



RECALIBRATING MOBILITY AND ACCESS towards spatial justice in Lilongwe

An urban design research project report by
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REGALIBRATING MOBILITY AND ACCESS towards spatial justice in Lilongwe

A research project submitted in partial fulfilment of the requirements for the degree of
Master of Urban Design

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(Please note that this report only contains an overview of the research process and findings, and is not the assessed component of the research course. Assessment was made via oral and pin-up studio examination of the design explorations that were informed by the research summary presented in this report.)

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In the
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Of the
Faculty of Engineering and the Built Environment

At the
University of Cape Town

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EXECUTIVE SUMMARY

Recalibrating mobility and access towards spatial justice in Lilongwe

Lilongwe was planned as Malawi's post-colonial new capital city. The new city's master plan followed modernist planning and design principles transforming a small colonial town into a sprawling urban territory. To date, Lilongwe has maintained the spatial legacies of colonial and modernist planning. The city's form is currently characterised by a lower-density significantly formally planned core that retains the ideals of the master plan and higher-density less formally planned auto construction sprawling on the peripheries.

The city does not have a formal public transport system, and most residents rely on informal (para)transit options such as minibuses and motorcycle taxis. The informal transit options are unscheduled, usually operate beyond the carrying capacity of the vehicles used, and appropriate street public space for pick-up and drop-off stops either complementing or competing with other uses of space such as walking and informal trade within the appropriated spaces. Consequently, the informal transit options are perceived as less convenient, uncomfortable or chaotic in the way they operate in street public spaces. Furthermore, the informal transit options are mostly unsupported by appropriate spatial infrastructure since they usually operate in spaces not specially designated and designed as transit stops. Additionally, the informal transit modes are all road-based yet the roads are mostly designed with less consideration for the transit uses and are primarily developed for private car mobility. Hence, private car mobility is considered the most convenient mode of moving around and accessing places in the city. However, many people particularly those with low incomes and those dependent on informal livelihoods cannot afford to own and use private cars.

The lack of a formal public transit system as well as the general absence of transit-supportive urban infrastructure in Lilongwe contributes to spatial injustice as the many people who depend on informal transit face extra hurdles moving around and accessing places in the city as compared to the convenience of private car mobility. Moreover, spatial injustice manifests in how mobility infrastructure within street public space is allocated to the various competing or complementary modes of mobility, for instance, the usual provision of road paving for private car mobility without any allocation of infrastructure for pedestrians and transit. The allocation of space to the various mobility modes, in turn, impacts how people access various spaces and places together with the opportunities they present. Therefore, this research investigated how the modes and spaces that facilitate mobility, particularly informal transit, can be reimagined or recalibrated to foster spatial justice in Lilongwe. Additionally, the research investigated how the existing informal transit system (i.e., the modes and spaces that facilitate informal transit) can be leveraged to catalyse wider spatial justice goals, especially regarding people dependent on informal livelihoods.

The research utilised an urban design approach to answer the main question: How can we reimagine mobility and accessibility to foster spatial justice in Lilongwe? Importantly, the study focused on understanding mobility and access with a special lens focused on people who use informal public transit and rely on informal livelihoods. In the context of Lilongwe, the research further approached spatial justice through the lens of historical spatial marginalisation emanating from the segregated colonial town. The spatial marginalisation initiated by the colonial town's master plan was carried further by the settlement typology and land use segregation of the capital city master plan. The capital city continues to shape the current geographies of spatial marginalisation with peripheral settlements housing poor residents who mostly rely on informal transit and depend on informal livelihoods.

The research process involved a month of fieldwork in Lilongwe to understand the functioning of the modes and spaces facilitating the informal transit system and to learn about people's experiences with the informal transit system particularly those dependent on informal livelihoods. The findings from the fieldwork informed the contextual analysis which revealed the capacities, opportunities and constraints for urban design interventions. The research proposed an urban design framework that aims to enhance access to services and facilities, quality public open spaces, walkability and multi-scalar accessibility in the southern peripheries of the city as a pathway towards spatial justice for the peripheral areas. The urban design framework proposed a toolkit of spatial interventions grounded on principles of incrementalism, community stewardship, and high-impact low-tech. The proposed spatial interventions form the framework by leveraging the existing multi-modal informal transit system, the network of markets and informal trading strips, clusters of public facilities, and the blue-green network of streams and rivers. However, this report does not include the design propositions that were explored during the studio project, but focuses on an overview of the background research.

Keywords: spatial justice, urban mobility, access[ibility], urban recalibration

1. INTRODUCTION

1.1 BACKGROUND ON THE RESEARCH PROBLEM

Lilongwe was planned as Malawi's post-colonial new capital city. The plan for the new capital city was initiated by Malawi's first President, Dr Hastings Kamuzu Banda, and the master plan for the city was developed in the late 1960s and early 1970s with the city officially becoming Malawi's capital on 1 January 1975 (Richards, 1974). The new city's master plan followed modernist planning and design principles (Gerke & Viljoen, 1968) transforming a small colonial town into a sprawling urban territory. To date, Lilongwe has maintained the spatial legacies of colonial and modernist planning (Mwathunga & Donaldson, 2022). The city's form is currently characterised by a low-density core that retains the ideals of the master plan and higher-density auto construction sprawling on the peripheries (Caldeira, 2016; Mwathunga & Donaldson, 2022).

Lilongwe has a complete absence of an official public transport system, most of Lilongwe's residents depend on varied modes of informal public transit ranging from minibuses and tricycles (i.e., tuk-tuk/bajaj) to motorcycles (i.e., bodaboda) and bicycles (i.e., kabaza) serving various urban scales from the metropolis to local streets. Although the current updated master plan has some plans for implementing a bus rapid transit (BRT) system, the master plan still emphasises road expansion which mainly targets decongesting roads for private car mobility as the top priority for the city's transport infrastructure developments (Japan International Cooperation Agency, 2010). Consequently, inadequate attention is put on providing relevant urban infrastructure to support the operations and spatial functioning of the informal (para)transit options such as

minibuses and motorcycle taxis which most residents rely on and fill the gap left by the lack of a formal public transport system. Despite cars being unaffordable for most residents, the privileging of private car mobility in the city's master plan has resulted in private car mobility being perceived by many residents as the most convenient or preferred mode of moving around and accessing places across scales in Lilongwe.

Lilongwe's situation of official spatial plans geared towards favouring private car mobility at the neglect of public transit systems is in line with trends in most African cities where private car mobility is increasingly being regarded as the mode of convenience for affording urban residents to move within cities and access places (Cervero, 2013; Newman & Kenworthy, 2015; UN-Habitat, 2013). Furthermore, African cities are being planned and designed to accommodate the increasing trends of private car mobility as the main means of moving to and accessing workplaces, public facilities, and other urban amenities (ibid). With growing private car mobility, the cities are further expanding outwards resulting in sprawling suburbanisation and peri-urbanisation (ibid). Ironically, most residents in African cities cannot afford to own private cars (UN-Habitat, 2013). Rather, they depend on often inconvenient and unsafe forms of informal public transport options such as minibus and motorcycle taxis (ibid). Therefore, the growing car-oriented development in these cities serves the interests and experiences of an elite minority mainly comprising middle- to higher-income residents. The resulting urban condition is one in which the cities are being planned and

designed to foster inequitable accessibility, unjust allocation of public space to car-centric infrastructure and poor public transit investment in favour of private car use.

Consequently, spatial injustice manifests through mobility and accessibility as people who cannot afford to have cars use less convenient mobility modes thus facing extra hurdles moving around and accessing places within the city. Moreover, spatial injustice manifests in how street-based public space is allocated to the various modes of mobility and, in turn, how such allocation impacts accessibility for various space users. Therefore, there is a need to investigate how the modes and spaces that facilitate mobility, especially of the somewhat neglected informal transit systems, can be reimagined or recalibrated to enhance multi-scalar accessibility and foster spatial justice in Lilongwe.



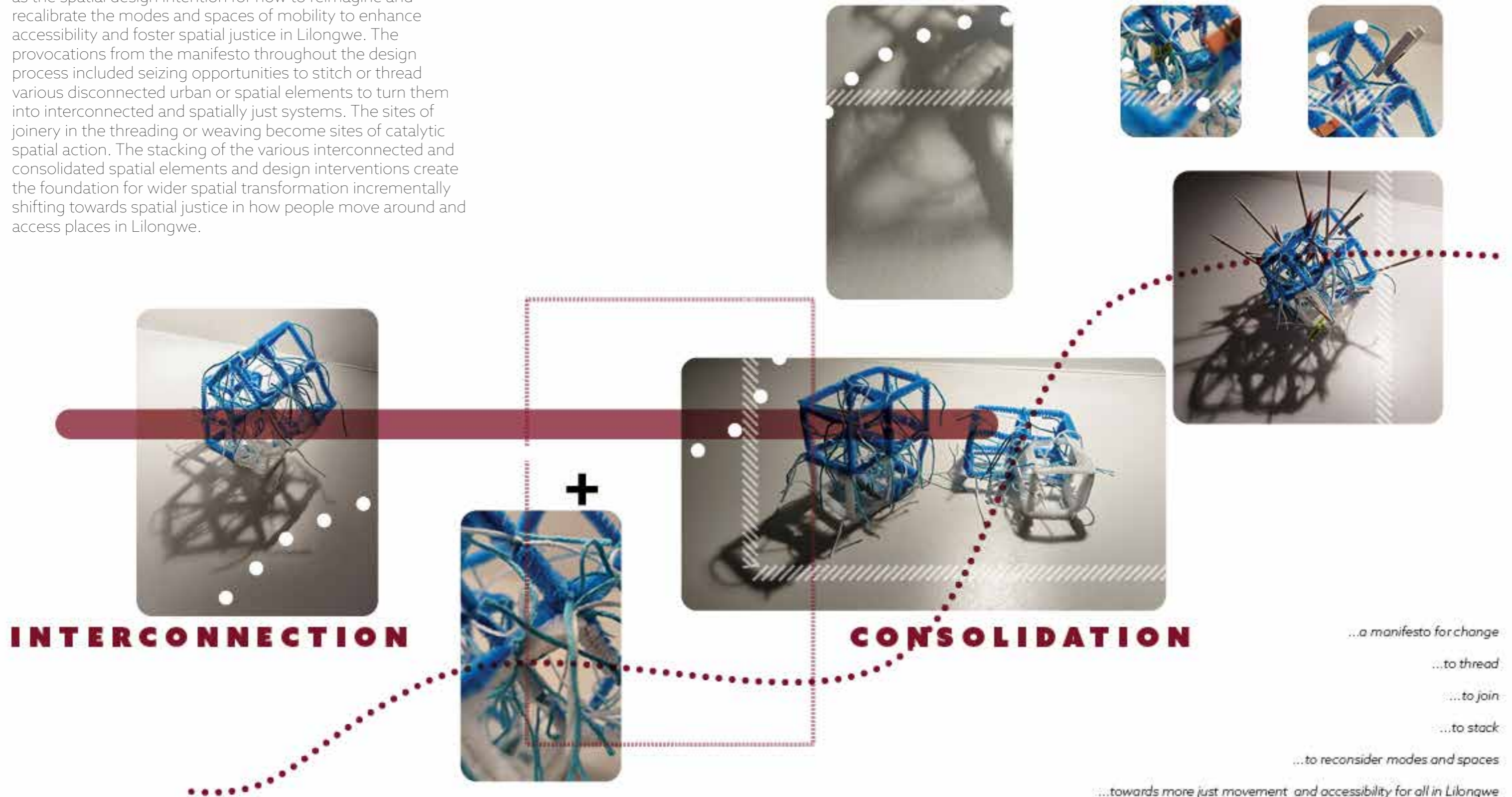
The location of Malawi in Africa
(Source: Author)



The location of Lilongwe in Malawi
(Source: Author)

1.2 RESEARCH MANIFESTO

The research problem was investigated through the approach of research by design which uses the design process as a mode of enquiry. Therefore, at the beginning of the research project, a manifesto was formulated from an artefact which was made as a representation of the intention of how the design process might respond to or help resolve the research problem. The manifesto (below) proposes interconnection and consolidation as the spatial design intention for how to reimagine and recalibrate the modes and spaces of mobility to enhance accessibility and foster spatial justice in Lilongwe. The provocations from the manifesto throughout the design process included seizing opportunities to stitch or thread various disconnected urban or spatial elements to turn them into interconnected and spatially just systems. The sites of joinery in the threading or weaving become sites of catalytic spatial action. The stacking of the various interconnected and consolidated spatial elements and design interventions create the foundation for wider spatial transformation incrementally shifting towards spatial justice in how people move around and access places in Lilongwe.



