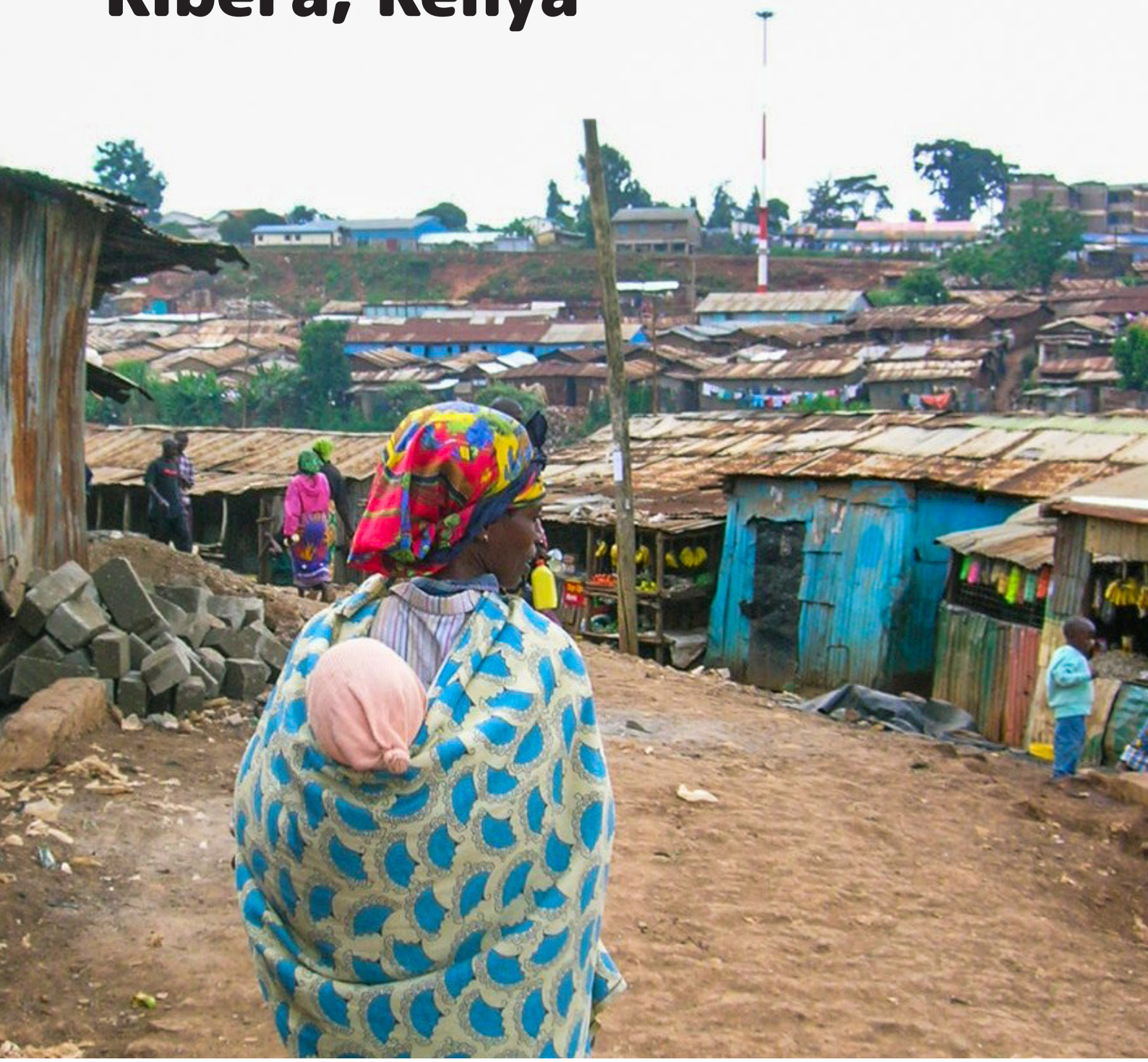
Proximity of Care
DESIGN GUIDE

SITE PROFILE & DESIGN REPORT:

Vuma, Makina Village, Kibera, Kenya



ARUP URBAN95 Bernard van Leer FOUNDATION In Partnership with KDI

Acknowledgements

This document is a product of the partnership between Arup and the Bernard van Leer Foundation as part of the project “Proximity of Care – Designing for Early Childhood in Vulnerable Urban Context”. Kounkuey Design Initiative (KDI) led the assessment for the Vuma neighbourhood in Makina Village Kibera (Nairobi, Kenya). Main contributors to this document are Vera Bukachi, Joe Mulligan, Allan Ouko K’oyoo, Pascal Mukanga Odira, Mary Mugeni, Amos Wandera, Manshur Talib, Campbell Clause, Franklin Kirimi and Gloria Tanui of KDI; Sara Candiracci and Spencer Robinson of Arup; and Irina Ivan of Bernard van Leer Foundation.

ARUP

Arup is an independent muti-disciplinary firm with more than 14,000 specialists working across every aspect of today’s built environment. Our mission to Shape a Better World is driven by our commitment to make a real difference, stretch the boundaries of what is possible, help our partners solve their most complex challenges and achieve socially valuable outcomes.

The Arup International Development group partners with organisations operating in the humanitarian and development sector, to contribute to safer, more resilient and inclusive communities and urban settings in emerging economies and fragile contexts around the globe.

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The Bernard van Leer Foundation is an independent foundation working worldwide to inspire and inform large-scale action to improve the health and well-being of babies, toddlers, and the people who care for them.

The Urban95 Initiative aims to improve, through urban planning, policy, and design, the way babies, toddlers, and the people who care for them live, play, interact with and travel through cities. It asks a bold but simple question:

“If you could experience the city from 95cm - the height of a 3-year-old - what would you change?”

The Kounkuey Design Initiative (KDI) is a non-profit design and community development organisation registered in Nairobi, Kenya; Stockholm, Sweden; and California, USA. We partner with under-resourced communities to advance equity and activate the unrealised potential in neighbourhoods and cities. We accomplish this mission through advocacy, research, planning, and built works. KDI works with residents to realise their visions for healthier neighbourhoods through the tools of participatory urban design and planning. Children, who are often least served by public infrastructure and most affected by issues such as climate risk, poor sanitation, and lack of safe spaces for play, are always at the centre of this process. KDI engages children to reimagine the public realm through a range of fun and interactive design activities, as well as consulting with families to ensure their needs are met.

In Nairobi, KDI predominantly works in the Kibera neighbourhood and has been co-designing projects with residents there since 2006. At the time of issue, KDI is working with residents in the Vuma neighbourhood where this report is based, to build its 11th Productive Public Space, under the Kibera Public Space Project network.

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Executive Summary

Arup and the Bernard van Leer Foundation have partnered to combine their design expertise and knowledge of early childhood development, to support urban practitioners, city authorities and development and humanitarian actors working in vulnerable urban contexts to design and build healthy, protective, supportive and stimulating environments where young children can thrive.

The Proximity of Care approach was developed to better frame the correlation and interdependencies between the built environment and early childhood development in informal and refugee settlements. It provides a framework to assess how various urban systems and social factors observable at different levels of the built environment relate to the needs, strengths and challenges facing young children, their caregivers and pregnant women, and ultimately influence early childhood development. The framework is also intended as a tool to support the identification and design of child- and family-friendly interventions in a given urban context, and to measure their long-term impact.

Proximity of Care is at the core of a Design Guide we are developing for professionals and decision makers operating in informal and refugee settlements to profile their work as child- and family-friendly. The Guide incorporates design principles, tools and policy recommendations, to support the assessment, design and


Source: Antonella Sinopoli, Flickr


Source: Antonella Sinopoli, Flickr

implementation of interventions aiming at improving the conditions and well-being of young children, their caregivers and pregnant women in the environment where they live.

To optimise the Proximity of Care approach and develop a practical and useful Design Guide, Arup and the Bernard van Leer Foundation have partnered with experienced organisations operating in informal and refugee contexts and piloted our approach in four sites. In Tripoli, Lebanon we are working with Catalytic Action; in Azraq, Jordan with Civic; in Kibera, Kenya with Kounkuey Design Initiative (KDI); in Khayelitsha, South Africa with Violence Prevention through Urban Upgrading (VPUU).

This report presents insights from the research study undertaken in Vuma, Makina Village, Kibera in Nairobi, Kenya, in collaboration with the Kounkuey Design Initiative. The Proximity of Care Framework was used to frame and inform the research and understand the challenges and opportunities for early childhood development in Kibera. The report also identifies opportunities for enhancing the living conditions of young children, their caregivers and pregnant women, and for empowering communities through innovative and strategic spatial interventions.

The research identifies core challenges and opportunities for early childhood development at all four dimensions of the Proximity of Care approach.

In relation to **health**, Kiberan residents are disproportionately affected by poor Water, Sanitation and Hygiene (WASH) service delivery, no antenatal care services at the neighbourhood level, malnutrition among young children and pregnant women, and an absence of green spaces. Opportunities include the design of flexible public spaces that cater for the needs of children and caregivers, and devolving specialist antenatal and paediatric care to the neighbourhood level.

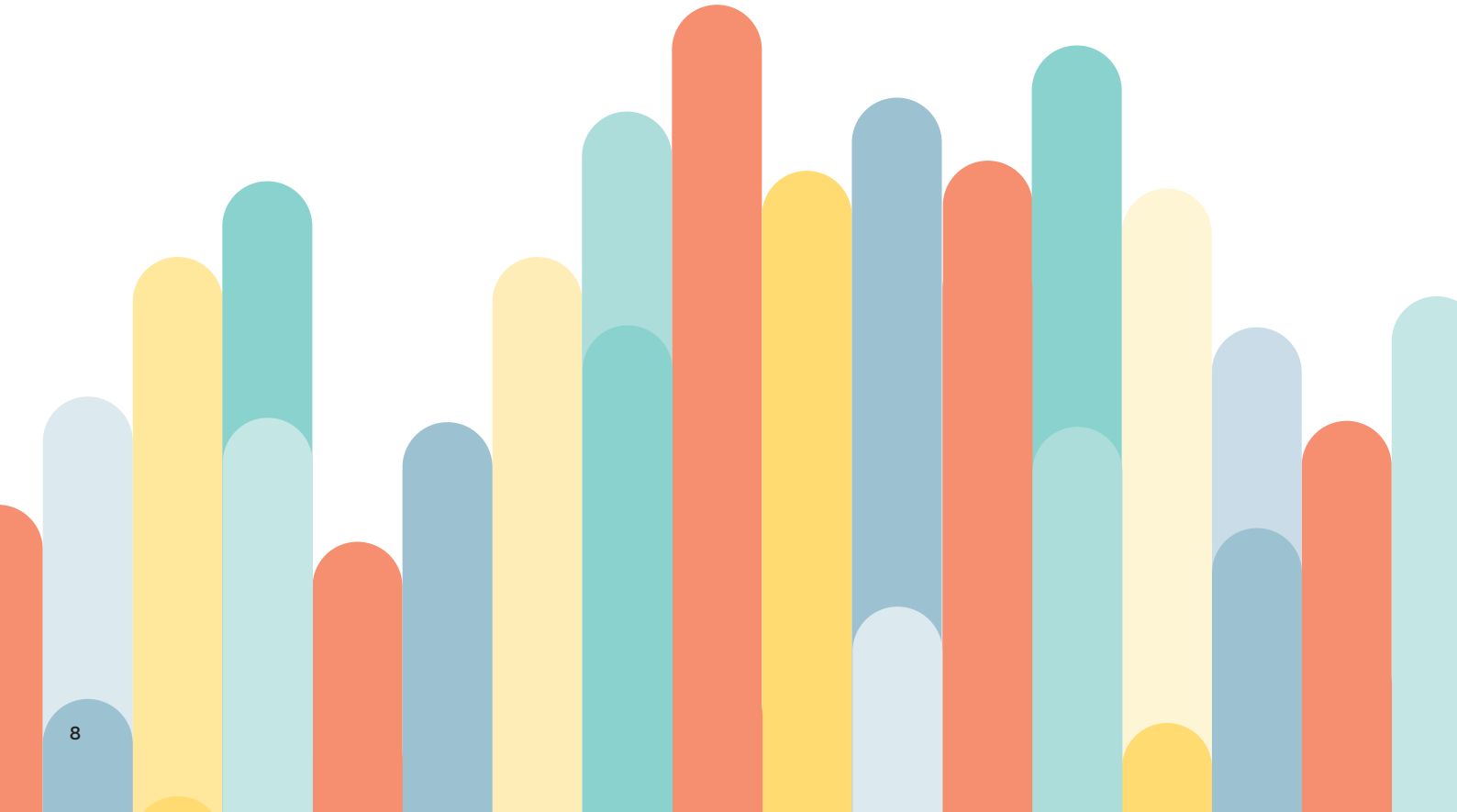
In relation to **protection**, residents are faced by a multitude of challenges including insecurity, child abuse, unsafe play spaces and risk from fire and other hazards. Potential opportunities are community-based crime management, hazard responsive design at household and neighbourhood level, including of public spaces, strengthening of institutions that deal with crime and abuse and utilising anonymous reporting mechanisms for children.

For **stimulation**, crowded indoor and outdoor spaces, limited toys and equipment, and unstimulating learning environments are some examples of the challenges to optimal early childhood development in Kibera. Consciously creating positive stimulating environments, embracing flexibility in public space use, delivering financing for effective learning through play and engaging children and caregivers as stakeholders in design and planning were also identified as opportunities.

Lastly, for **support**, some challenges identified include unstable household incomes, public sensitisation on neighbourhood early childhood development and infant care, and city planning frameworks that cannot be implemented. Potential opportunities to consider include building on strong community support systems for caregiving and savings and loaning, and targeted skills training and support for children's rights (including those with special needs).

This report includes key recommendations for enhancing early childhood development opportunities in Makina, which may also be relevant to wider Kibera and other informal areas. Core design and planning guidelines for early childhood development in vulnerable urban contexts have been proposed. Additionally, specific recommended urban design interventions have been developed to schematic stage at two levels: neighbourhood (Vuma, Makina Village) and city (Kibera settlement) level.

1.
Introduction



DESIGNING FOR EARLY CHILDHOOD IN VULNERABLE URBAN CONTEXTS

Vulnerable urban areas such as refugee and informal settlements house a growing population in critical need, and the number and size of these areas will only increase in the coming decades. While the specifics of these vulnerable areas vary, they consistently pose major challenges for children's optimal development.[1] Living in these contexts has particularly significant negative impacts on young children aged 0 to 5.[2]

At present, the specific needs, vulnerabilities and demands of young children, their caregivers and pregnant women living in informal and refugee settlements are frequently ill-considered and unaccounted by government, development and humanitarian organisations, and urban practitioners. The 0-5 age group's needs are different than those of older children, but are often 'lumped in' with them from a planning and policy perspective, or worse, go entirely unrecognised.

