



SYNTHESIZING ARCHITECTURE & INFORMALITY:

The influence of Informality in Creating a Responsive Architecture

Towards the Design of a Resilience Hub for the Community of the Quarry Road Informal Settlement

by

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DECLARATION

Submitted in fulfilment of the requirements for the degree of Master of Architecture, in the Graduate Programme in Architecture, University of Kwa-Zulu Natal, Durban, South Africa.

I declare that this dissertation is my own unaided work. All citations, references and borrowed ideas have been duly acknowledged. I confirm that an external editor was not used. It is being submitted for the degree of Master in Architecture in the faculty of Humanities, within the school of Built Environment & Development Studies, Kwa-Zulu Natal, Durban, South Africa. None of the present work has been submitted previously for any degree or examination in any other University.

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DATE

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DEDICATION

To the community of the Quarry Road West Informal Settlement and to all informal settlement dwellers of South Africa, I dedicate this dissertation to you, in the hopes that someday soon, creative responses to your plight will extend beyond the dusty shelves of university libraries and contribute towards viable solutions. Until then, I urge you to continue drawing attention to your struggle and never to stop asserting your rights to the city.

ABSTRACT

The world is currently facing rapid urbanization with the largest number of people moving from rural areas and countrysides to urban cores. This holds especially true in South Africa. However, as a result of a history of injustices and segregation perpetuated by apartheid and colonialism, a large portion of the South African population remains marginalised even today and occupy the left over space on the frays of cities in informal settlements, enduring poverty and exceedingly hazardous environments. Durban, the location of this study, has nearly a quarter of its inhabitants living in informal settlements (Informalcity, 2012).

In a context where these informal settlement communities have become insurgent and have begun to fight for their “right to the city” and a better quality of life, the authorities have been coerced to change their policies on informal settlements and to seek a route towards their normalization as part of South African cities. It is in this context that architecture ought to reevaluate its role in responding to the plight of informal settlement communities and to respond to Holston's (in Bremner, 2010) call for a reinvention of modernist architecture's social imperatives in these insurgent spaces. The aim of this dissertation is to explore how informality and the culture of informal settlement communities can inform architecture as a means of creating better and more responsive architectural interventions to the issues faced by communities within informal settlements. It hypothesizes that a synthesis of the architecture and informality; through an understanding of the existing socio-spatial dynamics, culture, economic networks, insurgent practices and approach to the production of built form of informal settlement communities; can produce a more responsive architecture capable of increasing informal settlement communities' resilience to site specific challenges, improve their quality of life and ultimately aid them towards their hopes and aspirations.

The literature, precedents and case studies on the subject assist in developing an understanding of the context of urban informality, the lifestyle and daily plight of the informal settlement dweller, as well as approaches towards ameliorating the challenges these communities face through a synthesis of formal and informal processes. Theories such as Culture and Identity, Insurgency and Informality provide insight into the daily life of informal settlements. Critical Regionalism begins to look at a more responsive architectural approach towards the informal, characterised by informal influences.

The outcome of the architectural approach developed in this dissertation will be the conceptualization of a Resilience Hub for the Quarry Road West informal settlement community with the aim of responding to and ameliorating site specific challenges the community faces on a daily basis and ultimately improving their quality of life.

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1.1. INTRODUCTION

1.1.1. Background

The world is currently facing rapid urbanization with the largest numbers of people moving from rural areas and countryside to urban cores. It is predicted that by the year 2050, 1.2 billion people or 60% of all Africans will live in and around urban cores (Harsch, 2012) and currently over 65% of South Africa's population is urbanized (World bank, 2017). However, South African cities were shaped by two major ideologies; namely modernism and apartheid. They were founded on spaces that were contested, controlled, surveyed and built around principles of exclusion and segregation (Claassen, 2014). The apartheid government actively tried to prevent black people from settling in cities as it had considered black people to be perpetually rural in nature and that urban life was simply not for them (Frescura, 2001). Frescura (2001) further states that the role of black people in cities was confined only to the physical labour work-force and that they were only allowed access to the city on a temporary basis with the understanding that they would return to the rural areas, located far from the urban cores. This was achieved through a segregationist ideology supported by modernist planning. However, the various social, economic and cultural ties of the majority black population to the city were undeniable and they were very much a part of urban life. It was their assertion of their role in urban life and their revolt against an oppressive regime to connect their lives to the city that resulted in the formation of informal settlements on the city's peripheries.

According to Rosenberg (2012), the Natives Trust and Land Act of 1963 set aside 87% of South Africa for Whites, Indians and Coloureds and prohibited black people from owning land in cities. Twenty four years after abolishing apartheid, the majority of the South African population are still marginalised and informal settlements continue to grow at increasing rates with approximately a quarter of Ethekewini's population living in informal settlements (Informalcity, 2012). As a result, the debate over informality and its place in cities has become of the highest priority. Huchzermeyer (2011) documents South Africa's changing attitudes towards informality within cities. This began in the post-apartheid era with a top-down approach to eradication of slums and squatters and the subsequent relocation and displacement of its people. The eradication of slums was an approach to urban development by cities that was influenced heavily by urban competitiveness, particularly towards the build-up of the 2010 World Cup. At the moment however, through continuous revolt and insurgency by informal settlement communities, and groups like Abahlali baseMjondolo and the Anti Eviction Campaign that grew out of these communities, the discussions over the concepts surrounding the "right to the city" (Harvey, 2012) have prevailed as the accepted discourse on informality within cities. South Africa has now recognized,

much like the rest of the world, that informality forms a major part of its cities. It must be acknowledged that these communities, through informal settlements, informal trade and their socio-economic networks and culture create and shape cities.

Amid the challenges of rapid rural-urban migration and a country still struggling to erase the effects of apartheid, the built environment and specifically architecture are compelled to respond to the resulting informality and insurgent citizenship, their social and economic networks and culture. This would enable architecture to develop more responsive interventions for the issues faced by these communities. The challenge that the built environment faces is emphasizing the right to the city of these marginalised communities, to provide them with the tools to be able to fulfil their roles as active citizens.

1.1.2. Motivation

According to Dube (2015), informal settlements in South Africa have always historically been associated with rural-urban migration which is closely linked to apartheid and land dispossessions. As a result, insurgent citizenship within informal settlement communities is seen as a response to socio-spatial inequalities faced within South Africa as people migrate out of desperation in anticipation of finding a better life.

However, informal settlement communities face constant threat from a variety of avenues, both physical and social, and are completely vulnerable to them. Physically, their dwellings are completely vulnerable to severe weather such as windstorms and rainstorms that result in flooding and the destruction of their homes. In addition, they are exposed to major health risks as a result of pollution and no access to proper waste removal services; and their lack of access to clean piped water for each household means they often rely on water from natural sources such as rivers which often carry disease and are heavily polluted. Having no access to electricity means that many of them rely on gas stoves or even illegal electricity connections, all of which are major fire hazards, all the worse in such a densely populated space. In addition to all of these physical threats, life in an informal settlement is harsh and can be potentially traumatic, leading to poor psychological health and depression. Informal dwellers face constant stigma and exclusion by broader society which leads to a breakdown of identity.

According to Huchzermeyer (2011), while the real lack of options and desperation of these people must be acknowledged when we consider the reasons for their choice of living environment, these people would not move to cities if they did not have the active resolve to connect their lives to the city or its fringes. Huchzermeyer (2011)

also speaks of these informal networks and communities that arise out of insurgent citizenship, as incubators for inventive survival strategies where they reclaim space for multiple uses, develop their own forms of collaboration and cooperation and a sense of community is developed rich in social exchange and culture.

What also has to be acknowledged is that the architecture produced in informal settlements is inherently infused with a keen insight into human scale, culture, identity and spirit of place. This architecture can be attributed to what Annalisa Spencer (2010) terms the “creative user” which is defined as that type of user that is an active participant in the production of architecture. The active user carries with him/her local wisdom into the contemporary world without being trapped into a formal, “modern” order which would aspire to erase the local. The active users within informal settlements create an architecture that is fluid, dynamic, mobile and temporal, recycles its resources, and reflects how its users conceptualise their homes and its relationship to paths and public space (Mehrotra, 2010).

The crux of the matter is that a very large portion of South Africans live in informal settlements and face these various challenges on a daily basis. As much as these communities are resilient and have fought for the spaces they inhabit, they still require the most basic amenities for a good quality life, not only to become active citizens within society but for survival in itself. These communities that have created extraordinary social, economic and cultural networks face dire challenges. This justifies the need for an architectural intervention that focuses on a bottom-up approach towards the enhancement of these informal settlement communities and the networks that they have created, with the specific aims of improving their lives and integrating them into broader society. The nature of such an intervention would provide spaces for public interaction internally as well as with the broader public, engagement with the government, spaces that aide in alleviating site specific social and physical ills through both education and social services, and spaces that promote and encourage the community towards resilience, self-reliance and sustainability.

1.2. DEFINITION OF THE PROBLEM, AIMS & OBJECTIVES

1.2.1. Definition of the Problem

The fringes of Durban have seen rapid growth of informal settlements with an increasing amount of new settlements as well that form at a rate that authorities cannot keep up with. The lack of infrastructure within cities to accommodate rural-urban migrants seeking better opportunities results in them claiming their own spaces on the city's frays. However, this does result in incredible and inspiring close-knit communities rich in culture and social exchange with an informal economy of their own.

The problem that this dissertation explores a response to, is threefold:

The first of which is that the left-over spaces of the urban fabric that informal settlement communities inhabit are hazardous and dangerous to their health and wellbeing. The reasons for this are that these types of sites often place these communities in direct exposure to dangerous weather conditions. In addition, they have either no or very limited access to sanitation, potable water, waste disposal services and electricity.

The second is that there is a lack of social and public infrastructure for informal settlement communities within their environments. This is largely due to limits imposed through legislation by the municipality which restricts infrastructural interventions into settlements deemed unsafe for habitation. The aim of this is to discourage the permanence of the settlements where residents have been earmarked for relocation. This lack of social infrastructure also results from the sheer over densification of informal settlements and the prioritization of private space, leaving no room for public space.

In addition, when urban authorities attempt respond to these issues, there appears to be a complete lack of understanding of these informal settlement communities, their lifestyle and culture. As a result, they face constant hostility, threats of displacement and a lack of proper recognition, all of which prevent them from progressing towards their hopes and aspirations (Huchzermeyer, 2011). Residents then continue to live in dangerous environments which desperately require more responsive architectural and infrastructural interventions that are informed by the informality.

1.2.2. Aims

The aim of this research document is to explore how informality and the culture of informal communities can inform architecture as a means of creating better and more responsive architectural interventions to the issues faced by communities within informal settlements.

1.2.3. Objectives

The objectives of this research are:

- To develop a background understanding of the context surrounding the formation of informal settlements and the unjust city planning that deprived these citizens of a right to the city.
- To establish an understanding of socio-spatial dynamics, economic networks and culture within informal settlements and to map this graphically.
- To gain an understanding of the insurgent practices of informal settlement communities when fighting for their right to the city.
- To explore how these communities approach placemaking and the production of built form under challenging conditions.
- To explore how architecture can respond to insurgent practices and aide informal settlement communities in their struggle for a right to the city.
- To explore how architecture can respond to informal settlement communities and their existing socio-spatial dynamics, economic networks and culture to enhance their lives, aide them in progressing towards their hopes and aspirations and integrate them into broader society.

1.3. SETTING OUT THE SCOPE

1.3.1. Delimitation of the Research Problem

This dissertation focuses on research involving the enhancement of people's lives within informal communities while responding to the hazardous living environments within which they live and integrating them into broader society through an in depth understanding of the social, economic and cultural mechanics of informal settlements and their role in shaping space. The research does not, however, focus on housing of people in informal settlements but rather on providing them with the knowledge and skills to overcome the challenges they face and to achieve their hopes and aspirations.

1.3.2. Definition of Terms

- **Architecture** – refers to the science of designing built structures. In this dissertation, the aim is to identify how “architecture” produced by informal settlement communities can inform the architecture produced by architects to aid in creating more responsive architecture for those communities.
- **Conditions of existence** – the material and cultural living conditions of a society.
- **Creative users** – this refers to users of the built environment who are not merely just experiencing it but also actively shaping it. This is particularly true of informal settlement dwellers.
- **Culture** – these are the ideas, customs and social behaviour of a particular people. For the purpose of this study, culture refers to the way in which groups of people develop a sense of community through their shared situation, experiences and influences
- **Extra-legal** – those actions beyond the scope of the law. Particularly referring to the insurgent practices of informal settlement communities.
- **Flex-scape** – a term coined by Rem Koolhaas, referring to the complete flexibility of space in the informal environment, becoming whatever it is required to be as the need arises.
- **Heterotopia** – refers to a utopian model of diverse and heterogeneous urban environments.
- **Identity** – for the purpose of this study, refers to the complex make up of individuals and people and how they form part of larger communities. Specifically how individuals in informal settlements form part of those communities.
- **Informal settlement** – unplanned settlements where informal housing (i.e. structures not in compliance with building regulations) is constructed on land that occupants have no legal claim to (at least initially), and on which few, if any, services exist. (according to Thabazimbi municipality in Limpopo)
- **Informal settlement community** – the community specific to a particular informal settlement

- **Informal urbanite** – individuals living within informal settlements
- **Informality** – refers to all those activities that occur outside the scope of the establishment. All those activities that are not regulated, taxed and controlled by the authorities. In this study it refers specifically to those elements of the built environment that occurs outside of the control of the authorities.
- **Insurgency** - Insurgency refers to any kind of revolt or protest and particularly in the fields of urbanism it refers to insurgent citizenship and to the claiming of space and a say in the shaping of it by marginalised people.
- **Kinetic city** – This refers to the dynamic quality of informal settlements and their constant nature of flux that is perpetuated by changing needs of space.
- **Levels of consolidation** – This refers to the varying levels of completion of dwellings within informal settlements that result in its heterogeneous aesthetic.
- **Lost space** – The undesirable parts of the urban fabric that make no positive contribution to its surroundings or users (Trancik, 1986). For the purpose of this study it refers to those left over spaces in the urban fabric that insurgent citizens claim as their own.
- **Marginalised** – Those people who are excluded from what is considered normative society and live on its edges.
- **Modes of production** - the process through a society approaches the production of place-making and built form
- **Resilience** – The ability of a system to recover after it experiences shock. For the purpose of this study, it refer to the ability of informal settlement communities to cope under challenging conditions and the ability to develop mechanisms to mitigate these challenges.
- **Resilience Hub** – The architectural intervention proposed as a prototype for informal settlement communities to provide a platform of engagement, infrastructure and education to aide them in dealing with site specific challenges and thereby increasing resilience to them.
- **Tectonic** – Refers to the art of construction expressed within the built form
- **Transitional societies** – Societies that are in the process of moving from on mode of production to another. In particular, informal urbanites who have left the rural and are still in the process of adapting to the urban environment.

1.3.3. Stating the Assumptions

It is assumed that through an understanding of informal settlement communities, their existing socio-spatial dynamics, culture, economic networks, insurgent practices and approach to the production of built form that architects can then produce an architecture that is more responsive to informal settlement communities. It also assumed that this synthesis of the formal and the informal can result in an architecture that is capable of increasing informal settlement communities' resilience towards site specific challenges, improve their quality of life and aide them in progressing towards their hopes and aspirations.

1.3.4. Key Questions

PRIMARY QUESTION

Communities in informal settlements face a number of physical and social challenges on a daily basis. The physical challenges manifest themselves in the hazardous and dangerous environment that they live in as a result of their lack of knowledge in producing an architecture that responds to the issues of weather, natural disasters, site, context and management of building services. The social challenges, on the hand, are characterized by the trauma inherent in living under such circumstances and the poor psychological health and depression that follows, in addition to a host of several other resulting social issues.

The key question then becomes:

How can architectural design act as a tool to ameliorate the various physical and social issues within informal settlements as well as enhance the existing social, economic and cultural mechanics and the insurgent practices of informal settlement communities?

SECONDARY QUESTIONS

- 1) What are the dominant social and physical issues faced by people living in informal settlements?
- 2) What do people in informal communities require to improve their quality of life?
- 3) What are social, economic and cultural networks within informal settlements?
- 4) What are the insurgent practices performed by informal settlement communities when asserting and fighting for their right to the city?
- 5) How do informal settlement communities approach placemaking and built form?
- 6) How can architecture enhance the lives of people within informal settlements?

1.3.5. Hypothesis

It is hypothesized within this study that a synthesis of architecture and informality; through an understanding of the existing socio-spatial dynamics, culture, economic networks, insurgent practices and approach to the production of built form of informal settlement communities; can produce a more responsive architecture capable of increasing their resilience to site specific challenges, improving their quality of life and ultimately aid them towards their hopes and aspirations.

1.4. CONCEPTS & THEORIES

The aim of this section is to explore theories and concepts that seek to further describe and explain the phenomenon of informality within cities. In addition, these concepts and theories would work towards shaping an architecture that responds to the various challenges faced by informal communities.

CULTURE & IDENTITY

Both culture and identity can be interpreted in various different ways. For the purpose of this study, culture refers to the way in which groups of people develop a sense of community through their shared situation, experiences and influences. In addition, it focuses on the way that both culture and identity influence the way communities interact and the way they shape their environments. Identity then, for the purpose of this study, refers to the complex make up of individuals and people, how they form part of larger communities and the role that perceptions play in misunderstanding identity.

Culture is defined by Tylor (1958) as “that complex whole which includes knowledge, belief, art, morals, customs, and any capabilities and habits acquired by a person as a member of society. Gusfield (2006) further elaborates on this definition by stating that it is comprised of two elements. The former of which differentiates one group from another and in essence, gives it an identity and the latter being the concept of acquired behaviour from one's own community. Culture is therefore the entire make up of one's lifestyle as being part of and influenced by a community.

In asserting that an individual's or a people's culture and identity are influenced by the communities within which they associate with, it must also be acknowledged that it is the social and cultural aspects of a people that determine how they shape the space around them. Rapoport (1969) suggests that although physical aspects specific to a particular context do influence the way in which spaces are shaped, ultimately culture and social influences are the determinant factors.

INSURGENCY & INFORMALITY

The “Right to the City” is a theory that, in the current context of urbanization and the influx of informality in cities, has seen resurgence in many spheres of academia. It was initially written by Henri Lefebvre in 1968 as a response to the existential pain of city life in withering cities. Its aim was to look at an alternative urban life that is more meaningful and less alienated. According to Harvey (2012), it speaks of the

promotion of insurgent citizenship; who gets to shape the qualities of daily urban life and space; and is a cry for help by oppressed peoples in desperate times.

Insurgency refers to any kind of revolt or protest and particularly in the fields of urbanism it refers to insurgent citizenship and to the claiming of space by marginalised people. According to Stolz (2013), insurgency occurs during periods of mass urbanization when the economic and social factors influence the mass influx of people migration to cities. Not only is this simply about land occupation but rather a desire and to connect one's life to urban environments and in so doing contribute towards shaping it. The types of spaces within cities that give rise to insurgent citizenship are what Trancik (1986) would refer to as "lost space", which are spaces produced as a result of an architecture that does not consider the urban fabric or urban form. This lack of acknowledgement by formal architecture of urban space as an exterior volume with properties of shape, scale and connections to other spaces opens the opportunity for the claiming of these spaces by marginalized communities.

This speaks directly about informal communities in Durban who tend to occupy and take ownership of lost space in the urban fabric as a result of the various social and economic challenges they face. This clearly demonstrates that professionals in the built environment ought to respond to this situation.

Both insurgency and a right to the city give rise to the informal city. These are parts of cities that are always in a state of flux and constant change socially, economically and geospatially. Mehrotra (2010) further describes this outcome as the kinetic city which symbolizes the collapse of varying conceptions of urbanism into a singular but complex and multifaceted entity that envelopes the static or formal city in a schizophrenic landscape with various forms of social, economic and cultural activity. He further argues that it is the kinetic city that gives most third world cities their image and identity.

Theories surrounding the Kinetic City and informal cities involve much of the same concepts surrounding Heterotopia. From the etymology of the word, it can be deduced that this refers to a city that promotes within it diversity and acceptance of all types of activity, people, cultures, economies and social interaction to coexist together. According to Harvey (2012), heterotopia delineates social spaces where something different is not only possible but foundational for the defining of revolutionary trajectories. In addition, all this does not occur out of a conscious plan but rather informally out of what people do, feel, sense and come to articulate as they seek meaning in their daily lives within the city.

Both parts of the above, the cause and the effect, which are insurgency and informality respectively, need to be fully understood to acknowledge the full plight of citizens within informal settlements in their daily life and their desire to connect themselves to the city.

CRITICAL REGIONALISM

At the advent of modernism in the 1920s, the idea of universal civilization, as referred to by Paul Ricoeur (cited in Frampton 1983), had come to the fore. This resulted in an architecture principled by autonomy, rationality and void of all historical, classical and cultural referents (Frampton, 1983). However, around the middle of the 20th century when architects and theorists had begun to understand the shortfalls of the modernist projects utopian and autonomous ideals, alternatives were being conceived under the banner of postmodernism. It was within this context that Alexander Tzonis and Liane Lefaivre (2003) coined the term Critical Regionalism when observing the approach taken by European architects working towards an alternative to modernism with the distinct aim of displacing its autonomist ideology with one that recognizes and acknowledges the significance of history, culture and situational context.

Critical regionalism seeks to mediate the impact of universal civilization with elements derived indirectly from a particular place. The architecture must be informed as much by world culture as by the culture of the place it is situated in – an *arriere garde*. (Frampton, 1983). The aim of Critical Regionalism is very much to situate the architecture within its social, cultural and physical context so that the architecture not only refers to the physical specificities of the site and its immediate context but also to the social phenomena of the context. The architecture would reflect its context within the physical aspects of its make up through its form, materials, structure, aesthetic and spatial planning. However, the architecture must also react and respond to the various social, cultural and economic issues specific to that context.

In direct bearing to this study, Critical Regionalism then becomes a tool to understand how the rich and dynamic culture within informal settlements can be synthesized with the formal premise of architecture.

1.4. RESEARCH METHODS & MATERIALS

This section outlines the research approach and methodology applied to this dissertation. It defines the procedures for data collection and identifies the techniques and methods used to gather all information.

PRIMARY DATA

CASE STUDY:

The case study is the Quarry Road West Settlement in Durban
Data from the settlement is to be gathered through:

1) Sensory Walks

These would be walks through the informal settlement with members of the community to identify dominant paths, nodes as well as social gathering spaces. In addition, the purpose would be to form a sense of understanding of the fabric of the informal settlement. The method of inquiry here is a combination of observation, photographic analysis and informal discussions with members of the community.

2) Community Collaborative Mapping

This is a process to be carried out using drone imagery of the settlement. The drone imagery in the context of informal settlement is particularly important as satellite imaging cannot keep up with the dynamic quality of informal settlements, which means that they are always under construction, expanding and changing.

The topographical image produced by the drone is then taken the community to map out the settlement, its paths, nodes, social spaces, activities and especially risk areas.

The main objective of this case study is to develop an understanding of life within informal settlements, the community's society and culture, the way they shape and create their own spaces and architecture of informality, and lastly the relationship of people in informal settlements to the natural environment around them.

These forms of primary research are motivated by the theory presented within this document which encourages interaction and engagement with the community. In this way, the community, through their knowledge of their environment, begin to shape the architectural intervention being proposed for them. The premise of the research is that only through serious engagement with informal settlement

communities can architects produce successfully responsive architecture for informal settlements.

INTERVIEWS:

- 1) Quarry Road West Informal Settlement Community: This would be both semi structured and open ended. All interviews will be done with the permission of the interviewee. The key aspect here is to understand first-hand about informal settlement life.
- 2) The Ethekwini Municipality: The municipality will be interviewed to develop an understanding of its attitudes and policies towards informal settlements and what work they are doing to document and aide citizens living in such conditions. In addition, it will be useful to the study to understand what interventions are proposed for informal settlements and what their approach is when developing these interventions.
- 3) Dr. Catherine Sutherland: is a lecturer and researcher at UKZN with qualifications in geography and whose research focuses on the relationship between society, space and the environment. She has also worked very closely with informal settlements and the environmental challenges they face. In addition, she was involved in the Palmiet River Rehabilitation Project which directly affected the Quarry Road West informal settlement. As such, she will be in a position to make a valuable contribution to this study.

SECONDARY DATA

This form of data comprises primarily of literature in the form of:

- Books by various authors
- Journals articles by various authors
- Academic paper and reports
- Published articles as well as books, journals and academic papers available on the internet

This dissertation explored literature concerning informal settlement life, its communities as well as its informal built environment through the lens of theories of Culture, Informality and Insurgency as well as Critical Regionalism.

In addition, this data will also include precedent studies to critically analyse how architectural interventions, faced with a similar context and similar issues, have dealt with them, their failings and their successes.



Figure 1: Journeying into the informal. (Source: Author)

2.0. SOCIO-CULTURAL IDENTITY & ITS INFLUENCE ON PLACEMAKING & BUILT FORM

2.1. INTRODUCTION

The purpose of this chapter is to explore the influence that socio-cultural identity has on both place-making and built form. It seeks to understand firstly, the background of the informal urbanite and how this affects their social network in an urban setting and ultimately, through these social networks and the culture that emerges from it, how do they approach placemaking and built form. The first part of this chapter seeks to establish who the informal urbanite is and also to overturn some misconceptions about them. The second part is about the social networks they form and the last part looks at a framework approach, theorized by Stea and Turan (in Kellett and Napier, 1995) of looking at how inhabitants of informal settlements shape their spaces and their architecture.

2.2. ESTABLISHING AN UNDERSTANDING OF THE IDENTITY OF INFORMAL URBANITES & SETTLEMENT COMMUNITIES

In the process of beginning to understand the culture of people living in informal settlements and ultimately how this culture manifests in the way they organize themselves, shape their spaces and their architecture, one first needs to establish the identity of the informal urbanite. It is imperative to fully understand who they are, where they come from, their background as well as their aspirations.

As already previously stated, according to Dube (2015), informal settlements have always been historically associated with rural-urban migration. Approximately half of the residents in Durban's informal settlements are from townships while the remaining population are comprised largely of more recent in-migrants from rural areas (Cross et al, 1994 and Kellett et al, 1995).

These migrants then, the residents of informal settlements, are often said to live on the frays of two very different cultures. Simmel (cited in Alsayyad 2004) would term rural urban migrants as a marginalised people on these grounds. This view is backed by many theorists who also view the informal urbanites role in city life as temporary. Peter Lloyd (1979) points out that many of the residents of informal settlements tend to return to their home of origin on a regular basis and that in many cases, their participation in urban life could be limited to just employment in the city. Simmel further states that they are a manifestation of cultural hybridity as a result thereof, carrying with them the culture they inherit from their rural background as well as a

more globalized culture associated with urbanism; that they live on the margin of these two worlds but do not belong fully to either.

While Simmel's acknowledgement of the hybrid nature of the culture of informal communities is undeniable, the statement that they are a marginalized people, is widely disputed. Perlman and Castells (cited in Alsayyad 2004) would go as far as to argue that marginality was a myth employed for the social control of the poor. These theorists would refute the idea that informal settlement communities are "marginal" or excluded from society. Asef Bayat (2004) further writes that such populations were fully integrated into society, but on terms that often caused them to be economically exploited, politically repressed, socially stigmatized and culturally excluded. This is evident in South Africa as a result of its history of apartheid. Non-white people who form the larger part of informal settlement residents, were oppressed by the country's government, not allowed to purchase land formally in cities and deprived of the aspects of culture afforded to white people in the cities. Although, despite these disadvantages, black people still formed a large part of the city's workforce, lived informally on its frays and the rich culture that developed within these settlements crept into the city. As could be seen with the culture that developed in Sophiatown.

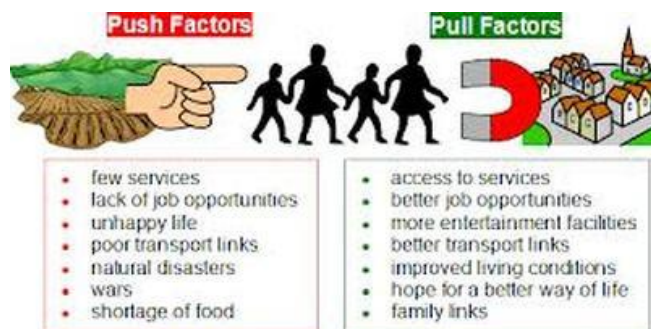


Fig.3: The above graphic displays some of the push and pull factors that encourage rural-urban migration.
(Source: <http://idee.satumuka.com/advantages-of-international-migration/>)



Fig.4: Musicians on the streets of Sophiatown.
(Source: <https://www.sahistory.org.za/article/introduction-sophiatown>)

The myth of marginality, as referred to by Janice Perlman (1979), does tend to skew society's view of the informal urbanite as, in the 1960s, the general consensus around the inhabitants of informal settlements and informal urbanites was that they were people who were doomed by their own laziness and poverty to remain on the margins of life. However, studies have proved this misconception to be grossly incorrect. Fischer (1976) sites a study that was carried out in Peru that found that migrants were especially skilled. The study compared 50 pairs of brothers, where one had migrated to the city and lived in an informal settlement while the other had

chosen to remain in the rural area. It was revealed from this study that, in most cases, the brothers agreed that the one who migrated to the city was harder working, more daring, independent and intelligent. Furthermore, Perlman (1979), in her study of the Favelas of Rio de Janeiro, states that residents did not exhibit attitudes or behaviours characteristic of marginalised people, instead, they were socially well organized, culturally optimistic, economically hardworking and aspired a better life. While the aforementioned examples speak of a South American setting, Peter Lloyd (1979) also observes a similar trend in an informal settlement in Nairobi referred to as Mathare 2. He speaks of the community as highly organised, politically integrated and that there is a clearly identifiable group of community leaders who direct the village committee. In addition, this settlement ran a cooperative society, maintained nursery schools, and has a social hall for dances which finance schools. All of the above mentioned examples are not a picture of communities drowning in apathy but rather, communities that are completely empowered towards achieving goals in creating a better life for themselves.

So in conclusion, and to answer the questions posed at the beginning of this sub chapter: It has firstly been established that informal settlement communities are formed of people who are largely rural-urban migrants. In the case of Durban specifically these are migrants partly from townships and from rural areas who have left their homes in search of better prospects and a better quality of life in the city (Cross et al, 1994). This description of people and communities in informal settlements already begins to introduce the ideas of cultural hybridity and the discourse on "Transitional Societies" (Kellett & Napier, 1995) that will be discussed in more detail further in this chapter. Another aspect that has been emphasized is that the residents of informal settlements do not possess many of the characteristics associated with marginalized people but rather, there is a strong sense of community among them and that they have a very clear community structure geared towards bettering the lives of its people.

2.3. THE SOCIO-CULTURAL NETWORKS OF INFORMAL SETTLEMENT COMMUNITIES & SUB-CULTURAL THEORY

The aim of this section of the chapter is to understand the nature of socio-cultural networks in informal settlements. It would begin by describing the types of social relationships within these communities and then go on to explain them in terms of subcultural theory.

THE SOCIAL NETWORKS OF THE INFORMAL URBANITE

It has already been established that informal settlement dwellers are comprised primarily of rural urban migrants (Cross et al, 1994) with that being people migrating from both townships and rural areas, in Durban specifically. The questions that then arises are: how does the migrant integrate themselves socially into the city; and whether on arrival, they are strangers or if they do immediately establish social relations and communities?

According to Fischer (1976) there has been a common misconception of migrants being complete strangers in the cities; that they suffer shock, adjustment trauma, alienation and social disorganization, all of which lead the migrant towards social deviancy and crime. However, according to Perlman (1979), a study conducted in the Favelas of Rio de Janeiro showed that only 3% of its occupants had not known anyone in the Favela before migrating there, the other 97% had either known someone already there or had travelled to the city with companions. Fischer (1976) further asserts that there are only a handful of migrants who travel to the city without their families or without associates already in the city. These associates, whether they be family, friends, or friends of friends provide orientation to the city for the migrant. They may also provide shelter and connections to find a job. Indeed, 6 of every 7 migrants in the favelas had obtained employment within three months of arrival to the city because of these social connections (Perlman in Fischer 1976).

These urban acquaintances provide a network of ties in a social world of people much like the migrant (Fischer, 1976). In this way, the migrant is able to adjust to the transition from rural or township life to life in the city.

SUBCULTURAL THEORY

According to Fischer (1976), there are three main theories focusing on the socio-psychological consequences of urbanism on its residents and in particular, in this case, rural-urban migrants and the inhabitants of informal settlements:

- 1) **Determinist Theory** argues that the onslaught of urbanism is stressful and that it increases social and personality disorders on the urban resident. The urban resident has to adapt their mode of adaptation and react with their heads rather than their hearts leading them to become intellectual, rationally calculating and emotionally distant from one another.
- 2) **Compositional Theory** on the other hand denies any such negative effects on the urban dweller. This theory, according to social scientist Gans and Lewis (Fischer, 1976), suggests that urbanism does not weaken people but that people are enveloped and protected by their social worlds which are impervious to the effects on urbanism.
- 3) **Subcultural Theory** tends to combine aspects of both compositional and determinist theory. It affirms that social worlds or communities do occur within urban environments and do offer a degree of protection for the urbanite from the negative effects of urbanism as described from the determinist perspective. However, it also acknowledges that urbanism does have an effect on its residents and that it is precisely these effects that encourages the formation of social worlds, communities or subcultures.

In the setting of informal settlements, the challenges that its residents face on a daily basis are clear. With poor access to sanitation, water, refuse removal, electricity and all the dangers and health risks these impose, the effects of such conditions of living on its residents are severe. However, it is exactly amid all these conditions, coupled with the difficulties of navigating urban life that communities form within these settlements. As subcultural theory suggests, the conditions of urbanism or the living environment encourage the forming of communities. In this way, the residents of informal settlements support each other and help each other cope with the traumas of living under such harsh conditions. Christien Klaufus (2001), in his study of an informal settlement in Ecuador, suggests that social relations of these rural urban migrants living in informal settlements adapt to confront the challenges they face on a daily basis. He suggests that vertical relationships with ancestors and divine beings are replaced by horizontal ties to neighbours and unrelated partners in adversity. According to him, the search for a new shared identity with other people in their residential environment in place of kinship plays an important role among residents in informal settlements.

These bonds and relationships between the residents of informal settlements can be said to take place on three levels according to Fischer (1976). The first of which, being the broadest, would refer to the community as a whole. The informal settlement environment can be differentiated from that of the urban environment in

that, as per Perlman's (1979) studies in Brazil already mentioned, its residents do have some social ties to the settlement which is what essentially invites them to take up residence within it. Those ties may be family, friends or some type of associates. However, in a more urban setting, Fischer (1976) writes, when referencing an American survey, that the tendency of a person to know as much as twenty of their neighbours in an urban setting is rare. It is even possible that an urban dweller may not at all know the names of their immediate neighbours. In informal settlements, as can be deduced by Perlman's (1979) study, the same does not hold true. Informal settlements dwellers are bonded together more closely as a community through their shared hardships and their struggle to better their lives. This speaks of informal settlement communities' insurgence against their daily challenges, which will be discussed in more depth in the next chapter. Another factor that can be considered to influence a strong sense of community is the sheer density of most informal settlements, which will also be discussed in the following chapters.

The second type of bond that Fischer (1976) speaks about are 'primary groups'. These groups are formed through bonds of kinship, ethnicity and friendship. This refers almost directly to Perlman's study. Primary groups, for informal settlement dwellers, are their gateway to the settlement. It is the first social structure that mediates the individual's experience of the environment.

The first two types of bonds mentioned, community and primary groups, are formed largely through kinship and through a shared occupancy of a given environment. The third type, however, are social networks that are forged outside the bonds of kinship and neighbourhood. These, according to Fischer (1976) are secondary groups or subcultures. These types of bonds are created through some form of shared activity, class, occupation or special interest. In societies, people often join together as a result of a shared interest like music, sport, activism, leisure activities. These types of groups manifest themselves in rather informal ways. Fischer (1976) gives the example of the group that comes together to play basketball on a Sunday, the musicians who jam on a Saturday, or the daily regulars at a bar. In the Quarry Road West informal settlement in Durban, this could be the church group that congregates on a Sunday morning, the group of women and mothers that form their own daycare, those men that gather to watch the soccer or rugby game, the local youth that convert the open space into a soccer field or the regulars at the local shebeen or shisa-nyama etc. All of these groups are just a few examples of people forming subcultures within larger settlements.

Another example of a society forming in adverse conditions is within the Torre David building in Venezuela. The Torre David building is a 45-storey high-rise in the middle of Caracas' central business district. The building was never fully completed as a result of both political and economic reasons and so this 45-storey building was left abandoned, incomplete and unoccupied. Amid the housing shortage during Venezuela's political upheaval a few families from the barrios surrounding the city discovered Torre David and took shelter in it.



Figure 4: Depicts a typical roadside Shisa-Nyama which acts as a meeting point for groups of people in the settlements.

(Source:<http://www.plaas.org.za/blog/%E2%80%99Ci%E2%80%99d-walk-mile-one-your-smileys%E2%80%9D>)



Figure 3: Shows how children and teenagers make use of open public space in settlements to play sport.

(Source:<https://www.theguardian.com/football/shortcuts/2014/may/21/brazil-favela-staging-own-world-cup-football-beyond-borders>)

Over time the informal occupation of this building grew, a community was formed and the occupation took on a much more organised process. The community began allocating spaces for each family, adapting the building to suit their needs, community amenities and facilities were formed within the building, they created their own waste disposal systems and organised the storage and distribution of water and electricity and retail outlets were established. Here again, the activities of the inhabitants, the subcultures, are evident through the allocation of spaces for these activities. Essentially, the informal squatters had become an organised community and had developed the building into a mixed-use high-rise to suit their needs. (Lepik et al, 2013)



Figure 5 & 8: The above pictures show how the residents of the Torre David adapted its use to suit their needs and to provide retail outlets, spaces for community organization and spaces for dwelling.

(Source: Lepik, Kitagawa, Brillembourg, et al, 2013)

CONCLUSION

This sub-chapter has provided a brief understanding of social networks in informal settlements. As subcultural theory suggests, the adverse conditions of urbanism is what encourages the formation of communities. Rural-urban and township migrants find themselves in very similar circumstances and as result, band together to support each other through the traumas inherent in living under such conditions. In addition, unlike with planned housing estates or suburbia, the residents of informal settlements are encouraged to dwell in particular settlements based on their social ties. Many of them have family or associates already living there. In this way, social networks form with more ease. Connections are made and people acquire jobs, opportunities and support through these connections. This also allows for ease in public participation systems as the community is well acquainted with each other and are able to assign roles onto people based on skills and knowledge to find practical solutions to their daily challenges.

2.4. TRANSITIONAL SOCIETIES, CULTURE & ITS ROLE IN SHAPING INFORMAL SETTLEMENTS

The final part of this chapter focuses on how socio-cultural identity influences place-making and built form. The structure of this part is based on the theory of place-making by David Stea and Mete Turan (in Kellett & Napier, 1995). The first section outlines their theory of place-making, the second of the "Conditions of Existence" of people living in informal settlements, and the third speaks of the "Mode of Production" or the process through which the community approaches place-making and built form.

PLACE-MAKING

The approach that Stea and Turan (in Kellett & Napier, 1995) use when describing placemaking is one that emphasizes the role of society and of the participation of people in the production of place. They use this theory to explain the formation of settlements in a vernacular or rural setting. However, this is equally relevant to the formation of informal settlements and its built form as these are created entirely by the occupants and no professional architect or planner. They define placemaking as a form of economic activity, in its broadest sense, combining cultural, political and material aspects of a society's "mode of production". They further define the concept "mode of production" as a specific, historically occurring set of social relations through which labour is deployed to wrest energy from nature by means of tools, skills organization and knowledge. Essentially this describes a process of community collaboration as a means of performing tasks and solving problems.

Another concept very relevant to this study and in particular to informal communities is that of the Transitional Society. This concept was coined by Stea and Turan (in Kellett and Napier, 1995) to describe all societies, particularly those in a vernacular setting. The idea is that all societies are transitional and in the process of moving from one mode of production to another (Napier and Kellett, 1995). This description suits informal communities and residents of informal settlements because, as pointed out earlier, these are societies who are comprised largely of migrants from townships and rural areas.

What is understood from the above is that a society in transition must adapt its mode of production to suit its current "conditions of existence". This is defined by Stea and Turan (in Kellett and Napier, 1995) as a society's material and cultural conditions. Essentially, it defines the society's current situation. A change in a society's mode of production then alters the way the society approaches placemaking.

CONDITIONS OF EXISTENCE

The conditions of existence are defined as the society's cultural and material conditions. This speaks of the society's physical living conditions as well as the type of culture that is influenced by its physical and social context.

The Material Living Conditions

According to Dubos (in Bell & Tyrwhitt, 1972), there is an inherent link between a people and the environments they inhabit. Indeed, the environment wherein a people live shape their culture. Dubos (in Bell & Tyrwhitt, 1972) states that the most important aspect of human ecology is that all environmental factors exert a direct effect on the development of human characteristics. She further states that the mind is shaped by the adaptive responses that people make to the social, behavioural and even historical stimuli that impinge on them. People are being constantly changed by the environments they are in and their responses to it. These responses that Dubos speaks of can easily be equated to a society's mode of production. Essentially, the material living conditions of the informal community shapes their culture and their mode of production towards placemaking and built form.



Figure 9: This depicts a typical South African informal settlement. A landscape that is always susceptible to change.
(Source: <https://www.notesfromthehouse.co.za/news/item/198-cape-town-lagging-behind-in-upgrading-informal-settlements>)

Therefore, to fully understand the culture that is produced by these material living conditions, one must understand the environment where its people live, for it is the environment that shapes and influences the people's culture. The informal settlement is described by Mehrotra (2010) as a 'kinetic city' as it is a landscape in

constant flux and motion in response to a whole range of physical, social, political and economic challenges. Mehrotra (2010) further describes it as a 3-dimensional construct of incremental development characterized by festivals, street vendors and dwellers and buildings of temporary recycled materials, whose very physical fabric is in constant motion and subject to change.

The informal stems from the essential conditions of correcting or compensating for the unequal distribution of resources in an urban condition (Mehrotra, 2010). This outlines the overall social, physical, political and economic context that influences the culture of informality. The environment of an informal settlement is one where its residents live in constant fear of eviction, being exposed to through poor infrastructure to dangerous weather and flooding, unsanitary conditions due to the lack of waste disposal and sewage services and the threat of fire often caused by illegal and other alternatives to electricity.



Fig.10: Depicts the pollution at the Quarry Road West informal Settlement that residents are exposed to.
(Source: Author)



Fig.11: This shows how the typical informal settlement is a mess of exposed electrical cables as a result of cable theft that results in a deadly environment.
(Source:<https://www.iol.co.za/news/south-africa/eskom-warns-about-dangers-of-electricity-in-rainy-weather-2093095>)

The Cultural Living Conditions

George Simmel (cited in Alsayyad 2004) as referenced earlier in this chapter, speaks of the idea of informal settlement communities as possessing a cultural hybridity. He speaks of this being a manifestation of both the informal urbanites rural or traditional culture of origin combined with the culture of the city or of globalization. Lloyd (1979) affirms this concept of cultural hybridity by stating that the values that rural-urban migrants hold are the product of both their traditional society and their present situation within the city. This discourse on cultural hybridity is very similar to the concept of transitional societies. In essence, it speaks about a society adapting to

change. In this case, it would refer to how the informal urbanite adapts to the living conditions of urbanity. In so doing, and by adapting one's own culture to imbibe that influenced by the current living conditions would be cultural hybridity.

It is evident that from the influx of migrants from rural areas to urban cores that there most definitely is a desire of these people to partake in urban life and subsequently join a capitalist, globalising world. The attraction to the urban environment for the rural-urban migrant would lie in the fact that the city offers more job opportunities, better access to amenities and facilities and a promise of progress and self-development. Lloyd (1979) states that in many cases, the migrants have come from societies with a strong emphasis on individual achievement; that their journey to the city was a conscious move for self-improvement and that their successes in finding work and establishing a home in the city are a demonstration of this achievement. He further states that this willingness of rural-urban migrants to integrate themselves into the dominant culture of urbanity and to raise themselves out of poverty is widely accepted by the upper classes.

The second aspect of this hybridity of culture comes in the form of the informal urbanite's ties to his/her traditional rural origin. While the urbanity and globalization aspects of cultural hybridity in informal communities speak more of their aspirations to integrate themselves into urban society and its dominant culture, traditional culture and the culture of adaptation manifests itself in the way informal communities and settlements are formed. While the capitalist aspects of the globalised culture of urbanity encourages individuality, the cultures of adaptation and rural tradition display a strong awareness of community. Lloyd (1979), emphasizes the sense of solidarity and cohesion experienced in informal communities in contrast to the adverse anonymity seen in the planned housing estates in cities and suburbs. It is exactly through this sense of solidarity that communities in informal settlements are formed as incubators for inventive survival strategies, where space is reclaimed for multiple uses otherwise not thought of in formal planning, forms of collaboration and cooperation are developed as well as a rich social and cultural exchange (Huchzermeyer, 2011).

MODES OF PRODUCTION OF TRANSITIONAL SOCIETIES

As discussed above, the mode of production speaks about the process through which a society goes about responding to its living conditions as a means of placemaking and creating shelter. The mode of production in transitional societies is described by Turan and Stea (in Kellett & Napier, 1995) as undergoing change or adapting to the society's current living conditions.

Essentially then, a culture that is influenced by the informal environment, an environment under constant threat and ongoing change, is a culture with an emphasis on adaptation. This is a culture that is a response to an ever-changing

environment. It embodies within it, the ability to respond to all the physical, social and politically hostile challenges inherent in such an environment. Another way of looking at this process of adaptation in informal settlements is that the dwelling is the first stage in an incremental stage of construction (Turner & Mangin cited in Kellett



Fig.12: The above image depicts the way the community in an Ecuadorian informal settlement work together to complete one of the resident's dwellings. An adaptation of the Minga ceremony of raising the roof of the traditional dwelling in a rural setting to now, in an informal settlement with a concrete roof and motivated by financial reasons to avoid using professional labour.

(Source: <https://fivepointfive.org/minga-ecuador/>)

and Napier 1995). These authors describe how the adaptability evident in dwellings in informal settlements suits the changing living conditions inherent in informal settlements throughout the life of the resident.

It also speaks of hybridity and the adaptation of the society's culture and mode of production to incorporate elements that better respond to its new living conditions. In essence, it may adapt some of its rural traditions or culture to a more urban setting. For example, Christien Klaufus (2001) provides the example of how the Ecuadorian people adapt their culture to suit their current living conditions. The construction of the roof for rural Ecuadorians was considered a very important milestone for a family living in rural conditions. The construction of the roof is considered a ceremonial practice carried out by the community and all the family's kin. The practice of involving the community and family is a means of appeasing their deity, *Pacha Mama*. At the end of the day when the construction is over, there

is a great festival with a feast and plenty of dancing. The group of people who construct the roof are known as a Minga. However, in an urban setting, the tradition of the Minga has taken a much more practical significance. The roof in an urban setting is often concrete a concrete roof, in place of the traditional roof and as such requires harder work. In addition, it is more costly. So the significance of the Minga is now more out of necessity than out of tradition. The Minga substitutes paid, professional workers and because of economic concerns there is no big festival. Instead, the community are offered a meal in exchange for a day's work. As discussed earlier, vertical relationships with ancestors and divine beings are replaced by horizontal ties to neighbours and unrelated partners in adversity.



Fig.13: The above image is of a typical Mediagua dwelling with block walls and a corrugated iron roof.
(Source: Klaufus, 2001)



Fig.14: Depicts a typical Casa dwelling with plastered block walls and a concrete roof.
(Source: Klaufus, 2001)

Another example from Ecuador speaks of the different types of dwellings. There are three types of dwellings; the casa, the villa and the medigua. The casa and villa resemble very much an urban or suburban dwelling, constructed from brick with concrete roofs. These are the dwellings of the slightly more affluent inhabitants of the informal settlement. However, the Mediagua is a small elongated dwelling consisting of a few rooms all accessible from the exterior with a sloping tin roof. This type of dwelling is looked down upon by the inhabitants of the settlement as it speaks of a more rural way of life in its spatial planning. In a rural setting, the dwelling is used only for cooking and sleeping, all other activities take place outside. This shows how a society in transition may tend to reject some of its older customs as a means of adaptation towards urbanity (Klaufus, 2001)

In a South African setting, the construction of dwellings in informal settlements are primarily wattle and pole frame construction with corrugated metal sheeting covering or plywood, a more traditional method of wattle and daub and in some cases concrete block or mud brick. All the types of dwellings above have

corrugated iron roofs. In the South Africa case, the choice of material is dependent heavily on availability. Only the more permanent dwellings are constructed of block or mud brick. A large contributing factor for the temporal nature of these structures in comparison to their South American counterparts, is that the threat of eviction has until very recently been very severe (Huchzermeyer, 2011). In addition, due to the young nature of the country's democratic government, many residents of informal settlements still have hope that the state would provide them with more formal housing. The conditions of existence, in this case, do not support dwellings of a more permanent nature. Another interesting aspect of the informal settlements in Durban is that a large number of the residents are from rural settings as pointed out by Cross



Fig.15: The Church and community hall at the Quarry Road West informal settlement displays an assemblage of materials like wood and scraps of corrugated iron used to clad the timber frame structure. (Source: Author)

et al (1994) and Kellett et al (1995), yet the dwellings are rectilinear in form rather than the round traditional dwellings. This could be due to the restraints of building with corrugated iron or it could be the society's attempt towards a more urban identity. (Kellett & Napier, 1995)

2.5. CONCLUSION

This chapter has set out to explore the role socio-cultural identity plays in influencing place-making and built form. In the first part of this chapter it was established that informal urbanites and the residents of informal settlements are largely rural and township migrants to the city, which had begun to speak of cultural hybridity, combining elements of township or rural life to their current urban conditions of existence. It then also looked at the myth of marginality associated with residents of informal settlements. The literature by Janice Perlman (1979) pointed out that these communities, in most cases, did not exhibit characteristics of a marginalised people, but rather that they are a highly organised community, optimistic and set in achieving goals towards a better quality of life.