1.3 THE AIM OF THE RESEARCH

This research investigates how the different modes and spaces that facilitate mobility, particularly informal public transit, in Lilongwe, can be reimagined or recalibrated to enhance accessibility and foster spatial justice. The research focuses on people who do not use private car mobility and have livelihoods dependent on the informal economy or rely on small-scale businesses or service providers, mainly in the informal economy, for their everyday essentials. Therefore, this research particularly investigates how informal (para)transit modes and the spaces that facilitate them in relation to access to informal livelihood opportunities can be reimagined or recalibrated to foster spatial justice.

The reimagining and recalibration of the modes and spaces facilitating informal transit and informal livelihood opportunities is done through a qualitative design research approach, establishing potential creative solutions in the form of an urban design framework, spatial design strategies, design interventions, and appropriate urban design guidelines. Hence, the output of the research process includes urban design propositions for spatial transformation towards spatial justice in mobility and accessibility in Lilongwe addressing the issues of spatial marginalisation such as those faced by people who rely on informal transit modes and informal livelihood opportunities.

1.4 THE RESEARCH QUESTION

Overall, this research seeks to answer the following main research question: How can we reimagine mobility and accessibility to foster spatial justice in Lilongwe? Specifically, the research asks: How can we reimagine mobility and multi-scalar accessibility to foster spatial justice in Lilongwe for people who depend on informal transit modes and experience spatial marginalisation through their dependence on informal livelihood opportunities and residence in peripheral areas?

At various stages during the research process, several sub-questions were utilised to provide more insight into responding to the main research question as follows:

- How do spatial injustice and marginalisation manifest across scales through the mobility system?
- How does spatial marginalisation (i.e., peripheral urbanisation) relate to the urban structure of the city?
- How do the informal public transit modes in Lilongwe operate, and how do the spaces that facilitate the informal transit systems function across scales?
- How does the informal transit system (i.e., the modes and spaces) relate to informal livelihood opportunities (e.g. informal trade)?
- How does the informal transit system relate to multi-scalar spatial injustice and marginalisation?
- How do the informal transit system and spatial marginalisation relate to access to the public realm (i.e., public spaces, quality public open spaces, public facilities and service provision)?
- How can urban design respond to spatial injustice and marginalisation by leveraging the informal transit system (i.e., modes and spaces) and accessibility to the public realm?

2. RESEARCH PROCESS AND METHODS

2.1 OVERVIEW OF THE PROCESS FOLLOWED

This research project followed a qualitative approach utilising spatial design research methods. The research process started with defining the research problem and context. This initial phase of the project included some studio-based activities for design provocations on the research problem upfront. The outputs of the upfront design provocations were abstract artefacts and models as well as a research manifesto which helped with the framing of the research problem, aim and question in line with the creative spatial design research that followed.

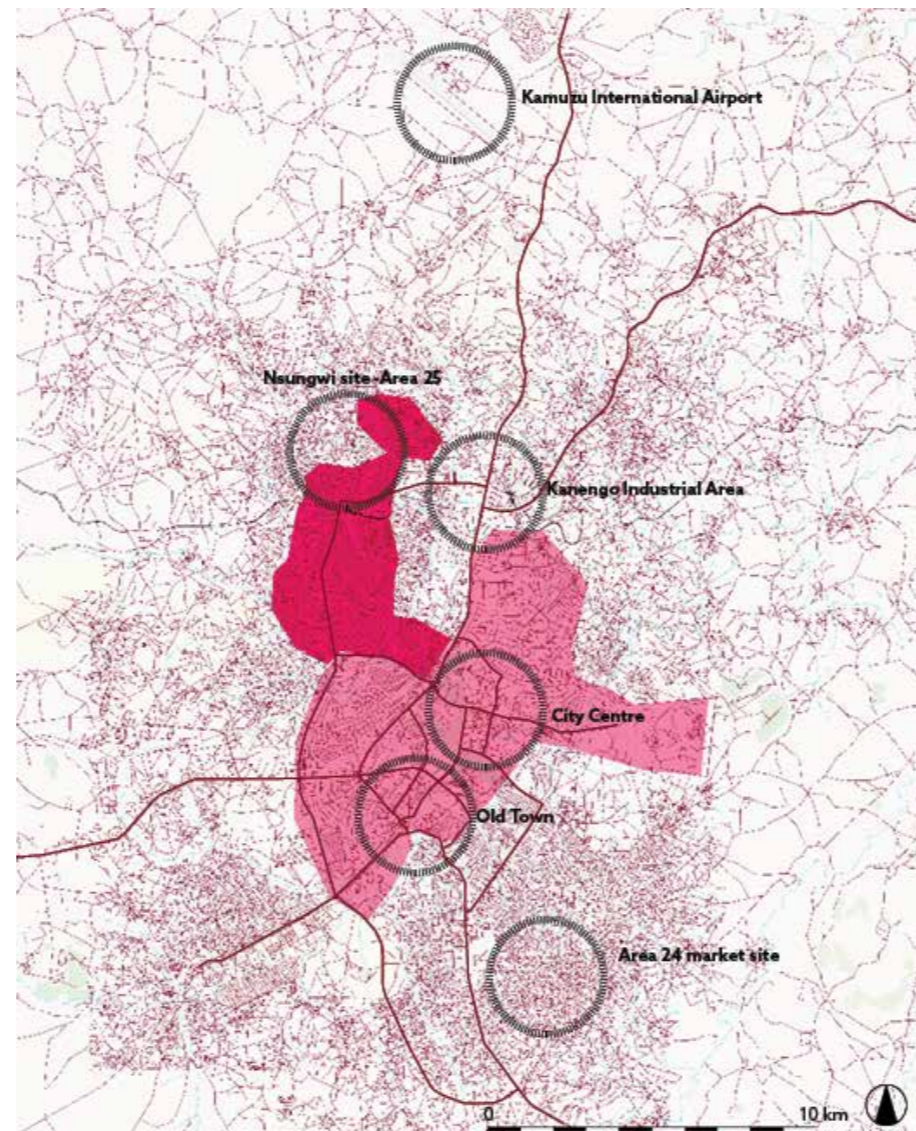
After the research problem, aim and question were framed for a spatial design research focus, appropriate investigation methods were determined. The methodological approach necessitated engaging with various types of space users, actors, and stakeholders as well as observing urban phenomena in space. As such, fieldwork for site visits was critical in the achievement of the research aim and in answering the research question.

Fieldwork was conducted in Lilongwe for a month in July 2024. The fieldwork was necessary to understand the informal transit system in Lilongwe as well as the functioning of urban spaces in the city. The fieldwork was also an opportunity to hear people's experiences in line with the research question. The fieldwork was conducted with the highest research ethical considerations possible. The research received ethics approval from the Faculty of Engineering and the Built Environment Research Ethics Committee at the University of Cape Town (see the approval letter attached in the Appendix). The main ethical issues considered in this research included the voluntary participation and informed consent of interviewees, confidentiality in data collection and protection of data, as well as the anonymity of those interviewed. Overall, the research upheld the highest safeguard measures in research ethics. Nonetheless, some limitations regarding the fieldwork have been noted in the limitations section at the end of this chapter.

Apart from the fieldwork, the research required desk study research and studio-based design work. The findings from the fieldwork informed the contextual analysis, spatial intervention explorations and the development of design propositions as creative outputs of the spatial design research. The rest of this section outlines an overview of the research methodology. Nonetheless, the sequence of the methods presented in this chapter does not imply the sequence of events as the design research process was not linear and had a lot of iterations to the sequence of methods and activities. Furthermore, some of the research methods and activities were conducted concurrently.

2.2 POSITIONALITY

The nature of the research required the researcher to be embedded in the research process. Thus, it is necessary to acknowledge my positionality in the research as the researcher as this positionality forms a critical perspective from which the research was conducted. I am a resident of Lilongwe and an informal transit user in the city. Therefore, I approached the research as a resident of the city and with my prior personal experiences in the city as well as with the informal transit system in the city. Nonetheless, since the research spatial marginalisation in relation to forms of urban informality including informal livelihoods, I acknowledge that although I rely on the informal economy to access numerous goods and services, I am not dependent on the informal economy for my livelihood. Also, I acknowledge that as someone who has a postgraduate qualification, I came into the research with some preconceptions that might have influenced the way I engaged with research participants and likely presented knowledge power dynamics that I probably was not always cognisant of.



2.3 STUDY AREA

The study area for this research project is the city of Lilongwe. The research was approached across multiple scales from the metropolitan area to specific precincts and streets. The city-wide scale was the focus of analysis to understand the informal transit system and the overall patterns of spatial marginalisation through peripheral urbanisation. Some sites were analysed at the neighbourhood, precinct, and street scale depending on their relevance in the informal transit system and overall patterns of spatial marginalisation. Nonetheless, during fieldwork, four initial sites were used to unpack the micro spatial dynamics relevant to the research.

The four initial sites were chosen because they are informal transit hubs and have some form of market or informal trading hub which are destinations for informal livelihood opportunities. Two of the four sites were chosen in the central areas of the city (i.e., the urban core) where urban development is more formal. The other two sites were selected on the northern and southern peripheries of the city where there are higher levels of informality and auto construction is the dominant mode of urban development. The central sites included the main market and bus depot (i.e., formal and informal transit station) in Old Town (the centre during the colonial era) and the city centre area (planned as the central business district of the new capital city). The peripheral sites included the market and informal transit hub at Area 24 (a neighbourhood on the Southern peripheries of the city, south of Old Town), and the market and informal transit hub at Nsungwi node in Area 25 (a neighbourhood on the Northern peripheries of the city). These initial sites were chosen to explore how informal transit functions in urban spaces in relation to informal livelihoods in varying central and peripheral settings contributing to the understanding of multi-scalar mobility and accessibility in Lilongwe.

The four initial sites were only the starting point for collecting data to understand how mobility and access systems work in Lilongwe in relation to the research question. More sites were visited especially along the informal transit network. The findings from the fieldwork in the visited sites informed the detailed contextual analysis which in turn revealed spatial informants that guided the selection of the actual sites for spatial intervention and design propositions as the output of this research.

The location of the initial exploration sites in Lilongwe
(Source: Author)



2.4 OBSERVATIONS AND THE RESEARCHER'S EXPERIENCES

The fieldwork involved the collection of both observational and experiential data from the spaces and modes of informal transit in relation to access to informal livelihood opportunities. Both the participant and non-participant observation methods were used.

Observations included noting the form and function of spaces including how space is used by various space users. The observations were initially done at the sites mentioned above (in Section 2.3) but as the fieldwork progressed, further sites were observed based on the emerging direction of the research focus in line with the research question. The observations included noticing forms of accessibility across the public/private space interface around the sites, modes of mobility including walking and informal transit, and forms of informal trade in the urban spaces observed. The observations also included walkthroughs which were filmed and recorded using an action camera (GoPro 12). The walkthroughs were particularly necessary because there is no Google Street View available in Lilongwe. Hence, the recordings of spaces done with the action camera created a reference dataset of the form and functionality of spaces after fieldwork, during the design development phase. Some of the walkthroughs were guided tours with key local actors in unfamiliar spaces that required special orientation.

Besides the video footage shot with the action camera, the observations were recorded through other multimedia including photographs, notes, survey checklists, sketches, and sound bites. The recordings were done at peak movement times for instance during the morning rush, lunchtime, and evening rush, but also during off-peak times such as mid-morning, and mid-afternoon.

In addition to observations in spaces that facilitate informal transit and informal livelihood opportunities, the fieldwork involved an immersive approach in which, as the researcher, I experienced the various modes of transit in Lilongwe. This experiential data collection involved recording through notetaking, photographs, videos, and sound bites. The various informal transit modes were experienced along main informal transit routes across the city at varying times of the day.

To safeguard an ethical research approach during observations, the recording of general space functioning did not specifically focus on any individuals or associate any particularities of observations with specific identifiable individuals in a manner that compromises their anonymity as space users. In some instances, I decided not to record when people appeared uncomfortable with my camera.



2.5 SEMI-STRUCTURED INTERVIEWS

Fieldwork also included conversations with urban space and informal transit mode users in line with the research objectives. The data collected through site observations and experiences of the informal transit modes were supplemented by open-ended semi-structured interviews with selected users of informal transit modes dependent on informal livelihoods. The intention was to use the interviews to elicit more details beyond those observed or experienced during the fieldwork. Prior informed consent was sought from all interview participants. The interviews were conducted in Chichewa since it is the widely spoken language in Lilongwe.

