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# A THOUSAND STREET SETTLEMENT

**REPORT 3**

Settlement Profiling - Homa Bay County

# AUTHORS & ACKNOWLEDGEMENTS

THIS REPORT WAS DEVELOPED BY

**Akiba Mashinani Trust (AMT)**

This *Situational Analysis Report for A thousand Street Informal Settlement* was prepared by Akiba Mashinani Trust (AMT) in collaboration with the **County Government of Homa Bay** through its **Department of Lands, Housing, Physical Planning and Urban Development**. The report provides a comprehensive baseline assessment of socio-economic, spatial, and environmental conditions on A thousand Street to inform inclusive, climate-resilient, and sustainable settlement upgrading under the **Local Physical and Land Use Development Plan (LPLUDP)** framework.

The study integrates quantitative household surveys, spatial mapping, and participatory community profiling, and forms part of AMT's broader work on **locally led adaptation and settlement resilience** within informal settlements across the Lake Victoria basin.

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# EXECUTIVE SUMMARY

This situational analysis presents a comprehensive overview of conditions in A Thousand Street, an informal settlement on the highlands around Oyugis in Homa Bay County. Drawing on household survey data from 1710 households, the report highlights the settlement's physical environment, demographic profile, land tenure, housing, infrastructure, social services, and socio-economic dynamics, alongside key vulnerabilities and opportunities for upgrading.

The physical environment is shaped by gently undulating topography, seasonal flooding, and widespread use of charcoal and firewood, which place pressure on tree cover and household health. Flooding affects 4% of households, is short-lived, and typically linked to poor drainage rather than river overflow. Adoption of solar lighting 33% signals positive community resilience.

Demographically, the settlement hosts between 4600 to 5,600 residents, with small household sizes (median = 2.7). Population density is high, and many households are led by women, widows, or the elderly. Economic vulnerability is severe: the median income and expenditure are both around KSH 3,001 per month, leaving little financial buffer. About 13% of households report no income, and unemployment ranks as the top community concern.

Land tenure is largely informal, discouraging long-term investment in housing and infrastructure. Housing is dominated by semi-permanent units, with overcrowding and limited ventilation contributing to poor living conditions. Infrastructure services remain basic as most households rely on shared toilets 79%, boreholes 46%, and unpaved access roads. Waste management is irregular, and ICT access is limited. Social infrastructure gaps are evident in education, health care, recreational spaces, and security. Youth unemployment, crime, and substance abuse undermine social cohesion.

The report identifies both vulnerabilities and opportunities. Incremental upgrading in drainage, sanitation, energy transition, and youth livelihoods could deliver high-impact benefits. Addressing cross-cutting issues like poverty, gender inequalities, environmental sustainability, and tenure security is critical for transforming A Thousand Street into a more resilient and inclusive settlement.

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# 1 INTRODUCTION

## 1.1 Introduction

This Situational Analysis Report provides a comprehensive baseline review of conditions in *A Thousand Street*, an informal settlement situated on the highlands surrounding Oyugis town in Homa Bay County. The analysis draws on household survey data covering 1,710 households, a systematic numbering and mapping exercise, and community-level profiling to present an integrated picture of the settlement's demographic structure, housing conditions, infrastructure, livelihoods, and environmental risks. By consolidating both quantitative and qualitative findings, the report aims to provide planners, policymakers, and development partners with an accurate understanding of the realities on the ground. This is not only essential for evidence-based decision-making but also for ensuring that interventions reflect community priorities and strengthen local resilience.

Beyond its diagnostic role, the report positions *A Thousand Street* within a broader framework of inclusive and climate-responsive urban development. It highlights pressing issues such as insecure tenure, overcrowding, service deficits, and socio-economic vulnerability, while also documenting community adaptation signals such as the uptake of solar energy and collective coping strategies for seasonal flooding. By situating the settlement's challenges and opportunities within the context of Homa Bay County's rapid urban growth, the report sets the foundation for structured planning

processes that prioritize equity, sustainability, and resilience. Ultimately, the findings serve as a critical input for guiding incremental upgrading, integrating *A Thousand Street* into municipal planning frameworks, and shaping locally led solutions that improve living standards while addressing long-term environmental and economic risks.

## 1.2 Historical Background

The origins of *A Thousand Street* are closely tied to the historical evolution of Oyugis town in Homa Bay County. Prior to colonial settlement, the region was inhabited predominantly by the Luo community, whose livelihoods centred on subsistence farming, fishing, and small-scale trade. Fertile soils, moderate rainfall, and strategic location along inland routes made the area a natural settlement corridor. Traditional land tenure systems were clan-based and organized around communal use, reflecting a socio-cultural framework that emphasised kinship and resource sharing. With the advent of colonial administration in the early 20th century, however, these dynamics began to change, as land was increasingly commodified and new transport corridors reoriented settlement patterns (Homabay County Government, 2023).

The formal establishment of Oyugis as a colonial administrative centre is generally dated to around 1907,

when the British appointed **Chief Oyugi Bala** as the first local chief in the area. According to local histories, the town derived its name from him. British colonial officers reportedly anglicised the name by adding the letter “-s” to *Oyugi*, creating “Oyugis,” a pattern consistent with colonial practices of modifying indigenous names for ease of use in administrative records (Nyongesa Sande, 2024; The Standard, 2019). This moment signalled the transformation of Oyugis from a dispersed rural settlement into a budding administrative hub, attracting migrants and traders due to its position along the Kisumu–Kisii route.

Since independence in 1963, Oyugis has expanded into an important commercial and administrative town in Homa Bay County. Recent urban planning documents identify the municipality as covering approximately **105 km<sup>2</sup>**, with a current population of **about 70,025** and a projected increase to nearly **96,322 by 2033** (Homabay County Government, 2023). Infrastructure investments in water supply, road networks, health facilities, and schools have reinforced Oyugis as a regional hub. This growth has catalysed the emergence of informal settlements like *A Thousand Street*, which absorb migration flows and provide affordable, though precarious, housing for low-income households seeking proximity to economic opportunities. The historical trajectory of Oyugis shaped by colonial naming practices, infrastructural expansion, and demographic pressures remains central to understanding the conditions and challenges facing *A Thousand Street* today.

### 1.3 Problem Statement

*A Thousand Street* faces a complex set of interlocking challenges that undermine residents’ wellbeing, constrain their adaptive capacity, and exacerbate vulnerability to climate change. Despite its proximity to Oyugis town and evolving infrastructure, many households live in semi-permanent or informal housing with overcrowding, insecure tenure, and limited access to safe water, sanitation, energy, and waste systems. These deficits lead to adverse health outcomes, including water- and vector-borne diseases, respiratory problems from indoor air pollution, and inadequate shelter during severe weather. The absence of reliable infrastructure also constrains livelihoods, trapping households in cycles of poverty and limiting opportunities for social mobility.

Climate change magnifies these existing deficits. Extreme weather heavy and erratic rainfall, flooding, droughts, heat stress is increasingly affecting informal settlements in Kenya and across Sub-Saharan Africa. Informal areas are often located in high risk zones (e.g., near riverbanks, low-lying depressions, floodplains), with

poor drainage, weak solid waste management, and inadequate environmental planning, leaving residents exposed to flooding and water contamination (Frontiers in Public Health, 2024; Nature Climate Change, 2024). In Nairobi’s Mukuru settlement, for example, residents report heating more intensely, facing water scarcity during droughts, and suffering disproportionately during extreme rainfall events due to deficient sanitation and shelter structures (Frontiers, 2024; Andersen et al., 2023).

In *A Thousand Street*, many of these climate-sensitive vulnerabilities remain under-documented and unaddressed. Lack of formal flood risk mapping, incomplete knowledge of household coping strategies, weak tenure security, and limited social safety nets mean that climate shocks can rapidly become disasters. Seasonal floods may destroy homes; prolonged dry spells exacerbate water shortages; high temperatures worsen health risks particularly for children, the elderly, and people with pre-existing conditions. The intersection of infrastructural deficiency, socio-economic fragility, and climatic hazards poses a persistent threat to safety, sustainability, and dignity of settlement dwellers. For sustainable upgrading, planning must integrate climate adaptation measures such as resilient housing, nature-based drainage solutions, secure tenure, and community-based health and early warning systems so that interventions reduce current risk and enhance resilience to future climate change.

### 1.4 Scope

This situational analysis focuses on *A Thousand Street* as an informal settlement within Oyugis municipality, examining the structural, socio-economic, and environmental conditions that shape residents’ lives. The scope is intentionally multi-sectoral, recognizing that the challenges facing informal settlements cannot be understood through a single lens. Instead, the study integrates physical environment, settlement morphology, household demographics, service access, livelihoods, and climate-related vulnerabilities into a holistic baseline for planning.

The analysis relies on a combination of primary and secondary data sources. Primary data include a structured household survey of 1,710 households, a settlement numbering and mapping exercise, and participatory community profiling. These datasets provide quantifiable indicators of population, housing, water and sanitation access, energy use, waste management, and hazard exposure. Secondary data are drawn from county government reports, urban planning frameworks, and relevant scholarly research on informal settlements and climate adaptation in Kenya and Sub-Saharan Africa. The scope is limited to the settlement

level, but situates A Thousand Street within the broader urban system of Oyugis, ensuring that its challenges and opportunities are understood in relation to municipal growth trajectories and climate resilience goals.

The scope does not attempt to provide detailed engineering designs, exhaustive socio-legal analysis of land tenure, or comprehensive environmental impact assessments, as these require separate technical studies. Instead, it establishes a situational baseline from which sector-specific interventions such as resilient housing, drainage upgrades, tenure regularisation, and livelihood strengthening can be developed. By foregrounding the intersection of poverty, service deficits, and climate risk, the scope ensures that planning for A Thousand Street is grounded in evidence, inclusive of community perspectives, and aligned with national and global commitments to sustainable urban development and climate adaptation.

## 1.5 Objectives

### General Objective

The overarching objective of this situational analysis is to establish a comprehensive baseline of conditions in *A Thousand Street* that can inform inclusive, sustainable, and climate-resilient settlement upgrading. By documenting the physical, socio-economic, and infrastructural realities of the settlement, the analysis seeks to provide a foundation for evidence-based decision-making that aligns local priorities with county development frameworks and global urban resilience agendas.

### Specific Objectives

1. **To assess the demographic and spatial profile** of *A Thousand Street*, including population size, household structure, and settlement density.
2. **To examine housing and tenure dynamics**, identifying prevailing typologies, cost burdens, and implications of insecure tenure for upgrading.
3. **To evaluate service access and infrastructure**, focusing on water, sanitation, energy, waste management, transport, and ICT, as key determinants of living standards and public health.
4. **To analyse socio-economic conditions and livelihoods**, including income sources, expenditure patterns, and financial vulnerabilities that shape household resilience.
5. **To identify environmental pressures and hazards**, such as flooding, drought, and indoor

air pollution, and assess their intersection with climate change.

6. **To document community priorities and coping strategies**, ensuring that planning interventions are participatory and responsive to local needs.
7. **To generate evidence-based recommendations** that integrate climate adaptation, equity, and sustainability into settlement planning and upgrading pathways.

## 1.6 Methodology

### 1.6.1 Approach and Rationale

The methodology for this situational analysis combines quantitative, qualitative, and participatory approaches to capture the multidimensional realities of *A Thousand Street*. Given the complexity of informal settlements, a mixed-methods design was essential to balance statistical representativeness with community-driven insights. Quantitative data were drawn from a household survey of 1,710 households and a numbering exercise that mapped housing units across the settlement. These were complemented by qualitative observations, stakeholder consultations, and participatory validation workshops to ensure that findings reflected lived experiences and local priorities. The rationale for this design was to generate reliable evidence that not only informs technical upgrading strategies but also builds legitimacy through community ownership.

### 1.6.2 Data Collection Methods

- **Household Survey:** A structured questionnaire captured demographic information, water and sanitation access, energy use, waste management, hazard exposure, and livelihoods. This provided quantitative indicators for settlement profiling.
- **Numbering and Mapping:** A spatial enumeration exercise was conducted to record the total number of housing units, enabling calculation of population estimates and survey coverage.
- **Key Informant Engagement:** Discussions with community leaders, women's groups, youth representatives, and local officials provided contextual insights into settlement dynamics and governance structures.
- **Secondary Data Review:** County government reports, academic studies, and global literature on informal settlements and climate adaptation informed comparative analysis and contextual grounding.

### 1.6.3 Data Analysis and Synthesis

Data from the household survey were cleaned, coded, and analysed using statistical software to generate frequencies, cross-tabulations, and measures of central tendency. Findings were triangulated with qualitative inputs and secondary sources to ensure internal validity. The synthesis was organized thematically to align with the Sofia situational analysis structure, ensuring comparability and consistency across sections. Quantitative data provided numerical baselines, while qualitative narratives enriched interpretation of community priorities and vulnerabilities.

### 1.6.4 Data Validation and Stakeholder Engagement

Preliminary findings were validated through community feedback sessions and consultations with settlement representatives, county government officials, and civil society partners. This participatory validation ensured accuracy, built trust, and integrated local perspectives into the analysis. It also allowed stakeholders to highlight emerging issues such as tenure insecurity,

safety concerns, and climate risks that might not be fully captured through structured surveys.

### 1.6.5 Limitations and Mitigation Strategies

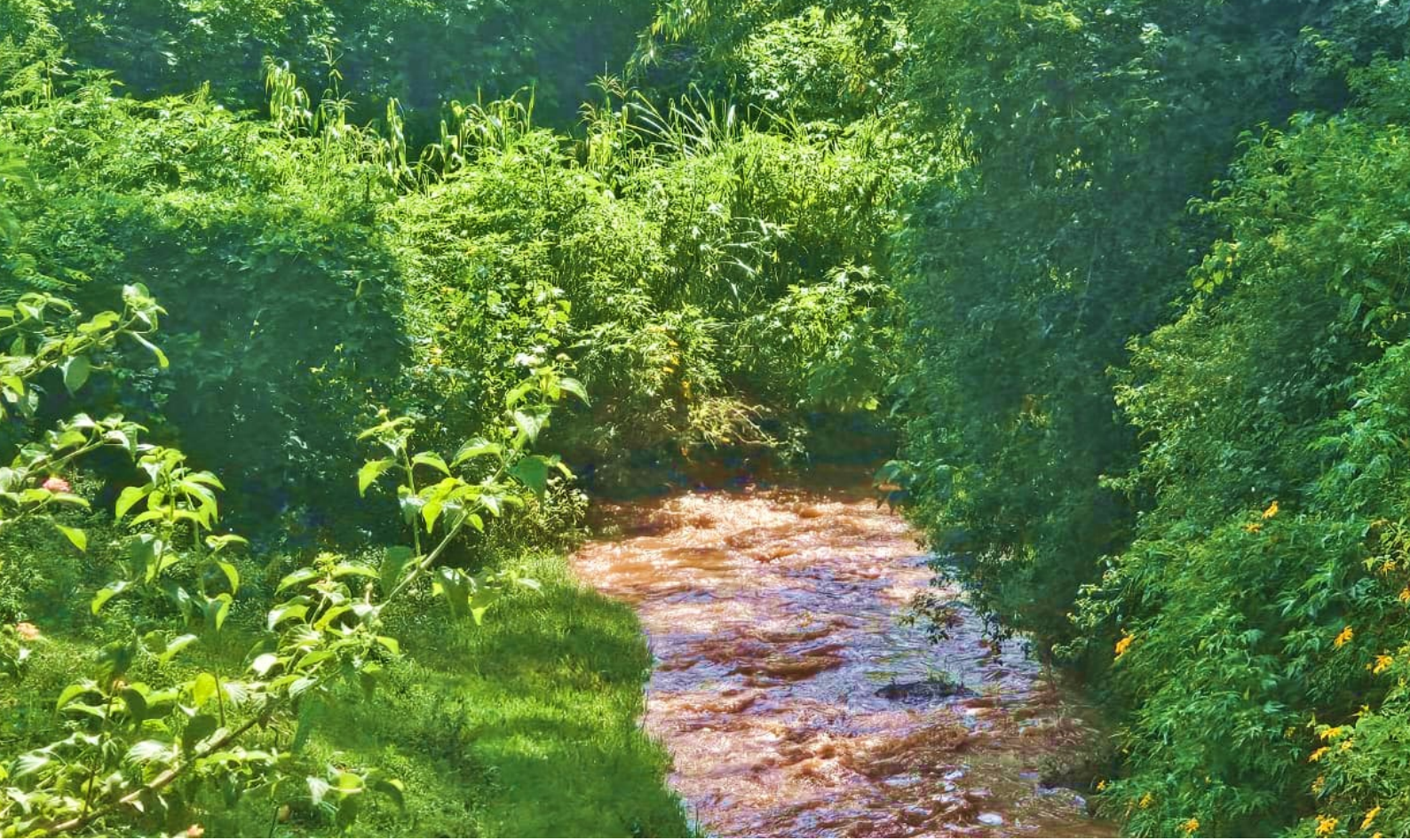
**Geological and hydrological data gaps:** No detailed soil or drainage studies were conducted; these limitations were addressed through use of regional environmental data.

**Resource and time constraints:** The scope of data collection was limited; prioritisation of essential indicators mitigated this gap.

**Coverage gaps:** While 1,710 households were surveyed, full alignment with the total numbered housing units required extrapolation to estimate population size.