Arup and the Bernard van Leer Foundation have partnered to help bridge this gap, by combining their design expertise and knowledge of early childhood development. The Proximity of Care approach was developed to better understand the needs and constraints faced by young children, their caregivers, and pregnant women in vulnerable urban contexts, such as informal and refugee settlements; and to ultimately help improve their living conditions and well-being.

The Proximity of Care approach is at the core of a Design Guide that we are developing to help urban practitioners, city authorities and development and humanitarian actors working in vulnerable urban contexts, mainstream in their projects child- and family-friendly design principles, processes and policy recommendations.

The Design Guide is intended to provide practical tools to enable users to thoroughly assess and design interventions in informal and refugee settlements, whilst considering the needs and demands of young children, their caregivers and pregnant women, to ultimately build healthy, protective, supportive and stimulating environments where young children can thrive.

The Guide builds upon the Bernard van Leer Foundation's Urban95 Initiative, which asks a bold but simple question: "If you could experience the city from 95cm – the height of a 3-year-old – what would you change?". Urban95 leverages urban planning, policy and design to improve the very youngest children and their caregivers experience, play in, interact with and travel through cities.

To ensure the needs of the Design Guide's end users are properly met, we are working closely with urban practitioners operating in informal and refugee settlements, and with development and humanitarian organisations. In particular, we are partnering with Civic, Catalytic Action, Kounkuey Design Initiative (KDI), and Violence Prevention through Urban Upgrading (VPUU), who are operating in vulnerable urban contexts in various sites across Jordan, Lebanon, Kenya, and South Africa respectively.

WHY AN EARLY CHILDHOOD DEVELOPMENT FOCUS IN VULNERABLE URBAN CONTEXTS

The early years of a child's life are crucial for healthy physical and mental development[1]. Neuroscience research demonstrates that a child's experiences with family, caregivers and their environment provides the foundation for lifelong learning and behaviour[2].

Cognitive evolution from birth to age five is a 'golden period' during which the stage is set for all future development, including core skills acquisition, establishment of healthy attitudes and behaviours, and flourishing of mature relationships[3]. Without effective early childhood support, developmental deficits can become a cycle of lost human capital. Developmental inhibition in the first two years of life has harmful effects on adult performance, including lower educational attainment and reduced earning[4]. Improving early childhood development, on the other hand, acts as a social and economic engine for communities and societies.

To develop to their full potential, babies and toddlers require not only the minimum basics of good nutrition and healthcare, clean air and water and a safe environment; they also need plenty of opportunities to explore, to play, and to experience warm, responsive human interactions[5]. To a large degree, the establishment of healthy patterns in human relationships depends upon the physical environment children inhabit in their very first years[6].

The characteristics of physical space impact learning and memory formation[7]; chronic noise exposure can result in lower cognitive functioning and unresponsive parenting[8]; crowding can elevate physiological stress in parents and cause aggressive behaviour in young children. For young children to make the most of their surrounding built environment, those places need to cater to age-relevant developmental needs, while providing affordances and barrier-free access for caregivers[9].

Children, caregivers and expectant mothers living in rapidly urbanising informal and refugee contexts are a particularly vulnerable population, among the most severely affected by a lack of basic services, inadequate living conditions, and limited opportunities for individual and community growth. In addition, these populations are often on the front line of climate change impacts, compounding the difficulty of their situation.

While the typologies of vulnerable urban contexts can vary, living in these environments is consistently demonstrated to have significant negative impacts on the optimal development of very young children, as well as their support networks[10].

With cities growing exponentially and population displacement on the rise globally, more and more children are likely to find themselves living in informal, resource-restricted, and otherwise vulnerable urban areas. In the coming decades, children's health, lives and futures will be increasingly determined by the shape of cities and urban settlements.

Investing in early childhood development has been proven to be the single most effective method for poor and vulnerable societies to break out of poverty and vulnerability cycles[11]. For urban planners, development actors, and government authorities alike, there is no greater chance to reap long-term, society-wide benefits than by improving early childhood development for the generations being raised in vulnerable urban contexts around the globe.

Source: Adriana Mahdalova, Shutterstock

THE PROXIMITY OF CARE APPROACH

The Proximity of Care Approach was developed to better understand the relationship between the built environment and early childhood development in vulnerable urban contexts, whose interdependencies are not always fully appreciated and addressed.

It is a tool that provides a structured, granular and holistic approach to assess how various urban systems relate to a child's developmental needs in a given context; and to help support, prioritise and design child- and family friendly interventions. The framework is also intended as a tool for ongoing outcome assessment, to measure the long-term impact of specific interventions.

The Approach considers **four primary Dimensions** foundational to optimal early childhood development: **Health, Protection, Stimulation and Support**. Each dimension is assessed against a range of key factor areas, which are both hard and soft assets – physical space and infrastructure, human interactions and behaviours, economic, policy and planning elements, that individually and collectively contribute to enable optimal early childhood development in a given urban context.

To gain a holistic understanding of the needs and demands of young children, their caregivers, and pregnant women in their settlement, these factor areas are assessed at different urban scales of human interactions– **the Household, Neighbourhood and City levels**, whose boundaries are highly context-dependent.

Dimension: Health

This dimension considers those factors that contribute to a healthy and enriching environment for optimal early childhood development, examining how to improve physical, mental, and emotional health and support cognitive development among young children, their caregivers, and pregnant women.

Dimension: Stimulation

This dimension considers those factors that contribute to a nurturing and stimulating environment for optimal early childhood development, addressing how to enhance the quality of children's interaction with caregivers, peers, other adults, and the physical space around them.

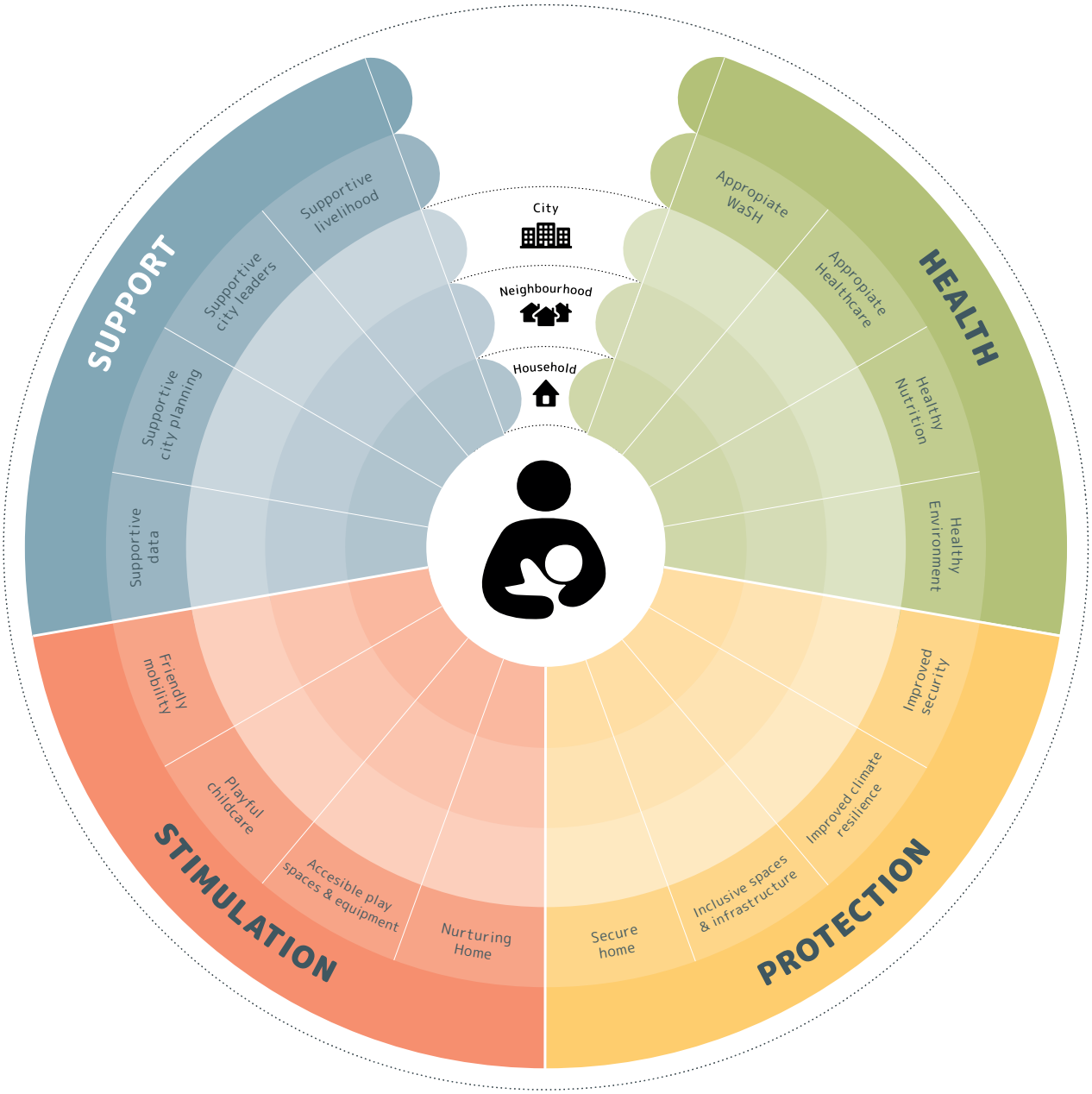
Dimension: Protection

This dimension considers those factors that contribute to a safe and secure environment for optimal early childhood development, determining how to reduce risks, mitigate hazards and increase safety for children, and improve caregivers' perception and experience of safety and security.

Dimension: Support

This dimension considers those factors that contribute to a knowledgeable and supportive environment for optimal early childhood development, looking at how to enhance knowledge, support from city authorities and community members, and include beneficiaries' voices in decision-making and planning.

Figure 1:
Visualisation of the Proximity of Care Approach



This cross-cutting assessment allows a nuanced understanding of the specific areas most critical to improving early childhood development in a given context. The knowledge and evidence generated through the application of the framework can be used to support planners, authorities and built environment professionals to create a healthy, stimulating, safe and supportive environment that contributes to young children's optimal development, and enhances caregivers' and pregnant women's living conditions and wellbeing.

THE TOOLKIT

The application of the Proximity of Care Approach is supported by a toolkit for conducting a participatory assessment. The toolkit includes methods and tools for the following activities:

Desk-based Analysis of secondary socio-economic and spatial data on the selected neighbourhood.

Transect Walks to map and assess site materiality and accessibility, social conditions, availability and conditions of child-friendly spaces, child-friendliness and child-specific hazards manifested by local infrastructure, pedestrian and vehicular traffic flows, and potential barriers to play access.

Key Informant Interviews with different stakeholders including academic experts, built environment professionals, NGO staff, city authorities, youth groups, educators and community leaders to better understand early childhood challenges and opportunities in the selected neighbourhood.

Focus Group Discussions with children, educators, and community members to examine local opportunities and challenges surrounding early childhood development.

Assessment Workshops with children (0-5 and 6-12), caregivers, local educators, community leaders and community members to map and understand early childhood challenges and opportunities in the selected neighbourhood, experienced by children and carers in the local community.

Co-creation Workshops with children (0-5 and 6-12), caregivers, local educators, and community members to identify early childhood development opportunities in the selected neighbourhood, and come up with tangible ideas for intervention in key hot-spots, using participatory solution development exercises.

Source: SuSanA Secretariat, Flickr

2.
Vuma, Makina Village, Kibera Profile

METHODOLOGY

The Proximity of Care Framework was used in Vuma, part of the Makina neighbourhood that is in the north-western part of the Kibera informal settlement in Nairobi, the capital city of Kenya, to understand the challenges and opportunities for early childhood development. The field research was conducted in collaboration with the Kounkuey Design Initiative (KDI).

The field research enabled Arup and the Bernard van Leer Foundation to field test and refine the Proximity of Care Framework and associated toolkit, and to establish a baseline for site conditions, including challenges and opportunities, to inform the design of context-sensitive interventions.

The following methods were used in the elaboration of the research and production of this report:

- **Desk based review** and gap analysis of secondary demographic, geographic, census data, and survey data from 200 households in the Vuma area , complemented by KDI's internal records and experience working in this setting.
- **Key Stakeholder mapping** to develop a database of key local stakeholders, sorted by specialisation, to engage for research activities including interviews and focus groups.
- **Semi-structured interviews (12)** with representatives from non-governmental organisations (NGOs), neighbourhoods and schools, local health providers, community leaders, as well as caregivers and pregnant women.
- **Focus Group Discussions (FGDs) (3)** with community representatives, design practitioners, and residents, including caregivers and pregnant women.
- **Transect walks** through the neighbourhood and major access route to Vuma area, to gain an in depth understanding of community amenities, public space and how children and caregivers uses the available spaces in the neighbourhood
- **Co-creation workshops** between the assessment and design teams to co-develop recommended design interventions in response to the challenges and opportunities raised

Due to movement and proximity restrictions required by the 2020 Covid-19 pandemic, some research activities were performed remotely. An envisioned workshop with children was scoped out due to the government mandated social distance guidelines introduced during the project period. Focus Group Discussions with caregivers, pregnant women, community representatives and design practitioners were conducted remotely.

This Vuma Profile Report is structured around the four Dimensions of the Proximity of Care Framework – Health, Protection, Stimulation and Support, with an introductory section presenting a general overview of the site, with geographic, demographic and socio-economic conditions.

Key challenges and opportunities to early childhood development are assessed for each Dimension at different urban scales – the Household, Neighbourhood and City levels. For the purposes of this work and due to the scale, complexity, and dynamism of Kibera's 300,000+ population, the 'City level' is taken as the entire settlement. Recommendations on type of interventions to be implemented to address these challenges and enhance these opportunities are provided.

OVERVIEW

Nairobi

Nairobi is the capital city of Kenya and was formed in 1899, as a transit point for the British East African Railway. Its population has proliferated from just over 300,000 during Kenya's independence in the early 1960s, to a resident population of 4.4 million (and a daytime population in excess of 6 million) residents according to the Kenya 2019 census. Approximately 70% of Nairobi's residents live in single-room units in informal settlements and tenements .

