‘MAIDAKUTIBVISA’

Developing networks of permanence and impermanence within Mbare, Harare, Zimbabwe , through the preservation and adaptation of informal infrastructure.

STUDENT : Tadiwa Sam Mashiri
SUPERVISOR : Michael Louw

TADIWA MASHIRI

MASTER OF ARCHITECTURE(PROFESSIONAL)

CONTENTS

SCHOOL OF ARCHITECTURE, PLANNING & GEOMATICS
MASTER OF ARCHITECTURE(PROFESSIONAL)

APG5079W
DESIGNN DISSERTATION

SUPERVISOR
Michael Louw

'MAIDAKUTIBVISA'
Developing networks of permanence and impermanence within Mbare, Harare, Zimbabwe , through the preservation and adaptation of informal infrastructure.

STUDENT
Tadiwa Sam Mashiri

Plagiarism Declaration
1. I know that plagiarism is wrong. Plagiarism is to use another's work and pretend that it is one's own.
2. I have used the Harvard convention for citation and referencing. Each contribution to, and quotation in this essay/report/project from the work(s) of other people has been attributed, and has been cited and referenced.
3. This essay/report/project is my own work.
4. I have not allowed, and will not allow, anyone to copy my work with the intention of passing it off as his or her own work.

Student Name: Tadiwa Sam Mashiri
Student ID: MSHTAD005

Signature : Signed by candidate

Date :1/9/2022

UCT school of architecture, planning & geomatics

GLOSSARY OF TERMS

Agency
Agency within this report refers to the ability of the Designer or Architect to make a significant and lasting difference within a community or context through their actions or knowledge. This difference is to be positive in nature.

Global South
The Global South in this report refers to developing nations within Africa that are under-resourced. The term global south will be used in reference to African countries.

Loci
The context and position in which something is located.

Macro
The term Macro within this report refers to the larger architectural context in which an area is located in. For example, the area of Harare, Zimbabwe would be seen as the Macro context in relation to the area of Mbare.

Maidakutibvisa

The title of the report and a Shona phrase which translates to 'you tried to remove us.' The phrase attempts to paint a picture of the current state of affairs and resilience of the informal market within the context of Mbare, taking on the same characteristics of the toponymy (the study of place names) that gives birth to names such as 'Mupedzanhamo' and 'Siyaso' within this context.

Network
A system that is made up of interconnected parts that contribute to how the system is run or functions.

Pazvakatangira
The title of the second part of the introduction (page 6). This title is a shona phrase that translates to 'where it begun.'This title, along with the title of the paper, borrow the same linguistic tools to describe issues that are based around the context of Mbare.

Prototype
Within this research, this term refers to experiments and physical models that are designed to test theories that are within this report.

Spatial
Relating to or occupying space.

Upcycling
Within the architectural sense, Upcycling is the act of reusing material in order to create a better end product or space in a sustainable manner.

Vernacular
Within this report and research, Vernacular refers to the architectural style that is associated with a particular context and its conditions, where the availability of materials, philosophies and terrain all contribute to the construction of space within this area.

ACKNOWLEDGEMENTS

Before beginning this design dissertation I would like to thank and offer my gratitude to my supervisor, Michael Louw for always being a fountain of knowledge and helping me, attempt to be 'concise' within my representaton and narrative.

I would also like to extend my gratitude to my friends, a.k.a *'the lunch club'* for being my sounding and idea board(s) and bearing the weight of this masters with me.

Lastly I would like to extend gratitude to my parents- Sheila and Pedzisai for the constant support and for allowing/enabling me to pursuit this architectural degree over the last six years, from my undergrad in the United Kingdom to my postgrad in South Africa.

"I was, like, 'Now I can be even more excited about architecture, because I don't have to just do architecture,' Studying architecture, to some people, is, like, 'Oh, you build buildings.' But to me it's a way of thinking. It's a way of problem-solving with a rationale. And you can apply that rationale to building a building but also to scrambling eggs."

- Virgil Abloh

PREFACE

Growing up in Zimbabwe, I have realized that it is extremely difficult to remove the informal market, vendors or what is commonly known as 'Musika' from the infrastructure that contributes to the economy and makes up the landscape of the country. The 'Musika' culture, (a Shona word that translates to 'the meeting of people' but has been used to describe informal vendor markets), of Zimbabwe is extremely present on every roadside and is something that cannot be detached from the narrative that makes up the country. My observation of this informal market is that it plays the role of providing the less privileged and poorer members of society with an opportunity to make a living in a country that is extremely impoverished, and these members make up much of the population, as Dovey (2013) states "Informality is not to be confused with poverty; it is indeed a resource for managing poverty" (Dovey, 2013, pp. 85).

Sadly, I have observed that most of structures that are made to facilitate the trade that is done within this sector, such as make-shift stalls, are dilapidated and their construction relies on limited knowledge and skill, leading to their accelerated deterioration. As an Architectural Designer and student raised within this context, I understand that issues such as limited resources play a large part but there is something worth admiring or learning from what I would like to call the 'people's architect' or the untrained maker/builder that is behind this construction. although this is not to be mistaken with the romanticization of the conditions that force the individual to produce this work.

Throughout history the construction of vernacular housing and infrastructure within the Shona culture and rural context of Zimbabwe has depended on the availability of materials, which led to a building language that I would like to think is now articulated within this informal sector as a development of what we call the 'vernacular' and where the untrained builder uses their surroundings to make the tools of their trade. Therefore, this is a culture that offers information that can be passed on and learnt from if sustained and taken care of.

I believe that with the knowledge of construction and design that I have built over the years there is an opportunity for a synergy between the trained architect and the untrained builder within my context. This synergy would allow for the creation of sustainable structures that still rely on the upcycling of available materials as well as the experience of those who work within the informal sector such as vendors and tradesmen, for assessing their needs. Other factors such as political unrest and police harassment play a significant part in the destruction of this infrastructure, and these are some of the other issues that as an architectural designer I wish to consider or deal with within my research.

The motivation behind this research is not only to observe how the untrained architect/maker constructs their space from found materials but also to learn how my knowledge can be applied to create longevity and sustainability, allowing people to make a living without being under a constant threat of losing their structures to fire, police harassment or deterioration. This research will also contextualize and situate itself in the heart or birthplace of the informal market that exists in Zimbabwe: Mbare.

To make some sort of difference within this sector, it is worth analyisng the history of this context and its relation to the history of Zimbabwe as a whole, how this informal architectural language did not generate from a 'bubble' but instead can be examined as a reaction to a harsh condition, a marked switch from a language of acclamation towards Zimbabwean Heritage in pre-colonial Architecture, to a language of adaptation to economic decay in post-colonial times.

ABSTRACT

Why?

This thesis investigation addresses the issue of dilapidated infrastructure within the informal trading network of Mbare, Harare, Zimbabwe and the informal markets that exist there. This issue of dilapidated and inadequate infrastructure comes as a hindrance to the structures and spaces that vendors occupy and rely on to make a living within this context and because of this issue, this context has faced problems such as congestion, constant threat of losing trading structures to fire and harassment from government and police forces because of the state of the trading spaces.

How?

To address this issue this thesis investigation looks at precedents of existing market spaces within the global south such as the Warwick Junction in Durban, South Africa, (amongst many) to understand and create functional market spaces with adaptable, affordable, and sustainable infrastructure within the context of Mbare. The creation of robust physical prototypes, such as stalls, furniture, façade elements and outdoor recreational spaces, using the available materials and knowledge within this area is another step that is taken to address spatial and infrastructural issues in the areas of Mupedzanhamo, Magaba and Mbare Musika markets within this context. This thesis investigation also looks at the application and investigation of spatial theories such as the Metabolist theory and critical regionalism to solve the spatial issues that currently exist within this nomadic and ever-changing context.

What?

To test these the results of my dissertation investigation, the design and creation of market spaces that deal with the issues of congestion and dilapidated infrastructure within this area will take place. These market spaces will not act as replacements for the existing Mupedzanhamo, Magaba and Mbare Musika but will instead act as an extension of their existing spatial networks thus providing vendors with more space to trade and doing so, making a living.

programs that did not previously exist allowing the creation of employment and training for the informal traders and vendors.

Conclusion.

The aim of this investigation is to assess whether the existing knowledge within the informal context of Mbare can be used to address some of the infrastructural issues that currently exist. This investigation also aims to see whether the role of the Architect as a collaborator within the design of the informal market context can allow traders to improve the means in which they make a better living.

0

INTRODUCTION

The loci and background of this research will see Zimbabwe as the macro context (fig.1) with Mbare serving as the immediate and micro context. When situating the informal market and the role that it plays in the context of Mbare it is important to read into the history of the context and its place in colonial and post-colonial times. Mbare, originally known as Harare and established in 1907 during colonial rule, served as a segregated area for black *male* workers who would be expected to live there in hostels during their working days but would have to relocate back to the rural areas upon retirement or their death (Chirisa, 2010, pp.58). This original condition of impermanence in colonial times would act as a foreboding sign of an area that is now largely ruled by informality and the migration of traders and vendors in and out of this context within the present. In this section of the research, I will be expanding upon this history, spaces that existed and continue to exist because of this and how this history finds itself represented in Mbare's networks and infrastructure. Mbare's informality represents a part of what Achille Mbembe (1992) calls the 'Postcolony' , a state that is governed by 'improvisation' and 'a lack of proportion' (Mbembe, 1992, pp.3) but still acts as a source of livelihood for the average person. Nevertheless, Hwati (2021) poses the brilliant question "How does one theorize constantly shifting socio/cultural/political/economic conditions?"(Hwati, 2021, pp.1) in their analysis of the informal Market, its build up, sounds and infrastructure within Zimbabwe.

It is much more complicated than the analysis of figures and numbers provided by a national census and in this section of my research I will be exploring and explaining these historical 'complexities' (Vambe, 2007, pp. 367) as well as how the markets within Mbare became the heart of informality within Zimbabwe. Within this exploration I will also be delving into how these complexities affected even the hostel system, as mentioned earlier, and its deterioration which saw "occupancy rates for single rooms (could) go up to two or three households" (Chirisa, 2010, pp. 61) an overcrowding that would also be a sign of how the informal market and its infrastructure would turn out.

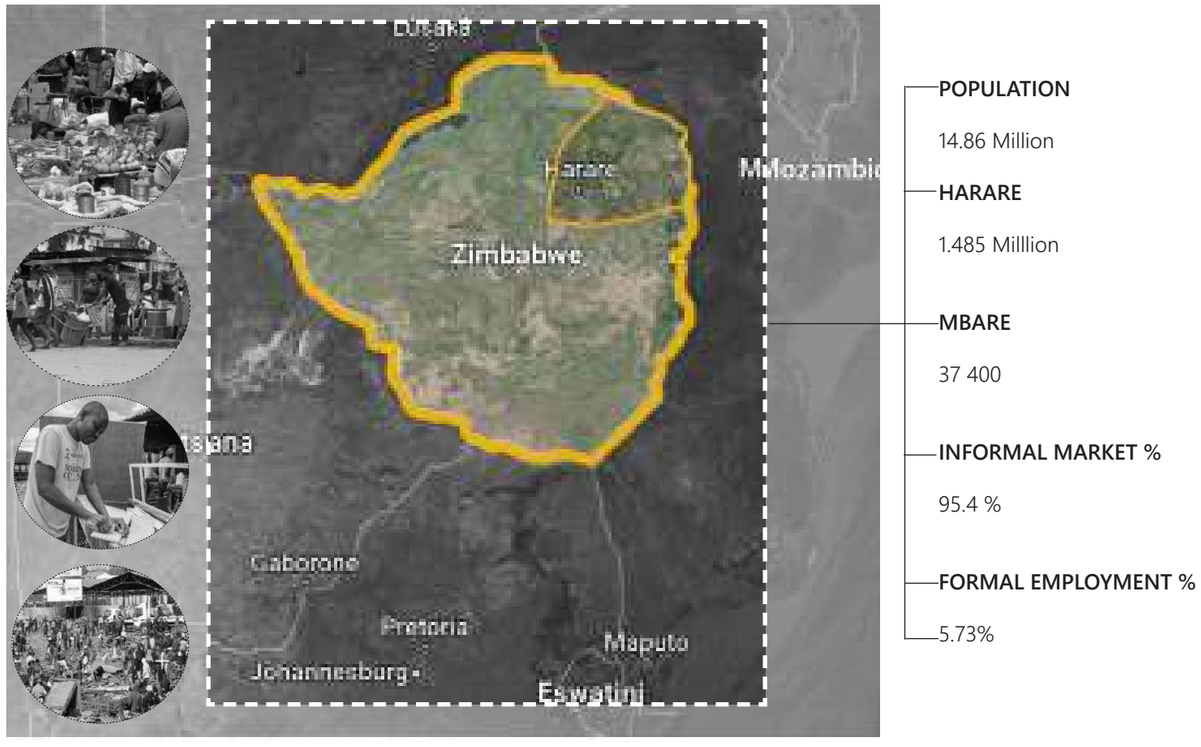
This research will also be exploring how the informal market within Mbare acts as an agent of space making in post-colonial discourse through its development and even its toponymy. The toponymy, or rather the naming of areas within Mbare, is rarely focused on and I believe that there are clues within this to how spaces are created within this context, for example the largest informal markets in Mbare are called 'Mupedzanhamo' and 'Siyaso,' (formerly known as Magaba), both Shona Terms, with the former translating to "where all problems end" and the latter translating to "leave it as it is", names that not only seem to be a description of programme but also seem to reflect hidden sentiments towards the left-over residue and violence of the colonial period and how informal trade served as a point of solace. Other themes I will be exploring within this context include a history of violence towards vendors within this context by the police and government through events such as Operation Murambatsvina (also known as operation restore order) (Chirisa, 2010, pp. 59) and the manipulation of these markets and their occupants to the advantage of different political parties.

To situate and contextualize my research within the global south I will also be examining different case studies of informal markets such as Warwick Junction in South Africa and informal spaces such as the Agbogbloshie Makerspace, these studies all share similar elements that illustrate a potential for a new type of vernacular and spatial organisation within informal settlement. The architectural language and heritage of old Zimbabwean settlements such as Great Zimbabwe display spatial organisation that illustrates 'enclosures and sub-enclosures' (Pikirayi, 2006, pp. 757), in a fractal pattern, that implied that larger enclosure could grow incrementally through the addition of different sub-enclosures, homesteads and shelters almost mimicking an organism that is constantly experiencing change.

This relationship between African traditional settlement and incremental urban growth, best represented by the Japanese architectural theory of Metabolism, will serve as theories worth exploring. An analysis/comparison into the theory of Metabolism will propose potential ways of organising the ever-changing informal context of Mbare as it too can be seen as an organism and body, but one that deals with permanence and impermanence through the infrastructure present and the constant migration of vendors daily.

On the other hand, looking at the organisation of old Zimbabwean communities, now turned monuments (in the case of Great Zimbabwe) will also provide inspiration for 're-evaluating tradition' in an area that has been subject to 'erasure' through different forces.

A re-evaluation of tradition that Pikirayi (2006) says has served as inspiration in the creation of architecture in this context but 'is yet to have an impact on urban planning' (Pikirayi, 2006, pp. 759) such as in the case of Mbare. This research will also reference some of Frampton's (1981) ideas on Critical Regionalism that speak on how the 'peculiarities' (Frampton,1981, pp.2) and learning points of old settlement culture within this context will serve as an important source of inspiration when designing within Mbare.



Figures 1: Locality of chosen context drawn by author, 2022.

‘PAZVAKATANGIRA’

UNDERSTANDING THE INCEPTION, ROLE AND VIOLENCE AGAINST INFORMALITY WITHIN MBARE

Attributing the genesis of informal market’s within Mbare and the greater context of Zimbabwe to a specific date is almost impossible but the period in which occupants within ‘native locations’ decided to make a living from selling their own crafts, services and even spaces within their own hostel accommodations, can be identified between 1991-1995 during the ‘Economic Structural Adjustment Programme(ESAP)’(Chirisa, 2010, pp.59), a period that saw several people lose their jobs whilst fighting the rising cost of living. Before this period, during colonial times as stated in the introduction, Mbare was established as an area that caretakers, cooks and gardeners would live in only whilst they actively worked (ibid, pp.59). The area of Mbare pre-independence and during the liberation struggle would therefore present itself as land of sojourners and living here presented itself as a symbol of being ‘uprooted’ to the African Migrant. Vambe even explains how during colonial times African Migrants would sing songs such as “Handidi Kuvigwa KuMufakose (I don’t want to be buried in Mufakose urban township)” (Vambe, 2007, pp. 261) which reflected how the burial of Africans within the urban context symbolised ‘de-tribalisation’ (ibid, pp.261).

This historical context is important when looking at how Mbare itself in the present has become a home and a working area for so many informal traders and vendors who still to this day are seen as sojourners who only ‘dock’ within this context when attempting to make a living. It would be dishonest to make it seem as though there are no permanent structures that were built within this area, but Mbare is home to hostels that were constructed in 1946 with the intention of housing black workers, having about ‘6 to 7 people sharing a room’ (Chirisa,2010, pp. 59). The deterioration of these hostels was a product of government negligence as after Independence in 1980 these areas would become overcrowded with an influx of families joining their husbands, causing each accommodation occupation to almost quadruple in number(fig.2).

The people (Fig.3) within this ‘new post-independence’ Mbare context took it upon themselves to create methods of earning a living through informal trade and the erection of informal structures that would help them promote their day-to-day activities as the deteriorating ‘state of the political economy in the 1990s’ (Brown, 2002) had pushed citizens in this direction.

It is important to note in the wider context of the Global South that during the late 20th century, a lot of African nations would become independent from colonial rule. Sadly, this independence would not mean the complete removal of the colonial system but instead what happened is what Fanon (1961) states as the attempt to ‘jump-start a nation’, whilst the ‘mesh of the colonial system is still tightly interlocked’ (Fanon, 1961, pp.68). Zimbabwe was not exempt from this, and as the community of Mbare continued to grow in an attempt for survival, the vendors and ‘architects’ of the informal would find themselves under violent attacks by a government that was free of colonial rule but longed for the colonial aesthetic or ‘set standards’ (Chirisa, 2010, pp.59) that existed before. Over the past decade attacks on these vendors and this community would come in several forms, but the most significant and catastrophic one would come in the form of Operation Murambatsvina (translating to Operation Restore Order) in 2005 (Fig.4).

This operation was set out to destroy what the government deemed slums, informal structures and illegal housing developments. The International Crisis Group reported that the operation was an effort to “reassert the rule of law” and halt the chaos resulting from rapid urbanisation in the 1980s and 1990s” (ICG, 2005, pp.3) as told by government officials but this ‘reassertion’ proved itself to not only displace about 700 000 Zimbabweans (ibid, pp.1) but effectively work as a witch hunt towards Informal traders and the urban poor.

This violence is not the only threat that informal vendors find themselves against, as there have been several newspaper’s reports and accounts of the main hubs of Mupedzanhamo, Siya So and Mbare Musika being shut down for political rallies (newzimbabwevision, 2015, online). Mbare is continuously at the mercy of political parties who take advantage of the 90 000 plus people’s freedom within the area, as recorded by the 2012 Demographic Health Survey.

As much as the attacks on the area of Mbare may be on the informal structures that are present, it is an attack on the people more than anything else, as from my observation from visiting the area, the infrastructure only plays a small part in the complete narrative of the role and composition of the area.

The constant fluctuation and migration of vendors within the informal market in Mbare can be attributed to the constant fear of police harassment versus the even larger fear of succumbing to economic conditions and the latter fear has not only led to adaptation against the former fear, but it has held its ground beyond any larger threat.

This fluctuation and temporality are aspects that represent themselves in the way the inhabitants of the area build some of their structures, it is an interesting point of research that I will expand upon in the technology section of this paper. When analysing the informal architecture of Mbare you note that when living in a constant state of uneasiness and potential displacement the structures you build tend to lack stability, as most of these structures are not necessarily made by professionals and are not there for comfort but instead to act as platforms to exhibit items on sale. Therefore, when considering the role of the architect and agency in this context, it is important to approach it not from a traditional lens but instead as Dovey (2013) says ““Informalising architecture does not mean the erasure of formal concerns, but it does entail a move onwards from both the fixity of form and the fixation on form that dominates the profession” (Dovey, 2013, pp. 87).

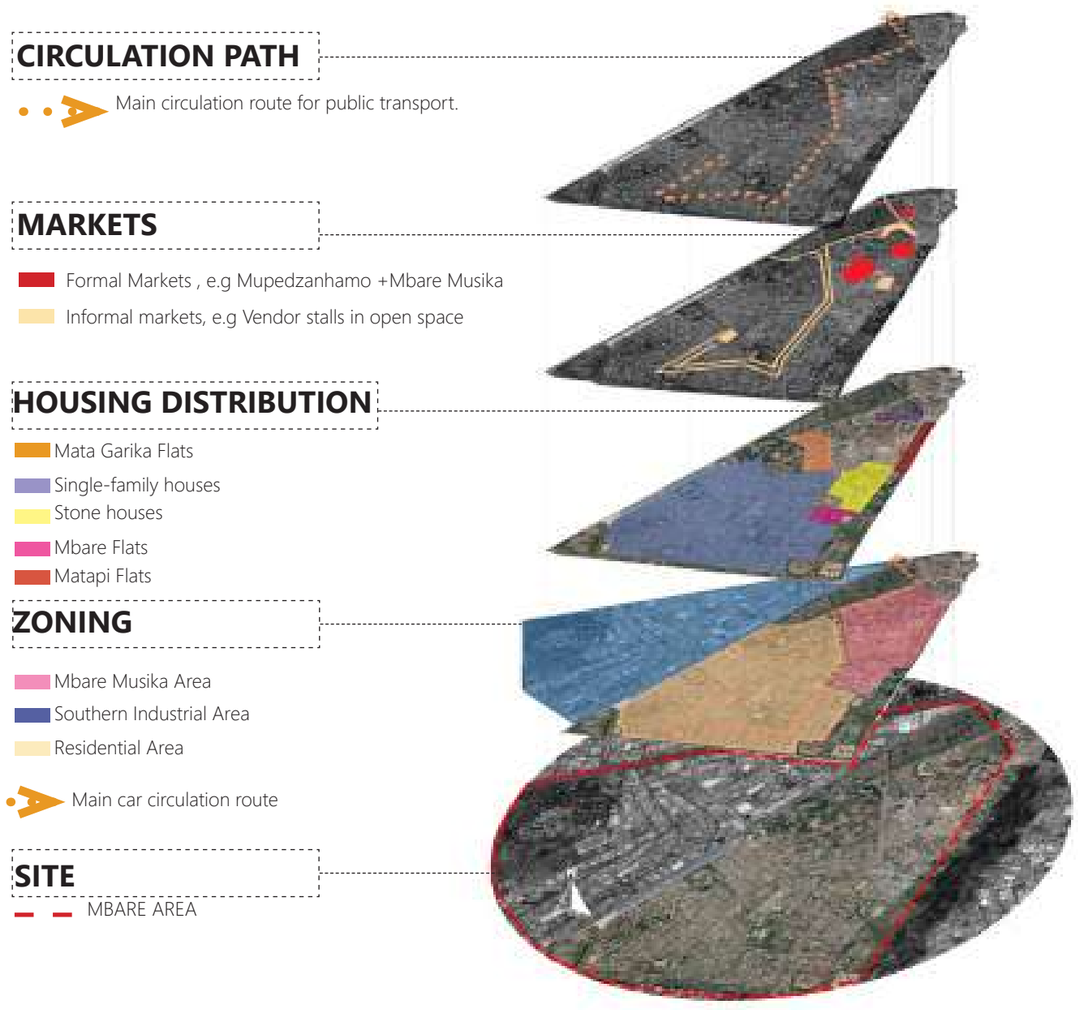


Figure 2 : Map showing distribution of hostels and informal trade within Mbare,drawn by Author,2022 ; Information gathered from on site visits.

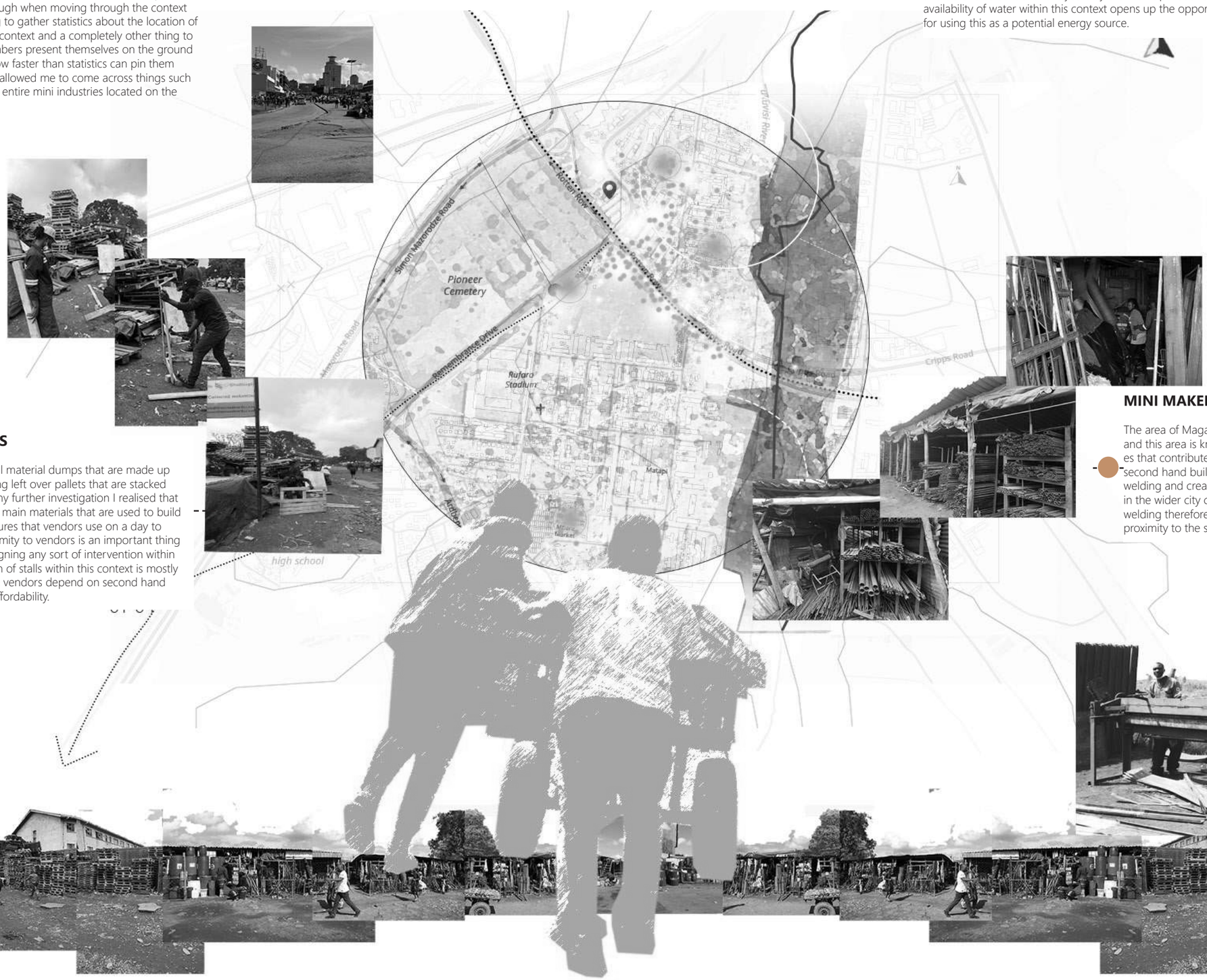
JOURNEY THROUGH MBARE

MOVING THROUGH THE SITE

This page illustrates some of the sites and terrains that you witness and move through when moving through the context of Mbare.It is one thing to gather statistics about the location of informal traders in the context and a completely other thing to witness how these numbers present themselves on the ground as they continue to grow faster than statistics can pin them down. This experience allowed me to come across things such as material dumps and entire mini industries located on the outskirts of Mbare.

WATER SOURCES

The area of Mbare also has the Mukuvisi river that runs through it, therefore this context is surrounded by several water sources and boreholes built over the years by the municipal council. The availability of water within this context opens up the opportunity for using this as a potential energy source.



MATERIAL DUMPS

Mbare is home to several material dumps that are made up of different vendors selling left over pallets that are stacked on top of eachother. In my further investigation I realised that these pallets work as the main materials that are used to build stalls and different structures that vendors use on a day to day, therefore their proximity to vendors is an important thing to note down when designing any sort of intervention within this context. Construction of stalls within this context is mostly through upcycling as the vendors depend on second hand material because of its affordability.

MINI MAKER SPACES AND WORKSHOPS

The area of Magaba is also located within this context of Mbare and this area is known for mini workshops and maker spaces that contribute to the livelihood of the makers as they sell second hand building materials and also take on the business of welding and creating furniture and steel elements that are sold in the wider city context. Most of this area deals with steal and welding therefore when carrying out a construction project, its proximity to the site is also an important aspect to factor in.

Figure 3 : Photocollage created by Author, showcasing photo documentation of traders and craftsmen within the Mbare area, 2022

TIMELINE OF EVENTS IN AND AROUND THE BIRTH OF MBARE

1200

Zimbabwe stone construction begins
Image: Great Zimbabwe Stone Enclosure
Source: www.zamaniproj-ect.org, 2020, Accessed: 11 April 2022.

1871

Bulawayo established.

1907

Mbare is established and known as the first township, originally called Harari.
Image : People and vendors in present day Mbare
Source:Available from: www.en-academic.com .Accessed 11 April 2022. [Online image]

1946

Mbare Hostel Construction starts
Image: Matapi Flats in present day Mbare.
Source: www.newsday.co.zw, 2015. Accessed 11 April 2022.[Online Image]

1980

Independence is declared on April 18. Mugabe is sworn in as prime minister of independent Zimbabwe

Image: Then-Prime Minister Robert Mugabe of newly independent Zimbabwe lights the Independence Flame on April 18, 1980, a monument to Black
majority rule [File: AP/Matt Franjola]
Source: www.aljazeera.com,2020. Accessed 11 April 2022.

2008

Economic crash, US dollar is adopted as main currency as zimbabwean dollar comes out of use.

Image: 'Years of political crisis and mismanagement has left Zimbabwe's economy in tatters [EPA]'
Source:www.aljazeera.com, 2009. Accessed 11 April 2022.

2021

COVID 19 restrictions still in place, Mupedzanhamo and Magaba are shut down in order to restrict traders from working; vendors resort to mobile vending using vehicles.

Image:Vendors working from their cars.(Photo credit: P Toriro)
Source: Percy Toriro & Innocent Chirisa | (2021) *Vendors on wheels! The changing terrain and manifestation of informality in Harare under Covid-19 pandemic restrictions.*

1100 AD

1100 A.D

Shona ancestors settle at Zimbbawe site.

1836

Ndebele and Afrikaners fight for the first time.

1896

Ndebele and Shona revolt; Ndebele revolt ends

1930

land Appointment Act promulgated

1961

Mbare Hostel Construction done.
Image: Present day image of Mbare hostels.
Source:www.zimbabwesit-uation.com,2021. Accessed 11 April 2022 [Online Image]

1991-1995

Economic Structural Adjustment Programme (ESAP) sees birth of informal markets in Mbare (Chirisa, 2010, pp 59)

2005

Operation Murambatsvina is carried out and sees the destruction of several informal enterprises and housing.
Image: Demolition of a house during Operation Murambatsvina
Source:www.newzimba-bwe.com, 2021. Accessed 11 April 2022 [Online image]

2019-2020

COVID 19 restrictions are put into place by government, displacing informal traders from workstations.
Image:'A desserted Mupedzanhamo market in Mbare'
Source: www.allafrica.com,2022.Accessed 11 April, 2022 [Online Image]

2022

(Present)
Magaba reopens, whilst Mupedzanhamo stays shut down, forcing informal traders to occupy roadsides instead.

KEY

◯ **KEY DATES AFFECTING INFRASTRUCTURE IN MBARE**

● **KEY DATES AFFECTING IN MACRO CONTEXT HISTORY**

Figure 4 : Timeline of events happening in and around the birth of Mbare, drawn by Author. Information sourced from; Owomoyela, O., 2002. Culture and customs of Zimbabwe. Greenwood publishing. group. Images referenced in text.

NAMING AND ‘OWNERSHIP’ OF SPACE

A BRIEF ANALYSIS OF THE TOPONYMY AND LANGUAGE PRESENT WITHIN THE CONTEXT

Matamanda et al (2021) points out how the renaming of streets at the end of the 20th Century in newly independent African countries not only worked as a way of establishing a new identity but was a powerful tool in the decolonisation of these states. This practice of giving an area a new name after its independence from colonial rule is not something that only existed in the formal and legislative part of a nation but was extremely prevalent in the Informal market areas of these nations, Hwati(2021) in their writing notices this trend of decolonisation of space through naming as they say:

“These second-hand clothes flea markets are a common feature all over Sub Saharan African they are known by various vernacular names in various African countries Ghana: „obroni wawu” (clothes of the dead white man) Zambia: „ salaula” (‚selecting from a bale by rummaging), Nigeria: „okirika” (bend down boutique), Zimbabwe: “Mupedzanhamo” (Where all problems end) Kenya: „kafa ulaya” (clothes of the dead whites)””(Hwati, 2021, pp.4)

When conducting this research there was the realisation that this place-making through naming is prevalent within the context of Mbare, and it represents sentiments that mirror the day-to-day activities of these areas. One of the factors that stands out in the toponymy of these informal spaces is the use of vernacular, this is an aspect that displays the intention of ‘ownership’ over a space that was previously colonised, ‘ownership’ that highlights the “political position of people who refuse death by colonial/post-colonial legislature”(Hwati, 2021, pp.3).

The word ownership is presented in quotes because the ownership that is sought after by the informal traders within these sectors differs to that which stems from an old colonial western ideology that refers to dominance of an area, but instead this ownership refers to the freedom and ability to work within a space without feeling inhibited or restricted.

It is not ironic how the largest informal structure and market space in Mbare is called ‘Mupedzanhamo’ which translates to “where all problems end” in Shona, this name symbolises how the people of Mbare rely on the informal market to make a living within the Zimbabwean economy, this market has stood as a space of opportunity and hope within a pariah state for over two decades.

If Mupedzanhamo speaks to the people of Mbare’s dependence on the informal market, then ‘Siyaso’, Mbare’s second largest market space, speaks to the disdain for political forces that have tried to uproot traders and vendors within this context. ‘Siyaso’ previously known as ‘Magaba’, an area which I believe was named after the Operation Murambatsvina violence, unironically has a name that translates to ‘Leave it as it is” in Shona, one of the main vernacular languages of Zimbabwe. The naming conventions of these areas in Mbare and Sub-Saharan African markets is rarely researched or acknowledged in their effects on the space making of these informal markets, but these names reflect the relationship that the people who live within these contexts have with these spaces and their identities as they are the ones who name their environments. Matamanda et al (2021) explain this practice within their writings on the Zimbabwean context as they say:

“The processing of renaming streets among other urban landmarks is more than an innocent spatial reference. Rather, the process is embedded in social relations and struggles over the identities of places and people (Berg and Vuolteenhaho 2009; Alderman and Inwood 2013).” (Matamanda et al, 2021, pp.340)

Research into the naming conventions of these areas is extremely important as an Architectural Designer in this context, as it alludes to the general need for ownership of space and independence that the informal market yearns for. Therefore, when designing areas, or dealing with existing infrastructure that communicates with this market , it is important to ensure that flexibility is present within the space that is created, along with the choice for people to shape their environment.

1

2

3

Images taken on site trips within the Mbare Mupedzanhamo and Magaba area images source
1-2: Gareth Stangroom, 2021
Image 3 taken by Author , 2022

1

THEORY

SPATIAL ORGANISATION AND IDENTITY THROUGH THE OBSERVATION OF HISTORICAL PATTERNS OF PLACE.

EXISTING SPATIAL ISSUES

The organisation of informal space within Mbare follows what Dovey (2013) notes about informal settlements as they say that they are usually "marginal to the topography" and exist near 'nodes of transport" (Dovey, 2013, pp.83). The observed reason behind this sort of spatial organisation is the ability for vendors to get to customers and most importantly become part of the journey of the customer such as the case in Mbare where vendors line the route of the road and almost dictate the pedestrian pathway. Within this context of Mbare there are three main permanent hubs for informal traders and vendors to occupy, as stated in earlier parts of the paper, these hubs are Mupedzanhamo, Siyaso and Mbare Musika (Chirisa, 2010) and one of the challenges that are faced in these areas is the distribution of space and permanence of position amongst each vendor as the vendor placement is mostly random and works as a 'first come first served' situation because of migratory nature of the trade itself. The organisation of vendor stall space within this context has even become a large issue, as vendors face threats from 'space barons' (newszimbabwe, 2020, online) who take the opportunity to grab empty spaces within Mbare and immediately 'rent' them to vendors even though they do not have the authority to do this (ibid, online).

When looking at this issue of spatial organisation and identity it can be plausible to look at the old vernacular ways of dealing with the organisation and hierarchy of spaces in communities, as the chaos that is present today in Mbare can be attributed to a loss of cultural sentiment and identity through constant demolition and dispersion of vendors at the hands of police brutality. Pikirayi (2006) even states how modernity, or what I would like to call the 'quest of modernity,' through practices such as Operation Murambatsvina can be a major challenge and 'lead to cultural loss' as it completely "sidelines African Heritage from public space" (Pikirayi, 2006, pp.759).

ORGANISING INCREMENTAL GROWTH IN INOFRMAL SPACES

When approaching this challenge and borrowing from vernacular ways of settlement, such as the case of Great Zimbabwe and other African settlements that deal with the incremental growth of modules, or in this case informal market spaces, (as a method of organising and growing communities) it is important to be careful and take a critical regionalist approach. Frampton (1981) warns of the dangers of 'nostalgia' when working with inspiration from old methods within a context and trying to apply them to a completely different time, but instead the author recommends dealing with the 'peculiarities' of a space instead.

Eglash (2010) discusses how a historical analysis of African communities and cultures highlights a 'self-organising phenomena' through what is deemed to be 'fractal geometry.' What the author is simply alluding to is how old African tribes such as the Logone Birni (Fig 5), Mokoulek (Fig 6) tribes in Cameroon and even the Shona Musha (Soroka, 1997) organised their communities in terms of hierarchy, but not hierarchy in the western-ised sense, and need. The use of fractal geometry is seen as most of these communities would consist of smaller similar shaped modules or 'fractions' that would line the vicinity but differ in size according to the needs of the occupant. Great Zimbabwe follows a similar pattern as Pikirayi (2006) picks up in their writing, that it consists of 'sub-enclosures' (Pikirayi, 2006, pp. 757) within the main overarching enclosure (Fig 7). The growth of these communities and 'sub-enclosures' relied on the availability of materials or the growth of one of the families or their needs, that lived in a sub-enclosure, allowing the flexible and incremental growth of a community, like a cell going through mitosis.

This vernacular geometry is important to observe and consider in the case of Mbare, where Mupedzanhamo can be seen as an overarching enclosure and the vendor stalls present representing smaller sub-enclosures (Fig 11). This space would benefit from a similar pattern of organisation where the vendors that would need more space can be provided with infrastructure that caters for their business, whilst smaller vendors are provided with sized infrastructure that has the 'flexibility' and capability to expand if necessary. The Warwick Junction Tradition-al Medicine Market and Brook Street Market (Fig 9) in South Africa displays this strategy well, as several vendors are accommodated for under a single enclosure but still function independently from one another (Dobson et al, 2009, pp. 1-133).

Whilst areas such as Warwick Junction have developed past some of the problems that the area of Mbare deals with, such as political manipulation and police violence, these initiatives and planning strategies stand to give informal traders opportunities to make a living. One of the main reasons that this theoretical approach of space making may benefit Mbare is that it assists with the organisation of programme within this context, as well as the possible categorisation of trades according to product and need, this would also assist pedestrian traffic with movement through this context.

As much as this theoretical approach may seem plausible in the context of Mbare, it is also important to note that because Mbare works as a network of different markets beyond that of Mupedzanhamo (Fig. 11), this initiative would have to be designed in such a way that it affects the macro context over time. This strategy of working with the larger macro context, where Mbare's periphery is treated as the larger enclosure and the market street works as the pathway through this proposed fractal settlement may best be analysed through the lens of the 'Metabolism' architectural movement, even though it was originated in Japan its ideas may work well within the ever-changing environment that is Mbare and I will be expanding on this in the next section.

CASE STUDY: BROOK STREET, WARWICK JUNCTION

The development of Warwick Junction has been a primary example of how an informal market can be perfectly integrated into a community's everyday cycle as well as becoming a part of the people who live and work there's chance of survival. Therefore, the Brook Street development at Warwick junction highlights how the designers intended to create a productive community of traders through the perfect sizing and layout of modules that would cater for different programs within this context (Dobson et al, 2009, pp. 87-105). This case study serves as a notable example to the context of Mbare as the designers approached this development from the macro scale, which would include aspects such as pedestrian movement and connections to the outer city, as well as the micro scale, which would include the re-designing of infrastructure that traders used within Brook Street. Brook Street serves as a great comparison to Mupedzanhamo (fig. 11) within the Mbare context as it not only serves as a pedestrian node within this context but also works as a permanent hub for informal traders to dock in and sell their products to the passing foot traffic.

When looking at the theory of African village vernacular layout, the pathways and entry points that are created between different modules and compounds are important because they work as a way of mapping the inhabitant's journey through the community to features such as water sources or locations where materials can be gathered to develop their homesteads. It stood out to me how the designers of Brook Street stated how the navigation and circulation of pedestrians was an important part of the design, therefore the decongestion of the old area was an important design decision along with making sure that the traffic from the existing train station and pathway would pass through the vendors stalls, allowing the vendors to find opportunities to make a living through this traffic (Dobson et al, 2009, pp. 87-105) (fig. 9). The Brook Street Market design development also included the consultation of "stakeholders, street traders, their organisations and the Mazaar Society" (Dobson et al, 2009, pp. 97) which displays another design aspect that needs to be applied before designing for the informal trading communities that exist within Mbare as this makes the final decision one that everyone contributes to and is familiar with instead of retrofitting an alien proposal that may not work within this context.

When trying to adopt a spatial language within Mbare that allows for incremental growth it is important to allow the community to have a say in building their environment. This case study also highlights the design strategies applied when dealing with the infrastructure that is present within an informal community and is used by vendors daily. The designers on this project went through several iterations of re-designing the tables and stalls that the vendors used as they faced problems such as 'break-ins,' 'theft' and even 'squatting' within some of the inbuilt storage facilities (Dobson et al, 2009, pp. 101) (Fig. 9). This part of the design seemed extremely interesting to me as it speaks to the part of architectural agency and the Architect's role in working with informal market design within a project and will be expanded upon in the latter part of my investigation and analysis into Mbare.

Brook Street Market development also dealt with differently sized modules for different programmes within the market and introduced the design of a 'kiosk' with electricity and running water (ibid, pp.104) (Fig. 9). The addition of a larger structure that catered to separate programmes such as spaces for traditional healers and food preparation, introduces a sense of hierarchy to the spatial organisation of this development, but hierarchy in a non-imposing way, like that of the previously discussed vernacular settlements and layouts.

This need for additional and larger spaces is a feature that will have to be considered in the context of an area such as Mupedzanhamo, where the allocation of space is not ordered and suffers from the potential case of certain vendors taking on larger areas than they need.

This case study gives hints on how to apply a spatial strategy to a context such as Mbare as the two contexts share a similarity, but besides this theoretical approach there are other elements that need to be considered in this shifting environment such as the daily routines of the vendors and their circulation patterns within this context, as well as how the area of Mbare is designed on a macro scale. It is worth finding out during the design process if aspects and strategies such as vernacular layouts and its features of incremental growth, and differently sized modules (according to need) can be viable for the context of Mbare in a way that allows all vendors to have equal opportunities in making a living.

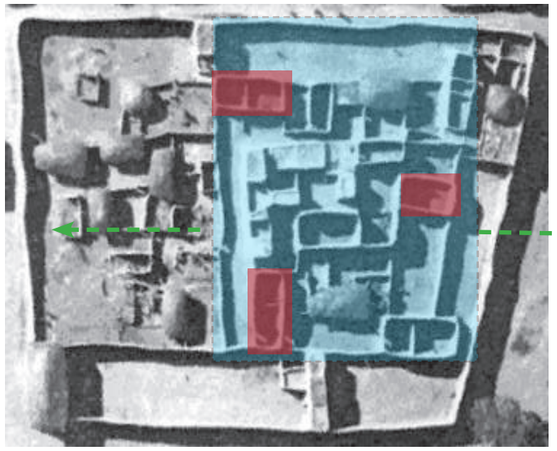


Figure 5 :Logone Birni Fractal Spatial layout, image sourced from: https://csdt.org/culture/africanfractals/architecture.html

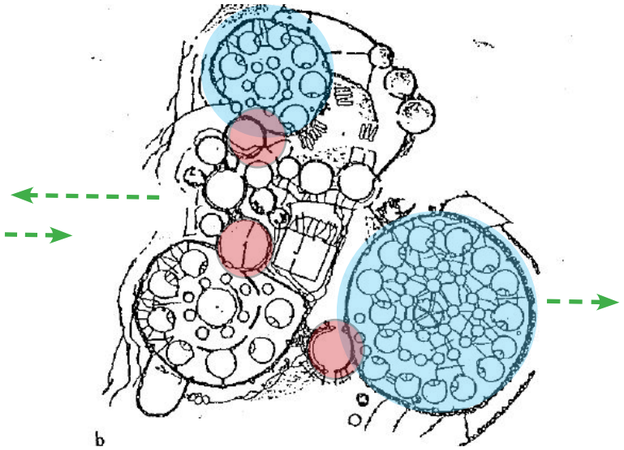
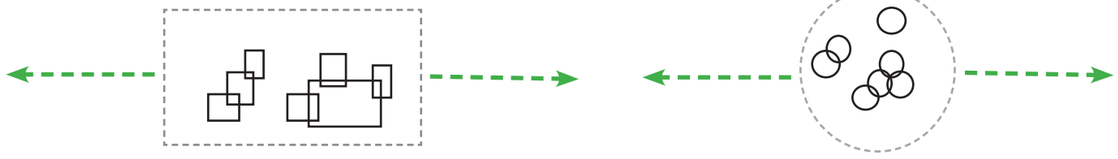


Figure 6 :Mokoulek Fractal Spatial layout, image sourced from: https://csdt.org/culture/africanfractals/architecture.html



These Diagrams showcase how these communities were organised in a way that allowed for incremental growth through the addition of a module. This is a concept that would be applicable in a context such as an informal market where a stall or the addition of a new vendor can be seen as the insertion of a new module that contributes to the growth of the market.

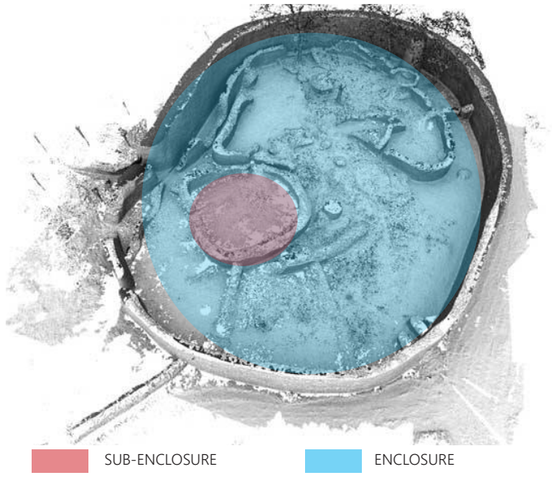
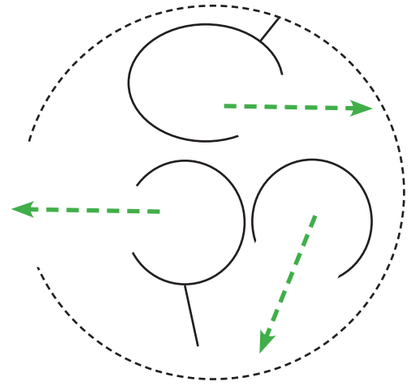


Figure 7 :Great Zimbabwe spatial layout, image sourced https://www.zamaniproject.org/site-zimbabwe-Great-Zimbabwe.html



Incremental growth diagram by Author

CASE STUDY:
BROOK STREET, WARWICK JUNCTION

Figure 8 Images source: Dobson, R. & Skinner, C. et al. (2009) Working in Warwick: Including street traders in urban plans.

PLANS
Drawn By Author

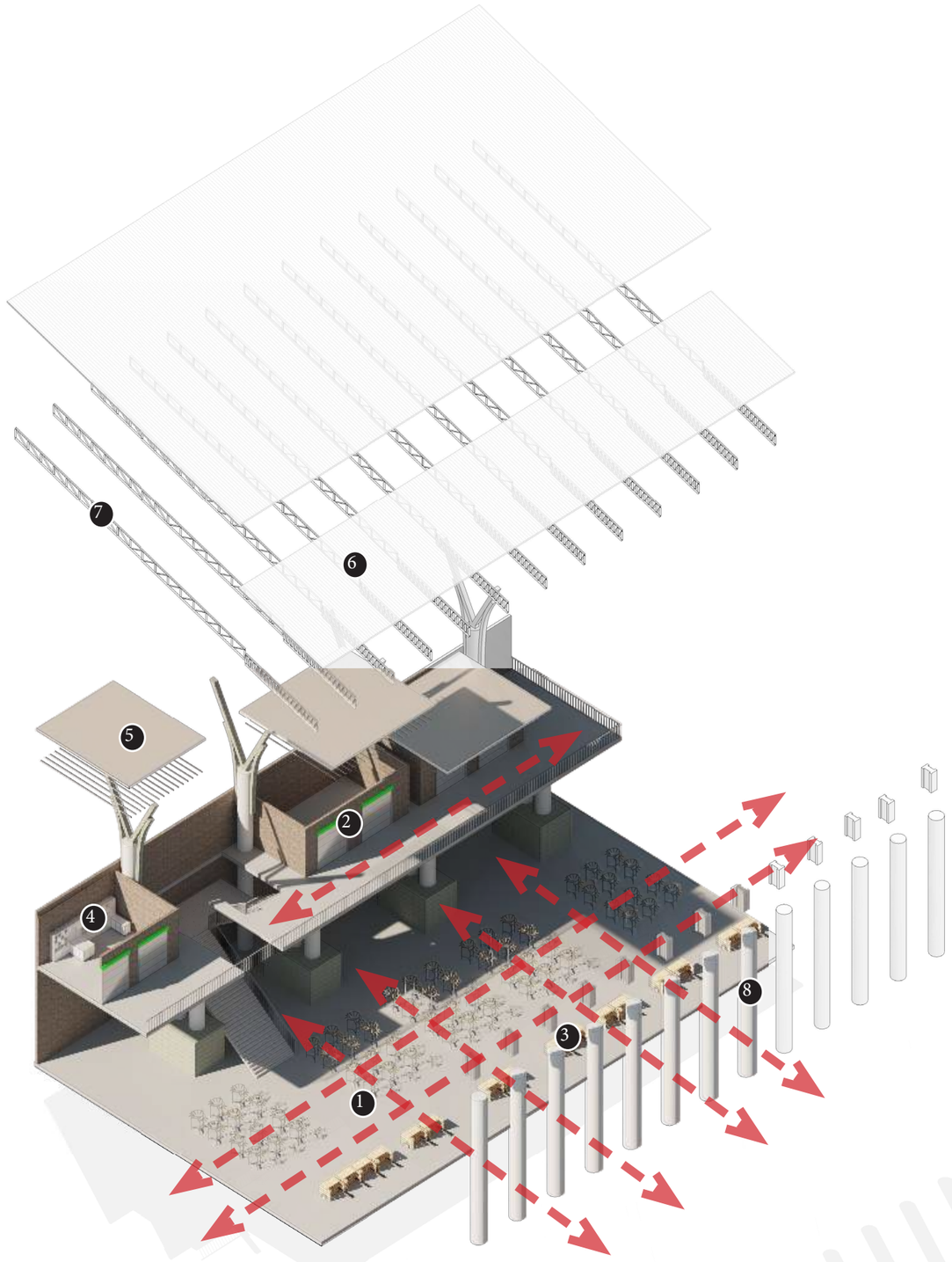


Figure 9: Exploded axonometric section of Brook Street drawn by author, with information from Dobson, R. & Skinner, C. et al. (2009) Working in Warwick: Including street traders in urban plans images.

ANNOTATIONS

1. PEDESTRIAN PATHWAY - The pedestrian pathway within the Brooke street area was planned in such a way that allowed those coming from the train station to interact with the vendors in a way that provided opportunities for selling product.

2.KIOSKS - The Kiosks were designed to house programs within the market area that demanded more space, this design strategy of having varying stall and space sizes according to program is a helpful design tool to consider going forward.

3.STALLS- The regular market stalls within the market were designed using similar dimensions, as the occupants had suggested this in an attempt to give all vendors equal opportunities when it came to displaying products. This design strategy is one that can be applicable to the space issues that are faced in the Mupedzanhamo context.

4.STORAGE- The development prioritised storage space as this was a key issue within the context of Brooke street, as former storage spaces were always broken into and at risk of vandalism.

5.ROOFING - A key aspect of the design strategy would be to consider the shelter aspect and problem that is usually faced by vendors when working in an open context.

6.OVERARCHING ROOF- The use of an overarching roof and enclosure speaks to the previously discussed vernacular design that presents an enclosure that houses sub-enclosures, in this case the stalls and the vendors.

CIRCULATION

The Brook Street Market design scheme showcases elements that can be carried in a possible redevelopment of an area such as Mupedzanhamo in Mbare.
The spatial considerations and techniques that the designers chose to apply to this development allowed for each vendor to not only be represented but to have a space that would allow their bussiness to thrive, this design technique would positively impact the space battles that are currently present within the context of Mbare.

