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How to cite this thesis

KLIPTOWN ‘BRIDGE’

Submitted in partial fulfillment of the requirement for the degree
MTech: Architectural Technology (Professional)

The Faculty of Art, Design and Architecture (FADA)
University of Johannesburg
South Africa

NHLAMULO NGOBENI
200817365

Supervisor: Prof. Amira Osman
Co-Supervisor: Tariq Toffa
DEPARTMENT OF ARCHITECTURE
ACKNOWLEDGEMENTS

I WOULD LIKE TO ACKNOWLEDGE THE SUPPORT THAT I RECEIVED AND EXPRESS MY SINCERE APPRECIATION TO THE FOLLOWING PEOPLE:

Thorsten Dickler my supervisor
Amira Osman my supervisor
Tariq Toffa my co-supervisor
Jhono Bonnett my mentor

My friends John Saaiman, Mpho Malebana and Simengaye Ndala
ABSTRACT

This dissertation is rooted within the process of analysing and understanding the dynamics of the context, from which principles can be drawn. The project is founded with the aim to address the harsh edges between Kliptown informal settlement and Kliptown CBD, which are physically separated by railway tracks.

This dissertation identifies the context as the 'bank' of design informants. Thus it forces the author to undergo a critical analysis of the context. The proposed site (Kliptown) forms a comprehensive layer of history, which has over time influenced both physical development and movement of the site.

The project propose a physical intervention in a form of a bridge over the railway tracks in attempt to connect the two areas. The author engaged with the context to establish program for the architectural intervention. The education gap was established within the informal settlement, which was then used to establish the program for the intervention. The average shack size of 15 square meters is never enough for learners to do they school work after schooling hours, thus the proposed programme of the physical bridge forms part of the bridging concept. The program is more about bridging the educational gap within the context.
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CHAPTER KEY ELEMENTS:
- STUDY AREA
- HISTORICAL BACKGROUND
- PROBLEM STATEMENT
- PROJECT OVERVIEW
- HYPOTHESIS
1.1 SITE LOCATION

Kliptown is a suburb of the formerly black township of Soweto in Gauteng, South Africa. Kliptown is located centrally between 3 suburbs created by apartheid (Lindsay, Lain, & Merwe 1998:60), about 17 km south-west of Johannesburg. Kliptown is the oldest residential district of Soweto, and was first laid out in 1891 on land which formed part of Klipspruit farm (Kliptown 2013).
Chapter 1  Introduction

Fig 4: Aerial Photograph of Kliptown and the surroundings (Google Earth 2013)
1.2 STUDY AREA: WALTER SISULU SQUARE

Walter Sisulu Square is located in Freedom Square, also known as Kliptown. Noble (2011) states that “Kliptown was conceived in recognition of ‘the spirit of human hope that animated...the ideas of the charter’” (Noble. 2011:164). The name Kliptown is used in this dissertation. The site identified for the architectural intervention is between Kliptown and Kliptown informal settlement across the railway line.

The railway line that sets apart Kliptown informal settlement from Kliptown has created challenges with regards to the integration of the two. As a result, the area is challenged by a physical disconnection. The disconnection between the two has triggered the intervention to connect them together. Kliptown was previously a flourishing informal business area where the people of Soweto did their shopping.

In 2005 Walter Sisulu Square was built as part of the urban upgrade for Kliptown which attempted to link the informal business of the area while providing 700 more stalls for the informal traders. The attempt to draw from the historical fabric along Union street, which was so rich in urban fabric quality was never successful. As the informal traders never uses the 700 stalls provided for them in the new building.

Fig 5: Figure Ground
1.3 HISTORICAL BACKGROUND

Farming activity in this area used to supply milk and fresh produce to the mining camps town of early Johannesburg, although few traces of these agricultural beginning remain.

In 1903, the Johannesburg City Council purchased Klipspruit farm with a view to establish a gravitational sewage work, and by 1904 the area was home to informal settlements (squatter camps). The very same year an influx of black and Indian people arrived in the area due to an outbreak of bubonic plague at the Indian location in central Johannesburg.

The new inhabitants were initially accommodated in emergency camps, settlements which were to evolve into the housing stock of Kliptown (Nobel 2011:162). And the area now contains a mixture of purpose-built housing and a large number of shacks and other informal homes which form the Chris Hani and Dlamini settlements (Kliptown 2013).

Kliptown did not fit the apartheid segregation plan; as a result it became a cosmopolitan town. Situated on the periphery of Johannesburg, it was an area where apartheid laws were never enforced.
POLITICAL BACKGROUND

Kliptown was a place where different cultural and racial groups lived together: African, Indian, Malay, Chinese and European. In June, 1955, Kliptown was the home of an unprecedented Congress of the People, organised by the African National Congress, the South African Indian Congress, the South African Congress of Democrats and the Coloured People’s Congress. Kliptown multicultural past was, without doubt, one of the reasons why this area was selected for the congress (Nobel 2011:162).

