[S]pace-placemaking through the Integration of Street Trading Practices. AT LIMBE, MALAWI

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Design Dissertation, APG5079W

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Master of Architecture (Professional)
University of Cape Town

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Date: 4th December 2023.

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ACKNOWLEDGEMENTS

Firstly, I would like to thank God for taking me through the Master's journey and giving me strength and courage.

Secondly, I thank my supervisor, Stella Papanicolaou, for always being there and guiding me tirelessly throughout the process.

Most importantly, I would like to thank my wife, Fortune Mwawa, for her prayers and support.

Lastly, I would like to thank my friends for encouraging me throughout this process.

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ABSTRACT

This study addresses the current contestation and attitude towards street traders in the global south. It proposes a paradigm shift in the approaches that seek to exclude and marginalise street trading practices from cities, arguing that these practices should co-exist with what is regarded as formal.

It suggests that architects and city councils should participate and learn from the traders, understand their practices and experiences, and use such dynamics as opportunities to integrate them into the urban fabric rather than suppressing their community-driven advances.

The Limbe CBD, on James Street, in Blantyre, Malawi, is the study area for the project, where I engaged with traders and uncovered their spatial practices, experiences, and needs through the theories of everyday life, space-placemaking, and the kinetic city.

Mainly, the traders expressed the need to be involved in all decision-making processes directly affecting them and the need for a platform that facilitates this civic engagement.

As such, this design dissertation proposes a community hub with a flexible space that can become a market, and a space for meetings, events, and skills training workshops, either by organisations or among themselves, in so doing, also providing a platform for empowerment.

In addition, they expressed the need for water supply, effective waste management, surface runoff and flood control solutions, ablutions, and shedding structures. This study covers some of these issues in a master plan and focuses on the hub as the facilitator to turn the area into a conducive environment for trading activities.

01

INTRODUCTION

1.1 CONCEPTUAL FRAMEWORK

The Limbe Central Business District (CBD), on James Street, in Blantyre, Malawi, has been chosen as the study area for the project (Figure 5 on page 11). Its dynamics are dissected using the conceptual framework developed through a desk study on the theories of everyday life, space-placemaking, informal and formal, and the kinetic city.

Everyday life entails the traders' social dynamics and experience with the city council strategies. Literature, interviews, and observations foreground these dynamics.

Space-placemaking is captured by foregrounding their needs for placemaking and observing and analysing their spatial practices through the lens of the kinetic city, which is the ephemeral nature of the urban realm and its relationship with the static and other essential kinetic elements. In addition, an application of *The Production of Space* spatial triad (Lefebvre 1991) is conducted to decode their interaction with space, coupled with an analysis of the materiality and techne of their architectures.

The analysis across the theoretical framework also employs walking and mapping (Papanicolaou, 2017), recording, sketching, model making, and analysis through tables and photographs.

Specifically, the interviews focus on street traders and Blantyre City Council officials, for which ethical clearance has been granted (Appendix 3).

Lessons drawn from this approach, coupled with lessons from the literature on the role of architects, case studies, and technology studies, are used to create design notations for a flexible and adaptable community hub intervention that can be used as a market and as a space for meetings, events, and skills training workshops in finances, sanitation, local artisanship, business planning, and other relevant activities the traders and organisations see fit.

Interviews with street traders were possible with the help of their chairman, who took me to five traders, including the previous chairman. He also walked me through the area and asked his fellow traders to allow me to take pictures of their stalls and practices, which I have used to portray the tactical responses of traders toward city council strategies and to extract their spatial dynamics.

However, I did not manage to interview the city council due to their non-availability. As such, I have used Jongh (2015) and my observations to describe the city council strategies.

1.2 BACKGROUND

Global capitalism has become an authoritative discourse that seeks to impose the universality of knowledge (Bhan, 2019), developing schemes and strategies considered widely acceptable and used by authorities to exclude the marginalised and their economic practices from cities. One area in which this manifests is street trade, a significant aspect of informal trading activities. Authorities have forcibly removed street traders (Riley, 2014) and used vocabulary to categorise them as informal rendering them less important than their formal counterparts.

In an interview, Rahul Mehrotra (2018) observed that classifying urban activities as formal or informal produces social and physical divides in the city and "reinforces the position of these binaries." In other words, this categorisation suggests that these activities should not coexist in the same place or that the latter should be excluded from the urban space. Unfortunately, this understanding has led to spatial subjectivities, as those regarded as the informal, the street traders, begin to feel out of place.

I argue that both the formal and informal should be taken as relevant forms of practice that can be interwoven into one another (Mehrotra, 2018; Foucault, 1980) to capitalise on their exchange and use value benefits, to improve our economies and urban environments (Zack & Govender, 2019). In addition, I propose a critical perspective on this categorisation and suggest that instead of identifying street traders as informal, they should be identified by their forms of practice (Riley, 2014). For this reason, we need to understand, apply, and integrate their practices into the Southern discourse to develop a vocabulary that speaks to our urban realities as we work towards just and equitable urban futures.

Street trading has emerged as a common strategy for negotiating the city across the global south and other parts of the world (Charman & Govender, 2016; Watson, 2009). In their paper, Charman & Govender (2016), citing Neves and Du Toit (2012), observe that street trading economies are networked and relational. They consider urban realities (Charman & Govender, 2016) and space-place dynamics (Roy, 2013) through their transitory, flexible, and pragmatic nature.

1.3 THESIS STATEMENT

According to the authorities, street trade has proven to be a challenge (Charman & Govender, 2016), yet I argue that it is full of possibilities (Pieterse & Simone, 2013).

Cities in the global south do not embrace the kinetic and current nature of our landscapes. As a result, there is constant contestation in the urban space fuelled by the daily struggles traders face with authorities (Jongh, 2015; Vishwa, 2013). Ultimately, this poses a challenge for traders as they negotiate urban spaces.

Our role as architects is to consider street trading practices as design opportunities for adaptable trading interventions, which can generate opportunities for traders and provide them with a means for inclusion and growth (Jonathan, 2018). Consequently, these interventions and practices should integrate with pedestrian and vehicular movements (Solomon-Ayeh et al., 2011) to ensure that all overlapping activities are accommodated adequately in the urban fabric (Jolaoso & Onolaja, 2021).

1.4 THE GAP IN LITERATURE

In their study on street trade in Ivory Park, South Africa, Charman & Govender (2016) analyse the space appropriation tactics of street traders in three locations: a taxi rank, a high street intersection, and a neighbourhood street. They discovered that street trade is organised and flexible to space-place dynamics.

In a similar study in Lagos Island, Nigeria, Jolaoso & Onolaja (2021) discovered the role of public spaces as distribution points for street trade, pedestrians, and vehicular movements.

In Malawi, Jongh (2015) established a general outlook of the tactics and strategies of street traders and local authorities, respectively, across two major cities: Lilongwe and Blantyre. He discovered that some street trading practices are legalised or illegalised, and others are tolerated.

Therefore, this study draws lessons from this literature, among others, and decodes street trading practices in the Limbe Central Business District (CBD) on James Street in Blantyre, Malawi. More uniquely, I will design a flexible and adaptable multifunctional community hub, that can facilitate the inclusion and assimilation of street traders in the urban fabric.

1.5 QUESTIONS

i. How do street traders experience Limbe?
ii. How do street traders appropriate space on James Street?
iii. How can architecture respond to their urban realities and practices to create a conducive environment for trading activities?

Below is the conceptual framework that drives the rest of the paper.

EVERYDAY LIFE

QUESTION

How do street traders experience Limbe?

CONCEPTUAL FRAMEWORK

Local Norms, Values and Social Dynamics

Strategies and Tactics

THEORETICAL FRAMEWORK

Answered using this Framework

Questions

SPACE□PLACEMAKING

Internal Practices
Ephemeral Nature of the Practices
Pedestrian and Vehicular Movement

KINETIC CITY

The static and the Kinetic

Adaptability
Space dynamics
Building systems

Analysis of the Case Studies and the Site

Proposed Site on James Street (River Intersection)

Lessons Drawn

THE ARCHITECT'S ROLE

Urban Markets
Community Centres
Unfinished Design
Transformable architecture
Transitional Street Edges
Flood Design
Waste Management

QUESTION

How can architecture respond to their urban realities and practices to create a conducive environment for their trading activities?

QUESTION

How do Street Traders Appropriate Space on James Street?

INTERVENTION

Design Concept

INTERSECTION

Where the Architecture should be
Integration of form and place

Figure 1: Conceptual framework (Author, 2023).

02

THEORETICAL FRAMEWORK

EVERYDAY LIFE

SPACE-PLACEMAKING

KINETIC CITY

THE ARCHITECTS' ROLE

2.1 EVERYDAY LIFE

This project locates itself in the Southern discourse, which strives to make relevant our urban realities (Bhan, 2019; Roy, 2013) and formalise their integration into the urban space. These realities form part of everyday life, a phenomenon outlined in de Certeau (1984).

In this study, everyday life is the experience between the street traders' urban realities and practices, with the power systems that strive to discipline and control them. These systems, in other words, the state, create explicit rules, techniques, or schemes that de Certeau (1984) refers to as *strategies* that expect behavioural compliance from them. This experience, as depicted in Figure 2 below, creates a contrasting realm (Lefebvre, 2013) where contestation and tactics become apparent (Kurfurst, 2012).

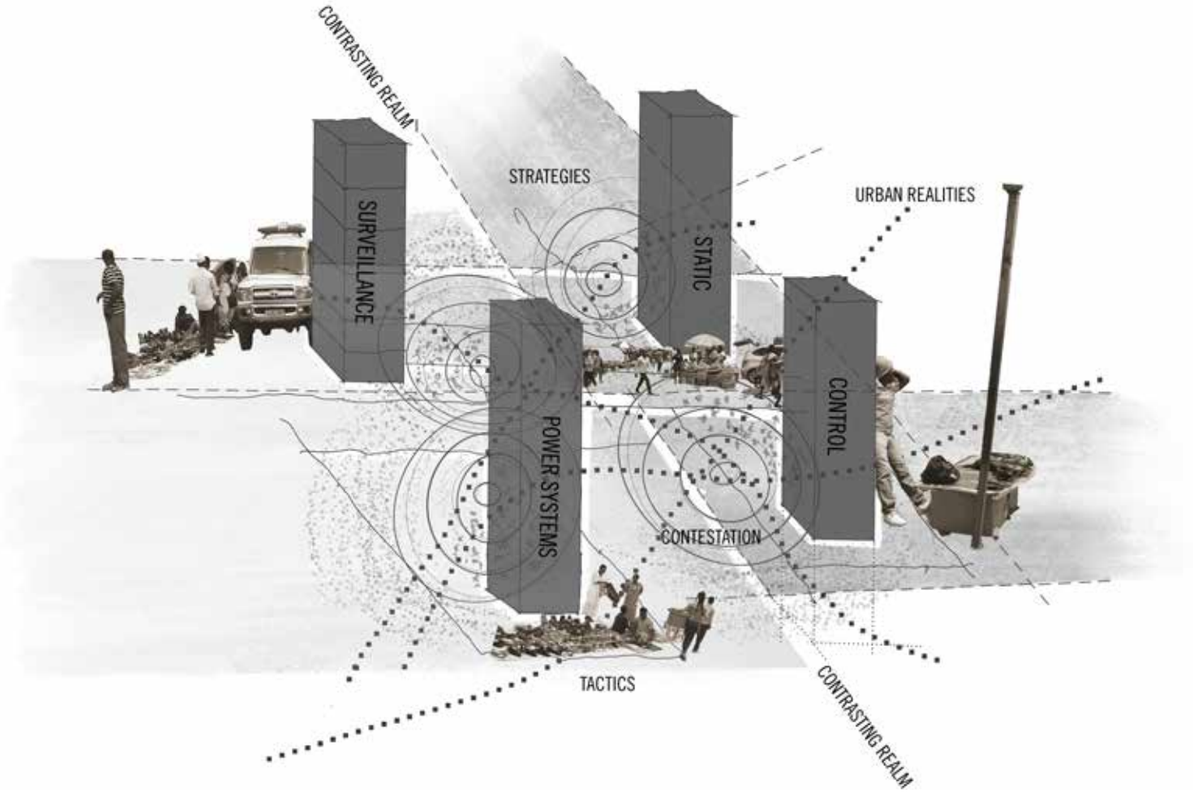


Figure 2: The contrasting realm between street trade urban realities and power systems (Author, 2023).

Tactics represent the make-shift creativity of individuals for negotiating around strategies to create opportunities for themselves, and produce space according to their lived realities (de Certeau, 1984).

Consequently, this study needs to decode the everyday life of street traders in the Limbe CBD, in terms of their tactics, around the city council's strategies as these experiences manifest in the urban space and become, as Lefebvre (2013) puts it, repetitive practices, that reorganise, and transform space.

2.2 SPACE-PLACEMAKING

2.2.1 Urban Space

Massey (2016) describes the urban space as a sphere that allows for socio-economic, political, and religious activities (Jolaoso & Onolaja, 2021). It is in the state of production and reproduction (Lefebvre, 1991) and becomes a product of interrelations of multiplicity (Massey, 2016).

2.2.2 The Production of Space

Thus, "any one event or illustration in the urban space has within it aspects of that whole" (Jolaoso & Onolaja, 2021, p. 114), created through layered narratives (Papanicolaou, 2017) over time. This phenomenon describes Lefebvre's (1991) post-structuralist theory of *The Production of Space*, which explains how people and space interact through conceived, perceived, and lived spaces (Newton, 2022).

Conceived space is depicted through spatial representation, while perceived entails spatial practices. Lived space portrays the intangible aspects that inform how people understand and territorialise their surroundings (Newton, 2022).

2.2.3 Time

Lefebvre (2013) argues that urban space appropriation is relative to time, and we cannot separate the two. He understands time as incalculable or non-quantifiable, "resisting abstract generalisation, and in need to be understood as lived" (p. 4). Consequently, time is the progression of activities of our everyday life, recorded as a series of moments in a physical environment that tend to repeat themselves in their plurality in a different and transformed fashion. In so doing, they become rhythms that transfigure the previous layer of moments. Unlike the conventional and quantifiable uniform and monotonous time (Lefebvre, 2013).

2.2.4 Space Making

As the body experiences space, it subjects itself to this "bundle of rhythms" and consumes and draws from it (Lefebvre, 2013, p. 20), creating mutated understandings that manifest in how people appropriate space through different organisational and behavioural logics.

2.2.5 Placemaking

Furthermore, these space appropriations reinforce the concept of place over time, as they are produced repeatedly (Beidler, 2007).

de Certeau (1984, p. 117) describes place as an "instantaneous configuration of positions," which implies an "indication of stability," pointing to the idea of its physical and situational nature. It can also mean the social interactions and meaning attached to a place (Turner & Turner, 2006, cited in Beidler, 2007).

In this study, place is the combination of the physical aspects of a place, the activities happening in it, and the meaning produced from their interaction, hence having a material, social, and spatial dimension (Thwaites et al., 2020). Therefore, placemaking can be achieved by respecting and acknowledging this multiplicity, when making design decisions for a given place.

2.3 INFORMALITY AND FORMALITY

The term informality, first coined by Keith Hart (1973) and the International Labour Office (ILO) (1973), was used to identify all heterogenic micro-economic activities that are unlicensed under one category, separating them from the licensed businesses operating in buildings and under labour force systems (Kurfurst, 2012). This separation is firmly entrenched in the urban realm and has reinforced the position of the two binaries. Alsayyad & Roy (2004) have criticised it as a practice of control towards the marginalised, to erase them from the city (Kurfust, 2012; Markus, 2012).

Furthermore, Markus (2012) argues that this categorisation is misleading since it does not reveal the characteristics and organisation logic at the core of their identity. Therefore, this project suggests rethinking the term informality to reflect the conditions and practices of the micro-enterprises, in this case, street trade.

2.4 THE KINETIC CITY

The kinetic city coined by Rahul Mehrotra, an architect and urban planner from India, describes the city as having a temporal landscape facilitated by urban realities, that needs theorisation and cultivation for cities to flourish. He compares this landscape with the static, that is, buildings and street edges, which define the configuration of the cities, which architects and planners have reinforced and argues that their approach has led to the unproductiveness of cities (Mehrotra, 2018).

As such, the kinetic thinks of the city as where the temporal and the static landscapes coexist to capitalise on their exchange and use value benefits. Therefore, the challenge of this project is to consider this approach by integrating street trade, which constitutes the temporal landscape, with the static and other kinetic elements.

The interplay between these elements and the static to produce space develops different technologies that cater to the traders' practices and needs. Therefore, the kinetic city also looks at new ways of materiality that preserve nature and that the local community can work with (Mehrotra, 2018).

2.5 THE ARCHITECT'S ROLE

Considering the above, the kinetic city assumes the role of architects as outsiders who need to understand and learn from the local community (Noero, 2016) to produce people-centred projects for social good (Chapman, 2019).

Like Carin Smuts in the Gugulethu Central Market (Smuts, n.d.) and Andy Horn in the Mamre revitalisation project, in collaboration with Jamie Ball (Wilkins, 2021) in South Africa, architects need to formalise community participation at the onset of projects, through workshops and negotiations, to allow for collective decision-making that applies to social contexts and addresses people's needs.

In addition, like Kevin Kimwele (Chapman, 2019), there is a need to learn from and use the existing technologies available locally, which continues and reinforces the character and sense of place and promotes community participation in the construction of the projects.

Furthermore, in relation to Habraken's concept of place, which promotes territorialisation by users (Thwaites et al., 2020), Jo Noero, in an interview with Elvia Wilk (Noero, 2016), suggests that architects can make minimal creative contributions that create opportunities, and trigger a response in people, which in turn can lead to a variety of spatial appropriations, thereby developing a sense of ownership.

Ultimately, these bottom-up approaches can help transform interventions into "more appropriate local and culturally expressive solutions" (Smuts, n.d., p. 1) that are rooted in place. For this reason, I aim to use these approaches in this project.

03

CONTEXTUAL STUDY ▯ LIMBE CBD, BLANTYRE, MALAWI

3.1 BACKGROUND

Blantyre is the oldest city in Malawi, an industrial and commercial hub founded in 1895. It has two central business districts (CBDs); Blantyre and Limbe CBDs. The Limbe CBD has become a bourgeoning economic enclave in the city, characterised by institutional buildings, industries, manufacturing companies, and commercial activities (Figure 5). It is southeast of the Blantyre CBD (Figures 3 & 4).

The Blantyre City Council (BCC) designated Limbe as a formal area and exercises control to keep up with modern city ideals. As such, street trade is a relic that needs exclusion from the urban space.

Limbe is on two arterial roads, Churchill Road and Livingstone Avenue, which connect most parts of the southern region of Malawi, making it a transport hub with a train station, minibus taxi ranks, and a bus terminal. As such, there is an influx of people commuting in and out of the CBD, qualifying it as a thriving arena for street trade (Figure 7).

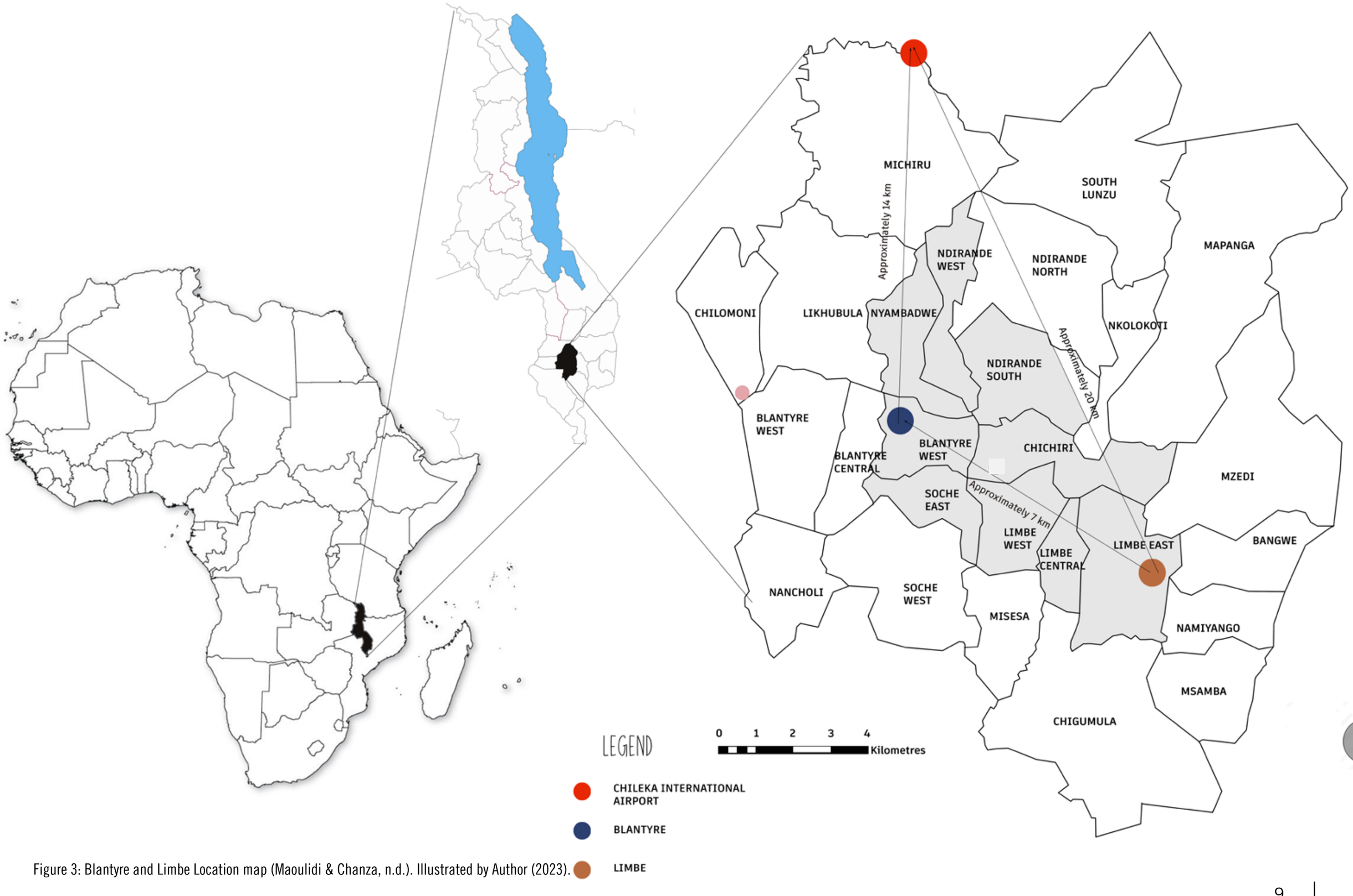


Figure 3: Blantyre and Limbe Location map (Maoulidi & Chanza, n.d.). Illustrated by Author (2023).

NYAMBADWE
KABULA HILL
BLANTYRE
NDIRANDE
NKOLOKOTI
NDIRANDE FOREST
KACHERE
MANDALA
CHICHIRI
MUDI
CHITAWIRA
SOCHE
NKOLOKOSA
NAPERI
LIMBE
MPINGWE
Bangwe
NANCHOLI
ZINGWANGWA
BANGWE
MANJA
CHIMWANKHUNDA
Baluti
ANGELO GOVEYA
CHIWEMBE

LEGEND

- Major Roads (M2)
- Tetiary Roads
- Intermediary Roads
- Adminstrative Wards
- Railway Tracks
- Rivers

Google Earth
Image © 2023 Maxar Technologies
Image © 2023 Airbus

N
10
4 KM

Figure 4: Blantyre CBD and Limbe CBD. Source: Google Earth. Illustrated by Author (2023).

LEGEND

WHOLESALE TRADE

Non-specialised Wholesale
Food, Beverages, Tobacco Products
Household Goods, Hardware,
detergents, textiles

RETAIL TRADE

Non-specialised, predominant with food & beverages

Non-specialised, not predominant with food & beverages

Textiles

Hardware, Pants & Glass

Pharmaceuticals & Medical Goods

Clothing, Footwear

Electrical, Household Appliances & Furniture

Warehousing & Support Activities for Transport

Banks

Offices

Institutional

Residential

Fuel Stations

Market (Predominated with Second-hand Clothes, with various items)

Market (Non-specialised, with a variety of commodities and products)

Warehousing & Storage

Minibus and Bus Depot

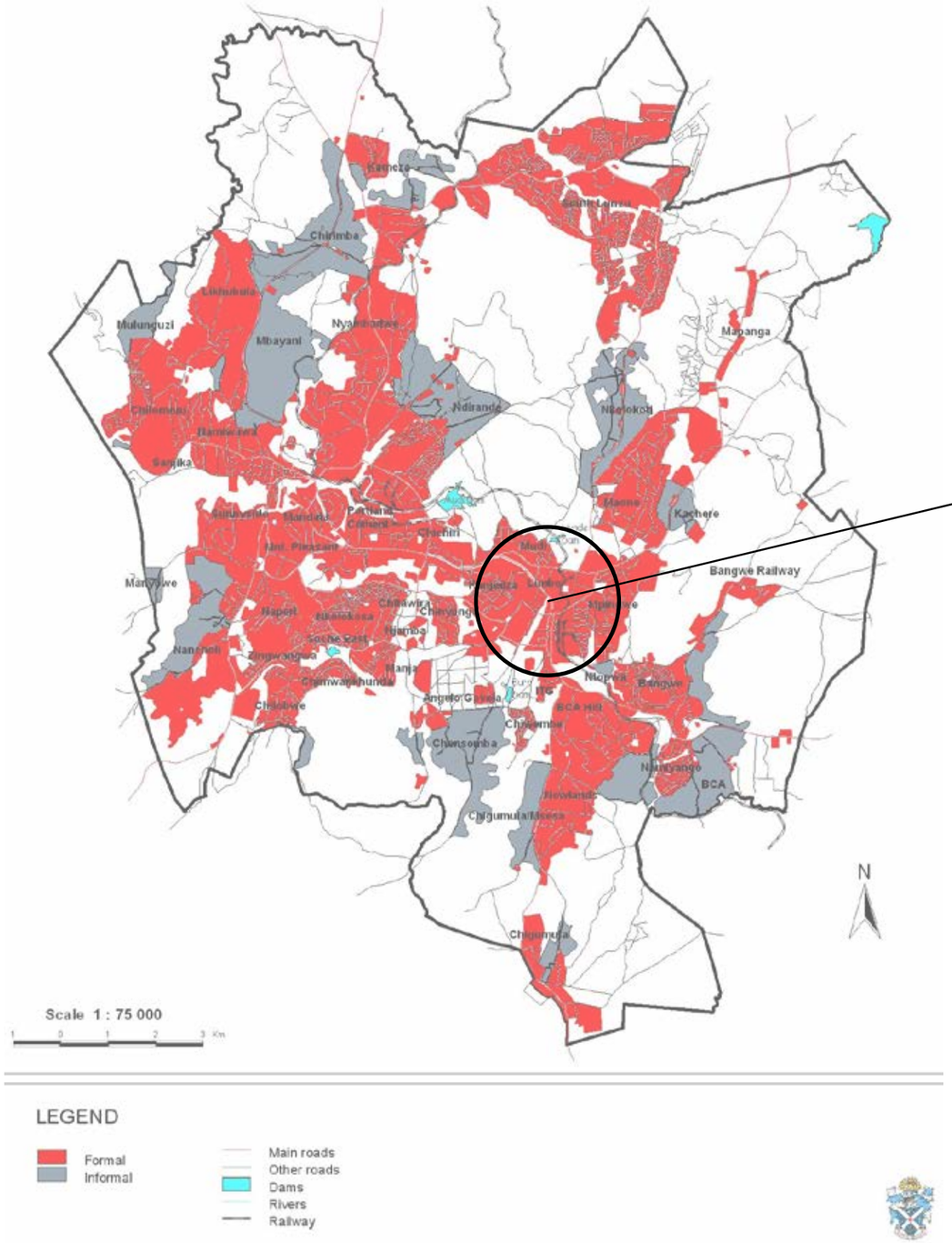
Car Spare Parts Market

N

400 M

Figure 5: Economic activities in the Limbe CBD (Author, 2023).

Formal and Informal Settlements- Blantyre City



Limbe Central Business District (CBD) Land-use Plan

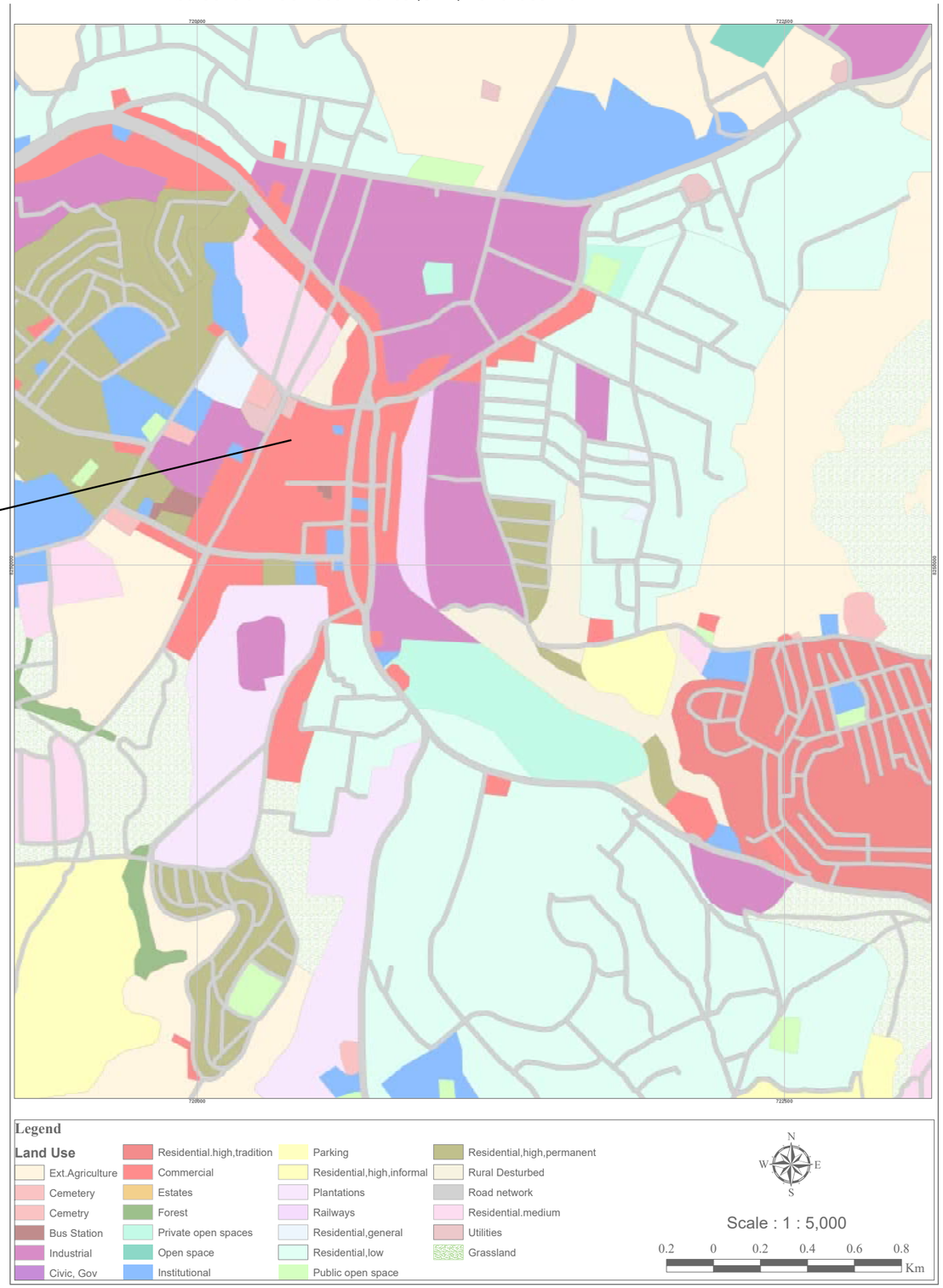
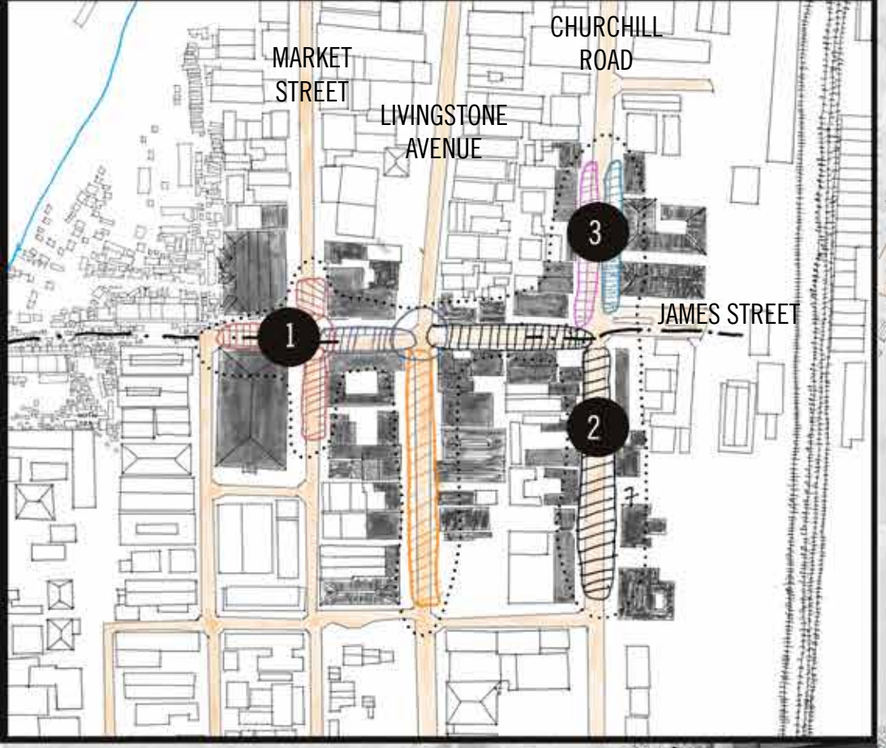
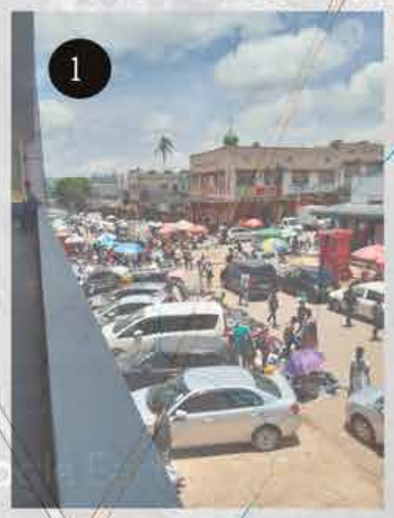
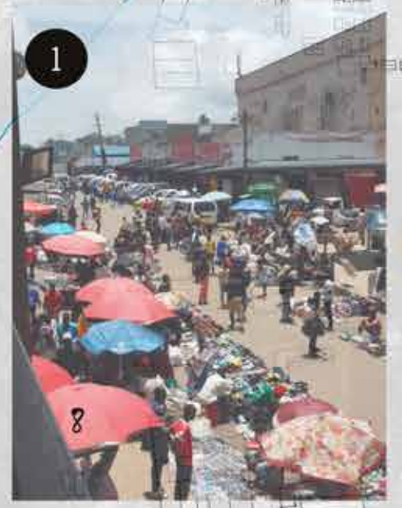


Figure 6: Formal and informal settlements in Blantyre, and Land-use plan of Limbe CBD. Source: Blantyre City Council.







LEGEND

- Tailoring
- Phone repairing
- Mobile money
- Household accessories

- Phone repairing
- Mobile traders
- Fruits
- Electronics
- Phone Accessories
- Plastics
- Beverages

- Fruits
- Shoes
- Phone Accessories
- Gloceries: sugar, salt, soap, cooking oil
- Mobile street trade

- Mobile traders (Second-handclothes)
- Kaunjika

- Fruits
- Kaunjika
- Vegetables
- Fast food
- Phone accessories

Figure 7: A general outlook of street trade in Limbe and its relationship with formal buildings (Author, 2023).

NYAMBADWE

TO CHILEKA

BLANTYRE MISSION (CHURCH OF SCOTLAND)

KABULA HILL

BLANTYRE

NDIRANDE

Settlement Existing within 3- 5 miles from Town

RAILWAY

MANDALA

Settlement Existing within 3- 5 miles from Town

CHICHIRI

TO ZOMBA

SUNNYSIDE

Settlement Existing within 3- 5 miles from Town

Settlement Existing within 3- 5 miles from Town

NAPERI

SOCHE

NAPERI RIVER

LIMBE

RAILWAY COMPANY LOCATION

TO CHIKWAWA

LEGEND

- European Territory
- Asiatic Ward Territory
- Native Settlements
- Major Roads (M2)
- Railway Tracks
- Intermediary Roads
- Tetiary Roads
- Rivers & Streams

N

4 KM

Figure 8: Blantyre-Limbe in the 1950s, showing the European, Asian, and native territories. Source: MacCraken (1998). Illustrated by Author (2023).

3.1.1 History of Limbe

During the European regime, Blantyre and Limbe CBDs were two seperate towns. White traders settled in areas surrounding the Blantyre Mission Church of Scotland. The traders located their native workers in planned settlements; Soche and Naperi, and some, miles away in unplanned settlements; Ndirande, Angelo Goveya, Chichiri, and Bangwe (Figure 8), and only the whites were responsible for the building of housing in the planned settlements (MacCraken, 1998).

The Shire Highlands Railway Company and Imperial Tobacco Company, the largest companies in Nyasaland (Malawi, before independence), established their headquarters in Limbe, which had many Asians living in the Asiatic Ward (Figure 8 & 9), and a few white settlers. In 1947, the companies established workers housing in Mpingwe (MacCraken, 1998).

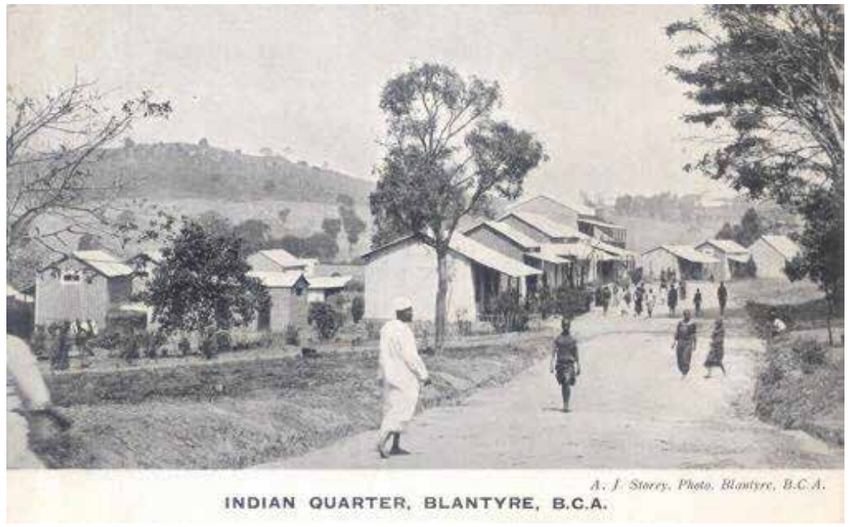


Figure 9: Asiatic Ward in Limbe, BCA Hills. Source: Nyasaland Historical Moments Facebook page.

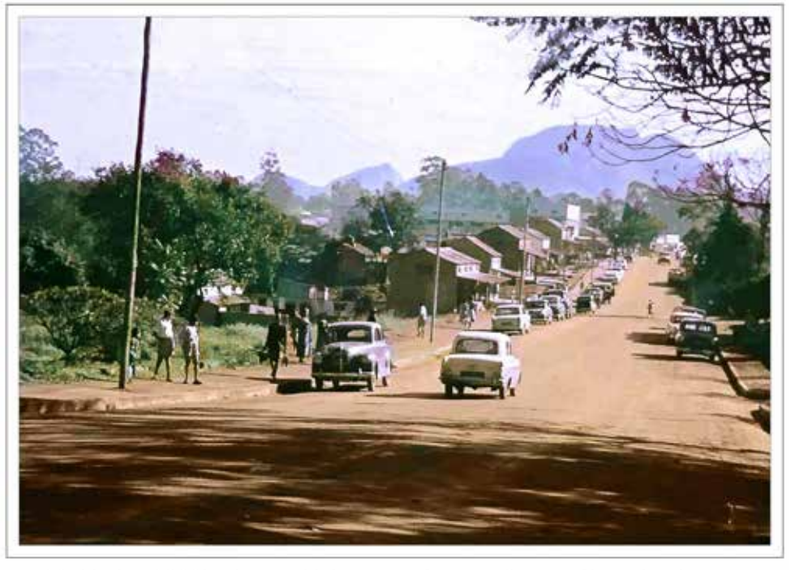


Figure 10: Limbe, 1960's view on Livingstone Avenue. Source: Nyasaland Historical Moments Facebook Page.

In the 1940s, the economy of Limbe grew due to a boom in industries, which led to the rise in urban migration of people seeking jobs in town. This development, coupled with a natural disaster in the then-capital city of Nyasaland, Zomba, in 1947, led the government to build new government offices and construct roads and public amenities in the area (MacCraken, 1998).

In 1956, the two towns grew and merged and became one municipality, called Blantyre, with 109,461 inhabitants by 1966, of which 93% were Africans (MacCraken, 1998).

3.1.2 Street Trade in Malawi

In the early 1960s, Dr. Hastings Kamuzu Banda of the Malawi Congress Party (MCP) took over from the European government and became the president of Nyasaland, which came to be known as Malawi.

Due to rapid urbanisation in municipalities in Malawi, street trade became a dominant source of revenue for people. However, throughout his reign, Dr. Banda suppressed all informal activities from urban areas to keep up with modern city ideals.

After amending the constitution in 1994 to allow for multiparty elections, Dr. Bakili Muluzi, under the United Democratic Front (UDF), became president of the country and empowered street traders in all urban areas in the country (Kayuni & Tambulasi, 2009). He later sought to formalise the trade by building flea markets under funding from Press Holdings Limited (Kayuni & Tambulasi, 2009).
Despite these efforts, they became white elephants since most traders refused to relocate, claiming the markets did not meet their needs.

Dr. Bingu wa Mutharika took over in 2004 under the Democratic Progressive Party (DPP). He revived the suppressive policies against street traders and used armed forces to relocate them to the markets (Kayuni & Tambulasi, 2009).

Today, there is still evidence of control and regulatory constraints in cities in Malawi. The city councils evict vendors from the street without providing alternative space for trade, e.g., In Lilongwe (Times 360 Malawi, 2023).

3.2 STREET TRADE IN LIMBE

3.2.1 Historical Timeline

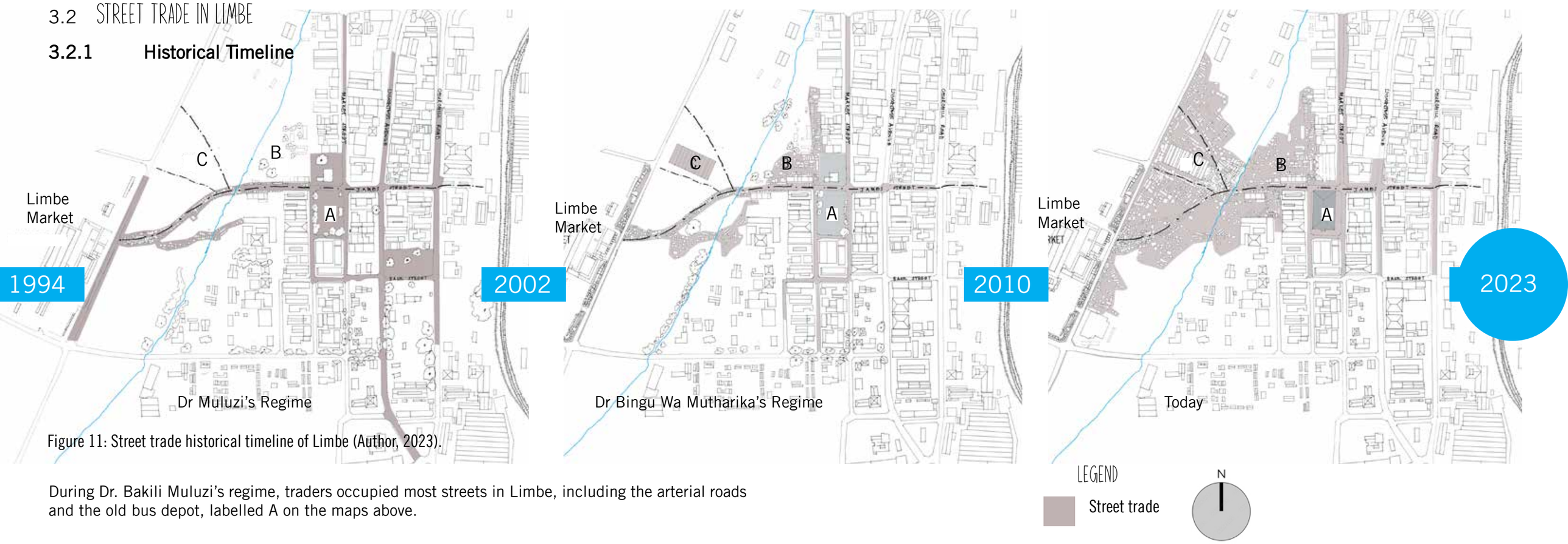


Figure 11: Street trade historical timeline of Limbe (Author, 2023).

During Dr. Bakili Muluzi's regime, traders occupied most streets in Limbe, including the arterial roads and the old bus depot, labelled A on the maps above.

Figure 12: Street trade on Churchill Road (Post office) during Dr Bakili Muluzi's Regime. Source: https://www.malawivoice.com/2022/04/08/we-are-here-to-stay-streets-are-our-livelihood-bts-treet-vendors/

However, during Dr. Bingu wa Mutharika's time, they were removed from all streets but later allowed to use some intermediary roads, including James Street and Market Street (Figure 11).

After selling the old bus depot, the traders were moved to site labelled B (Figures 13, 14, and 15), by the Ministry of Local Government, with a promise to accommodate them in the building built on the old bus depot site and a market on site B.

Later the site became privatised, though traders continue using it today. For this reason, the government instead built a 5-sheds market on site labelled C across the Mudi River, now dominated by Kaunjika (Chichewa word for 'second-hand clothes') trade.

Today, most intermediary roads accommodate street trade, and sites B and C have exploded with an influx of traders.

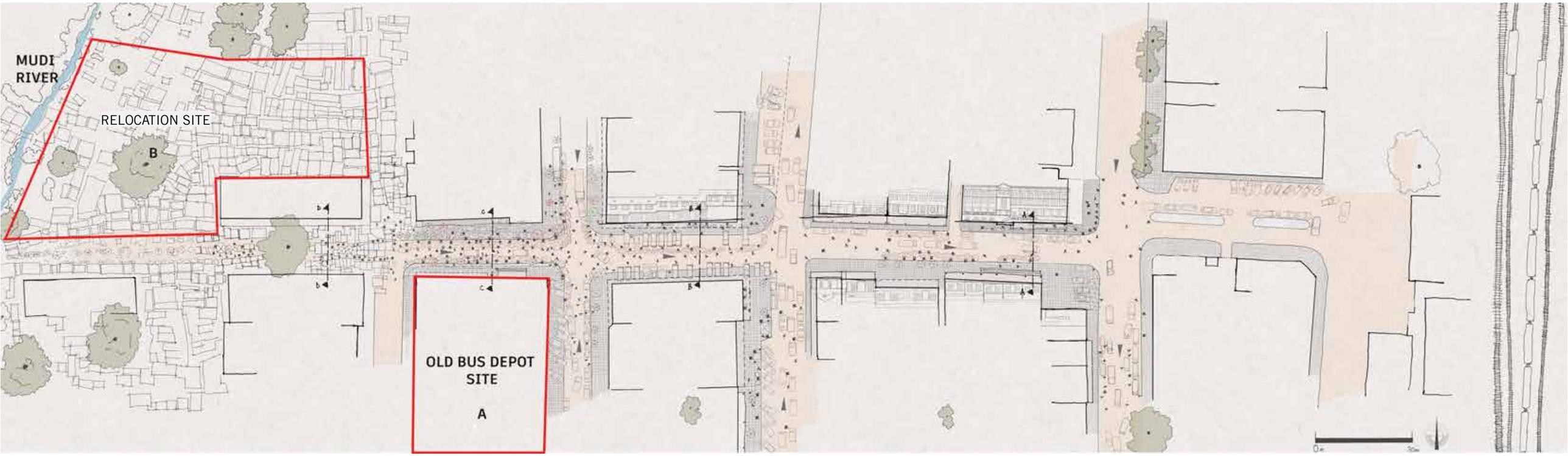


Figure 13: The old bus depot site and the relocation site on James Street (Author, 2023).

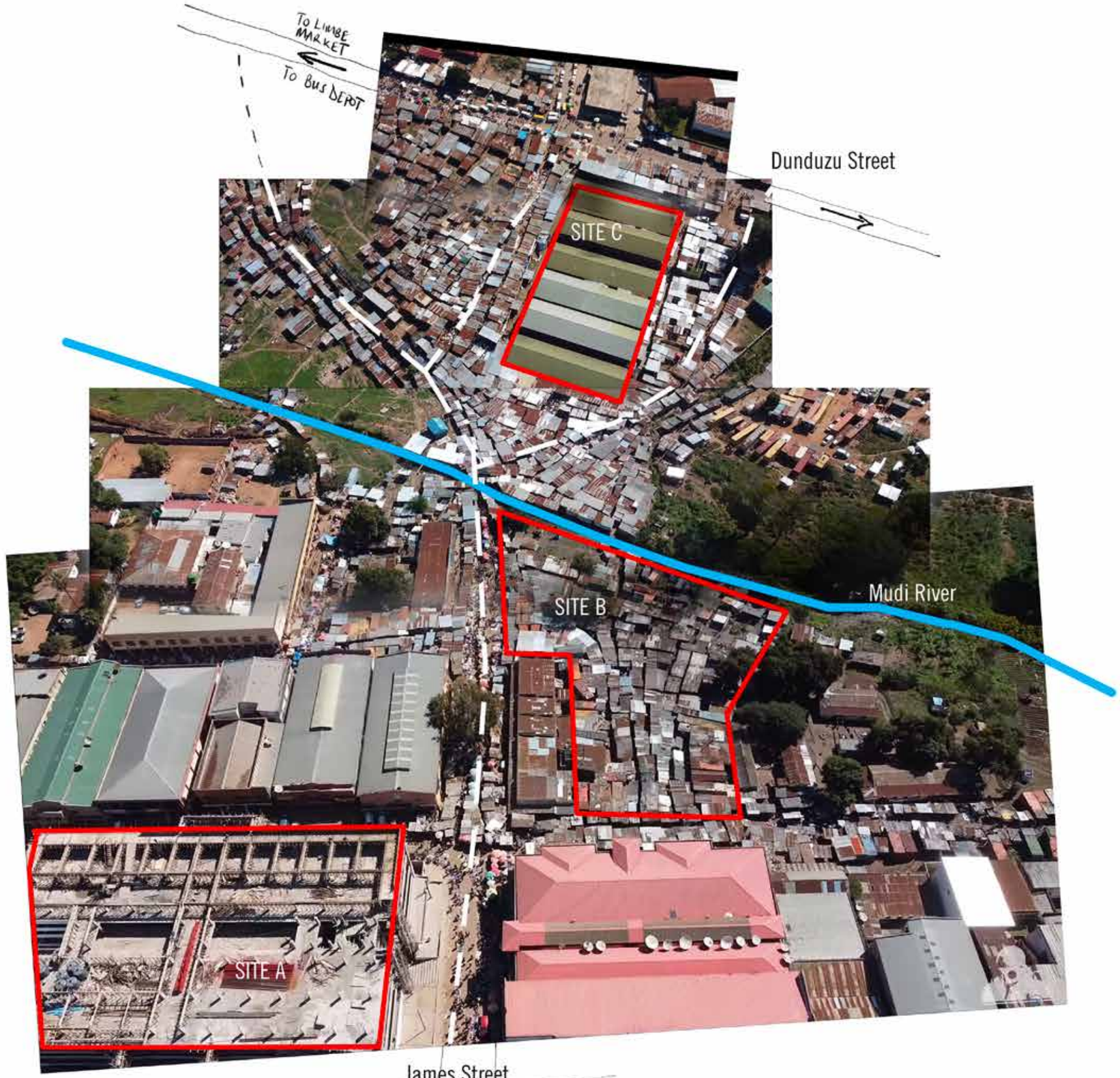


Figure 14: An aerial view showing the old bus depot site (A), the relocation site (B), and the Kaunjika Market (C) (Author, 2023)

The Pacific Tower, a shopping arcade designed to accommodate traders on the fifth floor, and retail on the ground to the fourth floor, was built on site A.

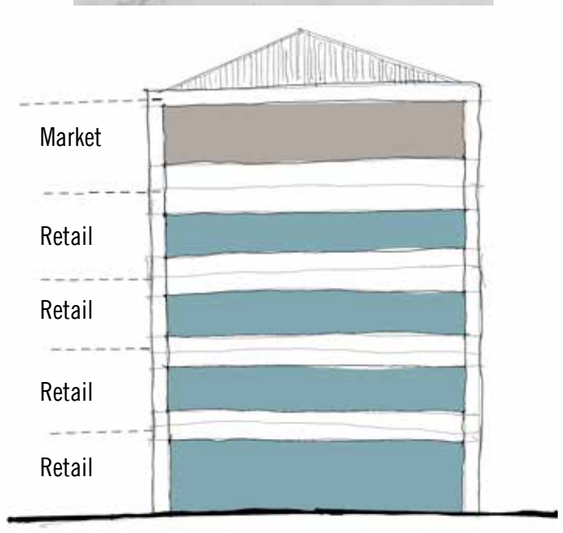


Figure 15: The Pacific Tower (Not to scale) (Author, 2023).

The designers of the building did not consult the street traders. As a result, the fifth floor is a white elephant since traders prefer the ground floor and the street (Figure 17).

Figure 16: Traders' preference is the street and the ground floor (Author, 2023).

Figure 17: Abandoned floors in the Pacific Tower (Author, 2023).