ANALYSIS : MUPEDZANHAMO, MBARE

Figure 10 Images of Mbare area and Mupedzanhamo surroundings taken by Author, 2022

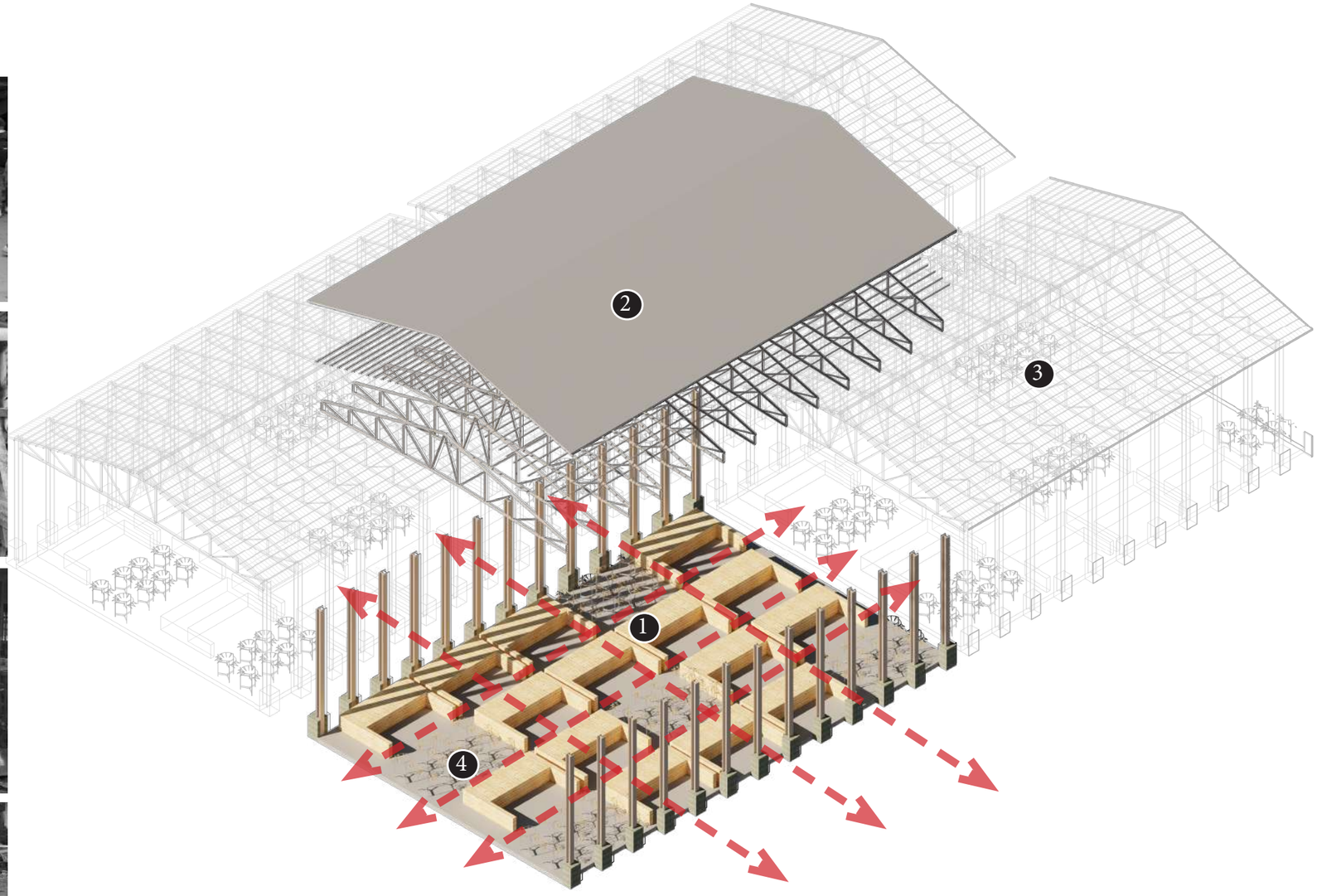
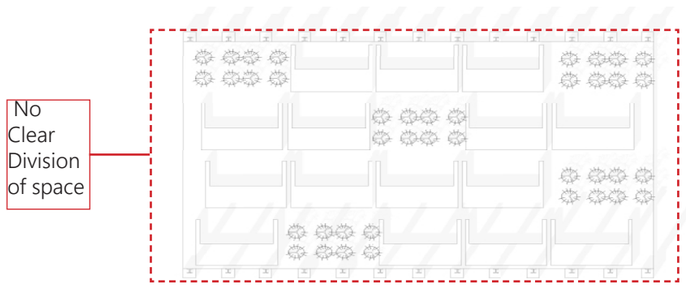
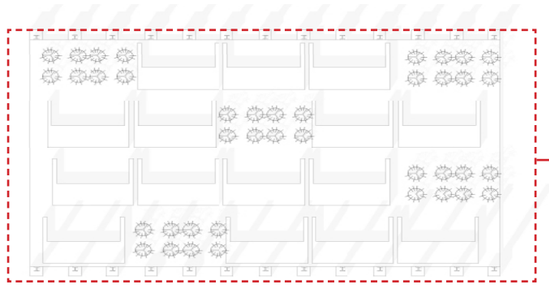


Figure 11 Exploded Section Axonometric of Mupedzanhamo, Mbare drawn by author, 2022. Information taken from images taken by author on site and google earth for dimensions.



No Clear Division of space

PLANS Drawn By Author



No Clear Program

ANNOTATIONS

1. STALLS -
The stalls that currently exist within the overarching Mupezanhamo structure are flimsy and therefore can benefit from the redesign steps that were taken with the Brook Street Development.

2.OVERARCHING ROOF
Similar to the Brook Street Development, The Mupedzanhamo market stalls are contained by an overarching roof that acts as an enclosure, the only issue is that this infrastracture has not been taken care of for a long time therefore poses a risk.This roof also provides very little light into the market area which creates an unpleasent work environment for the vendors and an unpleasent shopping experience as well.

3.NEIGHBORING STRUCTURES
The market consists of several neighboring structures that work as modules as they follow the same dimensions and size. This design aspect shows similarities with the concept of vernacular village communities that are designed using modules therefore this could be an opportunity to capitalise on.

4.OVERCROWDING
The major difference between the Brook Street development and Mupedzanhamo is the overcrowding that exists within this market, this is mainly due to the unplanned nature of the organisation of spaces ,therefore this aspect stands as one to focus on when redeveloping this space.

CIRCULATION

The analysis of Mupezanhamo area, its structure and set up is to act as a direct contrast to some of the design features that are explored in the design of the Brook Street Development and an analysis the reader can refer back to through out this documentation and research when the context is brought up. One of the main issues that exists in the design of Mupedzanhamo is the poor spatial planning that is present because it faces several issues andd politics that make it difficult for vendors to have specific spaces to 'dock'. When moving forward in my Design thesis Mupedzanhamo will serve as my point of interest, therefore this theoretical research into vernavular planning systems will be applied in this context.

2

THEORY

WORKING WITH THE INFORMAL NETWORKS FOUND WITHIN MBARE THROUGH THE LENS OF THE METABOLISM THEORY.

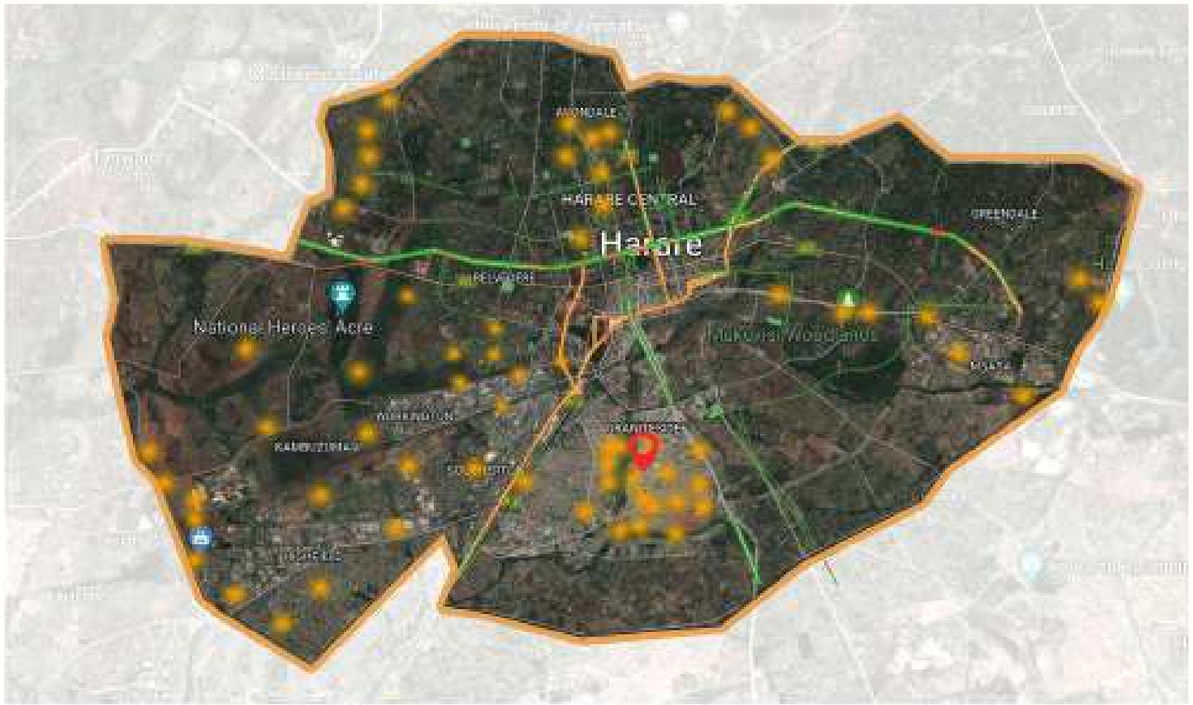


Figure 12 : Diagram drawn by Author showing GIS tracking data of all informal enterprises within the coontext of Harare, information sourceddd from (Gumbo, Moyo and Moyo, 2018)

Whilst doing research into the existing informal networks within my context, I came across a survey that was done in 2018 using GIS data to track the informal trading activity within the macro context of Harare in which Mbare sits(Fig. 12) . The survey displayed that the concentration of informal enterprises had changed from 900 enterprises per hectare in the year 1980, to 1900 in the year 1990, to 2500 in the year 2000 (Gumbo, Moyo and Moyo, 2018) and since then the numbers have continued to grow rapidly. Without these figures and through my personal observations of living within Harare for over two decades, it is apparent how the number of informal traders grows daily as the roads and transport routes are lined with traders at every point trying to sell products to incoming traffic and passer by pedestrians, a feature that is apparent in most areas within the Global South. However, within Harare, most of the traders that are situated in areas that 'North' and 'South' of the city are part of a network that leads straight to Mbare, as most of the maker spaces that are within this area are responsible for producing the exports and products that are sold in different and smaller informal markets (Fig. 13).

Mbare is seen not only as an informal hub of activity, but it is also seen as a source or 'plug' to all the other networks that work in distinct parts of the city therefore there is constant movement in an out of this area, not only by vendors but by those who bring in stock and materials into areas such as such as Siyaso, Mupedzanhamo and the farmers that supply the area of Mbare Musika with fresh produce (Chikulo, Hebinck and Kinsey, 2020). When moving through Mbare, I realized how these areas are characterised by infrastructure that make them permanent areas where informal traders can 'dock' and work from during the day, such as the rusted steel portal frames that make up Mupedzanhamo (fig. 11) and the re-purposed shipping containers that act as workshops for the area of Siyaso/Magaba. This influx and constant movement within Mbare are therefore attributed to the previously spoken about 'nomadic nature' of the vendor/informal entrepreneur culture in this context, where Mbare can be seen as a body that experiences continuous growth and change throughout the day because of this (Fig. 14).

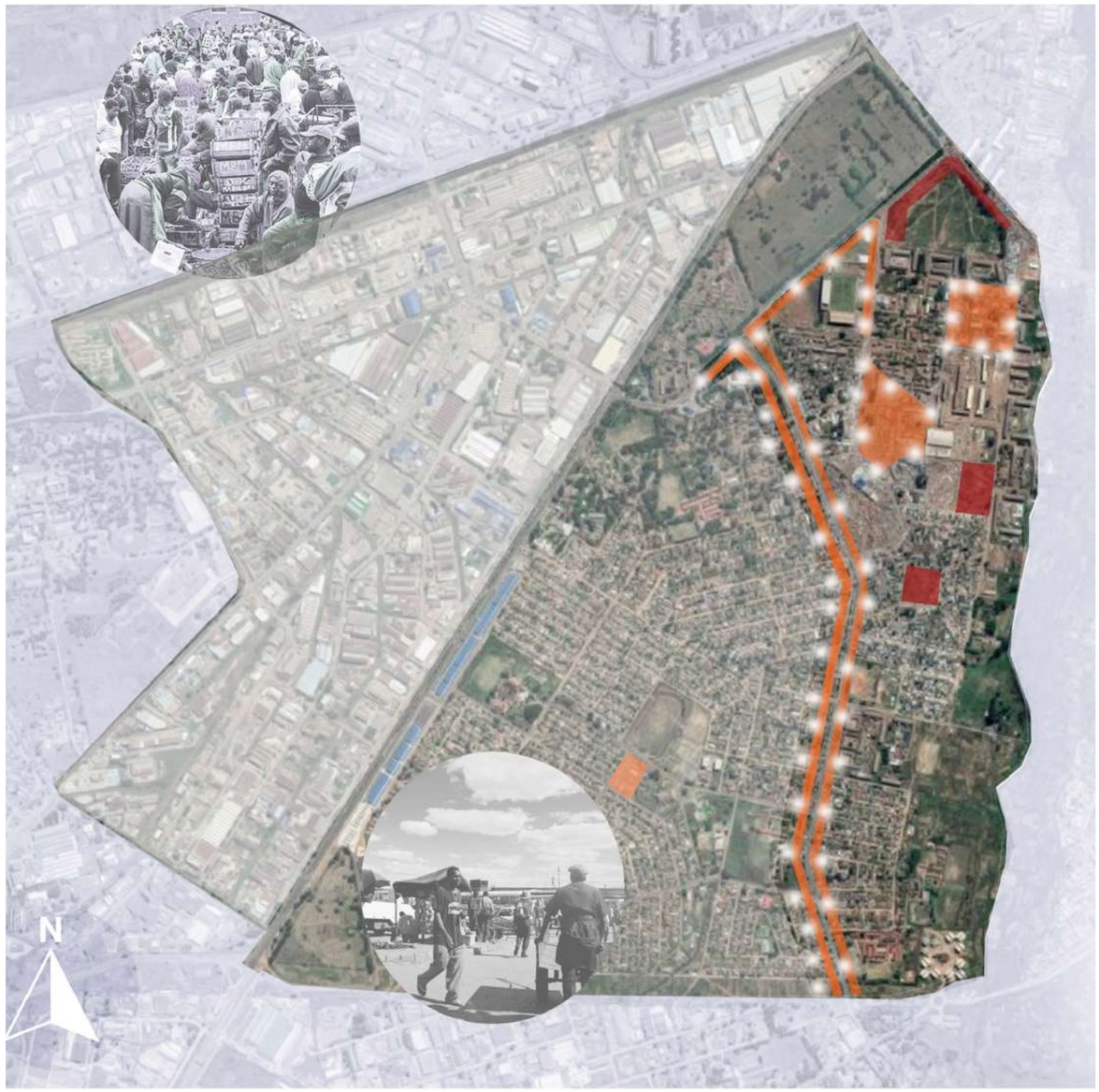
The Japanese theory and philosophy of Metabolism speaks best to this concept as it presents strategies on how architecture can deal with impermanence within the context of the city. This theory paints the city as a series of moving parts, parts whose movement is attributed to 'human society' (Kisho, 1977) and not just the infrastructural side of things. In a context such as Mbare, this approach is extremely important because as much as the informal market is dictated by the availability of infrastructure for vendors to work from or in, the vendors themselves stand as the most important feature with this context. Kisho, one of the pioneers of this theory, states how it aims to 'distinguish' the static parts and moving parts within a system, to find out which parts must be 'periodically replaced' (Kisho, 1977, pp.33) .

When studying Architectural proposals that stemmed from this movement such as the 'Fujisawa New Town,1968' and the Linear city, 'Metamorphosis' 1965 proposals, there is the aim to design models that are free to grow in all directions without interruption (Kisho, 1977, pp.58). Some of these architectural proposals may come off as far-fetched because of the sheer expense or scale when applied to a context such as Mbare, but there is the potential for this idea of 'uncapped growth' to be applied to trade networks within the context of Mbare and its connection to its surroundings and the wider world. Projects such as the Agbogbloshie Makerspace Platform, which I will expand on in the latter section of this paper, highlights how the informal sector of Ghana was successfully connected to the outside world, allowing it to foster relationships with different organisations and students within stem fields using recycled materials to create a workspace.

This precedent along with the theory of Metabolism display how areas such as Mbare can benefit from capitalizing on an existing network or creating growth within one through the creation of infrastructure that is not only flexible but adaptable enough to be changed according to its intended use. The vendors and craftsmen that work within the context of Mbare are the largest and most vital part of this network and making sure that their narratives and trades are considered within the proposal of any design would be an integral part of any design decision that would be made to improve the conditions of the existing market.

PATTERNS OF CHANGE: METABOLISM THEORY

0600 AM-1800 PM

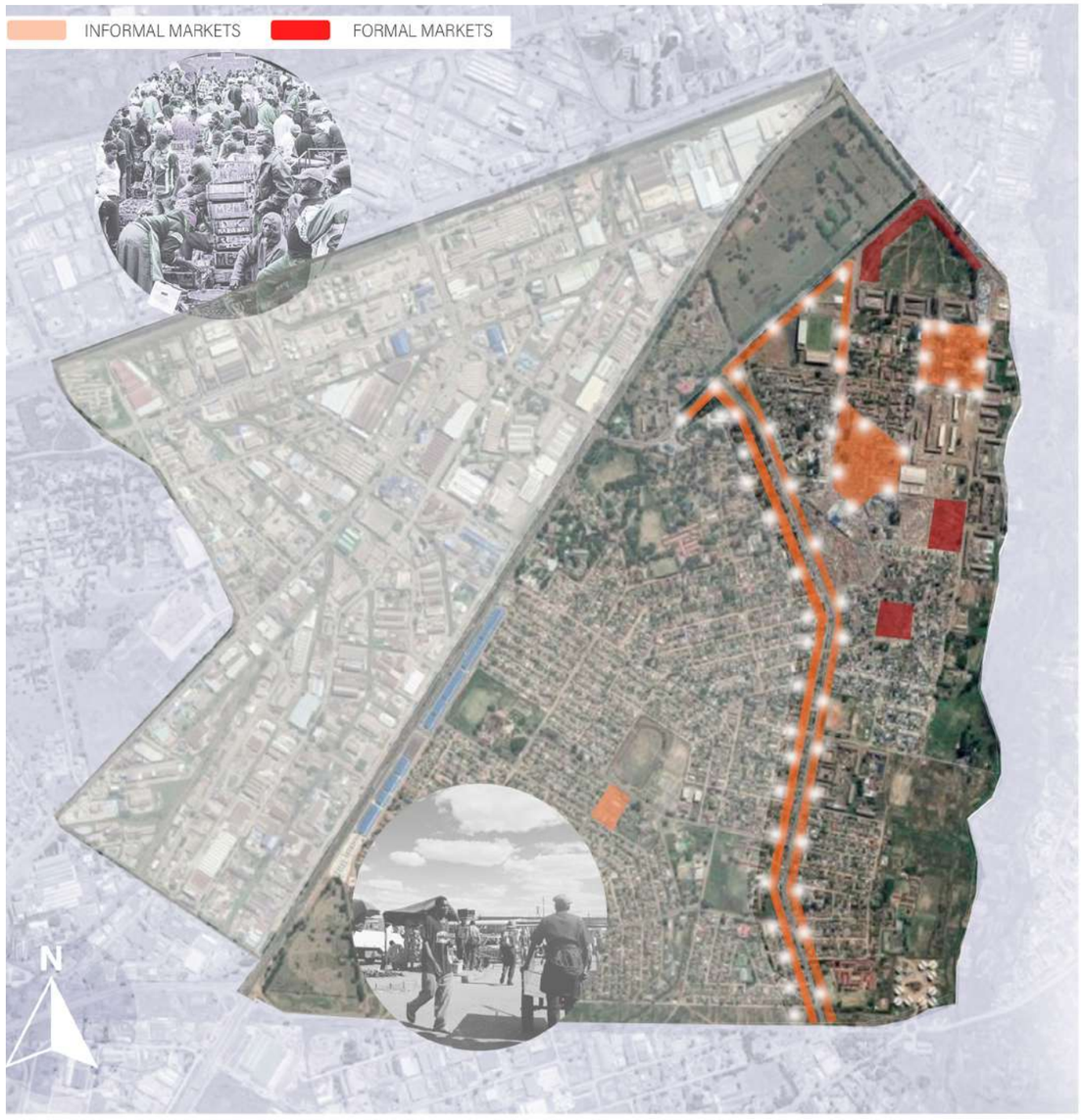


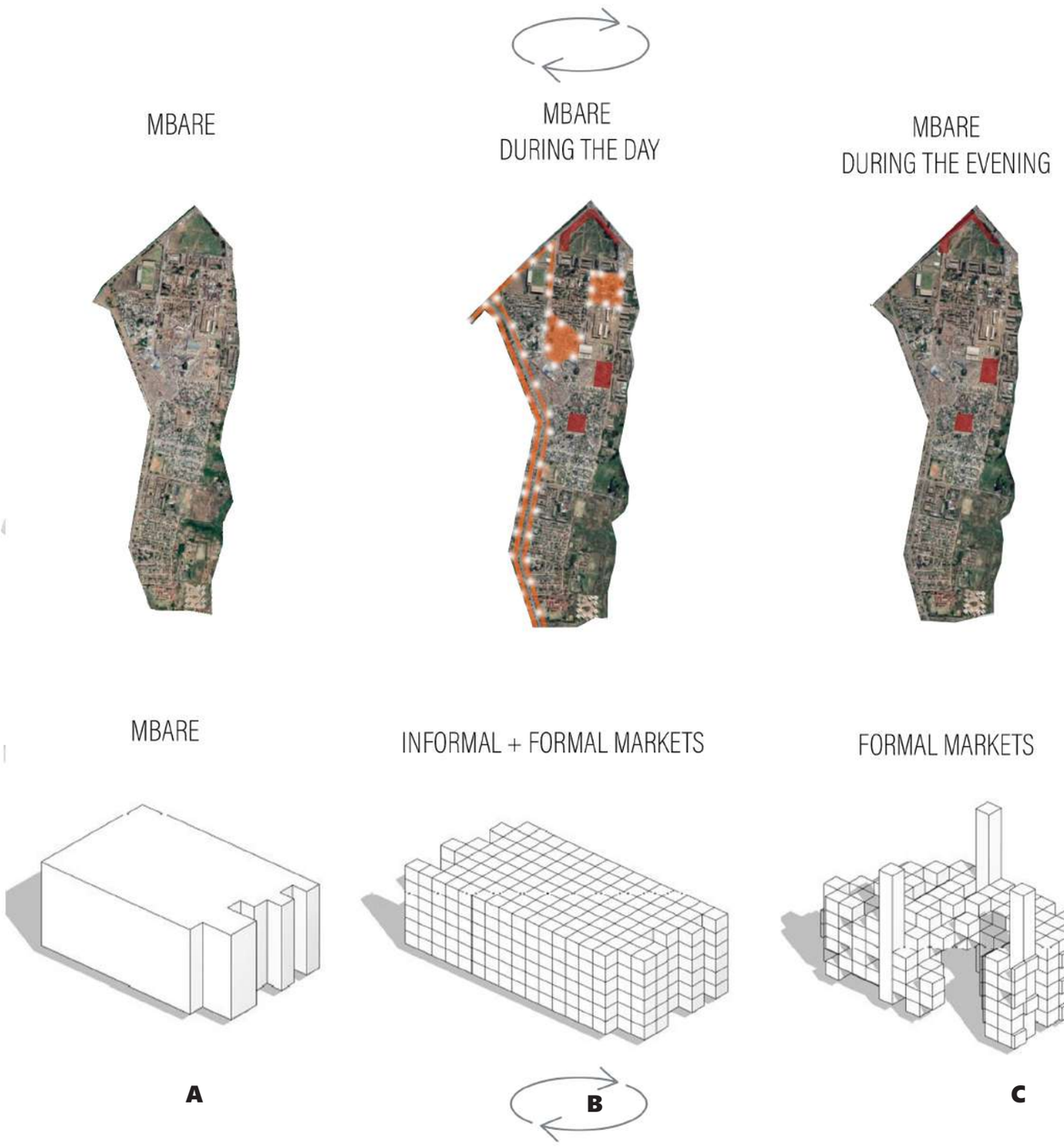
1900 PM - 0500 AM

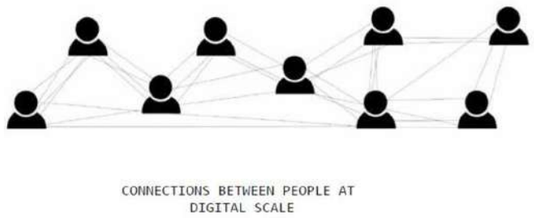
Figure 13 Maps showcasing patterns of change within the informal market throughout the day drawn by Author

When taking a closer look at the arrangement of markets throughout the history of the Mbare area, it has always been apparent that they shift between the formal and informal, creating constant states of permanence and impermanence within this context. Therefore, when tackling this area it is important to see how the informal market can adapt to this condition without being wiped out and costing the livelihoods of the vendors that use this space.

PATTERNS OF CHANGE: METABOLISM THEORY







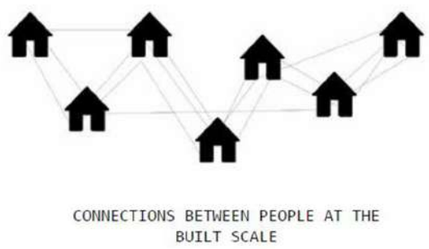
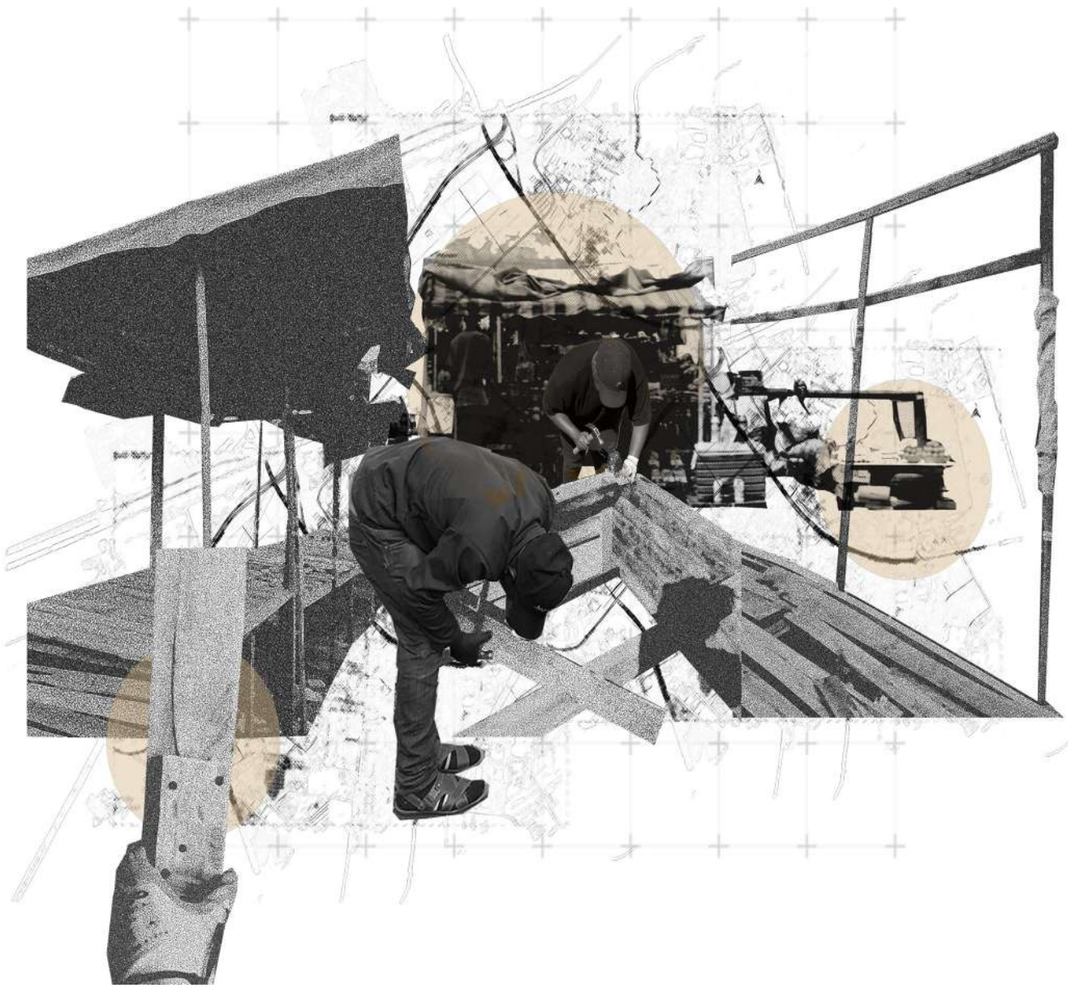


Figure 14 Illustrations of the metabolism theory when applied to the context of Mbare, drawn by Author, 2022

This illustration showcases the transformation that takes place within the context of Mbare as vendors move in and out of the context, the vendors, represented by the Informal Market, are essentially the pieces **(B)** within Mbare that sustain the network of trade and as more trading opportunities and spaces make themself available, this context is under continous fluctuation and change. The poles on **(C)** within the illustration showcase the formal markets that act as 'docking' and anchoring points within this context.

3

TECHNOLOGY
SPATIAL AGENCY



THE ARCHITECT'S ROLE WITHIN THE INFORMAL MARKET AND ITS INFRASTRUCTURE

Till and Schneider (2009) highlight the issue of architectural agency in their article 'Beyond Discourse: Notes on Spatial Agency' and within this text the authors reach the definition of architectural agency that I used to conduct my research within my technology studies. The authors frame architectural agency in the 'transformative sense', in such a way that sees the Architect as an 'agent of change' amongst many, within this change the Architect is also seen to be a figure that plays a key figure in the role of 'empowerment' through the unraveling of social reality of a given condition (Schneider and Till, 2009, pp. 91-111). In the context of an area such as Mbare, the reality is that the architect exists in parallel with the amateur builder that oversees the creation of their own informal infrastructure that allows them to deal with the demands of their daily lives.

Mbare, as previously discussed, stands as an area that is full of builders and craftsmen of varying skill therefore before the Architect or architectural designer approaches this area with proposals or designs that affect their reality it is important to take a step back and build a line of communication within this community and its traders. Within my research I sought to build this line of communication through a questionnaire that would explain some of the challenges faced when building infrastructure and how often construction of new infrastructure or stalls took place within the duration of a week.

Through my journey and visits to Mbare , I came across the realisation that the infrastructure that was being used within this context to sell clothing especially in the context of Mupedzanhamo was insubstantial and breakable (Fig.36), which would be a major issue within a context that is repeatedly under threat of police harassment and events such as Operation Murambatsvina (2005) which has presented itself in different forms over the past decade.

This realisation prompted a design response that would investigate creating iterations of different sustainable mobile and stationary stalls that could be used within this context for daily vendor activities, and one of the pressing design features would be availability of materials, therefore all the iterations were based around materials that were found within the area of Mbare and would be easily available to other vendors when needed during construction time.

The construction that takes place within the informal market differs from traditional architectural design in the sense that the availability of materials is what dictates the final form of the intervention, therefore during the prototyping and building process it was a continuous back and forth between design, improvisation in certain cases and implementation. The definition of agency within this section highlights this process as it considers how the Architect stands as an agent of change whilst also stepping back from this role in order to give power to the immediate discoveries of the context and to the occupants themselves (Schneider and Till, 2009, pp. 91-111).

Within my research the work of Collectif Saga stood as a large inspiration and served as precedents on how to build affordable and reliable structures through the collection and upcycling of materials within a certain context. In this part of my report, I will be analysing how these architects managed to build structures that would Improve poorer/disadvantaged communities using an approach that highlights spatial agency in an area that shared similar characteristics with that of Mbare through projects such as Silindokuhle preschool In Port Elizabeth, South Africa (fig. 17).

CASE STUDY: SILINDOKUHLE PRESCHOOL BY COLLECTIF SAGA AND UNCEDO

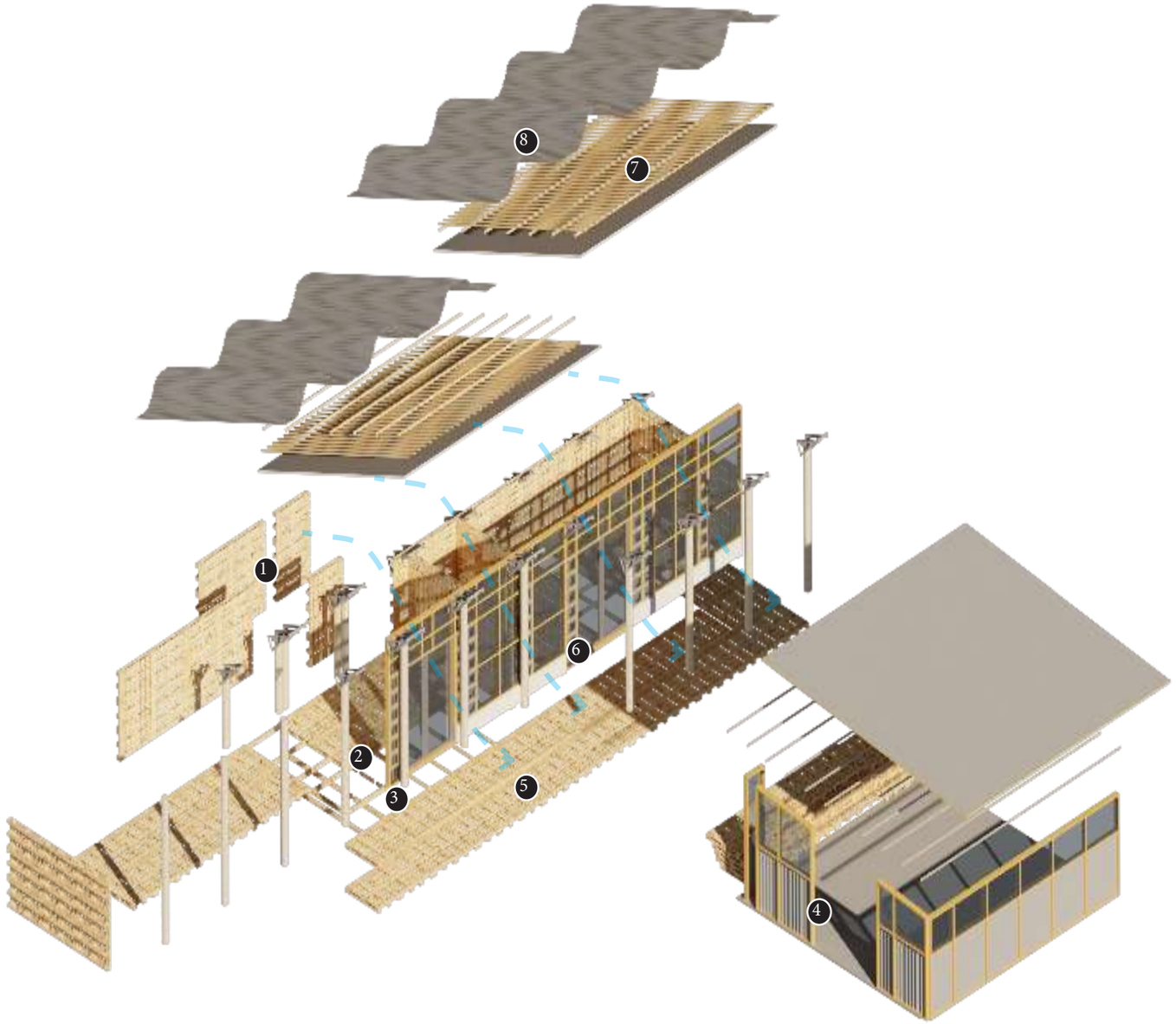
The Silindokuhle Preschool in Port Elizabeth, South Africa by Collectif Saga and Uncedo serves as a perfect case study for the idea of architectural agency, an architectural agency that focuses on the reality of an area and expands the role of the Designer and Architect from the 'authoritarian' role to the collaborative, through the inclusion of the community within a project which sees the Architect as an 'agent of change' as Till and Schneider (2009) put it. The project set out to provide the community of Joe Slovo with infrastructure that would 'improve their living conditions'(Collectif Saga, 2017) as the architects put it, and this project would come in the form of a pre-school. The important thing to note in the start of this project is that the pre-school had existed already through the work of Patricia Pinyani and as this initiative grew, the need for more 'accommodating' infrastructure would be important as the expansion of the pre-school would depend on this and this is where Collectif Saga and Uncedo step in.

This context is similar to the reality that exists within the informal market area of Mbare, where certain initiatives within the 'Mbare Musika,' 'Mupedzanhamo' and 'Siyaso' areas begin to outgrow the infrastructure that is available therefore this case study stands as an example of adapting to these conditions.

At the beginning of the design stage of the project, the architects said that they took the time to understand the context and what was available before imposing any sort of design. This approach echoes the sentiments of Frampton's (1981) critical regionalist approach, said earlier, where the features of a context, such as the availability of material are treated as a guide towards design.

Therefore, the construction of the project depended on the material that was found within the context (Figure 17), which caused the design to be informed by this instead of following the traditional architectural design route where the design comes before the collection of materials, (a design technique that is extremely prevalent within the construction of structures within the informal creation of space). The outcome of the project consisted of three naturally ventilated classrooms (Figure 16), a large office for the teachers, a playground space and a canteen area that offered the community and the children shared spaces along with areas to convene (Collectif Saga, 2017).

The construction and design of this pre-school incorporated aspects of the community such as the availability of material, knowledge of the area and even narratives of the inhabitants of the area, which showcases that the creation of a community within an area that is under-resourced, can also grow from aspects such as construction, craftsmanship and not just vernacular principles of layout within an area, as previously stated within the former research of this paper. This case study shows how making and construction can work as a powerful community design tool within informal areas as well, whilst providing a sustainable approach to design (Figure 17).



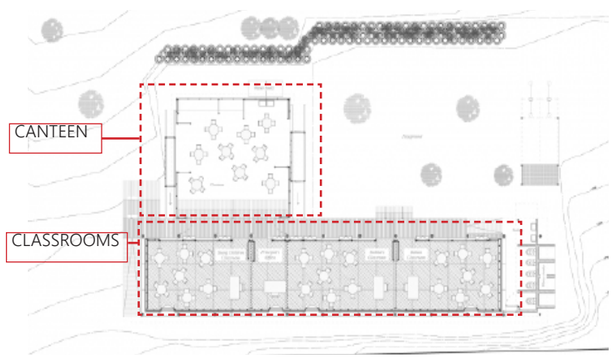


Figure 15 : Ground floor plan drawn by Architects, and drawn over by Author,

Image Source: "Silindokuhle Preschool / Collectif saga" 25 Jul 2017. ArchDaily. Accessed 5 Apr 2022. <https://www.archdaily.com/875103/silindokuhle-preschool-collectif-saga> ISSN 0719-8884

Figure 17: Images source: "Silindokuhle Preschool / Collectif saga" 25 Jul 2017. ArchDaily. Accessed 5 Apr 2022. <https://www.archdaily.com/875103/silindokuhle-preschool-collectif-saga> ISSN 0719-8884

ANNOTATIONS

1. RECYCLED PALLETS - The recyled pallets were used by the team to make up most of the walls and support structures, as these were the some of the most widely available materials. These pallets also offer stability and flexibility because of their form, therefore the team could make necessary changes and adaptations when working with them.

2.EUCALYPTUS POLES- The Eucalyptus poles were also a material that could be found within the context and were used as support columns for the roof structure and load. The strength of the Eucalyptus poles would provide stability for the IBR roof and also offer support against wind forces within the area.

3.TIMBER SECTIONS- The Timber sections would have been taken from parts of pallet pieces in order to create the support structure for the plywood flooring. This support is extremely important within this context as the floor is under constant stress from the children carrying out activities.

4. PLASTIC CORRUGATED SHEETING - The plastic corrugated sheeting was used as a a form of glazing and this allowed the construction cost of the project to stay fairly low whilst still providing insulation for the project in different conditions.

5.RECYCLED PALLETS UNDER PLYWOOD FLOORING - The Pallets played a similar role to the Timber sections, and this would be to provide stability for the structure whilst it was being used.

6.CURTAIN WALL - The ventilation of the project was mostly provided by openings within the curtain wall. The curtain wall was constructed using recycled pieces of wood and this would serve as another cheaper but still effective alternative to a traditional framing system

7.WOODEN BEAM SYSTEM- The wooden beam system was used by the architects to provide support and stability for the IBR roof and were actually attached before the roof was mounted on to the structure.

8.IBR SHEETING- The roof stands as a key aspect of the building both structurally and aesthetically , the form of the roof allows protection from wind for the building and also shows affordability through its use of IBR Sheeting. This roof is an example of how a sustainable feature does not have to be an eye-sore.

CASE STUDY:
LIM'UHPHILE CO-OP BY COLLECTIF SAGA

VISION, CONTEXT AND SPATIAL AGENCY

The Lim'uhphile co-op stands as another great example of spatial agency where the architect's decided to work and collaborate with the community of Walmer township to create a sustainable Agricultural project. The vision of the project was slightly different from their other projects located in Joe Slovo township as it sought to create a dialogue with the city center and 'Walmer's urban fabric' as the architect's put it. During their research and study into the forms of infrastructure that added to the economy of the context the architects came across and met with Xolani Siwa, a member of the community who had been involved with the Lim'uhphile Agricultural Association, an association that had been running for a decade on an abandoned area within Walmer.

The architect's decided to take on an initiative that would not only improve the surrounding context by providing infrastructure that would aid the teaching, meeting of communities and growing of produce but would also continue the growth of the economy in this area. The goal of this initiative was to connect and integrate the community with the wider context of the city through this activity, whilst also providing ablution facilities, a restaurant, a training hall, and a plant nursery that would act as an aid to the existing program that the Lim'uhphile Agricultural Association had been undertaking, allowing the users of the nursery to maintain and earn a living through this activity.

CONSTRUCTION AND EXECUTION

These projects were constructed using raw materials that the architect's gathered from the surrounding context and community. This approach of using local tectonics and upcycled waste to create and build the intervention not only allows for a sustainable outcome and product but also promotes community building, where different members of the community get to lend a hand to the development of their own context. Looking at this approach through the lens of spatial agency, where the architect acts as a collaborator instead of an authority, this allows for discourse between the Architect and the client and removes any chances of the designer forcing an alien intervention on a community. Most of the materials used in this project were left over pieces of wood from pallets along with recycled steel members and reclaimed carpet tiles that made up the cladding of the project (figure 18). The execution of the project came out extremely well as the architectural team used their expertise to guide the additional builders who volunteered to lend a hand. The execution of the project also allowed for the designers to create well ventilated spaces through the limited materials available as well as creating a well-designed nursery and greenhouse that has all the adequate facilities (figure 19).

PROS AND CONS

This project manages to highlight a product that comes from the synergy between the Architect and the community when working together from the point of inception to the point of construction using locally found materials. One of the main concerns or 'cons' that comes from building with recycled materials is the maintenance that will have to be carried out over time by the community against the forces of weathering (if the wood used in the construction is left untreated). This maintenance may come as an additional expense to a community that is just making enough money to take care of their families, therefore this has to be communicated upon the completion of such projects to give a full understanding of it. The use of local tectonics is advantageous because it lowers the carbon footprint of the build as well as lowers the potential cost of the build. This project was funded by an NGO (Non-government organisation), therefore the assumption is that they will take care of the maintenance cost. This line of thinking pushes this definition and role of the architect as the design agent and how many steps must be taken from the initial design stages of a project, its execution and finally the maintenance of the project once constructed and in use.

POSSIBILITIES FOR MBARE

This case study stood fits into the existing program of Mbare Musika (Market) as the cycle(fig. 47) that allows the vendors and informal traders to do their work is aided by local farmers who sell their produce in bulk for the vendors to sell, allowing them to make a 'cut' or portion of the profit that Is sold daily (Chikulo, Hebick and Kinsley, 2020, pp. 13). One of the issues that arises in this market is the lack of storage for some of this produce which severely hinders this ecosystem as the product brought by the farmers is too much to handle at times for the informal traders because of the lack of space and infrastructure. Another issue or aspect that is missing from the ecosystem of Mbare Musika is the ability to grow produce, take care of it within this context and even teach community members to find a way to grow their on sustenance through the allocation of a plot of land within a nursery or mini-greenhouse system. The Lim'uphile Co-op offers a case study through its construction methods that can be adopted within the context of Mbare and Mbare Musika and add another dimension to the cycle that allows certain informal traders to store and grow their own produce without dependence on farmers, a proposal that will be expanded upon in the design stage.

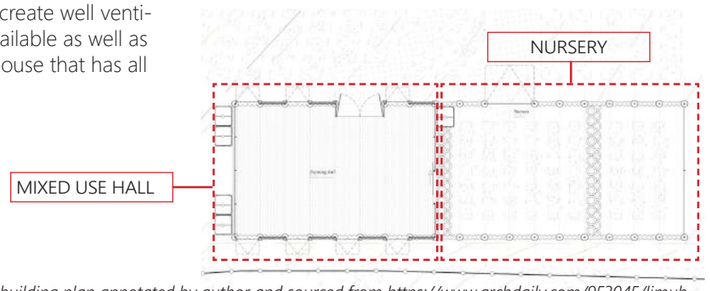


Figure 19 : Case study building plan annotated by author and sourced from https://www.archdaily.com/953045/limuhphile-co-op-collectif-saga?ad_medium=gallery. Accessed 24 July 2022.

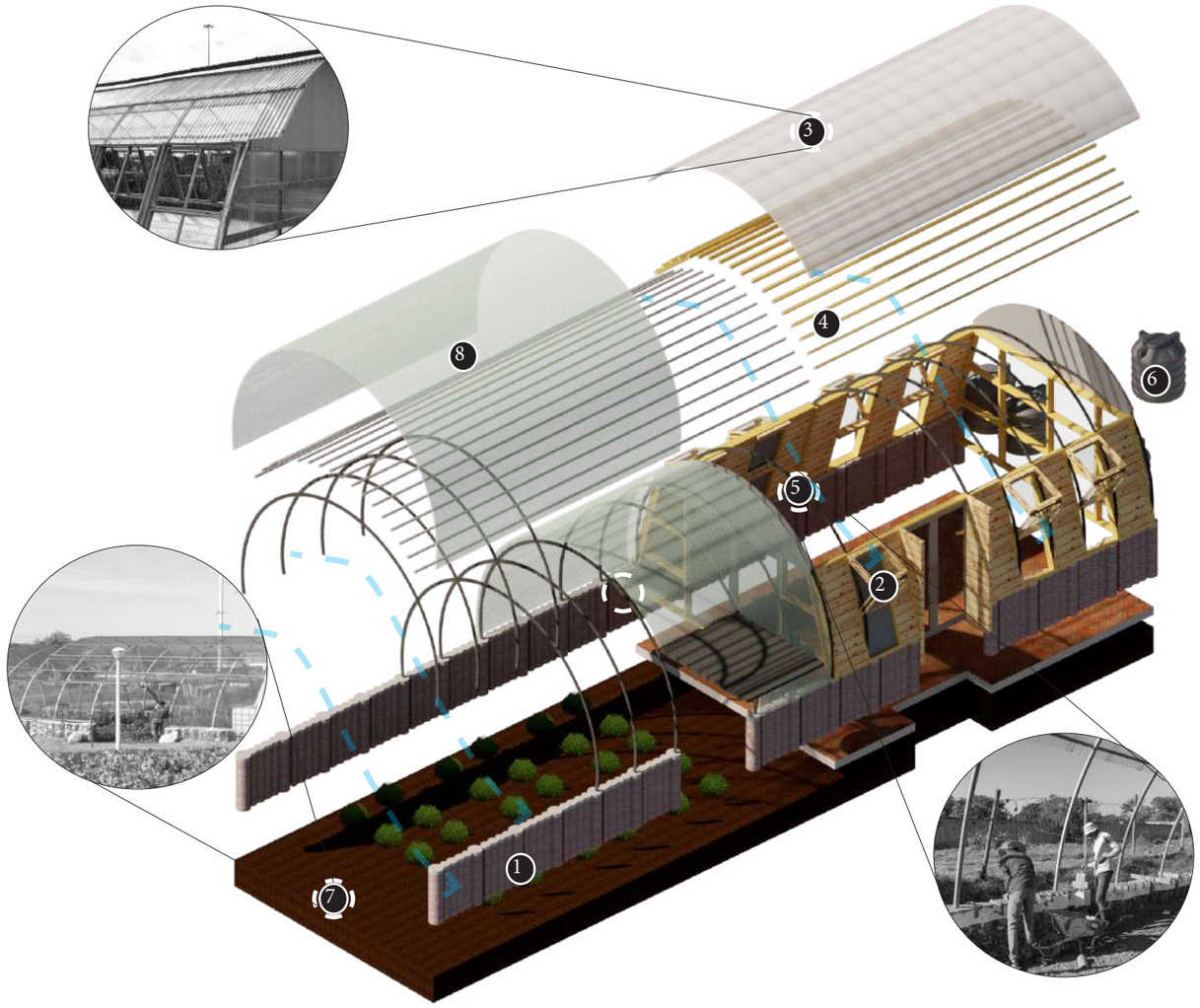


Figure 18: Exploded Axonometric of Lim'uhphile co-op drawn by Author, construction information from architects drawings. Supporting images sourced from https://www.archdaily.com/953045/limuhphile-co-op-collectif-saga?ad_medium=gallery. Accessed 24 July 2022.

ANNOTATIONS

1. GABION WALL - The architects upcycled left over construction rubble to create the foundation for the nursery and mixed-use hall. This strategy allows the wooden elements of the building to be elevated above the ground, keeping them away from moisture build up thus reducing the need for constant maintenance.
2.FOLDABLE TIMBER WINDOWS - The architects used left over wooden material to create foldable timber windows. These windows allow air into the structure through cross ventilation and this allows the occupants of the mixed use hall to have a comfortable experience when using this space.The material used on the windows also acts as the cladding material for the building eliminating the build up of waste during this process.
3.CORRUGATED POLYCARBONATE ROOFING - The corrugated polycarbonate sheeting roof acts as a shading device for the occupants of the mixed-use hall and this material is also an affordable but effective alternative to more expensive roofing.
4.38mm TIMBER PURLINS - The timber purlins provide structural stability and carry the span of the dome roof. These timber purlins were also upcycled from material and waste found around the community and vicinity , lowering the cost of construction and removing the need of importing any sort of material.
5.GALVANISED STEEL TUBE STRUCTURE - The steel tube structures create the form of the roof and are supported by the gabion walls, showcasing how all of these recycled materials work together beyond the aesthetic value they have but structurally as well.These steel members were made from steel waste that was found and collected in the area.
6.WATER TANKS- The water tanks are used to water the plants in the nursery, whilst also being important when it comes to how the ablutions in the area function and other activities in the community that may need water. The growth of plants is also present in the wider allotment and not just kept to the nursery therefore this water is utilised in this area as well.
7. NURSERY AREA- The nursery is the main activity area within this community project and it is mainly used by the agricultural association that has been running for 10 years. This area allows the community members to grow produce for sustenance as well as produce that can be sold to the wider community to make a living.
8. ROOFING MESH- The roofing mesh over the nursery allows the nursery/greenhouse temperature to be regulated during the day.

CASE STUDY: AGBOGBLOSHIE MAKERSPACE

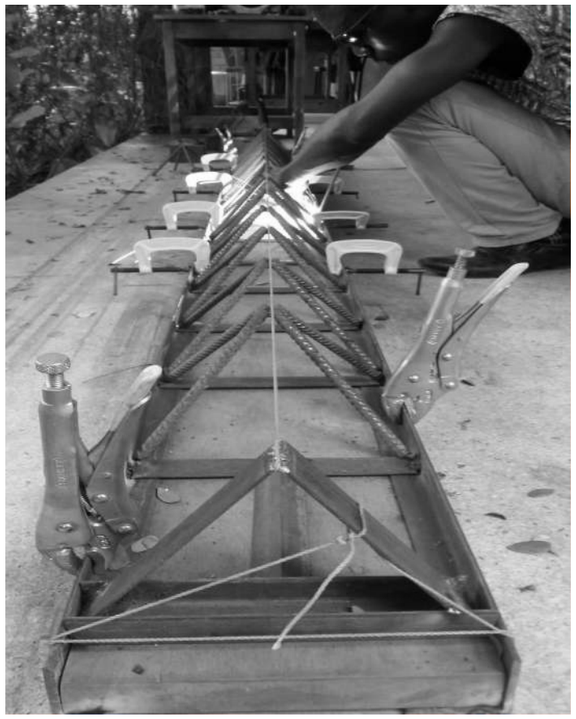
The Agbogbloshie Makerspace project is an initiative that was launched to not only capitalise on the existing network of makers based in the context of Agbogbloshie, Ghana, but to also deal with the issue of waste in what is deemed to be the 'world's largest e-waste dump' (theguardian.com, 2014) . The designers of the project realised that to simply highlight this context as a dumping ground was to overlook the innovation happening within this area (Potter, Osseo-Asare and M'Rithaa, 2013, pp. 39-56), in the form of informal smaller workshops, makers and 'unmakers,' therefore a series of interviews with '700 individuals' (ibid, 2013, pp. 45), would be conducted by the designers to find the pattern and locality of the existing networks.

This analysis of networks that exist within an informal context such as Agbogbloshie borrows from (or hints to) the theory of 'metabolism', as touched on earlier in this research, where the designers treat the site like an organism that is constantly evolving and going through metabolic processes, as the makers are seen as agents of these metabolic processes. Therefore, following this angle of analysis, the designers would go out of their way to find out how these 'processes' were organised within the body of Agbogbloshie by creating a map or flow diagram that highlighted "import of products, their reuse, their recycling and ultimately to their export" (ibid,2013, pp.45).

With all this information compiled, the designers decided to create initiatives that would deal with this system, one of them coming in the form of the AMP makerspace kiosk (Figure 21) that would act as a mobile hub that would allow makers within the area to work together whilst also conducting services to the community. Just like the previously highlighted case study of Silindokuhle pre-school, the creation of this kiosk would rely heavily on the collection and upcycling of materials within the Agbogbloshie area, and this material would be responsible for creating the semi-octet truss frames that hold up the structure as well as the foundation pads made from recycled tires which the structure sits on. The intention behind this makerspace was to make it as flexible as possible, as the designers insisted on its ability to be taken apart and put together in any context as being part of this theme of network creation and modularity.

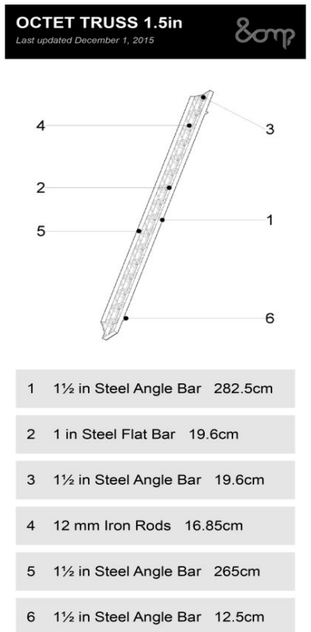
These mobile kiosks would work as satellites or anchoring points within this system of networks, where information could be distributed from, a design strategy that could be applied to the informal area of Mbare.