This Congress saw the declaration and adoption of the Freedom Charter, which set out the aims and aspirations of the opponents of apartheid (Kliptown 2013).

In 2005 Kliptown had an unemployment rate of 72%. In that same year Johannesburg City Council announced plans for renewal of the Kliptown area, including a large-scale housing project (Kliptown 2013).

1.4 KLIPTOWN TIME LINE

The following figure is the timelin of Kliptown highlighting historical date, both politically and urban related, which dates back from 1891 to 2010.
Kliptown, the oldest residential district of Soweto, is laid out on two farms by the Kliprivier.

**Charlotte Maxeke:**
- 1901: First African woman from SA to receive her bachelor’s degree.
- 1939: She died and was buried in Kliptown.
- She was elected as the first president of the Bantu Women’s League.

Kliptown is proclaimed as a freehold township. The area becomes home to informal settlements and contains a mixture of purpose-built housing, a large number of shacks and other informal houses.

**The Native Land Act is implemented.** Africans can only own 7.3% of any bought land and are prohibited from owning land outside their region.

The 1913 Land Act 1923 Urban Areas Act restricts blacks from owning land, and limits the number of people who can live in townships. But Kliptown is not a township; it is classified as a town and freehold area. This loophole is what attracted successive generations of Black, Coloured, white and Chinese people to Kliptown and allowed it to develop an independent spirit. It was the city’s first truly multi-racial community.

The negative consequences that which flowed from the fact that the area fell outside the municipal boundaries relate to infrastructure provision and maintenance, as sewerage and electricity is poorly developed.

Kliptown becomes recognized by Johannesburg Municipality. More different racial groups come into Kliptown. Kliptown houses 3 100 people.

**The South African Native National Congress is formed, which is renamed in 1923 to the African National Congress.** This political party aims to organise Africans in the struggle for civil rights.

**Kliptown expand organically from the 30s when migrants move to Johannesburg in order to find employment. Some residents of the inner suburbs also move to Kliptown so that they can own bigger properties. The commercial area develops parallel to the residential expansion.**

The National Party defeat the United Party and DF Malan becomes the Prime Minister. During this same year, Kliptown experienced a massive growth of shanties towards Klipriver. While Soweto’s nucleus development programme gets underway, matchbox houses and apartheid planning develops in Soweto.

Over 3 000 representatives of resistance organisations make their way through police cordons to gather together on a dusty soccer field at the northern end of Kliptown. It was organised by the African National Congress, the South African Indian Congress, the South African Congress of Democrats and the Coloured People’s Congress. They meet to draw up the Freedom Charter, an alternative vision to the repressive of the apartheid state.

Fig 9: Timeline of Kliptown. Source: Bremner, Lain, & Van der Merwe, 1998.
Some of the properties in Kliptown are expropriated and rezoned as white areas. Nancefield is declared as coloured and develops as Eldorado Park. Kliptown stretches from the Old Potchefstroom Road in the North to the Moroka by-pass in the South.

Some sections are demolished under Slums Acts to make place for Eldorado Park’s extensions.

The geographical location of Greater Kliptown area serves as a residential Apartheid buffer between Soweto and Eldorado park.

Nelson Mandela is elected as the first black President of a non-racial democratic South Africa.

Sans Souci Bioscope is destroyed.

Kliptown still has a status as no-man’s land. Its geographical location on the boundary of Soweto and Eldorado Park and on both sides of the railway line results in it being divided into several wards.

The expectations, given Kliptown’s historical significance, are that it will become a priority area for development and upgrading. However, Kliptown’s redevelopment proves to be too ambitious and costly.

2000/1

The residents of Kliptown realise the slow and uncoordinated development of the Kliptown.

The Kliptown Community center is found by the leaders of Kliptown.

Other supporting structures were found, such as Kliptown Concerned Residents (KCR)

Kliptown Our Town Trust (KOTT)

2002

The JDA rename Freedom Square to the Walter Sisulu Square of Dedication.

The winning submission is designed by StudioMas.

The judges report contains several reservations about the winning design and makes certain recommendations.

Aug 2002

StudioMas submit their design presentation to the South African Heritage Resource Agency (SAHRA).

Some SAHRA members are strongly opposed to the heritage implications of the design. The ANC wins the general elections and Thabo Mbeki takes over as President.

2004

The Kliptown community hands over a memorandum calling for their local councilor to be recalled and demanding adequate housing for all.

2007

There are confirmed cases of cholera in Kliptown.