3.2.2 Everyday life

3.2.2.1 Street Traders' Experience in Limbe

This section describes the everydayness of street trade in Limbe, using the conceptual framework in Figure 1, focusing on their social dynamics, tactics, and the strategies imposed on them by the authorities.

3.2.2.1.1 Social Dynamics

Most traders in the Limbe CBD come from the same neighbourhoods, mostly from Ndirande, Angelo Goveya, Bangwe, Nkolokoti, Kachere, and from other districts like Thyolo, Mulanje, Chiradzulu, and Zomba (Figure 18), making it easy for them to find space to trade in the CBD.

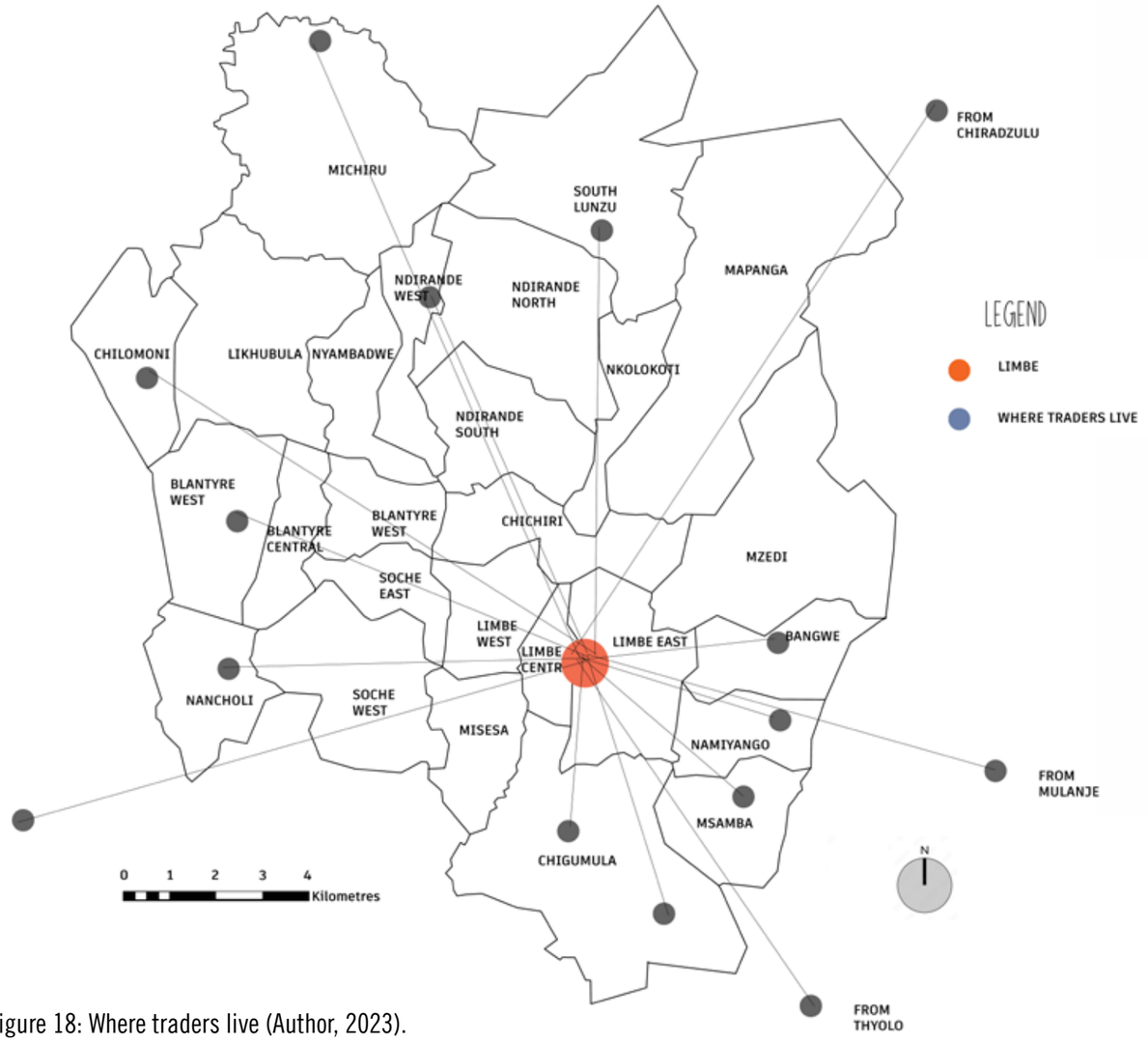


Figure 18: Where traders live (Author, 2023).

Traders commute to Limbe using private cars, minibus taxis, or by train and generally start trading at 7:30 and close at 5:30. They arrive 20 minutes to 2 hours before time to allow for setting up their trading spaces. They have leaders in the community who allocate 2-metre trading spaces to everyone for free. New traders must approach leaders for space allocation. Individuals rent out their space with rentals ranging from K15,000 to K 30,000.

Here, traders have developed ways to relate to one another and have unique experiences manifesting in space. However, these experiences are secondary to the city strategies, which presents a contrasting realm that becomes a space for contestation, where tactics are apparent (Figures 19 & 20).

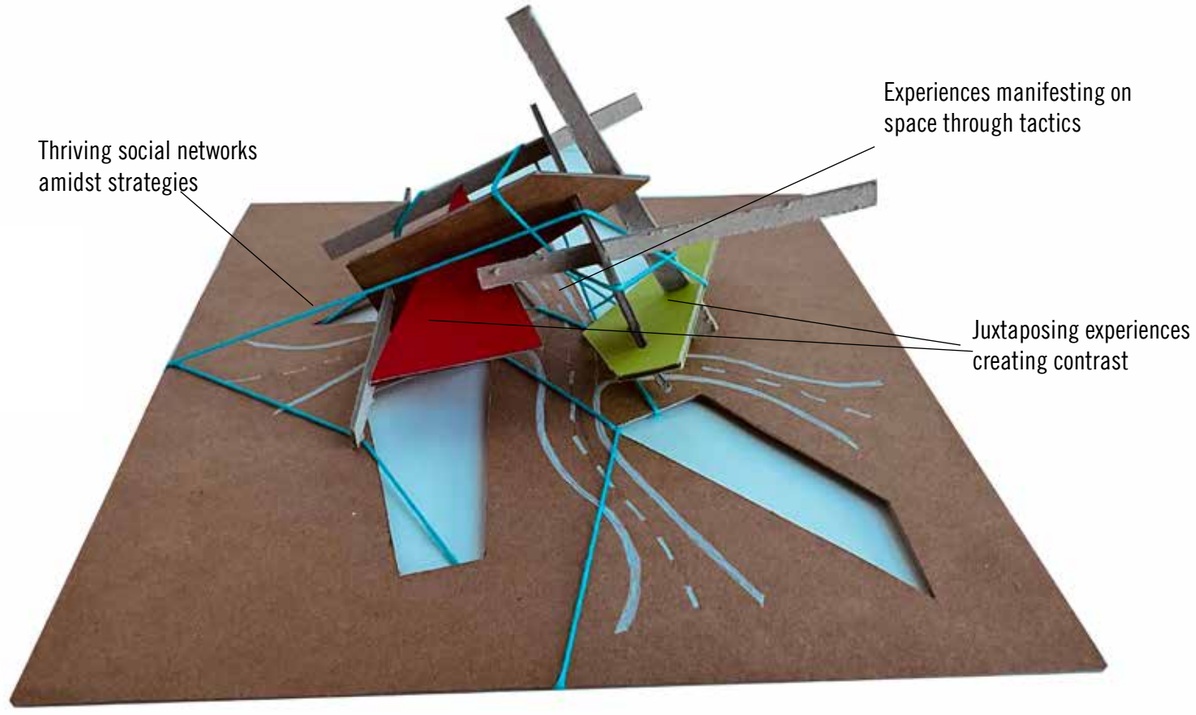


Figure 19: Artefact depicting the contract between the juxtaposing experiences (Author, 2023).

JUXTAPOSING EXPERIENCES

Thriving Economy

Social Networks

Strategies

Infrastructural Forces

Tactics

Figure 20: Street traders' everyday life in Limbe (Author, 2023).

3.2.2.1.2 The City Council Strategies

Street trade on Churchill Road and Livingstone Avenue (Figure 21) is less intense than on Market Street and James Street because of police patrol on the arterial roads to keep them clean, as they are visible and are the main access routes for taking visitors in and out of the CBD.

The leaders negotiate with the city council and the police to use the intermediary roads for trade, who give them conditions of use.

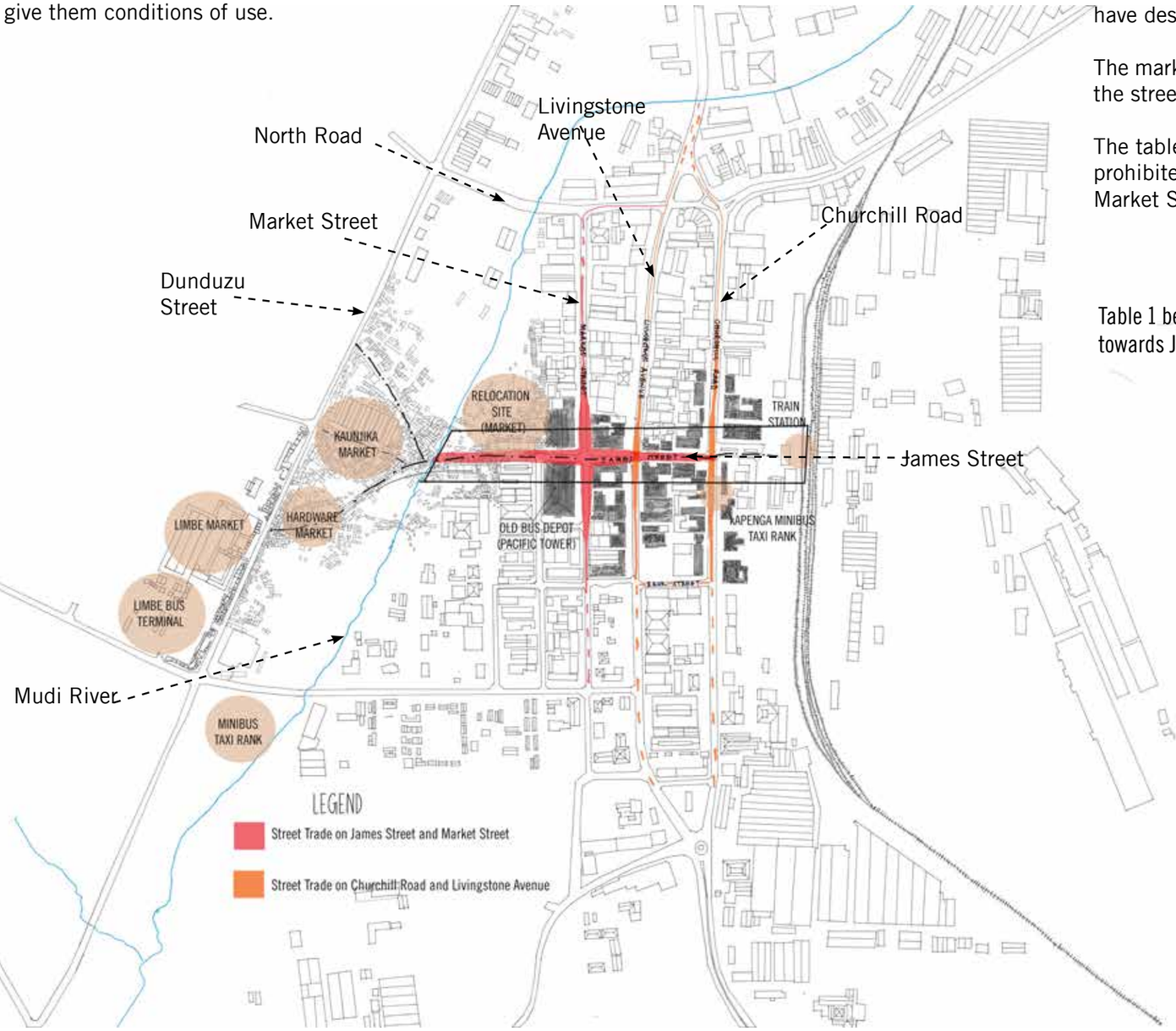


Figure 21: street trade on arterial and intermediary roads (Author, 2023).

According to Jongh (2015), the city council classifies street traders as legal or licensed, semi-legal, and illegal. They allow legal or Licensed and semi-legal street traders and tolerate some illegal street trading that qualifies as relatively valuable (Kayuni & Tambulasi, 2009), e.g., household accessories, phones, and watch repairers (Jongh, 2015). They do not tolerate street trade that qualifies as relatively invaluable (Kayuni & Tambulasi, 2009), e.g., the sale of doughnuts, fast food, or fritters, and all who have designated spaces in the flea markets (Jongh, 2015).

The markets accommodate specific types of traders. All traders who do not have space are tolerated on the streets, pending relocation (Jongh, 2015).

The table below maps the different types of street traders in Limbe, where they are allowed and prohibited, and where they are tolerated, on Livingstone Avenue, Churchill Road, James Street, and Market Street.

Table 1 below: Mapping of the City Council and police strategies. Table drawn in the orientation and hierarchy of roads towards James Street (Author, 2023).

LICENSED/ SEMI-LEGAL STREET TRADING

ILLEGAL STREET TRADING, TOLERATED & NON-TOLERATED

MARKET STREET

Airtime and mobile money agents are allowed to operate on sidewalks.

Businesses expanding their showrooms into the verandahs, projecting to the streets

Street traders selling beverages, cigarattes, plastic bags, phone accessories and electronics are tolerated, pending relocation.

Street traders selling perishables, fruits and vegetables, groundnuts, etc., are not allowed on the streets.

Second-hand clothes and shoes (Kaunjika) are not allowed on the street.

LIVINGSTONE AVENUE

Shoe polishers and mobile money agents are allowed on the street who form associations.

Shoe polishers make arrangements with shop owners to use shop verandahs, and are allowed to operate without harassment from their premises

Mobile street traders selling second-hand clothes and shoes (Kaunjika) are not allowed on the street, and are subject to forced removals by police and the city council.

No street traders selling perishables are allowed. They are mobile, and sell to moving cars and pedestrians.

The council claims they have designated spaces in the markets, therefore are not supposed to be in the streets.

CHURCHILL ROAD

Tailors are located on shop verandahs where fabric is sold.

Electronic and phone accessories, and watch repairers are allowed on this street, on verandas of shops specialised in electronics.

They make arrangements with shop owners, who keep their sewing machines, goods and products.

Shoe polishers are also allowed.

Churchill road is Heavilly patrolled by police to keep clean.

Torelates some street trading that qualifies as catering to people (household accessories, phones and watch repairers etc.)

Airtime and mobile money agents are allowed to operate on sidewalks.

Perishables (fruits, fish, vegetables, tomatoes, etc.), Kaunjika traders, and mobile phone accessories traders (who lay their merchandise on the ground are not allowed)

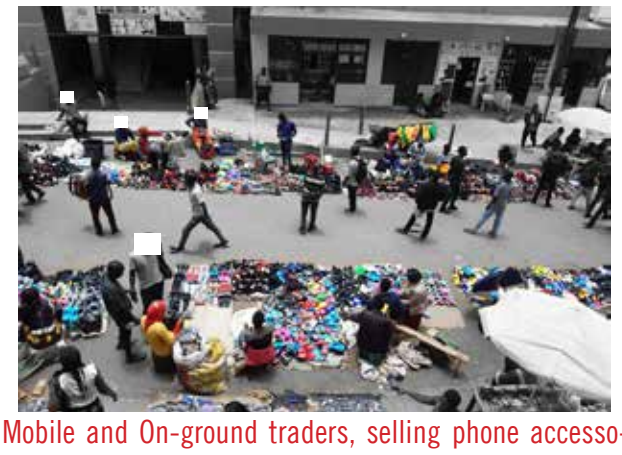
JAMES STREET

Businesses expanding their showrooms into the verandahs, projecting to the streets.

Tailors and shoe polishers operating from shop verandahs are allowed.

They also make arrangements with shop-owners

Mobile money and airtime agents are allowed



Mobile and On-ground traders, selling phone accessories, electronics, cigarrates, plastic bags, umbrellas, shoes, beverages, gloceries (soap, sugar, salt, cooking oil), plastic basins and containers, are tolerated, pending relocation. City Council observes that that they do not have designated spaces in the markets to operate.

James street is an access spine to the main market, and the Kaunjika market. Not as heavily patrolled as the major roads.

3.2.2.1.3 Street Traders' Tactics

The leaders negotiate for space in the street because there is not enough space in the markets to accommodate traders. They are mandated to leave room for cars and pedestrians to pass. However, traders commandeer the roads when blocked by parked vehicles or when they want to create more space, leaving less room for them. In some cases, they must move constantly when big cars pass.

Figures 22: Street traders' tactical response to road use (Author, 2023).

Mobile street traders carry their goods by hand or use lightweight frames or cardboard boxes to display commodities. Sometimes they reveal a few of them for easy running away and hiding from surveillance. These tactics allow them to trade even on arterial roads.

Figure 23: Mobile street traders carrying merchandise by hand (Author, 2023).

Figure 24: Street traders using cardboard boxes (left) and lightweight frames (right) for display (Author, 2023).

Figure: 25: James Street, the access spine (Author, 2023).

3.2.2.1.4 James Street Character

James Street has a higher intensity of street traders than other intermediary roads mainly due to being an access spine and housing wholesale shops. Another reason for this is the old bus depot site and the relocation site.

It intersects the two arterial roads directly from the train station and Kapenga minibus taxi rank, connecting to the Kaunjika market, the Limbe Market, and Limbe Bus Terminal (Figures 25). Figure 26 shows a mapping model depicting my walk on James Street, Market Street, and the two arterial roads, with views in the direction of movement and the intensity of street trade towards the intersections.

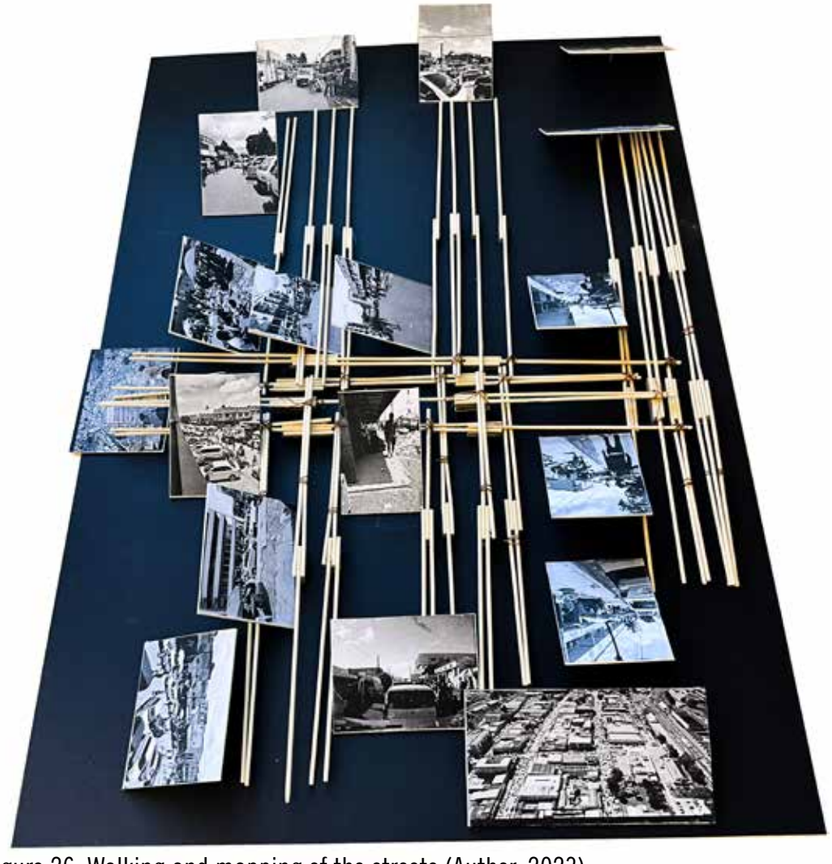


Figure 26: Walking and mapping of the streets (Author, 2023).

Figure 27: James Street north (top) and south (bottom) elevations. Scale 1: 100 (Author, 2023).

James Street has a single to a four-storey mixture of repurposed colonial and relatively modern buildings that make up the undulating character of the built fabric and the static landscape of the CBD. The static also includes the frontage of the buildings, the transitional concrete paved street edges, and the roads. All the roads are one-way and have on-street parking. The buildings on this street are specialised and non-specialised retail and wholesale shops, banks, and offices (Figure 29).

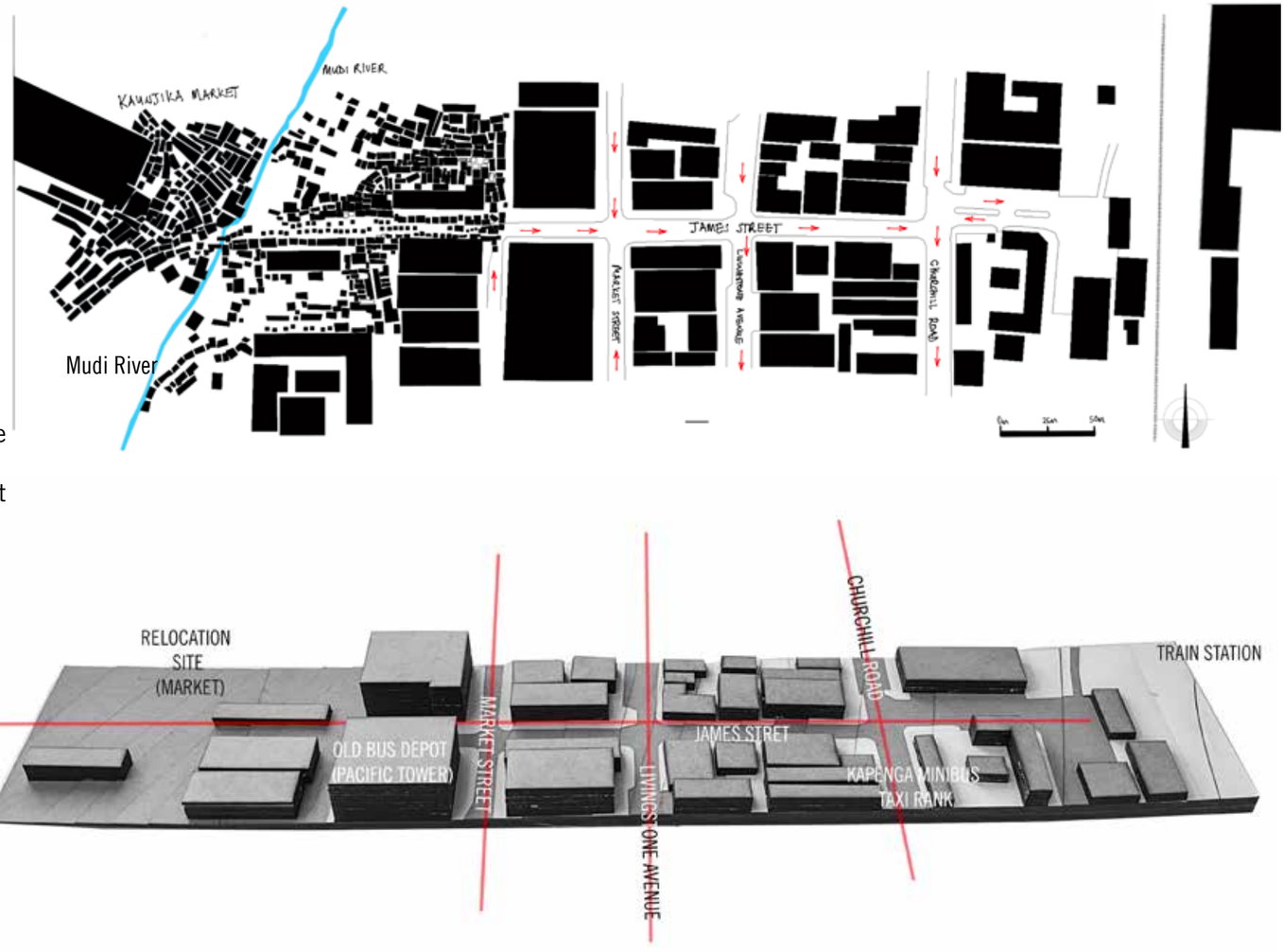


Figure 28: A nollie map of James Street (top) and its contextual model (bottom)t (Author, 2023).

Figure 29: Street trade space appropriation in relation to economic activities in the existing buildings (Author, 2023). Drawing style adopted from Charman, A. et al. (2020).

3.2.3 Space-placemaking

3.2.3.1 Space Appropriation on James Street

The pavements, building verandas, parking lots, and roads house the kinetic elements of the CBD. The Pavements are pedestrian walkways and trading spaces for mobile and on-ground street traders, mobile money agents, and shoe polishers. Most Tailors and shoe polishers occupy the verandas. Street traders who carry items by hand, on-ground traders, leverage on impulse buying and vehicular traffic while commandeering on-street parking, facing the road, from the Churchill Road junction, to where a dirt road starts, the area labelled D (Figure 29), and to Mudi River, making pedestrians negotiate around them, and vehicles to park elsewhere, except for the area labelled E, where a rank for cars that transport goods is situated. Here traders pave the way but set up in front, narrowing the road further.

Between the latter and area labelled D, moving vehicles tend to slow down negotiating pedestrians and street traders, creating a character that blurs the boundaries in the street's morphology.

Thandala and stall operators flood the whole street on the dirt road section and have established themselves in unbuilt spaces down to Mudi River, connecting the area with the Kaunjika market.

Walking on this street, one experiences music, vehicles hooting, pre-recorded descriptions of items and calls to buy, and rubbing shoulders with fellow pedestrians and traders.

The sections (Figure 29 for section lines) and aerial view perspectives below demonstrate how different kinetic elements on the street negotiate among themselves, and the static, and how the ephemeral aspect becomes important on this street (Figures 30 to 32).

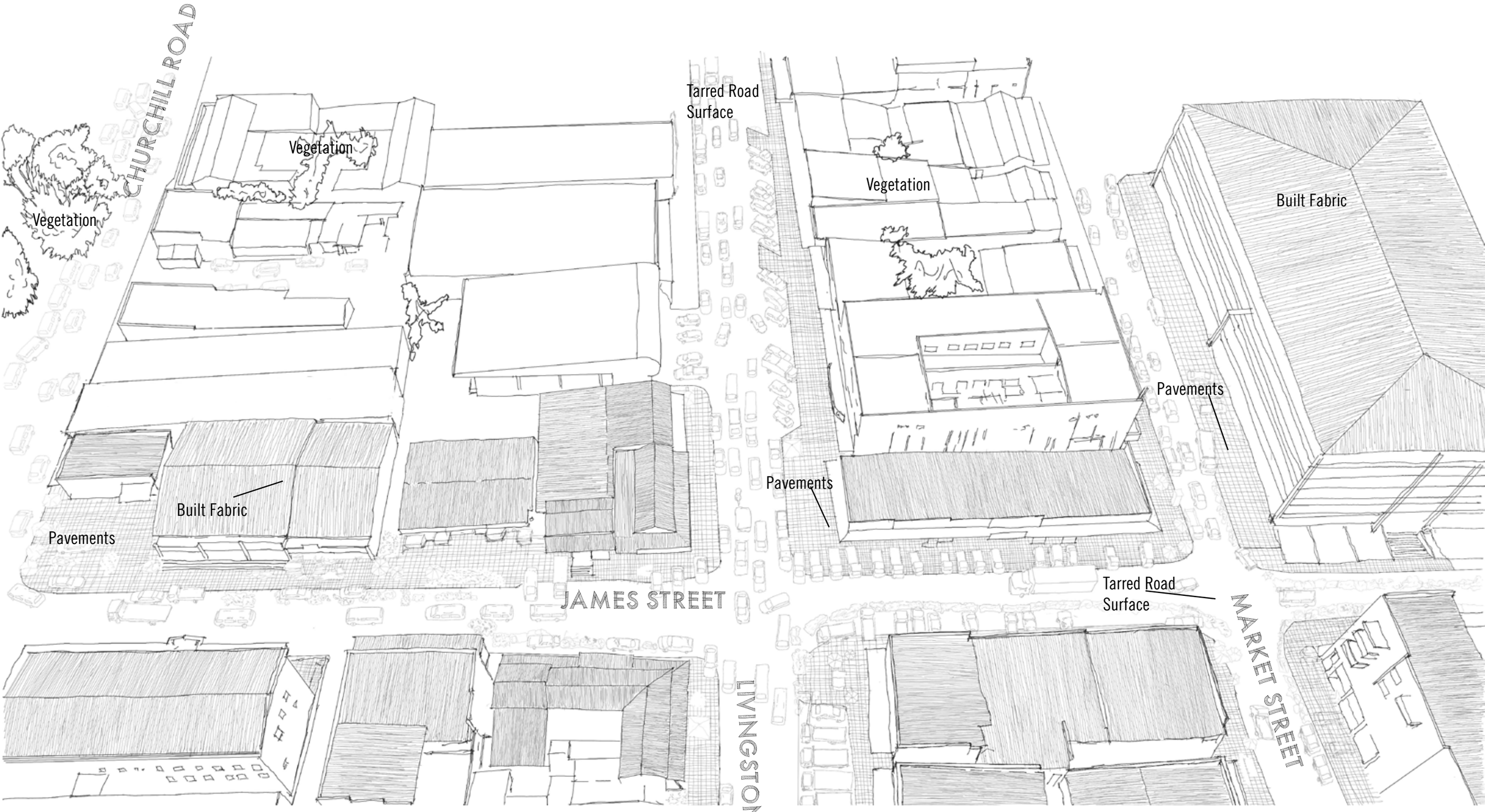


Figure 30: The static nature of James Street (Author, 2023).

Figure 31: The Kinetic Nature of James Street (Author, 2023).

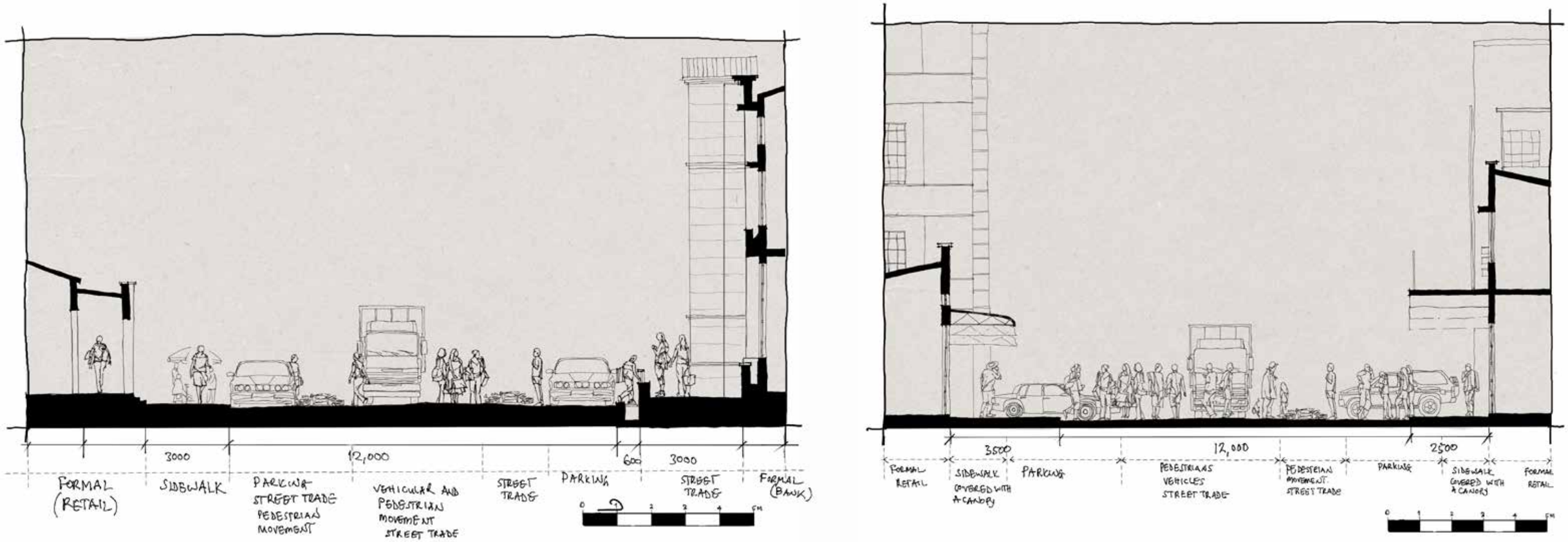


Figure 32: Section through Centenary Bank (left), and through area labelled E (right) on James Street (Author, 2023).

Below is a map depicting a journey on James Street and the evident space appropriations.

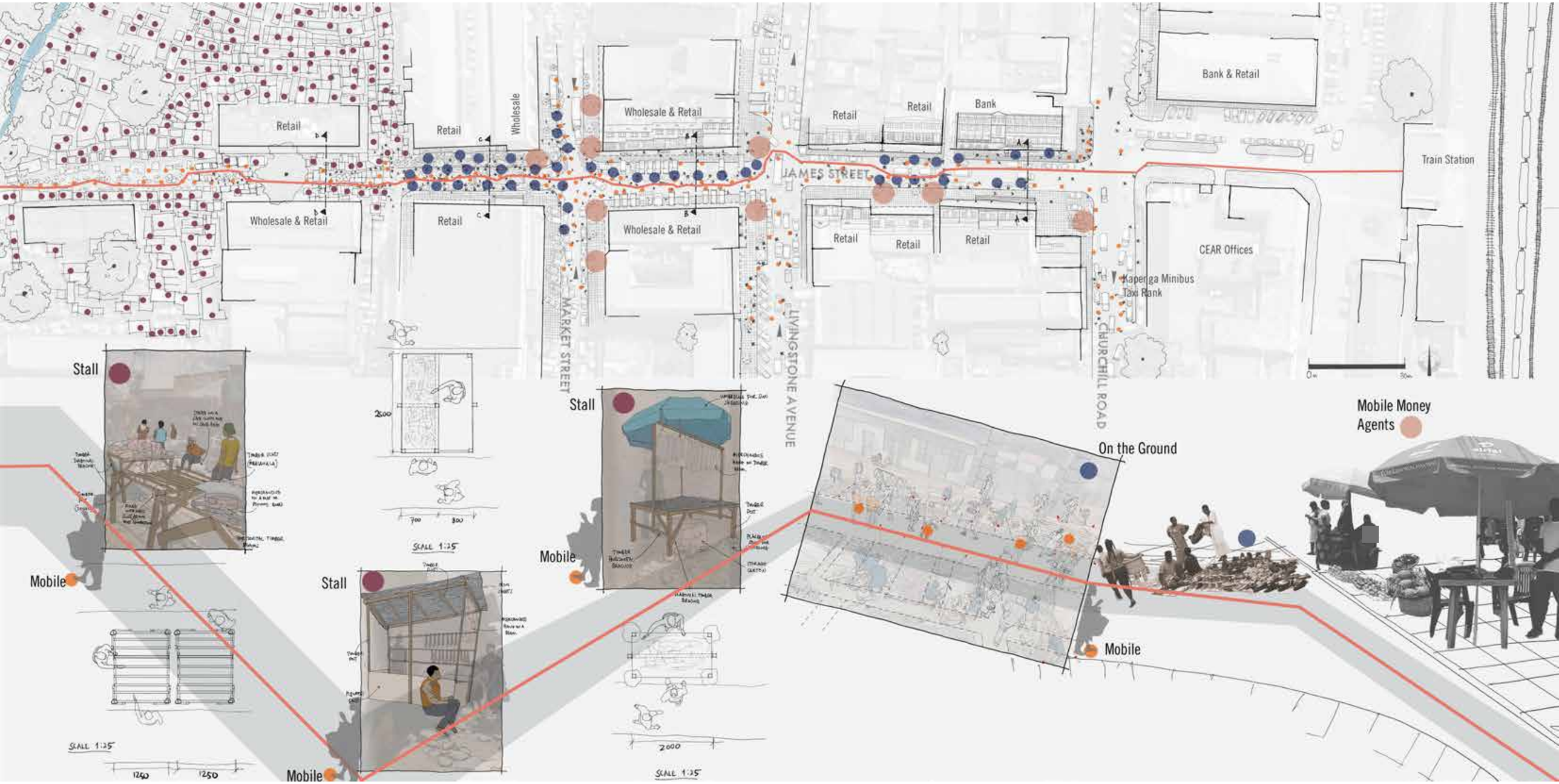


Figure 33: Map depicting a journey on James Street (Author, 2023).

3.2.3.2 Application of Lefebvre's Spatial Triad

The observation above depicts the relationality of space, such that one event at any moment in the street has aspects of the entire CBD. Consequently, this affects how people interact with space through spatial practices and personalisations.

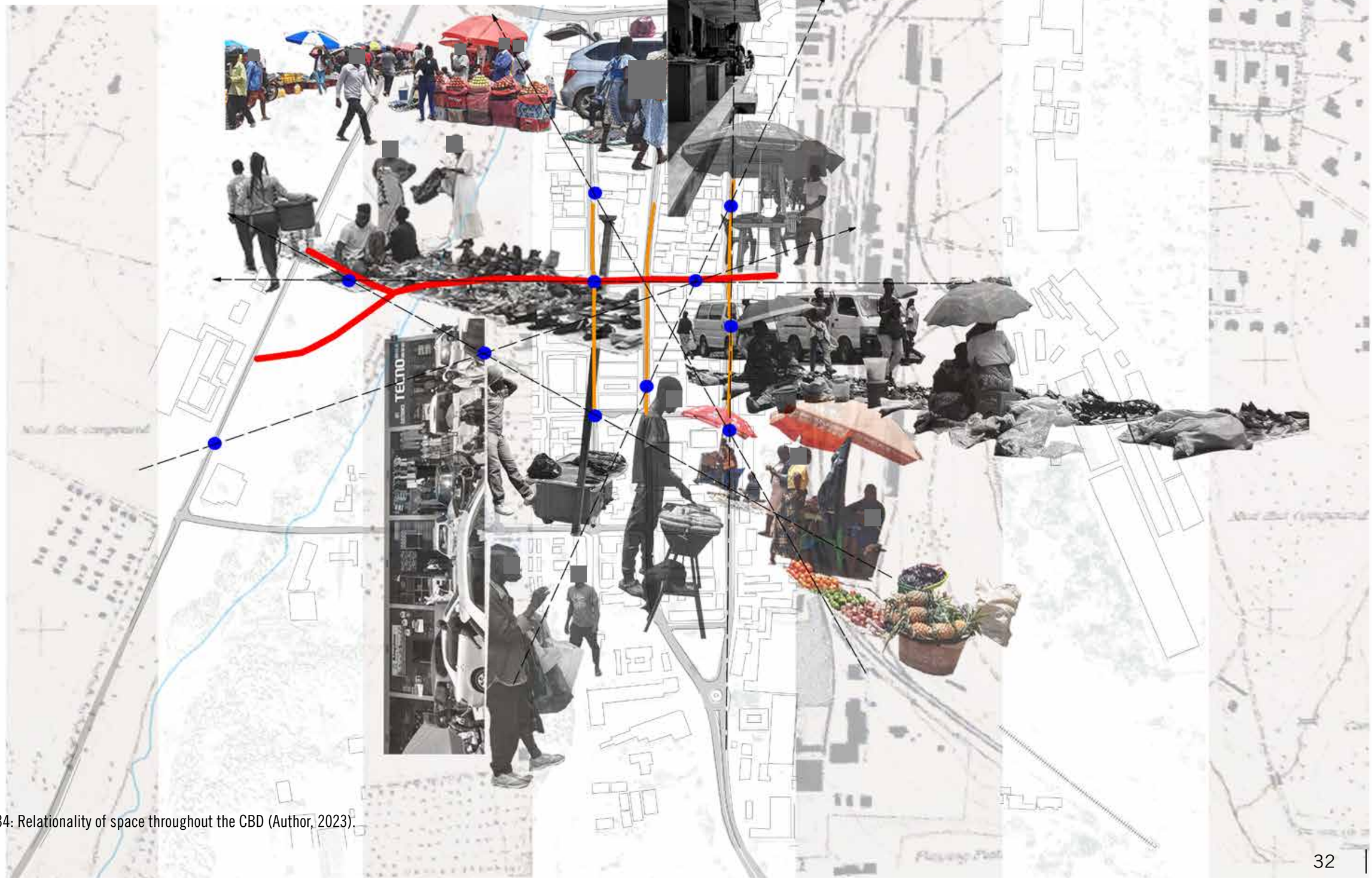


Figure 34: Relationality of space throughout the CBD (Author, 2023).

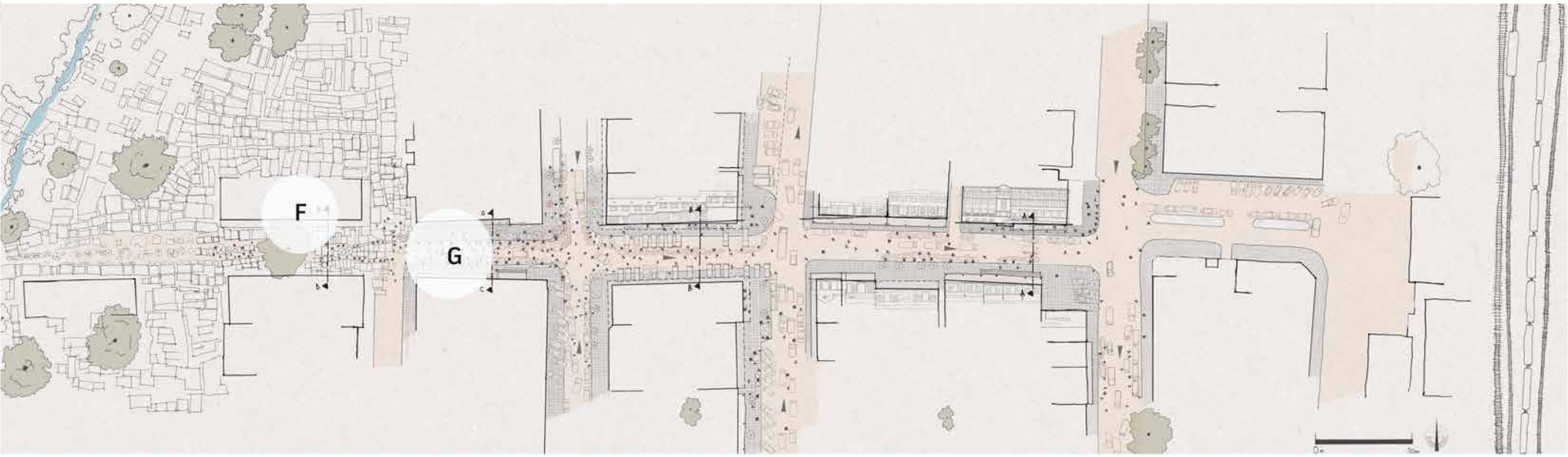


Figure 35: Areas used to apply Lefebvre's (1991) conceptual triad (Author, 2023).

The following diagrams depict how traders and pedestrians interact with space in areas F and G (Figure 35).

The presentation is in the order of conceived space, depicting the streets' design representation, and perceived space, showing the factored accommodation or the spatial relationships, and the lived space, that is, the interaction, appropriation, and personalisation of space to suit the spatial dynamics and relationships.

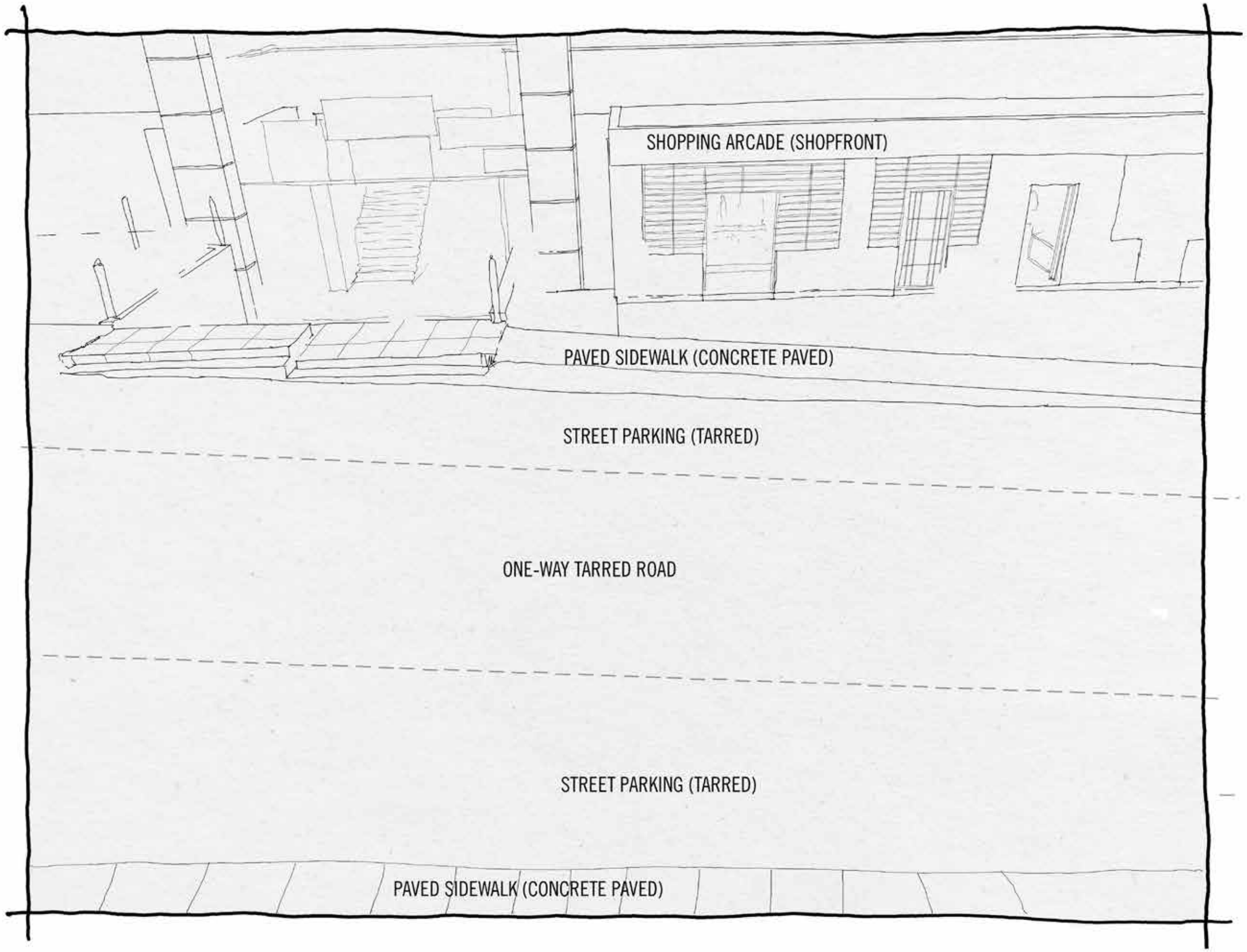


Figure 36: Conceived space on street interface labelled G (Author, 2023).

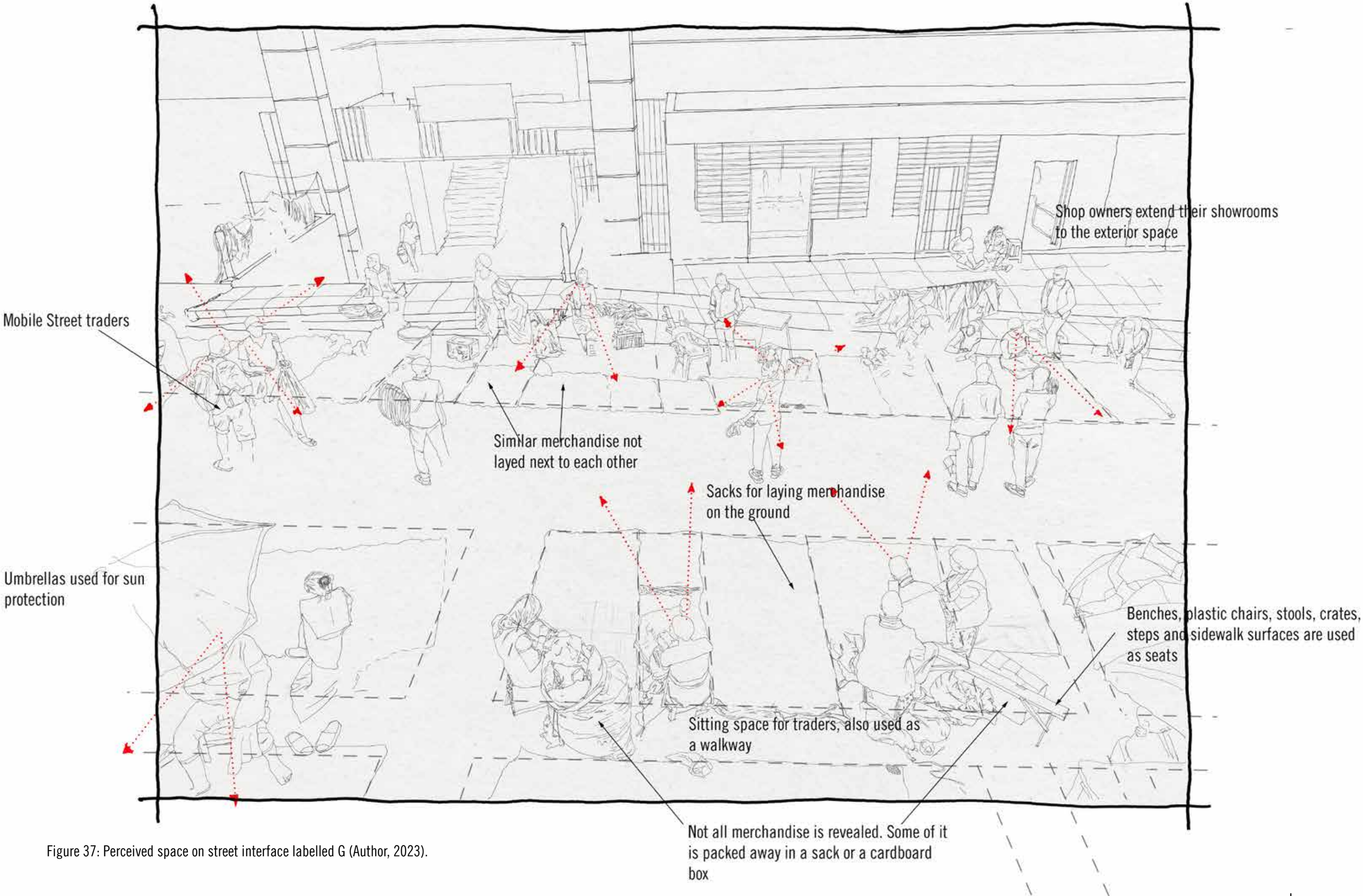


Figure 37: Perceived space on street interface labelled G (Author, 2023).

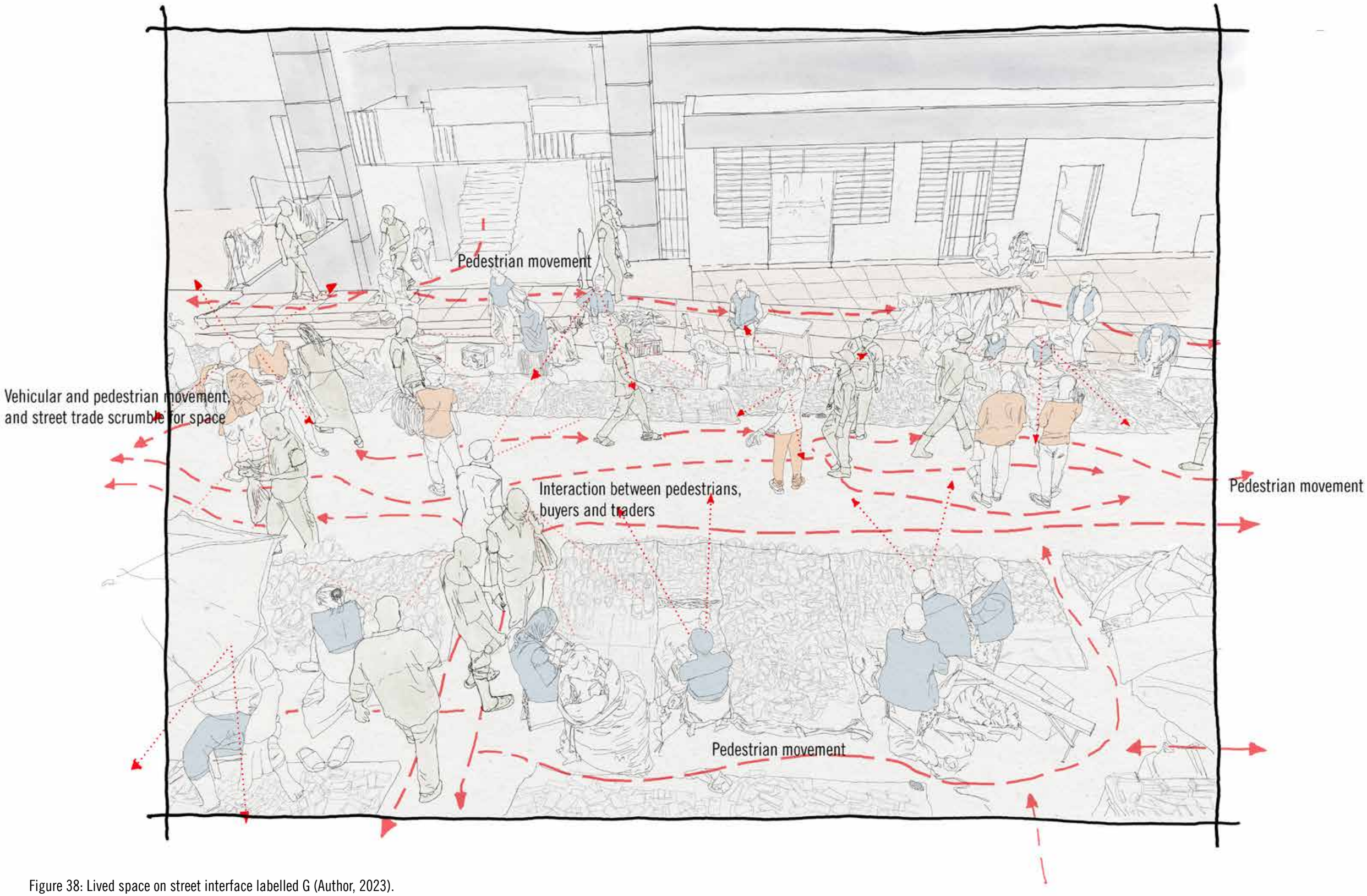


Figure 38: Lived space on street interface labelled G (Author, 2023).