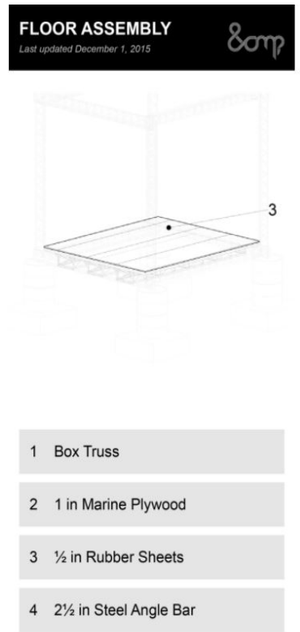
The construction technique of this kiosk was also extremely important; therefore, the designers went through several test phases and templates, with the constraint that the kiosk could be constructed by 'two individuals in the space of four hours'(ibid, 2013, pp.47). This idea of buildability is extremely important when looking at the designer and architect as an 'agent of change' within the informal community, as the provision of a flexible and realistic blueprint to an informal community allows the maker to take control of their environment and develop a sense of autonomy outside of the regimented way of working that is usually imposed by the architectural profession. This case study can be used to influence the creation of architectural networks of infrastructure within the area of Mbare, as these two contexts share similarities, such as the large network of informal makers versus the inadequate amount of workspace/vending space.



Construction of Semi-Octet Truss uploaded to website by AMP team
Images Sourced fromhttps://qamp.net/tag/welding/ , accessed 6 April 2022

Collage of Construction process By Author
Images Sourced from https://qamp.net/tag/welding/, accessed 6 April 2022

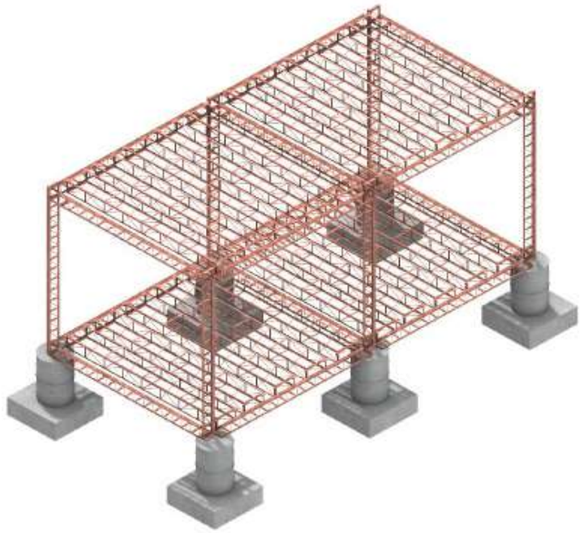




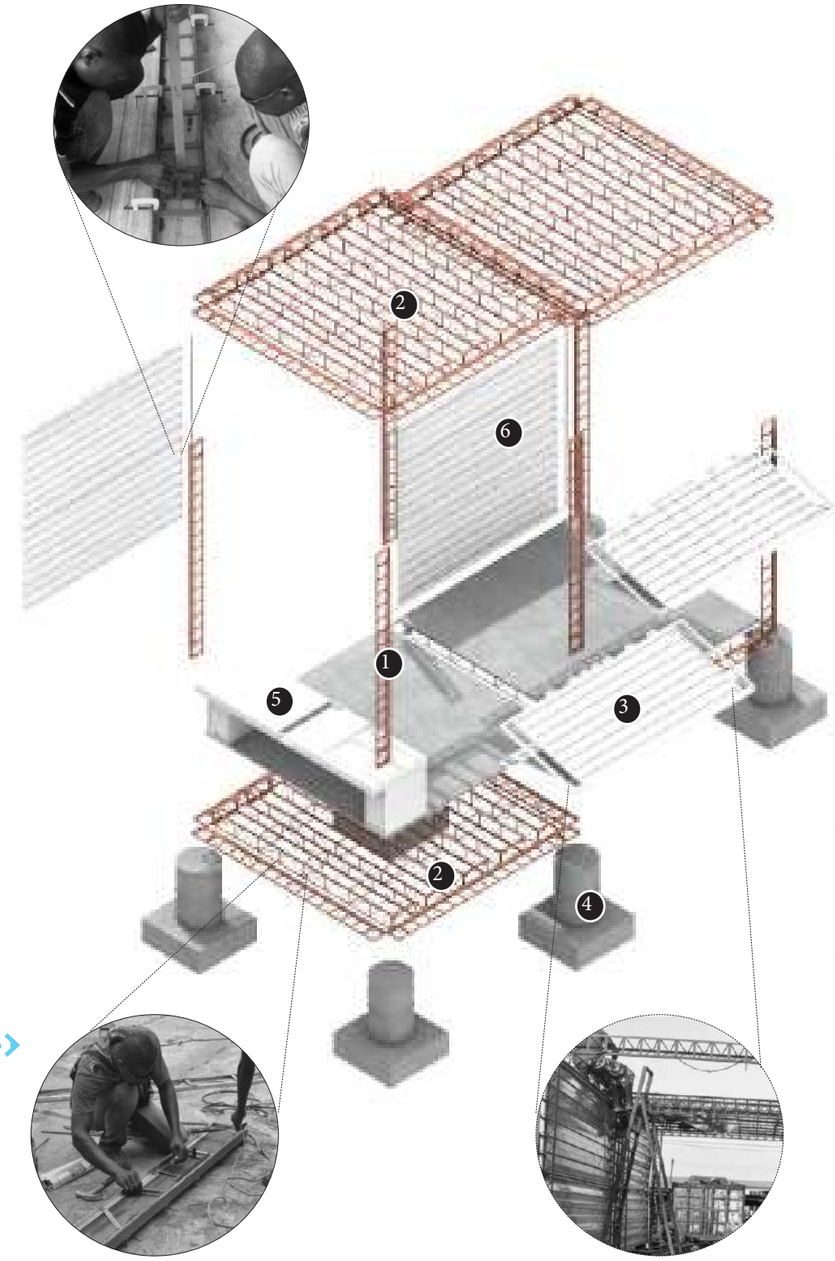
Kit of Parts provided by Agbogbloshie Makerspace Team
Images Sourced from https://qamp.net/tag/welding/, accessed 6 April 2022

CASE STUDY:
AGBOBLOSHIE MAKERSPACE

Construction process of AMP
Image source: https://www.dezeen.com/2016/05/16/agbogbloshie-e-waste-dump-makerspace-platform-spacecraft-mobile-architecture-workshop-ghana-julien-lanoo-photography/



Axonometric Semi-Octet truss Frame of AMP kiosk diagram drawn by Author, 2022



ANNOTATIONS

1. OCTET TRUSS 1.5 IN
The octet trusses were welded from different steel elements found within and around the area. These trusses act as the framing and support elements for the floor and roof structure.

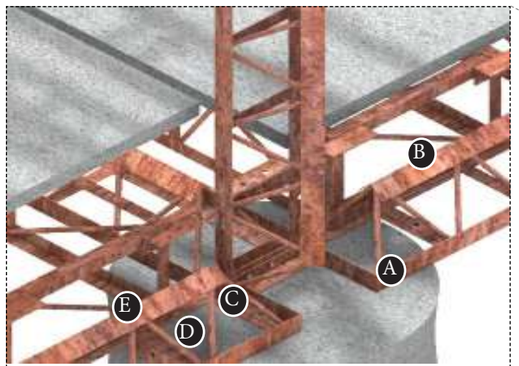
2.BOX TRUSS
The box trusses were made in a similar fashion as the octet trusses , with diagonal metal pieces welded in for cross bracing. The Box trusses act as support elements for the roof and floor structure and are framed by the octet trusses.

3.BIFOLD HANGAR DOORS
The Bifold hangar doors were also created from metal scrap elements collected along the site and serve as the points of entrance and natural ventilation for the kiosk.The doors are also dynamic as they are operable and have the ability to open during the day and close during the evening for protection.

4.RECYCLED TIRE FOUNDATION PADS
The Foundation pads of the structure are made from recyled tyres found within the site and they act as support points for the kiosk structure as they distribute all the weight that is transferred from the structure to the fround.

5.WORK DESK
The work desk that is installed within the kiosk also works as a point for customers to approach the workers with queries or interests in electronic devices.

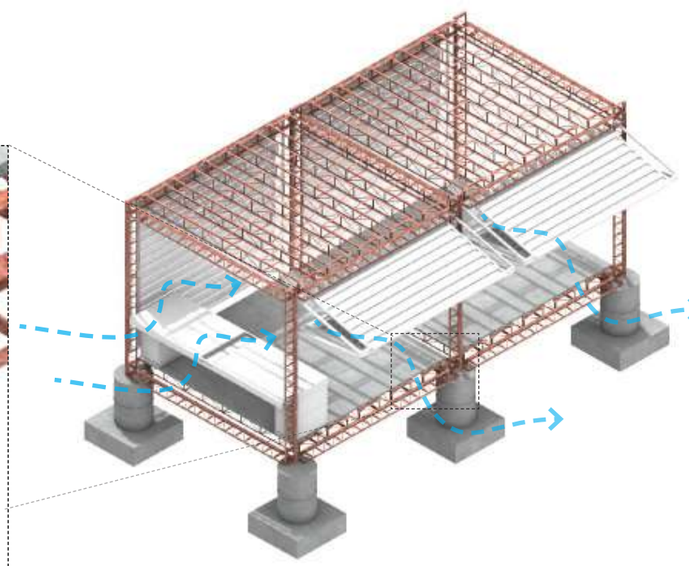
CROSS - VENTILATION



ANNOTATIONS

A: 1.5 in Steel Angle Bar 282.5cm
B: 1 in Steel Flat Bar 19.6cm
C: 1.5 in Steel Angle Bar 19.6cm
D: 12mm Iron Rods 16.85 cm
E: 1.5 in Steel Angle Bar 265cm

Figure 20 : Detail of Semi-Octet truss connections by Author, 2022
Construction information taken from designer's drawings, available on https://qamp.net/tag/welding/



Axonometric AMP kiosk diagram drawn by Author, 2022

Figure 21: Exploded axonometric diagram of AMP kiosk drawn by Author, 2022
Construction information taken from designer's drawings, available on https://qamp.net/tag/welding/

CONCLUSION, PROTOTYPING BUILD AND DESIGN

The prototyping design exercise considered some of the aspects that had been discussed within the preface and introduction of the report such as dilapidated working infrastructure that those in the informal industry are forced to build at times.

Therefore, I began this research by conducting an onsite investigation of the context, with aspects such as looking into the materials that were available within my context and its surroundings and how these could be used to create sustainable infrastructure. The designs and conditions of the existing infrastructure was also taken into consideration within the drawing process and most of these structures were documented using photographs in order to investigate some of the weaknesses that these designs displayed and how I would be able to improve on these.

My technology research would then center around building prototypes at a 1:1 scale myself, in order to see If some of the designs I had thought of creating using CAD were buildable and accessible using a limited number of tools, as these prototypes would be design guides for the amateur vendor who would be working on a limited budget.

This investigation into availability of materials followed by collection and construction with these materials forced me to reverse my traditional design process as most of the 3D CAD drawings that are presented were done only after the structures were built. The techniques that were used to design these stalls, which stand as a 'micro' representation of a much larger design solution in the future, would help inform future design that would allow

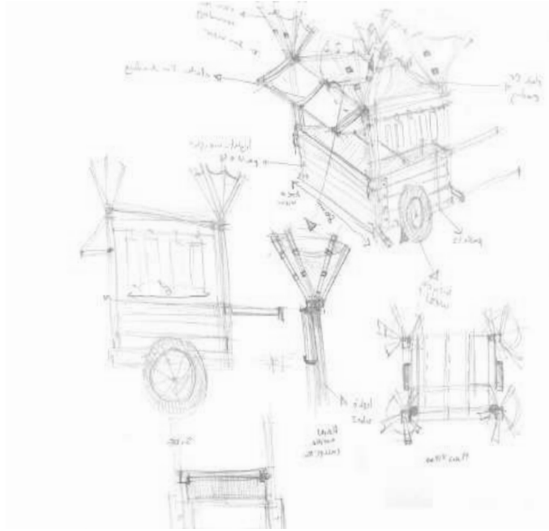
The occupants and users to make significant alterations or maintain the environment they would be working in daily. Most of the materials that were used to build and design these structures came in the form of recycled pallets, as this was the most widely used and available material within this context. This technology prototype exercise sought to investigate a more 'hands on approach' by the architectural designer, with the aim to discover design solutions that would be practical, sustainable and replicable by/to the amateur builder.

PROCESS OVERVIEW

Images of the material dump and collection point within Mbare taken by author, 2022

1. SITE VISIT AND MATERIAL COLLECTION

The first part of the prototyping process entailed the search for construction materials within the Mbare area and luckily through my search I came across an informal entrepeneur who sells different sized pallets all ranging within an affordable price margin. Sourcing these pallets from directly this context would mean that any sort of prototype that would be designed would have material sources that a readily available for the vendors and amateur builederswithin the context.



Sketch of Design Ideation by Author

Images of existing stalls within Mbare's context taken by author, 2022

2. PHOTO DOCUMENTATION AND DESIGN IDEATION

Throughout my journey within this context I kept a record of all the informal structures that I came across through photo documentation. The purpose of doing this was to discover what aspects were missing from these structures and how they could be added to make the vendor's experience easier. This process then led to a quick sketching exercise that incorporated the material that I had previously obtained and how I could possibly use it.

Images of the material prototype construction process taken by Author, 2022

3.BUILDING PROCESS

The building process would then consist of three structures: A garden bench , a stationary vendor stall and a mobile vendor stall, with the latter two being the prototypes that would fit into this context and the former being a test into what sort of products could come from the material that had been collected. The building process will then be expanded on through the rest of the research documentation.

BUILDING PROCESS

FROM CAD TO 1 : 1 SCALE CONSTRUCTION

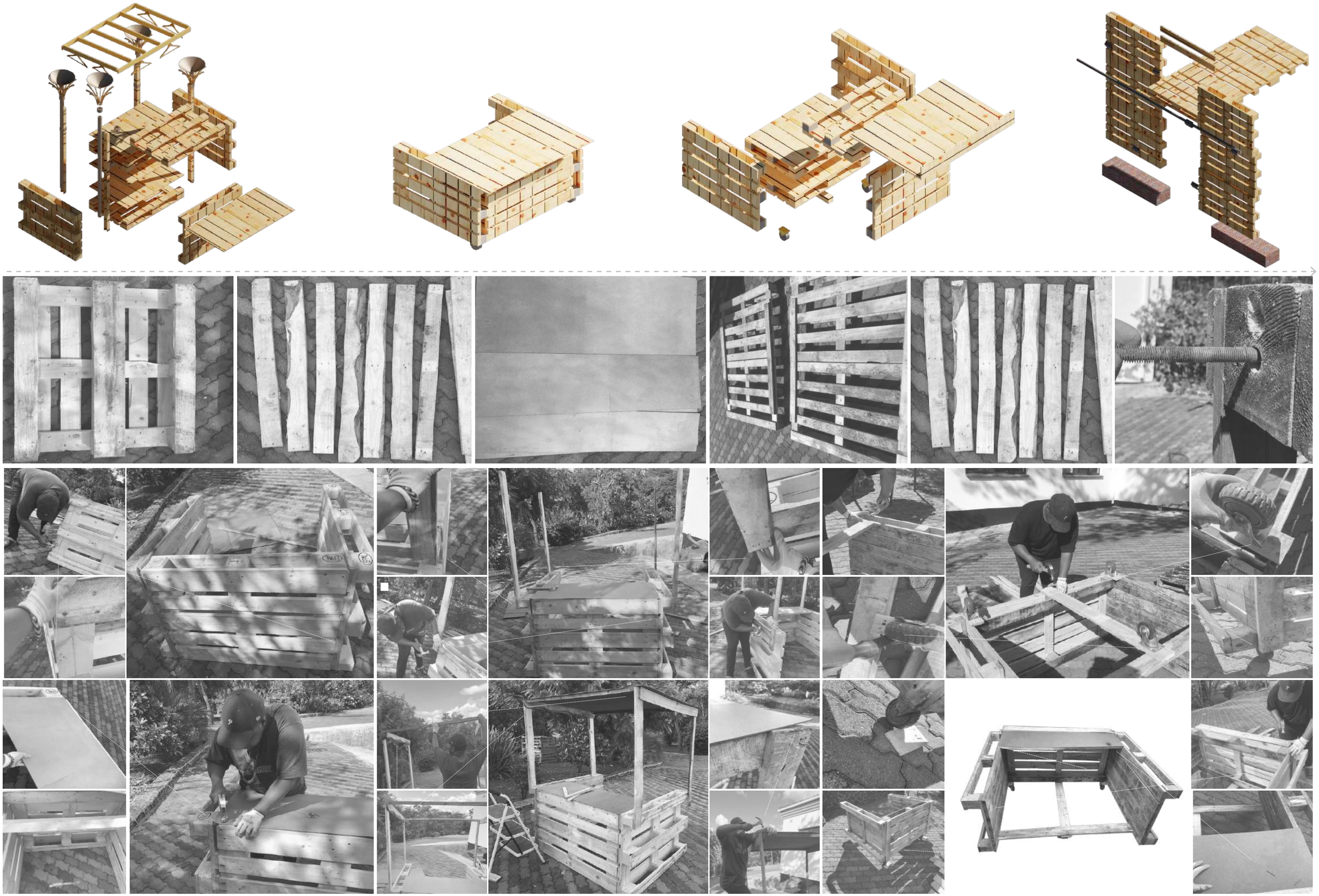


Figure 22: Exploded axonometrics drawings of prototype designs by author along with images from prototype building process, taken by author, 2022.

VENDOR STALL PROTOTYPE

OBJECTIVES

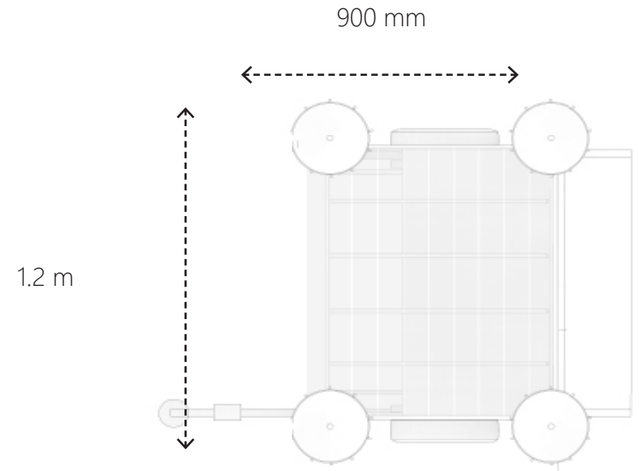
WATER COLLECTION

SHELTER

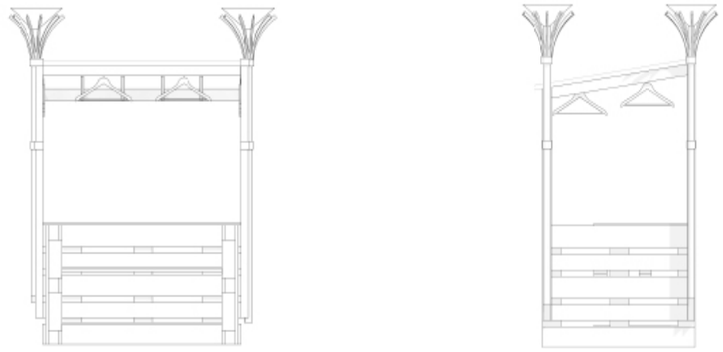
STORAGE

STABILITY

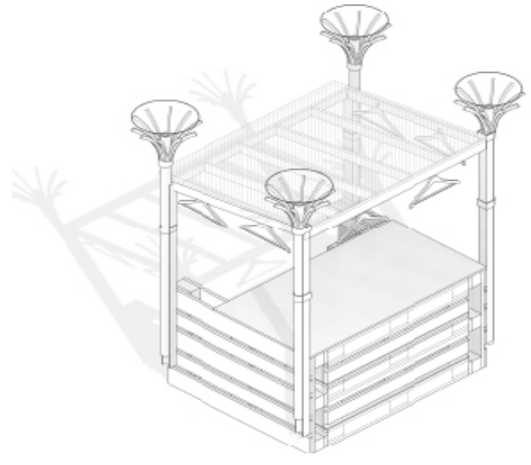
AFFORDABILITY



PLAN



ELEVATIONS



AXONOMETRIC

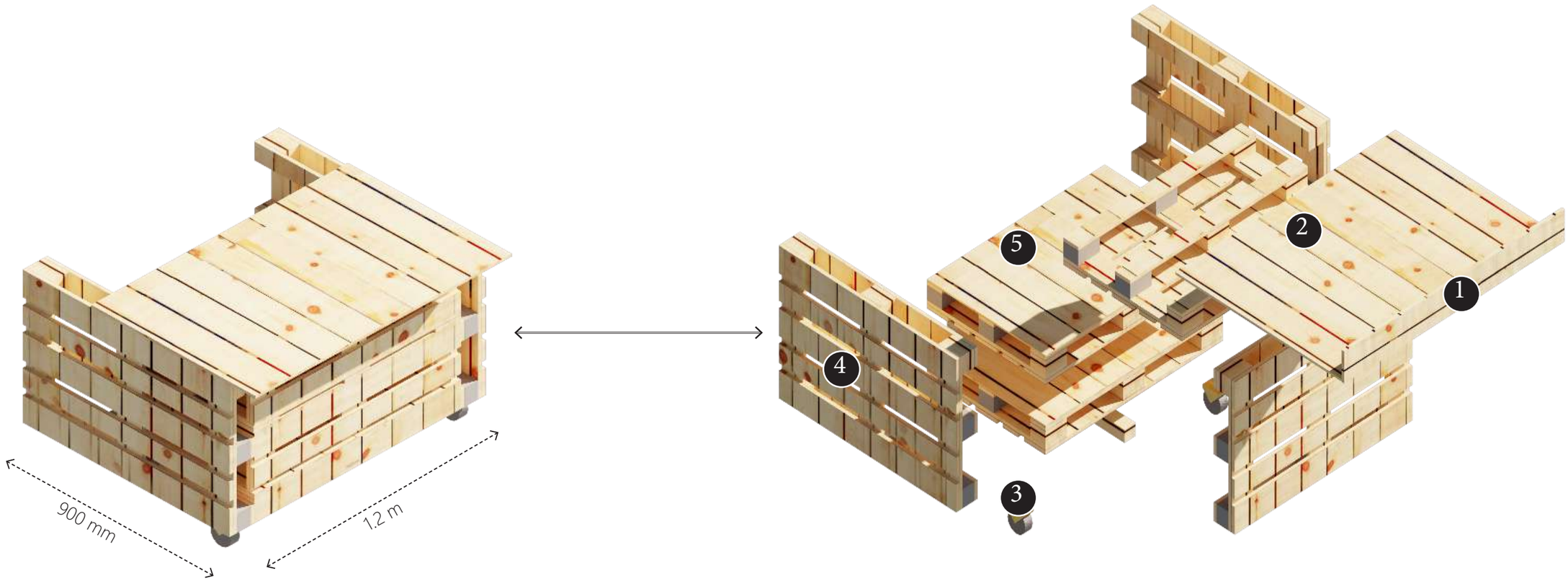
ANNOTATIONS

1. Reusable Pallets: Pallets are a material that is widely available to most vendors that work within this context therefore construction will not be costly, whilst also having the added advantage of the stability that the pallet provides.
2.Rain Collection: Most vendors face the issue of not having water readily available to carry out tasks such as cleaning stall space or even running their businesses, therefore a water collection funnel that can be constructed from plastic tubes tied to the roof can be of great assistance.
3.Storage: Storage is one of the most important needs for vendors within this context of Mbare, therefore this prototype comes with storage that is built within the ridges of the pallet that makes the form.
4.Roofing: In order to keep the wood that is used to create the stall dry along with the vendors and occupants, it is important to provide roofing, this can be constructed using transparent corrugated sheeting or canvas/cloth.

CONSTRUCTION PROCESS CAN BE FOUND IN APPENDIX

MOBILE VENDOR STALL PART PROTOTYPE

CAD DESIGN



ANNOTATIONS

1. Reusable Pallets Handle: The handle that would be attached on to the mobile vendor stall was an important decision as this would allow the user or vendor to navigate the structure from one point to the next. It was not possible to create two handles that would attach to the back of the vendor stall because of the width therefore this was the perfect position.
2.Table Top: The table top placement was an important part and aspect of the stall design as it allows vendors to place the products on a proper display platform instead of having their products on the ground.
3 Wheels: The wheels were made from parts of trolley wheels that were found within the context and would act as the most important part of the design as this allows vendors to move around the region. The stall design consists of two side wheels and a central wheel that allows for 360 degree rotation.
4 Reusable Pallets: As shown in the CAD design above, the use of recycled pallets was an important aspect of this design as they not only provide stability but are the most widely accessible materials within this context.

This mobile vendor stall creation and prototype is a continuation of the previously designed stationary stall, with the intention of the design allowing vendors to swap the two features out depending on their different needs. The construction of this prototype was also an opportunity to see the different strategies and methods that would need to be applied in order to build a mobile stall and if an amateur builder would be able to do so.

CONSTRUCTION PROCESS CAN BE FOUND IN APPENDIX

PALLET DOOR/WINDOW

OBJECTIVES

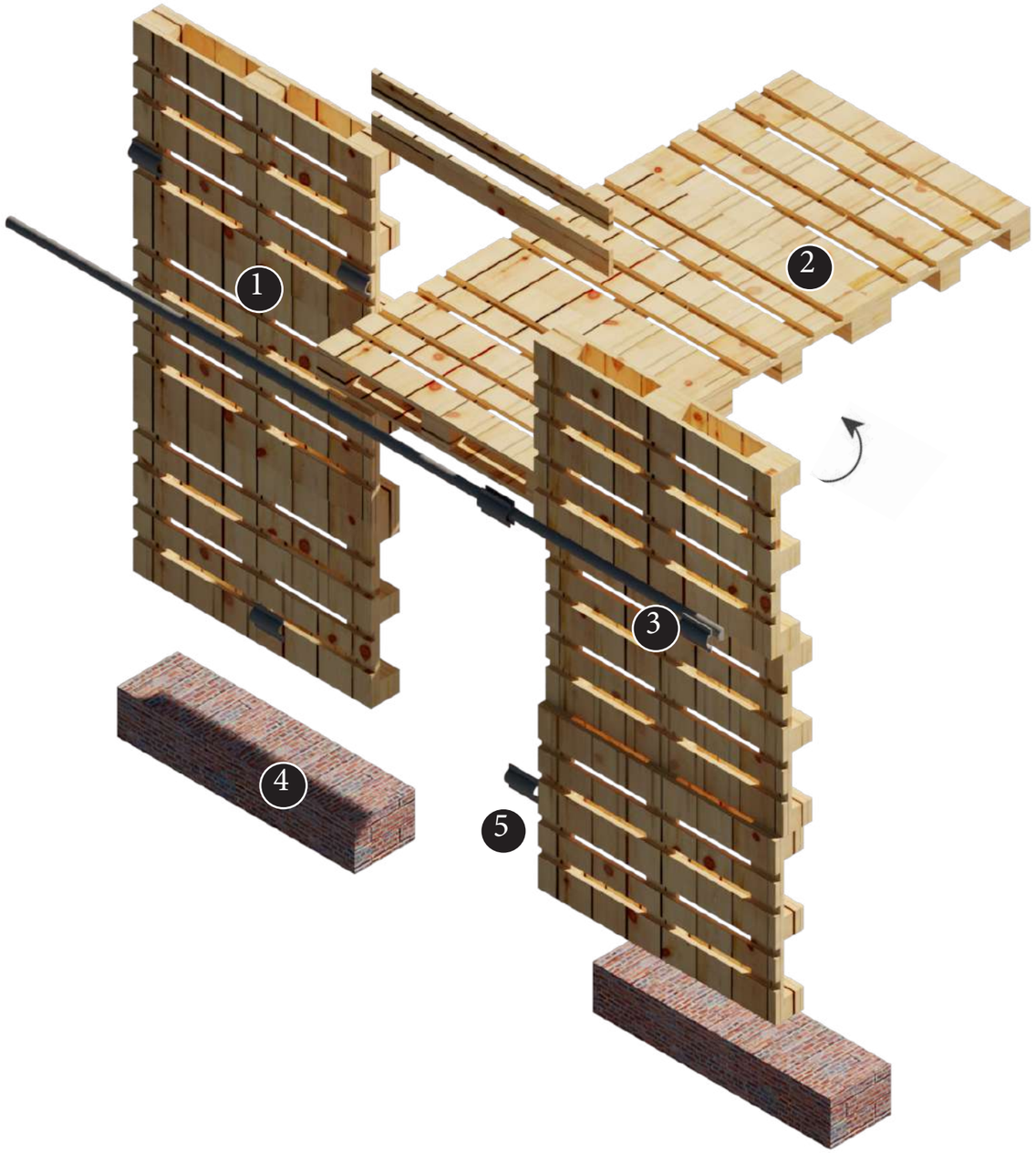
SHADING

SAFETY

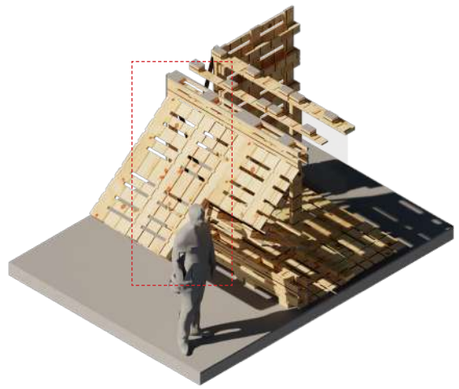
FLEXIBILTY

STABILITY

AFFORDABILITY



AXONOMETRIC VIEW



DOOR AS PART OF A FACADE VIEW

FRONT AXONOMETRIC VIEW

ANNOTATIONS

1. Reusable Pallet Wall : The supporting walls of the door are made from pallets as they are a material that is readily available within the existing context. These pallets are also affordable to the amateur maker and vendor and also provide stability and robustness in the making of the door and the handling of its weight

2.Pivot Door from Pallets: The Door is also constructed from the upcycled pallets and serves the vendors as a way to get ventilation and light into their working structures .The door is part of the facade allowing it to create a uniform appearance when closed at night , which will provide a layer of security for vendors when they close up at night.

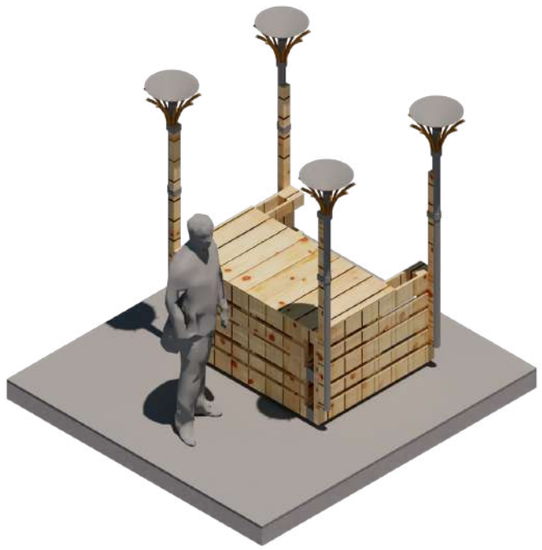
3.Door Pivot point and stopper: In order to keep the door/window in its desired position, whilst the vendors work, a steel pole will have to be used as a stopper. Second hand steel poles or pipes can be found in the Magaba area within this context, therefore construction of this door will be a hybrid between upcycled pallets and steel members.

4.Ground Support : An important thing to consider when constructing with these wooden pallets is the amount of moisture that they will be exposed to, the prototype will have to be treated and placed on a concrete or brick base in order to keep away moisture from the ground. This precaution is important because this will allow vendors to decrease the amount of time and money spent maintaining the structure when built if it is protected from moisture correctly.

CONSTRUCTION PROCESS CAN BE FOUND IN APPENDIX

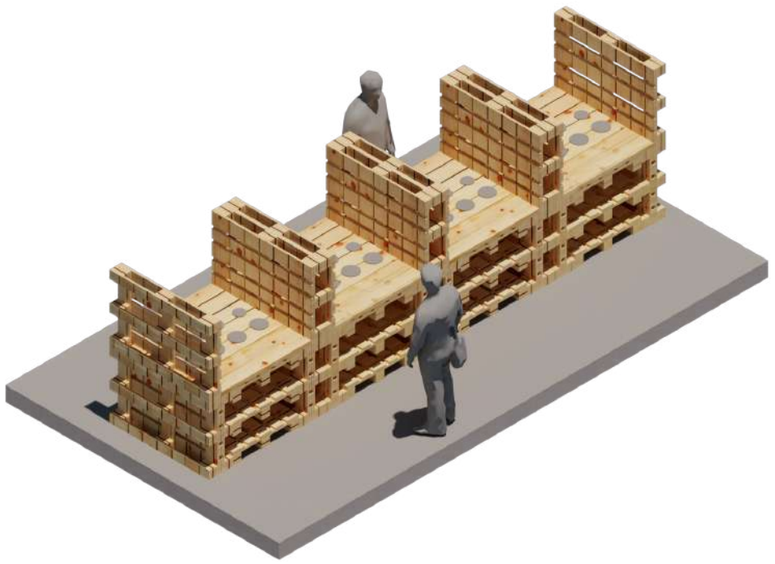
ADAPTING THE PALLET
SCALING UP FROM THE HUMAN SCALE

1.THE STALL



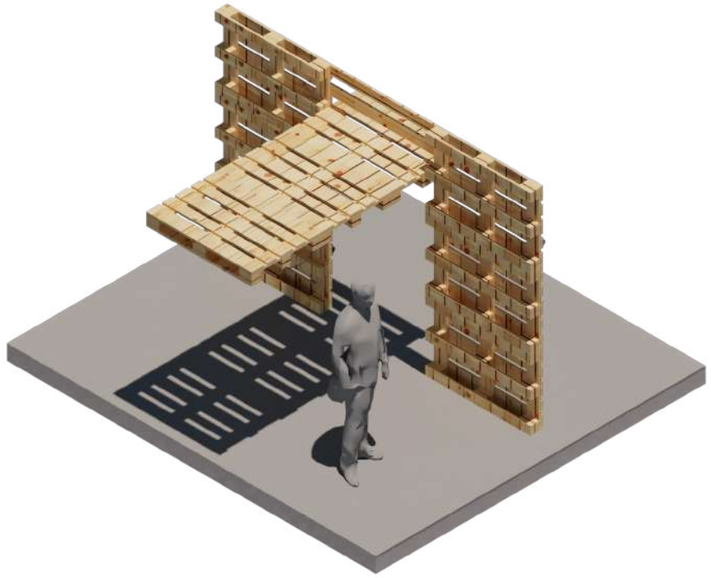
The stall stands as the first interaction point between the vendor and the pallet within the context. Most of the stalls within the informal context of Mbare are made from upcycled pallets because they are a widely available resource and also allow a certain level of robustness and flexibility for vendors and traders within the context. Therefore this use of the pallet to create the stall prototype is an important first step before scaling up within this informal context.

2.THE COOKING TOP



When looking at the program that exists within the precinct in the area of Mupedzanhamo, adapting a prototype and design that incorporates the cooking top is very important. This cooking top design illustrates how pallets can be used to create this infrastructure, in a robust and spaced out manner that allows each cook within that market to prepare food before dishing it out to customers. This design also illustrates how the stall can be scaled up to create more dynamic platforms whilst still using the pallet.

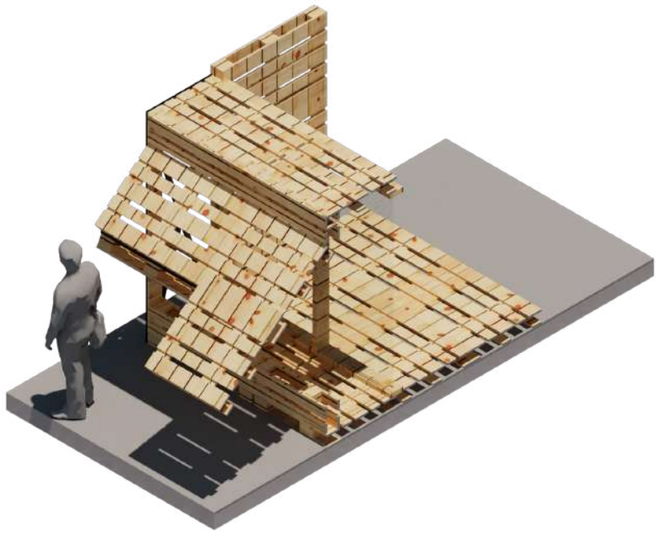
3.THE DOOR



The door or window constructed using pallets and recycled steel members (for support) showcases an initial expression of the pallet at an architectural or facade scale, as it now goes beyond being an element that supports an activity like selling and cooking and instead is seen as an element that lets in air and light into a space, as well as acting as a threshold within an informal context.

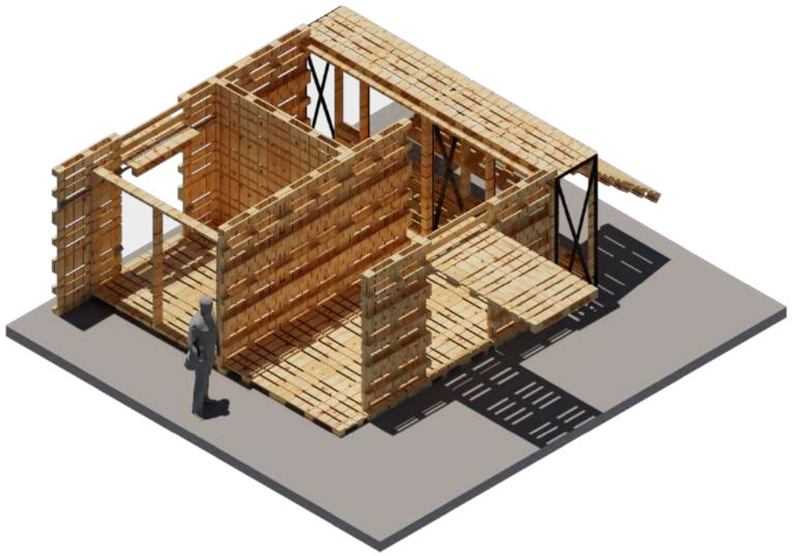
ADAPTING THE PALLET
SCALING UP FROM THE HUMAN SCALE

4.THE FACADE



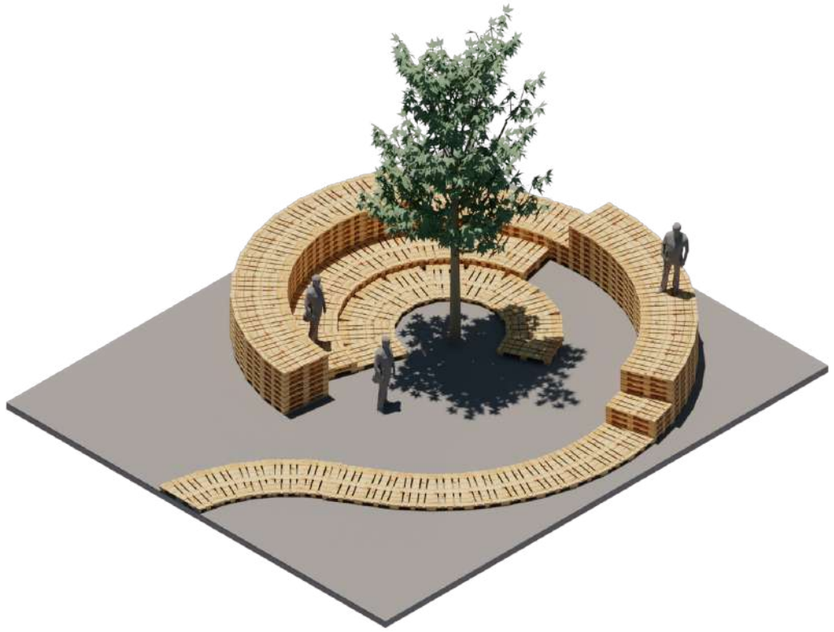
The pallet can also be scaled up to the facade scale as seen in different precedents, not only is the upcycling of the pallet seen as an opportunity to create a facade that brings in ventilation, light and shading, it is also seen as a low cost alternative. Low cost alternatives are important within the informal context of Mbare because of the availability of resources or funds. This scale showcases the relationship between the buyer, seller and the pallet at the scale of the facade.

5.THE ROOM



The room scale is the most dynamic use of the pallet as a building element and this design system can be applied(even as a hybrid) to consultation spaces within a market , ablutions and even smaller meeting enclsoures within a market space.This scale showcases the pallet applied to different systems such as flooring and walls and therefore this structural system has the ability to grow from here as illustrated in the silindokuhle case study.

6.THE OUTDOOR LANDSCAPE



The pallet can also be used and designed to create an outdoor landscape area,that can form into different forms and shapes that cater for different programs such as an outdoor ampitheatre, a play and recreation area or even an outdoor seating area. The advanatge of using pallets at this scale is their flexibility and how space can be arranged in different ways to accomodate diverse programs.When exploring the design stage of this project , I will delve into how the pallet can be used in a flexible and modular manner.

PROTOTYPING DESIGN AND BUILD(S) CONCLUSION

The prototyping design exercise served as a method of putting together and taking apart the different types of infrastructure that make up the vendor network of the Mbare area. These prototypes differ in scale and use, and all represent the different 'moving parts' of this informal context and network, 'moving parts' that make up the 'organism' that is the Mbare network and is best described/theorised by the metabolism theory.

By approaching Mbare in this manner and through the angle of its infrastructure, I understood some of the construction techniques that can be shared and applied when building the 'detachable' or 'moving elements' that make up Mbare's informal market and dictate the vendor's daily activities. Through this research I have discovered that in order to make a significant change in the context of Mbare through infrastructure, it is important to note that permanent and static structures ('docking' points and market spaces) along with detachable and moving structures (in this case, stalls) will have to work in tandem in order to not disrupt the flexibility of those that work within the informal market and cater to the existing 'metabolic needs' of this market. These findings will be expanded upon in the design dissertation.

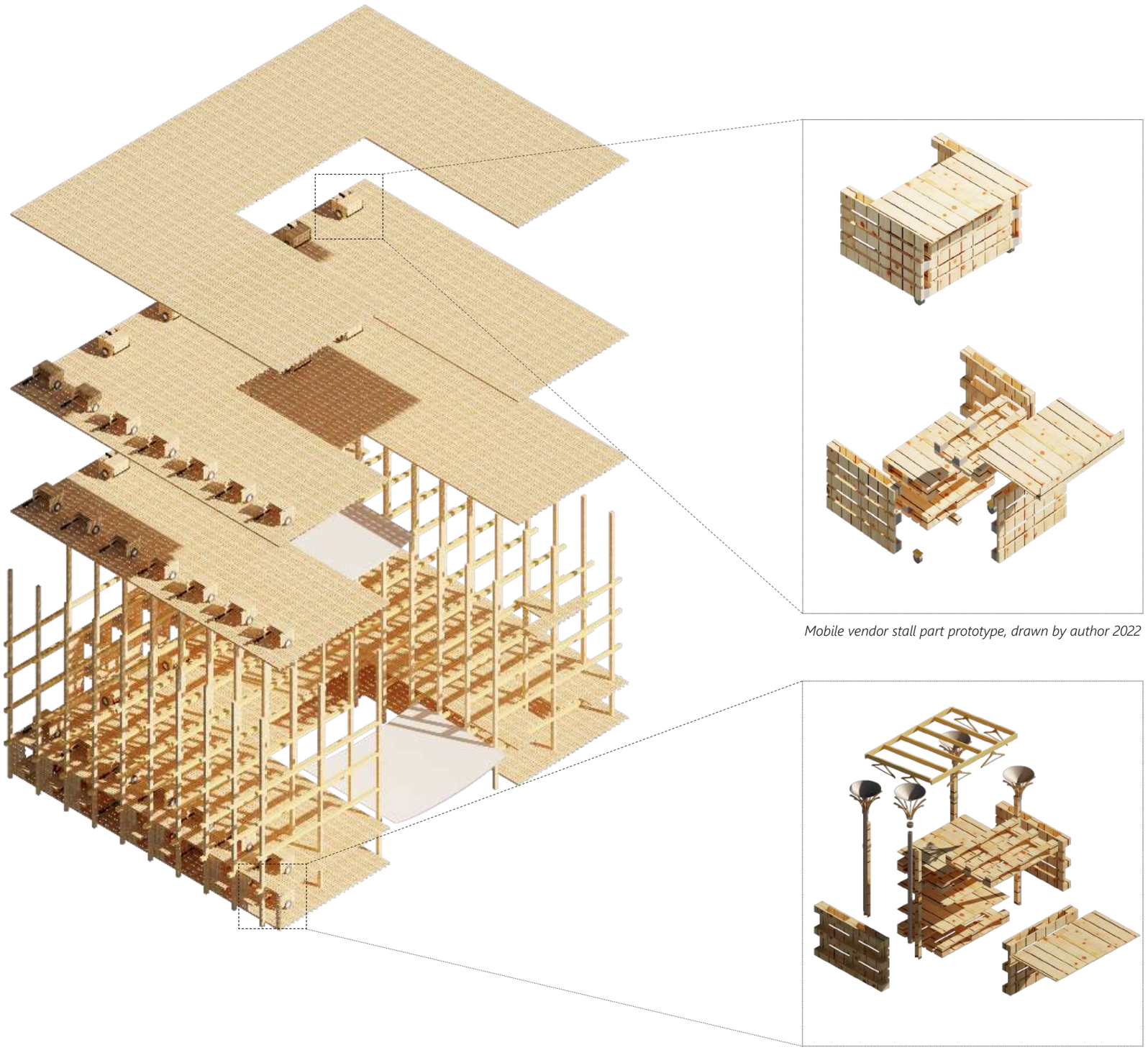


Figure 23: axonometric digital model of a permanent and static concept structure, that holds moveable stalls represented by mobile vendor stall prototype and static vendor stall prototype drawn by author, 2022.

Mobile vendor stall part prototype, drawn by author 2022

Vendor stall prototype, drawn by author 2022

TECHNOLOGY +THEORY CONCLUSION

MOVING FORWARD.

The purpose of this research is to outline the current issues that are prevalent within the macro context of Mbare and how these directly affect the micro context that Is made up by the informal networks that exist within this context. By outlining these issues of chaos, violence and poor infrastructure and analysing how similar contexts have dealt with them it provides the architectural designer with a backbone and understanding of how to approach this area in the form of a design proposal. When working throughout this research it was extremely important to study and work within several different scales to get a better understanding of how 'architectural agency' finds its place within the various dimensions that exist within the informal sector. This method of research brings a realisation that the architect should consider several factors when working in disadvantaged communities and step back from an idealistic approach, that the tradition has been criticized of having in the past, that alienates the current reality.

The case studies presented in this research indicate how architects such as Collectif Saga approach dealing with communities that may not be able to fund large projects and this provides an insight into how to approach the context of Mbare, not necessarily serving as a blueprint but a framework that provides suggestions on how to design within an area that deals with several varied factors.

This research into Mbare through a theoretical and technical lens was not necessarily to find answers on how to deal with this context as an architectural designer but instead to pose questions and deal with certain issues that are faced within an area that is constantly under attack and is constantly evolving, therefore finding a static solution, which architecture usually proposes or provides may not be the correct way to go about designing for this context. I think the questions that come from this research are questions such as:

1. "How do you provide a 'static' or permanent solution or program that offers flexibility, 'impermanence', adaptability and aligns with the nomadic nature that exists within the informal market?"

2. 'What is the role of the architect within the informal sector and how is this role facilitated through the collaboration with the sector instead of dominance through the imposition of retrofitted proposals?"

3. 'How does the designer or Architect deal with the secondary factors that affect the informal market within Mbare and maintain heritage and a sense of freedom within an area that constantly has these things taken away from them?"

Figure 24 : Collage of a Mbare 'material dump' and visuals of the pedestrian life and tradesmen that adds to the energy experienced within Mbare, made by author , 2022. photos for collage taken by author during site visits, 2022.

4

SITUATING AND LOCATING MBARE

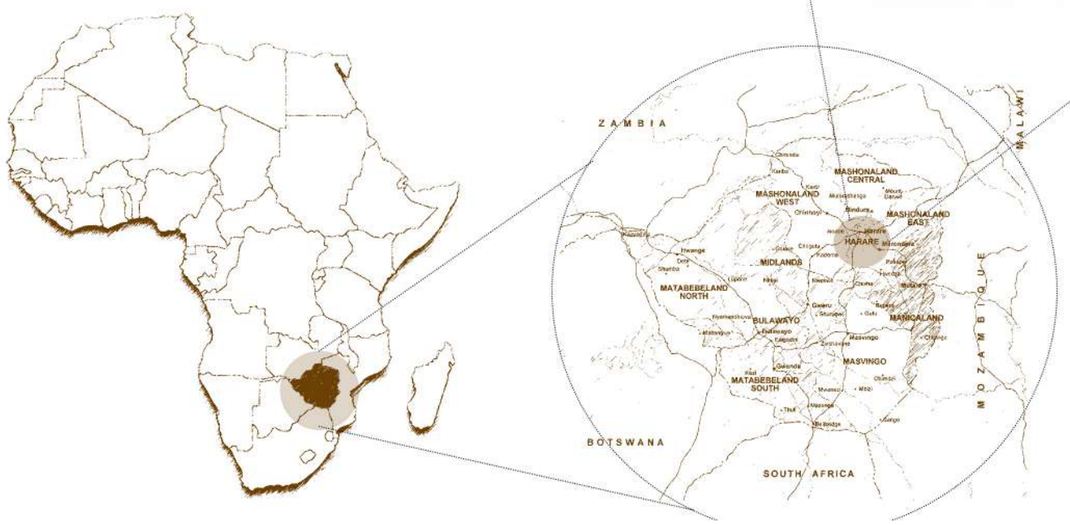
This section of the dissertation document presents the selected site and loci of Mbare through an analysis of the movement, access and infrastructure that is currently present. This introduction into the site carries on from the preceding theoretical, historical analysis, and showcases how this history manifests itself through the existing conditions.

This section also investigates the activity and 'energies' present within the site through several section cuts taken through the informal market hubs, as well as showing how the cycles present within these markets allow them to run whilst simultaneously pumping life into them.

This section also stands as the foundation/first step of the design dissertation document and the strategies that are applied when tackling the issues present within the informal context of Mbare.

Most of the information that makes up this section is made up of personal experience, as I have grown up and lived 25 minutes away from this area, conversations with locals, historical research and a documentation of the terrain done through walking.

Figure 25 : Arial drone photo of Mbare showcasinng informal trade and area of interest taken by Gareth Stangroom, 2021



ZIMBABWE	HARARE	MBARE	INFORMAL MARKET %	FORMAL EMPLOYMENT %
14.86 Million	1.485 Milllion	37 400	95.4 %	5.73%

SITUATING AND LOCATING MBARE

My investigation and design research will be taking place in the city of Harare in the area of Mbare, which stands as the oldest high-density area in Harare as well as the largest informal hub for vendors, makers and traders within the city. Mbare also faces spatial issues such as overcrowding, derelict infrastructure to trade from and use and non-specified zones for trade by informal vendors.

Some of the issues stand outside of the realm of architecture such as political violence and harassment of vendors by police officers over the previously mentioned spatial disputes. Architecture in this instance, can play the role of allowing the creation of secure and safe spaces that vendors can conduct their work in and make a living, and most importantly avoid harassment from police forces. Another role that architecture can play within this area, is the facilitation of sustainable infrastructure that vendors and informal traders can use within their trade, allowing mobility between different spaces in this context and also making sure that the infrastructure has durability that allows vendors to conduct their work in a comfortable and hassle-free manner.

CONTEXTUAL CLIMATE AND ECOLOGY

SOURCE OF WATER

Figure 26 Map drawing of the mukuvisi river and the surrounding greenery, drawn by Author, 2022.

THE MUKUVISI RIVER

The Mukuvisi River runs through the context of Mbare and through most of the city and this allows the occupants of this context access to a source of water. As soon through the program diagram, Mbare has several boreholes that have been allocated through the context and amongst the flats and this serves as a potential source of energy for the informal trade that goes on in this context. When looking from an urban development scheme, this River gives the opportunity to create a green corridor within the context of Mbare.

SOLAR AND WIND ANALYSIS

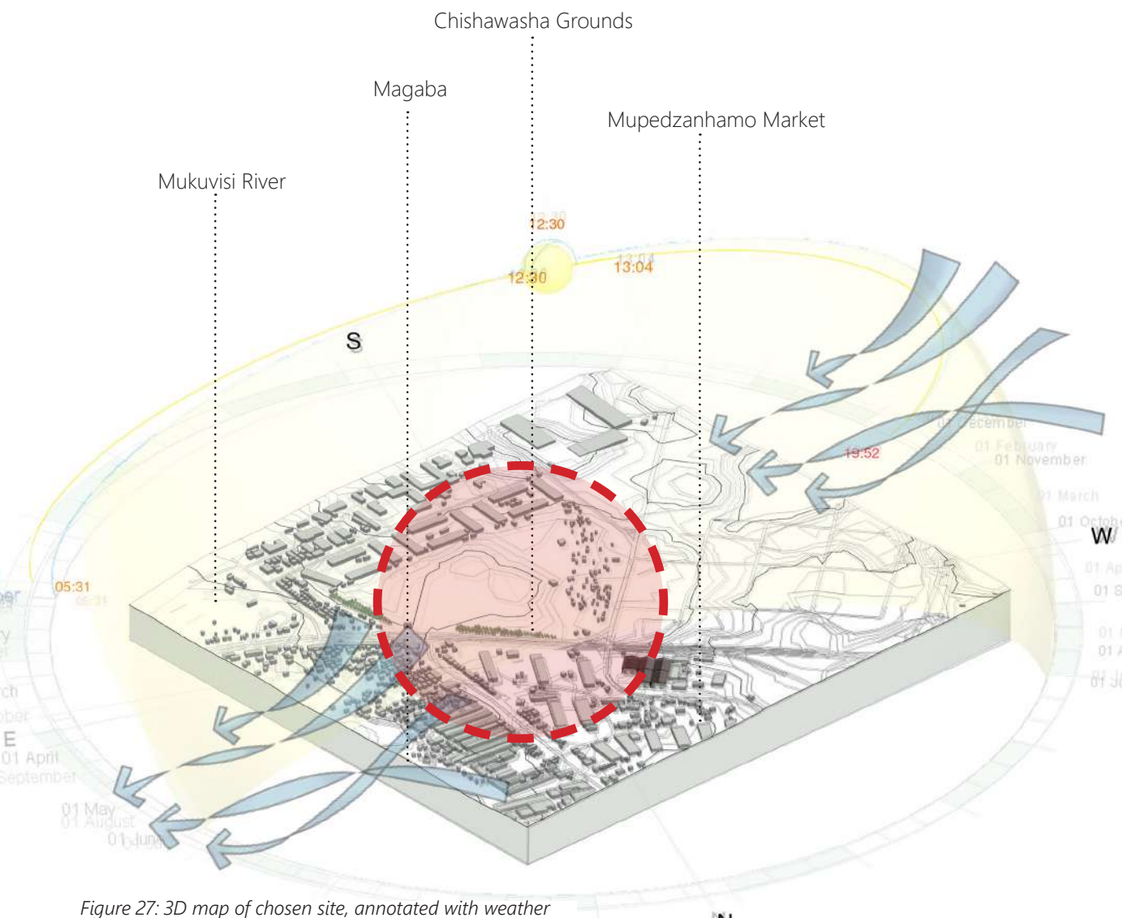


Figure 27: 3D map of chosen site, annotated with weather conditions, drawn by Author, 2022.

