning;

f) Demonstrate compliance with the EMCA and EIA/EA Regulations;

g) Build accountability and public confidence by showing that monitoring results are used to manage residual risks, including those related to the private developer ownership claim and neighbouring Southlands Estate residents.

12.2 Environmental Monitoring

Aspect	Key Parameters / Focus Areas	Methods	Frequency	Responsibility	Action on Exceedance / Negative Trend
Vegetation & Trees	Tree retention, compensatory planting, survival rates, buffer & landscape condition (Lot 2 has >25 mature trees)	Inventory, visual inspection, photo records, survival counts	Pre-clearance; monthly during planting/establishment; quarterly thereafter	Contractor / Supervising Consultant	Replace failed plants; increase protection measures
Soil Erosion & Sediment	Presence of controls, sediment in runoff, exposed surface area (site has water-logged areas)	Visual inspection, photo records	Daily/weekly during earthworks	Contractor	Install/repair controls immediately
Stormwater Drainage	Drainage performance, off-site discharge quality, blockages, residual water-logging	Visual inspection, water sampling if discharging	Weekly during construction; before/after rains	Contractor / Supervising Consultant	Clear drains; enhance treatment
Waste	Generation, segregation, storage, disposal	Visual checks, waste register, manifests	Daily visual; weekly register review	Contractor	Correct non-compliance immediately
Energy & Fuel Use	Fuel consumption, generator hours (GHG tracking)	Records review	Monthly	Contractor	Optimise plant use
Housekeeping & Pollution Prevention	General site condition, spills, litter	Visual inspection	Daily	Contractor	Immediate clean-up

12.3 Social Monitoring

Aspect	Key Parameters	Methods	Frequency	Responsibility	Action on Issues
PAP Register & Facilitation	Completeness of register, facilitation delivered, livelihood status (including private developer claim)	File review, payment records, follow-up interviews	Monthly during displacement phase; quarterly thereafter	Proponent Social Specialist	Accelerate outstanding support

Vulnerable Households	Status and support received	Targeted follow-up	Monthly / quarterly	Proponent Social Specialist	Prioritise additional assistance
Local Employment	% local workers, gender & youth participation (target ≥70–90% unskilled)	Payroll records cross-checked with Chief	Monthly	Contractor / Proponent	Adjust recruitment
Grievance Redress Mechanism	Numbers received, resolved, pending, response time, recurrence	GRM database analysis	Weekly review; monthly trend report	Proponent / Community Liaison	Escalate overdue cases
Community Perceptions	Feedback from meetings and spot checks (Southlands Estate & private developer)	Meeting minutes, interviews, FGDs	At key milestones and quarterly	Proponent Social Specialist	Adjust engagement approach
Stakeholder Engagement	Implementation of commitments	Meeting records, attendance	Ongoing	Proponent	Fill gaps promptly
Social Conflict	Incidents of protest or tension	Incident log, local admin feedback	Continuous	Proponent	Immediate de-escalation

12.4 OHS Monitoring

Indicator	Method	Frequency	Responsibility	Action
Induction & Toolbox Talks coverage	Training register review	Weekly	Contractor OHS	Conduct catch-up training
PPE availability & usage	Visual observation	Daily	Contractor OHS	Enforce immediately
Incidents, accidents, near-misses	Incident log	Continuous recording; weekly review	Contractor	Investigate & report serious cases to Proponent / DOSHS / NEMA
Lost-time injury frequency	Calculated from records	Monthly	Contractor / Supervising Consultant	Root-cause analysis & corrective action
First-aid, fire equipment & drills	Inspection & drill records	Weekly inspection; drills as scheduled	Contractor	Replenish / retrain
Welfare facilities	Visual inspection	Weekly	Supervising Consultant	Rectify deficiencies
Non-conformance closure rate	Audit / inspection tracking	Weekly / monthly	Supervising Consultant	Escalate open items

12.5 Water Quality Monitoring

Parameter	Location / Source	Frequency	Method	Standard / Trigger

pH, turbidity, EC, TDS, key ions, E. coli / coliforms	Boreholes	Baseline before use; Quarterly (or per WRA permit) during construction & first 2 years of operation	Accredited laboratory	WRA permit limits
Suspended solids, pH, oils & grease	Construction runoff / discharges leaving site (especially near water-logged areas)	When discharging or after heavy rain	Accredited laboratory or field kit	No pollution of receiving environment
Municipal supply quality	Point of receipt (reference)	As needed	Laboratory	For comparison only