**Tenure sensitivities:** Information on land ownership and occupancy was treated with confidentiality, and identifiers were anonymised to protect households.

**Climate data limitations:** Localised meteorological data were limited; secondary datasets from county and national sources were used to approximate climate risks.



## 2 PHYSICAL ENVIRONMENT

### 2.1 Topography

#### 2.1.1 Elevation

*A Thousand Street* occupies a transitional upland terrain on the eastern edge of **Oyugis Municipality**, with elevation ranging from **1,379 to 1,430 meters above sea level** (see Map 1). The landscape rises gently from the **western boundary near the Oyugis–Kisii road (A1)** toward the **northeast ridge along the Karachuonyo–Oyugis bypass**, forming a smooth undulating slope that defines the settlement's physical character.

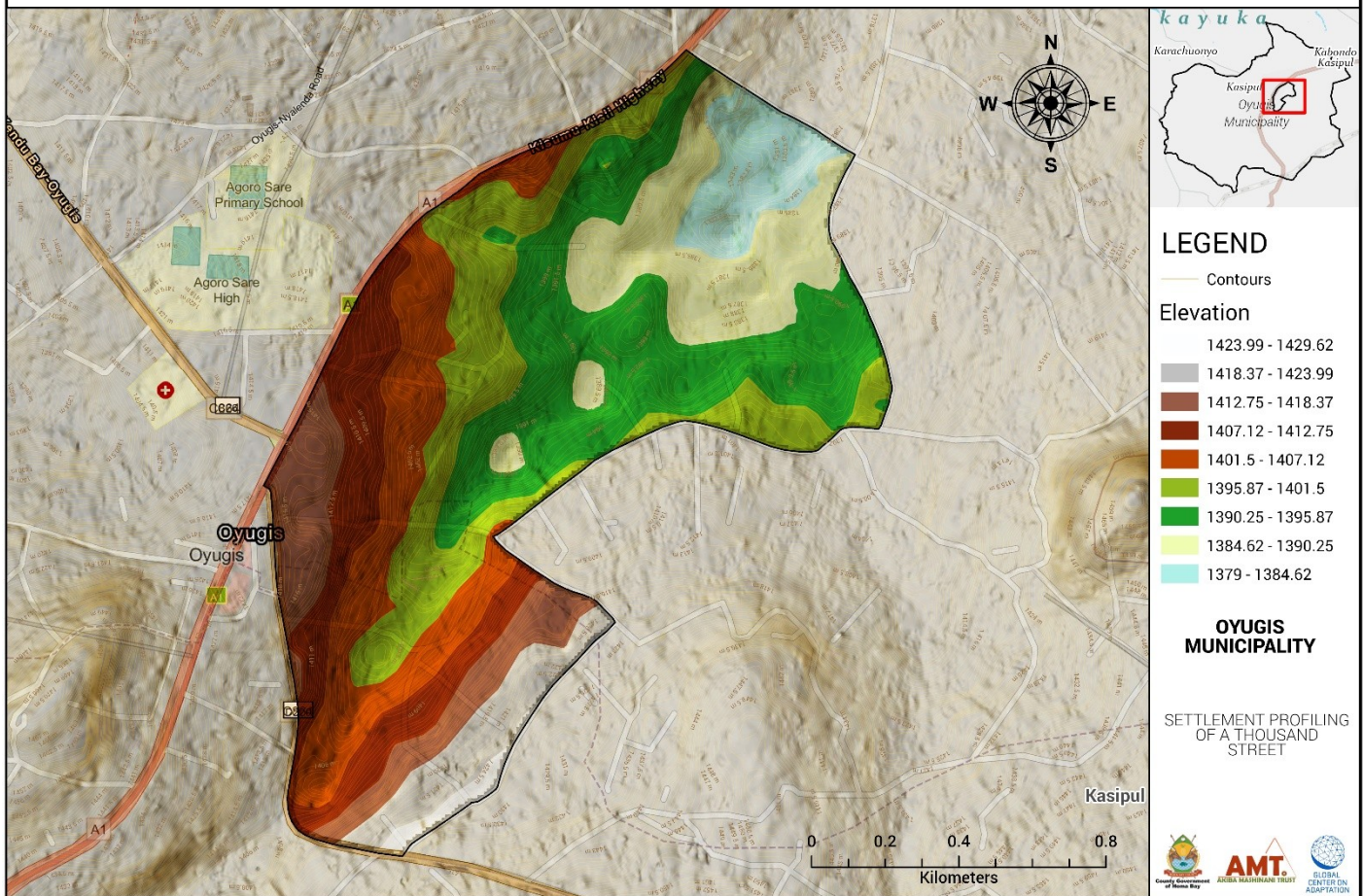
The **lowest elevations (1,379–1,390 m)** occur along the southwestern fringe adjoining Oyugis town, where surface runoff naturally accumulates. These depressions experience minor ponding and form the main drainage convergence zones. Moving eastward, the land ascends through a series of **moderate slopes (1,390–1,410 m)** that dominate the central sector of the settlement this is the main residential belt where most compounds and communal services are located. The **upper plateau (1,410–1,430 m)** occupies the northeast corner, representing the highest and most stable terrain within the mapped boundary.

#### 5 | A Thousand Street Settlement

Contours on the DEM indicate broad, convex slopes rather than sharply dissected ridges. The **gradient generally increases west to east**, creating a natural topographic divide that directs surface runoff downslope toward Oyugis town. These gentle but continuous slopes explain the settlement's recurrent **sheet flow and localized flooding**, particularly in compacted compounds and unpaved footpaths where infiltration is poor. The absence of steep terrain reduces landslide risk, yet the limited relief limits gravitational drainage, allowing stormwater to stagnate in low-lying areas.

The topography exerts a clear influence on settlement form and infrastructure layout. Housing clusters align with the mid-elevation zones (1,395–1,405 m) where access routes are easiest and erosion risks are minimal. Conversely, the lowest pockets marked in yellow and light green on the DEM serve as **seasonal flood basins**, while the upper light-grey ridge zones offer the most stable ground for potential service and public facility siting.

# ELEVATION - A THOUSAND STREET



Map 2.1: Digital Elevation Model

(Source: *Settlement Profiling of A Thousand Street, 2025*)

The relief can be described as **gently undulating highland topography**, with modest altitudinal variation (~50 m) across the settlement. This pattern underlines the need for **surface-water-sensitive planning** micro-drainage, soil stabilization, and permeable surfacing rather than large-scale slope stabilization. Proper management of runoff along the westward fall line will be critical for preventing erosion, maintaining access, and improving flood resilience across the settlement.

## 2.2 Hydrology and Drainage

The hydrology reflects its position within the **Lake Victoria Basin uplands**, characterized by the absence of permanent rivers or streams and dependence on **rainfall-driven surface runoff**. The area's drainage system is entirely seasonal, responding to localized precipitation and the westward fall of the terrain toward **Oyugis town**.

Rainwater follows the gradient identified on the elevation map, descending from the **northeastern high ridge** near the Karachuonyo–Oyugis Road toward the **southwestern lowlands** adjacent to the A1 highway. The flow pattern is diffuse rather than channelized,

producing widespread sheet flow across the surface during intense rainfall. Water accumulates temporarily in depressions, unpaved paths, and compacted compounds before gradually infiltrating or evaporating.

Household survey data confirm this hydrological behaviour. Approximately **4–6% of households** reported flooding in the preceding year, with nearly all cases described as **short-lived and seasonal** events occurring during the long and short rains (March–May and September–November). Flooding typically lasted **less than a day**, and no displacement of residents was reported. This pattern indicates **pluvial flooding**, caused by heavy downpours that exceed local infiltration capacity rather than by riverine or backflow processes.

Drainage within the settlement is largely informal. Footpaths, access routes, and shallow roadside channels function as **ephemeral watercourses** during storms. These pathways convey runoff downslope but also experience rapid erosion and siltation, especially where soils are bare. The low-lying southwestern pocket acts as a **temporary catchment**, where stormwater pools before dispersing through seepage and evaporation. The lack of vegetation and compaction of

clayey soils limit percolation, contributing to periodic waterlogging.

Floodwater quality is typically poor. Field observations and resident accounts describe runoff mixed with solid waste, eroded sediments, and latrine effluent, particularly in compounds where sanitation facilities are situated close to surface depressions. Stagnant pools in these areas persist briefly after rainfall, creating localized breeding grounds for mosquitoes and increasing health risks during peak wet months.

The hydrological regime of *A Thousand Street* can be characterized as **highly responsive, shallow, and short-duration**. Its defining feature is the dominance of rainfall-generated surface flow over groundwater or fluvial processes. The combination of gentle topography, compacted soils, and unplanned drainage routes shapes a landscape where water moves quickly across the surface but infiltrates slowly, producing recurrent yet transient flooding during the rainy seasons.

## 2.3 Geology and Soils

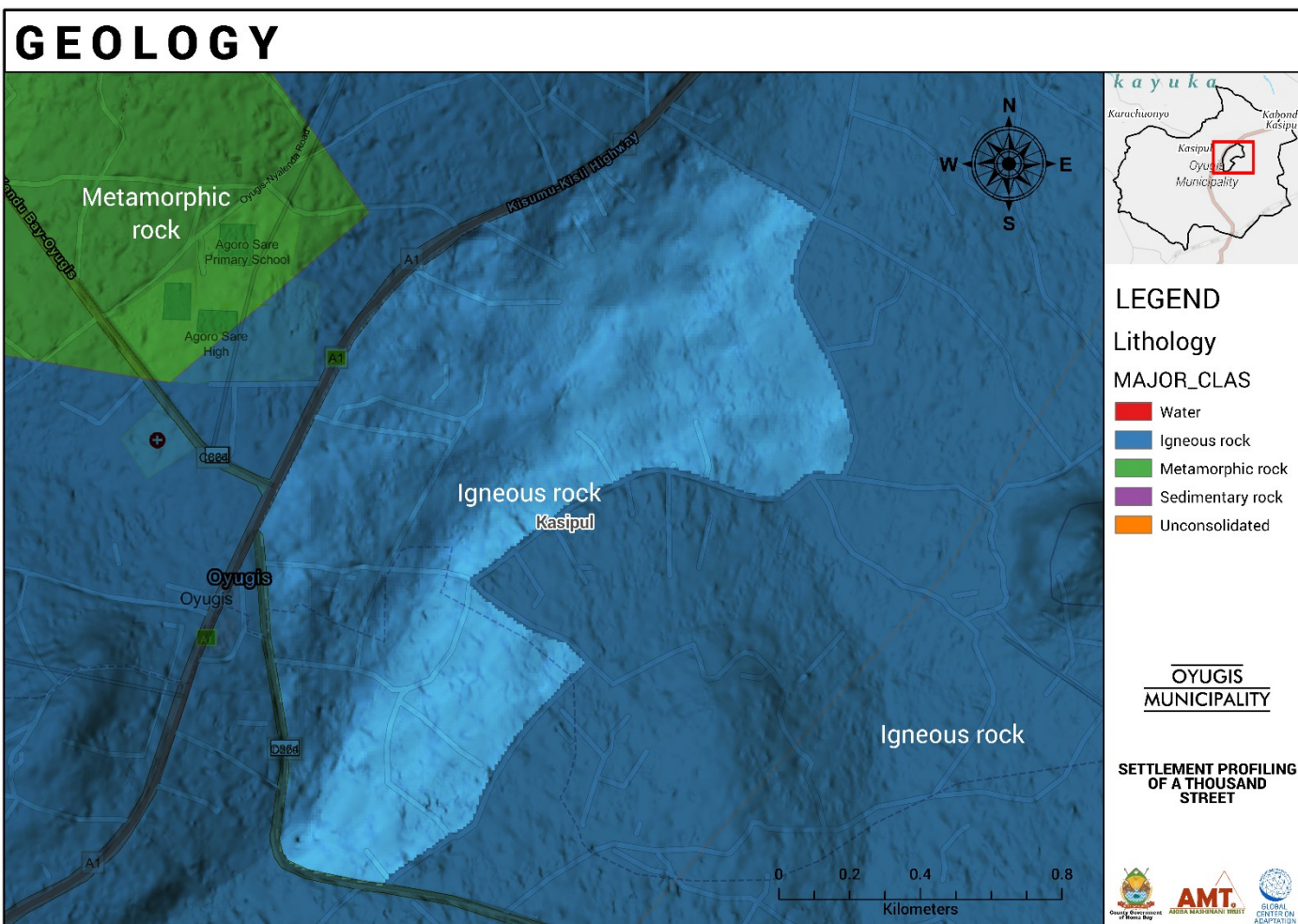
### 2.3.1 Geology

*A Thousand Street* lies within the **eastern highland zone of Oyugis Municipality**, underlain predominantly by **igneous basement rocks** of Precambrian age. The geology of the area is part of the **Basement System Complex**, which consists mainly of hard, crystalline rocks such as granites, granitic gneisses, and basalts. These rocks form a stable foundation typical of the Lake Victoria Basin highlands.

The geological map (Map 3) indicates that the settlement is almost entirely underlain by **igneous formations**, extending across the Kasipul area. To the northwest, near Agoro Sare and the municipal boundary, the lithology transitions into **metamorphic rocks**, marking a structural boundary between the older metamorphic terrain and the younger intrusive bodies that dominate the settlement core. This contrast in lithology reflects the region's long geologic history of uplift and metamorphism, followed by volcanic intrusions that shaped the modern landscape.

The igneous bedrock gives rise to the area's **moderately elevated and gently undulating topography**, observed in the elevation model. Its resistance to weathering limits the development of deep soils and confines groundwater storage to the thin weathered overburden. As a result, the area lacks permanent surface water bodies and depends on direct rainfall and shallow aquifers for domestic supply. The hard rock substratum also influences settlement form: roads, paths, and housing foundations often follow natural rock exposures or slightly weathered surfaces, which provide stable ground for construction but restrict excavation depth.

Rock outcrops are occasionally visible on the higher ridges, particularly toward the northeast and eastern margins, where thin soil cover exposes weathered granitic surfaces. These exposures confirm the dominance of dense, fine-grained igneous material with low permeability, explaining the limited infiltration observed during rainfall.



Map 1.2: Geology

(Source: *Settlement Profiling of A Thousand Street*, 2025)

In summary, the geological structure of *A Thousand Street* is characterized by **hard igneous rocks overlain by shallow weathered soils**, forming a firm but relatively impermeable base. This geology contributes to the area’s hydrological behaviour rapid surface runoff, shallow infiltration, and absence of perennial drainage and defines the physical foundation upon which the settlement has developed.

### 2.3.2 Soils

The soils underlying *A Thousand Street* are the product of prolonged weathering of the Precambrian igneous and metamorphic basement rocks that dominate the Oyugis highlands. These ancient rocks, largely granitic and gneissic in composition, have broken down over time to form clay-rich surface materials characteristic of the Lake Victoria Basin uplands. As a result, the settlement is founded on **clay-loam to heavy clay soils** of moderate depth, typically ranging between 40 cm and 100 cm before encountering weathered rock or compact subsoil. The soils are firm underfoot, moderately cohesive, and exhibit low natural permeability – traits consistent with their crystalline parent material.

Regionally, the *Soil Atlas of Kenya (2025)* and the *Farm Management Handbook of Kenya* classify the uplands of Homa Bay as having **heavy clay ferrallitic soils**, often with strong shrink–swell properties. These soils harden and crack deeply during dry periods, but when wet, they become sticky and plastic, forming a near-impermeable layer that restricts infiltration. The dual behaviour explains much of the surface hydrology observed in *A Thousand Street*: water flows rapidly across the compacted surface during storms, then lingers in depressions where drainage is slow. Because the soils are fine-textured and frequently compacted by foot traffic and housing development, surface runoff dominates over infiltration, reinforcing the short-lived ponding patterns noted across the settlement.

Chemical and fertility characteristics of these soils reflect long-term leaching under a humid tropical climate. Regional soil studies indicate that **most soils in western Kenya are acidic**, with pH values commonly below 6.0 and, in many cases, approaching 5.0 in the upper horizons. The acidity results from intense weathering and continuous removal of base cations through rainfall. Consequently, nutrient availability – especially phosphorus, calcium, and magnesium – is limited, and fertility tends to decline quickly when

organic matter is depleted. The relatively low organic content observed in many of the open or bare compounds at *A Thousand Street* accentuates this nutrient limitation.

Within the settlement, subtle variations occur with micro-relief. On slightly elevated ridges, soils are better drained and display reddish-brown hues typical of well-oxidized ferrallitic clays. In contrast, lower-lying areas and compacted depressions exhibit darker, more plastic clays that retain moisture and may become waterlogged after heavy rainfall. These contrasts correspond with observable differences in vegetation density and surface stability across short distances. The widespread disturbance of the soil surface by housing and footpaths has further reduced infiltration capacity, encouraging fine-sediment accumulation in drainage corridors.

The soils of the area can be described with high confidence as **moderately deep, clay-rich, and strongly weathered tropical soils**, derived from igneous basement rock and shaped by the area's humid highland climate. They are slightly to strongly acidic, of moderate natural fertility, and exhibit limited permeability. These characteristics underpin many of the settlement's environmental dynamics – shallow infiltration, surface runoff, and periodic waterlogging – and form the physical substrate upon which settlement growth and infrastructure development continue to evolve.