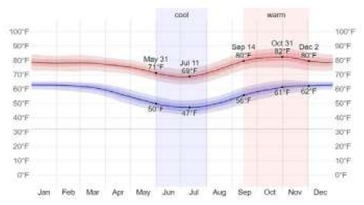


Figure 29 : temperature analysis of site taken from https://weatherspark.com/y/96831/Average-Weather-in-Harare-Zimbabwe-Year-Round, Accessed : 5 September 2022.

TEMPERATURE

The temperature within the context ofHarare does not experience much fluctuation with the lowest temperatures being felt from June to August and the rest of the year maintaining a fairly cool temperature.This low variation in temperature lowers any dependence on artificial heating and cooling within this context.

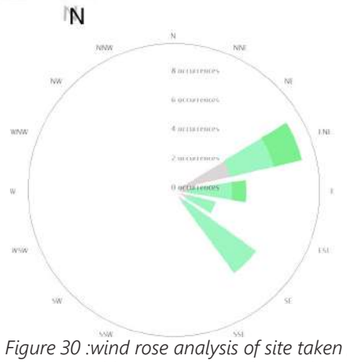


Figure 30 :wind rose analysis of site taken from https://www.meteoblue.com/en/weather/archive/windrose/harare_zimbabwe_890299, Accessed : 5 September 2022.

WIND

Most of the winds within this context come from the east side, therefore this is something to consider when considering the effects of moisture when building with pallet wood. This analysis would mean that extra treatment would need to be applied on the east side of a design's facade, as well as the application of wind breakdown devices on the east, although the trees present within the context do a good job of this.

SEASONAL SUN COVERAGE

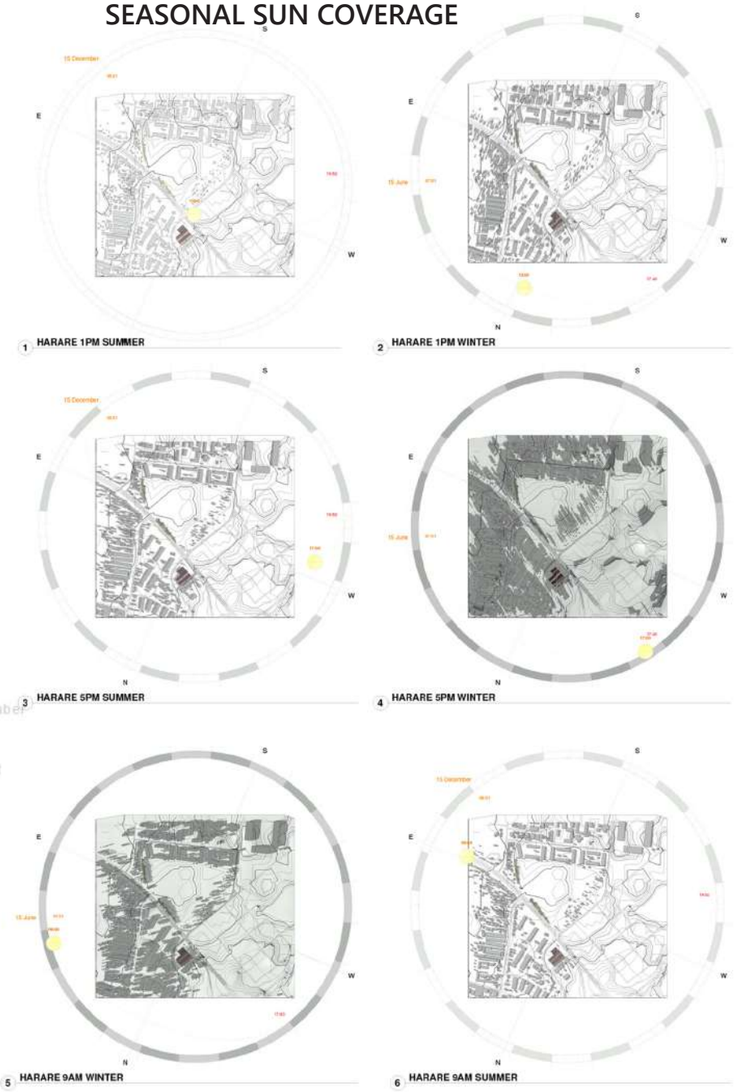
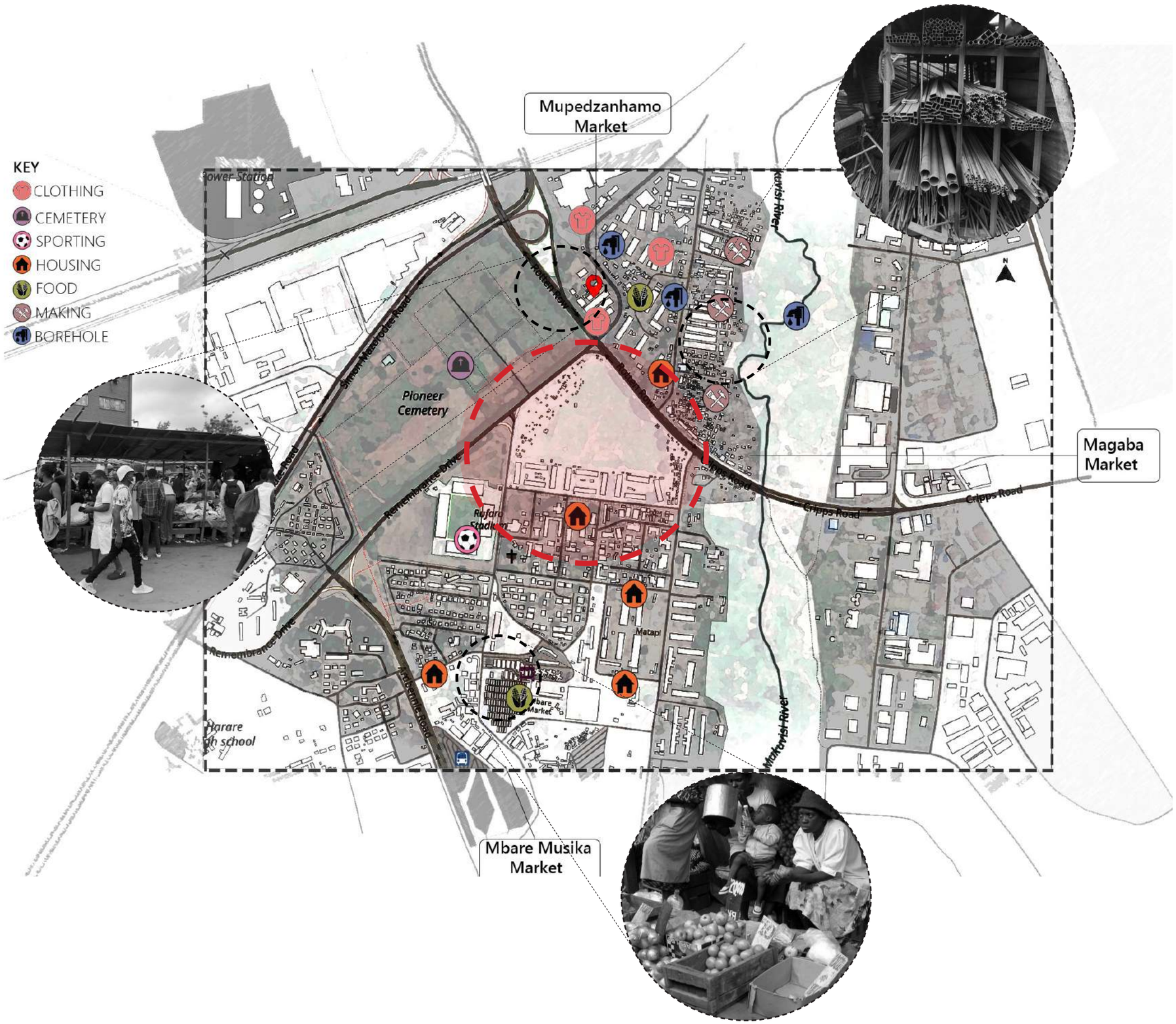


Figure 28: Sun coverage analysis diagram over site, drawn by Author, 2022.

SUMMER AND WINTER SUN COVERAGE

These sun path and sun coverage diagrams were carried out between the summer and winter seasons as the context mostly experiences these two seasons only. The times that the coverage data was taken from was at 9am: when the earliset pedestrian traffic is experienced in Mbare , 1pm: lunchtime for workers within the context and 5pm when most workers are heading home.

When looking at the daylight coverage between summer and winter in the context, it is clear that during the winter months the cycle that informal traders and vendors go through with selling their product will be cut short because of the context getting darker earlier.



DISTRIBUTION OF PROGRAM

The Macro context of Mbare hosts several informal markets, micro-enterprises, housing in the form of hostels and a football stadium that hosts the country's national games and athletic events. Within the informal market, the markets are divided into 'two home industry hubs'] (Chikulo, Hebick and Kinsley, 2020, pp. 12) in the form of the Magaba and Siya so areas which serves as a maker's spaces and are responsible for the selling of second hand and affordable building materials amongst employing hundreds of medium skilled to highly skilled workers (ibid, 2020, pp. 11);

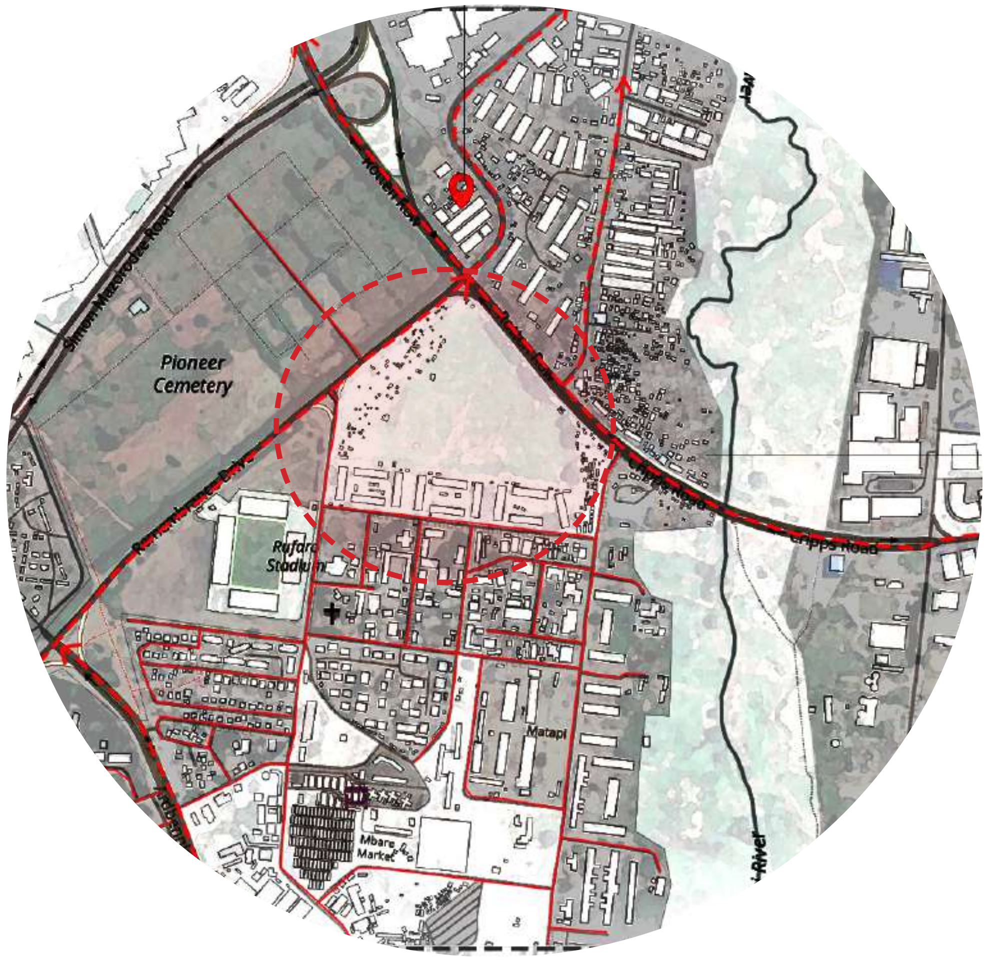
The Mupedzanhamo area which serves as a second-hand clothing, material and food site is seen as the most diverse informal market area within Mbare, serving as the 'main'(or the one that experiences the most traffic) informal market; Lastly there is the Mbare Musika market area, which serves as a produce and food market and receives most of its products from farmers within the city of Harare.

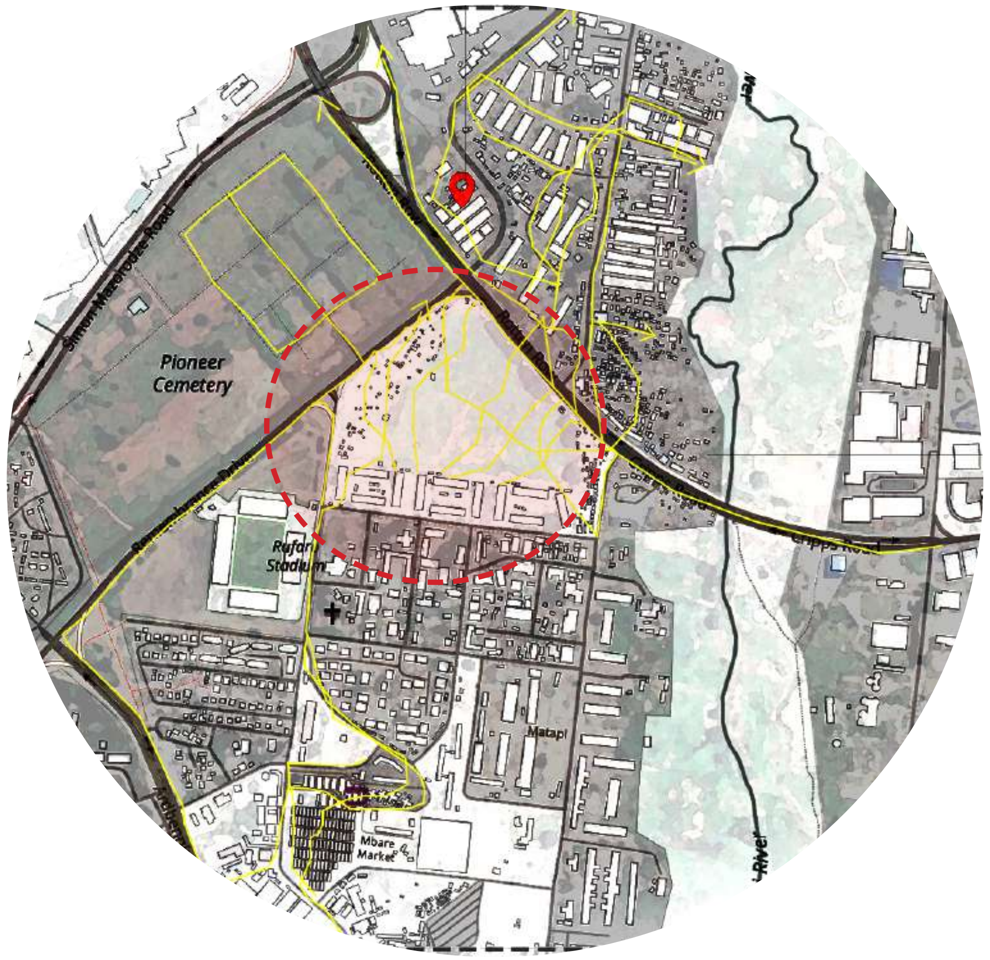
POINT OF INTEREST

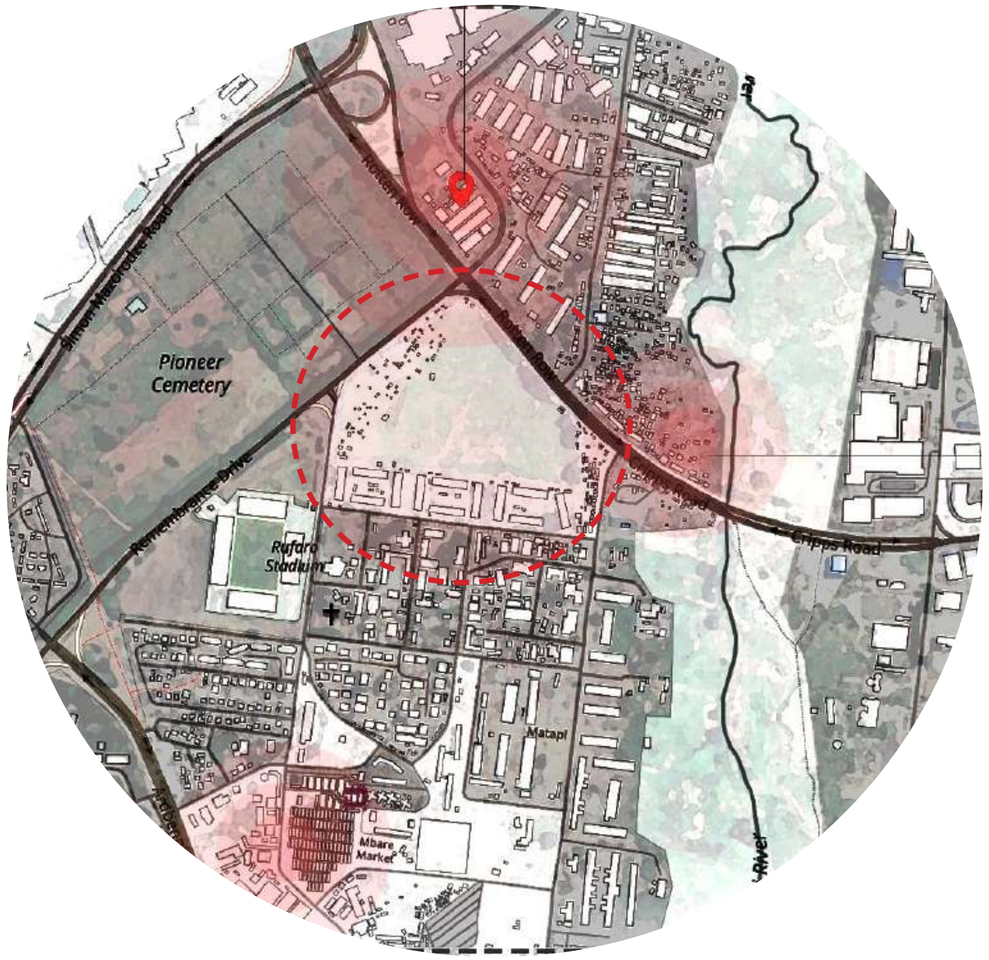
Figure 31: A map of the context of Mbare highlighting the spread and allocation of program, as well as the site of interest drawn by Author, 2022. Supporting images taken by Author during site visits, 2022.

MOVEMENT AND ACCESS THROUGH SITE

POINT OF INTEREST







ROAD CONNECTIONS

The main access roads that connect through this context and into Mbare are Remembrance Road and Rotten Row Road which act as the largest entry points into these informal areas as most public transport and commuter omnibus operators use these roads to drop off citizens.Mbare bus terminal is also an important connection point within this context as it is situated near Mbare Musika market, and this bus terminal acts as a linking point to all the high-density suburbs within and out of Harare.

Figure 32 : An annotated map of the road connections that run through Mbare, drawn by Author, 2022. Supporting images sourced from : https://zimbabweandiaspora.com/harare-shuts-down-mbare-musika-bus-terminus/. Accessed 5 September 2022.

PEDESTRIAN CONNECTIONS

The pedestrian connections within this informal context differ slightly from the vehicular ones as they are not formalized but are created by people moving along the highways and in-between housing to get to the existing informal markets. The housing that exists within this area in the form of 'hostels', built during the colonial period, make up most of the pedestrian traffic in Mbare.

The informal markets in Mbare depend on pedestrian traffic for vendors to sell their product but pedestrian lanes and sidewalks are not provided for but almost dictated by the placement of informal stalls along the road edge conditions and highstreets.

Figure 33 : An annotated map of the pedestrian connections that run through Mbare, drawn by Author, 2022. Supporting images of pedestrian movemennt sourced from : https://www.youtube.com/watch?v=8pL-DEjhatY&t=2531s video. Accessed 24 July 2022.

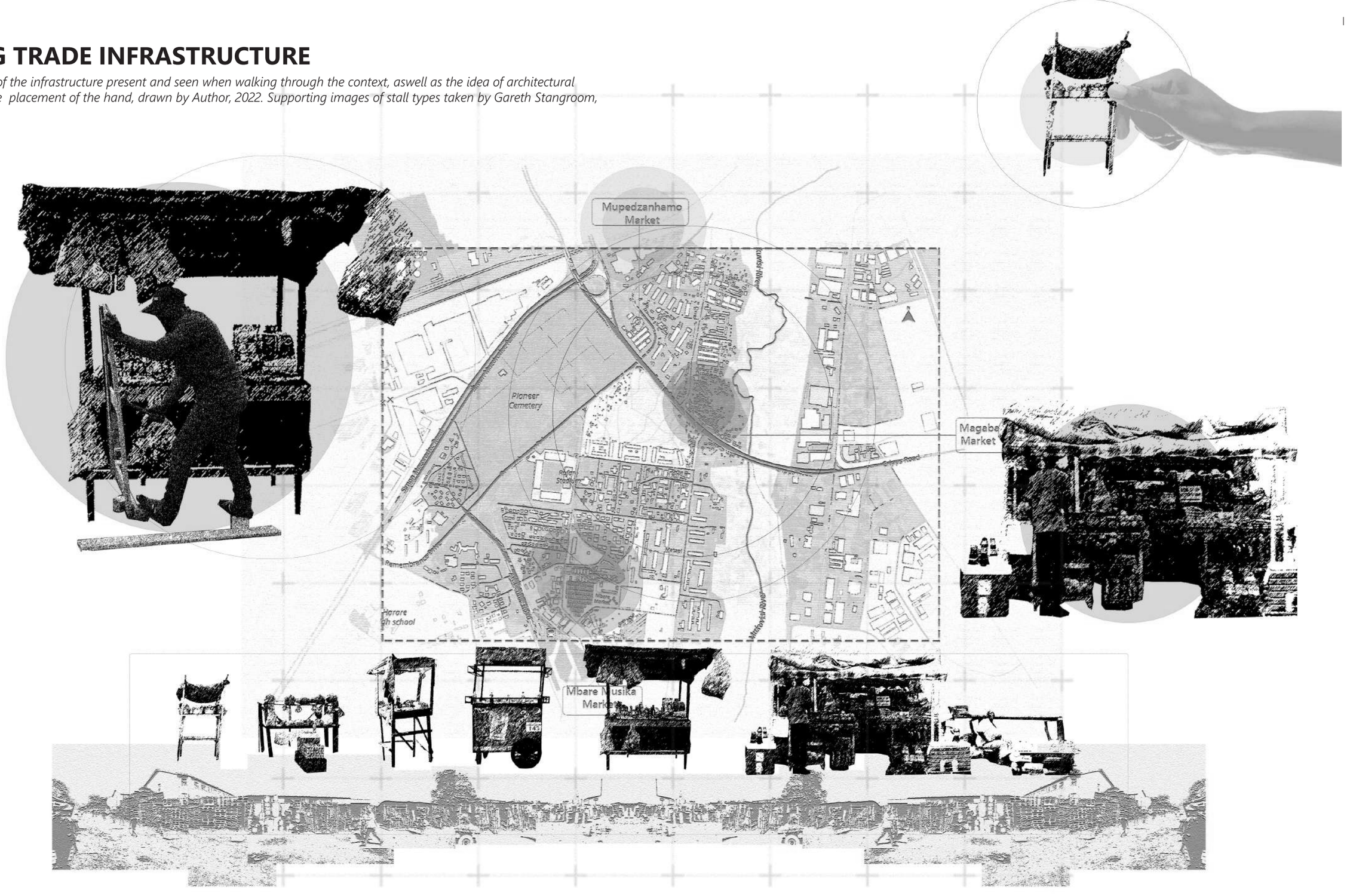
INFORMAL VENDOR MARKETS

The existing informal vendor markets within Mbare (Highlighted by red) are scattered within the same radius and are connected using these pedestrian and vehicular connections. The reason most of these markets are located near road networks is to allow the transportation of products from this informal hub to the rest of the country, as most micro-enterprise's production points are based in Mbare.
The connection of these markets to the road networks also offers the opportunity for vendors who use skotch-carts to carry materials through the area without the need of a car, this mode of transport is the most frequently used form of mobile vending.

Figure 34 : An annotated map of the informal vendor market concentration through out Mbare, drawn by Author, 2022. Supporting images of existing markets sourced from : https://www.youtube.com/watch?v=8pL-DEjhatY&t=2531s video. Accessed 24 July 2022.

EXISTING TRADE INFRASTRUCTURE

Figure 35: Collage of the infrastructure present and seen when walking through the context, aswell as the idea of architectural agency through the placement of the hand, drawn by Author, 2022. Supporting images of stall types taken by Gareth Stangroom, 2021.



Through my journey and visits to Mbare , I came across the realization that the infrastructure that was being used within this context to sell clothing especially in the context of Mupedzanhamo and Mbare Musika was insubstantial and breakable(fig. 36), which would be a major issue within a context that is repeatedly under threat of police harassment and events such as Operation Murambatsvina (2005) which has presented itself indifferent forms over the past decade.
This constant threat of violence is one of the reasons that the infrastructure that is made within this context is dilapidated because at any point it may be destroyed, therefore investing in it as a vendor could prove to be a risk when the money that vendors earn is insufficient, meaning that constant reconstruction of stalls does not stand as a priority.

As shown in my prior technology investigation, I looked at how this issue could be resolved by providing a robust prototype, through the angle of architectural agency, that vendors are able to put together and put apart within this context.

(a)

(b)

(c)

Figure 36: Collage making images taken by author during site visits in 2022, supporting images by Gareth Stangroom (a,b,c), 2021.

VENDOR CONCENTRATION PRE-COVID

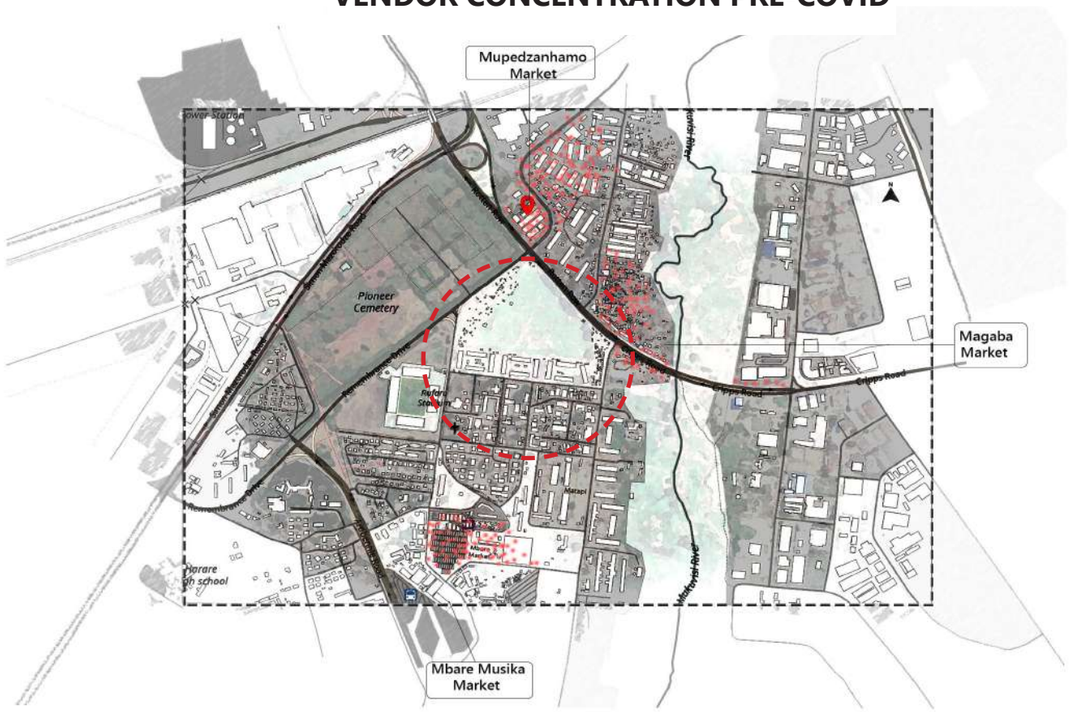


Figure 37: Site map of Mbare showcasing vendor concentration before displacement due to COVID-19 restrictions, drawn by author 2022.

VENDOR CONCENTRATION POST-COVID

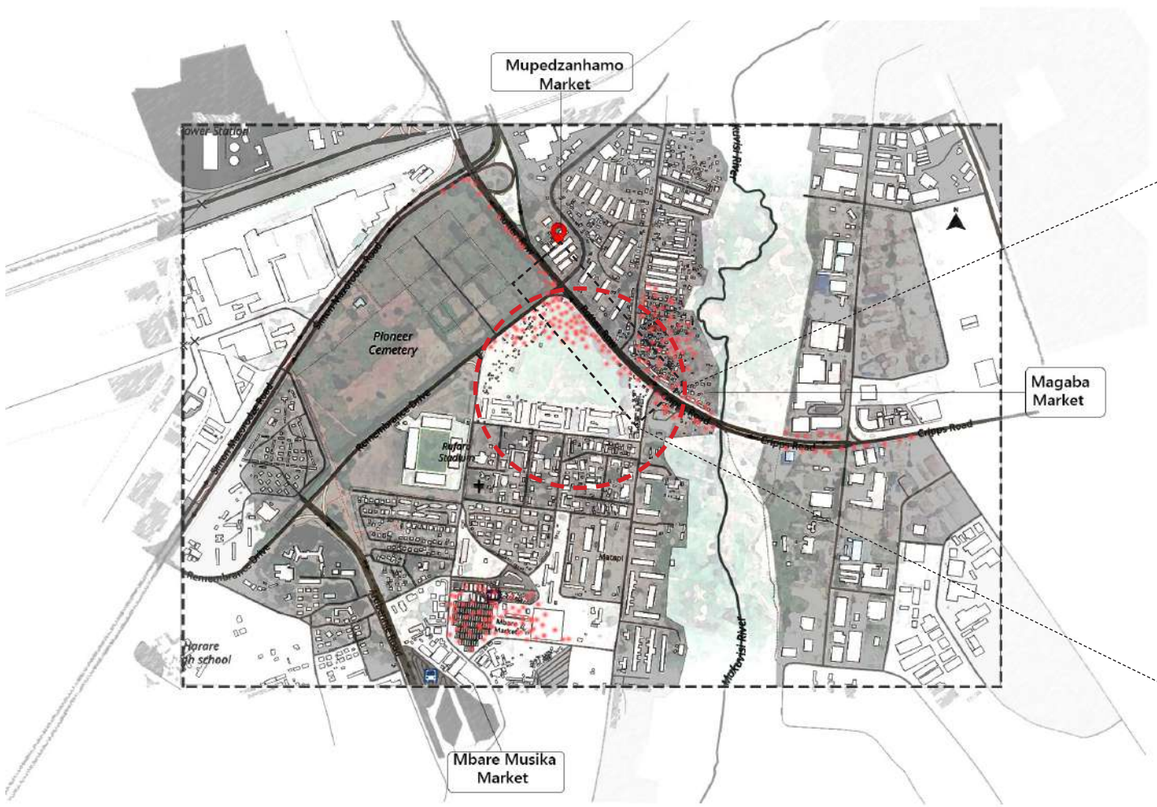


Figure 38: Site map of Mbare showcasing vendor concentration after displacement due to COVID-19 restrictions, drawn by author 2022.

VENDOR DISPLACEMENT

The Covid-19 Pandemic saw the government of Zimbabwe and Harare City Council shutting down and administering a ban on the traders and vendors that operated at the Mupedzanhamo, secondhand clothing market because of the overcrowding, lack of water and derelict infrastructure that existed at the marketplace.

The informal market space's closure forced the vendors that used this area to shift to the adjacent Chishawasha grounds, most of the high street and roadside. These restrictions were placed in 2020 and two years later, the market space has not been opened or given a 'facelift' as proposed and promised by city council and government officials upon its closure (Gwaze, 2022, sundaymail.co.zw). This closure has created overcrowding and poses health risks to the vendors that use this area as the vendors do not have ablution facilities or access to running water.

Therefore, this area calls for the creation or supply of sustainable infrastructure that allows the vendors to work from a sanitary environment, allowing the 1800 vendors (Gwaze, 2022, sundaymail.co.zw), that the Mupedzanhamo market facility had a capacity for, the opportunity to make a living.

● Informal traders and vendors

POINT OF INTEREST

Figure 39: Site photographs taken by Author showcasing vendor concentration on the road side due to displacement, 2022

SITE SECTIONS AND ACTIVITY

Informal vendor stalls along site section opposite the evacuated Mupedzanhamo Market

Trade activity showcases vendors with clothes scattered on the ground on display because of a lack of infrastructure

Informal Vendors in front of the accomodation flats upon evacuation from Mupedzanhamo market. This set up has led to overcrowding, littering and noise pollution for the occupants fof the accomodation flats and hostels.

Aerial view showcasing Chishawasha grounds that has now had its periphery occupied by vendors and traders upon the closure of Mupedzanhamo market.

Figure 40: Site sections through chosen point of interest, showcasing activity and terrain in context, as well as explanations for the existing cycles, all images drawn by author, 2022.

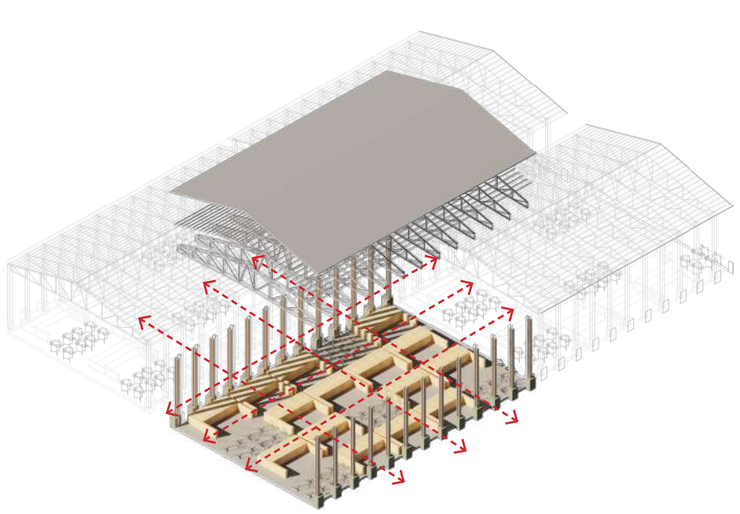
SELECTING AN AREA

SITE 00
MUPEDZANHAMO MARKET

Figure 41: Map and location of Mupedzanhamo market along with 3D axonometric showcasing circulation , drawn by Author, 2022

The Mupedzanhamo Market is one of the longest existing informal markets within the Mbare area and has come under several attacks from police through events such as operation Murambatsvina. This area is known as an area where people within the Mbare community can find second hand and affordable clothing along with other miscellaneous items.

Mupedzanhamo serves as the first site and starting point within this investigation as it is the only one that has recently become vacant due to covid restrictions; therefore the portal frame structures that vendors worked from have become empty, some being converted into car ports and car wash by local 'entrepeneurs' (Gwaze, 2022, sundaymail.co.zw) leading traders and vendors to work on the side of the road instead. These vendors seem to be the most in need for sustainable strong infrastructure, as well as sanitary facilities and new base to work from so this stands as a large focus area.



MAIN ACTIVITY : SELLING OF SECOND HAND CLOTHING ITEMS

SITE 01
MBARE MUSIKA MARKET

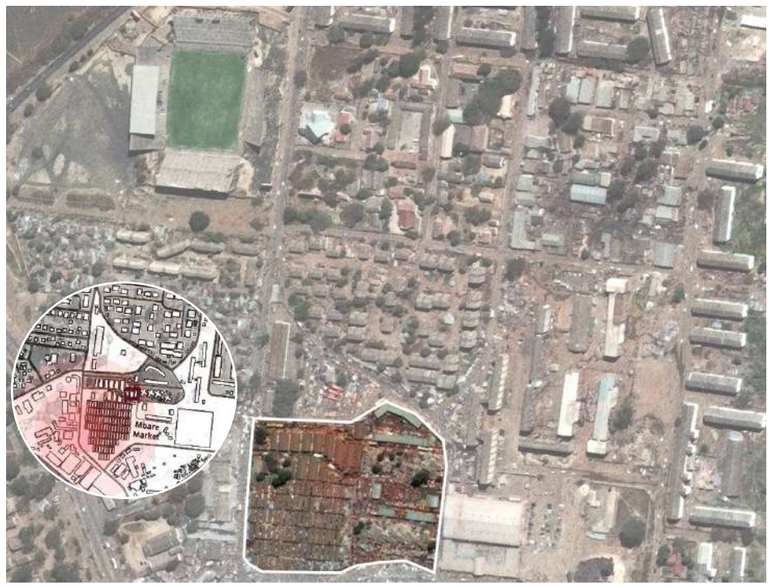
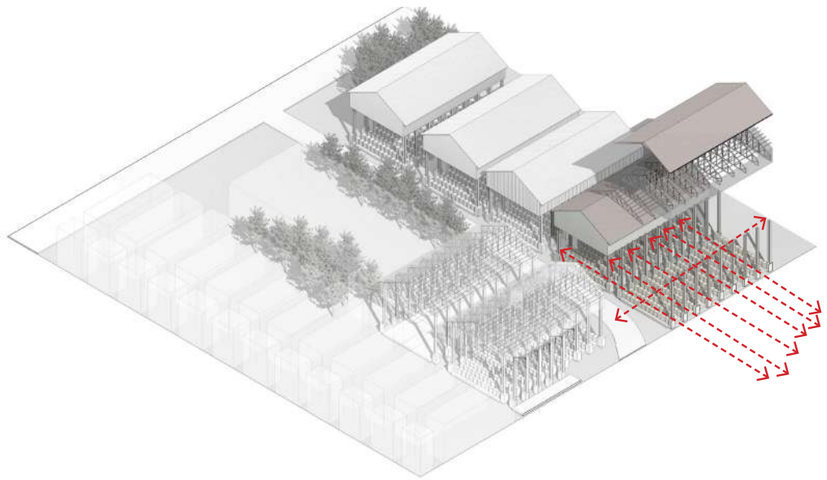


Figure 42: Map and location of Mbare musika market along with 3D axonometric showcasing circulation, drawn by Author, 2022

The Mbare Musika Market serves as the food hub and core of the Mbare area and consists of informal vendors and traders who sell produce provided by Farmers from different parts of the city and some vendors being farmers themselves, at a smaller scale. The Mbare Musika Market is functional but suffers from dilapidated working conditions and infrastructure, as it was last upgraded in 1996 (Chikulo, Hebick and Kinsley, 2020, pp. 13) that forces vendors to lay some of their produce on the ground as the stalls that are used are flimsy and tend to break under the weight of some of the produce.

This market space therefore serves as Site 01, as it can benefit from the construction of a secondary sub-marketplace that can serve the vendors on their day to day living and practices and decongest the market, also allowing them to move between the two market places.



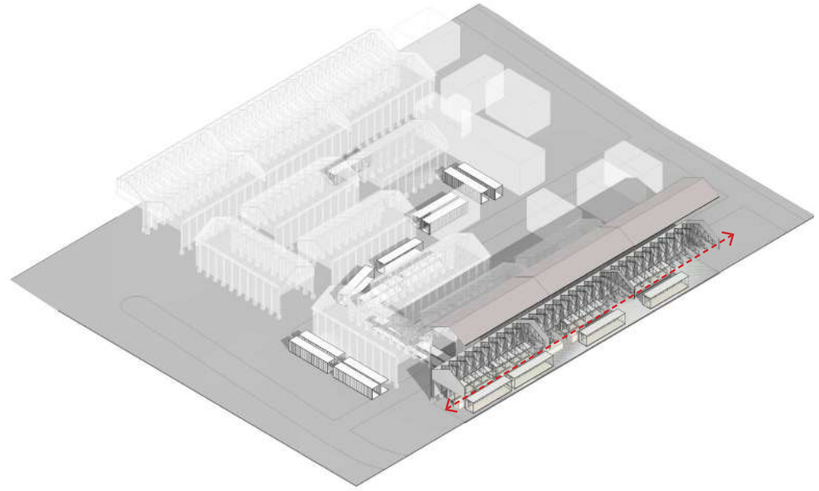
MAIN ACTIVITY : SELLING OF PRODUCE AND FOOD ITEMS

SITE 02
MAGABA MARKET

Figure 43: Map and location of Mbare magaba market along with 3D axonometric showcasing circulation, drawn by Author, 2022

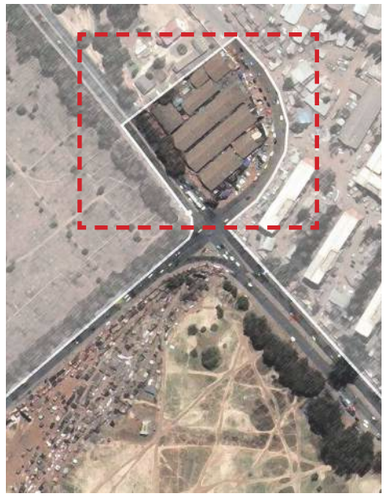
The Mbare Magaba area works slightly differently from the other informal market spaces as it functions as a workshop, manufacturing area and home industry hub within the context of Mbare. This area still hosts informal traders who sell the products they make, along with cheaper building tools and materials than the ones one would find in large formal ware-houses. These materials are usually upcycled as well therefore there is a sustainable practice that goes on within this area. The Magaba area is also situated next to the green belt of the Mukuvisi river allowing access to water that can be used during the building and manu-facturing process. One of the key issues with Magaba is the issue of congestion along with inadequate infrastructure for workers to carry out their jobs.

This area therefore serves as Site 02 as it can benefit from the creation of a secondary sub-marketplace as well that takes on some of the smaller activities such as wood working and apprenticeship training, allowing both sites and markets to work in tandem.

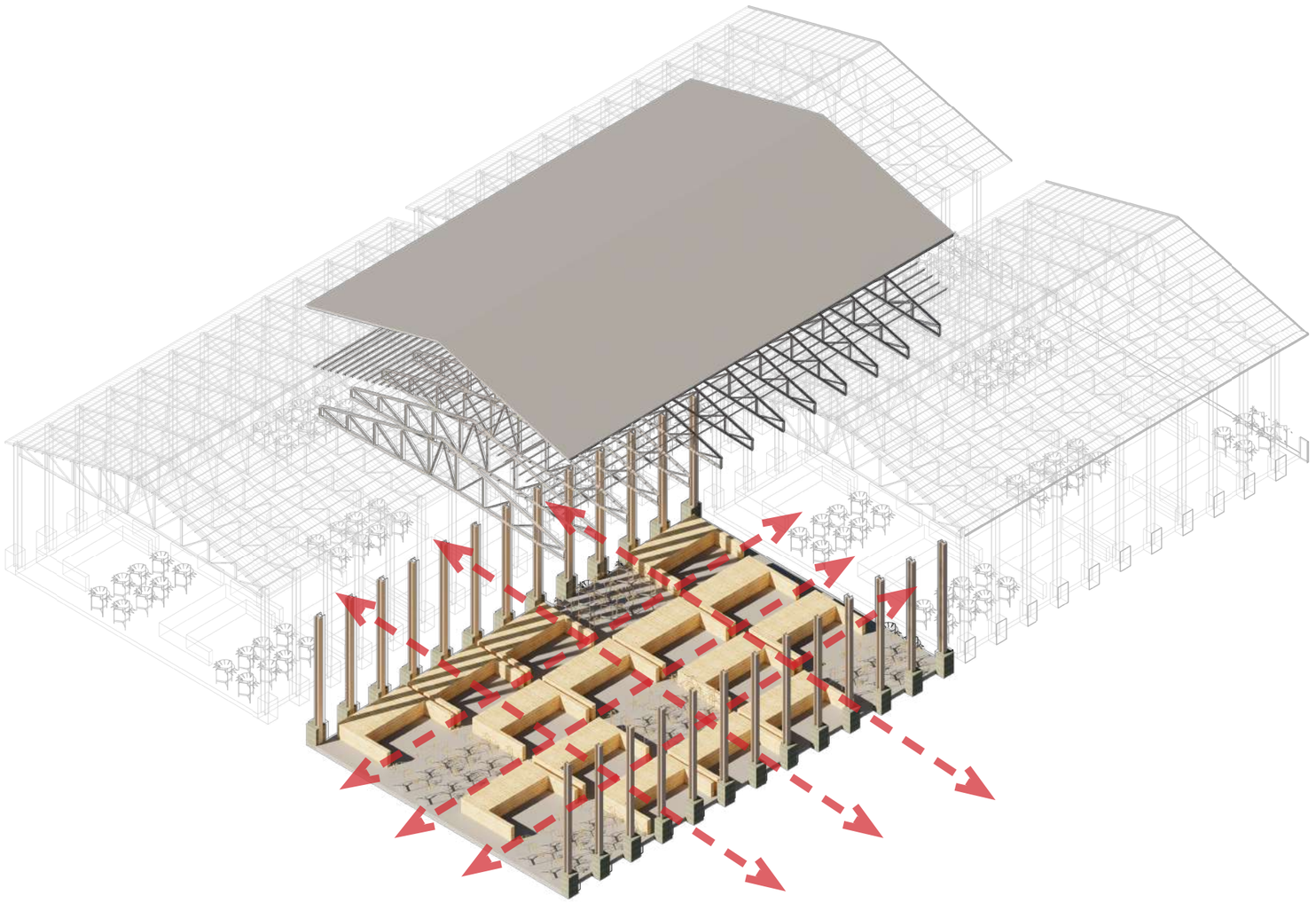


MAIN ACTIVITY : MANUFACTURING

SITE 00
ANALYSIS : MUPEDZANHAMO MARKET , MBARE

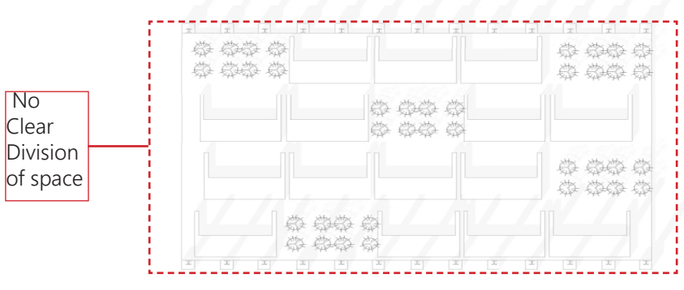


Figures 45 Images of Mbare area and Mupedzanhamo surroundings taken by Author, 2022



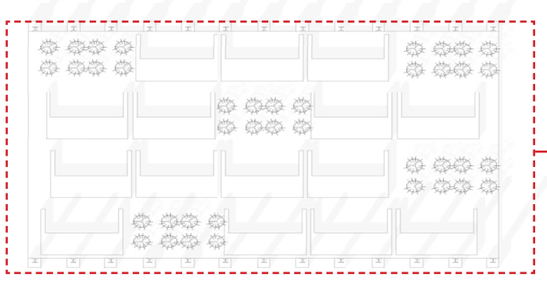
CIRCULATION

Figures 44 Exploded Section Axonometric of Mupedzanhamo, Mbare drawn by author, 2022. Information taken from images taken by author on site and google earth for dimensions.



No Clear Division of space

PLANS Drawn By Author



No Clear Program

UNDERSTANDING ISSUES

The Mupedzanhamo Market before its closure was characterised by 8 portal frame structures that informal traders within the context worked from. The conditions around this market were far from satisfactory and for a market that was said to have the capacity of 1800 traders by the Harare City Council (Gwaze, 2022, sundaymail.co.zw) it was hosting 2200 stalls whilst experiencing about 6000 passing feet a day.

The issue of congestion is one that is common within the neighbouring markets of Magaba and Mbare Musika, and this case study into the architecture of Mupedzanhamo Market gives us an understanding of the existing condition. The creation of sustainable infrastructure and provision of more space for vendors to work from is crucial within this context in order to allow traders to work from a sanitary and safe environment.

PROGRAM SIZES

PASSING FEET A DAY (PEOPLE)

6 000

STALL NUMBER

2200

STALL SIZES

$1m^2$ $2m^2$

KITCHEN SIZES

$5m^2$

AVERAGE ABLUTION SIZES

$4m^2$ $4m^2$

SITE 00
MUPEDZANHAMO MARKET CYCLE

SECOND HAND CLOTHING PACKED AND SHIPPED IN FROM OTHER COUNTRIES

The start of the cycle that feeds the Mupedanhamo market are the imports of second hand clothing from outside the country. Even though this can be seen as a potential way of reducing carbon footprints by selling second hand clothing whilst also providing means for traders to make a living, this enterprise has severely affected the clothing production industry within this context and has attributed heavily to the waste that is found within the area of Mbare.

SORTING AND DISPALAY OF CLOTHES

Once the clothing is distributed to the different informal vendors, they are sold to the public through the Mupedanhamo market. One of the main issues besides the lack of storage space and overcrowding, is the fact that the market traders do not have infrastructure to carry out their daily jobs, therefore most of the clothing ends up on the ground. Mupedanhamo is also largely contested because of the police violence towards the informal trade on the site.

SELLING TO CUSTOMER

The last part of the Mupedanhamo cycle is the buying of the second hand clothing by the community. Mupedzanhamo is seen as a market that also caters to the macro context of Harare and Zimbabwe, because of the affordability of the clothing. One of the main issues that exists within this context is the overcrowding present due to the large number of stalls occupying a small area, therefore most people that visit the context feel unsafe and would rather shop at smaller second hand markets

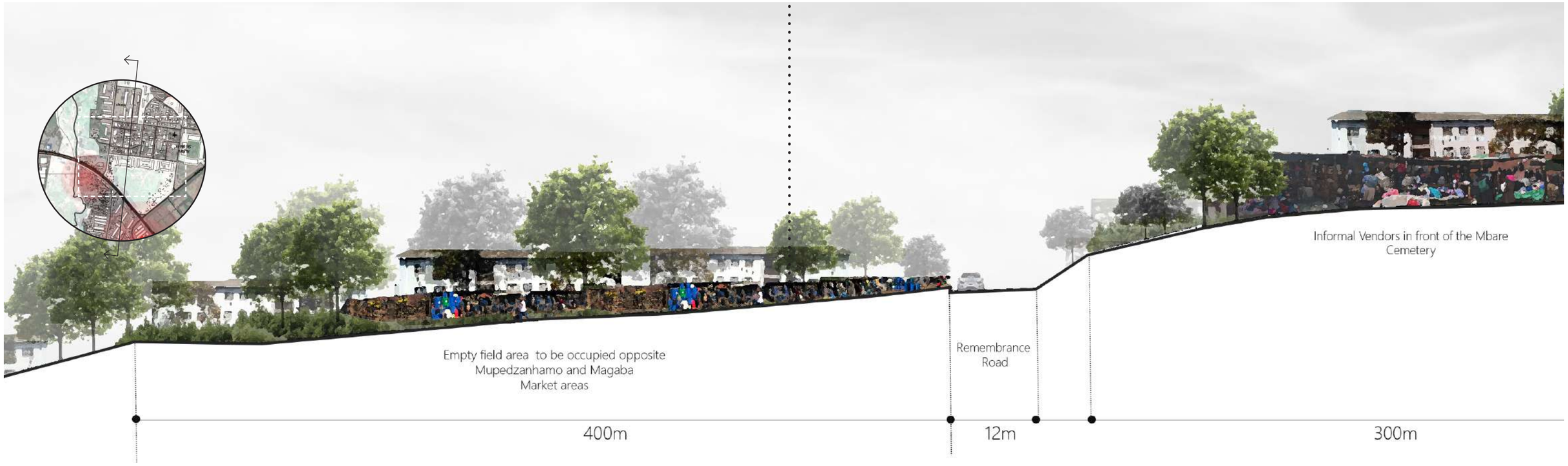


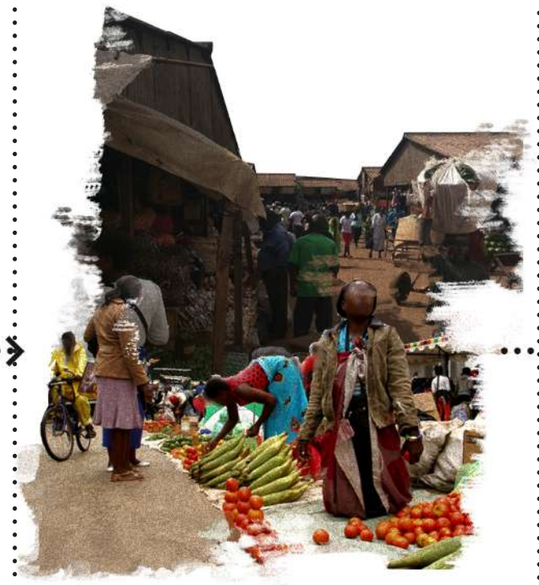
Figure 46: Site sections through Mupedzanhamo Market , showcasing the existing cycles and terrain, all images drawn by Author, 2022

SITE 01
MBARE MUSIKA CYCLE

FARMERS

The cycle that feeds into Mbare Musika begins through the regional farming system, where farmers supply vendors with produce that can be sold at the informal market for profit. The vendors themselves are paid a sum by the farmers from the total sales and this subsidises their living.

VENDORS



The vendors that are present at Mbare Musika then carry out sales to the public in which these sales include the selling of food, but the vendors work in cowded areas that make the process of selling produce a difficult experience. The vending process extends from the existing infrastructure on to the road side, signalling for the need for more spaces.

COMMUNITY

The last point of the cycle is the consumer/pedestrian that does not partake in the sellinng of the produce but instead sees this as an opportunity to find affordable food. The main problem that the customer is faced with is the overcrowdedness that not only makes the shopping experience uncomfortable but poses a security risk.

Figure 47: Site sections through Mbare Musika , showcasing the existing cycles and terrain, all images drawn by Author, 2022

SITE 02
MAGABA + SIYA SO CYCLE

SCRAP COLLECTION/SUPPLY FROM FORMAL INDUSTRY

The start of the cycle that feeds the Magaba industry and market is the collection of scrap metals and left over metals from the formal industry. During the economic collapse in 2008, a significant number of skilled workers lost their jobs and were retrenched. Most of these workers shifted to the Magaba industrial area of Mbare and are responsible for most of the trade and construction that happens there.