While residents in these neighbourhoods make up the vast majority of the population, the settlements comprise 5-6% of the city's residential land area and only 1-2% of Nairobi's total land area[12,13]. The settlements are mostly found on illegally subdivided government or privately-owned land, or on reserve land deemed unsuitable for construction, such as riparian reserves and infrastructure reserves (railway reserves, for example). New settlements were formed as a result of nearby large developments (construction and industrial sites, for example), and others disappeared or shrinked in size and population due to displacement relating to demolitions for other formal developments or infrastructure[14].

Nairobi has the unenviable record of having what is considered by some the largest informal settlement in East and Central Africa - Kibera - and others such as Mukuru, Kawangware, Mathare, Kangemi, Korogocho and Majengo[15].

Kibera

Kibera is a thriving and vibrant informal settlement made up of 13 interlocking villages, 5km or so from the city centre. Kibera's name, derived from the term, 'Kibra', is a Nubian word for forest or jungle. The land was settled in the early 1900s as a temporary residence for discharged Nubian (Sudanese) veterans from the King's African Rifles, who served in Britain's East Africa colonial forces, many of them for life and indeed, for generations. Reference to Sudanese does not refer here, to the country Sudan. Rather, it derives from an Arabic term for the area south of Khartoum, where the descendants of the Nubian slave soldiers that fought in Britain's East African colonial forces were from.

Growth of Kibera started in the Makina area (dark spots north of the railway line), progressing fairly organically through 1965. By 1980, rural-urban migration was driving Kibera's population growth and the density of this 2.2km^2 settlement grew to above 130,000 people per square km.

From a population of around 3,000, Kibera quickly grew post-independence, with migrants from all over Kenya flooding in and settling without official government recognition. Kiberans today comprise various ethnicities, as well as the descendants of the original Kiberans who continue to lay claim on the land. The original Kiberans are now a minority, which is sometimes seen as a source of conflict particularly when it comes to issues of tenure and 'who' owns Kibera.

Figure 2: Population Density growth in, from top left, 1915 - 1920, 1955 - 1965, 1975 -1980 and 1990 - 2010. Source: Shakib, 2013, adapted from ETH Studio Basel and Andres Herzog

1915-1920

1955-1965

1975-1980

1990-2010

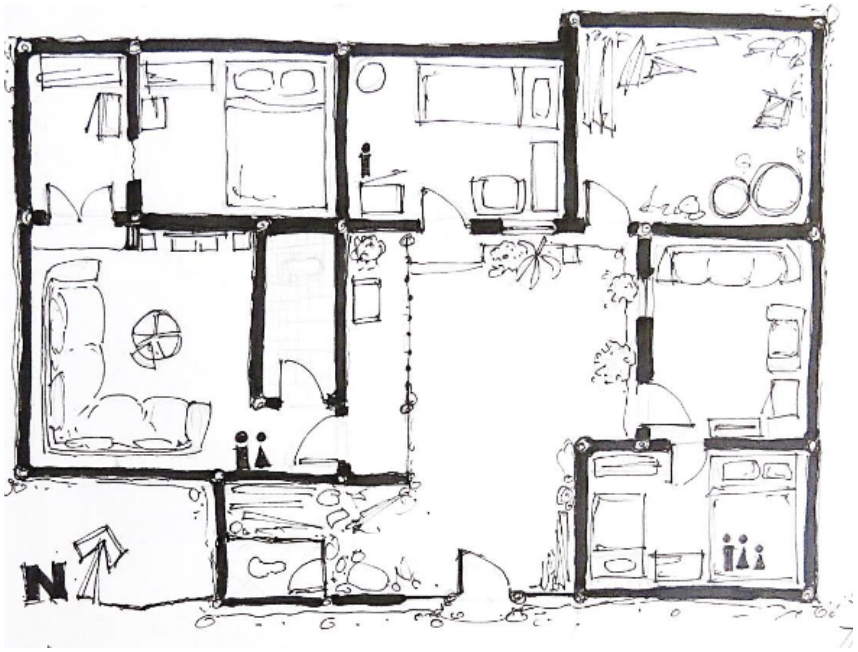


Figure 3: Traditional building typologies in Vuma, Makina used by the Nubians had rooms arranged around a common courtyard. Sketches by Shakib R, 2013

Makina and Vuma

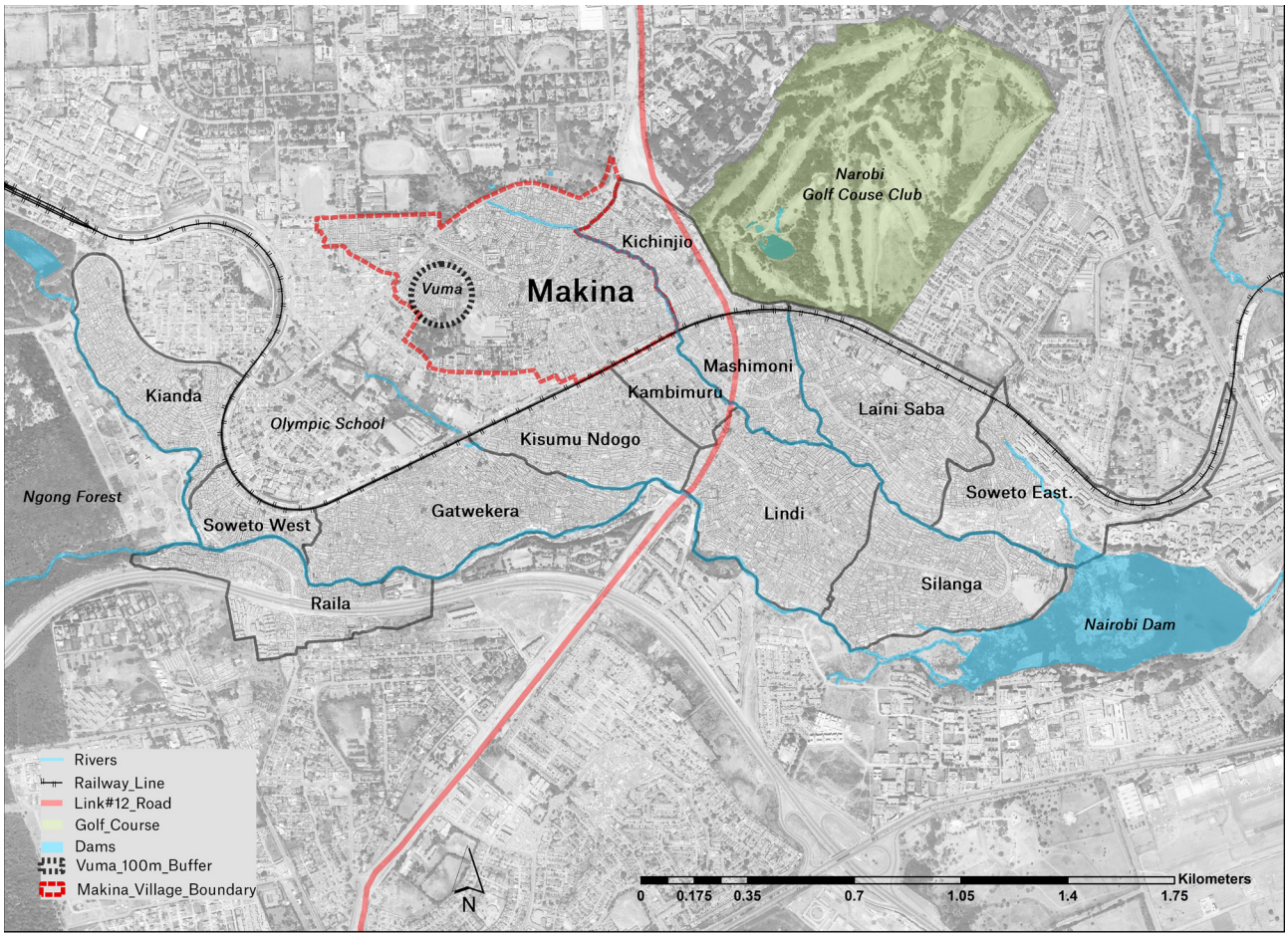
Makina, a village to the north west of Kibera, was the first settled village in Kibera, owing to its weekly market. This makes it not only one of Kibera's, but also one of Nairobi's oldest settlements. The area originally had a mix of structure typologies including houses built around a central courtyard, a style associated with the traditional Swahili architecture. Most of the traditional structures were wrapped around a courtyard with the structure assuming a U-shape, which offered a semi-public outdoor space.

Today this architecture is largely abandoned in favour of back-to-back single or double-storey compound typologies with little or no common space.

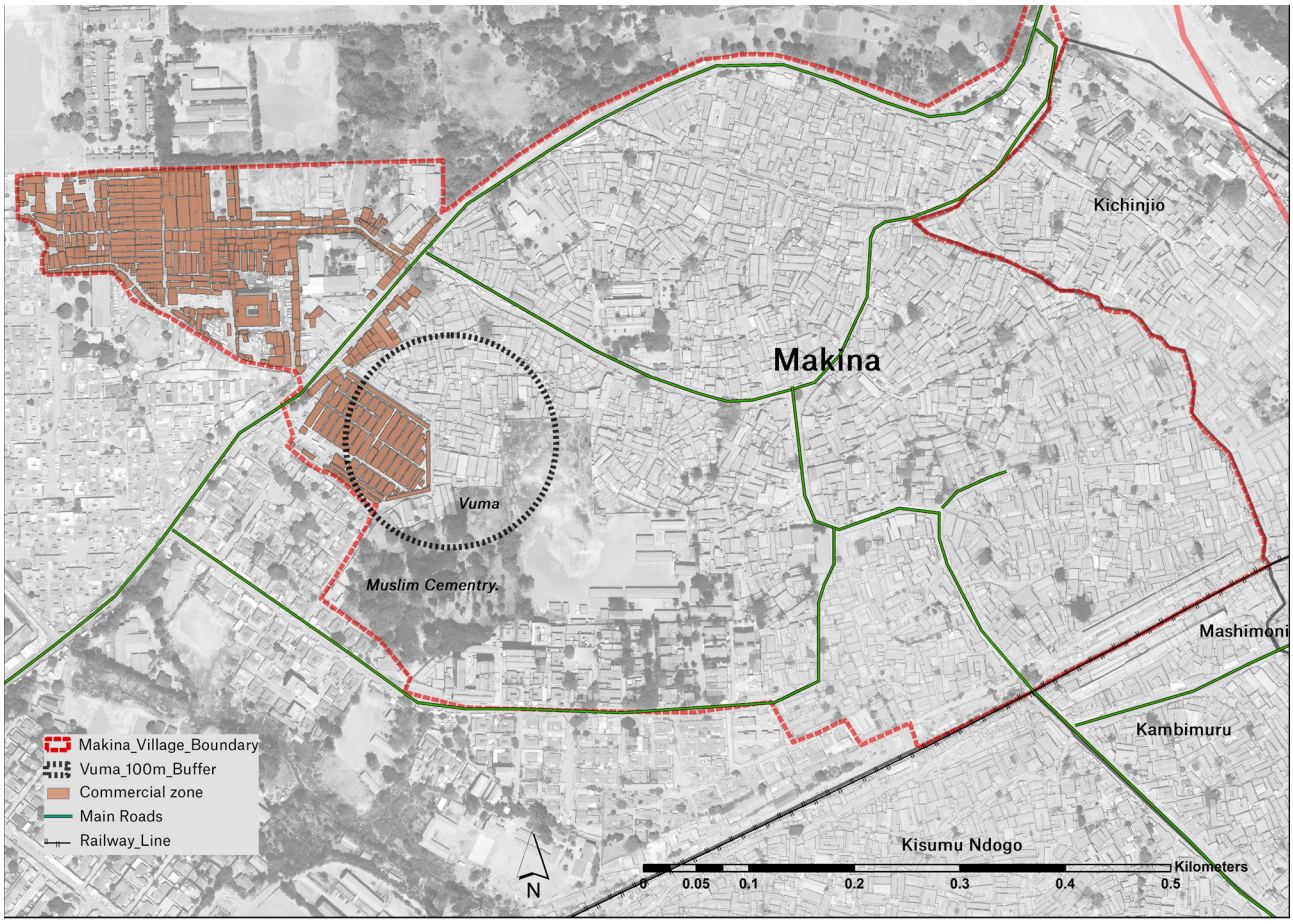
Makina is part of the Nubian land claim that was recognised by the National government in 2017. Prior to this, like most of Kibera, Makina was on public government land. In May 2020, the Nairobi Metropolitan Service (NMS), the body that has taken over key operations that were initially run by the Nairobi County government, declared most of Kibera, including Makina village, a Special Planning Area (SPA). This means that any further developments have been stopped in the area for 2 years during which the stated intentions of NMS (as per their Gazette Notice on the SPA) are to develop a "participatory, economically feasible, socially and environmentally sustainable Physical Development Plan" for the area.

Vuma is named after long standing community based organisation Vijana, Usafi na Maendeleo (Youth, Sanitation and Development), comprising reformed youth from the area. The area is the site of the Kibera Productive Public Space 11, which aims to bring a variety of much-needed amenities and opportunities to this area by the end of 2020. As well as creating jobs and other income-generating initiatives, the site, to be operated by the Vuma group, will help mitigate the increasingly severe flooding in the area through Sustainable Urban Drainage strategies.

Map 1: Kibera settlement, highlighting Makina village and Vuma neighbourhood in NW Kibera.



Map 2: Makina village, access, main commercial area, and Vuma neighbourhood.



Demography

Kenya's 2019 census put Kibera's population at 225,119. It is likely that this figure is an under-estimate considering that Kiberans tend to travel to their 'home villages' out of Nairobi, to be counted for the census.

Furthermore, the boundaries that define Kibera are based on sometimes selective interpretations of data, with some residents being accounted for in neighbouring constituencies. Kibera's population is religiously and ethnically diverse, with Christian and Muslim populations, and residents from a variety of Kenyan tribes.

The Kenya 2019 census indicates that Makina has a population of approximately 14,000, split 49.8% male and 50.2% female. The Vuma neighbourhood (a subset of Makina) has an estimated population of around 2,200 (based upon the random selection of households sampled in Vuma under the Community Responsive Adaptation project 2017-2020 led by KDI and Stockholm University). The average household size in Vuma in that sample is 3.24 household members, compared to 3.6 household members in the wider Kibera, with most living in single rooms typically measuring 10ft by 10ft.