12.6 Air Quality Monitoring

Parameter	Locations	Frequency	Method	Action on Exceedance
Dust / Particulate matter (visual + quantitative PM_{10} or TSP)	Boundaries next to Southlands Estate residential blocks and private developer claimed parcel; downwind points	Daily visual during dry earthworks; quantitative at start of high-dust phases, monthly in high-risk periods, and on complaint	Visual + calibrated equipment	Enhance water spraying, install additional screens, adjust methods, or temporarily suspend high-dust works
Visible emissions from plant/vehicles	Site-wide	Continuous observation	Visual	Maintain/repair equipment

12.7 Noise Monitoring

Parameter	Locations	Frequency	Method	Action on Exceedance
Ambient noise (LAeq, Lmax)	Boundaries closest to Southlands Estate residential buildings; representative points in nearest estates (if access granted)	Baseline before noisy works; Weekly during high-noise phases; Monthly in lower-intensity periods; immediate on complaint	Calibrated sound level meter	Investigate source, install barriers, maintain equipment, reschedule works, feedback through GRM
Working-hour compliance	Site-wide	Continuous	Observation & records	Enforce approved hours (7:00 AM – 6:00 PM for high-noise works)
Impulsive / tonal noise	As above	During relevant activities	Observation + measurement	Additional mitigation

Performance standard: Residential areas – Daytime ≤ 55 dB(A), Night-time ≤ 35 dB(A) (EMCA Noise Regulations, 2009).

12.8 Waste Monitoring

Indicator	Method	Frequency	Responsibility	Action on Non-conformance

Quantities by category	Waste register	Daily recording; monthly summary	Contractor	—
Segregation rate	Visual + register	Daily visual; weekly review	Contractor / Supervising Consultant	Re-train & enforce
Reuse / recycle vs disposal	Manifests & register	Monthly	Contractor	Maximise recovery (≥60% construction; ≥70% decommissioning target)
Storage areas condition	Visual inspection	Daily / weekly	Contractor	Correct immediately
Carrier & disposal site licences	Document check	Before engagement & spot checks	Supervising Consultant	Use only licensed operators
Incidents (burning, dumping, improper storage)	Observation & records	Continuous	Contractor	Immediate stop + corrective action + possible sanctions
Completeness of manifests	Document review	Weekly / monthly	Supervising Consultant	Complete missing records

12.9 Traffic Monitoring

Phase	Indicators	Method	Frequency	Action
Construction	CTMP compliance (access, holding areas, timing, flagmen, signage); queue lengths; incidents/near-misses; mud/debris on roads; traffic complaints (Southern Bypass / local access)	Daily observation + weekly formal check	Daily by Contractor; Weekly by Supervising Consultant	Adjust CTMP; increase controls; liaise with KeNHA
Operational	Access junction functioning; on-site parking occupancy & overspill; delays/safety issues; pedestrian facility condition; traffic grievances	Structured observation	Monthly/quarterly for first 12–24 months; continuous through GRM	Enforce parking rules; improve facilities; consult KeNHA/County

12.10 Community Grievance Monitoring

Indicator	Method	Frequency	Responsibility	Action
Number received (by category)	GRM database	Continuous logging; weekly review	Community Liaison / Social Specialist	—
% resolved within timeframe	Database analysis	Weekly / monthly	Proponent	Prioritise overdue cases
Number pending & average resolution time	Database	Monthly	Proponent	Escalate systemic delays

Repeat / escalated grievances	Database + analysis	Monthly	Proponent	Root-cause analysis
Distribution by stakeholder group (Southlands Estate, private developer, others)	Database	Monthly	Proponent	Tailor responses
Root causes & systemic issues	Qualitative review	Monthly / quarterly	Proponent	Adjust mitigation or engagement

12.11 Reporting Requirements

Clear and timely reporting ensures transparency, regulatory compliance and informed decision-making for Lot 2.