## 2.4 Climate

*A Thousand Street* lies within Kenya's equatorial highland zone, which experiences a **bimodal rainfall regime**. The "long rains" fall between **March and May**, while the "short rains" occur between **September and November**, with interspersed dry seasons often marked by water stress (Homabay County Government, 2023). These seasonal patterns have direct implications for settlement life, shaping agricultural cycles in surrounding rural areas and influencing water availability, flooding risks, and infrastructure performance within the settlement.

Survey results highlight the extent to which residents are directly affected by rainfall extremes. About **97 households (≈6%)** reported experiencing flooding in the past 12 months, with **82% of these cases occurring seasonally during the rainy seasons**. The flooding is predominantly **pluvial (flash flooding or surface runoff)**, often caused by short, intense downpours overwhelming informal drainage channels. Specifically, **45 households cited flash flooding from heavy rainfall**, and **42 reported surface water flooding linked to poor drainage systems**. Smaller proportions reported riverine flooding (**6 households**) and lake-related flooding (**4 households**). The impacts are disruptive but usually short-lived: **56 households indicated that floods lasted a day or less**, while **14 reported events lasting up to a**

**week**, and **19 reported flooding persisting for over a month**. Losses included **damage to buildings (16 households)**, **livelihood disruptions (18 households)**, and **loss of property (11 households)**.

Seasonality strongly aligns with Kenya's rainfall calendar. Households most frequently identified **March–May** and **June–August** as peak flood months, with some also mentioning **October–December**. Despite these risks, displacement remains limited: **77 households reported no need to relocate**, while **13 households reported being relocated every rainy season**, and a very small number faced rare or permanent relocations. This demonstrates that while floods are recurrent, they are typically **nuisance or low-intensity events**, causing localized disruption without mass displacement. At the same time, the settlement also experiences **dry season water stress**, with reliance on boreholes and communal taps intensifying when rainfall is scarce, often leading to long queues and increased collection burdens, particularly for women and children.

The climate profile of *A Thousand Street* reveals a settlement caught between two extremes: **short-lived but disruptive flood events during rainy seasons** and **acute water scarcity during dry periods**. The absence of resilient drainage, widespread reliance on informal water sources, and poor solid waste management exacerbate these seasonal stresses. Climate change projections for East Africa predicting more intense rainfall events and prolonged dry spells (IPCC, 2022) indicate that such risks are likely to intensify. Addressing these vulnerabilities through **low-cost drainage improvements, water security measures, and nature-based climate adaptation strategies** is therefore central to sustainable upgrading of *A Thousand Street*.

## 2.5 Environmental Pressures and Sustainability

*A Thousand Street's* environmental profile reflects the dual pressures of resource dependence and the urgent need for a transition toward sustainable energy. Household survey data show that **54% of households rely on charcoal as their primary cooking fuel**, while **13% use firewood**. A smaller share use **liquefied petroleum gas (15%)**, **biogas (9%)**, or **ethanol-based fuels (3%)**, while less than 2% rely on electricity or solar for cooking. This heavy reliance on biomass fuels contributes to **deforestation, land degradation**, and high levels of **indoor air pollution**, which have been directly linked to respiratory illnesses in informal settlements across Kenya (Andersen et al., 2023). Women and children, who are typically responsible for cooking, face the greatest exposure to smoke and associated health burdens.

In contrast, the settlement presents a more positive picture in terms of access to lighting. Approximately **67% of households are connected to the electricity grid**, while **28% depend primarily on solar lighting**. A very small proportion rely on candles (1%), torches (1%), or kerosene lamps (0.6%). The relatively high adoption of solar technology is a **resilience signal**: it reduces reliance on an often unreliable grid, provides backup during outages, and improves night-time security, particularly around communal sanitation facilities and along footpaths. These findings resonate with national trends in Kenya, where solar home systems and pay-as-you-go models have significantly expanded energy access among low-income households (Energy and Petroleum Regulatory Authority [EPRA], 2022).

The coexistence of heavy reliance on biomass for cooking and widespread adoption of solar lighting highlights the uneven trajectory of energy transition in *A Thousand Street*. On one hand, continued dependence on charcoal and firewood undermines environmental sustainability, accelerates forest loss, and exposes households to health risks. On the other hand, growing investment in solar energy demonstrates the community's willingness to adopt clean technologies when they are affordable and accessible. Building on this momentum requires **scaling up access to clean cooking solutions** including LPG, ethanol, and biogas through targeted subsidies, microfinance, and infrastructure support. Simultaneously, expanding decentralized solar solutions can further strengthen energy resilience, reduce household expenditure on fuels, and mitigate the environmental footprint of the settlement.

## 2.6 Climate Adaptation and Resilience Signals

While it faces multiple vulnerabilities, the household survey highlights several signs of resilience that provide

a foundation for climate adaptation. Most residents exhibit strong **awareness of seasonal flood patterns**: more than four out of five households experiencing flooding reported that it occurs predictably during the rainy seasons, usually lasting no more than a day. This familiarity enables a degree of preparedness and proactive coping, such as temporary adjustments in mobility and safeguarding household assets. Importantly, despite recurrent flooding, the majority of affected households did not require relocation, indicating that the risks are disruptive but not displacement-inducing. Such conditions suggest that targeted, small-scale drainage improvements could deliver substantial benefits in reducing disruption at relatively low cost.

Another key resilience signal is the **uptake of decentralized renewable energy for lighting**. A significant share of households have adopted solar systems, supplementing or substituting grid connections. This choice not only enhances energy reliability during outages but also improves safety in communal and public spaces after dark. The willingness to invest in decentralized clean technology demonstrates local adaptive capacity and openness to innovation traits that are essential for building climate resilience.

These patterns reflect a broader capacity for **incremental, community-driven adaptation**. By leveraging predictable flood cycles and existing investments in renewable technologies, future upgrading strategies can build on community strengths rather than introducing entirely new systems. Such an approach would reduce immediate risks while embedding adaptation in daily practices, laying the groundwork for more comprehensive climate-resilient planning.



# 3 POPULATION AND DEMOGRAPHIC CHARACTERISTICS

## 3.1 Population Size, Distribution, and Density

The household survey captured **1,709 households** within *A Thousand Street*, spread across **984 compounds**. Each compound contains an average of **1.7 households**, reflecting the widespread subdivision of compounds into single-room rental units. With an average household size of **2.8 members**, the settlement's total population is **4,785 residents**. This makes *A Thousand Street* one of the densest informal settlements in Oyugis municipality.

Table 3.1: Household Summary

Indicator	Value
Compounds enumerated	984
Households surveyed	1,709
Average households/compound	1.7
Average household size	2.8

Estimated population	4,785
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Table 3.2: Household Size

Household Size	Number of Households	% of Total
1	436	25.5%
2	426	24.9%
3	272	15.9%
4	242	14.2%
5	210	12.3%
6	83	4.9%
7-12	40	2.3%

Spatial analysis confirms that population is unevenly distributed. The **map of household distribution (Figure 3.1.1)** shows dense clusters of housing units (in red) concentrated in the **northern and western zones**, closest to Oyugis town and along the main road corridors. These areas attract higher population density because they provide better access. In contrast, the **southern and eastern sectors** are more dispersed, although still tightly packed, with compounds spread across larger parcels.

The dominance of small households intensifies this density. **Half of all households have two members or fewer**, and only **7% of households host six or more people**. This reflects the rental-driven character of the settlement, where affordability and space constraints limit family size. Rental compounds subdivided into one-room units dominate the built environment, meaning that crowding is horizontal (many small households within one compound) rather than vertical (multi-story development).

The consequences of this density are visible in daily life. Narrow, unplanned footpaths serve as both circulation and drainage channels, restricting mobility and creating seasonal flooding hotspots. Overcrowding places immense pressure on shared water and sanitation facilities, while the lack of designated open or recreational spaces deprives children and youth of safe areas for play and social interaction. Congestion also reduces access for emergency services and undermines waste management systems, as open spaces are often co-opted for dumping. Without proactive upgrading, further in-migration will likely exacerbate congestion and deepen environmental and health risks.

### 3.2 Household Characteristics

Households in A Thousand Street are predominantly small and nuclear in form. Out of 1,709 households surveyed, the median household size is just two members, while the mean size is 2.8 members. A striking feature is the prevalence of single-person households, which account for 34% (584 households) of all cases. This reflects both economic vulnerabilities where individuals cannot afford to co-reside with extended family and spatial constraints that discourage larger

groups from living together in limited housing space. At the other end of the spectrum, only 18% of households accommodate five or more individuals, with the largest household recorded at 12 members.

The distribution of household sizes highlights the **dominance of small, rental-based arrangements**. Many households occupy **single-room units within larger compounds**, often with thin partitions and limited privacy. This subdivision of space means households operate in **congested clusters**, where shared services are stretched. About **79% of households rely on communal toilets**, underscoring the degree of dependence on shared infrastructure. Water access is similarly communal, with most households obtaining water from kiosks, boreholes, or shared taps rather than individual connections. The reliance on such collective facilities intensifies pressure during peak hours and exposes households particularly women and children responsible for collection to time and safety risks.

Despite the predominance of small families, a notable proportion of households fall into the **5+ category (18%)**, indicating the presence of larger or extended families that sometimes occupy bigger rental compounds. These families require proportionally higher access to water, sanitation, and waste-disposal facilities, yet they face the same limitations as smaller units. This creates **compound-level overcrowding**, where larger families compete with numerous smaller tenants for already stretched resources. Taken together, the household structure of A Thousand Street demonstrates a community where **living arrangements are shaped by poverty, insecure tenure, and spatial scarcity**, making **cluster-sensitive service delivery** essential to address the needs of both small and larger families.

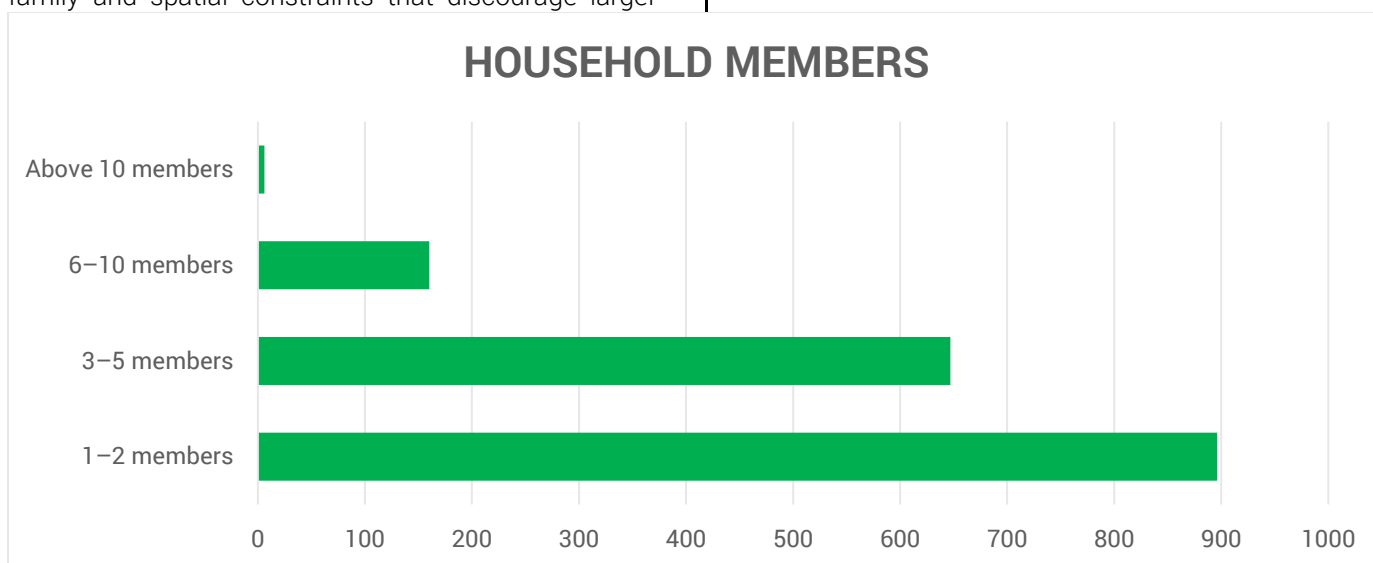


Figure 3.1: Household Members

### 3.3 Gender and Age Composition

The population of A Thousand Street is almost evenly split by gender. Out of 4,784 individuals enumerated across 1,709 households, 50.2% are female (2,403 people) and 49.2% are male (2,353 people), with a small fraction (0.6%, 28 individuals) choosing not to disclose their gender. This balance suggests a relatively stable demographic mix, but with important implications for household roles particularly in caregiving, water collection, and informal trading where women remain disproportionately engaged (Field Survey Data, 2025).

Table 3.3: Gender and Age Composition

Gender	Number of Individuals	% of Population
Female	2,403	50.2%
Male	2,353	49.2%
Prefer not to say	28	0.6%
<b>Total</b>	<b>4,784</b>	<b>100%</b>

The age profile of residents reveals a youth-dominated population, with significant implications for education, employment, and future settlement growth. The largest single cohorts fall within ages 25–29 (15.4%) and 30–34 (12.9%), highlighting the presence of young adults in their prime working years. Children and adolescents also represent a major share: 0–4 years (7.6%), 5–9 years (9.4%), and 10–14 years (9.5%), together forming over a quarter of the community. Elderly residents above 65 years account for less than 2% of the population, showing that the settlement is heavily skewed toward younger age groups (Field Survey Data, 2025).

Table 3.4: Age Distribution

Age Group	Number of Individuals	% of Population
0–4	364	7.6%
5–9	449	9.4%
10–14	453	9.5%
15–19	468	9.8%
20–24	582	12.2%
25–29	739	15.4%
30–34	619	12.9%
35–39	402	8.4%
40–44	278	5.8%
45–49	128	2.7%
50–54	96	2.0%
55–59	46	1.0%
60–64	51	1.1%
65–69	26	0.5%
70–74	23	0.5%
<b>Total</b>	<b>4,784</b>	<b>100%</b>

This youth-heavy age structure has important social and economic consequences. On the one hand, it suggests a potential labor force that could drive future economic activity if properly supported through skills training, apprenticeships, and job creation initiatives. On the other hand, the same youth bulge intensifies pressure on schools, health services, and recreational facilities, which are already inadequate. The relatively small share of elderly residents underscores the limited role of pensions and eldercare compared to other urban settings, while also highlighting the dependency burden borne by working-age adults caring for both children and unemployed youth (Field Survey Data, 2025).

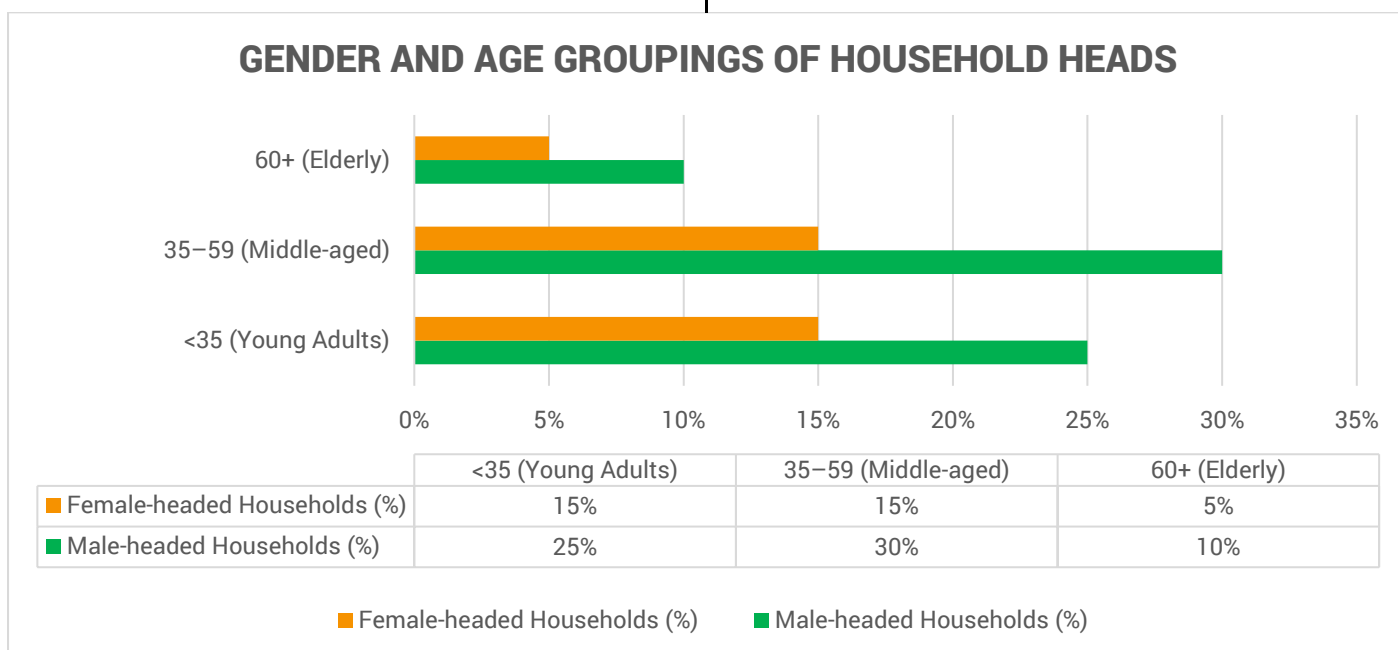


Figure 3.2: Gender and Age Groupings of Household Heads

### 3.4 Migration and Vulnerability

The demographic profile of **A Thousand Street** highlights how migration has reshaped the settlement into a predominantly **youth-driven community**. Out of 4,784 residents enumerated in the household survey, **40.6% (1,940 individuals)** are **young adults aged 20–34**. This cohort represents the classic **migrant population**, typically moving from rural areas to urban centers in search of work, education, or affordable housing. Their strong presence underscores the settlement’s role as a **receiving area for rural-to-urban migrants** drawn by Oyugis town’s economic opportunities (Field Survey Data, 2025).