2.6 ACTIVE PARTICIPANTS

To get rich in-depth and situated data concerning the experiences and perceptions of the people that the research is focused on, I used two active participants as an additional method to get insight which could not be obtained through site observations, my experiences as the researcher or time-limited interviews. The active participants gave their full consent before following them for a few days to learn more about their everyday experiences from residences to the places they visit as they go about their day. Both active participants are women involved in informal trade at the main market near the bus depot in Old Town, reside in the Area 24 neighbourhood in the southern peripheries of Lilongwe and rely on informal transit for their daily commuting. The active participants provided in-depth contextual insights which were useful for interpreting the data obtained through observations, the researcher's experience, and the semi-structured interviews.



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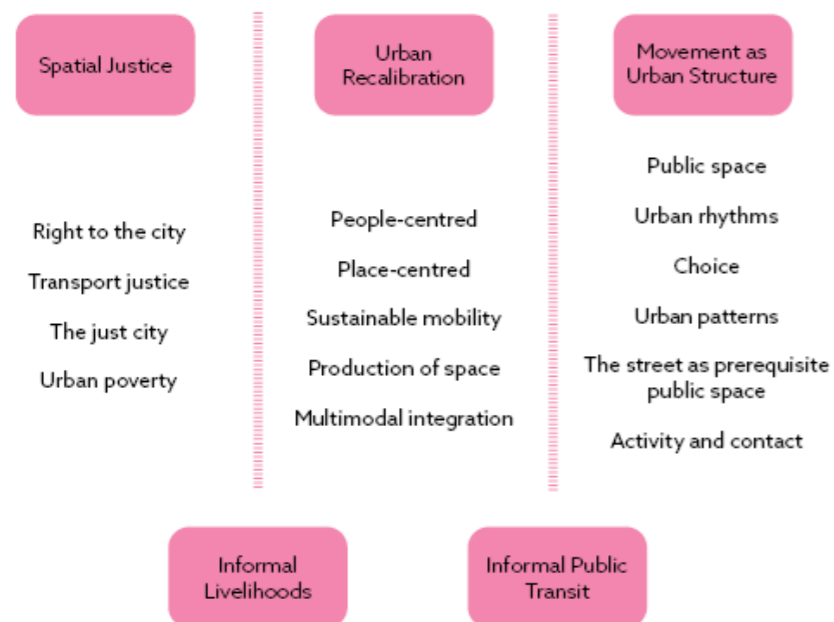
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PHARMACY

2.7 MAPPING

Alongside the fieldwork, the research also utilised desk and studio-based research methods. The desk and studio work consolidated the findings from fieldwork with other studio-based exercises such as the design artefact and manifesto explorations that informed the direction of the research.

The findings from the fieldwork were complemented with detailed spatial analysis mapping. The base map data were collected using Open Street Maps data on QGIS for the mapping. Some data recorded from the fieldwork were overlaid on the base maps. The mapping exercises unpacked more spatial relationships, as well as the understanding of capacities, opportunities and constraints for spatial intervention.



A list of KEYWORDS guiding the review of literature [within the theoretical framework]

2.8 REVIEWING THEORY, POLICY AND PRECEDENT CASE STUDIES

The desk and studio work included a study of applicable urban design project case studies to establish relevant design precedents. The design principles, ideas and concepts obtained from the precedents provided design informants for the final urban design propositions which were explored following the contextual analysis findings.

The contextual analysis also involved the collection and review of publicly accessible policy documents for urban development planning and design as well as applicable transport policies in Lilongwe. Additionally, the contextual analysis included the collection of relevant historical information.

A literature review was conducted to establish the theoretical and conceptual framework for approaching the research and inform specific assessment criteria for data analysis and interpretation. The literature review focused on unpacking the theories of (1) spatial justice (Soja, 2010) as well as related concepts of 'the right to the city' (Harvey, 1973), 'the just city' (Fainstein, 2010), and transport justice (Martens, 2016); (2) urban mobility and access through the perspective of movement channels as essential urban spatial structuring elements (Dewar & Todeschini, 2017), the link between poverty and urban mobility (Dávila et al., 2013), integrated transport and urban development (Cervero, 2013), sustainable urban mobility (UN-Habitat, 2013), people- and place-centred urban mobility (Cervero et al., 2017), and urban planning and design against car dependency (Newman & Kenworthy, 2015); as well as (3) urban design responses to mobility and access focusing on the form and functioning of urban space (Dewar & Uytendogaardt, 1991) as well as intervention through urban design frameworks (Uytendogaardt et al., 2000). Furthermore, the literature review focused on unpacking the theories of informal livelihood (Rakodi, 2014), urban informality (Roy, 2005, 2011), informal public transit, the relationship between informal trade, transport and settlement (Dovey & Recio, 2024; Dovey et al., 2022), and peripheral urbanisation (Caldeira, 2016). Overall, the literature review helped with applying theory in the design process to ensure robust design proposals.

2.9 LIMITATIONS

There were some limitations experienced with the research methodology and scope of the research process. The first limitation was that since the rest of the research work after fieldwork was conducted remotely (i.e., in Cape Town), it was not possible to conduct follow-up visits to the site(s) particularly the sites for design intervention. However, this limitation was minimised by relying on the footage and photographs collected during the fieldwork but also follow-up calls with the active participants. The second limitation was that in some spaces recording by filming or photography was not done because some people expressed uneasiness with being captured. The third limitation was that most people were generally sceptical about getting interviewed with people preferring to informally chat off the record, hence only a few people provided full consent to participate in the semi-structured interviews and only their data were included in the research findings. Lastly, another major limitation during the data collection phase was the translation of urban design concepts and jargon into everyday language terminology to facilitate better participant engagement. Therefore, during the data collection fieldwork, a particular focus was made on taking note of the terminology that people were already familiar with and used in describing matters of space and design.

3. THEORETICAL FRAMEWORK

3.1 OVERVIEW OF THE THEORY EXPLORED

To achieve the aim of the research and answer the main research question, this research utilises a theoretical framework based on the theories explored on spatial justice, urban recalibration, movement as a structuring element of urban space, urban informality, informal livelihoods, informal public transport, the assemblage of informal trade, transit and settlement, and peripheral urbanisation.

3.2 SPATIAL JUSTICE

In the context of this research, spatial justice is framed based on Edward Soja's theorisation. Extending from Lefebvre's view of the production of space as a social process, Soja's notion of socio-spatial dialectic emphasises how spatiality impacts the social aspects of people and how social processes in turn also impact space and spatiality (Soja, 2010). With the view of the socio-spatial dialectic, we also understand that spatial advantages and disadvantages also influence advantages and disadvantages in other aspects of people's lives (ibid). Hence, space is actively involved in the production of socio-economic privileges and inequality as much as privilege and inequality produce further spatial outcomes. This socio-spatial dialectic results in just and unjust geographies across scales from how the individual human experiences space to global distribution patterns of development (ibid).

The just and unjust geographies, manifesting the spatiality of justice and injustice, create social and spatial structures of enduring uneven distribution processes and patterns of privileges and burdens (ibid). These structures underlying uneven privileges and burdens produce spatial injustice. Therefore, spatial justice is a normative goal that entails implementing social and political action to rebalance the structures underlying the uneven distribution patterns of privileges and burdens towards fairer outcomes for those disadvantaged by the socio-spatial structures. Spatial justice is, thus, fairness and equity in the distributional patterns and processes underlying the spatiality of socio-economic advantage.

Furthermore, this research relies on David Dewar's (2019) conceptualisation of spatial justice as it relates to spatial structure and urban design. Dewar's criteria for evaluating spatial justice in urban contexts will form the basis for understanding and interpreting spatial characteristics in this research. In particular, the research focuses on the criteria concerning spatial justice as manifested by the generative power of urban space, settlements and the built environment in creating wide-ranging opportunities, and equity in accessing the various opportunities within urban spaces and the built environment (Dewar, 2019). Additionally, the research uses the criteria of spatial justice as manifesting liveability and choice (ibid). Liveability concerns spatial justice as a condition in which everyone lives in dignity including the ability of the poorest and most vulnerable to be able to conduct activities in public spaces with dignity. On the other hand, choice concerns how urban spaces and the built environment allow everyone, including the most vulnerable, to have options for access to wide-ranging amenities and opportunities.

3.3 URBAN RECALIBRATION

Cervero et al. (2017) frame as urban recalibration the argument for a shift in the design and planning of cities from the contemporary scenario where cities are mostly influenced by car-oriented infrastructure towards city planning and design that centres people and places. This requires the reordering of priorities from planning and designing cities around systems that facilitate fast movement across large city-wide scales to planning and designing cities that prioritise accessibility for all people and placemaking at local scales with city-wide movement systems regarded as primarily connecting the places. Urban recalibration is, therefore, a normative process for redesigning cities to improve accessibility for all focusing on transforming urban spaces into places where people can spend their time well (ibid). What distinguishes the argument for urban recalibration from other calls to shift away from car-centric urban development is the specific focus on ensuring the transition, or recalibration, should guarantee direct benefits to the less privileged. Urban recalibration recognises that transitions towards more sustainable mobility modes may end up maintaining structures of privilege for those who can afford to switch modes and disadvantage for those who cannot afford, who are also usually the poorest or most vulnerable. Therefore, urban recalibration emphasises pro-poor and socially just transitions to foster inclusive places. Further, urban recalibration entails creating opportunities for more choice through the design of the built environment and urban spaces.

3.4 MOVEMENT AS AN ELEMENT OF URBAN STRUCTURE

Also underpinning the research framework for this research is the understanding that movement is an integral organising structure of urban space (Dewar & Todeschini, 2017). Therefore, this research considers movement as beyond mobility but also as a critical aspect of access and accessibility.

Access and accessibility within cities are profoundly influenced by urban form and spatial structure (Dewar & Uytendogaardt, 1991). Urban form entails both the spatial distribution of buildings, infrastructure and spaces as well as how these components interface and relate with one another. On the other hand, the urban form is generated by the common modes of movement in the specific area (Dewar & Todeschini, 2017; Dewar & Uytendogaardt, 1991). Therefore, movement is considered a generator of urban form because the distribution of urban functions depends on whether fast movement or slow movement is prioritised in the area (ibid). Therefore, for any intervention towards transforming the spatial structure embedded in a particular urban form, movement is a key element to consider.

Furthermore, movement occurs in the open spaces of the urban fabric. The negotiations of people within the open spaces as they facilitate their movement provide opportunities for encounters (Todeschini & Dewar, 2013). Hence, depending on the kind of encounters facilitated by these movement spaces, vitality, intensity, and more opportunities emerge. Therefore, to create lively, vibrant, and intense urban experiences and opportunities, intervention within movement systems and spaces is pertinent. In turn, because of their value in facilitating movement, open spaces are prerequisite sites for urban transformation (ibid). Hence, there is value in the design of urban spaces to optimise the inherent value of open spaces and the urban fabric at large.

Perhaps the most inherent attribute of spaces for movement is that they provide connections and linkages between public facilities. Therefore, these spaces for movement serve the public; hence they are public spaces (ibid). These public spaces, in turn, facilitate connections between people and urban functions such as places of work and places they visit for leisure and necessity such as hospitals (Pafka & Dovey, 2017).



ABC
Liquor Store

FDH Bank
TIMAPANGA IZI
NBS bank
airtel

CHICKEN MASTER & CONFECTIONERY TAKEAWAY

3.5 URBAN INFORMALITY

The theoretical framework for this research utilises Ananya Roy's (2005) theorisation of urban informality. In this framing, urban informality forms critical and complex relations with formal urban structures (Roy, 2005). As Roy (ibid) argues, informality is not merely a failure of planning but a dynamic and integral part of urban life that challenges conventional notions of citizenship and legality. Informal practices can reveal the socio-political realities of marginalised communities, highlighting their agency in navigating urban spaces (ibid). By situating informality within broader economic and political contexts, Roy (ibid) advocates for a nuanced understanding that recognises the contributions of informal sectors to urban development, thus reshaping policy discourses around urban planning, spatial design and social justice.