PRODUCTION /MAKING IN INFORMAL INDUSTRY

Once the material has been collected and brought to the Magaba area, welders and craftsmen that work there proceed to create steel elements and bars from the collected materials. The craftsmen are also responsible for the creation of smaller items such as gas stoves and wheel barrows. The downside of this area is that most of this work is done out in the open simply because there is no infrastructure to cater for this work, therefore dumping is a large issue within this part of Mbare

SELLING TO CUSTOMER

The last point of the cycle is the selling of the made products to customers within the community. The selling of products and the making of them is seperated within the area of Magaba, therefore customers are not exposed to any fires that are used to weld items. The key issue that is present is similar to that of Mbare Musika, that the overcrowding experienced in the Magab area creates an uncomfortable 'shopping' experience as well as issues of safety annd security.

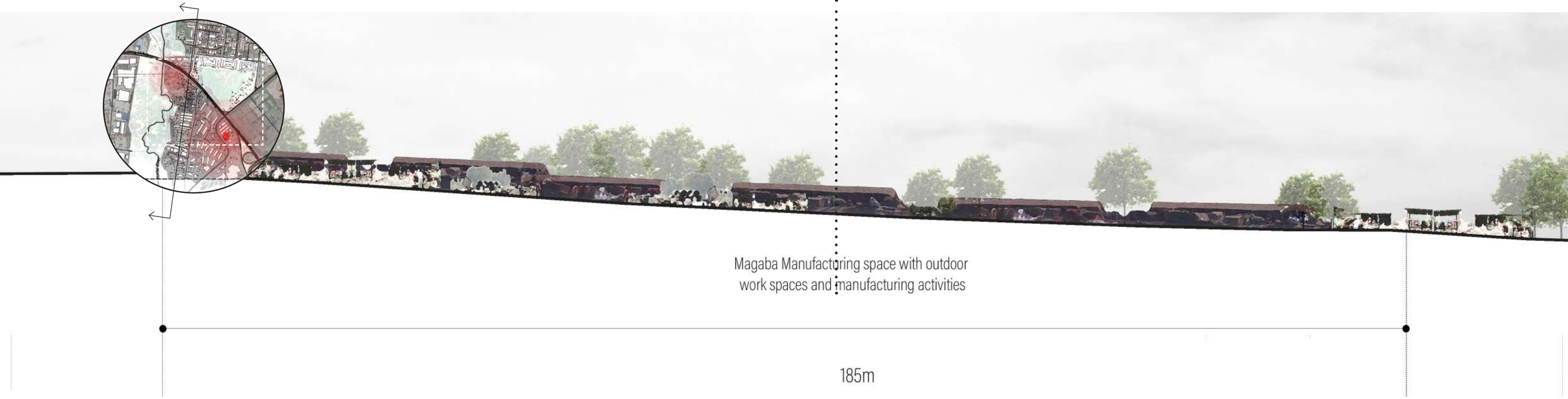


Figure 48: Site sections through Mbare Magba , showcasing the existing cycles and terrain, all images drawn by Author, 2022

5

PROGRAM AND DESIGN BRIEF.

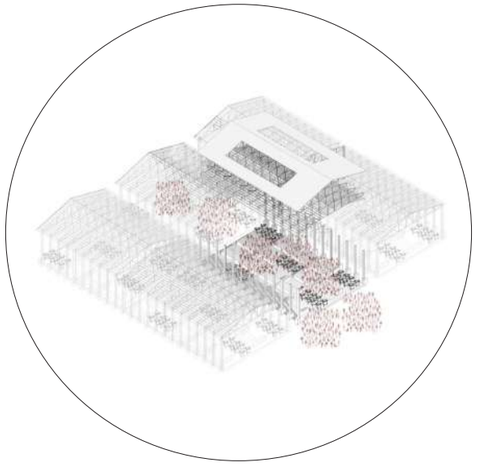
Within this section of the document, the analysis taken from the site investigation is translated into a brief and adequate program that tackles the existing issues within the context, issues such as congestion, dilapidated infrastructure and the need for communal areas and connections throughout the site.

In order to clearly present the intentions of this program exercise, the design principles are highlighted first along with the areas that are created once this program has been set within the context.

Spatial distribution tactics are shown within this section through a volumetric exercise that addresses pedestrian and vehicular movement through the proposed sub-markets as well as the relationships between the different facilities present.

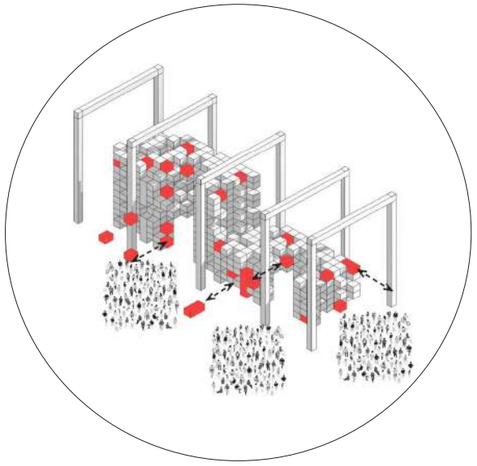
Lastly, this section touches on some of the architectural inspirations around the visual appearance and programmatic layout of the sub-market proposals through the analysis of the Dandaji, Xiafu and Brook Street, Warwick Junction markets.

PROGRAM
Principles



1.
CREATING INFRASTRUCTURE THAT ALLOWS INFORMAL TRADERS TO MAKE A LIVING.

One of the main aims of the design dissertation and program investigation is to find a way to create infrastructure that caters for the existing programme of informal trade that is present in the context of Mbare, Harare. The existing infrastructure that serves this program is either dilapidated or under constant threat from police forces, therefore by providing vendors with a structure or infrastructure that is sustainable and not susceptible to destruction, you allow informal traders to have a choice and security when conducting trade within this community.



2.
CATER FOR IMPERMANENT AND PERMANENT CHANGE WITHIN PROGRAM IN MBARE, AND THE IN-BETWEEN THAT AFFECTS THE LIVELIHOODS OF THE OCCUPANTS.

One of the interesting design strategies I would like to explore is to find a way to create a structure or system that caters for the nomadic culture of vendors within the area of Mbare. This exploration will consider a way to create a structure that acts as a 'docking point' or permeable base for vendors and informal traders, with permanent systems and structures such as ablutions and storage facilities but also allow traders to act as the elements within the system that go in and out of it, whilst also allowing growth.

Therefore, this program investigation will not only look at the covering structure that contains and houses all the stalls but also how the stall itself can act as a flexible and moveable entity within this enclosure.

3.
LOOK INTO SUSTAINABLE AND AFFORDABLE WAYS OF CONSTRUCTION THAT ALLOW OCCUPANTS TO MAINTAIN THEIR INFRASTRUCTURE OVER TIME.

One of the keys aims of the design dissertation is to investigate the creation of affordable and sustainable ways of building within the context of Mbare, as the community is made up of large networks of makers and upcycled materials, therefore this is an opportunity to use these aspects in construction. This construction method is worth exploring from the angles of pallet use, left over steel, and left-over brick to create infrastructure that can serve this context and does not come at a great expense.

This investigation therefore will consist of a back and forth of design and testing to produce a construction method at a particular scale, but these tests will not limit the options available but give more of an idea of what could be possible.

4.
BUILD COMMUNITY THROUGH TRADER/VENDOR, PEDESTRIAN RELATIONS, AND SPATIAL ORGANIZATION

Finally, one of the main principles within this design dissertation and investigation is to find a way to build a community within the context of Mbare, through the program and infrastructure that is inserted into this context. Even though some of the main focuses within this investigation zone in on the creation of sustainable and flexible infrastructure, the creation and maintenance of communities within this informal context is extremely important, therefore these design decisions will have to contribute to that.

Figure 49: Principle diagram images 1-4 drawn and taken by Author, 2022

PROGRAM
Areas

AREAS OF CONNECTION AND GROWTH

The area of Mbare as previously seen and presented within the locality analysis section of this research showcases that the area already hosts a diverse program that is ordered amongst the 3 informal markets of Mupedzanhamo, Mbare Musika and Mbare Magaba. The existing activities within these informal markets are largely disadvantaged by the lack of infrastructure, access to facilities such as electricity and water along with a serious issue of sanitation.

The program proposal aims to analyse the existing ecosystem amongst these informal markets and provide infrastructure that allows traders and vendors to take advantage of this system and allow it to run in an efficient manner (figure 51). This program proposal also aims to provide the traders and vendors with non-static systems that allow for adaptation, growth and movement within the area of Mbare, through the implementation of satellite or modular systems that offer traders the chance to move within the area as opportunities present themselves and do not necessarily keep them to one area.

The design of these satellite systems and modules will rely on the availability of materials within this context as shown within the technical part of this investigation. Lastly this program proposal aims to provide the informal traders and vendors with the option of flexibility in infrastructure and program through an understanding of how the needs of a vendor and trader transforms according to the number of factors present in the turbulent economy of Zimbabwe. This sort of approach will call for a move away from a 'fixed form' as Dovey (2013) states that architects apply when approaching design within informal settlements.

AREAS OF OPPORTUNITY

The initial architectural investigation of this project is based on the creation of sustainable infrastructure within the context of Mbare, which allows vendors to work from suitable environments that improves their chances of making a living. An issue that this architectural proposal and program wishes to tackle as well is the existing issue of congestion within the large informal markets of Mbare Musika, Mupedzanhamo and Magaba. This need to decongest this area is built off the design principle that was applied in the redesign of Brook Street Market, Warwick junction, that clearly outlines that "If there are too many traders none of them will earn a decent living," (Dobson et al, 2009, pp. 87-105) therefore with this in mind, this program wishes to create a design proposal that allows vendors to occupy the area of chishwasha grounds as well as the existing informal markets, whilst also tackling the issue of infrastructural upgrade.

This issue of decongestion is one that had been raised by vendors within the Mbare Musika area as well as the Harare city council that had proposed a $1.5-million-dollar upgrade(Chikulo, Hebick and Kinsley, 2020, pp. 14) extension of the market to other markets in Chikwanha and Chitungwiza, but nothing of this project has come to fruition. The creation of an extension or de-centralization of program to Chishawsha Grounds still allows the existing vendors to have equal opportunities at all markets even if they were to move through the day as the site and context lies adjacent to the high street of rotten row and is located a 19-minute (1.5km) walk away via Chaminuka Street from Mbare bus terminal.

Therefore, one of the priorities in the structuring of this proposal's program is to create spaces that allow for equal opportunities for informal traders in the context of Mbare in the way the programs are positioned with regards to pedestrian/customer access and road networks; the amount of space each vendor is allocated and the inclusion of activities in the market extension(s), so that customers can access similar services.

AREAS OF COMMUNITY

As Harare's oldest suburb, the context of Mbare is extremely diverse, with the earliest settlers in this community being of Malawian and Mozambiquan descent (Vambe, 2007), which was mostly due to the patterns of migration that took place during and after the colonial period of Zimbabwe. The diversity of this community saw the introduction of traditional dance such as the Malawian 'Gule waMkula mask dance' (Vambe, 2007) as well as spiritual practices and beliefs from different parts of Africa. Despite this context being extremely diverse, the area of Mbare does not accommodate for this diversity through available program and the implementation of social spaces designed and catered for by the city council, instead the locals have taken it upon themselves to practice their beliefs in open spaces within the area of Mbare.

Therefore, an aim and priority of this program thinking, and design proposal is to create spaces within the wider context of Mbare and informal market spaces where occupants of the context can meet, start a dialogue, celebrate and even participate in their belief systems. The setup of the existing informal market's in Mbare already offer the opportunity for community members to meet, although most of these meetings happen to be accidental meetings where community members meet whilst shopping.

Within my design program planning and analysis, I intend on creating intentional and inclusive meeting spaces through the addition of park and play spaces, outdoor sports and recreation as well as indoor/outdoor meeting points where the community can gather and start a dialogue.

Figure 50: Area activity shown through diagrams, drawn by Author, 2022

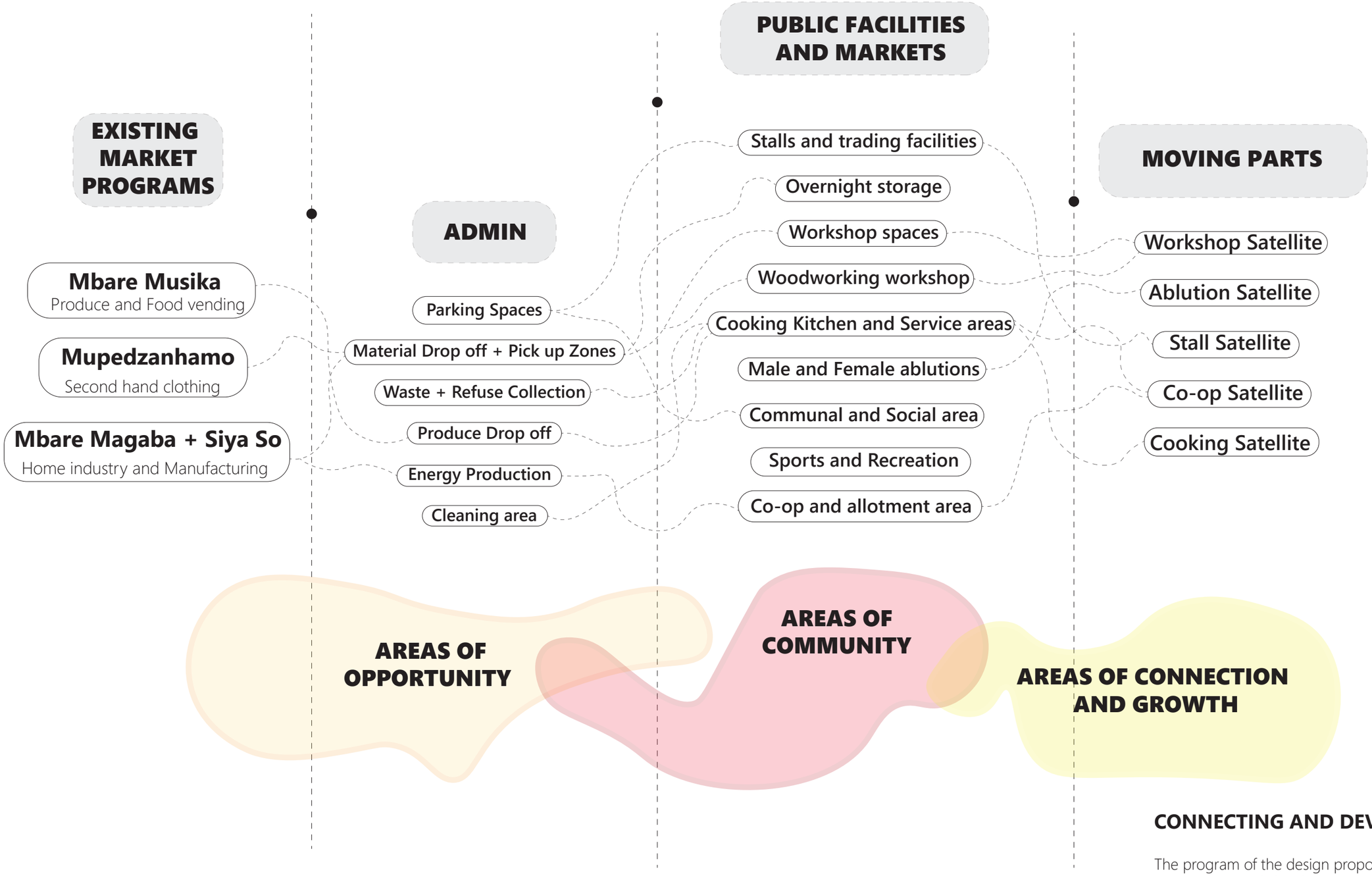


Figure 51: Diagram of program connections between exiting market programs and all the areas considered in creating a brief for the proposed sub-markets, drawn by Author , 2022.

CONNECTING AND DEVELOPING PROGRAM

The program of the design proposal follows the different cycles of the existing informal market and creates an ecosystem where everything from the administration to the 'moving parts' works in tandem. This diagram illustrates how the existing market program(s) is in dialogue with the new proposal that supports de-centralisation and decongestion of these areas. The proposed program stretches all the way to the modular/satellite systems or what I have deemed as the 'moving parts' of the proposal. This proposal also illustrates how the three points of focus ,(Areas of opportunity, areas of community and areas of connection and growth) are all served by this program.

THE MARKET ROOF AND ITS ROLE IN PROGRAM

THE TREE AS INSPIRATION

Within the the informal markets that take place at locations such as Mbare Musika, a lot of the cooking, selling and activity takes place under trees because of the lack of adequate infrastructure. This way of organisation has been prevalent within African markets for a long amount of time, and this can easily be seen by visiting areas where informal markets take place. Trees not only provide shade but serve the purpose of acting as shelter for informal vendors who cannot find a location to work from due to congestion or lack of infrastructure.

Over time the motif and symbolism of the tree has been used in creating roof canopies through mimicry of the tree form as well as analysis of how the tree branching system can provide an insight into structural strength and weight distribution in column design (Özdemir, Nurbanu & Arslan Selçuk, Semra, 2016, pp. 64-76) .

In my architectural design proposal, I will be looking at some case studies that have used tree symbolism or the tree as a metaphor to design market roofs and vendor spaces such as the Dandaji Market (fig. 54) and Xiafu Farmers Market(fig. 58). My goal, therefore, is to not directly mimic the form of the tree, but to borrow characteristics that served traders throughout history in their use of the tree. Characteristics such as the tree canopy working as provider of shade and refuge, and how this can be translated into the creation of an overarching floating market roof or canopy.

The use of this canopy approach goes beyond the aesthetic as seen by the xiafu farmers market (fig. 58), as it allows more open circulation through the supporting column spaces, therefore allowing the market to become a permeable and accessible intervention that caters for the wider community.

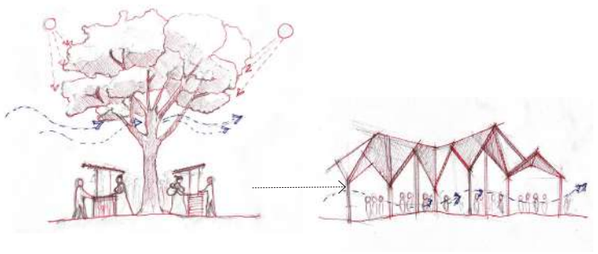


Figure 52 : Sketch by author,2022, illustrating the use of the tree canopy as an inspiration for an architectural market canopy

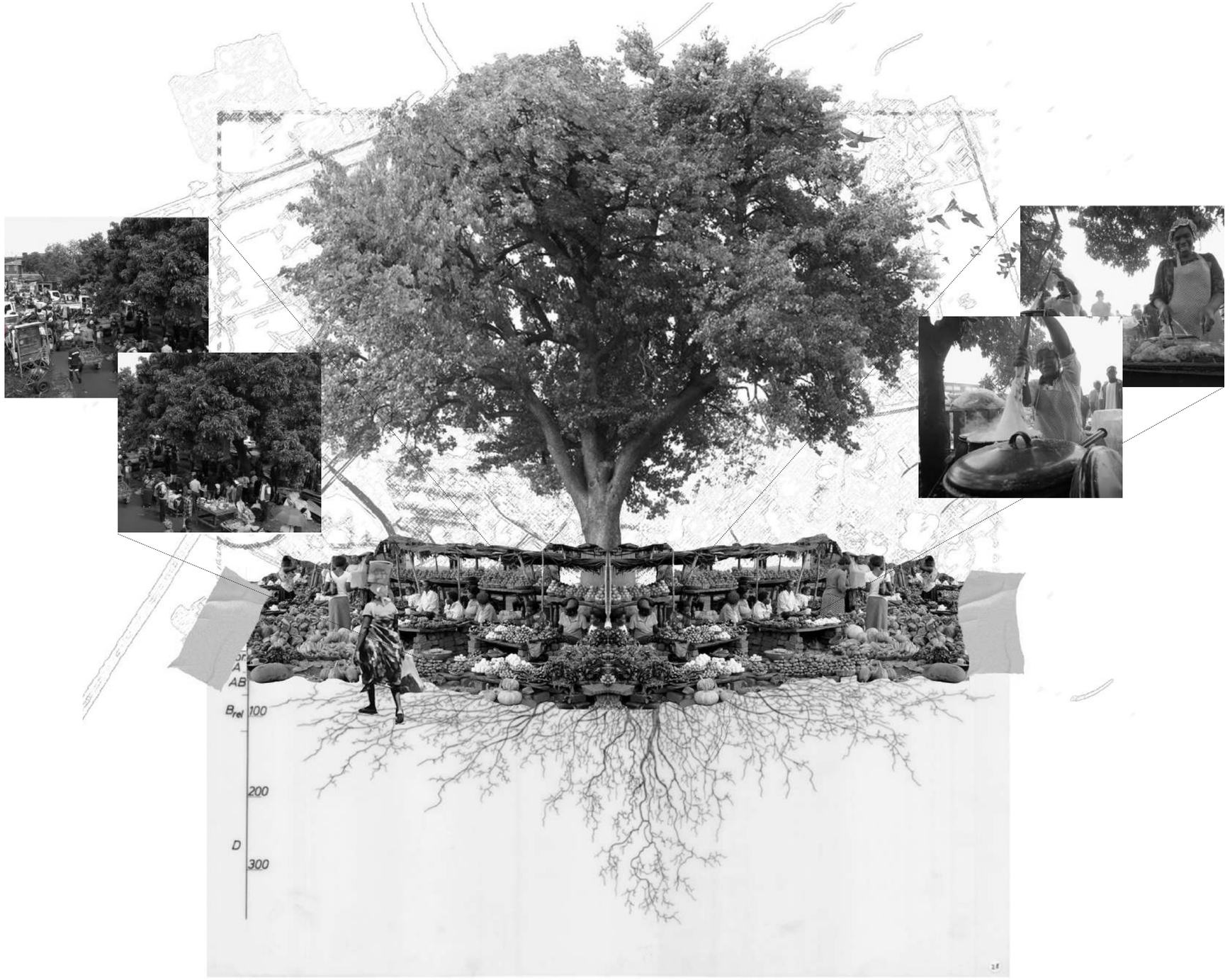


Figure 53: Photocollage showcasing the metaphoric role of the tree as a shading element as well as a place to work under for informal vendors and traders by Author. Supporting photos sourced from https://www.youtube.com/watch?v=Je_tEM5hQWg, accessed 20 July 2022.

THE MARKET ROOF AND ITS ROLE IN PROGRAM

Analysis: Dandaji Daily Market by Atelier Masōmī

Figure 54: Images of Dandaji daily market sourced from https://www.archdaily.com/922161/dandaji-daily-market-atelier-masomi?ad_medium=gallery, accessed 20 July

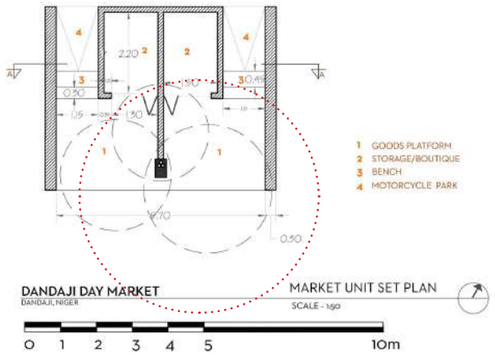
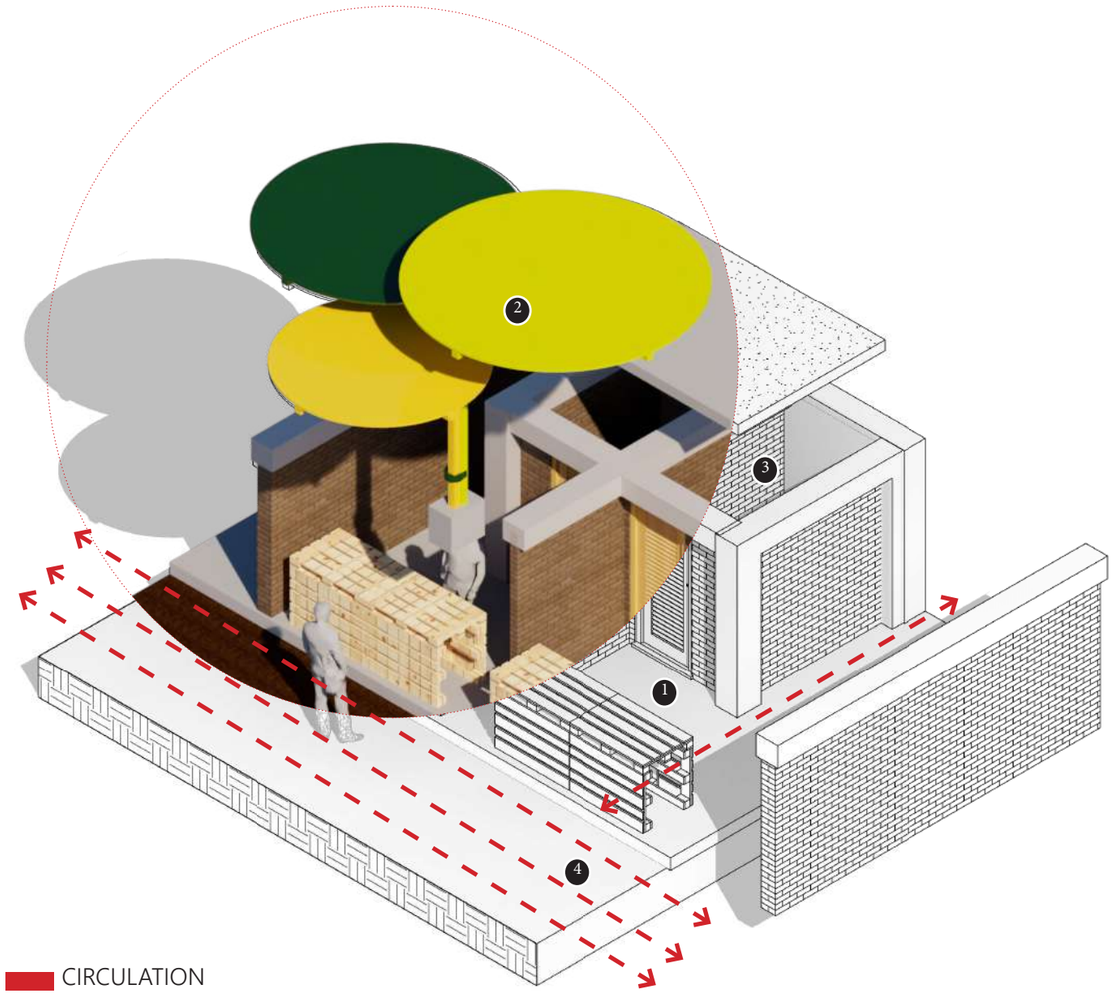


Figure 55: Dandaji daily market plan sourced from https://www.archdaily.com/922161/dandaji-daily-market-atelier-masomi?ad_medium=gallery, accessed 20 July 2022



Exploded Axonometric drawing of Dandaji Daily Market by Author, with information sourced from architect's drawings.

ANNOTATIONS

1. Vendor/Trader space and goods platform:

2. Tree-like metal shading and roofing structure:

3. Goods storage area :

4. Pedestrian walkway :

UNDERSTANDING THE PROGRAM + ROOF

The market stands as a new development and upgrade in infrastructure of the old market within this context, which was organised around an ancestral tree within the Dandaji area. The colourful roof in this instance stands as a motif or representation of this tree and the old way the market was run. The designers kept the re-design and upgrade of the market fairly simple by providing vendors with a module that consisted of a trading space on its frontage and storage space for trader goods.

Each vending space is characterised by three colourful roof like structures that not only aid the ventilation of the space because of their different heights, but articulates the program by acting as a divider and demarcator of vending spaces. This case study showcases how within market spaces the 'roof' or 'canopy' goes beyond being an aesthetic tool and extends to being a cultural and programatic tool, similar to how old african markets utilise trees in a similar manner.

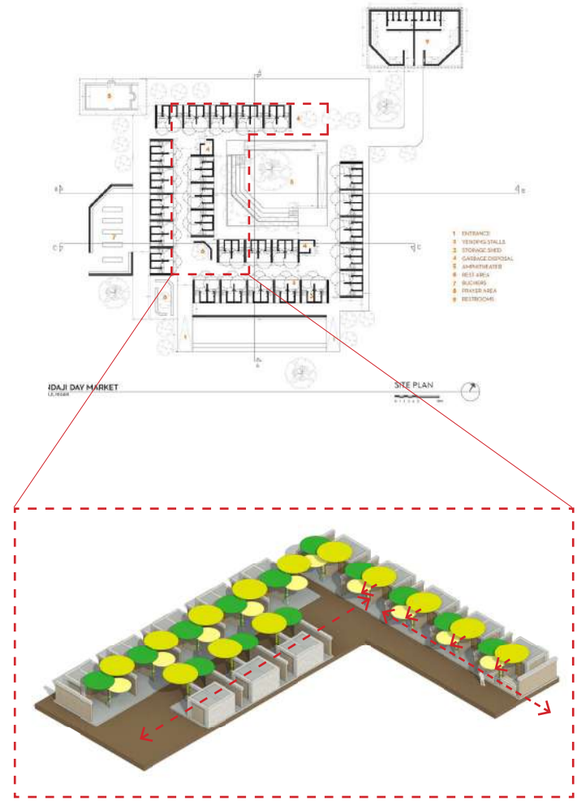
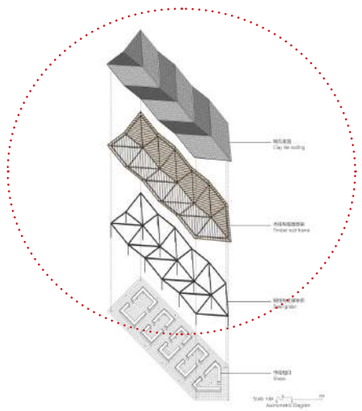


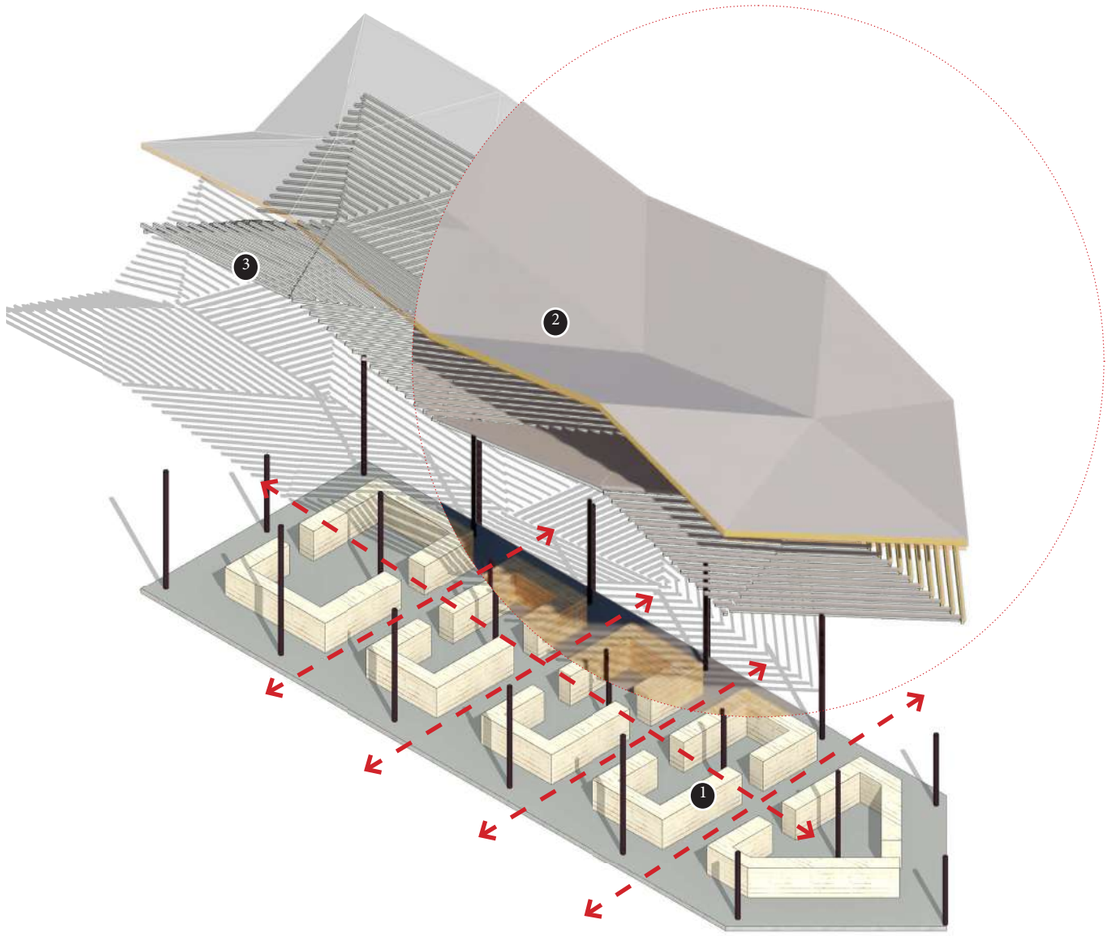
Figure 56 :Axonometric section drawing of Dandaji Daily Market by Author, with information sourced from architect's drawings.

THE MARKET ROOF AND ITS ROLE IN PROGRAM

Analysis: Xiafu Farmers' Market by Bengo Studio

Figure 57: Images of Xiafu Farmers' market sourced from https://www.archdaily.com/912100/xiafu-farmers-market-bengo-studio?ad_medium=gallery, accessed 20 July





CIRCULATION

Figure 58: Exploded Axonometric drawing of Xiafu Farmer's Market by Author, with information sourced from architect's drawings, 2022.

ANNOTATIONS

1. Trading stalls for vendors :

2. Encompassing roof structure :

3. Supporting wooden beam system :

UNDERSTANDING THE PROGRAM + ROOF

In the case of the Xiafu Farmer's market ,the designers decided to upgrade a fairly linear market space by breaking about the roof structure's geometry into folds. This strategy allowed the layout of the market to become more welcoming and allow entry from all sides of the structure and market place. The roof structure of the market place also allows cross ventilation within the structure to take place, creating a cool and well ventilated space for traders and vendors to work in.

This market stands as a great case study of how the roof structure's geometry can affect the program on the ground, allowing market goers and buyers to follow a less structured and rigid linear program and pattern that the previous roof used, but instead allowing buyers to move in a more flexible manner.

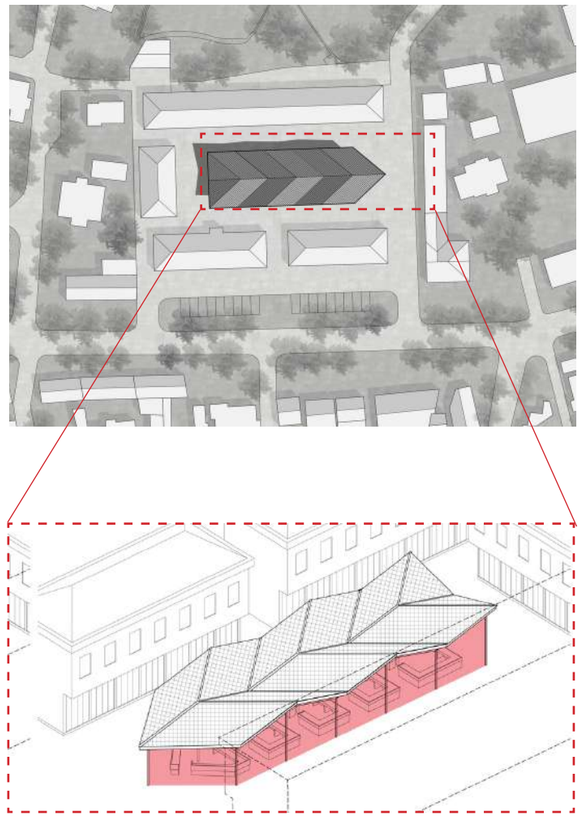


Figure 59: Images of Xiafu Farmers' market axonometric sourced from https://www.archdaily.com/912100/xiafu-farmers-market-bengo-studio?ad_medium=gallery, accessed 20 July 2022

PROGRAM
Volume and program placement

The analysis of the existing market cycles leads to a massinng and program exercise that looks at the potential placement and circulation within the new proposed sub-markets. This exercise will be better refined within the site development and planning section of this research, whilst this page serves as a preliminary way of plugging the resolved program (aspects such as '**admin', 'public facilities and markets'** and '**moving parts'**) into the three sub-markets.

MUPEDZANHAMO MARKET
PROGRAM: SECOND HAND CLOTHING

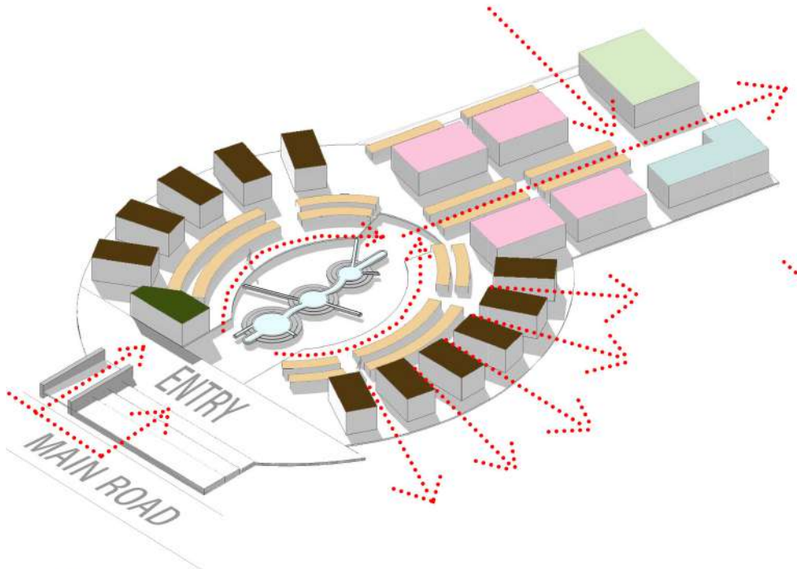


Figure 60: Volumetric layout of the proposed program for the Mupedzanhamo sub-market, along with pedestrian and vehicular entrance ways from the main road, drawn by Author, 2022.

MBARE MUSIKA MARKET
PROGRAM: SELLING PRODUCE

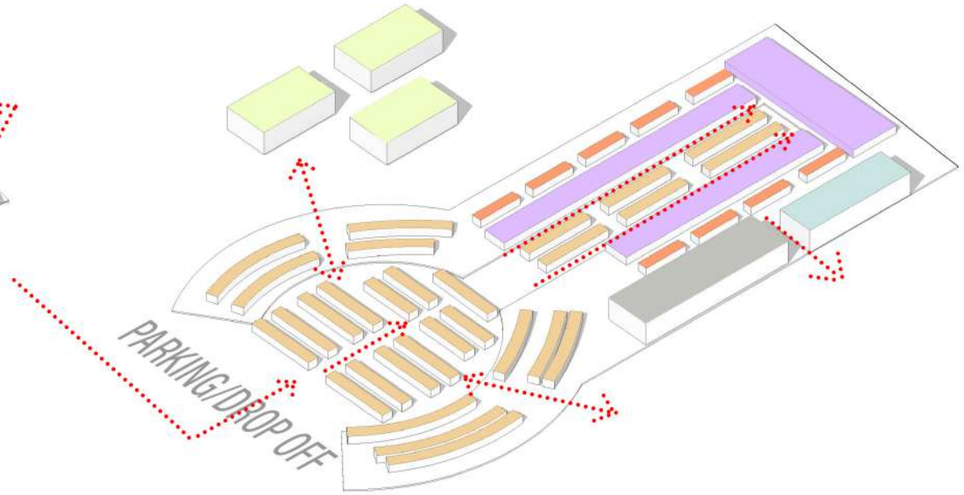


Figure 61: Volumetric layout of the proposed program for the Mbare Musika sub-market, along with pedestrian and vehicular entrance ways from the main road, drawn by Author, 2022.

MBARE MAGABA
PROGRAM: HOME INDUSTRY AND MANUFACTURINNG

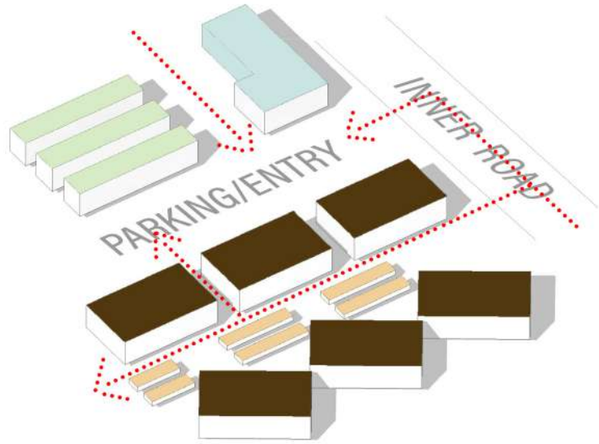
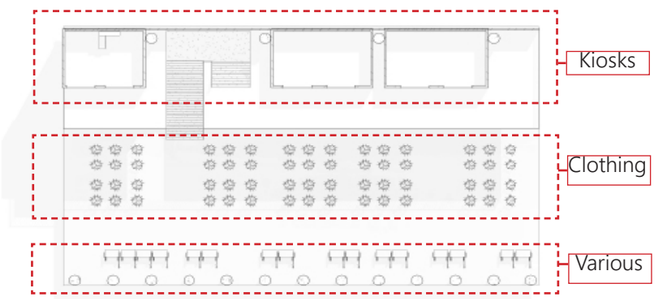


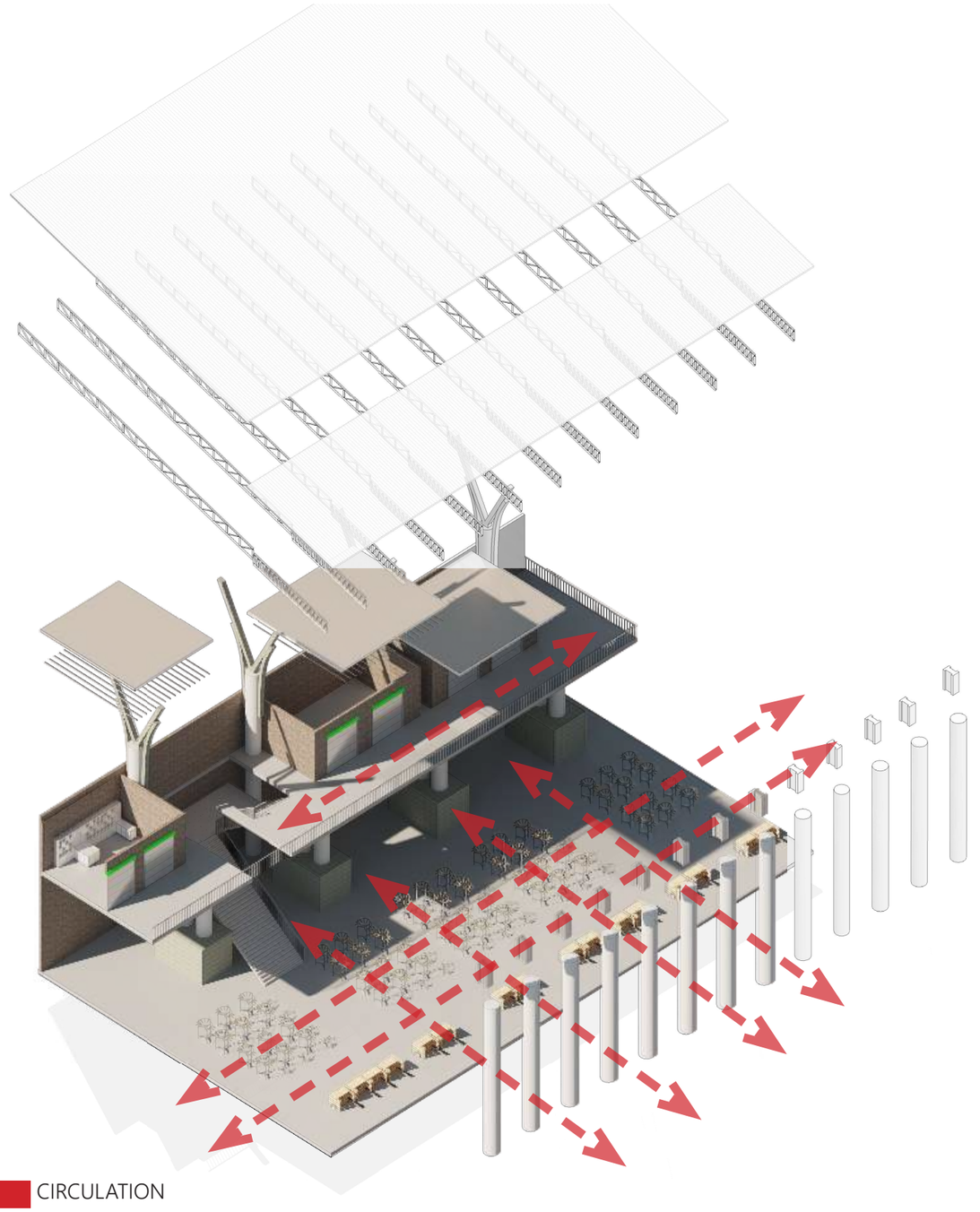
Figure 62: Volumetric layout of the proposed program for the Mbare Magaba sub-market, along with pedestrian and vehicular entrance ways from the main road, drawn by Author, 2022.

WIDER PROGRAM CASE STUDY: BROOK STREET, WARWICK JUNCTION

Figures 63: Images source: Dobson, R. & Skinner, C. et al. (2009) Working in Warwick: Including street traders in urban plans.



PLANS
Drawn By Author



CIRCULATION

Figures 64 Exploded axonometric section of Brook Street drawn by author, with information from Dobson, R. & Skinner, C. et al. (2009) Working in Warwick: Including street traders in urban plans images.

UNDERSTANDING THE PROGRAM

Brook Street, Warwick Junction was built over a period of 11 years therefore the sizing of all the program elements was done through constant back and forth meetings with the occupants in order to provide something that catered to their needs. This market will serve as a precedent for the development of the informal market areas. This program information was taken from the design report of the Broolk Street, Warwick Junction and therefore serves as a guiding line to the appropriate sizes for storage, kitchen and stall sizes when dealing with a similar number of passing feet a day.

PROGRAM SIZES

PASSING FEET A DAY (PEOPLE)

10 000

STORAGE FACILITIES

48m^3

24m^3

8m^3

STALL SIZES

18m^2

2m^2

KITCHEN SIZES

20m^2

AVERAGE ABLUTION SIZES

8m^2

6

URBAN PROPOSAL, PLANNING AND SITE DEVELOPMENT.

Within this section of my design dissertation I will be analysing some of the development plans that had been proposed on the existing site by the Harare City Council and why these proposals were not implemented and would prove to be destructive to the current informal trader's cycle and livelihood.

After this analysis I will be proposing a better site development plan that accounts for future development whilst including the needs of the informal trader and vendor. This site development section will also showcase how the prior site analysis comes together to create a system that caters to existing market cycles as well as facilitating the design principles highlighted in the previous section.

This section of the document will also zoom in from the macro intervention (the site devlopment plan) to the micro details found in the building floor plan along with the open circulation and 'satellites' that create a flexible and polyvalent system, allowing the traders to occupy spaces inside and outside the structure according to their needs.

OVERVIEW :2018/19 HARARE CITY COUNCIL MBARE URBAN DEVELOPMENT

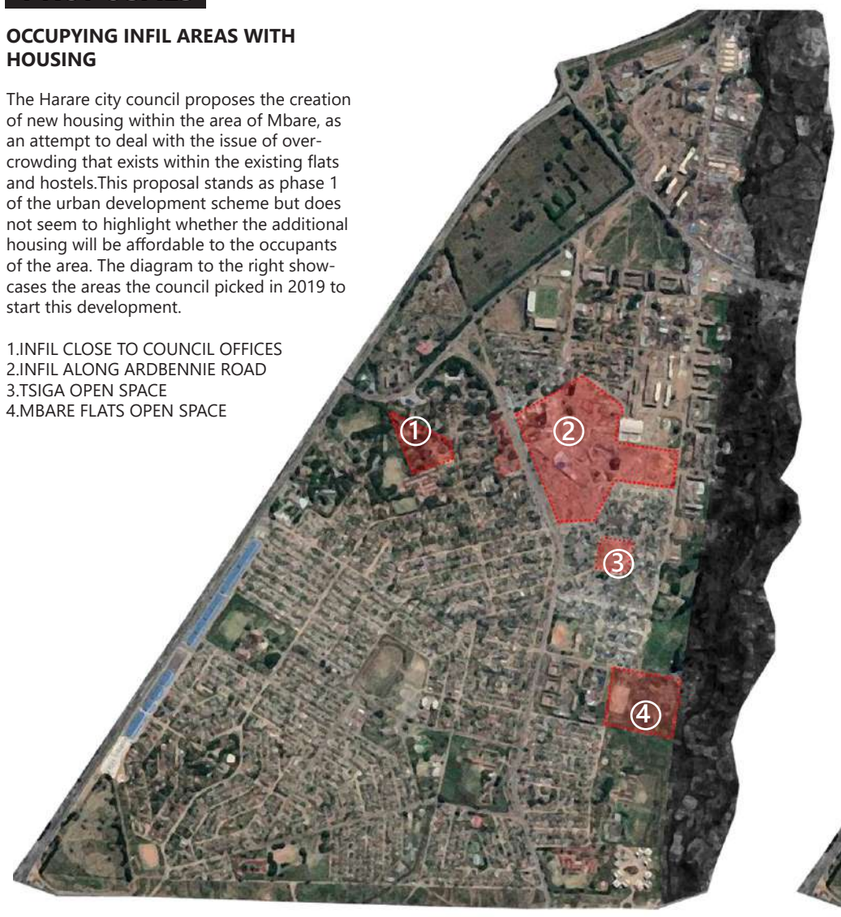
In 2018 the Government of Zimbabwe proposed the Mbare Urban Development project, which would constitute and see the creation of new housing along with formal market places that the occupants of the area would shop from. One of these proposals would include the creation of the 'Shawasha Shopping complex' along the open Chishawasha grounds area that lies adjacent to the Mupedzanhamo market place. This Urban development scheme would see the removal of informal traders in mbare in an attempt to 'clean' and 'sanitize' the area. This page showcases an overview of this proposed scheme with diagrams made by the author.

PROPOSALS

OCCUPYING INFIL AREAS WITH HOUSING

The Harare city council proposes the creation of new housing within the area of Mbare, as an attempt to deal with the issue of over-crowding that exists within the existing flats and hostels.This proposal stands as phase 1 of the urban development scheme but does not seem to highlight whether the additional housing will be affordable to the occupants of the area. The diagram to the right show-cases the areas the council picked in 2019 to start this development.

1.INFIL CLOSE TO COUNCIL OFFICES
2.INFIL ALONG ARDBENNIE ROAD
3.TSIGA OPEN SPACE
4.MBARE FLATS OPEN SPACE

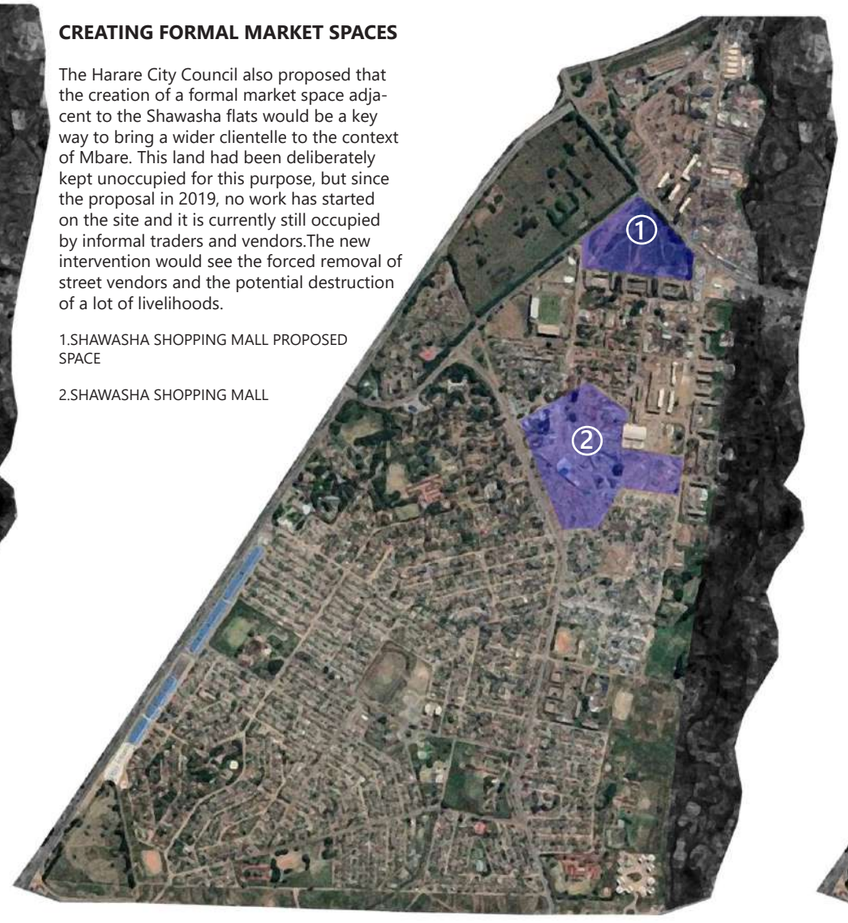


CREATING FORMAL MARKET SPACES

The Harare City Council also proposed that the creation of a formal market space adja-cent to the Shawasha flats would be a key way to bring a wider clientelle to the context of Mbare. This land had been deliberately kept unoccupied for this purpose, but since the proposal in 2019, no work has started on the site and it is currently still occupied by informal traders and vendors.The new intervention would see the forced removal of street vendors and the potential destruction of a lot of livelihoods.