Children also form a substantial share of the population. **26.5% (1,266 individuals)** are aged **0–14 years**, reflecting both the migration of young families and relatively high fertility rates typical of informal settlements. This child-heavy profile increases dependency ratios and creates pressing demand for **education, health, and childcare services**, especially given the limited facilities available locally. The combination of a large youth base and high child dependency places long-term pressure on already fragile household resources and communal infrastructure (Field Survey Data, 2025).

Table 3.5: Age-Based Vulnerability Indicators

Category	Number of Individuals	% of Population
Children (0–14)	1,266	26.5%
Young Adults (20–34)	1,940	40.6%
Elderly (65+)	63	1.3%
Total	4,784	100%

Source: Field Survey Data, 2025

At the other end of the demographic spectrum, the settlement contains very few elderly residents. Only **1.3% (63 individuals)** are aged **65 years and above**, suggesting that A Thousand Street is not a traditional retirement community but rather a space dominated by **working-age migrants and young dependents**. This absence of older generations points to the settlement’s role as a **transitional space for mobile populations**, where residents may not intend to age in place but instead use it as a stepping stone to other urban locations. Such a population structure amplifies both **vulnerability to shocks** and the **likelihood of continued rapid growth**, as new migrant households join an already youthful and expanding community (Field Survey Data, 2025).

Table 3.6: Migration and Vulnerability Profile

Indicator	Situation in A Thousand Street
Dominant migrant group	Young adults (20–34 years) – 40.6% of population
Families with dependents	Children (0–14 years) make up 26.5% of population
Elderly residents	Only 1.3%, showing settlement as a transitional migrant hub
Typical migrant condition	Renting single-room units in subdivided compounds
Key vulnerability	Lack of tenure security → risk of eviction
Dependency pressures	High child share increases demand for schools, health, and care
Growth driver	Rural-to-urban migration for work, education, services

Source: Field Survey Data, 2025

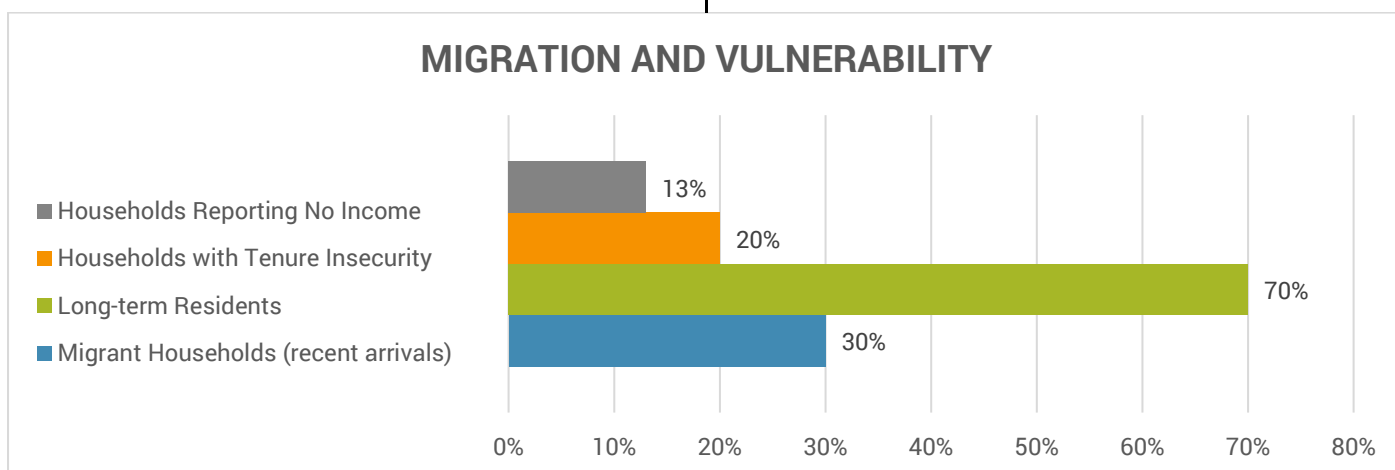


Figure 3.3: Migration and Vulnerability

### 3.5 Growth Trends

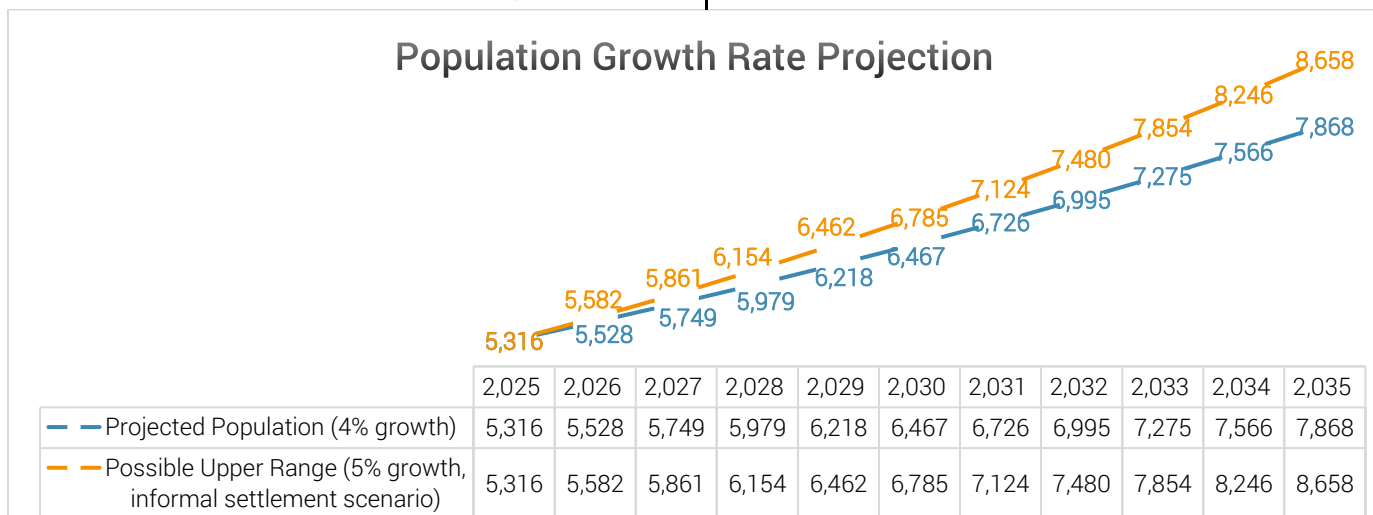
The expansion of The area has been **incremental and organic**, taking place outside formal planning frameworks. Most new housing units arise through the **subdivision of existing compounds into rental rooms**, or through the occupation of small, irregular vacant plots. This has resulted in **horizontal sprawl rather than vertical growth**, with the overwhelming majority of households living in **single-story, semi-permanent structures** made of mud walls and corrugated iron sheets. The survey confirmed that **multi-storey housing is virtually absent**, a trend driven by **tenure insecurity, low household incomes, and limited access to construction financing** (Field Survey Data, 2025).

The settlement’s growth trajectory reflects its role as a **receiving area for rural-to-urban migrants**, particularly youth and low-income households seeking employment in Oyugis town. With **young adults (20–34 years) already forming over 28% of the total population**, the demographic profile strongly suggests that **migration-driven growth will continue**. Such inflows increase the demand for **affordable rental rooms**, leading to further **subdivision of existing compounds** and rising levels of **congestion within shared facilities** such as toilets, boreholes, and water kiosks (Field Survey Data, 2025).

Population projections indicate that these dynamics will significantly **increase settlement density over the**

**coming decade**. Adjusting the survey results for undercounting (90% coverage), the 2025 baseline population is estimated at **5,316 residents**. Applying Kenya’s average **urban growth rate of 4% per year**, the population is expected to reach **7,868 by 2035**. However, given that informal settlements typically experience **higher-than-average growth** due to a combination of youthful fertility rates, sustained in-migration, and compound-level subdivision of housing units, the upper range of growth may be closer to **8,600 residents by 2035**. This means that within ten years, the settlement could see a population increase of **over 2,500 people**, with the bulk concentrated in already congested rental clusters (World Bank, 2024; Field Survey Data, 2025).

Without proactive intervention, this pattern of **densification under** will intensify pressure on basic services, worsen overcrowding, and amplify public health risks. Seasonal flooding, already affecting more than **4% of households**, is likely to become more disruptive as open spaces are further encroached upon and informal drainage paths are blocked. Planned upgrading such as improving drainage, expanding sanitation coverage, strengthening internal access roads, and setting aside modest recreational or green spaces will be essential to manage growth sustainably. In the absence of such measures, the settlement risks entrenching **unsustainable and unsafe living conditions**, making resilience-building interventions a critical priority (Field Survey Data, 2025).



*Assumptions: Baseline adjusted for 90% survey coverage (5,316). Projections use Kenya’s urban population growth rate of 4% (World Bank, 2024), with an upper-range scenario of 5% to reflect higher fertility and migration typical of informal settlements (Field Survey Data, 2025).*



## 4 LAND TENURE AND LAND USE ANALYSIS

### 4.1 Land Use Analysis

#### 4.1.1 Compound-Level Land Use

At the **compound level**, The area displays a predominantly residential pattern, with **797 out of 984 compounds (81%)** mapped as residential in function. These compounds are the fundamental land parcels that structure the settlement, and they typically consist of single-story, semi-permanent buildings constructed with **iron-sheet roofing, mud, or timber walls**. Compounds often contain multiple subdivided dwellings, creating a dense mosaic of housing where space is maximized through the addition of rental units. This clustering within compounds reflects the **dual logic of survival and investment**: residents seek affordable accommodation, while informal landlords maximize rental income by subdividing plots (Field Survey Data, 2025).

Although residential compounds dominate, **85 compounds (8.6%)** are commercial, highlighting the economic interweaving of land use. These commercial compounds host kiosks, small shops, food stalls, and workshops, often clustered along **road-facing areas and**

**major footpaths**. They illustrate the **roadside economy** typical of Kenyan informal settlements, where visibility and customer flow are critical for business survival. Many of these compounds support **juakali workshops** (light repair yards and artisanal sheds), providing employment for youth and sustaining household livelihoods. The compound-based commercial activities reinforce the **absence of formal zoning** and the way **economic uses are integrated directly into residential space**.

Mixed-use compounds further underline this land-use hybridity. A total of **31 compounds (3.1%)** were recorded as **mixed-use**, where residential dwellings are combined with other uses such as small shops, eateries, or sanitation facilities. These compounds embody the **adaptation strategies of low-income families**, who convert portions of their living spaces into commercial fronts to diversify income. In many cases, residents run kiosks from their doorsteps or rent out compound frontage for petty trade. This demonstrates that **compounds are not static housing parcels but multifunctional micro-spaces** where residential, economic, and service functions coexist.

Institutional and public functions occupy only a small proportion of compounds: **34 compounds (3.5%)** host schools or training centers, while **16 compounds (1.6%)** are reserved for public uses such as community halls or local administration points. Industrial compounds remain rare (**18 compounds, 1.8%**), reflecting only small-scale workshops. Notably, **recreational land use is almost absent**, with a single compound identified as dedicated to this function, underscoring the lack of designated playfields or open areas. Utilities such as water treatment and energy facilities are equally scarce, with **just 2 compounds (0.2%)** mapped. This imbalance demonstrates that while compounds are the **primary organizing unit of the settlement**, their use is heavily skewed toward housing, with minimal allocation for collective services or public goods (Field Survey Data, 2025).

### 4.1.2 Household-Level Land Use

At the **household unit level**, the numbering sheet recorded **2,981 distinct structures**, with **2,381 units (79.8%) used for residential purposes**. These units are overwhelmingly **single-room tenancies**, built within subdivided compounds. Each unit typically houses one nuclear family or a single individual, and in many cases multiple unrelated tenants share a single compound. The dominance of single-room rentals illustrates the settlement's **rental-driven economy**, where informal landlords subdivide compounds into the smallest viable units to cater to low-income tenants. This arrangement offers affordability for tenants but produces **overcrowding, minimal privacy, and shared dependency on compound-level services** such as toilets and kitchens (Field Survey Data, 2025).

Commercial units at the household level number **277 (9.3%)**, representing kiosks, shops, and small eateries. These units are **integrated into residential compounds**, meaning that households often live behind or above their place of work. This form of **home-based enterprise** demonstrates the centrality of informal trade to household survival. It also shows the **dual use of**

**household space**, where the same unit can serve as a dwelling and income-generating kiosk. These micro-enterprises are vital in sustaining livelihoods, especially for female-headed households, and provide accessible goods and services within walking distance for residents.

Household-level analysis also reveals the **embedded nature of basic services within compounds**. The survey documented **128 toilet units (4.3%)**, **50 bathrooms (1.7%)**, and **47 kitchens (1.6%)**, showing that sanitation and cooking facilities are often provided as separate household-level structures. These facilities are not evenly distributed, meaning that many households depend on neighbors or communal sharing within the compound. The lack of independent household facilities reflects **structural inequalities in service provision**, where infrastructure is concentrated at compound or cluster nodes rather than attached to every unit. It also underscores the vulnerability of households to **sanitation-related health risks**, particularly during floods or peak usage.

Other household-level uses include **25 stores (0.8%)**, **23 animal sheds (0.8%)**, and **5 parking units (0.2%)**, highlighting adaptive land-use practices at the micro scale. These uses support both livelihoods and household resilience. For example, animal sheds provide supplementary income from poultry or goats, while small stores allow for bulk purchase and resale of goods. Only **one religious household unit (a church)** was recorded, reflecting the near absence of dedicated worship or gathering spaces at the unit level. Approximately **44 household units (1.5%) were vacant**, further reflecting the transient nature of occupancy, where tenant turnover is frequent. Collectively, household-level analysis confirms that **land use in The area is multifunctional at the smallest scale**, balancing domestic living, survival-oriented trade, and shared infrastructure in ways that reflect the settlement's economic precarity and spatial constraints (Field Survey Data, 2025).



# 5 HUMAN SETTLEMENTS AND HOUSING

## 5.1 Human Settlement Patterns

The physical layout of the area is defined by its **dense clustering of compounds and subdivided housing units**. The numbering exercise mapped **984 compounds**, which together accommodate **2,981 individual household units**. On average, each compound hosts **three households**, though larger compounds accommodate as many as six to eight rental units. This pattern of **compound subdivision into multiple small dwellings** has produced a compact, high-density settlement form (Field Survey Data, 2025).

The settlement is overwhelmingly **single-story in character**. All mapped units were recorded as ground-level structures, with no evidence of multi-story housing across the 56 zones (ATS01–ATS56). The reliance on **semi-permanent construction** mud or timber walls with corrugated iron-sheet roofing is consistent throughout the compounds. While this provides rapid, low-cost housing, it also contributes to poor ventilation, seasonal leakages, and susceptibility to flooding during heavy rains. The absence of vertical expansion reinforces **horizontal sprawl**, with dwellings tightly packed and leaving little open space between clusters (Field Survey Data, 2025).

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Circulation within the settlement is provided by a **network of narrow footpaths** that double as both access routes and drainage corridors. These paths weave between compounds but often become **flooded or impassable** during the rainy season due to runoff channeled along their surfaces. The lack of planned internal roadways limits access for vehicles and restricts emergency service delivery. Compounds tend to cluster more densely along these footpaths and around service nodes such as **water kiosks, shared toilets, and solar lighting masts**, where accessibility and safety are greater (Field Survey Data, 2025).

The settlement pattern shows that **residential, commercial, and service functions are intermixed at the compound scale**. While most compounds are residential, a minority also host kiosks, workshops, or communal toilets, producing a land use mosaic within an otherwise residential fabric. However, the defining feature of settlement organization remains the **concentration of multiple households within each compound**, a configuration that maximizes land occupancy while amplifying crowding and pressure on shared services. This **high-density, low-rise, clustered pattern** is typical of informal settlements in secondary urban centers of Kenya, where land demand is high but

tenure and infrastructure remain limited (Field Survey Data, 2025).

Table 5.1: Settlement Structure Overview

Indicator	Value
Total compounds mapped	984
Total household units	2,981
Average units per compound	3.0
Dominant building height	100% single-story structures
Construction materials (typical)	Iron-sheet roofs; mud/timber walls

Source: Field Survey Data, 2025

## 5.2 Development Trend Analysis

The development trajectory of **The area** reflects **incremental, self-built expansion** rather than planned urban growth. The numbering survey documented **984 compounds hosting 2,981 household units**, confirming that growth occurs through **progressive subdivision of existing compounds** into multiple rental units. On average, each compound accommodates **three units**, but larger compounds have been subdivided further, sometimes exceeding six or more individual tenancies. This pattern indicates that development is driven less by the creation of new plots than by the **densification of existing parcels**, a trend typical of informal settlements in smaller urban centers (Field Survey Data, 2025).