From the household surveys undertaken in the Vuma neighbourhood the majority of households we sampled are Christian (Protestants, 65.5% and Catholics, 18%), 15.5% are Muslims and the remaining 1% fall under 'other'. Approximately half of the households surveyed use Kiswahili (Kenya's national) language as their main dialect, other local dialects used at home include Luhya, Luo, Kikuyu and Kisii. (Community Representative Adaptation project, 2017-2020)

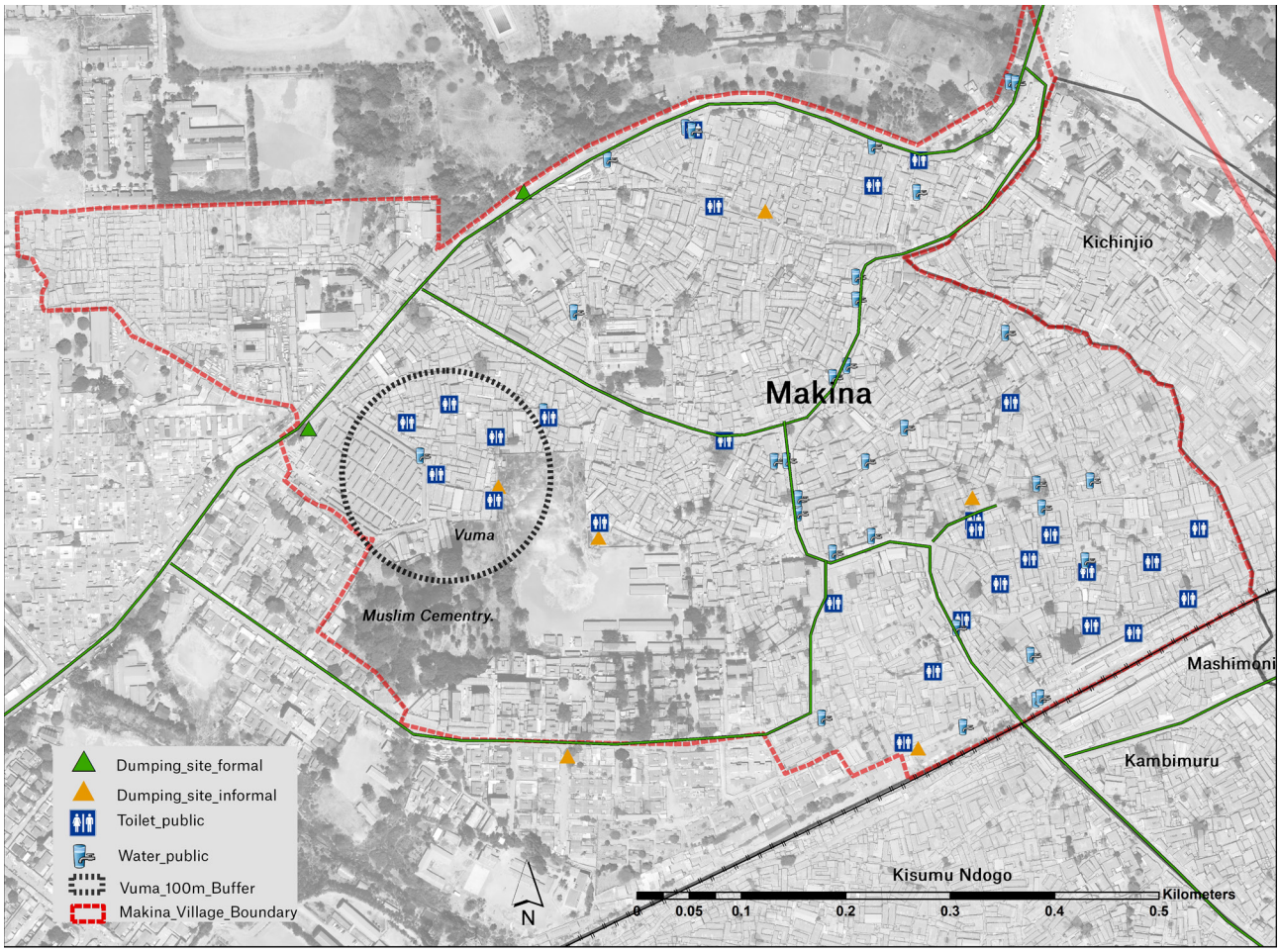
4 in 10 of surveyed households have lived in their respective households in the Vuma neighbourhood for between 1-5 years, 3 in 10 for between 6-20 years, while the remaining 3 in 10 have been in Vuma for more than 21 years[16] (Community Representative Adaptation project, 2017-2020).

SOCIO-ECONOMIC CONDITIONS

KDI's household survey in 2018, found that 56.6% of households earn their income by working within Kibera, 32% earn their income outside the settlement, and 11.4% work both inside and outside (typically as transport services providers) of Vuma. 21.4% of residents confirmed that they have no source of income. The average household income in the surveyed households in Vuma is Kshs. 3,100/- per month (about $31). The vast majority of the residents in Vuma rent their properties.

Figure 4: Example of open channel surface drain in Vuma neighbourhood, Kibera

Map 3: Public toilets, water points, and dumping spots in Makina village (from KDI and MapKibera).
Note: Sanitation facilities are of highly variable quality and level of operation.



Services and Systems

Kibera has inadequate healthcare facilities, schools, markets, recreation areas, and housing. Kibera is connected to the national electricity grid. According to the Kenya Census 2019, up to 94% of Kibera households use mains electricity for lighting, as compared to Nairobi city's 96.5%, although illegal connections remain an issue. To improve security during the night, Kibera has a number of high mast security lights. 45.4% of Kibera residents have access to the internet either through their mobile phone or through cabled or wireless point-to-point internet connections. Parts of Kibera have piped water but only 35% have water at household or plot level, compared to 50% of the wider Nairobi. Parts of Kibera are served by both water and sewer lines from the Nairobi City Water and Sewerage Company (NCWSC). Poor drainage is characteristic in Kibera, although things are changing with city and sub-county funded projects installing constructed drainage in parts of the settlement.

Makina village and by extension the Vuma neighbourhood is connected to mains water. Most residents pay for water from public taps or water points within their compounds. The availability of a water supply is inconsistent and costs up to 20 times what one pays in formal parts of Nairobi. The neighbourhood is also served with a system of open channel surface water drains. However, these are inadequate, and the area often floods during heavy rainfall.

At the time of this project, there is an ongoing neighbourhood-wide project to install new subsurface and surface water drains. The area is served by a limited sewer system, with most Vuma households either using public toilets in the area or in some cases, those provided by landlords at shared plot level. 4 in 5 (80%) are either flush toilets or covered pit latrines, compared with just over half the country's average of 50%.

Source: Sara Candiracci

3.
Key Challenges

This section outlines key challenges identified in Vuma, using the Proximity of Care Approach. Opportunities and recommendations on type of interventions to be implemented in the neighbourhood to address the challenges identified within the Health, Protection, Stimulation and Support Dimension are provided in Section 4.

Source: Sara Candiracci

HEALTH CHALLENGES

The Health Dimension of the Proximity of Care Approach assesses those factors that contribute to a healthy and enriching environment for optimal early childhood development, examining how to improve physical, mental, and emotional health, and support cognitive development among young children, their caregivers, and pregnant women.

Household level

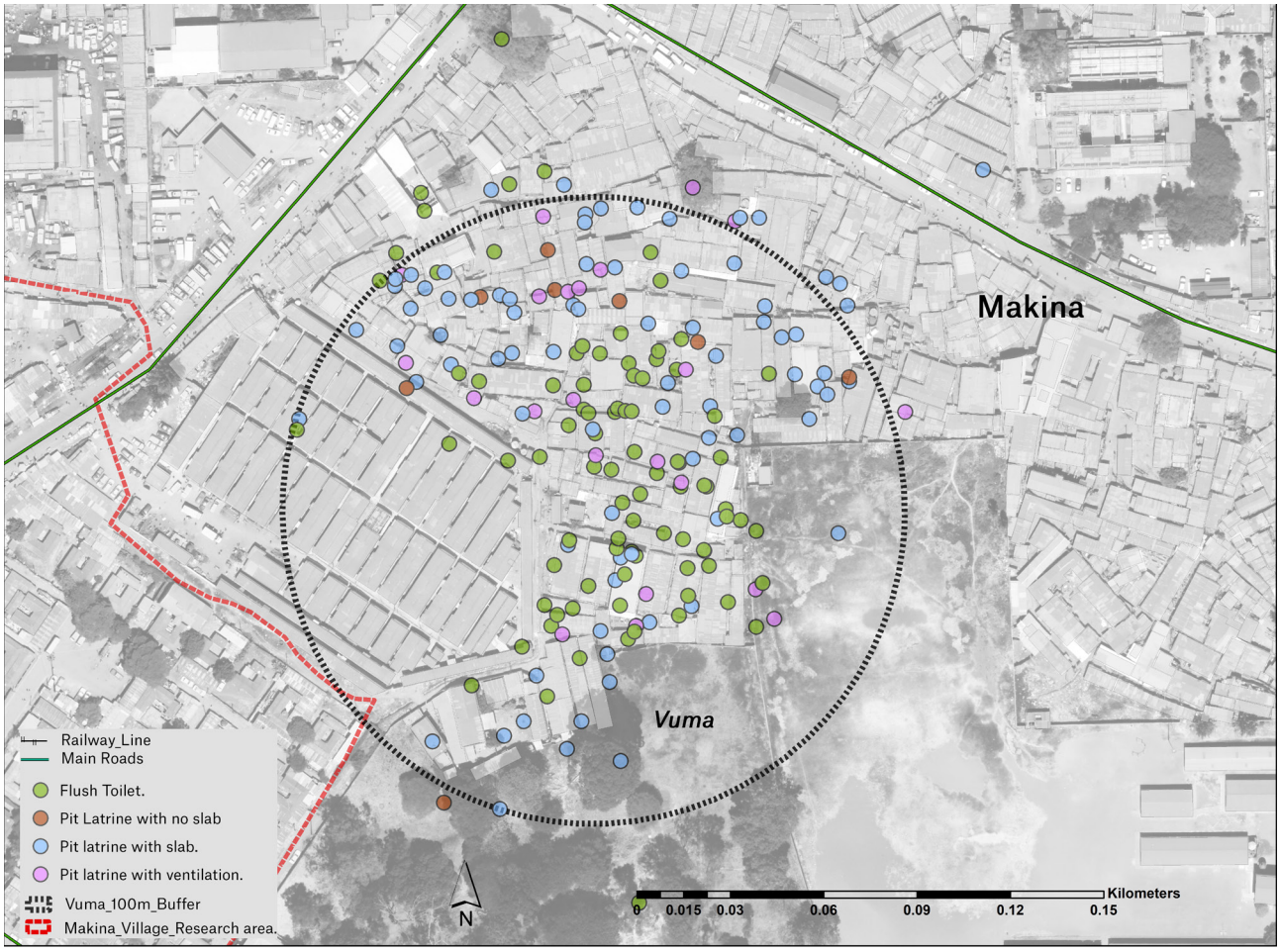
The majority of households pay premium prices for water and sanitation services, with prices fluctuating between $0.05 - $0.10 per 20 litres (up to 20 times the cost of water in formal households). **Very few households have a dedicated water supply, with some households located hundreds of meters from the nearest water facility.**

Pregnant women in this situation have the option of straining their physical health by fetching water, or paying $0.20 or more for water to be delivered to their homes. This is an added financial burden that also faces elderly residents and people living with disabilities. Long queues typically build up at water fetching points, especially during periods of water shortage, affecting more vulnerable residents and reducing the time caregivers could be spending with their children or engaging in income-generating activities.

Typical households do not have indoor toilet facilities and use public shared facilities, where they are charged $0.10 per use or up to $3 per month per household. Some households opt to use flying toilets if they are unable to afford the cost of using toilet facilities. One respondent highlights this challenge: “this is a bad situation where we have to queue with our children to use the toilet. I wish children had their own toilet to use”.

Various non-designated solid waste dumping spots are located within the settlement, and these are preferred by the majority of households who do not use the door-to-door waste collection services offered by youth groups in the settlement, as they do not have to pay to dispose of their waste. Waste collected through the door-to-door services is deposited at government designated collection points in the neighbourhood; however, it can take months to collect, causing waste to build up and present a health hazard.

Map 4: Daytime sanitation facilities of Vuma households (from Stockholm University and KDI survey). Note many are shared within 'plots'. Note also that "flush" facilities drain to local unimproved pits or "septic" units.



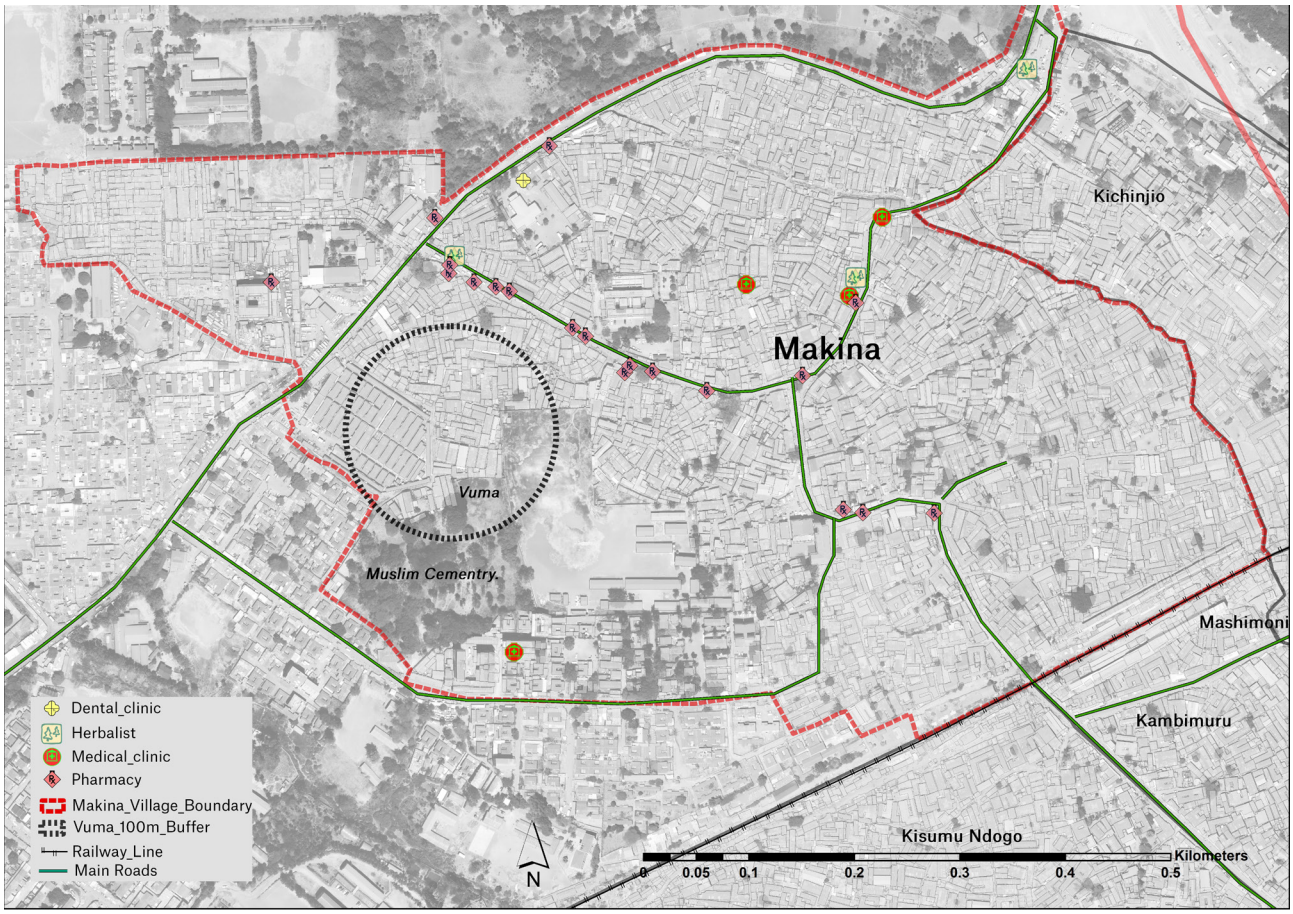
Households often cook in their single rooms (or just outside them) with paraffin or charcoal, potentially exposing children and pregnant women to pollution and fire risk. Noise pollution from vehicular movement and loud music in mixed neighbourhoods disrupt physical and mental relaxation for children and caregivers, while nuisance dust and ambient air pollution, such as that from vehicular traffic, expose households to harmful pollutants. Small spaces, poor ventilation and little spacing between households exacerbates this exposure.