1.SHAWASHA SHOPPING MALL PROPOSED SPACE

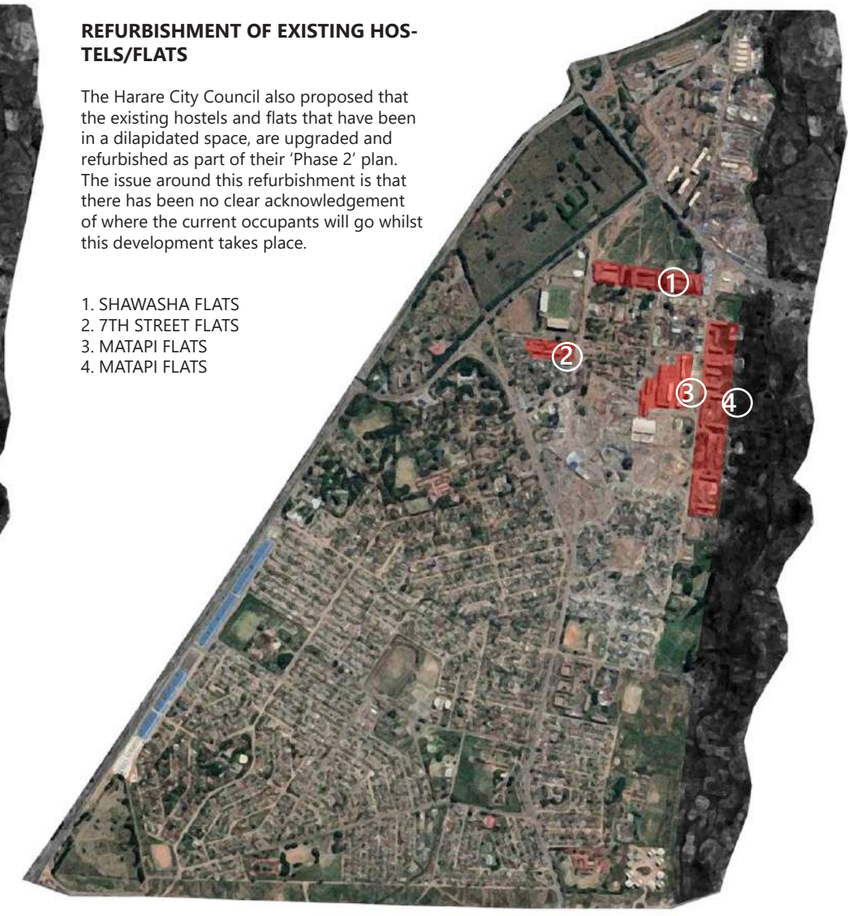
2.SHAWASHA SHOPPING MALL



REFURBISHMENT OF EXISTING HOS-TELS/FLATS

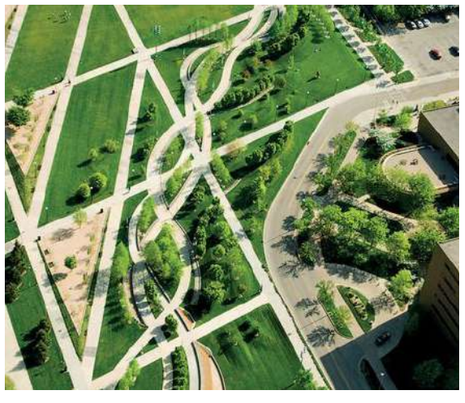
The Harare City Council also proposed that the existing hostels and flats that have been in a dilapidated space, are upgraded and refurbished as part of their 'Phase 2' plan. The issue around this refurbishment is that there has been no clear acknowledgement of where the current occupants will go whilst this development takes place.

1. SHAWASHA FLATS
2. 7TH STREET FLATS
3. MATAPI FLATS
4. MATAPI FLATS



CITY COUNCIL OBJECTIVES

1.ENVIRONMENTAL UPGRADE



The city council's initial objective is to 'beautify' the area of Mbare through the implementation of an environmental upgrade. This upgrade is with the inten-tion of making the area of Mbare a safer place to move through for the regular pedestrian.

2.FORMAL MARKET SPACES

The City Council has also opted to push the creation of formal market places within the context of Mbare, in an attempt to decongest the current informal markets. This approach pushes a 'regestration' system where vendors sign up, ultimately formalising the informal community within Mbare.

3.HIGH RISE 'AFFORDABLE' FLATS

The addition of affordable housing to replace the existing flats has been proposed by the Harare City Council. This proposal does not necessarily factor in the displacement of occupants of the existing flats whilst demolition and refurbishment takes place.

4.GREEN CORRIDOR

The creation of a green corridor through the area of Mbare, through the dredging of the Mukuvisi River is one of the objectives pushed forward by the Harare city council as well. Even though this has its advantages, it may still have its disadvantages that need to be analysed closely.

EXISTING ISSUES AND PROPOSED SOLUTIONS FOR AN URBAN PROPOSAL

The first step of establishing an urban proposal within the context of Mbare,was looking at the small but crucial issues that the Harare City Council proposal had overlooked and establishing how certain solutions could be applied to this highly informal context. When establishing this urban proposal it is best to start from the micro scale of vendor and infrastructure relations and establish how these relations could be fixed without necessarily sanitising the existing condition and proposing something that gets rid of informal trade all together. The context of Mbare is one that experiences large traffic and thousands of people on a daily basis, therefore it is important to come up with solutions that make the journey and accessibility into this context easier, as well as coming up with a solution that allows vendors and pedestrians to help each other on a day to day basis.

1

ISSUE : No seperation between vehicular traffic ,pedestrian traffic and vendors.
SOLUTION : Creating separate lanes that direct pedestrians through vendor stalls and also allow vehicles to branch off main road and park i.e curb parking.

2

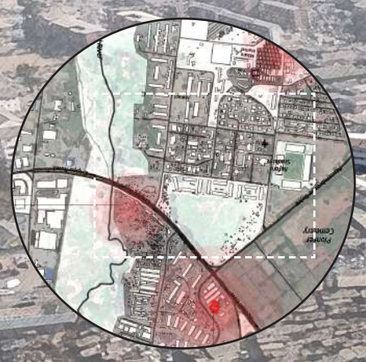
ISSUE : No separation between housing accomodation and vendor stalls which results in noise pollution.
SOLUTION: Using architectural elements as noise blockers or planting trees around vending spaces.

3

ISSUE: Narrow and hard to move through informal pedestrian walkways.
SOLUTION: Create designated pedestrian pathways that still allow pedestrians to meet vendors along their lines of circulation.

4

ISSUE: Poor and unstable infrastracture that forces vendors to create new stalls everyday or two.
SOLUTION: Create a prototype that is both durable, easy to assemble and flexible/portable for vendors.



5

ISSUE : Material dumps scattered along sites.
SOLUTION : Creating a storage space for vendors selling materials such as pallets, so the wood is not subject to dampness causing it to rot.

6

ISSUE : Inadequate presentation spaces for clothing vendors because of badly designed stall spaces
SOLUTION: Create a model or prototype that allows for secure clothing presentation for vendors within the area.

7

ISSUE: Poor and dangerous boundaries between vendors on high platforms and roads.
SOLUTION: Create a secure barrier area between vendors and highways, that allows traders and vendors to carry out their jobs well without issues.

8

ISSUE: Narrow roads create congestion and make it difficult for pedestrians to cross the road.
SOLUTION: Add parking and pedestrian routes that allow a widening of roadways and a separation between vehicular and pedestrian routes.

Figure 65: Arial drone view of Mbare area, with call outs of existing issues and solutions within the wider development plan. Pictures and diagrams taken and drawn by Author, 2022.

URBAN PROPOSAL

Extending and connecting the markets

SITE SELECTION

When analysing the macro context of Mbare the decision to develop the Chishawasha grounds site along these two areas over time was made because this area offers the opportunity to spread to all parts of the context and allow accessibility to it. It sits amongst the Mupedzanhamo market, Magabamarket and Mbare Musika market.

Therefore placing a market within this area that serves the informal vendor and the pedestrians that move through this site will allow vendors a good opportunity to attract a wider range of customers allowing them a better opportunity at making a

living. These locations become a threshold through the site and offer the opportunity to create aspects such as parking, sports and recreational zones that speak to other parts of the site as well as park areas where members of the community can meet and spend time together.

The selection of the Chishawasha grounds as a potential market zone, allows the decongestion of the existing markets by allowing vendors to move to this part of the context as well without be alienated from their usual clientelle base.

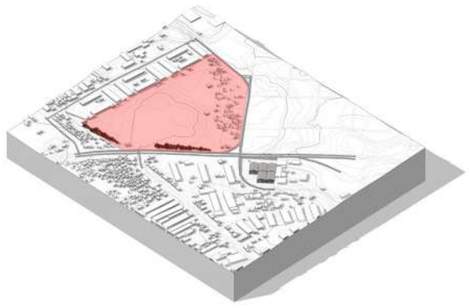


Figure 66: Axonometric site cut with point of interest highlighted in red, drawn by Author, 2022.

Figure 67: Annotated maps of the surrounding market locations in context and connection to proposed sub-market area, original images taken from google earth screenshots. Annotations done by Author, 2022

URBAN PROPOSAL

Extending and connecting the markets

1.INFORMAL TRADERS AND VENDORS

The periphery of the site has become a prime position for vendors and traders to situate themselves, mainly because of the amount of space that is available and also because of its connection to the high street. Vendors situated in this area have taken advantage of this

2.SHAWASHA FLATS

The shawasha flats were built during the colonial period to house black workers and as ZImbabwe gained its independence the population of these flats grew rapidly, as families migrated from rural housing. The flats are currently dilapidated and are in need of refurbishmnet

3.NATURE

The trees that are situated along the periphery of this site almost stand as an architectural tool as they provide shading and protection from rain for the informal vendors who work along this part of the site.

4. INTENDED USE

The Harare City council had kept this area unoccupied since 2018, as it had created a development scheme that saw the construction of a formal "Shawasha mall", which would see the further displacement of informal traders within this area of Mbare. This proposal presented itself almost as a way to sanitise the context instead of dealing with the issue of overcrowding created by informal trade.

Figure 68: Highlighted site for formal market development, within the 'Mbare 2018/19 regeneration plan' by Harare City council, sourced from council information video https://www.facebook.com/watch/?v=909595792581568. Accessed 20 July 2022.

Figure 69: Annotated site location plan highlighting the different layers that make up the site of interest, drawn by Author, 2022. Map sourced from google earth screenshot.

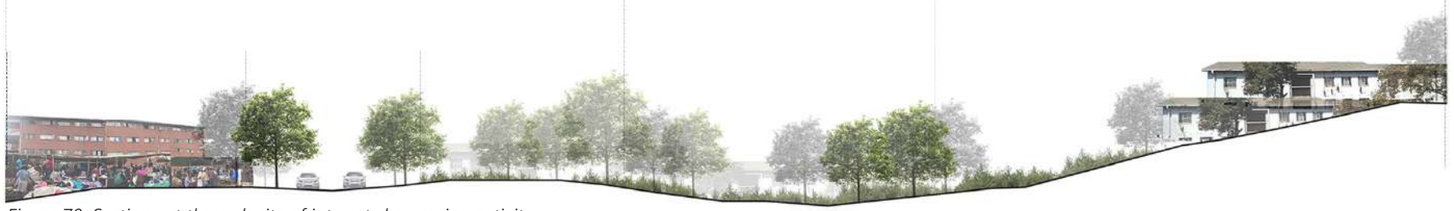


Figure 70: Section cut through site of interest showcasing activity and site gradient, drawn by Author, 2022.

URBAN PROPOSAL

Extending and connecting the markets

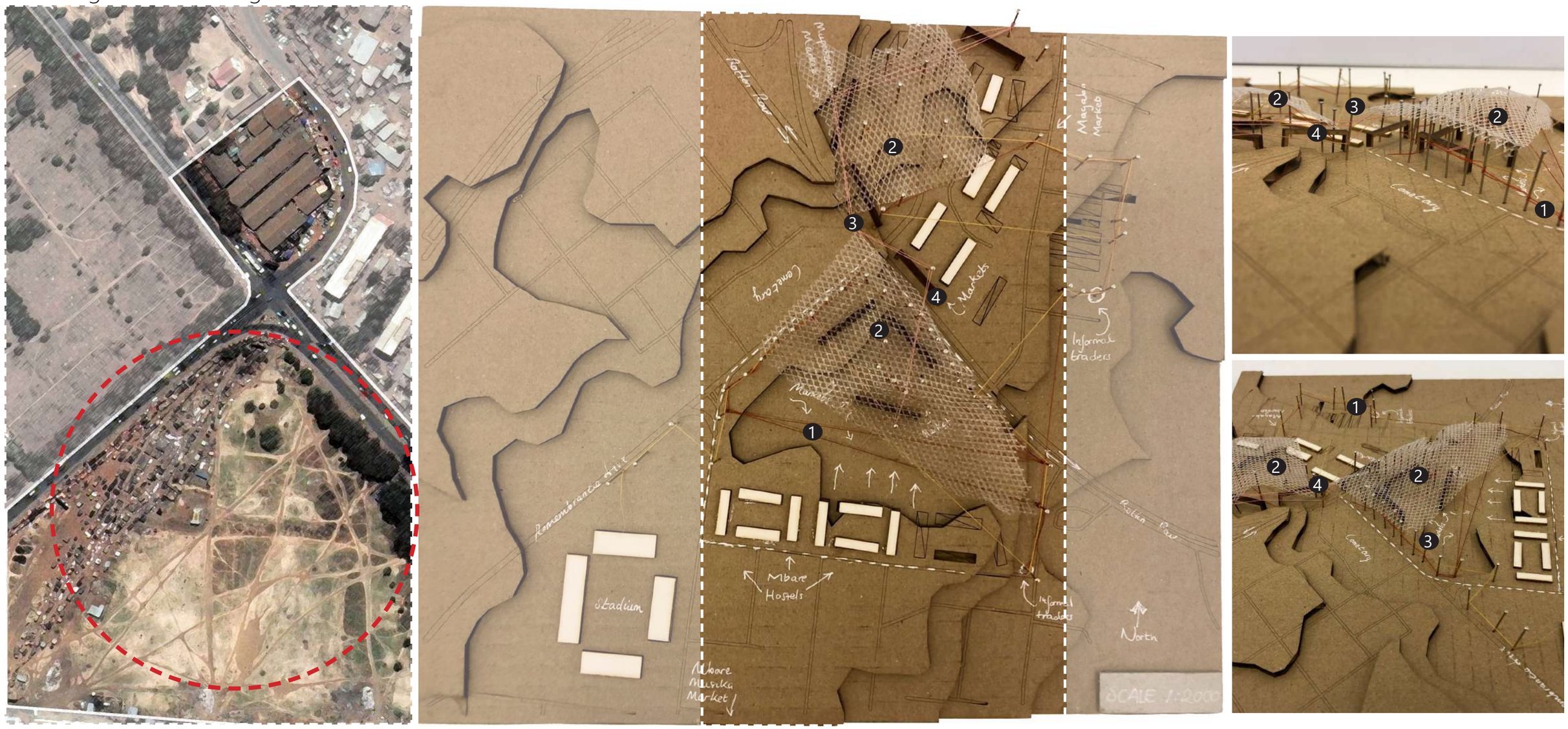


Figure 71: Analytical site model showing the terrain within the context and the networks and connections between different vendors, made by Author, 2022.

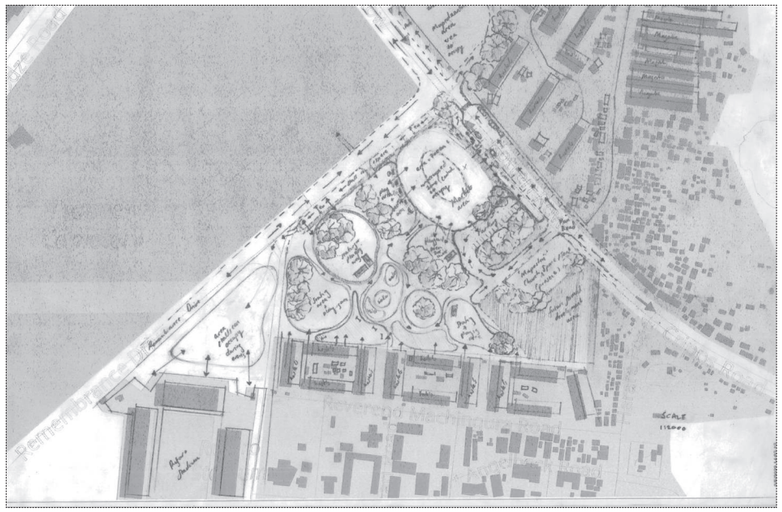
ANNOTATIONS

1. CIRCULATION CONNECTIONS (THREAD)- The thread on the model was used to represent the different circulation patterns that connect pedestrians to informal traders through the precinct, this representation and study would be a useful tool when finding a way to set stalls along the site and creating landscaping routes that do not disrupt the traditional flow of traffic that already exists on the site.

2.ZONES TO DEVELOP(MESH)- The mesh on the conceptual site model was used to showcase the areas being explored and covered by the intervention that I am proposing, These two zones are areas that serve not only the south side of the site where Mbare Musika is located but also the north side of the site where the Mupedzanhamo and Magaba Markets are situated.

3.INFORMAL TRADE NETWORKS(PINS)-The pins on the site model represent the informal trade networks that exist along the edge condition of the site along with the path that they follow. It was important to analyse these trade networks as they indicate the area that a market space should sit without disrupting the existing locations that customers and informal vendors gave gotten used to. The informal vendor networks(pins) are also connected with strings in order to illustrate that the position of traders is usually determined by the circulation path of pedestrians and vehicles, with the three almost working in tandem at times.

4.INFRASTRUCTURE(FRAMES)- The frames placed along the model represent the placement of potential market areas that work with the existing informal trade zones and circulation connections. The translation of circulation and informal vendor trade placement into market space and market movement is an important aspect to analyse within the precinct in order to create a market that is fruitful for the informal traders and also accessible for the pedestrians that move through the site.



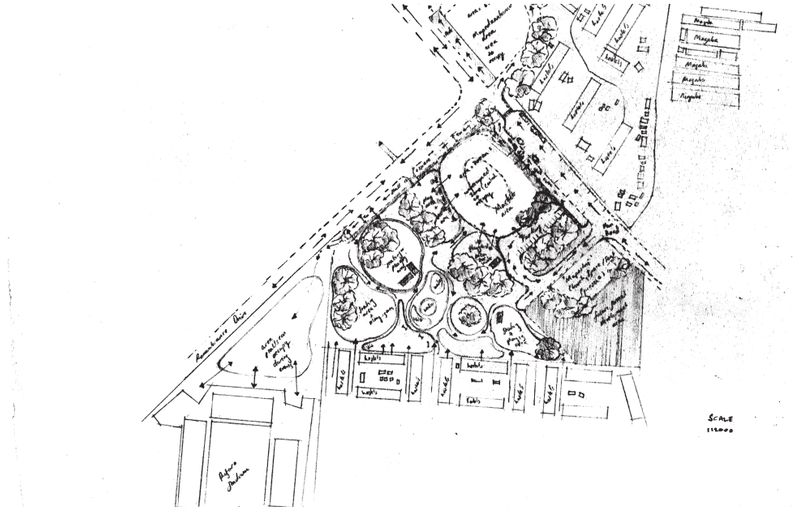


Figure 72: Preliminary urban proposal iterations drawn by Author, 2022.

URBAN PROPOSAL

Extending and connecting the markets
Initial intentions

SCALE 1: 2000 @A3

KEY

- Pedestrian pathways
- Greenery
- Vehicular pathways

Occupying the Edge Condition
This site development plan proposes that vendors and traders can occupy the edge condition in order to move in and out of the market space through out the day as they please. By occupying the edge condition they are also in position to meet with vehicular and pedestrian traffic as they are now part of their circulation routes.

Vegetation and Greenery
In the current scheme of the area surrounding the Mupedzanhamo market area, there are no sound blockers, therefore the market areas generate a lot of noise for the surrounding housing. By adding vegetation the noise within the area is lowered and this also adds an aesthetic quality to the market space to be dveloped.

Mupedzanhamo Area
The Mupedzanhamo area has now become vacant as the previous analysis highlights therefore this is an opportunity to improve the infrastracture that was present in this area and allow vendors to work from a better environment.

Existing housing/hostels
The existing housing on the northside of the site makes up for most of the customers or client base that visit the market spaces in Mbare on a day to day. By creating a market area next to this housing this allows occupants to have access to these areas whilst also allowing vendors to profit from this client base.

Clear Pedestrian Pathways and Curb Parking.
By creating clear pedestrian pathways that move through the site and the proposed market spaces, along the edge conditions, this allows a clear separation of vehicular traffic from pedestrian tarffic and also allows the circulation pathway of the pedestrians to run into the vendors and vice versa, promoting the purchasing of goods.

Proposed New Market Area
This space offers the perfect position to connect pedestrians and vehicular traffic from all sides of the site. This market area will also act as a bridge between the north and south sides of the site, whilst allowing vendors to also occupy its edge conditions. This market space will act as a threshold in and out of the market space for vendors, allowing them to freely move around.

Playground and Recreational Area
This iteration offers the opportunity of hosting a playground area, where vendor's children can spend time during the day whilst the traders and vendors are at work. This area will be a close distance from the vendors allowing them to monitor their children..

Future Formal Market Space
As the masterplan of the area is completed, creating a formal market space or allowing for one to enter the area will allow more activity in the space and also promote potential relationships between the formal and informal.

Park Area
The addition of a park area adjacent to the hostels and housing within the area will allow for community engagement and improve the surroundings of the run down hostel flats, givng the people within these hostels a space to spend time.Unlike the first iteration this park area will host different spaces and also feature a water element that the community can benefit from and use.

Figure 73: Initial annotated site development plan by Author, 2022.

URBAN PROPOSAL

Extending and connecting the markets
Initial intentions

Figure 74: Developed and focused development plan highlighting point of interest drawn by Author, 2022.

CURRENT URBAN PROPOSAL

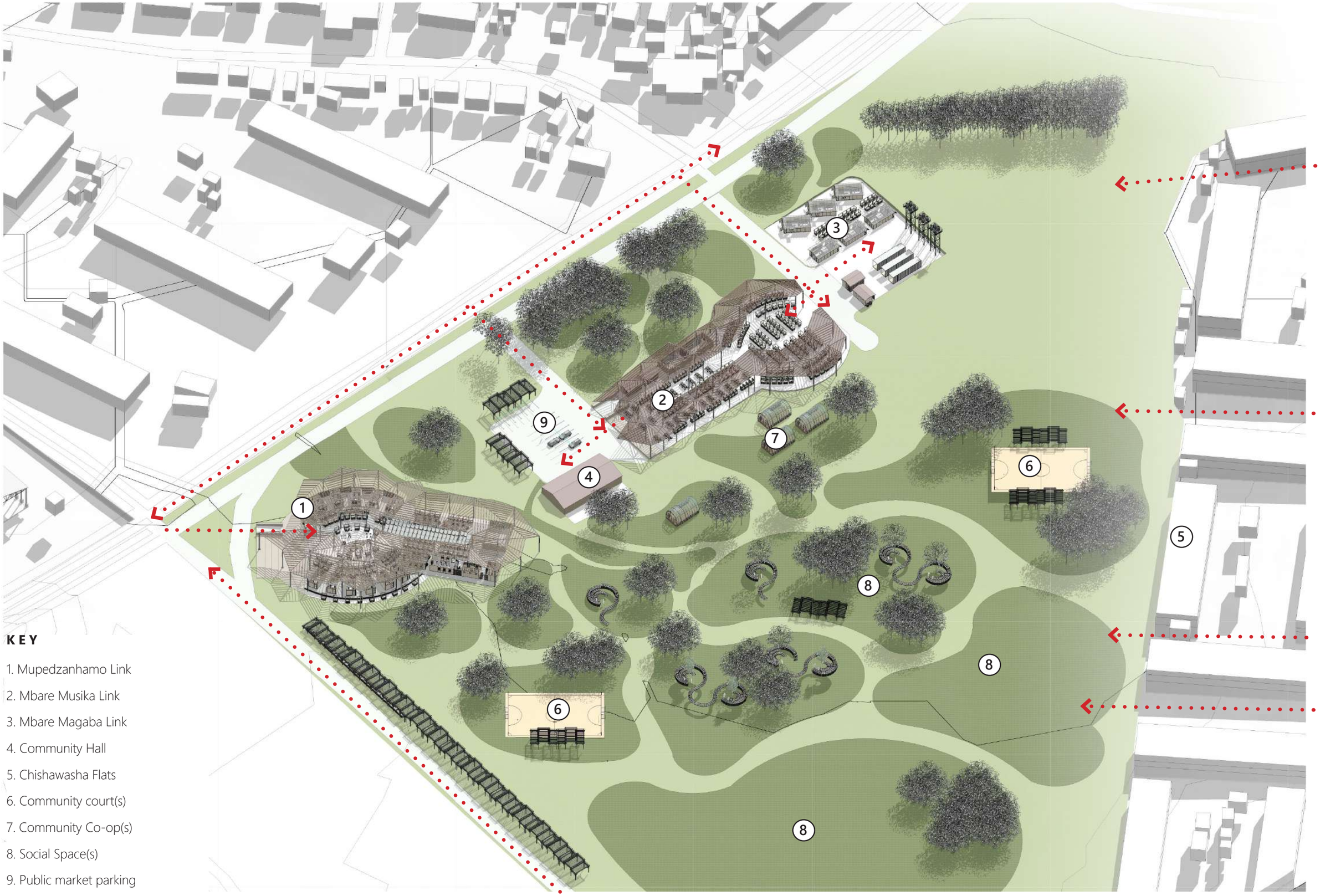
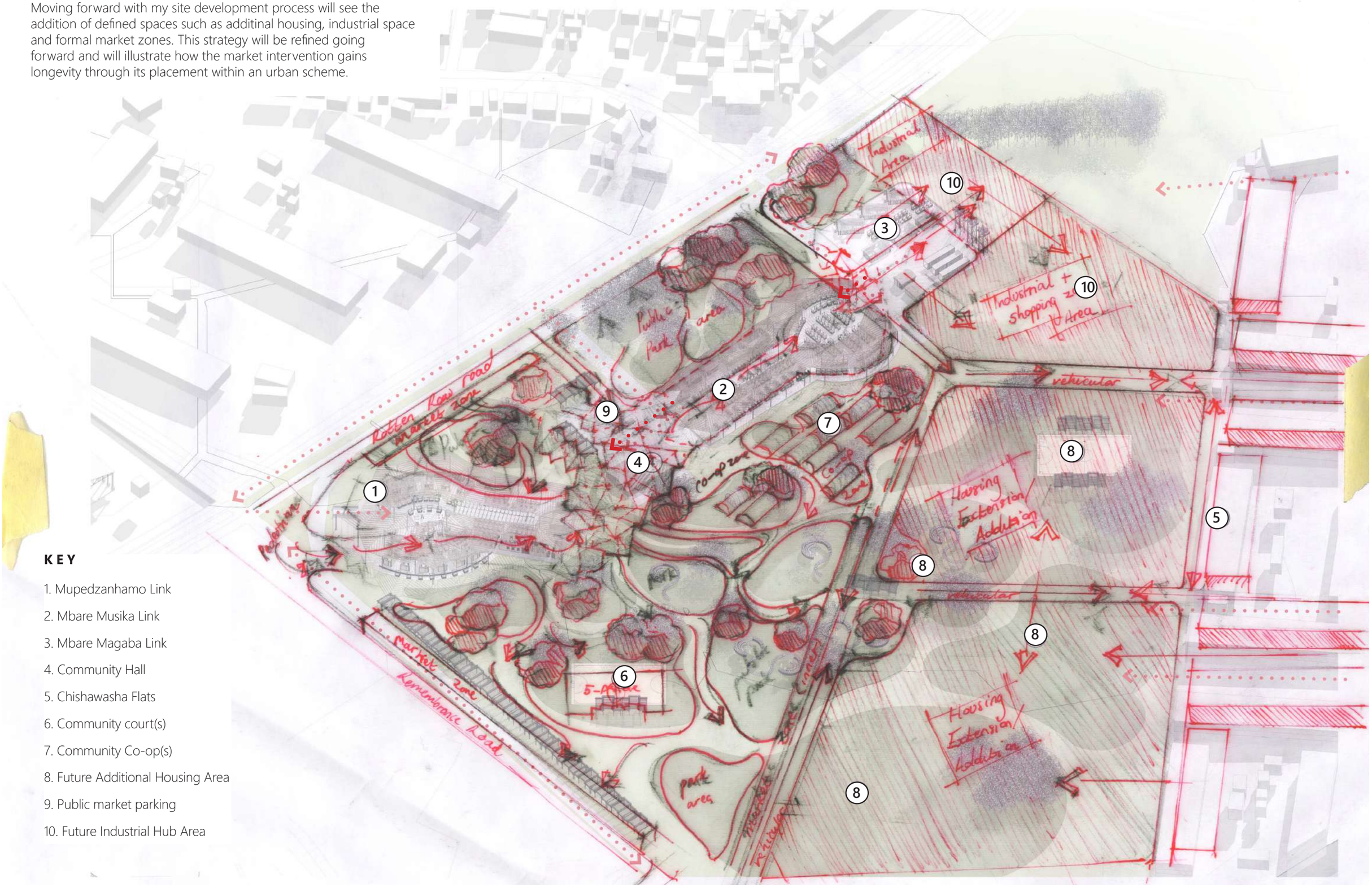


Figure 75: 3D Developed and focused development plan highlighting point of interest drawn by Author, 2022.

CURRENT URBAN PROPOSAL

ADJUSTED FUTURE ITERATION

Moving forward with my site development process will see the addition of defined spaces such as additinal housing, industrial space and formal market zones. This strategy will be refined going forward and will illustrate how the market intervention gains longevity through its placement within an urban scheme.



KEY

1. Mupedzanhamo Link
2. Mbare Musika Link
3. Mbare Magaba Link
4. Community Hall
5. Chishawasha Flats
6. Community court(s)
7. Community Co-op(s)
8. Future Additional Housing Area
9. Public market parking
10. Future Industrial Hub Area

Figure 76: Current site development plan iteration showcasing planned paths of movement and different program area/space allocation, drawn by Author, 2022.

URBAN PROPOSAL

For my design proposal I will be developing all three submarkets but focusing on the mupedzanhamo sub-market as it is the only market that is currently not active anymore and is devoid of existing infrastructure that vendors can work from

CHOSEN FOCUS

MAIN FOCUS : MUPEDZANHAMO MARKET LINK

MBARE MUSIKA MARKET LINK

MBARE MAGABA MARKET LINK

Figure 77: Highlighting the Mupedzanhamo market link plan to be developed, along-side other sub-market plans drawn by Author, 2022.

URBAN PROPOSAL
Adjusted Future Iteration

URBAN PROPOSAL

Green area and Park Space Objectives

1. Environmental Upgrade
2. Areas of play
3. Community areas and gardens
4. Open and connecting walkways

URBAN PROPOSAL

Strategies

TRADERS ALONG THE HIGH STREET

The scheme allows market traders to leave the market and occupy the periphery of the market along the highstreet. This condition allows traders to make a living by being able to sell to passing traffic within the context of Mbare. The current practice of informal trade within the context applies this practice therefore by allowing vendors this level of mobility, vendors are not restricted to the market place alone.

MAIN ACCESS ROUTES

The main acess routes into the market place branch off the main roads (rotten row and remembrance)and are an interchange between vehicular and pedestrian traffic. Routes directly into the entrance of the market are pedestrian, as most of the market goers are community members therefore this method of entry is not only familiar but easy to follow. These pedestrian routes are taken from existing desire lines that were present on site.

TRADERS ALONG THE HIGH STREET

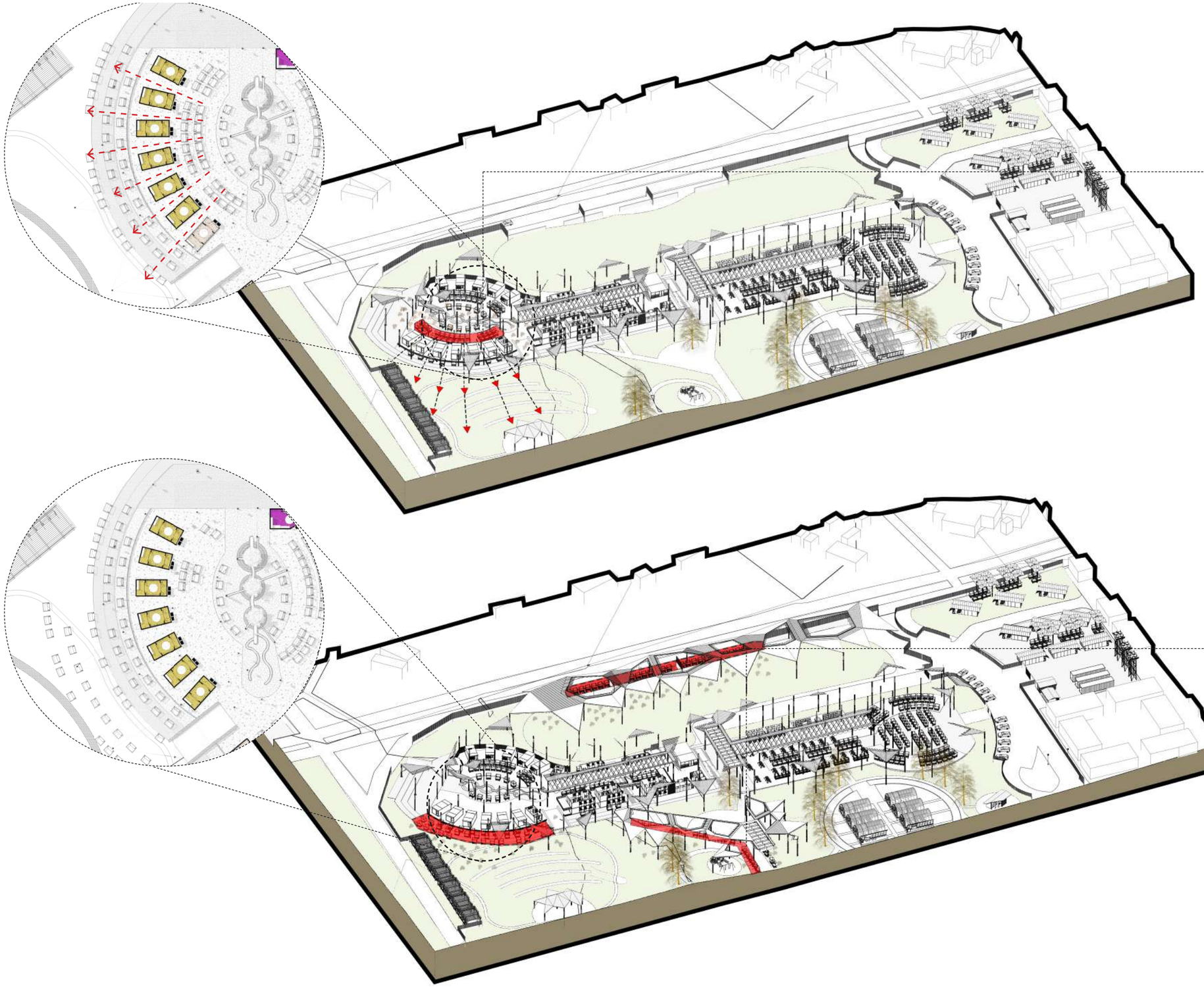
The scheme allows market traders to leave the market and occupy the periphery of the market along the highstreet. This condition allows traders to make a living by being able to sell to passing traffic within the context of Mbare. The current practice of informal trade within the context applies this practice therefore by allowing vendors this level of mobility, vendors are not restricted to the market place alone.

SECURITY

The security around the park and development plan is present in the form of a fence that is open during operating hours and wraps around the park. This allows traders and vendors to have protection over their belongings and infrastracture. An additional layer of security is also provided by the city council offices that have direct views into the market and the park.

URBAN PROPOSAL

Mobile Trader Movement



0630 - 1200

START OF THE DAY

As the market day commences most of the traders and vendors will be located within the main market area, in a radial pattern. The informal traders are located in this position as most of the pedestrian traffic comes through this zone at the beginning of the day, therefore the buyers and traders will be able to interact.

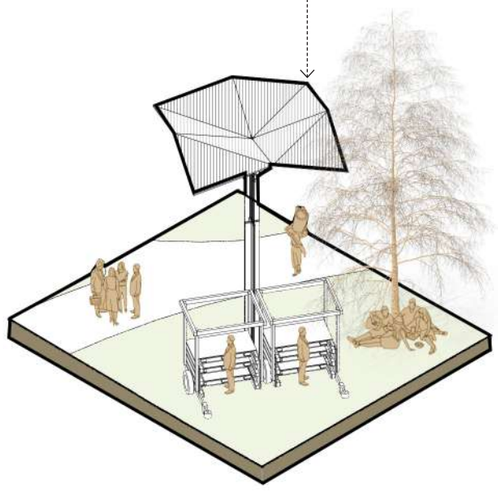
1200 - 1800

AS DAY GOES ON

As the day goes on the traders and mobile vendors will start to move into the wider context in a radial pattern as the park will now be fully occupied. This strategy aligns with the nomadic nature of the informal trading that happens within this context. The canopies distributed around the context will provide shading for these traders.

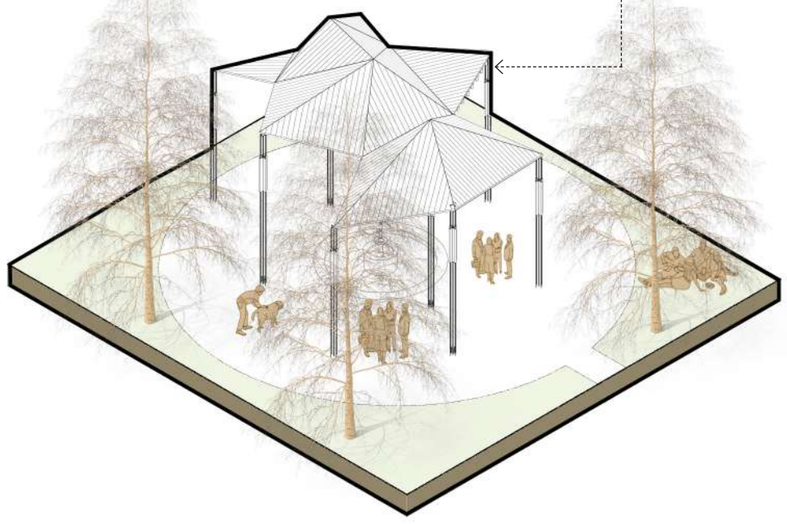
URBAN PROPOSAL

Canopies



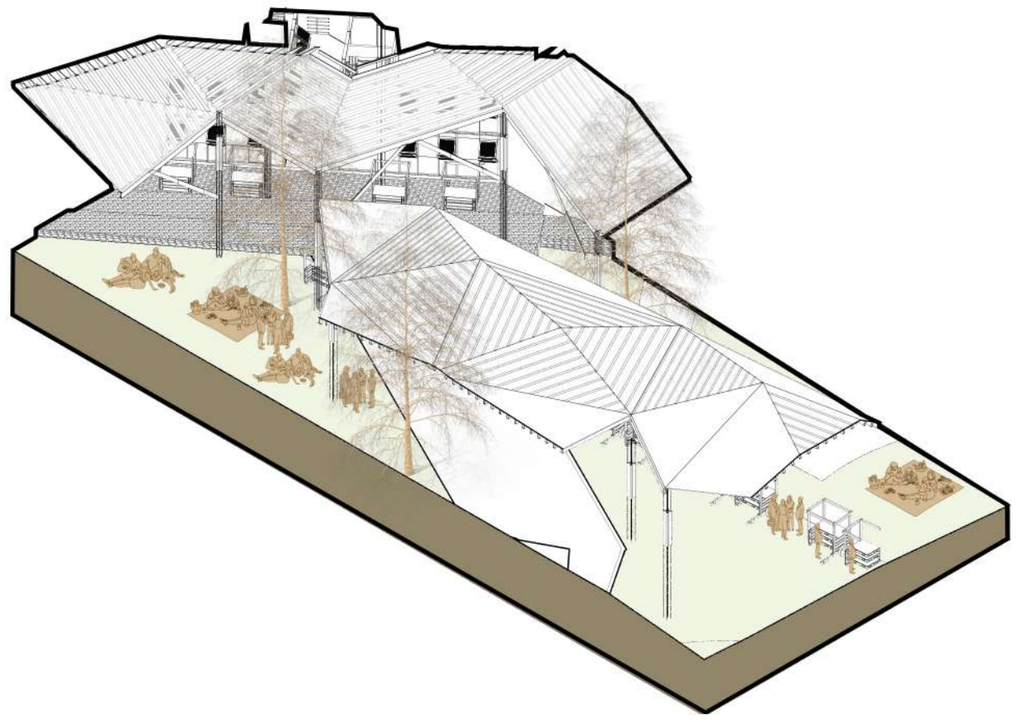
❶ SINGLE CANOPIES

The single canopies or roofs are placed around the market scheme in order to allow traders and vendors to occupy the park and sell their items, whilst being away from the main market canopy. The single canopies act as trees spread around the context providing shelter and shading and blend in with the surrounding vegetation.



❷ PROGRAM CANOPIES

Program canopies or roofs are placed within the park area and are used to highlight public gathering areas such as the public well and the natural ampitheatre. These elements act as a way of being a sign in the terrain that directs visitors to specific activities or programs, whilst maintaining the visual aesthetic of the scheme.

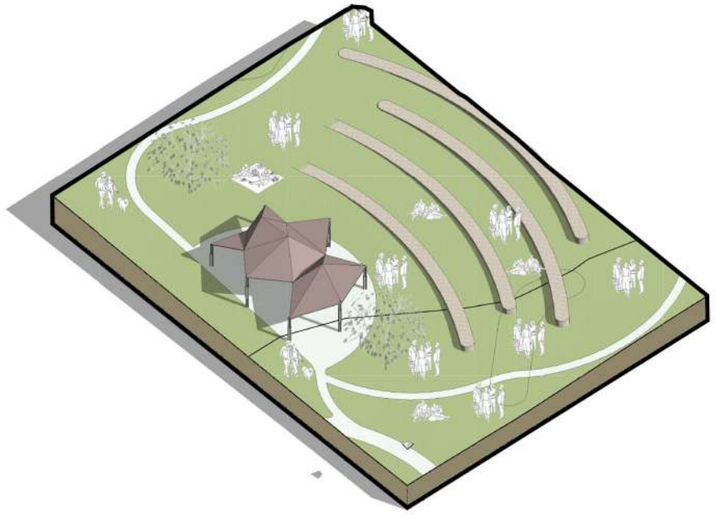


❸ MARKET CANOPIES

The market canopies or roofs act as the main feauture within the scheme and provide shelter for the surrounding market goers and informal traders. The market canopies also occupy the periphery of the scheme along with the areas in which mobile traders occupy, allowing the main canopies of the market to stretch and expand into the landscape. This strategy allows traders who cannot afford to be stationed in the main structure to still have an opportunity to place themselves within the park .

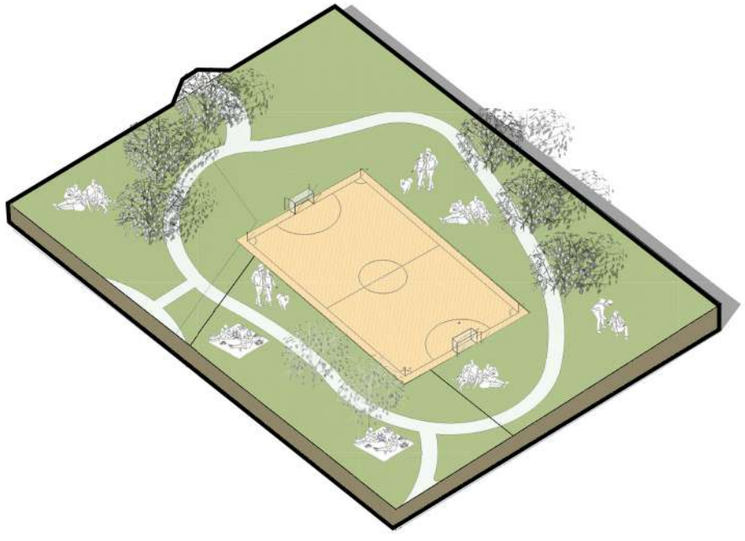
URBAN PROPOSAL

Green area and Park Spaces



NATURAL AMPITHEATRE

The natural ampitheatre allows community members and park or market goers to enjoy different sorts of entertainment whilst sitting within the landscape. The ampitheatre is constructed out of naturally found stone, making seats that cascade in the landscape.

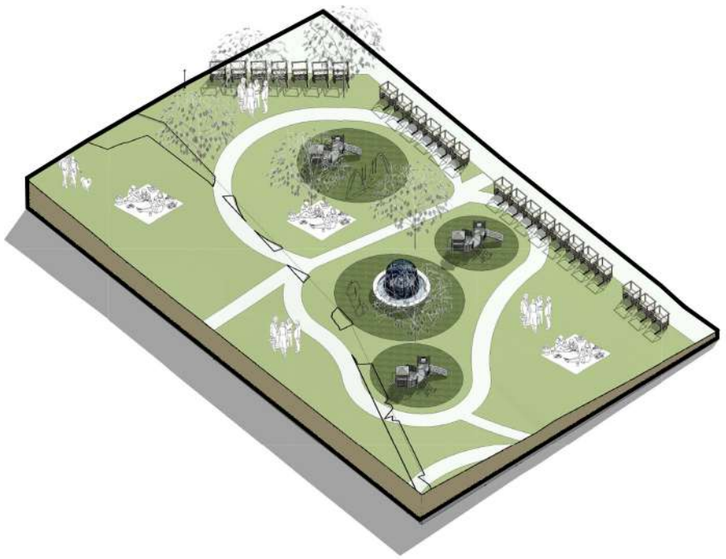


FIVE -A -SIDE FOOTBALL PITCH

The 5 A-side- football pitch allows community members to take part in different activities and build relationships within this part of the city and park. Social football is seen as a major bonding activity within Mbare, therefore this feature enables and boosts this aspect of the community.

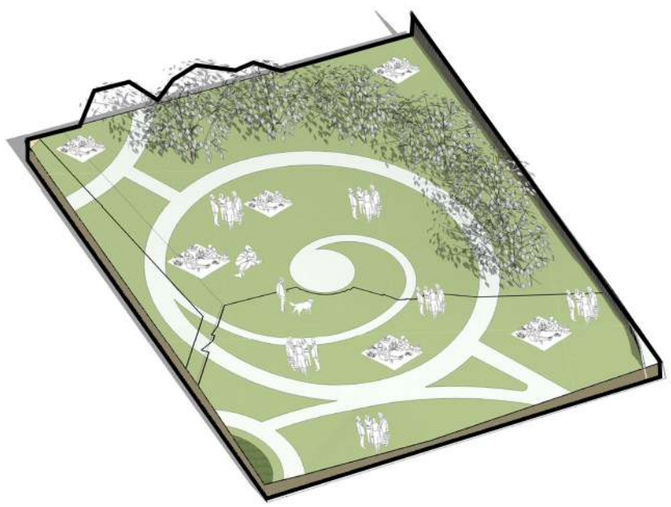
COMMUNITY GARDEN / CO-OPS

The community garden and co-ops allow members of the Mbare community to grow their own produce and not completely rely on farmers who provide produce to sell.The addition of these community gardens also allows the creation of skill and talents that could lead to the



PLAYGROUND AREAS

The Playground areas sit adjacent to the market which allows children visiting the market to find areas to play within. These playground areas also offer different age groups within the community a chance to bond, in what is usually seen as a highly contested and political area.



SOCIAL OPEN FIELD AREAS

The open fields within the scheme allow market goers and park goers to enjoy casual activities such as picnics, play or informal meetings. These social spaces create a feeling of safety to what is usually taken as a very dangerous site within Mbare.