Urban informality provides sites of both crisis and opportunity in cities leading to the need to 'manage' or work with informality rather than eradicate it (Roy, 2011). There is a tension between the romanticising of the opportunities presented by informality and the harsh realities faced by inhabitants of informal settlements and actors in the informal economic sector, and Roy (2011) argues that such depictions often strip away the agency of people whose lives are embedded in urban informality. While focusing on framing informal settlements as spaces of resilience and innovation, Roy (ibid) challenges the stigmatisation of informal settlements as slums, and advocates for urban development policies and praxes to recognise the potential of urban informality rather than viewing it solely through a lens of poverty. This approach to urban informality calls for a critical reassessment of urban design and spatial planning policies and interventions that address the realities of informality, hence the need to engage with the lived experiences of marginalised communities in urban contexts.

3.6 INFORMAL LIVELIHOODS

Informal livelihoods play an essential role in urban economies, particularly in developing countries (Rakodi, 2014). Rakodi (2014) conceptualises informal livelihoods as adaptive strategies that individuals and communities use to cope with economic instability and structural inequalities. The emphasis in the framing of informal livelihoods is on the interconnectedness of formal and informal sectors, as Rakodi (ibid) argues that informal livelihoods are not simply survival tactics but vital components of urban resilience and social networks. The framing of informal livelihoods critiques conventional economic frameworks that often marginalise informal work and advocates for policies that

recognise and support these livelihoods as legitimate economic activities (ibid). By highlighting the complexity and diversity of informal employment, Rakodi (ibid) calls for inclusive urban planning and design that addresses the needs and contributions of informal workers in the broader economic landscape.

For this research, the framing of informal livelihoods as essential to urban economies is in further acknowledgement of the role that informal employment opportunities (i.e., informal livelihoods) play in patterns of mobility and access across scales in urban contexts.

3.7 INFORMAL PUBLIC TRANSIT

Informal public transit systems have emerged as critical components of urban mobility, especially in developing countries where formal public transport options are often inadequate. Cervero and Golub (2007) have highlighted the role of informal transit in providing affordable and flexible transport solutions that cater to the needs of underserved populations. These systems, which include shared taxis, minibuses, and motorcycle taxis, are characterised by their adaptability and responsiveness to local demand. They often operate outside formal regulatory frameworks, leading to challenges such as safety concerns and lack of service standards. Moreover, informal transit plays a significant role in urban economies, providing employment opportunities and easing multi-scalar accessibility in urban areas.

3.8 THE *INVENTRASET* ASSEMBLAGE

The concept of '*INVENTRASET*' assemblage concerns understanding the complexities of informal urban practices as a system of interrelations between the various facets of urban informality and informal livelihood (Dovey & Recio, 2024; Dovey et al., 2022). Coined by Dovey et al. (2022), the '*INVENTRASET*'—INformal VEnding, TRANsport, SETtlement— assemblage applies assemblage urban theory to the understanding of the interrelationships between street vending, transport, and settlement as an expanding understanding of the spatiality of urban informality. By applying an assemblage framework, the *INVENTRASET* highlights the intricate networks of relationships between vendors, informal transit modes, informal settlement and building morphologies, the actors, customers or patrons of urban informality, and their connection to urban space, revealing the underlying spatial logics that shape urban life (Dovey & Recio, 2024; Dovey et al., 2022). Furthermore, Dovey and Recio (2024) argue that the elements of and

interactions between informal street vending, transport systems, and settlement patterns coalesce into a complex urban ecosystem, essential for addressing challenges related to mobility and social equity.

3.9 PERIPHERAL URBANISATION

Teresa Caldeira's (2016) theorisation of peripheral urbanisation offers a critical lens through which to understand the dynamics of urban growth in developing countries, particularly in the context of informal settlements and marginalisation. Caldeira (ibid) argues that peripheral urbanisation as characterised by the expansion of socio-spatial inequalities and the fragmentation of urban life results from processes shaped by global economic forces and local governance structures. Caldeira (ibid) emphasises the role of state policies in facilitating or hindering the integration of informal settlements into the wider urban fabric. Moreover, peripheral urbanisation is not merely a physical expansion or fragmentation of the urban fabric based on socio-spatial inequality but also a complex social phenomenon that affects residents' identities, access to resources, and social networks.

Peripheral urbanisation extends to the cultural and political implications of living in or urban experiences in fragmented and marginalised spaces (ibid). Therefore, residents of informal settlements, and actors in urban informality more broadly, often engage in practices of resistance and adaptation, negotiating their place within the urban hierarchy (ibid). At the interplay between informality, governance, and urban identity, peripheral urbanisation shapes socio-economic relations and community dynamics, particularly in Southern cities.

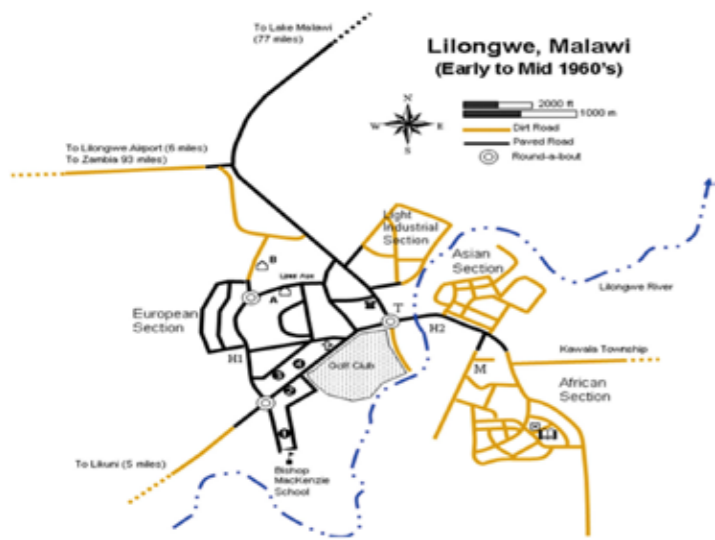
4. CONTEXTUAL ANALYSIS FINDINGS

4.1 OVERVIEW OF THE CITY OF LILONGWE

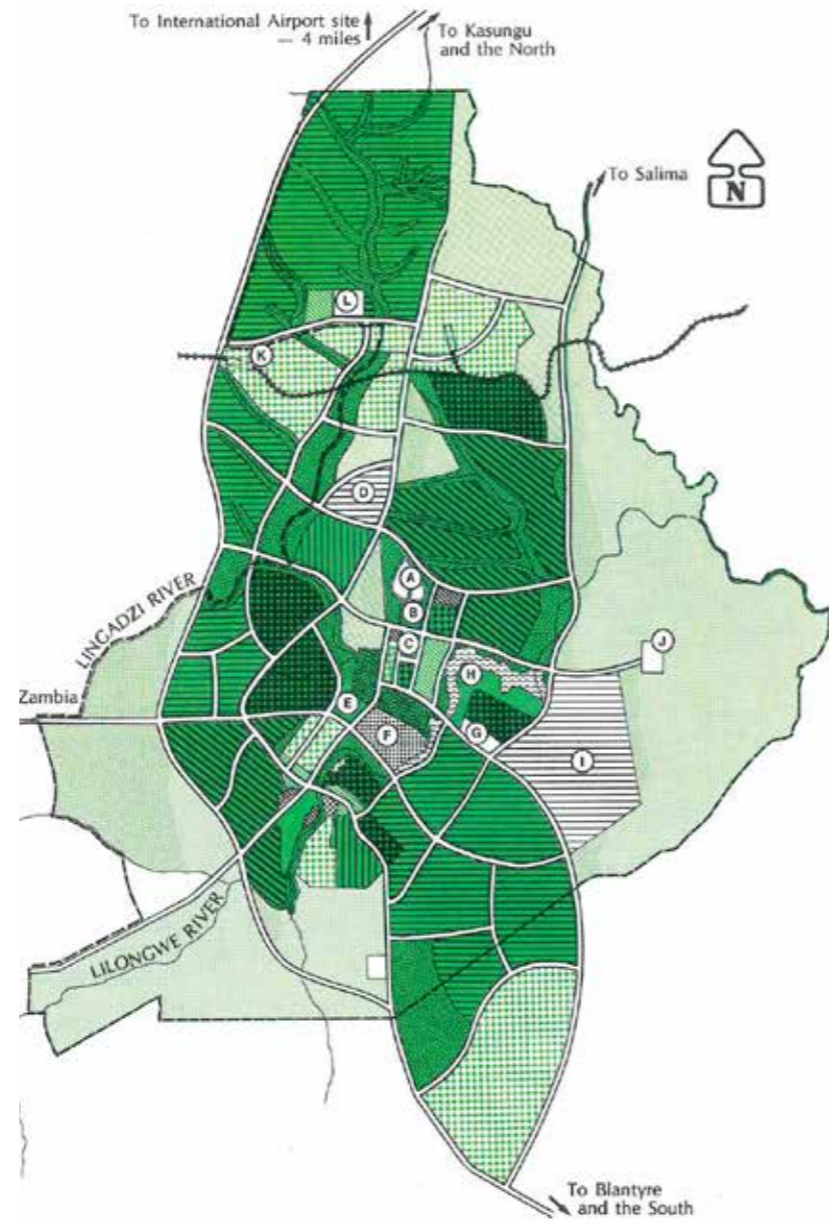
Lilongwe is Malawi's capital and largest city. The city is in Malawi's Central Region. Because of Lilongwe's central location in the country, it was chosen as the site for the capital of the independent nation-state of Malawi after the end of the British colonial regime replacing the colonial capital of Zomba which is in Malawi's Southern Region. The capital was moved to the country's centre as a regional planning intervention to catalyse development in the lagging regions outside of the areas that experienced colonial developments which were predominantly in the Southern Region (Gerke & Viljoen, 1968; Mwathunga & Donaldson, 2022; Richards, 1974).

Lilongwe officially became the capital city in 1975 following the implementation of the new capital city master plan. The capital city was planned with modernist principles (Gerke & Viljoen, 1968; Richards, 1974). The new capital city master plan extended the colonial town of Lilongwe into a sprawling urban territory (Mwathunga & Donaldson, 2022). The colonial town forms the old town and surrounding areas whereas the expanded capital city includes the new city centre inspired by Garden City principles and Le Corbusier-style spatial design regarding buildings as objects in space (Gerke & Viljoen, 1968; Mwathunga & Donaldson, 2022; Richards, 1974). Hence the current city of Lilongwe retains the spatial legacies of colonial and modernist planning.