No door-to-door services exist for pregnant women, and monthly antenatal checks are hampered by poor quality and unsatisfactory services within walking distance from households. Although intended to be free, there are costs associated with doing required tests if referred to other facilities, with some pregnant women choosing to miss their checks due to lack of disposable income. Paediatric services are also unsatisfactory at public facilities; caregivers who can afford to opt to take their children to fee-paying private health facilities due to perceived better quality services.

Neigbourhood level

Public toilets used in the Vuma and larger Makina neighbourhood are operated and maintained by local community-based organisations, the majority being youth groups. Few facilities are connected to a limited sewer network. Most neighbourhood public toilet blocks are segregated for adult male and female users. **At present, no toilet blocks in the neighbourhood are designed for young children to use on their own, or for people living with disabilities.** There are also no baby changing or dedicated breastfeeding facilities. Limited water availability and funds for maintenance result in poor hygiene in some facilities that pose health risks to children (diarrhoea), pregnant women (more vulnerable to Urinary Tract and other Infections), and people living with disabilities. **Waste from toilets makes its way into neighbourhood street drains and walkways, where children often play.** This increases their exposure to food-borne pathogens and increases the likelihood of diarrhoea, as well as exacerbating air pollution.

A number of local pharmacies and "clinics" exist, though services are variable and there is no guarantee of quality. **There are no specific health facilities for pre-natal or paediatric healthcare in the Vuma neighbourhood or the wider Makina village.** Furthermore, neighbourhood health



Map 4: Daytime sanitation facilities of Vuma households (from Stockholm University and KDI survey). Note many are shared within 'plots'. Note also that "flush" facilities drain to local unimproved pits or "septic" units.

facilities that do exist lack adequate healthcare staff, which results in limited services and long waiting times for pregnant women and children. Access to comprehensive pre-natal or paediatric care is only available at hospitals outside the neighbourhood, such as Kenyatta Hospital, Coptic and Mbagathi Hospital, and some private health clinics such as Crescent Medical Centre, for which people must travel a longer distance and spend more money to access. There is a need for special attention for specific sub-groups of pregnant women, namely those with lower educational attainment (none or incomplete primary school education), older mothers above 35 and single mothers. These sub-groups have the highest risk of not receiving adequate antenatal care.

One caregiver's story encapsulates the compounding issues: "My child gets sick out of diarrhoea at least twice every three months, the sickness lasts about five to six days. I have to pay for transport to the health facility, buy medicine and pay for service fees. It also means I have to pay more for toilet use since she has to use the toilet more frequently. Also her sickness means I cannot go to hustle for job since she needs my care, I end up losing about 100 KShs (1USD) that I would have gotten from hustling."

Maternal malnutrition has increased the risk of poor pregnancy outcomes including obstructed labour, premature or low-birth-weight babies and postpartum haemorrhage in the neighbourhood. Interviewed pregnant women mentioned that they cannot afford nutritious food or nutrition services from experts. Increased food prices in the Makina neighbourhood have been made worse by the deleterious impacts of Covid-19. Loss of income and children being at home (Covid-19 has resulted in closure of schools until December 2020) has resulted in households needing to spend more money on food. Donor funding that supported community child feeding programmes has also been affected. The high costs of nutrient-rich vegetables and fruits are unaffordable for some respondents, which contributes to poorer nutrition resulting in wasting, stunting and poor weight.

City level

No mental health programmes have been identified within Kibera during the research, and **while there is anecdotal awareness of postpartum depression amongst health personnel, there is also acknowledgement that this is not actively addressed.** There are some caregiver / parental support programmes in Kibera that teach parents how to take care of the child at home, and to improve the home environment for the child. Pregnant women across the settlement rely on doctor's clinic reports, while some use internet sources or advice from peer groups on social media.

The majority of land and space in Kibera has been utilized for construction of housing and incidental infrastructure, and where an undeveloped space exists, it is usually privately owned or earmarked for building development. The few existing green spaces are fields in public and private schools with restricted access. **If not in school, children play in non-designated and usually hardstanding areas, exposing them to unhealthy environments, greater exposure to injury and little oversight.** As noted by one respondent: "within Kibera, there is no green space, every space is utilised by building houses where people live".

PROTECTION CHALLENGES

The Protection Dimension of the Proximity of Care Approach assesses those factors that contribute to a safe and secure environment for optimal early childhood development, determining how to reduce risks, mitigate hazards and increase safety for children, and improve caregivers' perception and experience of safety and security.

Household level

Typically, an entire household (an average of 3.2 people per household across those interviewed in the Vuma area) lives within a single room unit typically measuring 10ft by 10ft. As such, there is little privacy between children and adult household members. **Children living in these close settings are potentially exposed to higher levels of domestic violence, verbal, physical and emotional abuse.** The research indicates that there is low awareness in the community of what constitutes intimate partner abuse, which affects not just caregivers, but also children's levels of socialisation.

Neigbourhood level

Most children in the neighbourhood do not have access to avenues or mechanisms through which they can vocalise or report abuse against them. This is compounded by the fact that most of the perpetrators of the abuse, are people close to the children. There are no neighbourhood-based structures for counselling and rehabilitation for child abuse survivors.

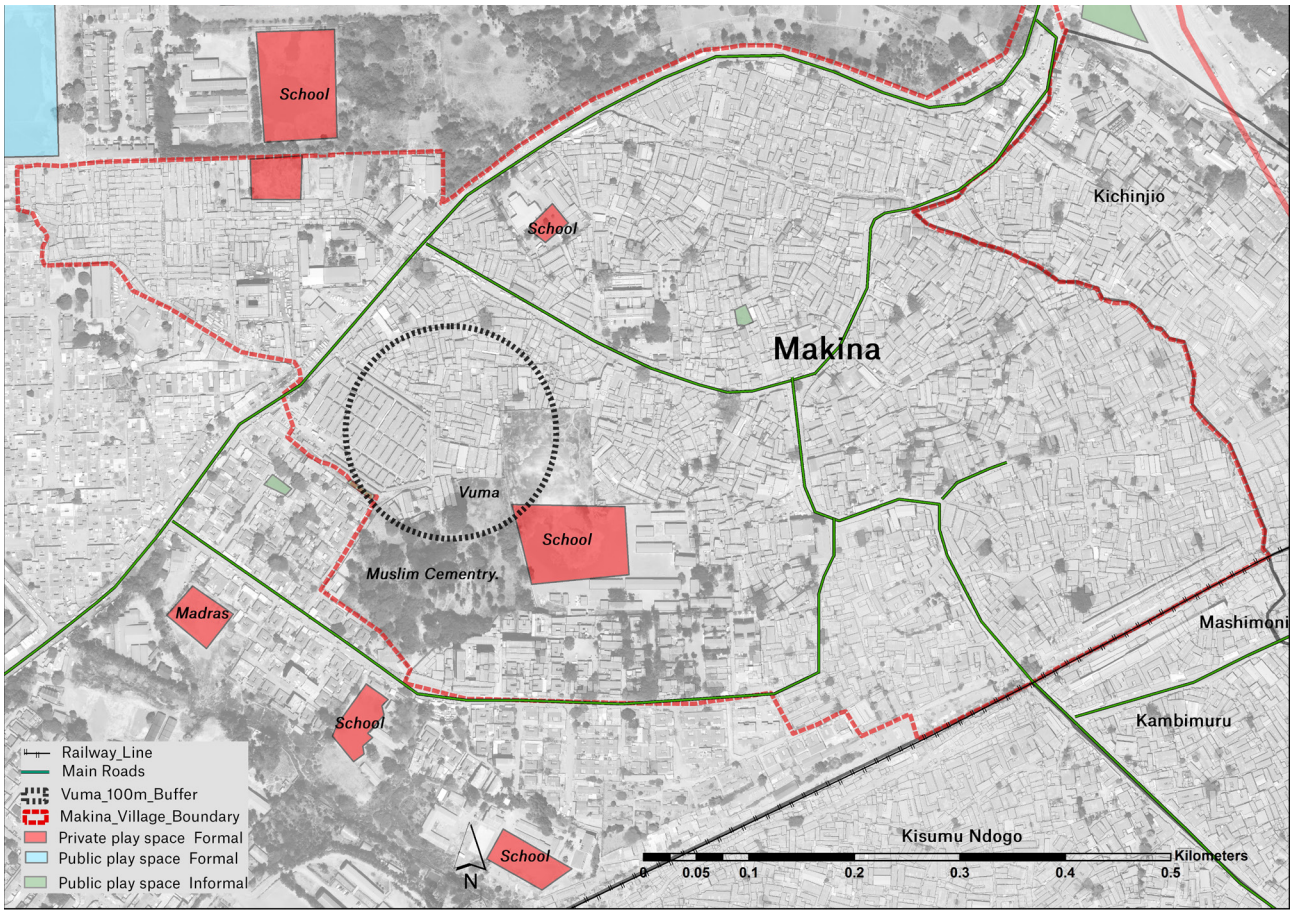
There are no safe publicly-accessible play spaces for children in the immediate Vuma neighbourhood (aside from the forthcoming play space at Kibera Public Space Project 11, designed and implemented by KDI). In the wider Makina village, there are some publicly accessible play (but not green) spaces including playgrounds and football pitches. There are a number of open and play spaces within school grounds but these are only accessible to school students. As stated by one of the NGO respondents in the August 2020 key informant interviews: “Remember as we are dealing with Kibera itself, most of the public spaces that exist are either spaces that are left for the school or spaces that are left for the government itself”.

Many of the public spaces that do exist do not provide inclusive areas for children of all ages to play safely. Younger children especially are not able to access them without being escorted by a caregiver or older children due to distance or the need to cross heavily trafficked roads. Some of these areas are considered unsafe due to known drug abuse and peddling within these spaces, as well as reported attacks on children. Informal play spaces in children’s immediate environments, such as within ‘plots’ or smaller streets and paths, can often be unsafe due to poor sanitation, traffic and stone or rubble.

Figure 5: Children playing along poorly drained Kibera pathways

Most parts of the settlement are exposed to hazards including fire, risk of disease outbreak and flooding. Although river flooding affects a significant proportion of Kibera residents, particularly those who live close to the watercourses that cut across the settlement, surface water flooding is also a significant hazard, with the low-lying Makina area being heavily affected.

KDI's household survey in 2018, found that **34% of households in the Vuma neighbourhood were flooded during the immediate previous rainy season.** Furthermore, 81% of the households in Vuma affected by one or more hazards confirmed that flooding was the most severe. The survey also found that 34% of children under 5 suffered a bout of diarrhoea in the 2 weeks preceding the survey; this is higher than the rate in other parts of Kibera (including riverine areas), and extremely high compared to the national urban average of 14%[17].



Map 6: Private and public open and play spaces in Makina village and environs. Source: KDI mapping.

City level

Fire hazard is a key risk in the public realm, such as roads and access paths, or public facilities including halls, schools and worship centres. Many access routes have developed organically, with little attention paid to design guidance, resulting in little space for emergency vehicles. **Despite regulations, emergency escape routes are deprioritised in the establishment of public facilities, alongside concerns that they may double up as theft escape routes.**

While most primary roads connecting Makina to other neighbourhoods in Kibera are in good condition, **there is no dedicated space for non-motorised movement.** This creates an unsafe public environment for children, many of whom walk, run and cycle, as well as play on roads and streets, owing to the lack of or minimal access to play spaces.

Results from the household surveys show that 1 in 5 respondents feel unsafe walking in the immediate Vuma neighbourhood during the day, and 1 in 3 feel unsafe when walking at night. Focus Group Discussion (FGD) respondents also indicated they often feel unsafe in the wider Makina neighbourhood; break-ins are common and **caregivers and pregnant women feel insecure using sanitation facilities at night, or having their children do so.** Women in particular felt insecure irrespective of the distance to the facilities.

STIMULATION CHALLENGES

The Stimulation Dimension of the Proximity of Care Approach assesses those factors that contribute to a nurturing and stimulating environment for optimal early childhood development, addressing how to enhance the quality of children's interaction with caregivers, peers, other adults, and the physical space around them.

Household level

Small, crowded indoor and outdoor spaces limit opportunities for unstructured play and exploration at the household level, with children more likely to play in less safe and hardscaped neighbourhood streets and walkways with limited stimulation.