PUBLIC WELL

The public well allows members of the community to collect washing or drinking water within the park area. The public well starts to become an area where new connections can be made within the community as well as well as an area to partake in conversation

SITE PLAN

1. Mupedzanhamo Sub-market
2. Mbare Musika Sub-market
3. Mbare Magaba Sub-market
4. Public Open recreational space
5. Playground
6. Public Natural Ampitheatre
7. Public Five A-side pitch
8. Community Co-op
9. Public Well
10. Sculpture Garden
11. Public Ablutions
12. Public Parking
13. Future Industrial Development Area
14. Future Housing Development Area
15. Mashawasha Housing (Existing)
16. Mbare Cemetary
17. Mbare Matapi Housing (Existing)

Scale @ A0 sheet

SITE PLAN

KEY

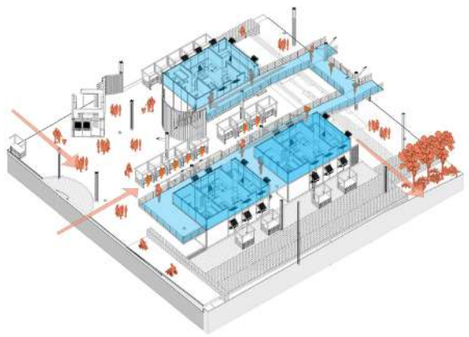
1. Mupedzanhamo Sub-Market **2.** Mbare Musika Sub-Market **3.** Mbare Magaba Sub-Market **4.** Public Open Recreational Space **5.** Playground **6.** Public Natural Ampitheatre

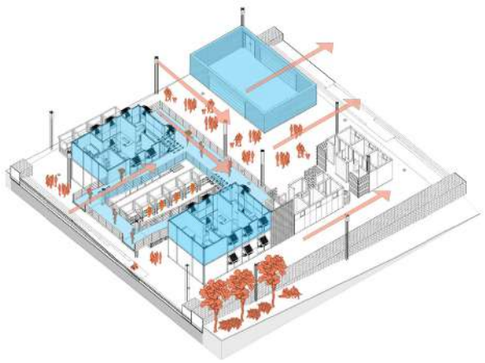
7. Public Five A-side pitch **8.** Community Co-op **9.** Public Well **10.** Sculpture Garden

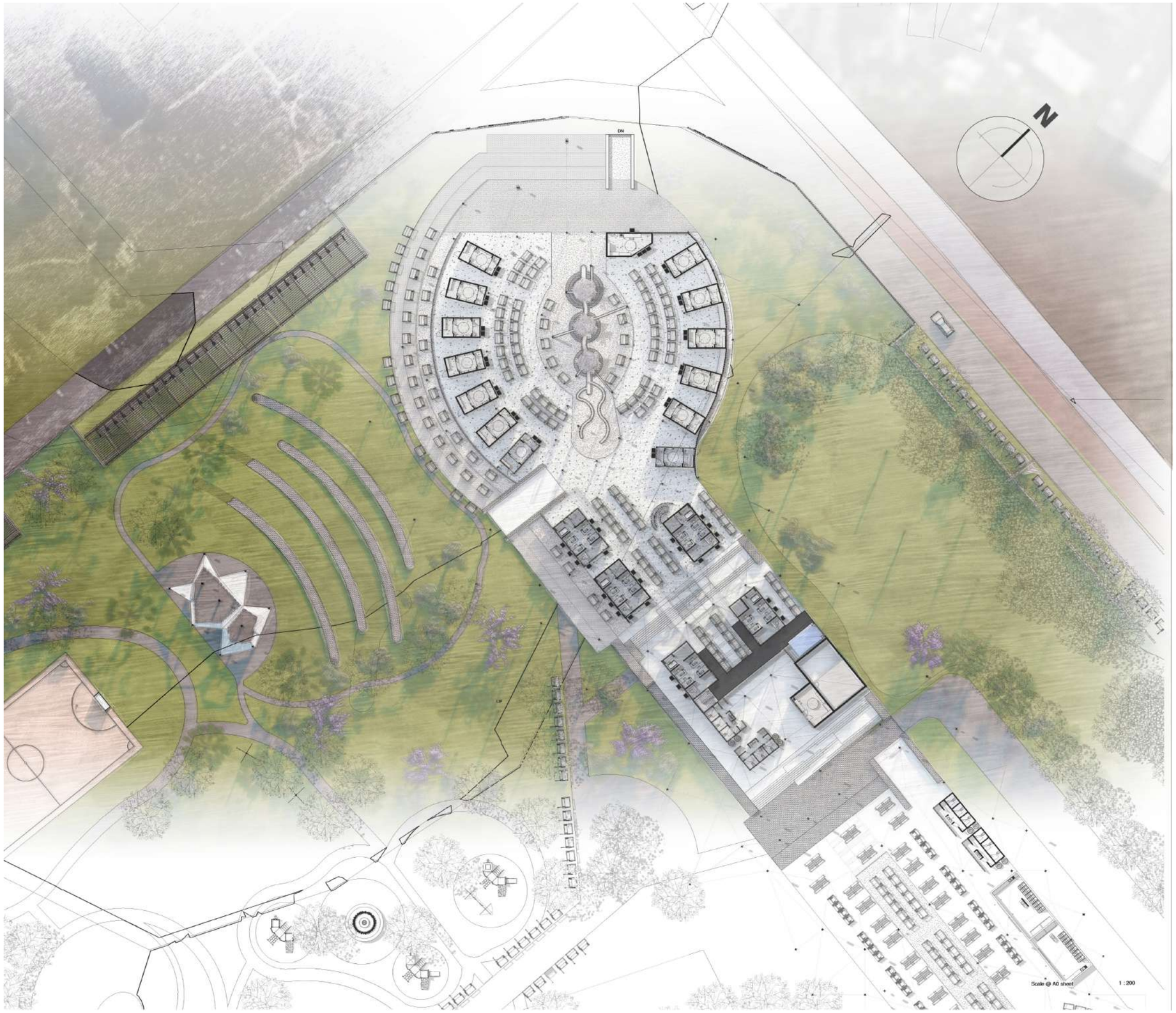
11. Public Ablution **12.** Public Parking **13.** Future Industrial Development Area **14.** Future Housing Development Area

15. Mashawasha Housing (Existing) **16.** Mbare Cemetary **17.** Mbare Matapi Housing (Existing)

MUPEDZANHAMO LINKING MARKET GROUND FLOOR



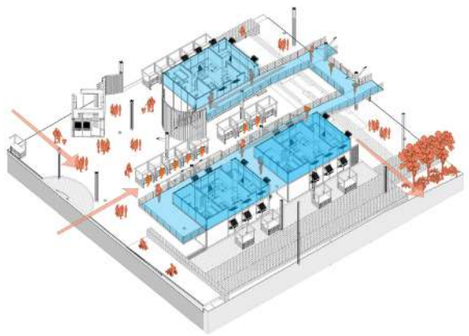




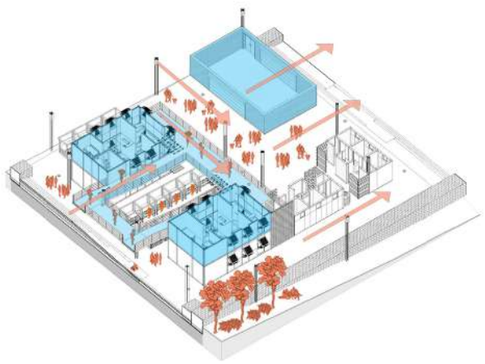
MUPEDZANHAMO LINKING MARKET GROUND FLOOR

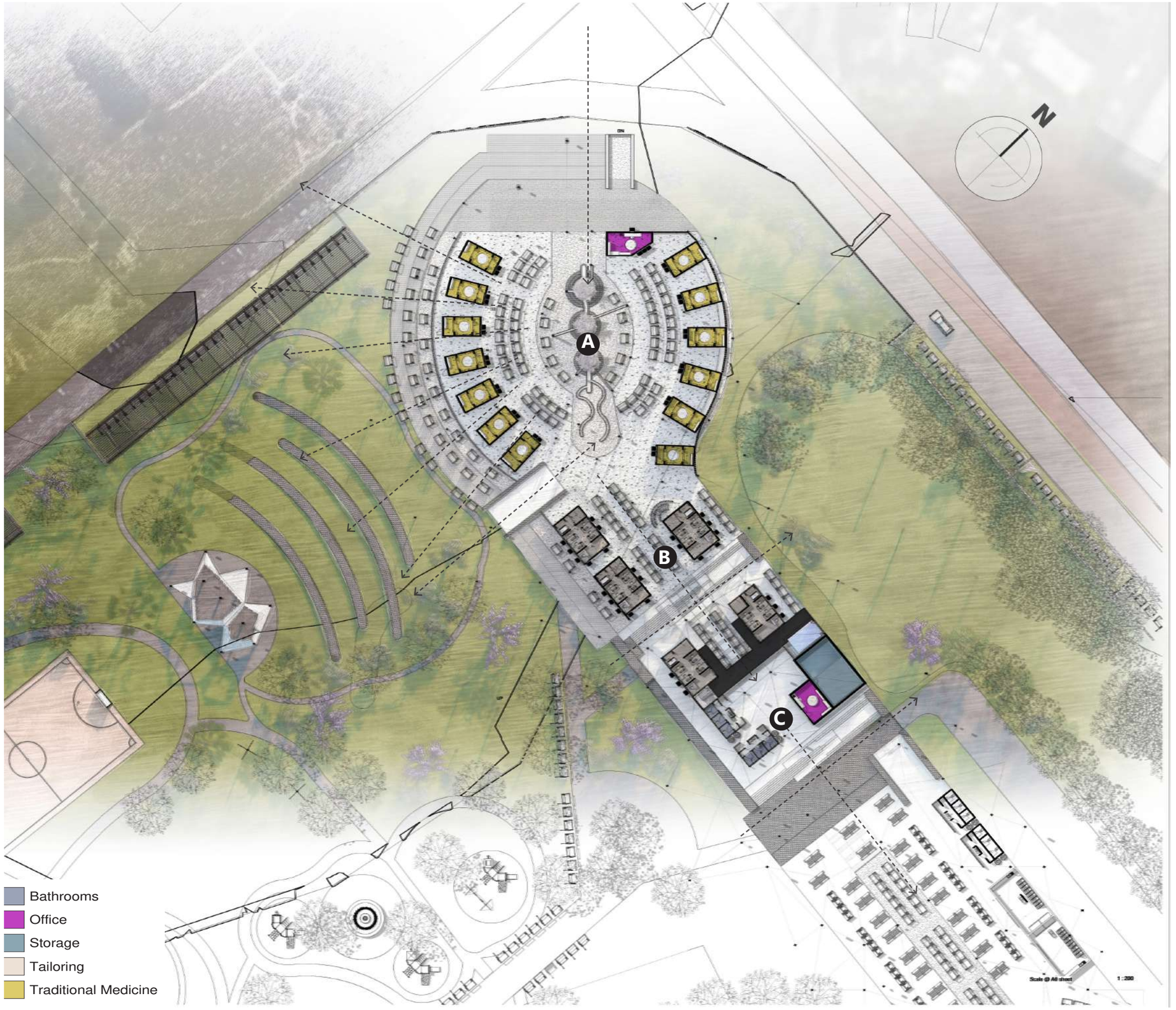
A

B



C





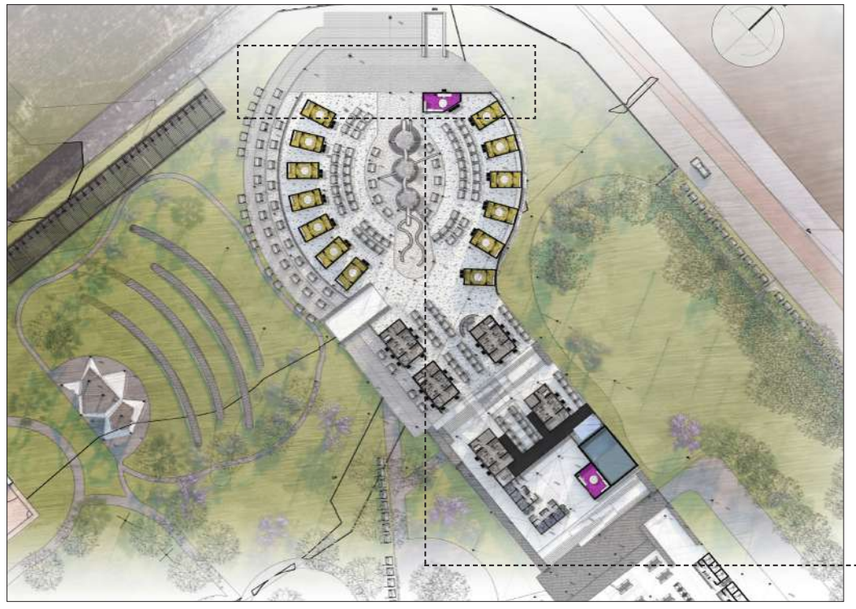
ENTRY

Scale @ A0 sheet : 25


EXIT

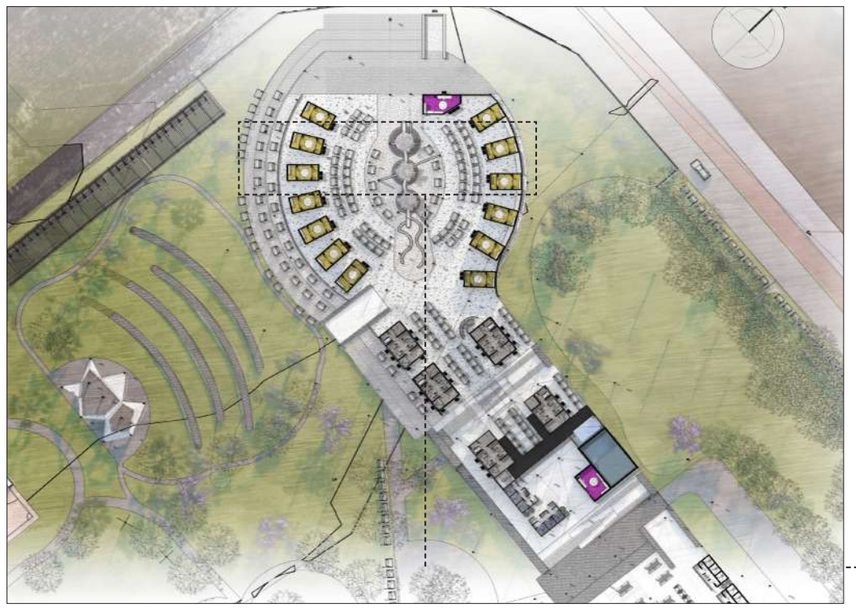
MOVEMENT + DAILY CYCLE

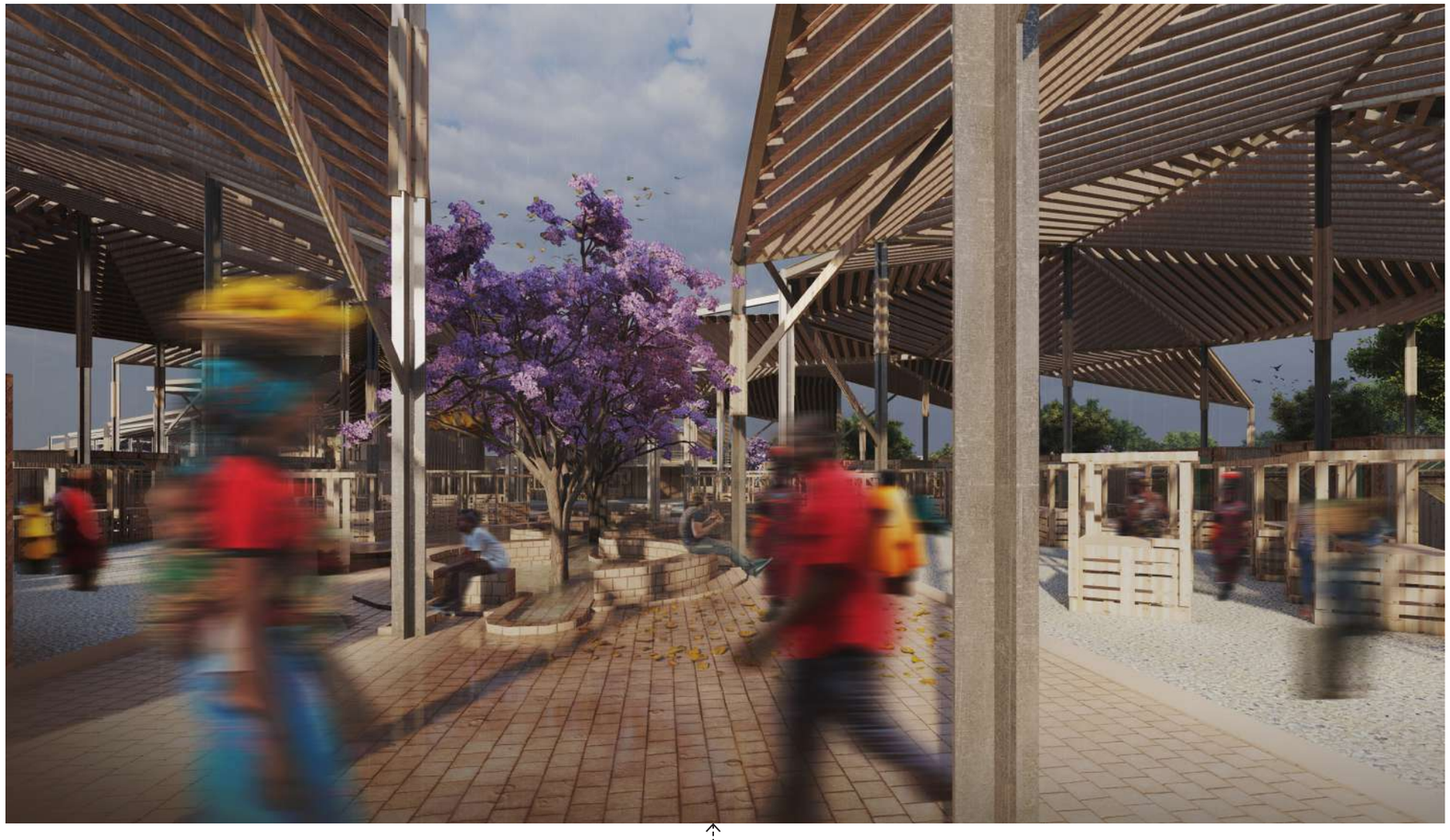
The mupedzanhamo market consists of clothing vendor stalls set out in a radial pattern that brings the user into the market and allows them to move smoothly through it with ablutions being located along this market path and open to the surrounding context.



MOVEMENT + DAILY CYCLE

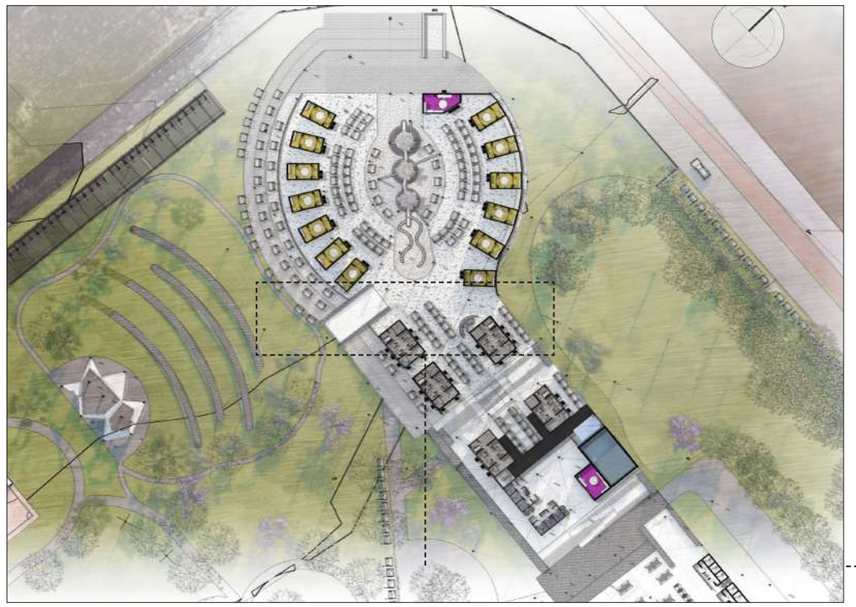
The mupedzanhamo market consists of clothing vendor stalls set out in a radial pattern that brings the user into the market and allows them to move smoothly through it with ablutions being located along this market path and open to the surrounding context.





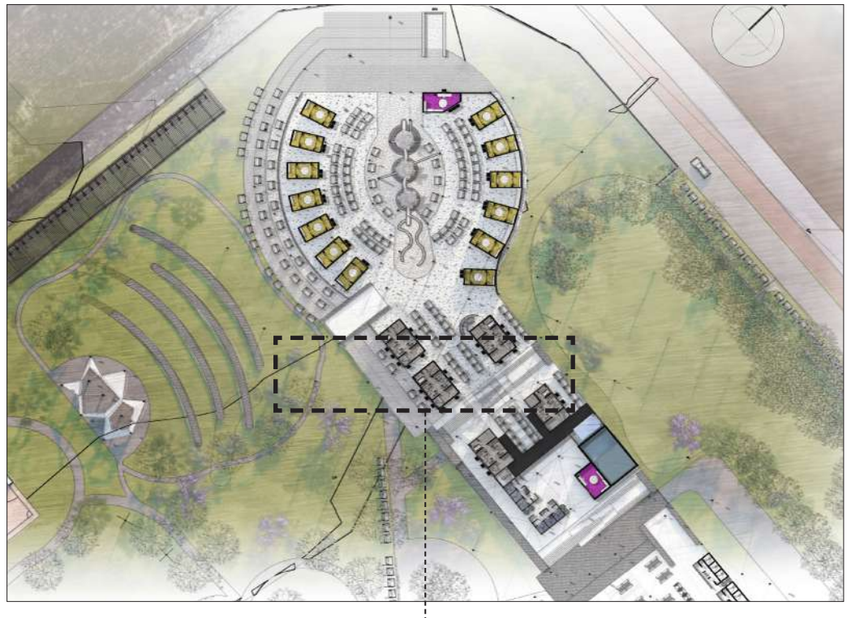
MOVEMENT + DAILY CYCLE

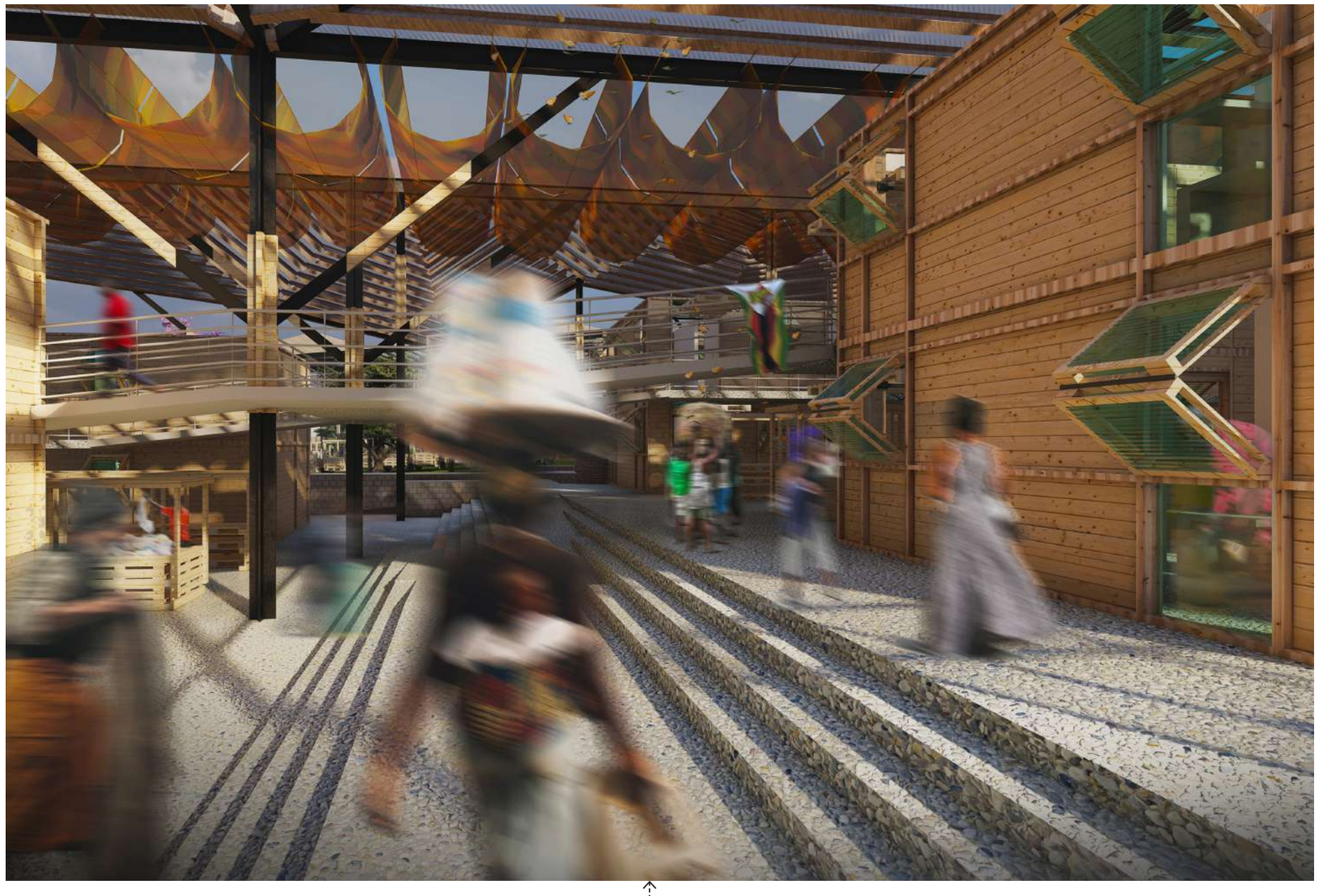
The mupedzanhamo market consists of clothing vendor stalls set out in a radial pattern that brings the user into the market and allows them to move smoothly through it with ablutions being located along this market path and open to the surrounding context.



MOVEMENT + DAILY CYCLE

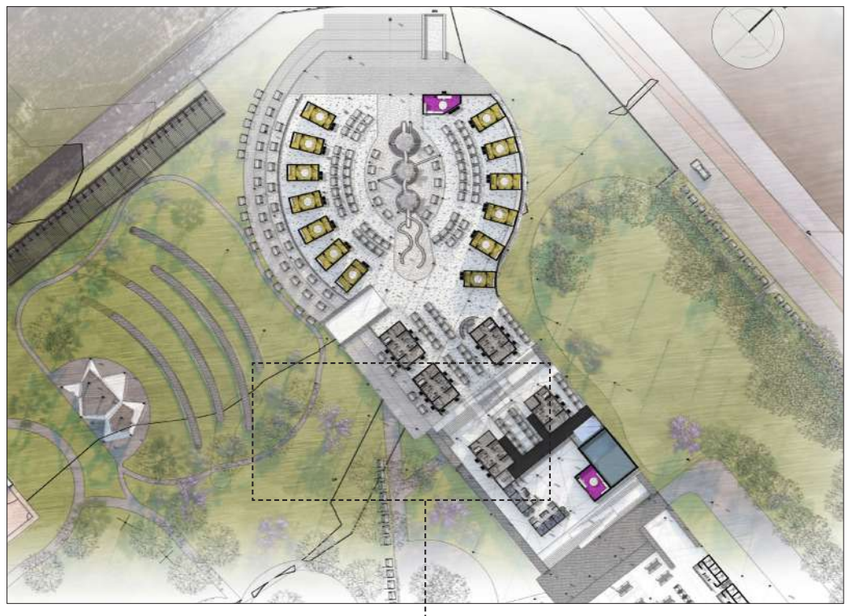
The mupedzanhamo market consists of clothing vendor stalls set out in a radial pattern that brings the user into the market and allows them to move smoothly through it with ablutions being located along this market path and open to the surrounding context.



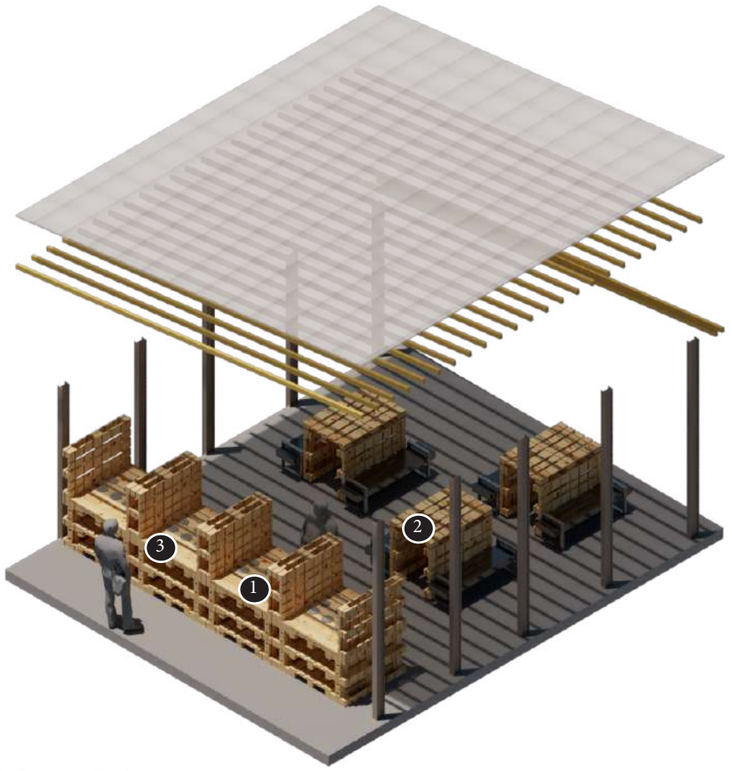


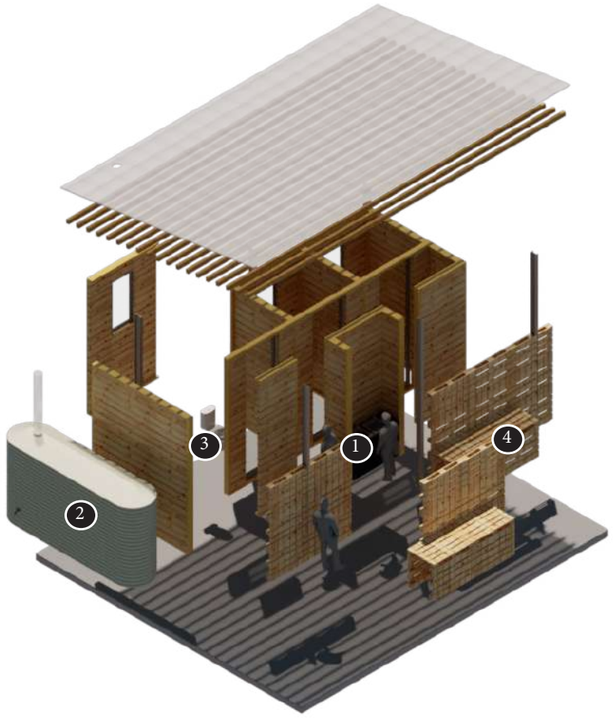
MOVEMENT + DAILY CYCLE

The mupedzanhamo market consists of clothing vendor stalls set out in a radial pattern that brings the user into the market and allows them to move smoothly through it with ablutions being located along this market path and open to the surrounding context.



MODULES
Moving parts/satellites.





STALL SATELLITE

The vendors within the context of Mbare largely rely on the use of the stall to conduct their business, therefore when considering the economic and political instability that forces vendors to continously move within the area, it is crucial for the program to accomodate a mobile stall or satellite that can be set up anywhwere within the market and outside of it as well.

1. Table top

2. Storage compartment

3. Water/rain collection funnel

4. Hanger rail for clothing

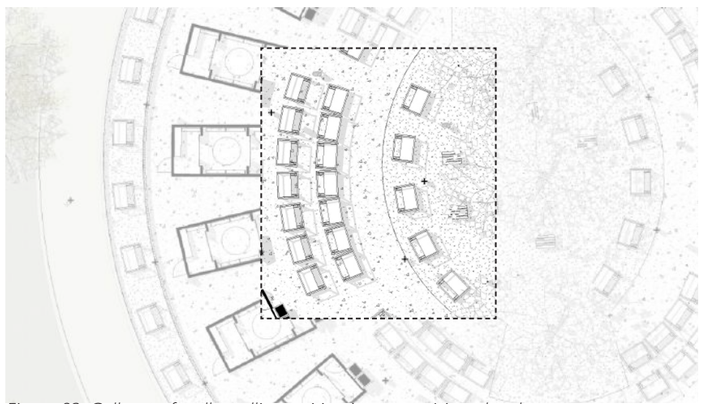


Figure 82 :Call-out of stall satellite position in current Mupedzanhamo sub-market plan drawn by author, 2022.

COOKING SATELLITE

The cooking stall is an important utility and part of the program within the informal context of Mbare and particularly in the context of Mbare Musika. Creating a cooking module or satellite that can be easily constructed through upcycled pallet wood and steel members allows the vendors from the Mbare Musika market to still earn revenue even when migrated to a different location. The cooking stall can be assembled from one pallet unit, made up of three to four pallets, to a much larger multi-pallet unit as shown above.

1. Cooking top

2. Customer pallet seating

3. Cooking top partition

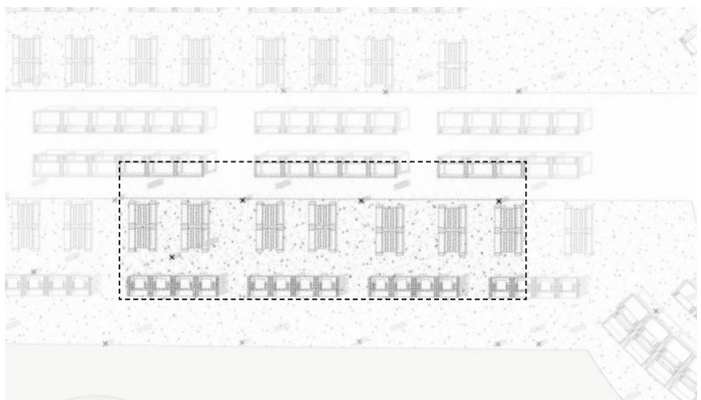


Figure 83 :Call-out of cooking satellite position in current Mbare musika sub-market plan drawn by author, 2022.

ABLUTION SATELLITE

A major issue and concern within the informal context of Mbare is the lack of ablution facilities amongst all the existing informal markets.The ablution satellite/module allows the construction of this structure around different parts of the new proposed market and the existing one, using pallet wood , steel and concrete as well as having a facility that collects and distributes rain water to run the ablutions.

1. Washing basin

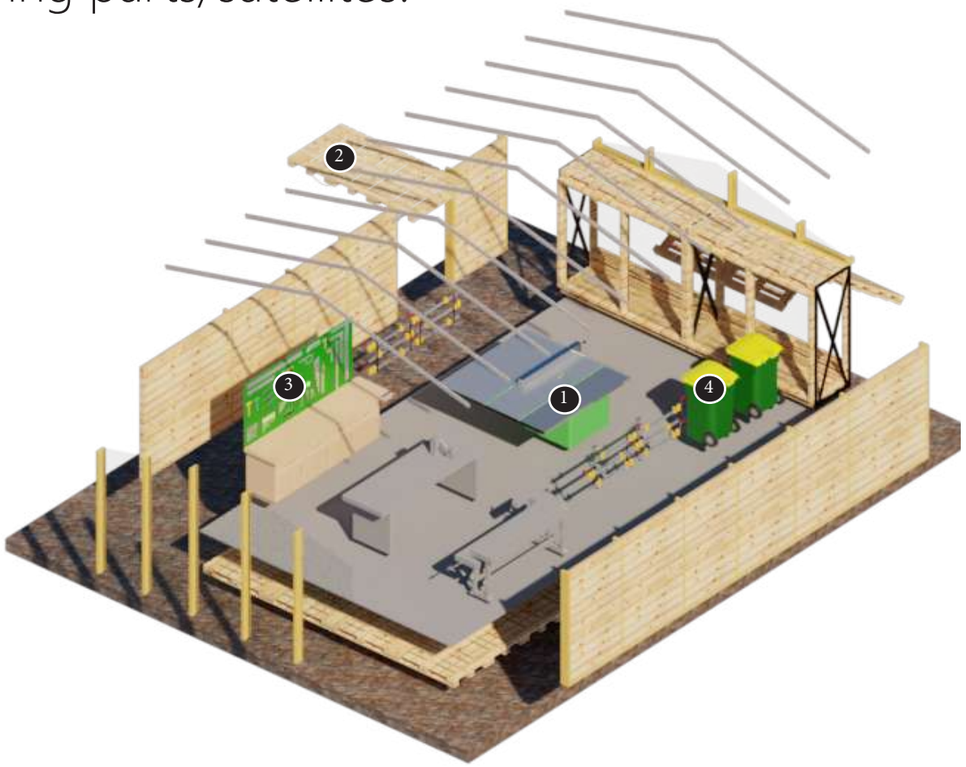
2. Water collection and distribution tank

3. Toilets

4. Ablution block pallet partition wall

Figure 84 :Call-out of ablution satellite position in current Mupedzanhamo sub-market plan drawn by author, 2022.

MODULES
Moving parts/satellites.



WORKSHOP SATELLITE

The Magaba area within the informal context of Mbare will benefit greatly from the introduction of a workshop satellite as the area is currently lacking with regard to this type of infrastructure. This workshop prototype/satellite can be used , constructed and adapted within the existing Magaba area and the newly proposed market program in order to make the work cycle of the tradesmen in this area much easier. The satellite construction will mainly consist of pallet wood, concrete or brick base as well as recycled steel in order to make the construction process easier to build for the workers.

1. Woodworking Table

2. Swinging door for ventilation

3. Wall for Tools

4. Bins for offcuts

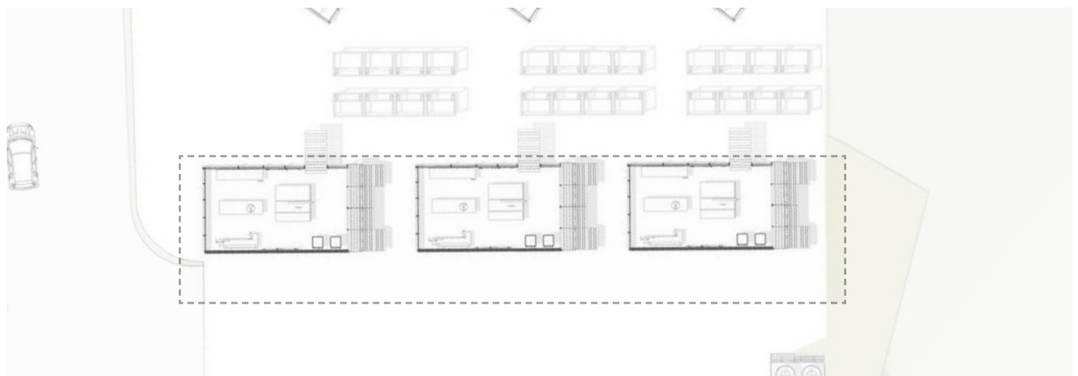
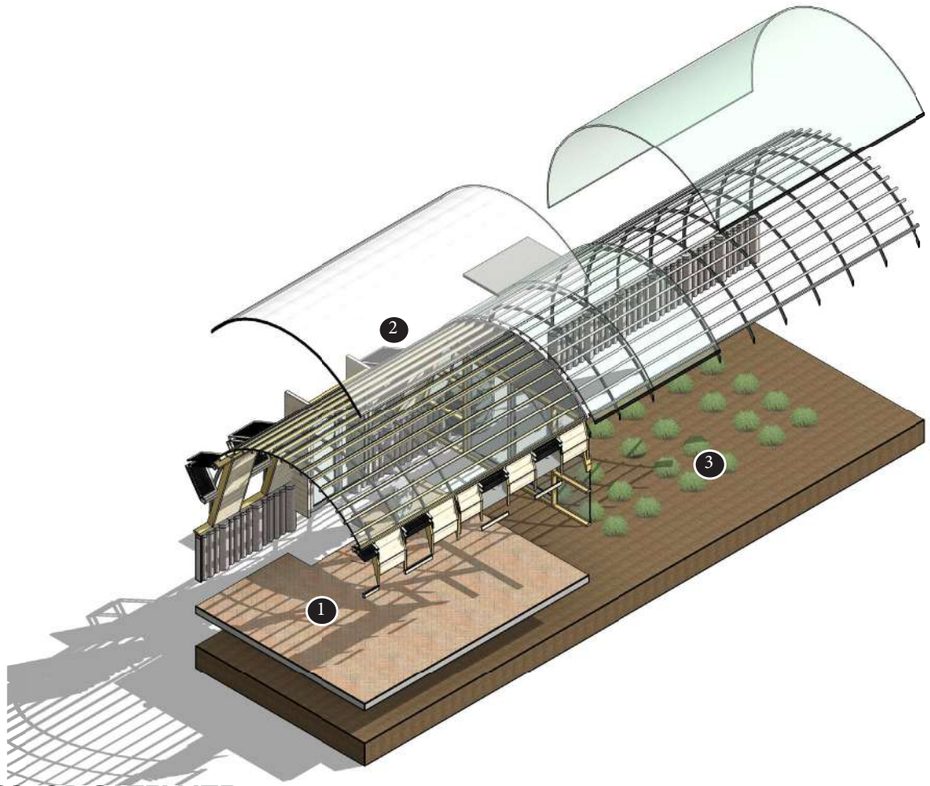


Figure 85: Call-out of workshop satellite position in current Mbare magaba sub-market plan drawn by author, 2022.



CO-OP SATELLITE

This Co-op iteration is taken from the Lim'uphile co-op designed and built by Collectif Sega and previously analysed within this text. This co-op satellite opens up the opportunity for the creation of a training and growing of vegetables area allocation close to the Mbare Musika market space along with the new proposal. The addition of this strcucture allows occupants of the market and the community to capitalise on the existing cycle that brings revenue into the Mbare Musika vegetable market by becoming a part of it and also using this facility to make a living beyond relying on external farmers..

1. Multipurpose Hall area

2. Transparent clear roofing

3. Plant and vegetable nursery

Figure 86: Call-out of co-op satellite position in current Mbare musika sub-market plan drawn by author, 2022.

IMAGINED SECTIONS THROUGH SDP

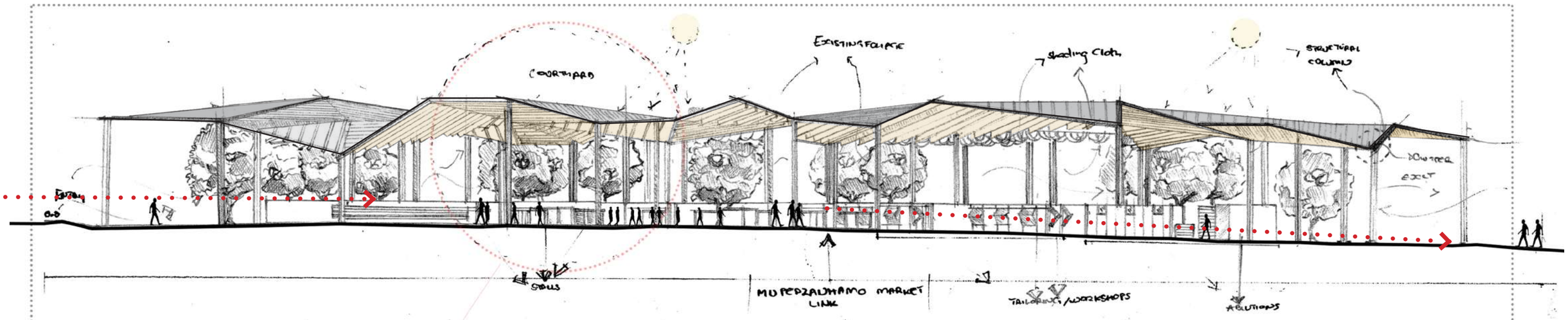
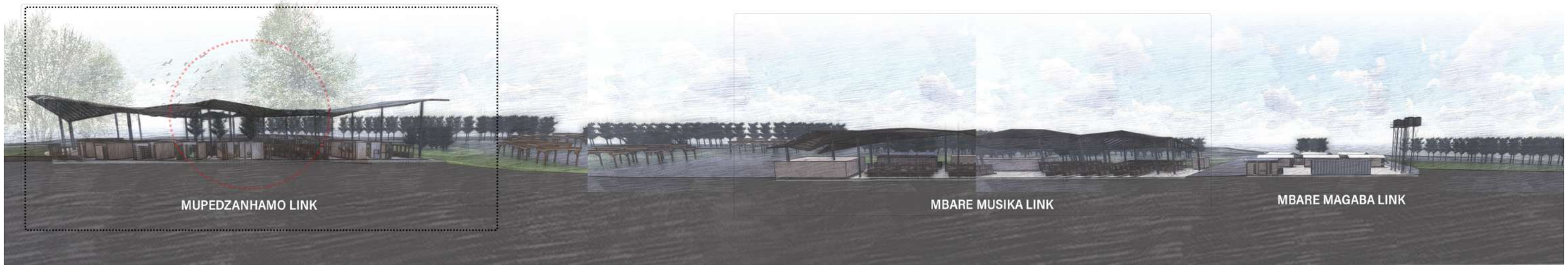


Figure 87: Call-out of Mupedzanhamo sub-market section cut, highlighting entrance, position in terrain , light and ventilation strategies drawn by author, 2022.



IMAGINED SECTIONS THROUGH SDP

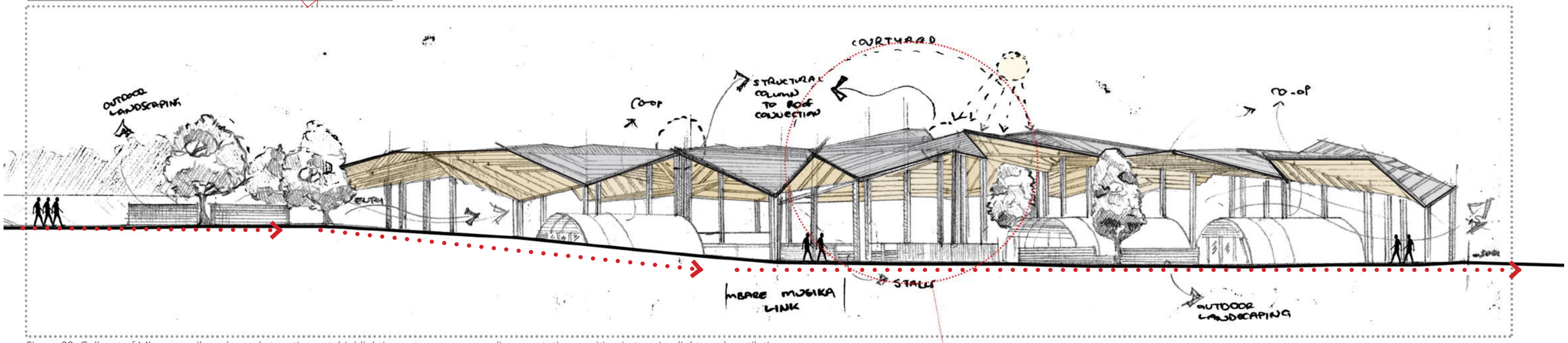
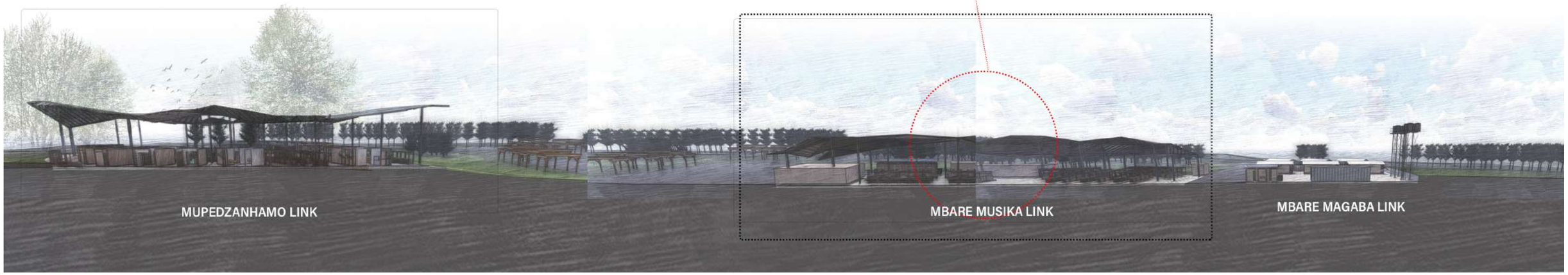


Figure 88: Call-out of Mbare musika sub-market section cut, highlighting entrance, surrounding vegetation, position in terrain , light, and ventilation strategies drawn by author, 2022.



IMAGINED SECTIONS THROUGH SDP

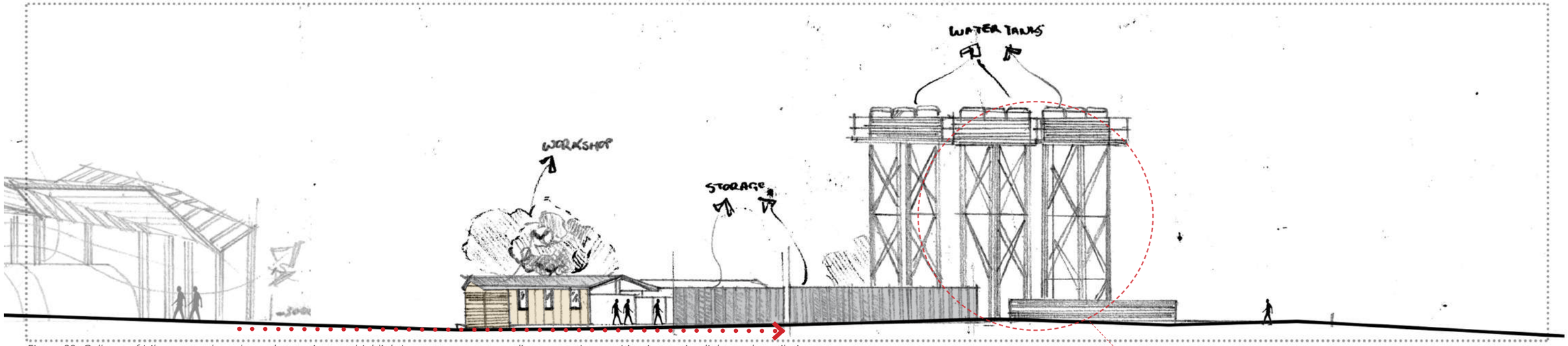
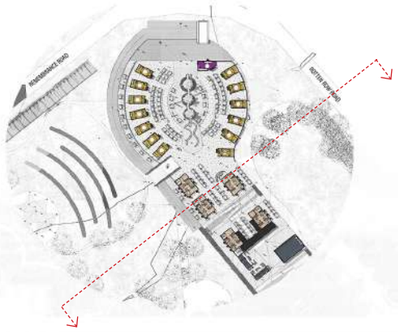
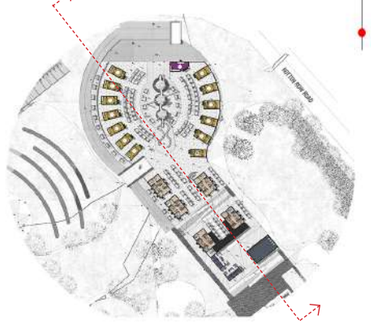


Figure 89: Call-out of Mbare magaba sub-market section cut, highlighting entrance, surrounding vegetation, position in terrain , light, and ventilation strategies drawn by author, 2022.

FINAL SECTION CUT THROUGH MARKET





FINAL MARKET ELEVATIONS

7

CONCLUDING THOUGHTS

This design proposal tackles the beginning of a long-term proposal that sees the issues present in Mbare tackled in phases. The first phase of this proposal being the creation of sustainable infrastructure for the existing informal sector, whilst the following phases tackle a larger site development plan that sees the creation of affordable housing for the community along with the implementation of industrial and formal marketplaces within this scheme. This scheme would take over a decade within the analysed economic climate, but this design dissertation seeks to create or highlight the 'first steps' in a brighter scheme for the Mbare area.

The issue of infrastructure for the informal sector of this location goes beyond the design of a structure or prototype and this has been highlighted through the analysis done in the prior chapters of this document. This issue bases itself in the land ownership struggle and political violence faced by the informal trader and vendor, therefore this realization highlights that there is nothing to romanticize about the current condition, but all the Architect can do is open a dialogue that seeks to create areas where this sector is empowered through space, collaboration, and tools (in this instance those tools being reliable 'infrastructure).'

As this design develops further, the architectural intention behind this dissertation will make itself clearer, through the finalization of plans, models, details, and visualisations.

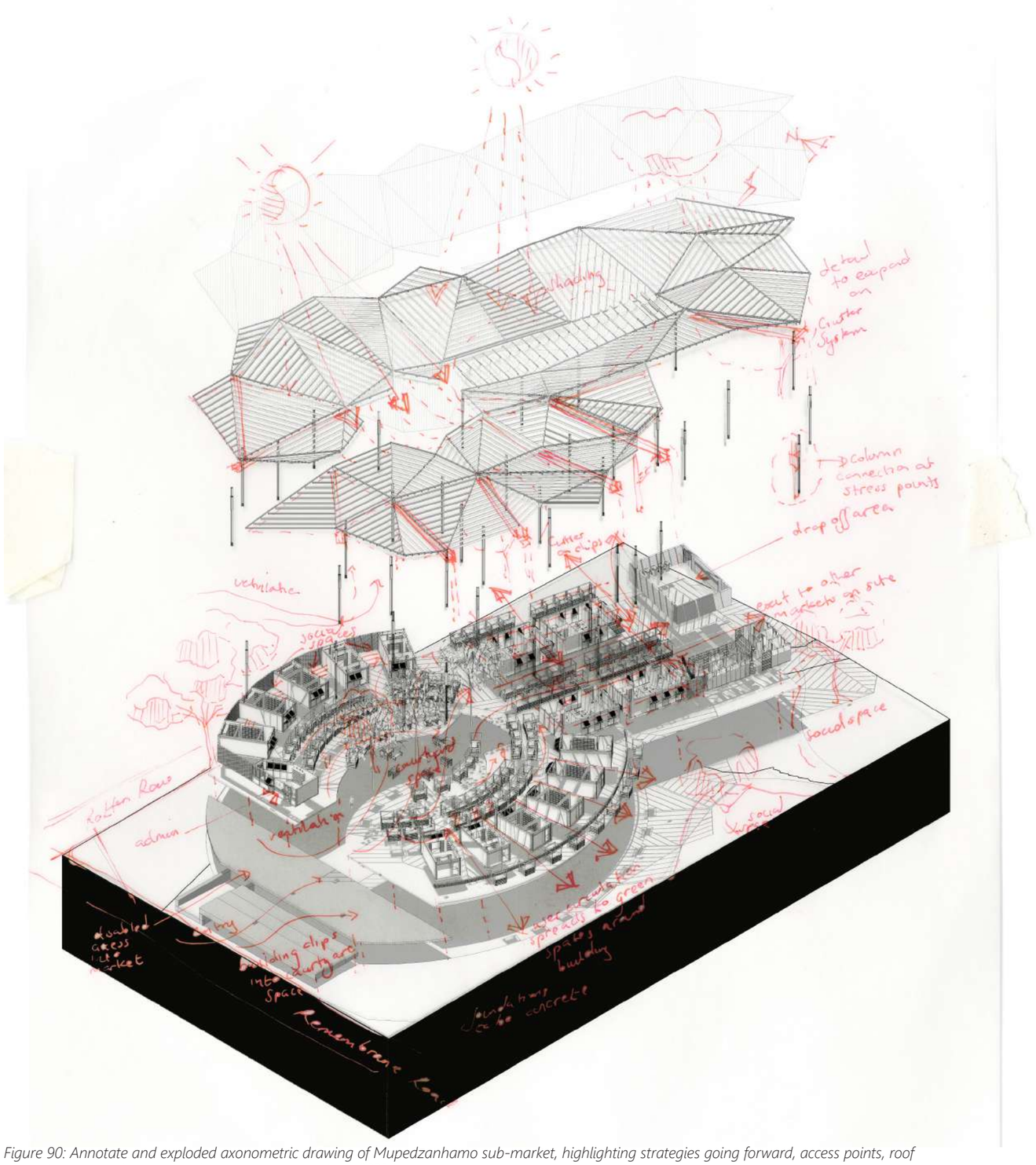


Figure 90: Annotate and exploded axonometric drawing of Mupedzanhamo sub-market, highlighting strategies going forward, access points, roof geometry, and drainage consolidation drawn by author, 2022.

8

APPENDIX

This section of the document highlights all of the steps taken when building the prototypes found within the technology investigation of this document. These steps are shown and annotated in depth in order to build a dialogue between the designer and the amateur builder. A dialogue around the materials, tools and steps needed to construct these prototypes.

This exercise was extremely useful as it allowed me to understand the time and resources needed to build a robust structure that can be used within this informal setting, whilst completely relying on materials found within this context.

This exercise also allowed me to weigh the pros and cons of the proposed building strategy and what sort of measures one would need to take to create a sustainable model this way. Strategies such as waterproofing the pallet wood as well as makinng sure the wooden prototypes are elevated from the ground.

VENDOR STALL PROTOTYPE

OBJECTIVES

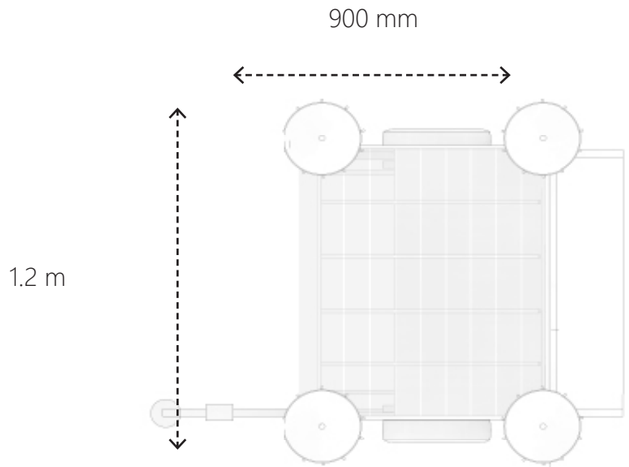
WATER COLLECTION

SHELTER

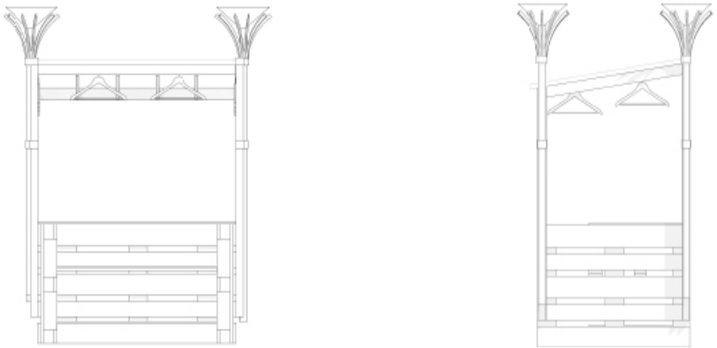
STORAGE

STABILITY

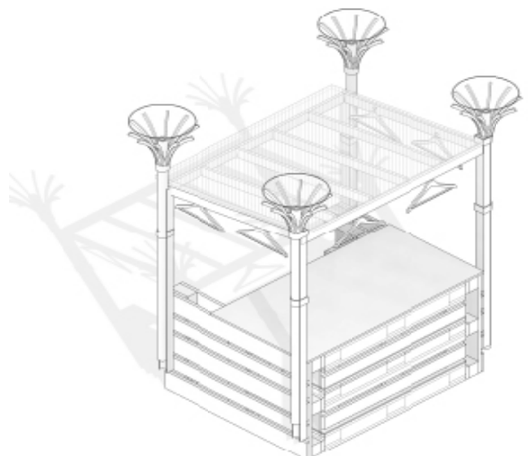
AFFORDABILITY



PLAN



ELEVATIONS



AXONOMETRIC

ANNOTATIONS

1. Reusable Pallets: Pallets are a material that is widely available to most vendors that work within this context therefore construction will not be costly, whilst also having the added advantage of the stability that the pallet provides.
2.Rain Collection: Most vendors face the issue of not having water readily available to carry out tasks such as cleaning stall space or even running their businesses, therefore a water collection funnel that can be constructed from plastic tubes tied to the roof can be of great assistance.
3.Storage: Storage is one of the most important needs for vendors within this context of Mbare, therefore this prototype comes with storage that is built within the ridges of the pallet that makes the form.
4.Roofing: In order to keep the wood that is used to create the stall dry along with the vendors and occupants, it is important to provide roofing, this can be constructed using transparent corrugated sheeting or canvas/cloth.

TOOL SELECTION

1. SAW : The saw was used through out these building steps in order to cut the longer booard pieces into appropriate lengths for the stall. The saw is widely available and cheap therefore it is a good choice for the amateur builder.