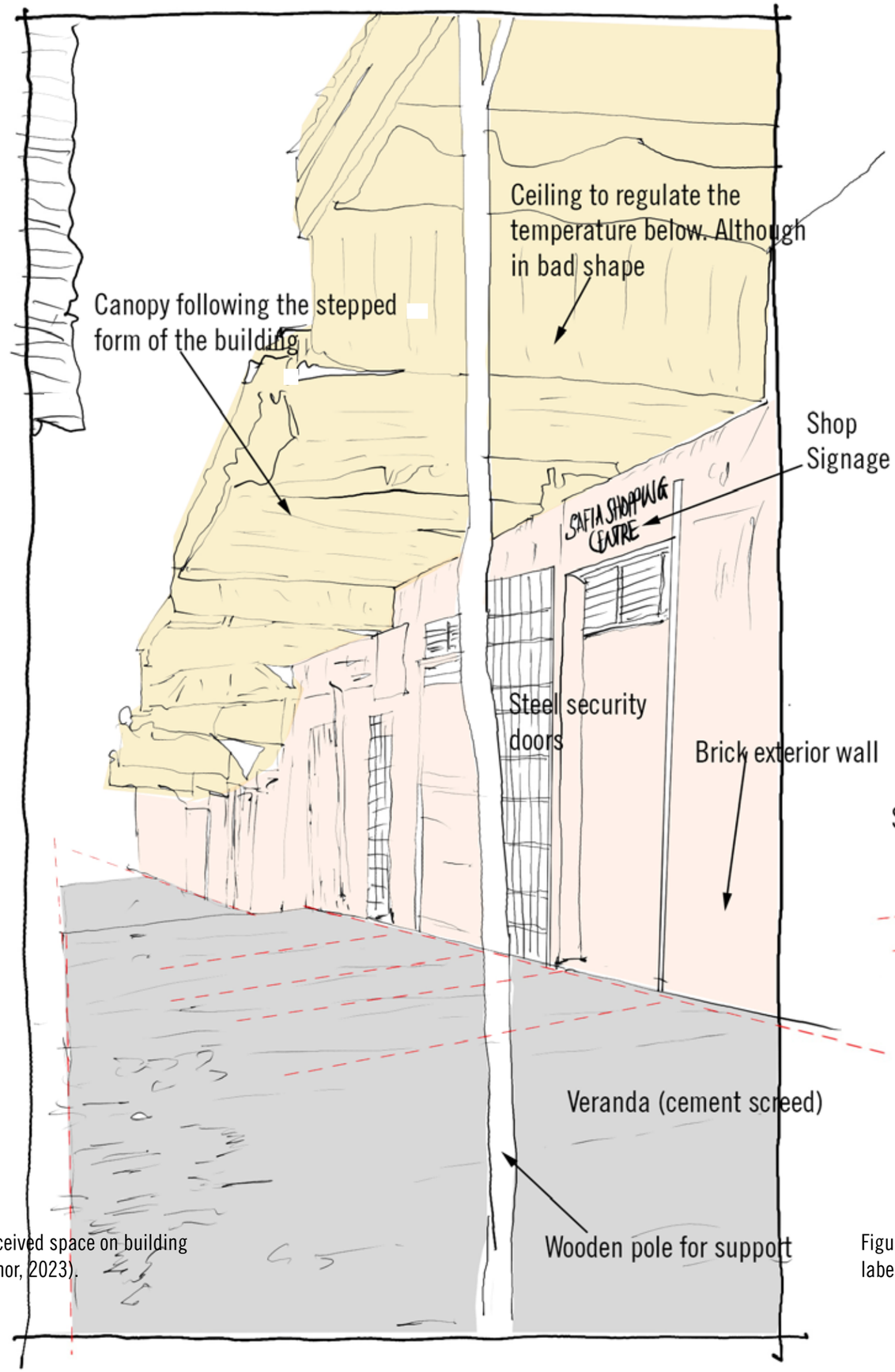


Figure 39: Conceived space on building labelled F (Author, 2023).

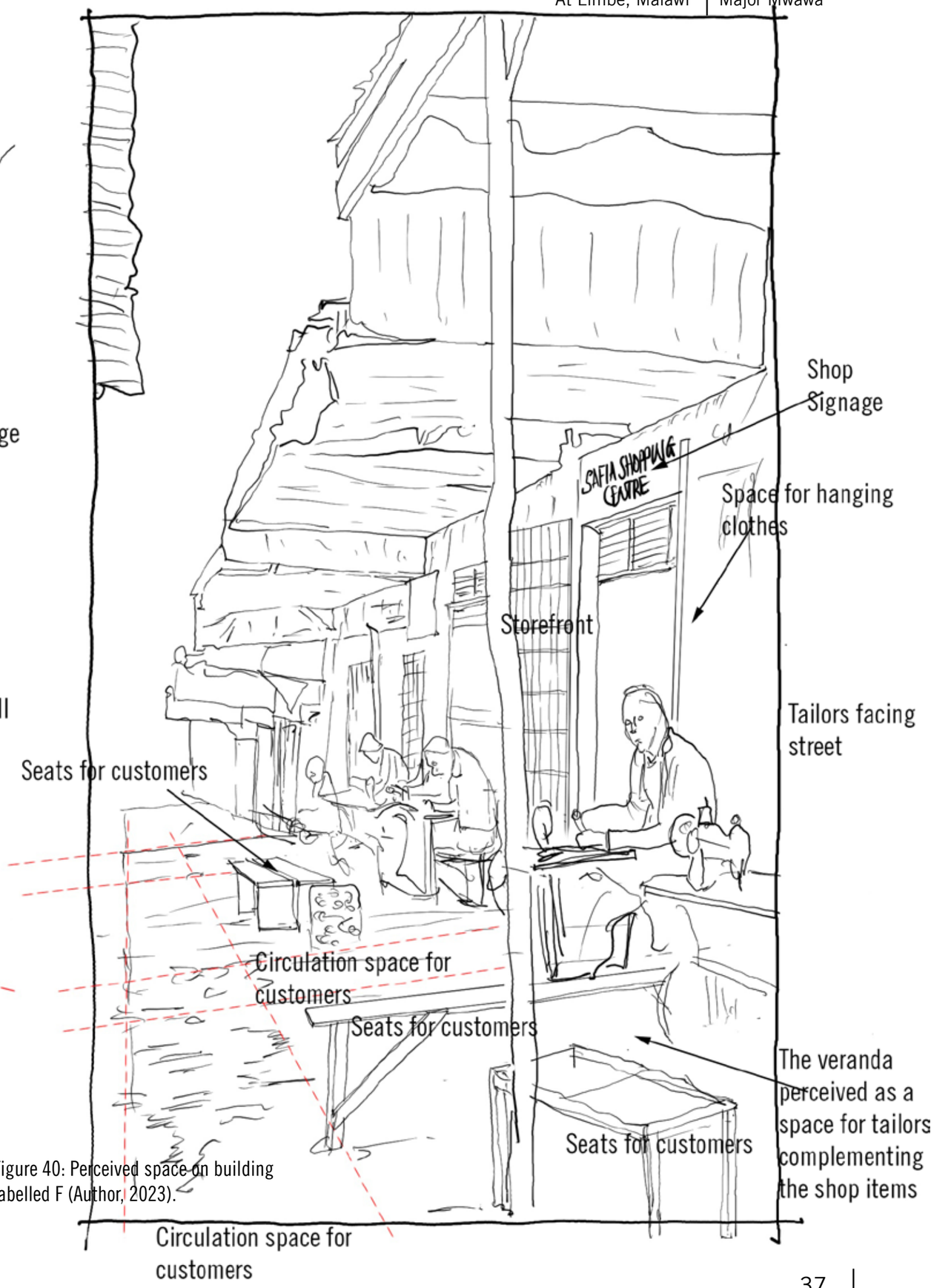


Figure 40: Perceived space on building labelled F (Author, 2023).

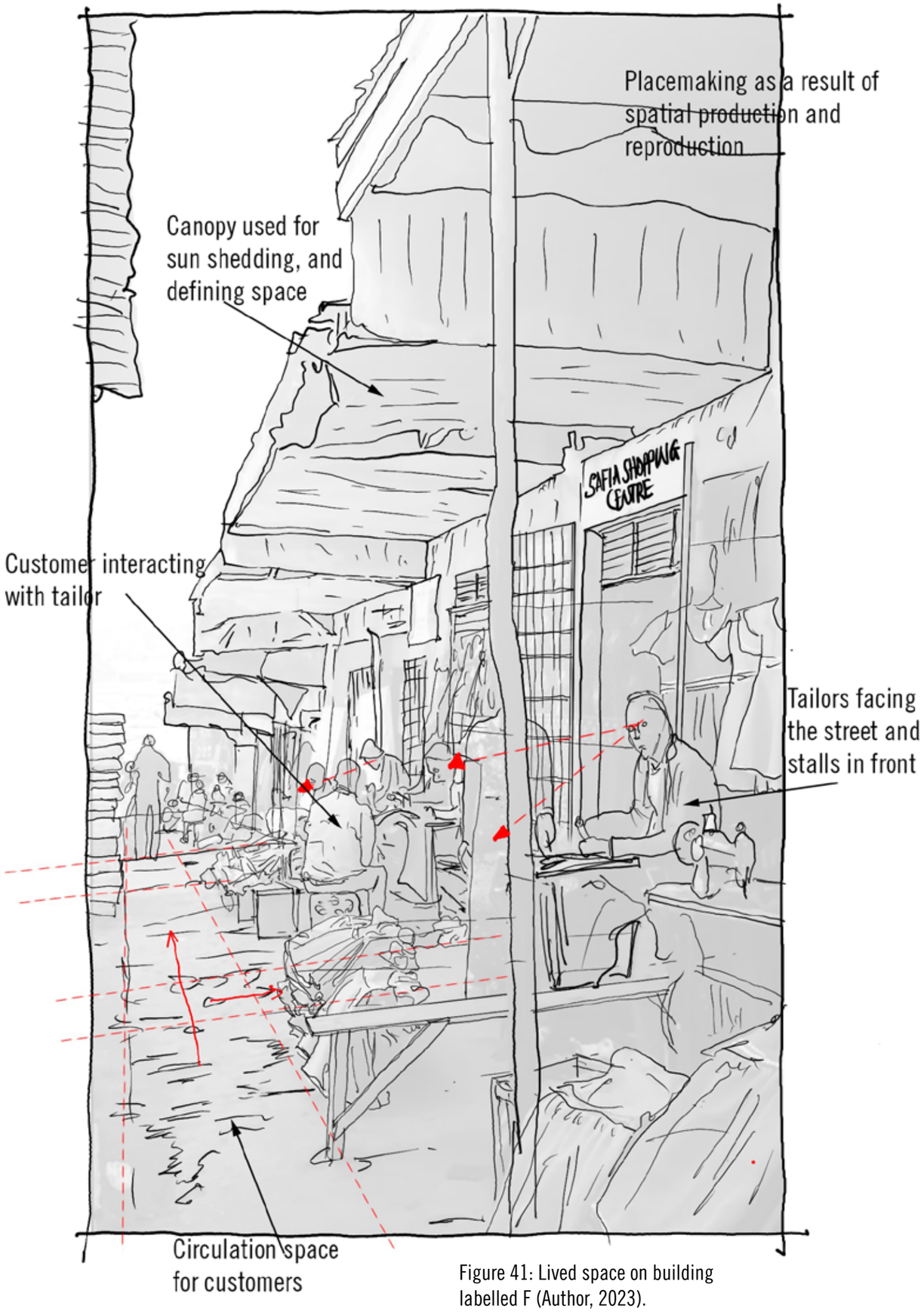


Figure 41: Lived space on building labelled F (Author, 2023).

3.2.3.3 Placemaking

These appropriations and personalisation of spaces are produced repeatedly over time, and in turn, they reinforce the concept of place. They give a perceived meaning of place that defines the character and relationality of space.

3.2.4 Site Selection

This section focuses on the proposed site B (Figure 42), on James Street, foregrounding the dynamics of the site; the spatial development of the site, the sectors present today, storage, circulation, natural elements, security issues, infrastructure and waste management, the street traders' needs, and the stalls' materiality and technology.

The traders treat sites B and C as one continuous market with different sectors and similar dynamics. These dynamics contribute to placemaking and will be used to design a market that integrates the traders in the urban space.

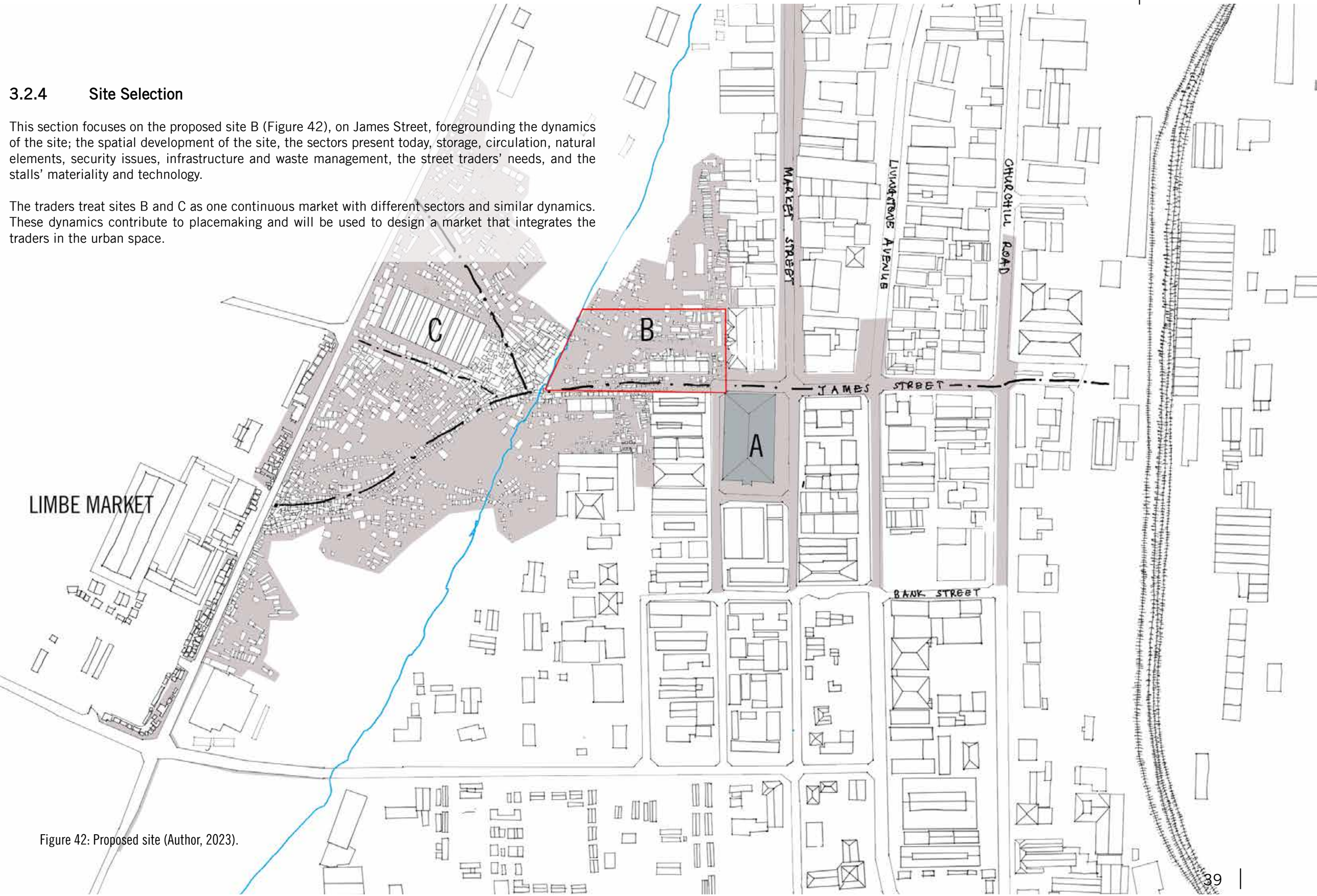


Figure 42: Proposed site (Author, 2023).

3.2.4.1 Spatial Development

Below is the spatial development of the site from 2002 to 2010 after relocation from the old bus depot to the site, to how it is in 2023.

Figure 43: Spatial development of the proposed site (Author, 2023).

3.2.4.2 Sectors and Storage

Trading happens in stalls, on the ground, and in shipping containers. The street has trade in electronics, plastics, and clothes, including Kaunjika, shoes, and food.

The site has a single-storey textile building that accommodates tailors on its veranda (Figures 45) with stalls and containers all around, which house trade in agricultural produce, hardware and maize processing items, restaurants (called 'chiyimilire'), and fresh food.

Programme	Approximate area (sqm)
Restaurants	142
Mixed trade	78
Storage	187
Hardware & Agri-business accessories	449
Agri-business	174
Clothing & Shoes	316
Fresh Food	115
Ablutions	189
Liqour stalls	53
Domestic animals	60

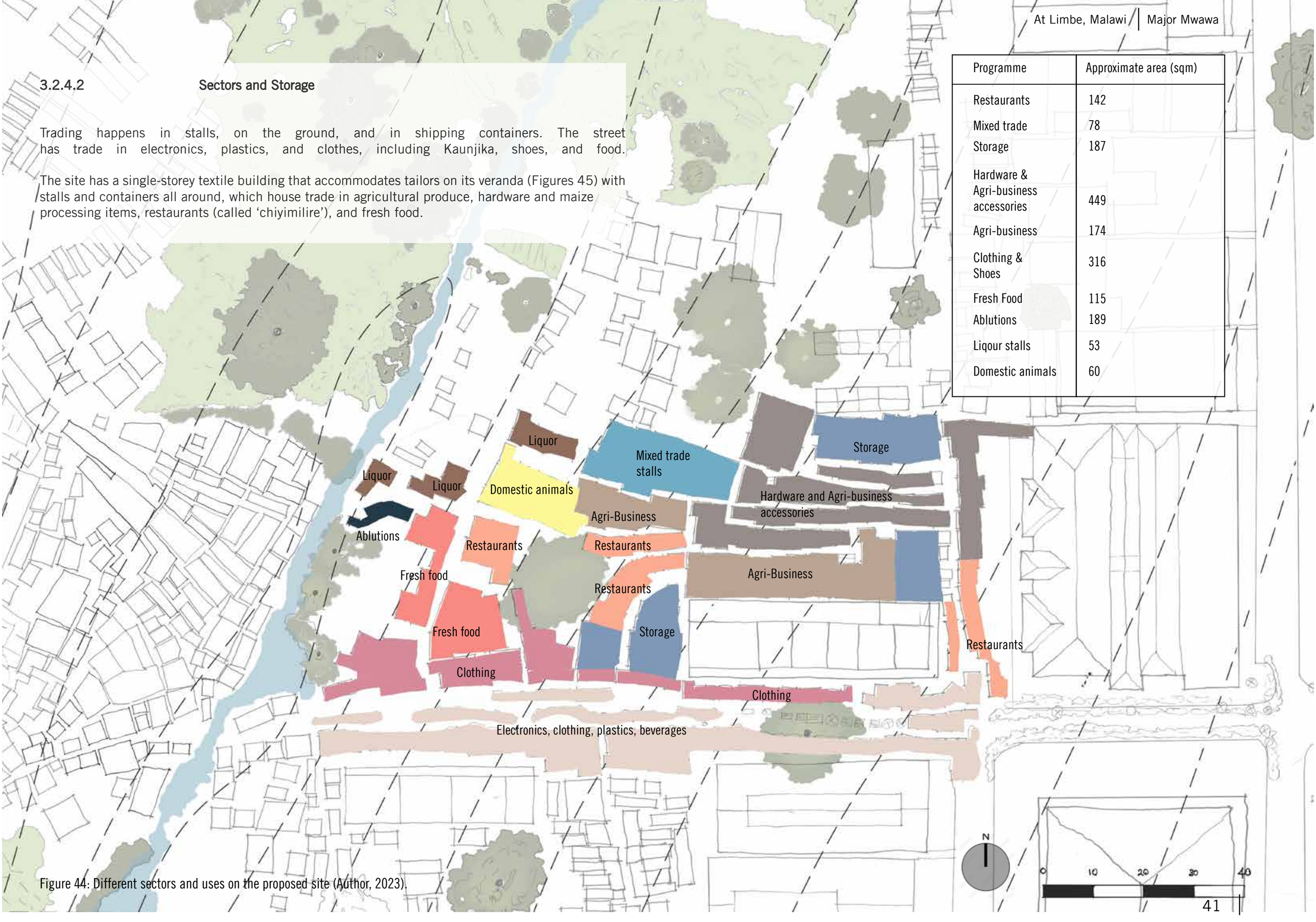


Figure 44: Different sectors and uses on the proposed site (Author, 2023).

Figure 45: Tailors on the veranda of the textile building (Author, 2023).

The shipping containers can also house both functions (Figure 46). Figure 47 shows the location of a storage warehouse and containers in the area, for which traders pay K300 rentals. As such, traders claim they have enough storage in the area.

Figure 46: Shipping container used as a stall and for storage.

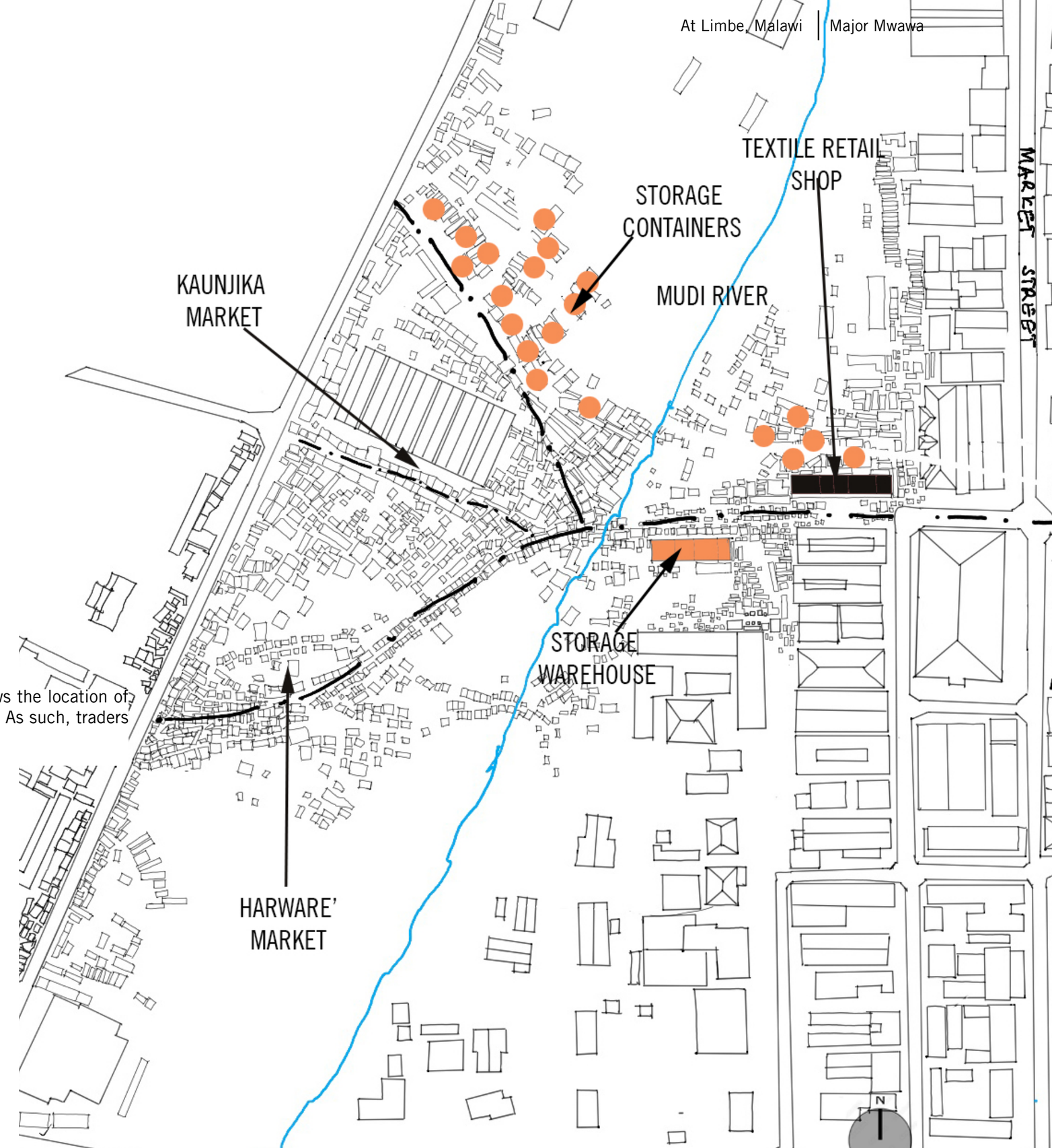
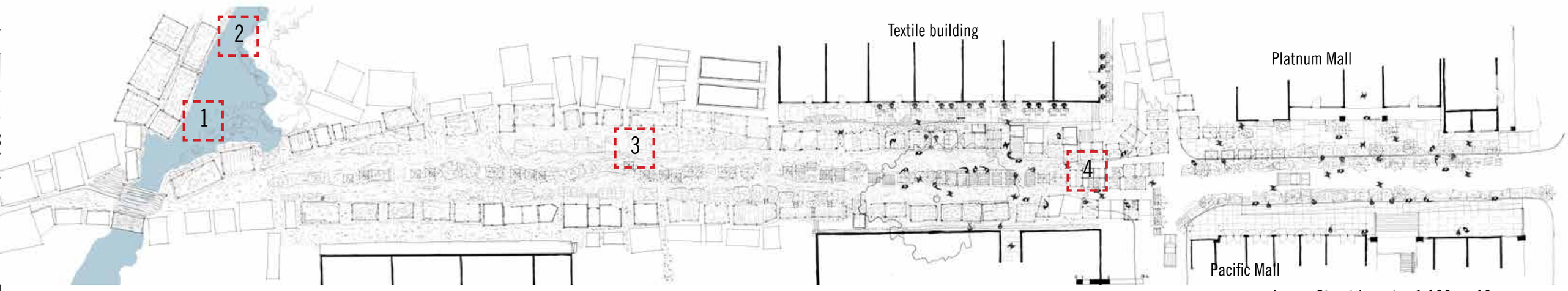


Figure 47: Location of a storage warehouse and containers (Author, 2023).

3.2.4.3 Circulation, Natural Elements and Ground Conditions

This part of James Street allows pedestrians and street traders only. Pedestrians walk between trading spaces on two distinct footpaths that direct traffic flows. It becomes a dirt-road characterised by small gullies formed by surface runoff, with exposed stones evident throughout the site. Some Traders have erected sandbags to protect their stalls from running water and to provide their trading spaces with a levelled base.

During heavy rains, the river floods, forcing traders operating on the riverbank to close their businesses or move elsewhere until the situation settles.



James Street layout. 1:100 on A0

1

2

A timber bridge across Mudi River.

3

Ground conditions

4

Footpath between stalls.

Figure 48: The Mudi River and dirt road section dynamics (Author, 2023).

3.2.4.4 Security

Criminal activities are apparent during the night. As a result, there is a 5:30 pm curfew, after which traders must leave the market for better surveillance of the area.

3.2.4.5 Infrastructure and Waste management

Sewage problems are apparent on the site, with a few private ablutions. This development, coupled with the river's use for waste disposal due to a lack of effective waste management systems, has led to its pollution. In addition, there is no water infrastructure and no shaded space for some traders, who complained about damage to their commodities due to direct sunlight and rain.

Traders, referring to the Kaunjika sheds, were also concerned about not being involved in the construction and design of their facilities, reporting that the infrastructure does not cater to their needs.

3.2.4.6 Participation

Traders expressed the need to be involved in all decision-making processes directly affecting them and the need for a platform that empowers them and facilitates this civic engagement. In this case, they need meeting spaces for voicing their concerns and workshop initiatives.

3.2.4.7 Stalls: Materiality and Technology

Below is a table showing different stalls found in the area, with a description of their materiality and technology.

Table 2 Below: Types of Stalls on-site. Materiality and Techne (Author, 2023).

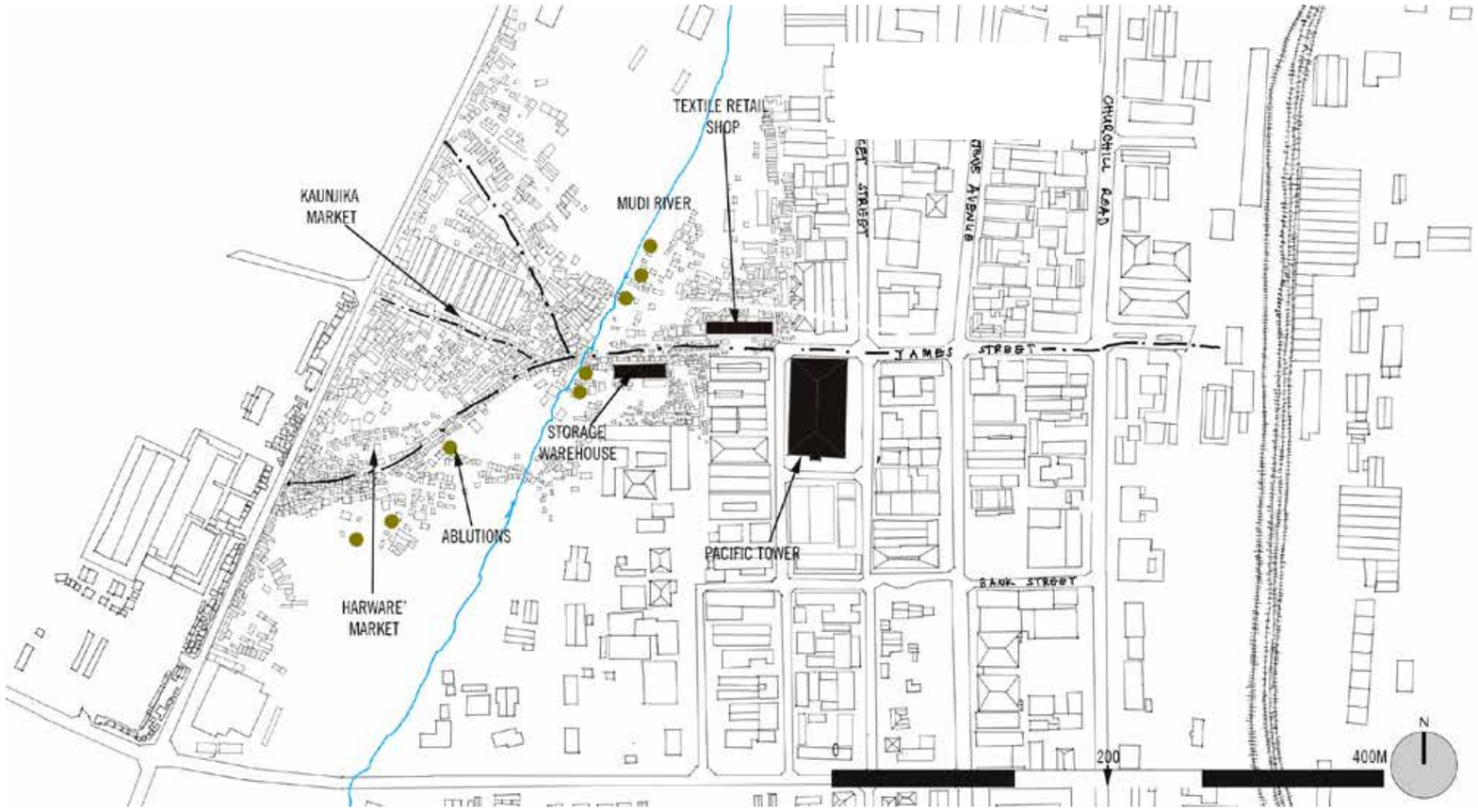
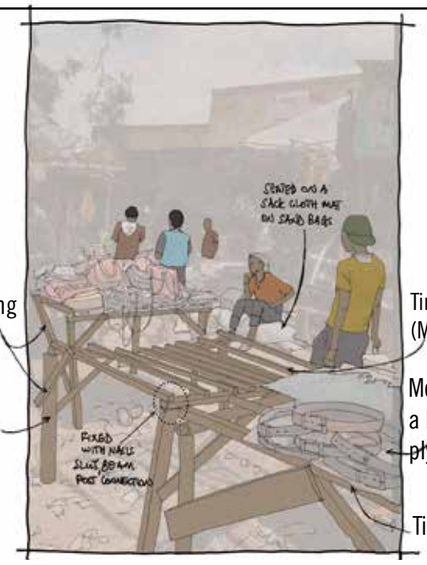
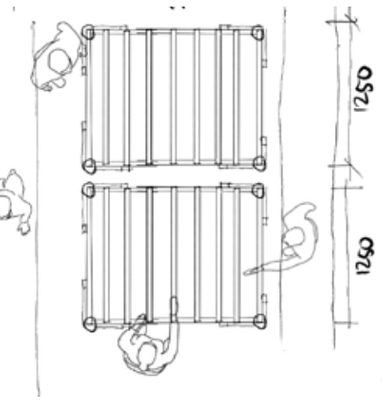
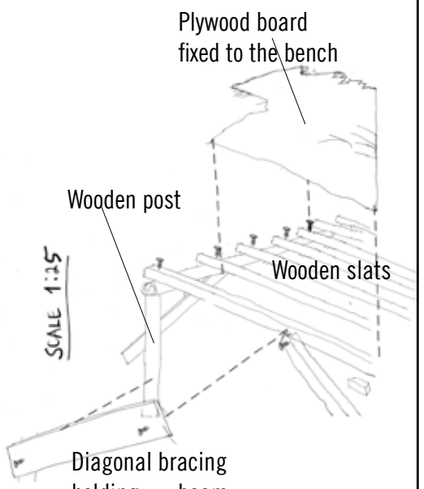
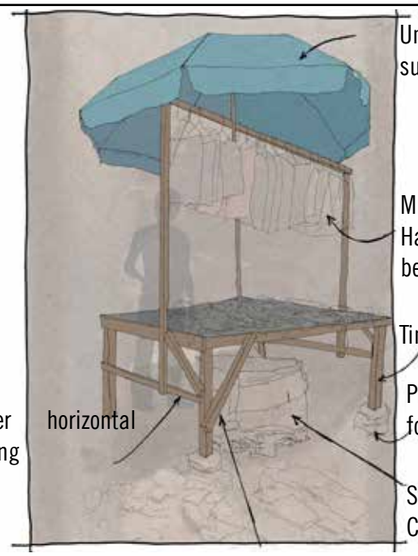
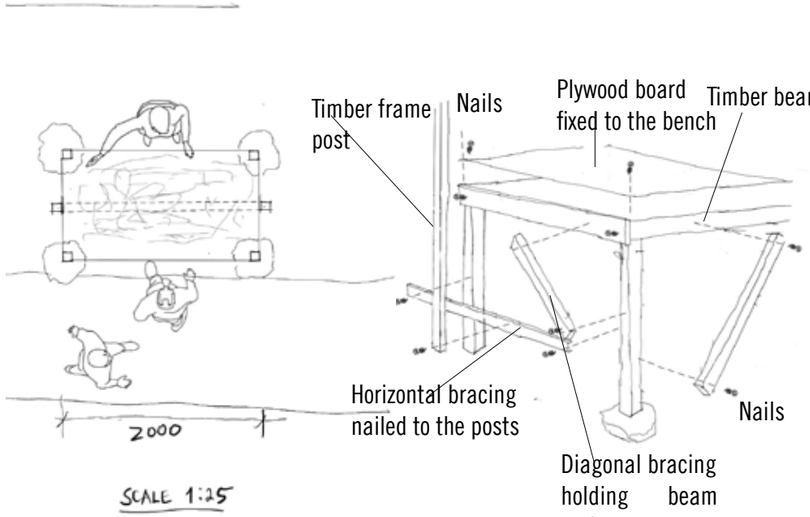
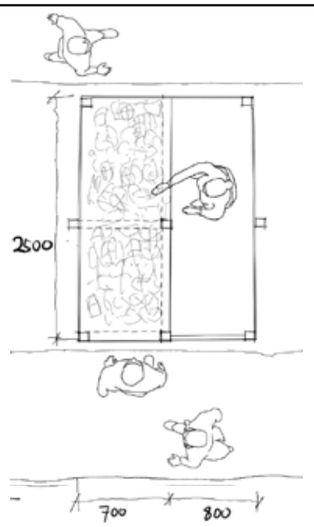
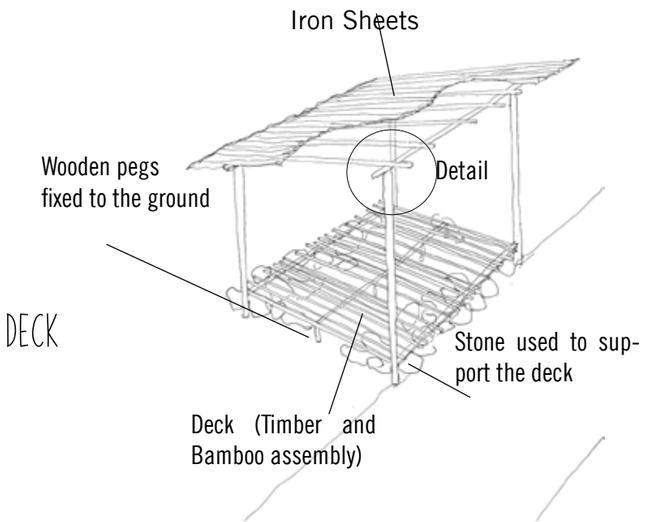


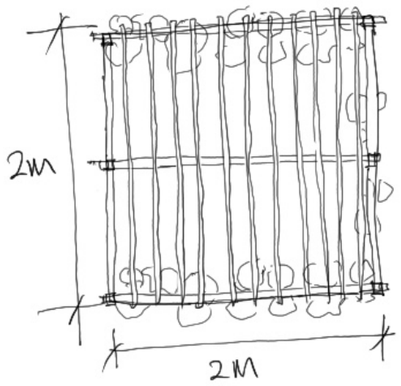
Figure 49: Ablutions available in the area (Author, 2023).

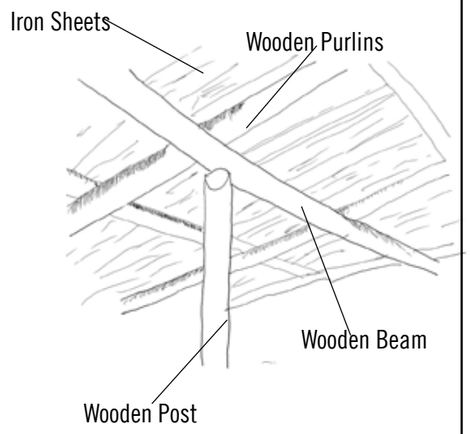
TYPOLOGY	APPLICATION IN DETAIL	DESCRIPTION
THANDALA STALL  	   	Thandala stalls are made of wooden posts (fixed to the ground) and beams with timber slats. Other assemblies are made of timber. Braces are used to stabilise the structure. Plywood boards or cardboards are laid on top of the slats where commodities are displayed. The stalls are left on the street at night. Movable benches are removed and stored away at night.
OPEN BENCH  	  	These stalls are made of timber posts, beams, braces and slats with a playwood baord on top. An umbrella is used for sun shedding, and a timber frame is introduced to hang different commodities. Since the ground slopes and is uneven, stones are used to level the benches. The underside of the bench is used to keep for storage
ENCLOSED BENCH  	  	This typology mixes the above typologies, with ideas of openess, enclosure and protection. The shell is made of a timber post and beam assembly, with purlins and iron sheets. Horizontal braces are introduced, and are used to display commodities. A bench is created inside, approximately 500mm from the ground. The trader can sit on a chair inside, and attend to foot traffic.

TYPOLOGY



APPLICATION IN DETAIL





DESCRIPTION

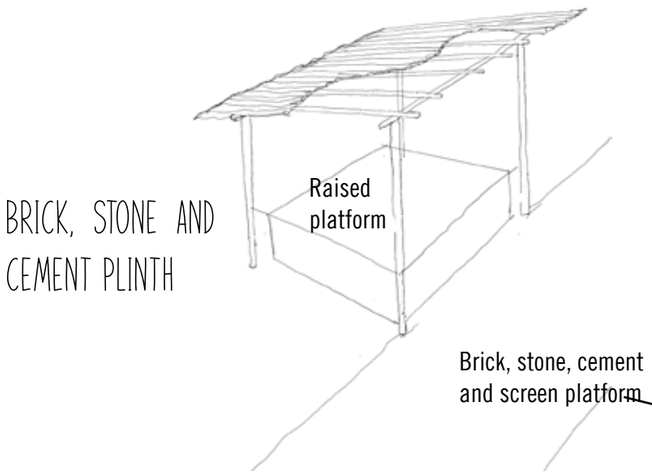
Wooden post and column assembly, with iron sheets on purlins.

A platform where the goods are displayed, and where traders sit, is constructed as a wooden deck supported by posts, stones and pegs, that are fixed to the ground.

The perimeter and the central members of the deck are made of timber. Slats are made of bamboo.

The deck is covered with plywood or cardboards and a sack cloth on top.

It is raised about 300mm from the ground. Customers can walk on it as they browse goods.

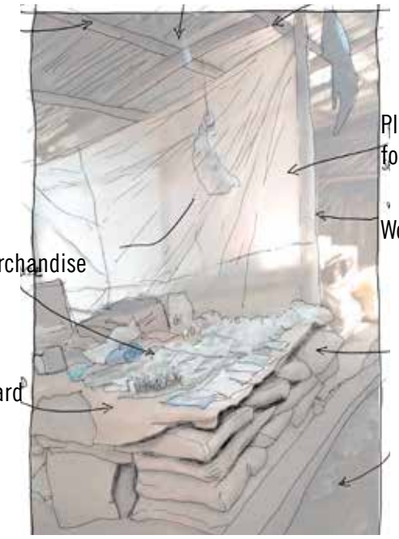


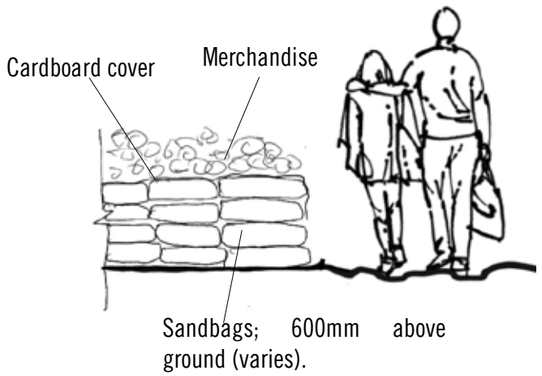
Same as above only there is a plinth raised about 600mm above ground, made of bricks, cement and stones, finished with screed.

Customers browse commodities while standing on footpath.

In some applications, the roof covering is made of cheaper materials like plastic membranes.

These can also be used as a screens seperating stalls.





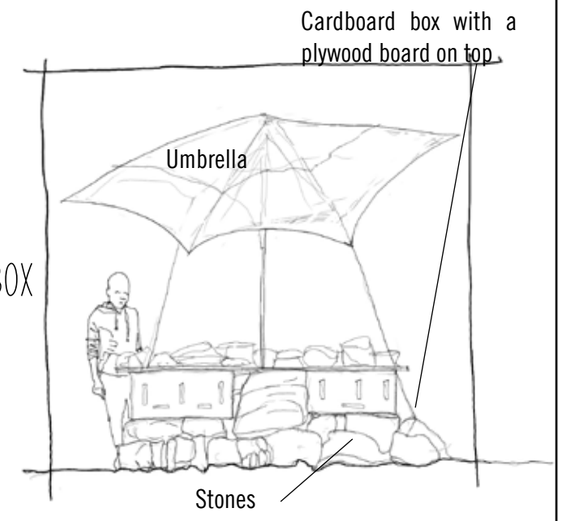
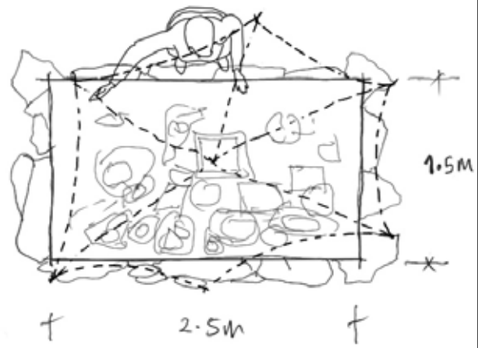
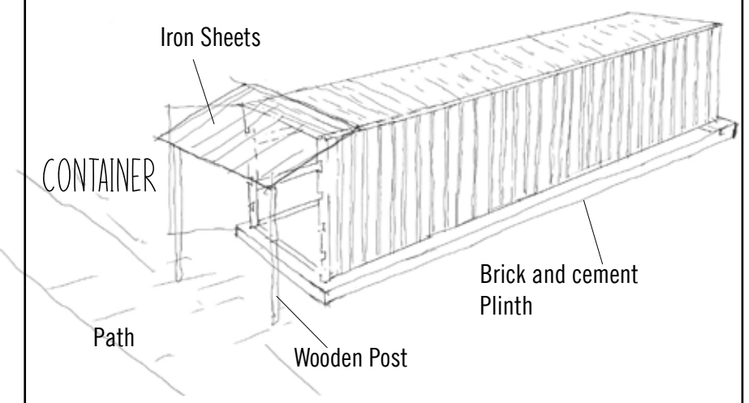
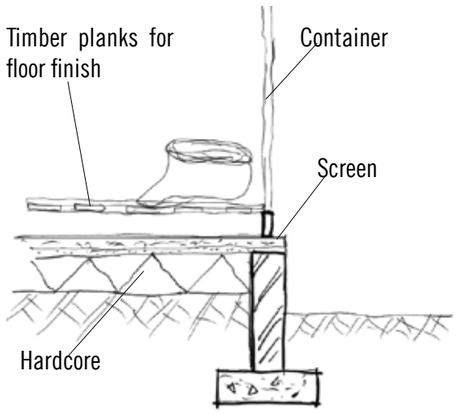
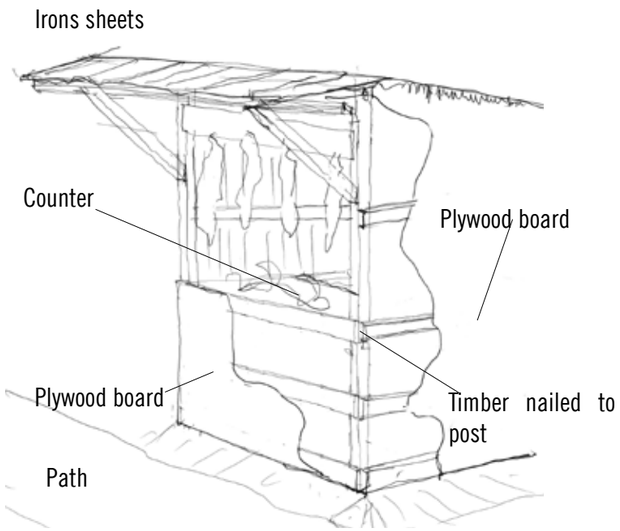
Sandbags are used to create a platform for display and sack fabric is laid on top, where goods are displayed

They are also used as retaining platforms from running water.

The enclosure structure is made of wooden poles, beams and purlins, with iron sheets covering.

Horizontal braces, beams and purlins are used to hang goods.

Sometimes, not all the goods are displayed, some are stored behind the stall, where traders sit.

TYPOLOGY	APPLICATION IN DETAIL	DESCRIPTION
STONE & CARDBOARD BOX PLATFORM 	  	Stones are stack together, with cardboard boxes on top, to create a level surface, that is covered with a plywood board. Goods are displayed on top. This stall had a worn out umbrella with strings tied to stones for stability. The stone platform is also used for protection from running water, and broken sewer systems.
CONTAINER 		 Containers sit on a plinth made of brick and cement. They are used for storage, and as shops. A front canopy, made of iron sheets, supported by wooden poles, is used to create shedding for the goods displayed outside. Mechanisms for hanging to display goods are attached to the container shell.
SHOP 	 Business extending to the edge of the plinth targeting foot traffic	 These are made of timber and plywood boards bought from Bangwe and other locations, depending on proximity to the traders, and a shop in Limbe called Phalombe Hardware. Timber is used to construct the frame of the shop, using nails and graft connections. Plywood (painted or non-painted) is used as covering layer. In some instances, the shop sits directly on the ground, and in others, on a plinth.

3.2.4.8 Local Ways of Making

Wooden poles, timber, stones, and bricks are not alien to Malawian construction technology. The traders have home-grown techniques, which they use to create different spatial appropriations in the area with these materials, thereby contributing to placemaking.

Figure 50: Construction techniques in Malawi using wooden poles and bricks (source: https://www.malawiarchitecture.com/reeds).

3.2.4.9 Stakeholders

To respond to the dynamics outlined above, I have identified the Tilitonse Foundation, Blantyre City Council, Waste Advisers, and traders in the area as stakeholders.

The Tilitonse Foundation works with communities to promote active citizenship and social inclusion (Tilitonse Foundation, 2023). The Blantyre City Council's vision for Blantyre is to be a city that gives ownership and facilitates the prosperity of businesses (Blantyre City Council, n.d.), and Waste Advisers aims at helping vulnerable communities prosper in waste reduction systems (Waste Advisers, 2018).

These organisations can be at the forefront in providing the infrastructure and services they need, conducting workshops, and engaging the traders to help generate solutions to issues affecting them.

3.2.5 Conclusion

Considering the above, this project aims to design a flexible community hub that can become a market and a space for meetings and skills training workshops, either by organisations or among themselves, in so doing, also providing a platform for empowerment and facilitating placemaking and the effectiveness of trade in the area. It also aims to provide the infrastructure and services necessary for their everyday lives in the existing market.

The following section outlines good practices in the form of case studies and theory, illustrating the architect's role in local materiality and technology and in responding to street trade urban realities and practices.

(Amani, 2022).

04

THE ARCHITECT'S ROLE

4.1 CASE STUDY MATRIX

The table below outlines a series of case studies analysed in relation to the architect's role. However, only three are discussed in this section.

	Project	Image	Description/ Why this case study?	Framework for analyisis
	USE OF LOCAL MATERIALITY AND TECHNOLOGY			
General case studies	**Las Tejedoras Community Centre Chongon Equador** Designed by: Juan Carlos Bamba and Natura Futura Arquitectura Year: 2023 Source: Zapico (2023). Archdaily.com		Promotes local artisan techniques The use of locally available teak wood and bricks This case study is discussed in this section	Materiality and technology
	Silindokuhle Creche in Joe Slovo, South Africa. Designed by: Kevin Kimwele Year: N/A Source: Chapman (2019)		Building using recycled materials	
	RESPONSE TO STREET TRADE URBAN REALITIES AND PRACTICES			
Urban Markets	**Warwick Junction, Durban, Kwa-Zulu Natal** Coordinated by: Asiye eTafuleni Year: 1997 to present Source: Dobson et al. (2019) and Dobson & Quazi (2016).		Demostrates integration of street traders in the urban space Discussed in detail in this section.	
	Kariakoo Market, Dar es Salaam, Tanzania Formalised by the City Council, designed by Beda J. Amuli Year: 1974 Source: Amani (2022).		Demostrates placemaking dynamics and how the market is adaptable, and provides different opportunities for traders. Discussed in detail in this section	Social dynamics and placemaking Space making and adaptability Materiality and technology
	Guabuliga Market, Ghana Designed by: Foreign Affairs, Institute of Architecture, University of Applied Arts, Vienna) Year: 2020 Source: Gonzalez (2020)		Demostrates community involvement and the use of local labour, while promoting locally made products, through education and commercial activities. Demostrates placemaking	

Table 3: Case studies covered on the architect's role (Author, 2023).

4.2 USE OF LOCAL MATERIALITY AND TECHNOLOGY

4.2.1 Community Centre Case Study: Las Tejedoras Community Productive Centre, Chongon, Equador.

Figure 51: Las Tejedoras Community Productive Centre (Zapico, 2023).

The community centre aims to empower women and promote local artisan techniques (Zapico, 2023). It sets an example in the use of local materiality and technology. Round teak wood which is locally available in the region, makes up the main structure that supports the roof and first floor. Wooden folding doors ventilate the interior spaces and connect them to the exterior. Wooden tongue and groove planks make up the ceilings and floors. Brickwork with interlocking bonds makes up the enclosures of the ground floor (Zapico, 2023).

Figure 52: Round teak wood, wooden doors, and tongue and groove applications (Zapico, 2023).