The second part then looked at how these communities are formed and subcultural theory then provides a reasoning for why they do not exhibit, for the most part, characteristics of marginality. Subcultural theory suggests that in adverse conditions, people in similar circumstances form communities or subcultures, which helps them deal with the traumas inherent in their conditions of existence. The chapter also explored how well knitted these communities are in comparison to planned estates. In informal settlements, social networks form with ease due to kinship, friends, associates and a shared experience in adversity. These communities are well structured and develop their own means of public participation.

The last part of this chapter is structured by Stea and Turan's (in Kellett & Napier, 1995) theory on place-making. It established that a society in transition, like the informal community, must alter its "mode of production" to suit its current "conditions of existence" in the process of place-making. It then outlines the conditions of existence of communities in informal settlements which are characterized by the settlements kinetic nature and the various challenges of living in such environments. It also speaks of the cultural conditions of existence as being a product of hybridity to adapt to an urban context. The last part of this sub-chapter then explains how, through examples, society adapts its mode of production to suit its current conditions of existence in order to create place and built form.



Fig.16: Journeying into the informal 2. (Source:Author)

3.0. THE ROLE OF INSURGENCY IN INFLUENCING AN ARCHITECTURAL RESPONSE TO INFORMALITY

3.1. INTRODUCTION

The last chapter explored the socio-cultural networks within informal settlements and how those influence place-making and built-form, this chapter looks deeper into a quality that is engrained in the fundamental make-up of informal communities – insurgency. A quality that enables these communities that dwell on the peripheries of society and the city to fight for the very rights that they have been deprived of, often making use of extra-legal processes towards this end.

The first part of this chapter aims to create a background from which to understand the plight of insurgent citizens fighting for their right to the city. It provides a brief history of the role of the state and the city of depriving the marginalised of their right to the city. Thereafter, it looks at how these insurgent groups form and how they mobilize to approach the problems they face on a daily basis. The third section then seeks to explore and rationalise the architecture produced by insurgent groups in informal settlements. Lastly, the chapter looks at the implications for formal architecture of insurgent practices and built form.

3.2. A BACKGROUND OF THE URBAN POOR'S DEPRIVATION OF A RIGHT TO THE CITY IN SOUTH AFRICA

Before exploring the underprivileged citizens' insurgency in response to being deprived of many of the rights to the city, it is important to gain an understanding of the nature of the unjust way the city has been structured and governed to fully understand their plight.

The specific motivations of insurgency and for a people to rebel against the authority are numerous, however, in this context, these motivations are viewed specifically from the point of view of fighting for a right to the city. The colonization of developing nations followed by the rapid growth of their cities through a modernist ideology of progress, as well as the racism of the colonialists ultimately marginalised the urban poor forced them to inhabit the unsuitable peripheries of the city. In this sub-chapter, the writings of Nnamdi Elleh and Marie Huchzermeyer are looked at to gain an understanding of the urban conditions that ultimately provoke insurgency from the very citizens it marginalizes.

Elleh (2011) defines modernity as the experience of becoming part of the productive force within the world economic order, a process he describes as always reorganizing the spatial and experiential landscape of each society, in order to effect new modes of production, distribution and consumption of goods and services. He further writes that the squatter settlement, shanty town, favela or barrio are all consequences of the rapid modernization of cities in the developing world for urban housing of the underprivileged. Their rapid urbanization and modernization attracts rural dwellers seeking opportunities, jobs and a better quality of life promised



Fig.17: A depiction of the informal settlements of Caracas, situated on the frays of the urban fabric on land considered too steep for development.

(Source: <http://caracas1010a.blogspot.com/2011/12/>)

by urban life, however, the planners had not planned for these dwellers, considering them unsuitable for urban life. Ultimately this produces large unplanned parts of the city, occupied by these citizens the authorities chose to ignore. Huchzermeyer (2011) expands on this, saying that informality can be seen as the modernist state simply never succeeded in registering, taxing, controlling and suppressing.

Essentially, the colonial past of the developing nations of the world had deprived the urban poor of their right to the city. Particularly in South Africa, this was exacerbated by the apartheid state. Both the apartheid and colonial state in South Africa had presumed for themselves that the native black people were perpetually rural in nature and that urban life was simply not for them. They were allowed access to cities only on a temporary basis with the understanding that they would return to the

rural areas located far away from the urban cores. As a result, the population of black people in cities were largely male labourers that stayed in temporary barracks on the frays of the city (Frescura, 2001). This eventually resulted in the proliferation of clusters of informal settlements on the uninhabitable and unused edges of South African cities.

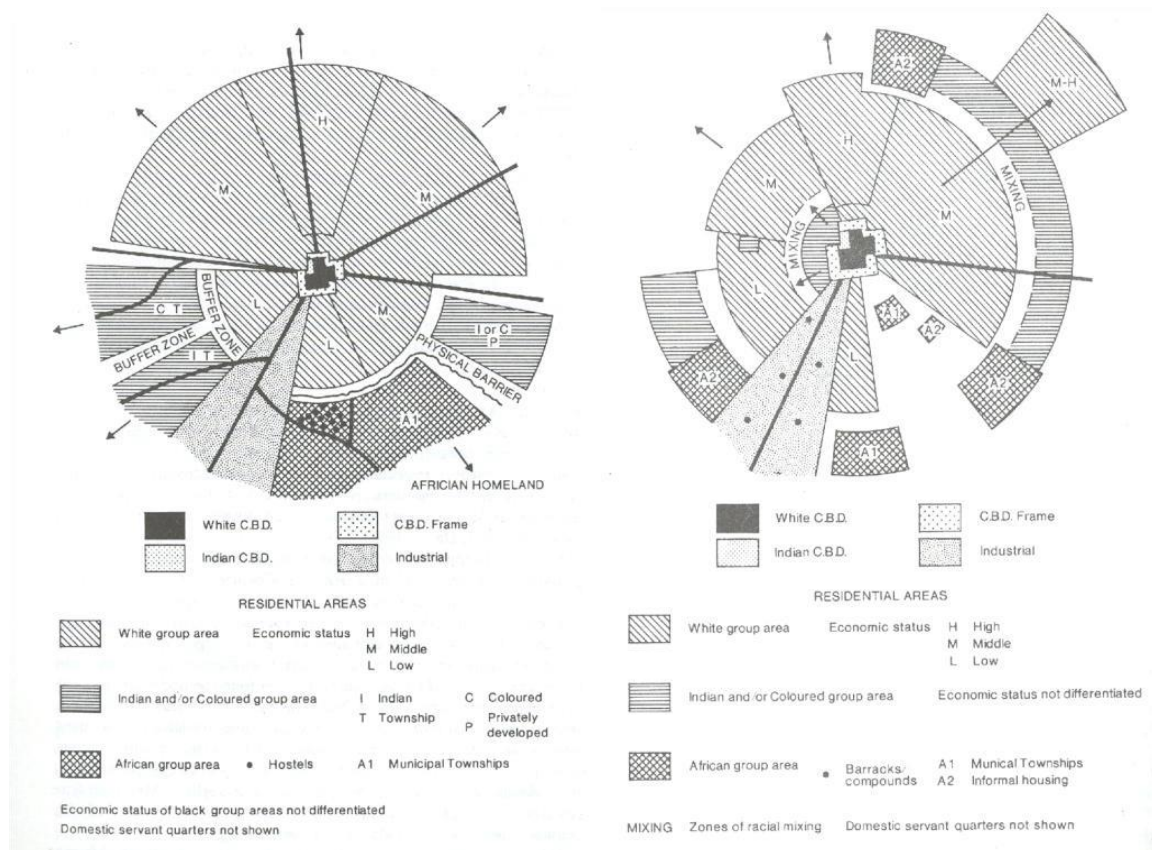


Fig.18 & 19: These are depictions of apartheid state planning which was predicated upon, segregation and control. (Source: Rosenberg, 2012)

The demise of the apartheid state, restored in some part, to these marginalised communities, rights to the city. However, the new democratic state, in its efforts to modernise its city centres would again begin to impose of the rights of these underprivileged urban dwellers. Huchzermeyer (2011) attributes this further imposition on their rights to the drive for urban competitiveness in both African and South African cities. As a result of this new pressure for urban competitiveness, informal settlement eradication was seemingly justified. Within South Africa particularly, Huchzermeyer (2011) states that the new urgency towards high density and mixed income developments provided convenient justifications for the removal of well-located settlements and the relocation of its residents, often to locations deprived of

the centrality and connectedness of their original settlement. These efforts were influenced by two international forces that urged the country towards urban competitiveness. The first of which was a misinterpretation of the Millennium Development Goal 7 target 11 which sought to achieve a significant improvement in the lives of at least 100 million slum dweller. The Millennium Development Goals are a broad framework developed by the United Nations to respond to various pressing



Fig.20: Residents of the Joe Slovo informal settlement along the N2 highway in Cape Town protesting against the informal settlement evictions, relocation and the privatization of their land where they dwell.

(Source:https://en.wikipedia.org/wiki/Joe_Slovo,_Cape_Town)

issues facing the world's population. The framework, which consisted of 8 broad goals to address these issues, was adopted by the United Nation's member states at the Millennium Summit in 2000. Goal 7 target 11 was often, very unfortunately accompanied by the slogan "cities without slums". As a result, especially in the South African context, this was misinterpreted to mean the eradication of informal settlements and the subsequent relocation of its inhabitants to more formal dwellings. The second of these international influences came in the form of the 2010 FIFA Soccer World Cup. Huchzermeyer (2011) explains that the pouring of resources and funds into stadiums and urban regeneration projects became as important as informal settlement eradication and their replacement with attractive housing. This could be clearly seen in how the evictions of informal settlement inhabitants living along the N2 Highway in Cape Town, which connected the airport to the city.

3.3. THE ROLE OF INSURGENCY IN MOBILIZING INFORMAL SETTLEMENT COMMUNITIES TOWARDS A RIGHT TO THE CITY

This sub chapter picks up from the last by now fully defining what a right to the city actually implies and what insurgency involves from the perspectives of Henri Lefebvre, David Harvey, Marie Huchzermeyer and James Holston. It then goes on to examine how insurgent communities form and respond to an infringement of their rights and finally looks at a few examples of these in practice.

One simply cannot speak about a Right to the City without mentioning Henri Lefebvre. It was in the latter part of the 1960s that Lefebvre wrote his essay "The Right to the City". The context within which he wrote it was one within which European cities were undergoing radical modernization, wherein the capitalist city that favoured production and consumption was rapidly triumphing over a city guided by society and community. This was the case in all European cities, particularly Paris. Harvey (2012) explains that Lefebvre's essay was a response to the existential pain of a withering crisis of everyday life. A crisis which saw the breakdown of society and family values in favour of capitalism. He further explains that the Lefebvre's "Right to



Fig.21: The abahlalibaseMjondolo shack dwellers movement marching for informal settlement dwellers rights on a street in Durban. The group uses the Right to the City rhetoric by Harvey and Lefebvre as means of enriching their struggle.

(Source: <https://www.sowetanlive.co.za/news/2017-04-17-shack-dweller-movement-worried-about-vigilante-group/>)

the City" was as much a cry as it was a demand, in that it was a demand to look the crisis in the eye and to search for and create an alternative urban life that is less alienated, more meaningful and playful, conflictual and dialectical open to becoming, to encounters and to the perpetual pursuit of unknown novelty. Thus, the Right to the City is far more than just gaining access to the city, it is to claim some kind of shaping power over the processes of urbanization, over the ways in which our cities are made and remade and to do so in a fundamental and radical way. (Harvey, 2012)

The question that then has to be asked is how do we apply this to the plight of residents of informal settlements? Firstly, the right to the city can be applied to any "marginal" group that has been deprived of both access and shaping power in the city. The aim of the city, as Marx (in Harvey, 2012) states is both to feed and be fuelled by its reciprocal relationship with capitalism. Capitalism, as he explains relies on the premise of perpetually producing a surplus value or profit, and in so doing relies on creating surplus product. Urbanity is what constantly feeds on this surplus product and keeps capitalism sustained. This is a fundamental reciprocal relationship that excludes the urban poor, who in the case of developing nations the world over, are the residents of informal settlements. This also explains Huchzermeyer's (2011) allusion to urban competitiveness.

Huchzermeyer (2011) states that informal settlements, whether knowingly or not, are essentially already fighting for a right to the city by confronting oppression in three different dimensions. The first of which is by fighting for the right to long-term habitation of the city and to spatial centrality. Secondly, they fight for a right to participate in central decision making. And lastly, for a right to the creative making of public spaces.

The act of land occupation and the creation of informal settlements itself are manifestations of insurgency as well as the fight for a right to housing and the creative making of public spaces. In a South African context this fight is also seen through public protest which often, as is characteristic of insurgence in informal settlement communities, employs extra-legal strategies. These are seen largely through marches and the blocking of crucial transport nodes to disrupt the activities of the city and draw attention to their plight. In the age of the camera phone and an over-active news media, the use of imagery and spectacle is a powerful tool in the arsenal of insurgent informal settlement communities. So much so, that these protests and groups like Abahlali BaseMjondolo have become synonymous with tyre burning. The use of spectacle and disruption often forces the authorities to act on their demands and take them seriously as failure to do so, would only expose the ineptitude of the authorities to the broader public. What these strategies also do is get the attention of NGO's, civil society and the concerned public who often aide the informal settlement communities using more formal procedures.

* * * * *

Insurgency then, is an intrinsic quality of Lefebvre's Right to the City. Harvey (2012) describes the essay as both a cry and a demand against a crisis of a withering everyday life and for an alternative urban life. Insurgency represents a community's demand for an alternative urban life. Holston (in Huchzermeyer, 2011) defines insurgency as a counter politics that destabilizes the dominant regime of citizenship, renders it vulnerable and defamiliarizes the coherence.

Insurgency is deeply rooted in urban informality and informal settlements as, according to Holston (2009), it is precisely in the peripheries that residents organise movements of insurgent citizenship to confront the entrenched regimes of citizen inequality that the urban centres use to segregate them. He further states that insurgency occurs in the realm of everyday and domestic life taking shape usually in the peripheries of the city with regards to the construction of residence. It begins with the struggle for a right to have a daily life in the city worthy of a citizen's dignity.

In concluding this section the question is raised about who should bring about a right to the city. The answer is of course, as is already apparent, it is not the state or NGOs but rather the oppressed citizens themselves. Holston (2009) describes the leaders of insurgent movements as the "barely citizens" of the entrenched regime: the women, labourers and squatter inhabitants. The people that bring about a new alternate urbanism are the oppressed themselves. It is on the frays of the city and society that insurgent movements like Abahlali baseMjondolo and the Anti-Eviction Campaign emerge to challenge unjust treatment and legislation.

INSURGENT COMMUNITIES IN PRACTICE

This section looks closer at insurgent communities in practice, how they form, and the ways in which they respond to the issues they face on a daily basis.

Miraftab (2009) while referencing Holston, speaks of insurgent citizenship as a means of destabilizing old formations of differentiated citizenship. A term Holston (2009) defines as unequal citizenship: that citizens are visibly equal in terms of the law, however, they are unequal in terms of social class and the resources and opportunities available to them. Insurgent movements are formed to challenge this differentiation. When explaining the nature of insurgent movements, Miraftab (2009) states that they do not confine themselves to the spaces for citizen participation allowed for by the authorities, rather they invent new spaces where they can invent their citizenship rights. These new spaces of participation or insurgent practices are usually referred to by scholars as "extra-legal" as these are practices that often work outside the boundaries of the legal framework. Miraftab (2009) explains that they

move between “invited” and “invented” spaces to voice their struggle and to fight for their rights. Ultimately, this fluidity is the main characteristic of insurgent movements that allow them to get the attention of the authorities and to attain their rights.

Earlier in this chapter it was mentioned about how, in South Africa during the preparations for the 2010 FIFA Soccer World Cup, many informal settlements were eradicated in favour of housing development projects. Miraftab (2009) speaks particularly about the case of the informal settlements along the N2 highway connecting the airport and the City of Cape Town. As a result of the authorities' eradication and privatization of their land, the dwellers of the informal settlement formed a movement to oppose the authorities. The movement, formed in 2001, became as the Anti-Eviction Campaign or the AEC. The movement, fought for their rights to the city, water and for roofs over their heads and against the privatization of these rights which they would ultimately be unable to afford.

The AEC's strategies to fight against the authorities were varied and ranged from informal negotiations with the agents of forced eviction to ignore or delay its implementation, to capacity building and creating their own data about their plight, to operating soup kitchens, to the reconnection of disconnected services by “struggle plumbers and electricians” and relocation of evicted families back into their homes, to mass protest, sit-ins and land invasions. (Miraftab, 2009)

They also used formal legal procedures in a rather innovative way and to create a spectacle and ultimately involve the media. Instead of going on by one to the court to register housing claims, all 1600 of the residents had gone at the same time, forcing the court to see to them outside, on the streets, in front of the court building.

However, in the end, they were evicted anyway. Although they continued to stay on the pavements across the temporary houses they were provided and set up shacks to dwell, a community crèche as well as various other community institutions.

Another example of insurgent communities in action is a case study by Kevin Kearns (1979) in inner city London. Initially, Kearns (1979) states that squatting in the unused urban buildings in London was first conceived as a form of activism against an inefficient and inequitable housing allocation system. However, this community of activists eventually grew to include both families and individual. Eventually, an entire network of squatters was formed. Some of the larger, more organized of these groups even published newsletters, newspapers and handbooks on how to squat.

Kearns (1979) notes that much like squatters in the developing nations, their counterparts in London cooperated strategically to rehabilitate the buildings they invaded, including among their groups, plumbers, electricians and carpenters. In this way, squatters in London have been able to transform entire blocks of flats.



Fig. 22: A group of squatters taking up residence in an abandoned building in inner-city London.

(Source:<https://www.dailymail.co.uk/news/article-1363157/Squatters-Inc-As-professional-agencies-MARKET-vacant-family-homes-break-beware-going-holiday.html>)

As the authorities began recognising squatting as an economically viable means of housing the urban poor and of regenerating unused urban space, squatter communities began forming their housing cooperatives to more formally organise themselves and engage with the authorities.

These two examples show how insurgent communities form, engage with authorities and move between invited and invented spaces of participation.

3.4. THE FORMATION OF AN INSURGENT ARCHITECTURE

While the previous sub chapter explored the insurgent community and its role in challenging the authorities towards attaining a right to the city, this section takes a look at the architecture produced by these groups and the rationale that informs it.



Fig.23: A row of dwellings in an informal settlement in Mumbai displaying contrasting degrees of completion, creating a heterogeneous spectacle.

(Source: <http://www.ronmcdaniel.com/the-big-problem-with-basic-income/>)

Annalisa Spencer (2010) while observing the informal architecture of Brasilia speaks about the role of the “user” in architecture. She speaks of how the functionalism of modern architecture supposes humans to be a component of a machine and that by implication, the user within the building plays the role of a passive receiver. However, the informal architecture produced in informal settlements does not involve architects at all. It is an architecture produced by the user of the building. Jonathan Hill (in Spencer, 2010) refers to these users as creative users. He uses the term “creative user” to replace “occupant” or “inhabitant” because it suggests potential “misuse” of the architecture. Essentially, the dwellers in informal settlements are creative users as they shape their own environments, create their own architecture and urban space which they constantly change to suit their evolving needs throughout the different phases of their lives. Spencer (2010) notes that acknowledging creative users marks a departure from the functionalism of and the

specific zoning of uses demonstrated in the original modernist planning of Brasilia. In addition, it also dispels any notion of informal urban development and architecture being haphazard. She expands by saying that informal settlements are not just a response to random opportunities and chances but they can be seen to demonstrate how in the absence of a formal power, like an architect or planner, this creative use of space becomes engrained in the culture of that society.

Another similar way of perceiving the architecture of informal settlements was proposed by William Mangin and John Turner (in Kellett and Napier, 1995) who reinterpreted the shack as the first stage in an incremental process of construction. They further note that far from being the passive victims of circumstance or being trapped by poverty, the inhabitants of informal settlements demonstrate great energy in the use of resources and in evaluating priorities. They further state that the adaptability of the architecture produced under such conditions is the most important architectural advantage of squatters.

Lindsay Bremner (2010), reflecting on the informal architecture of Kinshasa also makes note of its almost extreme adaptability and flexibility. Philip de Boek (in Bremner, 2010) describes Kinshasa's architecture by referring to what one needs to operate a vehicular repair garage in such a context. The answer he provides is that it isn't a building at all named garage that one requires but rather, the only material element required is signage. This attitude towards space generates vibrant urban spaces, constantly susceptible to change and accommodating a whole range of activities. Bremner (2010) notes that in such contexts, infrastructure is defined more by its absence than its presence. She goes on to refer to this as invisible architecture. Rem Koolhaas (in Bremner, 2010) refers to this kind of space as "flex-scape" in his observation of the informal architecture of Lagos, which he further describes as space that is undifferentiated, all-accommodating, flexible and open to becoming whatever it needs to be at any given moment.

Bremner (2010) further cites the example of Kliptown in South Africa, where she observes that the infrastructure that anchor their social practices are, as in Kinshasa and Lagos, featureless, juxtaposed and indistinguishable from one another as all these spaces double up and perform more than one function. Soccer pitch, she observes, becomes church, becomes motor repair shop, becomes street. Living rooms become shops, meeting rooms and youth clubs. These changes can often occur all within a day or a week depending on the people's initiatives.

This same "flex-scape" can be observed in Brasilia. Spencer (2010) speaks about how the rodoviaria, Brazil's Inter Urban Bus Terminal, not only replaces the functions of the traditional town square but also of the market place. The rodoviaria is not only an imitation of the square, it is an adaptation of the typical square to suit the needs of the city's users.

Another important aspect to consider about the formation of an insurgent architecture in the absence of architects, it is the dissemination of architectural knowledge in informal settlement communities. It has already been shown how in many informal settlements across the world, how valued a resident with knowledge of plumbing, electricity and building is to such a community. This could be seen in the example of the "struggle plumbers and electricians" in Cape Town or in the insurgent inner-city dweller community of London, or also in the example of the Torre David building in Caracas. Fernando Luiz Lara (2010) writes that besides from knowledgeable people within settlements, architectural knowledge is also transferred to them primarily through word of mouth as he discovered from his surveys in Brasilia. Their knowledge is often transferred to them during the building process through friends and relatives who are in contact with modernist architecture. Hence, in these particular cases in the favelas, it's not uncommon to see homes carrying modernist features like briese soleils.

3.5. SYNTHESIZING INSURGENT PRACTICES & FORMAL ARCHITECTURE

The aim of this section of the chapter is to look at how the formal sector, like the state, NGO's, planners and particularly architects are to engage with insurgent community movements. It will also look at how to learn from and interpret the knowledge systems of insurgent communities into more formal areas of study and ultimately, from this, formulate a formal architectural approach to reinforce insurgent practices.

LISTENING TO THE VOICES FROM THE BORDERLANDS

The aim of many of the authors that have already been mentioned, Leonie Sandercock, Faranak Miraftab and Nnamdi Elleh, are to study the knowledge base systems of insurgent groups and to understand how these can formulate a new approach from within a formal background, like architecture, towards reinforcing and aiding their insurgent practices.

Sandercock (1998) begins speaking about "difference" and how people who live on the margins of society culturally, socially and economically are usually considered by the so-called "normative" society to be different. The marginalizing of difference is usually what causes people who are considered to be different to either blend themselves into what is considered normal or on the other hand, to be steadfast and assert their difference, in many cases, in an insurgent manner. Sandercock (1998)

further explains that if social justice and respect for cultural diversity is to be achieved, the formal sector and particularly architects need to begin listening to the voices of difference and to theorize a productive politics of difference.

Sandercock (1998) defines the "borderlands" as a part physical, part metaphorical territory which is described as the frontier of the new space of radical resistance. Holston (2009) explains that it is precisely in the peripheries and the "borderlands" that residents organise movements of insurgent citizenship. Sandercock (1998) goes on to say that the "voices of the borderlands" belong to people who dwell in cultures of displacement and transplantation, to cultures with a long history of oppression, to people who have been marginalised for hundreds of years, but who are now insurgent and who are turning their very marginality into a creative space for theorizing. Furthermore, these voices, whose range of concerns include identity and difference; more inclusive ways of thinking about social justice; new spaces of opposition; resistance and consciousness; the importance of storytelling; multiple voices; the search for new ways of being alongside new and old ways of knowing; and new and more inclusive ways of theorizing (Sandercock, 1998). Only by listening to the insurgent voices of the borderlands can architects produce an inclusive response to reinforce insurgent practices towards a right to the city.

According to Anzaldua (in Sandercock, 1998), one of the key aspects to this new approach is the refusal to separate formal theory and knowledge from lived experience and the assertion that "marginalised" people have always produced knowledge, albeit in forms quite different from the dominant Western form of abstract logic. Elleh (2011) reinforces this by writing that if a new approach and methodology has to be formulated by architects to respond to the architecture produced within underprivileged communities and informal settlements, the architect must first learn to describe these neighbourhoods using the language of what exists on the ground. Such a language, he asserts, can be seen as the language of everyday life, a language which respects and represents the lives of the people as it sees them while presenting opportunities for growth and self-realization.

THE FORMATION OF A FORMAL ARCHITECTURAL RESPONSE TO INSURGENT PRACTICES & INFORMALITY

At the beginning of the chapter, it was already noted that the modernist state, with its capitalist ideology of perpetually producing a surplus product to sustain both the consumerist ideals encouraged in urbanity and capitalism's goal of producing a surplus value or profit, alienated and marginalised the urban poor. In South Africa particularly, the apartheid regime used modernist ideals and urban planning to further segregate its citizens. However, this wasn't always the case with modernism as James Holston (in Bremner, 2010) calls for a reinvention of the activist

commitments of modernist architecture by investigating and producing architecture in the spaces of insurgent citizenship. Bremner (2010) sums up Holston's argument saying that modern architecture from the 1970s onwards abandoned its social and political commitments in favour of commodification and consumption and new solutions to the social crisis of industrial capitalism. Holston (in Bremner, 2010) urges architects to reinvent modernisms social imperative in the new spaces where new forms of social life are taking place.

The question that has to be asked is how then, do architects go about reinventing modernisms social imperative in insurgent spaces? According to Brillembourg and Klumpner (2011), architecture in the informal city takes place in the context of urgency. They assert that in such a context, the model that architects should follow is one in which the architect focuses on worst case scenarios and what they hope to avoid when designing interventions in spaces of insurgent citizenship. One simply cannot afford to think about the best-case scenario, the point is to avoid catastrophe and to design with a clear indication of what the community prioritizes. Brillembourg and Klumpner (2011) conceptualizes the architect in this context as an "agent provocateur" to engage with "performative architecture". They describe this latter concept as an architecture that can set in motion a series of social practices. This aides, they say, injecting a certain collectively into a community.

Brillembourg and Klumpner (2011) write that the norm of architecture produced in such contexts is adaptation to constantly changing conditions under extreme social, economic and political circumstances. It is a context where uncertainty is the only constant and therefore, the architect must respond to this by engaging in multiple forms of action simultaneously including, researching, networking, mapping, designing and building.

The architect's response then to an insurgent architecture and to reinforce insurgent practices by informal settlement communities, is an architecture that is informed by the knowledge base systems already inherent in the way those communities live their daily lives. It is an architecture that promotes adaptation and flexibility to the multiplicity of activities that take place on a daily basis, to the ongoing change subject to the various challenges and stages of the life of the insurgent citizen. It is also an architecture that mitigates the reality of its informal context and takes heed of the priorities of the community.

FORMAL RESPONSES TO INSURGENT MOVEMENTS

The aim of this last section of the chapter is to look at examples of formal interventions and in particular, architectural interventions in sites of insurgent citizenship.

The GDIC in the Barrios of Havana

Ronaldo Ramirez (2011) speaks about the formation of a group in the Barrios of Havana. He says that the aspirations of Cuban urbanists to decentralise and promote popular participation, as well as recognition of the importance of the barrios were reinforced by the creation of the Grupo para el Desarrollo Integral de la Capital (GDIC). This was established in 1987 in Havana as an interdisciplinary agency working with the municipality. Its aim, according to its first director Gina Rey (in Ramirez, 2011) was to define a strategic vision and a commitment to improve the urban living conditions of the population from a bottom-up approach with the participation of the residents of the barrios. From this group, they formed the Talleres para la Transformación Integral de los Barrios. This was a group formed community engagement and participation at its core. The "Talleres" began work in the barrios in 1988 as part of a movement to bring about new bottom-up social initiatives.



Fig.24 & 25: The painting of murals in the Havana barrios that were achieved through the GDIC.

(Source: <https://www.trover.com/d/jSmH-callejon-de-hamel-havana-cuba?st=adpdnc1>)

(Source: <http://www.havanagourmet.com/Destinations/Centro-Habana/Callejon-de-Hamel/index.php>)

The way the "Talleres" operated was that they consisted of a few staff of usually long term residents of the barrio. This consisted of one architect, one sociologist and a few workers. They carried out their work on premises in the barrios which were intended to be centres of community activity. These premises were expanded over time and began to house rooms for conferences, training programmes, meetings, celebrations and rooms for activity groups in the community.

The "Talleres", according to Ramirez (2011) produced an annual "Participative Diagnosis" detailing the urgent problems that the community identified and possible solutions to them. This is then followed by a "Strategic Community Plan" where problems are evaluated according to their priority and the feasibility of the solutions.

Through this programme, the communities were able to start community food gardens, the "Colouring My Barrio" project which involved the painting of murals all over the barrios, and various other initiatives that were brought about by the residents themselves.

Sans Souci Cinema

The Sans Souci Cinema was opened in 1948 in Kliptown, South Africa but was eventually destroyed in a fire in 1994. The ruins had since served as an informal gathering space for local youth. The Kliptown Our Own Trust had approached 2610 South Architects to redesign the Sans Souci as a cultural public space. Lindsay Bremner (2010) explains that the logic used on this project by herself and the architects was similar to Rem Koolhaas' concept of "flex-scape". A type of architecture that is flexible and adaptable to a multiplicity of activities.



Fig.26: Part of the design process of revitalizing the Sans Souci cinema ruin was through engaging with the community and envisioning how the space would be used.

(Source: <https://www.2610south.co.za/gallery20.php>)

The architects engaged with the community through a series of workshops and events to gauge the way the community envisions the cinema. In this was it was in used a number of different cultural events over a period of a few years. However, the architects had to develop a new way of engaging with a community that ultimately could not afford the new building. Instead of abandoning their client, they came up with different means of utilizing the existing structure and developed a priority-based incremental design.

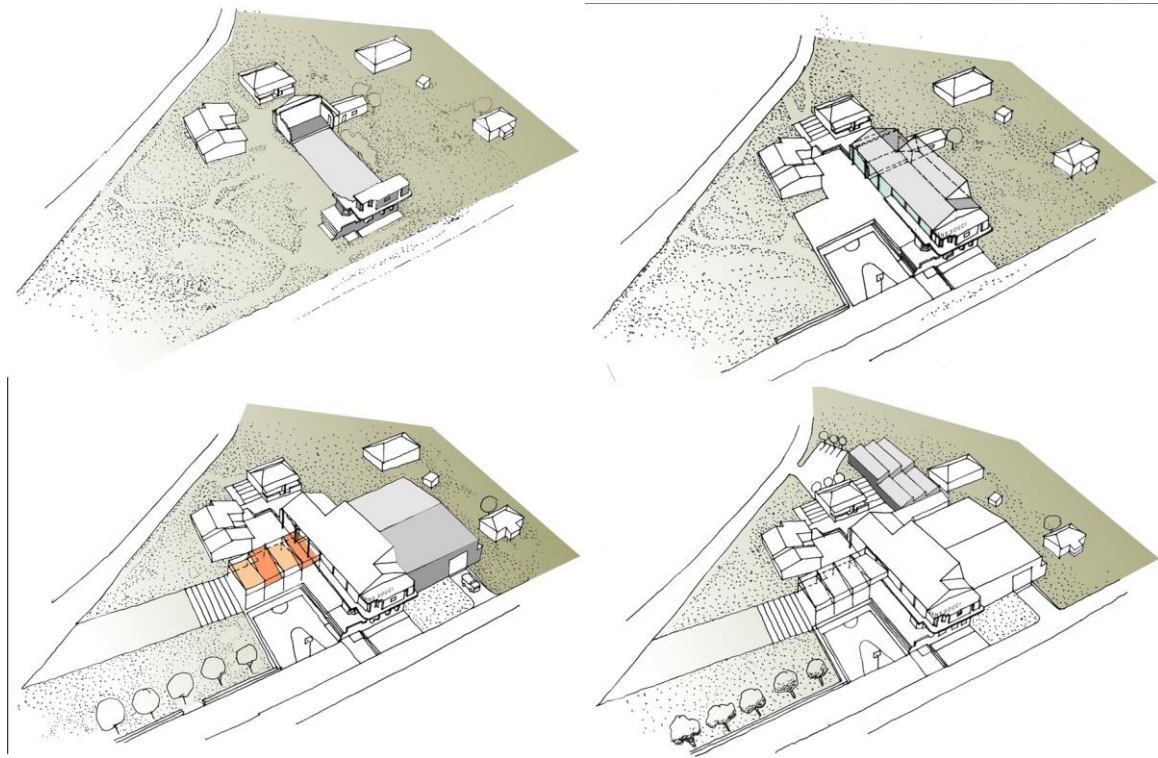


Fig.27: The incremental design of the San Souci cinema redevelopment around the ruin.
 (Source: <https://www.2610south.co.za/gallery20.php>)

Urban Think Tank in Caracas

Urban Think Tank have proposed designed a series of interventions in the barrios of Caracas. This section speaks very briefly about a few of them.

The first of these interventions is the Vertical Gym. This, Brillembourg and Klumpner (2011) write is dedicated to the belief that a physical structure can have a profound positive impact on social and physical interactions and a clear reduction in gang crimes and health issues. The building was proposed as a free sporting facility, particularly in a space place that was struggling against a high rate of gang-related crimes. It was meant to act as a social space to keep both attract both adults and youth away from gangs.

The vertical gym acted as an alternative to the much larger social projects and occupied a smaller footprint, something very valuable in the dense urban fabric of the barrios. Since its completion, the area has seen a reduction in crime and it has also served as a space for community gathering and interaction.

Another one of the interventions introduced into the barrios by Urban Think Tank is the House Core Unit. This addresses the issue of the lack of formal sewage waste disposal in the barrios. As a result, sewerage disposal has to be taken care of by the inhabitants alone and poses a major sanitary threat. The Core Unit is a unit that contains a toilet, with a rain-catching roof and storage tank as well as solar panels. In addition, the toilet is a dry toilet, separating solid and waste and liquid, which allows the solid waste, after treatment to be used as compost. The idea is that these toilets would serve as the core of the houses to be built around them.

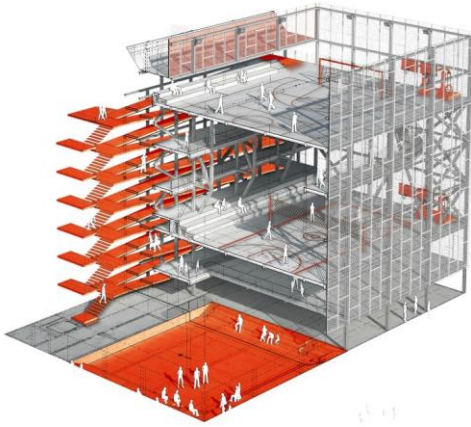


Fig.28: An axonometric cross section showing how the vertical gym maximizes space in informal settlements.
(Source: <https://gimnasiovertical.wordpress.com/vertical-gym-projects/vertical-gym-san-agustin/>)



Fig.29: A dry toilet ablution block designed by Urban Think Tank for the barrios in Caracas.
(Source: <http://u-tt.com/project/dry-toilet/>)

3.5. CONCLUSION

The aim of this chapter was to develop an understanding of insurgent practices and built-form in informal settlements and their implication on formal architecture.

The first part established that the colonial and modernist state, and in the case of a South Africa, apartheid, deprived the marginalized and the urban poor of their right to the city. The next section then looked at Henri Lefebvre's 'right to the city' and the insurgency that evolves out of this and ultimately what these mean for residents of informal settlements. It also explored the mechanics of insurgent movements in practice. The next part proceeded by looking at the characteristics of an insurgent

architecture, particularly in the absence of architects. And the last section formulated an architectural approach to insurgency through a process of learning from insurgent groups.

For architects to respond to the crises faced by insurgent movements, the architecture they produce must be conceived from a bottom-up approach. It must embody the very language of the people within informal settlements and it must be informed by the knowledge systems rooted within such communities. The architecture ought to have a keen sense of the priorities of issues shared by insurgent groups and it must be an architecture that adapts to and accommodates the perpetually changing environment of the informal settlement.



Fig.30: Journeying into the informal 3. (Source:Author)

4.0. ARTICULATING THE ARCHITECTONIC EXPRESSION OF THE INFORMAL SETTLEMENT ARCHITECTURE

4.1. INTRODUCTION

The previous two chapters established an understanding of the culture and social networks of informal settlement communities, as well as their insurgent practices and how these influence placemaking and built form. This chapter shifts from these socio-cultural influences and examines much more closely the nature of built form that is conceived by informal settlement communities. It will examine the architectonics of the informal architecture produced in such environments using Critical Regionalism as a lens of analysis. The first part of this chapter will assert the role of Critical Regionalism in creating a responsive architecture for informal settlement communities. The second part seeks to take a closer look at the reality of the challenges of building in informal settlement communities that are manifest in society, culture, politics and economics. Thirdly the chapter will examine the types of environments that informal settlements occur in and how the architecture responds to them. Lastly, it will seek to articulate the tectonic expression of informal settlement architecture and identify meaning attached to it.

4.2. CRITICAL REGIONALISM IN THE CONTEXT OF INFORMALITY

In order to understand the relevance of Critical Regionalism in the context of informal settlements, it is relevant to understand the context within which it was conceptualized. Towards the middle to the latter part of the 20th century, theorists and philosophers, like Paul Ricoeur, were beginning to examine more closely the dilemma faced by many post-colonial nations. These were nations that were, for a very long time under the control and domination of Western powers but had recently received independence. The problem that these nations faced was that they were under the control of an alien culture for so long that essentially suppressed their own. Any sense of identity that they had before the colonial period or prior to industrialization was now so repressed by the culture of their invaders that, it was partially lost. These nations now, that were highly underdeveloped, had the massive task of catching up to the other first world modernizing nations, but at the same time, they had to forge an identity of their own. Their dilemma, as Paul Ricoeur (in Frampton, 1983) wrote, was that on the one hand, they had to root their nation in the soil of its past, forge a national spirit, and unfurl this spiritual and cultural revindication before colonization, but on the other hand, in order to take part in modern civilization, it was necessary to partake in scientific, technical and political rationality, something often at odds with their pre-colonial identity and culture. The

question then that Paul Ricouer poses is: How do these nations become modern and return to sources? How do they revive an old dormant civilization and take part in universal civilization.

Modernization and architecture, of course, are two quite inseparable entities. The most visual display of a modernizing nation is through its infrastructure. Primarily during the 1920s, the idea of a universal civilization came to the fore during architecture's modern project. The core essence of modern architecture is that it represented pure autonomy, a complete break from the architecture of the preindustrial past. It sought a more honest representation of architecture that was characterized by a minimalist aesthetic, and thereby, stripped of all ornamentation and decoration. In so doing, it also placed, to a larger degree, function over form. Hence, form in modern architecture became detached from typology. This resulted in an architecture that was more honest in its structural expression, form and portrayal of the buildings functions but that was ultimately stripped of all cultural and historical referents. According to Frampton (1983), it became clear to many architects and modern masters like LeCorbusier and Louis Kahn that this autonomy in their works was not effective, and was repressive of contextual influences like culture, identity, society, climate and site. This was particularly evident in postcolonial nations as these architects soon began adapting the "International Style" born out of modernism by reinterpreting the vernacular in terms of modern technology or by incorporating some elements of the vernacular into their architecture.

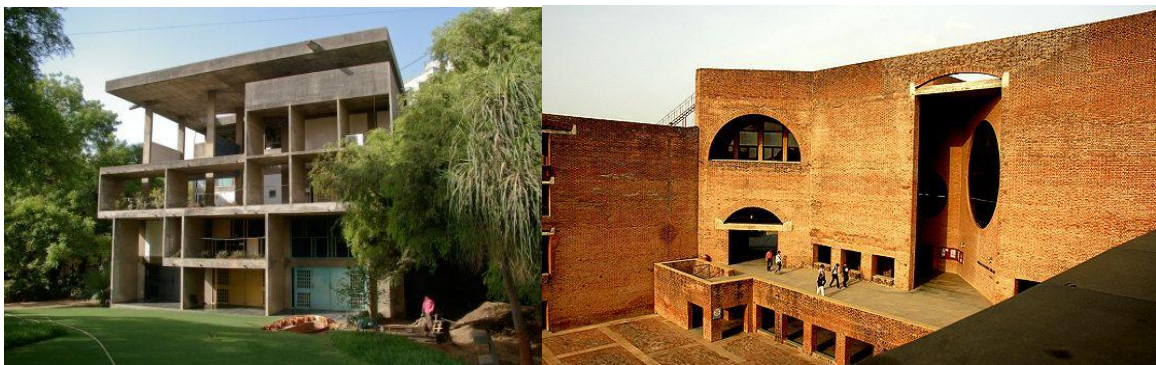


Fig.31: Le Corbusier's Villa Shodhan in Chandigarh showing weathered concrete and brise soleil in response to context and climate. (Source: <https://manmakehome.com/2012/10/11/villa-shodhan/>)

Fig.32: Louis Kahn's Institute of Management in Ahmedabad depicting his monumental form making style but adapted to local building materials – brick. (Source: <https://en.wikiarquitectura.com/building/indian-institute-of-management/>)

This was the climate within which critical regionalism was conceptualised. Frampton (1983) defines Critical Regionalism as an architecture that distances itself equally from the Enlightenment myth of progress and also from a reactionary, unrealistic impulse to return to the architectonic forms of the preindustrial past. Frampton suggests an "arriere-garde" stance to architecture to replace avant-gardism. To define the military metaphor, the avant-garde literally means the "advance guard" of the formation of a battle regiment. It represents the absolute forward movement

and innovative thinking or advances. The “arriere-garde”, on the other hand, are the rear guard. This rear guard marched forward while being equally aware of what is behind it. In the same way, architecture ought to make advances by partaking in universal civilization and incorporating all of the advances in technology and thought into it, but at the same time, it must acknowledge the architecture of the past. Frampton writes that only the arriere-garde has the capacity to cultivate a resistant, identity-giving culture while at the same time partaking in universal technique.

How is all this then translated into the context of informality? Or to be more specific, how is it relevant to this study? Critical Regionalism is essentially a theoretical approach to synthesize harmoniously, the advances of modernization and globalization with the culture of a given place. It seeks to mediate the impact of universal civilization with elements derived indirectly from the peculiarities of a particular place (Frampton, 1983). It is an approach to architecture that seeks to combine two almost incompatible dualities. The purpose of this study also seeks to combine two seemingly irreconcilable dualities: formality and informality. The very nature of the two seemingly cannot exist in the same sphere. Informality is only identified by the fact that it isn't formal. The informal in the case of architecture translates as architecture that is conceived outside of the scope of architectural professionals. It is essentially, an architecture produced in the absence of architects. Informal settlement communities shape their own environments and built form. They are the creative users of their own environments (Spencer, 2010). This description of architecture produced in informal settlements is indistinguishable from the vernacular architecture of the preindustrial past. As such Peter Kellett and Mark Napier (1995) would refer to informal settlements as the new vernacular. As such, if this view is to be held, the synthesis of the formal and the informal is inherently imbued with a Critical Regionalist ideology. The purpose of this study, to synthesize the formal and the informal in architecture, is to explore how architecture can respond to informal settlement communities and their existing socio-spatial dynamics, economic networks, culture and insurgent practices to produce a responsive architecture for these communities that ultimately enhances their quality of life, aides them in progressing towards their hopes and aspirations and integrates them into broader society. As such, this chapter would seek to analyse informal settlement architecture through the lens of Critical Regionalism by analysing the way in which informal settlement architecture is influenced by society, culture, the physical environment and, as is the case with informal settlements the economic and political challenges as well. This will ultimately aid the study to attach meaning to the architectural expression of informal settlement architecture.

4.3. THE PERPETUAL CONSTRUCTION OF INFORMAL SETTLEMENT ARCHITECTURE

In chapter 2, a framework was set up to understand the nature of built form in informal settlements. This framework, which followed the principles written by Stea and Turan (in Kellett and Napier, 1995) placed an emphasis on understanding the material and cultural living conditions of informal settlement communities in order to understand how they approach placemaking and built form. The material living conditions of informal settlement communities, according to Mehrotra (2010) are characterised by constant fear of eviction, being exposed to dangerous weather conditions and flooding, unsanitary conditions and often the threat of fire. In addition, the economic plight of these communities must be acknowledged. Many of residents of informal settlements are unemployed, do not hold full-time employment or are employed in sectors that do not afford them a good revenue, while others struggle to make ends meet with small businesses. The cultural living conditions are characterised by the large amounts of rural-urban migrants in informal settlements which often results in a hybridity of culture: a synthesis of the migrant's rural cultural background as well as of their new found urbanity. These cultural and material living conditions culminate in a "mode of production" that embodies within it, constant adaptation. It is a mode of production that allows informal settlement communities to constantly adapt to their dynamic and at times volatile living conditions.



Fig.32: Stages of construction of dwellings in an informal settlement in the Savda Ghevra informal settlement in India

(Source: King, 2017)

This results in a built form that is constantly subject to change during the lifetime of its inhabitants. Kellett and Napier (1995) would refer to this spectacle in informal settlements as different degrees of consolidation, which essentially refers to different degrees of completion of the dwellings. This also is in reference to Turner's approach to understanding informal settlements as perpetual building sites. Observing informal

settlements in Santa Marta, Colombia, Peter Kellett (1999) observes the varying rates of consolidation of dwellings and how a typical street or path will contain dwellings of various levels of completion, resulting in an eclectic and heterogeneous spectacle. Indeed, Mahyar Arefi (2011) speaks of the stages of settling in an informal settlement in Istanbul, which further acknowledges the varying levels of consolidation. After initial occupation of the land, the occupiers will set up temporary shelters as part of the initial stage of construction. Over time, he observes that the temporary, makeshift structures would gradually give way to more permanent multi-storey dwellings. Over time, in many informal settlements around the world, the informal reaches such a level of consolidation that it becomes indistinguishable from the formal.

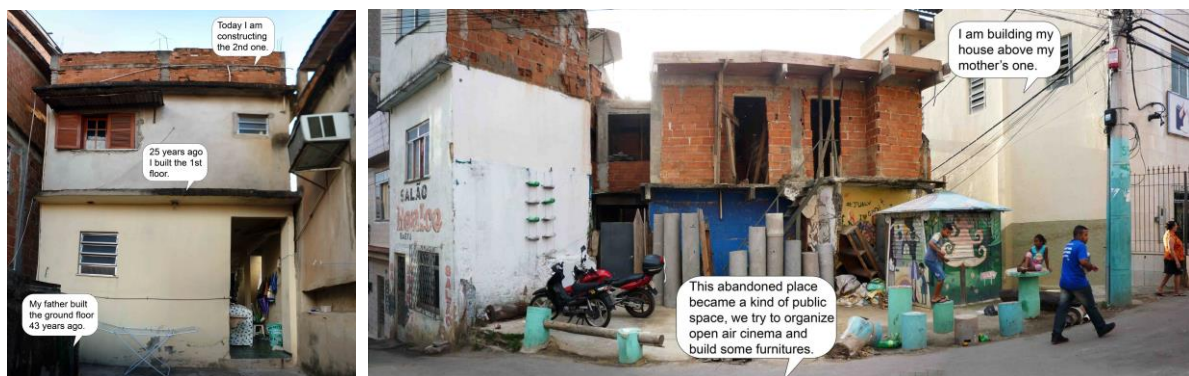


Fig.33 & 34: A study done of the favelas in Rio de Janeiro showing their incremental construction that occurs over generations.

(Source: https://www.archdaily.com/531253/case-study-the-unspoken-rules-of-favela-construction?ad_medium=gallery)

Of course, the level of consolidation of dwellings in informal settlements is highly dependent on the communities' living conditions that are marked by various social, cultural, economic and political circumstances. Peter Kellett (1999) compared the influence of culture on the levels of consolidation of dwellings in two informal settlements in Colombia. He analysed the influence of marriage and the role of the family unit on the level of completion of dwellings. What he found was that in one of the settlements, Santandareano, the community was much more involved in the church, which in turn encouraged marriage and emphasized the patriarchal role of the man as the father-figure that takes care of his family. In this instance, the rate of consolidation was quick and many of the dwellings had already reached a stage of completion. The reason for this being that the dwelling became a symbol of the father's commitment to his family and household. On the other hand, in an informal settlement in Samario, according to Kellett (1999), the male did not express his manhood by demonstrating his authority over his family but rather through his virility. In this case the community was far more liberal in the way they viewed marriage. As a result, there was much less of an emphasis on the family unit and the majority of households were run by women, who often had children from different partners. As

a result of this constantly changing lifestyle and the difficulty of being single mothers, it was not of the highest priority for these women to invest their time, money and hard work on completing their dwellings.