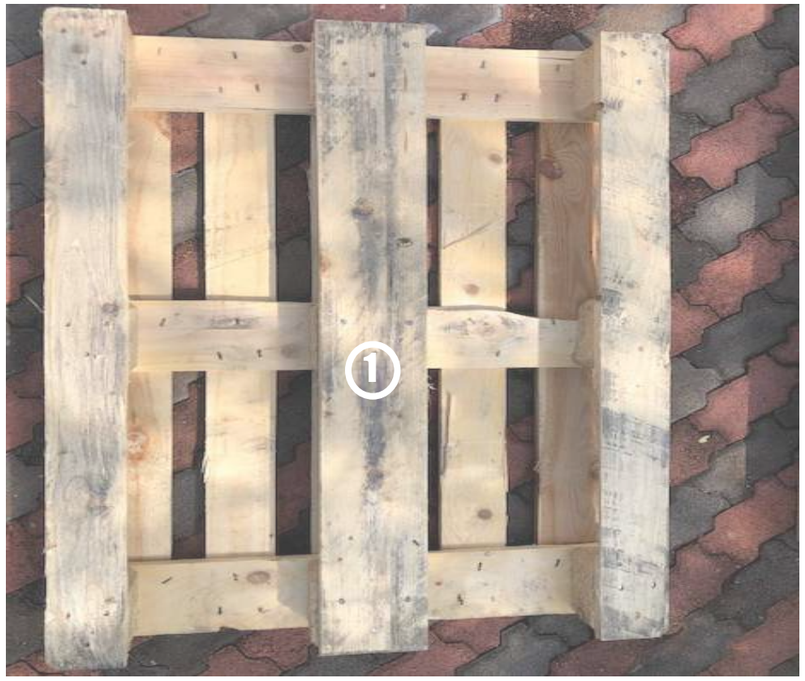
2. BALL - PEEN HAMMER: The ball-peen hammer was used for the thinner wooden boards that would not need large screws for connections therefore this hammer would work well for joint connection

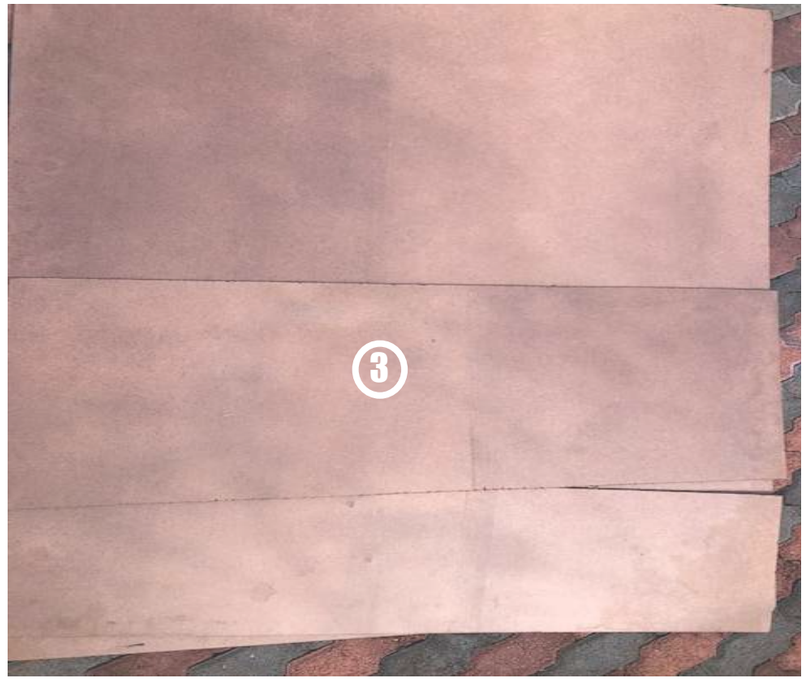
3. TACK HAMMER: The tack hammer helped me get into the tighter spaces between the pallets in order to hammer in nails during the construction of the stall.

4. ELECTRICIAN HAMMER : The electrician hammer is the hammer that I used the most during construction as it allowed me to create crew held joints effeciently and quickly as it covers a significant surface area when hammering and can take more force.

5. SAFETY GLOVES : The safety gloves were extremely important when hammering as I am an amateur therefore I did my best not to injure myself during the construction process.

MATERIALS



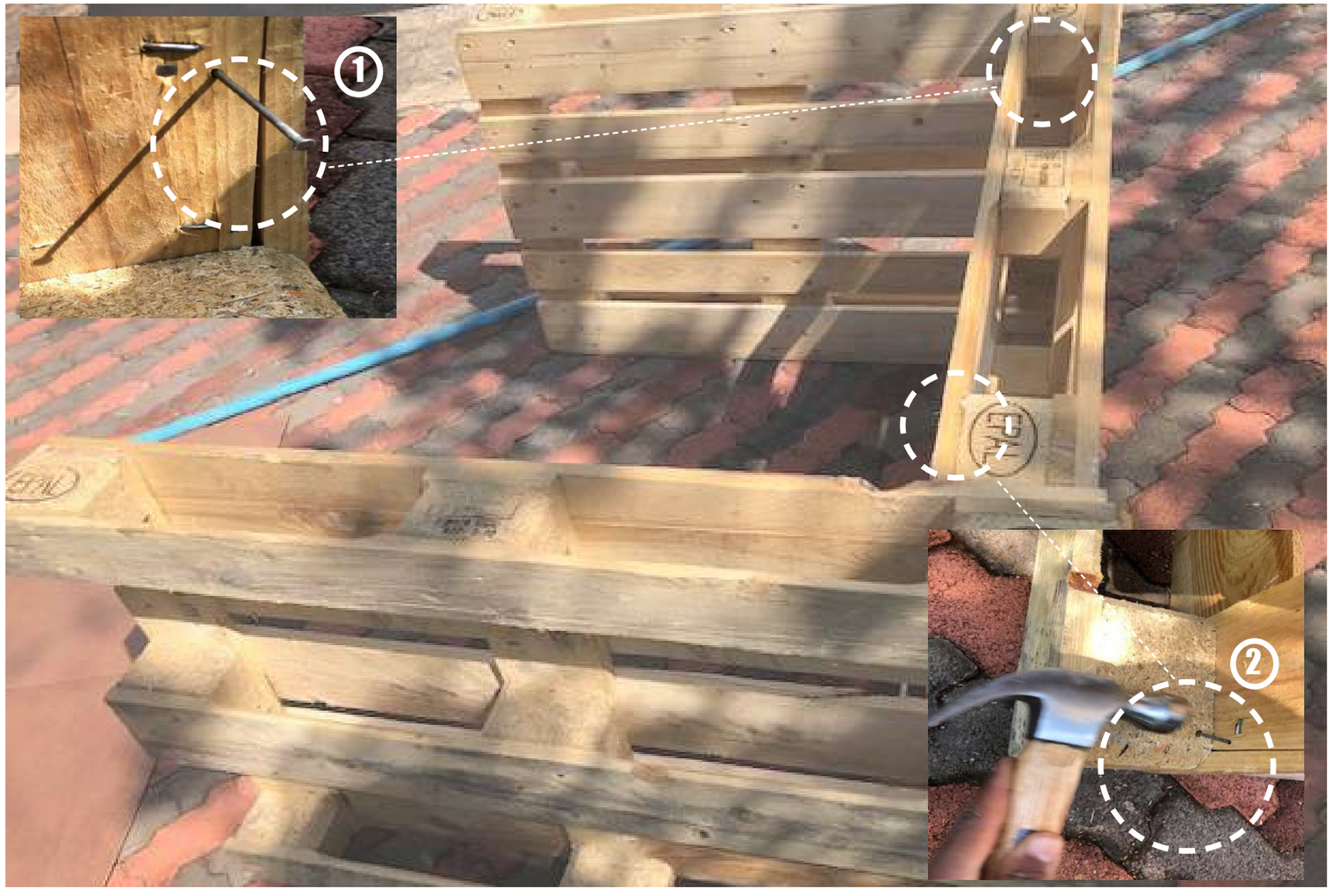


1. PALLETS (X3) : Wooden pallets were used to construct the base and the support for the vendor stall, as shown in the previous deisgn and this was key as the weight of the pallets would assist with the stability of the stalls. The pallets were also sourced from the context as they were the most widely available materials.

2. LOOSE PLANKS (X10) : The loose planks would be used to create the columns and beams that would support the roofing element of the stall as well as carry the water filtration pipes that would be attached to the side of the stall acting as a water collection mechanism. The planks were the result of stripping a fourth pallet therefore all the pieces were roughly the same thickness and length.

3. SOFT WOOD BOARDS : The soft wood boards would serve as a counter top for the vendor as well as a roofing element to protect vendors from the rain. These boards were affordable and also found in the same area as the planks and pallets. The board measured at 1.5m x 1.2m

BUILDING A FRAME



1. NAIL PLACEMENT ON CONNECTION POINTS: In order to create a stable connection and joint between the pallets I used nails to secure them. The nail connection would be placed on the upper, middle and lower parts of the pallets in order to create stability.

2. HAMMERING CONNECTIONS : The nails were hammered in using an electrician's hammer for precision and also as a way of showcasing the way to create connectioons using widely available tools and materials. During the connection process I did not use a drill because of the cost of the machinery as this project stands as an 'affordable' prototype all the way to the equipment and tools used in construction.

BUILDING A FRAME

1. NAIL PLACEMENT ON CONNECTION POINTS: In order to create a stable connection and joint between the pallets I used nails to secure them. The nail connection would be placed on the upper, middle and lower parts of the pallets in order to create stability.

2. HAMMERING CONNECTIONS : The nails were hammered in using an electrician's hammer for precision and also as a way of showcasing the way to create connections using widely available tools and materials. During the connection process I did not use a drill because of the cost of the machinery as this project stands as an 'affordable' prototype all the way to the equipment and tools used in construction.

TABLE TOP PLACEMENT

1. FINDING BOARD PLACEMENT AND SIZING : In order to start hammering the table top of the prootype stall it was important to see where the 1.2m x 500mm board would sit on the pallet face. After finding a comfortable placement I made marks that would denote where the nails would go.

2. CREATING HORIZONTAL SUPPORT FOR TOP: In order to also add stability to the board it was important to establish some sort of horizontal support for the board so that it would not depend on the edge pallet alone and not buckle from the weight of any goods being sold. One of the 10 planks was hammered into to the sides of the two side pallets at the 500mm mark and therefore the table top would rest here as well.

3. NAIL PLACEMENT ON CONNECTION POINTS : I then proceeded to hammer in nails to all the corner points and middle points that would secure the top to the pallets. The thickness of the board meant that it would require thinner nails in order to work and not crack the board.

CREATING ROOF SUPPORT

1. FINDING PLANK PLACEMENT AND MARKING : When placing the side planks that would support the roof, I used the some of the 10 planks I had collected from Mbare and marked the appropriate position on the pallet that would allow stability. Since this plank would be the front of the stall it would sit higher than the back one in order to create a successful slope for the roof to sit on and allow water runoff.

2. CREATING CONNECTION : The connections between the vertical planks and the pallets were created through hammering 3 nails into the side pallets in order to create stability , this process would be repeated for all four corners.

3. FINDING LOWER PLANK PLACEMENT TO CREATE SLOPE : The lower planks at the back of the stall would follow the same procedure as the top ones and allow the roof boarding to sit at a slope that would allow vendors to experience rain run-off and not have the weight of the rain build up on the rooof causing it to cave in.

4. CREATING CONNECTION: The connections between the vertical planks and the pallets were created through hammering 3 nails into the side pallets in order to create stability , this process would be repeated for all four corners.

PLACING ROOF

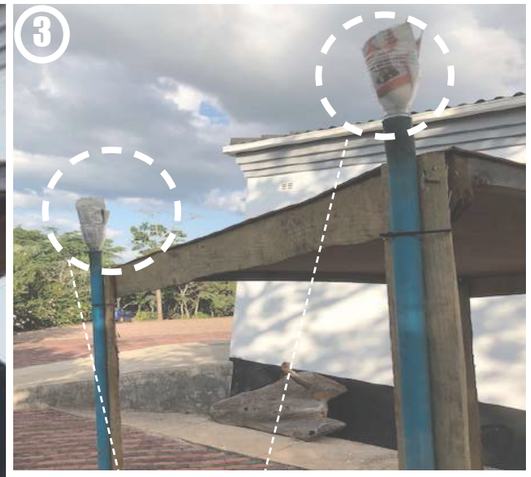
1. HORIZONTAL BEAM PLACEMENT : In order to support the placement of the roof , I used the left over pieces of wood to create horizontal beams for support and this would allow the roofing board to transfer its forces on to these pueces and not buckle under the force of weather elements.

2. CREATING CONNECTION BETWEEN HORIZONTAL SUPPORTS : All the horizontal supports were then nailed into place, and I had assistance from a friend of mine in holding one side of the beam whilst I nailed in the other side. The creation of these horizontal points contradicts some of the ways in which informal traders make their stalls as these elements are usually missing, therefore this example serves as a learning point.

3. PLACING ROOFING BOARD ON TOP OF HORIZONTAL SUPPORTS : The roofing board was then placed on top of the horzontal beam elements with an overlap happening on each side of stall. The roofing board also perfectly followed the slope created by the different lengths of the roof support , allowing rain run-off in rainy conditions.

4. CREATING CONNECTION/ PLACING ROOF DOWN: The fnal step of securing the roof was hammering the board on to the horizontal beam elements and ensuring that there was stability. During this construction process it was not necessary to add a middle beam as the span of the roof was not long enough to create a stress on the roof. A missing step and step to still add is the addition of waterproofing on the roof using a plastic that can act as a DPM.

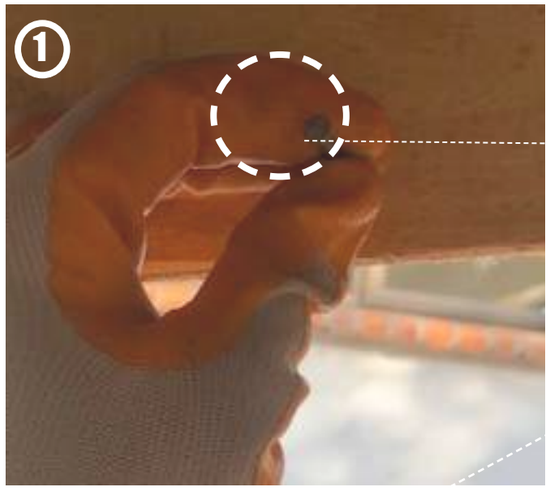
CREATING WATER COLLECTION FUNNEL



1. CREATING FUNNEL FROM PLASTIC BOTTLE : When creating the water funnels that would work as rain collection points, I used blue plastic pipes that were found within the Mbare area and a plastic water bottle. The reason for using these materials is that they are widely available therefore it makes it easier for an amateur builder or vendor to follow building instructions when attempting to build this structure.
2. CABLE TIE CONNECTION : In order to connect the pipes to the stall, I tied the plastic pipes to the side of the supporting roof elements using black cable ties, purchased from the Mbare area. In the final CAD model I designed clips that would connect the two elements but noting how these may not be largely available or accessible to the amateur builder it was important to consider an alternatives.
3. CREATE WATER FILTER USING PAPER SCRAP: When finalising the idea of the water funnel , I used a technique that I had learnt in primary education. The technique would see me using old paper or newspaper to create a filter cone that would collect any residue or dirt from splash back water that is collected in the funnel and not allow it to go into the water collection bucket at the end of the day.

All of the materials used to create this basic water filtration system are widely availble to the amateur builder or vendor therefore this prototype can be seen as accessible.

FINALISATION

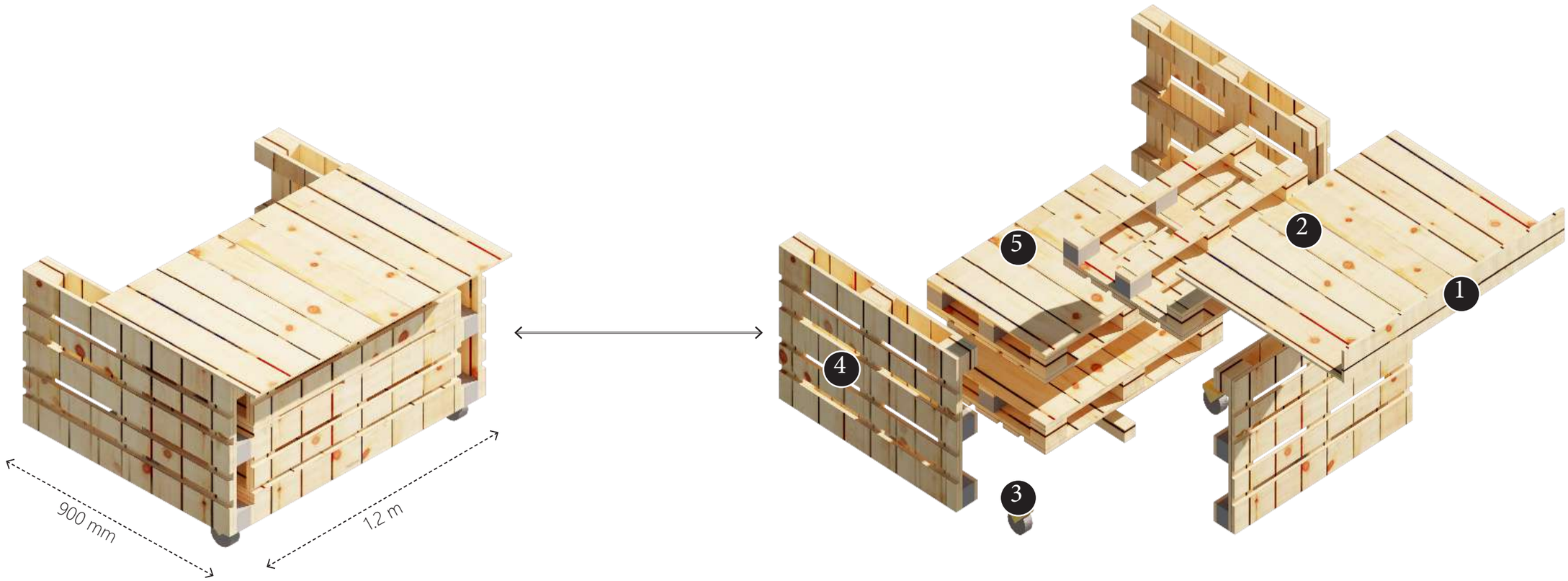


1. CREATING RAIL SYSTEM USING NAILS : In order to create an affordable low cost rail system I though that it would make the most sense to use the left over nails from the construction and hammer them into the roof beams allowing me to create hanging points. One of the thoughts behind this was the logic that using metal rails would create an additional cost that not every vendor may be able to bare after constructing the stall therefore this decision stood as a low cost alternative.
2. USING METAL WIRES AND BENDING NAILS : In order to make sure that the clothes did not fall off the nails/rails when hanging , I decided to bend the nails up in an effort to stop the force of gravity from having the clothes on the ground if bent in a different direction.

This part of the design was the last design decision made for the stationary vendor stall and through out this construction I realised how tedious the creation of these elements may be therefore this may be one of the reasons why a lot of infrastructure found within this context may be half done or delapidated.

MOBILE VENDOR STALL PART PROTOTYPE

CAD DESIGN



ANNOTATIONS

1. Reusable Pallets Handle: The handle that would be attached on to the mobile vendor stall was an important decision as this would allow the user or vendor to navigate the structure from one point to the next. It was not possible to create two handles that would attach to the back of the vendor stall because of the width therefore this was the perfect position.
2.Table Top: The table top placement was an important part and aspect of the stall design as it allows vendors to place the products on a proper display platform instead of having their products on the ground.
3 Wheels: The wheels were made from parts of trolley wheels that were found within the context and would act as the most important part of the design as this allows vendors to move around the region. The stall design consists of two side wheels and a central wheel that allows for 360 degree rotation.
4 Reusable Pallets: As shown in the CAD design above, the use of recycled pallets was an important aspect of this design as they not only provide stability but are the most widely accessible materials within this context.

This mobile vendor stall creation and prototype is a continuation of the previously designed stationary stall, with the intention of the design allowing vendors to swap the two features out depending on their different needs. The construction of this prototype was also an opportunity to see the different strategies and methods that would need to be applied in order to build a mobile stall and if an amateur builder would be able to do so.

TOOL SELECTION

1. SAFETY GLOVES : The safety gloves were extremely important when hammering as I am an amateur therefore I did my best not to injure myself during the construction process.

2. TACK HAMMER: The tack hammer helped me get into the tighter spaces between the pallets in order to hammer in nails during the construction of the stall.

3. ELECTRICIAN HAMMER : The electrician hammer is the hammer that I used the most during construction as it allowed me too create crew held joints effeciently and quickly as it covers a significant surface area when hammering and can take more force.

4. BALL - PEEN HAMMER: The ball-peen hammer was used for the thinner wooden boards that would not need large screws for connections therefore this hammer would work well for joint connection

MATERIALS

1. PALLETS (X3) : Wooden pallets were used to construct the base and the support for the vendor stall, as shown in the previous deisgn and this was key as the weight of the pallets would assist with the stability of the stalls. The pallets were also sourced from the context as they were the most widely available materials.

2. LOOSE PLANKS (X10) : The loose planks would be used to create the columns and beams that would support the roofing element of the stall as well as carry the water filtration pipes that would be attached to the side of the stall acting as a water collection mechanism. The planks were the result of stripping a fourth pallet therefore all the pieces were eoughly the same thickness and length.

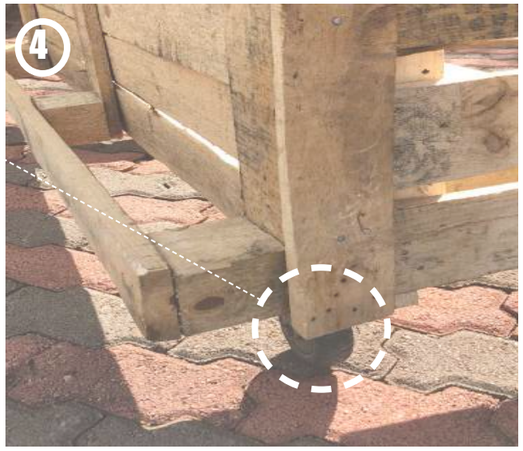
3. TROLLEY WHEELS: The trolley wheels would be used to create the mobility of the structure. Three wheels would be attached to the structure, two on the side andd one in the middle that would be able to rotate 360 degrees on its hinge allowing the vendor stall to move in different directions when attached.

BUILDING A FRAME

1. NAIL PLACEMENT ON CONNECTION POINTS: Before attaching the wheels to the stall, I created a frame out of the three pallets. The pallets would be attached together using nails and no extra fastening therefore three nails were hammered on the top, middle and lowwer part of the frame in order too ensure stability once the structure was being used.

2. HAMMERING CONNECTIONS : The nails were hammered in using an electrician's hammer for precision and also as a way of showcasing the way to create connections using widely available tools and materials. During the connection process I did not use a drill because of the cost of the machinery as this project stands as an 'affordable' prototype all the way to the equipment and tools used in construction.

ADDING WHEELS AND SUPPORT



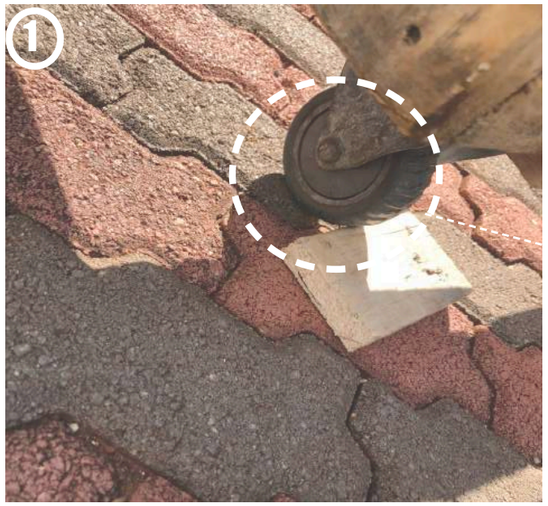
1. CREATING ANCHORING BEAM FOR MIDDLE WHEEL : In order to create a support point for the middle wheel, I decided to hammer in an anchoring beam where the wheel would sit. The beam would be in the middle of the vendor stall so that it would not impede on the vendors ability to place their feet when working.

2. CREATING A SUPPORT POINT FOR THE WHEELS: It was important to fasten the trolley wheels to a smaller plank that would allow them to not only attach to the larger vendor stall but also to be able to take the weight of the stall without slipping away. The three wheels were all attached to separate planks before connecting them to the larger stall structure.

3. CONNECTING WHEELS TO UPSIDE DOWN FRAME: The next step was connecting the wheels to the structure whilst it was upside down before resuming with the rest of the stall built. The wheels were attached to the two sides of the vending stall and one was attached on the middle anchor beam.

4. TRYING OUT THE MOBILITY OF THE STALL: The last step was trying out the mobility of the vendor stall and making sure that it would be able to move from different points without facing any difficulties. This test was successful and in order to continue with the finalisation of the build, stoppers were placed in front of the wheels.

FINALISATION



1 + 2. PLACING STOPPERS ON THE WHEELS: In order to continue with the final process of the build, I used two left over planks to stop the structure from moving whilst the vendors table top was being placed.

3 + 4. HAMMERING ON TABLE TOP: The table top of the structure was constructed from some left over board wood from the construction of the stationary vendor stall, therefore this was an opportunity to upcycle the left over material from different building processes.

PALLET DOOR/WINDOW

OBJECTIVES

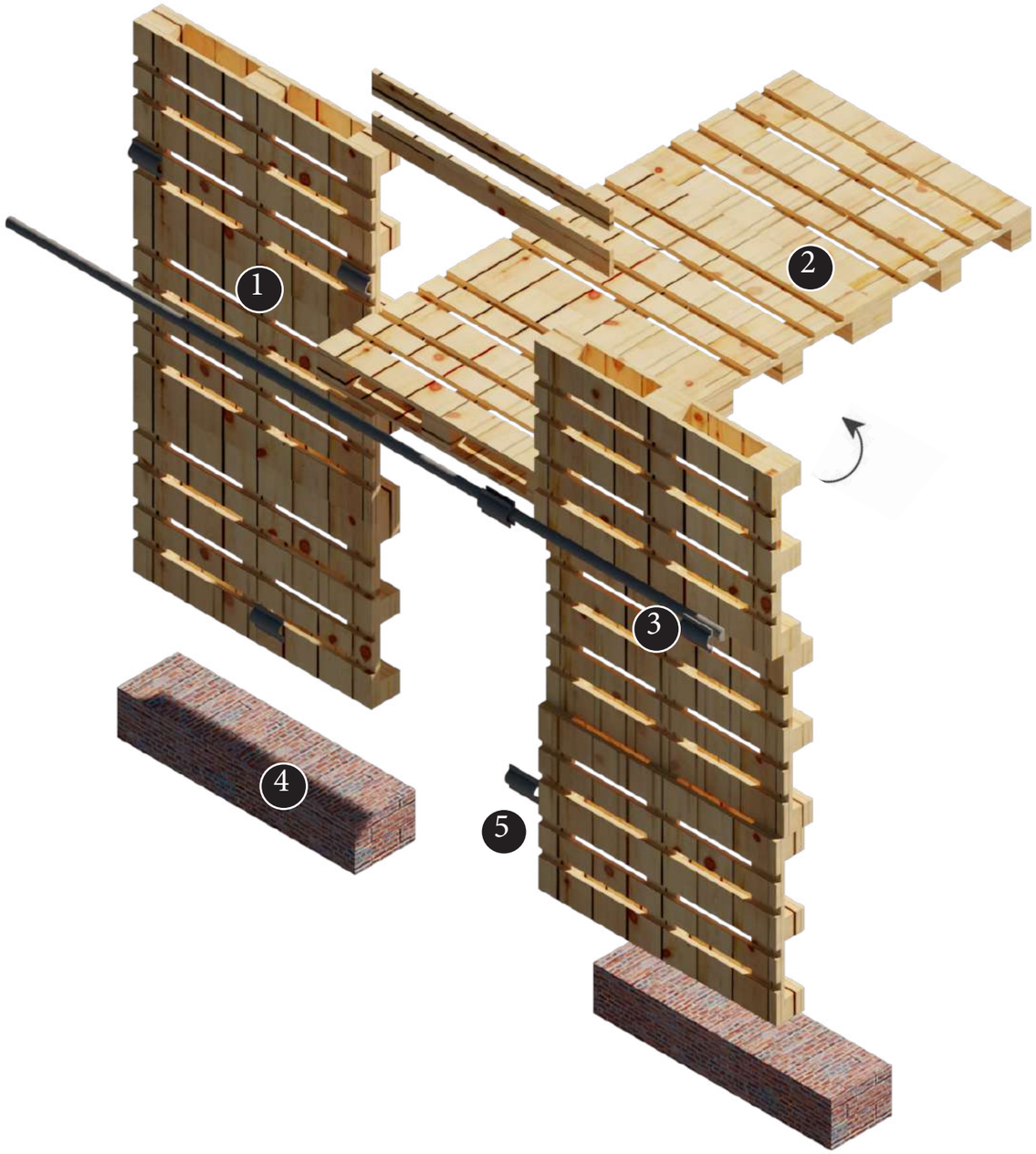
SHADING

SAFETY

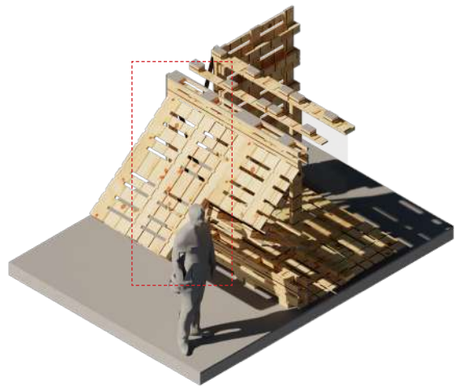
FLEXIBILTY

STABILITY

AFFORDABILITY



AXONOMETRIC VIEW



DOOR AS PART OF A FACADE VIEW

FRONT AXONOMETRIC VIEW

ANNOTATIONS

1. Reusable Pallet Wall : The supporting walls of the door are made from pallets as they are a material that is readily available within the existing context. These pallets are also affordable to the amateur maker and vendor and also provide stability and robustness in the making of the door and the handling of its weight

2.Pivot Door from Pallets: The Door is also constructed from the upcycled pallets and serves the vendors as a way to get ventilation and light into their working structures .The door is part of the facade allowing it to create a uniform appearance when closed at night , which will provide a layer of security for vendors when they close up at night.

3.Door Pivot point and stopper: In order to keep the door/window in its desired position, whilst the vendors work, a steel pole will have to be used as a stopper. Second hand steel poles or pipes can be found in the Magaba area within this context, therefore construction of this door will be a hybrid between upcycled pallets and steel members.

4.Ground Support : An important thing to consider when constructing with these wooden pallets is the amount of moisture that they will be exposed to, the prototype will have to be treated and placed on a concrete or brick base in order to keep away moisture from the ground. This precaution is important because this will allow vendors to decrease the amount of time and money spent maintaining the structure when built if it is protected from moisture correctly.

TOOL SELECTION

1. SAW : The saw was used through out these building steps in order to cut the longer booard pieces into appropriate lengths for the stall. The saw is widely available and cheap therefore it is a good choice for the amateur builder.

2.ELECTRICIAN HAMMER : The electrician hammer is the hammer that I used the most during construction as it allowed me to create crew held joints effeciently and quickly as it covers a significant surface area when hammering and can take more force.

3.ELECTRIC DRILL : In this building exercise I used an electric drill in order to create holes for the steel elements that would slot through the pallet to create a pivot.The drill helped me to work efficiently and quickly through the construction process of this prototype.The drill is also widely available, easy to use and affordable making it a good choice for the amateur builder.

4. 3 INCH NAILS : The three inch nails were important when connecting the pallets and pallet supports. The nails were the appropriate length to create connections between the pallets, making sure that the connections would create and allow stability when the structure stood by itself.

MATERIALS

1. PALLETS (X3) : Wooden pallets were used to construct the base and the support for the vendor stall, as shown in the previous deisgn and this was key as the weight of the pallets would assist with the stability of the stalls. The pallets were also sourced from the context as they were the most widely available materials.

2. LOOSE PLANKS (X4) : The loose planks in this instance were used to create supports for the walls that would house the swinging window/door. In the creation of this prototype supports would be important as there were no extra supporting walls that were built for the sake of showcasing this mechanism.

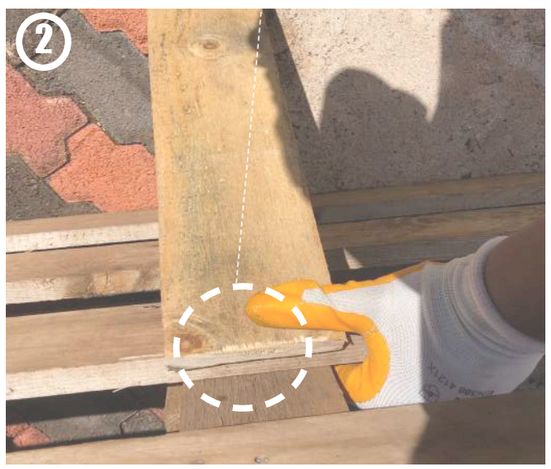
3. METAL ROD FOR PIVOT : The metal support rod was a product of leftover scrap metal and used to create a pivot that would slot through the pallet in order to allow it to swing upwards from this point. In this instance scrap metal had to be recycled and put to use because I did not have the means to cut larger pieces of metal. The recycled piece of steel was long enough and strong enough to act as the door pivot.

BUILDING WALLS

1. NAIL PLACEMENT ON CONNECTION POINTS: In order to create a stable connection and joint between the pallets I used nails to secure them. The nail connection would be placed on the upper, middle and lower parts of the pallets in order to create stability.

2. HAMMERING CONNECTIONS : The nails were hammered in using an electrician's hammer for precision and also as a way of showcasing the way to create connectioons using widely available tools and materials.The walls were supported by two planks which were hammered in on this stage of the construction (on both sides) in order to keep the pallets up for this prototype.

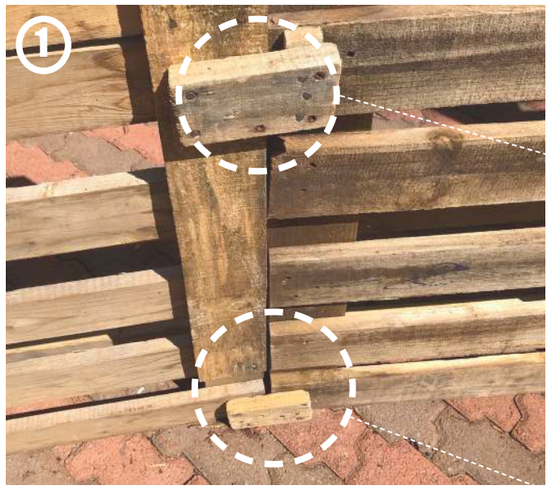
BUILDING WALLS



1. NAIL PLACEMENT ON CONNECTION POINTS: In order to create a stable connection and joint between the pallets I used nails to secure them. The nail connection would be placed on the upper, middle and lower parts of the pallets in order to create stability.

2. HAMMERING CONNECTIONS : The nails were hammered in using an electrician's hammer for precision and also as a way of showcasing the way to create connectioons using widely available tools and materials.The walls were supported by two planks which were hammered in on this stage of the construction (on both sides) in order to keep the pallets up for this prototype.

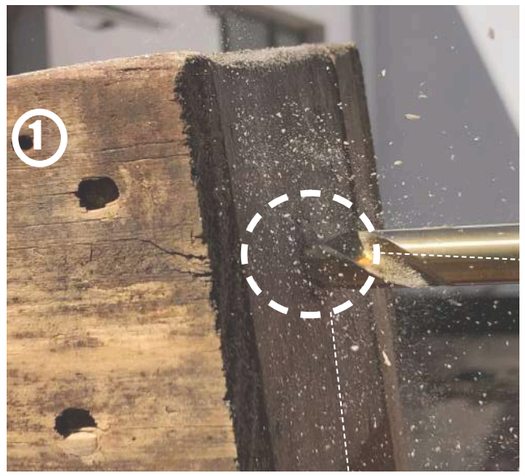
BUILDING WALLS

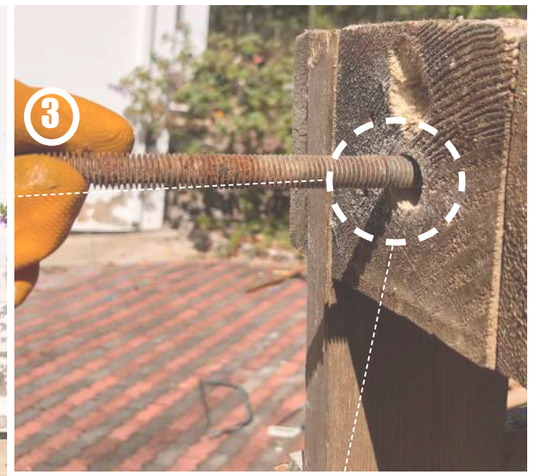


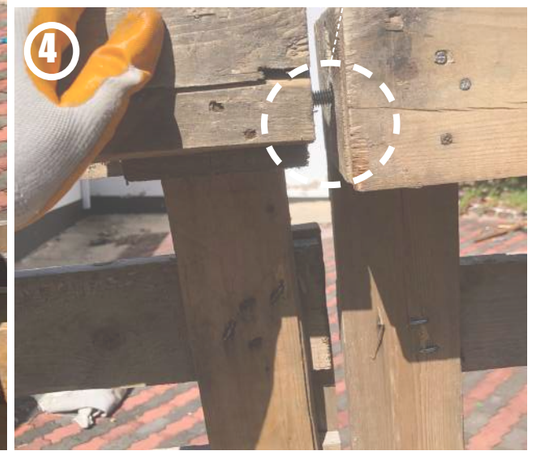
1. NAIL PLACEMENT ON CONNECTION POINTS: In order to connect the pallets together to create walls, I used smaller off-cuts from the pallet planks to create connection points where the nails would be hammered in to. These connection elements made sure that the connections between the pallet walls would be straight allowing an accurate placement point for the swinging door and pivot.

2. HAMMERING CONNECTIONS : The nails were hammered in using an electrician's hammer for precision and also as a way of showcasing the way to create connectioons using widely available tools and materials.

CREATING DOOR PIVOT POINT







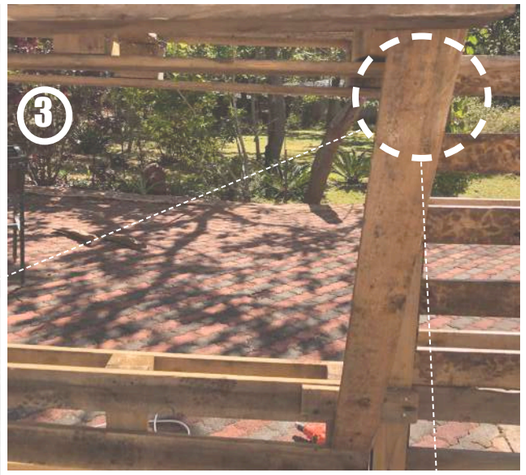
1-2 MAKING HOLES TO INSERT METAL ROD WITH DRILL : The first step of the door connection process was to create holes that would host the metal rod for the door's pivot. I started by marking points on both the supporting walls of the structure as well as the points on the 'door' that would have holes drilled into them, and then proceeded to create the holes.The main purpose of creating holes on both pallet structures was to make sure that the pallets would line up in order for the door to swing successfully.

3. INSERTING METAL RODS FOR PIVOT : This part of the construction consisted of inserting the supporting rods in the holes that lined up the swinging door and the wall segments of the prototype. The rods were secured using bolts that lined up with the size of the drilled holes after passing through the pallets, this step was to give the connections some stability and strength.

.

4. CONNECTING SWINGING DOOR TO BUILT WALLS : The last step was inserting the door into position to test if the door would sit comfortably when shut and follow the same line as the rest of the pallets. When the door is shut it is supposed to give the appearance of a flat wall for safety and security reasons.

INSERTING DOOR

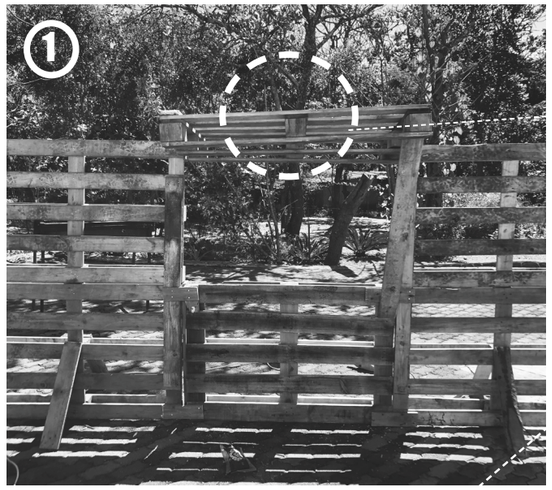


1. TESTING OUT THE UNIFORMITY OF THE WALL : After inserting the door into the wall structure, I looked at and tested if the inserted door fit into the rest of the structure and would appear straight when connected. This aspect of the prototype is mainly to provide protection and security for vendors working with structures that have these sort of doors and designs, allowing them to keep their belongings safe.

2. TESTING THE PIVOT : One of the final steps for building the prototype was to test if the door moved smoothly through the structure and back to its resting position. The pallets that I used to construct the door where slightly heavy so I made the door lighter by removing the planks on the inside face of the door, allowing it to manually swing open with little to no stress.

3-4. ADDING A STOPPER: In order to keep the door in a locked position I decided to add a stopper in the form of a plank as there were some leftover planks during previous prototype constructions. An alternative to this system would be creating a pulley system that uses ties or locks to stop the door from moving, but because of limited resources and the extra expense of some of those items, this was the most feasable choice within construction.

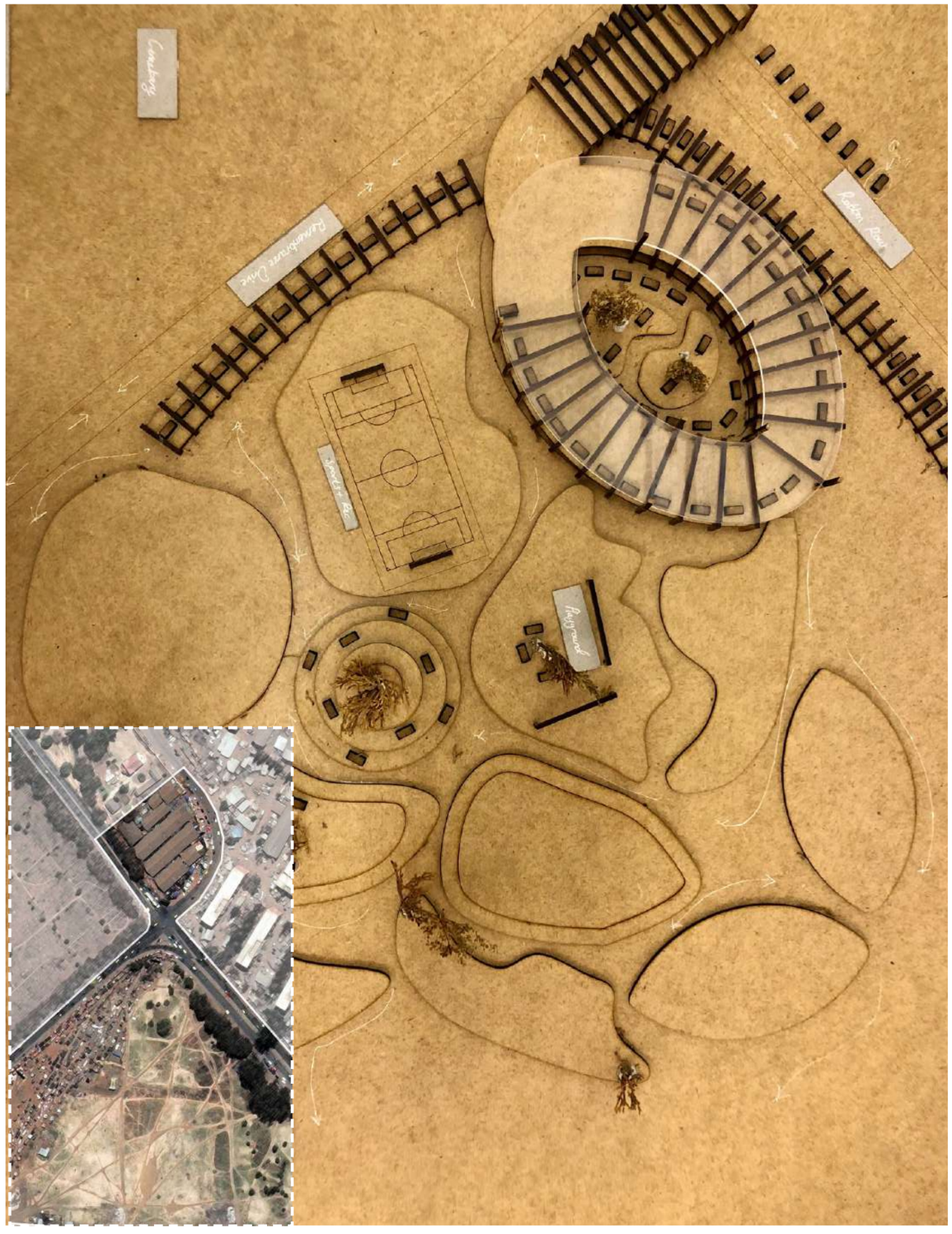
FINALISATION

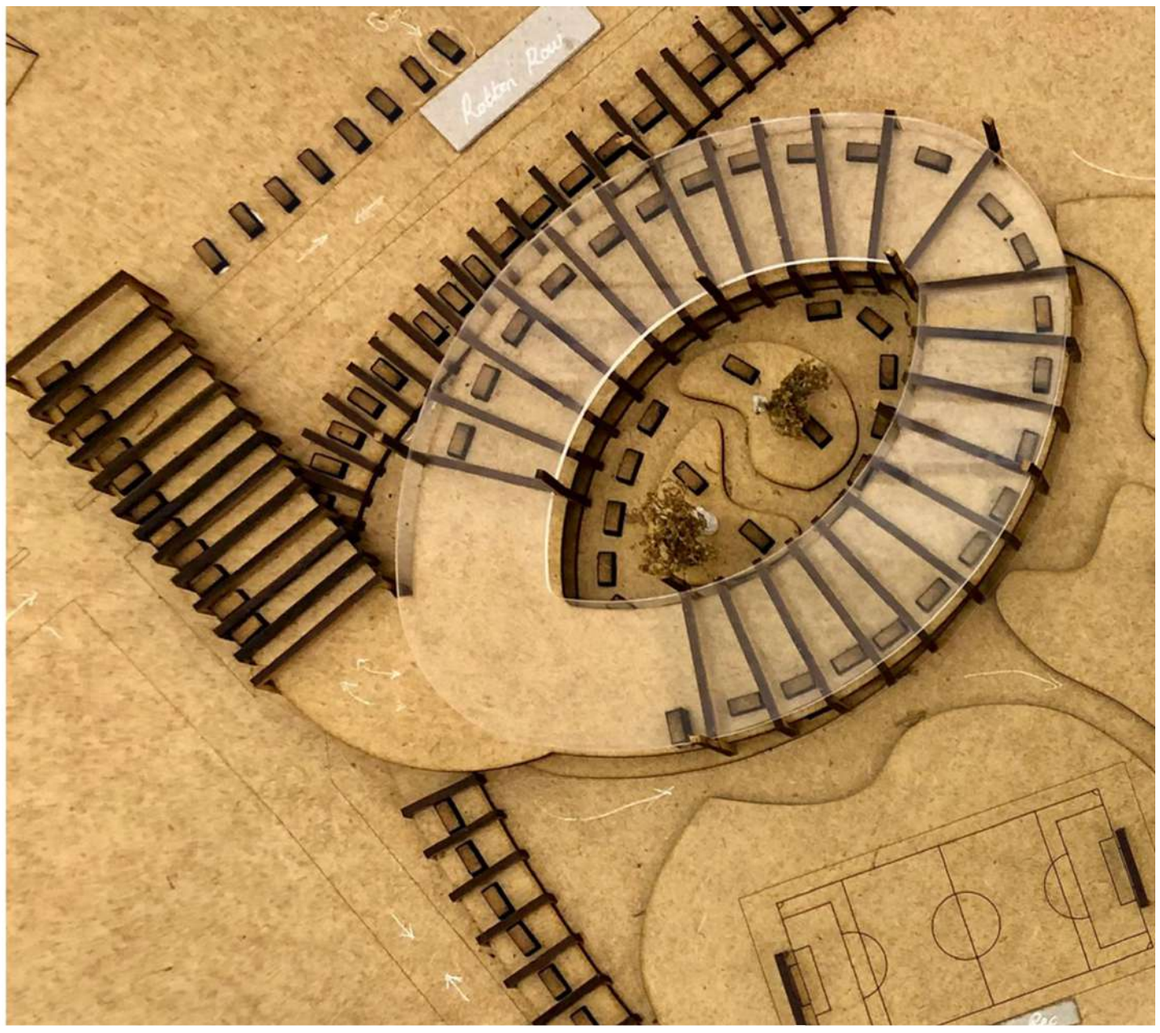


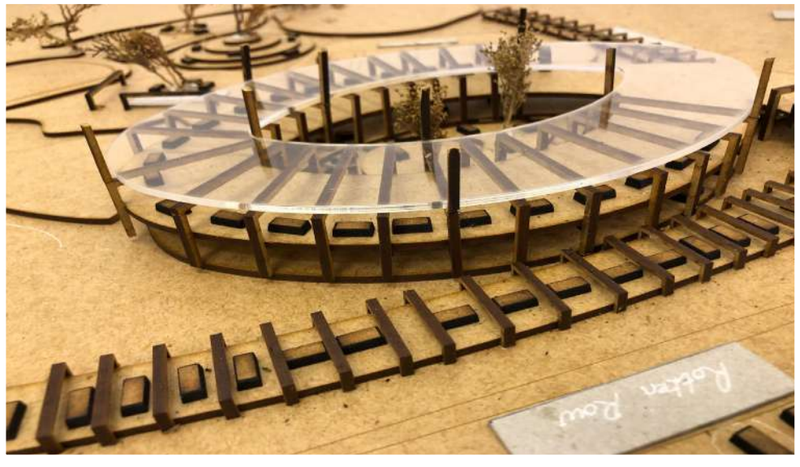
1-4 FINAL TESTING : These last few images showcase the finalisation of the swinging door and what it would look like to have the door in use by a vendor on a chair or even standing. This prototyping exercise served as an experimentation into some of the technology that could be applied when creating modules and structures for a market space.This prototype also stands as another scale of the relationship between the pallet and the user and how this system can be scaled up and scaled down according to user need and program flexibility .

PROCESS + CONCEPT MODEL(S)

This process models was made during the site development plan and phase of the document and contributed to the understanding of form making and circulation on the site. Even though I did not proceed with this form because it read as rigid and enclosed spatially, it allowed me to approach the form and plan making of my market structures from a different angle.







LIST OF FIGURES

BIBLIOGRAPHY

Abraham R. Matamanda, Innocent Chirisa, Tinashe N. Kanonhuhwa & Dixon D. Mhlanga (2021) Politics and the legacy of street renaming in postcolonial Zimbabwe, Journal of Cultural Geography, 38:3, 336-353, DOI: 10.1080/08873631.2021.1927348

Chirisa, Innocent. (2010). Inner-City Revitalization and the Poor in Harare: Experiences, Instruments and Lessons from Mbare Innocent Chirisa. IHS Working Paper.

"Dandaji Daily Market / atelier masōmī" 02 Aug 2019. ArchDaily. Accessed 5 Sep 2022. <https://www.archdaily.com/922161/dandaji-daily-market-atelier-masomi> ISSN 0719-8884

Dobson, R., Skinner, C. and Nicholson, J., 2009. Working in Warwick: including street traders in urban plans. School of Development Studies, University of KwaZulu-Natal.

Dovey, Kim. (2013). Informalising Architecture: The Challenge of Informal Settlements. Architectural Design. 83. 10.1002/ad.1679.

Eglash, R., 1999. African fractals. Rutgers University Press.

Fanon, F., 2004. The Wretched of the Earth. 1961. Trans. Richard Philcox. New York: Grove Press, 6.

Gumbo, T., Geyer, M., Moyo, I. and Moyo, T., 2018. Mapping spatial locational trends of informal economic enterprises using mobile geographic information data in the city of in Harare, Zimbabwe. Data in brief, 20, pp.1692-1699.

Hwati, Masimba. (2021). The Black Market Sound: Sampling a Micropolitical Terrain of Listening, Resistance and Refusal. 10.6084/m9.figshare.15129750.v1.

International Crisis Group, 2005. Zimbabwe's Operation Murambatsvina: The Tipping Point?. International Crisis Group.

Kurokawa, K., 1977. Metabolism in architecture. London: Studio Vista.

"Lim'uhphile Co-op / Collectif saga" 10 Dec 2020. ArchDaily. Accessed 5 Sep 2022. <https://www.archdaily.com/953045/limuhphile-co-op-collectif-saga> ISSN 0719-8884

Maurice Taonezvi Vambe (2007) 'Aya Mahobo': migrant labour and the cultural semiotics of Harare (Mbare) African township, 1930–1970, African Identities, 5:3, 355-369, DOI:10.1080/14725840701611455

Mbembe, A., 1992. Provisional notes on the postcolony. Africa, 62(1), pp.3-37.

Munyaradzi Hwami (2016) Frantz Fanon and the problematic of decolonization:perspectives on Zimbabwe, African Identities, 14:1, 19-37, DOI: 10.1080/14725843.2015.1100107

Musoni, F., 2010. Operation Murambatsvina and the politics of street vendors in Zimbabwe. Journal of Southern African Studies, 36(2), pp.301-317.

Özdemir, Nurbanu & Arslan Selçuk, Semra. (2016). Tree Metaphor in Architectural Design. 1. 64-76.

Percy Toriro & Innocent Chirisa | (2021) Vendors on wheels! The changing terrain and manifestation of informality in Harare under Covid-19 pandemic restrictions, Cogent Social Sciences, 7:1, 1939230, DOI: 10.1080/23311886.2021.1939230

Pikirayi, I., 2006. The kingdom, the power and forevermore: Zimbabwe culture in contemporary art and architecture. Journal of Southern African Studies, 32(4), pp.755-770.

Potter, C., Osseo-Asare, D.K. and M'Rithaa, M., 2019. Crafting spaces between Design and Futures: An analysis of the Agbogbloshie Makerspace Platform. Journal of Futures Studies, 23(3), pp.39-56.

Raffaele Pernice (2004) Metabolism Reconsidered Its Role in the Architectural Context of the World, Journal of Asian Architecture and Building Engineering, 3:2, 357-363, DOI:10.3130/jaabe.3.357

Schneider, Tatjana & Till, Jeremy. (2009). Beyond Discourse: Notes on Spatial Agency. footprint. 3. 97-112. 10.7480/footprint.3.1.702.

"Silindokuhle Preschool / Collectif saga" 25 Jul 2017. ArchDaily. Accessed 5 Apr 2022. <https://www.archdaily.com/875103/silindokuhle-preschool-collectif-saga> ISSN 0719-8884

"Xiafu Farmers' Market / Bengo Studio" 26 Feb 2019. ArchDaily. Accessed 5 Sep 2022. <https://www.archdaily.com/912100/xiafu-farmers-market-bengo-studio> ISSN 0719-8884

Zimbabwe Human Rights NGO Forum, 2005. Order Out of Chaos, Or Chaos Out of Order?: A Preliminary Report on Operation" Murambatsvina". Zimbabwe Human Rights NGO Forum.

UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD

PRE-SCREENING QUESTIONNAIRE OUTCOME LETTER

STU-EBE-2022-PSQ000045

2022/07/29

Dear Tadiwa Mashiri,

Your Ethics pre-screening questionnaire (PSQ) has been evaluated by your departmental ethics representative. Based on the information supplied in your PSQ, it has been determined that you do not need to make a full ethics application for the research project in question.

You may proceed with your research project titled:

Maidakutibvisa : Developing networks of permanence and impermanence within Mbare, Harare, through the preservation and adaptation of informal Infrastructure.

Please note that should aspect(s) of your current project change, you should submit a new PSQ in order to determine whether the changed aspects increase the ethical risks of your project. It may be the case that project changes could require a full ethics application and review process.

Regards,

Faculty Research Ethics Committee