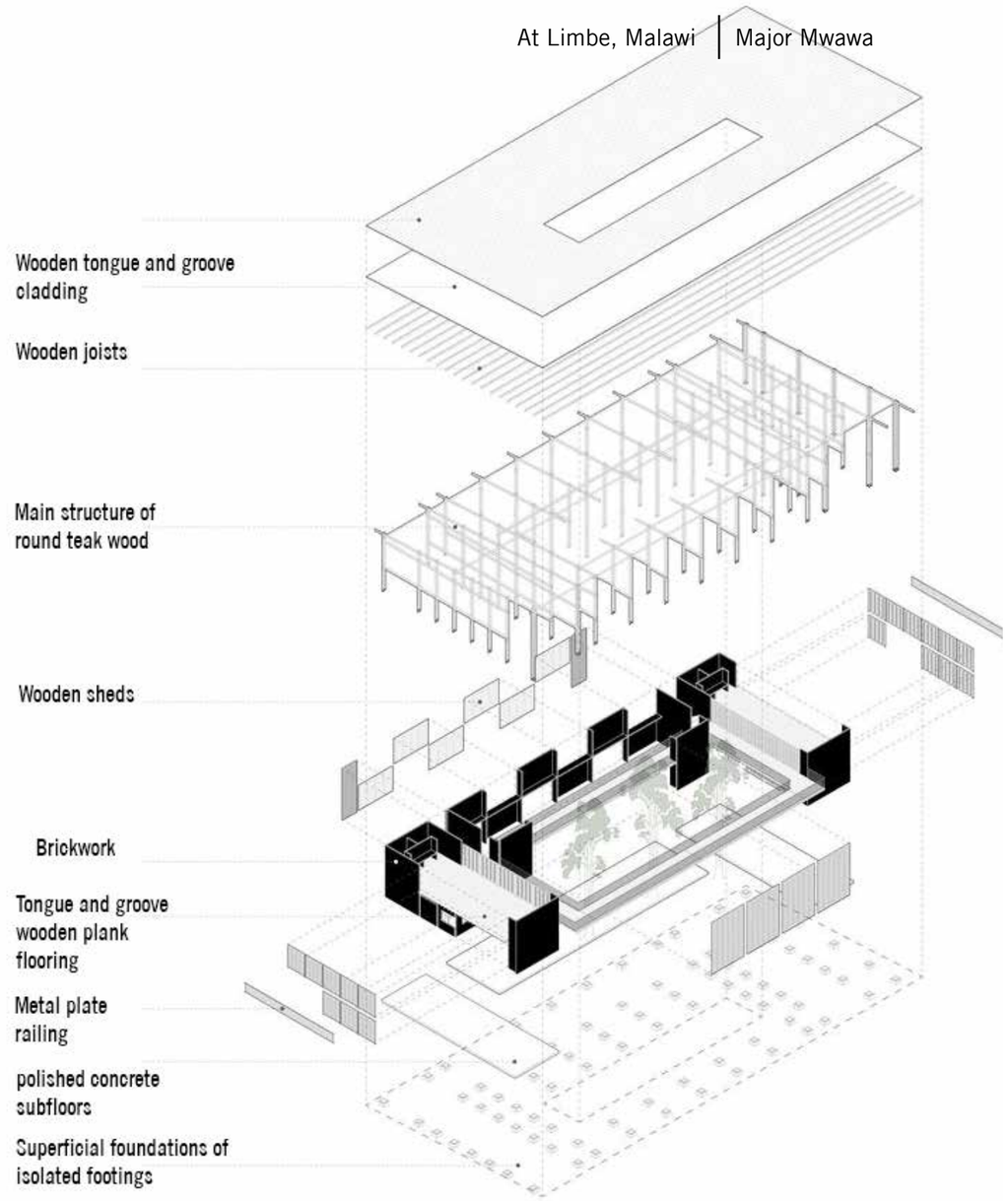


Figure 53: Construction assembly of the community centre (Zapico, 2023).

4.3 RESPONSE TO STREET TRADE URBAN REALITIES AND PRACTICES

4.3.1 Urban Markets

The case of Limbe CBD demonstrates the need for essential market infrastructure to facilitate trading activities in the area and the integration of street traders, as there have been attempts to assimilate them into the urban fabric, although some efforts have failed, e.g., the Pacific Tower.

Considering this, lessons can be drawn from Dewar & Watson's (1990) study on urban markets in Africa, including Malawi, to develop guidelines for designing urban markets.

According to them, markets must reduce traffic problems and accommodate existing and new traders. They must facilitate their exposure and provide them with selling opportunities (Figure 54).

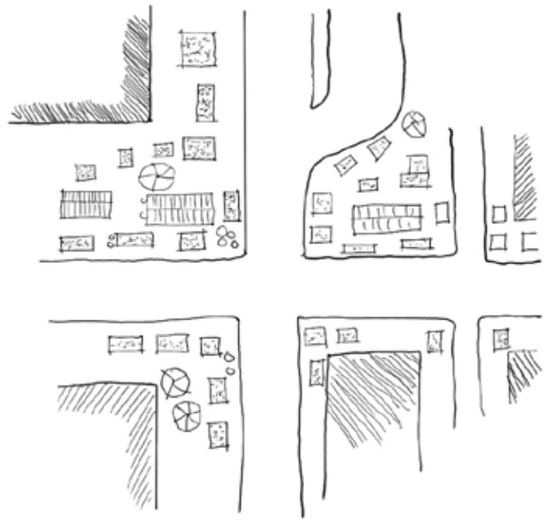


Figure 54: Traders prefer the exposure to traffic flow (Dewar & Watson, 1990).

In addition, they must allow for phased growth as more traders occupy the space, coupled with operating in totality in the phases. Furthermore, waste management facilities and systems must be provided to promote hygiene(Dewar & Watson, 1990).

Street traders can be accommodated in simple street structures and on the ground and first floors of buildings. For the latter, there is a need for better articulation and concentration of traders on the floor (Dewar & Watson, 1990).

Furthermore, urban markets must be designed cohesively according to sectors to facilitate comparative buying and diffuse traffic flows throughout to reduce congestion. They must be as generalised as possible to allow for rotation, expansion, and change of use (Dewar & Watson, 1990).

Courtyards can be used as areas of concentration to draw people into markets and facilitate lighting and air circulation. Traders with “less generative power” (p. 42) can be oriented in front of stronger ones on traffic flows in the form of interceptor stalls (Dewar & Watson, 1990).

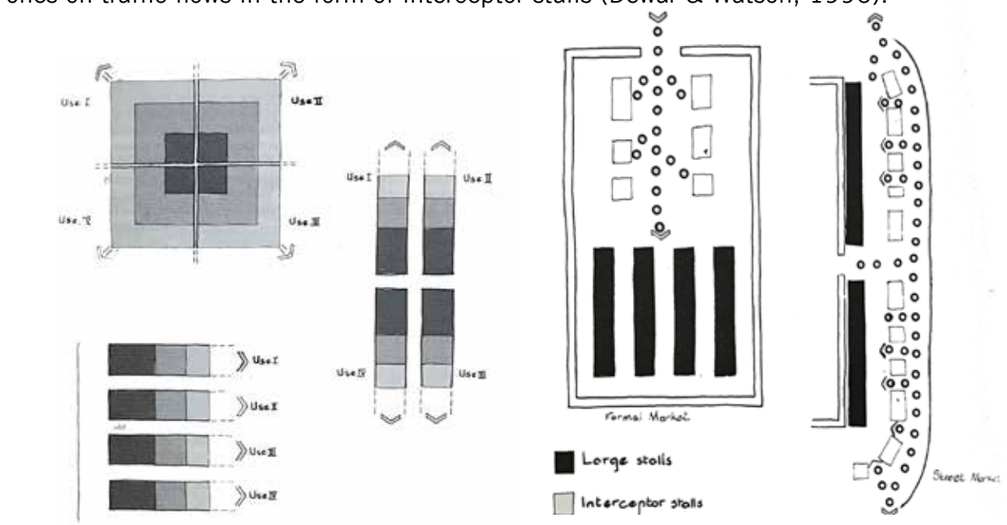


Figure 55: Design to allow for growth (left). Interceptor stalls (right) (Dewar & Watson, 1990).

Ultimately, the lateral spread of selling must be close to the movement channels for all to leverage the traffic flow, and there should be enough space between opposite stalls to facilitate circulation and browsing of goods (Dewar & Watson, 1990).

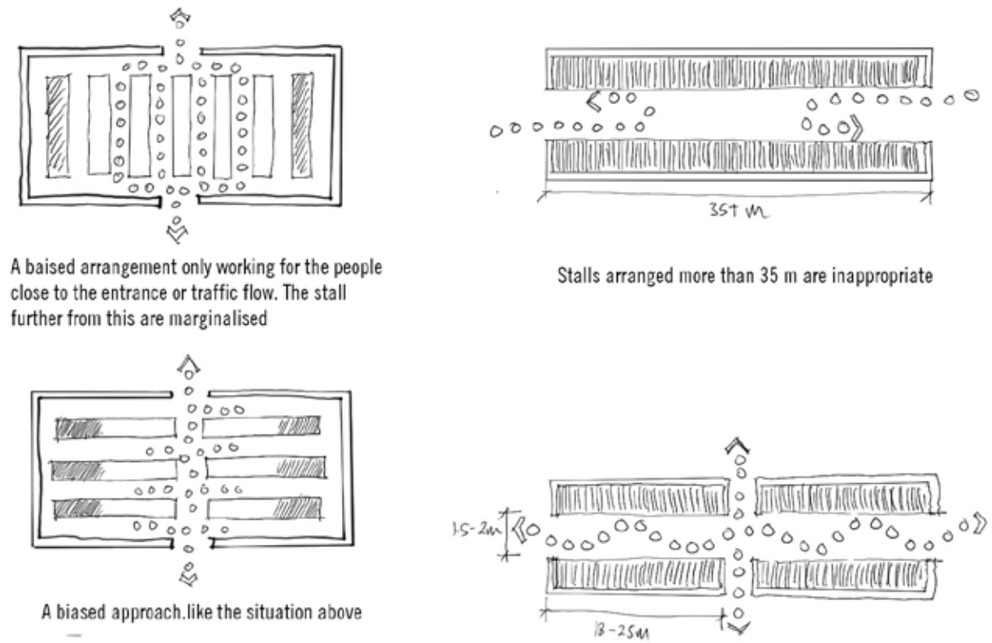


Figure 56: Space making dynamics (Dewar & Watson, 1990).

The following case studies on urban markets will be analysed using the framework established in the theory; social dynamics and placemaking, space making and adaptability, and materiality and technology.

4.3.2 Case Study: Warwick Junction, Durban, Kwa-Zulu Natal.

The Warwick Junction precinct is an example that demonstrates an integration of street traders into the urban space, in different trading sectors, through the construction of infrastructure that facilitates their trading practices.

Figure 57: Warwick Junction Precinct (Dobson & Quazi, 2016). Illustrated by Author (2023).

4.3.2.1 Brook Street Market

4.3.2.1.1 Social Dynamics and placemaking

The Brook Street market, designed on an existing street market (Figure 58), has infrastructure that celebrates a variety of religious and cultural interests and becomes a kinetic space that hosts Badsha Peer ceremonies and different traditional and modern trade activities (Dubson et al., 2009).

Figure 58: Brook Street Market before intervention (Dobson et al, 2009).

4.3.2.1.2 Space making and adaptability

It provides custom storage, restaurants, a food court, kiosks, and an open trading space where traders appropriate in different ways (Figures 59 and 60). The location of trading activities depends on their need for foot traffic (Dobson et al., 2009).

Figure 59: Open trading space (Dobson & Quazi 2016).

Figure 60: Setup and display option of goods. Illustrated by Author (2023) (Dobson et al, 2009).

The use of movable fold-way tables presents an opportunity for occasional cleaning. The project demonstrates the importance of affordable storage close to the trading site, with various sizes that provide enough space for packed goods of any form to leverage on time to set up and pack away their goods (Dobson et al., 2009).

Figure 61: Space making and structure. Illustrated by Author (2023) (Dobson et al, 2009).

4.3.2.1.3 Materiality and Technology

The market has a steel roof and composite steel and concrete column structure, which allows the penetration of natural lighting and air and protects the users from rain.

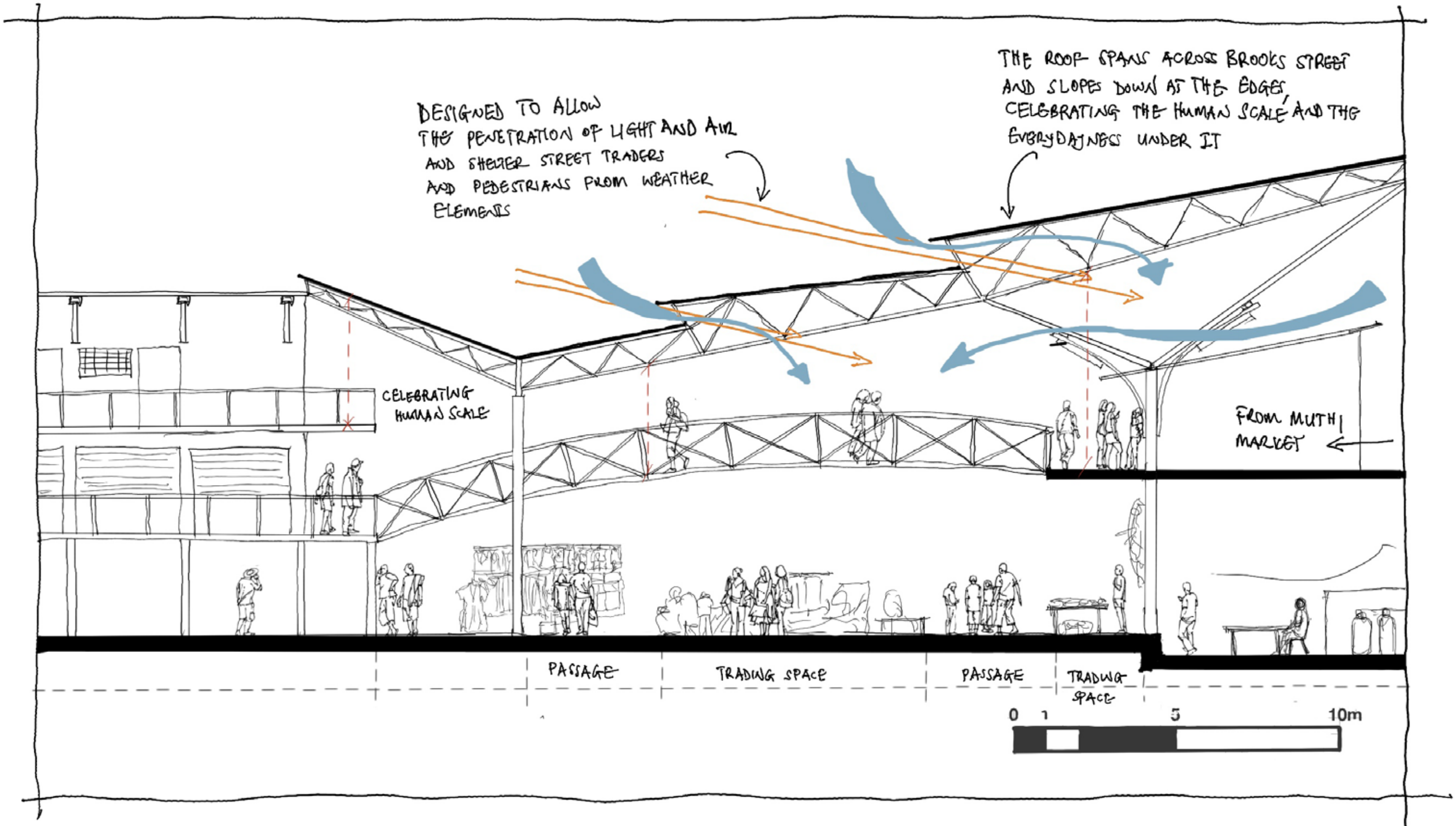


Figure 62: Section through Brook Street market. Illustrated by Author (2023).

4.3.2.2 Victoria Street Market

Victoria Street market demonstrates the integration of street trade with the static architecture in its transitional street edges that define the paths, sidewalks, and trading spaces.

Figure 63: Victoria Street market spatial dynamics. Illustrated by Author (2023). Source: Google maps.

Figure 64: Victoria Street market spatial dynamics. Illustrated by Author (2023) (Dobson, et al., 2009).

4.3.3 Case Study: Kariakoo Market, Tanzania, Dar es Salaam.

The Kariakoo Market started as an adapted trading space that evolved and thrived over time due to urbanisation and became a commercial hub in Dar es Salaam (Amani, 2022).

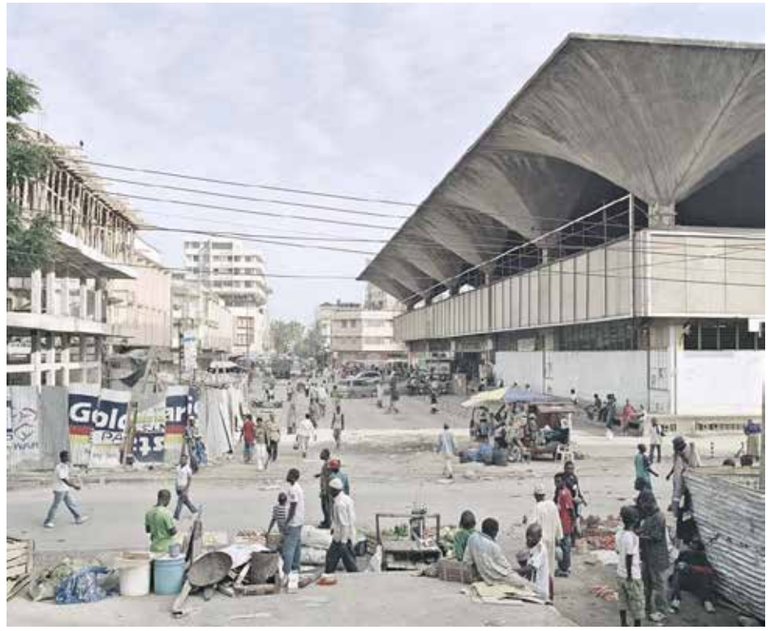


Figure 65: Kariakoo Market (Amani, 2022).

4.3.3.1 Social Dynamics and placemaking

The roof design of the market is a tree trunk-like concrete structure that respects place by considering the local culture of the area that situated markets under trees. The market attracts people locally and across borders, including Malawi, and becomes a social hub that expands outside its footprint to its immediate exterior space and into streets and alleyways. These spaces have different types of trade in sectors, with mobile hawkers, shops, and restaurants (Amani, 2022).

Figure 66: Market extends to streets and alleyways (Amani, 2022).

Its character established a social structure and qualified the market as a symbol of pride. Today people only use the exterior space, lined with benches on the perimeter walls, creating a conducive space for trade, and the place continues to thrive despite catching fire in 2021 (Amani, 2022).

4.3.3.2 Space Making and Adaptability

The exterior space has make-shift stalls where people must negotiate to reach the entrance of the building. The building has three levels, including a basement with storage and stalls. This level is accessible eastward through a ramp entrance, used as a delivery point (Amani, 2022).

The ground and first floors have kiosks, open spaces, and walls organised in a grid and appropriated in different ways by trade in various products.

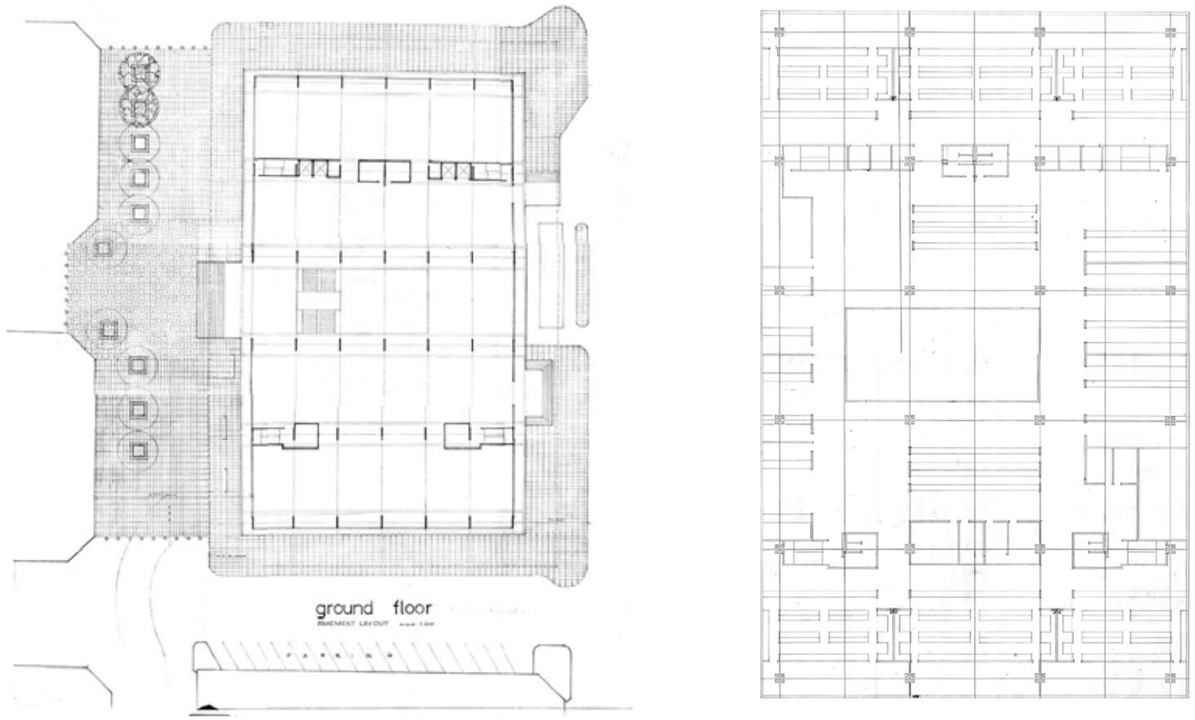


Figure 67: Ground floor (left), first floor (right) (Amani, 2022).

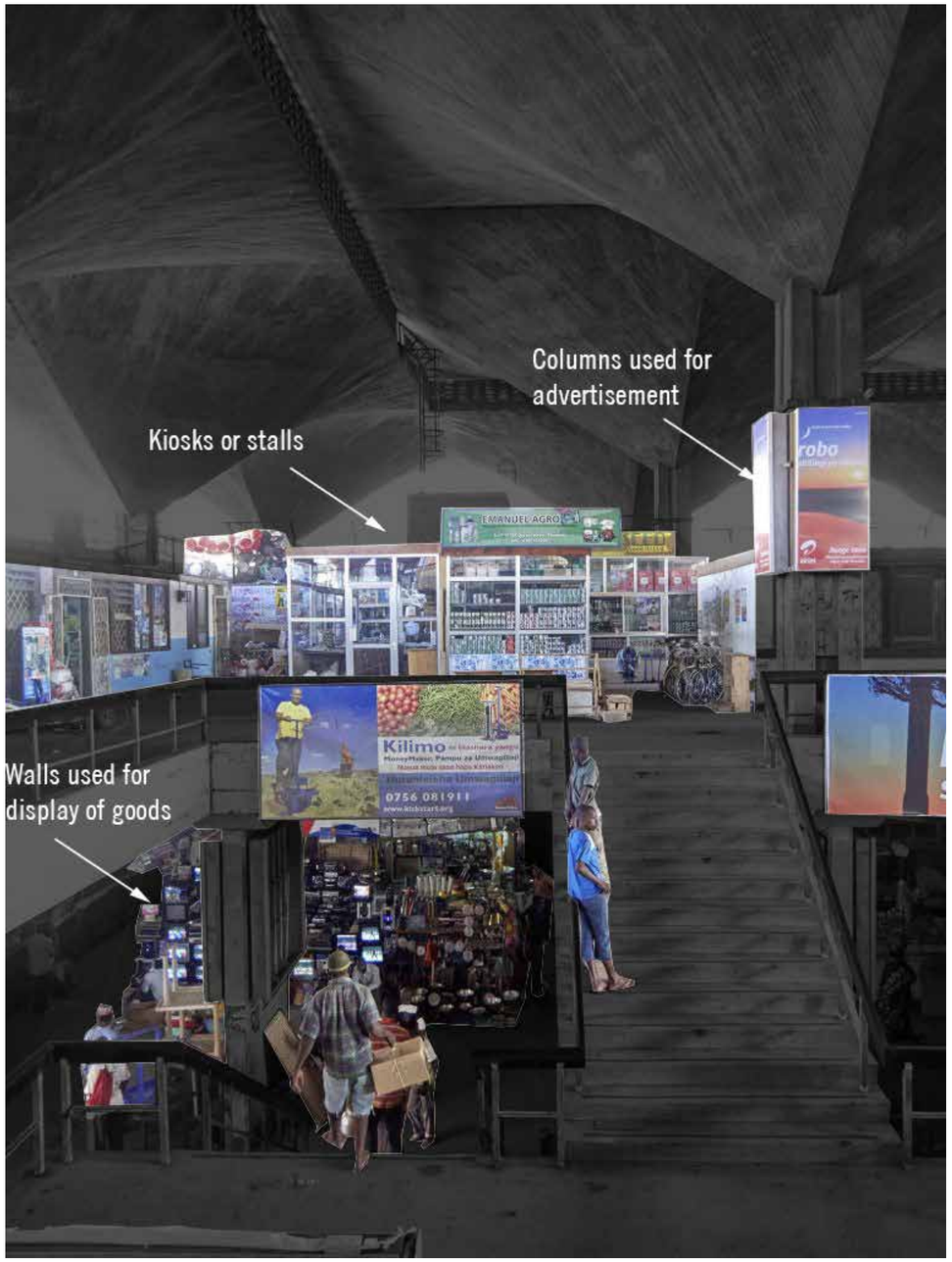


Figure 68: Different space appropriations possible in the building (Amani, 2022) illustrated by Author (2023).

4.3.3.3 Materiality and Technology

The concrete roof structure collects water down column channels to underground water tanks reserved for seasonal water shortages (Amani, 2022). The roof also allows the penetration of natural light and air circulation.

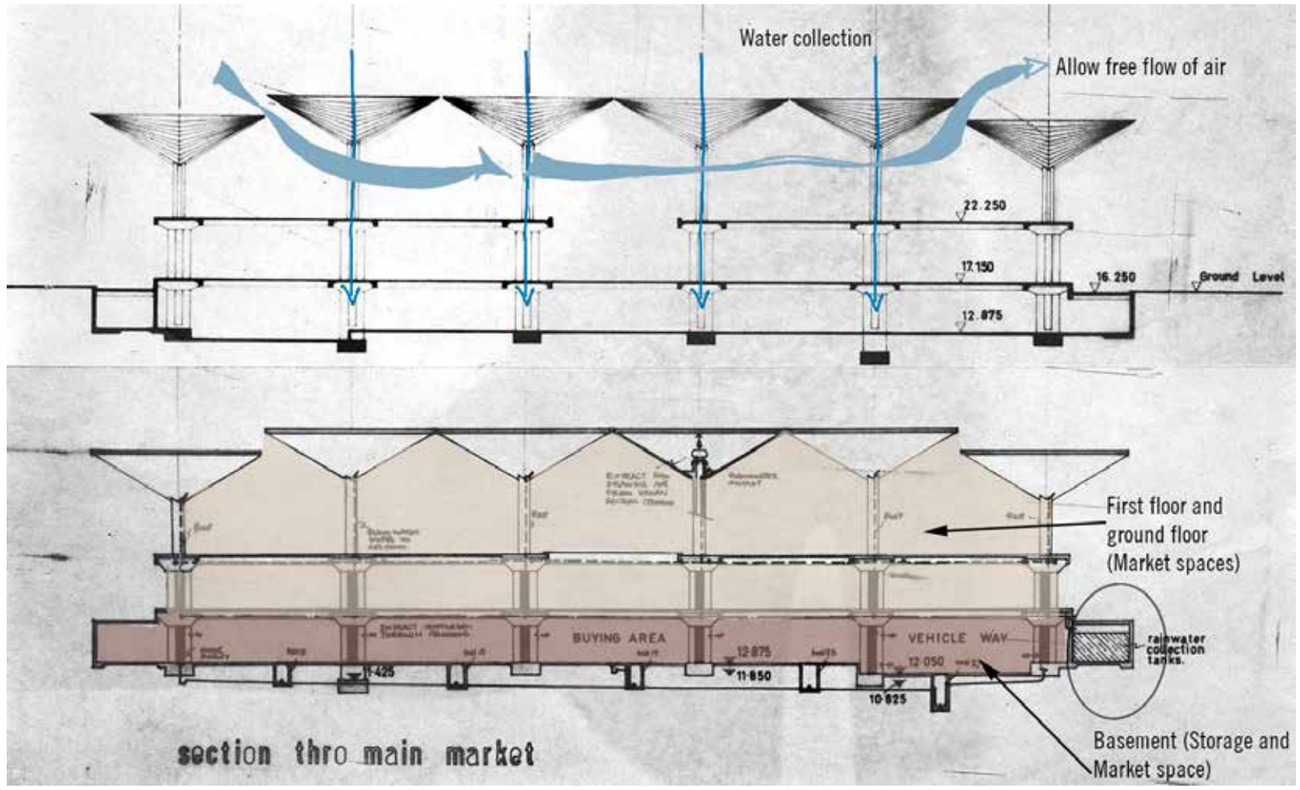


Figure 69: Tree trunk -like or funnel-like concrete structure used for water harvesting (Amani, 2022).

(Gonzalez, 2018).

05

TECHNOLOGY

This section outlines the possible technologies for the community hub proposal.

5.1 CASE STUDY MATRIX

The table below outlines a series of case studies analysed in relation to technology. However, only two are discussed in this section.

	Project	Image	Description/ Why this Case Study?	Framework for analysis
	DESIGNING FOR ADAPTABILITY			
Unfinished Design	**The Table House Project, South Africa** Designed by: Jo Noero in collaboration with Rainer Hehl from Design Innovation Programme at Berlin's Technical University Year: N/A Source: Noero (2016).		Design of static components that provide opportunity for appropriation by adding secondary elements	
	Dadad Market, Bangkok, Thailand Designed by: Bangkok Tokyo Architecture and OPH Year: 2017 Source: Gonzalez (2018).		Scaffolding, temporariness and permanence Discussed in detail in this section	Adaptability
	Temporary Workshop and Recreation Centre of Qianyi Farm Designed by: Big Smallness & Wuhan ADAP Architects Year: 2017 Source: Big Smallness & Wuhan ADAP Architects (2017)		Scaffolding and temporariness	
	Level Up Designed by: Bret Mahon, Joona Parviainen, Saagar Tulshan & Shreyansh Sett Year: 2018 Source: Pintos (2019)		Scaffolding which also allows appropriation using other materials	
	KINETIC ARCHITECTURE			
Kinetic and Transformable Architecture	**Storefront Library** Designed by: Abruzzo Bodziak Architects Year: 2018 Source: Pintos (2022)		Kinetic facade for displaying purposes Revealing and hiding techniques	Movement Mechanisms Load-bearing structures Planar surface components

	KINETIC ARCHITECTURE			
		Image	Description/ Why this Case Study?	Framework for analyisis
Kinetic and Transformable Architecture	**TRH Market Stalls, Czech Republic** Designed by: Edit Year: N/A Source: Furuto (2012)		Designed to quickly setup and pack away goods, and for arranging in different configurations according to traffic flows or specific needs.	Movement Mechanisms Load-bearing structures Planar surface components
	Urban TelesCOOP, Sibiu, Romania Designed by: COOP pe Strada Year: 2013 Source: Strada (n.d).		Flexible space for interaction and exhibition Discussed in detail in this section	

Table 4: Case studies covered on Technology (Author, 2023).

5.2 DESIGNING FOR ADAPTABILITY

Architecture is known for its static nature, fixed in place throughout its lifespan (Maden, 2019). It has neglected the time factor and the ephemeral human behaviour. However, the idea of movement is not new in the architectural discourse. It was first coined in the 1970s by William Zuk and Roger H. Clark, who argued that “architecture can adapt to changes taking place within a set of pressures acting upon it” (Elmokadem et al., 2018). This adaptation can happen through the physical movement of the architectural elements in response to the pressures. Over the years, mobile and flexible structures for user manipulation (Elmokadem et al., 2018) and transformable architectural interventions have emerged.

Transiency is at the core of street trading activities, such that these activities beg to be associated with adaptable architecture to allow for flexibility for various space appropriations that respond to people’s needs. Consequently, street trading interventions must provide freedom and empower the users to interact with the architecture through unfinished and kinetic design.

5.2.1 Unfinished Design

Street traders in Limbe have a deeper understanding of their needs and representations of their spaces that leverage existing conditions and maximise their business operations, making the area a thriving economy for small-scale trading activities.

The concept of unfinished design is rooted in empowering people to interact with architecture continuously on a need basis. It integrates the physical architectural elements with the users as “active elements of the architecture (Schmidt & Austin, 2016).” In this case, the physical facilitates and allows for manipulation and appropriation in different ways by the user. However, the architecture must have some level of permanence through the provision of supporting facilities and elements that increase opportunities for space appropriation and from which the building can form an identity to achieve a sense of place (Thwaites et al., 2020; Schmidt & Austin, 2016).

According to Habraken’s levels proposed in the 1960s, the urban fabric and base building, which are the responsibility of professionals, should be opportunities for flexibility, adjustability, and scalability of space and façade elements with infills (Thwaites et al., 2020; Schmidt & Austin, 2016).

5.2.1.1 Case Study: Dadad Market, Bangkok, Thailand.

Figure 70: Dadad Market, Bangkok, Thailand (Gonzalez, 2018).

The Dadad Market covers an area of 342 square metres and demonstrates the unfinished design concepts in its demountable tubular steel scaffolding structures, which achieve some level of temporariness and permanence.

Figure 71: The steel structure forms part of the identity of the market (Gonzalez, 2018).

The scaffolds are floating steel beam and column structures on pre-cast concrete square pile footings, with horizontal and diagonal bracing and iron sheets on purlins. They have corrugated polycarbonate envelopes that house lights, forming an open space underneath, and that light up at night, celebrating the character of lit tents and food stalls at night of local traders in the region, thereby continuing and reinforcing place (Gonzalez, 2018).

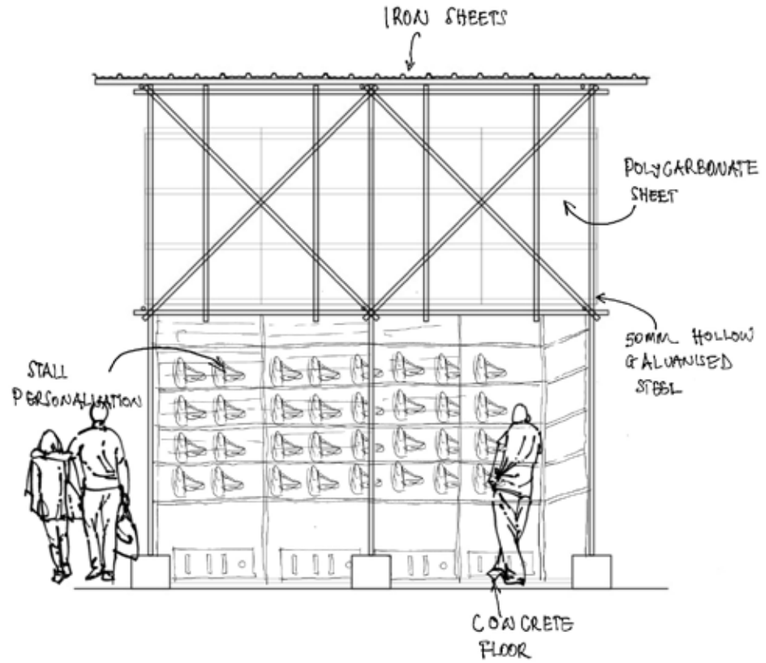


Figure 72: Scaffolding market structure (Gonzalez, 2018). Illustrated by Author (2023).

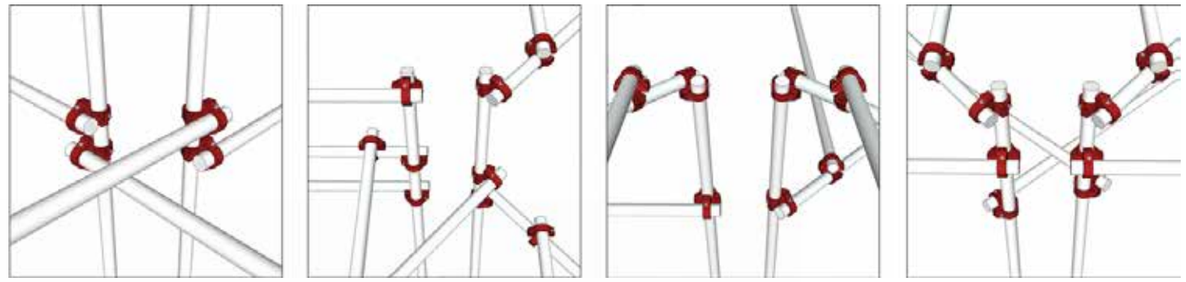


Figure 73: The materiality and making of scaffolds (Gonzalez, 2020).

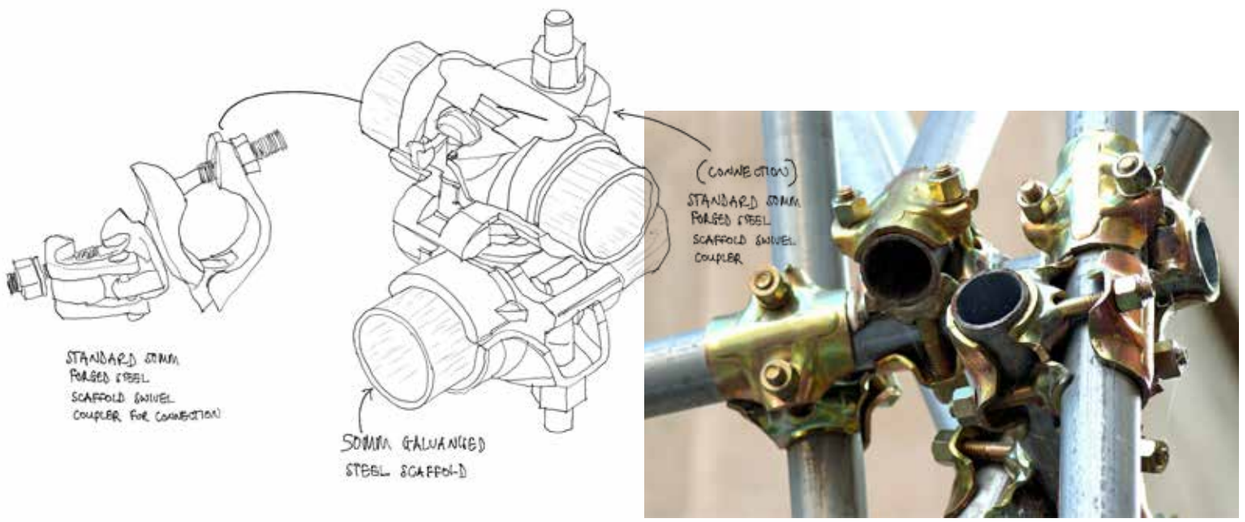


Figure 74: Scaffold connection detail, illustrated by Author (2023). Image source: Shutterstock.com.

This assemblage allows traders to appropriate the structure according to their spatial and display needs (Figures 91 and 94).

Figure 75: The structure allows appropriation according to needs (Gonzalez, 2018).

The Table House project by Jo Noero and Level Up by Bret Mahon and others used the same idea by providing a static component that allows adding secondary elements to achieve different functions.

Figure 76: The Table House Project appropriated by users (Noero, 2016).

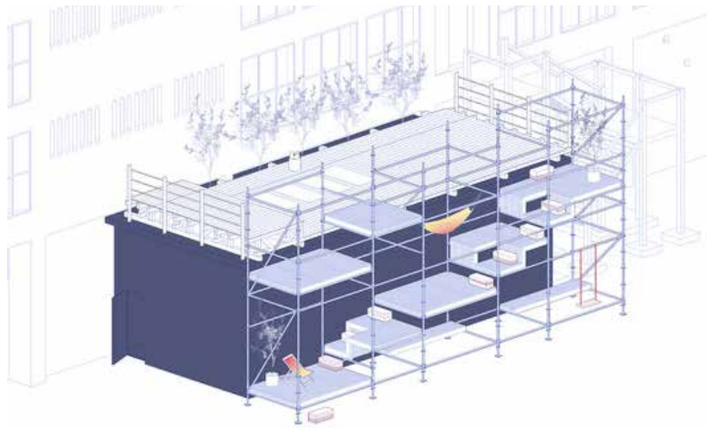


Figure 77: Scaffolding and secondary elements in Level Up (Pintos, 2019).

5.2.2 Kinetic Architecture

Intelligent buildings that use automated mechanical systems to regulate interior conditions use kinetic architecture through kinetic facades that respond to the sun's movements or natural air currents Mekhamar & Hussein (2021). On the other hand, kinetic walls, furniture, and facades that create geometrical movement in space and accommodate different uses use kinetic architecture for functional purposes (Elmokadem et al., 2018). The latter application is the focus of this study.

An example of this kinetic application is the Storefront Library by Abruzzo Bodziak Architects (Figure 78).

Figure 78: The Storefront Library (Pintos, 2022).

5.2.3 Transformable Architecture

Kinetic structures fall under transformable structures that can change configuration repeatedly within controlled parameters. They are flexible elements connected by articulated joints that operate using simple to complex mechanisms to accommodate certain functions and achieve a character or aesthetics.

As a potential technology for this project, understanding the critical building components of transformable structures, that is, movement mechanisms, load-bearing, and planar surface components (Werner, 2013), is paramount to making the design decisions necessary for their success.

5.2.3.1 Movement Mechanisms

The kinetic or transformable elements operate in different geometric movements: rotation and translation (Werner, 2013), scalling, and contraction (Elmokadem et al., 2018).

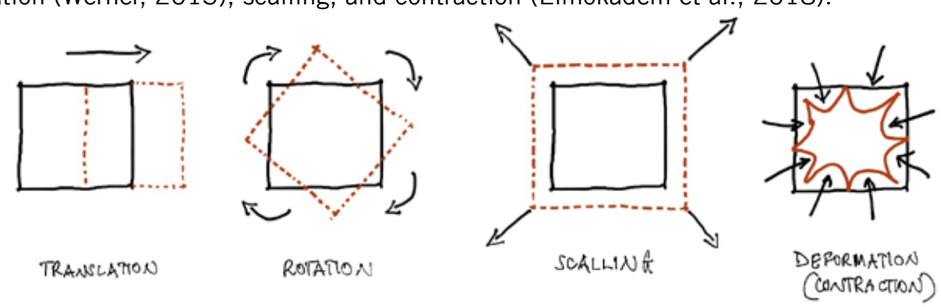


Figure 79: Geometric movements (Elmokadem et al., 2018).

Geometric movement		Swivel	Rotate	Flap	Fold	Scissor-fold	Slide parallel	Slide vertically
Simple movements of surfaces	Horizontal							
	Vertical							
	Level							
Simple movements of Volumes	Horizontal							
	Vertical							
	Level							

Table 5: Geometric movements. Illustrated by Author (2023) (Werner, 2013).

The weight and size of an element affect the nature of joint mechanisms, which determine the loads transferred to load-bearing members and the degree of movement (Werner, 2013).

5.2.3.1.1 Joint Mechanisms

5.2.3.1.1.1 Revolution Joints

These are typical hinge, flap, or turning pair joints used in opening and closing applications. The number and size of joints needed in this application are directly proportional to the weight, size, axis of rotation, and cycles of use of the elements (Werner, 2013).

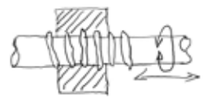
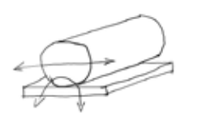
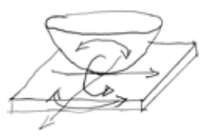
Joint form	Name/ Description
	Revolute joint (hinge, turning pair or pin)
	Prismatic joint (slider or sliding pair)
	Screw joint (Helical joint or helical pair)
	Cylindrical joint (Cyrindrical pair)
	Spherical joint (ball joint or spherical pair)
	Planer joint (planar pair)
	Cylindrical roller. Roller rotates about the instantaneous contact line and does not slip on the surface
	Body can rottate about any axis through the contact point and slide in any direction in the tangent plane

Table 6: Joint mechanisms. Illustrated by Author (2023) (Werner, 2013).

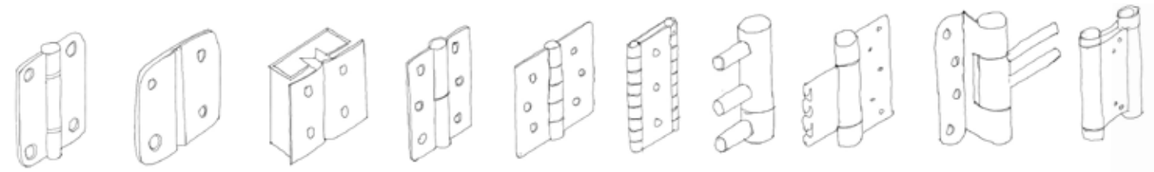


Figure 80: Different types of hinges (Werner, 2013).

5.2.3.1.1.2 Bearings

There are two types of bearings: slide bearings and roller bearings. Slide bearings use fluids to support loads and are impact-resistant and noise-absorbent. Roller bearings are applied in interlocking assemblies (to avoid member displacement) or circular profiles and work with an intermediary element, and sometimes in a casing for protection and motion control to transfer loads, mostly in wheel-rail systems (Werner, 2013).

Figure 81: Rail with roller bearings (Rollon by Timken, 2021).

5.2.3.1.2 Control Mechanism Options

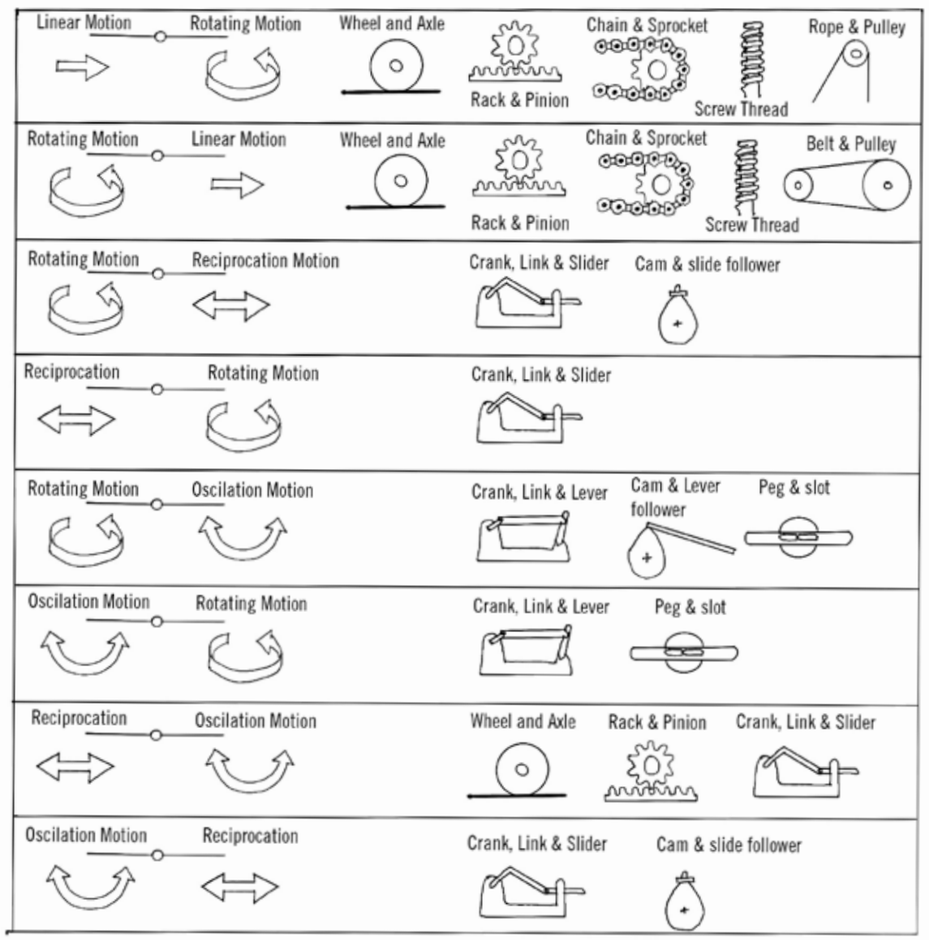


Table 7: Mechanism chooser to change the type of movement. Illustrated by Author (2023) (Werner, 2013).

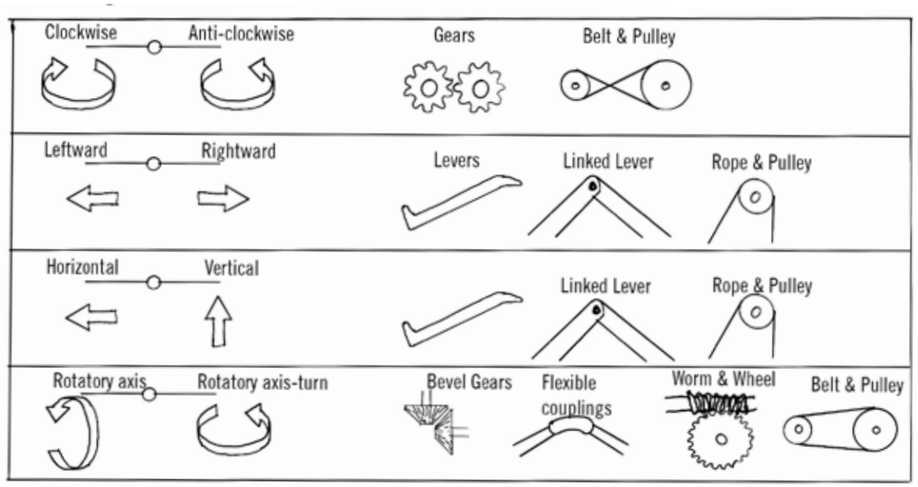


Table 8: Mechanism options to change the direction of movement. Illustrated by Author (2023) (Werner, 2013).

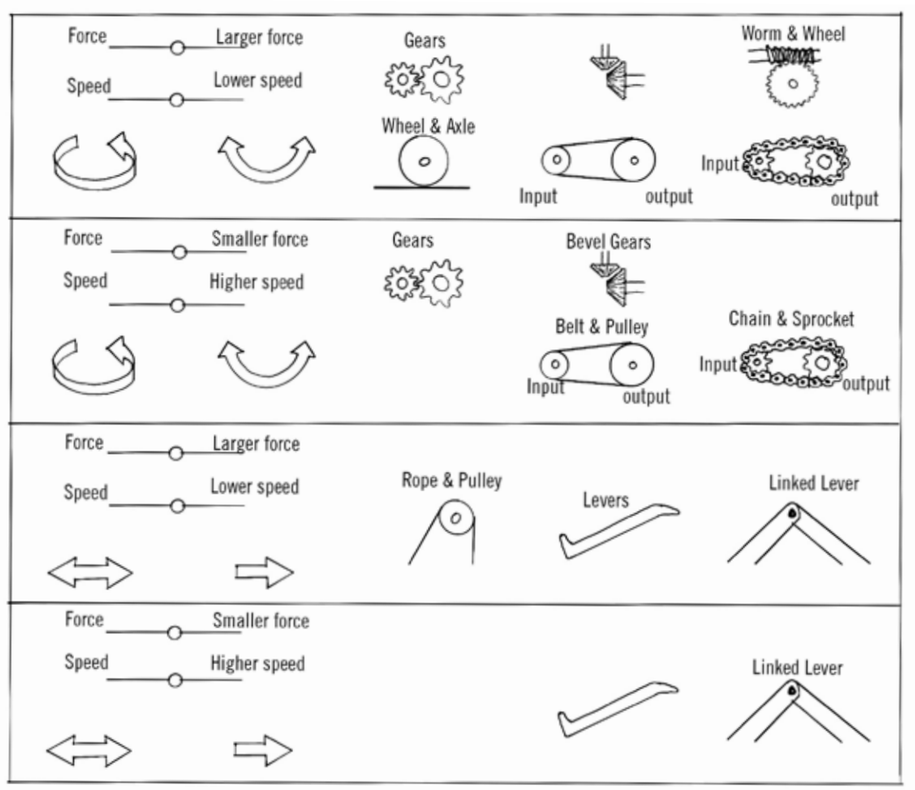


Table 9: Mechanism options to change the output force and speed. Illustrated by Author (2023) (Werner, 2013).

5.2.3.2 Load-bearing Structure

The load-bearing elements for transformable structures are the static and the kinetic components themselves (Werner, 2013).

5.2.3.2.1 The Static Component

A beam, column, post, or static wall assembly that supports the kinetic components or to which the kinetic components are connected to transfer forces and carry all loads. These forces and loads influence the type of structure specified (Werner, 2013).

5.2.3.2.2 Kinetic Components

These perform the kinetic movements within defined parameters and connect to the static structure.

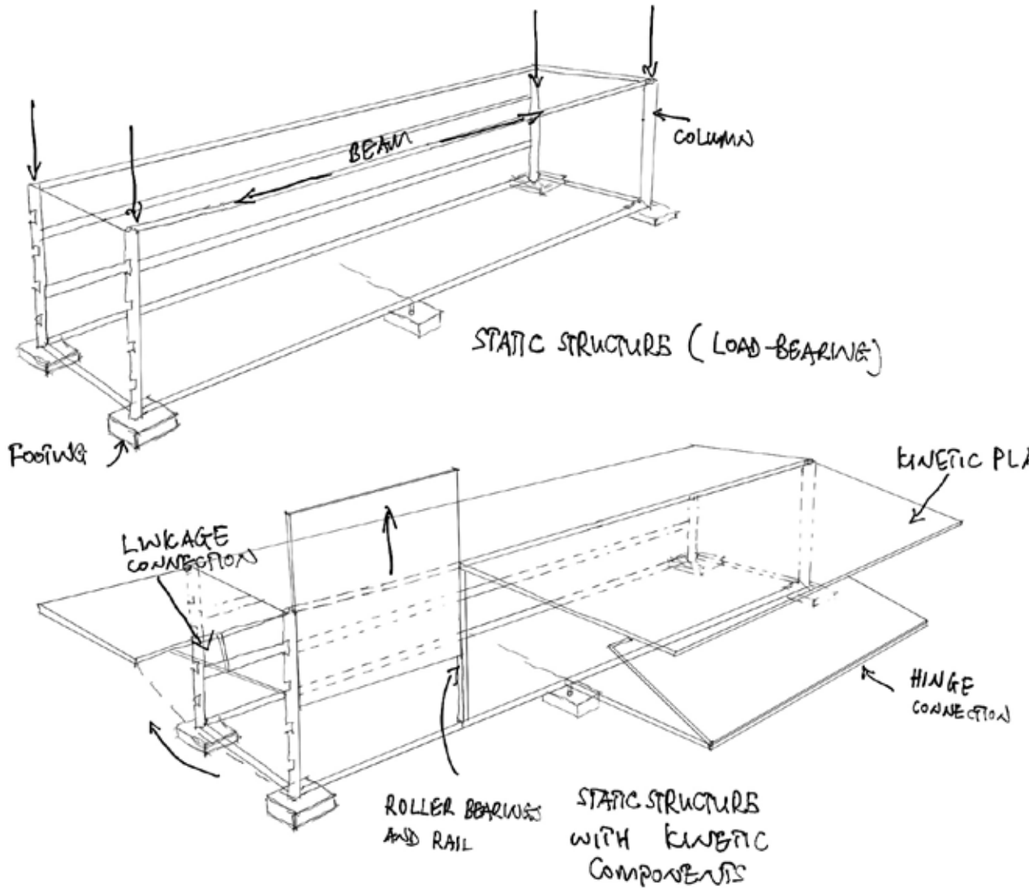


Figure 82: Static and kinetic components Author (2023).