The other aspect that impacts heavily on the levels of consolidation of dwellings in informal settlements is the income of the household. Indeed, Ward (in Kellett, 1999) notes that households with more working members and higher household incomes are more likely to be able to spend more time and resources on their dwellings. This is something that is quite self-explanatory and would be expected to be one of the biggest factors affecting the informal settlement dwellers prioritization or lack thereof, of the construction and improvement of their dwelling. As mentioned earlier in chapter 2 about Christien Klaufus (2000) observations in Ecuador, new residents to the settlements from the rural areas tend to build much more temporary structures with corrugated iron roofs, whereas older residents, who are now much more economically secure, often add concrete roofs to dwellings to be able to add another floor to the dwelling in future. They may even completely abandon the original corrugated iron roof structure to build something that resembles much more a formal house in the city. The economic influence would also not only speak particularly of the individual income of the household but perhaps of the economic circumstances of whole communities as the prioritization of dwellings would not only be apparent by the unevenness of completion of dwelling to dwelling in a particular settlement but also from settlement to settlement and even in comparing informal settlements from country to country or state to state.

In South Africa, the socio-political influence is much more of an influencing factor than in other parts of the world. With a history of policies in support of slum eradication and eviction in favour of urban competitiveness (Huchzermeyer, 2011), the consolidation and completion of dwellings tends to occur at a much slower rate. In most informal settlements in Durban, there may just be a handful of dwellings constructed from more permanent materials like brick or blocks, whereas the majority of dwellings are constructed with wooden frame structures clad in either recycled timber or corrugated iron. The reason for this preference of less permanent structures, while in part influenced by economic factors, is ultimately due to the fact that residents still fear eviction and therefore, would prefer not to put all their time and resources into a dwelling that they may ultimately lose. Indeed, residents in many settlements in Durban are still earmarked for resettlement. However, current legislation prevents the municipality from evicting them. Kellett and Napier (1995) also attribute this preference for more temporary structures to the hopefulness of residents to eventually receive formal housing provided by the government.

What all this depicts is that informal settlement dwellers are influenced by a number of factors that determine whether or not they prioritize consolidation and completion of their dwellings. Kellett and Napier argue that informal settlements are the new vernacular in the sense that, much like vernacular architecture, informal settlement architecture does not involve the input of an architect. While labelling it the “new vernacular” helps to remove certain negative connotations previously associated with informal settlements and their dwellers and depicts the dwellers as ‘creative users’ of their environments, it also fails in some measure to acknowledge the plight of informal settlement dwellers. Informal settlement communities are met on a daily basis with challenging social, economic, political and environmental factors that often cause them to place less of a priority on their dwellings on focus more on actual survival.



Fig.35 & 36: The image on the left depicts the typical wooden frame structure type of dwelling clad in a mixture of materials in the Quarry Road West Settlement in Durban, South Africa. The image on the right however depicts a much more developed dwelling of more robust construction, whose residents have been in the settlement for much longer. (Source: Author)

The vernacular architecture that Amos Rapoport (1969) speaks of displays within it, much more clearly, the culture and identity of its people. Aspects like climate responsive architecture is much more clearly found in the vernacular. The main reason for these aspects being much clearly defined in vernacular architecture is that the users and the residents of these dwellings do not face as challenging social, economic and political challenges as informal settlement communities. The way the Matmata dwellings of the Sahara are constructed underground, under metres and metres of earth, making use of the slow transfer of heat to the dwelling at night when it is needed and out of the home during the day when it is hot, is clearly indicative of the hot, arid climate of the Sahara. The portability of the Mongol yurt is also very much influenced by the nomadic culture of its people. The examples of just how clearly aspects like culture and climate influence vernacular architecture are

endless. This is the difference between vernacular and informal settlement architecture. This very clear depiction of the culture, identity, climate responsiveness, is not always immediately apparent in informal settlement architecture. Often this is because, informal settlement dwellers have to prioritize survival and a number of other aspects over the consolidation of their dwellings. As a result of this, in many cases, the residents are unable to imbue within their dwellings their cultural identity or respond to the environmental context as well as they would like to. However, this does not necessarily mean that these aspects are altogether absent, but rather that their residents have to look to alternative ways to express their identity within their architecture and that this may be more apparent in the subtleties of construction.

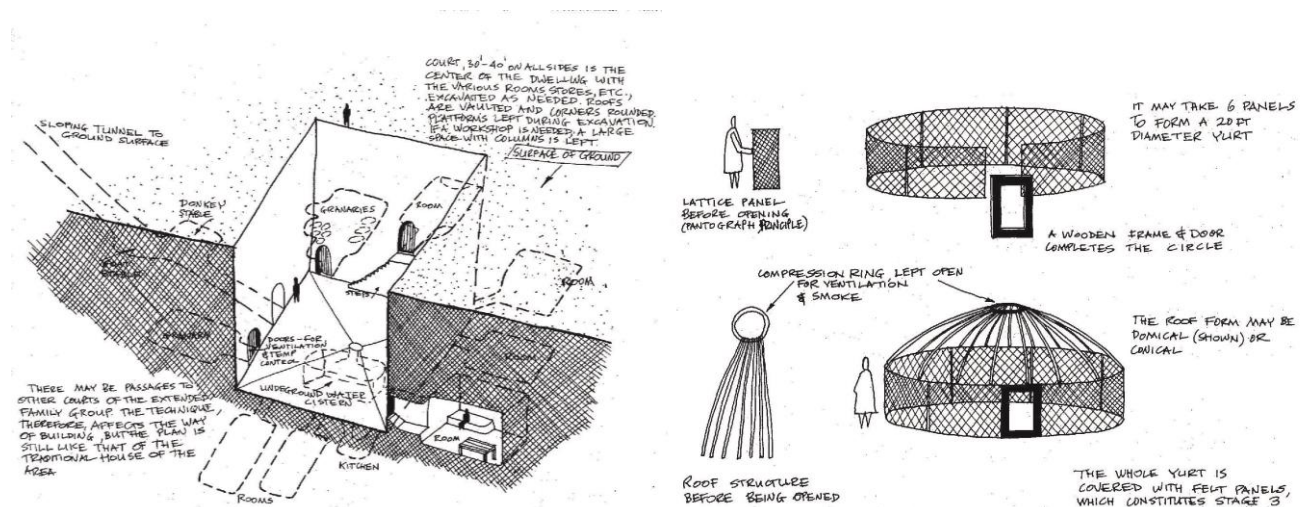


Fig.37: A section through a Matmata dwelling showing the spaces of the household underground.
(Source: Rapoport, 1969)

Fig.38: The construction of the Mongol yurt, showing the portability of its elements, in response to the nomadic culture of its people.
(Source: Rapoport, 1969)

The following chapters will seek to understand the architectonics of the built form produced in informal settlements in greater detail. What has to be understood is that the rates of consolidation of dwellings in informal settlements vary not only within settlements themselves but from settlement to settlement and country to country. The reasons and factors that influence this, as aforementioned, are varied and ultimately determine how much of priority is placed on consolidation. In these cases it is quite often difficult to immediately recognise some immediately comprehensible architectonic. However, these exist in the subtleties, particularly in South Africa. Therefore, the rest of the chapter will seek to not only look for those immediately apparent features of the construction that contribute towards an architectonic but also to seek how informal settlement communities approach architectural expression in the absence of an immediately comprehensible architectonic.

4.4. THE GENIUS LOCII OF THE INFORMAL SETTLEMENT

According to Frampton (1983), because critical regionalism draws from the peculiarities of a particular place, it involves a more direct relationship with nature, especially in the case of vernacular architecture and informal settlement architecture. As a result, those aspects like topography, slope, sunlight, climate and immediate existing built context plays an influential role in a design process conceived through critical regionalism. The way the built form reacts or responds to these elements is much more harmonious than say, the tendency to completely alter a site using earth-moving equipment to flatten a slope to build upon. Such an approach completely ignores the “peculiar characteristics” already inherent in a given site and is predicated on the complete erasure and disregard of them. This could also be noted in the case of designing a building that pays no attention to climate. The “International style” buildings for example, which are characterized by large expanses of glass with little to no shading, may make sense in a European context, but could potentially be unbearable in the context of a sub-tropical climate like Durban.



Fig.39 & 40: Images of the favelas in Caracas, showing the favelas overtaking the left over too steep to develop on space outside the bounds of the city.

(Source: <https://archithoughts.wordpress.com/2009/10/06/room-with-views/caracas-slum-2/>)

(Source: <http://caracas1010a.blogspot.com/2011/12/>)

Informal settlements communities, whether knowingly or not do take the surrounding environment into consideration. As has already been acknowledged in previous chapters, informal settlement communities tend to occupy space on the peripheries of cities. Furthermore, these spaces are part of the extended urban fabric that are usually unsuitable for development. This is largely due to steep gradients on sites, locations being close to industrial areas or in general, areas considered by developers to be worthless. These areas then become leftover spaces in the urban fabric. It is in these very spaces that insurgent groups set up communities and begin the process of settling.

Kim Dovey and Ross King (2011) categorize these spaces into 8 typologies as a means of easily identifying them:

- 1) **Districts:** These are what they describe as informal settlements that have grown to such an extent they can no longer be described as encroachments but rather large, informal mixed-use districts. Examples of which are Kibera in Nairobi, Dharavi in Mumbai, Tondo, Khong Toei and Kampung Kaliasin.



Fig.41: The slums in Dharavi, forming a district of its own on the outskirts of the formal city. (Source: <https://dharavislumindia.weebly.com/dharavi-problems.html>)

- 2) **Waterfronts:** These are settlements that occur on the marginal land between the formal city and rivers, canals, lakes or harbours and are often sites deemed unsafe for development by the city due to flooding.



Fig.42 & 43: Examples of waterfront settlements

(Source: <https://edsc.unimelb.edu.au/graduate-research/student-life/oculus/2016/minimising-the-flood-risk-in-kathmandu-factors-affecting-riverbank-informal-settlers-physical-adaptation>)

- 3) **Escarpmnts:** Sites considered useless for development due to very steep slopes.
- 4) **Easements:** These are usually buffer zones around urban infrastructure like railways, freeways and large power and sewer lines.

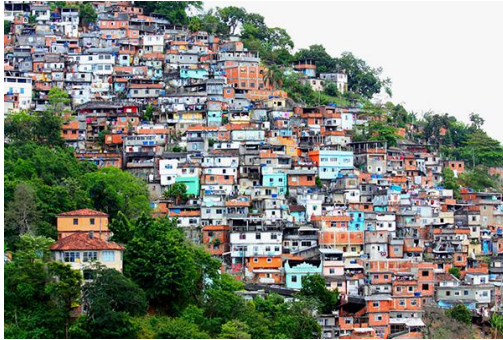


Fig.44: The favelas in Rio de Janeiro located on a steep escarpment
(Source: <http://www.theborneopost.com/2016/08/21/natural-hazards-slope-failures/>)

Fig.45: Slums in Kibera occupying an easement along a railway line.
(Source: <https://mambo.hypotheses.org/941>)

- 5) **Sidewalks:** Usually on sidewalks lined with blank facades.
- 6) **Adherences:** This is usually a form of settling where the informal architecture attaches to or relies upon the formal.

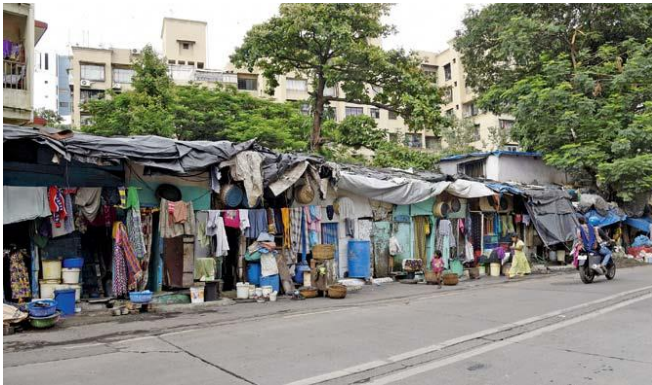


Fig.46: Slums in Mumbai occupying the sidewalks.
(Source: <https://www.mid-day.com/articles/e-ward-mumbai-news-encroachments-slum-dwellers-byculla-dockyard-road/17604196>)

Fig.47: Shacks occupying the rooftops of multistorey buildings in Hong Kong
(Source: <https://za.pinterest.com/pin/113012271873292014/>)

- 7) **Backstages:** Where informal settlements insert themselves between or attach themselves to formal buildings, often hidden away from the public.
- 8) **Enclosures:** Where settlements are contained in a formal shell of a vacant building or compound.



Fig.48: An example of a backstage informal settlement occurring on unoccupied land behind formal houses, Havelock, Durban. (Source:Google earth)

Fig.49: The Torre David. An example of an enclosure typology where the vacant building was occupied by slum dwellers who rebuilt the interior, creating a settlement within the highrise building.

(Source:<http://caracasshots.blogspot.com/2012/09/white-elephants-la-torre-de-david-2.html>)

These typologies, while in some ways do tend to over-generalize the types of environments, do however create a guideline to understanding the kinds of settings wherein insurgent groups insert themselves. There could be cases where a settlements could carry features of a few of these typologies or even none at all. However, King and Dovey (2011) acknowledge that the types are in no way mutually exclusive or stable but rather they provide a range of conditions to understand why informal settlements emerge where they do. Why this is necessary to this paper, is that it sets up a means of articulating the different types of architectural responses produced in this range of contexts.

If we are to consider the architecture produced at waterfronts, by rivers, lakes and lagoons, one would have to immediately consider the danger of flooding. Clearly the architectural response would be predicated heavily on keeping water out of the building and protecting its occupants from floods. In the case of an informal settlement in Lagos, called Makoko, the entire settlement is constructed over Lagos lagoon. The dwellings are built of recycled timber driftwood and bamboo, and often clad in corrugated iron, while sitting on stilts high above the water.

Another case of waterfront informal settlements occur in Indonesia and Manilla. These are often in the form of dwellings occurring on the banks of rivers and lakes. In Bandung, Indonesia, dwellings are built right on the edge of the water, making use of every bit of left over space by building high in a variety of ways to prevent rising tides from flooding dwellings. Block houses tend to wall up the side of the river while the wooden frame structures tend to be built on stilts.

In the Quarry Road West settlement in Durban, part of the settlement is situated between a freeway and river. As a result, residents have to deal with flooding during

heavy rains from the river as well as the run-off from the freeway. The solutions by residents in this case are far more subtle than in the previous two, partly due to the more temporary nature of their structures. Here the residents raise their homes above ground slightly, have makeshift drains that channel water away from the homes and make use of carpets to soak the water.



Fig.50: An image depicting the waterways of the Makoko informal settlement in Lagos, showing the dwellings raised up on stilts.

(Source:<https://www.theguardian.com/cities/2016/feb/23/makoko-lagos-danger-ingenuity-floating-slum>)

Fig.51: A dwelling at the Quarry Road West informal settlement raised off the ground. (Source:Author)

Considering the architecture produced on escarpments, on closer inspection one can clearly notice the rhizome-like and organic street network that conforms to the contours of the slope. Indeed, Mahyar Arefi (2011), when observing the process of formation of an informal settlement in Pinar, Turkey, describes how the community begins the settlement process by setting up a network of roads and paths, outlining dwelling plots, that follow the topography. In addition to this, the dwellings themselves, particularly in the favelas are built into the slope. This is what Frampton describes as "cultivating" the site. It is a process whereby the building is terraced into the slope. In the favelas, according to Brillembourg (2010), dwellings are built as such with flat roofs to accommodate for expansion. This is often to allow for the family to extend as they gather the funds or to make provision for the second generation or extended family to eventually live above the dwelling. This terraced style of construction allows for outdoor open space on upper levels that are often used to escape the interior heat or used for clothes lines. In the case of Pinar, the residents often make use of innovative means creating more space by raising platforms on stilts to access roads or paths (Arefi, 2011).

What can be taken from these few examples of how informal settlement communities respond architecturally to their physical environments is that these responses are what ultimately shape the "sense of place" of the settlement itself. The experience created by the winding narrow paths that follow the contours of the

slope, the boat ride through the waterways between stilted buildings all contribute towards the settlements sense of place. The relationship of the dwellers to their environment shape their architecture and in essence is a reflection of their culture and identity.



Fig.52: An image from the Quarry Road West informal settlement showing how residents bank the slope to create plots to build on. (Source:Author)

Fig.53: An aerial view of the Kennedy Road informal settlement showing the rhizomic-like paths that follow the slope. (Source: Google earth)

4.5. PUBLIC/PRIVATE SPATIAL RELATIONSHIPS WITHIN THE INFORMAL

Informal settlements throughout the world share one very apparent commonality – density. Largely due to the sheer number of informal settlement dwellers and the scarcity of land available for occupation, land in informal settlements is a very valuable commodity. In addition to this, the lack of any formal legislative planning controls or restrictive parameters by authorities result in occupants creating highly dense urban fabrics which defy many normative conventions of public and private space relationships.

According to a study done in Mexico by Elena Tames (2004), comparing the public-private space relationships in informal settlements to formal housing formal housing projects, it was found that informal settlements tended to prioritize private space. The two informal settlements, Lomas Atlas de Padierna and Dos de Octubre, were compared to two housing projects, La Palma and San Pablo, and it was found that the private space in the informal settlements were 54% and 63% compared to 29% and 26% in the housing projects. As such, one can clearly see the prioritization of private space where land is more efficiently allocated for dwellings, leaving very little wasted space. As such, squares or plazas are rare. Rather, the streets in these

informal settlements, which represent 34% and 29% of their total areas, is where all the public activity occurs. Public space in informal settlements is linear.



Fig.54: An aerial view of a portion of the Quarry Road West informal settlement depicting the sheer density of dwellings in the space. (Source: Author)

These uneven streets that widen at some points or are encroached porches and frontages of dwellings shape the public space. The wider portions may become little unconventional "squares" where kids may gather to play or where the adults may sit outside in the evenings after a hard day's work.

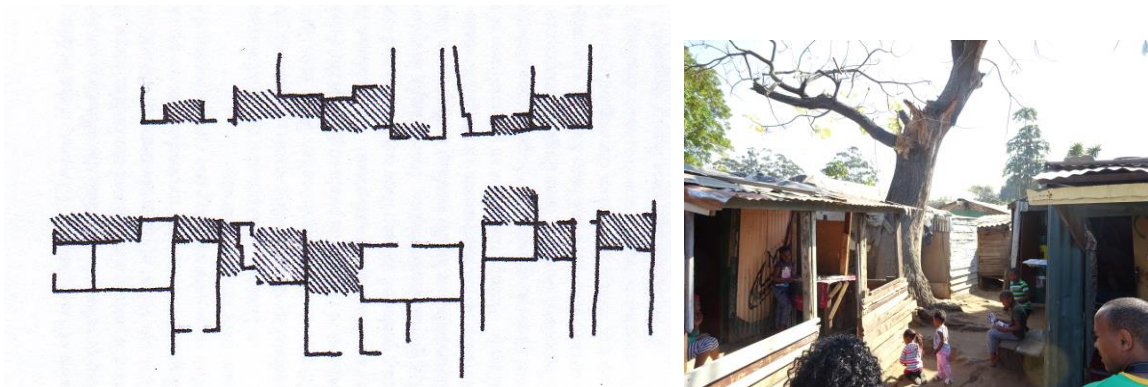


Fig.55: An example of a street in an informal settlement, showing how public spaces form in the wider portions of the street, with semi-private zones shaded in. (Source: Opalach, 1997)

Fig.56: A small public space along a path created by the position of the tree where kids play in the Quarry Road West informal settlement. (Source: Author)

In addition, due to the complete flexibility of space and land use, Tames (2004) observes that the frontages of buildings often become storefronts. The same can be observed in informal settlements in Durban, where dwellings along major streets often double as shebeens, spaza and tuck shops, food stalls and game rooms for

teenagers. The spaces outside these home based enterprises are often very busy and where a lot of the social interaction takes place.

GRADATION OF PRIVACY

Privacy in such dense environments is something that to the outside observer seems almost non-existent due to the sheer density of informal settlements. However, even in such dense environments, occupants do set up degrees of privacy.

According to Klaufus (2000) one of the key organizing principles in formal settlements in Ecuador that differentiate between public and private or outside and inside, is kinship. Only family are permitted into the house, whereas, friends, neighbours and acquaintances meet outside. This could be especially true to all settlements to all informal settlements as it was found in earlier chapters that informal settlement dwellers usually take residence in particular settlements through family or associates already living there. Elena Tames (2004) affirms this observation in Mexico, where there is a strong indication of plot sharing with extended family.

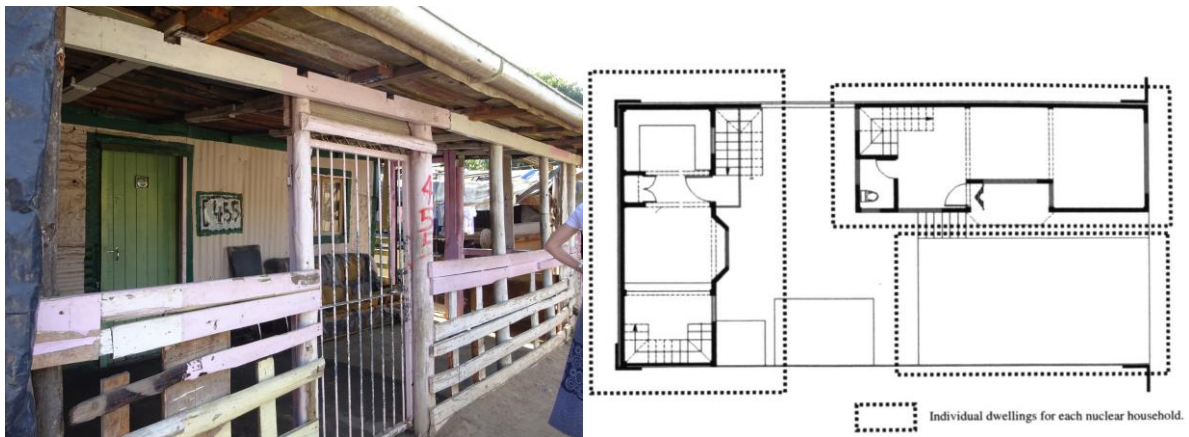


Fig.57: An example of a semi-private zone along a street in the form of a covered veranda in the Quarry Road west informal settlement. (Source: Author)

Fig.58: A typical example of family plot sharing in an informal settlement in Mexico (Source: Tames, 2004)

Opalach (1997) on speaking on the degrees of privacy in informal settlements in Sao Paulo observes that the street façade is not completely solid but rather, it is often a permeable screen that protects semi-private space. This is often a buffer zone between the dwelling and the street. Although this kind of gradation of privacy doesn't occur throughout the observed settlement. Depending on the level of consolidation of the dwelling and the affluence of the occupants, the buffer zone may take the form of just a small porch or even just a half door.

According to Opalach (1997), the spaces within the informal dwellings in Sao Paolo are graded from public to private, with the most public spaces occurring closest to the street. Often that more public space takes the form of home based enterprise. In informal settlements in Durban, the same does hold true, but again, depending on the size and consolidation of the dwelling, length of stay of the occupants and their financial standing, the degrees of privacy may vary, with the more consolidated dwellings exhibiting higher levels of privacy from the street.

4.6. THE POETICS OF THE INFORMAL ARCHITECTONIC



Fig.59: An image of the “Crumbling Wall” artwork by El Anatsui depicting the tectonic expression of the informal through its use of varying materials of varying age and size.

(Source: <https://everydaytrash.com/tag/bottle-caps/>)

The last section of this chapter seeks to analyse the built form produced within an informal setting through the poetics of its construction technique and the meaning associated to the materials used in its composition. It uses Kenneth Frampton’s rhetoric on tectonic culture as a means of analysis.

In his famous essay, “Towards a Critical: Six Points for an Architecture of Resistance”, Frampton suggests the tectonic as a means of architects expressing in their architecture a structural poetic or a play between materials, craftwork and gravity (1983). His main motivation for suggesting the tectonic as a key of architectural expression was guided primarily by the idea of aiding architects to look within architecture itself as an art form for influence rather than looking outward towards other disciplines like art and philosophy. The idea of studying the poetics of tectonic expression within architecture allows for the study of its influences, like culture, identity, climate, physical context and many others, all of which have been

discussed in previous chapters. Whereas the previous chapters looked at how these aspects influence the architecture, this section aims to understand how these influences, particularly culture and society, ultimately imbue the built form and materials with meaning.

AN OVERVIEW OF FRAMPTON'S THEORY OF THE TECTONIC

Throughout Frampton's writing on the 'tectonic', he tends to establish a number of binary opposites as a means of defining the concept in and of itself. He first begins by analysing Gottfried Semper's primordial dwelling, which Semper divided into 4 elements. The first of which being the earthwork; second, the hearth; third, the framework and roof; and fourth, the lightweight enclosing membrane. Semper draws a distinction between the earthwork, framework and roof on the one hand the hearth and the lightweight enclosing membrane on the other. This distinction creates Frampton's first set of binary opposites, with the former being referred to as the "ontological" and the latter being the "representational". Frampton refers to the ontological as the core of a building that is simultaneously both its fundamental structure and its substance, while the representational refers to the skin that depicts

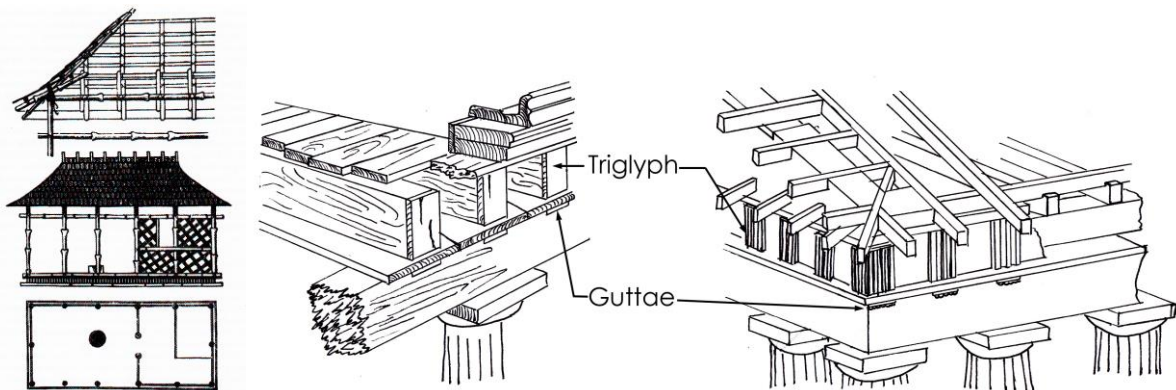


Fig.60: Drawings of a Caribbean hut from which Semper formulated the four elements of his primordial dwelling (Source: Dahl, 2017)

Fig.61: Sketch demonstrating the transformation of the kenform into the kunstform in the Greek Temple (Source: Author)

the composite character of the construction. This distinction in the built form is further explained by Karl Botticher's (in Frampton, 1995) distinction of the "kenform" and the "kunstform" in the architecture of the Greek temple. The Kenform, Botticher explains, refers to the core form of the timber rafters in the original wooden Greek temple. On the other hand, the eventual change of the construction of the temple from wood to stone, emulates the wooden rafter through elements like the triglyphs and metopes. This emulation of the wooden structure in stone is the kunstform. The kunstform of course referring to the representational or the scenographic and the kenform to the ontological. On extension, the ontological would refer to an architectural language developed through an honest representation of the

materials and the construction technique. The representational, however, is an approach that favours the image over structural honesty. It is where the expression of the building is derived through its representation of something else. This tends to immediately create the impression that the representational is not a suitable approach to architecture, but it isn't in any way incorrect. While it may not always advocate a structurally honest way of tectonic expression, it is nevertheless an expression that often makes reference to something of importance to the context within which the architecture is produced. As is the case with the Greek temple, which references older building techniques that may have been a very important aspect of its people's cultural and architectural identity.

The other distinction that Frampton makes, with reference to Gottfried Semper, is between light and heavy materials used in construction. Here, Frampton refers to the earthwork and the heavier materials like stone, brickwork and mud walls as stereotomic and he refers to the frame like elements of construction in this case as the tectonic.

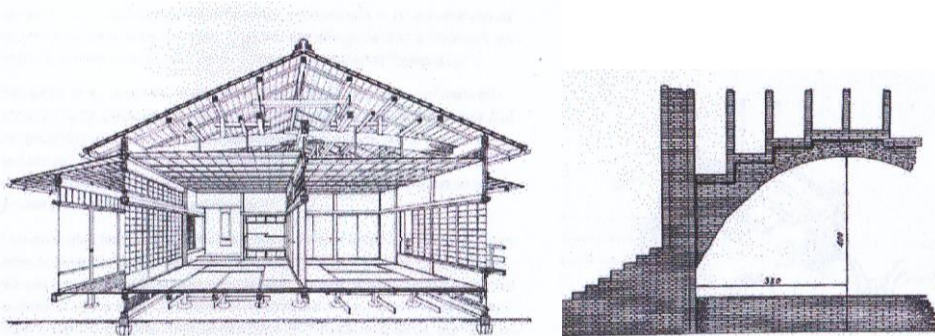


Fig.62: Traditional Japanese dwelling depicting a very lightweight "tectonic" type of construction
(Source: Frampton, 1995)

Fig.63: Catalan Vaulting showing a more heavy, stereotomic type of construction
(Source: Frampton, 1995)

What Frampton's terminology produced from his distinctions of the elements of built form and its technique do, is that they provide for this paper, a framework to analyse the architecture in informal settlements in terms of its construction, the materials used and ultimately how these are ingrained with meaning as a result of how the informal settlement dweller applies the aforementioned elements and techniques when building their dwellings. According to Frampton (1995), these dichotomies of representational versus ontological and the stereotomic versus the tectonic should be constantly rearticulated in the creation of architectural form, since each building type, technique, topography and circumstance brings about a different cultural condition. The following sections will depict how these dichotomies are reinterpreted by the informal settlement dwellers in the construction of their dwellings and how this ultimately makes its tectonic expression meaningful and relevant to them and their daily lives, whether or not they are aware of it.

THE TECTONIC-STEREOTOMIC DIALECTIC IN THE CONTEXT OF INFORMALITY

According to Frampton (1995), each cultural condition and set of physical contextual circumstances reinterprets and rearticulates the tectonic-stereotomic dichotomy. With Gottfried Semper's primordial dwelling, the only stereotomic elements are the heavy earthworks. The rest of the dwelling: the framework and the roof and the membrane skin wall are all considered tectonic. In the case of say, the traditional Berber dwelling in North Africa, however, with an arid climate, the building's exterior is comprised only of stereotomic elements, like thick mud walls to slow down heat transfer to the interior of the building. Similarly, its culture which, sees the interior of the dwelling as something very private, is protected by the heavy, stereotomic walls. On the other hand, the traditional Japanese dwelling is comprised primarily of tectonic elements, with the only heavy, stereotomic elements being the floor ground floor and the foundations for the columns that are hidden underground. The lightweight framework, the shoji screen walls and the roof are all tectonic. This comes largely from the manner in which the Japanese culture viewed privacy. Often during hot weather the walls were all slid back, opening the entire dwelling to the outside. The Japanese had a much more liberal view on privacy and that reinterpreted the stereotomic-tectonic dialectic. The purpose of this interlude into vernacular architecture was to display some examples of how culture and context reinterpret this dichotomy.

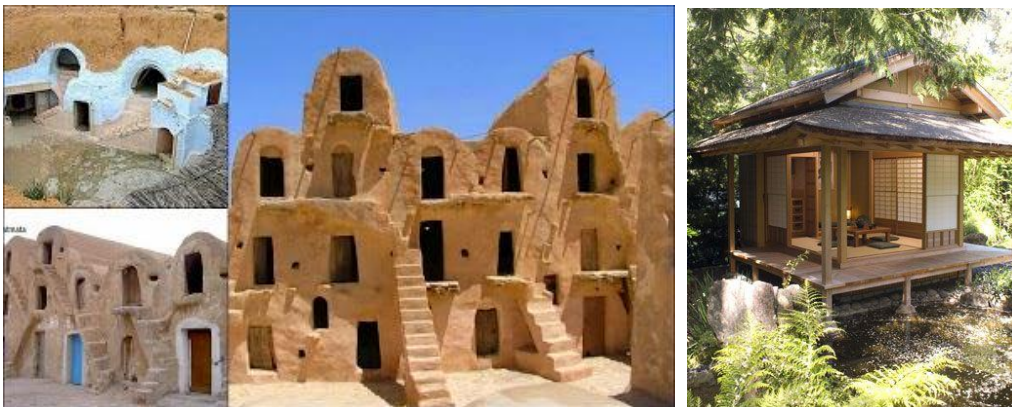


Fig.64: Traditional Berber Matmata dwelling showing its stereotomic earth construction
(Source:<http://travel-with-bech.blogspot.com/2014/09/matmata.html>)

Fig.65: Traditional Japanese tea house with its shoji screens slid back open showing its lightweight tectonic construction.
(Source: <https://za.pinterest.com/pin/87820261470420008/>)

In the case of the architecture produced in an informal settlement, the tectonic-stereotomic dialectic is also reinterpreted. In this case, the stereotomic implies permanence while the tectonic implies impermanence. This also speaks about all those social, political and economic influences that determine whether a resident prioritizes the consolidation and improvement of their dwellings. In a case where a resident may have the financial means, secure land tenure, manpower and the

intention to stay in the settlement for a long period of time, the materials that they choose are often intended to create a structure that is more permanent. Hence the materials, are often, brickwork, blockwork, mud and even concrete. Whereas, the lack of finances, secure land tenure and manpower, would mean that the resident would look towards more temporary building materials. So that in the case that they are evicted, they would not lose as much. Or if their financial means improve, they could demolish the temporary structure and replace it with ease or perhaps even move away. The materials that are seen in this case are often, wooden frame structures that are clad in either wood, corrugated iron or even plastic sheeting to keep water out.



Fig.66: Image of a dwelling in Quarry Road West showing brick construction plastered over – depicting permanence (Source: Author)

Fig.67: A dwelling at the Quarry Road West constructed from recycled timber and plastic sheeting depicting impermanence that could be influenced by a number of challenges. (Source: Author)

What can be seen here is that the choice between stereotomic and tectonic for the informal settlement dweller is informed through influences that are, in essence, of a much more dire and serious nature. Impermanence and the type of building it influences represents insecurity, and being subject to a very unpredictable and turbulent life, wherein the informal settlement dweller often has very little control. On extension this also means that architectural expression is often restricted.

MATERIALS & FORM

The previous section looked at the nature of materials chosen and depicted a broad picture of what they represent in terms of lightweight and heavy materials. However, on observing informal settlements throughout the world, one cannot deny that regardless of the material choice used to produce these dwellings, the form is almost always rectilinear and cuboid. Rectilinear forms tend to always dominate informal settlements above all others. The only variation that is apparent is when these rectilinear forms are arranged on slopes, as in the favelas, which produces multi-storey, terraced forms. However, these do still remain, stacked rectilinear prisms, terraced down a slope.



Fig.68: Image of the Favelas terracing down a slope with their rectilinear forms.

(Source:<https://www.dandc.eu/en/article/favela-news-agency-expressing-views-rios-marginalised-people>)

Fig.69: An aerial view of the Quarry Road West informal settlement showing the rectilinear forms of the dwellings.

(Source: Author)

Indeed, Kellett and Napier (1995) acknowledge that in informal settlements in the Inanda region of Durban, South Africa, the majority of dwellings are rectilinear with just a handful being circular or domed. This is particularly interesting considering that according Kellett and Napier's (1995) research, 69% of residents in these settlements were born in rural areas, where the traditional circular and domed dwellings would be a common sight. They cite the reason in this case as being born out an effort to maximize space. Any person who has observed informal settlements in any part of the world would notice immediately the high density of people and dwellings within them. As a result, space is something very valuable in an informal settlement. Circular or more organic forms would simply be uneconomical.

On the other hand, one could attribute the restriction of form on the very materials used in construction. Abu-Lughod (in Elleh, 2010) writes, rather eloquently, that in these cases, form does not follow function but rather that the "box" follows inevitably from the dictates of the construction material. She claims that the cement block is a building material that carries with it design principles that are often

independent of the culture within which it is used. The same could also be said of the dwellings constructed from recycled timber and clad in timber board or corrugated iron.

What this depicts is that form, in informal settlements is sorely restrained due to restrictions posed by the lack of space and by the materials used in construction. This could also be attributed to the fact that informal settlement dwellers who build their own homes, as ingenious as they prove to be, are ultimately not experts in design or construction and therefore, do not see the potential in the materials they use to produce different forms. Nonetheless, the restriction of form in informal settlement dwellings makes it difficult for informal settlement dwellers to infuse within their architecture elements of their culture and identity. However, it is not altogether lost as dwellers take to other forms of expression in their dwellings as the next section explores.

SCENOGRAPHY & REPRESENTATION AS ARCHITECTURAL EXPRESSION

Frampton speaks about scenography and representation as being the dichotomy of ontology in reference to architectural expression. Ontology refers to the core of a building that is simultaneously both its fundamental structure and its substance, while the scenographic and representational on the other hand, refers to the representational aspect of image or the skin of the building that represents a more composite type of construction. (Frampton, 1995)

The last section has shown that the form of dwellings in informal settlements is restricted by material choice and space, and by extension this means that its fundamental structure and core substance are restricted in terms of cultural expression as the form produced is almost always cubic or rectilinear. This means that the ontological character of the dwelling is robbed of a tectonic expression that reflects the culture, identity, style or preferences of its inhabitant. In this case, the residents of informal settlements cannot develop an architectonic expression by relying on structural and material qualities and therefore, have to turn to the more scenographic forms of expression to imbue identity into their architecture.

Nnamdi Elleh (2011) references an artwork produced by El Anatsui called the Crumbling Wall, which is essentially a reproduction of a wall in an informal settlement. The artwork is comprised of multiple pieces of different metal claddings, all of different sizes and different degrees of decay. What this speaks of is the nature of materials in informal settlements as being recycled again and again. These materials are often just picked up by the residents because they are merely there and cheap and serve a function or they could even have been taken from an older house, they could have been provided by a friend or family, they could even have

been a remnant from when the dwelling's resident was better off. Whatever the case may be, each panel may carry with it some sort of memory, and with time, they gain more meaning. This skin of the dwelling while not being the core of its structural poetic carries with it an architectural expression that is infused with meaning and memory.

Elena Tames (2004) highlights how the lack of expression from an ontological approach is made up for by a scenographic approach when she observed the building process of dwellings in an informal settlement in Mexico. In the initial stages, she says the forms produced by the concrete frame and block infill construction result in the same repetitious rectilinear, cubic structures with very little differentiation, however, as the house takes on its finishes, they take on a completely different character and now begin to express the individual household's tastes, style preferences and identity.



Fig.70: Favela Project by Haas and Haan.

(Source: <https://www.designboom.com/art/favela-painting-by-haas-hahn/>)



Fig.71: The distinctly colourful dwellings of the Bo Kaap.

(Source: <http://www.nova.fr/radionova/60117/episode-instantane-nova>)

While the above example reflects the personal tastes and style preferences of individual households, there are also various examples of informal settlement dwellers having parts of multiple houses painted in bright and vibrant colours that give the settlement a whole new identity. This can be seen in the Santa Maria favela in Rio de Janeiro where artists, Haas and Hahn, in collaboration with the community had used the walls of multiple dwellings as a giant canvas for a mural that completely changed the appearance of the settlement. The project was initiated by the artists as means of rejuvenating deprived areas and bringing about positive social change while completely rebranding the community (Chin, 2011). Another similar approach was taken by the Bo-kaap community in Cape Town, who after the apartheid era, had been able to purchase their homes, but were unable to change

its architectural language as a result of architectural heritage legislation. So, in response many of the residents began personalising their dwellings by painting in bright, vibrant colours and thereby giving the neighbourhood a completely new identity. The latter example does not occur in an informal settlement but the restrictions imposed by legislation also render the residents unable to make changes to the core and fundamental architectural expression and do had to rely on the scenographic.

4.7. CONCLUSION

This chapter used Critical Regionalism as a lens to analyse the architecture produced in informal settlements and ultimately to articulate its tectonic expression and understand the meaning associated to it. In so doing, it looked at and examined the various challenges that exist within the context of informal settlements preventing its dwellers from focusing their efforts on improving their dwellings and ultimately creating a dwelling for themselves that reflect their culture, identity and style preferences. It also established the types of environments within which informal settlements occur and how these environments, which are essentially left over space, prompt the dwellers to develop ingenuous solutions to respond to the environments.

The last part of this chapter sought to articulate an understanding of the architectonic expression in an informal settlement setting using Frampton's writing on the tectonic in which he sets up dichotomies of the stereotomic versus the tectonic and the representational or scenographic versus the ontological. It shows how these dichotomies are reinterpreted by different cultural and contextual conditions and ultimately how these are reinterpreted within the informal. Whereas the vernacular reinterprets these in terms of culture or physical context, the informal reinterprets these by responding not to influences but rather challenges, like politics, economics and society. Here a tectonic and stereotomic expression means either impermanence or permanence, respectively. Impermanence being in response to volatile and ever-changing conditions.

The informal also reinterprets the ontological-scenographic dichotomy. While Frampton may advocate to architects to favour an ontological tectonic expression. That is to reflect the architectural expression within the core essence of the dwelling or its fundamental structure. This was not the case in informal settlements. Not out of choice, but rather out of response to a set of challenges. The high density of informal settlements and the materials used in construction prevent informal settlement dwellers from expressing within the core form their identity or culture. Instead, these produce a simple, rectilinear, cubic form, devoid of identity or cultural expression. Yet they are able to express these things through a scenographic approach.



Fig.72: Journeying into the informal 4. (Source:Author)

5.0. LISTENING TO THE VOICES FROM THE BORDERLANDS: A Case Study of the Quarry Road Informal Settlement

5.1. BACKGROUND

The Quarry Road West Informal Settlement in Durban is located in the suburb of Clare Estate. The formation of the settlement began in 1984 (Sutherland et al, 2018) shortly after the construction and completion of the M19 highway that runs alongside it. The settlement is contained between the M19 highway and Quarry Road with the Palmiet River running through it.

Currently the settlement is divided into four sub-settlements as a result of the Palmiet River and a private plot of land that cause this division through the site. The settlement, according to a community mapping project undertaken in July 2017, is home to 2400 residents and 931 households (Sutherland et al, 2018), making it an average of 2.6 people per household.



Fig.73: A pictorial sketch of Quarry Road West Informal Settlement (Source: Author)

At the moment, all of the residents of the settlement are earmarked for relocation by the eThekweni Municipality as a result of the site being considered unsuitable for habitation as a result of the danger posed by the river constantly flooding the settlement as well as the unhealthy environment as a result of pollution in the river. According to one of the residents, at least half of the residents have already been moved to more formal housing. However, since then, the settlement has continued to grow to completely occupy almost all the available land and even at times spilling over into the private land which has become highly contested over the years.

5.2. JUSTIFICATION OF CHOICE

The premise of this dissertation is to design an approach to an architectural intervention to respond to the physical and social challenges and health and safety hazards faced by informal settlement dwellers. The architectural approach proposed within this document suggests that in order for architecture to respond to these challenges effectively and for the intervention to be accepted by the community, it must be informed by the very informality it responds to. For the architecture to be meaningful to the community it must embody within it, the very language inherent within the settlement, the identity of the dwellers and the approach that they take towards placemaking and the creation of built-form.



Fig.74: The polluted Palmiet River that runs through the Quarry Road West Informal Settlement poses a major health and safety issue (Source: Author)

As a result of all this, the case study had to be the study of an informal settlement rather than a response to it, to at first begin to understand the way in which informal settlement dwellers approach placemaking and built form. This would be understood through the framework set up in chapter 2 proposed by Stea and Turan (2010) which advocates that the “conditions of existence” determine the “mode of production” or the way in which informal settlement dwellers shape their environment and architecture. The theory so far suggests that the conditions of

existence of informality and the insurgency it produces, result in a mode of production that is characterised by adaptation to a constantly changing set of challenges.

The study of the Quarry Road West informal settlement helps firstly to situate the theory in the context of Durban. Quarry Road West is also considered to be a case where the challenges faced by residents are especially difficult verging on the extreme, especially with reference to the river and its flooding. The study seeks to find out how the theory applies under the most difficult set of challenges.

5.3. ANALYSIS OF THE CONTEXT

The settlement is located along the M19 highway which is a continuation of Umgeni Road to the east that runs through Durban's mixed retail and light industrial corridor and terminates in the cbd. To the west, the M19 runs through to Pinetown and New Germany which also have a slight industrial character. Close to the settlement, the M19 intersect with the N2 provides access all the way North and South. What this depicts is just how central the settlement actually is. By locating themselves at the intersection of these two major transport arteries, this insurgent community have taken advantage of Durban's decentralised, segregationist planning to gain access to not only the core of the city but all of its extents and frays which have themselves become hubs of activity.

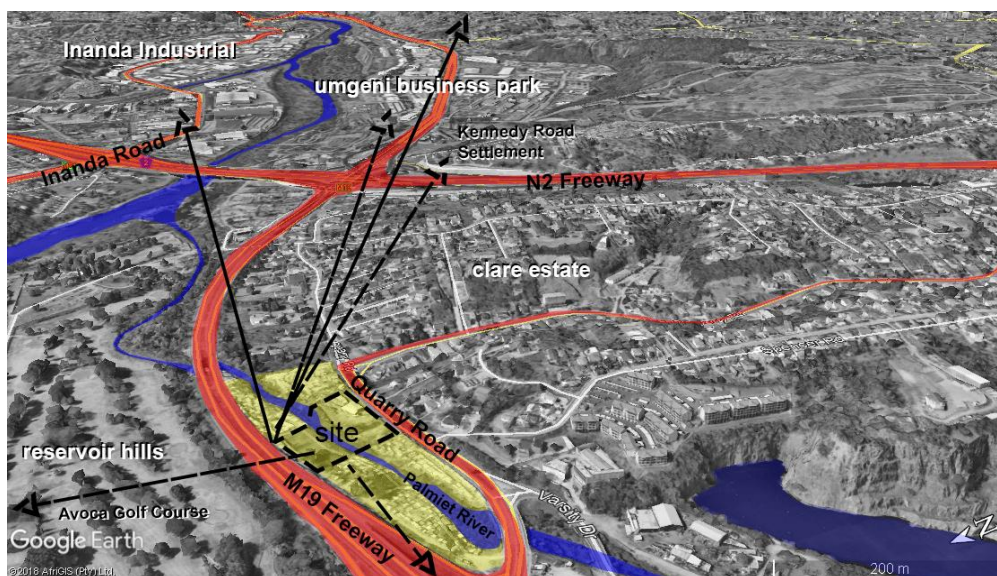


Fig.75: 3D graphic of the Quarry Road West Settlement showing connections to the rest of the urban fabric and other informal settlements. (Source: Author)

In addition, the Quarry Road West informal settlement is located in the largely middle income suburb of Clare Estate. Besides in the urban core, according to Tyida (2003) many of the residents find informal employment in the suburbs as housekeepers and gardeners.

The Quarry Road West informal settlement is also part of a network of informal settlements located along the M19 and Umgeni Road. This is particularly important during protest action as informal settlement communities join together to make their voices heard by the public and the authorities.

5.4. SOCIO-SPATIAL ANALYSIS

To begin by hypothesizing, an analysis of the socio-spatial relationships of the Quarry Road West informal settlement should reveal how social networks, subcultural activities, public-private relationships influence placemaking. The research was conducted through a community collaborative mapping exercise wherein the community identified the various spaces of activity within the settlement.

SOCIAL NETWORKS & SUBCULTURAL ACTIVITY

Much of the literature depicts that communities in informal settlements are much more close-knit than the typical urban community. Much of this can be attributed to the fact that in most cases, informal settlement dwellers' choice of settlement that they settle in is influenced by friends or associates already living in the settlement. This is especially true in the case of Quarry Road West, where, according to Tyida (2003), the majority of dwellers already had associates living in the settlement.

In addition to this, the sheer density of dwellings and the close proximity of residents to neighbours means that residents are constantly interacting with their neighbours.



Fig.76 & 77: The above two images depict the close proximity within which residents live. The left image showing three attached houses and the right showing the entrances opening straight out onto the walkway. (Source: Author)

Subcultural groups manifest themselves throughout the settlement. These are the various pool and game rooms which are frequented by teenagers and young adults at any time of day, the group of men that gather every night around the nearest or preferred shebeen, the women that gather around the washing area and the

clothes lines, the church goers who gather every Sunday in prayer, the groups of people who meet every day at the standpipes to collect water, the mothers who collectively look after each other's kids in make-shift crèches, the group of men and women of varying ages concerned about the pollution and clean-up of the river. All these activities, in some way or another, contribute towards the shaping of public space in informal settlements. Unlike in a formal setting, where the space is created first and the activities come later, in informal settlements, the activities come first and then the community shape the space around these.



Fig.78 & 79: The above images depict spaces of gathering within the community. The pool table room and the water standpipe. (Source: Author)

PUBLIC-PRIVATE SPACE

Informal settlement dwellers create their own public space means that the spaces are much more meaningful to them than the public spaces imposed on the residents of suburbs and urban environments. Indeed, Opalach (1997) remarks how in the informal settlements in Sao Paulo, the percentage of private space is much higher than their formal counterparts. Here, due to the value of space and the density of the settlement, private space takes precedence over public space. However, the public space that has been created is much more meaningful to its residents. The spaces that are created very seldom occur in the form of a square. In these informal settlements, as with many other settlements around the world, public space is manifest in the form of the street. The streets are the areas of most activity, being lined by shops and the direct entrances to dwellings. The streets are where the kids play and where people gather around outside the local pub.