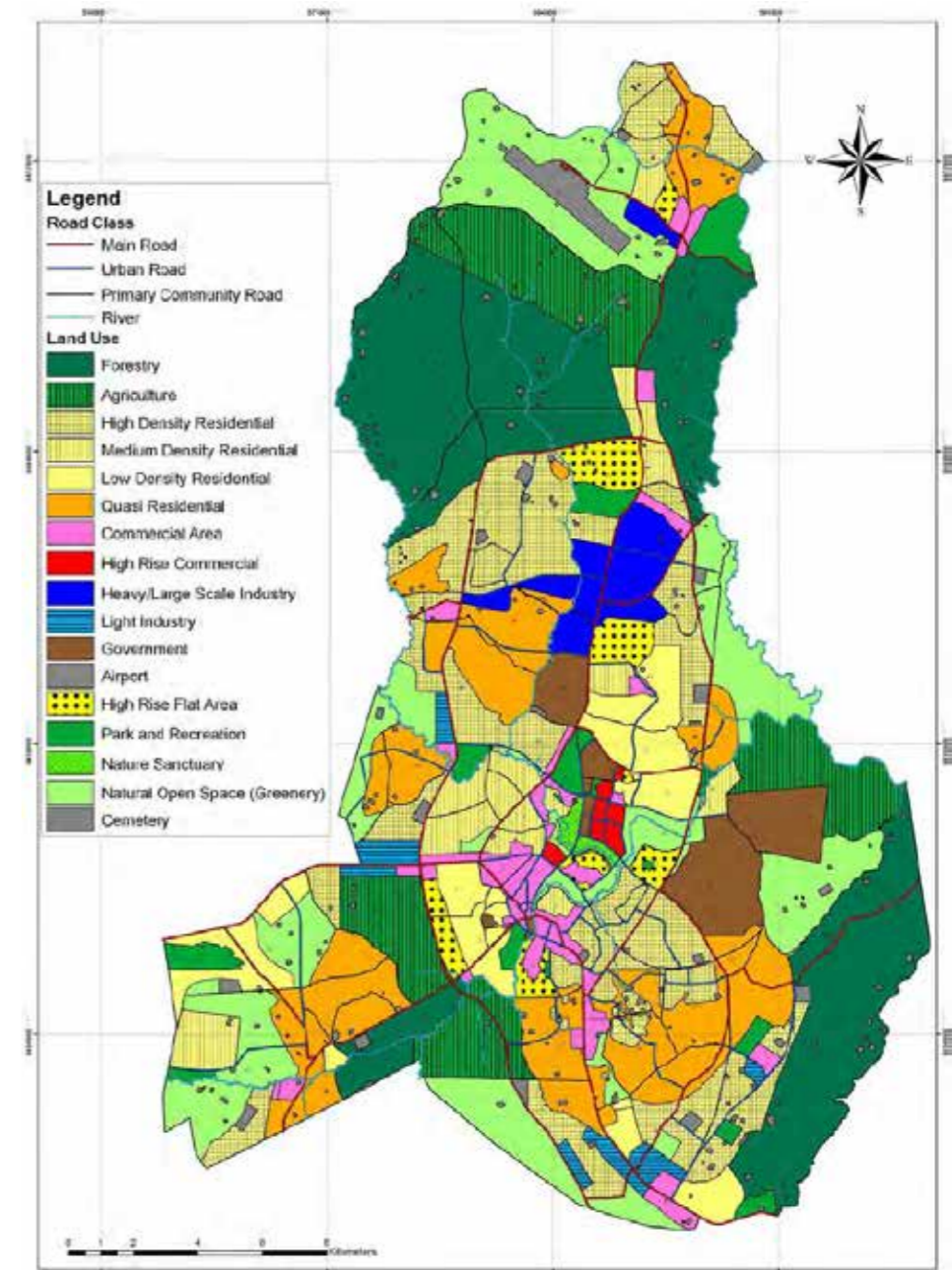
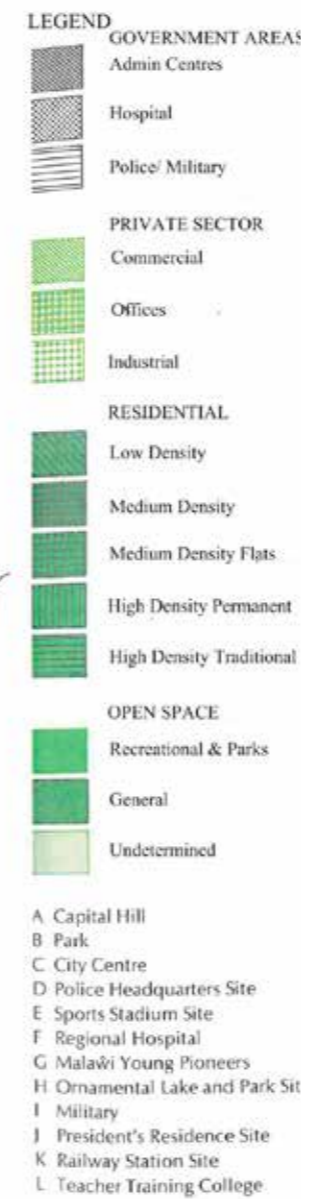




The segregated colonial town of Lilongwe (Source: Mwachungu & Donaldson, 2022)



The 1969 new capital city master plan (Source: Richards, 1974)



The current master plan for Lilongwe developed in 2010 (Source: JICA, 2010)

4.2 HISTORIC URBAN DEVELOPMENT AND SPATIAL MARGINALISATION

Before the town of Lilongwe was extended to the extent of the capital city plan, it was a racially segregated town. Lilongwe river divided the town into two sections: the western section as the European sector and the eastern section was divided into the Asian sector to the north of the main road and the black African government workers sector to the south of the main road. Further east across Mchesi river and outside of the town's boundary lied Kawale Township for the rest of the majority black Africans. The racial segregation accompanied by class segregation for black Africans depending on their employment type was the manifestation of spatial marginalisation during the colonial period.

When the master plan for the new capital city was developed, the area east of Lilongwe River which was previously marginalised through racial segregation was mostly as a Traditional Housing Area (THA). THAs were conceived as areas that were partially planned by subdivision of plots through a sites and services approach. The intention for the THAs was to accommodate workers (i.e., labour) for the new capital city, but the state evaded the responsibility to provide housing and adequate facilities through proper settlement planning and design. Contrary, the 1969 new capital city master plan extended the already well-off western section northwards to create the new city centre and mostly low and medium density planned suburbs for the middle and upper classes. Consequently, the new capital city master plan continued the spatial marginalisation of the south-eastern neighbourhoods of Lilongwe.

4.3 SETTLEMENT MORPHOLOGY, ACCESSIBILITY AND SPATIAL MARGINALISATION

As a result of the historical spatial marginalisation of having THAs on the peripheries of the 'planned' core of the capital city, current settlement morphology as well as planning visions position high population density residential areas on the periphery. Furthermore, the THAs have become more informalised and are currently recognised as quasi-residential areas based on the urban development master plan for 2030 (developed in 2010).

Furthermore, urban infrastructure development such as paving of roads has also been aligned with planned settlement morphologies. Hence, the south-eastern parts of Lilongwe have quite neglected. Therefore, this project focuses on this marginalised part of the city.

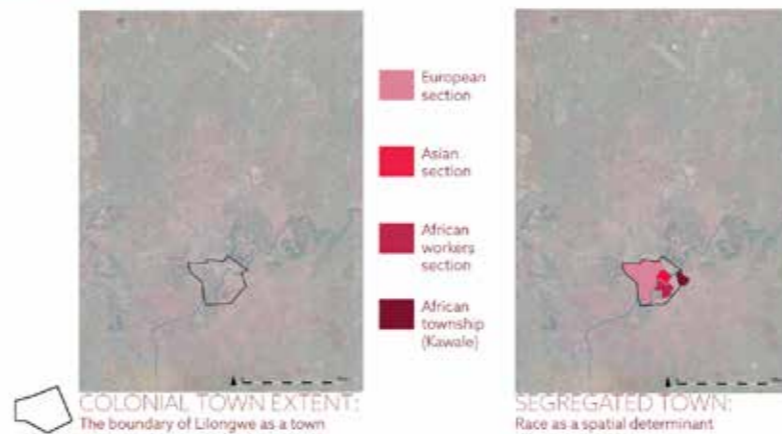
A city on the banks of Lilongwe River



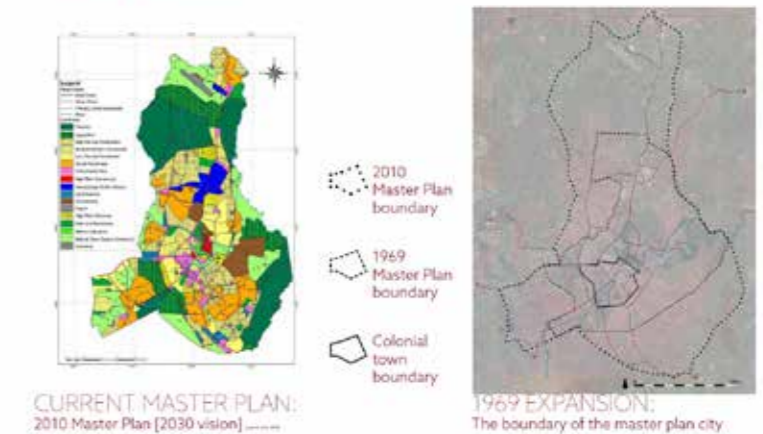
Transition into the capital city



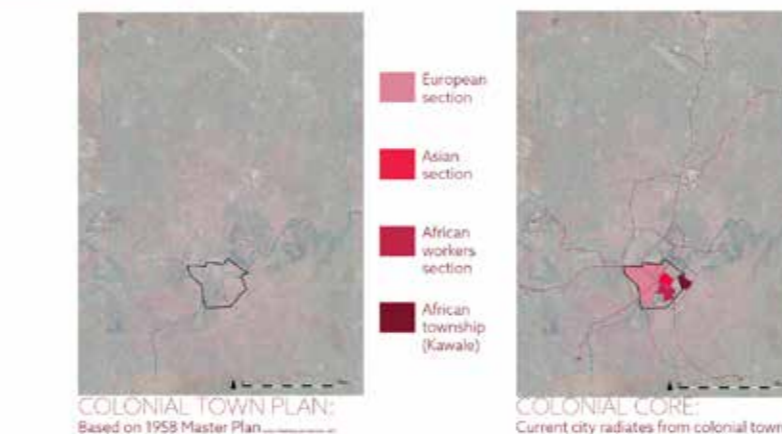
The colonial town



Current master plan extent



The colonial town



The extent of urban development over time



Key findings from fieldwork

ISSUES WITH TRANSIT SPACES + EXPERIENCES:

Dust impacting walking experiences + street activities

Filth/trash especially near markets

Congestion in transit spaces and along routes

Lack of amenities like shelters, seating, toilets in waiting spaces

Safety + comfort with the modes and safety issues at night in spaces



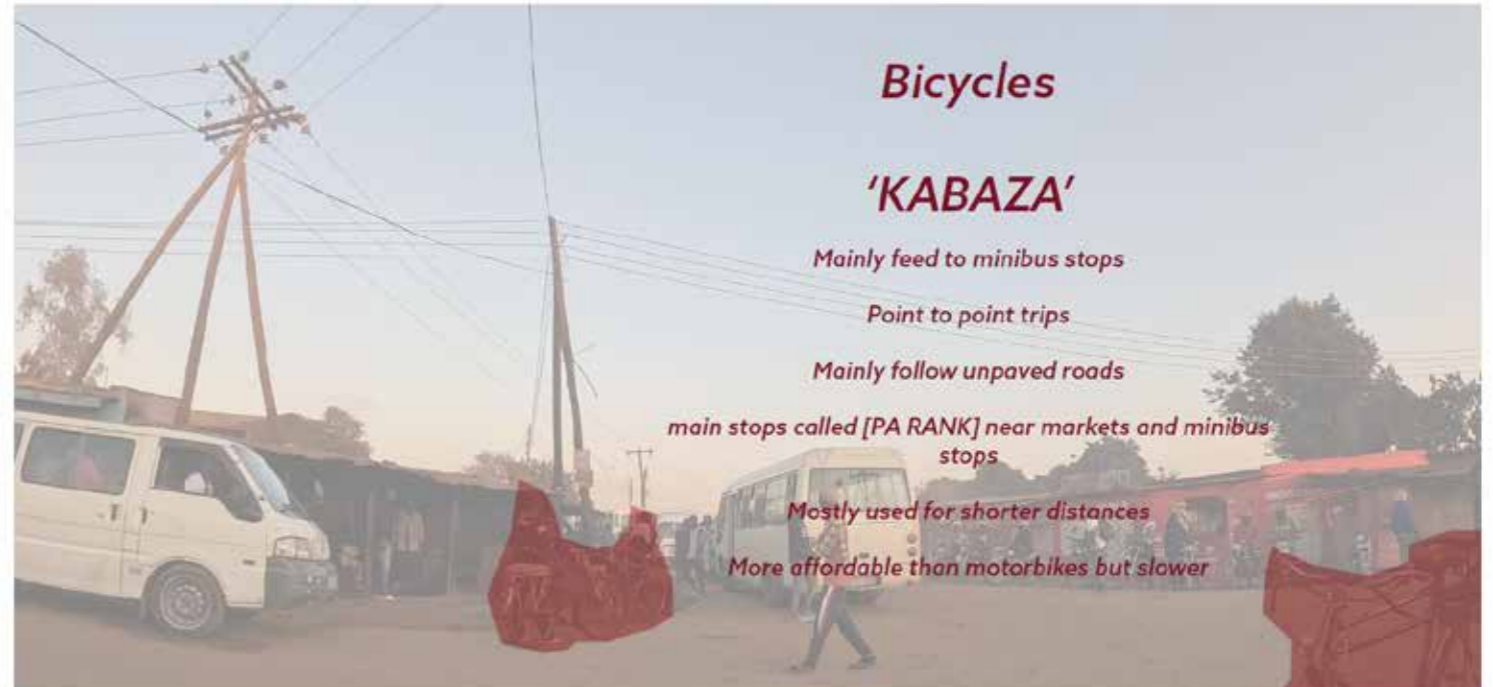
The modes of informal transit



The modes of informal transit

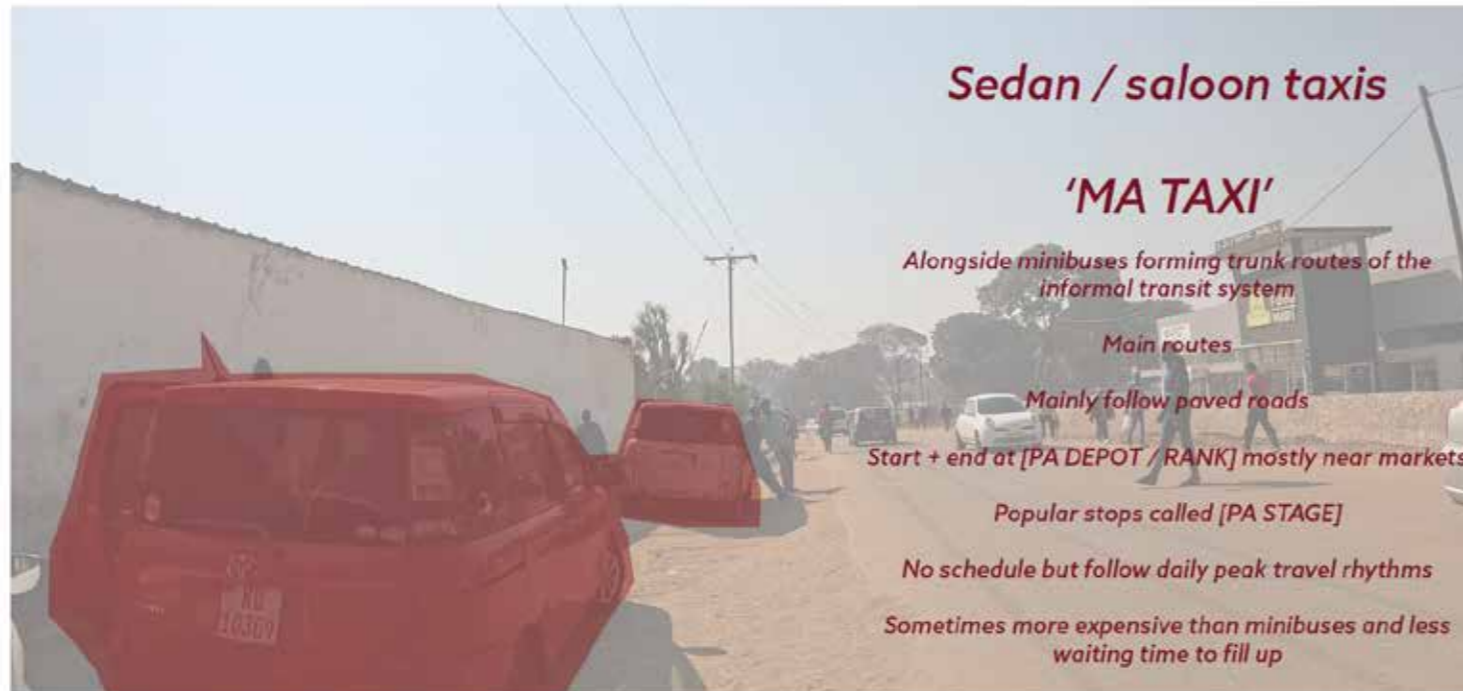


The modes of informal transit



4.4 FINDINGS ON TRANSIT MODES AND SPACES

The modes of informal transit

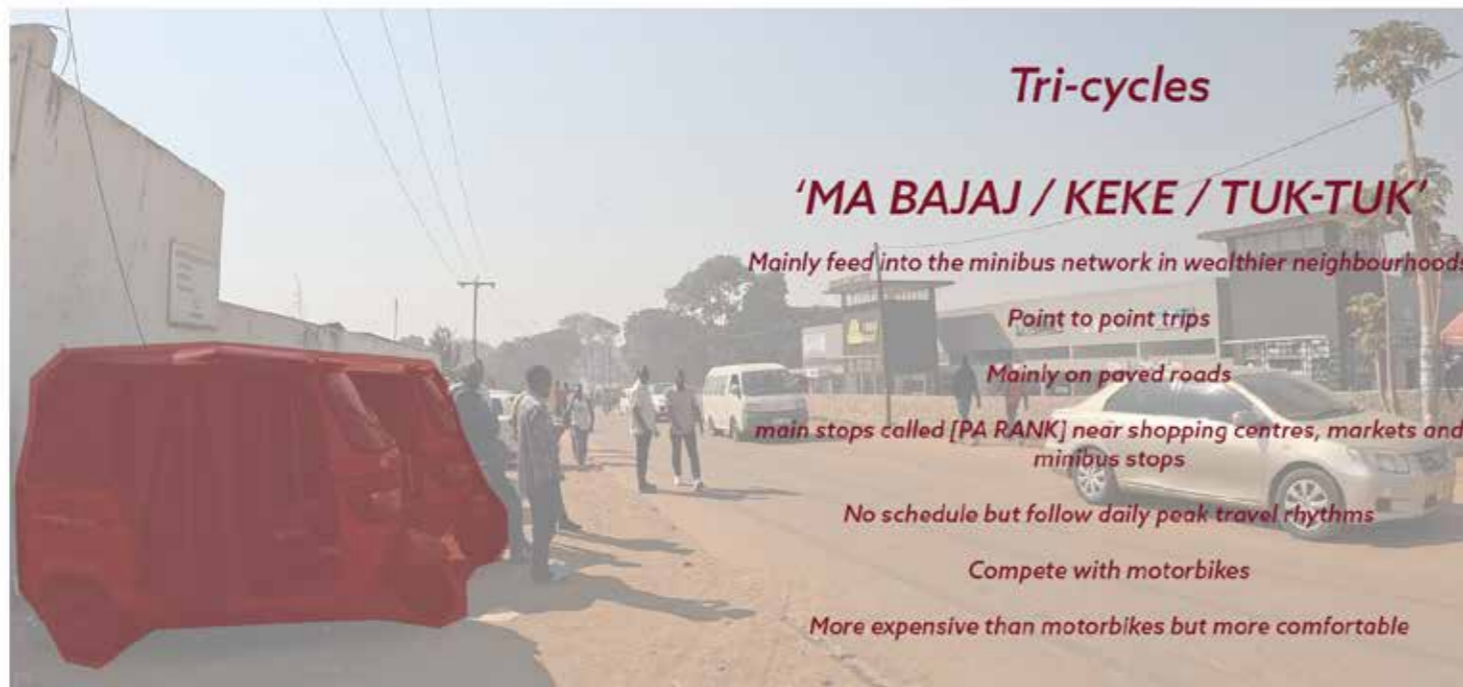


The informal transit modes in Lilongwe include minibuses that serve trunk routes (i.e., the main popular informal transit routes), and motorbike (known as Njinga ya Moto) and bicycle taxis (known locally as Kabaza) which serve as point-to-point direct mobility and usually feed into the minibus route and the minibus stops. The motorbikes and kabaza are the main transit options off the tarred roads.

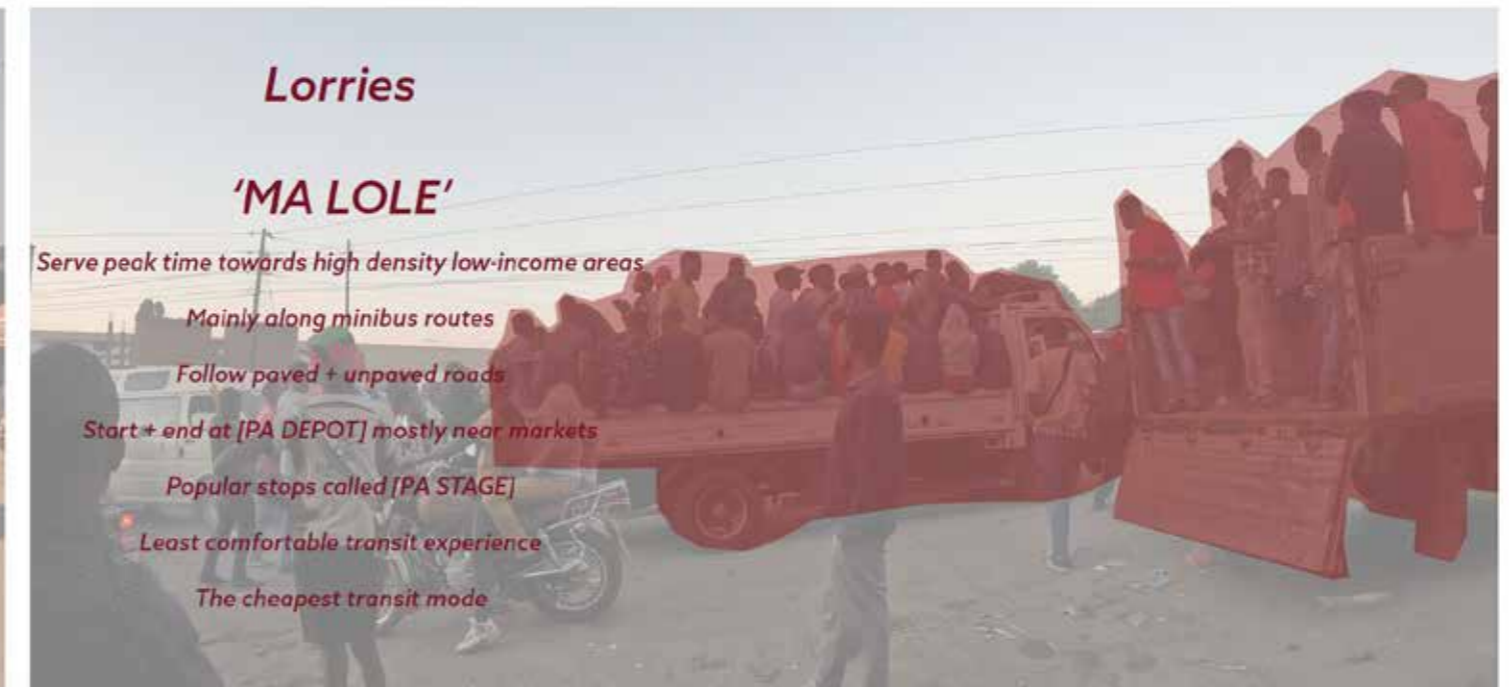
The main informal transit routes (i.e., minibus routes) correspond to the paved roads in the focus area. In general, the further away from Old Town towards the southeast, the less paved roads are and the less transit options are accessible because of the lack of main minibus routes.

Generally, strips of informal trade occur around the popular transit stops. The transit stops are also mostly multi-modal with the motorbikes and bicycles waiting for passengers from the minibuses and delivering passengers to the main stops.