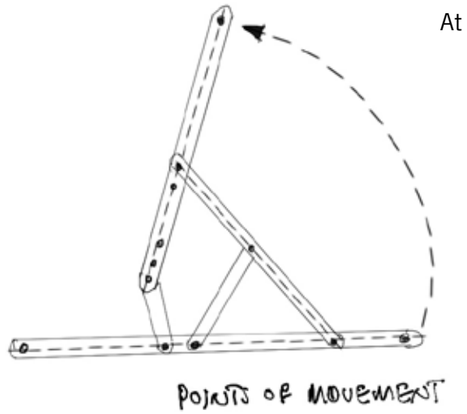


Figure 83: Linkage. Illustrated by Author (2023) (Werner (2013).

5.2.3.3 Planar Surface Elements

The types of surface materials determine the efficiency, flexibility, and aesthetics of the kinetic components. They must be water and wind-proofed with sealants on all movable connections and must be durable, resisting "repeated movements and environmental changes" (Asefi, 2010, cited in Werner, 2013, p. 41), with consideration of lightweight materials (Schumacher, 2010).

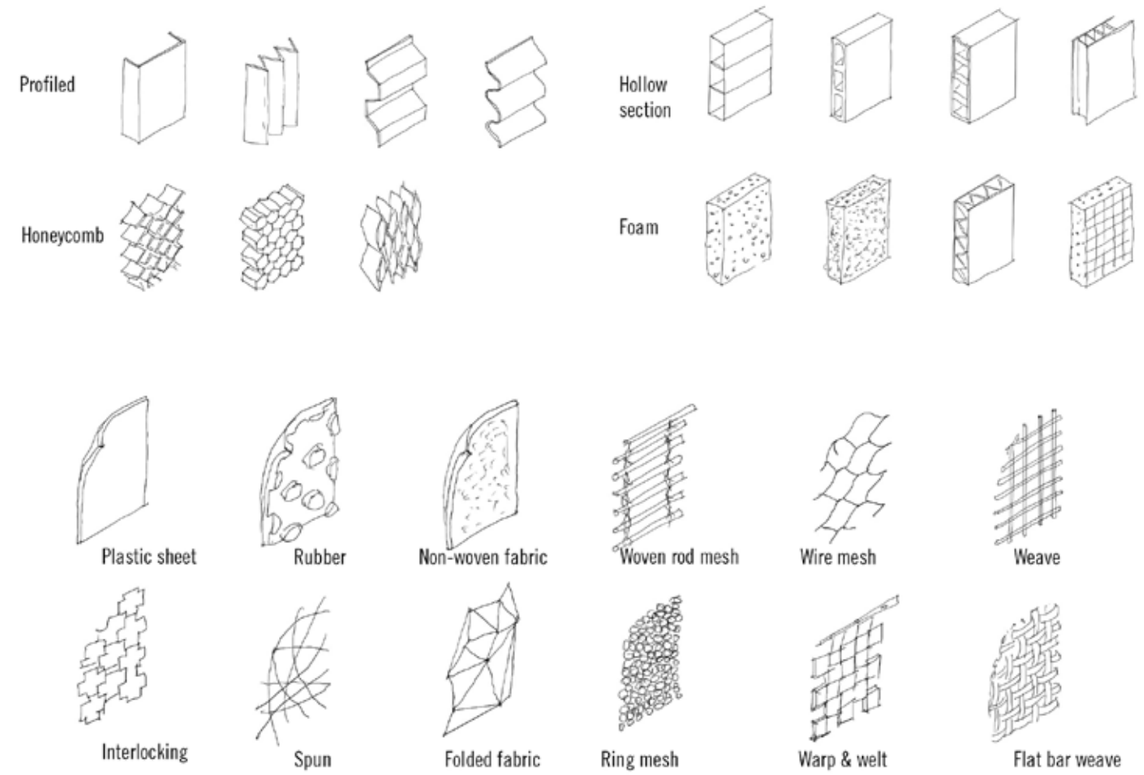


Figure 84: Flexible and lightweight materials. Illustrated by Author (2023) (Werner, 2013).

The surface treatment must be easy to clean and well-insulated to regulate the interior environment.

Connections can use rubber, fibre, foam, or plastic-preformed sealants, with flexible ones used externally to allow movement and achieve aesthetics.

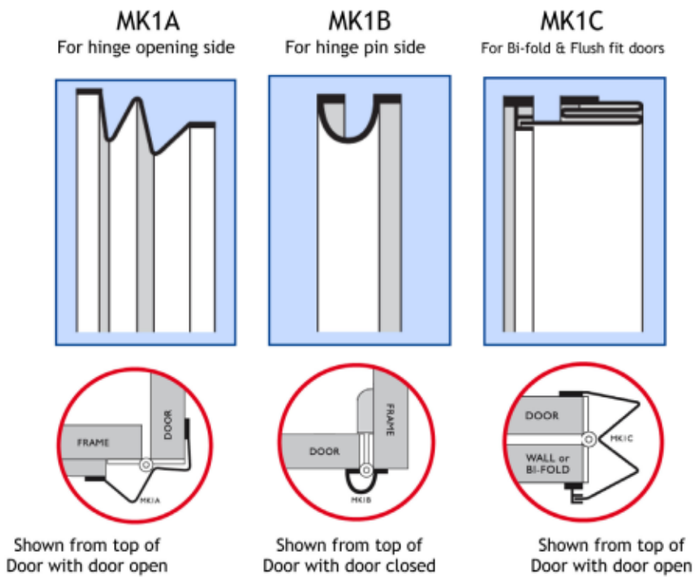


Figure 85: Flexible sealants application (Werner, 2013).

5.2.3.4 Reflection

Considering the ephemeral exchange activities associated with trade and the intensity of the use of public structures, these mechanisms can move frequently, causing damage with time. Therefore, I suggest using simple ones that are easy to maintain to reduce maintenance costs. In addition, there should be minimal use of the technology at a building scale but more on movable elements that complement the building and provide an opportunity to maximise the flexibility of adaptable spaces.

The following case study analysis uses the criteria: movement mechanisms, load-bearing structures, and planar surface components established in Werner (2013).

5.2.3.5 Case Study: Urban TelesCOOP, Sibiu, Romania

Figure 86: Urban TelesCOOP (COOp pe Strada, n.d.)

The Urban TelesCOOP was a temporary pavilion designed as a flexible space for interaction and exhibitions. The static structure has a load-bearing timber beam assembly with horizontal and vertical slats.

The kinetic components hold display boards and have vertical slats which rotate on screw joints fixed to the beam and floor (COOp pe Strada, n.d.).

This application did not have planar surfaces, and the timber was left exposed.

Figure 87: The making of the pavilion (COOp pe Strada, n.d.).

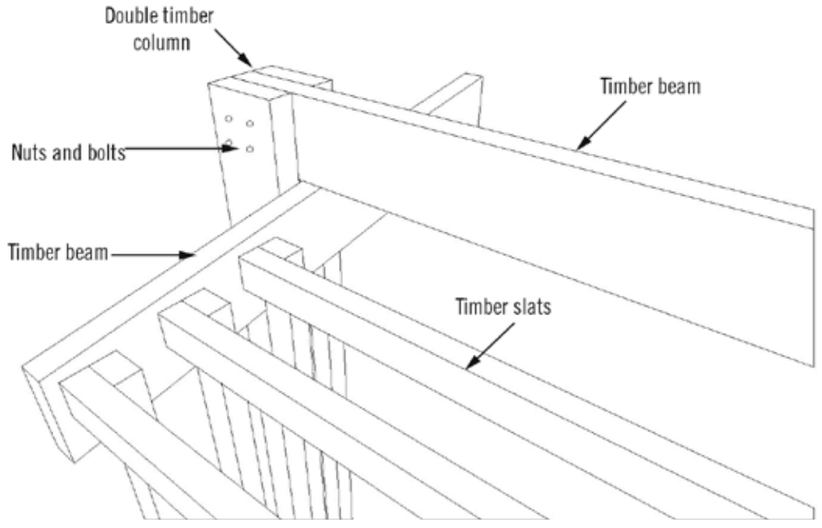


Figure 88: Main structure detail (COOp pe Strada, n.d.).

Figure 89: The kinetic components holding display boards (COOp pe Strada, n.d.).

5.3 TRANSITIONAL STREET EDGE ANATOMY

Thwaites et al. (2020) outline the Habraken levels of control as form, place, and understanding, which concern the character of efficient transitional street edges. They define form as the stable infrastructure which is appropriated and place as the product of transformation by spatial appropriations, which produces meaning and understanding, that is, a means for people to relate to one another.

The stable infrastructure here is associated with materiality that defines the extent and identity of infrastructure and the street edge, facilitating the formation of social functions and territorialisation (localities) derived from an interpretation and understanding of the materiality and spatial organisation (Thwaites et al., 2020).

The spatial organisation forms the literality of the edges, which characterise the transects on the edges (Thwaites et al., 2020).

5.3.1 Social Spatial Attributes Across Edges

Considering the above, the extent of infrastructure needs to have enclosures that allow flexibility and continued spatial transformation, and the thresholds across the edges (literality), need to allow for spatial expansion, permeability, transparency, and a gradual transition from public to private space. Ultimately, these realms need to hold the capacity to accommodate locality in the form of social activity and interaction, opportunities to hide and reveal, and temporality (Thwaites et al., 2020).

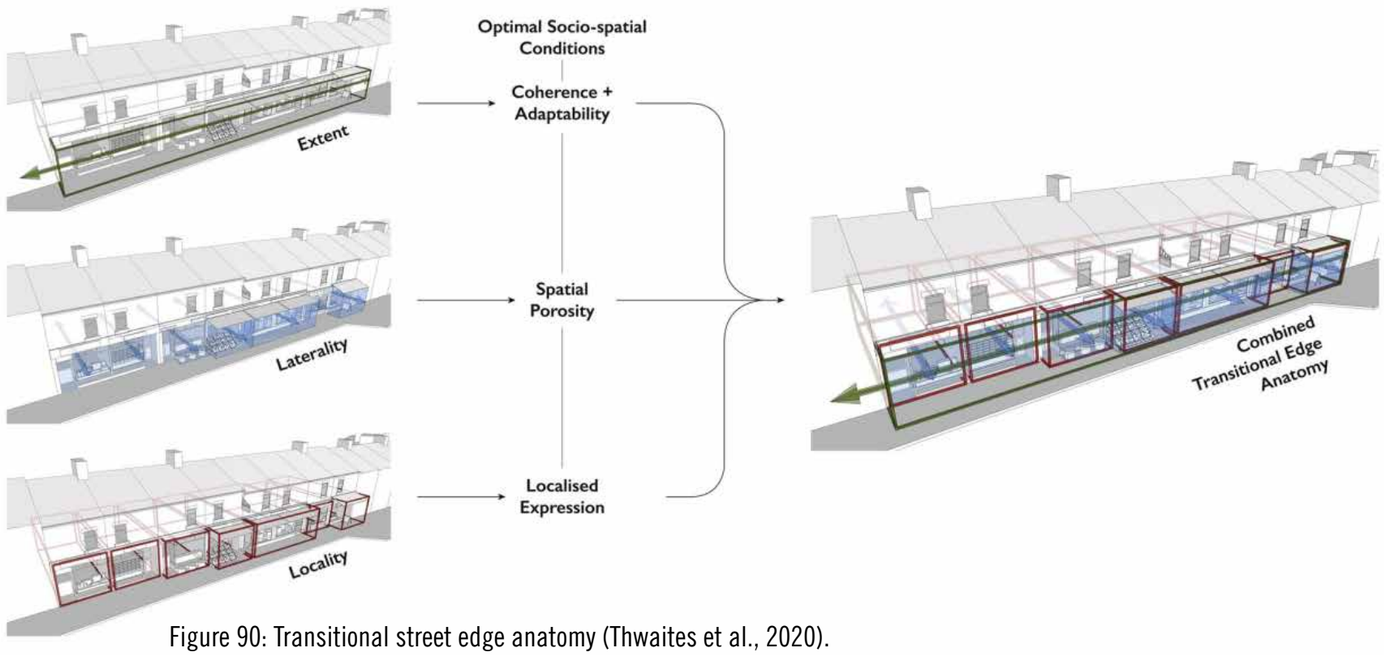


Figure 90: Transitional street edge anatomy (Thwaites et al., 2020).

In a nutshell, transitional street edges should have a material dimension that embraces temporality, a spatial dimension that articulates the thresholds, and a social dimension that occupies and appropriates the two.

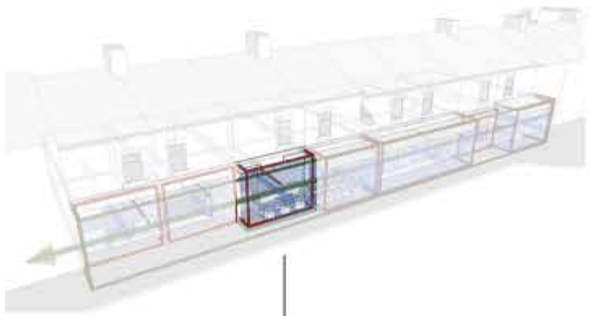
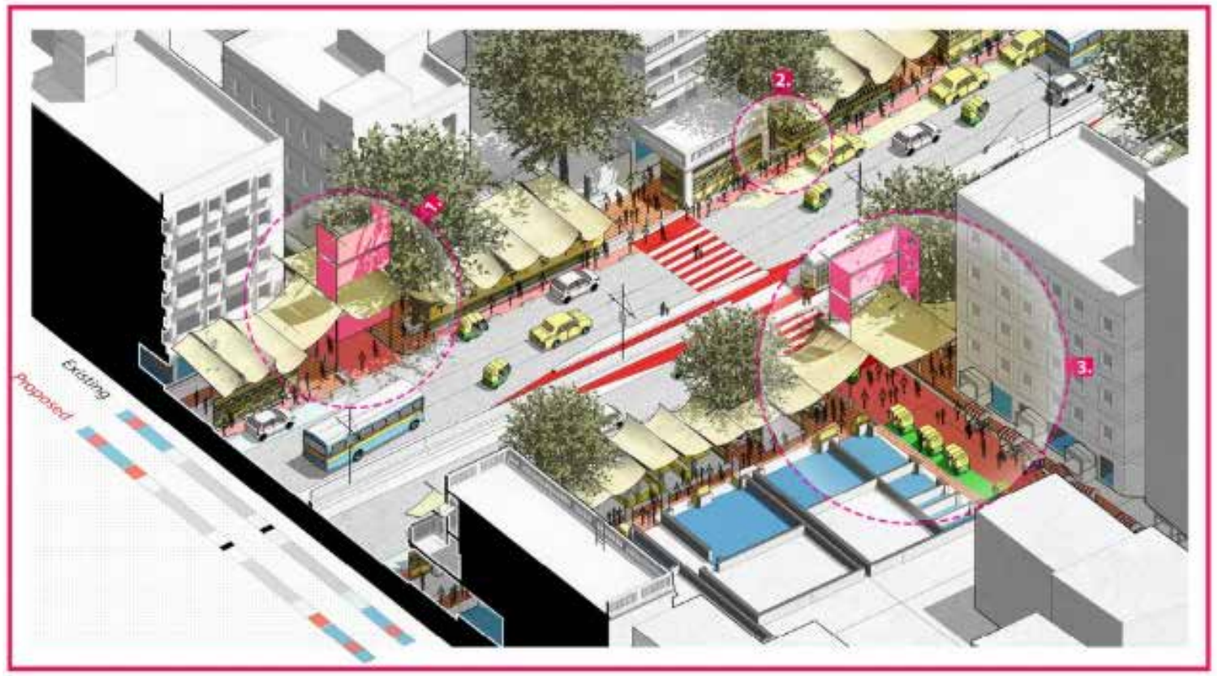


Figure 91: Transitional street edge anatomy (Thwaites et al., 2020).

5.4 STREET EDGE PLACEMAKING STRATEGIES

5.4.1 Case Study: Revitalisation of Gariahat Market, Kolkata



It has active streets, eat streets, and pockets that break the monotonous linearity of the market. Taller structures mark the location of these sections for easy navigation.

Figure 92: Placemaking strategies of Gariahat Market, Kolkata.

Active/ Animated Corners

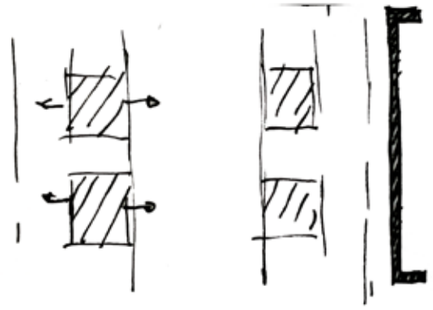
Active corners with resting platforms facilitate street food trade and encourage pauses.

Pockets

There are pocket inlets with modular benches for increased permeability.

Eat Streets

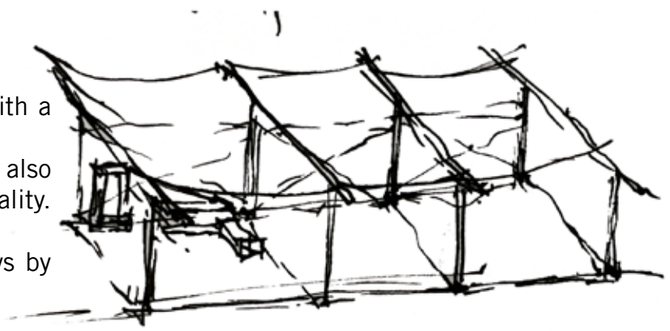
The feeder streets are pedestrianised and are used as eat streets.



Modular Standard Steel Framework

There are modular standard steel framework stalls with a continuous lightweight tensile fabric for roofing that facilitates the hanging and display of goods, which also defines the limits of encroachment and spatial literality.

This framework can be appropriated in different ways by the traders.



Source: https://portfolio.cept.ac.in/2021/S/fp/project-1-ud4003-1-spring-2021/revitalization-of-gariahat-market-kolkata-spring-2021-pud20321

5.5 FLOOD DESIGN PRINCIPLES

Compacted Fills

They partially elevates parts of a site to reduce the vertical distance or reclaim land and keep a building above the design flood elevation (Watson & Adams, 2011).

Grade beam and pier combination

Used to provide lateral stiffness and can use diagonal or knee bracing for column support (Watson & Adams, 2011).

Gabion Baskets

These baskets are a Low-cost solution built on riverbanks to control soil erosion.

Wet floodproofing

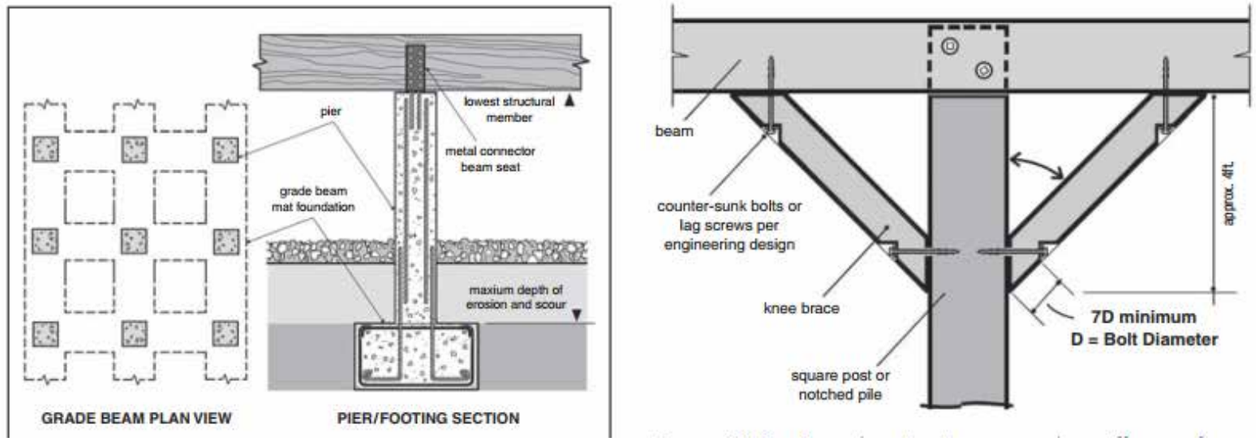
A measure that allows floodwaters to enter the structure. In this case, the building must resist "floodwater flow, collapse, and lateral movement," (Watson & Adams, 2011, p. 174), and must have flood-resistant materials below the design flood elevation.

Flood resistant materials

- Concrete
- Concrete blocks
- Glass blocks or stone with weatherproof mortar or grout
- Steel headers, beams, panels, or hardware
- Sprayed polyurethane foam or closed-cell plastic foam insulation
- Hot-dipped galvanised and stainless steel screws and nails.

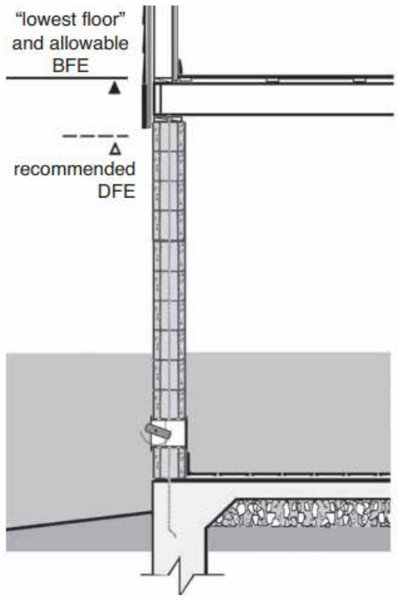
(Watson & Adams, 2011).

Figure 93: Flood design strategies.



Grade beam and pier combination (Watson & Adams, 2011)

Gabion Baskets
(https://www.gabionbaskets.co.za/musango-river-lodge-southern-zambia-zambezi-river/)



Wet flood-proofing (Watson & Adams, 2011)

06

REFLECTION

This section highlights the traders' needs, design principles, and strategies extracted from engaging with the preceding content.

6.1 SUMMARY OF STREET TRADERS NEEDS

Participation and Empowerment

Community Hub:

A flexible space for meetings, interaction and workshops in financing, local artisanship and sanitation e.t.c.

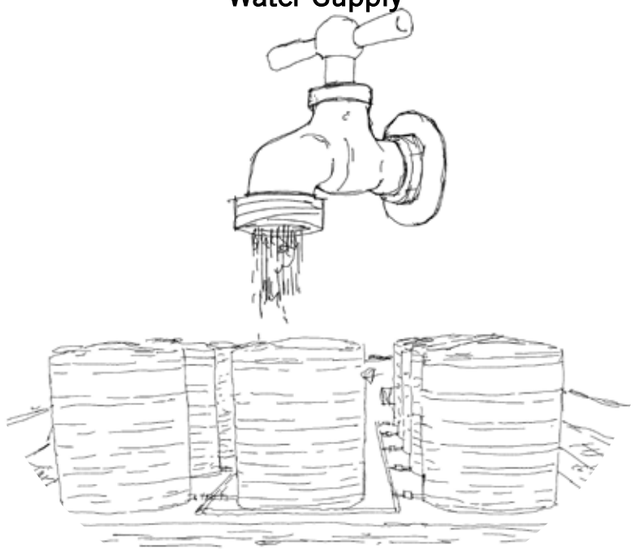
Events

Market

Waste Management

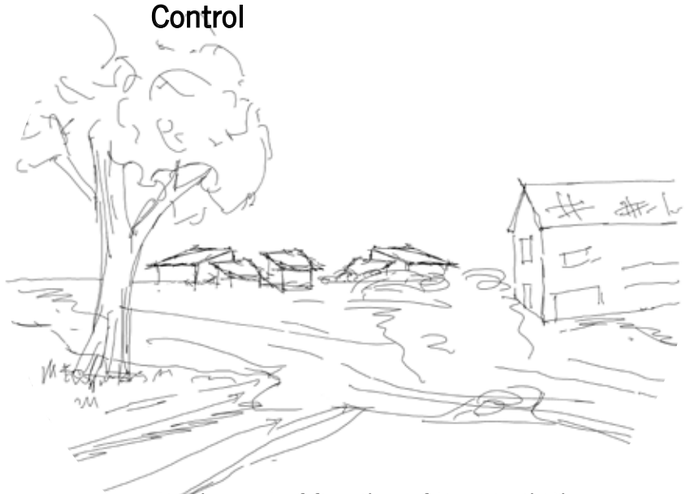
Effective waste managament systems to clean up Mudi River.

Water Supply



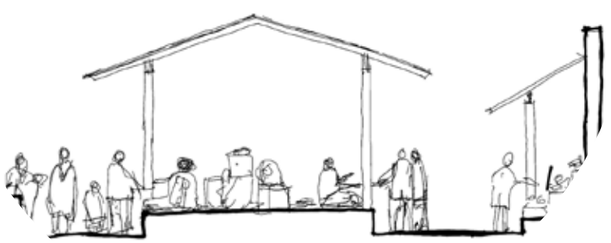
Water points and water harvesting

Flood and Surface Runoff Control



To reduce the impact of flooding of the Mudi River, and the formation of gullies on James Street.

Shedding Structures

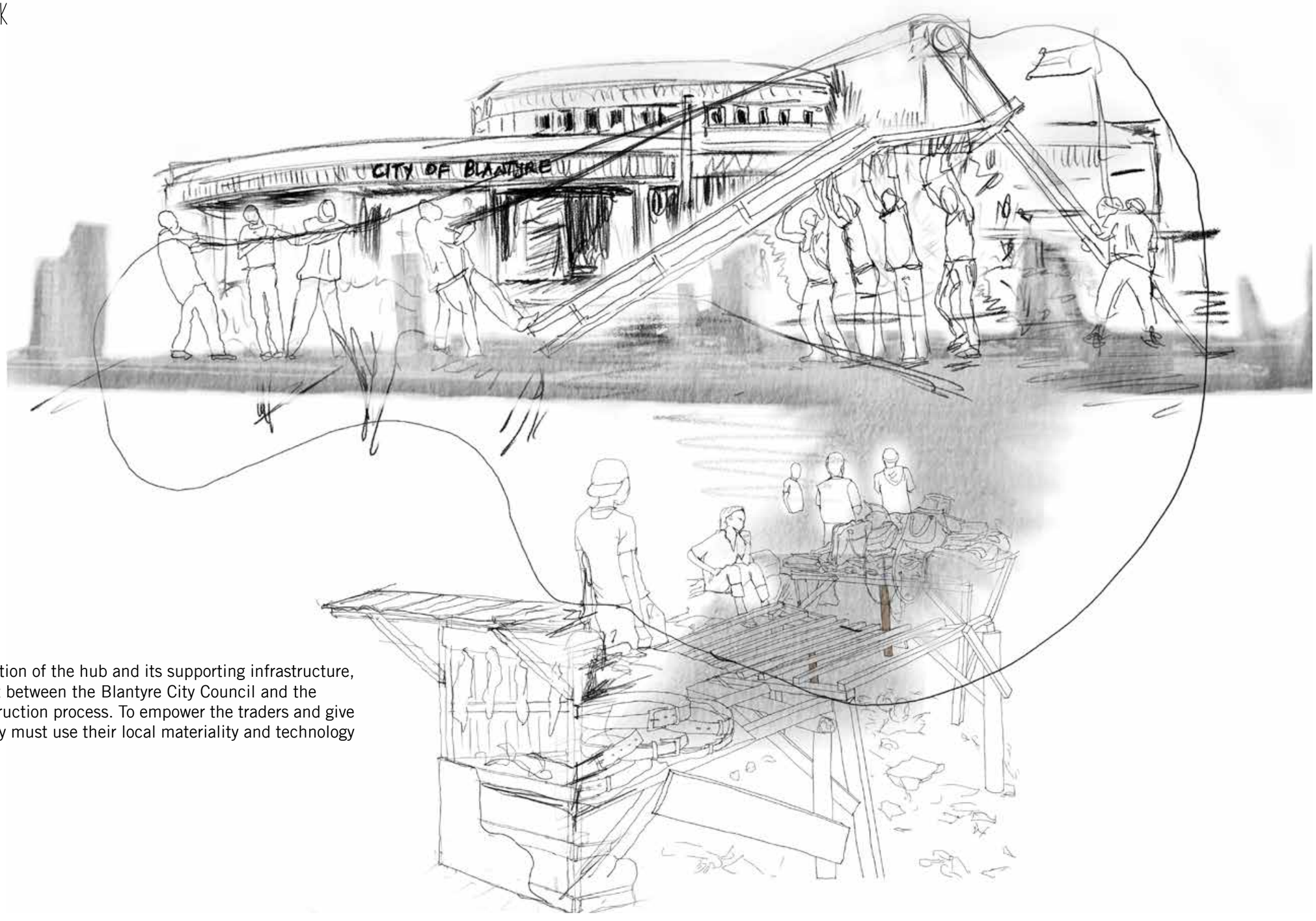


Shedding structures to protect traders and their goods from the sun and rain.

Ablutions

Figure 94: Summary of street traders' needs.

6.2 PATICIPATORY FRAMEWORK



For the design and implementation of the hub and its supporting infrastructure, I propose effective engagement between the Blantyre City Council and the traders in the design and construction process. To empower the traders and give them a sense of ownership, they must use their local materiality and technology to make infills for the hub.

Figure 95: Participatory framework.

6.3 DESIGN PRINCIPLES

UNFINISHED DESIGNS

Habraken Levels

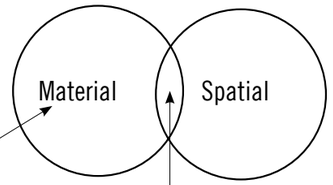
Design of the **urban tissue** with relevant services and infrastructure that provide a conducive environment for trading activities.

Services: Ablutions, Water and Waste Management
Infrastructure: Ground Conditions & Flood Control solutions

Provision of a **structure** that provides opportunity for appropriation by traders with **infills**.

Structure facilitating appropriations

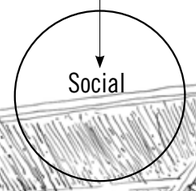
TRANSITIONAL STREET EDGE ANATOMY



Street Edge Placemaking Strategies

Animated Corners and Pockets/ Crossings

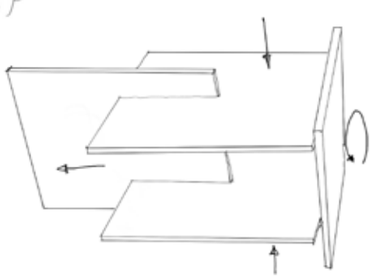
Sitting spaces
Water points
Eating streets and corners



Spatial layout, sitting, water points and materiality facilitating social functions

TRANSFORMATION AND FLEXIBLE SPACES

Design of **Kinetic Elements** that create new configurations to respond different functions.



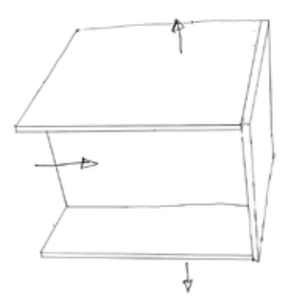


Figure 96: Design principles

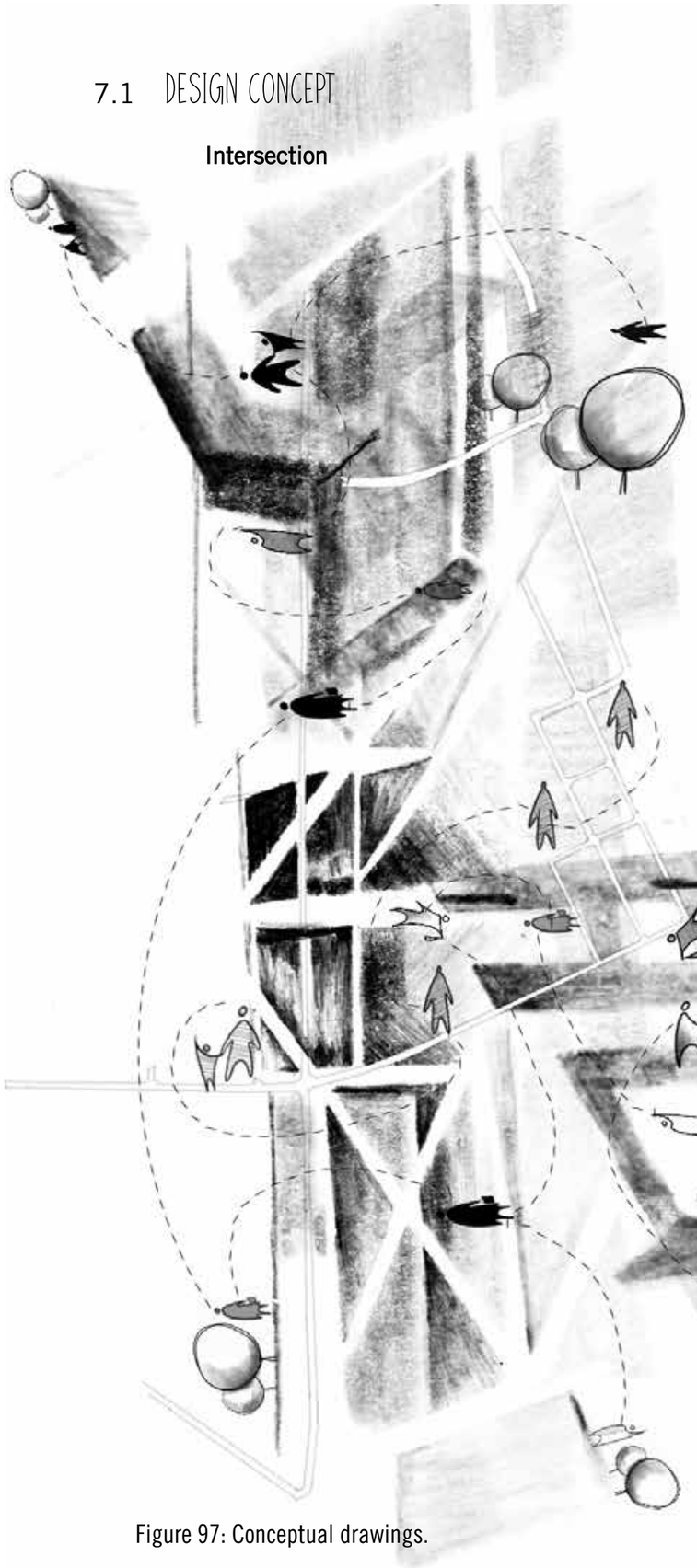
07

ARCHITECTURAL RESPONSE

This section engages with the needs, design principles, and strategies and reports on the design of the community hub in reference to the traders' urban realities and practices on the proposed site on James Street. The proposal is a prototype for further input and engagement with the traders.

7.1 DESIGN CONCEPT

Intersection



Intersection Defines: →

Where the architecture should be

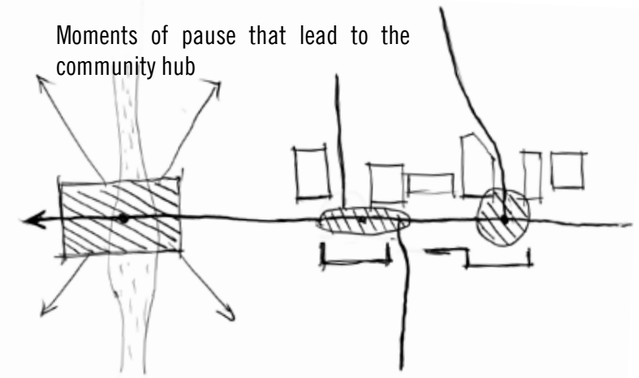
At a point of intersection or crossing

Where people converge

Familiar experience in the Hub as at other intersections

A connector between the two parts of the existing market

Moments of pause that lead to the community hub



Intersection Defines: →

Integration of form and place

How the architecture sits in, and relate to the place

How the architecture interacts with people and vise-versa?

Material choice and assembly

The Intersection Between:

Sky and the building

Building and Sorrounding (existing and new infills)

Water/ Earth and the Building

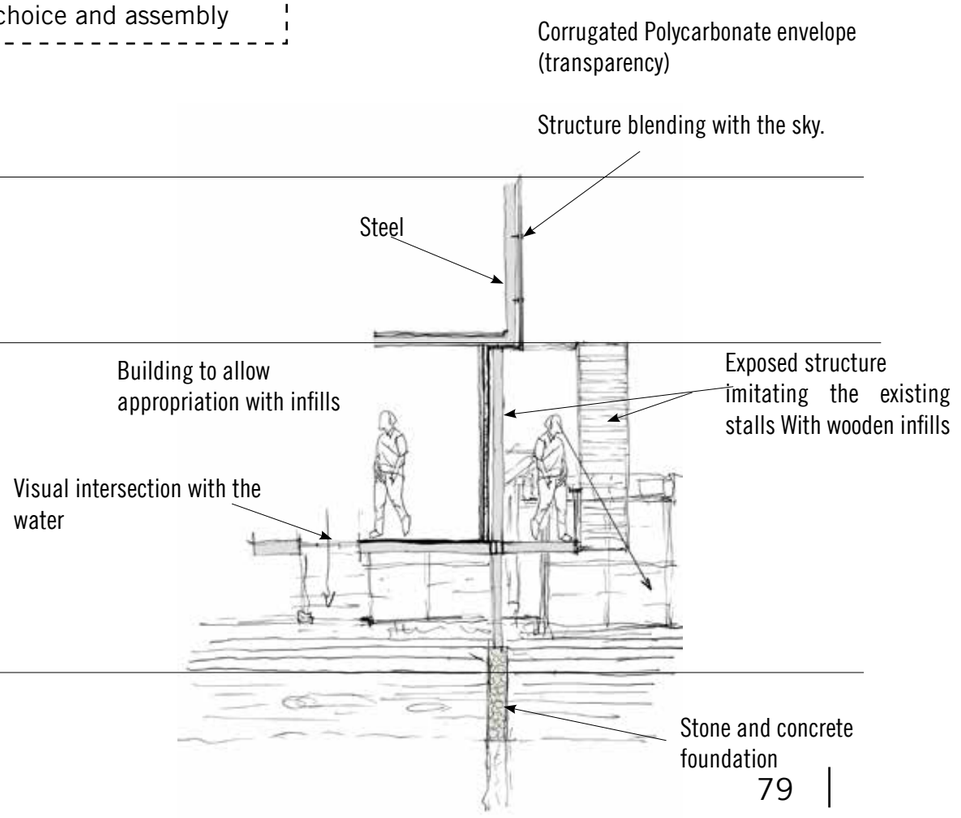


Figure 97: Conceptual drawings.

Figure 98: Conceptual model representing intersection.

7.2 DESIGN DEVELOPMENT: PROCESS

The following pages describe the design process to the final iteration.

Figure 99: Approach. Final iteration

7.2.1 Location for the iterations

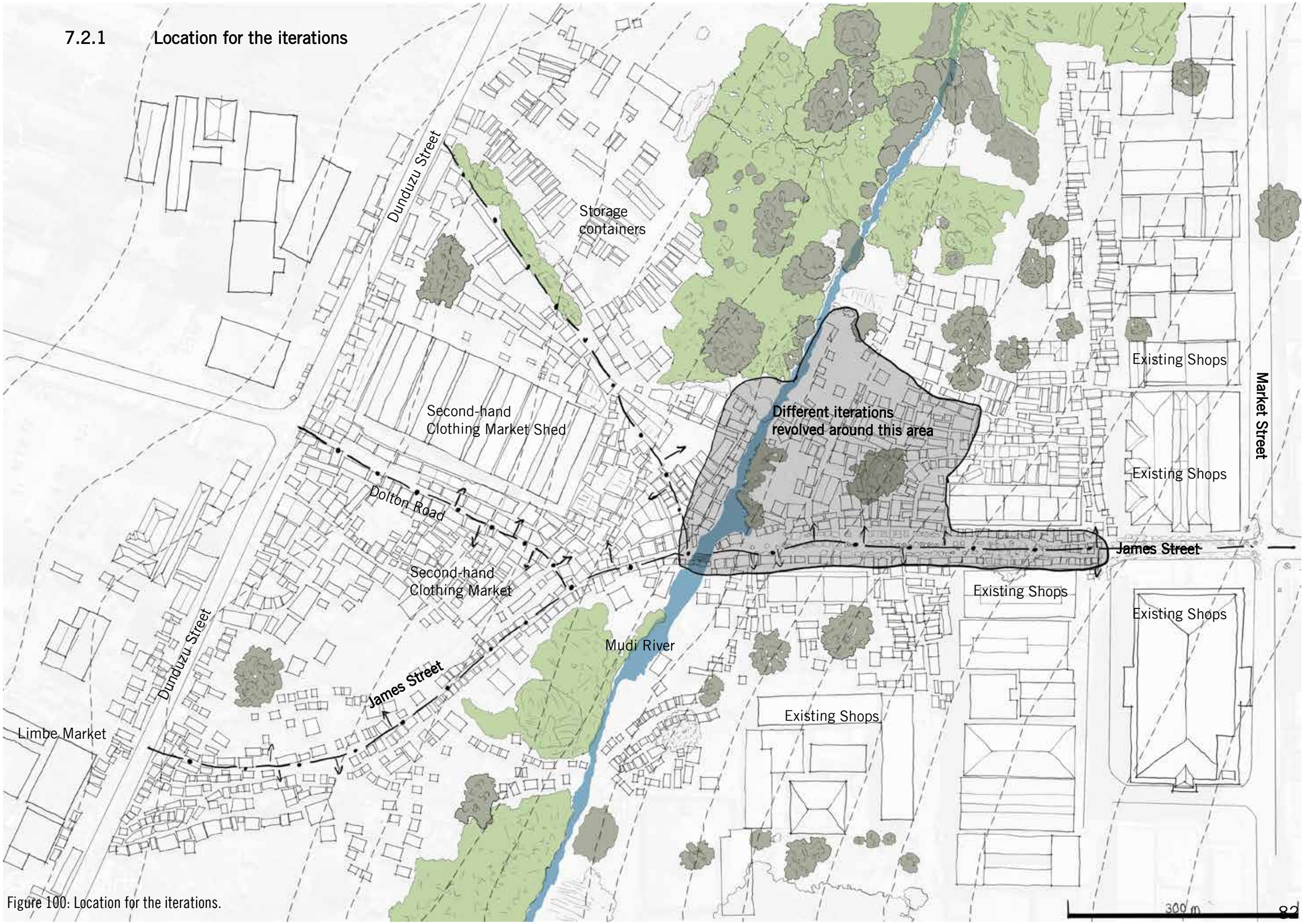


Figure 100: Location for the iterations.

7.2.2 First Iteration

This iteration has the community hub crossing over the Mudi River to the second-hand clothing market and aims to upgrade the street conditions and create a market square around an existing tree (Appendix 6).

S

Strengths

- The design of a community hub as a bridge.
- The provision of ablutions, a waste collection point, and a recreation space that activates the river edge.

W

Weakness

- The disruption of the existing market setup that already works for the traders.

O

Opportunity

- Improve the river's edge conditions to control flooding.

T

Threat

- It will be too sensitive and imposing to disrupt the existing market setup.

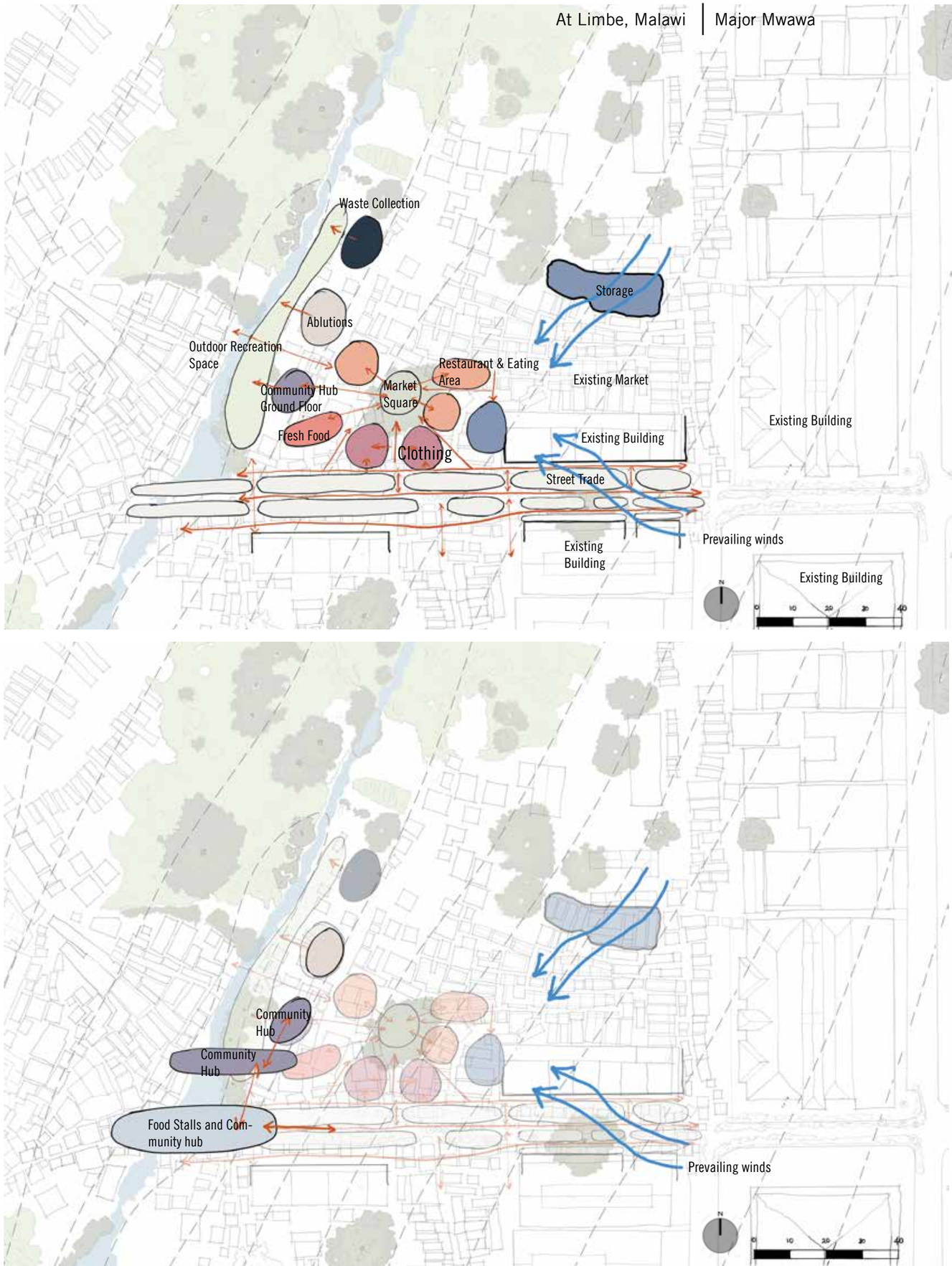
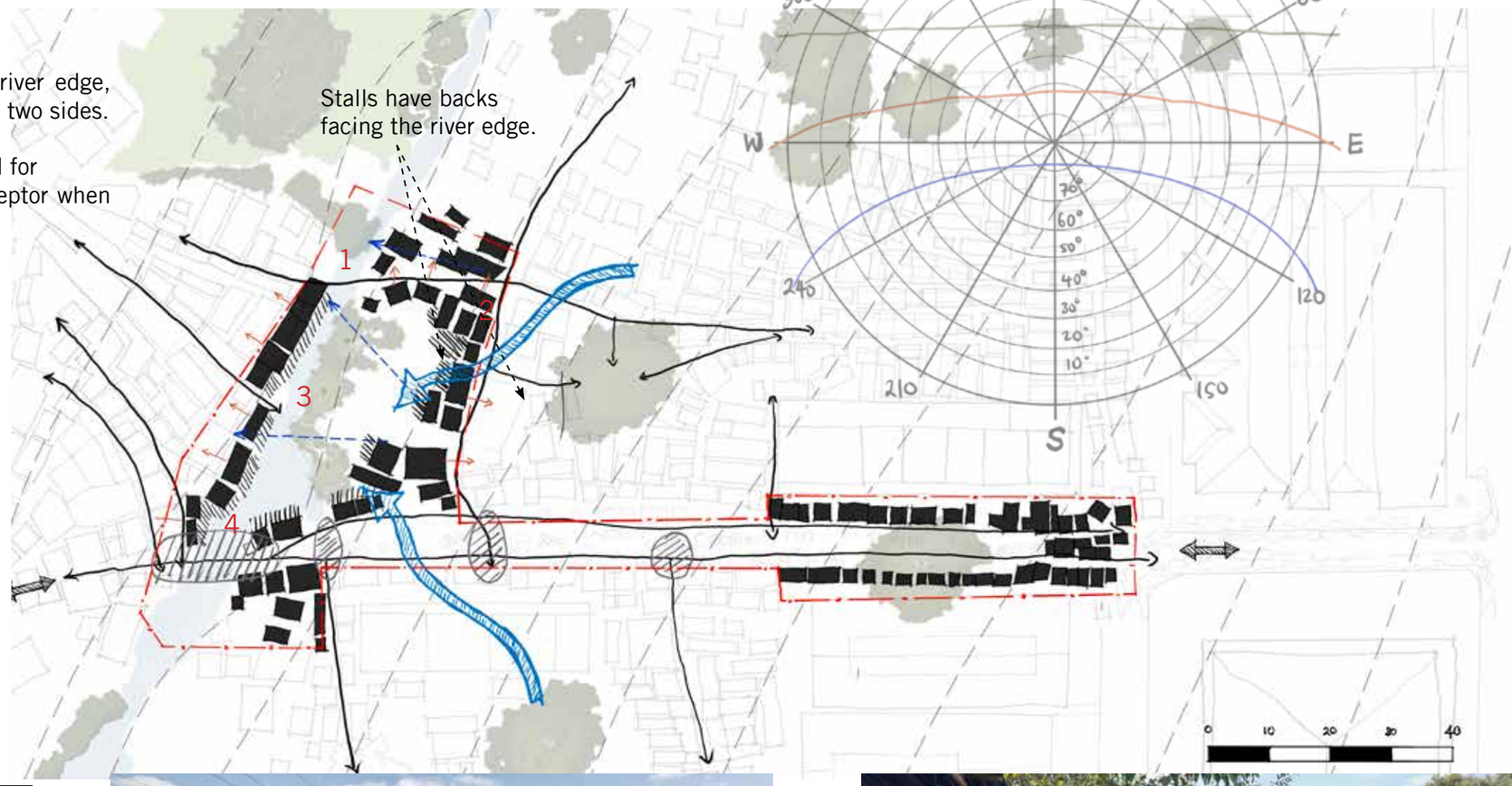


Figure 101: First iteration

7.2.3 Second Iteration

The second iteration aims to disrupt criminal activities at the river edge, improve its condition, and create a visual connection between the two sides.

Garbage barriers to trap wastes at riverbanks ready to be collected for recycling, coupled with a solar-powered waterwheel trash interceptor when the water levels rise, can be used to clean the Mudi River.



1

2

3

Figure 102: Location for the second iteration.

3

4

3

4

Figure 103: Site images.

7.2.3.1 Proposed Waste Management System for Mudi RIver

Barrier of Garbage on Matias Hernandez River

Floating garbage barriers

Mr Trash Wheel. Baltimore, Maryland

Solar-powered waterwheel trash interceptor

Figure 104: Proposed waste management systems.

Source:

https://designedconscious.com/plastics-in-the-ocean/sustainability-news-stories/12-river-plastic-cleanup-projects/

7.2.3.2 Design process

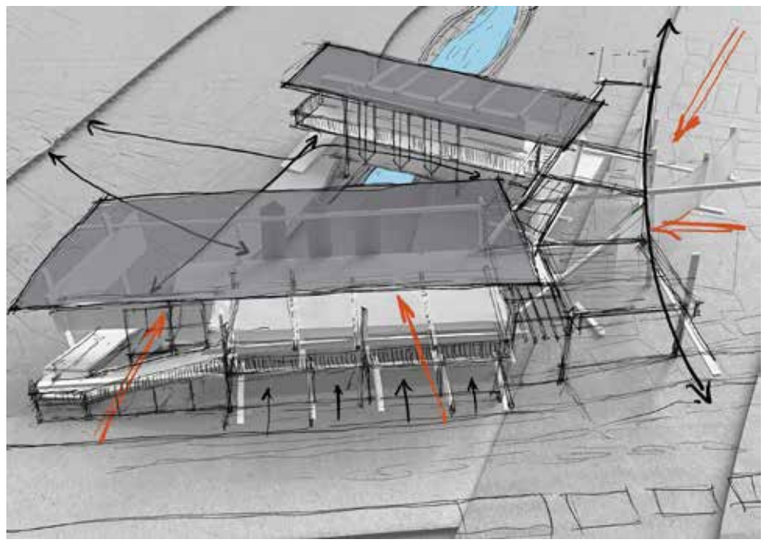
Two bridges link the two sides of the market, accommodating the community hub and stalls for displaced traders on the site.

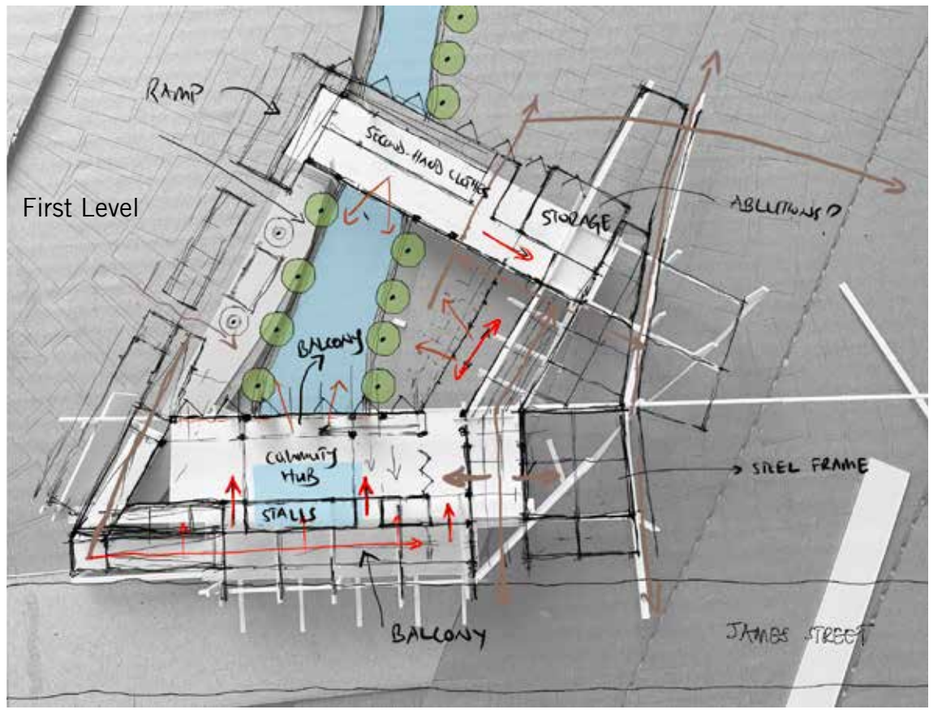
Strengths
- Open space underneath the hub for appropriation by traders, following the Habraken's levels.
- The community hub overlooks the recreation space.
- Orientation maximizes natural lighting.