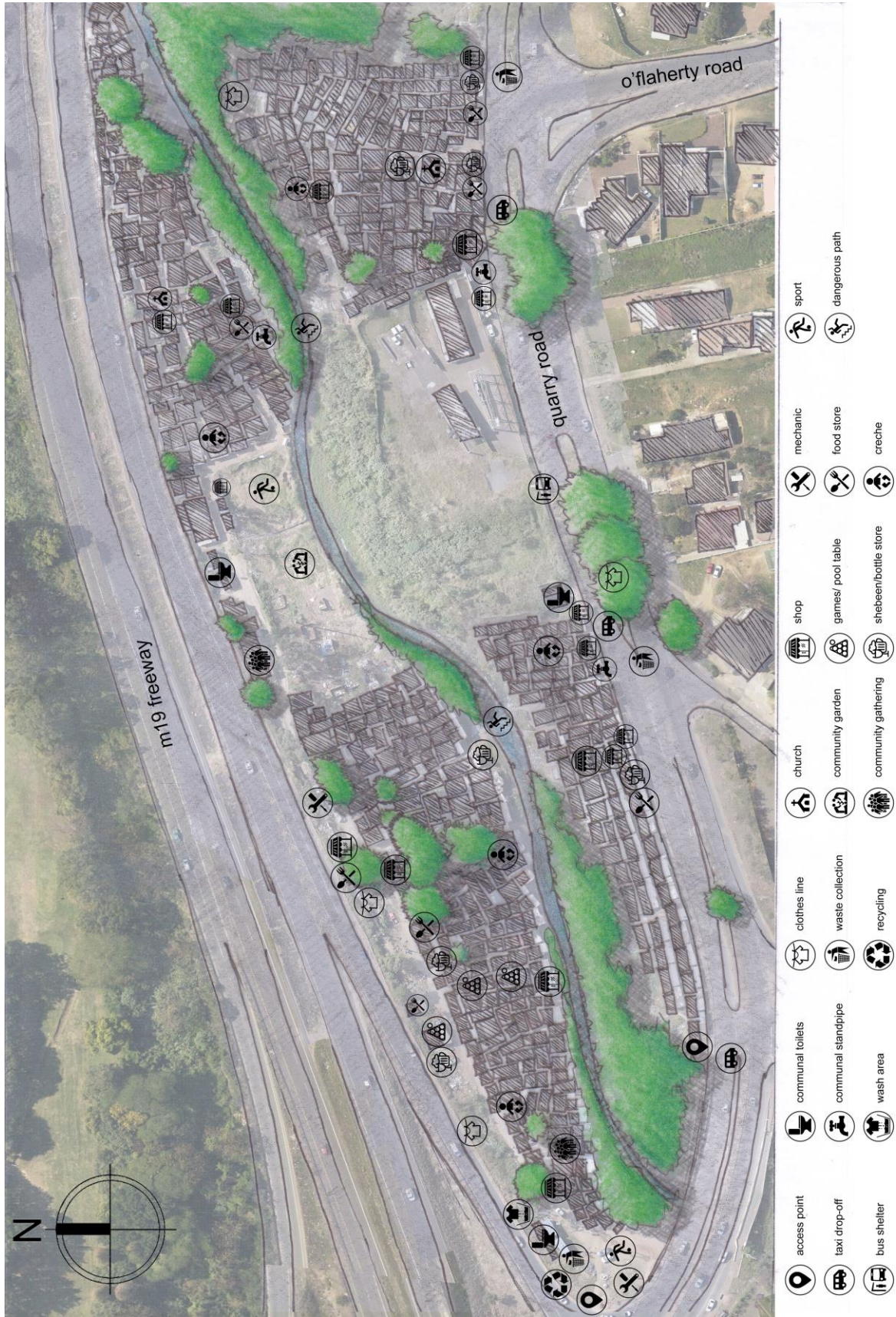


Fig.80: A sketch plan of the Quarry Road Settlement showing the spaces of activity within the settlement produced from the community collaborative mapping exercise. (Source: Author)

It is quite clear from the topographical sketch plan that all the major activity within the Quarry Road West informal settlement occur along the paths. These busy paths don't only occur along the settlements edges but throughout its interior as well. The shebeens, halls, churches, crèches, mixed retail and meeting places all occur along these dominant paths. The part of the settlement on the south-west had suffered a fire and many residents lost their homes. The municipality provided emergency housing in the form of corrugated iron dwellings. From the topographical image, it is quite apparent that the character of this part of the settlement lacks the organic nature of the rest of the settlement. The paths follow perfectly straight lines with no variation to them. Unlike the rest of the settlement, the activity is focuses along the street edge alone, because in this instance the activity followed after the planning and construction. It did not shape the planning and construction and so the urban form depicts this.

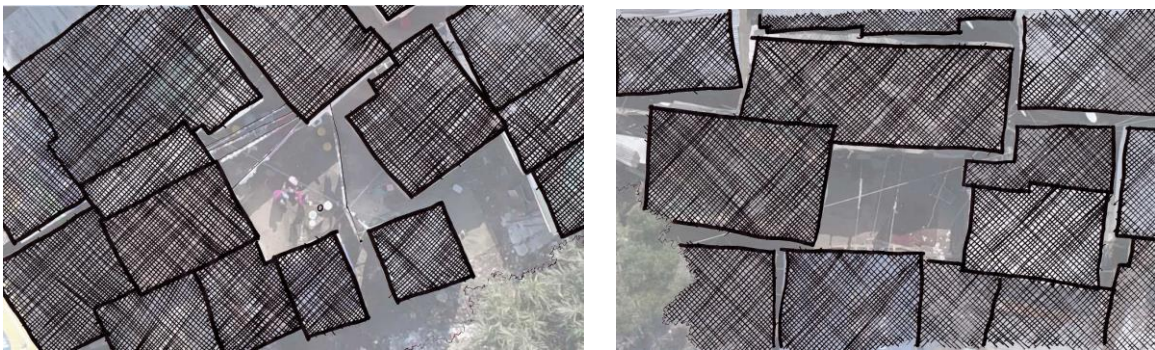


Fig.81 & 82: The above images show small courtyards that formed around areas of activity within the settlement. The above examples being of the communal water standpipe and the clothes lines. (Source: Author)

Where the spaces occurred organically through the residents constructing their own space, one can observe in less public spaces, the idea of a square. These are small public squares or courtyards which are shared by a few houses. In some cases these are simply just a few houses opening out onto a shared space, and in others, these squares occur where there is some kind of activity, like the communal standpipe, a clothes line or a church.

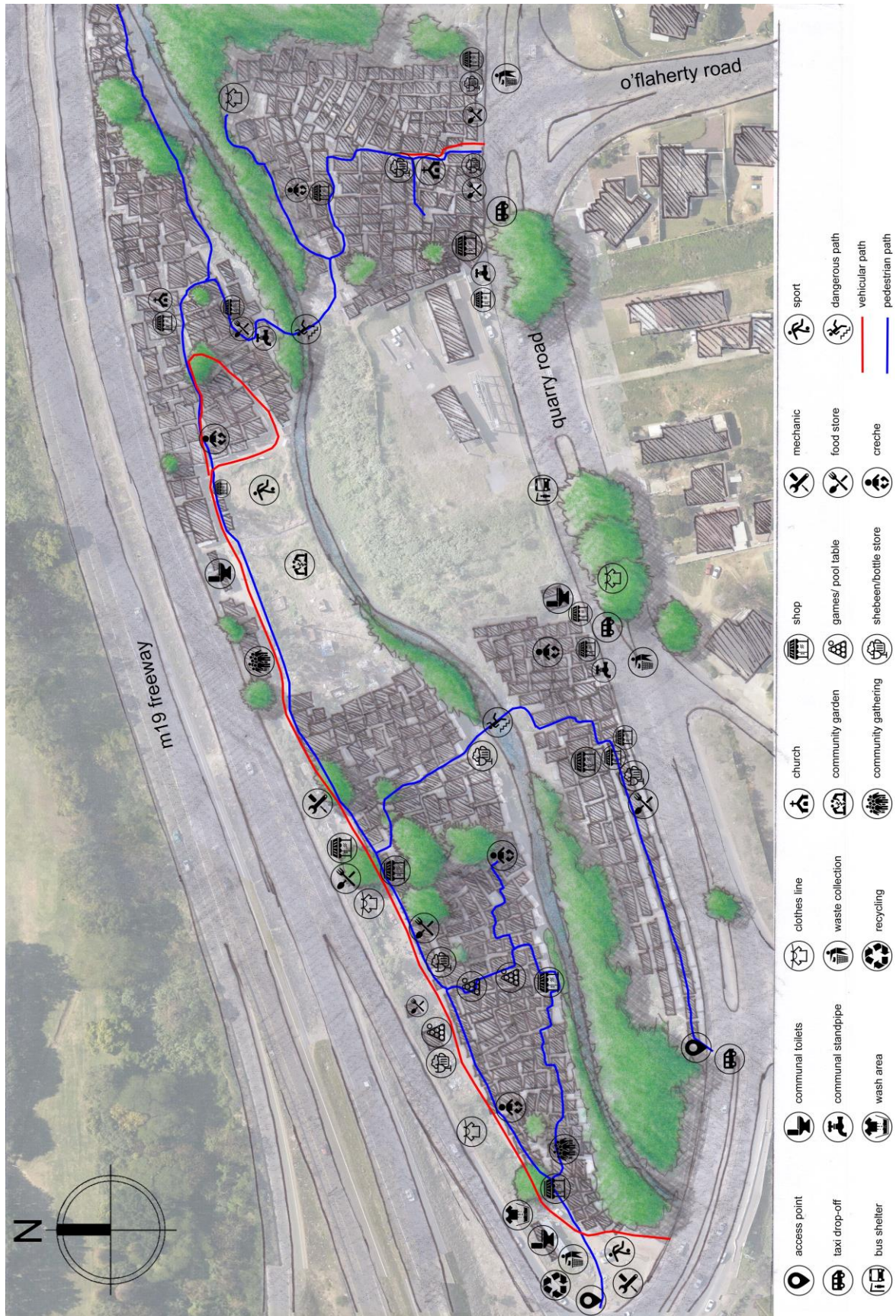


Fig.83: The dominant pedestrian and vehicular movement paths form along the areas of most activity. (Source: Author)

In some dwellings, much like Opalach (1997) observes gradients of privacy in Sao Paulo with the residents' use of porches outdoor entrance foyers, in Quarry Road West, one can notice frontages to the dwellings that mediate the public and private realms. In some cases it occurs simply as a slightly raised porch lined with rocks, in others, there are more elaborate gardens to act as buffers, while others have complete covered verandas.



Fig.84 & 85: The above two images how residents create buffers of privacy to demarcate their space using frontages and verandas. (Source: Author)

5.5. ANALYSIS OF THE BUILT FORM

RESPONSE TO PHYSICAL ENVIRONMENT

The typology of settlement that Quarry Road West falls under according to King and Dovey's (2011) 8 typologies is a combination of the waterfront and easement types. This is as a result of the settlement occurring alongside the M19 highway and the Palmiet River running through it.

The biggest challenge that residents face in this type of environment is flooding. During rainstorms, the Palmiet River often floods its banks, eroding their integrity and collapsing dwellings built on them. To make matters worse, the large hard surface of the M19 highway is the source of large amounts of run-off water that also floods into the settlement.

Residents have responded to this challenge in a number of ways. One of the simplest is by raising their buildings onto a higher platform, often of a mixture of cement and sand. The platform is often lined with stones or rocks to maintain its integrity and also as a decorative measure. In other cases, the threshold of the dwelling is raised higher than the natural ground level outside.

Other residents have taken to landscaping the surrounds of their buildings to divert water away from the dwelling. This is often achieved by digging drainage pits around the home and leading them to gulleys with underground laden pipes that channel the rainwater to the river. In other cases, residents may simply lay carpets around the home as a means of absorbing rainwater.

In the more extreme cases close to the river's edge, many residents have taken to retaining the banks of the river with tires. What this does is not only prevents the bank from eroding during rainstorms but it also reclaims more space for the residents at the river's edge. The dwellings located under the M19 highway are the most vulnerable as these are the lowest in relation to the river and are flooded very frequently. Here again, tires are used along the river's edge to retain the bank but many of the dwellings are completely raised off the ground on pilotis, making them completely unaffected by flooding.



Fig.86 (left): Residents use tyres to reinforce the bank of the river to prevent erosion. (Source: Author)



Fig.87 (right): An example of a dwelling within the settlement being raised off the ground to prevent flooding. (Source: Author)

The other challenge that residents have to respond to when constructing their dwellings, is climate. Durban's climate is sub-tropical and can get fairly warm in the summer. With the use of corrugated iron as a staple in construction in the settlement due to its availability and lightweight nature, residents have to combat the fact the fact that the metal gets very hot when exposed to direct sun. This heat then radiates into the interior and can become quite unbearable. In most instances, the way this is combatted is through the use of extended eaves, to reduce the amount of sunlight the walls are exposed to. Using a similar rationale, many residents have shaded verandas. Another way they have addresses the challenge of heat is through the use of cross ventilation. This is simply achieved by the placing opposite windows in the line of the prevailing breeze to carry away the hot air within the building. In some cases, whether intentional or not, dwellings have a gap between wall and roof that

allows for ventilation. As hot air rises, it gets carried away through the gap by the breeze, while the denser cool air remains in the dwelling.

MATERIALITY & TECTONIC EXPRESSION

According to Tyida (2003), the majority of the residents at Quarry Road West are originally from rural and township areas. Although this is the case, the tectonic expression of their dwellings do not depict much of the vernacular in them. This is very much in keeping with the observations of Kellett and Napier (1995) of the informal settlements throughout this region. The Quarry Road West community operate within and under very similar parameters and challenges to any other informal settlement. In all settlements, the biggest challenge is the lack of space. Space is very valuable and so its use has to be smart, efficient and economical. As a result, all dwellings are rectilinear in plan and relatively box-like in form. It's almost a more organically forming variation of the grid-iron street pattern that informs the dwellings' plan.



Fig.88: An aerial image of the settlement depicting its density and the organic “grid” that dictates the rectilinear plan of dwellings. (Source: EtheKwini GIS)

However, where the architecture does become expressive is through the choice of materials used in construction. The skin of the dwelling is what is most representative of the identity and style preferences of the dweller. On observing the dwellings, there is a very clearly heterogeneous and eclectic character to them, both in the settlement as a whole and individual dwellings. Most houses are constructed of

timber frames and then clad in a combination of corrugated iron, asbestos sheeting, timber panels, plywood and chipboard. The majority of houses are comprised of a combination of these materials resulting in very eclectic looking façade – a patchwork of various different materials. In a sense, these dwellings have much more character than their more homogenous neighbours. The façade tells a story of the incremental process of the buildings construction, and on extension about its owner's life. Each element of the façade may carry a different memory with it; about how it was acquired, what state the owner was in at that particular time, how old their child was, etc.



Fig.89 & 90: The above two images depict the eclectic mix of materials that comprise the facades of dwellings in the settlement. (Source: Author)

However, although this is the overall aesthetic quality of the settlement, the aspiration is still to achieve a more “formal” looking dwelling that is usually of a much more uniform, homogenous character. For example, the emergency housing provided by the municipality is very uniform in its construction. It is comprised of a timber frame and clad in unpainted corrugated iron. Due to these houses being provided by the municipality, it is often considered to be the hallmark of dwellings within the settlement. As a result, corrugated iron is seen as a material that is considered to be higher quality, as opposed to timber cladding, or mud.

There are a handful of cases though, where the dwellers have really expressed their personal preferences and identity in their dwellings. These are dwellings that visually do appear to have had a lot more work put into them and this would clearly result from the owners being in a slightly better economic position, having the time to construct and improve the dwelling and possessing the workmanship and skill to create it. In one example, the dwelling is a double-storey, with the ground floor being constructed out of a wooden frame structure that holds recycled, broken blockwork in place. The interior is plastered with a mixture of mud and cement. The upper floor consists of corrugated iron cladding. In other examples, homes are constructed entirely out of timber and detailed particularly well, while others are constructed out of block.



Fig.91 & 92: The above two images depict cases where dwellers have expressed their identity and personal tastes in the construction of their dwellings, producing unique dwellings much more responsive to the context and climate.
(Source: Author)

5.6. SUMMARY

The Quarry Road West informal settlement aided in situating much of the theory to a South African context, and specifically to Durban. What can be observed is that much of the theory about informal settlements throughout the world do hold true for Durban. Although the fairly young democracy, insecure land tenure, low average income amongst various other challenges do result in settlements with a much more temporal quality.

Another observation is that community engagement is key when implementing interventions, as can be seen from the failed relocation intervention which lacked proper community engagement.



Fig.93: Journeving into the informal 5. (Source:Author)

6.0. ARCHITECTURAL RESPONSES TO INFORMALITY: Key Precedent Studies

6.1. INTRODUCTION

This chapter takes a look at key architectural precedents that responded to challenges faced by informal settlement dwellers and townships as a means of improving their quality of life. The following architectural examples are depictions of different approaches to architecture responding to informality within a variety of contexts. Each one of them deal with a wide range of challenges and propose multiple innovative responses to them with the key theme being that they are all informed by the communities that they are meant to serve.

Each of the precedent studies will be analysed using the concepts and theories discussed in previous chapters as a broad framework. The analysis of these precedents will ultimately aide in formulating an approach towards the design of a resilience hub for the Quarry Road West Informal Settlement.

6.2. RESPONDING TO INSURGENCY FROM THE GROUND: DUDUZA RESOURCE CENTRE

6.2.1. Project Details



Fig.94: The central courtyard space of the Duduza Resource Centre.
(Source: <https://www.noeroarchitects.com/project/duduza-resource-centre/>)

ARCHITECT: Joe Noero Architects

LOCATION: Duduza, Gauteng Province, South Africa

6.2.2. Background

The Duduza Resource Centre is situated in the township of Duduza. The township is located close to Nigel, which was founded as a mining town and saw extensive industrial growth during the post World War II years. The influx in industry meant that the town attracted a lot of people, particularly black people from rural areas who were the main work force in the area. However, this all occurred under an apartheid regime which would not cater for the well-being of these communities. Duduza was established in 1964 as a resettlement area for the black community of Charterston because it was felt that they lived too close to and began encroaching on the “white” town. The township that was produced was the typical township template that the apartheid government replicated throughout South Africa. The township itself was planned in a way that clustered dwellings around a central space. The central space was to be the area of control where the law enforcement would base themselves during any unrest within the settlement and move through the settlement from this point using the road network which fanned out from these points. In addition, the township itself was located far from the Nigel town, being separated by mines, quarries, and highways that acted as a buffer. As a result, the residents were deprived of many of the basic facilities within the city which the government would not provide within townships.



Fig.95: A map of the Duduza township from 1976 depicting the farmlands buffering the town from its surrounds and the apartheid township planning template.

(G&A Heritage, 2015)

It was within this context that a group of industrialists, and NGO's approached Joe Noero to design a facility that would aid this community with the most basic resources they were denied, education, skills training, and a platform for community gathering and recreation.

6.2.3. Justification of Choice

The context within which the architects responded to in Duduza in the early 1990s is very similar to the context of informal settlements in Durban now. Both contexts were of communities that had restricted access to basic facilities. In the case of informal settlements it is far worse, having no access per household to water, sanitation and electricity. It is also motivated by economic influences rather than being imposed on the community by an apartheid regime. However, the purpose of the architectural intervention in both contexts is to provide a platform for community engagement both within and outside to NGOs, civil society and government in the case of the intervention proposed in this dissertation. Both interventions seek to bring within the communities resources to enhance their quality of life using education as a key component in this regard.



Fig.96: The community hall as the platform for engagement.

(Source: <https://www.noeroarchitects.com/project/duduza-resource-centre/>)

In addition, the approach taken by the Duduza resource centre in its architecture was to be informed by the community and by the vernacular. Its aim was to be informed by an architecture that they can identify with and claim as their own. Similarly, the architectural approach proposed in this dissertation advocates using the knowledge inherent within informal settlement communities to produce an architecture to respond to their site specific social and physical ills. The architecture is to be embodied with the very language of the settlement which is similar to the approach that was practiced by Noero Architects in Duduza.

6.2.4. Urban Analysis

Duduza is a peri-urban area comprised primarily of single storey houses on tiny suburban stands. The terrain of the inland area is almost completely flat and the township are various vast farmlands that contain and bound it. The resource centre is located on one of the first “public green spaces” as you enter the township long the main Duduza Road. The building is situated along Nala Street which contains a mixture of public and private dwellings. The site on which it is located would have functioned as one of the old spaces from which the apartheid police would have positioned themselves to fan out into the township to stop any form of protest or riots.



Fig.97: A topographical view of the intervention in the fabric of the township. (Source: Google Earth)

In the vicinity of the intervention, the context is comprised primarily of private dwellings. However there are a few other public and civic buildings like schools, post offices, the police station, churches and retail that have now occupied the old “public green spaces” in the township.

The character of the dwellings vary from formalised solid brick construction to an eclectic mix of brick construction with corrugated iron renovations to the core brick structure. In addition, there are various informal dwellings occupying unused land throughout the township. These dwellings carry a much more temporary appearance than the others and are more similar in character to those found in informal settlements.

The urban environment has changed immensely since the Duduza resource centre was initially built. Much of the public and civic buildings did not exist at all and the overall character of the township would have been far more informal in appearance except for the very discernible property lines.

6.2.5. Project Objectives

The main objective of the building was to function as community centre and an educational facility for the disadvantaged township community. At the time of the buildings construction in 1992, South Africa was still governed by the Apartheid regime and the community had very little access to public and civic infrastructure. There were very few schools and spaces for the community to gather and engage. This was building was to act as a platform for engagement within the community and with the NGO's that were bringing aid into the township.

The other very important objective of the intervention was skills transfer. It was very important to bring skills development to the community to lift help lift them out of their state of poverty and to help them develop skills in order to attain well-paying jobs.

The building was also to form part of the community and to provide a space for them to call their own. A space where they can congregate, recreate, and discuss matters of importance within their community.

6.2.6. Programme

- Community Hall
- Markets
- Taxi and Bus rank
- Classrooms
- Offices
- Courtyards
- Kitchen
- Public ablutions

6.2.7. Planning & Design Rationale

A key consideration of the planning and design rationale was to design a building that the community could identify with and call their own. As a result, the building was designed in such a way that the users could identify within it certain familiar elements of their everyday lives.

SPATIAL PLANNING

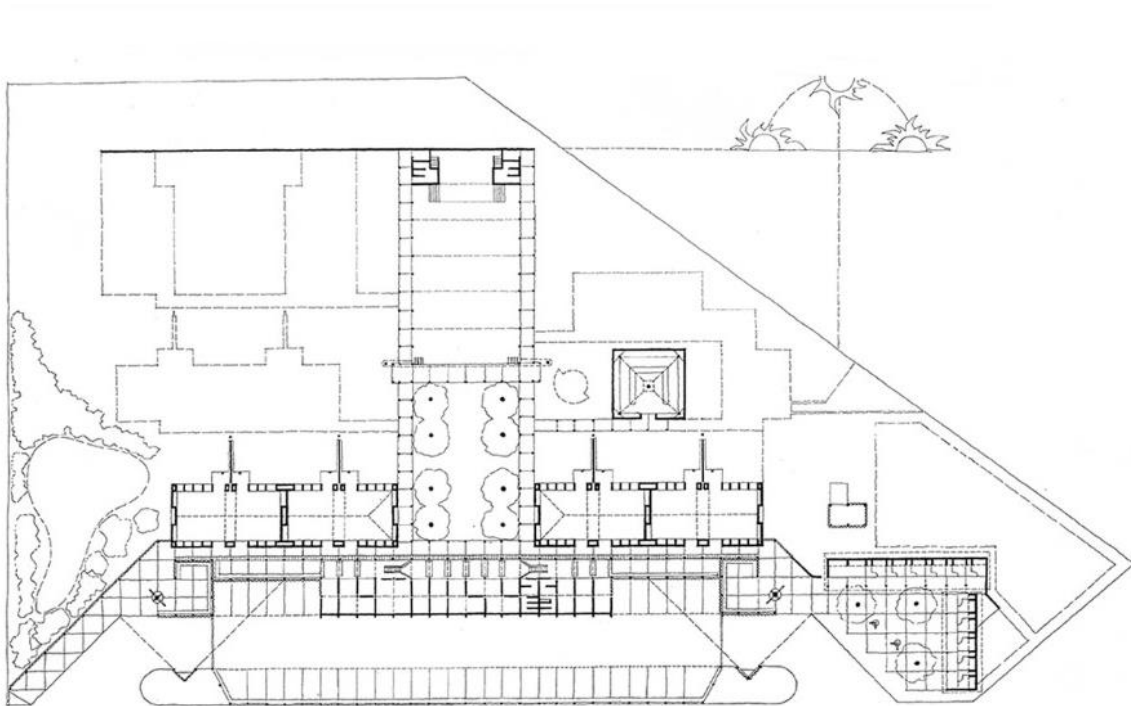


Fig.98: Floor plan depicting the linear street-like arrangement of the spaces around the path.
(Source: <https://www.noeroarchitects.com/project/duduza-resource-centre/>)

The spatial planning of the building was designed to be as simple as possible to make wayfinding easy. The design strategy was to organize all activities along a street which ran through the site and along which a range of social services was offered. The classrooms, employment offices and skills workshops were all arranged along this linear route. The idea here was to organize the building in a way that the user would be familiar with. In this regard, the system of movement through the building resembled a shopping strip. A linear axis with shops on one or either side. Even the signage used within the building was made to resemble what would be found in a shopping strip.

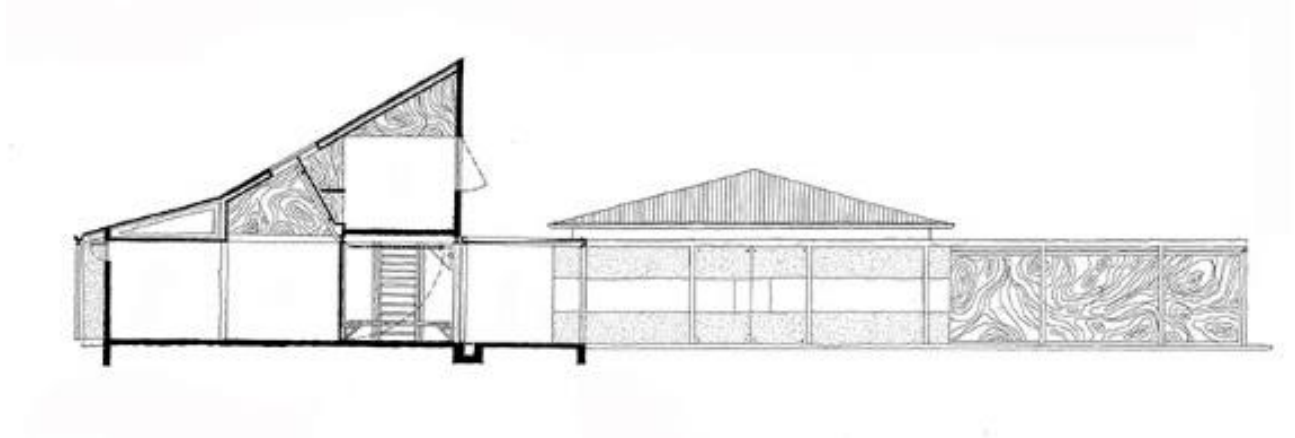


Fig.99: A section through the building.
(Source: <https://www.noeroarchitects.com/project/duduza-resource-centre/>)



Fig.100: A view through the central axis along which the spaces are arranged showing the signage.
(Source: <https://www.noeroarchitects.com/project/duduza-resource-centre/>)

TECTONICS & MATERIALITY

The tectonic expression and the materiality of the construction of the building are used as a means of referencing the shacks in close vicinity to the building. The architects felt this was very necessary to use materials that the users would find familiar, but using more sophisticated construction techniques and detailing to almost honour the labour that would have gone into the construction of the users'

own dwellings. The tectonic expression of how these materials are put together to form the building were made very explicit. There is constant engagement between the user and the structure of the building.

The architects used this strategy to engage the users by using similar materials so that they could learn to build better within the systems they already knew.



Fig.101: The above images depict the intricacy of the tectonic expression using some of the materials that are found easily available in the township and informal settlement.

(Source: <https://www.noeroarchitects.com/project/duduza-resource-centre/>)

6.2.8. Summary

The Duduza Resource Centre is a building that was to bring social services and skills training to a sorely underprivileged community. The architecture seeks to act as a platform for community building and a space where the community can be given the tools to overcome the injustices imposed on them by the apartheid regime. It responds to the peoples' insurgency and rebellion against an unjust authority and bolsters it from the ground.

The most important aspects of the design was design it in such a way that it seamlessly fitted into its context so that it could be more identifiable to its users and ultimately, something they can claim to be their own. As such, the planning and design rationale reflect with it aspects of the built form and placemaking that occur within the informal context. This manifests in the linear arrangement of spaces, referencing the busy streets in settlements and the flexibility of spaces that speak of the adaptability of space in informal settlements that cater for a number of varied activities. An even more apparent way this is realized in the architecture is through its tectonic expression and materiality which, through more sophisticated detailing, reference and pay homage to the adhoc construction in informal settlements, characterized by an eclectic mix of recycled materials.

6.3. STITCHING ARCHITECTURE INTO THE INFORMAL URBAN FABRIC: Alexandra Interpretation Centre

6.3.1. Project Details

ARCHITECT: Peter Rich Architects

LOCATION: Alexandra Township, Johannesburg, South Africa



Fig.102: The ad hoc, informal urban fabric of the Alexandra Township with the Interpretation Centre in the background straddling the street stitched seamlessly into its context.

(Source: Baan, 2010)

6.3.2. Background

The Alexandra Interpretation Centre is located within the Alexandra Township, which is situated north-east of Johannesburg and just east of the rich locality of Sandton. The township began its growth around 1912 when the wealthy farmer who owned the land began subdividing it and selling plots to black families who moved to Johannesburg from rural areas in search of work and opportunities in the growing mining industry. However, the Land Act of 1913, took away the rights of black people to own land. Over the course of time, this, along with the massive influx of rural urban migrants resulted in a much more informal development of the township,

giving way to makeshift dwellings constructed from temporary, easily available scraps of materials.

During the apartheid era, Alexandra was often considered to be a problem to the government being closely located to white areas. As a result, there were many attempts by the apartheid government to demolish the township and relocate all of its residents. However, none of the attempts were successful. This treatment from the authorities only resulted in a much more defiant Alexandra, which became well known as a symbol of the struggle against apartheid. It was many acts of resistance, from the bus boycotts of the 1940s and '50s to the protests against the unfair, poor quality of education delivered to black students as a result of the Bantu Education Act. Alexandra as the symbol of the struggle was home to many struggle icons, Nelson Mandela, being the most famous among them.

After various failed attempts at renewal both before and after the abolishment of apartheid, former president Thabo Mbeki had announced the Alexandra renewal Project in 2001. This was a bottom-up approach to urban regeneration that involved community based organizations, civil society, NGOs, government and professionals. The primary objective of the renewal project was community building and poverty relief which was to be achieved by envisioning Alexandra as a tourist attraction. Residents were to be trained to partake and drive this tourism industry and to work alongside professionals to cultivate Alexandra's heritage and history. The renewal project was to aid small enterprises within the settlement and showcase the art, culture and environment of Alexandra.

The community was involved in cultivating this heritage of Alexandra, with the elders of the community being regarded as the custodians of this culture and history. After a mapping exercise that relied heavily on the first hand oral history of the township, spaces of cultural value were identified. It was within this context, that Peter Rich architects were appointed to take this information a step forward and bring it into material form through infrastructure designed to showcase and house Alexandra's heritage and culture.

6.3.3. Justification of Choice

Alexandra today is a township that has a mixture of formal houses and informal dwellings that occupy all of the left over space. The township is very poor and many of the residents do not have access to the most basic of amenities. In that regard, the architects had to respond to a context that is very similar to informal settlements in Durban. The purpose of the interpretation centre was, in its most basic form, to be a museum of the struggle against apartheid within the Alexandra Township.

However, it uses this as a base to strengthen community by providing a platform for the community to cultivate and showcase their own culture, identity and heritage.

Similarly, the purpose of the Resilience hub too, is to bring social infrastructure into informal settlements to act as a base to facilitate the engagement between the community, the municipality and NGOs to implement further interventions that require constant input from the community.

The approach that was used in the urban regeneration and the design development of the Interpretation Centre was one that relied heavily on the input of the community. It was a bottom-up approach that gave value and significance to the knowledge of the community. This basis and the argument of this dissertation is predicated entirely upon giving gravity to the knowledge and culture that is born out of informality. Only through a synthesis of the formal and informal can an architectural intervention truly be responsive to the context of informal settlements.

6.3.4. Urban Analysis

The Township of Alexandra is located north west of the Johannesburg cbd. It is bounded on its north, east and south sides by low cost housing developments. On the west, is a light industrial zone, which together with the M1 highway serves to buffer the township from the elite Sandton area.



Fig.103: Map of Alexandra depicting the grid iron street pattern with informal infilled density in contrast to spaces of municipal intervention bringing in hostels, social housing and infrastructure. (Source: Google Earth)

The street grid of the township is a very regular grid iron plan. However, given the informal nature of the township, this has given way to incremental and organic development of dwellings around the formal houses, making use of every left over

piece of land. The typical street in Alexandra is narrow with barely enough room for two cars and pavements that have been taken over by tuckshops and informal dwellings or extensions to formal dwellings. This grid iron street pattern with its dense informal infill only gives way at spaces where the municipality may have intervened to provide schools, social housing, massive hostels and civic infrastructure.

The Interpretation Centre is located at the intersection of Hofmeyr Street and 7th Avenue, across a place with a small shack that is believed to be Nelson Mandela's first residence in Johannesburg.

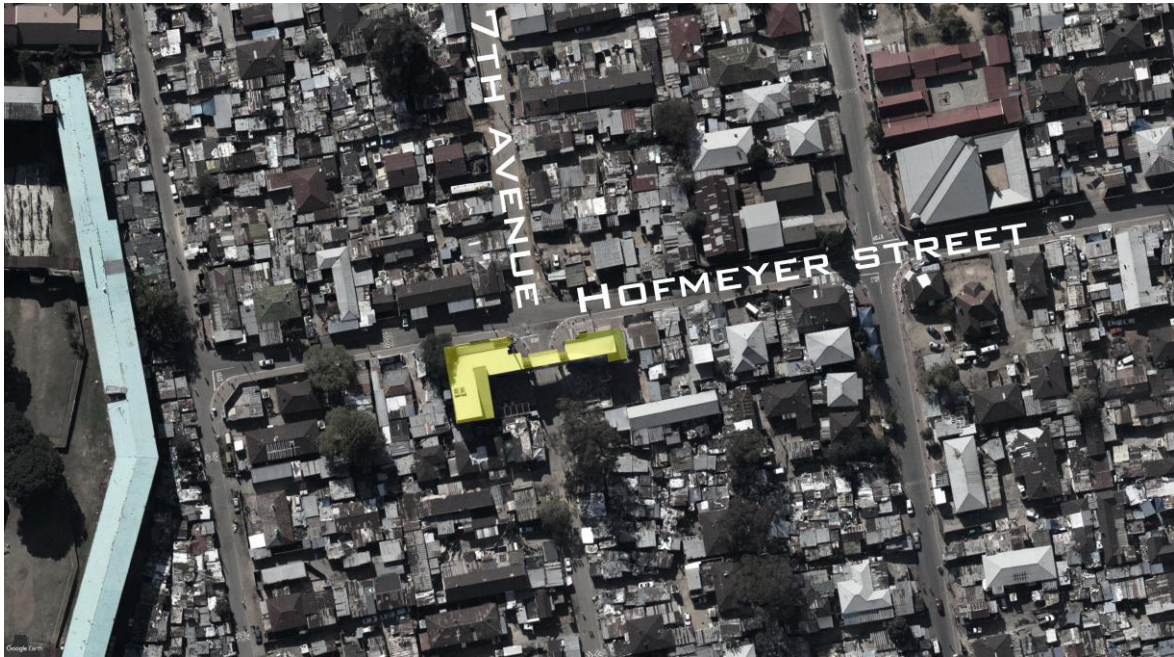


Fig.104: The Alexandra Interpretation Centre at the intersection of 7th Avenue and Hofmeyr Street stitched into the growing informal urban fabric. (Source: Google Earth)

6.3.5. Project Objectives

The building was conceived as an intervention part of a broader urban renewal project for Alexandra, initiated by the government in 2000. The primary objectives of this renewal project were community building and poverty relief through a rebranding of Alexandra as a heritage and tourism hub. This was to be achieved through the cultivation of Alexandra's heritage through the residents and training them to become active participants in the storytelling of the township and ultimately benefitting from the tourism industry. As such, the Interpretation Centre then, was to facilitate this by providing spaces for the exhibition of that heritage as well as training for the residents to integrate them into the industry.

Ordinarily, such a building programme would inevitable result in a museum typology. However, given the context, the building had to take on the dual role of both

exhibiting Alexandria's history as well as responding to the more serious issues of its context. The building then had to incorporate and provide infrastructure for existing commercial activity and much needed public facilities. Ultimately, the building had to serve as a platform for the people of Alexandria to exploit new opportunities from the tourism industry while cherishing their local culture.

6.3.6. Programme

- Exhibition spaces
- Training rooms
- Community spaces
- Offices
- Restaurants
- Retail
- Internet Café
- Archive area

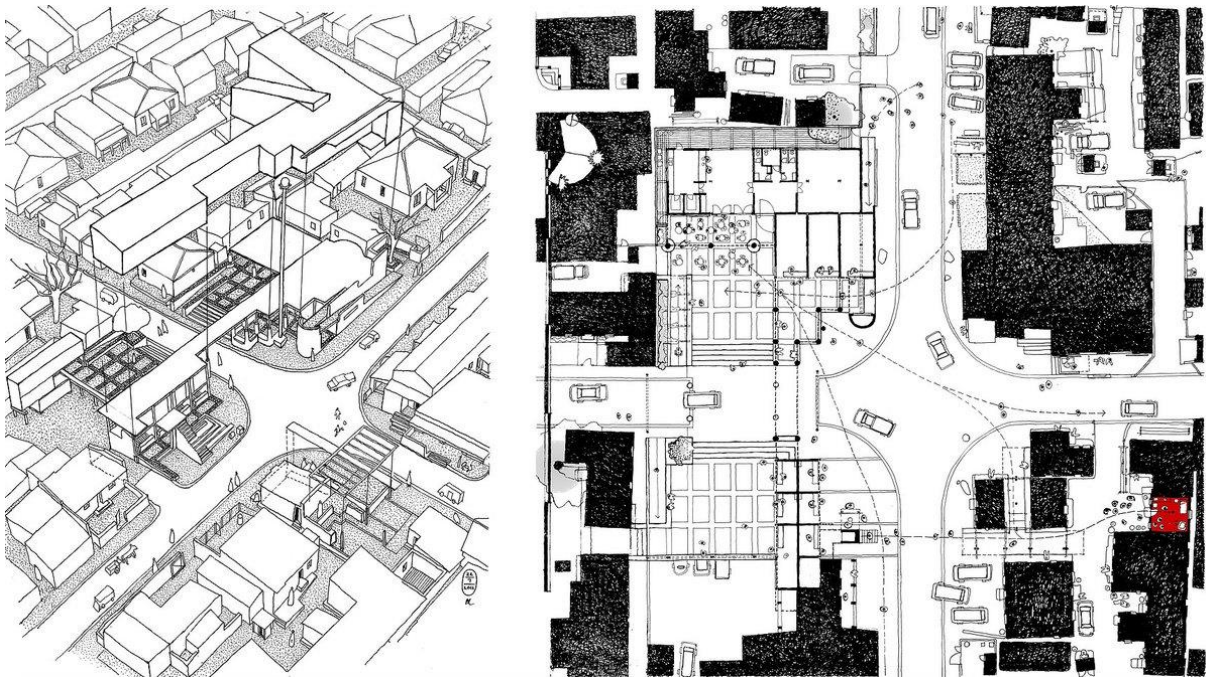


Fig.105: The above drawing by the architects depict how the building was stitched into its informal urban fabric.
(Source: peterricharchitects, 2018)

6.3.7. Planning & Design Rationale

The main aspects that drove the design rationale of the building were community involvement and a very clear awareness and respect for the context. This ofcourse is very clear in all elements of the spatial planning and the design as will be broken down below.

SPATIAL PLANNING

The building is located on two separate sites on either side of 7th Avenue bridges over the street. The approach to which the architects placed the building into its context was one that required the building to fit seamlessly into its environment. It required the building to be stitched into the urban fabric. As such, the ground floor is almost entirely public. The majority of the ground floor consists of open public space with stepped seating areas that will overlook the street where community activities would take place. The rest of the enclosed space consists of shops, restaurants and the training rooms. All of which make the ground floor much more open to the general public.

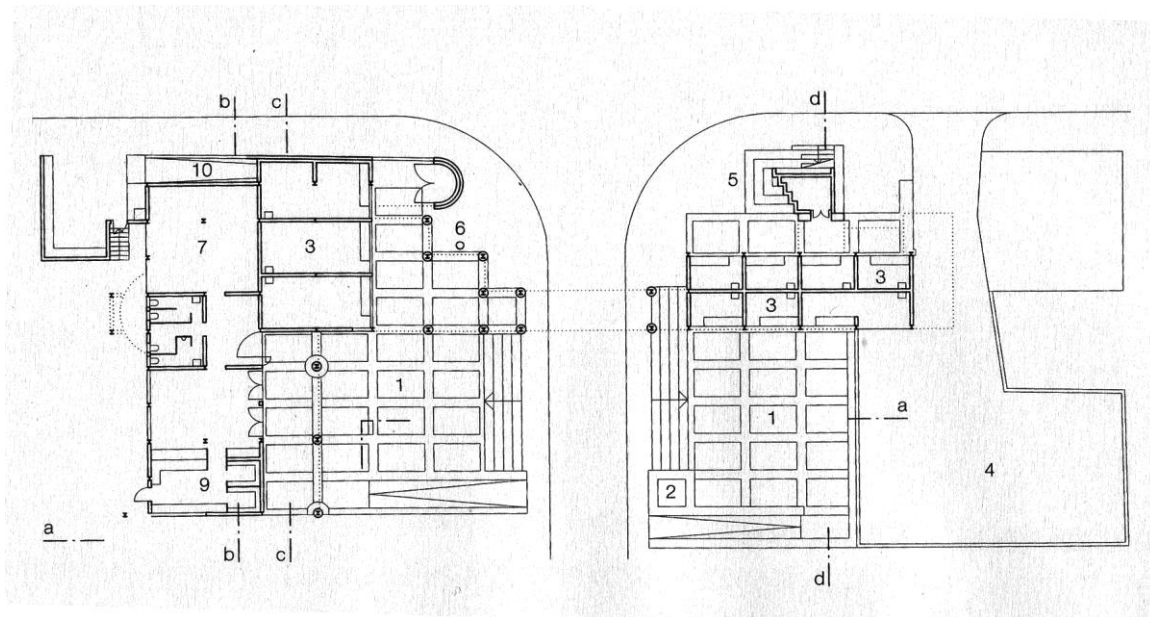
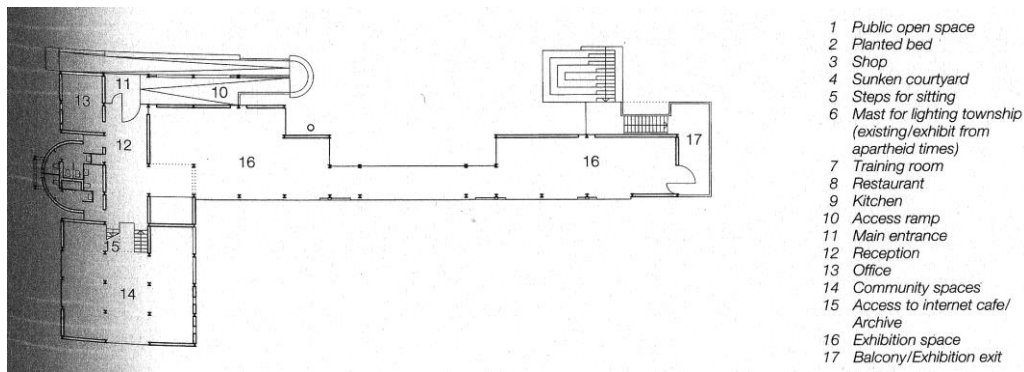


Fig.106: The ground floor plan showing the primary focus on public space and commercial activity (refer to figure 103 for key).

(Source: Detail, 2011)

The upper level contains the exhibition spaces as well as community rooms and offices. The main exhibition space is fairly linear in form and is what the bridge over the street that links both parts of the building on opposite sides of the street.

Access to the building is made very simple. The entire ground floor is open to the public. Special attention is given to universal access. Ramps are designed in that provide access from the street to the ground floor and all the way up to the 1st floor. The access to the first floor is completely external, with a ramp accessing the western end of the building and stairs on the eastern side, which double as seating area to view community activities and performances on the street. At the moment, however, the stair access has been closed off, perhaps due to the facilitators of the building requiring controlled access to the general public.



- 1 Public open space
- 2 Planted bed
- 3 Shop
- 4 Sunken courtyard
- 5 Steps for sitting
- 6 Mast for lighting township (existing/exhibit from apartheid times)
- 7 Training room
- 8 Restaurant
- 9 Kitchen
- 10 Access ramp
- 11 Main entrance
- 12 Reception
- 13 Office
- 14 Community spaces
- 15 Access to internet cafe/Archive
- 16 Exhibition space
- 17 Balcony/Exhibition exit

Fig.107: The 1st floor plan with the majority of the buildings facilities.
(Source: Detail, 2011)

COMMUNITY INVOLVEMENT

The architects were part of a long journey of mapping the cultural history and heritage of the township in partnership with the residents. The idea was to develop and chart an oral history of Alexandra. This allowed the architects to interact directly with the community and identify what it is that they envision the building to be. Through this process of engagement, the architects were able to produce a design that was far more responsive to the community.



Fig.108: The north façade of the building showing the large expanses of brick infill which was produced locally and built into the façade by the community. (Source: Baan, 2010)

In addition, some aspects of the construction were done by members of the community through poverty relief initiatives sponsored by the government and facilitated by the architects. An example of this was the paving of the public spaces on the ground floor. Here members of the community who were involved in the

cultural mapping of the precinct were involved and encouraged to create collage panels in the paving out of marble off cuts from the local stone masons yard. This allowed the community to leave their own personal mark on the building, creating a sense of ownership of the building. The brick infill of the building was also done by unemployed local community members, who produced the bricks sourced from soil sourced locally using hydraform presses.

TECTONICS & MATERIALITY

The building is constructed from a steel frame and infilled with a variety of different materials. The steel frame construction is what eased the construction process in such a context. Being in an environment with narrow roads and barely any space, prefabricated components allowed for speedy construction that wouldn't interrupt the context for extended periods of time.



Fig.109: The main exhibition space composed of an assortment of corrugated metal and polycarbonate sheeting and the contrasting brickwork all infilled into the steel frame structure.

(Source: Baan, 2010)

The architects as well as the community describe the architectural language and the eclectic mix of materials as "jazz architecture". The façade of the main exhibition space that bridges over the street is comprised of a mixture of corrugated metal and coloured polycarbonate sheeting in a "patchwork" composition that

references its context and informal setting. In addition, despite the majority of the building being brick infill, there are a lot of elements like the shading, balconies and overhangs that give it a very lightweight and technical appearance, more closely referencing the vernacular of the informal.



Fig.110: The building fitting into its context through the use of brickwork that resembles the surrounding buildings. (Source: peterricharchitects, 2018)

6.3.8. Summary

The Alexandra Interpretation Centre is a reinterpretation of the museum typology to better respond to the needs of an underprivileged community. Rather than the exhibition of the object or of artefacts, it seeks to provide spaces for the community to tell the story of their heritage and culture. It integrates the informal environment around it into the design, celebrating the identity of the place and putting that on display by stitching the building into the existing urban fabric. In addition, it provides social infrastructure into a disadvantaged area as a platform from which to uplift the community.

The key aspects that drove the design of the building were the involvement of the community and a respect for the informal context. Unlike many other infrastructural interventions into Alexandra that had completely obliterated the existing urban fabric, the Interpretation centre stitches itself into that context. It opens up its ground floor almost completely to the public, prioritizes open public space and caters for the existing informal trade. The building then bridges over the street, celebrating it

and creating a potential hub of community activity beneath. The assortment of materials used in the façade and its aesthetic reference the informal vernacular and the involvement of the community in its construction cultivated a sense of ownership.



Fig.111: The exhibition space that bridges over the street.
(Source: Baan, 2010)

6.4. ARCHITECTURAL MANIFESTATIONS OF THE “FLEX-SCAPE”: Legson Kayira Community Centre & Primary School

6.4.1. Project Details

ARCHITECT: Architects 4 A Change

LOCATION: Chipamba, Malawi



Fig.112: The Legson Kayira Primary School & Community Centre.

(Source: <http://www.apsaidal.com/legson-kayira-community-school-architecture-for-change/>)

6.4.2. Background

Malawi is considered to be one of the least developed yet most densely populated countries in the world. As a result, the majority of its citizens live in rural areas and villages with very limited access to basic infrastructure and social services. The location of this intervention, the village of Chipamba in the Mchinji region of Malawi, is one of these particular villages.