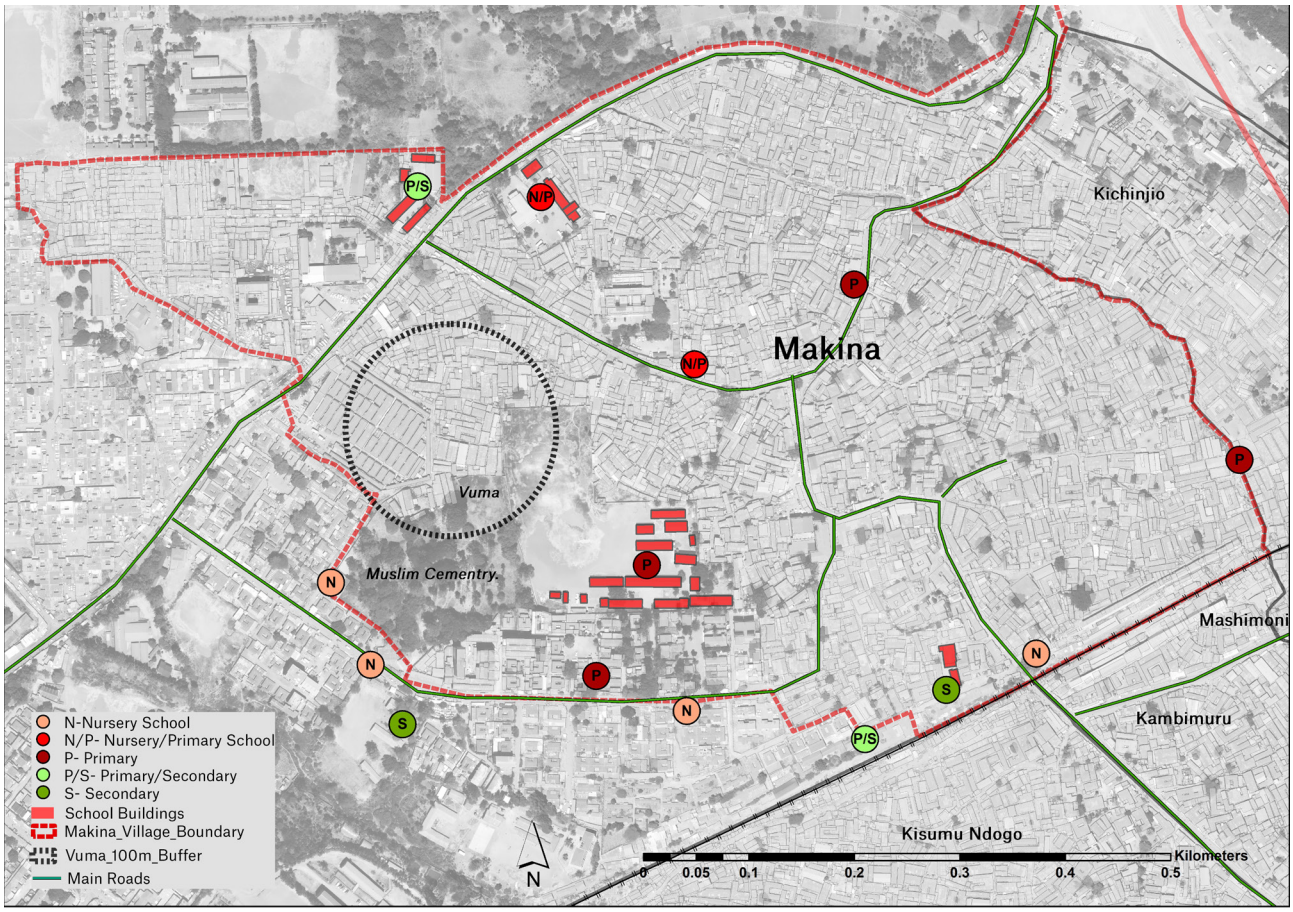
In the majority of households there is inadequate equipment, few or no toys and children have limited access to learning materials due to their unaffordability and limited awareness of the benefits these materials bring. Overall, there are reduced opportunities for stimulating and challenging play in the home environment as compared to the wider city.

In most households, adult caregivers work during the daytime to generate income. Travel and working hours combined can be upwards of 12 hours per day (or at night) thus limiting time spent at home with children. **It is not uncommon to have children of a certain age, 10 years and over, left at home to take care of their siblings without adult supervision,** increasing exposure to crime and abuse and depriving children of quality interaction with their primary caregiver. In August 2020, an interview respondent from the children's organisation Kidogo recounted: "if parents need to go to work and they do not have anyone to take care of the child, they simply lock up the child within the house and leave them there, so you will find the child crying to be opened for the door".

Neigbourhood level

The Vuma neighbourhood lacks stimulating public play spaces that help develop children's creativity and innovation[x]. While talent camps, performance arts and organised sports activities are held in Makina, participation generally targets more independent children above five years old. Furthermore, individuals or organisations that put together many of these activities sometimes require payment (if not donor or well-wisher funded), limiting their sustainability and making them accessible to only some children.

Many schools in Makina lack age appropriate school furniture for nursery age children, who sometimes have to stand at their desks to write and draw. **More popular schools are crowded, with large student to teacher ratios (students being 40 or even 50 to a class),** impacting the quality and quantity of learning contact time. For many schools, there is also poor outdoor space, with children having to play in shifts, usually on hardscaped spaces that are more likely to cause injury.



Map 7: Educational facilities in Makina village. Source: KDI mapping.

Figure 6: Children play adjacent to an unsanitary solid waste disposal site in Vuma neighbourhood, Makina village.

City level

There is a general lack of understanding of the value of play as a foundation for innovation and creativity in the settlement. The research found little awareness of the critical role of play in building young children's understanding of mathematical, scientific and literacy concepts amongst caregivers.

Source: Antonella Sinopoli

SUPPORT CHALLENGES

The Support Dimension of the Proximity of Care Approach assesses those factors that contribute to a knowledgeable and supportive environment for optimal early childhood development, looking at how to enhance knowledge, support from city authorities and community members, and include beneficiaries' voices in decision-making and planning.

Household level

The caregivers engaged in interviews and focus group discussions are all in unstable (informally or casual) employment, which is typical of most of the wider settlement. **Most participants in the research indicated that their household incomes do not meet their household needs,** with some noting that they supplement their regular income by taking on additional casual work within the neighbourhood, such as washing cars or cleaning clothes.

This instability has been compounded by the effects of Covid-19 in 2020 during which average monthly incomes in surveyed households Vuma reduced by almost 50% (Community Responsive Adaptation Project, 2017-2020). **Reduced incomes affect the provision of children's basic needs including healthy nutrition, education, clothing, and shelter.** Reduced stable income also increases the hours that caregivers are away from the home as they seek casual jobs, reducing time that could be spent with their children or engaging in organised caregiver support activities. As mentioned elsewhere in this report, it is not unusual for young children to be on their own or in the care of their elder non-adult siblings.

Neigbourhood level

Some of the organizations involved in the provision of ECD training programmes, as well as community leaders, indicated an absence of any public awareness campaign on ECD and infant care in the Vuma or Makina neighbourhood, and one organization noted such a campaign would be useful to the community. Limited information at community level means missed opportunities for adequate care and well-being of children and pregnant women.

From the focus group discussions, it emerged that **there are no existing initiatives or training to enhance caregivers' and pregnant women's access to new professional opportunities.** Most respondents admitted they are not aware of any ongoing or existing skill development programmes in the neighbourhood.

City level

Service provision – consistent piped water, sewer services, street lighting and others – are beginning to improve, but with little or no public participation, or participation being limited to temporary youth employment on construction of infrastructure programmes. During Covid-19 the city and local government has provided some limited support (such as free trucked water in limited parts of Kibera) that support family life, but there is limited evidence of longer term planning or support.

One of the organizations involved in providing ECD training programs across Kibera noted that **while city planning authorities have provided some frameworks and tools aimed at promoting child-centred design in Kibera, they are usually not fit for context,** and as such the majority of organizations, groups and early childhood development service providers at the local level find it difficult to implement them. It was noted that there is a need for increased collaboration between city planning authorities and organizations and groups working on early childhood development and child-centred design in the community.

Our research found that some organisations working on child and gender-based issues have developed a collaborative digital (WhatsApp based) platform that they use to interact with each other and report on issues. None indicated a similar platform for collaboration between city-level and community organisations, although there is some limited interaction between sub-county (Kibera) and the city. **Exclusion of community organisations reduces city level awareness of issues affecting children in Kibera and other settlements, impacting early childhood development frameworks.**

4.
Opportunities

Applying the Proximity of Change approach has enabled a diverse set of opportunities to be identified in Vuma across the Health, Protection, Stimulation and Support dimensions, and at different urban scales – the Household, Neighbourhood and City levels.

Source: KDI

HEALTH OPPORTUNITIES

Built environment interventions can create healthier and more enriching conditions for children in Vuma. The built environment bears a strong influence on public health, especially for children. The design and quality of a child's physical environment can boost their emotional, mental and physical wellbeing while supporting their behavioural and cognitive development. Including children in the process of reorganising public spaces in Vuma can address certain health challenges they currently face, namely the lack of room for unstructured play away from polluted streets. Furthermore, creating more inclusive public toilets, possibly by retrofitting current mobility routes or by building facilities closer to households, can improve health outcomes and create a more accessible built environment.

Household level

Some of the caregivers and pregnant women noted that they mostly rely on information provided at clinics for caregiving support. As such, and given the lack of mental health support programs or initiatives, **there is opportunity for health facilities to work with household members, and to collaborate with other organizations, to provide caregiver and parental support, as well as mental health support services.**

Rainwater Harvesting for non-potable water use at household (and 'plot' level) through collaboration with neighbours and in partnership with landlords is an opportunity to address inconsistent water supplies. This could be extended to public facilities such as schools, churches and mosques that are proximal to households, to reduce distance of travel to access water facilities as well as to increase availability of water to households.

Neigbourhood level

School-run feeding programmes in schools attract and keep children in education and improve nutritional outcomes. Nutrition programmes tailored to pregnant mothers and caregivers that provide information on affordable and seasonal healthy alternatives would support pregnancy and child growth outcomes.

New and rehabilitated public spaces in the neighbourhood could be redesigned with children, caregivers and pregnant women to meet identified needs such as training space and safer, healthier and unstructured play environments away from polluted streets. Providing dedicated spaces for early childhood development information sharing and training in these public spaces – for example, through artwork, signboards, action days – would create a more enriching and informative environment in which key health messages could be disseminated.

Designing affordable, designated and inclusive toilet facilities and water points at child height, and also in consideration of other users (such as caregivers and their children, as well as elderly persons and those living with disabilities) would result in improved health outcomes. Additionally, providing discrete and practical baby changing and breastfeeding facilities will address the distinct health requirements of young children and their caregivers.

City level

While there are large public hospitals within wider Kibera settlements (to the East and within 5 km), transport access remains difficult and the facilities are typically overcrowded as they are national or county referral facilities. **Devolving or providing quality affordable pre-natal and paediatric healthcare services in strategic and accessible locations within the settlement, possibly in partnership with these larger facilities, provides an opportunity for improved healthcare within reach of the majority of residents.**

Source: Ninara, Flickr

PROTECTION OPPORTUNITIES

The built environment can be leveraged and shaped to improve protection outcomes in Vuma. Increased sightlines across public spaces can boost surveillance, and strategically installing lights along common mobility routes could address the insecurity that caregivers experience, especially at sanitation facilities during the evening. These physical measures can complement community-led crime prevention efforts in Vuma, as well as the police stations in Makina. Furthermore, clearly demarcating pedestrian routes, and separating these from busy traffic zones, can reduce the threat of collisions while increasing mobility throughout the neighbourhood. Integrating fire risk measures in the built environment, especially at the household level, is critical given the neighbourhood's exposure to fire-related hazards. Indeed, existing interventions, like KDI's Public Space Project 11, set a useful precedent that can be leveraged to create a more resilient, safer built environment.

Household level

Upcoming upgrading projects could explore housing typologies that include adequate space and ventilation, line of sight and a level of privacy through multiple rooms. Traditional Swahili architecture, adopted by most of the Nubian community, does follow the majority of these principles, and often provides a central courtyard spaces that could be used for play, rest or cooking.

Neigbourhood level

Community-led crime prevention and security awareness initiatives exist in Vuma, which supplement the fairly limited support provided by the 3 police stations in the wider Makina. The capacity of two of the three is low, and improving this would be beneficial towards improving security, and both mitigating and dealing with crime incidents.

The ongoing Kibera Public Space Project 11 by KDI has incorporated fire mitigation measures, from protected wiring to ventilation of closed spaces, clear escape routes and outward opening doors and windows. This could set an important precedent and influence design practice elsewhere.

City level

Community organisations like Tabasamu Watoto and Kidogo run education programmes aimed at preventing child violence. For instance, Kidogo provides a programme in their early childhood development centres every school term; parents are taught how to positively discipline children and handle difficult situations at home.

Organizations such as Polycom provide a platform where girls can anonymously report violence or abuse, and village elders, area chiefs, school teachers as well as Community Health Volunteers are involved in following up on cases of abused children. **Strengthening the working of these organisations will improve awareness and prevention of violence and abuse of children, as well as their caregivers.**

Source: Christine Olson

STIMULATION OPPORTUNITIES

A more stimulating built environment will provide caregivers and children with accessories and environments that they can tailor to their play needs. Creating a network of open space, connected by colourful mobility routes, can provide more rewarding and stimulating areas for children beyond the bounds of their household. At home, children experience limited stimulation owing to their caregiver's employment structure and inadequate materials. By creating more stimulating public space throughout the neighbourhood, children can interact with others, express their creativity and participate in a common purpose. Providing affordances for caregivers is important, especially for those with limited time because of their work.

Household level

A key aspect of fostering public support and demand for learning through play is to ensure that caregivers recognise their role in providing meaningful play experiences in the home environment, and to empower them to do so. Training programmes that focus on children's unique play and learning needs are required to raise awareness and strategies for parents, caregivers and educators. **The local CBO Tabasamu Watoto currently runs a professional development programme for teachers from other community schools that trains teachers and caregivers on teaching and caring for a child with special needs.**

Neigbourhood level

Mitigating distracting, oppressive, or negative sensory aspects (loud noise, disturbing scenes) in child play environments, such as schools and public spaces, will lead to more optimal early childhood development outcomes, especially considering children's development is impacted by the sensory spectrum.

A positive example is Anwa Junior Academy in Lindi village, part of the Kibera Public Space Network, that was designed and implemented by KDI, with Arup as a technical collaboration partner, providing specialist engineering support. The Academy has actively used bright colours on both the outdoor facade and on wall art on the inside and outside of the school. The organisation Kidogo provides training programs to early childhood development providers aimed at creating quality spaces, and a quality nurturing environment for children, as well as engaging parents of children in their centres.

Some schools recognise their responsibility to provide out of hours care for caregivers with non-traditional working hours. **Schools can develop after-school activities or support structured play during and after school that helps the children learn and develop, even as they provide them a safe space.**

Incorporate children's ideas by engaging them as active stakeholders, and as designers, in designing play spaces within their neighbourhoods, such as KDI has been doing through its Kibera Public Space Project work.