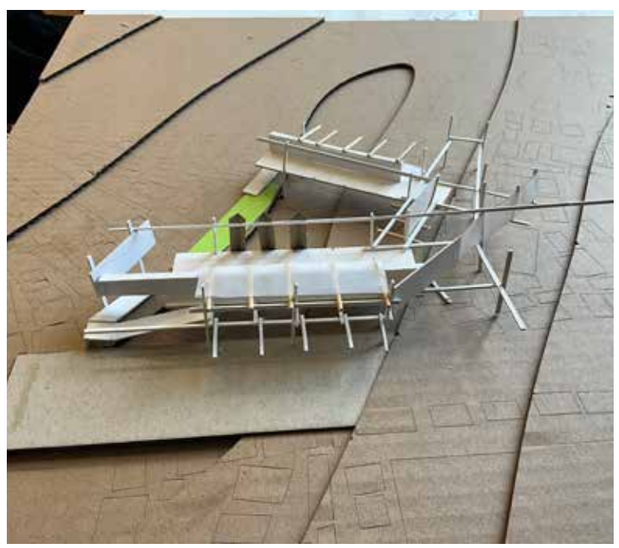
Weakness
- The design does not leverage foot traffic on James Street, which makes it challenging to bring people into the architecture.

Opportunities
- Position the hub on the street and leverage its foot traffic.
- An elevated secondary bridge on James Street to access it.

Threats
- It is redundant and expensive to create two wings for the hub.
- Recreation on the left side of the river edge disrupts a lot of existing stalls.







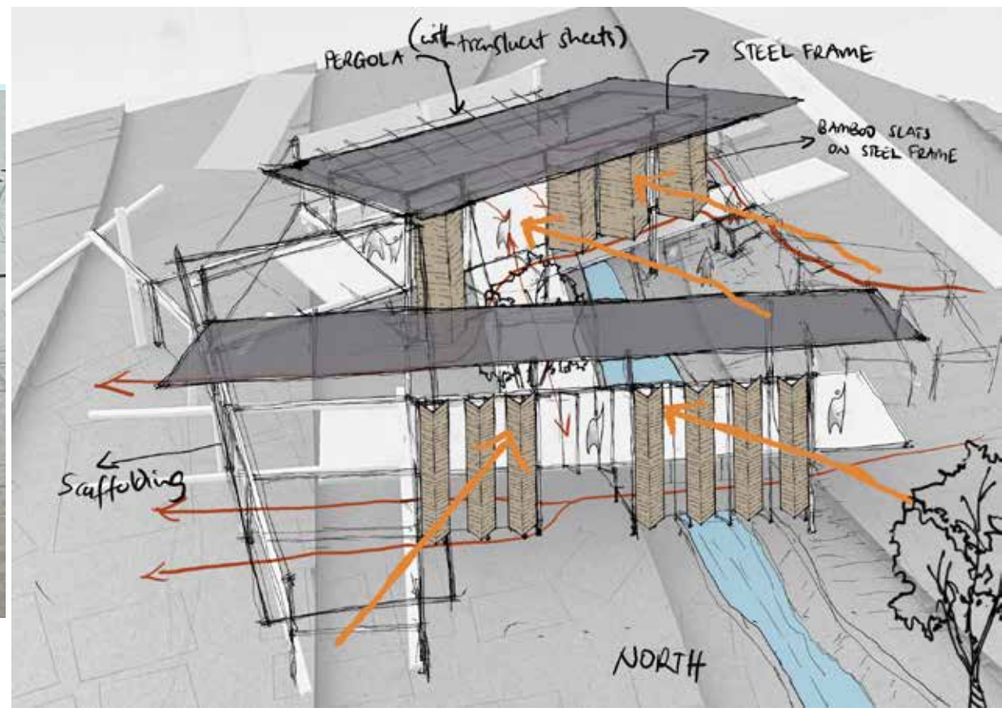
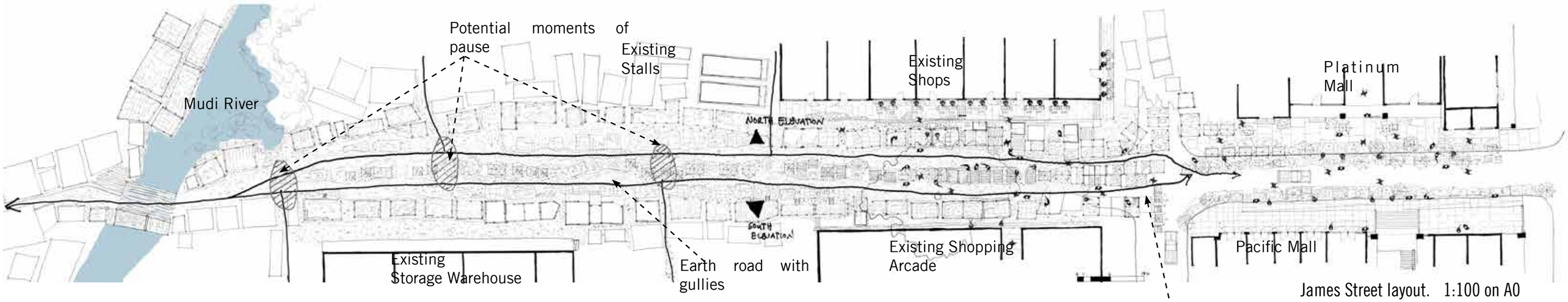
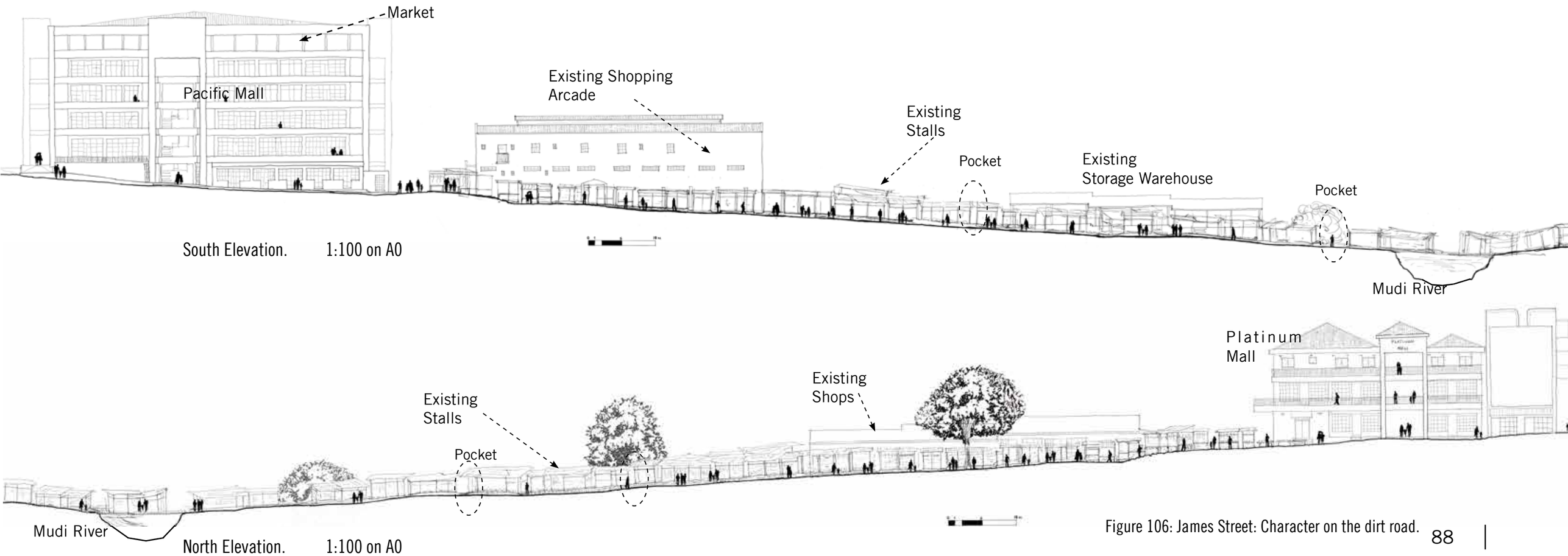


Figure 105: Iteration two design process.



James Street layout. 1:100 on A0

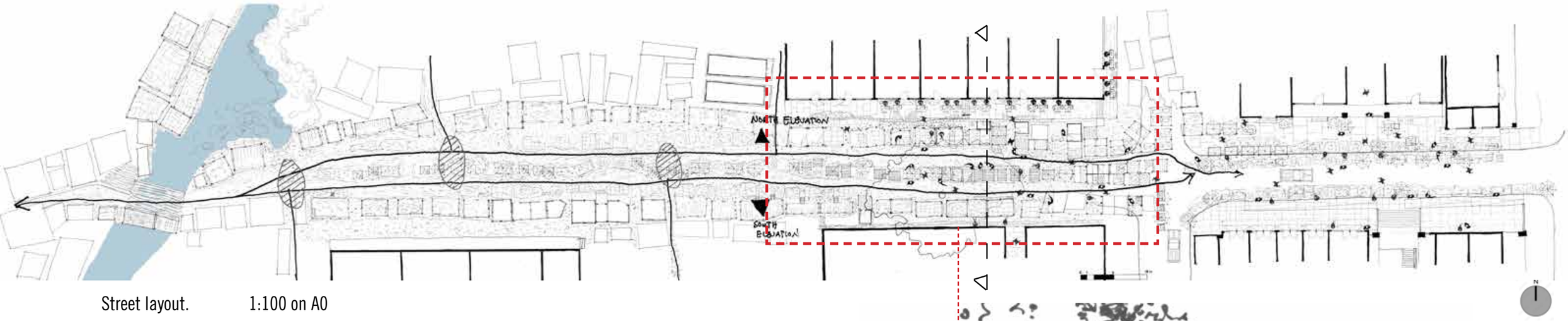
The proposal also aims to improve James Street ground and edge conditions and create moments of pause that lead to the community hub. However, due to time constraints, this is left for further studies and is only covered in the master plan.



South Elevation. 1:100 on A0

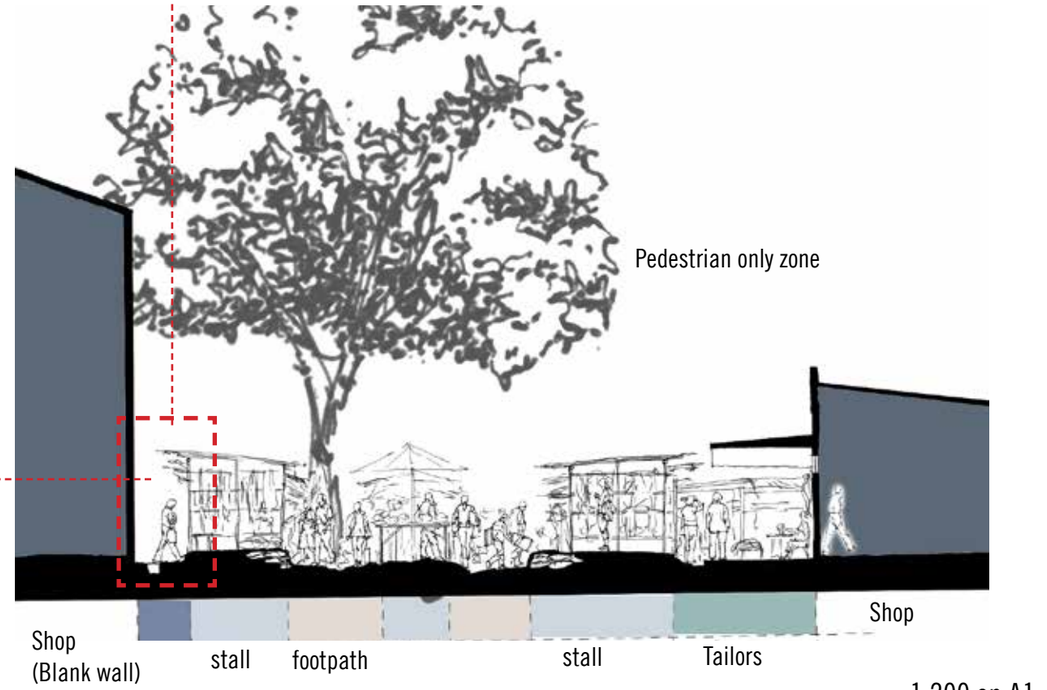
North Elevation. 1:100 on A0

Figure 106: James Street: Character on the dirt road.



Street layout. 1:100 on A0

Dead space. People urinate in this space, and dispose waste.



1:200 on A1

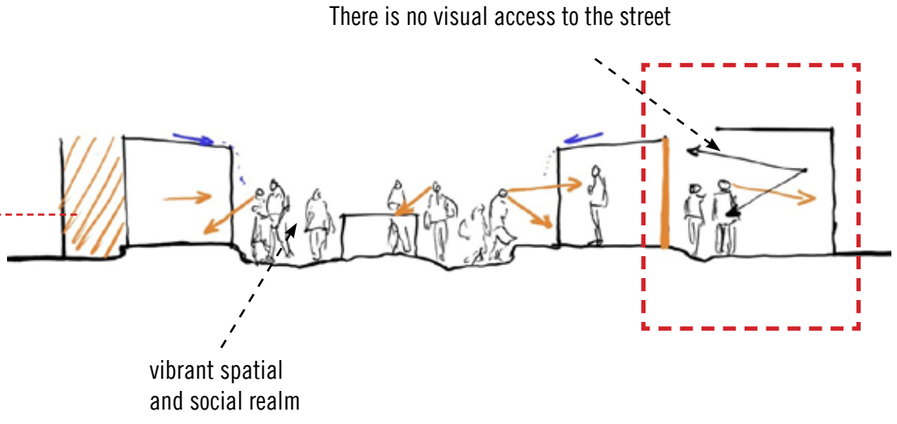


Figure 107: James Street edge conditions

7.2.4 Third Iteration

The third iteration locates the hub on James Street, at the river intersection, leveraging the foot traffic and creating an opportunity for a concentration of traders in the intervention.

The street edges maximise visual access and foot traffic for the existing shops while also maximising the potential for traders.

S

Strengths
- Placemaking strategies for pockets (water points, seats, and trees) facilitate and encourage eating streets, rest, and the concentration of mobile street traders.
- An eat street facing the river edge and recreation.

W

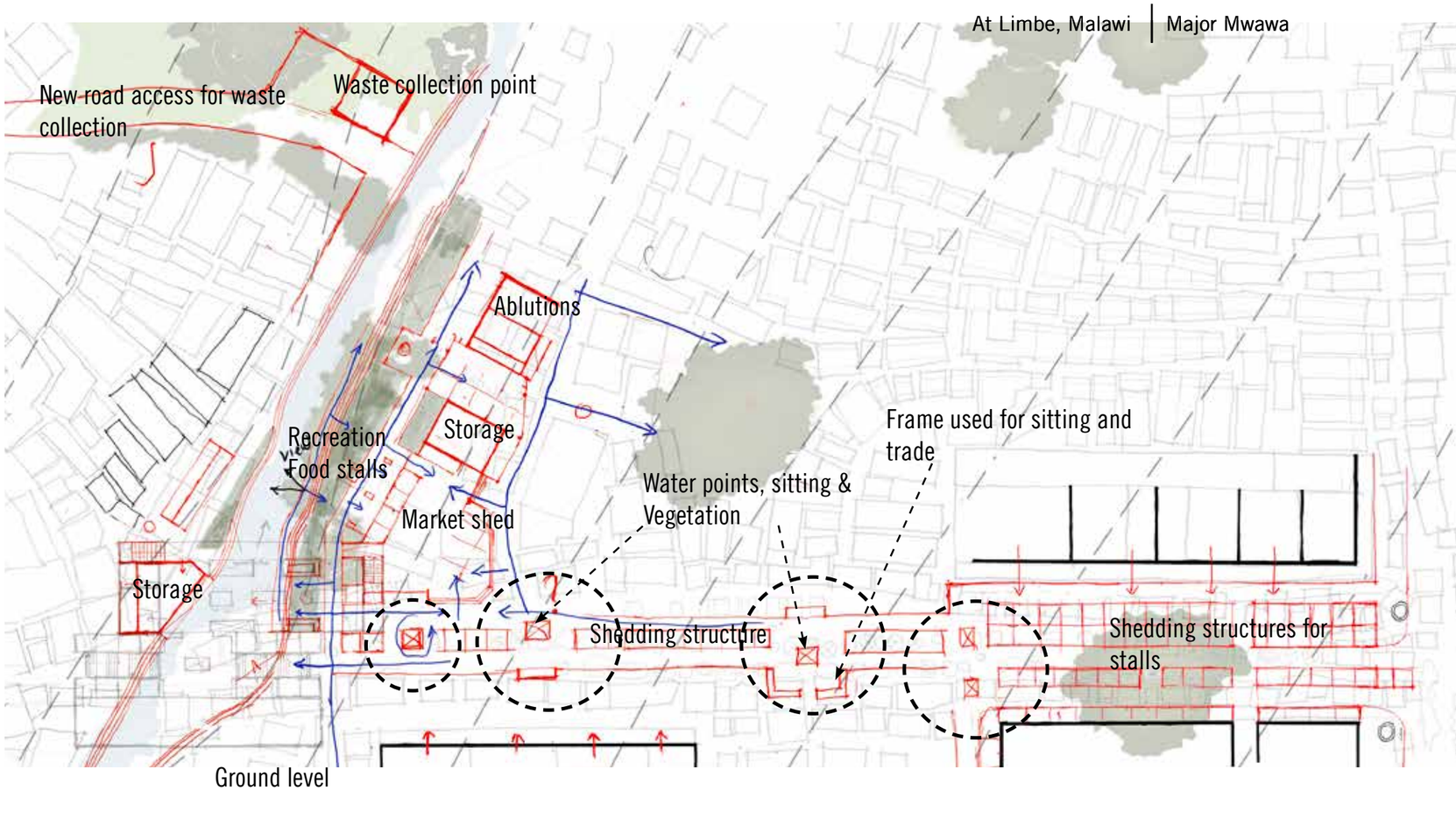
Weakness
- The hub becomes too wide to appreciate the river.

O

Opportunity
- Create floor openings for people to appreciate the river from the hub.

T

Threat
- The width becomes a threat to the scale of the existing context.



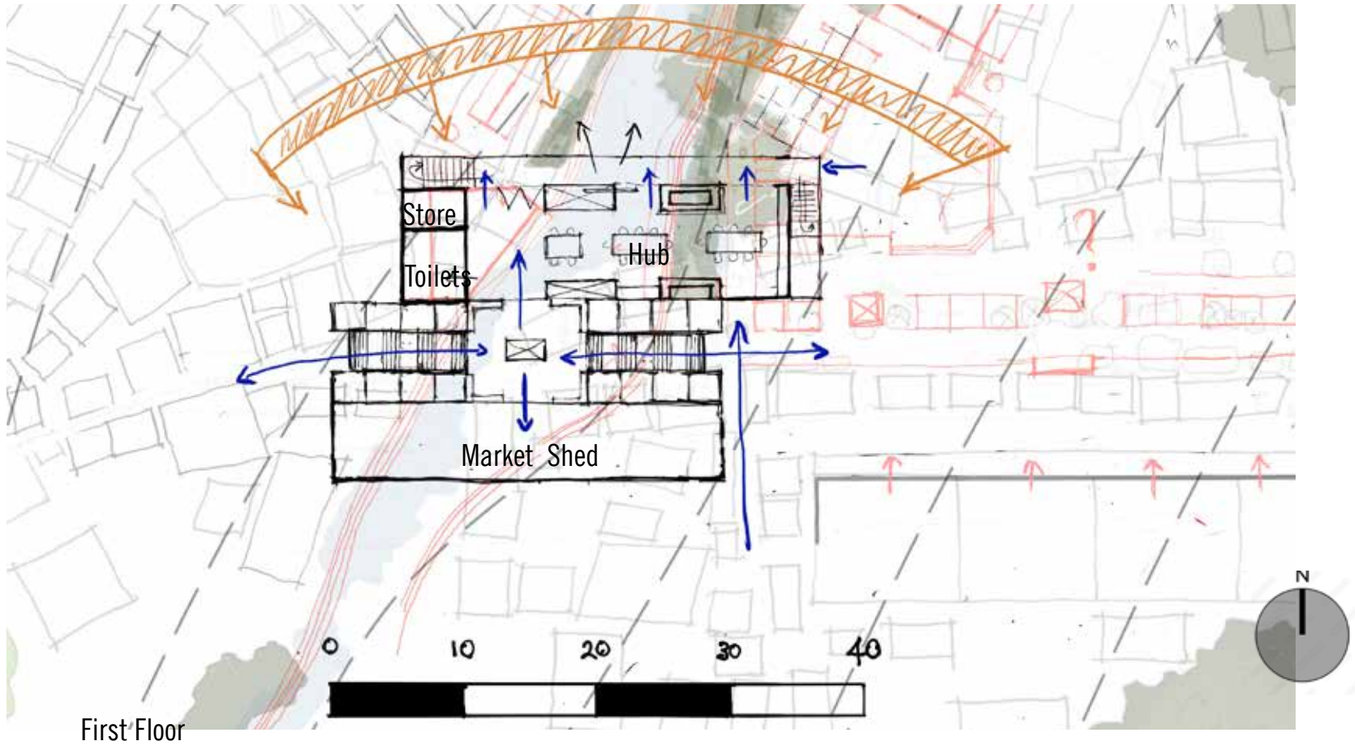


Figure 108: Third iteration site layout and floor plan.

7.2.5 Fourth Iteration

The fourth iteration creates two ramps with trading spaces for universal access, but minimal trading space is available in the hub.

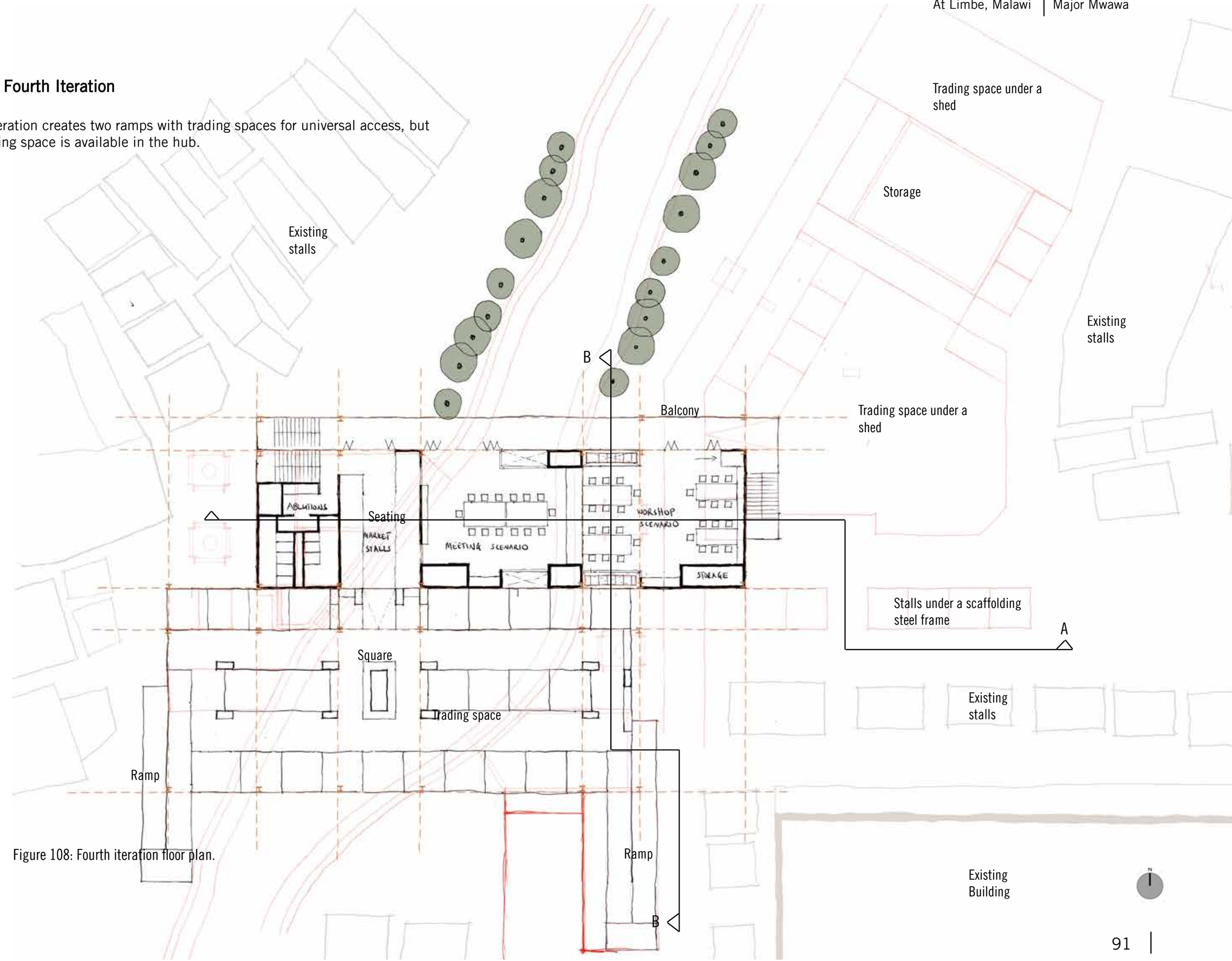
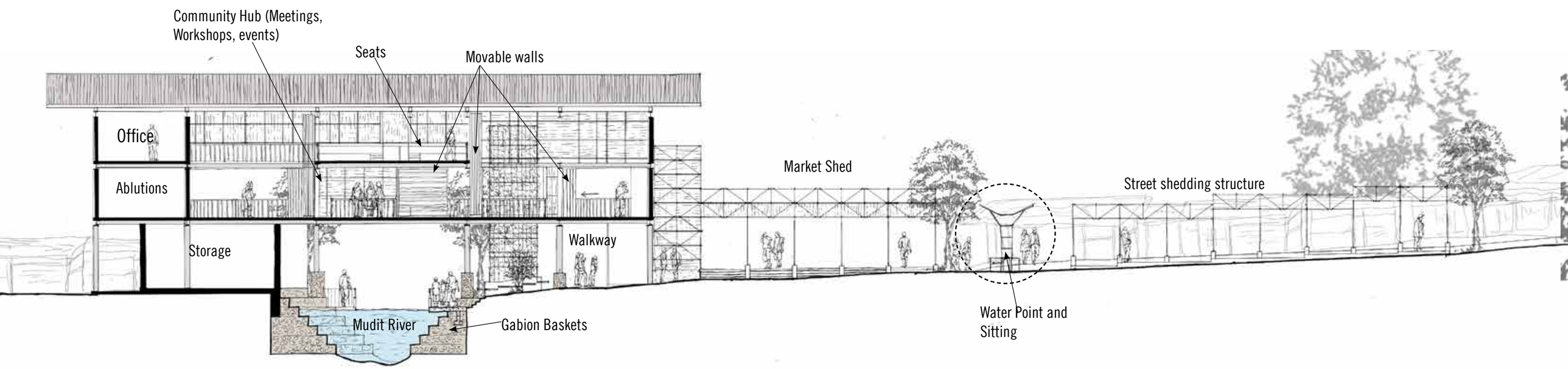


Figure 108: Fourth iteration floor plan.



Section A: Through Mudi River, Community Hub, Recreation Space, and the proposed scaffolding steel structure market sheds.

Scale: 1:100 on A1

Figure 109: Fourth iteration. Section A.

S

Strengths
- Fire escapes that would also diffuse traffic through the hub.
- Water Harvesting

W

Weakness
- The ramp becomes a detour that disrupts the continuity of James Street.
- There is no appropriate ventilation for the ablutions.

O

Opportunities
- Keep ablutions at a minimum since there are other ablutions in the vicinity.
- Remove the ramps and put two solar-powered lifts.
- The hub can become a market.

T

Threats
- The public may find the ramps undesirable.
- The ramps displace many traders since they take up too much space.

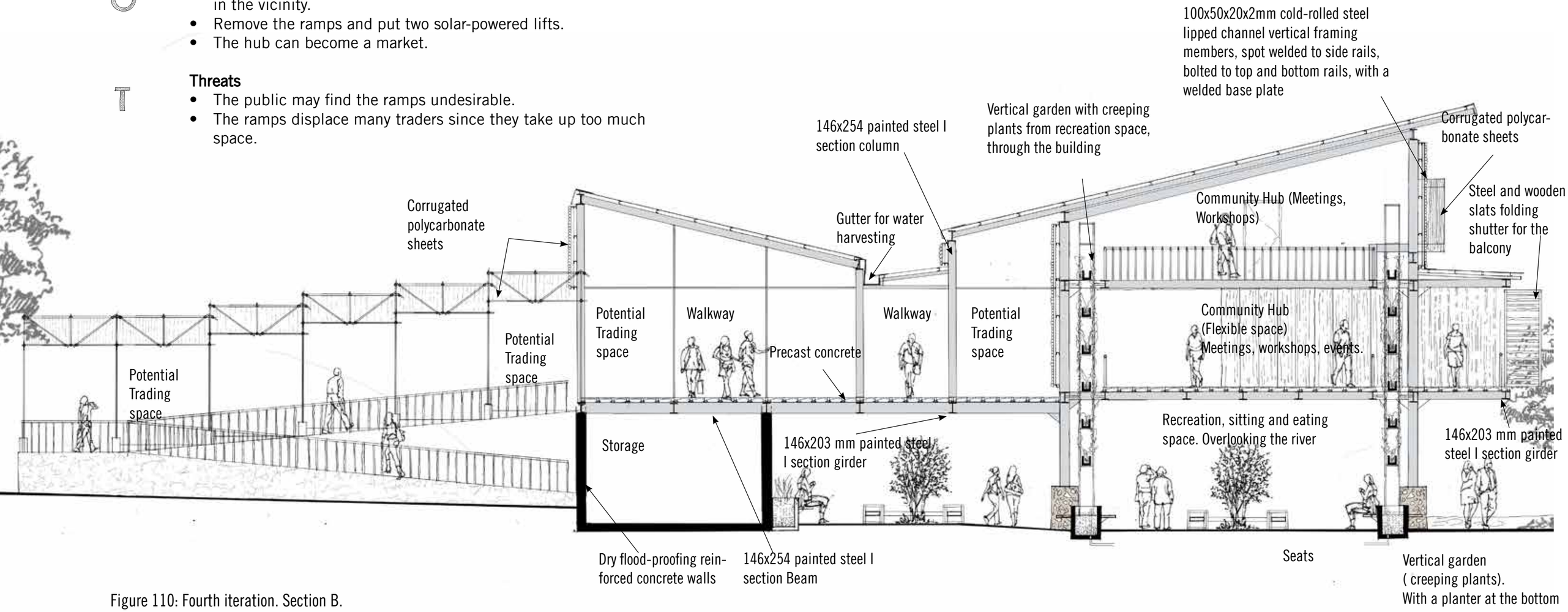


Figure 110: Fourth iteration. Section B.

Section B: Through Community Hub, Recreation Space, Storage and Market

Scale: 1:50 on A1

7.2.6 Structural and Material Assembly Case Study

7.2.6.1 Alexandra Interpretation Centre. Johannesburg, South Africa

Figure 111: Alexandra interpretation Centre.
Source: https://www.archdaily.com/58495/alexandra-interpretation-centre-peter-rich-architects?ad_source=search&ad_medium=projects_tab

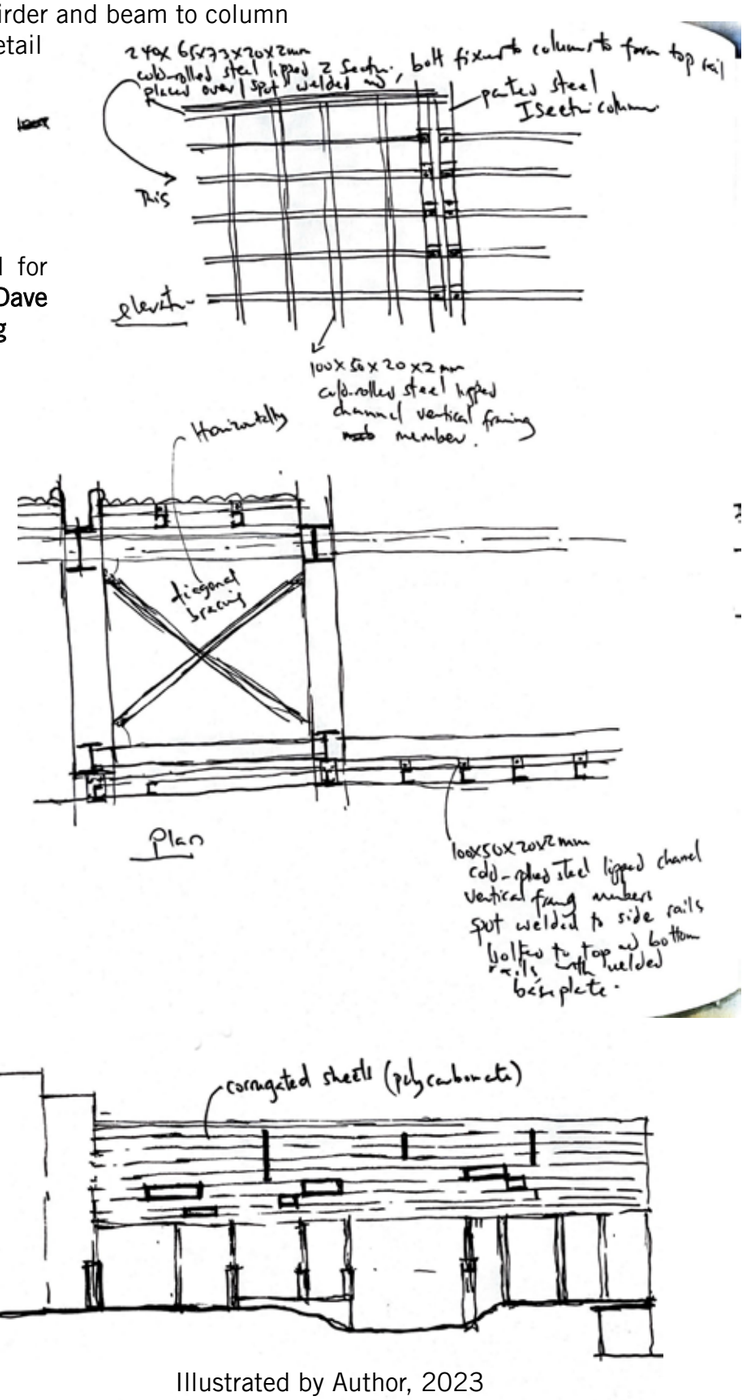
The Alexandra Interpretation Centre, designed by Peter Rich Architects, is built as a bridge across a street in Alexandra, Johannesburg, and offers exhibition and retail spaces, restaurants, a library, and skills development initiatives.

What is of interest for my project is the way it blurs the universality of the steel structure by appropriating it with a collage of infills that resemble the existing elements and materiality in the context, thereby giving it a sense of place.

My investigation into this case study also focused on its structural aspect.

The materiality investigation used for this case study is attributed to **Dave MacApline's Report on the building (UCT Honours 2023).**

Girder and beam to column detail



Illustrated by Author, 2023

Figure 110: Alexandra Interpretation Centre. Facade assembly and structural dynamics.

7.3 DESIGN DEVELOPMENT: FINAL ITERATION

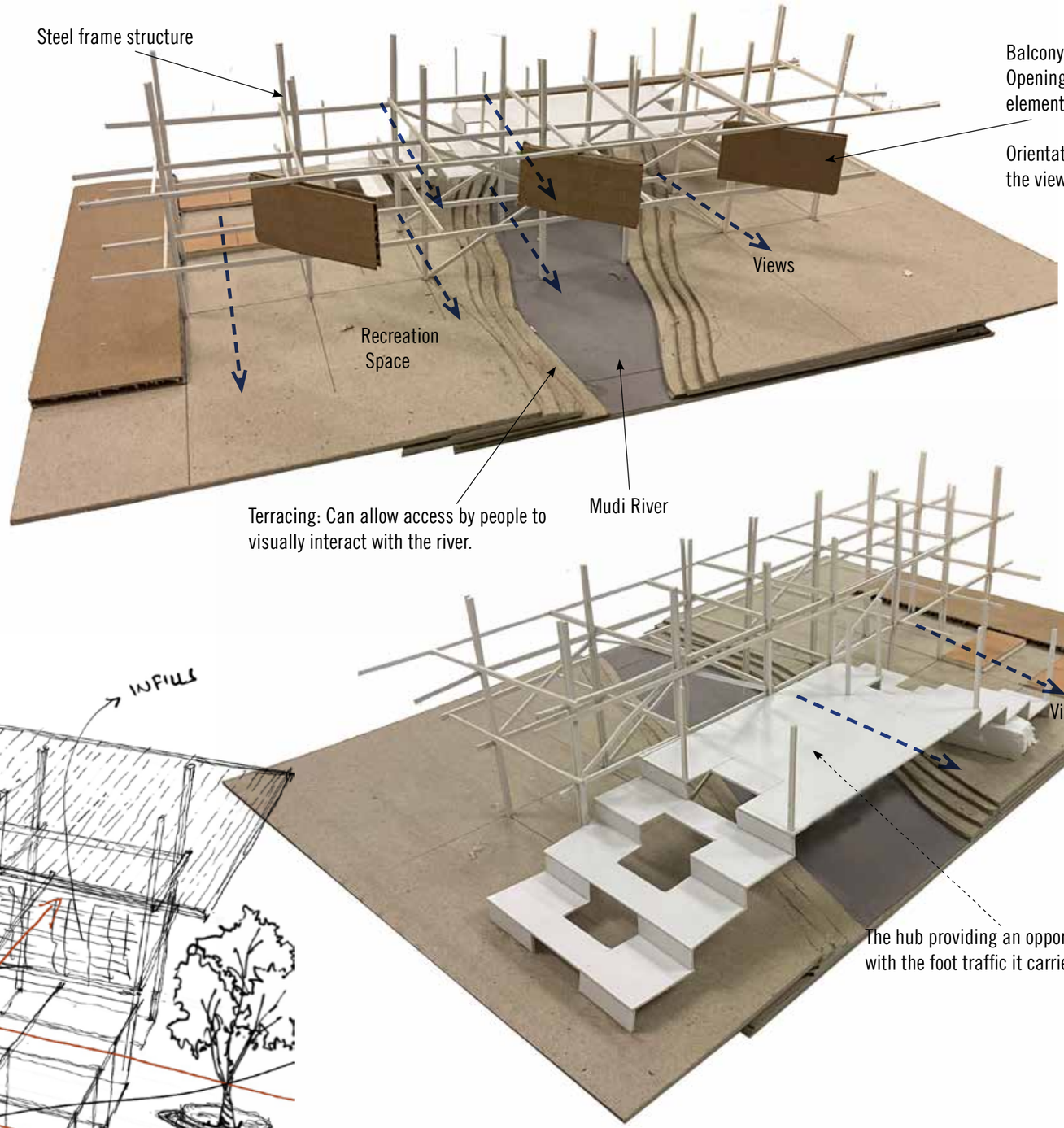
7.3.1 Where the Architecture Should Be.

7.3.1.2 At the river intersection

Finally, the hub becomes narrow and spans across the river, with its longer side facing the north, to allow maximum natural lighting into the building and maximise views of Mudi River and the recreation space.

It presents itself as a landmark, with a roof overhang that emphasizes its presence in the area, as it lets traders appropriate it and its vicinity.

A concrete bridge sits next to it and becomes the traders' tactile manifestation of their spatial reproductions and making. The steel frame becomes the permanent civic manifestation with infills influenced by the traders' materiality and practices, constructed, and assembled by them and a local contractor.



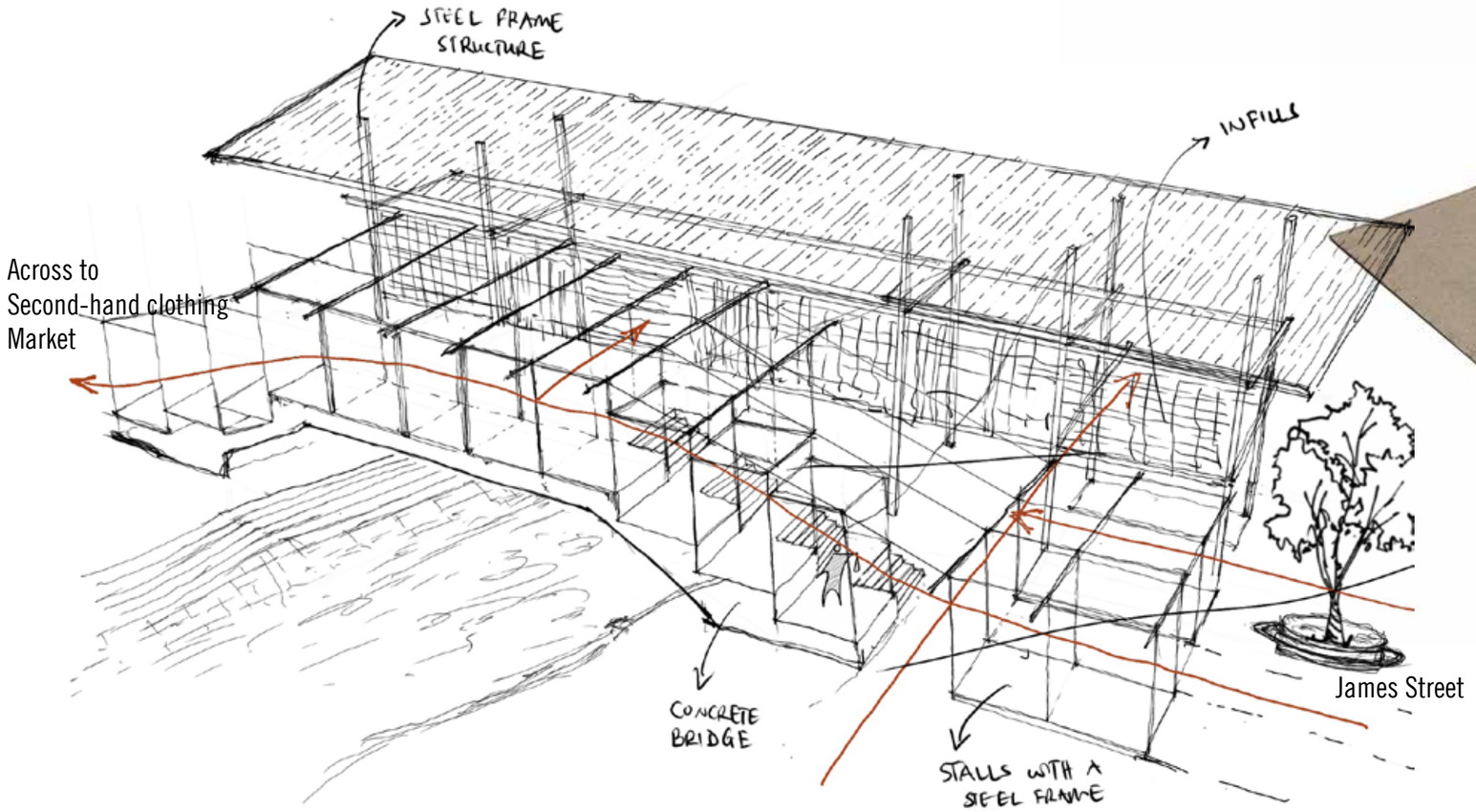


Figure 111: Community Hub Conceptual drawing and Model.

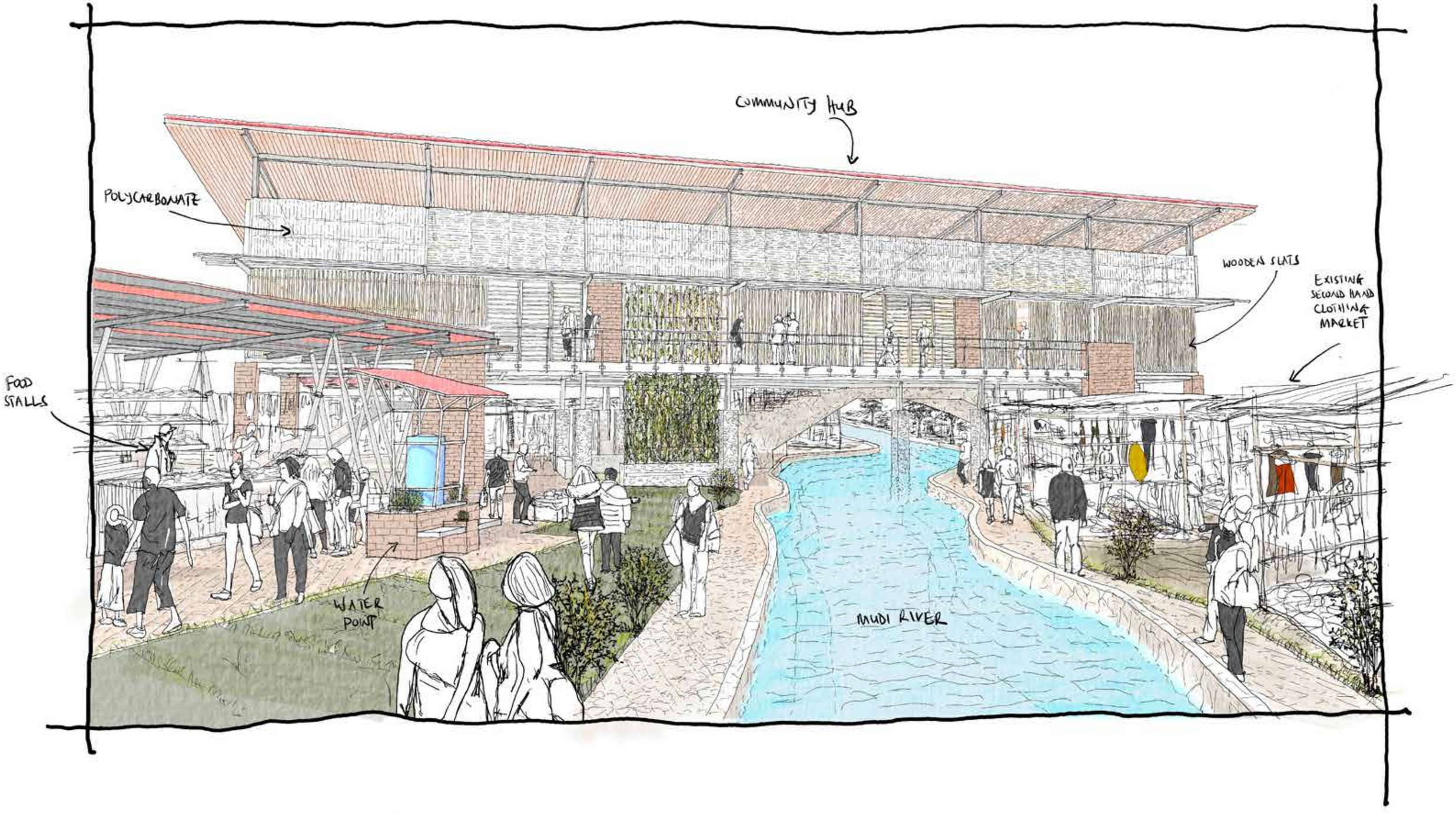


Figure 112: North Facing Side

Figure 113: 3D Perspective. Market sheds

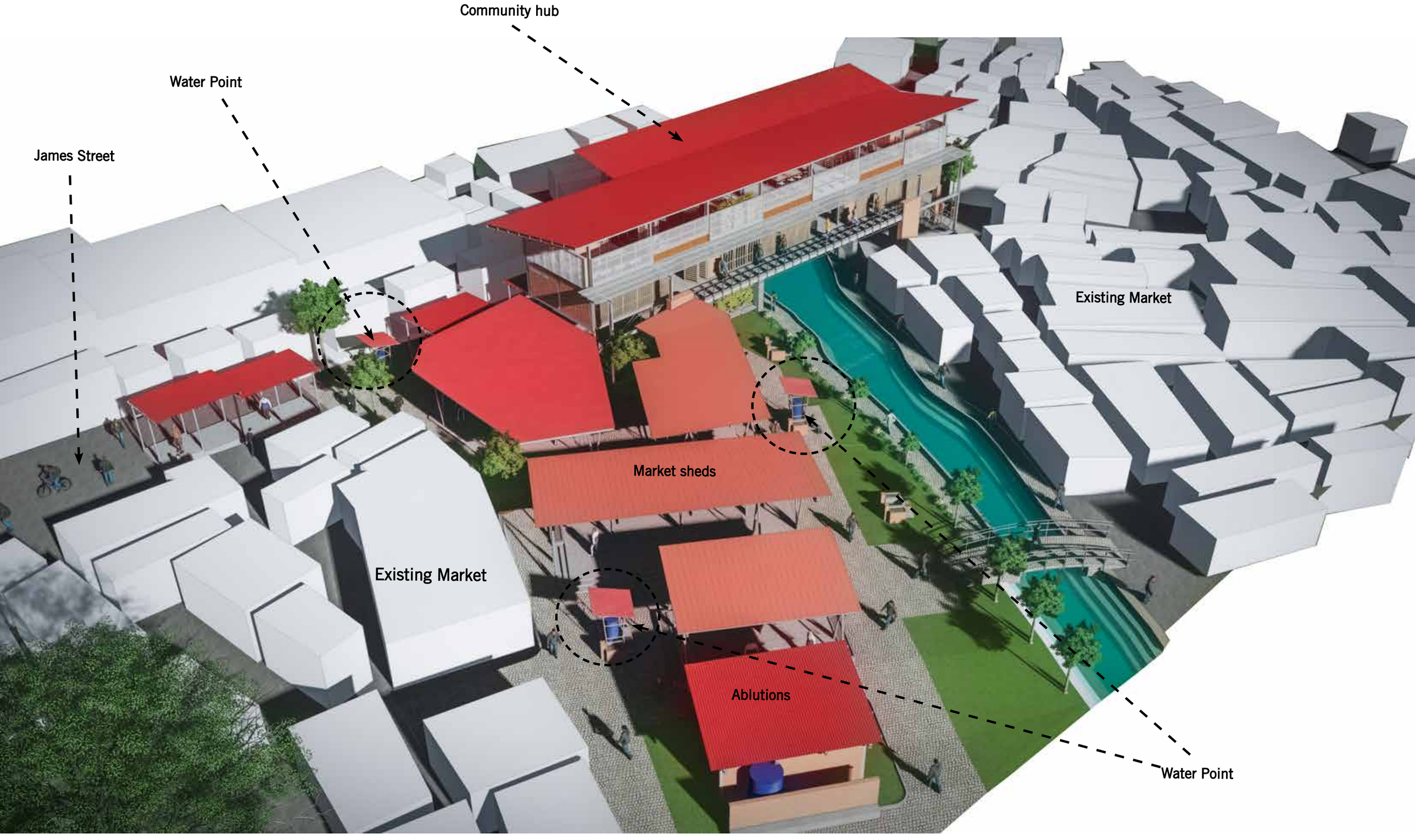


Figure 114: 3D Perspective. Aerial View

Figure 115: 3D Perspective. North Facing Side.

7.3.2 Master Plan.

Community Hub

Flexible space for meetings and workshops
Outdoor recreation and sitting spaces
Storage
1 Office
Toilets
Market
Kitchenette

Street Market

Activated corners and pockets

Water Points pavilions
Sitting spaces
Food stalls & eating areas

Shedding frames for stalls

Figure 116: Master Plan.

Services and infrastructure for the existing market (Street Market Upgrade)

Ablutions
Waste bins
Waste collection point
Market sheds for displaced traders

7.3.3 Site Plan

7.3.3.1 Placemaking

In the final iteration, I maintained the food stalls facing the river and provided experiential paths on both sides at the river edge, which activate the back of the existing stalls on the left edge and create a dialogue with the recreation on the opposite edge.

Parts of the recreation space and the opposite edge sit on reclaimed land, filled with compacted soil, with the whole edge treated with gabion baskets and vegetation to keep the soil intact.

The vicinity has a waste collection point, ablutions with a gravity-fed water harvesting system to flush toilets, and water points for washing hands and drinking.

The ground is paved with bricks and stone to give it an earth feel, like the existing situation, and to intersect the intervention with the earth.

7.3.3.2 Space making

The fresh food and second-hand clothing market spaces apply the Habraken principle, where a static structure sits for appropriation by traders, which also satisfies the wet flood-proofing requirements with flood-resistant materials (concrete piers finished with stone cladding).