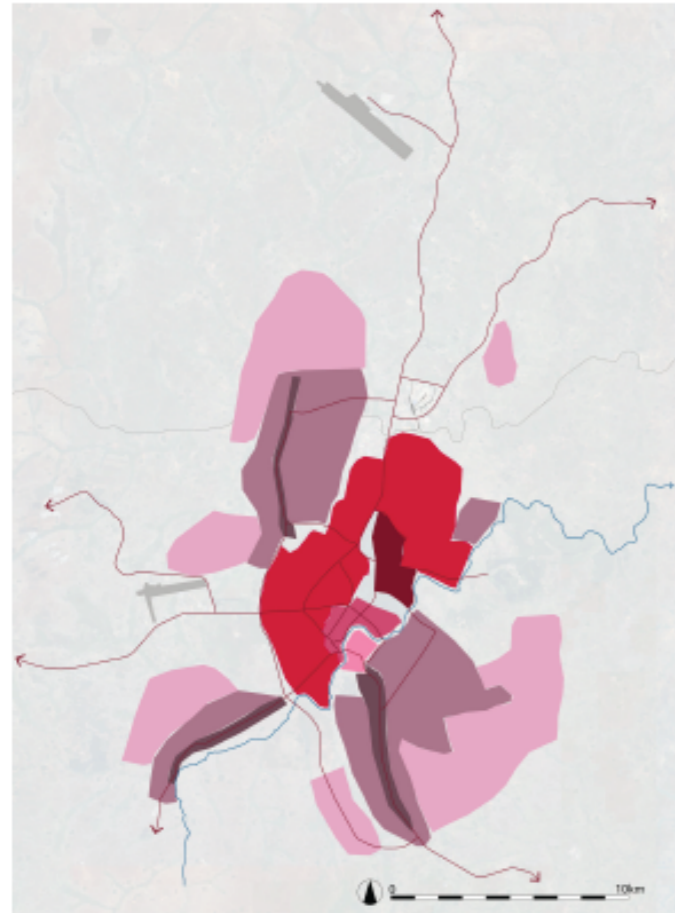
The modes of informal transit



The modes of informal transit



PERIPHERY GRADIENT



Core POWER



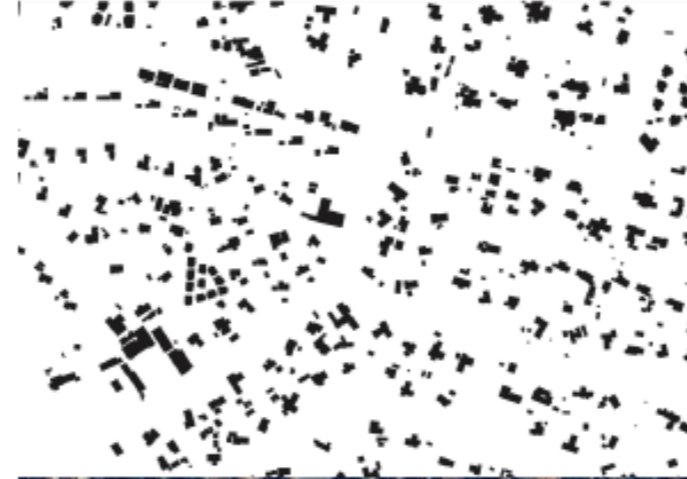
Automobile dependent
Central area



Core LIVING



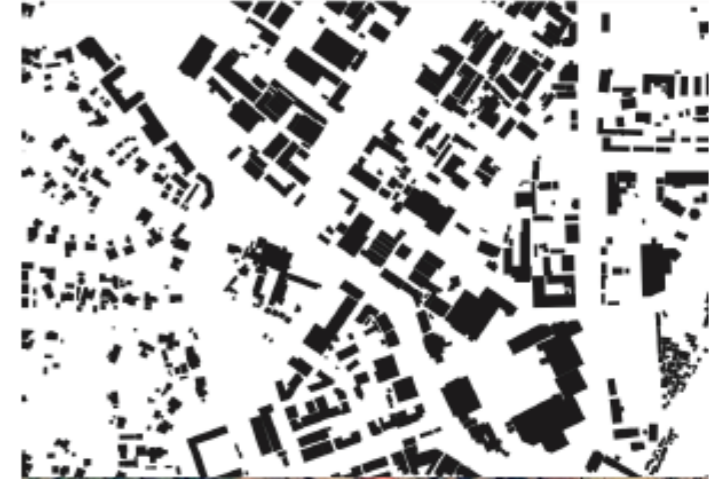
Automobile dependent
Adequate access to facilities



Core BUSINESS



Adequate informal transit
Central area



Peripheral BUSINESS



Adequate informal transit
Best multiscale accessibility



Peripheral MAIN CORRIDOR



Adequate informal transit
Good multiscale accessibility



Peripheral INNER



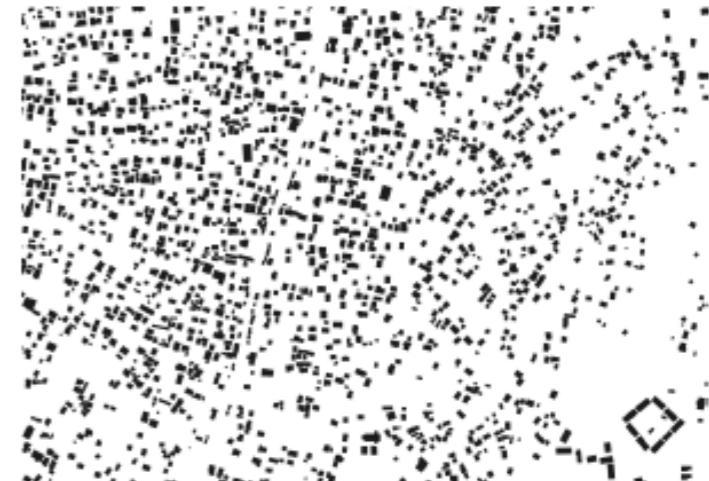
Minibus to kabaza/motorbike transition
Average multiscale accessibility



Peripheral OUTER



Kabaza + motorbike dependent
Worst multiscale accessibility



4.5 SHIFTING THE PROJECT FOCUS TO THE PERIPHERAL AREAS

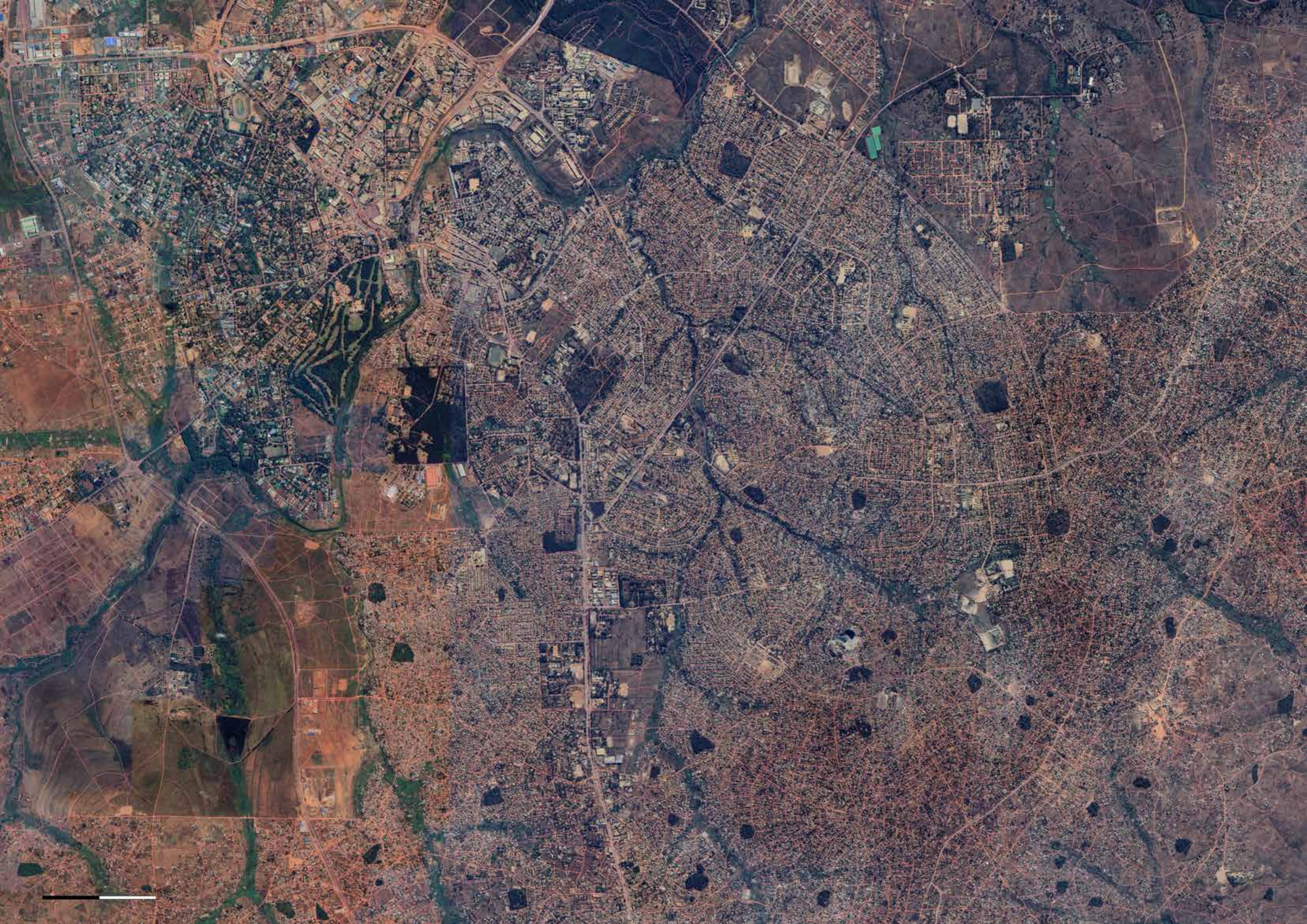
The informal transit modes in Lilongwe include minibuses that serve trunk routes (i.e., the main popular informal transit routes), and motorbike (known as Njinga ya Moto) and bicycle taxis (known locally as Kabaza) which serve as point-to-point direct mobility and usually feed into the minibus route and the minibus stops. The motorbikes and kabaza are the main transit options off the tarred roads.

The main informal transit routes (i.e., minibus routes) correspond to the paved roads in the focus area. In general, the further away from Old Town towards the southeast, the less paved roads are and the less transit options are accessible because of the lack of main minibus routes.

Generally, strips of informal trade occur around the popular transit stops. The transit stops are also mostly multi-modal with the motorbikes and bicycles waiting for passengers from the minibuses and delivering passengers to the main stops.

Focusing on the southern periphery





4.6 THE INFORMAL TRANSIT ASSEMBLAGE

The informal transit modes in Lilongwe include minibuses that serve trunk routes (i.e., the main popular informal transit routes), and motorbike (known as Njinga ya Moto) and bicycle taxis (known locally as Kabaza) which serve as point-to-point direct mobility and usually feed into the minibus route and the minibus stops. The motorbikes and kabaza are the main transit options off the tarred roads.

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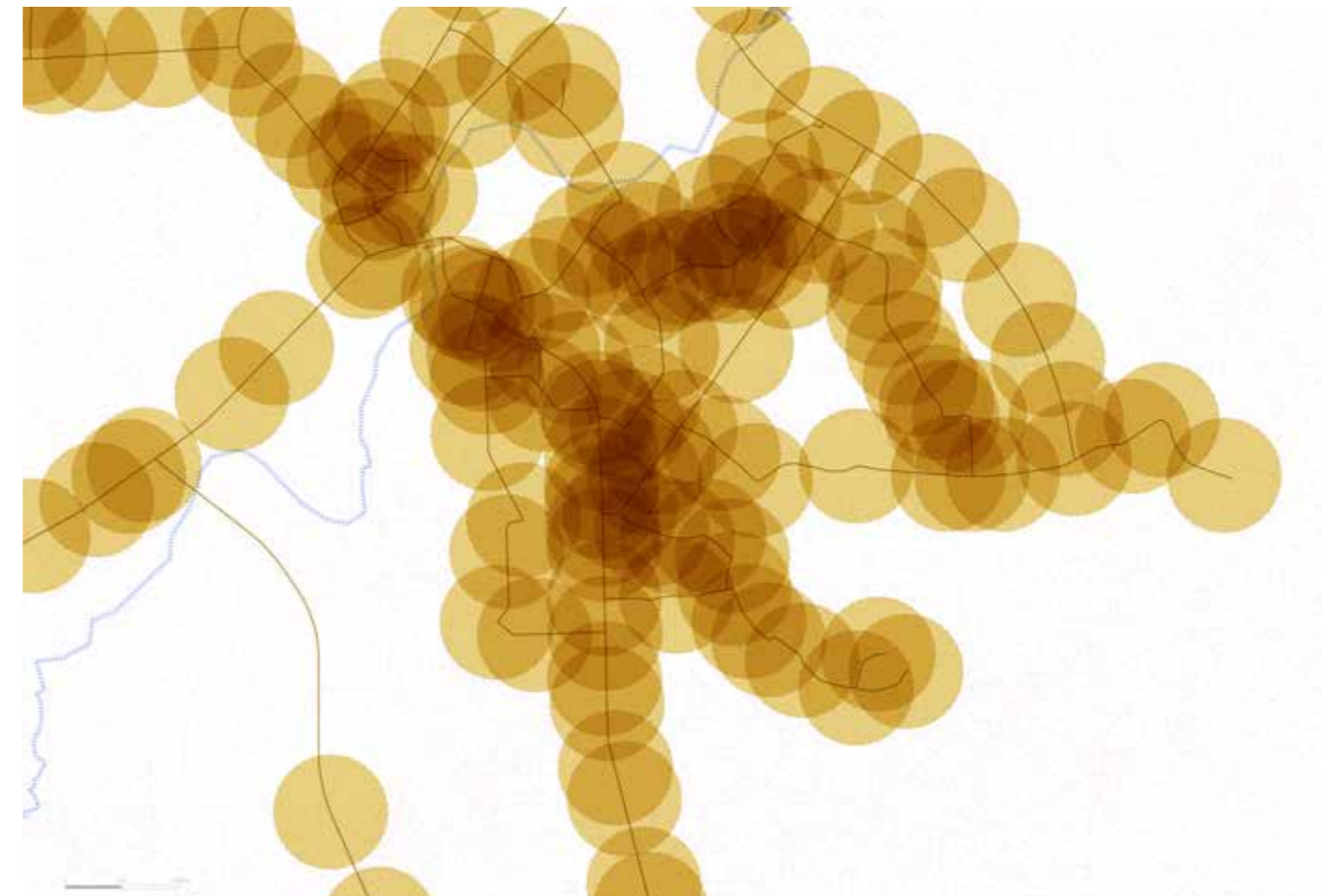