City level

A newly approved competency based curriculum (CBC) has recently been launched in Kenya, and as part of the syllabus it is mandatory to schedule structured play for younger children at least 4 times a week. Not only are schools more motivated to promote quality play for children by providing stimulating play spaces and play materials, but caregivers are also encouraged to use creativity and innovation to develop critical thinking and problem solving skills.

Budget for and fund playing materials, equipment and professional support that promotes stimulation and diversity in play. Playing materials and toys that are available and affordable to caregivers, schools and children are currently not available. **Providing those will give children opportunities to learn through developmentally appropriate activities and materials.**

Figure 7 (on the right): The colourful and stimulating façade of Anwa Junior Academy, Lindi Village, Kibera (part of KDI's Kibera Public Space Network)

Figure 8 (on the left): Children engaging in design at the Vuma site using Lego-like bricks (Bringing Bricks to Kibera project with the Nexon Foundation and KDI, 2019)

SUPPORT OPPORTUNITIES

A child-friendly built environment offers multi-level benefits to all elements of society. Stimulating spaces that build in consideration of children are often green, playful and without traffic, and they can become havens for individuals to spend time in. Moreover, an inclusive built environment that caters to the needs of young children can reduce the burden on caregivers to constantly monitor their child, and, possibly, the need to leave their child at home while they work. An inclusive built environment also provides shared space that caregivers can visit with their friends. Ensuring that safe play space is within close proximity of organizations like SHOFCO, can support underemployed caregivers to enhance their professional development within close reach of their children.

Household level

A strong sense of community spirit was expressed by caregivers, pregnant women and community representatives at household and neighbourhood level. This ranged from neighbours providing caregiving support to local leaders (area chief, village elders, religious and youth leaders) mobilising fees for school-going children for vulnerable families.

Organisations involved in early childhood development in Kibera reported that they have, through local leaders, successfully mobilised caregivers in Makina to participate in their programmes. The Nubian Youth Council, for instance, is involved in the welfare of children living with disabilities in the neighbourhood, including providing food packages. **Building on these existing networks is an opportunity to grow social cohesion and community support.**

Neigbourhood level

Initiate diverse training programmes that are geared towards building unique technical skills, knowledge and work readiness programmes for caregivers and pregnant women to increase entry, retention, and career growth.

Organizations such as SHOFCO and Tabasamu Watoto can and do provide flexible skills development training programs for caregivers, such as soap making, beadwork, sewing and others, so that they are able to work from home. The Kibera Public Space Project 11 will have a hall that can host training space in close vicinity for caregivers.

Caregivers involved during the research in focus group discussions, who are involved in informal businesses (such as selling vegetables and clothes), can access low cost loans from microfinance institutions in their own right (also available from government funds such as the Women Enterprise Fund and the Uwezo Fund). They can use these to grow or improve their business. **Neighbourhood care and support systems extend to neighbourhood savings groups, where caregivers cannot just save, but also loan to each other at reduced interest rates, as well as support each other when in need.**

Considering public space in a holistic fashion and from the perspective of all users is critical to making it safe and stimulating for children. The Kounkuey Design initiative is working with residents in the Vuma neighbourhood to design, build and implement Kibera Public Space Project 11 which comprises community buildings, water and sanitation facilities, green infrastructure, a play area and open seating space. **When launched in late 2020, the space will generate income for the community-based organisation operating the space while building community capacity, and maintaining an accessible and attractive hub for all Vuma residents, including dedicated space for play.**

City level

The interviewed organisations Kidogo, Tabasamu Watoto and Polycom Development all run programmes on gender-based violence and child protection, as well as advocating against child abuse and violence. For instance, Polycom Development has a tool known as the Talk Box, through which children who have undergone violence or abuse can anonymously report their experience.

Several organisations, including Tabasamu Watoto run early childhood development centres for special needs children in Kibera, with Tabasamu Watoto additionally providing specialist training for teachers and families on care and learning for children living with disabilities. **These initiatives provide opportunities for inclusive early childhood development, and avenues to understand the different nutrition, learning, play and design needs for children, among others.**

Organisations, Institutions and Groups implementing early childhood development initiatives in Kibera:

- **Kidogo**
- **Tabasamu Watoto**
- **Polycom Development Project**
- **SHOFCO**
- **ANWA School**
- **St. Johns school**
- **Nubian Youth Council**

5. Recommended Intervention

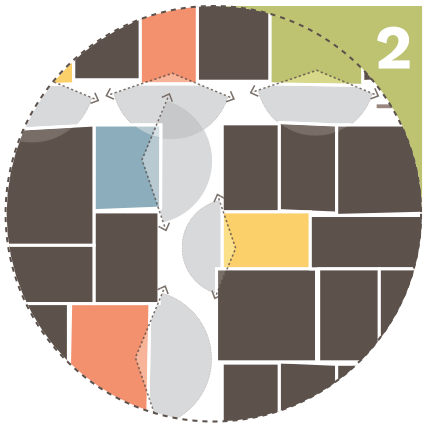
DESIGN AND PLANNING PRINCIPLES

From the field research and through the co-creation process, it quickly became clear that for any design and planning recommended interventions to be successful, they needed to be based upon emergent principles as well as cut across the Proximity of Care dimensions.

To enhance the health, protection, stimulation and support opportunities in Vuma, Makina and the wider Kibera, the following seven (7) design and planning recommendations were identified. These principles contributed to inform the Proximity of Care Design Guide principles.

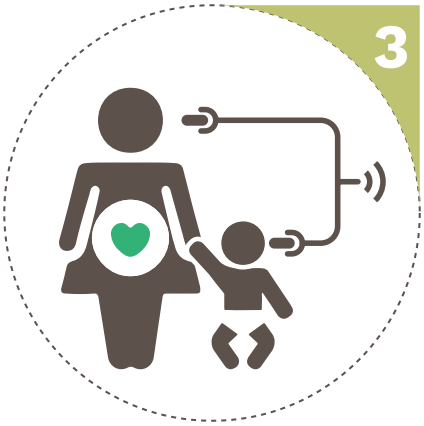
It takes a village to raise a child

In vulnerable neighbourhoods such as Vuma there is more reliance on one-another than other formal sectors of the city, even more so for childcare and development. Systems of care and support have evolved out of necessity but also out of innovation in densely populated or under-resourced settlements or neighbourhoods. At the household scale support networks extend to neighbours. Neighbourhood planning and design that capitalizes on this social fabric strengthens the support needed by caregivers to nurture children at all stages of development.



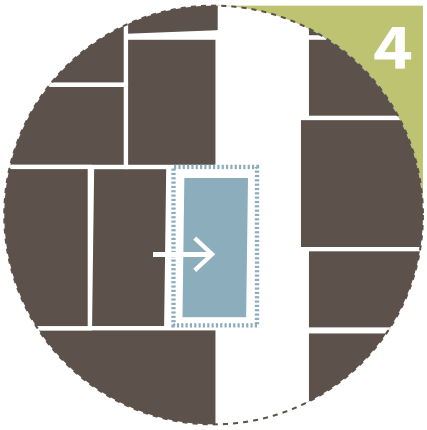
A supportive environment lets a child thrive

The household, neighbourhood and city environment within which children live, play and learn is formative. It can stimulate healthy and inquisitive growth and protect from a myriad of risks and hazards. In Kibera, children's living, playing and learning spaces should offer responsive, stimulating environments to engage their minds to explore, learn and grow. Ensure ongoing training/professional development opportunities for teachers to build practical skills on active learning and play-based methodologies. Actively engaging caregivers in shaping children's learning and development through play further enhances continuity and connectivity of learning across the spheres of children's life (home, school, community).



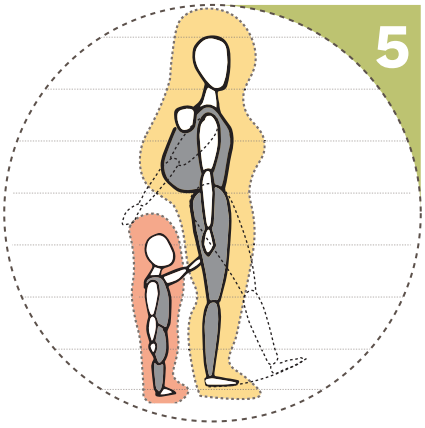
The experts are the users; they may not know it yet

The perspective and priorities of children (including those under 5), their caregivers and pregnant women are invaluable for finding sustainable and meaningful solutions to the challenges faced in early child development. The process of bringing in the end-users of spaces and places which are designed for their use, gives a sense of ownership and stewardship. Participation is entrenched in the Kenyan Constitution but, particularly in vulnerable urban environments, this opportunity or right to engage in development is not widely acknowledged or understood in practice.



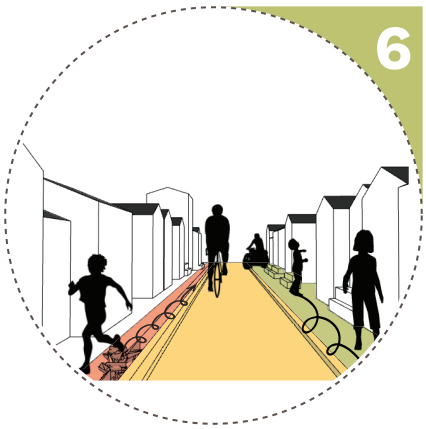
Dedicated and appropriate spaces, resources and services

Dedicated (specified and where needed segregated) and appropriate (inclusive, accessible, clean, and safe) spaces are not in conflict with flexible approaches to design and planning that are needed in vulnerable urban environments. Design and planning can incorporate social, emotional and physical needs of children, their caregivers and pregnant women giving them more freedom, comfort, and safety even within their homes and neighbourhood. This in particular incorporates not just play spaces for example, but also essential WASH and Health facilities, so that they are designated and equipped appropriately for user priorities, functions and routines, as well as non-discriminatory and affordable.



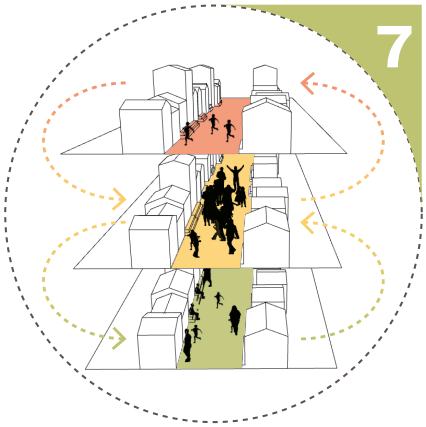
Childcare has specific spatial needs for safety and stimulation:

How space functions and is designed, impacts the nature of child care. Good design even in vulnerable communities understands the use, or potential use, of space from the perspective of the user, such as creating playgrounds where the caregiver is comfortable or able to multitask, or where caregivers may not be present, children are able to move safely within their neighbourhoods between their homes and play areas.



For the under 5's, exploration of play opportunities has no limits

Play provision is critical and yet important to balance with the appropriateness of space. Children under 5, with inquisitive minds and unsteady mobility, seek out the new, peripheral play opportunities wherever they can make them. Designers should plan interventions to allow for exploration, yet and especially in vulnerable urban neighbourhoods, have strategies on how to maintain safety, protection and support.



Make the most of the space and routine

Akin to the ideas of tactical urbanism, there are multitude of opportunities for the activation of unused or underused space in the home, neighbourhood, settlement and city. Optimise space to support early childhood development by considering how routine uses might be curated to provide temporary play space or dedicated childcare support.

DESIGN AND PLANNING INTERVENTIONS – VUMA PUBLIC SPACE, MAKINA VILLAGE

In construction at the time of the issue of this report, Vuma public space is designed to fulfil the VUMA Group's defined five goals: a clean environment, financial stability, community safety, social welfare, and children's welfare.

The site features a community hall and plaza, public space seating and shade structures, a kiosk, water tanks, a playground, gardens, a laundry pad and a sanitation block that expands and upgrades existing facilities operated by the Vuma youth. Sustainable doors, windows, and a bamboo roof are to be fabricated by some of the youth through an academy jointly run by KDI and the Kenya Forestry Research Institute. As well as creating jobs and other income-generating initiatives, the site will help mitigate the increasingly severe flooding in the area through Sustainable Urban Drainage strategies (SUDs) such as rainwater harvesting, a below ground stormwater detention and infiltration tank, and a renovated ground well.

Funded by Stockholm University and the Jeff Cook Trust, the project aspires to bring to the wider Makina village a variety of much-needed amenities and opportunities for men, women, children and the elderly, and will have long-term impacts within the community and the sustainable development field.

With regard to early childhood development engaged design and planning, the following issues and outcomes emerged:

1. **Providing vantage points for adults and caregivers from the neighbourhood to rest and where they can also observe a wide area of playable open space.**
   Sightlines between spaces used for play and adults have been incorporated into the design. They provide not just passive adult supervision opportunities, but also protection and safety.

2. **Covering open drains at key points where residents and children have been observed to cross (desire lines) is simple yet impactful.**
   Drains in Kibera are a risk for both infection and injury, a focus on reducing risks to children in the neighbourhood adds to all the four Proximity of Change dimensions: Safety, Health, Protection and Stimulation.

3. **While the community were clear that communal toilets and showers units for men and women is typical, this project promoted separation by gender.**
   The way in which this separation is done through design provides opportunities that are relevant to children and caregivers. In the instance of Vuma women's toilets, the design workshops held with the community highlighted a need for additional manoeuvring space inside of the cubicle when caregivers visit with toddlers and young children. As such the women's toilets cubicles are longer than the men's, and the doors opened outwards to win back valuable space for accompanying toddlers and children.

4. **Water access is a priority in Kibera, caregivers and children generally require additional quantities and are more likely to regularly queue at the public access tap.**
   The comfort and safety of caregivers and children while queuing was specifically considered in the design adjacencies

approach; for example, a space was design for comfortable queing for the water tap.

5. **Streets and pathways in Kibera are often difficult to use, even for adults.**
   Paths without obstructions, holes, drains, steps and steep slopes are far easier and less risky to travel for all, but especially for caregivers and children. The key path south west of Vuma Hall (5) is the only access for over 100 households, the intervention has widened and levelled the path to improve safe access for all.