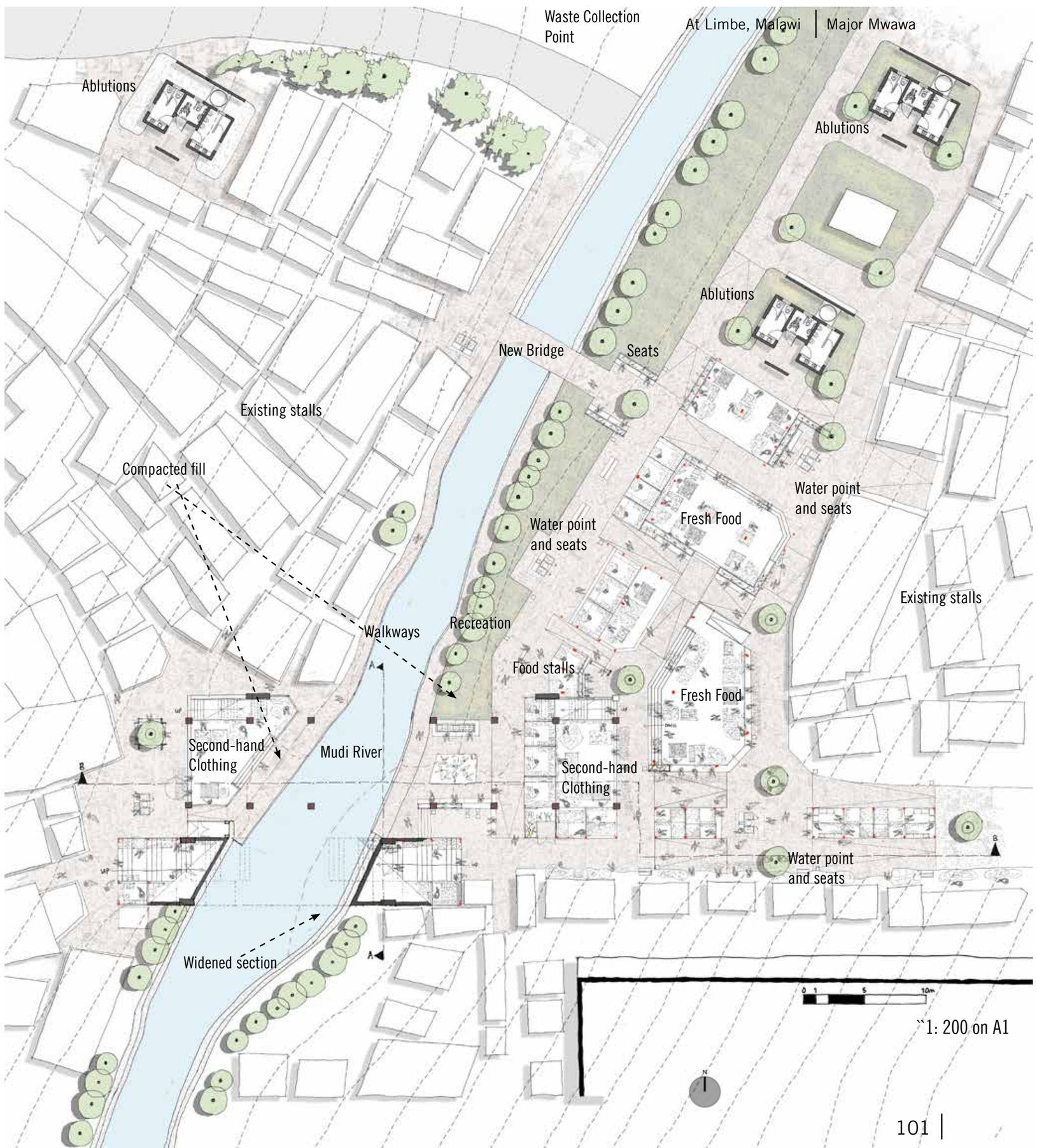


Figure 117: Site Plan

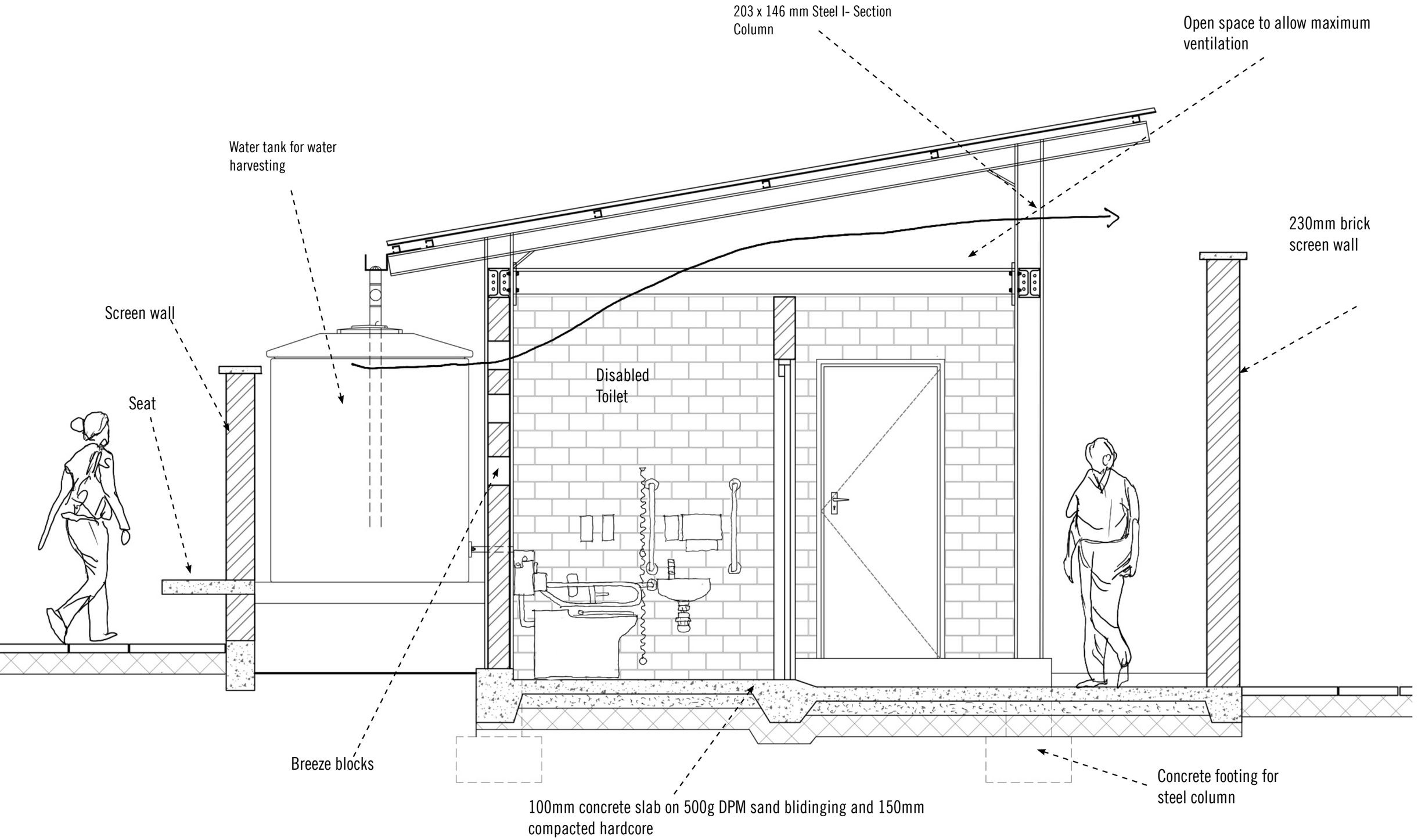
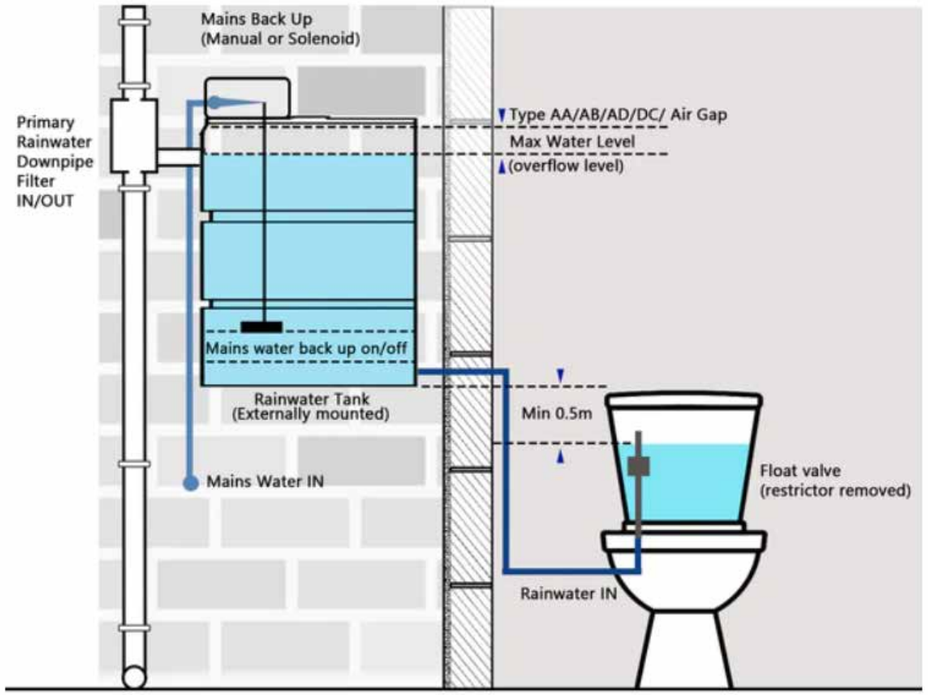


Figure 118: Ablution. Scale: 1:25

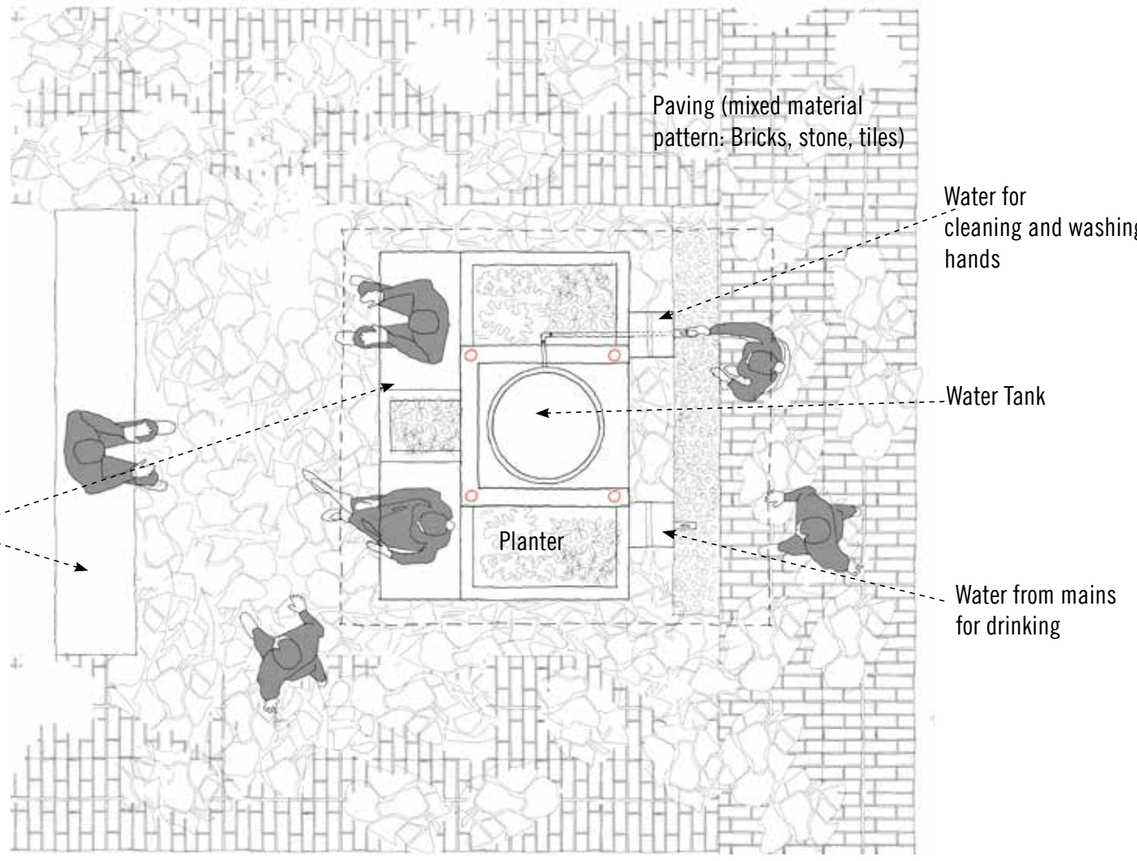
7.3.3.3 Proposed Water Harvesting System



Gravity-fed Water Harvesting System

Source: https://www.freeflush.co.uk/pages/gravity-fed-rainwater-harvesting-system-for-flushing-toilets

Figure 119: Proposed water harvesting system.



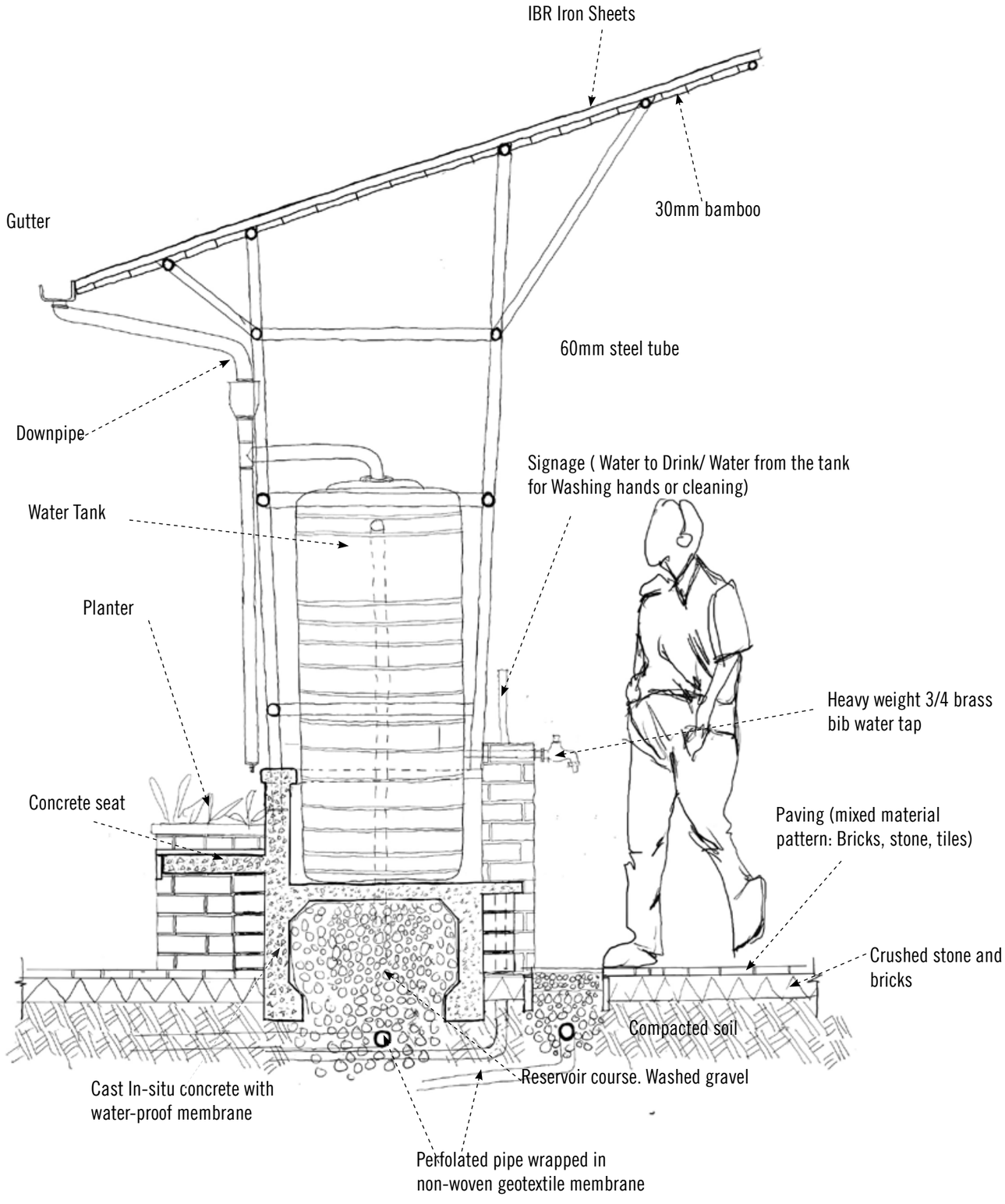


Figure 120: Water Point Floor Plan (Scale: 1:20) & Section (Scale: 1:10).

7.3.4 Floor Plans

7.3.4.1 First Floor: Meetings and Workshops

Space Making

The concrete bridge allows appropriation by on-ground and mobile street traders with stalls made from their local materiality and technology.

The traders displaced from the existing bridge can appropriate the new bridge first, and the remaining spaces by other traders, depending on what they decide as per their protocol.

Transformation and Flexible Spaces

The flexible space for meetings, events, workshops, and stalls accommodates forty six people at once, four times the space they have as a dedicated meeting space in the existing market.

The workshops can range from skills training in financing and business planning to

local artisanship, sanitation, and other initiatives the traders might see fit.

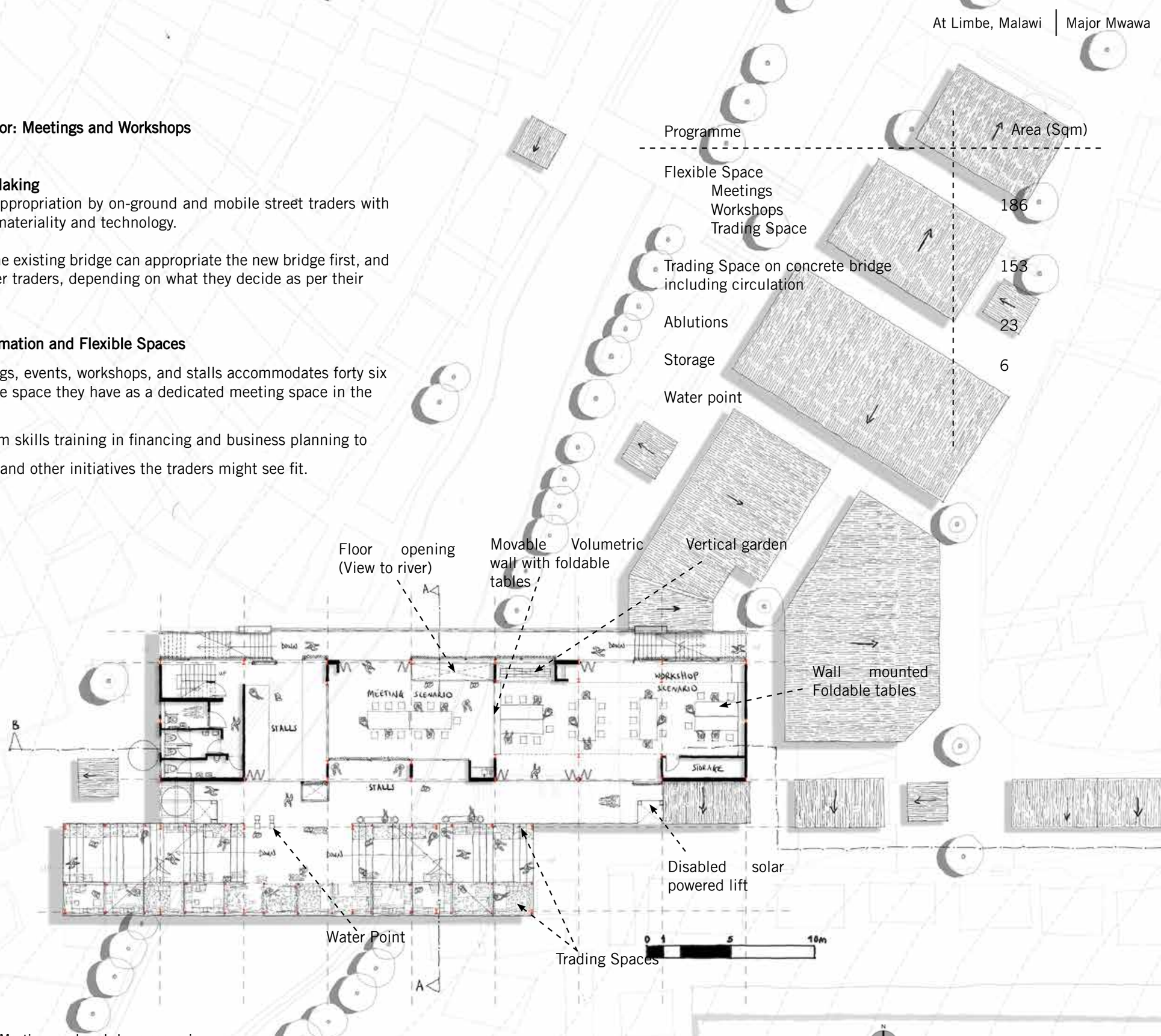
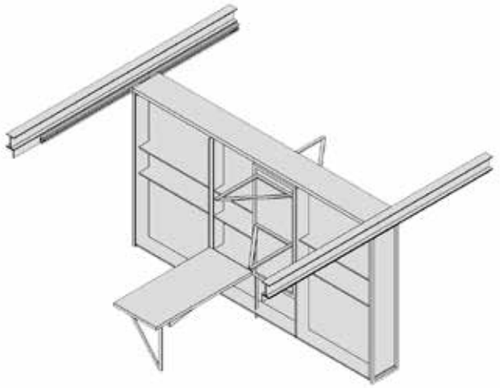
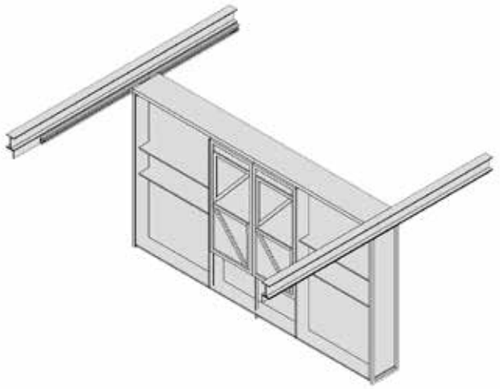
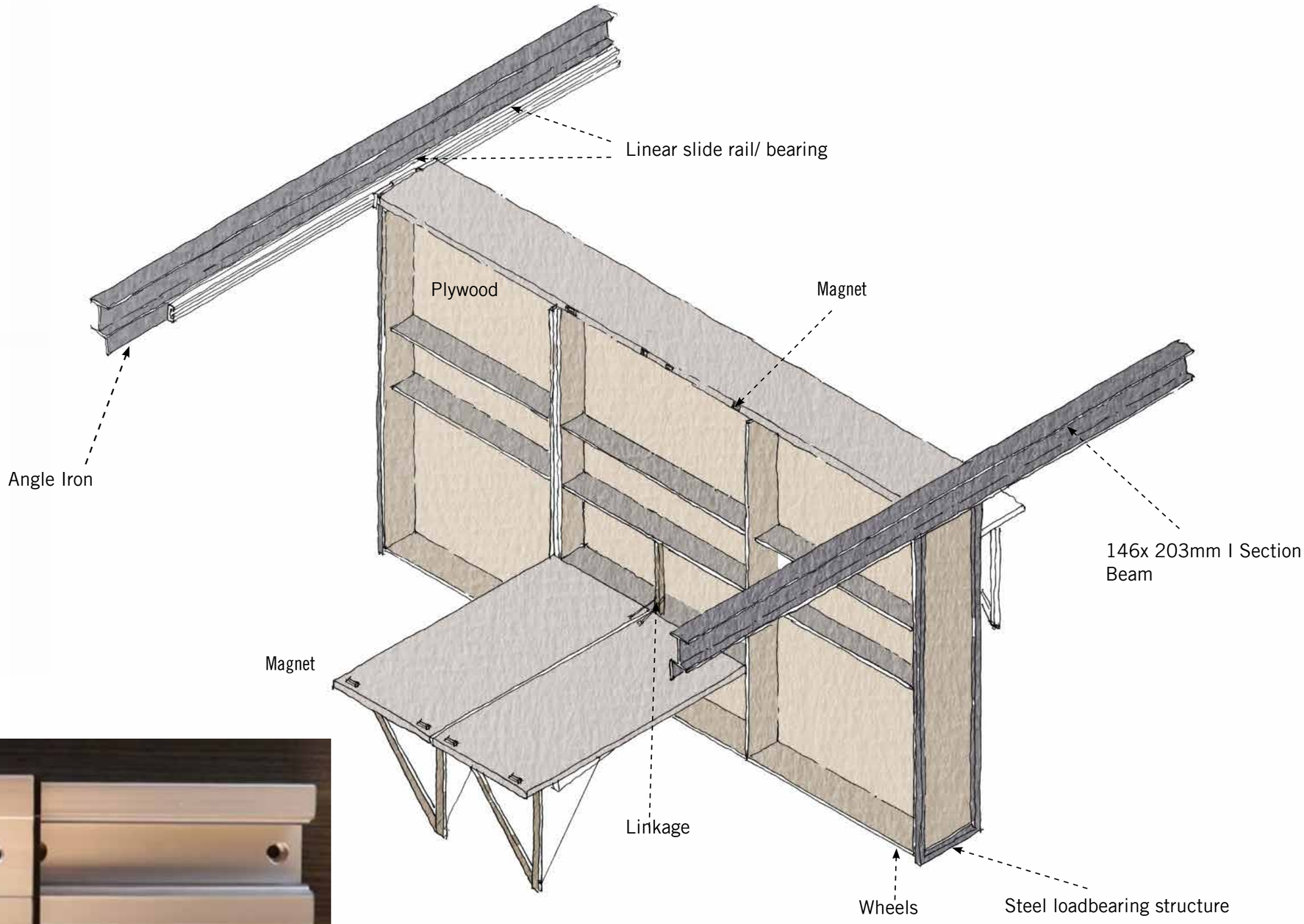


Figure 121: First floor. Meetings and workshops scenario.

Movable Volumetric Wall Detail







Heavy-duty linear slide rail/ bearing

https://www.firgelliauto.com/blogs/slide-rails/how-to-adjust-friction-on-slide-rails

Figure 122: Movable volumetric wall detail.

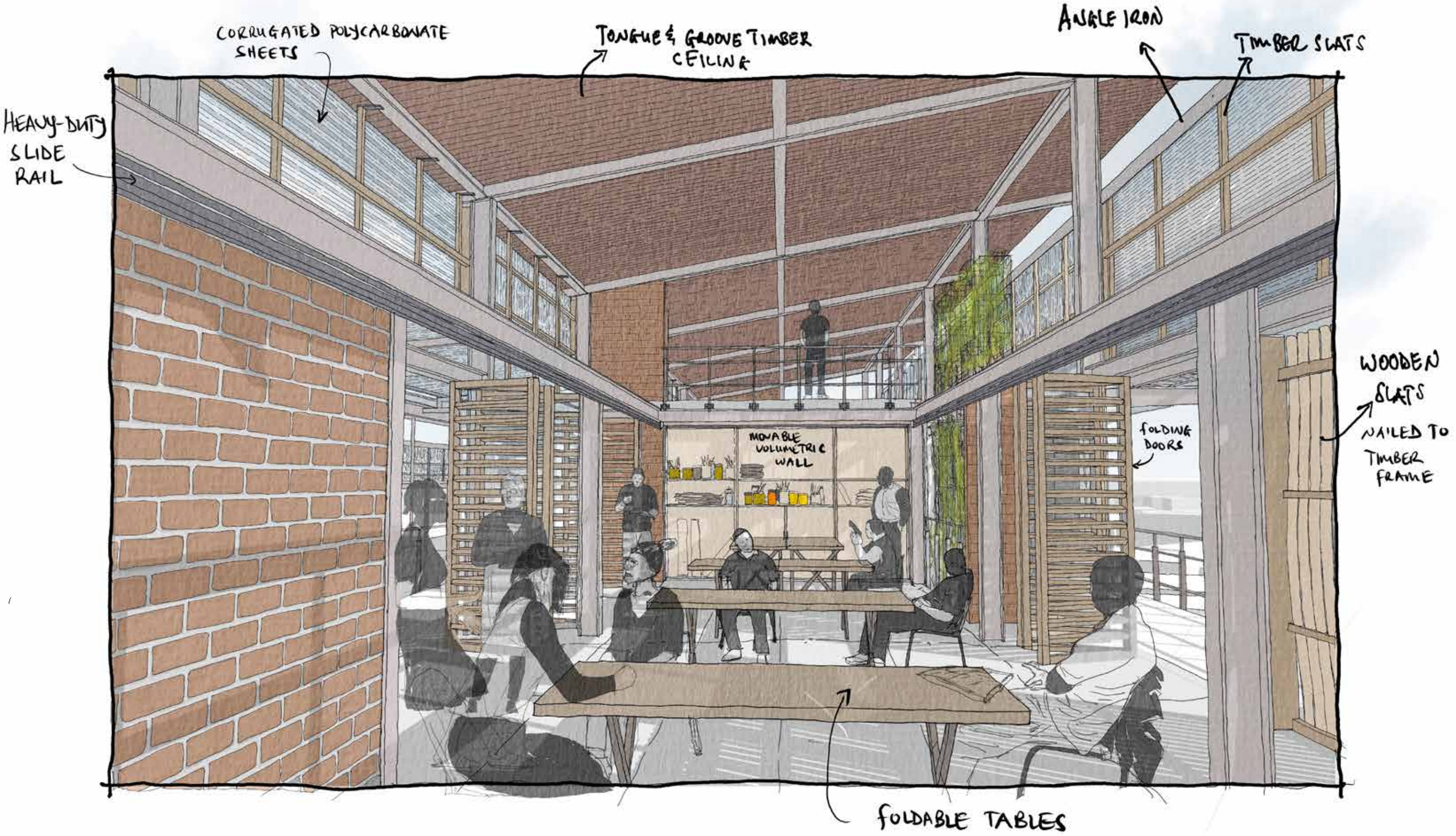


Figure 123: Meetings/ Workshops Scenario

7.3.4.2 First Floor: Events or Workshops

It has two fronts, one overlooking the river and another receiving the foot traffic on James Street, with a flexible trading space facing the transitional edge between the concrete and steel bridges, which is a circulation space, with access to the water tank and the disabled lifts. It also accommodates seats that encourage pause.

Like some pockets in the site plan, the landing at the bridge has a water point serviced by the water harvesting tank and a separate outlet from the mains for drinking.

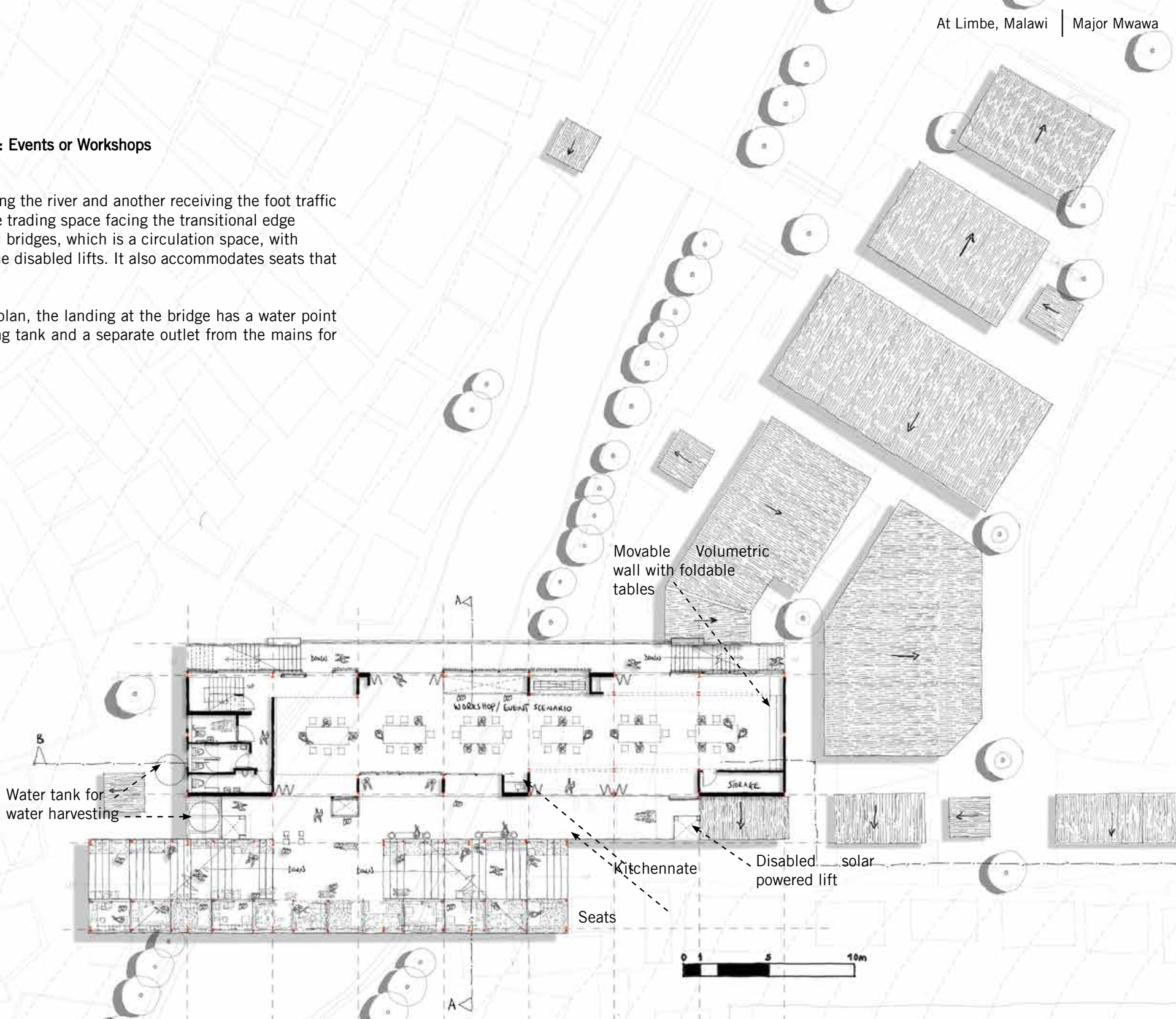


Figure 124: First floor. Events and workshops scenario.

7.3.4.3 First Floor: Market and/ or Workshops

The openness and permeability of the flexible space makes it possible for a market scenario that can attract people from James Street and the north-facing balcony.

There are movable walls with open, sliding, and closing mechanisms for expansion, rotation, and change. In addition, folding tables and chairs are recommended for this space for easy storage.

The Market can occupy the whole space on different days and times, depending on what the traders decide. Essentially, there are no restrictions on how they should use the hub. The stalls on the concrete bridge can act as interceptor stalls for traders with less generative power.

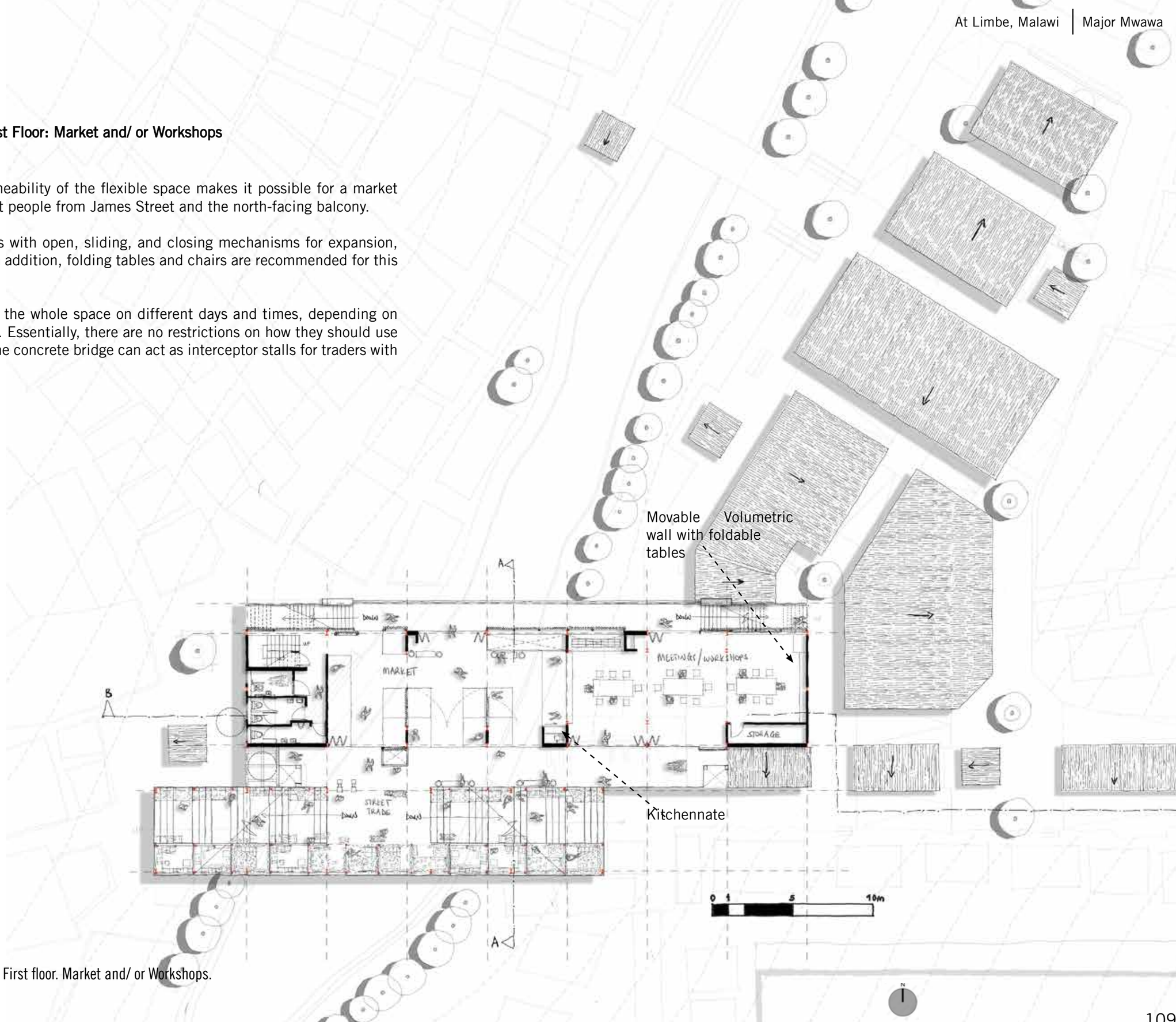


Figure 125: First floor. Market and/ or Workshops.

7.3.4.4 First Floor: Mezzanine Floor

The mezzanine floor also has a meeting space, offices, and storage. At this level, the facades are made of translucent and maroon polycarbonate infills, mimicking the colourful collage-like layering of rusting iron sheets in the context.

Programme	Area (Sqm)
Flexible Space Meetings Workshops	58
Office	8
Storage	9

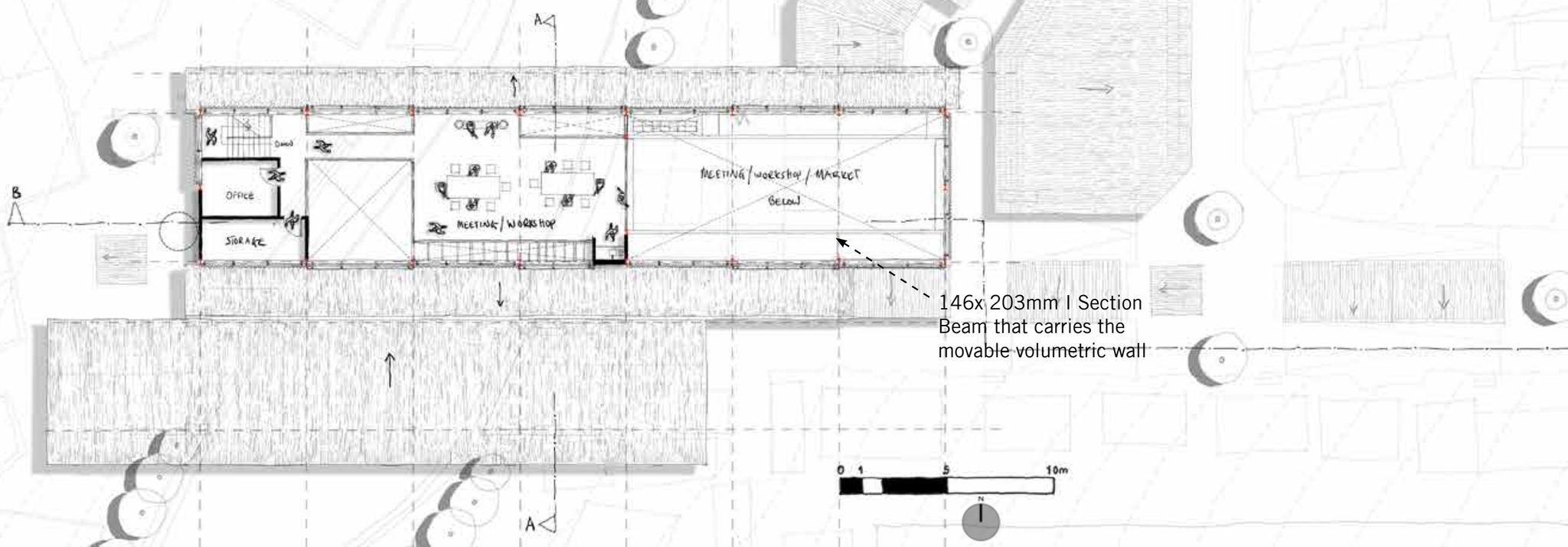


Figure 126: Mezzanine Floor.

7.3.5 Integration of Form and Place

The materiality ideas are derived from observing the existing context:

Corrugated Polycarbonate

The corrugated polycarbonate infills arranged horizontally and vertically on the facades mimic the intersecting nature of the corrugated iron sheets, seen in an aerial view of the area.

Timber Slats

- They make the attaching framework for polycarbonate infills to the steel frame.

Bricks and Stones

- The ground is paved with stone and bricks to mimic the earthy surface character of the context.
- Some parts of the infills are brickwork.

Wooden Slats

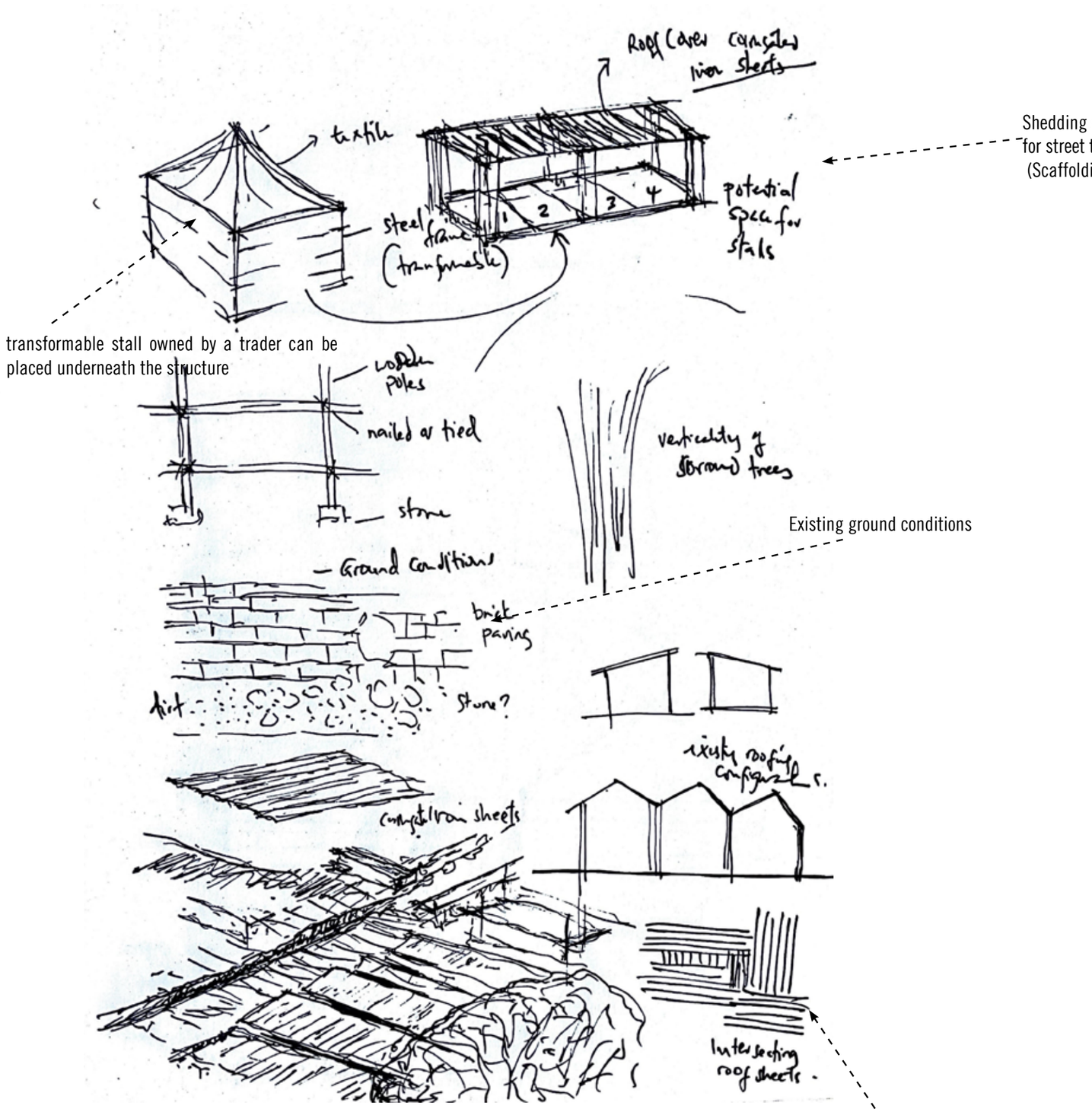
- They make some parts of the facade elements.

Tongue and groove timber ceiling cladding

- The ceiling gives the interior space a familiar experience.

Steel Frame Structure

It has a civic feel, with lightweight and exposure properties, appropriated by local materiality and technology, as a metaphor for collaboration between the city and the traders.



Shedding structure for street trade (Scaffolding?)

transformable stall owned by a trader can be placed underneath the structure

Existing ground conditions

Corrugated iron sheets (rust tones)
Aerial view of the market

Intersecting character of existing roofing sheets
(Idea for facade character)

Figure 127: Materiality ideas from context.

7.3.5.1 Sections

Intersection with water and earth

The ground level has earth materials, i.e., stone-cladded concrete piers, stone and brick paving, and gabion baskets. Floor openings facilitate visual access to the river below.

Intersection with Context

The building mimics the low-sloped roofs present in the existing context while having an exposed nature with an infill facade character of intersecting corrugated sheets, wooden and timber slats.

It has folding timber doors with spaced horizontal slats to allow maximum air circulation and visual access. Essentially, the vertical wooden slats and brickwork make the facade infills on the first floor.

Intersection with the sky

Polycarbonate infill sheets envelop the mezzanine floor, making the structure disappear into the sky and allowing maximum natural lighting and ventilation into the hub.

The architecture also intersects with the atmosphere by having a roof with a rainwater-receiving gesture that harvests water.

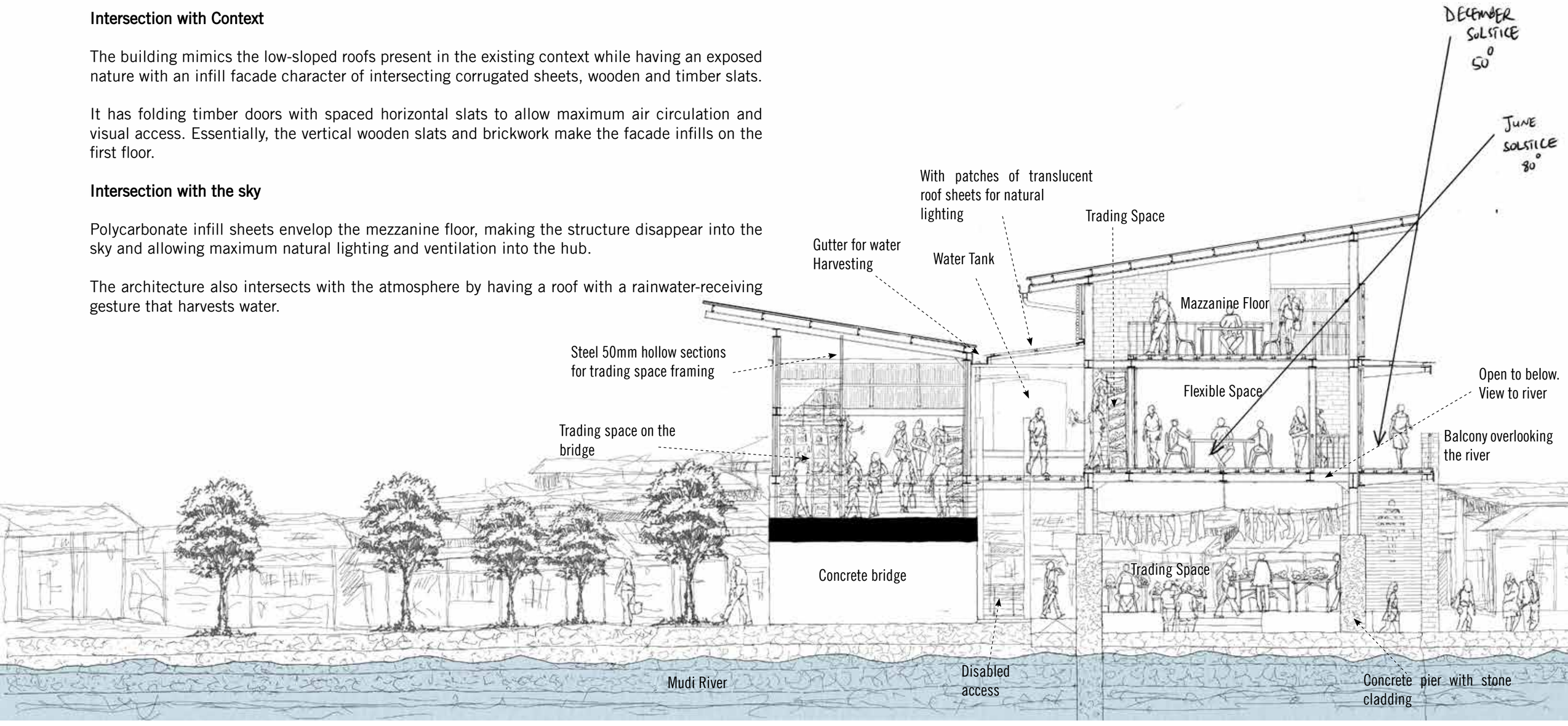
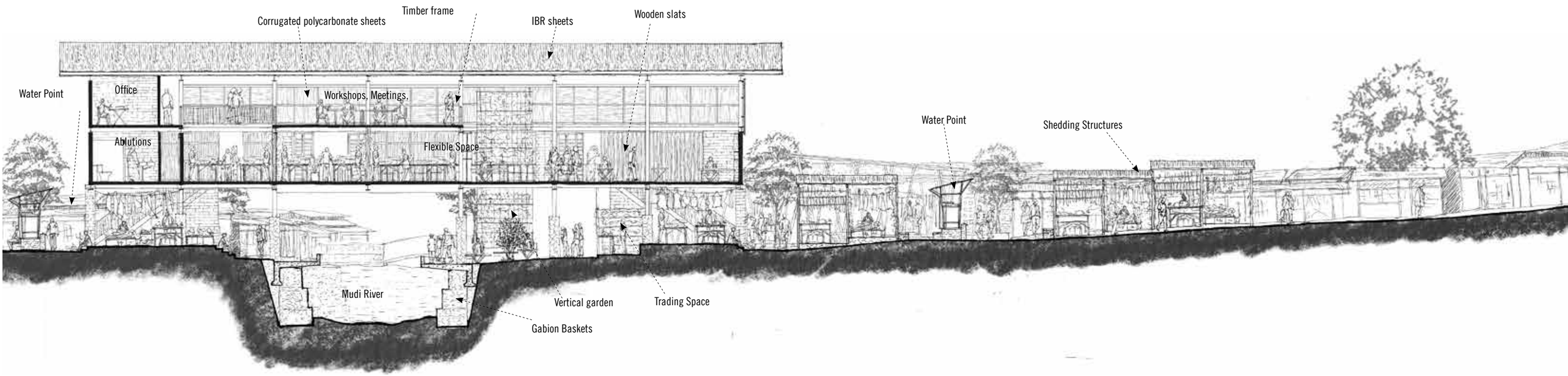


Figure 128: Section A. Scale: 1:50 on A1

The building also intersects with the earth by introducing a vertical garden on the north-facing side that creeps from the ground level, thereby improving the microclimate in the interior space.



Section B-B. Scale: 1:50 on A0

Figure 129: Section B. Scale: 1:100 on A1

7.3.6 Structural and Material Assembly

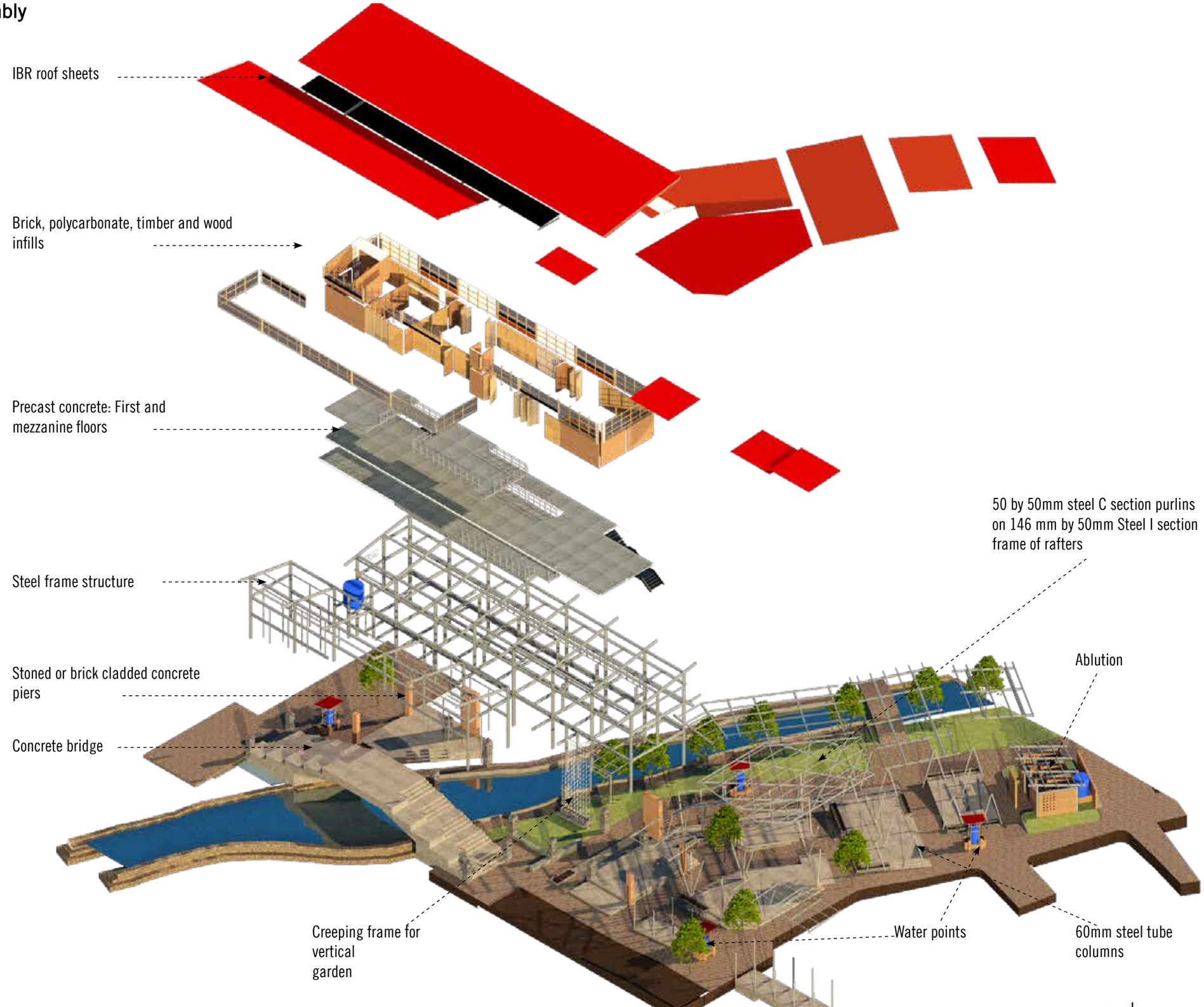


Figure 130: Structural and material assembly.