The Community Centre and School was part of a series of interventions proposed by the architects in that region of Malawi. Two of which, being the only ones built however. The purpose of these interventions was to bring in much needed social infrastructure into the village as a means of strengthening the community and providing the platforms for services to be brought in to them.

6.4.3. Justification of Choice

The context of the Legson Kayira Community Centre and School is different from the proposed Resilience Hub and the previous two key precedents in that, this one is rural. The Resilience Hub is proposed site for the Resilience Hub is an informal settlement and the previous two precedents were in townships. However, the premise of the intervention remains the same. All these interventions aim to bring social infrastructure into poverty stricken contexts as a means of community strengthening and providing a platform from which to bring in much needed services to the community.

In addition, this project paid particular attention to the construction process of the building. In particular, responding to the challenges of building in locations that are not easily accessible pushed the architects to explore prefabrication and recycling. In addition, they also relied heavily on the community during the construction process which gave the community a sense of ownership. These explorations stem out of an approach to architectural interventions very similar to designing infrastructure within the context of informal settlements and on extension, the approach that will be adopted in the design of the Resilience Hub.

6.4.4. Urban Analysis

The area within which the intervention is located is a very remote village called Chipamba, approximately 109km west of the capital city of Lilongwe. The village itself is surrounded by vast farmlands and uninhabited wilderness to the west.

The context is almost completely residential with a handful of shopping outlets, churches and schools. However the majority of the context is primarily residential. Most of the houses seem fairly formal from a birds eye view and property lines are distinguishable in parts of the village. However, there is a sense of adhoc development as dwellings sprawl away from the main roads, forming organic plots and roads in the dirt ground.

6.4.5. Project Objectives

The main aim of the project was to bring into the village much needed social infrastructure. In this case, the architects sought to develop a flexible structure that would function primarily as a school but be able to accommodate a number of other activities that the community may require to be housed. Accordingly the design had to allow the building to be adaptable to the needs of the community.

Another aspect that was particularly important was the process of construction. So the objective was to develop a structural system that could be easily assembled on site by the community and then infilled with locally sourced materials from the village.

Plan

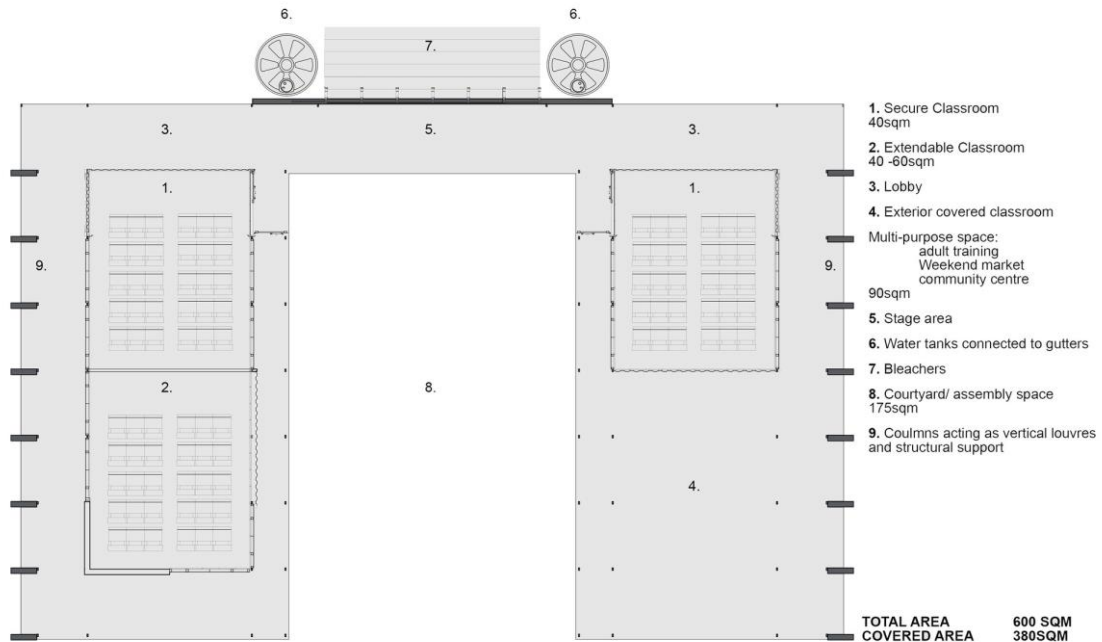


Fig.113: Floor plan.

(Source: Archdaily, 2014)

6.4.6. Programme

- Classrooms
- Extendable spaces for classrooms
- Community gathering space
- Stage area
- Multipurpose covered space to accommodate markets and adult education
- Seating for sports events

6.4.7. Planning & Design Rationale

The design rationale was influenced by four key factors: self-sustainability, prefabrication, flexible spaces and community involvement. The school was conceived as a covered canopy under which a number of activities could take place in response to the changing needs of the community.

PREFABRICATION & TECTONICS

Because of the remote location of the village, the architects had to take into consideration the construction process of the building. With limited access to skilled labourers and building materials as well as the difficulty of transporting materials to the site, alternatives had to be explored.



Fig.114: A classroom with the shipping container at the front and parts of the frame structure it would have contained during transportation.

(Source: Archdaily, 2014)

As a result, the architects designed the building as a kit of parts that they had prefabricated and that would then be assembled on site by the community. The building then was designed as a steel frame structure that would be transported to the site in shipping containers that themselves would be used as part of the building.

The shipping containers are used with one of the longer sides cut out to form the front of the classrooms. The rest of the components then extend outward from this to form the classrooms that sit under the raised roof.

After assembly of the canopy and the classrooms, the involvement of the community began. This was the infill stage of the buildings construction where the

community constructed many of the walls and the vertical shading on the outside from locally sourced masonry.

As a means of softening the technical aesthetic of the frame structure and shipping containers, materials like the brick, bamboo, as well as shade netting were used to give the building a more contextually responsive appearance.



Fig.115: An exterior view of the building showing the assortment of materials used in the buildings construction. From the high tech frame structure to recycled shipping containers and breeze blocks.
(Source: Archdaily, 2014)

SPATIAL PLANNING

A key element of the planning was to allow for flexibility. The arrangement of the spaces is incredibly simple. The classrooms are arranged around a central courtyard which acts a community gathering space and an assembly area for the kids.

The classrooms are designed to open out onto the corridors should the number of students expand over time. The dual role of this is that it allows for the space to be ventilated. The doors that open out the space, hinge upwards and provide shading underneath them. Allowing for the spaces to be cooled and ventilated passively.

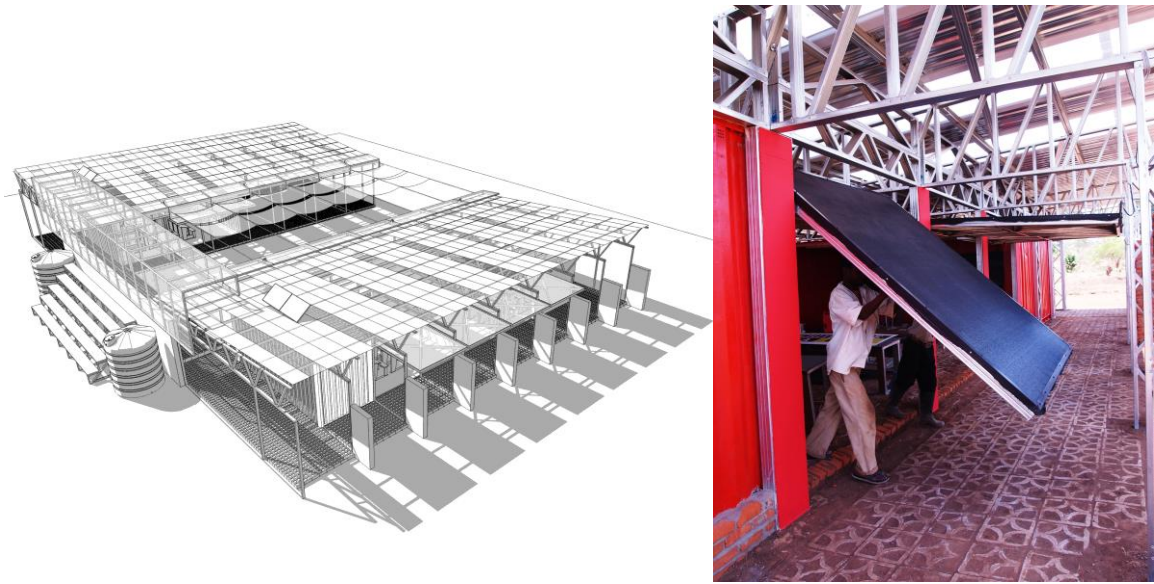


Fig.116 (left): A 3d view of the building showing the simple courtyard design.
(Source: Archdaily, 2014)

Fig.117 (right): An image showing the flexibility of the space as it opens out.
(Source: Archdaily, 2014)

In addition, classrooms are extendable by collapsible walls that allow the space to be made bigger to accommodate more students and different activities.

SELF-SUSTAINABILITY

Duly in part to the buildings remote location, the architects designed it be self-sustaining. As such, the roof accommodates the dual function of water harvesting and solar energy collection. The roofs over the classrooms slope towards the inner courtyard where tanks collect the rainwater for use in the gardens and for washing. The roof also contains solar panels for lighting, particularly at night when the lack of any other lighting in the buildings vicinity make the area quite dangerous.

6.4.8. Summary

The Legson Kayira Primary School and Community Centre was designed as flexible infrastructure to accommodate the changing needs of the community. Its purpose was to bring much needed social infrastructure into a remote rural village.

The design was driven by the remoteness of the village and developing innovative means of dealing with this challenge. One of the ways of achieving this was through the employment of a "kit of parts" approach that allowed for components of the building to be prefabricated off-site and then assembled once delivered to site. The architects also made use of recycled shipping containers in the design which they used for transportation of the components. Another way of responding to the remoteness of the site was by involving the community in the construction process. This also created a sense of ownership. And lastly, the architects designed the building to be completely self-sustaining through water harvesting and solar power.



Fig.118: Journeying into the informal 6. (Source:Author)

7.0. ANALYSIS & DISCUSSION

7.1. Introduction

The aim of this chapter is to analyse and discuss the interviews conducted of residents of informal settlements in Durban. All the interviews conducted were with residents of the Quarry Road West Informal Settlement and have yielded insight into daily life in informal settlements as well as what would be required of an intervention architecturally and socially to be able to alleviate the various challenges informal settlement communities face.

In addition, the theory analysed within this document will be discussed in reference and conjunction to the precedent studies to evaluate their responsiveness to informal settlement communities.

The research within the literature review as well as the primary data aims to address the problem statement and answer the key question set out in the beginning of this document:

The problem that this dissertation explores a response to, is threefold:

The first of which is that the left-over spaces of the urban fabric that informal settlement communities inhabit are hazardous and dangerous to their health and wellbeing. The reasons for this are that these types of sites often place these communities in direct exposure to dangerous weather conditions. In addition, they have either no or very limited access to sanitation, potable water, waste disposal services and electricity.

The second is that there is a lack of social and public infrastructure for informal settlement communities within their environments. This is largely due to limits imposed through legislation by the municipality which restricts infrastructural interventions into settlements deemed unsafe for habitation. The aim of this is to discourage the permanence of the settlements where residents have been earmarked for relocation. This lack of social infrastructure also results from the sheer over densification of informal settlements and the prioritization of private space, leaving no room for public space.

In addition, when urban authorities attempt respond to these issues, there appears to be a complete lack of understanding of these informal settlement communities, their lifestyle and culture. As a result, they face constant hostility, threats of displacement and a lack of proper recognition, all of which prevent them from progressing towards their hopes and aspirations (Huchzermeyer, 2011). Residents then continue to live in dangerous environments which desperately require architectural and infrastructural interventions but which are ultimately restricted.

How can architectural design act as a tool to ameliorate the various physical and social issues within informal settlements as well as enhance the existing social, economic and cultural mechanics and the insurgent practices of informal settlement communities?

7.2. Analysis of the Research Findings

The aims of the interviews was to gain an understanding of life in informal settlements as a means of being able to create a more responsive architecture. Specifically, to understand the social and cultural dynamics within informal settlements and its effects on the architecture produced as well as understanding the various challenges of life in an informal settlement and how the community addresses these. A total of [10] people were interviewed within the Quarry Road West Informal Settlement.

Society and Culture

1) How long have you been living in Quarry Road West?

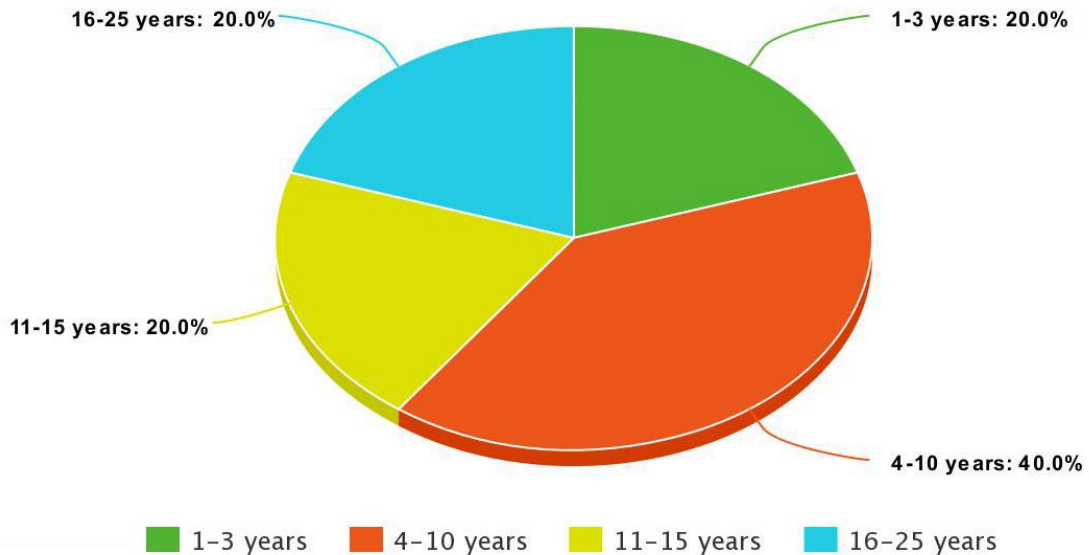


Figure 119: Pie graph depicting the length of occupation of residents within the settlement. (Source: Author)

As can be seen from the above graph, there appears to be a very heterogeneous mix of occupancy durations within the settlement. The older part of the settlement, Mamsuthu has many of the original residents who have lived there for over 25 years. A lot of the newer residents, in Mampondweni are renters.

2) Where are you originally from?

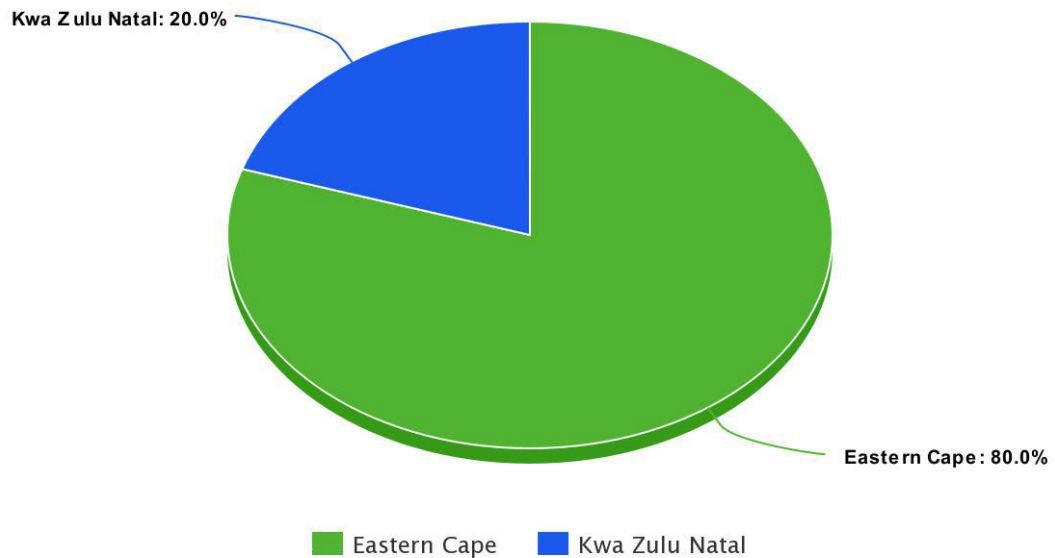


Figure 120: Pie graph depicting the location of origin of the respondents. (Source: Author)

Here, all respondents except two had claimed to come from areas in the Eastern Cape, primarily Bizana and Lusikisiki. These are areas formerly part of the Transkei which form the Xhosa ancestral lands. This begins to suggest that many of the residents would have taken up residence in the settlement because they either knew someone already there or felt some sense of belonging due to cultural similarities with other residents. One of the respondents had claimed to have migrated from Lusikisiki to live in her deceased sister's home. Another respondent claimed that after migrating from Empangeni with her son, she befriended residents of the settlement and then eventually took up residence. This is very much in keeping with Perlman's (1979) observations of residents of the favelas who move into the settlement after having either family or associates already there. As such, the community within these settlements tend to know their neighbours which creates a strong sense of community.

3) What made you choose this particular settlement to live in?

The primary reason given by 8 out of ten of the respondents was due to the close proximity to the city and public transport, all of whom also stated that the location was close to areas that they could find work. The warehouses in the Inanda industrial park as well as domestic work in the nearby suburbs.

The other two had claimed that they chose it purely due to having associates already living in the settlement.

4) Can you describe the community structure within the settlement?

8 out of 10 respondents were able to answer this question immediately in detail which suggests that there is a strong sense of community and that there is a very clear structure that is inclusive of all the residents. The respondents that were not as clear about the community structure were newer residents who have lived in the settlement for less than a year. However, the respondents did describe a structure comprised of four committees from each sub-section of the settlement which then formed a ward committee with a chairperson. The committees held meetings regularly and when then need arose to deal with problems. The problems that respondents spoke of that were discussed in meetings were things like the flooding of the river, pollution of it, rent disputes, crime and theft as well as conflict resolution. Within these meetings, the community would discuss solutions and the community leaders who formed the committees would then act on the agreed solution.

Built Form and the Informal Vernacular

5) Did you construct your home? Did the community help?

Here, all the respondents except the one renter had constructed their own homes. The lady who moved into her sister's home was also renovating at the time of the interview. All had claimed to have some sort of help from associates or family living within the settlement.

6) Where did you source your building materials from?

2 out of the ten respondents had been provided with building materials by the municipality after a fire. However the rest had salvaged building materials of rubble, corrugated iron, plyboard and timber from local businesses who dump their waste at the settlement for the use of the residents.

What could be noticed was that the majority of the residents had constructed their dwellings out of a timber framework clad in a mixture of plywood and corrugated iron. However, some of the older residents in the sector called maMsuthu had constructed their dwellings from an alternative wattle and daub type of construction. They had used branches to make a structure to hold a wire mesh that they infilled with rubble and plastered over. The plaster itself was given a decorative, rough honeycomb-like finish through poking it with their fingertips. This was an aesthetic shared by a lot of the residents in that sector as well as a few more scattered around the settlement.

Challenges of Informal Settlement Life

7) What dangers does dangers to you face on a daily basis within the settlement?

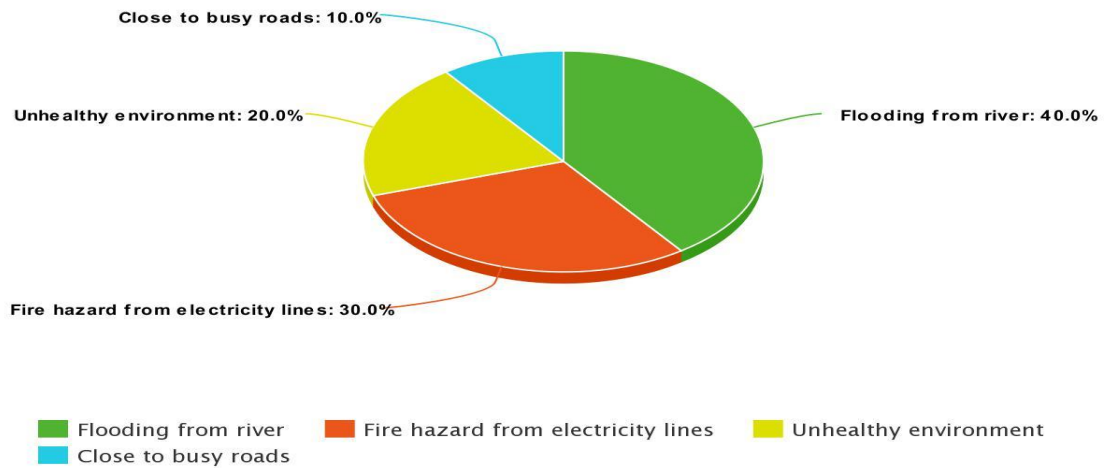


Figure 121: Pie graph depicting the primary sources of danger in the settlement. (Source: Author)

All the respondents had mentioned many of the same concerns about hazards, however, the danger the river posed was the most prevalent and the concern over exposed illegal electricity cables causing a fire came second.

8) Do you rely on the natural environment within or around the settlement in any way?

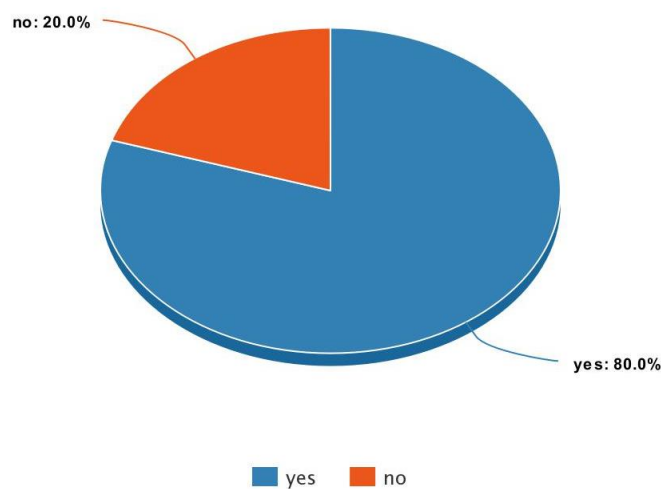


Figure 122: Respondents reliance on the natural environment. (Source: Author)

Here, 80% of the respondents claimed not to rely on the natural environment. The reasons for this being:

- “The river was once clean and used for fishing, washing and drinking, the pollution has stopped us from using it.”
- There is no space for farming
- Some claimed to rent farming space elsewhere

Respondents who did claim to rely on the environment said they relied on the river to carry their waste downstream and away. Others said that they relied on the trees to serve as natural pylons to carry their electricity cables. All respondents claimed that they would like to be able to farm but did not have the space while others also condemned the illegal dumping claiming that it stopped them from using water from the river.

9) What is your relationship with the municipality?

Respondents all claimed that at the moment their relationship with the municipality is good but that it was not always. They also claimed that in the past, the government did not understand their needs very well but that is changing. However, many respondents claimed that the municipality only acts on matters when it is too late and that they would like a more direct way of engaging with the municipality.

10) What do you think is required to improve the quality of life here?

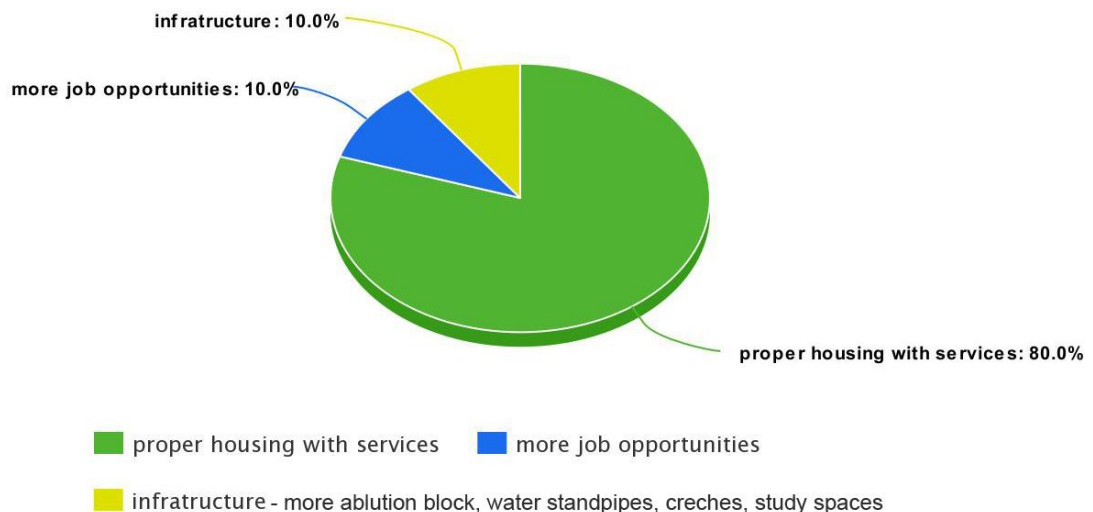


Figure 123: Pie graph depicting what residents feel would improve their quality of life in the settlement. (Source: Author)

80% of respondents wanted the government to provide them with better houses. However, all except one had wanted the houses to be built where they currently reside and were opposed to their relocation, claiming that they

chose this location for various reasons and that moving away would only cause more problems than it would solve.

11) If the unused plot of land were to be used for the public use of the community, what kind of infrastructure would you like to see there?

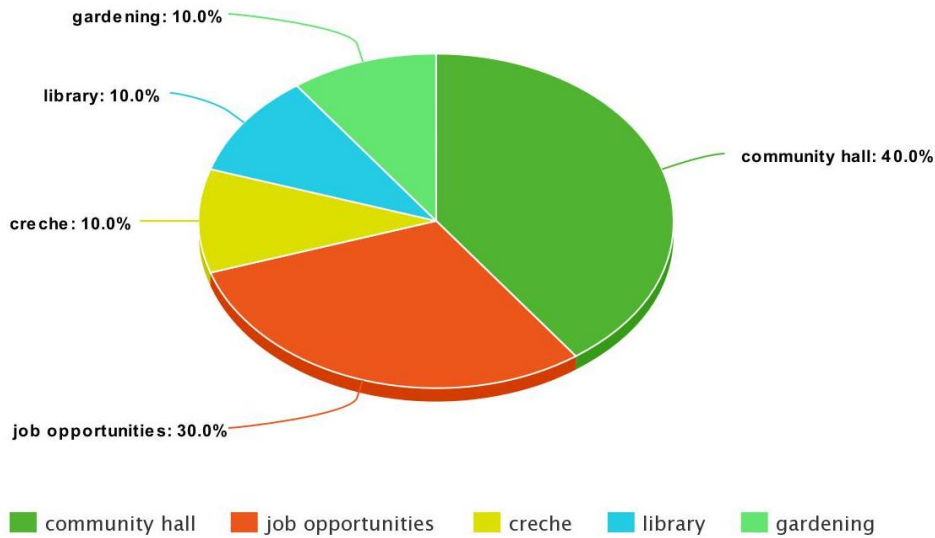


Figure 124: Pie graph depicting the kind of public infrastructure respondents want. (Source: Author)

The interviews helped in understanding how an architectural intervention introduced into the settlement could potentially improve the community's quality of life. Although the majority of respondents had prioritized housing as a means of improving their quality of life, when the question about the kind of public infrastructure they wanted came up, they had all acknowledged that they do desperately require a place for the community to gather. At the moment, they don't have a space and have to resort to standing on the street when meetings are called. This is not only uncomfortable due to the lack of shelter but it also creates the appearance of a hostile mob. Having a gathering space would mean that the community can engage and discuss important matters together.

They had also inferred that although they want the municipality to provide them with houses they fear having no say in the process as in the past, the municipality has acted without their contribution. The suggestion of the building acting as a platform for engagement with the municipality and NGO's was well received as a result.

7.3. Discussions & Theoretical Implications

The aim of this research has been to conceptualize an approach to architectural design that is more responsive to informal settlement communities. That is, to create an architecture that is informed by informality, their insurgency, approach to placemaking and architecture. In so doing, this study attempts to rationalise the seemingly adhoc nature of the morphology of the informal through an understanding of its communities, their society and culture. The crux of this research is that in order to respond to informality, architecture needs to be understood from the perspective of informal settlement communities. Various theories such as Identity and Culture, Informality, Insurgency and Critical Regionalism have been used as a means of rationalising the nature of the informal and how architecture can then be synthesized and stitched into such a system. The theories concerning Identity, Culture, Informality and Insurgency provide an understanding of informal settlement communities. They provide a base from which to understand the material and cultural living conditions of informal settlement communities and how they perceive and approach placemaking and built form. Critical Regionalism is a synthesis of the architecture produced through formal architectural processes and knowledge with elements very specific to a particular place, culture or society. As such, it provides the framework from which to combine the informal with what we consider formal architecture.

Analysis of these theories have resulted in the generation of four architectural concepts from which to analyse the key precedents and their response to the informal. These concepts are Community Participation, Incrementalism, Stitching into the Informal, and Reflecting the Informal Architectonic.

COMMUNITY PARTICIPATION

Sandercock (1998) explains that if any form of social justice and respect for cultural diversity is to be achieved, the formal sector, and particularly architects, need to begin listening to the voices of "difference" and to theorize a productive politics of difference. These voices of difference are the voices of the marginal population who dwell on the edges of society culturally, socially and economically. Informal settlement communities form part of this group.

Community participation in design towards architectural interventions for informal settlements is key to achieve social justice and respect for these voices of difference. The knowledge base of informal settlement communities is indispensable, particularly when seeking responses to the very challenges they face on a daily basis.

The Alexandra Interpretation Centre was conceived almost completely through community participation. Through this, the architects found that the community's history and heritage didn't exist in artefacts or books but rather, that they were the custodians of their own heritage through a relaying of it through oral tradition. As a result, the museum typology had to be reinterpreted. Vast exhibition spaces were unnecessary and so the building accommodated more spaces for community gathering and empowerment. Symbolically, the building bridges over the streets and creates public space under it, to celebrate the context, which is the real exhibition on display.

In addition, the community was also involved in the construction, much like with the Duduza Resource Centre and the Legson Kayira Community Centre.

FLEXIBILITY & INCREMENTALITY

A defining characteristic of informal settlement architecture is that it is designed and built by its users. These "users" who experience the architecture on a daily basis are the ones who shape it. They are "creative users" (Spencer, 2010). As such, the space is dynamic and under constant flux in response to the users' changing needs. This is evident in the kind of space in informal settlements that is adaptable to a number of activities at different times of the day which Bremner (2010) refers to as "flex-scape". Where a space may serve as a crèche during the morning, a sports court in the afternoon, a community centre at night and a church on Sunday mornings. This adaptability is also evident in Turner and Mangin's view of informal settlements as perpetual building sites, constantly being constructed to respond to the changing stages of its users' lives.

In terms of the programmes of the buildings, all three precedents were kept very flexible. All allowed for spaces that could be converted to suit another function should the need arise. The Legson Kayira Community Centre serves as a school during the day and a community centre on weekends and evenings. The Duduza Resource centre actually has walls that slide away that make classrooms larger.

Both Duduza and Legson Kayira also make use of a very modular system that allows for replication and space for future development. Should the need arise, the buildings can very easily be expanded to accommodate larger numbers or a different function altogether.

In terms of incrementalism, none of the case precedents fully exploit this concept. Each of them are buildings that are built on site with opportunities for future development but no planned incremental execution of the construction to suit the community's needs. The best example of incremental construction in response to priority is the Sans Souci cinema mentioned in previous chapters, which was never

realised. Here, 26'10 architects planned the construction of the building in phases to respond not only to a tight budget but also to priority.

STITCHING INTO THE INFORMAL

The main objective of critical regionalism is to achieve harmony between the proposed architecture and the existing context. Stitching the new architecture into its existing urban context is part of that objective. The key aspect of this is to be in cognisance of the existing nodes and paths, both pedestrian and vehicular.

The way the Alexandra Interpretation Centre bridges over the street and formalises an existing public node at the intersection is a means of stitching the architecture into the urban context. The Duduza Resource centre does this in a more subtle way. It reintegrates a site which was a symbol of oppression back into the urban fabric. It develops it as a node through the creation of a public gathering space as well as a public transport node. The site was one of the spots in the township from which the apartheid police would fan out to quash any protests.

REFLECTING THE ARCHITECTONIC OF THE INFORMAL

The architectonic of the informal is characterized by its material quality. It does not very often result in very distinctive form-making due to the restrictions on space, almost always being cuboid. However, they do become distinctive in the materials that the owners choose to build their homes from and the finishes that they use. Just as Tames (2004) describes, the dwellings, while under construction look almost entirely the same, sharing the exact same cuboid forms. It is when the owners begin applying the finishes, that the dwellings take on identity and become distinct. Here, the poetic of the construction of the façade is expressed in its eclectic, heterogeneous composition of various different pieces and scraps of materials. Odd bits of corrugated metal sheeting, plywood, asbestos, rubble and block walls used in conjunction to create a patchwork aesthetic that is characterized by recycling and using what is easily available.

All three of the precedents make use of the very same materials that are used extensively in informal settlements and share the same kind of architectonic expression as the informal. The Alexandra Interpretation Centre uses what the architects refer to as Jazz architecture in reference to the patchwork facades of the informal dwelling. On the other hand, both the Legson Kayira Community Centre and the Duduza Resource Centre make use of the materials but use them in more formal, sophisticated construction techniques to show the community the possibilities of the very same materials they use.

7.4. Conclusion

The analysis of the data collected through interviews, discussions, case studies and precedents have served to illustrate the practicality of the theories and concepts from this dissertation in conceptualising an approach to architectural design that is more responsive to informal settlement communities. In order for architectural interventions to be successfully integrated into the fabric of informal settlements, be sensitive to its physical and social context as well as be accepted by the community, the architecture has to be a true synthesis of conventional formal processes and approaches as well as those that have emanated from the informal. A deeper analysis of the theories and the informal settlement communities approaches to built form and placemaking have resulted in four concepts that would serve to aid in the creation of a more responsive architecture for informal settlement communities. These four concepts serve as guidelines for architectural interventions in informal settlements to produce architecture that informal settlement communities can identify with and that would be able to serve their specific needs. These four concepts were then tested and used as a means of analysing the precedents' responsiveness to the informal setting. What was found is that although these precedents have excelled in many ways to serve their communities, there have been many missed opportunities that, if carried out to their potential would have provided a far more responsive design.



Fig.125: Journeying into the informal 7. (Source:Author)

8.0. CONCLUSIONS & RECOMMENDATION

8.1. Introduction

This dissertation set out to explore how informality and the culture of informal settlement communities can inform architecture as a means of creating better and more responsive architectural interventions to the challenges faced by informal settlement communities. Conceptualising a more responsive architecture for informal settlement communities required the study of their existing social networks, socio-spatial dynamics, economic networks, culture and insurgent practices. All this provided a deeper understanding of the lifestyle of informal settlement dwellers as well as the challenges they mediate on a daily basis. For conclusion to then be drawn on how best to conceptualise this architectural response, it is necessary to revisit the hypothesis:

"It is hypothesized within this study that a synthesis of the architecture and informality through an understanding of the existing socio-spatial dynamics, culture, economic networks, insurgent practices and approach to the production of built form of informal settlement communities that a more responsive architecture can be produced capable of increasing their resilience to site specific challenges, improving their quality of life and ultimately aiding them towards their hopes and aspirations."

The data presented throughout this dissertation has provided a greater level of understanding of life in informal settlements as well as their approach to architecture. It also looked at formal responses to the challenges these communities face. Both these were imperative in achieving the objectives set out in the first chapter and in ultimately conceptualising a synthesis between architecture and informality.

8.2. Conclusions

The research demonstrates that in order for architectural interventions in informal settlements to be successfully integrated into their physical and social contexts, they need to be influenced and informed by the very informality knowledge base systems already inherent in these communities as well as the way they live their daily lives. Only through this form of integration of the architecture, can it make a lasting difference to these communities and improve their quality of life.

The theoretical framework is built upon creating an understanding of life in informal settlements through an analysis of the culture that is developed from such a context and how this ultimately influences the way these communities shape their built environment. Conclusions of this study are structured with reference to and compared against the objectives set out in the beginning of this dissertation as follows:

OBJECTIVE 1:

“To develop a background understanding of the context surrounding the formation of informal settlements and the unjust city planning that deprived these citizens of a right to the city in the context of South Africa.”

Through the writings of Elleh (2011) and Huchzermeyer (2011), it is understood that the inability of the rapidly modernizing developing countries to cope with the influx of rural-urban migrants searching for a better life has broadly resulted in the proliferation of informal settlements along the peripheries of their cities.

Historically, this has largely been due to planners not considering this group of people in the planning of cities, deeming them to be perpetually rural in nature. This is particularly true for both the colonial and apartheid states of South Africa which considered black people's stay in the city to be temporary and only for the purposes of work (Frescura, 2001). As such, the authorities denied black people a role in city life beyond labour which ultimately resulted in these people settling on the edges of South African cities.

Huchzermeyer also states that in the post-apartheid era, the South African government's urban competitiveness placed them on a crusade of sorts to eradicate slums which further imposed on the rights of informal settlement dwellers and perpetuated a climate of fear and uncertainty in their lives. A stance that was largely influenced by a misinterpretation of the Millennium Development Goal 7 target 11 which sought to achieve a significant improvement in the lives of at least 100 million slum dwellers. The South African government perceived this to mean the eradication of settlements and the relocation of residents to more suitable living

areas. The second aspect that influenced this urban competitiveness according to Huchzermeyer (2011) was the 2010 Soccer World Cup which saw governments on a drive to clean up the image of its cities.

OBJECTIVE 2:

“To establish an understanding of socio-spatial dynamics, economic networks and culture within informal settlements and to map this graphically.”

The latter part of this objective was achieved through a collaborative community mapping exercise with the Quarry Road Informal Settlement Community.

Through a reading of various informal settlements around the world, the conclusion was reached that residents of informal settlements are in fact resilient to their living conditions and that this is largely due to the strong social networks and subcultures that form precisely because of these harsh living conditions. These social networks and subcultures aide the informal settlement dweller in coping with the traumas inherent in such living conditions. Space in informal settlements is shaped through the activities of these social groups, be they insurgent, leisurely, economic, recreational or ordinary acts of daily life. Unlike normative urban fabrics, informal settlement fabrics are shaped by its occupants who are “creative users” of the space. It is their activities that shape the space rather than the space shaping their activities.

A conclusion about the culture that emanates from the informal, is that it is a culture characterised by adaptation – to various challenges that the informal urbanite faces on a daily basis. The informal is dynamic and has a fabric that is constantly changing. In addition, a large percentage of informal settlement dwellers are rural-urban migrants. They are effectively societies in transition and must adapt their “mode of production” to suit their new material and cultural living conditions. As a result, the informal settlement dweller is constantly adapting to the dynamic environment around them. The effect of the informal settlement dweller being an “active user” and a shaper of their environment results in a setting that is under perpetual flux to suit the changing needs of its inhabitants.

OBJECTIVE 3:

“To gain an understanding of the insurgent practices of informal settlement communities when fighting for their right to the city.”

According to Huchzermeyer (2011), informal settlement communities fight for their rights to the city in three different dimensions: by fighting for the right to long term habitation of the city and spatial centrality; a right to participate in central decision making; and for a right to the creative making of public spaces.

According to Mirafteb (2009), informal settlement communities do not confine themselves to normative spaces for citizen participation, but rather they invent new “extra-legal” spaces to fight for their rights. They move between these “invented” spaces and “invited” spaces and it is exactly this flexibility and adaptability in changing approaches that allows them to get the attention of the authorities.

These invented spaces are manifest in the actual act of land occupation and the creation of informal settlements, the acts of protest, marches, the blocking of transport nodes to disrupt the activities of the city, and even the use of the media, imagery and spectacle. All these extra-legal acts are what ultimately draw the attention of the authorities and pave the way for more formal processes of achieving their rights. In this vein, architecture cannot confine itself to the normative when in such a context. To respond to such dire conditions and be able to achieve its social imperative, architecture must be inventive as well as act outside what is considered normative and conventional.

OBJECTIVE 4:

“To explore how these communities approach placemaking and the production of built form under challenging conditions.”

Public space in informal settlements has a tendency towards a linear quality rather than a bounded square. It is in large part due to the sheer density of the informal settlement fabric, where private space is prioritized. This is confirmed by the literature of Tames (2004) and Opalach (1997) as well as through the case study.

Frampton's writings on tectonics were used as a means of developing a framework from which to analyse the built form produced within the informal settlement fabric. The aim of this was to identify a sense of meaning or a structural poetic. Frampton (1995) argues that each cultural condition and set of physical contextual circumstances reinterprets and rearticulates the tectonic-stereotomic dialectic. The material and cultural living conditions of the informal settlement environment are characterized by flux and constant adaptation to this. The built form in the informal settlement fabric is characterised by two phenomena: flexibility and incrementalism.

Space in informal settlements is created to be flexible due its shortage and high value. A single space can perform the most varied of functions at different times of the day or week. For example, at the Havelock informal settlement in Durban, a house that contains a crèche during the day, functions as a shebeen at night. The other phenomena, incrementalism, is change that occurs over several years. This speaks about the perpetual incremental construction of informal dwellings to suit the occupants' changing lifestyles, growing families, or even to accommodate the next generation. What can be observed in the built form is that the stereotomic represents permanence, secure land tenure, prosperity. On the other hand, the tectonic represents impermanence and insecurity brought about by the various challenges of informal settlement life that the occupant endures.

OBJECTIVE 5 & 6:

"To explore how architecture can respond to insurgent practices and aide informal settlement communities in their struggle for a right to the city."

"To explore how architecture can respond to informal settlement communities and their existing socio-spatial dynamics, economic networks and culture to enhance their lives, aide them in progressing towards their hopes and aspirations and integrate them into broader society."

This concerns the actual synthesis of the formal and the informal. It concerns how architects are to respond to the informal and how to respond to Holston's (2009) call for a reinvention of modernisms social imperatives in insurgent spaces. It is hypothesized that in order to achieve this synthesis, architects are required to step out of the normative realms of practice and of knowledge and to look to the informal for answers. It is hypothesized that only through an in depth understanding of the socio-spatial dynamics, culture, economic networks, insurgent practices and approaches to the production of built form of informal settlement communities that architects can successfully reinvent modernism's social imperatives in these spaces. This is in keeping with Brillembourg and Klumpner's (2010) assertion that to respond to this context of uncertainty, the architect must engage in multiple forms of action simultaneously, including mapping, researching, networking, designing and building. The architect must design to accommodate adaptation and flexibility to respond to its context of uncertainty and perpetual change. The architect must be fully aware of the harsh realities of the informal context and take heed of the degrees of urgency and priority that these communities give to each of their challenges.

8.3. Recommendations

The following guidelines insights into the design recommendations for the proposed Resilience Hub for the community of the Quarry Road West informal settlement. The aim of the literature has been to gain an understanding of the context of urban informality as well as the lifestyles of informal settlement communities, their socio-spatial dynamics, culture, economic networks, insurgent practices and informal architecture to develop a more responsive approach to architecture that architects produce for these communities. All of the aforementioned considerations and knowledge will be taken into account and implemented to create a more responsive architecture for the Quarry Road West informal settlement community through the Resilience Hub.

- **Community specific:** The design of the Resilience Hub must seek to respond to and ameliorate the specific challenges and issues faced by the Quarry Road West informal settlement community.
- **Site Specific:** Informal settlements most often occur in spaces considered uninhabitable or unsuitable for development. The design and technology of the building must respond especially to the physical challenges of the site. In the particular case of Quarry Road, a river splits the site, so the design must be inventive in its response to this challenge.
- **Sync into the urban fabric:** The building must be designed to sync harmoniously into the existing informal urban fabric of the settlement, its paths and nodes.
- **Incremental Design:** Informal settlements are environments constantly subject to change with a very high level of uncertainty. As such, mitigating degrees of urgency is imperative. The building must respond to the present and the future. As such, the building must be implemented through an incremental phasing with the most urgent elements implemented first and so that other elements can be weighed by the community in terms of priority and the current circumstance of the settlement prior to implementation.
- **Flexibility:** The design must allow for flexibility in plan to accommodate for a number of varying activities as well as future change in use.
- **Community Engagement & Co-design:** It is of utmost importance for the success of the intervention to be designed with the aid and input of the

community. This would aid the architect in understanding the context as well as precisely what the community requires.

- **Empowerment:** The building must accommodate educational facilities that allow for the empowerment of the community through adult basic education, skills training and entrepreneurial opportunities specific to the community. In the case of Quarry Road for example, wastepreneurship.
- **Innovative Sustainable Design:** Getting municipal services, like piped water, sanitation and electricity into informal settlements is a challenge and can be disruptive to the existing urban fabric. As such, the design of the building must make use of technology that makes it less dependent on the municipality.
- **Challenges to Opportunities:** The building must be able to convert and transform site specific challenges into opportunities for the community. In particular, informal settlements lack waste removal which leads to a highly hazardous environment. However, the waste is an opportunity for wastepreneurship.
- **Reblocking:** The building must accommodate for accommodation and administration to facilitate the reblocking of the settlement in future.
- **Cultivating Identity:** The design of the building, through its architectonic language and materiality must reflect the informal. It must use the very same materials as a means of dispelling prejudice associated with them and use them in a way that the community can develop a sense of pride for.

8.4. Conclusion

The recommendations serve as guidelines for design to create a more responsive architecture for informal settlement communities in the form of a Resilience Hub. The Resilience Hub is defined as a prototype building for informal settlement communities that provides desperately needs services and amelioration of site specific challenges, infrastructure, education and empowerment for the community as well as to serve for a platform of engagement internally as well as with NGO's and government; all with the aim of improving the communities quality of life and bolstering their resilience to the challenges of informal settlement life.

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PART TWO
DESIGN REPORT

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CHAPTER 1: INTRODUCTION

1.1. Introduction

The world is currently facing rapid urbanization with the largest number of people moving from rural areas and countrysides to urban cores. This holds especially true in South Africa. However, as a result of a history of injustices and segregation perpetuated by apartheid and colonialism, a large portion of the South African population remains marginalised even today and occupy the left over space on the frays of cities in informal settlements, enduring poverty and exceedingly hazardous environments. Durban, the location of this study, has nearly a quarter of its inhabitants living in informal settlements.

In a context where these informal settlement communities have become insurgent and have begun to fight for their "right to the city" and a better quality of life, the authorities have been coerced to change their policies on informal settlements and to seek a route towards their normalization as part of South African cities. It is in this context that architecture ought to reevaluate its role in responding to the plight of informal settlement communities. The aim of the dissertation is to explore how informality and the culture of informal settlement communities can inform architecture as a means of creating better and more responsive architectural interventions to the issues faced by communities within informal settlements. It hypothesized that a synthesis of the architecture and informality; through an understanding of the existing socio-spatial dynamics, culture, economic networks, insurgent practices and approach to the production of built form of informal settlement communities; that a more responsive architecture can be produced capable of increasing informal settlement communities' resilience to site specific challenges, improve their quality of life and ultimately aid them towards their hopes and aspirations.

The outcome of the architectural approach developed in the dissertation is the conceptualization of a Resilience Hub for the Quarry Road West informal settlement community with the aim of responding to and ameliorating site specific challenges the community faces on a daily basis and ultimately improving their quality of life.

1.1. Project Description

The nature of insurgency is that it acts outside of normative spaces of citizen participation and invents new “extra-legal” spaces for the fight for the rights of marginalised groups of society (Miraftab, 2009). The flexibility of insurgency allows it to act within “invented” and “invited” spaces of citizen participation to get the attention of the authorities and ultimately aid in achieving these citizens' rights.

Similarly, if architecture is to respond to the plight of informal settlement communities and be able to achieve its social imperatives in these insurgent spaces (Holston, 2009), it needs to be inventive and act outside the realms of what is considered normative or conventional. According to Brillembourg and Klumpner (2010), to respond to the dire circumstances and uncertainty of informal settlements, the architect must engage in multiple forms of action simultaneously including mapping, researching, networking, designing and building. The architect must design to accommodate adaptation and flexibility to respond to its context of uncertainty and perpetual change. The architect must be fully aware of the harsh realities of the informal context and take heed of the degrees of urgency and priority that these communities give to each of their challenges.

As such, the typology of the Resilience Hub, being a prototype that has elements that can be replicated in other informal settlements, is open to flexibility. Its aim being ultimately to bolster the community's resilience to the challenges of informal settlement life and ultimately improve their quality of life. However, different informal settlement prioritize different challenges and the building must be able to be flexible enough to adapt to both the changing needs of its community over time, as well as to different communities and different contexts. In addition, being placed in such a dire context of poverty where communities lack the most basic amenities, the architecture has to redefine what it usually gives hierarchical value to. Whereas conventionally, basic amenities are elements that carry very little architectural value, in a context where they are lacking, they take on immense value. It is within this type of context that the Resilience Hub must act and be inventive in the way it responds to the serious challenges informal settlement communities face on a daily basis.

URBAN DESIGN REQUIREMENTS:

- The building must activate the proposed neglected site as a means of integrating and stitching it into the surrounding informal settlement.
- The building must tie into existing pedestrian paths within the settlement and repair broken links through its urban design.
- The design of the building must tie into the existing urban fabric of the informal settlement as well as its architectural language.
- The design of the building must respect the existing network of informal trade within the settlement and provide opportunities for this community.
- The building must take cognisance of the existing transport routes and nodes and design for these.
- The building must shape pockets of public space for the growing informal settlement to form around.