Construction remains predominantly **horizontal and single-story**. All mapped structures are ground-level units, with no evidence of multi-story housing across the 56 surveyed zones (ATS01–ATS56). This absence of vertical growth is closely tied to the settlement’s **low-income profile**, where households lack resources for reinforced materials or multi-level designs. Instead, residents rely on **mud or timber walls and corrugated iron roofing**, materials that allow incremental construction but discourage vertical expansion. The persistence of this low-rise form contributes to **spatial sprawl**, with the settlement growing outward rather than upward (Field Survey Data, 2025).

The expansion of rental housing has been central to the settlement’s development trend. With **1,244 households reporting tenancy**, landlords increasingly subdivide compounds into **single-room rental units**, a practice reflected in the growing number of household units recorded compared to the base number of compounds. This creates **high-density clusters of small dwellings**, which maximize land use but intensify pressure on communal sanitation, water access, and drainage. The demand for rental accommodation is linked to **rural-to-**

**urban migration** into Oyugis town, as reflected in the survey’s age profile, where **40.6% of the population are young adults (20–34 years)** seeking affordable housing close to economic opportunities (Field Survey Data, 2025).

Infrastructure upgrading within the settlement has lagged behind housing expansion. The survey data show that **128 toilet units, 50 bathrooms, and 47 kitchens** were recorded, representing only a fraction of the nearly 3,000 dwelling units. This mismatch indicates that while new rooms continue to be added incrementally, investment in essential services has not kept pace. The result is a **service gap that mirrors the development pattern itself**: rapid subdivision of space for dwellings without proportional allocation for sanitation, drainage, or utilities. Left unchecked, this trend will exacerbate overcrowding, environmental stress, and health risks as the population grows (Field Survey Data, 2025).

## 5.3 Urban Centers within the Municipality

The area lies within the municipal boundaries of **Oyugis town**, a secondary urban hub in Homa Bay County. Oyugis functions as the settlement’s **primary center for trade, education, and healthcare**, linking residents to broader economic and social opportunities. The proximity to the town enables households to access schools, public health facilities, and municipal markets that are otherwise absent within the settlement itself. For many residents, livelihood opportunities in **petty trade, motorcycle taxi services, and casual labor** depend directly on connectivity to Oyugis and its surrounding rural hinterlands (Field Survey Data, 2025).

Despite this proximity, integration between A Thousand Street and Oyugis remains limited by **poor access roads and inadequate drainage**. Internal paths within the settlement are narrow and mostly unpaved, restricting vehicular movement and complicating transport of goods. This weakens the settlement’s linkages to municipal economic activities and makes it difficult for residents to fully participate in the urban economy. Seasonal flooding further disrupts mobility, as footpaths that connect compounds to town-bound access routes often become impassable during rains.

Commercial activity within **The area** reflects these constraints. The household and numbering data show that only **277 household units (9.3%)** are used for commercial purposes, primarily kiosks, shops, and food stalls. Larger-scale trading remains concentrated in Oyugis town, where residents must travel to access wholesale goods or formal employment. The lack of a designated market within the settlement reinforces

dependence on the municipal center, limiting opportunities for local enterprise growth.

The area operates as a **dormitory settlement**, where most residents live in rental housing but rely on Oyugis for services, markets, and jobs. Without improved **road infrastructure, drainage, and service networks**, the settlement risks remaining **economically peripheral**, despite its geographic closeness to the town. Strengthening urban integration would require targeted investments in **internal road upgrades, designated trading areas, and transport connectivity**, ensuring that residents can better tap into Oyugis' role as the economic hub of the municipality (Field Survey Data, 2025).

Table 5.2: Urban Linkages between A Thousand Street and Oyugis

Indicator	Value
Total household units	2,981
Local commercial units (kiosks, shops, food stalls)	277
Local commercial share	9.3% of all household units
Absence of formal market within settlement	Confirmed
Dependence on Oyugis town for schools	High (no secondary schools recorded in dataset)
Dependence on Oyugis town for healthcare	High (no hospitals/clinics mapped in dataset)
Dependence on Oyugis town for wholesale/large-scale trade	High (limited commercial clustering internally)

Source: Field Survey Data, 2025

## 5.4 Informal Settlements and Challenges

The area exhibits the defining features of an **informal settlement**, where rapid population growth and unregulated expansion have outpaced the provision of infrastructure and services. The numbering survey recorded **2,981 household units distributed across 984 compounds**, with the majority being **single-room, semi-permanent dwellings** built of mud or timber walls and iron-sheet roofs. These structures are closely packed, leaving little open space for circulation or amenities. The absence of formal planning has produced a settlement form where **residential, commercial, and service functions are intermixed**, and where internal circulation routes double as drainage channels (Field Survey Data, 2025).

One of the key challenges faced by the community is **over-reliance on shared services**. The household survey revealed that **79% of households rely on communal toilets**, and the numbering data confirmed the existence of only **128 toilet units, 50 bathrooms, and 47 kitchens** for nearly 3,000 dwelling units. This creates heavy congestion around sanitation and cooking facilities, particularly in larger compounds where multiple households compete for limited amenities. The absence of in-house infrastructure increases health risks, particularly during rainy seasons when floods contaminate drainage paths and expose residents to waterborne diseases (Field Survey Data, 2025).

Environmental vulnerability further compounds these challenges. Flooding was reported by **4.2% of households**, typically lasting less than a day but recurring seasonally. The reliance on unpaved paths that also act as drainage corridors intensifies exposure to floodwater, eroding compounds and spreading waste from open pits. Coupled with the heavy reliance on **charcoal (59%) and firewood (11%) for cooking**, these environmental risks heighten health challenges by contributing to indoor air pollution, deforestation, and climate fragility (Field Survey Data, 2025).

Social vulnerability is also acute. The survey recorded **13% of households reporting no income**, highlighting widespread economic precarity. Unemployment and underemployment were consistently ranked among the most serious concerns, driving youth into casual labor, petty trade, or motorcycle taxi services. In turn, residents frequently cited **security concerns, substance abuse, and petty crime**, especially in underlit areas and informal open spaces. With virtually no recreational land use recorded in the numbering survey (only one compound designated for this purpose), youth have limited safe outlets for social engagement, contributing to social instability.

Collectively, these conditions underscore The area's challenges as an informal settlement: **tense overcrowding, inadequate infrastructure, environmental risks, and socio-economic fragility**. The lack of formal planning has entrenched a settlement pattern where survival needs dictate land use, but where long-term resilience remains constrained without systematic upgrading and municipal support (Field Survey Data, 2025).

## 5.5 Housing Typologies

Housing in The area is dominated by **semi-permanent single-room dwellings**, a reflection of both economic constraints and incremental construction practices. The numbering survey identified **2,381 residential units**, the vast majority of which are constructed from **mud or timber walls with corrugated iron-sheet roofing**. Floors

vary between compacted earth and simple cement finishes, depending on household income. This typology provides basic shelter but leaves residents vulnerable to seasonal flooding, leakages, and rapid structural deterioration (Field Survey Data, 2025).

A defining typology is the **single-room rental unit**, which accounts for the majority of the nearly 3,000 dwelling units. These rooms, often measuring less than 12 square meters, are clustered within **subdivided compounds**, where landlords partition plots into multiple rental units. This typology is directly tied to the settlement's **rental-driven character**, with tenants forming more than 70% of all households. Units are typically separated by thin partitions, offering minimal privacy and limited ventilation. Cooking and sanitation facilities are rarely provided inside individual units, forcing households to rely on shared compound-level services (Field Survey Data, 2025).

Beyond single-room rentals, a smaller number of **owner-occupied dwellings** exist, often larger and more structurally reinforced. Among the 260 owner households, many reside in units with cemented floors and occasionally more durable walling materials such as stone or stabilized blocks. However, these remain exceptions rather than the norm, as less than 15% of surveyed households reported ownership. The limited presence of such typologies underscores the **economic disparity between a small class of owner-occupiers and the dominant population of low-income tenants**.

Notably, the survey confirmed the **near-total absence of multi-story housing**. All 984 compounds recorded during the mapping exercise were single-story, with no evidence of vertical expansion. The absence of this typology highlights the constraints of both **financial capacity and tenure insecurity**, which discourage investment in permanent multi-level structures. Instead, horizontal expansion through compound subdivision continues to define the settlement's growth. Taken together, the typologies of The area present a landscape of **low-cost, semi-permanent, rental-dominated housing**, built incrementally and maintained under conditions of fragility (Field Survey Data, 2025).

## 5.6 Cost of Housing

The cost of housing in **The area** is closely tied to its **rental-driven character**. Out of 1,709 households

surveyed, **1,244 reported paying rent**, confirming that tenancy is the dominant tenure mode. Rental values range from as little as **KES 600 per month** for the smallest, least serviced rooms, to as high as **KES 22,000 per month** in exceptional cases. The central tendency, however, is much lower: the **median rent is KES 3,000**, while the **mean rent is KES 3,114**, with an interquartile range of **KES 2,000–3,500** (Field Survey Data, 2025).

This cost burden is significant when compared to household income levels. The survey recorded a **median household income of KES 3,001 per month**, meaning that for many households, rent alone consumes between **20% and 40% of monthly earnings**. This proportion far exceeds the affordability benchmarks commonly applied in formal housing markets, where rent is recommended not to exceed 30% of household income. The consequence is that households have limited resources left for food, education, health, or savings, reinforcing cycles of poverty and vulnerability.

For owner-occupiers, construction costs are minimized through the use of **locally available and recycled materials**, including mud, timber, reclaimed iron sheets, and timber offcuts. While this keeps initial housing expenditure low, it compromises the durability and safety of structures. Floors are frequently compacted earth, though some households invest incrementally in cement finishes when resources allow. The absence of secure land documentation further discourages larger capital investment in permanent housing, as only a minority of owners reported holding documents (246 households, 14.4% of the sample).

The cost of housing in The area reflects both **financial strain for tenants** and **fragility of owner investments**. Rent remains high relative to incomes, leaving tenants with precarious financial margins, while owners avoid permanent upgrades due to insecurity and limited financing options. These dynamics reinforce the settlement's reliance on **low-cost, semi-permanent housing typologies**, which meet immediate needs but remain vulnerable to environmental hazards and economic shocks (Field Survey Data, 2025).



## 6 PHYSICAL INFRASTRUCTURE

### 6.1 Transportation Networks

The area sits within a wider regional transport system anchored by two major tarmacked corridors: the Katito–Sondu–Oyugis–Kisii road, which links Oyugis to Kisii and the agricultural highlands, and the Kendu Bay–Oyugis–Gamba road, which provides a critical connection to lakeside trade centers along Lake Victoria. These highways are vital for the flow of goods, agricultural produce, and passengers, and they reinforce Oyugis’ role as a municipal hub. For residents of A Thousand Street, they form the primary gateways into the settlement and are the main means of reaching employment, education, and health services outside the community.

Inside the settlement, however, the transport network is overwhelmingly defined by unpaved murram and earth roads. A small number of these roads branch off the main highways into the settlement, but they are generally narrow, irregular, and poorly maintained. Their width rarely allows larger vehicles to pass, and in many areas they are only suitable for boda boda motorcycle taxis, which serve as the dominant form of public transport. Even these face major disruptions during rainy months when ponding, mud, and erosion make many routes impassable. The limited accessibility contributes to higher transport costs for residents, particularly during wet seasons when fares rise sharply.

Beyond the murram tracks, a dense lattice of informal pedestrian footpaths connects individual households with communal services such as water kiosks, sanitation blocks, and local kiosks. These paths are vital for everyday mobility, yet they are also the most vulnerable elements of the system. During heavy rains, the paths function as drainage corridors, carrying runoff through the settlement. Without lined drains, culverts, or proper surfacing, they quickly degrade into muddy, hazardous channels that obstruct movement and heighten the risk of flooding.

Some positive steps are being taken through the Kenya Informal Settlements Improvement Project (KISIP), which has earmarked certain roads in A Thousand Street for upgrading. These works are expected to provide improved surfacing and basic drainage, offering more reliable access for both residents and service providers. However, coverage remains limited, and the majority of the settlement still depends on fragile and seasonal earth paths. Until more systematic interventions are undertaken, transport will continue to be a constraint on emergency response, waste collection, water distribution, and broader economic integration with Oyugis town.

Strengthening A Thousand Street’s transport system requires a deliberate focus on upgrading the main access routes that link directly to the surrounding highways while also formalizing critical internal footpaths. Providing all-weather surfaces, incorporating drainage infrastructure, and expanding the current

scope of KISIP interventions would transform local mobility, reduce the isolation caused by seasonal rains, and improve the delivery of essential services. Improved roads would not only enhance safety and efficiency but also create stronger economic linkages with the wider Homa Bay region, ensuring that residents of A Thousand Street can better access opportunities and contribute more fully to municipal growth.

## 6.2 Energy

### 6.2.1 Lighting and Electricity Access

Access to household lighting and electricity in A Thousand Street demonstrates a blend of progress and persistent gaps. The household survey revealed that **63% of households are connected to the national electricity grid**, while **33% rely primarily on solar power systems** (Field Survey Data, 2025). This dual pattern reflects both integration into formal infrastructure and the adoption of decentralized alternatives in response to affordability constraints and unreliable supply.

Grid electricity connections are not always formalized. Many households share meters with neighbors or landlords to reduce costs, an arrangement that lowers entry barriers but exposes users to disputes, billing irregularities, and sudden disconnections (Field Survey Data, 2025). Among connected households, electricity is typically used for lighting and mobile phone charging, with fewer families owning higher-energy appliances such as televisions, radios, or refrigerators. Frequent interruptions and voltage fluctuations were reported, undermining reliability and discouraging investment in energy-dependent microenterprises.

The uptake of solar power reflects an important adaptive response. Pay-as-you-go solar kits and small photovoltaic systems are increasingly common, especially among renters and lower-income households who lack access to grid connections (Field Survey Data, 2025). Beyond household adoption, the installation of **solar high-mast lighting** in public areas has been widely recognized as a significant community improvement. These lights enhance night-time safety around sanitation blocks and busy footpaths, reducing risks of crime and harassment, particularly for women and children. Residents consistently identified these installations as one of the most visible and transformative infrastructure upgrades in recent years (Field Survey Data, 2025).

The balance between grid electricity and solar uptake illustrates a community that is highly adaptable yet constrained by affordability and infrastructure limitations. Strengthening household access to reliable and affordable electricity would not only improve quality

of life but also create pathways for enterprise growth, education, and digital connectivity.

Table 6.1: Household Lighting Sources in A Thousand Street

Lighting Source	Primary Use (% of households)	Secondary/Bakup Use (% of households)	Key Characteristics
Grid electricity	63%	12%	Shared meters common; frequent outages reported.
Solar power (household systems)	33%	21%	Mostly pay-as-you-go kits; provides reliable backup during outages.
Kerosene lamps	3%	18%	Used mainly by very low-income households; health risks from indoor smoke.
Candles	1%	9%	Used occasionally during outages or as supplementary lighting.
Other (battery torches, generators)	<1%	6%	Mostly disposable torch batteries; generators rare and costly.

Source: Field Survey Data (2025)

### 6.2.2 Cooking Energy Sources

Cooking energy in A Thousand Street is overwhelmingly dependent on traditional biomass fuels, with the household survey showing that **59% of households primarily use charcoal** and **11% rely on firewood** as their main source of cooking energy (Field Survey Data, 2025). These fuels remain dominant because they are

cheap, locally available, and flexible for small household cooking needs. However, their continued use contributes to **indoor air pollution, respiratory health risks, and deforestation pressures** in surrounding rural areas.

The reliance on biomass has strong gender implications. Women and children, who are primarily responsible for cooking and fuel collection, face daily exposure to smoke in poorly ventilated kitchens and the physical burden of sourcing firewood when supply or income is limited (Field Survey Data, 2025). Rental households are particularly dependent on charcoal, since it is sold in small, affordable portions that can be purchased on a day-to-day basis, aligning with irregular income flows.

Cleaner fuels such as **Liquefied Petroleum Gas (LPG)** and **ethanol stoves** remain rare, cited by fewer than **5% of households** as either a primary or secondary source of cooking (Field Survey Data, 2025). Cost is the primary barrier: the upfront purchase of cylinders, regulators, or improved stoves is unaffordable for many low-income families, and refilling gas often requires bulk payments that households cannot sustain. Similarly, uptake of

**biogas** and other modern fuels is virtually absent in the settlement, reflecting both infrastructure gaps and affordability challenges.

Some households diversify their energy use depending on availability and income. Approximately **22% reported using kerosene or electricity as secondary cooking sources**, often for quick meals or boiling water (Field Survey Data, 2025). However, electricity use for cooking is extremely limited due to the cost of appliances and unreliable power supply. This reinforces the dependence on charcoal and firewood, even when cleaner alternatives exist.

The persistence of charcoal and firewood use underscores both poverty and energy insecurity. Transitioning households toward clean cooking solutions would deliver multiple benefits, including reduced health risks, time savings, and environmental sustainability. Possible interventions include **microfinance schemes for LPG kits, community awareness campaigns on clean cooking, and subsidized improved cook stoves** that can reduce fuel consumption even within the charcoal and firewood systems that remain dominant.