Reporting hierarchy and frequency

Report Type	Prepared by	Submitted to	Frequency	Content Focus
Daily / Weekly Site Report	Contractor	Supervising Consultant	Daily (key issues) / Weekly	Activities, incidents, non-conformances, GRM summary, monitoring highlights
Monthly Progress Report	Supervising Consultant	Proponent	Monthly	ESMP compliance status, monitoring results, grievances, corrective actions, employment & PAP updates
Semi-annual / Annual Environmental & Social Monitoring Report	Proponent (with Consultant support)	NEMA & relevant lead agencies	Semi-annual during construction; Annual during early operation	Full monitoring data, trend analysis, compliance assessment, adaptive management actions, stakeholder engagement summary
Incident Reports	Contractor / Proponent	Proponent, NEMA, DOSHS (as applicable)	Within 24–72 hours for serious incidents	Description, immediate response, investigation findings, corrective & preventive actions
Completion / Handover Report	Supervising Consultant / Proponent	NEMA & Proponent	At end of construction	Final compliance status, outstanding actions, operational ESMP readiness

CHAPTER THIRTEEN: CONCLUSION AND RECOMMENDATIONS

13.1 Conclusion

The proposed construction of social and affordable housing and associated infrastructure on Kibra Lot 2 (Southlands, Mugumo-ini Ward, Lang'ata Constituency, Nairobi County) has been subjected to a comprehensive, fresh Environmental and Social Impact Assessment in full compliance with the Environmental Management and Coordination Act (EMCA), Cap 387, the Environmental (Impact Assessment and Audit) Regulations, 2003 (as amended), and the Terms of Reference approved by the National Environment Management Authority (NEMA).

The project entails the development of sixteen (16) multi-storey residential blocks of Ground plus eight floors (G+8) configuration on approximately 6 acres of land, delivering a total of 1,584 housing units (a mix of social housing and affordable housing units) together with supporting infrastructure. These include cabro-paved internal roads and parking, storm-water and foul drainage systems, water supply (including boreholes and storage), power supply with backup generation, solid-waste management facilities, green spaces, children's play areas, commercial stalls, and perimeter security infrastructure. The maximum building height of 29 metres has been cleared by the Kenya Civil Aviation Authority (KCAA) in view of the site's location within the Wilson Airport Obstacle Limitation Surfaces.

The assessment has confirmed that the project is consistent with national policy priorities, particularly Article 43(1)(b) of the Constitution of Kenya, 2010 (right to accessible and adequate housing), Kenya Vision 2030, the National Housing Policy, the Affordable Housing Act, 2024, and the National Climate Change Action Plan 2023–2027. It will make a significant contribution to reducing Nairobi's urban housing deficit while generating employment and business opportunities for the surrounding community.

Baseline studies have identified key site characteristics and sensitivities, including: Portions of water-logged ground requiring careful earthworks and drainage design; Presence of 25 mature trees; Proximity to established residential receptors (Southlands Estate and a private developer asserting ownership claims over part of the parcel); Location adjacent to the Southern Bypass (KeNHA jurisdiction) with currently limited access and Proximity to River Motoine and River Ngong, both draining into Nairobi Dam.

Potential negative impacts during pre-construction, construction, operation and eventual decommissioning phases have been systematically identified and assessed. These include dust and noise generation, traffic disruption, temporary loss of vegetation, risks to water quality and drainage, occupational health and safety hazards, and social concerns related to neighbouring residents and any residual Project Affected Persons (including ownership claims).

All significant adverse impacts can be avoided, minimised or offset to acceptable levels through the implementation of the comprehensive Environmental and Social Management and Monitoring Plan (ESMP) set out in Chapters Eleven and Twelve. Residual impacts after mitigation are predicted to be low to moderate and manageable. Positive impacts — particularly the delivery of 1,584 decent housing units, local employment (with a target of approximately 90 % local labour where skills permit), improved infrastructure, and contribution to orderly urban development — substantially outweigh the residual negative effects.

The project has undergone inclusive public participation in accordance with Regulation 17 of the EIA/EA Regulations. Concerns raised by stakeholders (including neighbouring residential associations, the private developer, youth, women, persons with disabilities and

local administration) have been documented and addressed through design refinements, mitigation measures and the Grievance Redress Mechanism.

In light of the foregoing, the ESIA Study concludes that the proposed Kibra Lot 2 development is environmentally and socially acceptable, provided that the ESMP, monitoring programme, and all recommended conditions are fully implemented and enforced throughout the project life cycle.