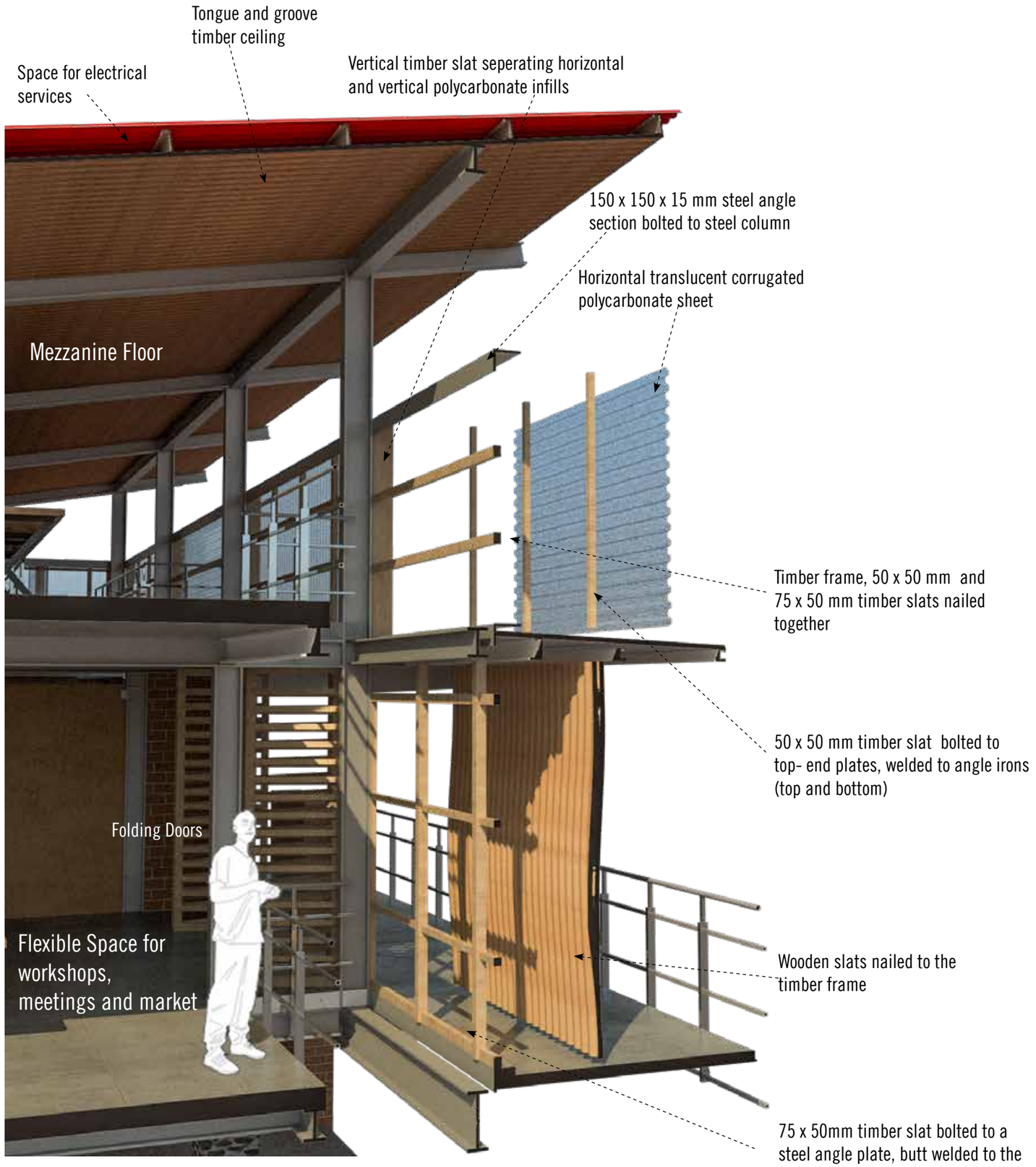


Figure 131: Exploded facade infill (Polycarbonate, timber frame and wooden slats

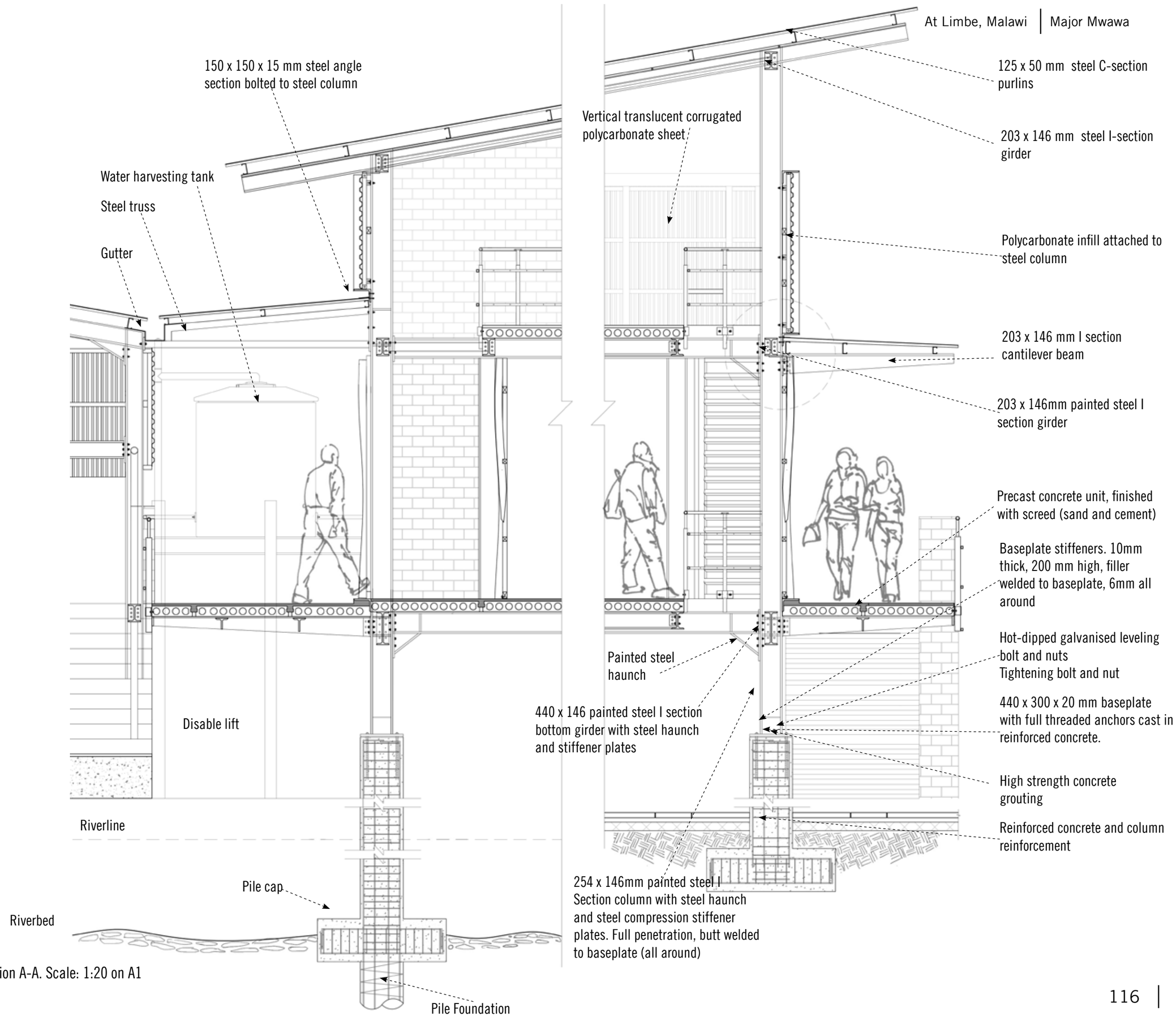


Figure 132: Strip Section A-A. Scale: 1:20 on A1

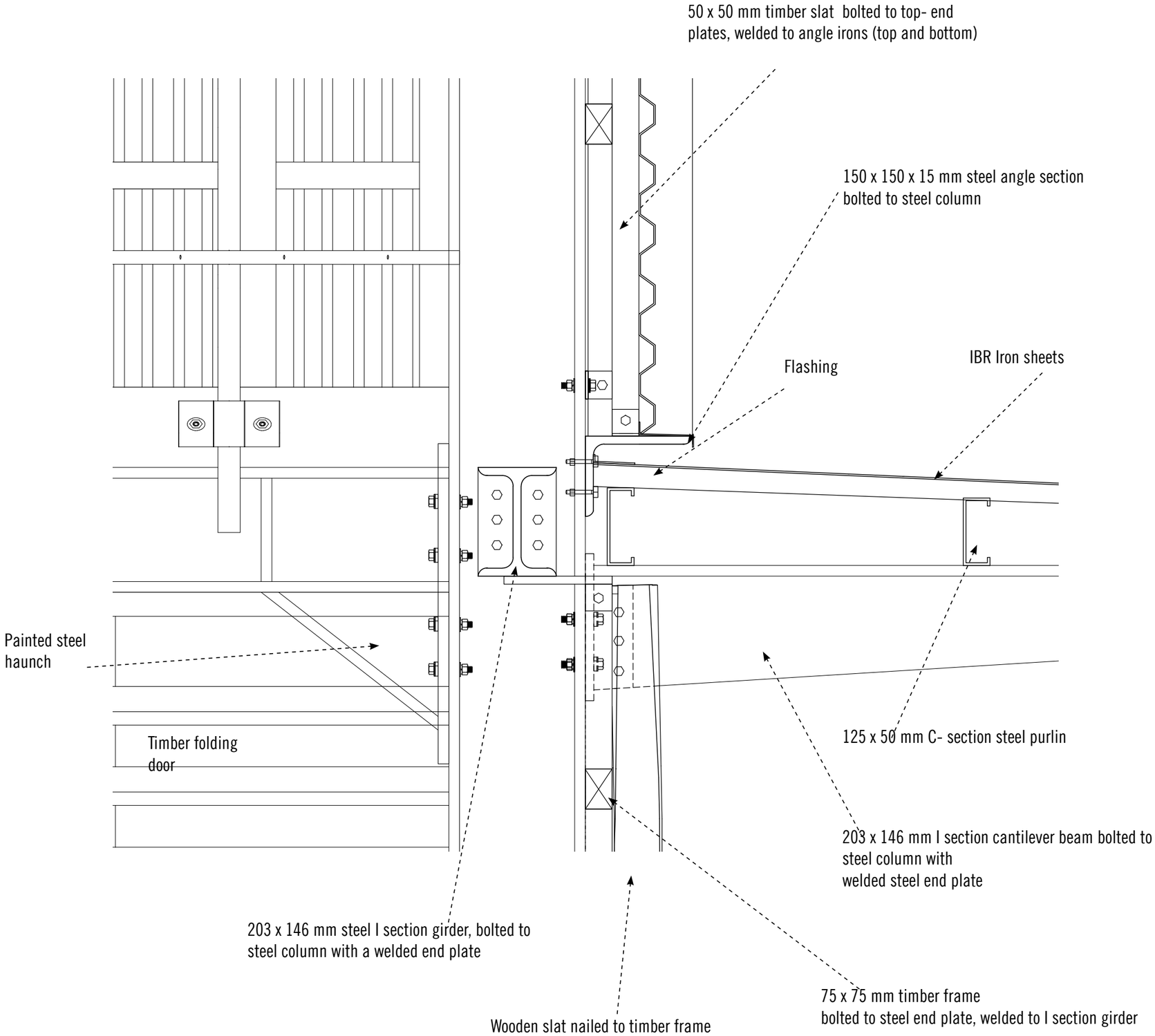


Figure 133: Cantilever canopy detail. Scale: 1:5 on A1

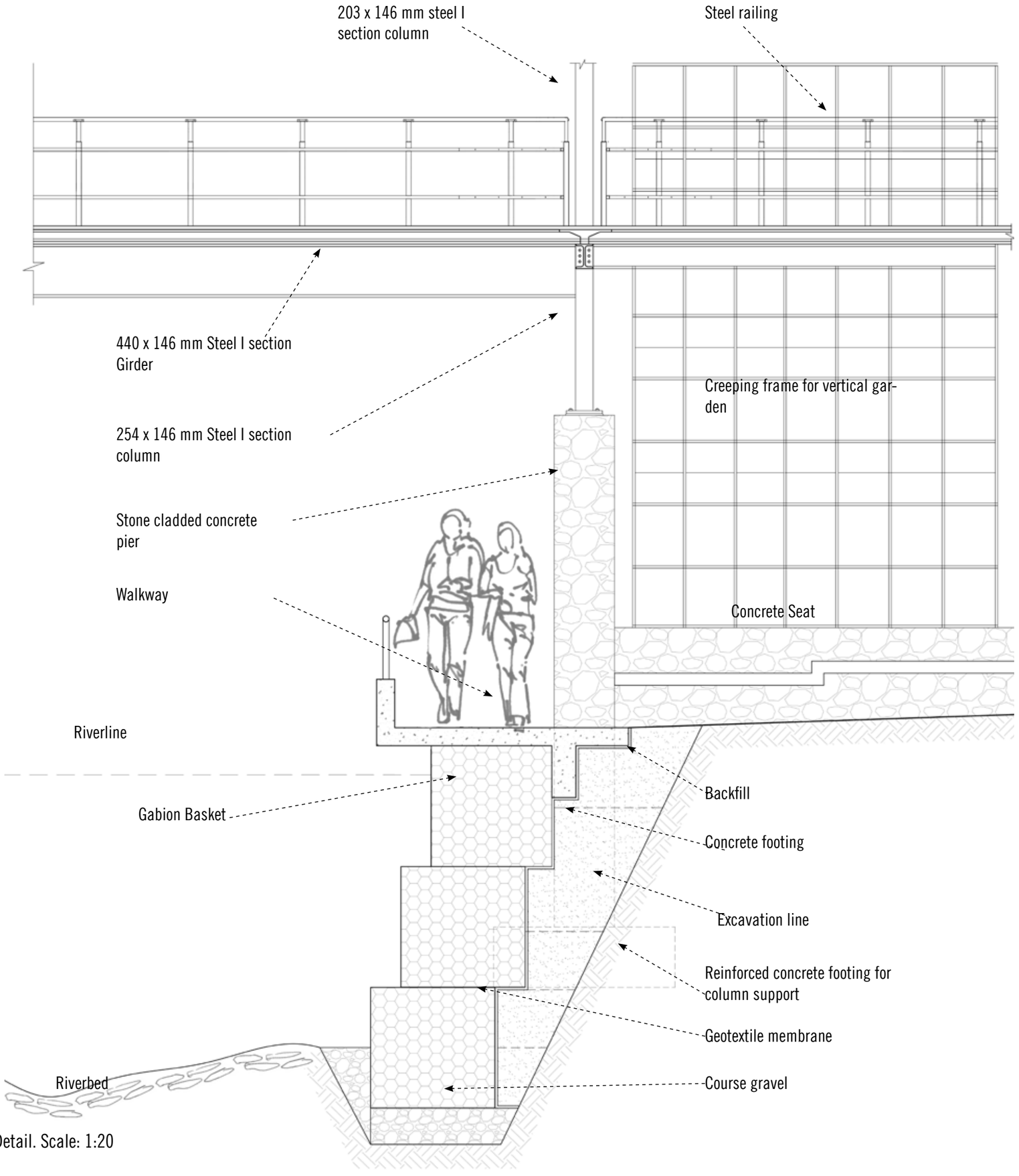


Figure 134: Mudi River Edge Detail. Scale: 1:20

CONCLUSION

Authorities perceive street trade as a challenge and a relic not to be associated with cities. As such, they have developed strategies to control and remove street traders from urban spaces and sidelined them in urban development. The Limbe Central Business District presents such a scenario, where traders operate in harsh conditions without adequate public amenities and infrastructure to make the area conducive for trade.

Considering this, this paper presents a paradigm shift on the current situation and argues that street trade is full of possibilities and must be associated with urban spaces to tap into its use and exchange value benefits, in so doing, allowing traders to participate in urban development.

It argues that city councils, organisations, and architects must participate in their practices, learn from them, understand their challenges and needs, and use those dynamics to develop solutions influenced by their lived realities.

For this reason, I observed and analysed their practices using the theories of everyday life, the kinetic City, and space-placemaking and discovered their need for a platform for empowerment and participation in decision-making, design, and implementation, and their concerns on ablutions, water supply, flooding, and waste management.

In response, this paper proposes the design of a community hub, which can become a market and a platform for workshops, events, and meetings at different times, managed by the city council but operated by traders. This proposal becomes a driving force for collaboration to realise more infrastructure and service delivery in the area. It uses a steel frame structure and is finished with and appropriated with infills derived from local materiality and technology, portraying a symbolic collaborative gesture between the city council and the traders.

In addition, it develops flood control and waste management strategies for the Mudi River and provides the traders with water points, ablutions, recreation spaces, vegetation, and improved ground conditions.

Finally, this proposal is not final but an example to sell the idea to the city council and as a starting point for the collaborative process with the traders to provide for their needs and improve the existing conditions.

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APPENDIX 1 ▯ LIST OF FIGURES

APPENDIX 2 ▯ LIST OF TABLES

APPENDIX 3 ▯ ETHICS APPROVAL

RE: Checking: Ethics Approval Letter

Harro Von Blottnitz <harro.vonblottnitz@uct.ac.za>
Fri 12/1/2023 6:05 AM

To:Stella Papanicolaou <stella.papanicolaou@uct.ac.za>
Cc:Major Mwawa <MWWMAJ001@myuct.ac.za>

Dear Stella and Major,

Thank you for the query.
If the dissertation has already been examined then you should not have much to worry about. That step usually is the major one if ethics clearance cannot be demonstrated.

I understand that in the uploaded copy for the library, you'd like the dissertation to be speckless in this regard. I apologise for the ambiguously worded system-generated conditional approval letter. Something must have gone wrong there.

Based on the correspondence we have had and the assurances given, I can confirm that the conditions attached to the conditional approval have all been met.
You may want to include this message together with the system-generated letter in your dissertation.

Well done on completing your research and dissertation!

Prof. Harro von Blottnitz (Pr.Eng.)
Chair: Ethics in Research Committee
Faculty of Engineering and the Built Environment
University of Cape Town

UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA · UNIVERSITEIT VAN KAAPSTAD

2023/06/08

EBE/00147/2023

RE: Research Ethics Committee Project Approved with Condition(s) Letter

Dear Major Mwawa,

Your application for ethics review of your project titled

At Limbe, Malawi: A Conscious Space-placemaking through the integration of Networked-transitory Street Trading Economies

has been reviewed and evaluated by the

Engineering & Built Environment Committee.

Based on the information supplied your application has been conditionally approved.

Please note the following additional conditions associated with this approval:

(i)

Proof that you have met these conditions, in the form of letters of permission or other relevant documentation,

should be supplied to the REC, via the eRA system.

Once you have met with the above condition(s), you may proceed with your research project titled:

At Limbe, Malawi: A Conscious Space-placemaking through the integration of Networked-transitory Street Trading Economies

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.

Regards,

Engineering & Built Environment Committee.

APPENDIX 4 ▯ CONSENT FORM

School of Architecture, Planning and Geomatics
University of Cape Town, Private Bag X3, Rondebosch 7701
Centlivres Building, University Avenue, Upper Campus
Cape Town, South Africa

www.apg.uct.ac.za

CONSENT FOR AN ADULT TO BE INTERVIEWED FOR RESEARCH

TITLE OF RESEARCH PROJECT: At Limbe, Malawi: A Conscious Space-placemaking through the Integration of Networked-transitory Street Trading Economies

Hello, my name is Major Mwawa, and I am conducting research towards a master's degree in architecture at the University of Cape Town, South Africa. I wanted to find out how you do trade in this area, your challenges and needs, and what kinds of stalls you operate from. I have a few questions around this, and I was wondering if you could assist me by participating in this interview.

Expectations and Benefits: Your participation in this interview is voluntary. If you choose not to participate, there will be no negative consequences, and if you choose to participate, you are free to withdraw at any time you feel uncomfortable.

Permissions: The interview is for academic purposes. Using this information, I will produce a design, but my design will never be built, it will only be marked by my professors. In this case, what I will do for this research will not change anything in your life, and I do not have money to pay you for your time. I will be grateful for your participation because it will help me do a good project. The work may be published in books or journals.

In the case that it is published, will you allow me to use your name as a source of information? If not, I will use a pseudonym that we can agree on, and I will make sure you remain anonymous.

Yes, I do: ☐ No, I do not: ☐

Do you agree with the interview being recorded?

Yes, I do: ☐ No, I do not: ☐

Do you give permission to be photographed?

Yes, I do: ☐ No, I do not: ☐

If I photograph you, would you like to be anonymous? If so, I will hide your face, or draw over you.

Yes, I do: ☐ No, I do not: ☐

Adult Participant: name: .....

signature: .....

Student: signature: .....

date: .....

"Our Mission is to be an outstanding teaching and research university, educating for life and addressing the challenges facing our society."

APPENDIX 5 – INTERVIEW SCHEDULES

Interview Schedule

RESPONDENT: Street Trader

Respondents will be asked to answer whichever questions they are comfortable with.

Questions on Timeline

1. *Where do you live?*
2. *Where is your stall?*
3. *What are your trading hours from Monday to Sunday.*

With these questions, I hope to trigger a more fluid conversation in which I hope to find out:

- Their typical day, in terms of what route they take to their stall, how long it takes to get there, and to set up before they start trading, and how long it takes to wrap up for them to get back home. I hope to find out how they attract customers to make profits, and when their best profitable hour is. A map will be provided for them to locate their stall, and to draw the route they take to the stall.

On Self-organisation

4. *What determines where you trade from?*

With this question, I hope to find out:

- Who decides where they trade, and if they pay rent for the spaces they use, and how they accommodate new traders, and how stall owners or traders engage with each other, and various other unexpected information.

On stalls

5. *I'm interested to know where the materials to make your stalls come from.*
6. *What are the issues of storage, safety, and security for you?*
7. *What aspects of your culture do you apply in the way that you construct your stalls?*

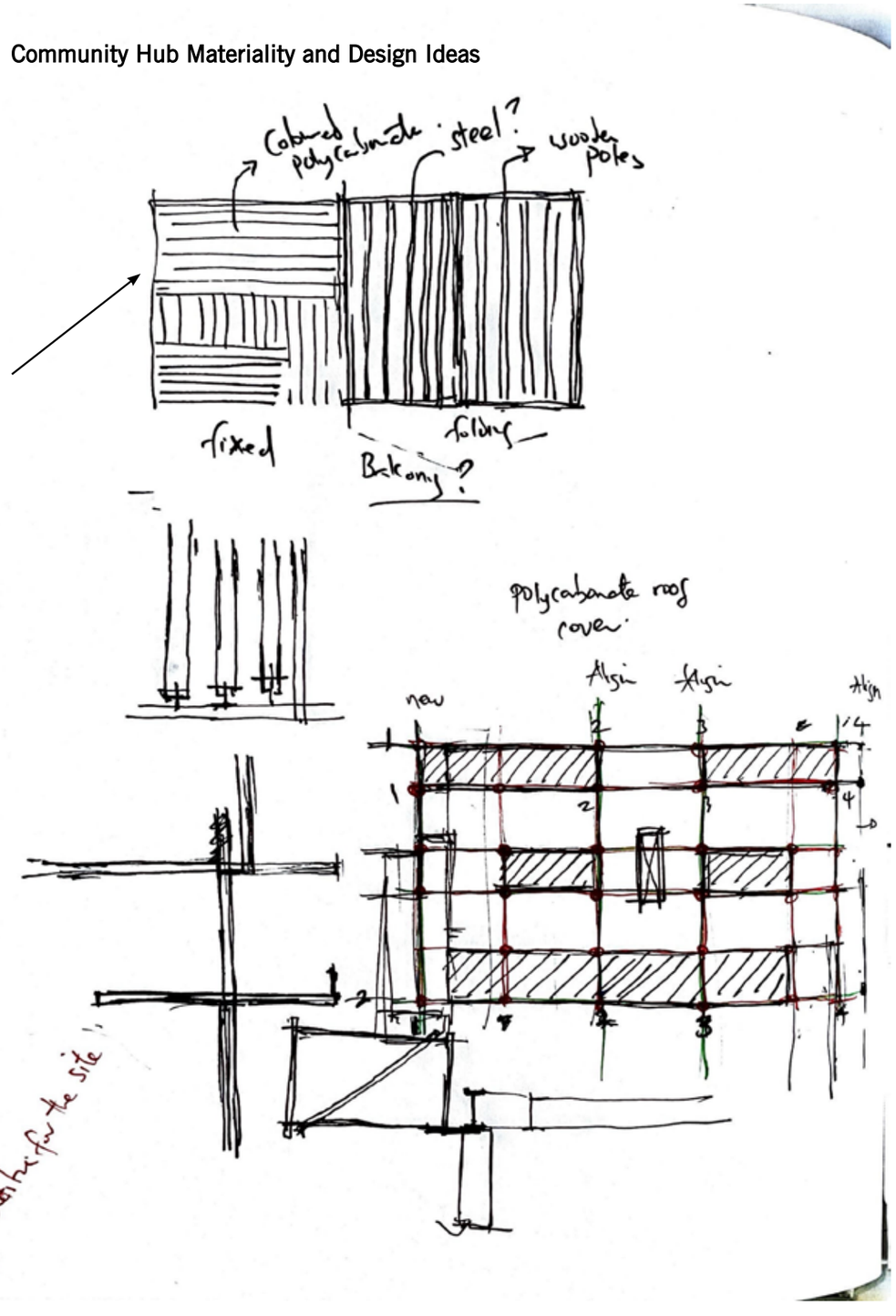
With these questions, I hope to find out:

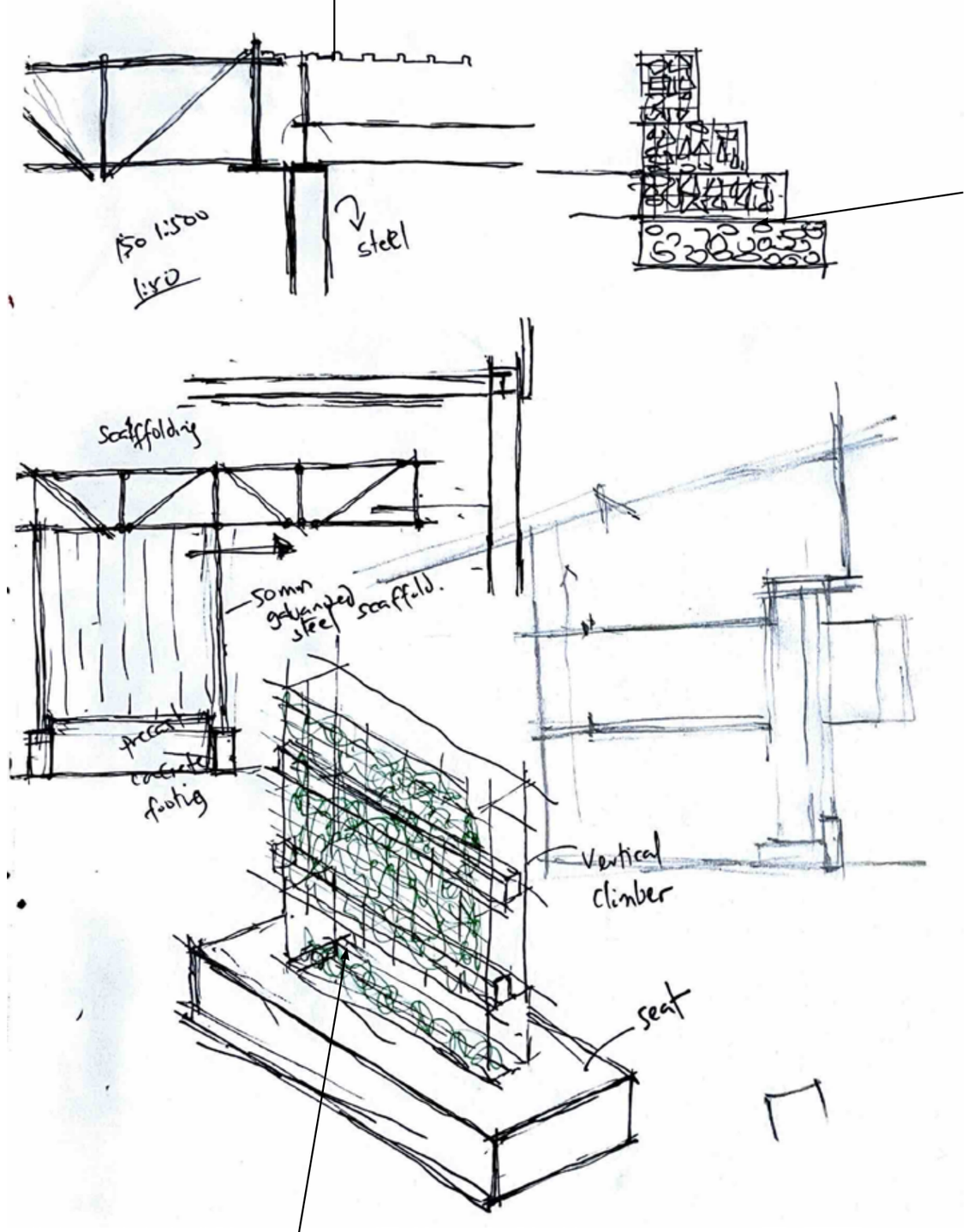
- If there are workshops or industries that make the materials, how the stalls are made, who makes them, how storage of merchandise, or movable stalls works at daybreak, what happens to fixed stalls when they are not trading, and what happens when it rains.

APPENDIX 6 ▯ FINAL MODEL

Community Hub Materiality and Design Ideas

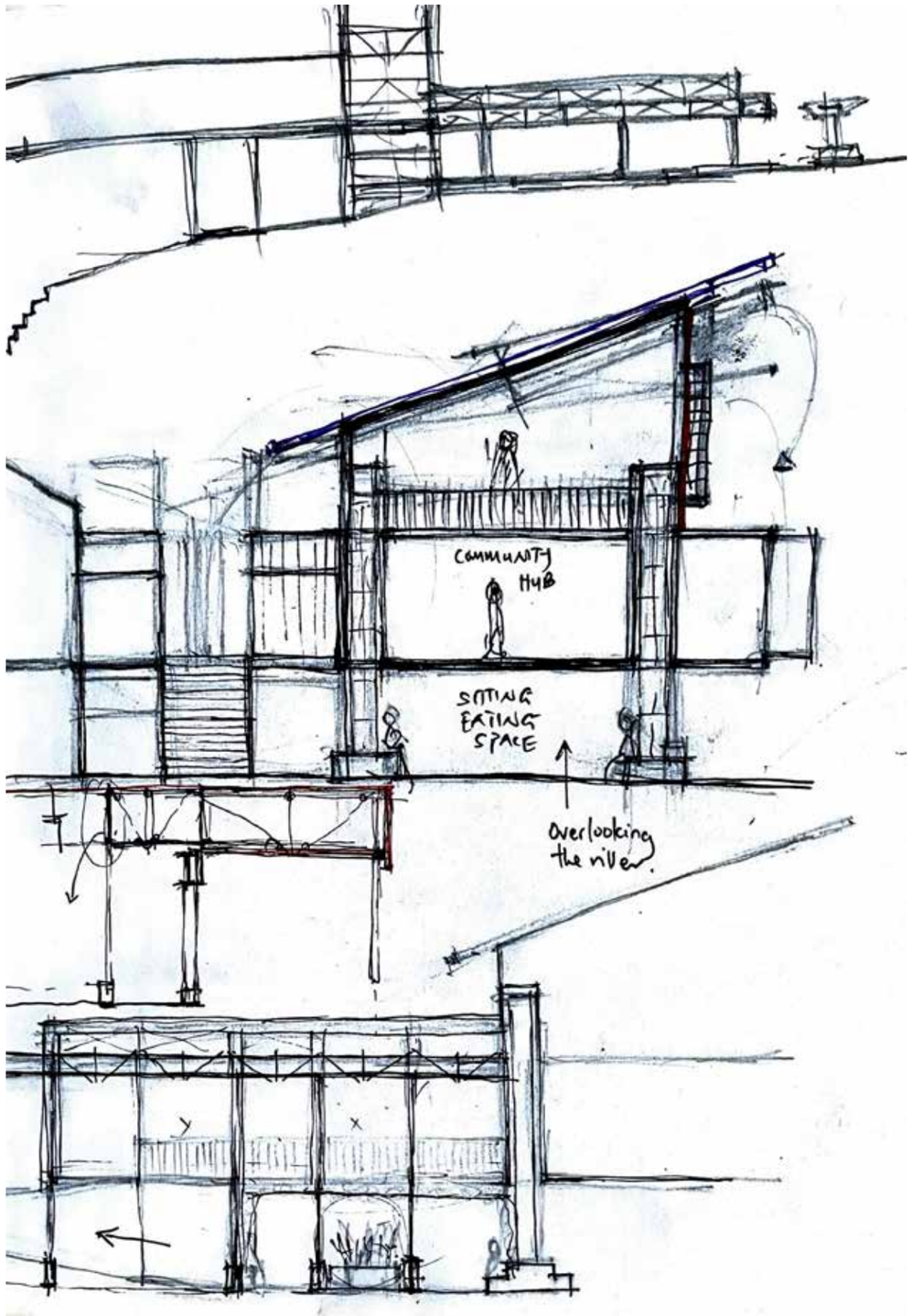
Facade ideas

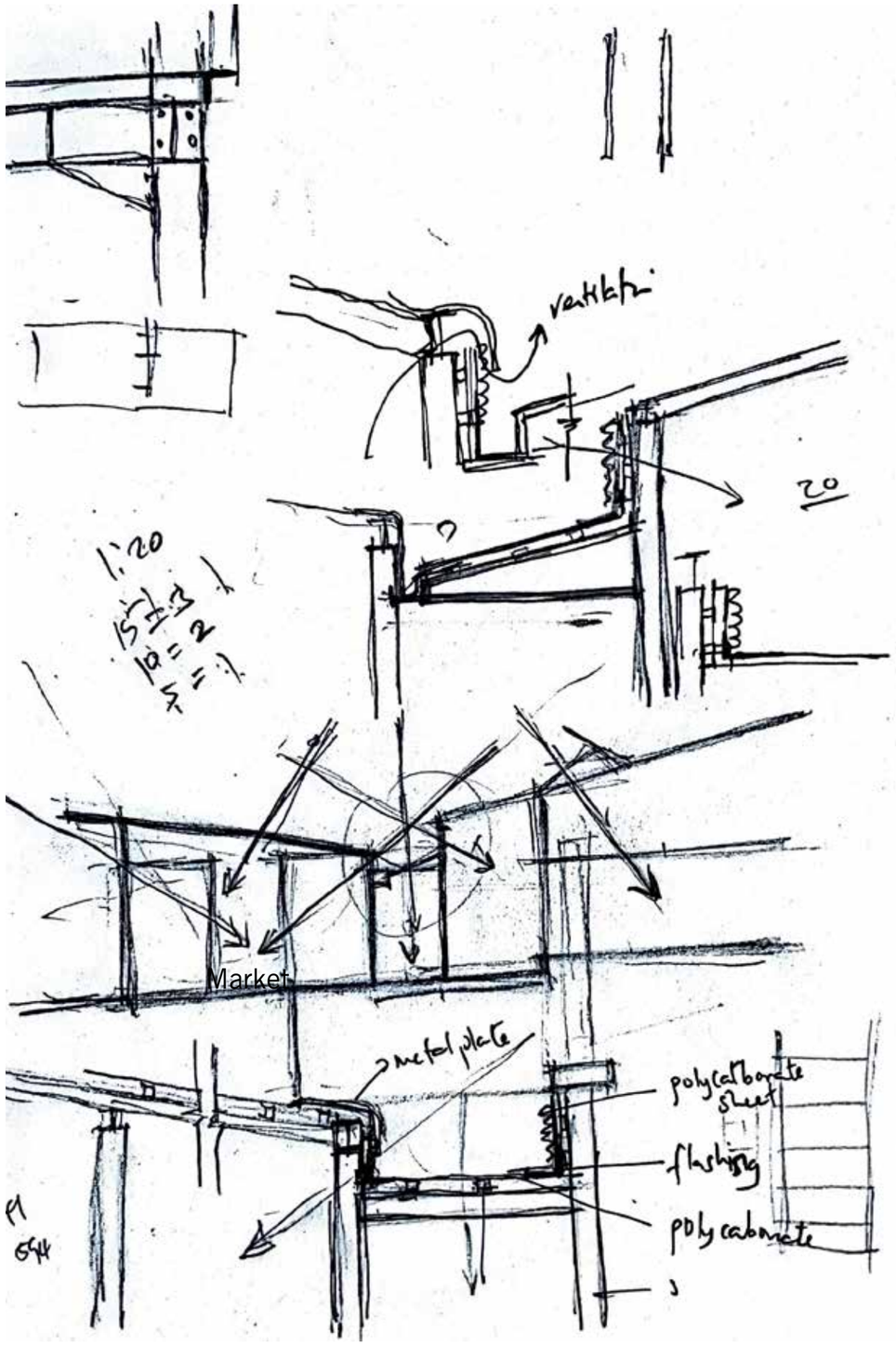




Intersection with nature
Creeping plants into the building

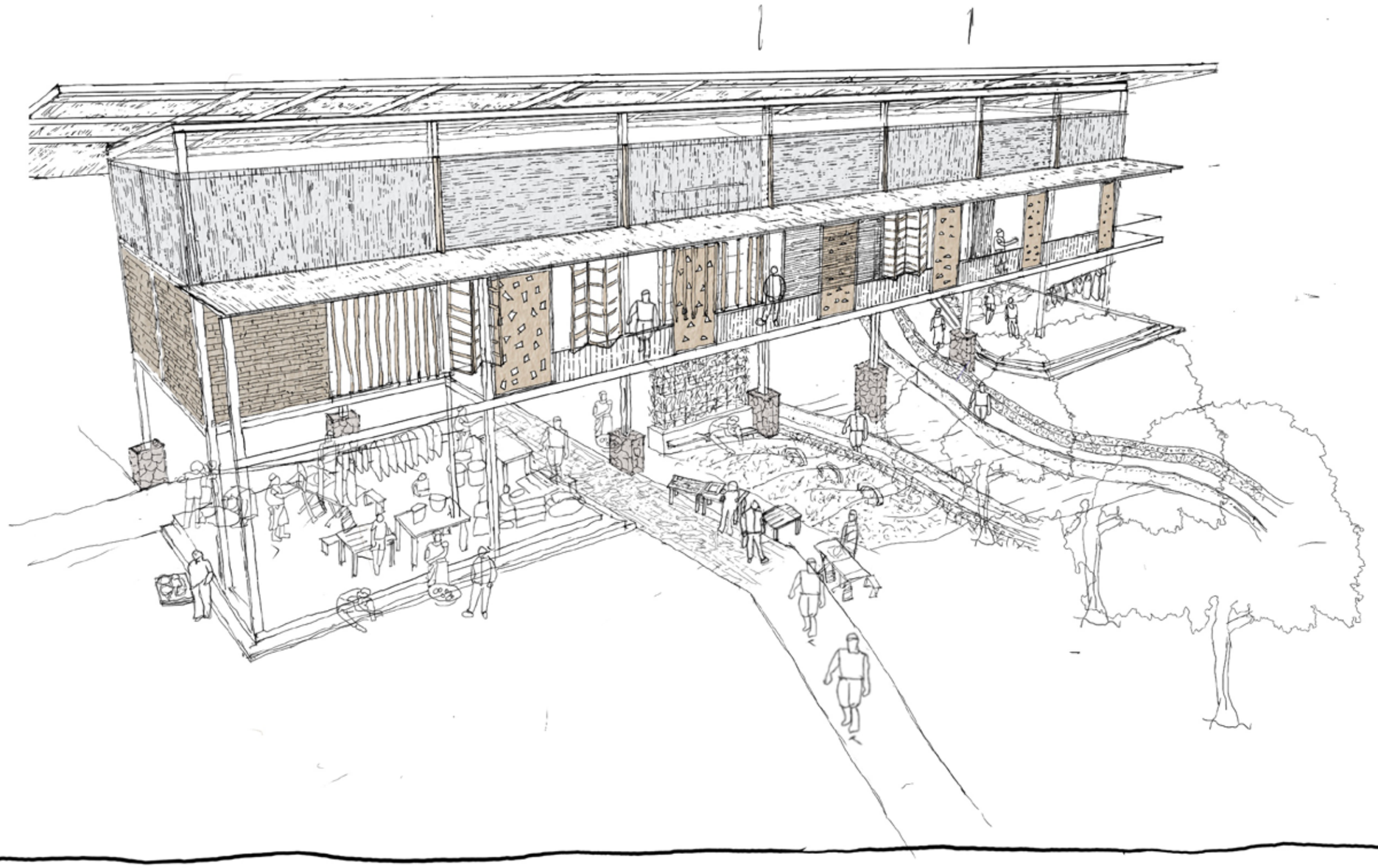
Community Hub Materiality and Design Ideas





APPENDIX 6 ▯ PROCESS SKETCHES AND DRAWINGS

Community Hub Process Work

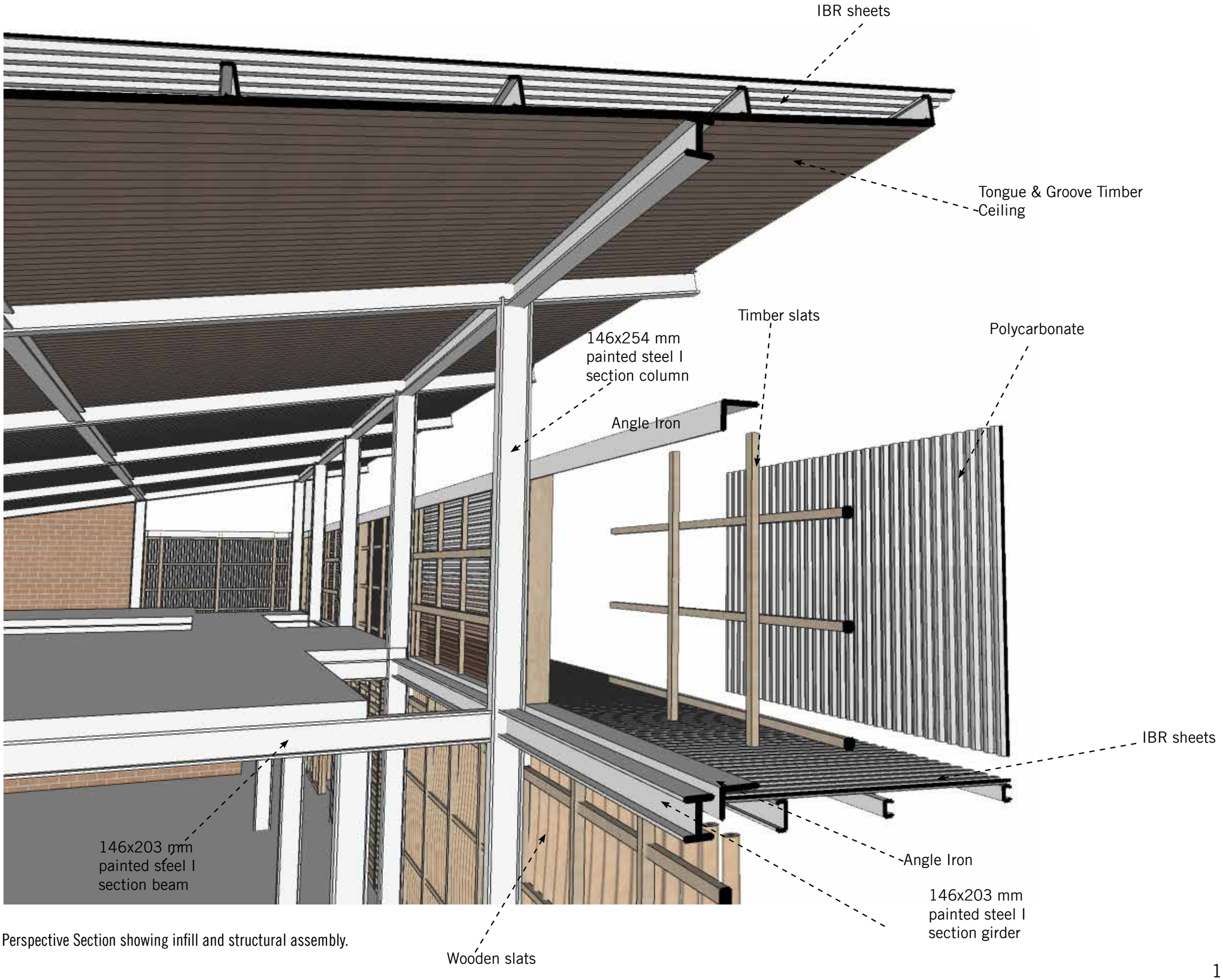


Interior View

Interior view showing infills.

Infill Details

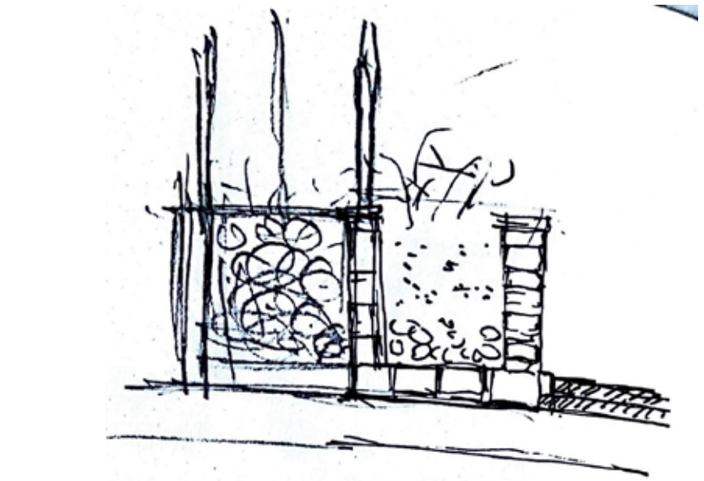
Section perspective showing infill and structural assembly.

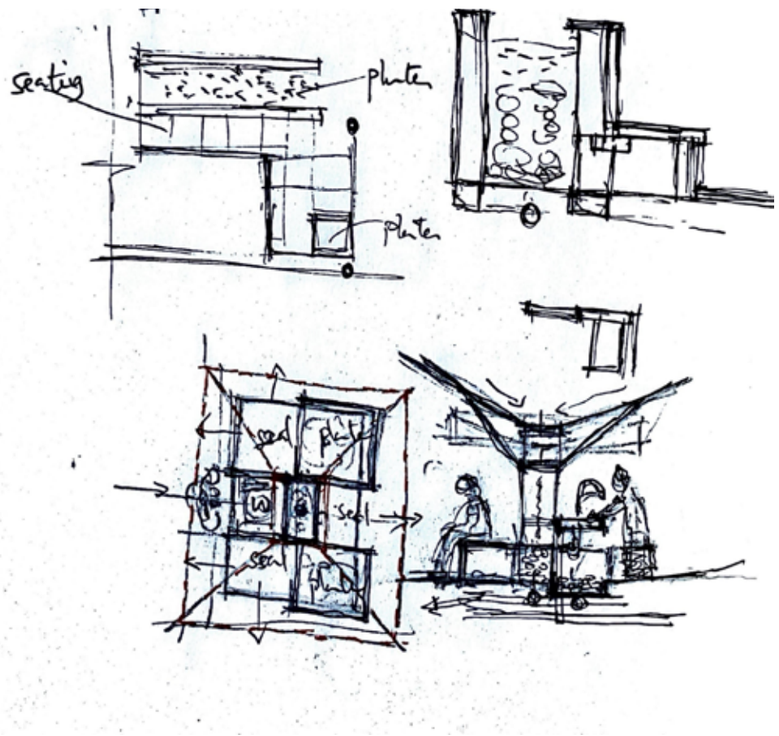


Perspective Section showing infill and structural assembly.

Approach

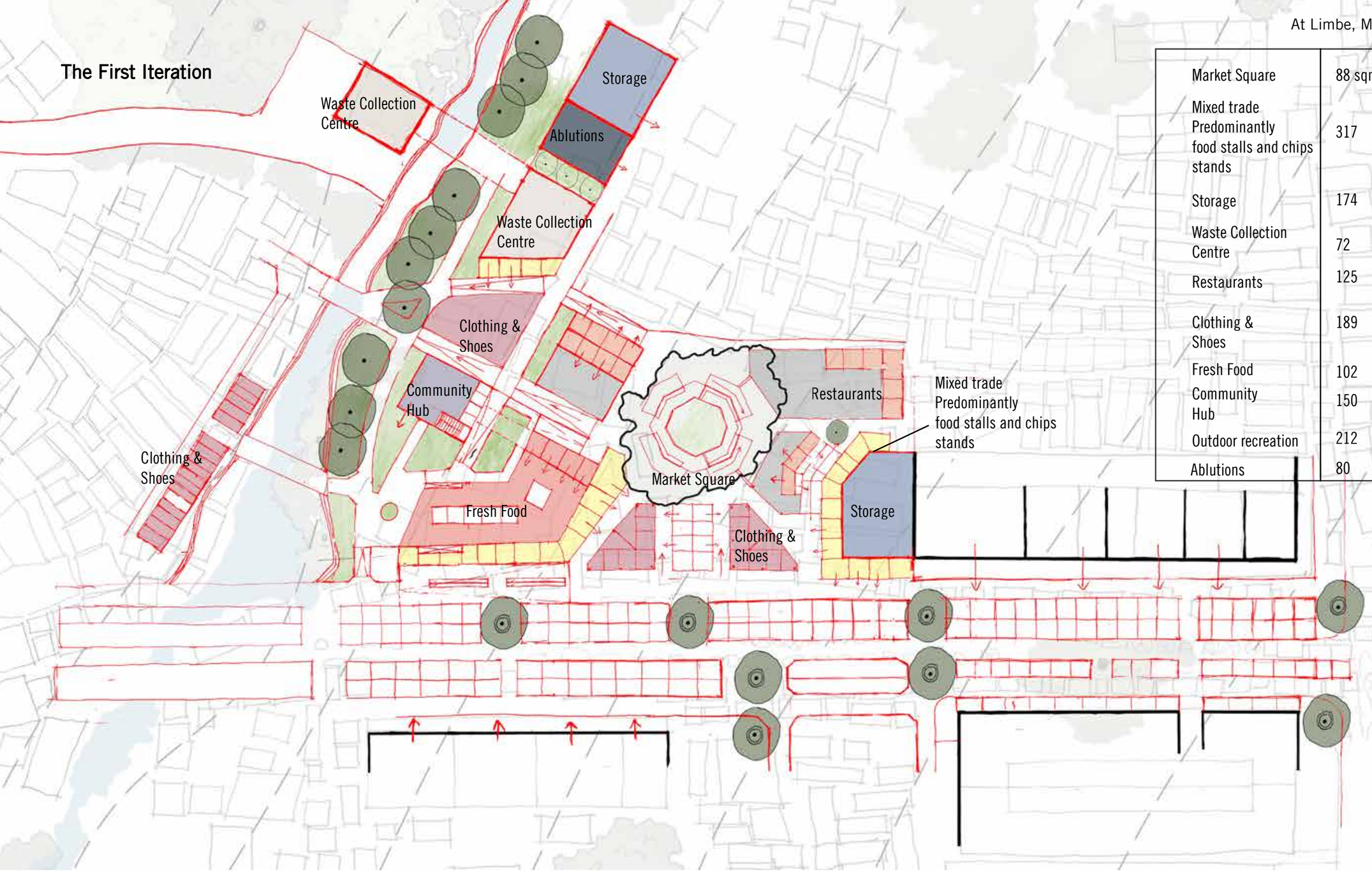
Water Point Sketches



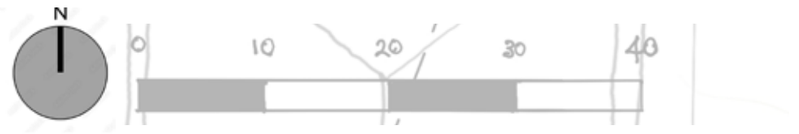


Ramp Iteration

The First Iteration



Market Square	88 sqm Including Circulation
Mixed trade Predominantly food stalls and chips stands	317
Storage	174
Waste Collection Centre	72
Restaurants	125
Clothing & Shoes	189
Fresh Food	102
Community Hub	150
Outdoor recreation	212
Ablutions	80



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END