Table 6.2: Household Cooking Energy Sources in A Thousand Street

Cooking Source	Energy	Primary Use (% of households)	Secondary/Backup Use (% of households)	Key Characteristics
Charcoal		59%	27%	Affordable in small daily quantities; high indoor air pollution risks.
Firewood		11%	18%	Common for extended families; collection burdens women and children.
LPG (gas)		3%	7%	Cleaner option but limited by high upfront and refill costs.
Kerosene		2%	15%	Used for quick meals or tea; smoke and odor issues.
Electricity (stoves, hotplates)		<1%	5%	Very rare due to unreliable grid power and appliance costs.
Ethanol/biogas/other		<1%	1%	Virtually absent; infrastructure not in place.

Source: Field Survey Data (2025)

## 6.3 Water

### 6.3.1 Water Sources

The household survey showed that water in A Thousand Street is obtained from a mix of communal and informal sources. The **largest share of households (46%) depend on boreholes** as their main water source (Field Survey Data, 2025). These boreholes are widely distributed and serve multiple families at once, often forming collection points for entire clusters of households.

A further **20% of households rely on communal taps and kiosks**, which are located in high-density sections of the settlement and typically managed by private operators or local committees (Field Survey Data, 2025). These

taps provide treated or semi-treated water, though their coverage remains limited.

Approximately **16% of households reported using untreated surface water** such as streams and runoff channels (Field Survey Data, 2025). This reliance is particularly pronounced during rainy periods when surface water is abundant, though it remains a year-round option for households without resources to purchase water.'



Photo 6.1: Water Source

Additional minor sources include **rainwater harvesting (7%), neighbor’s piped connections (5%), and vendors or rivers (6%)** (Field Survey Data, 2025). Rainwater is seasonal and depends on the availability of storage

facilities, while informal sharing of piped connections reflects the settlement’s limited in-plot water infrastructure. Water vendors typically sell in jerricans, offering convenience but at a higher unit cost.

Table 6.3: Main Household Water Sources in A Thousand Street

Water Source	Primary Use (% of households)	Secondary Use (% of households)	Notes
Boreholes	46%	21%	Most common source; community-based points.
Communal taps/kiosks	20%	17%	Semi-treated; long queues during peak times.
Untreated surface water	16%	9%	Includes streams and runoff channels.
Rainwater harvesting	7%	14%	Seasonal; depends on storage capacity.
Neighbor’s piped water	5%	8%	Informal sharing between compounds.
Vendors/rivers (other)	6%	6%	Purchased water or nearby rivers.

Source: Field Survey Data (2025)

### 6.3.2 Water Quality and Safety

Household survey findings highlight significant variation in the quality and safety of water accessed within A Thousand Street. While boreholes and communal kiosks supply a substantial proportion of households, they do not guarantee consistently safe water. Respondents reported that **surface water sources (16%) and untreated streams** are often turbid and visibly contaminated, particularly during the rainy season when

runoff carries debris, waste, and silt into collection points (Field Survey Data, 2025).

Rainwater harvesting, which accounts for **7% of households as a primary source** and **14% as a secondary source**, provides relatively clean water, but its safety depends on the cleanliness of roofing sheets and storage containers. Informal piped water shared between neighbors (5%) and vendor-supplied water (6%) have mixed safety outcomes, as the quality depends heavily on the source from which vendors draw or how connections are made (Field Survey Data, 2025).

Overall, the reliance on untreated surface water and inconsistent monitoring of boreholes underscores the uneven quality of water available to residents. Households relying on surface water and vendors face a higher risk of exposure to contamination, while those using kiosks or harvested rainwater enjoy somewhat safer options but still without guaranteed treatment.

### 6.3.3 Water Accessibility and Distance

Accessibility of water in A Thousand Street varies widely, but the survey confirms that most households live close to their main sources. Out of all surveyed households, **57.5% reported that their primary water source is within 200 meters**, equivalent to less than a five-minute walk (Field Survey Data, 2025). These households are generally located near communal kiosks, boreholes, or vendor points concentrated in the central clusters of the settlement.

Another **17.3% of households access water between 200 and 500 meters away**, which translates to a 5–10 minute walk. For these families, daily collection involves slightly longer travel times but still remains within a reasonable distance (Field Survey Data, 2025). A further **6.6% of households reported distances of 500 meters to 1 kilometer**, while **1.6% travel over 1 kilometer**, making them the most water-insecure in terms of physical accessibility (Field Survey Data, 2025).

Interestingly, **14.2% of households reported having taps within their compounds**, though most of these are shared arrangements with neighbors rather than formal in-plot piped connections (Field Survey Data, 2025). These households enjoy the highest level of convenience and reduced collection burden. However, **2.9% of respondents did not provide distance information**, which may indicate irregular reliance on multiple water points or uncertainty about measurement.

Table 6.4: Distance to Household Water Source in A Thousand Street

Distance to Water Source	Households	% of Total
Less than 200 m (under 5 minutes' walk)	982	57.5%
200–500 m (5–10 minutes' walk)	296	17.3%
Tap is within compound/house	243	14.2%
500 m – 1 km (10–15 minutes' walk)	112	6.6%

More than 1 km (over 15 minutes' walk)	27	1.6%
No response	49	2.9%

Source: Field Survey Data (2025)

### 6.3.4 Cost of Water

The cost of water varies significantly across households in A Thousand Street, reflecting differences in source type, household size, and purchasing power. Survey results show that **51.8% of households reported spending no money on water** (Field Survey Data, 2025). These households rely mainly on boreholes, rainwater harvesting, or untreated surface water, which are available without direct charges but often require more time and effort to collect.

Among households that pay for water, the most common monthly expenditure bands were **KES 200 (9.1%), KES 300 (7.5%), and KES 500 (4.6%)** (Field Survey Data, 2025). Smaller shares of households reported paying higher amounts, including **KES 1,000 (2.3%), KES 1,200 (3.2%), and KES 1,500 (2.5%)**. A small number of households indicated paying extreme amounts such as **KES 3,000 (1.2%), KES 5,000 (0.2%)**, and one household reported **KES 50,000**, which may reflect atypical circumstances such as bulk purchase for resale or data entry outlier (Field Survey Data, 2025).

The majority of paying households fall within the **KES 100–500 per month range**, indicating that while many households access free or nearly free sources, a substantial portion incurs moderate costs for reliable access through kiosks, vendors, or shared piped connections (Field Survey Data, 2025).

Table 6.5: Monthly Household Expenditure on Water in A Thousand Street

Monthly Water Cost (KES)	Households	% of Total
0 (no expenditure)	885	51.8%
100–300	320	18.7%
400–600	50	2.9%
700–1,000	94	5.5%
1,200–1,500	97	5.7%
2,000–3,000	63	3.7%
Above 3,000	10	0.6%
Other / No response	191	11.2%

Source: Field Survey Data (2025)

### 6.3.5 Water Reliability

The household survey indicates mixed levels of reliability in water access across A Thousand Street. A slight majority of households, **51.3%**, reported that they had **not experienced interruptions** in accessing their main

water source during the reference period (Field Survey Data, 2025). However, a substantial proportion, **44.1%**, reported experiencing interruptions, while **4.6%** did not provide a response. This highlights that while some households benefit from relatively stable supply, nearly half face periodic disruptions that limit availability.

Among households that reported interruptions, the duration varied significantly. **9.9%** reported that interruptions lasted more than three days, while **6.8%** experienced week-long interruptions (Field Survey Data, 2025). A further **6.6%** reported three-day interruptions, **6.0%** reported interruptions lasting one month, and **4.3%** experienced two-week disruptions. Shorter interruptions were less common, with **3.4%** reporting a one-day disruption and **3.0%** reporting two-day disruptions. A small minority, **2.8%**, reported interruptions lasting more than a month.

These findings demonstrate that while half the households report continuous access, the other half face interruptions that range from occasional short-term disruptions to prolonged shortages. The variation reflects the diversity of water sources, with boreholes, kiosks, and vendor-supplied water being more prone to outages than rainwater harvesting or untreated surface water.

Table 6.6: Household Reports of Water Supply Interruptions

Water Reliability Response	Households	% of Total
No interruptions	877	51.3%
Yes, experienced interruptions	753	44.1%
No response	79	4.6%

Source: Field Survey Data (2025)

Table 6.7: Duration of Water Supply Interruptions in A Thousand Street

Duration of Interruption	Households	% of Total
1 day	58	3.4%
2 days	52	3.0%
3 days	113	6.6%
More than 3 days	172	10.1%
One week	117	6.8%
Two weeks	74	4.3%
One month	102	6.0%
More than a month	48	2.8%
No response / not applicable	973	56.9%

Source: Field Survey Data (2025)

## 6.4 Sanitation

### 6.4.1 Access to Toilet Facilities (Shared vs. Private)

The household survey established that toilet access in The area is dominated by shared facilities. Out of all surveyed households, **66.8%** reported that they share toilets with other households (Field Survey Data, 2025). These shared toilets are typically clustered within compounds and used by multiple families, reflecting the settlement's high density and limited space for private sanitation facilities. Sharing often results from both spatial constraints and financial limitations that prevent individual households from constructing their own toilets.

In contrast, **27.3%** of households reported having private toilets not shared with neighbors (Field Survey Data, 2025). These are mainly found in compounds with relatively more space or among households with slightly higher income who can afford to construct their own latrines. However, private facilities remain a minority, showing that individual household sanitation is not yet widely established in the settlement.

A further **3.5%** of respondents did not provide information, and **2.4%** explicitly gave no response (Field Survey Data, 2025). These non-responses may represent households without consistent access to sanitation or cases where respondents were reluctant to disclose details about their facilities. Together, these figures suggest that while the majority of households do have some form of access to sanitation, the system is heavily reliant on communal use, which has implications for congestion, maintenance, and hygiene.

Table 6.4.1: Household Access to Toilet Facilities in A Thousand Street

Toilet Facility Access	Households	% of Total
Shared with other households	1,141	66.8%
Private (not shared)	467	27.3%
No response	41	2.4%
Missing/Not specified	60	3.5%

Source: Field Survey Data (2025)

### 6.4.2 Cost of Toilet Use

The survey shows that the majority of households in the area do not pay to use toilet facilities. Specifically, **63.5%** of households reported that they do not incur any cost when accessing toilets (Field Survey Data, 2025). This suggests that most facilities are either self-constructed

within compounds or freely shared among tenants without direct charges.

A much smaller share, **3.2% of households, reported paying to access toilets** (Field Survey Data, 2025). These payments are typically associated with pay-per-use facilities managed by landlords, private operators, or community-based groups. Such arrangements are more common in higher-density clusters where households lack space to build their own latrines. Payments can be per use or monthly, though the survey did not capture specific fee structures.

A notable **33.2% of households did not provide a response**, which may indicate variability in arrangements within shared compounds where payment is not standardized or where tenants are not directly responsible for sanitation fees (Field Survey Data, 2025). The very low proportion of households paying highlights the limited role of cost-recovery sanitation systems in the settlement, with access shaped more by communal use and landlord arrangements than by formal user charges.

Table 6.8: Household Reports of Paying to Use Toilet Facilities

Payment Status	Households	% of Total
No	1,085	63.5%
Yes	55	3.2%
No response	1	0.1%
Missing/Not specified	568	33.2%

Source: Field Survey Data (2025)

### 6.4.3 Safety in Using Toilets at Night

Perceptions of safety around sanitation access vary across The area. The majority of households, **76.3%**, reported that they feel safe using toilet facilities at night (Field Survey Data, 2025). These households are typically located in compounds with closer, internally managed toilets or in areas benefiting from external lighting such as solar high-mast installations.

However, **19.3% of households indicated that they do not feel safe using toilets at night** (Field Survey Data, 2025). Concerns highlighted during data collection included poor lighting, the distance of shared facilities from dwellings, and fears of harassment or theft. This reflects the vulnerability of residents in sections of the settlement where toilet blocks are not well lit or are located away from residential clusters.

A smaller proportion, **4.4% of households, did not provide a response** (Field Survey Data, 2025). This non-response may reflect either lack of access to toilets at night, irregular usage patterns, or reluctance to disclose personal security concerns. Overall, while most residents reported feeling safe, a significant minority

expressed insecurity, pointing to uneven conditions across the settlement.

Table 6.9: Household Perceptions of Safety When Using Toilets at Night

Response	Households	% of Total
Yes	1,304	76.3%
No	329	19.3%
No response	76	4.4%

Source: Field Survey Data (2025)

### 6.4.4 Waste Management from Toilets

Toilet waste management in The area is highly varied, reflecting the absence of a uniform sanitation system. The most common practice reported was disposal into **soak pits or drains**, cited by **30.4% of households** (Field Survey Data, 2025). This method is widespread in areas where space is available for pits but is vulnerable to flooding and leakage during rainy seasons.

A significant portion of households, **22.8%**, stated that toilet waste is **collected by local authorities**, while **9.6% reported private collection through exhauster services** (Field Survey Data, 2025). These methods are more structured but tend to be limited to specific areas and require financial contributions that not all households can afford.

At the same time, **22.5% of households indicated that they did not know how waste from their toilets is managed** (Field Survey Data, 2025). This uncertainty is common among tenants who rely on landlord-provided or communal toilets without being involved in the management process. Another **7.1% did not provide a response**, which may overlap with this uncertainty.

Less common practices include connection to **sewer systems (7.0%)**, reported by a small fraction of households, and environmentally unsafe methods such as **disposal into the lake (0.4%)** or **open dumping (0.3%)** (Field Survey Data, 2025). These practices represent only a small minority but highlight gaps in safe sanitation coverage.

Table 6.10: Toilet Waste Management Practices in A Thousand Street

Waste Management Method	Households	% of Total
Emptied into a soak pit or drain	519	30.4%
Collected by local authorities	390	22.8%
I don't know	385	22.5%
Collected by private companies (exhauster)	164	9.6%
Connected to a sewer system	119	7.0%
No response	121	7.1%

Disposed into the lake	6	0.4%
Open dumping	5	0.3%

Source: Field Survey Data (2025)

## 6.5 Solid Waste Management

### 6.5.1 Household-Level Solid Waste Disposal Methods

Solid waste disposal in The area is primarily managed at the household level due to limited formal collection services. The household survey showed that the most common method is **burning**, reported by **59.4% of households** (Field Survey Data, 2025). Burning is typically carried out within household compounds or nearby open spaces and remains the dominant approach because it is cost-free and reduces waste volume quickly.

The second most common practice is **dumping in designated community areas**, cited by **23.8% of households** (Field Survey Data, 2025). These sites are often informal and agreed upon by residents rather than officially designated by municipal authorities. While they provide temporary disposal points, they are rarely serviced, and accumulation often leads to unsanitary conditions.

A smaller proportion of households reported other practices. **7.0% of households rely on local authority collection**, while **1.2% pay private individuals or groups to collect waste** (Field Survey Data, 2025). Another **2.5% practice open dumping in undesignated spaces**, **2.3% bury waste within compounds**, and **0.7% dump waste into the lake**. These practices are environmentally unsafe but persist in areas where space or collection services are limited.

The findings indicate that **over 90% of households manage waste on their own**, primarily through burning or dumping, with very little recycling or re-use reported. This reflects the absence of systematic, settlement-wide waste management infrastructure.

Table 6.11: Household Solid Waste Disposal Methods in A Thousand Street

Disposal Method	Households	% of Total
Burning (within compounds/open spaces)	1,015	59.4%
Dumping in designated community areas	406	23.8%
Collected by local authorities	119	7.0%
Pay individuals/groups to collect	21	1.2%
Open dumping (undesignated spaces)	43	2.5%
Burying within compounds	40	2.3%
Dumping in the lake	12	0.7%
No response	53	3.1%

Source: Field Survey Data (2025)

### 6.5.2 Coverage of Collection Services

Collection services in The area remain limited, with only a small share of households benefiting from structured solid waste management. The household survey shows that **7.0% of households reported their waste being collected by local authorities**, usually in areas close to main access roads where trucks can reach (Field Survey Data, 2025). These services are irregular, with households reporting long intervals between collections.



In addition, 1.2% of households indicated that they pay private individuals or groups to collect waste (Field Survey Data, 2025). These private collectors typically use wheelbarrows or carts and operate within specific clusters of the settlement. While they provide a valuable service, their coverage is fragmented, and collected waste is often disposed of in informal sites rather than formal landfills.

Together, only 8.2% of households reported access to either public or private collection services. This means that more than nine in ten households must rely on self-managed disposal methods such as burning, dumping, or burying waste (Field Survey Data, 2025).

Table 6.12: Households Reporting Access to Waste Collection Services

Collection Method	Households	% of Total
Collected by local authorities	119	7.0%
Pay individuals/groups to collect	21	1.2%
Combined coverage (any collection)	140	8.2%
No access to collection services	1,569	91.8%

Source: Field Survey Data (2025)

### 6.5.3 Projected Solid Waste Generation Increase

The household survey established that The area contains approximately 1,710 households, with an

average household size of 2.8 persons (Field Survey Data, 2025). This results in a current estimated population of 4,784 residents. Based on World Bank estimates for low-income urban settlements, an average per capita solid waste generation rate of 0.55 kilograms per person per day can be applied to this population.

At present, the settlement is therefore estimated to generate approximately 2,631 kilograms of solid waste per day, equivalent to 2.6 metric tons daily (Field Survey Data, 2025). This volume is managed almost entirely through household-level practices such as burning and informal dumping, with less than 10% of households accessing collection services.