13.2 Recommendations

Based on the findings of this ESIA Study, the following recommendations are made:

1. **Mandatory Conditions for Implementation** a) Full implementation of the Environmental and Social Management and Monitoring Plan (Chapters 11 and 12) by the Proponent, Supervising Consultant and Contractor. b) Prioritisation of local employment (target ≥90 % of unskilled and semi-skilled labour from the surrounding community) coordinated through the area Chief. c) Strict adherence to the KCAA height clearance (maximum 29 m / G+8) and all aviation-safety conditions. d) Preparation and approval of a detailed Construction Traffic Management Plan in consultation with KeNHA before commencement of works, with particular attention to safe access from the Southern Bypass corridor. e) Treatment of water-logged areas and design of an effective storm-water management system to prevent off-site flooding or pollution of River Motoine, River Ngong and Nairobi Dam. f) Inventory, protection or compensatory planting of the approximately 25 mature trees in accordance with the biodiversity and landscaping measures in the ESMP. g) Continuous operation of an accessible Grievance Redress Mechanism throughout construction, operation and any future decommissioning, with particular attention to concerns of Southlands Estate residents and the private developer asserting ownership claims. h) Regular environmental and social monitoring and reporting to NEMA as specified in Chapter 12 (semi-annual during construction; annual during early operation). i) Preparation of a Decommissioning Plan (should it become necessary) for NEMA approval prior to any permanent cessation of operations.

2. **Institutional Coordination** The Proponent (State Department for Housing and Urban Development) shall maintain close coordination with all relevant lead agencies (KCAA, KeNHA, WRA, NCWSC, KPLC, Nairobi City County, DOSHS, National Land Commission and local administration) to ensure timely issuance of permits and compliance with specialised conditions.

3. **Adaptive Management** The Proponent and Supervising Consultant shall apply adaptive management based on monitoring results and stakeholder feedback. Any significant unforeseen impact or non-conformance shall be reported to NEMA promptly and corrective measures implemented without delay.

4. **Public Disclosure and Continued Engagement** Key project information, monitoring summaries and GRM performance shall be disclosed in accessible formats to the local community. Structured engagement with Project Affected Persons, Southlands Estate residents and other stakeholders shall continue throughout the project life cycle.

REFERENCES

Affordable Housing Act, No. 2 of 2024 (Kenya).

Climate Change Act, No. 11 of 2016 (Kenya).

Constitution of Kenya, 2010.

Environmental (Impact Assessment and Audit) Regulations, 2003 (Legal Notice No. 101 of 2003) (as amended by Legal Notices Nos. 31 and 32 of 2019) (Kenya).

Environmental Management and Coordination (Air Quality) Regulations, 2014 (Legal Notice No. 34 of 2014) (Kenya).

Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 (Legal Notice No. 61 of 2009) (Kenya).

Environmental Management and Coordination (Waste Management) Regulations, 2006 (Legal Notice No. 121 of 2006) (Kenya).

Environmental Management and Coordination (Water Quality) Regulations, 2006 (Legal Notice No. 120 of 2006) (Kenya).

Environmental Management and Coordination Act, Cap. 387 (Kenya) (as amended).

Forest Conservation and Management Act, No. 34 of 2016 (Kenya).

Government of Kenya. (2009). *Sessional Paper No. 3 of 2009 on National Land Policy*. Government Printer.

Government of Kenya. (2014). *Sessional Paper No. 10 of 2014 on National Environmental Policy*. Government Printer.

Government of Kenya. (2016). *National Housing Policy (Sessional Paper No. 3 of 2016)*. Government Printer.

Government of Kenya. (2016). *National Urban Development Policy*. Government Printer.

Government of Kenya. (2019). *National Policy on Gender and Development*. Government Printer.

Government of Kenya. (2023). *National Climate Change Action Plan (NCCAP) 2023–2027*. Ministry of Environment, Climate Change and Forestry / Climate Change Directorate.

Kenya Roads Act, No. 2 of 2007 (Kenya).

Kenya Vision 2030. (2007). Government of the Republic of Kenya.

Land Act, No. 6 of 2012 (Kenya).

Land Registration Act, No. 3 of 2012 (Kenya).

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

Okoiti v. Ministry of Lands, Public Works, Housing and Urban Development & others (Environment and Land Court Petition E052 of 2025) [2026] KEELC 3230 (KLR) (29 May 2026).

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

Public Health Act, Cap. 242 (Kenya).

Sustainable Waste Management Act, No. 31 of 2022 (Kenya).

Traffic Act, Cap. 403 (Kenya).

Water Act, No. 43 of 2016 (Kenya).

Wildlife Conservation and Management Act, No. 47 of 2013 (Kenya).