ARCHITECTURAL REQUIREMENTS:

- The building should be designed to be permeable and allow for ease of pedestrian flow through it to act as a thoroughfare used daily by the residents of the settlement.
- The building must provide spaces that allow for the alleviation of site specific challenges that the community on a daily basis. The responses to these challenges must be innovative and sustainable.
- It should provide spaces that cater for the upliftment of the community through education and economic opportunities.
- The building must be as self-sustaining as possible and rely minimally on the municipality for services.
- The design of the building must allow for flexibility in function to suit the changing needs of the community.
- The architectonic expression and materiality of the design must reflect and be sensitive to the surrounding informal settlement.
- The design must cater for the mixture of social activities within the settlement and be designed to become a hub of social and cultural activity.

1.4. THE CLIENT

The Client's Requirements

The client requires a multipurpose facility for the Quarry Road West informal settlement community that:

- 1) Provides a platform of engagement between the community and the client to facilitate the incremental upgrade process of the settlement.
- 2) Provides spaces that use innovative and sustainable means of alleviating challenges that the community faces on a daily basis.
- 3) Provide spaces for educational and recreational facilities as well as economic opportunity, in addition to transitional accommodation during the incremental upgrade process.

The Clients Organization

The South African Shack Dwellers Alliance is an alliance of community organizations in South Africa that provide aid and social services to informal settlement communities. The alliance is affiliated with Shack Dwellers International and is comprised of:



- 1) Community Organization Resource Centre (CORC)

NGO that supports the social processes of community-based organizations that want to work for themselves, by facilitating engagements with formal actors like the State.



- 2) Federation of the Urban & Rural Poor (FEDUP)

A women-led nationwide federation practicing daily savings, enumeration, pragmatic partnerships with the State, community-led housing development, land acquisition & informal settlement upgrading.



- 3) Informal Settlement Network (ISN)

The Informal Settlement Network (I.S.N) is a bottom-up agglomeration of settlement-level and national-level organizations of the poor at the city-wide scale.



4)uTshani Fund

A formal bridging finance institution, which provides loans for community-led initiations regarding house construction, land acquisition, and incremental informal settlement upgrading.

The alliance's aim is to build strong and resilient communities capable of making cities more inclusive and pro-poor by:

- Building communities
- Building partnerships with government
- Implementation of the goals of the partnership
- Keeping record by learning, monitoring and evaluating implemented interventions.

1.6. Detailed Client Brief

RESILIENCE PODS

Structures that bridge over the river providing much needed services

- Ablutions
- Trader stall
- Hydroponic Veggie Farm
- Waste Collection
- Water storage and purification
- Water collection points

Total Area: 148sq.m x 6 = 888sq.m

RESILIENCE HUB GROUND FLOOR

- Community Hall
Storage
Kitchen
Ancillary Spaces

Total Area: 695sq.m

- Workshops
Workshop area
Retail area

Material storage

Total Area: 60sq.m x 5 = 300sq.m

- Open Market

Total Area: 390sq.m

- Fresh Produce Market

Total Area: 200sq.m

- Trader Stalls

Total Area: 150sq.m

- Classrooms

Total Area: 70sq.m x 3 = 210sq.m

- Creche

Total Area: 140sq.m

- Community Flexible space

Total Area: 210sq.m

- Ablutions

Total Area: 80sq.m

RESILIENCE HUB 1st FLOOR

- Library

Total Area: 450sq.m

- Offices

Total Area: 300sq.m

- Transitional Accommodation

Total Area: 350sq.m

Complete square metreage: 3973sq.m

1.7. Conclusion

The theory calls for an architectural response that is inventive, flexible, open to adaptation over time and that challenges the normative notions and conventions of architecture to better respond to such a dire and uncertain context. The aims of the building are to increase the informal settlement community's resilience to the challenges of informal settlement life, to bring into the settlement much needed basic services infrastructure and amenities, to empower the community through the provision of educational and training spaces, to transform site specific challenges into opportunities for the community, to provide a platform for engagement with NGO's and the municipality, and to provide spaces that facilitate the reblocking and upgrading process of the settlement. Such a wide range of functions within a building placed in such a context defies and challenges conventional architectural typological categorization and has no built precedent. However, this wide range of functions and the architecture's action outside of what is considered convention is precisely what is required to enable it to make a lasting positive impact on the community.

CHAPTER 2: SITE ANALYSIS

2.1. Site Survey

The settlement is located along the M19 highway which is a continuation of Umgeni Road to the east that runs through Durban's mixed retail and light industrial corridor and terminates in the cbd. To the west, the M19 runs through to Pinetown and New Germany which also have a slight industrial character. Close to the settlement, the M19 intersect with the N2 provides access all the way North and South. What this depicts is just how central the settlement actually is. By locating themselves at the intersection of these two major transport arteries, this insurgent community have taken advantage of Durban's decentralised, segregationist planning to gain access to not only the core of the city but all of its extents and frays which have themselves become hubs of activity.

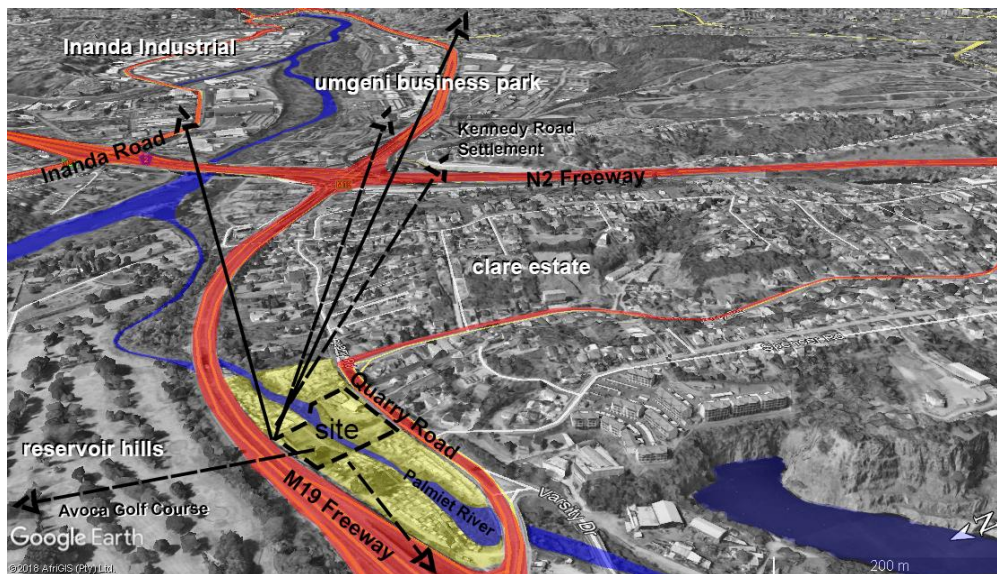


Fig.1 3D graphic of the Quarry Road West Settlement showing connections to the rest of the urban fabric and other informal settlements. (source: author)

In addition, the Quarry Road West informal settlement is located in the largely middle income suburb of Clare Estate. Besides in the urban core, according to Tyida (2003) many of the residents find informal employment in the suburbs as housekeepers and gardeners.

The Quarry Road West informal settlement is also part of a network of informal settlements located along the M19 and Umgeni Road. This is particularly important during protest action as informal settlement communities join together to make their voices heard by the public and the authorities.

Zoning

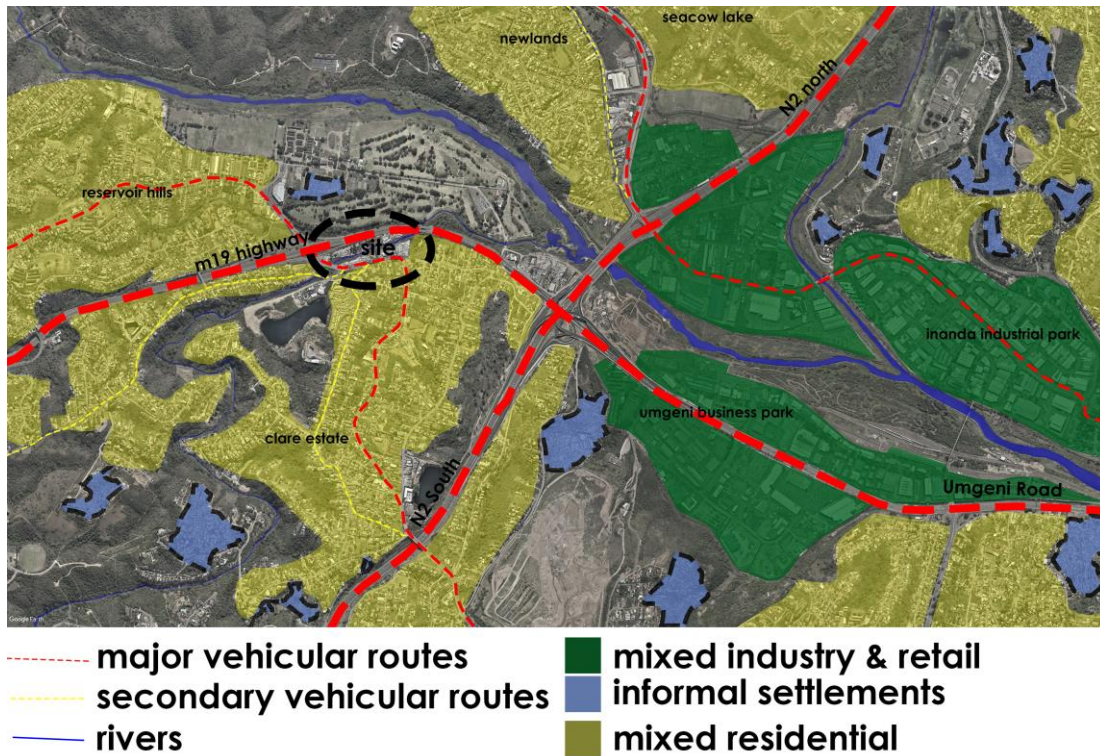


Fig.2: Drawing showing the zoning of the sites broader context (source: author)

Contextual Analysis

- 1 SITE
- 2 MCONDO 2
- 3 MCONDO 1
- 4 MAMPONDWENI
- 5 MAMSUTHU
- 6 OLD TRUCK YARD
- 7 QUARRY LAKE LODGE
- 8 QUARRY
- 9 PALMIET PRIMARY
- 10 TEMPLE
- 11 CHURCH
- 12 PAPWA GOLF COURSE
- 13 CREMATORIUM
- 14 INFORMAL SETTLEMENT
- 15 CHECKERS SHOPPING CENTRE
- 16 AD LAZARUS SECONDARY

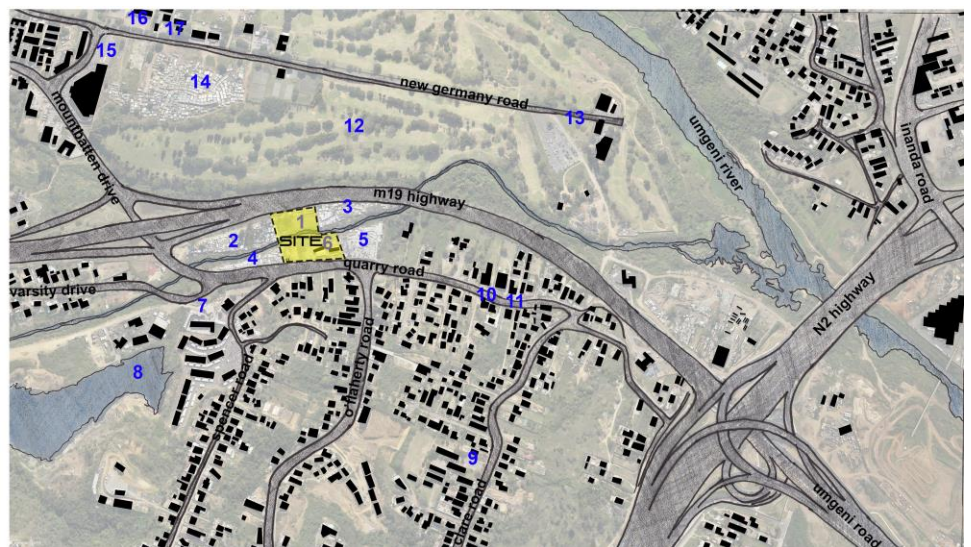


Fig.3: Drawing showing the broader context surrounding the site (source: author)

Pedestrian Movement

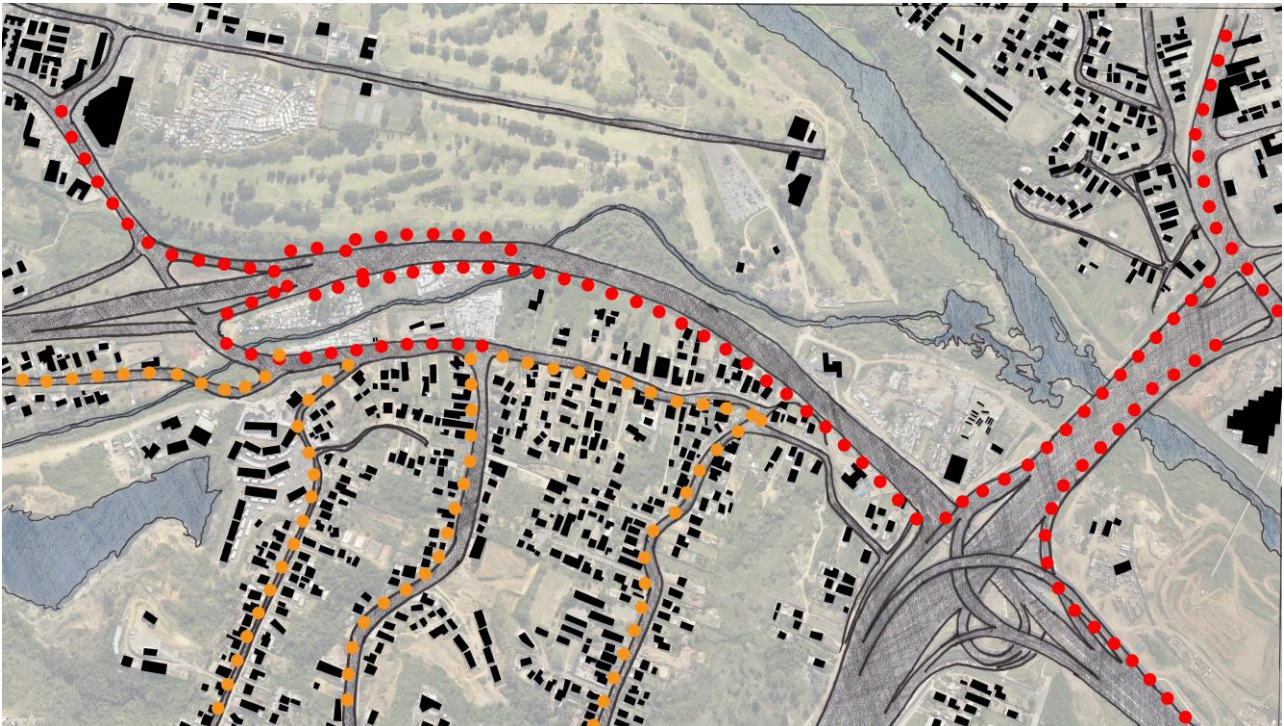


Fig.4: Drawing showing pedestrian movement around the site (source: author)

Vehicular Movement

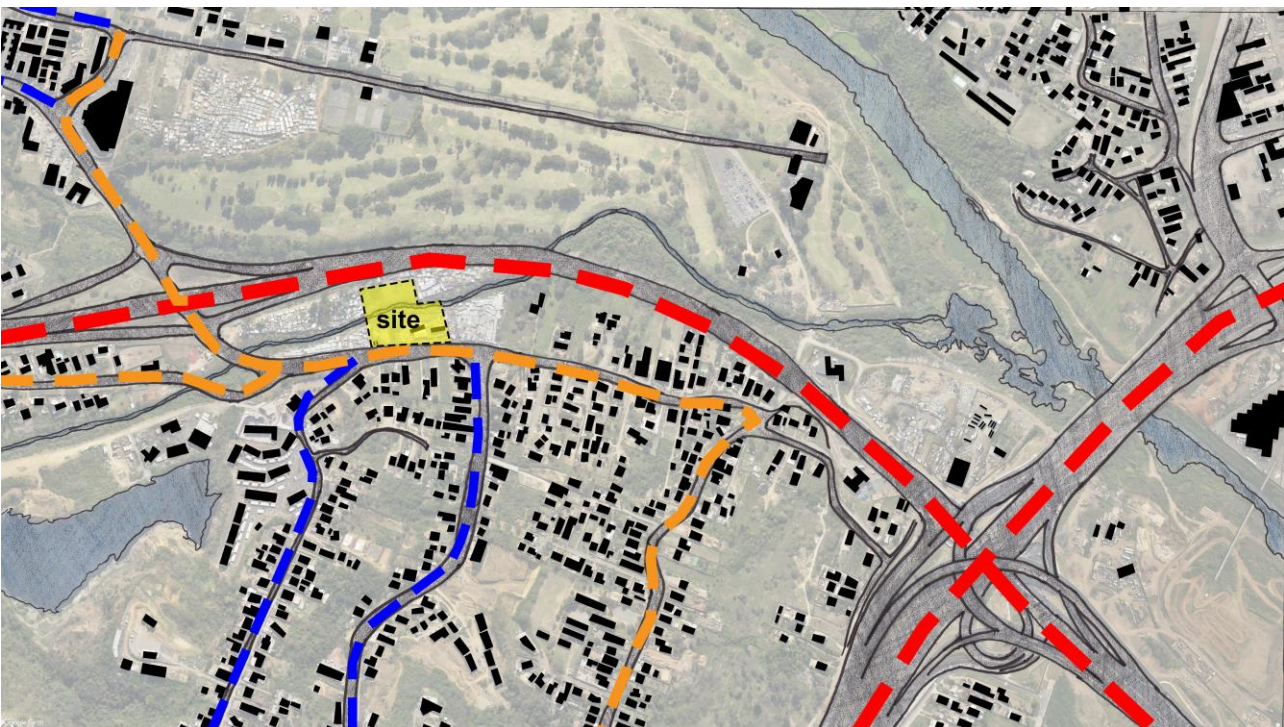


Fig.5: Drawing showing vehicular movement around the site (source: author)

Climate Analysis

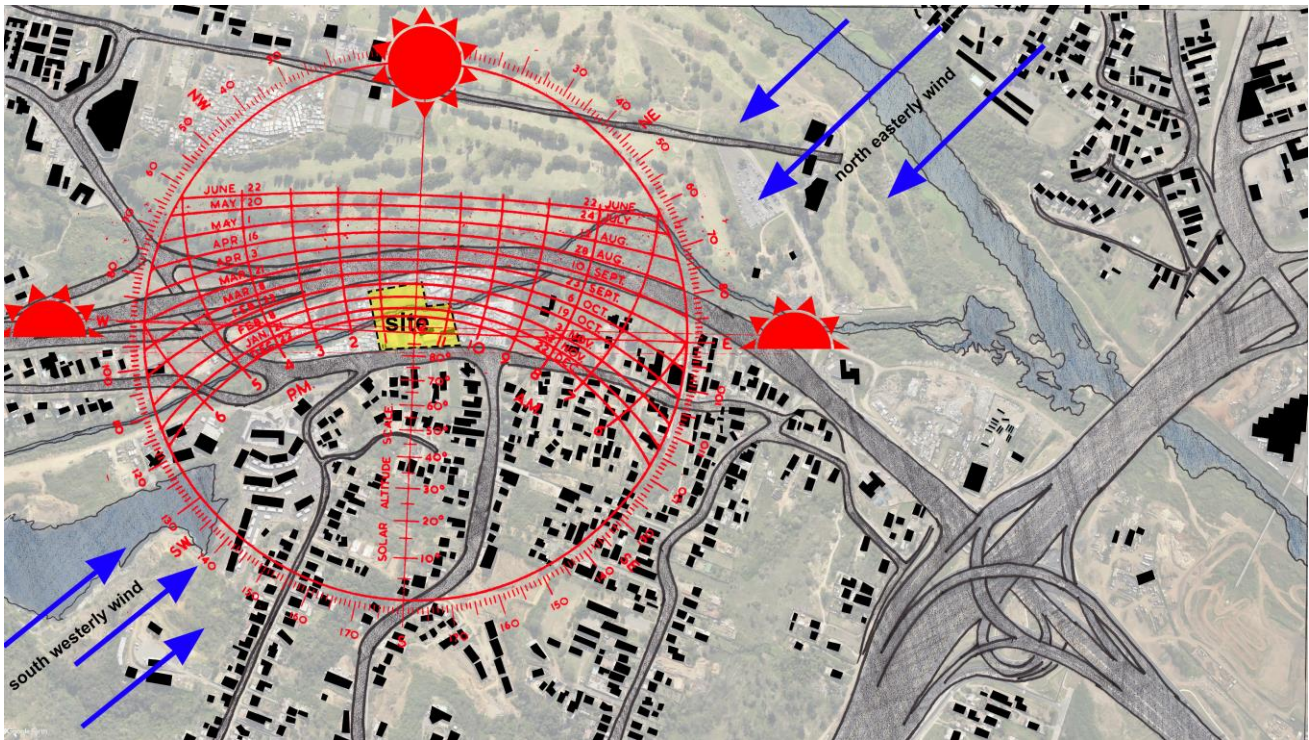


Fig.6: Drawing showing climate analysis (source: author)

2.2. Background of the Settlement

The Quarry Road West Informal Settlement in Durban is located in the suburb of Clare Estate. The formation of the settlement began in 1984 (Sutherland et al, 2018) shortly after the construction and completion of the M19 highway that runs alongside it. The settlement is contained between the M19 highway and Quarry Road with the Palmiet River running through it.

Currently the settlement is divided into four sub-settlements as a result of the Palmiet River and a private plot of land that cause this division through the site. The settlement, according to a community mapping project undertaken in July 2017, is home to 2400 residents and 931 households (Sutherland et al, 2018), making it an average of 2.6 people per household.

At the moment, all of the residents of the settlement are earmarked for relocation by the eThekweni Municipality as a result of the site being considered unsuitable for habitation as a result of the danger posed by the river constantly flooding the settlement as well as the unhealthy environment as a result of pollution in the river. According to one of the residents, at least half of the residents have already been moved to more formal housing. However, since then, the settlement has continued to grow to completely occupy almost all the available land and even at times

spilling over into the private land which has become highly contested over the years.

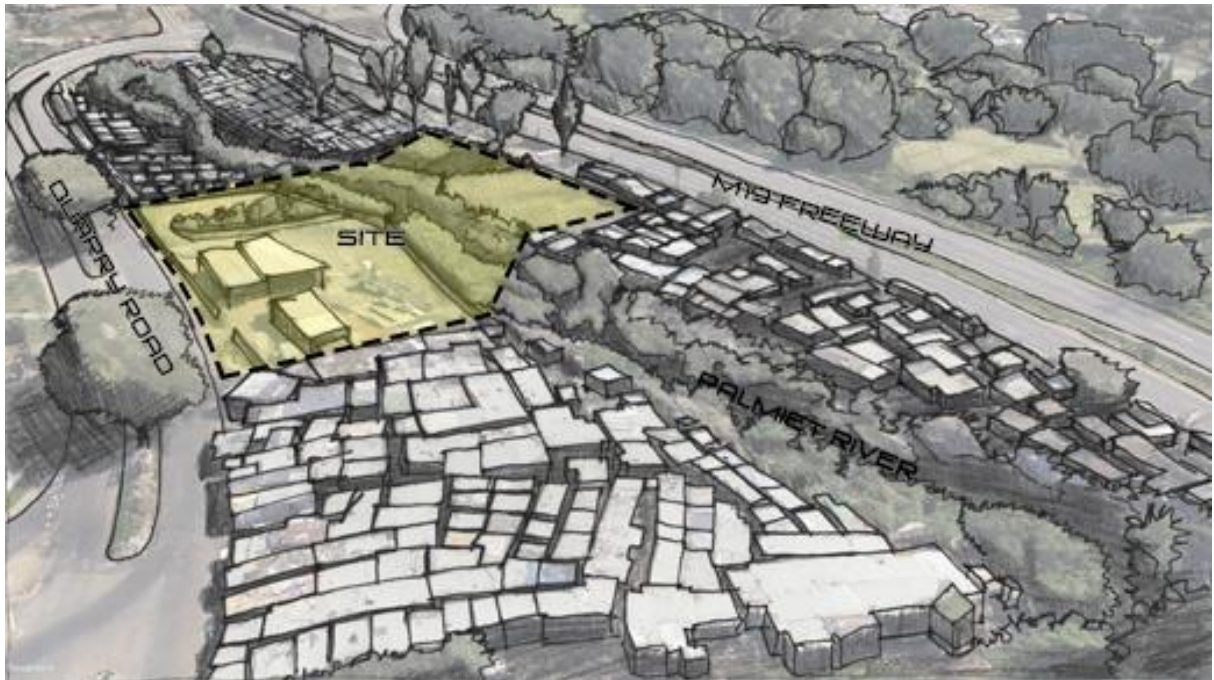


Fig.7: A pictorial sketch of Quarry Road West Informal Settlement (source: author)

2.3. Settlement & Site Analysis

To begin by hypothesizing, an analysis of the socio-spatial relationships of the Quarry Road West informal settlement should reveal how social networks, subcultural activities, public-private relationships influence placemaking. **The research was conducted through a community collaborative mapping exercise wherein the community identified the various spaces of activity within the settlement.**



Fig.8 : The imagery produced by the drone –annotated (source: author)

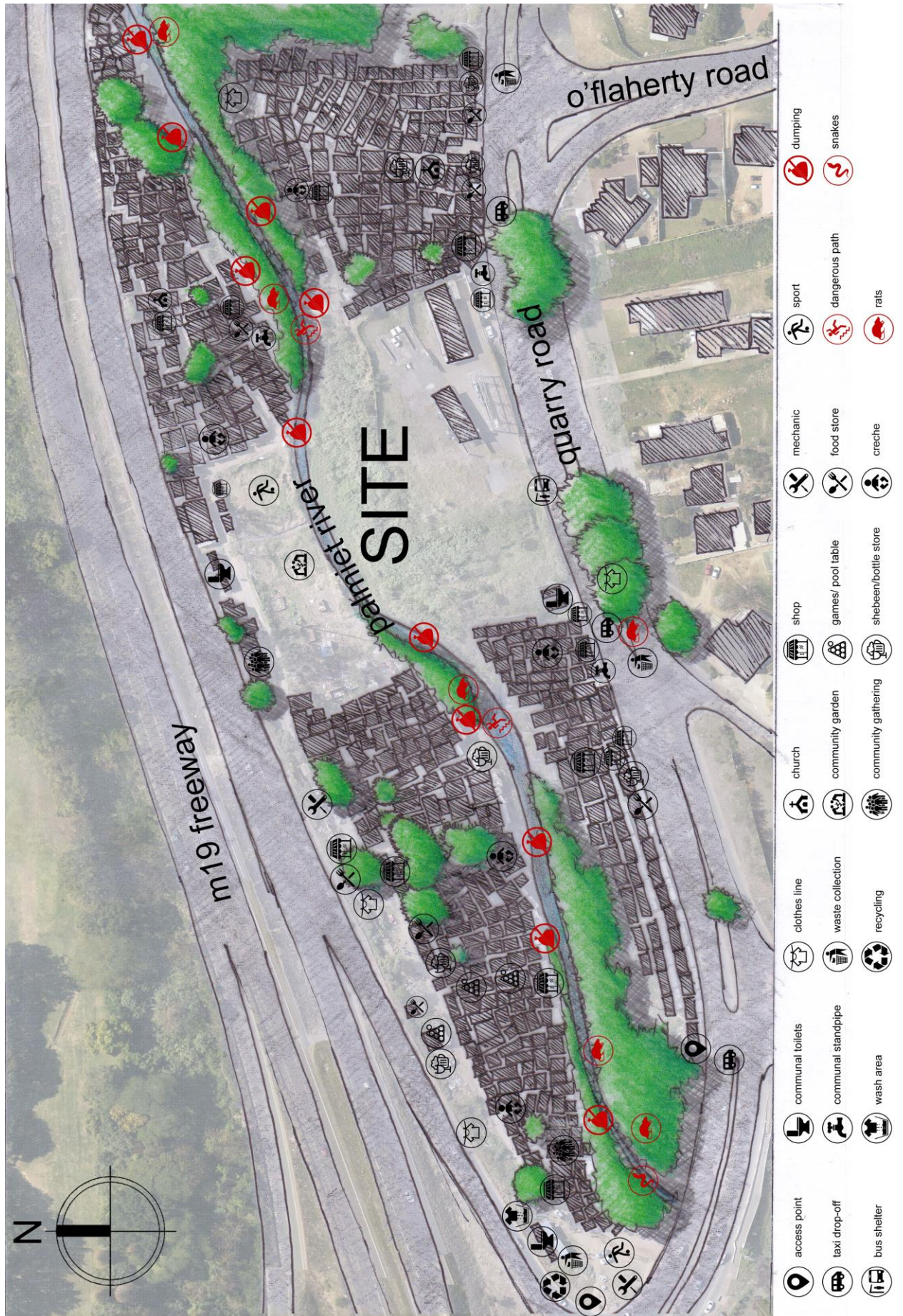


Fig.9: The social spatial analysis produced by the community collaborative mapping exercise (source: author)



Fig.10: The paths and social nodes analysis produced by the community collaborative mapping exercise (source: author)

CHAPTER 3: DESIGN DEVELOPMENT & RESOLUTION

Urban Design Proposal

The aim of the urban design proposal was to use architecture to transform the inaccessible void within the dense fabric of the settlement and stitch it into the surrounding informal fabric.

The architecture consists of a series of buildings placed strategically throughout the settlement along and close to existing paths and nodes to stitch the architecture into the informal settlement fabric.

The other aspect of the urban design is the proposed incremental upgrading which the Resilience Hub facilitates. This will occur on the site to begin with until eventually transforming the entire settlement.

The Urban Design intends to:

- Strengthen and repair existing broken links between nodes within the settlement.
- Create a safer environment along the river edge
- Shape and create public space in and around the proposed intervention
- Reinforce and strengthen existing informal trade

Design Intentions

- To design a facility that accommodates for the specific needs of the Quarry Road West informal settlement community.
- Alleviate site specific challenges through innovative and sustainable solutions that can be managed by the community.
- To provide a platform of engagement between the community, their leaders, NGO's and the municipality so that solutions can to challenges can be drawn using input from the community
- To provide facilities that aide in improving the quality of life of the community
- To design a building that can adapt to the changing needs of its community
- To create a sense of identity and ownership by reflecting the architectonic expression of the settlement within the architecture of the intervention.

Design Concept



Fig.11: Concept sketch (source: author)

The concept is **Stitching Resilience into the Informal**. Creating an architecture that seamlessly etches into the informal urban fabric that aides in bolstering resilience and empowers the community towards their hopes and aspirations

SUB-CONCEPTS:

Weaving into the Informal Fabric

This is a process that seeks to identify the existing paths; nodes; social spaces; risk areas; challenges; the economic, social and political circumstances and then seeks to embed the architecture within this system.

Paths in informal settlements are the primary social spaces due to the lack of space and nodes occur around spots of activity like the community standpipe, clothes line or even local shebeen.



Fig.12: Images of paths and social nodes at the Quarry Road West informal settlement (source: author)

Flexibility & Incrementalism

A defining characteristic of informal settlement architecture is that it is designed and built by its users. As such, the space is dynamic and under constant flux in response to the users' changing needs. This is evident in the kind of space in informal settlements that is adaptable to a number of activities at different times of the day. As such, spaces in the building must be flexible and planned incrementally to respond to changing needs and priorities.



Fig.13: Incremental development at the Savda Gheva settlement in India (source: King, 2017)

Fig.14: Incremental phasing of the Sans Souci cinema (source: <https://www.2610south.co.za/gallery20.php>)

Reflecting the Informal

The informal fabric is very distinct in character. Critical regionalism promotes the approach to the appropriating of that specific character as a means of imbuing the architecture with a sense of local identity. As such, the architecture must reflect the informal.



Fig.15 & 16: The informal architectonic (source: author)

Concept Execution

1) Community Participation and co-design

This involves engaging the community through mapping exercises as well as co-design input.

2) Identifying Existing Paths & Nodes

Identifying through the collaborative mapping exercises existing paths and social nodes

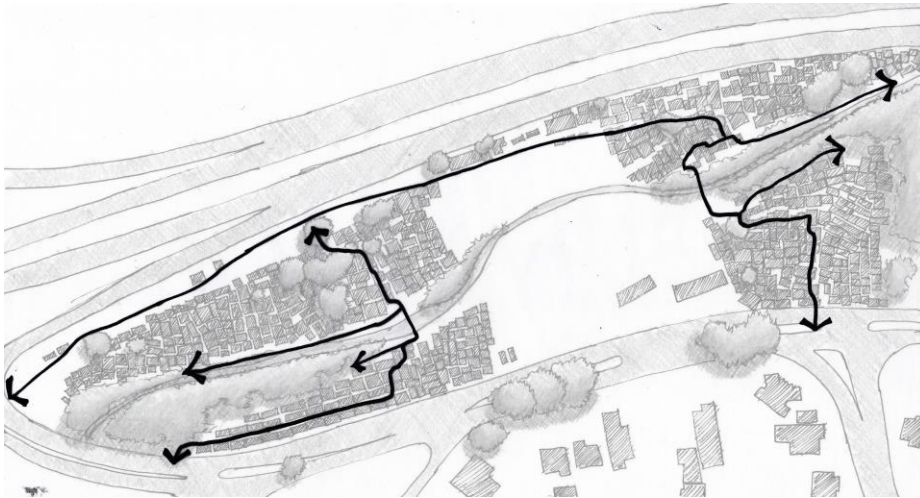


Fig.17: Existing paths (source: author)

3) Creating New Paths & Nodes

Creating new paths to repair broken links and create opportunities for new nodes.

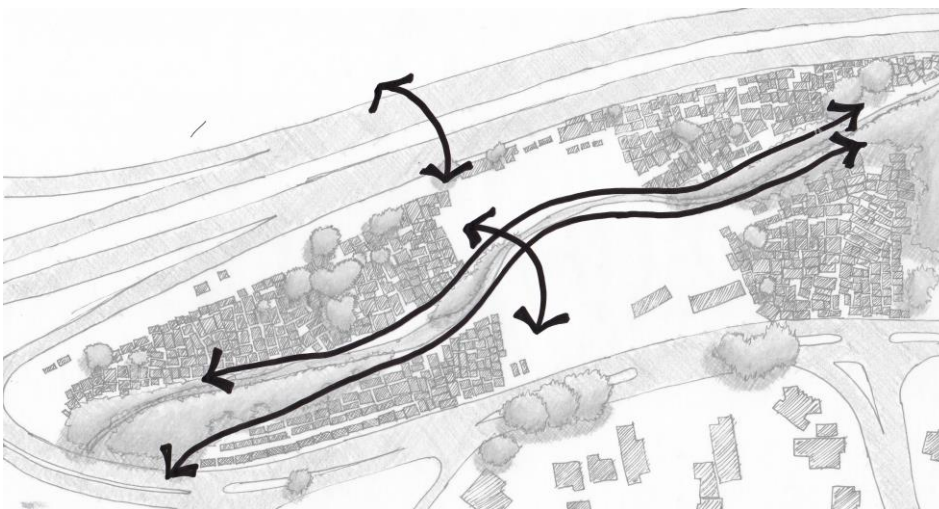


Fig.18: Creating new paths and repairing broken links (source: author)

4) Permeability

Arranging the internalised spaces of the building around the paths to stitch the building into the fabric and as a means of creating a permeable building that allows for movement through it.

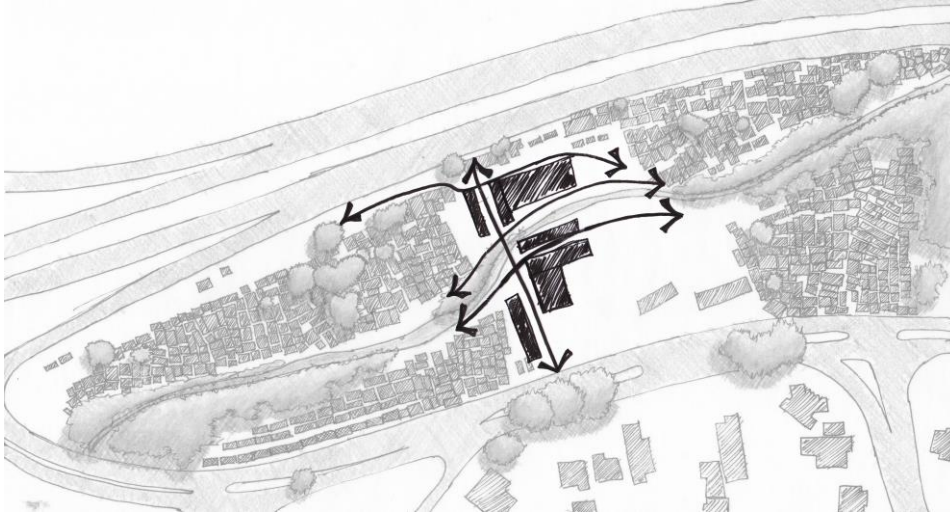


Fig.19: Arranging building spaces around paths to make the envelope permeable (source: author)

5) Introducing Spaces that Facilitate Resilience

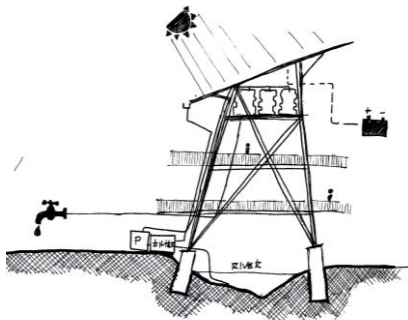


Fig.20: Early sketch of tower in Resilience Pod (source: author)

6) Cultivating Identity Through the Informal Architectonic

Respecting the scale of the informal settlement. Reflecting its materiality.

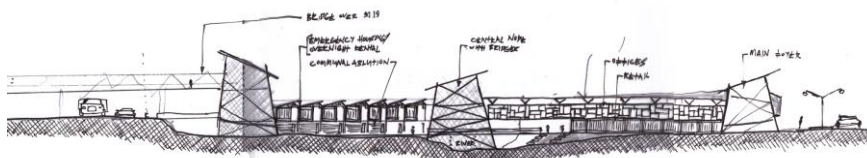


Fig.21: Section showing human scale of building (source: author)

Development of Building Footprint

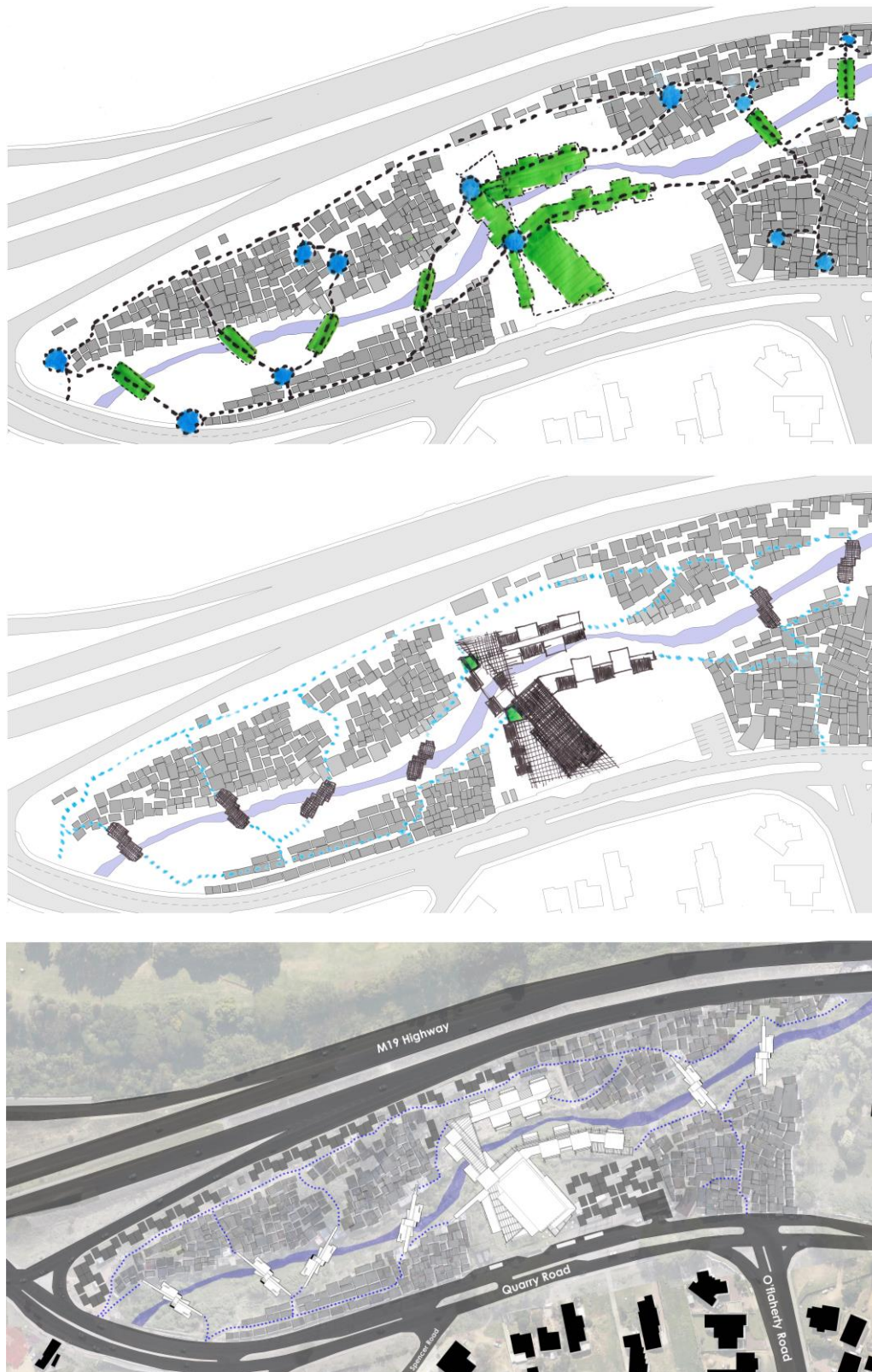


Fig.22: Development of building footprint stitched into settlement (source: author)

Planning & Incremental Design

Responding to the various challenges that informal settlement communities face requires the architect have a sense of understanding of the priority and urgency given to these issues and challenges by the community. As such, while some interventions in the settlement maybe of utmost importance, others may be more be more beneficial in the future. The architect, then must design for both the present urgent needs as well as for the future needs of the community. Both the present as well as a number of future scenarios must be considered, bearing in mind the worst case scenario (Brillembourg and Klumpner, 2010).As such, the responses that the Resilience Hub provides for these challenges has been broken up into an incremental phasing of the building to deal with the most urgent problems immediately. This is especially important in the temporal fabric of informal settlements which are constantly undergoing change.

PHASE 1

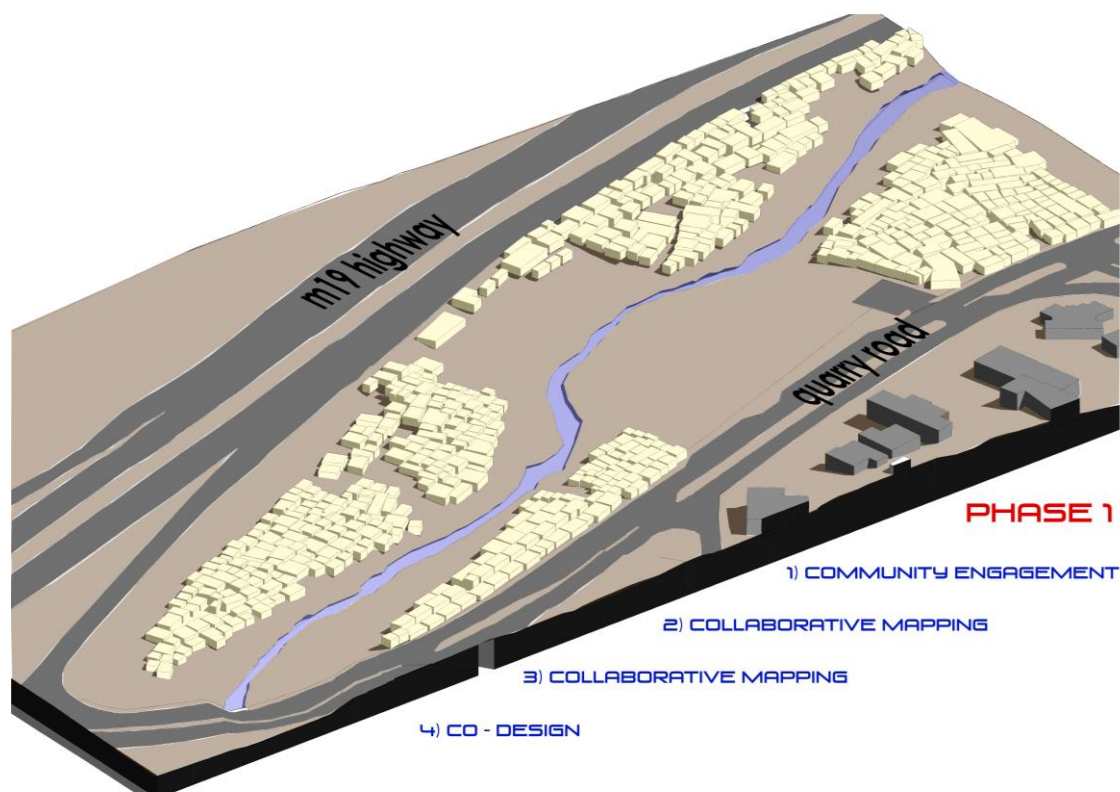


Fig.23: Phase 1 (source: author)

PHASE 2

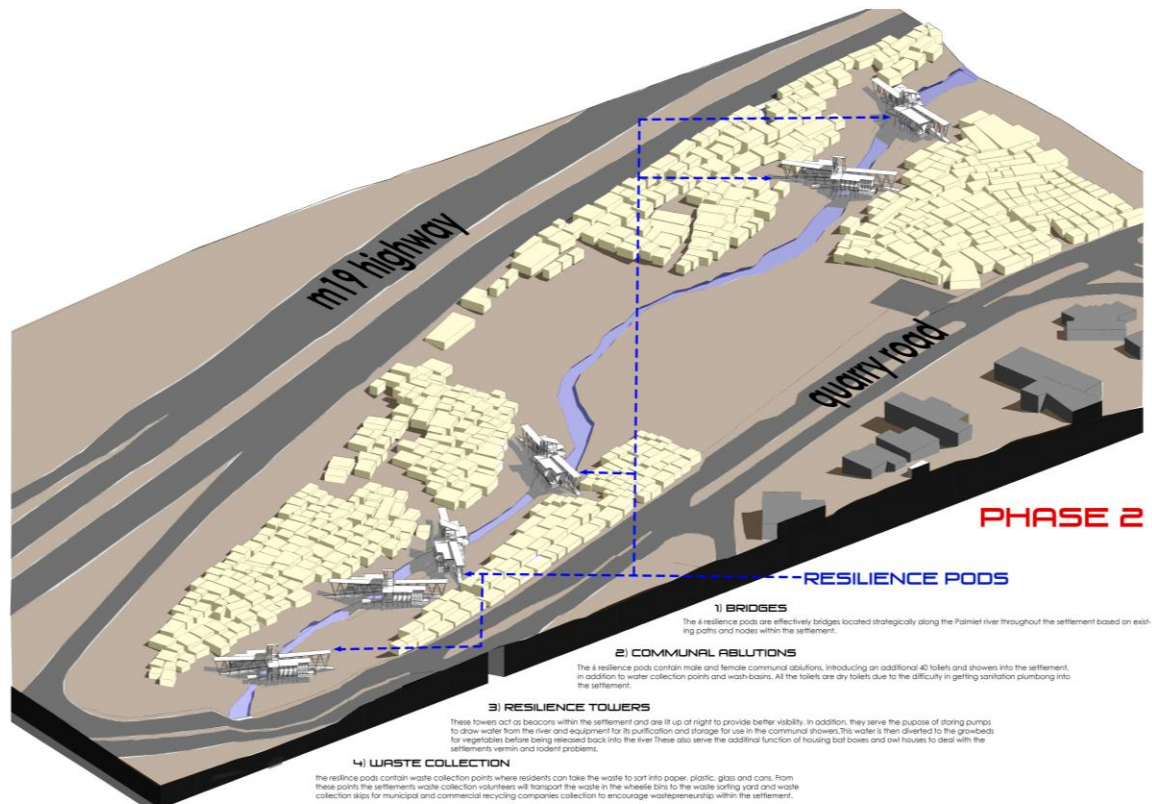


Fig.24: Phase 2 (source: author)

1) Bridges

The 6 resilience pods are effectively bridges located strategically along the Palmiet River throughout the settlement based on existing paths and nodes within the settlement.

2) Communal Ablutions

The 6 resilience pods contain male and female communal ablutions, introducing an additional 40 toilets and showers into the settlement, in addition to water collection points and wash-basins. All the toilets are dry toilets due to the difficulty in getting sanitation plumbing into the settlement.

3) Resilience Towers

These towers act as beacons within the settlement and are lit up at night to provide better visibility. In addition, they serve the purpose of storing pumps to draw water from the river and equipment for its purification and storage for use in the communal showers. This water is then diverted to the grow-beds for vegetables before being released back into the river. These also serve the

additional function of housing bat boxes and owl houses to deal with the settlements vermin and rodent problems.

4) Waste Collection

The resilience pods contain waste collection points where residents can take their waste to sort into paper, plastic, glass and cans. From these points the settlement's waste collection volunteers will transport the waste in the wheelie bins to the waste sorting yard and waste collection skips for municipal and commercial recycling companies' collection to encourage wastepreneurship within the settlement.