Assuming an average population growth rate of 2.5% per year, consistent with national urbanization trends, the settlement's population could reach approximately 6,124 residents in ten years. This growth would increase daily solid waste generation to around 3,368 kilograms per day, or 3.4 metric tons daily (Field Survey Data, 2025).

Table 6.13: Projected Solid Waste Generation in A Thousand Street

Year	Estimated Population	Waste per Capita (kg/day)	Total Waste (kg/day)	Total Waste (tons/day)
Current (2025)	4,784	0.55	2,631	2.6

2035 (10 yrs)	6,124	0.55	3,368	3.4
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Source: *Field Survey Data (2025); World Bank waste generation benchmark for low-income urban areas*

## 6.6 Information, Communication, and Telecommunications (ICT)

The household survey recorded respondent phone numbers as part of data collection, which indirectly

indicates widespread access to mobile telephony among sampled households (Field Survey Data, 2025). Mobile phones are the main channel of communication for residents, enabling not only personal contact but also access to mobile money platforms, which play an essential role in daily financial transactions. However, the survey did not capture the proportion of households owning mobile phones, the number of devices per household, or patterns of use.



# 7 SOCIAL INFRASTRUCTURE

## 7.1 Education

Education levels in The area reflect a population with significant attainment at secondary and post-secondary levels, but with gaps at the lower end of the education spectrum. The household survey recorded that **42.1% of household heads had completed secondary school**, **23.8% had attained college education**, and **13.9% had completed university studies** (Field Survey Data, 2025). A further **10.4% had only primary-level education**, while **5.2% had vocational or technical training (TVET)**. A small minority reported **no formal education (1.0%)**, while **3.5% did not provide a response** (Field Survey Data, 2025).

At the household level, education is supported by a significant number of children currently attending school. Across all surveyed households, there were **2,656 school-going children**, translating to an average of **1.6 children per household** (Field Survey Data, 2025). This confirms that nearly every household is directly engaged with the education system through active school attendance. Respondents identified a range of schools, including both public and private institutions in Oyugis town and surrounding areas, though the data did not disaggregate enrollment by type of school.

The figures indicate that while the area has a relatively well-educated base of household heads compared to many informal settlements, the burden of financing and sustaining school attendance remains significant. The presence of over 2,600 school-going children points to strong demand for accessible, affordable, and

adequately resourced education services within reach of the settlement.

Table 7.1: Education Level of Household Heads in t

Education Level	Households	% of Total
Secondary	719	42.1%
College	406	23.8%
University	237	13.9%
Primary	178	10.4%
Vocational/TVET	89	5.2%
No formal education	17	1.0%
Junior Secondary	2	0.1%
Preparatory	1	0.1%
No response	60	3.5%

Source: Field Survey Data (2025)

Table 7.2: School-Going Children in A Thousand Street

Indicator	Value
Total households with data	1,709
Total school-going children	2,656
Average school-going children per HH	1.6

Source: Field Survey Data (2025)

## 7.2 Health

### 7.2.1 Healthcare Challenges

The household survey highlighted that the most widespread barrier to healthcare access in The area is the **lack of medicine in health facilities**, reported by **68.8% of households** (Field Survey Data, 2025). Respondents consistently indicated that when they sought care, essential drugs were frequently unavailable. This forces patients either to purchase medicines from private pharmacies at additional cost or to forgo treatment altogether. The shortage of medicines undermines trust in public health facilities and increases reliance on costly alternatives.

The **cost of treatment** was cited as another critical challenge, mentioned by **55.6% of households** (Field Survey Data, 2025). Out-of-pocket payments remain the primary method of financing healthcare, and for low-income households in A Thousand Street, even small fees are significant. Costs include not only consultation charges but also diagnostic services and medicine purchases, creating a cumulative burden that prevents timely care. Many respondents noted that treatment costs often lead to delayed visits to clinics or reliance on informal providers.

**Distance to health facilities** was reported as a challenge by **42.0% of households** (Field Survey Data, 2025). Although Oyugis town hosts several hospitals and clinics, many residents of The area must walk considerable distances to access them. The challenge is compounded by poor internal roads within the settlement, which are often impassable during the rainy season. For emergencies, the lack of immediate access poses particular risks, especially for children, the elderly, and expectant mothers.

Another major issue is the **poor quality of services**, highlighted by **34.9% of households** (Field Survey Data, 2025). This category included complaints about overcrowded facilities, long waiting times, inattentive staff, and limited diagnostic equipment. Respondents also mentioned situations where they were attended to but left without receiving the required treatment, either due to inadequate staffing or lack of proper follow-up. The perception of poor quality further discourages households from seeking formal healthcare, reinforcing cycles of delayed treatment and poor health outcomes.

Only **4.0% of households did not provide a response** on healthcare challenges (Field Survey Data, 2025). The very small share of non-responses indicates that nearly every household has direct experience with one or more barriers to healthcare. Taken together, the findings show that most families face a combination of challenges rather than a single constraint. For example, respondents frequently reported lack of medicine and

high cost together, or cost combined with long distances. These overlapping barriers reveal the multi-dimensional nature of healthcare access problems in The area.

Table 7.3: Household-Reported Challenges in Accessing Healthcare

Reported Challenge	Households (Mentions)	% of Total Households
Lack of medicine	1,176	68.8%
Cost of treatment	950	55.6%
Distance to facilities	717	42.0%
Poor quality of service	596	34.9%
No response	69	4.0%

Source: Field Survey Data (2025)

### 7.2.2 Health Care Financing

The household questionnaire recorded the **primary source of funds for health care expenses** at the household level. Out of **1,709** surveyed households, **785** provided a financing source (a **45.9% response rate**), while **888 (52.0%)** were **MISSING** and **36 (2.1%)** marked **No response** (Field Survey Data, 2025). The analysis below therefore reports both **% of all households** and **% of responding households** to make the distribution transparent.

Among respondents, **personal savings** overwhelmingly dominated as the main way households pay for care. **641 households** reported personal savings, equal to **37.5% of all households** and **81.7% of responding households** (Field Survey Data, 2025). This indicates that where a financing source was stated, most care is paid for directly by the household without pooling or prepayment mechanisms.

Other self-financing modes were present but far less common. **"Household income set aside for health expenses"** accounted for **53 households (3.1% of all; 6.8% of respondents)**, and **"Daily earnings"** for **21 households (1.2% of all; 2.7% of respondents)** (Field Survey Data, 2025). These categories point to day-to-day or budgeted cash payments rather than insurance or credit mechanisms.

Social support networks appeared in a minority of cases. **Support from relatives** was cited by **41 households (2.4% of all; 5.2% of respondents)**, and **contributions from friends/community fundraising** by **23 households (1.3% of all; 2.9% of respondents)** (Field Survey Data, 2025). **Chama** (informal savings/credit groups) was referenced by **5 households (0.3% of all; 0.6% of**

respondents), indicating limited but present reliance on communal or group-based financing.

Use of formal or informal loans was rare: 1 household reported loans (0.1% of all; 0.1% of respondents) as the

Table 7.4: Primary Source of Household Health Care Financing

Health Care Financing Source	Households	% of All Households	% of Respondents*
Personal savings	641	37.5%	81.7%
Household income set aside for health expenses	53	3.1%	6.8%
Support from relatives	41	2.4%	5.2%
Contributions from friends / community fundraising	23	1.3%	2.9%
Daily earnings	21	1.2%	2.7%
Chama (informal savings and credit groups)	5	0.3%	0.6%
Loans (from financial institutions or informal lenders)	1	0.1%	0.1%
Missing (MISSING)	888	52.0%	
No response	36	2.1%	

Source: Field Survey Data (2025).

### 7.2.3 Health Risk Exposure

The burden of disease in The area is dominated by communicable illnesses, with malaria reported by 88.2% of households (Field Survey Data, 2025). Its overwhelming prevalence reflects the settlement's exposure to mosquito breeding sites, stagnant water, and seasonal rainfall. Malaria remains the single most pressing health challenge faced by households.

Respiratory illnesses appeared with lower but still notable frequency. Asthma and pneumonia were each reported by 1.7% of households, and tuberculosis (0.9%) was also recorded (Field Survey Data, 2025). These illnesses are closely linked to household energy practices, as most families cook with charcoal (59%) and firewood (11%), fuels associated with indoor air pollution. In dense, poorly ventilated housing units, this contributes to respiratory vulnerability, particularly among women and children.

Chronic conditions were also present, though at relatively low rates. Diabetes (0.9%) and hypertension (0.6%) were the most common non-communicable diseases, with isolated mentions of blood pressure issues and old age-related ailments (Field Survey Data, 2025). These findings point to an emerging dual burden of disease, where lifestyle-related illnesses coexist with communicable diseases.

Waterborne and sanitation-related illnesses were also reported. Diarrhea (0.6%), skin diseases (0.5%), typhoid (0.2%), and bilharzia (0.2%) highlight the health consequences of heavy reliance on shared toilets (66.8%), surface water sources (16%), and informal waste disposal practices (Field Survey Data, 2025).

primary source for health expenses (Field Survey Data, 2025). The questionnaire did not capture NHIF or private insurance uptake as explicit options; therefore, insurance coverage is MISSING in the dataset and cannot be reported here (Field Survey Data, 2025).

During rainy seasons, these risks are amplified by latrine overflow and contamination of surface water.

Other illnesses, though less common, included HIV/AIDS (0.4%), sickle cell disease (0.2%), cough (0.2%), allergies (0.1%), and rare mentions of amoeba and body aches. 3.3% of households did not provide a response (Field Survey Data, 2025). These results confirm that while malaria remains the dominant health burden, the settlement faces a spectrum of respiratory, waterborne, chronic, and genetic health challenges linked to its environmental and socio-economic context.

Table 7.5: Most Common Illnesses Reported in A Thousand Street

Illness	Households	% of Total
Malaria	1,507	88.2%
Pneumonia	29	1.7%
Asthma	29	1.7%
Tuberculosis (TB)	15	0.9%
Diabetes	15	0.9%
Diarrhea	11	0.6%
Hypertension	10	0.6%
Skin diseases	9	0.5%
HIV/AIDS	6	0.4%
Typhoid	4	0.2%
Bilharzia	3	0.2%
Sickle cell	3	0.2%
Cough	3	0.2%
Allergy	2	0.1%
Blood pressure	1	0.1%
Body aches	1	0.1%
Amoeba	1	0.1%
Old age	1	0.1%
No response	57	3.3%

Source: Field Survey Data (2025)

## 7.3 Markets and Economic Hubs

The area is closely integrated with Oyugis town, whose central market serves as the main economic hub for residents. The settlement lies within walking distance or short boda boda rides from the town center, giving households access to a variety of goods including fresh produce, cereals, livestock products, and household items. Within the settlement itself, small-scale retail dominates: informal kiosks, makeshift stalls, and roadside vendors provide daily essentials such as vegetables, flour, cooking oil, and charcoal. These micro-enterprises form the backbone of the local economy and are the most visible income-generating activities for residents.

The household survey confirmed the importance of market-related activities as part of livelihoods. Many respondents reported occupations tied to **petty trade, vending, and casual labor**, either within the local settlement or directly linked to Oyugis town market (Field Survey Data, 2025). Women in particular are heavily engaged in small-scale trading, while men more frequently reported casual labor or boda boda transport as income sources. Although the survey did not record precise income figures per trade, these occupations were consistently highlighted as the mainstay of household survival.

Market access was also identified as a priority in the survey. In the open-ended question on “most serious concerns in your neighborhood,” a significant share of households mentioned the **need for improved access roads** to markets (Field Survey Data, 2025). Poor road conditions, particularly during the rainy season, restrict the ability of traders to transport goods in and out of the settlement, limiting both income opportunities and consumer access to affordable commodities.

## 7.4 Recreational Areas

The area does not have formally designated recreational facilities such as playgrounds, sports fields, or community parks. Instead, residents rely on **multi-purpose open spaces** within the settlement and its immediate surroundings. These spaces are not planned for recreation but serve this function out of necessity.

The most common informal recreational grounds include **public school compounds**, which double as playfields for children outside school hours. Schools thus provide one of the few relatively open and safe areas for sports, games, and community gatherings. Similarly, **common grounds within compounds** are often adapted for children’s play and for small social events, though space is very limited given the settlement’s density.

Residents also make use of **roadside walks and access roads as play areas and social spaces**, especially in the evenings and on weekends when traffic is lower. These roads serve multiple functions: circulation, market spillovers, socializing, and recreation reflecting the absence of designated spaces.

Recreation in the area is characterized by reliance on **shared, multi-purpose spaces** rather than purpose-built facilities. This informal use of school grounds, common areas, and roads underscores the settlement’s adaptation to space constraints and the lack of planned recreational infrastructure.

## 7.5 Security

### 7.5.1 Perceived Crime and Insecurity

Household perceptions point to crime and insecurity as a prominent neighborhood issue. In the question on “the three most serious concerns,” **29.9% of households** mentioned **Crime and Insecurity** (Field Survey Data, 2025). Other frequently reported concerns in the same question were **Employment (47.3%)**, **Health Care (38.8%)**, **Education (33.9%)**, **Safe drinking water (27.0%)**, **Improved access roads (24.7%)**, **Safe and adequate sanitation (24.5%)**, **Tenure security (22.6%)**, and **Substance abuse (21.4%)**. These results show that crime and insecurity are among the highest-cited social concerns alongside livelihoods and basic services (Field Survey Data, 2025).

### 7.5.2 Night-time Safety

Perceptions of night-time safety around sanitation facilities show mixed experiences. **76.3% of households reported feeling safe using the toilet at night**, while **19.3% reported feeling unsafe** and **4.4% gave no response** (Field Survey Data, 2025). This indicates that while a majority perceive safety at night around facilities, a substantial minority do not, reflecting varied conditions across compounds and paths within the settlement.

Primary lighting sources reported were **electricity (67.3%)**, **solar power (28.3%)**, with small shares using **candles (1.3%)**, **torches (1.0%)**, and **kerosene lamps (0.6%)** (Field Survey Data, 2025). A descriptive cross-tab (non-causal) shows the share of households feeling unsafe at night within each lighting group: **electricity (15.8%)**, **solar (25.3%)**, **kerosene lamps (27.3%)**, **candles (50.0%)**, and **torch/flashlight (58.8%)**. Counts for candles, torches, and kerosene are small.

Table 7.6: Night-time “Unsafe” Responses by Main Lighting Source

Lighting Source	Households (Total)	Households “Unsafe”	% Unsafe at Night
Electricity	1,150	182	15.8%
Solar power	483	122	25.3%
Kerosene Lamps	11	3	27.3%
Candles	22	11	50.0%
Torch/Flash light	17	10	58.8%
No response	26	1	3.8%

Note: Table is descriptive; small-category counts should be interpreted cautiously. Source: Field Survey Data (2025).

### 7.5.3 Reported Security-Related Mentions in Neighborhood Concerns

Mentions explicitly tied to safety and public order include **Crime and Insecurity (29.9%)** and **Substance abuse (21.4%)**. **Street lighting** appeared only rarely in open responses (Field Survey Data, 2025). These figures are based on direct household mentions and do not infer causation or broader implications beyond what respondents stated.

Table 7.7: Top Mentions in “Most Serious Concerns in Your Neighborhood”

Concern	Mentions	% of Total Households
Employment	808	47.3%
Health Care	663	38.8%
Education	580	33.9%
Crime and Insecurity	511	29.9%
Safe drinking water	461	27.0%
Improved access roads	422	24.7%
Safe and adequate sanitation	419	24.5%
Tenure security	386	22.6%
Housing	373	21.8%
Substance abuse	365	21.4%
No response	99	5.8%

Source: Field Survey Data (2025).

Table 7.8: Night-time Safety When Using Toilets

Response	Households	% of Total
Feel safe	1,304	76.3%
Feel unsafe	329	19.3%
No response	76	4.4%



## 8 SOCIO-ECONOMIC CHARACTERISTICS

### 8.1 Livelihoods and Employment

#### 8.1.1 Employment status of household heads

Employment among household heads in A Thousand Street is anchored by **self-employment in micro/small enterprise (47.0%)**, followed by **casual labor (14.5%)** and **formal employment (13.0%)** (Field Survey Data, 2025). Smaller shares reported **unemployed (9.8%)**, **trade/shops (3.8%)**, **artisan work (2.8%)**, and **agriculture (1.7%)**; **dependents** (students/children) together accounted for **4.7%**, and **no response** was **1.8%**. Grouping employed categories shows **82.7%** of household heads are engaged in some form of work, compared to **14.5%** reported as unemployed/dependents (Field Survey Data, 2025).

Table 8.1: Household head occupations

Occupation (grouped)	Households	% of HHs
Self-employment (micro/small business)	803	47.0%
Casual labor	247	14.5%
Formal employment	223	13.0%
Unemployed	168	9.8%

Trade (stalls/shops)	65	3.8%
Dependent – student	63	3.7%
Artisan work	47	2.8%
Agriculture	29	1.7%
Dependent – child	17	1.0%
No response	30	1.8%

*Source: Field Survey Data (2025); N=1,709 households.*

#### 8.1.2 Gender differentials (household head)

Cross-tabulation by **gender of the household head** shows distinct patterns. Among **female-headed households**, **self-employment** is higher (**51.7%**) and **unemployed** is also higher (**16.0%**) relative to males; **casual labor** is lower (**6.7%**) (Field Survey Data, 2025). Among **male-headed households**, **casual labor (17.7%)** and **formal employment (15.4%)** shares are higher, while **self-employment** is slightly lower (**45.2%**) compared to female heads (Field Survey Data, 2025). **Trade** is also more common among female heads (**5.5%**) than male heads (**3.1%**) (Field Survey Data, 2025).