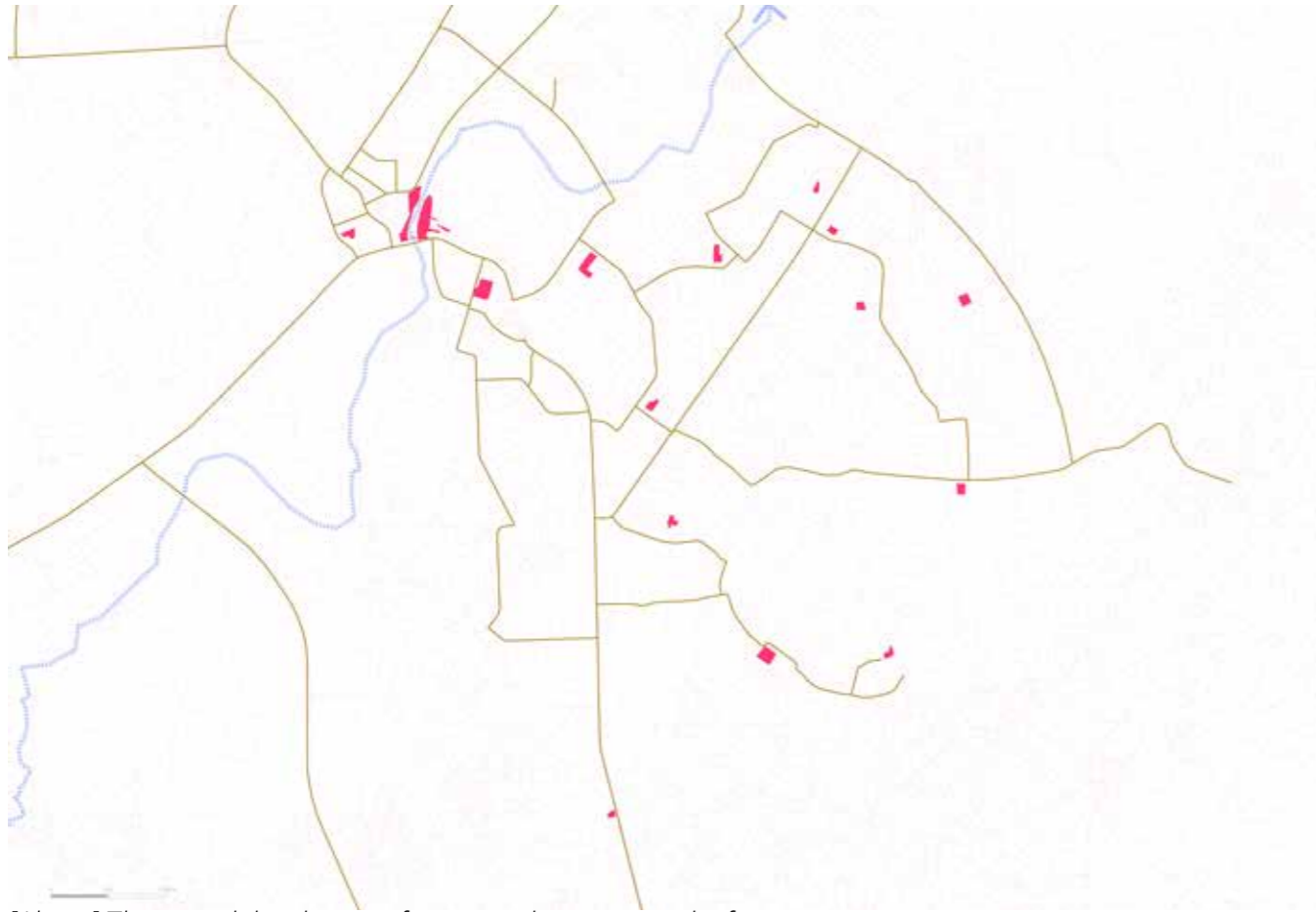
[Above] Paved roads in the focus area south-east of Lilongwe River
(Source: Author)

[Below] The main (popular) informal transit routes in the focus area
(Source: Author)



[Below] 20-minute walk pedestrian catchments from popular stops along the main informal transit routes
(Source: Author)





[Above] The spatial distribution of main markets across the focus area
 (Source: Author)



[Above] Secondary schools across the focus area
 (Source: Author)

[Below] Primary schools across the focus area
 (Source: Author)



[Below] Technical colleges across the focus area
 (Source: Author)



4.7 THE SPATIAL INFORMANTS FOR POTENTIAL INTERVENTION

The informal transit modes in Lilongwe include minibuses that serve trunk routes (i.e., the main popular informal transit routes), and motorbike (known as Njinga ya Moto) and bicycle taxis (known locally as Kabaza) which serve as point-to-point direct mobility and usually feed into the minibus route and the minibus stops. The motorbikes and kabaza are the main transit options off the tarred roads.

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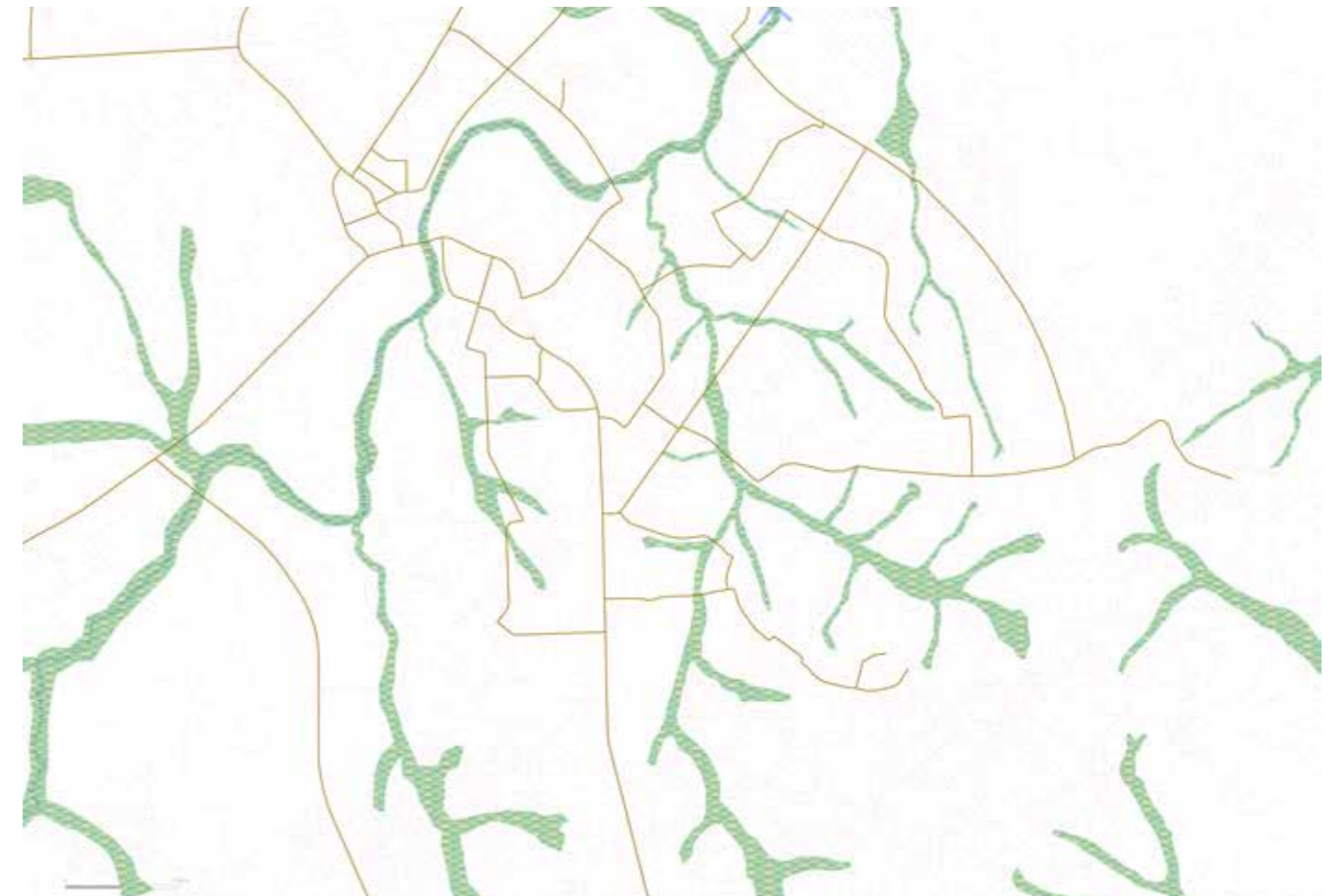


[Above] Location of public hospitals in relation to the focus area
(Source: Author)

[Below] Sports and recreation open spaces in proximity to the focus area
(Source: Author)



[Below] The network of blue-green corridors in the focus area
(Source: Author)





[Above] The distribution of all the public facilities in the focus area
(Source: Author)



[Above] Clusters of facilities in the predominantly residential areas away from the M1 main road
(Source: Author)



[Below] The opportunity area for high-intensity urban development along the M1 main road
(Source: Author)



[Below] The spatial informants for urban design intervention in the focus area
(Source: Author)

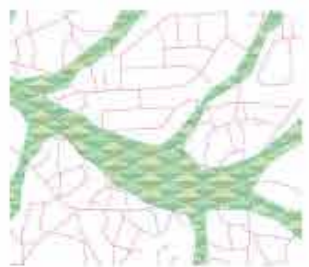
Spatial informants for intervention



Consolidation opportunity along the M1 main road corridor



Consolidation opportunity for public heart-beats at transit + public facility clusters



Opportunity to utilise blue-green corridors as quality public open spaces



5. CONCLUSION

Design intent + principles

5.1 CONCLUSION OF RESEARCH FINDINGS

The research findings revealed the overlap between spaces that support informal public transit modes, especially the transit nodes, and public facility clusters that include local markets and schools. Therefore, these intersectional areas present spatial intervention opportunities to apply urban design principles that may enhance informal transit experiences while also improving neighbourhood-scale accessibility and walkability in the nodal areas. Nonetheless, the research findings also suggest that spatial design interventions need to respond to the highly informal morphological contexts of the intervention areas.

'OVERALL VISION'

USE SPACES FOR INFORMAL TRANSIT as catalysts for spatial transformation in the peripheral areas starting with the southern periphery.

IMPROVING ACCESS TO SERVICES, infrastructure, and public facilities.

ENHANCING THE EXPERIENCES OF MOBILITY AND ACCESSIBILITY through upgrades of transit spaces.

improving ACCESS TO QUALITY PUBLIC SPACES especially open spaces.

Introducing HEARTS OF URBANITY AND VITALITY in the peripheral areas through the clustering of transit nodes, markets and facilities.

INTERVENTIONS SHOULD...

...[be] low-tech high-impact

...[enhance] walkability

...[have an] incremental approach

...[offer] citizen engagement + ownership

CONCEPT

Case studies for inspiration and precedent



KIBERA PUBLIC SPACE PROJECT
- NAIROBI, KENYA:

Community involvement

Infrastructure as anchor for spatial change

Local materials + simple technology



SOCIAL URBANISM
- MEDELLIN, COLOMBIA:

Facilities as catalysts

Transit spaces upgraded with sensitivity to context





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CONVENTION DRIVE



VISION

Clean, Green and Prosperous Lilongwe

MISSION

To tirelessly serve all citizens of Lilongwe City

VALUES

Hardwork, Integrity, Customers and Services first, Results and Innovation

APPENDIX: RESEARCH ETHICS APPROVAL



2024/06/05

EBE/00869/2024

RE: Research Ethics Committee Project Approval Letter

Dear Wrixon Mpanangombe,

Your application for ethics review of your project titled
Recalibrating mobility and access towards spatial justice in Lilongwe

has been reviewed and evaluated by the
Engineering & Built Environment Committee.

You may proceed with your research project titled:
Recalibrating mobility and access towards spatial justice in Lilongwe

Expiration date of approval: 2024/12/31

Please note that should:

- (i) any serious or adverse effects to participants occur and/or,
- (ii) aspect(s) of your current project change and/or
- (iii) any unforeseen events that might affect continued ethical acceptability of the project occur then you should immediately report this to the approving REC. You may be required to submit an amendment to this application, in order to determine whether the changed aspects increase the ethical risks of your project.

Based on the information supplied your application has been successful and is approved.

Please note the following additional conditions associated with this approval:

- (i) No additional conditions.

Regards,

Engineering & Built Environment Committee.