PHASE 3

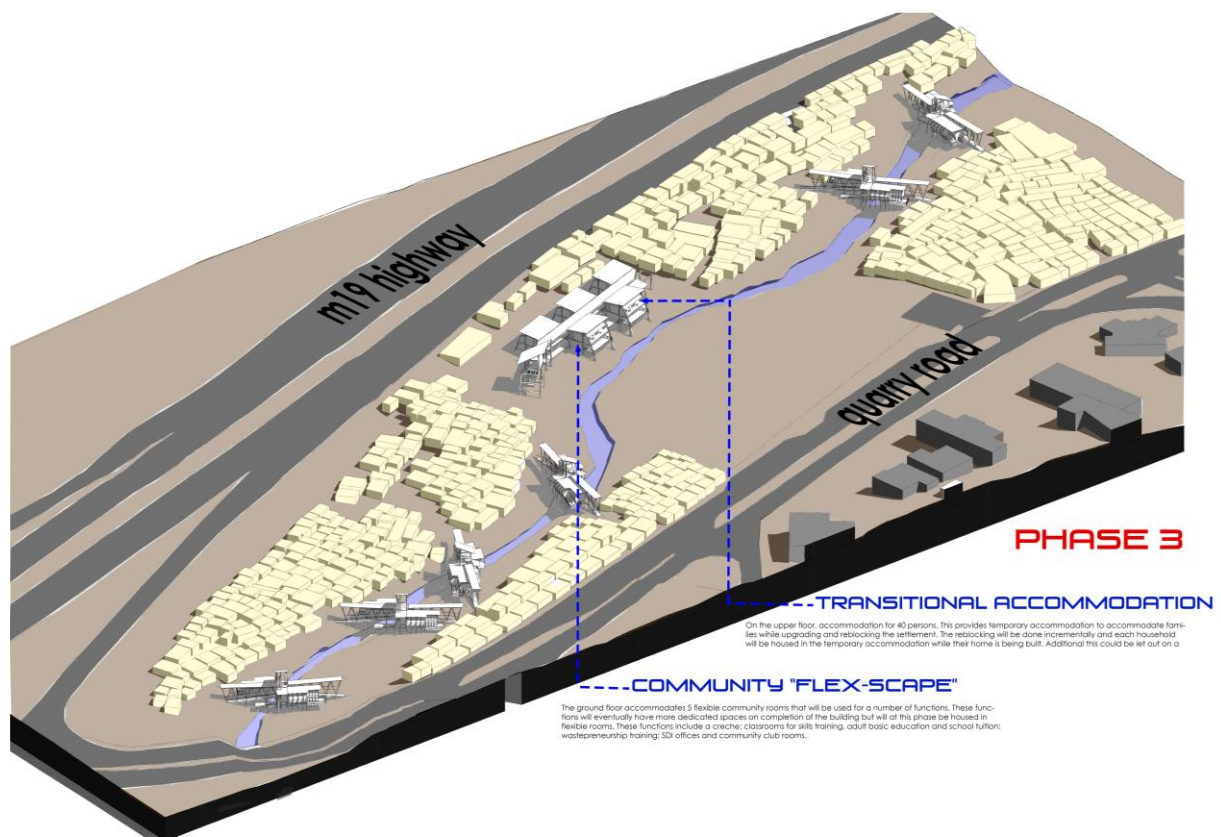


Fig.25: Phase 3 (source: author)

Transitional accommodation

On the upper floor, accommodation for 40 persons. This provides temporary accommodation to accommodate families while upgrading and reblocking the settlement. The reblocking will be done incrementally and each household will be housed in the temporary accommodation while their home is being built. Additional this could be let out on a nightly basis.

Community “flex-scape”

The ground floor accommodates 5 flexible community rooms that will be used for a number of functions. These functions will eventually have more dedicated spaces on completion of the building but will at this phase be housed in flexible rooms. These functions include a crèche; classrooms for skills training, adult basic education and school tuition; wastepreneurship training; SDI offices and community club rooms.

PHASE 4

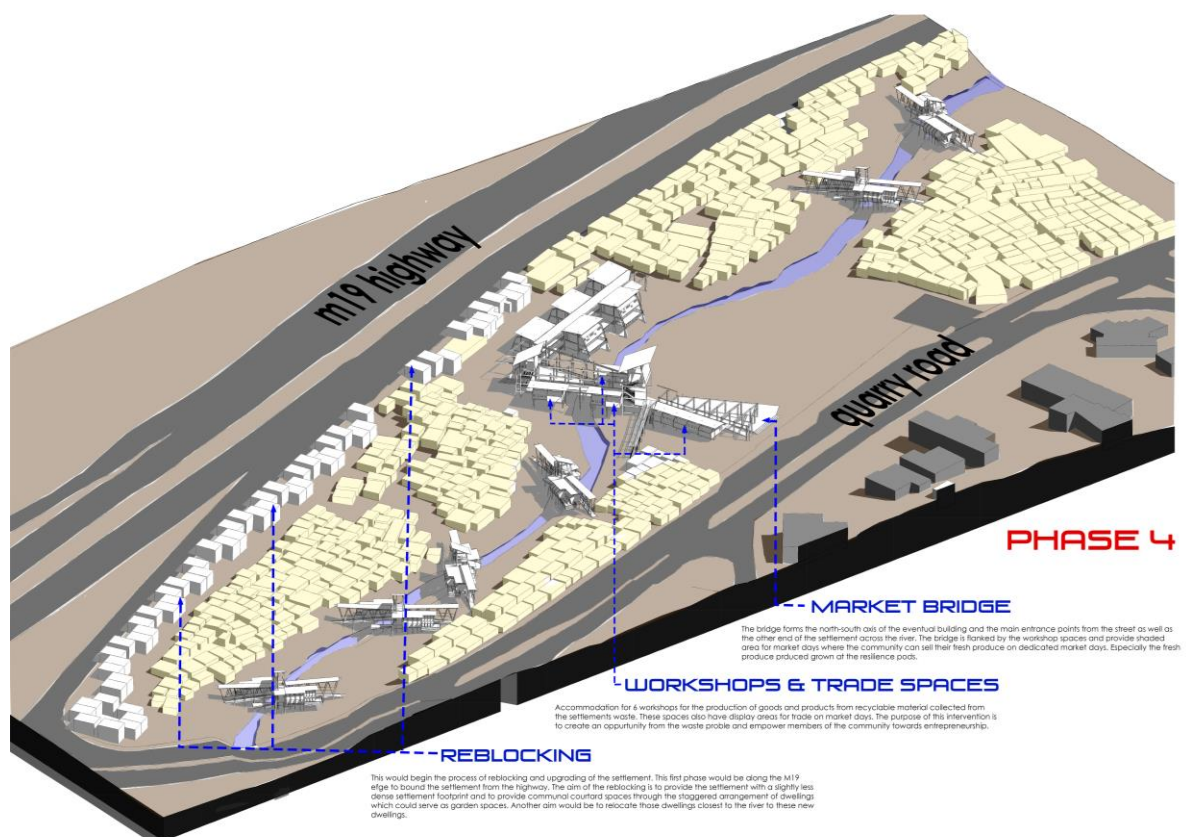


Fig.26: Phase 4 (source: author)

Market Bridge

The bridge forms the north-south axis of the eventual building and the main entrance points from the street as well as the other end of the settlement across the river. The bridge is flanked by the workshop spaces and provide shaded area for market days where the community can sell their fresh produce on dedicated market days. Especially the fresh produce grown at the resilience pods.

Workshops & Trade Spaces

Accommodation for 6 workshops for the production of goods and products from recyclable material collected from the settlements waste. These spaces also have display areas for trade on market days. The purpose of this intervention is to create an opportunity from the waste problem and empower members of the community towards entrepreneurship.

Reblocking

This would begin the process of reblocking and upgrading of the settlement. This first phase would be along the M19 edge to bound the settlement from the highway. The aim of the reblocking is to provide the settlement with a slightly less dense settlement footprint and to provide communal courtyard spaces through the staggered arrangement of dwellings which could serve as garden spaces. Another aim would be to relocate those dwellings closest to the river to these new dwellings.

PHASE 5

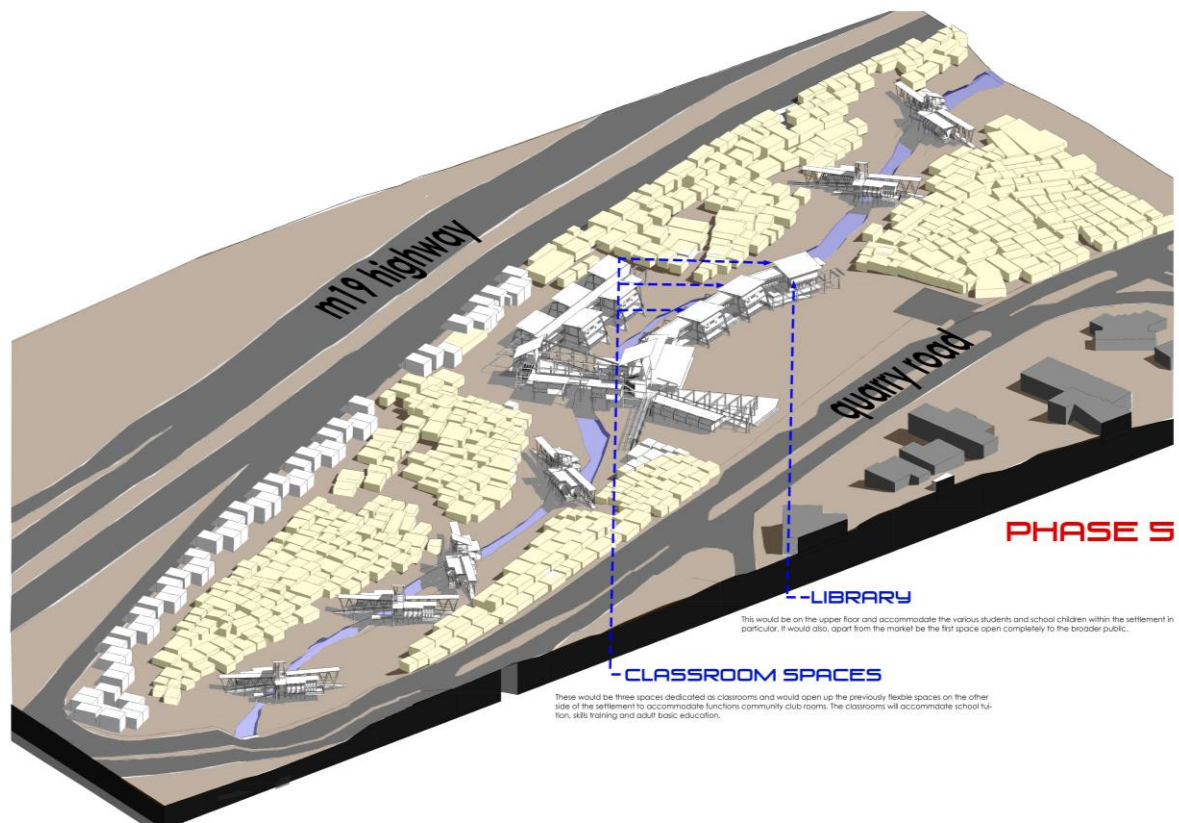


Fig.27: Phase 5 (source: author)

Library

This would be on the upper floor and accommodate the various students and school children within the settlement in particular. It would also, apart from the market be the first space open completely to the broader public.

Classroom Spaces

These would be three spaces dedicated as classrooms and would open up the previously flexible spaces on the other side of the settlement to accommodate functions community club rooms. The classrooms will accommodate school tuition, skills training and adult basic education.

PHASE 6

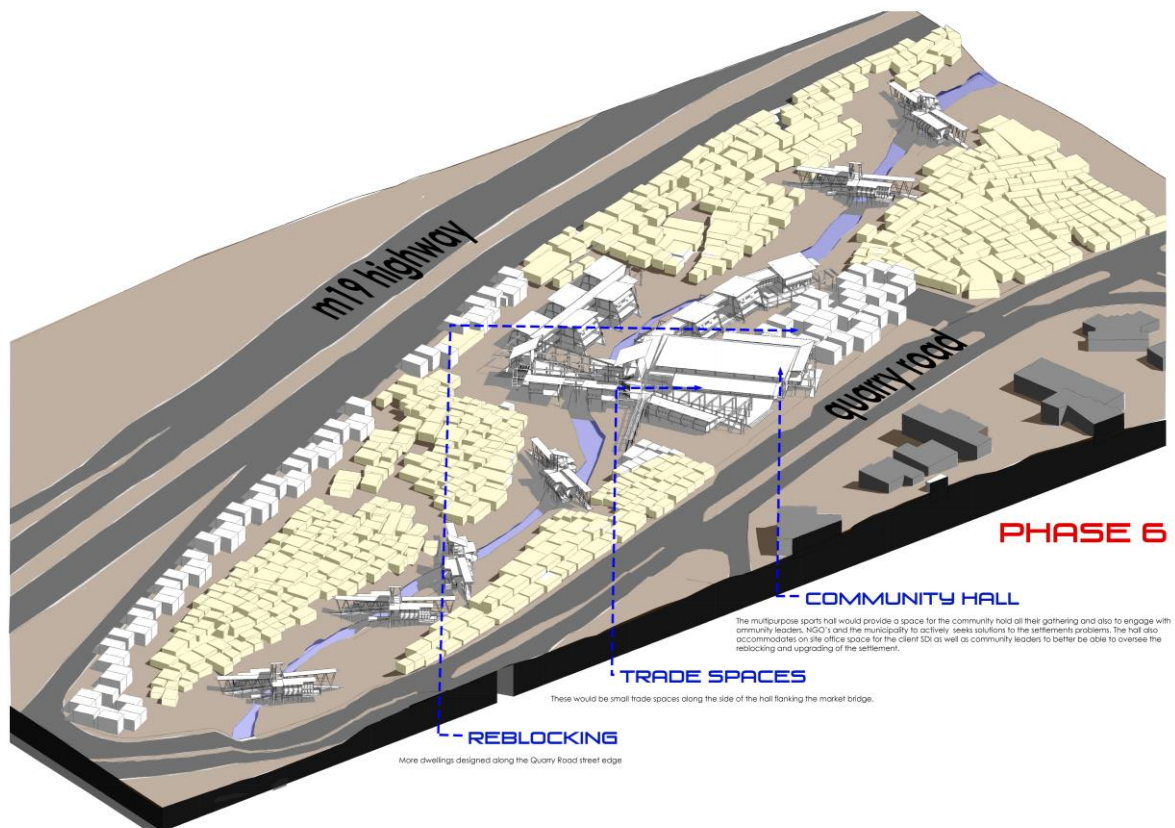


Fig.28: Phase 6 (source: author)

Community Hall

The multipurpose sports hall would provide a space for the community hold all their gathering and also to engage with community leaders, NGO's and the municipality to actively seeks solutions to the settlements problems. The hall also accommodates

on site office space for the client SDI as well as community leaders to better be able to oversee the reblocking and upgrading of the settlement.

Trade Spaces

These would be small trade spaces along the side of the hall flanking the market bridge.

Reblocking

More dwellings designed along the Quarry Road street edge.

Structure

FRAME STRUCTURE

The structure of the building is a composite system of gum-post columns and steel beams. The columns are formed of 4 175mm gum-posts bolted together and strapped at regular intervals with hoop-iron. These are bolted to concrete footings via a u-shaped steel bracket, typical in glulam slab/column joints.

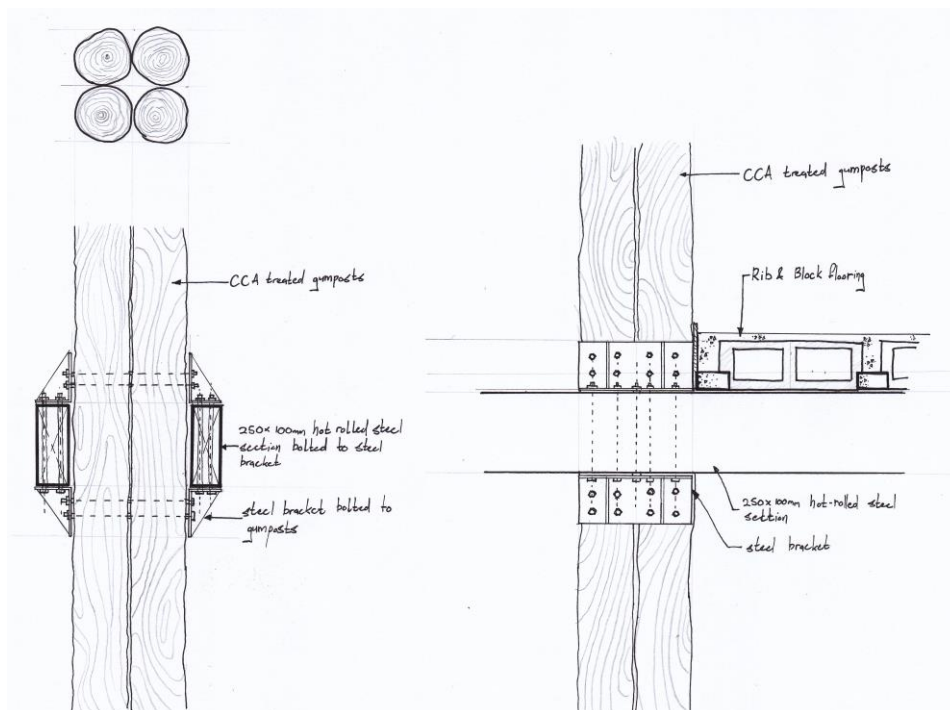


Fig.29: Column and beam junction (source: author)

FLOORS

The floors are all a precast rib and block system that spans the steel beams. The choice being motivated by the ease and quick construction as well as the cost.



Fig.30: Rib and block construction (source: www.econorandb.co.za)

WALLS

All of the walls are made of steel frame structures of 75mm square hot rolled steel sections. Each of the walls are clad in corrugated sheeting, polycarbonate, recycled timber slats or plywood, depending on the location.

ROOF

All the roofs are Kliplok 700 roof sheeting. The specialised brackets are secured to either 125mm or 75mm gum-post battens that are secured to the steel frame structure via custom steel brackets.

Materials

The choice of materials was particularly important to reflect the informal settlement setting and to fit into the context. As such, the materials that were used are many of the very same material used in the settlement. For exterior cladding, its corrugated sheeting, polycarbonate and recycled timber cladding. The interior is a mixture of dry wall and exposed plyboard. For shading, in some instances, 50mm gumposts and branches are used. The plastic waste that is collected, recycled and sewn into textiles in the facility's workshops are used for shading in some instances.

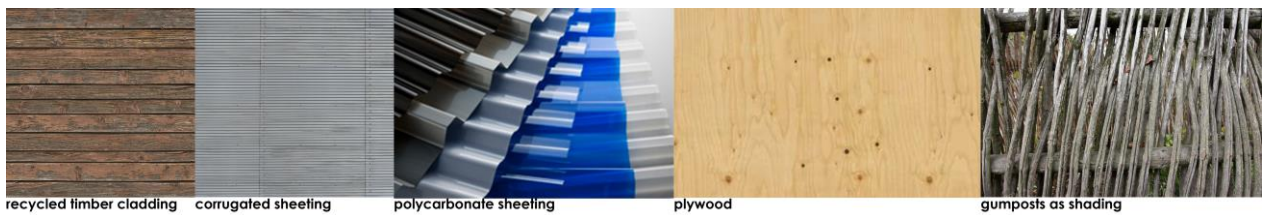


Fig.31: Material Palette (source: www.textures.com)

Services

TOILETS

Due to the difficulty in getting sewerage lines into the settlement. It meant that the building could not rely on the municipality for conventional sewage removal. As such other options were explored. Septic tanks were not an option due to the environmental hazard it may cause, being close to a river. Ultimately, dry toilets were settled on as the best option as the waste can be safely carried off-site to be disposed of. This also made it much easier to place toilets anywhere within the dense settlement without causing too much disruption by sewage lines and the space required for septic or even conservancy tanks.



Fig.32: Waste tank and vent pipe of the enviroloo dry toilet (source: enviro-loo.com)

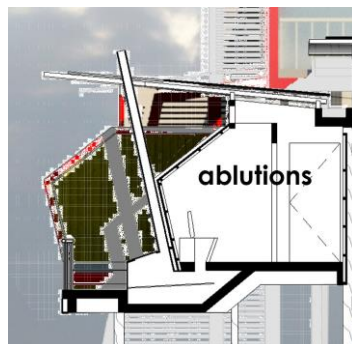


Fig.33: Section through the dry toilet in the Resience pod (source: author)

WATER SOURCES & SHOWERS

In all of the Resilience Pods, the showers and water collection points are fed water from tanks that have harvested river and rain water. These tanks are placed at the top of the towers in the Resilience pods from which they are gravity fed to the showers and taps. Water that is pumped out of the river and collected off the roofs are purified at the bottom of the tower using reverse osmosis filtration systems. The water is then re-mineralised within the filtration system and pumped up to the storage tanks at the top of the tower. Once the water has been used in the showers it is led to grow beds where vegetables are grown and the water from there, finally drains back into the river.

Ventilation

Due to the low-tech approach used within the building, mechanical cooling was simply not an option. So the building had to be designed to optimise passive cooling. As such, the facades of the building are designed in a way that they funnel the breeze up to mesh screens which allow air to pass through and keep the space well ventilated and cool.

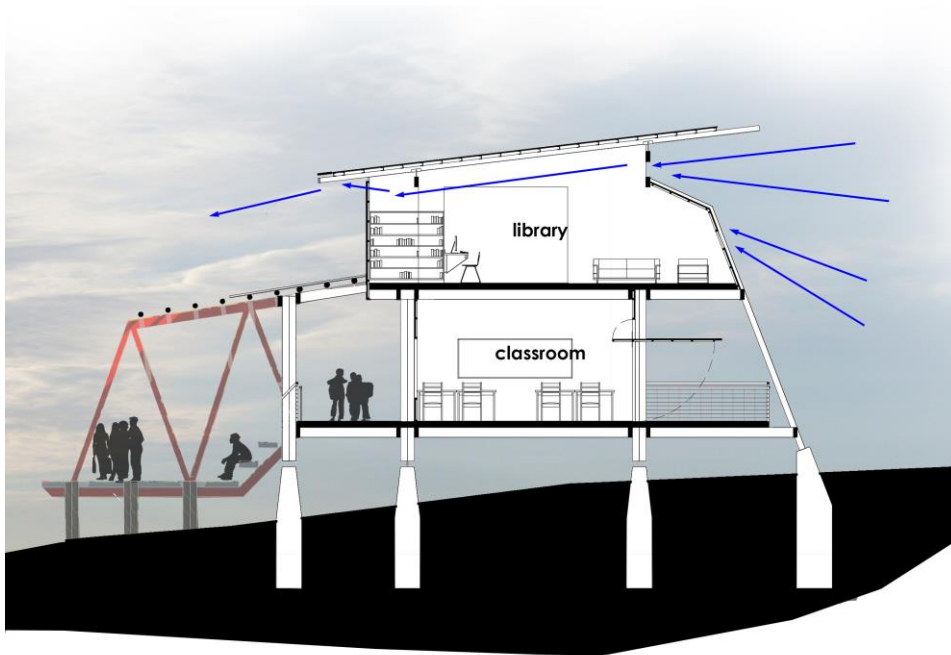


Fig.34: Section depicting ventilation in building (source: author)

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- 14) STOLZ, D. 2013. *The Influence of Insurgency on Socially Responsive Urban Development: A Proposed Informal Recycling Facility for the Informal Cardboard Recyclers of the Durban CBD, South Africa*. MA Thesis, University of Kwa Zulu Natal.
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Hypothesis

A Synthesis of the formal and the informal is the only effective way of creating a responsive architecture for informal settlement communities to respond to the various challenges they endure on a daily basis.

Problem

- 1) The environments are hazardous and dangerous and lack services
- 2) Over densification and prioritization of private space leads to a deficit in social infrastructure.



Aim of Research

The aim of this research document is to explore how informality and the culture of informal settlement communities can inform architecture as a means of creating better and more responsive architectural interventions to the issues faced by communities within informal settlements.

Theories

- Culture Theory
- Insurgency & Informality
- Critical Regionalism

Key Precedent Studies



Duduza Resource Centre
Duduza, Nigel, Gauteng
Noero Architects

Designed as a centre to bring in social services and skills training to the disadvantaged community of Duduza during the early 1990s.



Alexandra Interpretation Centre
Alexandra, Johannesburg
Peter Rich Architects

A mixed-use structure containing exhibition spaces, a library, training facilities, shops and restaurants.



Legson Kayira Community Centre
Mchinji, Malawi
Architects for A Change

A multi-purpose community centre functioning as a school and a community centre.

The Client



The South African Shack Dwellers Alliance is an alliance of community organizations in South Africa that provide aide and social services to informal settlement communities. The alliance is affiliated with Shack Dwellers International.

The Client's Requirements

The client requires a multipurpose resource centre for the Quarry Road informal settlement that:

- 1) Provides a platform of engagement between the community and the client to facilitate the incremental upgrade process of the settlement.
- 2) Provides spaces that use innovative and sustainable means of alleviating challenges that the community faces on a daily basis.
- 3) Provide spaces for educational and recreational facilities as well as economic opportunity, in addition to transitional accommodation during the incremental upgrade process.

Accommodation Schedule

Ground Floor

Resilience Pods	888sq.m	Community Hall	659sq.m
Ablutions		Workshops	300sq.m
Hydroponic Veggie farm		Open air market	390sq.m
Waste Collection		Fresh produce market	200sq.m
Water storage and Purification		Trader Stalls	150sq.m
Water Collection points		Classrooms	210sq.m
		Community decks and flex space	210sq.m
		Ablutions	160sq.m

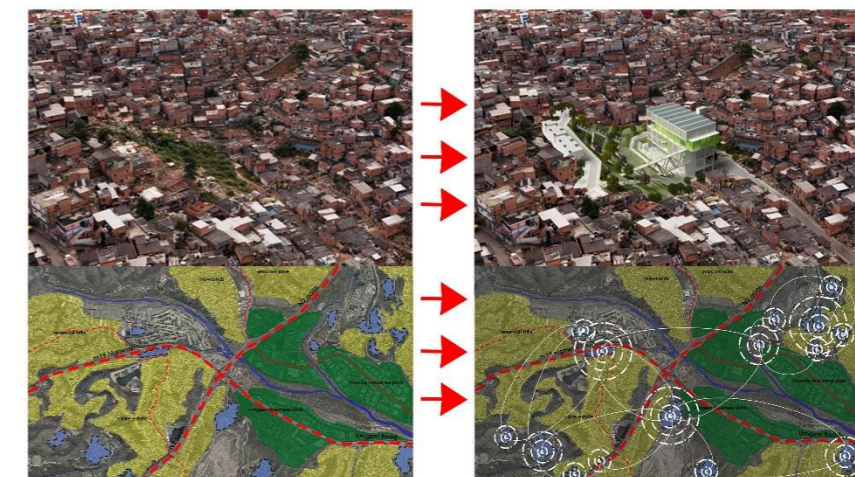
Upper Floor

Library	450sq.m
Offices	300sq.m
Transitional Accommodation	350sq.m

A Resilience Hub

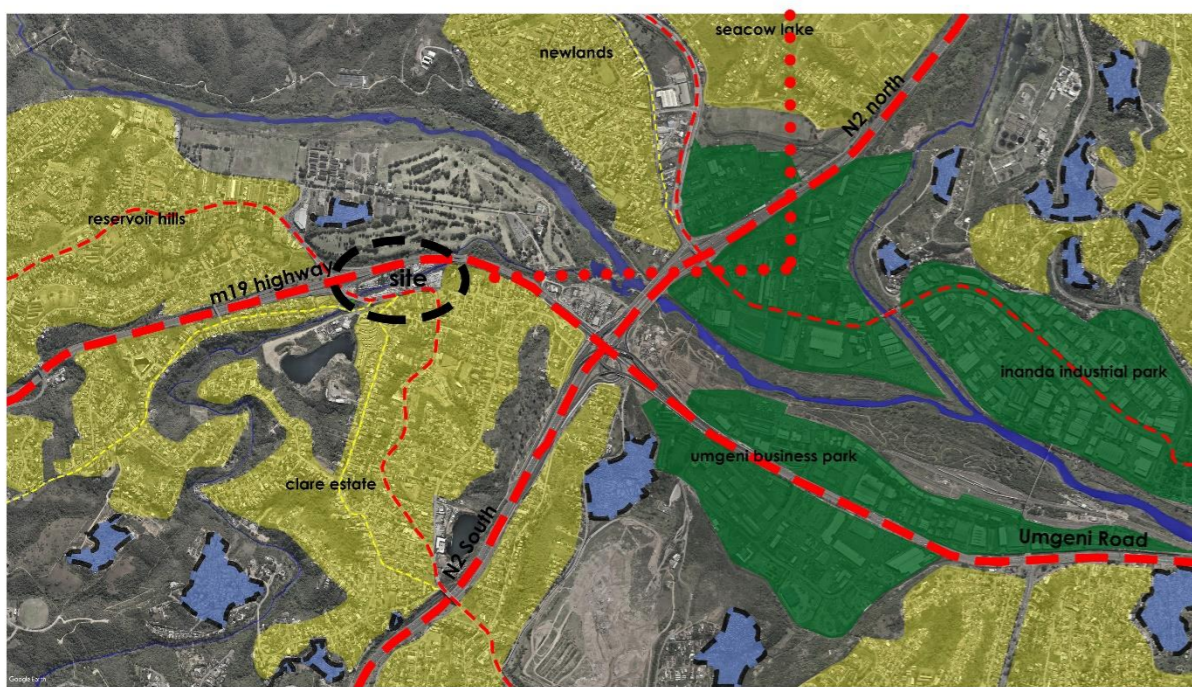
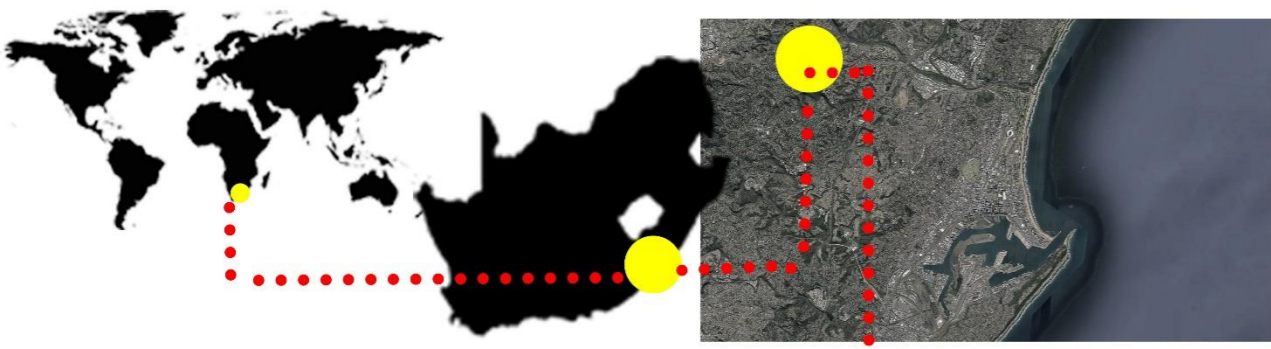
An architectural intervention weaved into the existing system of the informal settlement to serve as a platform for informal settlement dwellers to interact, gather and recreate as well as engage with with the municipality, NGO's, civil society and the broader public.

An architectural prototype to respond to the harsh living conditions of informal settlements and alleviate site specific challenges.

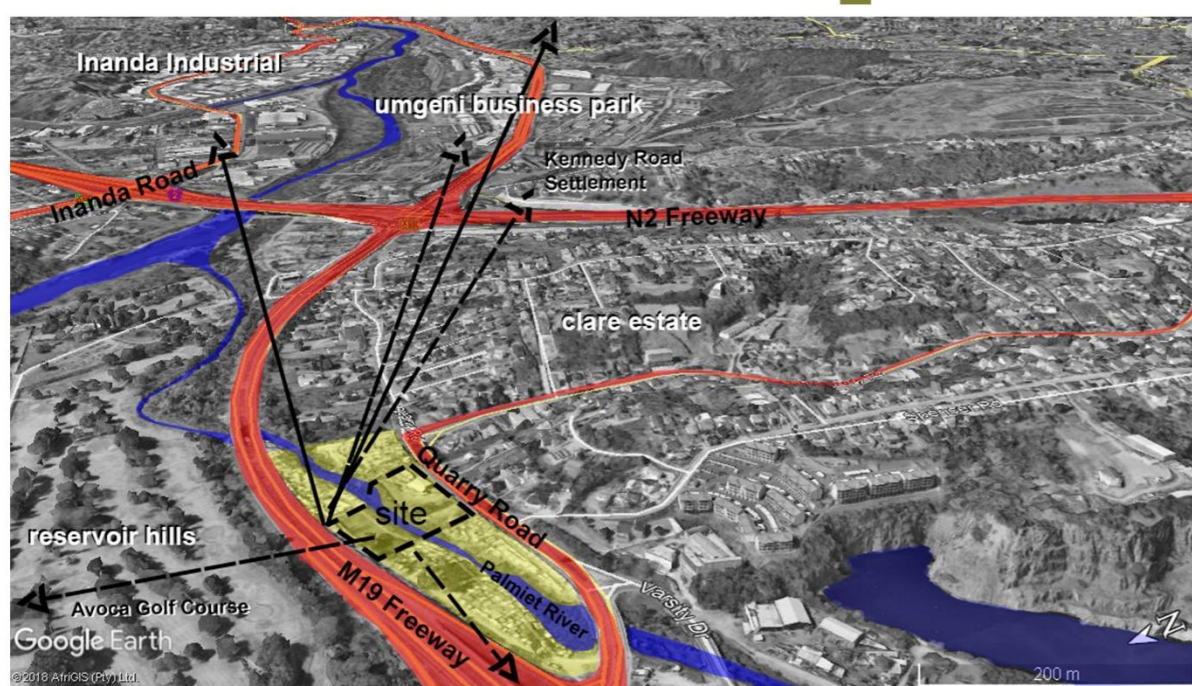


Activating dead space through public infrastructure.
Strengthening and connecting marginal decentralised zones of the urban fabric.

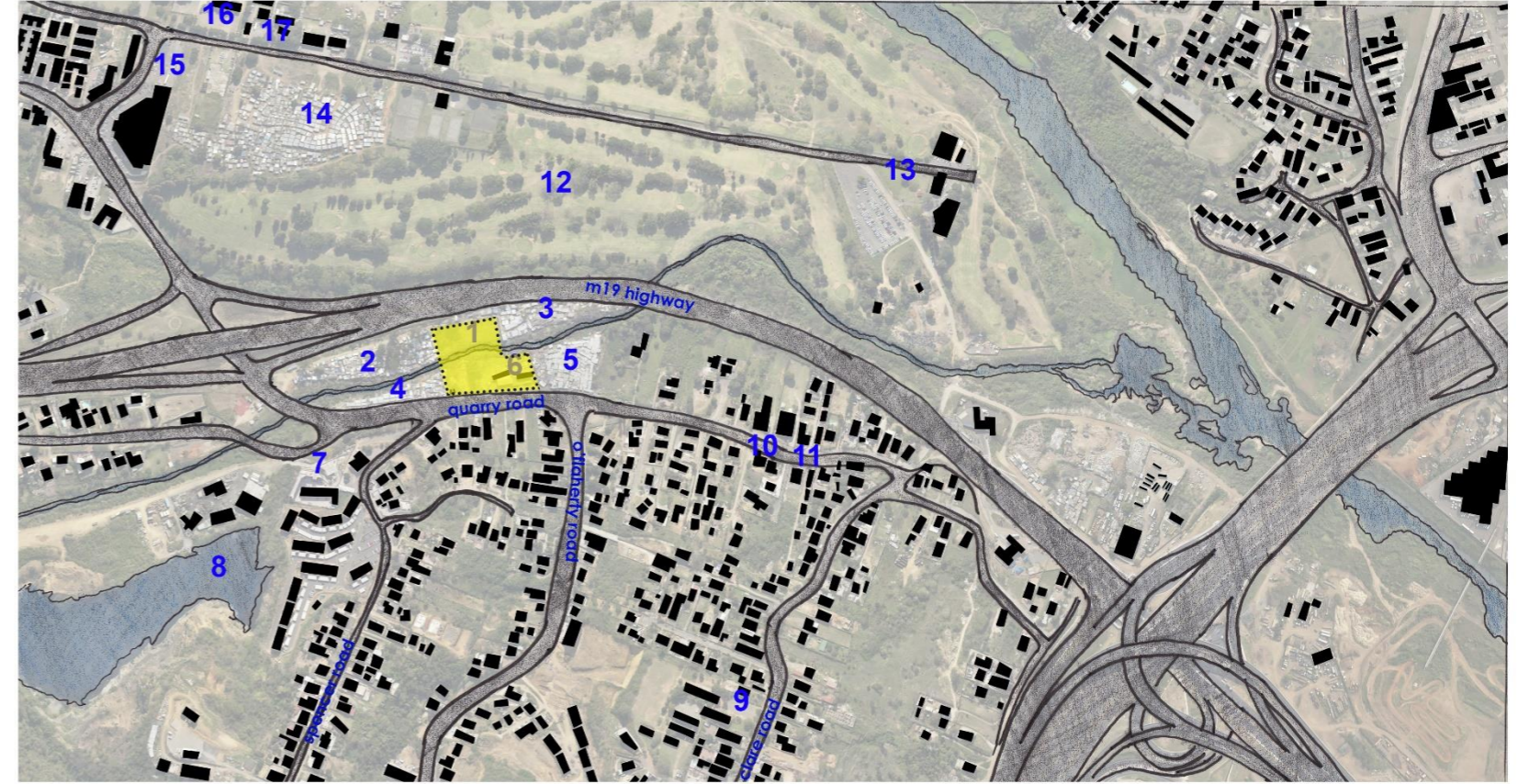
Macro Context



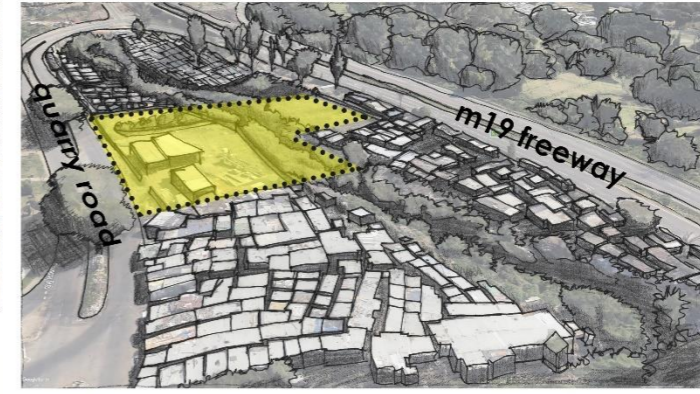
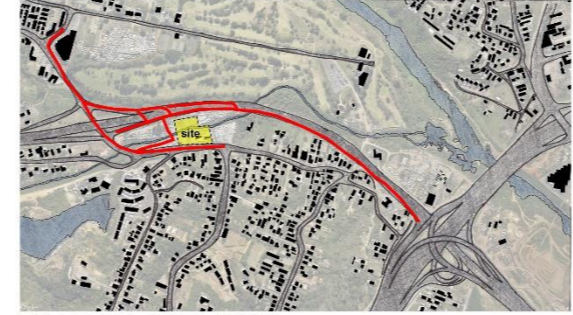
--- major vehicular routes
--- secondary vehicular routes
--- rivers
■ mixed industry & retail
■ informal settlements
■ mixed residential



Micro Context

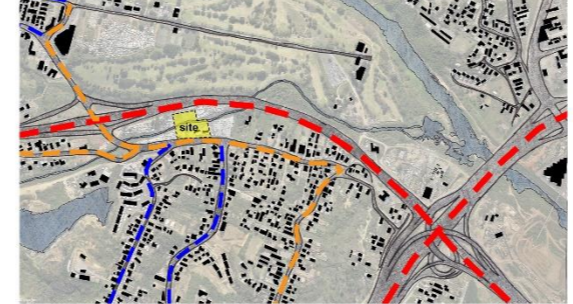


PEDESTRIAN MOVEMENT

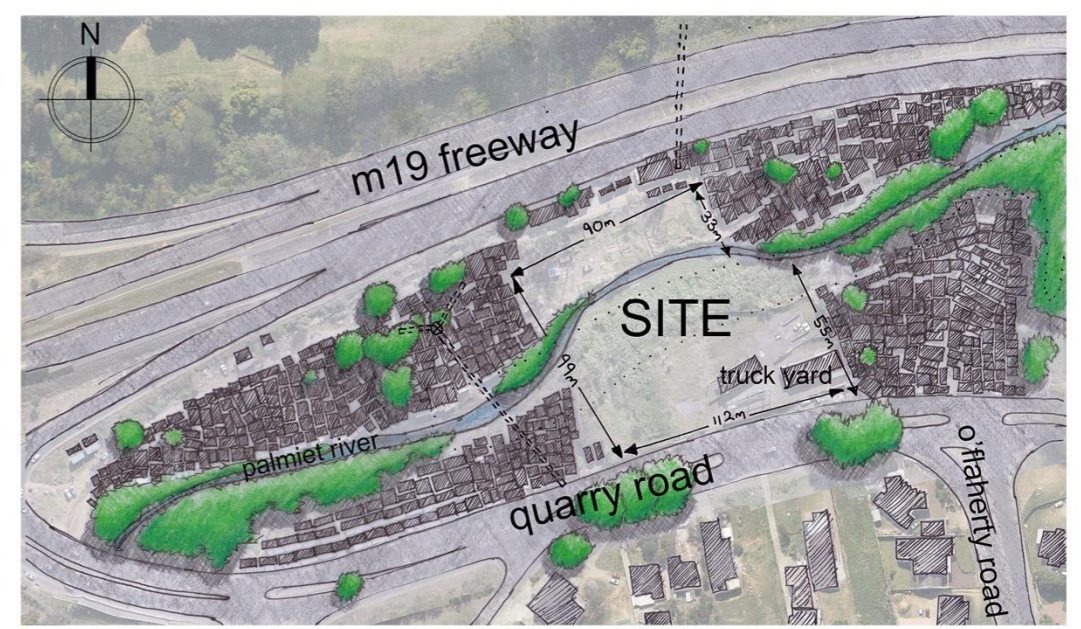
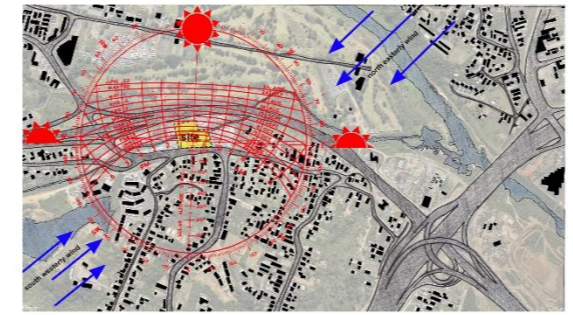


- 1 SITE
- 2 MCONDO 2
- 3 MCONDO 1
- 4 MAMPONDWENI
- 5 MAMSUTHU
- 6 OLD TRUCK YARD
- 7 QUARRY LAKE LODGE
- 8 QUARRY
- 9 PALMIET PRIMARY
- 10 TEMPLE
- 11 CHURCH
- 12 PAPWA GOLF COURSE
- 13 CREMATORIUM
- 14 INFORMAL SETTLEMENT
- 15 CHECKERS SHOPPING CENTRE
- 16 AD LAZARUS SECONDARY

TRAFFIC ANALYSIS



CLIMATE ANALYSIS





- access point
- taxi drop-off
- bus shelter
- communal toilets
- communal standpipe
- wash area
- clothes line
- waste collection
- recycling
- church
- community garden
- community gathering
- shop
- games/ pool table
- shebeen/bottle store
- mechanic
- food store
- creche
- sport
- dangerous path
- rats
- dumping
- snakes

COLLABORATIVE MAPPING ANALYSIS

ANALYSIS OF PATHS AND SOCIAL NODES



ESTABLISHMENT OF NEW LINKS AND BUILDING FOOTPRINT



DEVELOPMENT OF BUILDING FOOTPRINT



Concept

Weaving increased resilience into the informal

Creating an architecture that seamlessly etches into the the informal fabric that aides in bolstering resilience and empowers th community towards their hopes and aspirations.

Weaving into the Informal Fabric

This is a process that seeks to identify the existing paths; nodes; social spaces; risk areas; challenges; the economic, social and political circumstances and then seeks to embed the architecture within this system. Paths in informal settlements are the primary social spaces due to the lack of space and nodes occur around spots of activity like the community standpipe, clothes line or even local shebeen.



Flexibility & Incrementalism

A defining characteristic of informal settlement architecture is that it is designed and built by its users. As such, the space is dynamic and under constant flux in response to the users' changing needs. This is evident in the kind of space in informal settlements that is adaptable to a number of activities at different times of the day. As such, spaces in the building must be flexible and planned incrementally to respond to changing needs and priorities.



Reflecting the Informal

The informal fabric is very distinct in character. Critical regionalism promotes the approach to the appropriating of that specific character as a means of imbuing the architecture with a sense of local identity. As such, the architecture must reflect the informal.



Concept Execution

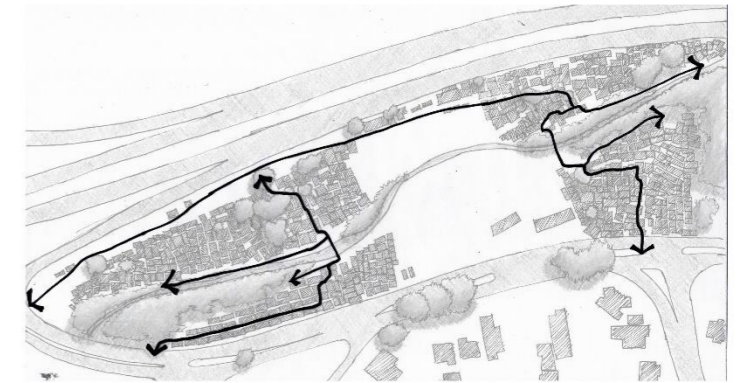
1) Community Participation and co-design

This involves engaging the community through mapping exercises as well as co-design input.