Selected row percentages by gender (household head):

- Female heads: Self-employment **51.7%**; Casual labor **6.7%**; Formal **7.5%**; Unemployed **16.0%**; Trade **5.5%**.
- Male heads: Self-employment **45.2%**; Casual labor **17.7%**; Formal **15.4%**; Unemployed **7.2%**; Trade **3.1%**.

Source: Field Survey Data (2025).

### 8.1.3 Spatial patterns by settlement

Livelihood profiles vary across the three named settlements. **Self-employment** dominates in **Ayoro (60.6%)**, compared with **A Thousand (44.6%)** and **Madiaba (39.7%)**. **Casual labor** is highest in **A Thousand (16.1%)**, then **Ayoro (13.5%)**, and **Madiaba (10.1%)**. **Formal employment** is most pronounced in **Madiaba (25.9%)**, compared with **Ayoro (12.1%)** and **A Thousand (9.5%)** (Field Survey Data, 2025). These shares are row-normalized within each settlement and indicate spatial clustering of livelihood types linked to local opportunities and accessibility.

### 8.1.4 Link between education and occupation of household heads

Education strongly correlates with occupation. Within education strata, the **share in formal employment** rises sharply with attainment: **University 61.2%**, **College 15.5%**, **TVET 3.4%**, **Secondary 1.3%**, **Primary 0.6%** (row % within each education level). Conversely, the **share in self-employment** is higher at lower/mid education: **Primary 62.9%**, **Secondary 57.7%**, **College 44.8%**, while **University** shows a much lower **21.5%** in self-employment (Field Survey Data, 2025). These cross-tabs show that higher education is associated with formal sector jobs, while microenterprise/self-employment is the default pathway at lower schooling levels.

### 8.1.5 Participation of other household members

Looking beyond heads, the occupation tags for **all household members** show a young/dependent labor structure: top mentions were **dependent child (847 mentions)** and **unemployed (750)**, followed by **self-employment (576)** and **dependent full-time student (407)**; smaller counts appear for **formal employment (119)**, **casual labor (97)**, **trade (54)**, **artisan (23)** and **agriculture (21)** (Field Survey Data, 2025). Normalized, these correspond to **49.6 dependent-child mentions** and **43.9 unemployed mentions per 100 households**, against **33.7 self-employment mentions per 100 households** (Field Survey Data, 2025). This profile is consistent with a settlement where many adults are engaged in informal

work, while a large share of members are either dependents or not currently employed.

## 8.2 Household Income and Expenditure

### 8.2.1 Household Income Distribution

Household income levels in The area demonstrate both polarization and vulnerability. Out of 1,709 households, 28.3% did not provide an income response, highlighting a significant information gap that may be linked to the sensitivity of income reporting or irregular earnings (Field Survey Data, 2025). Among those who did respond, a notable 14.6% explicitly reported having no income, reflecting high dependency on relatives, neighbors, or informal support systems.

Within households reporting income, the largest shares fall in the lower-middle brackets: 11.3% reported between KES 4,001–6,000, 9.4% between KES 6,001–8,000, and 8.6% between KES 2,001–4,000. An additional 9.1% earned below KES 2,000, underscoring how a large fraction of households live on minimal, often irregular earnings. At the higher end, 11.8% of households reported incomes above KES 10,000, and 6.8% between KES 8,001–10,000, reflecting a minority with stronger earning capacity, typically linked to formal employment or more successful business activity (Field Survey Data, 2025).

### 8.2.2 Household Expenditure Distribution

Expenditure reporting mirrors income but also reveals mismatches. 31.4% of households did not state their expenditure levels, which is slightly higher than the non-response on income (Field Survey Data, 2025). Among those reporting, 13.0% reported spending below KES 2,000, and 12.7% between KES 2,001–4,000. This aligns with the lower-income groups but also suggests survival on very limited budgets, often insufficient to cover food, rent, health, and education.

At mid-levels, 10.9% reported expenditure of KES 4,001–6,000, 9.0% between KES 6,001–8,000, and 8.2% between KES 8,001–10,000. Notably, 9.5% reported spending above KES 10,000, which is a higher share than those reporting comparable income, suggesting that some households incur costs beyond their earnings capacity, likely through borrowing, informal credit, or support from networks. Furthermore, 5.4% reported “no income” but listed expenditures, reinforcing the reliance on non-income sources.

### 8.2.3 Income–Expenditure Alignment

Cross-tabulation of income and expenditure illustrates both alignment and strain. For most households in the lowest income bracket (<KES 2,000), expenditures were also reported in the same band, indicating tight survival on minimal resources. However, a smaller subset of this group reported higher spending, implying dependence on borrowing, aid, or remittances.

At the middle brackets (KES 4,001–8,000 income), expenditures were dispersed across multiple ranges, reflecting how household size, priorities (such as school fees), and shocks (such as medical bills) alter spending patterns. At the upper end, households reporting incomes above KES 10,000 tended to also report expenditures above KES 10,000, suggesting more stable financial situations and the ability to maintain spending in line with earnings (Field Survey Data, 2025).

### 8.2.4 Economic Inequality and Gaps

The data shows clear inequality within the settlement: while a minority (18–20%) report relatively higher and stable incomes, a substantial proportion earn very little or nothing at all. More than one in four households either declared no income or did not respond, indicating pervasive vulnerability. Expenditure figures reinforce this while some households spend more than KES 10,000 per month, others survive on less than KES 2,000, underscoring disparities in economic resilience within the community.

Table 8.2: Household Income Distribution

Income (KES/month)	Range	Households	% of Total
No response		484	28.3%
No income		250	14.6%
>10,000		202	11.8%
4,001–6,000		193	11.3%
6,001–8,000		161	9.4%
<2,000		156	9.1%
2,001–4,000		147	8.6%
8,001–10,000		116	6.8%

Table 8.3: Household Expenditure Distribution

Expenditure (KES/month)	Range	Households	% of Total
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No response	536	31.4%
<2,000	223	13.0%
2,001–4,000	217	12.7%
4,001–6,000	186	10.9%
>10,000	162	9.5%
6,001–8,000	153	9.0%
8,001–10,000	140	8.2%
No income	92	5.4%

Source: Field Survey Data (2025); N=1,709 households.

## 8.3 Poverty and Vulnerability Indicators

### 8.3.1 Economic stress and financial gaps

Income–expenditure alignment shows clear pressure on household budgets. Among **1,093** households where both income and expenditure bands were provided and comparable, **20.5%** reported an **expenditure band higher than their income band**. In addition, **84 households (4.9% of all)** reported **no income** but **positive expenditure**, indicating reliance on borrowing, gifts, or transfers. Intersections confirm this pressure: **77 households** simultaneously reported a household head who is **unemployed** and **no income**.

### 8.3.2 Labor-market and gendered vulnerability

Unemployment among household heads stands at **168 households (9.8%)**. The burden is uneven by gender: **female-headed households** have an unemployment rate of **16.0% (79 of 493)**, compared to **7.2% (87 of 1,211)** for male-headed households. Income non-receipt also skews female: **17.6%** of female-headed households (87/493) reported **no income** versus **13.4%** of male-headed households (162/1,211). These patterns reflect higher exposure of female heads to irregular or absent earnings relative to their male counterparts.

### 8.3.3 Household composition and dependency

Households are small but carry substantial child dependency. The **average household size** is **2.8** persons, with an average of **1.55 school-going children per household**. Using a household-level (per-household) ratio, the **mean dependency ratio** (school-going children per person) is **0.737** (median **0.333**), confirming many households have a large share of dependents relative to total members. **Households with three or more school-**

going children are also present indicating higher recurrent expenditure needs for fees and supplies among a non-trivial subset.

### 8.3.4 Basic services and health-linked deprivations

Service access indicators align with vulnerability. **Shared toilets** are the norm at **66.8%** of households, a known congestion and hygiene pressure point. **Water access distances** are short for most, but **8.1%** of households travel **over 500 m** for their main source, while **14.2%** have a **tap in the house**. On energy, **solid-fuel dependence is high**: **66.9%** use **charcoal or firewood as the primary cooking fuel** (Charcoal **54.2%**, Firewood **12.6%**), while **LPG** is used by **14.7%** as the primary fuel. These conditions correlate with reported health barriers: **"lack of medicine"** was mentioned by **68.8%** of households and **"cost of treatment"** by **55.6%** (multi-select).

### 8.3.5 Perceived deprivations (community priorities)

Community priorities reflect both livelihoods and services. In the multi-response "three most serious concerns" item, **Employment** was mentioned by **47.3%** of households, **Crime & Insecurity** by **29.9%**, **Safe drinking water** by **27.0%**, **Safe & adequate sanitation** by **24.5%**, **Improved access roads** by **24.7%**, and **Tenure security** by **22.6%**. These perceptions align with the quantitative indicators above: high informality in work, WASH gaps, and mobility constraints are consistently identified by residents.

## 8.4 Coping Strategies

Households in The area rely first and foremost on **personal savings** as their primary coping mechanism in the face of shocks. Among respondents who reported health care financing methods, **81.7% identified savings** as their main source (Field Survey Data, 2025). This shows that most households depend on irregular income streams or small savings to handle emergencies, rather than relying on pooled or institutionalized support systems. The heavy reliance on savings reflects both resilience and vulnerability: while families are able to mobilize their own resources, these

savings are often minimal and quickly depleted when shocks persist.

Alongside savings, **social networks form an important safety net**. **Support from relatives (5.2%), community fundraising and friends (2.9%), and chamas (0.6%)** were reported as ways households manage health care and other urgent needs (Field Survey Data, 2025). These mechanisms illustrate the role of kinship and neighborhood solidarity in buffering households from crises. Even though relatively few respondents identified them as their primary option, such informal networks remain crucial lifelines, especially for households without stable incomes.

Evidence of **borrowing and debt as coping strategies** appears both directly and indirectly in the data. Only **0.1% of households reported loans** as their main source of health financing (Field Survey Data, 2025). However, cross-analysis of income and expenditure shows that **20.5% of comparable households reported spending above their income band**, while **4.9% reported no income but positive expenditure**. These mismatches imply hidden reliance on borrowing, informal credit, or unrecorded transfers to maintain basic consumption despite inadequate earnings.

Another coping strategy involves **adjusting household consumption patterns**. Expenditure data shows that **13.0% of households spent less than KES 2,000 per month**, often despite larger household sizes and high dependency ratios (Field Survey Data, 2025). This indicates that households cope by cutting back on essential and non-essential spending alike skipping meals, delaying health visits, or prioritizing school fees over other needs. Such adjustments may allow survival in the short term but deepen vulnerability over time.

**Gender dynamics shape coping pathways**. Female-headed households are more likely to be unemployed (**16.0% vs. 7.2% of male-headed households**) and more frequently reported having no income (**17.6% vs. 13.4%**) (Field Survey Data, 2025). This means that female heads are disproportionately dependent on social networks, relatives, or reduced consumption strategies, while male-headed households are more likely to sustain themselves through casual labor or self-employment. Gendered vulnerability therefore influences which coping strategies households can realistically access and sustain.



## 9 ENVIRONMENTAL RISKS AND HAZARDS

### 9.1 Reported Disasters and Hazard Exposure

The household survey shows that most residents did not experience major disasters in the year preceding the survey. A total of **1,469 households (85.9%)** reported **no disaster exposure**, while **108 households (6.3%)** gave **no response** (Field Survey Data, 2025). However, a notable minority did report significant hazard events, highlighting localized vulnerability within the settlement.

The most commonly reported disaster was **flooding**, cited by **103 households (6.0%)**. Respondents described these as seasonal, short-lived floods associated with heavy rainfall and poor drainage within densely built clusters. Though not affecting the entire settlement, flooding was concentrated in specific low-lying zones, creating recurrent problems such as ponding, restricted mobility, and water contamination.



Photo 9.1: Erosion In A Thousand Street

**Landslides and mudslides** were reported by **26 households (1.5%)**, particularly in areas where settlement expansion occurs on unstable slopes or poorly

compacted ground (Field Survey Data, 2025). While less frequent than floods, these events were associated with localized property damage and temporary displacement.

**Fire outbreaks** were reported by **15 households (0.9%)**. These were attributed to congestion, reliance on charcoal and firewood, and the presence of closely spaced semi-permanent houses with highly flammable roofing materials. Though less common than floods, fires have severe localized impacts when they occur.

Table 9.1: Household Reports of Disaster Exposure in the Last 12 Months

Reported Disaster / Hazard	Households	% of Total
None	1,469	85.9%
Flooding	103	6.0%
Landslide / Mudslide	26	1.5%
Fire	15	0.9%
Rising Lake water level	4	0.2%
No response	108	6.3%

Source: Field Survey Data (2025).

## 9.2 Settlement-Linked Environmental Hazards

Environmental risks in The area are closely tied to service deficits and settlement conditions. Survey responses highlighted **Safe drinking water (27.0%)** and **Safe and adequate sanitation (24.5%)** as among the most serious concerns in the settlement (Field Survey Data, 2025). These concerns point to hazards from reliance on untreated surface water, overuse of shared toilets, and unsafe waste disposal practices, all of which increase the risk of disease outbreaks and environmental contamination.

Waste-related hazards also emerged in the data. With **59.4% of households burning their waste** and **23.8% dumping in informal community sites**, residents are exposed to smoke, foul odors, and the spread of pests (Field Survey Data, 2025). Smaller numbers reported unsafe practices such as **open dumping (2.5%)** and **dumping in the lake (0.7%)**, creating localized environmental hazards within and around the settlement.

Energy use further compounds environmental risks. A majority of households cook with **solid fuels (66.9% combined charcoal and firewood)**, creating both indoor air pollution and heightened fire risks in the densely built housing clusters (Field Survey Data, 2025). These risks are reflected in the disaster data, where **0.9% of households reported fire outbreaks** within the past year.

**Natural disasters were explicitly mentioned by 5.0% of households** in the open-ended concerns question (Field Survey Data, 2025). While most households did not cite direct hazard exposure, this indicates an awareness of

vulnerability to events such as flooding or landslides, reinforcing the environmental risks indicated.

## 9.3 Perceptions of Environmental Risks (Community “Top Three Concerns”)

Households were asked to list their **three most serious concerns**; because this was a **multi-response** question, totals reflect **mentions per total households** (N=1,709) and can exceed 100%. The most frequently cited concern was **Employment (47.3%)**, followed by **Health Care (38.8%)** and **Education (33.9%)** (Field Survey Data, 2025). Alongside these socio-economic priorities, several **environment-linked concerns** were highly prominent: **Crime and Insecurity (29.9%)**, **Safe drinking water (27.0%)**, **Improved access roads (24.7%)**, and **Safe & adequate sanitation (24.5%)**. Mentions of **Tenure security (22.6%)**, **Housing (21.8%)**, and **Substance abuse (21.4%)** also featured substantially, while **Natural disasters (5.0%)**, **Electricity (0.2%)**, and **Street lighting (0.1%)** were less common (Field Survey Data, 2025).

Within these perceptions, **environmental service gaps** are consistently visible. Over a **quarter of households** identified **safe drinking water (27.0%)** as a top concern, and nearly the same share cited **safe & adequate sanitation (24.5%)** (Field Survey Data, 2025). Together, these indicate broad recognition of risks tied to water quality, access, and sanitation congestion echoing earlier sections that documented reliance on boreholes and shared toilets. **Improved access roads (24.7%)** was also frequently mentioned, reflecting how poor surface conditions and seasonal passability affect daily movement, emergency response, and service delivery. These three perceptions water, sanitation, and roads form an environmental risk triad repeatedly raised by residents.

Security and social order concerns overlap with perceptions of environmental risk in shared spaces. **Crime and Insecurity (29.9%)** and **Substance abuse (21.4%)** were commonly cited (Field Survey Data, 2025). A simple cross-tabulation shows that households who mentioned **“Crime & Insecurity”** were **less likely to feel safe at night** around shared facilities (e.g., toilets): among those naming “Crime & Insecurity,” **27.5%** reported **not feeling safe** at night vs **15.7%** among those who did not mention it; **71.5%** felt safe vs **78.4%** respectively (Field Survey Data, 2025). While this safety proxy is sanitation-related, it provides a comparable settlement-wide indicator that aligns with security perceptions in public/shared areas.

Socio-economic and tenure pressures appear alongside environmental ones. Nearly **half of households (47.3%)**

selected **Employment**, and **22.6%** highlighted **Tenure security**, with **21.8%** citing **Housing** (Field Survey Data, 2025). These concerns frame environmental risks within broader livelihoods and stability contexts: when incomes are low or uncertain, and when tenure and housing are precarious, households report heightened sensitivity to service interruptions or environmental shocks. The **Health Care** concern (**38.8%**) complements this picture, given earlier evidence of medicine stock-outs and treatment costs.

The **multi-response distribution of concerns** shows a settlement whose **top priorities** combine immediate livelihood needs (employment), **core social services** (health, education), and **environmental service risks** (water, sanitation, roads, security). The pattern is consistent with the quantitative indicators elsewhere in the dataset and emphasizes that within residents' own rankings **environmental risks are among the most frequently cited issues**, interwoven with safety and economic constraints (Field Survey Data, 2025).

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