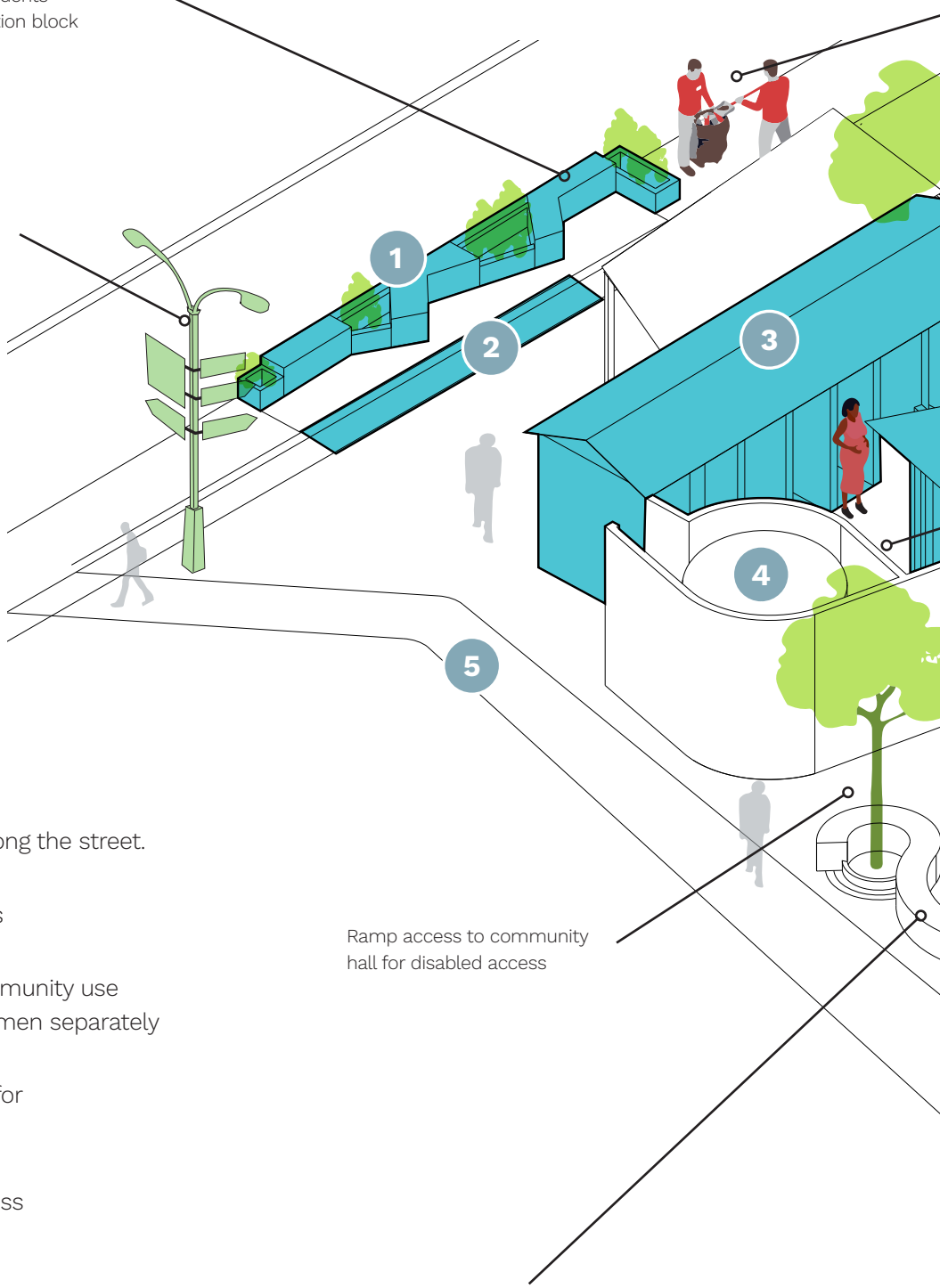
6. **The community hall is for residents to gather, collaborate and conduct group activities.**
   Caregivers, mostly women, have the opportunity to meet, share ideas and transact self-help group activities such as table banking and savings and loaning schemes safely. The hall is equipped to flexibly accommodate meeting, TV watching and children study areas. The windows and doors are louvered to ensure good ventilation and visibility. This creates a conducive environment that feels safe and less confining for women and children. The whole front facade is able to open to the plaza, meaning that hall users or audiences can sit outside also. Importantly, this multiple access allows for easy escape in case of emergency.

7. **Benches and seating in the public spaces are incorporated to activate and support the community use of it.**
   The seating is located in open spaces not secluded spaces to improve safety and sense of safety. The seating is spread out and in clusters so that it can be more inclusive and welcoming to different sections of the community. The seating areas are lit at night so can be used after dark, the seating will be used throughout the day and to fit with different community routines. The playful design of the benches are designed for inventive play. Seating and the inclusivity of the seating various areas plays a role in keeping the space active, appreciated, maintained and clean.

8. **The designated place for play is equipped to stimulate younger children with both structured and non-structured play features.**
   The space is distinctly out of the way from the street, there is a permeable boundary between play space and street, and part of the play space is dedicated to play alone (by means of a built playground). Caregivers can attend meetings in the hall and feel confident that the children are playing safely.

Use of scented plants between street sitting to provide comfort for all users. The seats are used by residents queuing to use the sanitation block

Street lighting to beef up surveillance doubling as signage and information boards for residents



Ramp access to community hall for disabled access

Two-way sitting adjacent to the street allows for flexible use and street surveillance by activating the street all day long

1. Strategic sitting spaces along the street.
2. Safe crossing for the users
3. Toilet and shower for community use providing for men and women separately
4. Clean safe to drink water for sale to the community
5. Open streets to ease access and enhance walk-ability
6. Community hall for residents to gather and share
7. Open to public sitting space
8. Kids' play zone to lure younger children from playing in the risky streets.

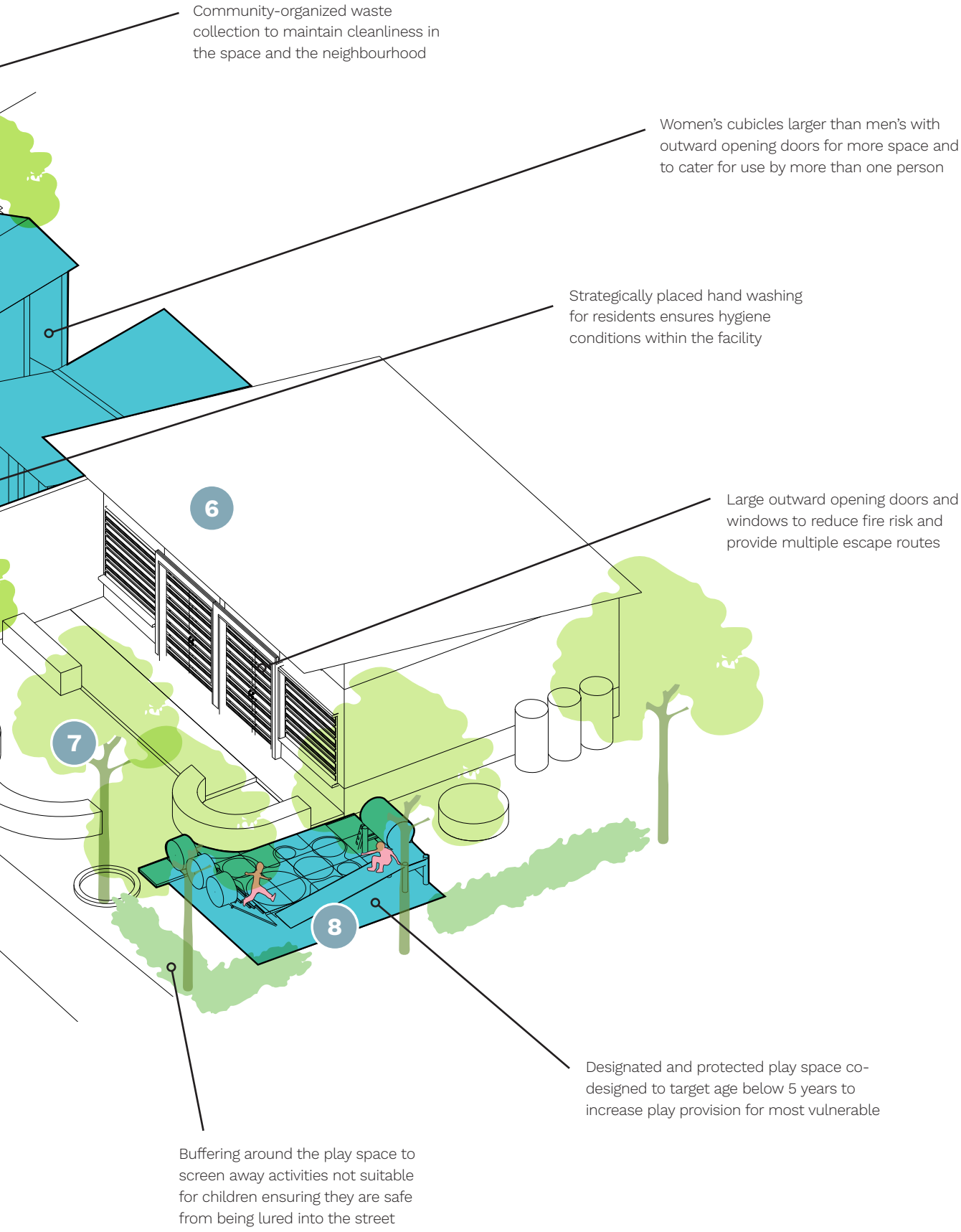


Figure 9: Design and Planning intervention, Vuma, Makina Village

DESIGN AND PLANNING INTERVENTION – KIBERA SETTLEMENT

The illustration below depicts a typical Kibera setting with a variety of elements, and how these different elements could be addressed under a Design and Planning Intervention.

Typical challenges have been outlined and interventions proposed:

1. Increase walk ability within the neighbourhood by providing a designated safe pedestrian network that is separated and buffered from the road. Pedestrian paths should to connect between open spaces and other amenities within the neighbourhood with clear sight lines and easy to read routes to ensure children and caregivers can access the places and services they need securely and conveniently.
2. Use of seating areas to support surveillance and community care. Strategically placed street furniture not only provides for rest but acts as a tool to activate unused areas along the streets. Children and caregivers are safer where public spaces are activated.
3. Provision of basic services and amenities for children and caregivers at neighbourhood hubs strategically located and connected to be convenient and accessible. Integrate the neighbourhood into the city through transport links from key hubs to the wider city to ensure access to amenities further away from the neighbourhood.
4. Provision of open spaces within the neighbourhood that are connected to the pedestrian network of paths and routes, open spaces should have multiple egress points and multiple uses and activities. The creation of adaptable communal open spaces to accommodate different users ensures spaces are functional, maintained and utilised for the intended purpose.
5. Introducing plants within the neighbourhood and streetscape can not only improve aesthetics and the character of place, but can also meet therapeutic needs and psychological stimulation of children and caregivers. Trees and plants can be used to provide shade, enliven the surroundings, filter air of pollutants and buffer pedestrian and motorist spaces to the benefit of greater comfort and well-being of users.

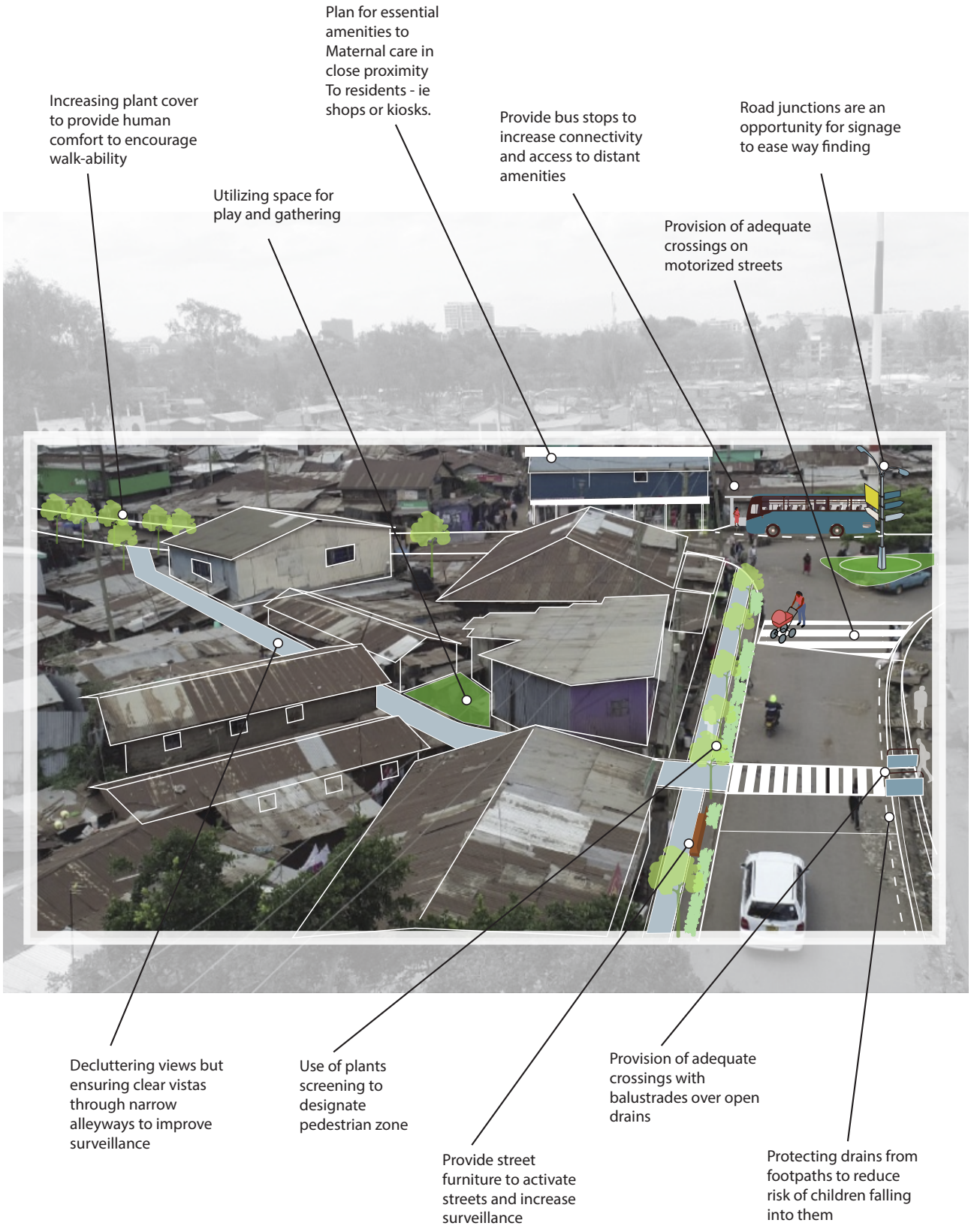


Figure 10: Design and Planning intervention, Kibera

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Ove Arup & Partners Ltd
13 Fitzroy Street
London
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United Kingdom

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