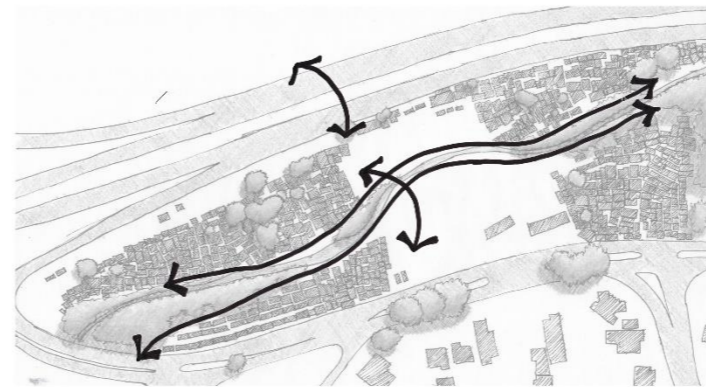


2) Creating new paths and nodes

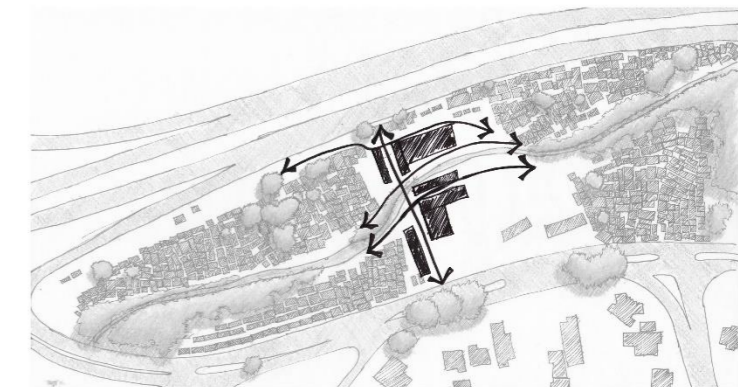
2) Identifying existing paths and nodes



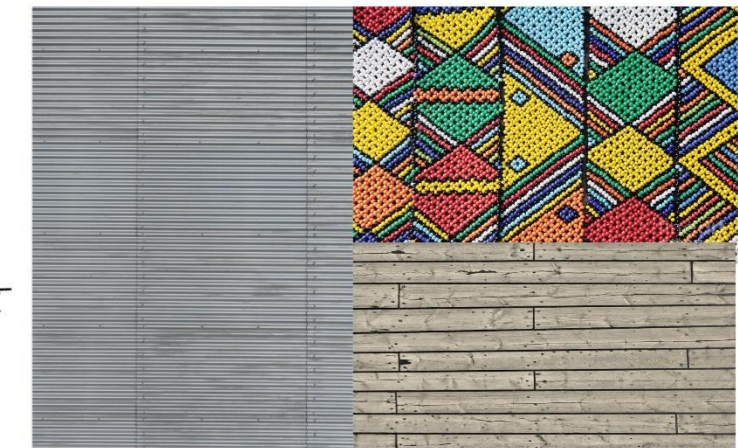
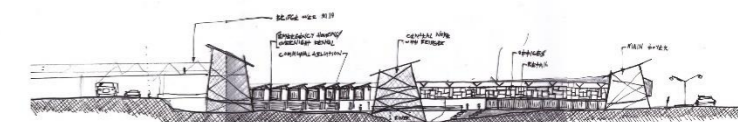
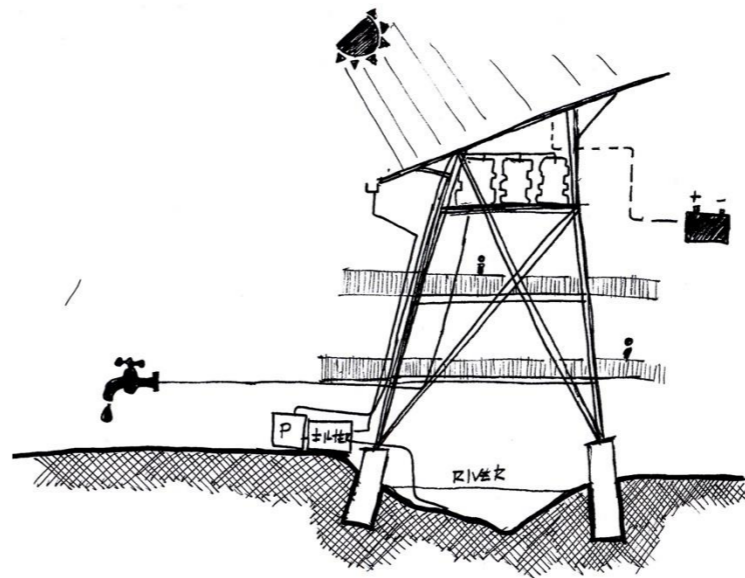
2) Permeability



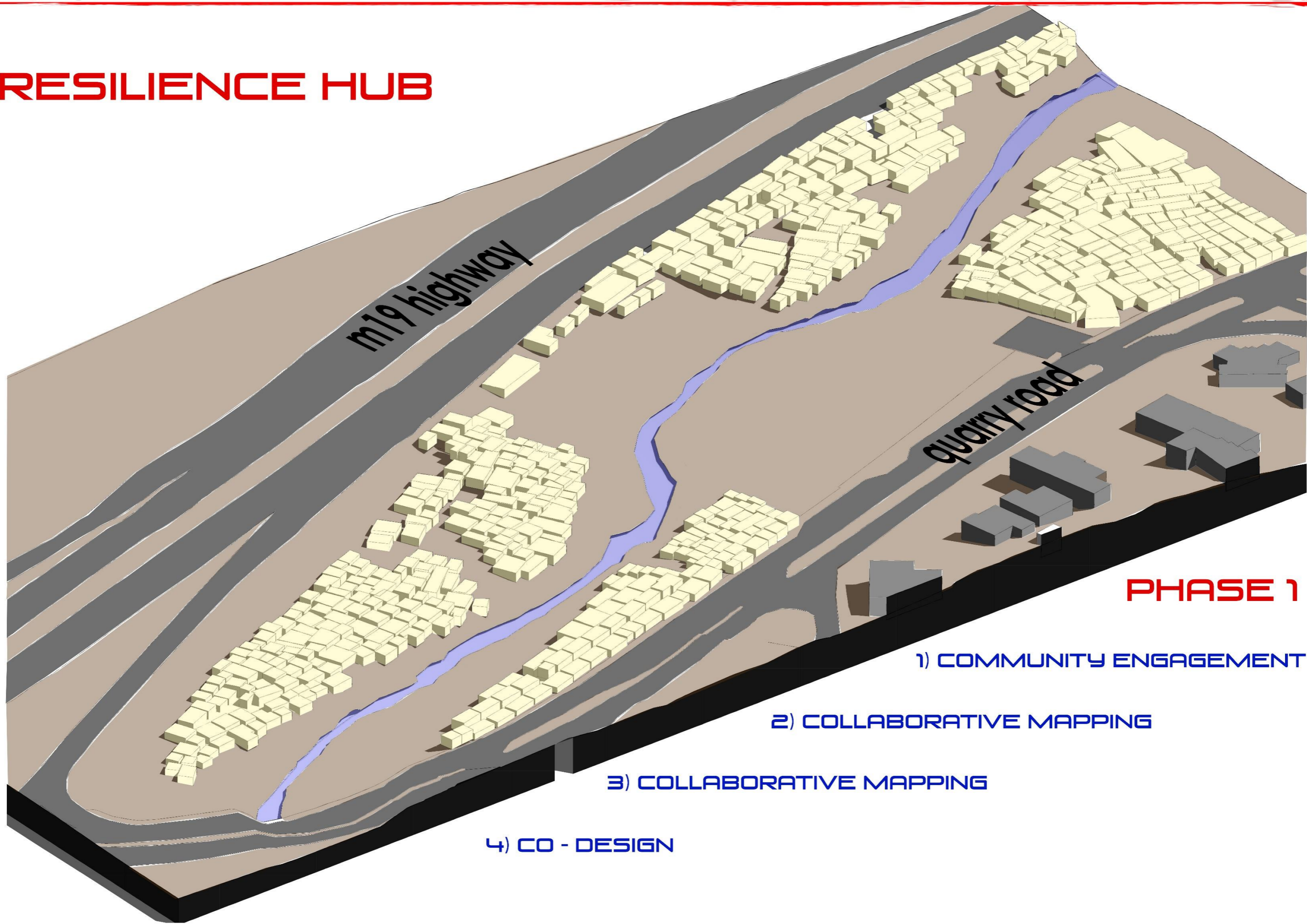
2) Introducing spaces that facilitate resilience



2) Cultivating identity through the informal architectonic



RESILIENCE HUB



PHASE 1

1) COMMUNITY ENGAGEMENT

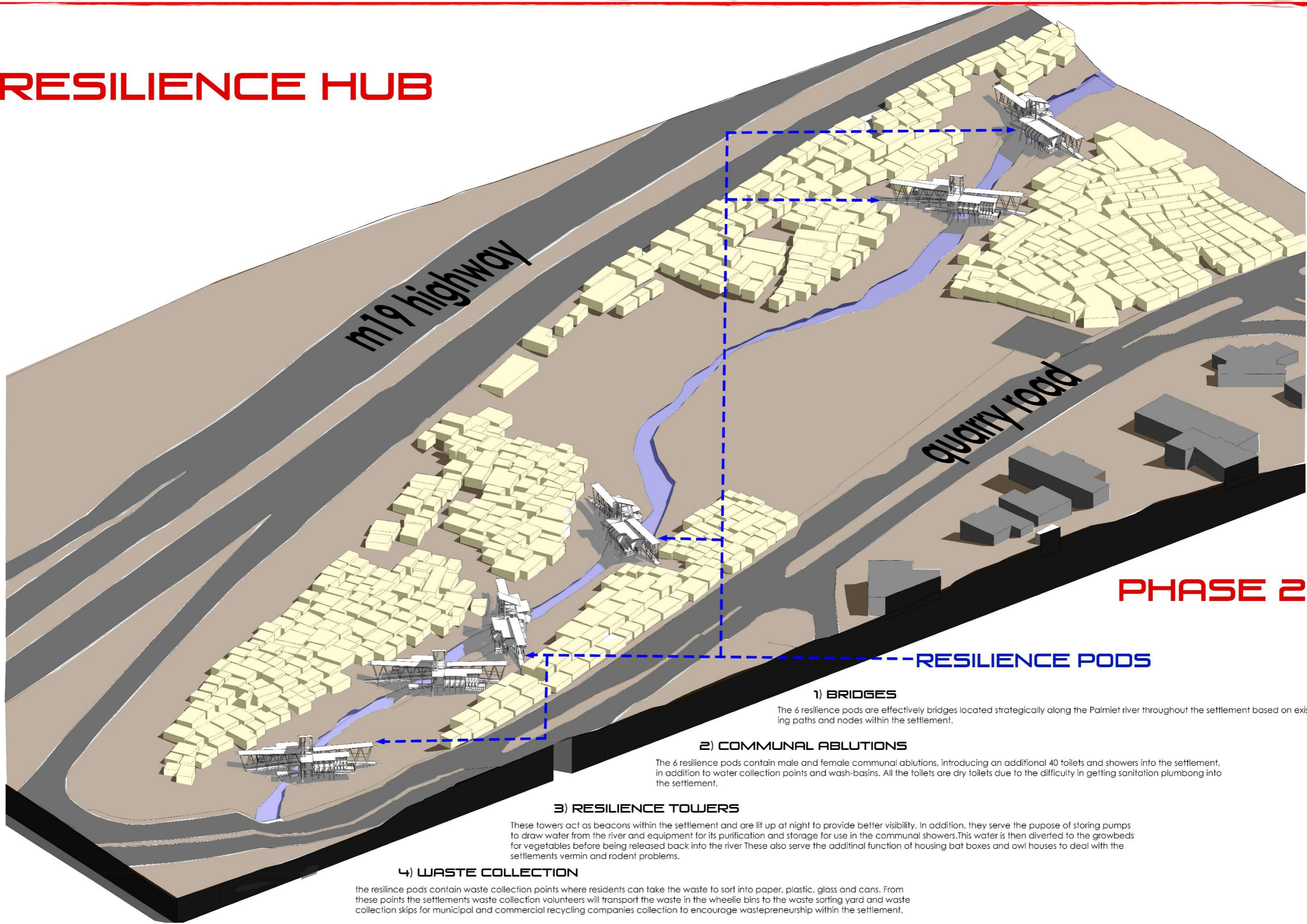
2) COLLABORATIVE MAPPING

3) COLLABORATIVE MAPPING

4) CO - DESIGN

RESILIENCE HUB

INCREMENTAL DESIGN



PHASE 2

RESILIENCE PODS

1) BRIDGES

The 6 resilience pods are effectively bridges located strategically along the Palmiet river throughout the settlement based on existing paths and nodes within the settlement.

2) COMMUNAL ABLUTIONS

The 6 resilience pods contain male and female communal ablutions, introducing an additional 40 toilets and showers into the settlement, in addition to water collection points and wash-basins. All the toilets are dry toilets due to the difficulty in getting sanitation plumbing into the settlement.

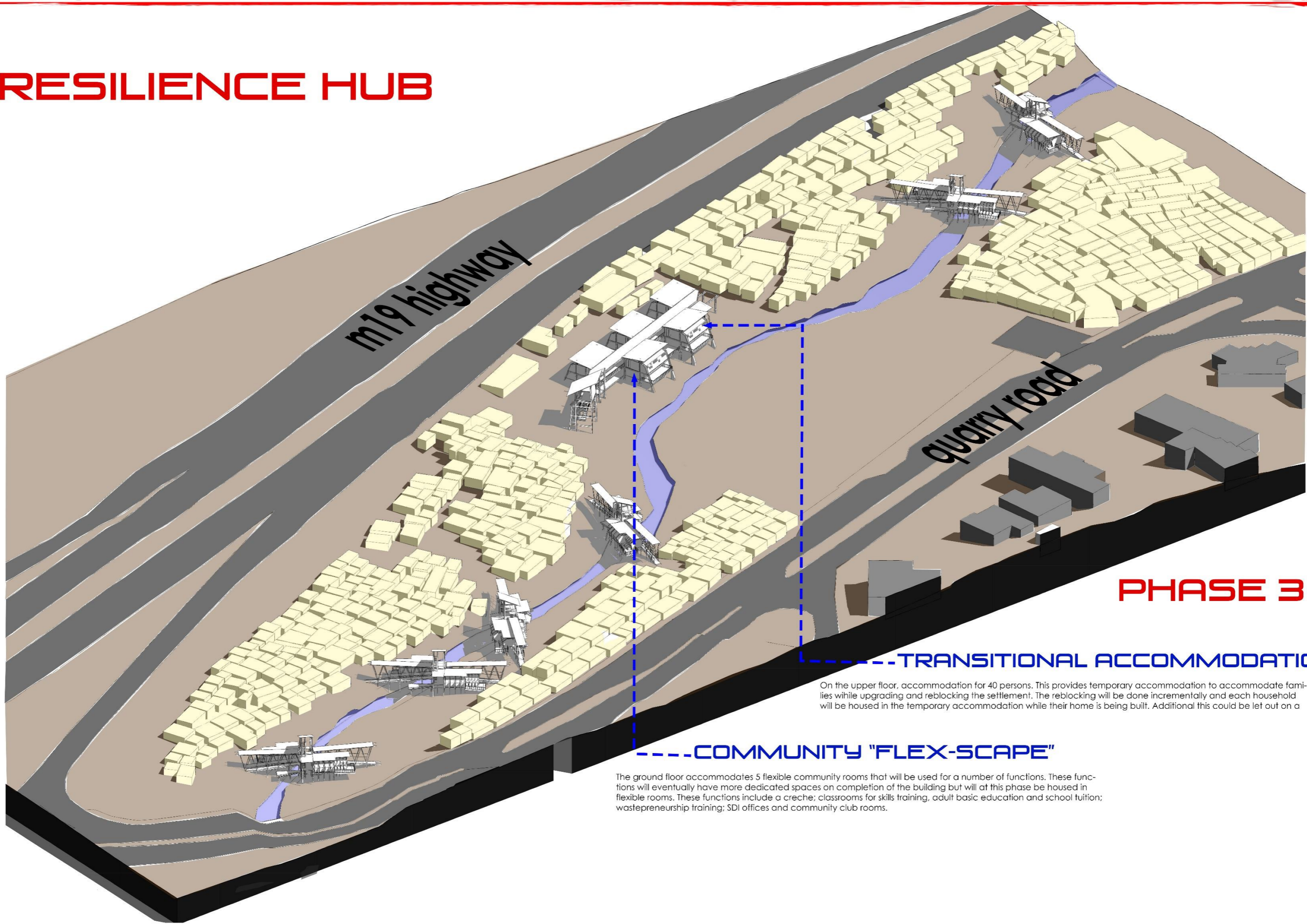
3) RESILIENCE TOWERS

These towers act as beacons within the settlement and are lit up at night to provide better visibility. In addition, they serve the purpose of storing pumps to draw water from the river and equipment for its purification and storage for use in the communal showers. This water is then diverted to the growbeds for vegetables before being released back into the river. These also serve the additional function of housing bat boxes and owl houses to deal with the settlement's vermin and rodent problems.

4) WASTE COLLECTION

The resilience pods contain waste collection points where residents can take the waste to sort into paper, plastic, glass and cans. From these points the settlement's waste collection volunteers will transport the waste in the wheelie bins to the waste sorting yard and waste collection skips for municipal and commercial recycling companies collection to encourage entrepreneurship within the settlement.

RESILIENCE HUB



INCREMENTAL DESIGN

PHASE 3

---TRANSITIONAL ACCOMMODATION

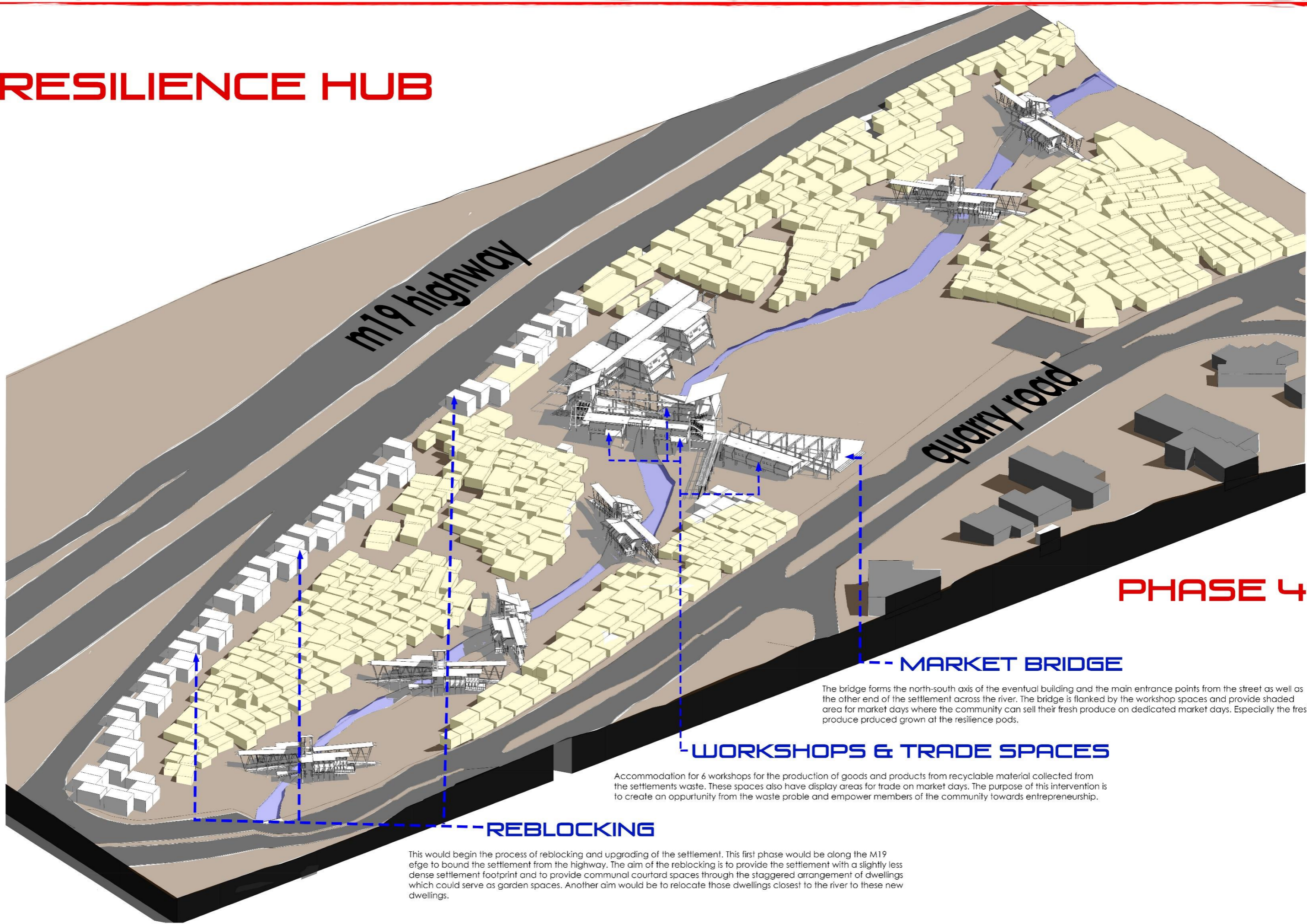
On the upper floor, accommodation for 40 persons. This provides temporary accommodation to accommodate families while upgrading and reblocking the settlement. The reblocking will be done incrementally and each household will be housed in the temporary accommodation while their home is being built. Additionally this could be let out on a

---COMMUNITY "FLEX-SCAPE"

The ground floor accommodates 5 flexible community rooms that will be used for a number of functions. These functions will eventually have more dedicated spaces on completion of the building but will at this phase be housed in flexible rooms. These functions include a creche; classrooms for skills training, adult basic education and school tuition; wastepreneurship training; SDI offices and community club rooms.

RESILIENCE HUB

INCREMENTAL DESIGN



PHASE 4

MARKET BRIDGE

The bridge forms the north-south axis of the eventual building and the main entrance points from the street as well as the other end of the settlement across the river. The bridge is flanked by the workshop spaces and provide shaded area for market days where the community can sell their fresh produce on dedicated market days. Especially the fresh produce produced grown at the resilience pods.

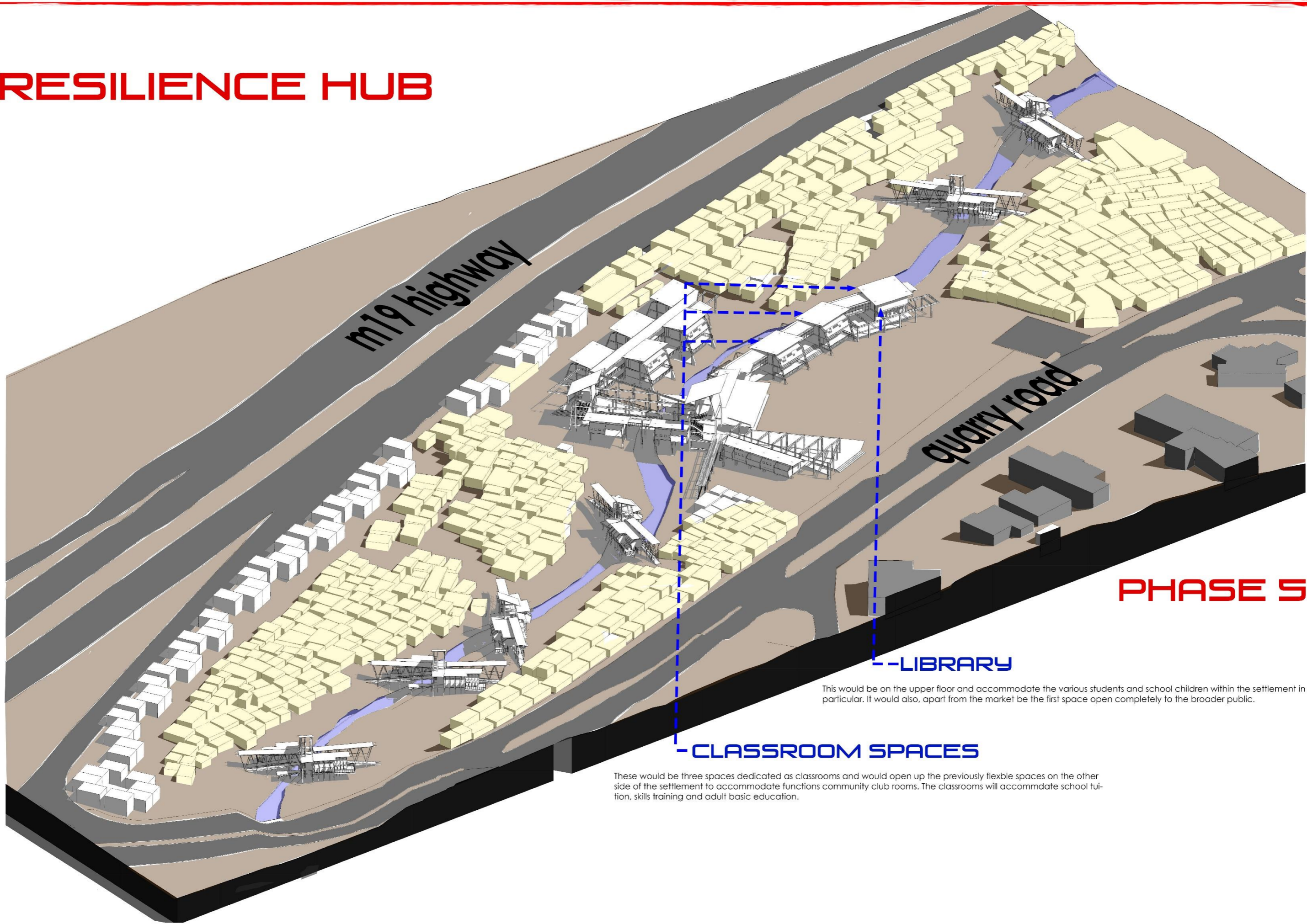
WORKSHOPS & TRADE SPACES

Accommodation for 6 workshops for the production of goods and products from recyclable material collected from the settlements waste. These spaces also have display areas for trade on market days. The purpose of this intervention is to create an opportunity from the waste problem and empower members of the community towards entrepreneurship.

REBLOCKING

This would begin the process of reblocking and upgrading of the settlement. This first phase would be along the M19 edge to bound the settlement from the highway. The aim of the reblocking is to provide the settlement with a slightly less dense settlement footprint and to provide communal courtyard spaces through the staggered arrangement of dwellings which could serve as garden spaces. Another aim would be to relocate those dwellings closest to the river to these new dwellings.

RESILIENCE HUB



PHASE 5

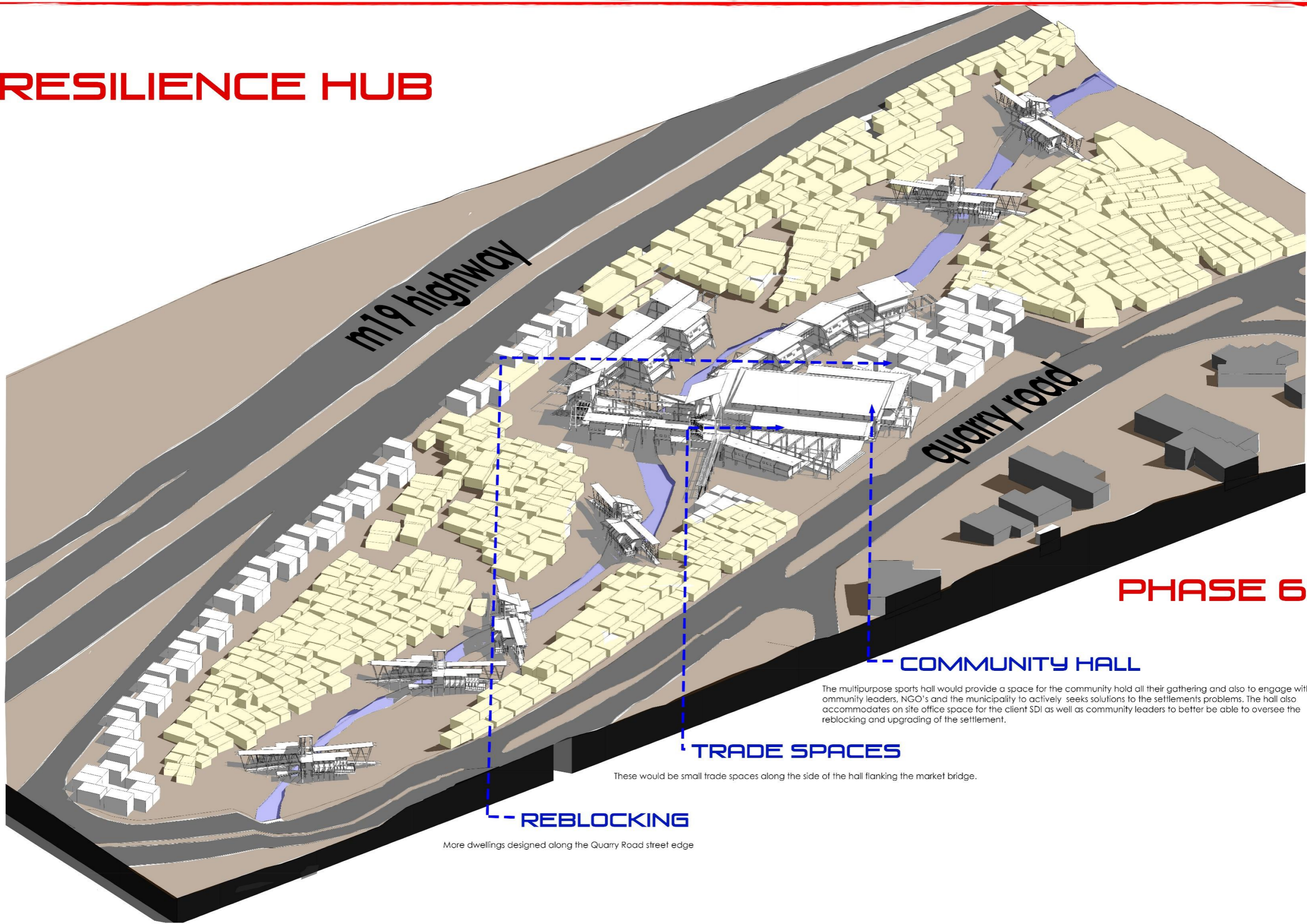
--LIBRARY

This would be on the upper floor and accommodate the various students and school children within the settlement in particular. It would also, apart from the market be the first space open completely to the broader public.

--CLASSROOM SPACES

These would be three spaces dedicated as classrooms and would open up the previously flexible spaces on the other side of the settlement to accommodate functions community club rooms. The classrooms will accommodate school tuition, skills training and adult basic education.

RESILIENCE HUB



PHASE 6

COMMUNITY HALL

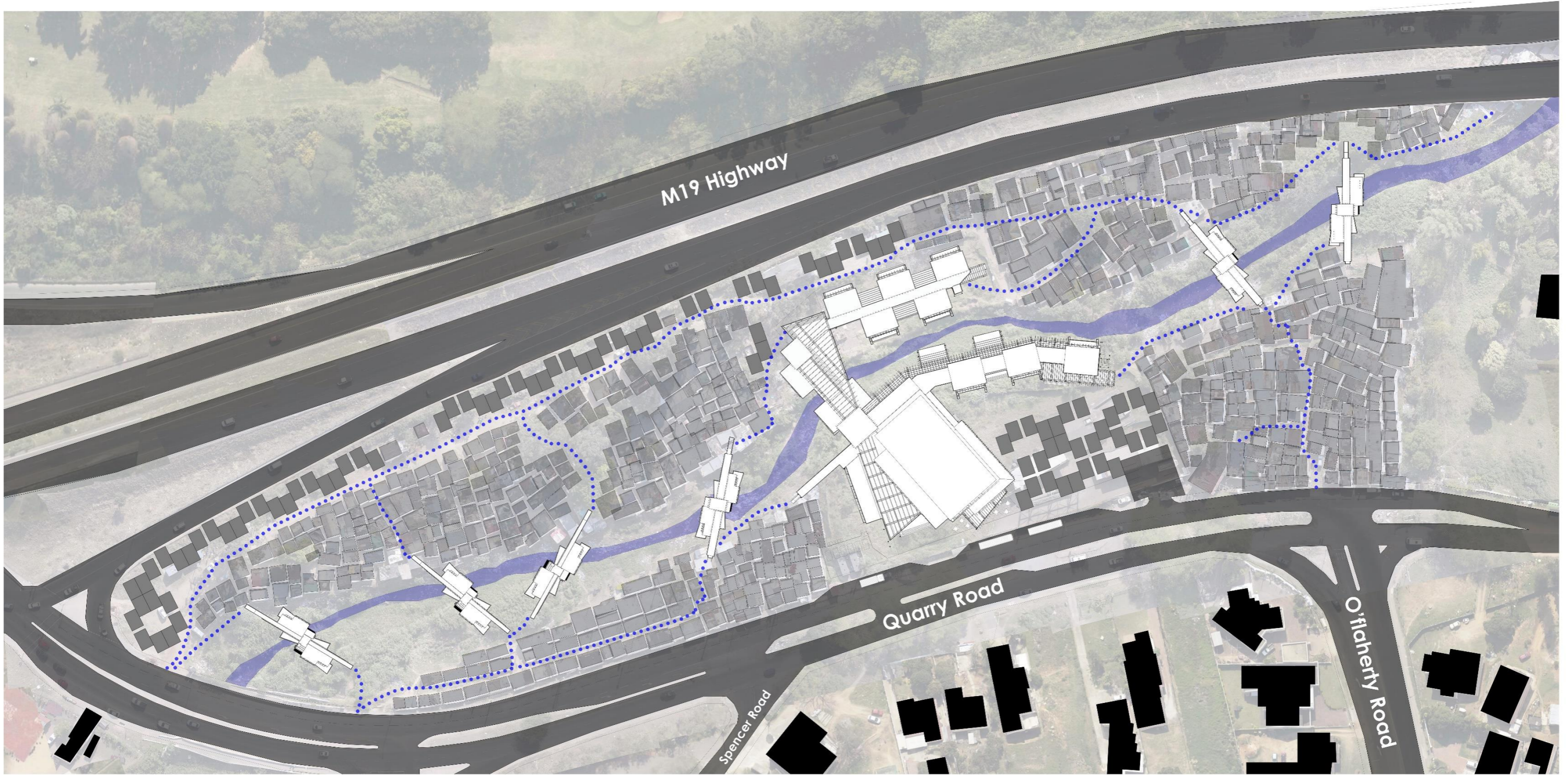
The multipurpose sports hall would provide a space for the community hold all their gathering and also to engage with ommunity leaders, NGO's and the municipality to actively seeks solutions to the settlements problems. The hall also accommodates on site office space for the client SDI as well as community leaders to better be able to oversee the reblocking and upgrading of the settlement.

TRADE SPACES

These would be small trade spaces along the side of the hall flanking the market bridge.

REBLOCKING

More dwellings designed along the Quarry Road street edge



M19 highway



palmiet river

shaded market

shaded market

multipurpose sports hall

waste sorting yard

waste skips

Quarry Road

GROUND FLOOR PLAN - 1:250



UPPER FLOOR PLAN - 1:250



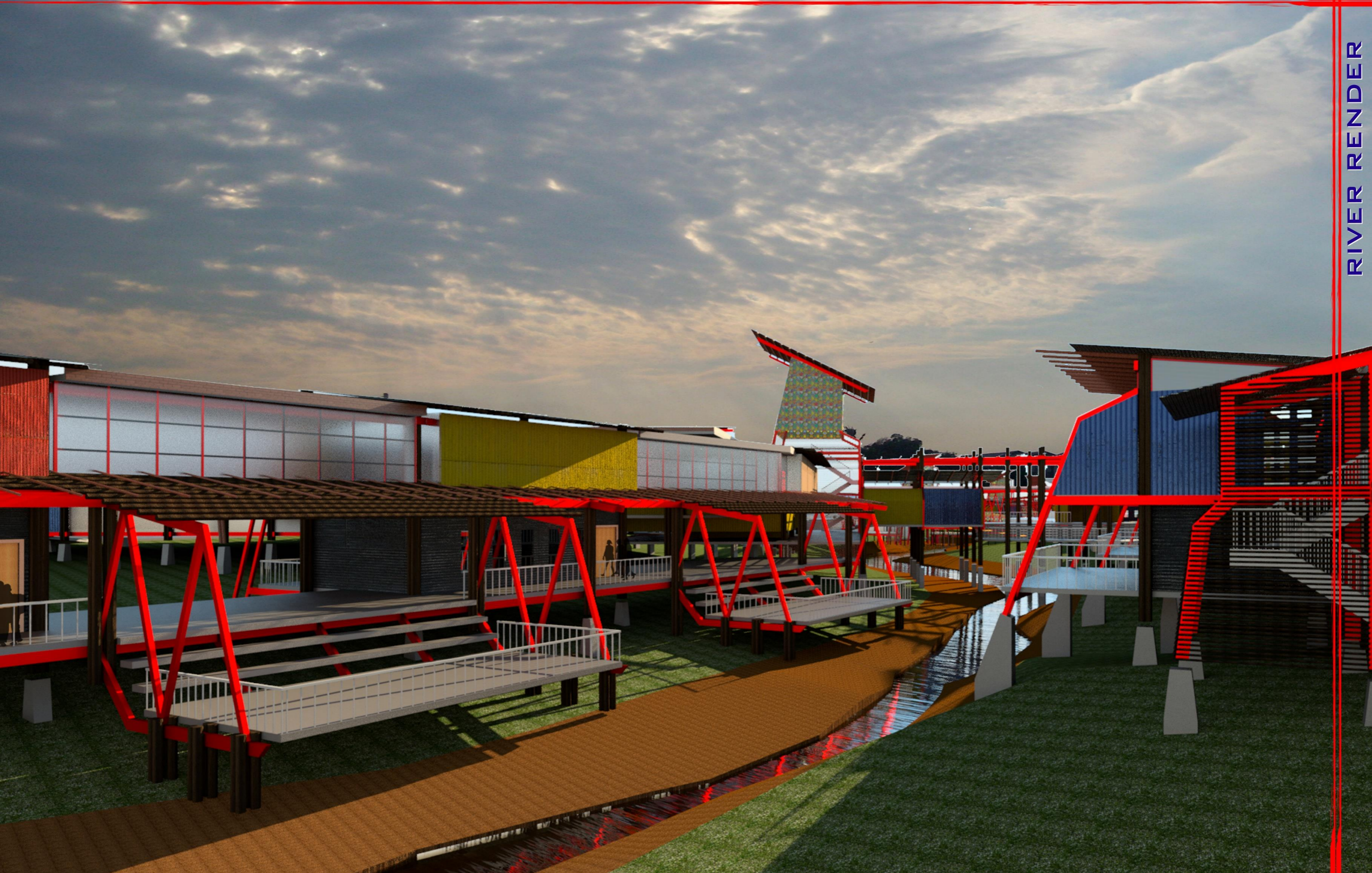
PICTORIAL RENDER

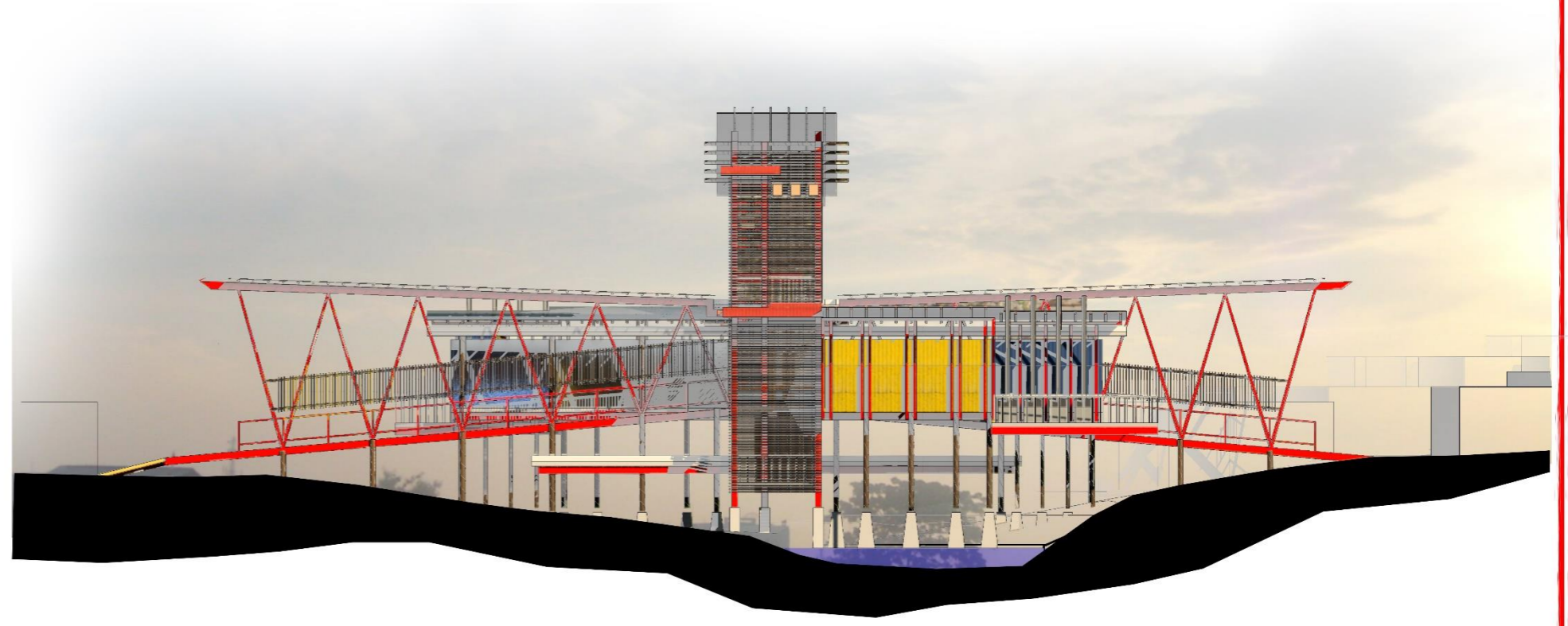
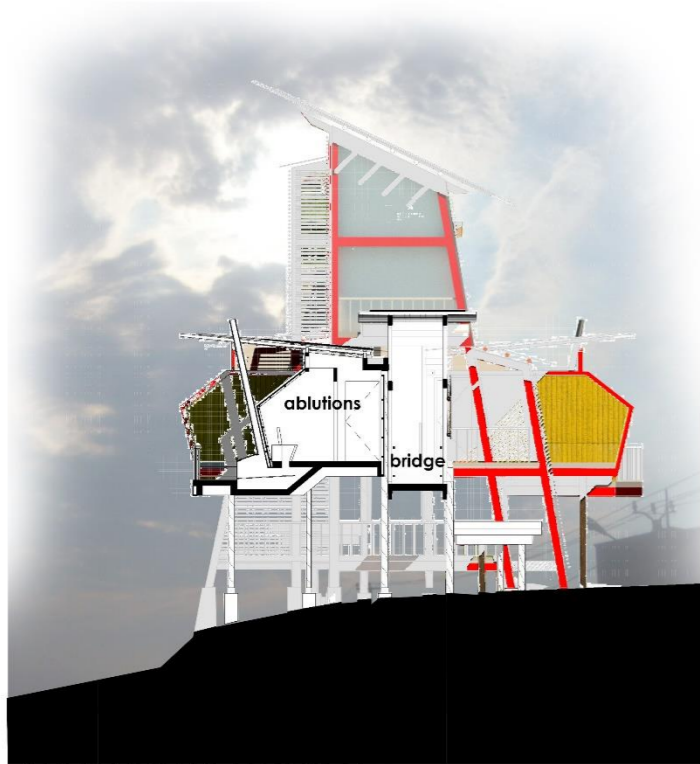
A RESILIENCE HUB FOR THE QUARRY ROAD INFORMAL SETTLEMENT COMMUNITY



ABLUTION BLOCK RENDER

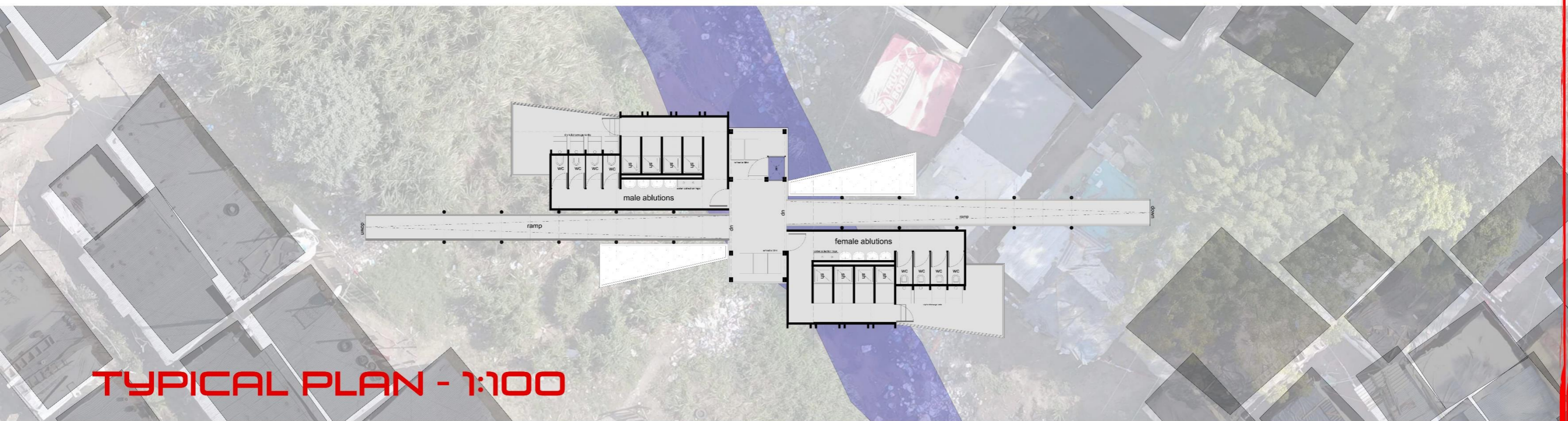
A RESILIENCE HUB FOR THE QUARRY ROAD INFORMAL SETTLEMENT COMMUNITY



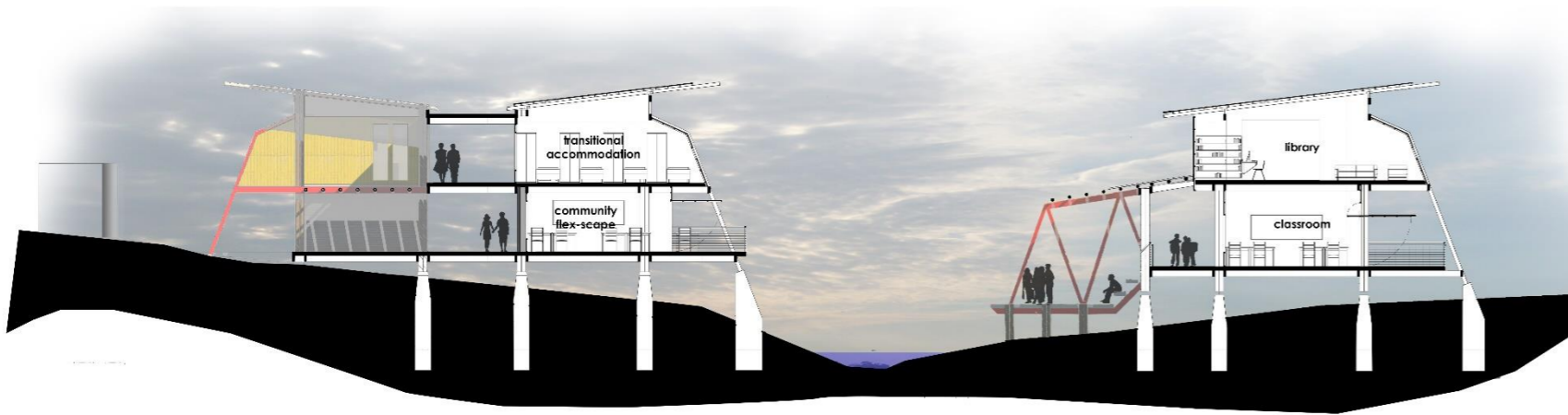


SECTION ON - 1:100

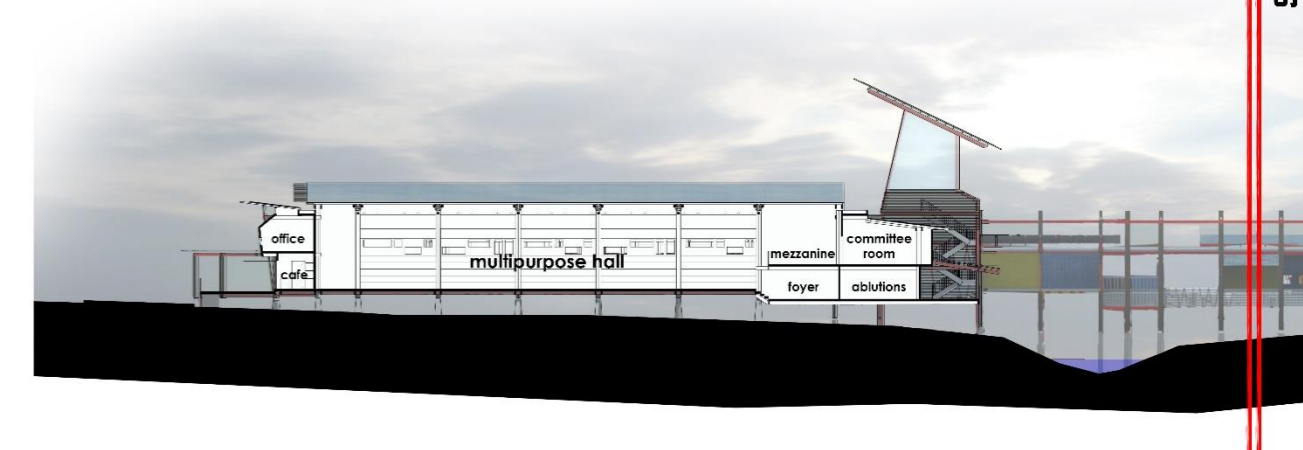
ELEVATION - 1:100



TYPICAL PLAN - 1:100



SECTION ON A-A - 1:100



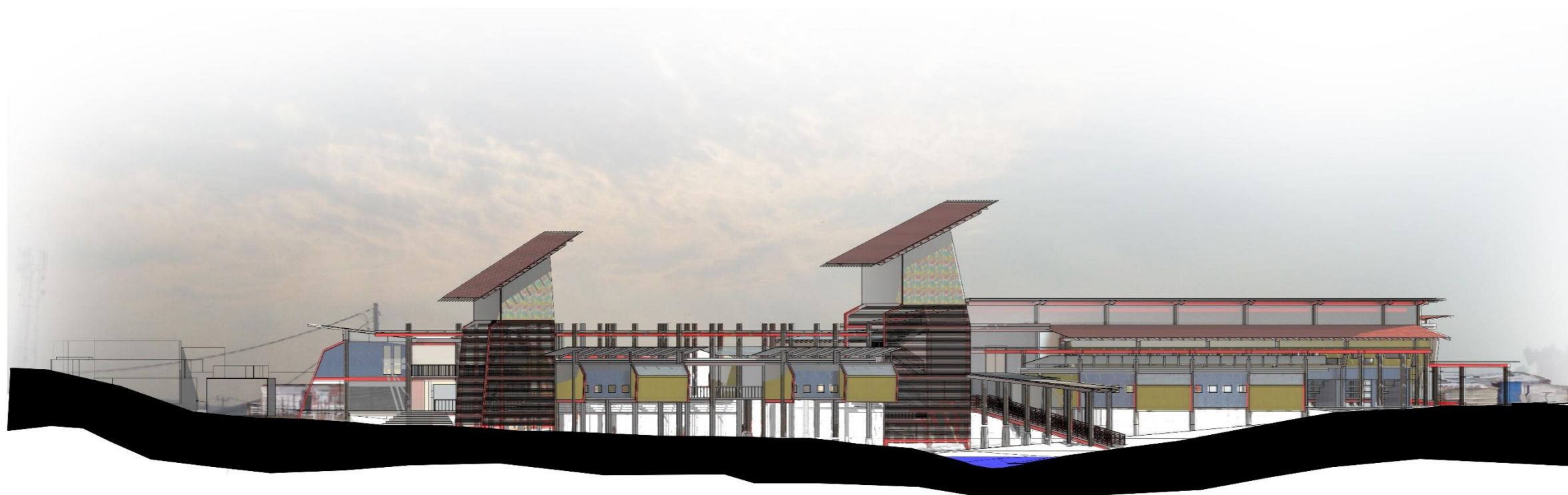
SECTION ON C-C - 1:200



SECTION ON B-B - 1:100



SOUTH ELEVATION - 1:200



WEST ELEVATION - 1:200