2008

A survey is conducted of the greater Kliptown area that aims to identify priority needs.
1.5 **KEY ELEMENTS OF KLIPTOWN**

1. **KLIPTOWN LIVING CONDITIONS:**

Kliptown is arguably one the oldest settlement in Soweto, which dates back to 1891. It is without adequate infrastructure. Images on the right show the arrangement strategy of the informal settlement. The arrangement attempts to form courtyards around either water taps of toilets.

**KEY LESSONS:**

- Lively settlements are not based on how much investment has been made into that particular settlement. It always becomes a better space when people do it themselves.
- Unity within a community can turn a place into a better environment.
- People will forever plan their spaces according to what they desire.
KEY ELEMENTS OF KLIPTOWN

2. KLIPTOWN SOCIAL SPACES:

More tourists coming into Kliptown have had the opportunity to experience the vibrant social life in Kliptown as most local people only come to Kliptown for shopping mostly. Images on the right depict how people of Kliptown viewed streets as outdoor rooms and how people enjoyed these outdoor rooms. Not only were the streets viewed as outdoor rooms, but picnics that used to take place along the Klipspruit River suggest the river side was another form of outdoor room.

KEY LESSONS:

- Social spaces can only be successful if they can accommodate more than one activity.
- If it is for people it needs to be comfortable.
- Users should be allowed to impact these space, or add on to them.
- Less limits as to what they could be used for will lead to the space being a success.
KEY ELEMENTS OF KLIPTOWN

3. KLIPTOWN NATURAL RESOURCE:

The Klipspruit River running north, edging the informal settlement on the West is where the picnics were held with kids swimming along side. If taken care of it would have been a great space for the community.

KEY LESSON:
- Natural resources need to be taken care of.
KEY ELEMENTS OF KLIPTOWN

KLIPTOWN ECONOMY:

Kliptown’s largest economy relies on trading, both formal and informal. Many might still not be aware how diverse Kliptown trading is. Trading range from wholesale to the women selling fresh produce in bulk right into the men on the pavement side selling loose items. For those who are on the pavement sides buy their products in bulk from the wholesaler’s right in Kliptown.

Kliptown attracts people mainly for trading reasons. By day Union Road is like a corridor in a shopping mall, with people shopping side by side. The images on the right show the nature of Kliptown trading.

KEY LESSONS:

- Both formal and informal trading can be looked at as a network, as we have learnt how they co-exist in Kliptown.
- Freedom of trading remains important
- Informal trading is a platform for those with less resources to enter the economy
Chapter 1  Introduction

Fig 19: The Buzzing Union Road (Blomo 1999)

Fig 20: Livestock on Union Road (Blomo 1999)

Fig 21: Old Shop on Union Road (Blomo 1999)

Fig 22: The Old Informal market on Union Road (Blomo 1999)
1.6 RESEARCH STATEMENT:

This dissertation identifies the railway tracks as an edge which results in both physical and social disconnection between Kliptown, Kliptown informal settlement and Kliptown CBD as the source of negative aspects such as:

- lack of social cohesion,
- rising crime within the area, specifically around the railway tracks, and
- lack of economical opportunities, economic growth, flexibility, and the complexity of informal activities of Kliptown CBD in particular.

Fig 23: Aerial Photograph of Kliptown (Author 2013)
1.7 APPROACH TO THE RESEARCH PROBLEM:

This dissertation sets out to investigate how the context and its existing dynamics may be turned into design informants. The study also explores how designers may provide infrastructure that can positively stimulate informal activities within the informal settlement and Kliptown CBD, by integrating the informal settlement with Kliptown CBD. This dissertation aim to create a synergy that will be mutually beneficial to both areas. This research aims to immerse the researcher in the life and informal dynamics of Kliptown CBD. Through this research the researcher aims to come up with the following:

- A context-driven architectural intervention that will best connect the area.
- Suggest an urban framework which will be guided by densification, economic growth, flexibility, and the complexity of informal activities of Kliptown CBD in particular.

Fig 24: Existing Bridge over the Railway tracks (Author 2013)
1.8 SITE SELECTION AND MOTIVATION

One of the political events never to be forgotten in the political history of South Africa took place in Kliptown, namely the signing of the Freedom Charter. Walter Sisulu Square was built in 2005 as a memorial of the Freedom Charter. Kliptown, also known as Water Sisulu square and the social housing on the north side of the Square remain the only urban upgrade to the area to this day. “Kliptown CBD was conceived in recognition of the spirit of human hope that animated...the ideas of the charter” (Noble 2011:164).

The site identified for the architectural intervention spans across the railway line that separates the informal settlement and Kliptown CBD. This line of division has created challenges with regards to the integration of the two areas. The area is challenged by physical disconnection. This disconnection between the two areas has triggered the intervention which aims to best connect the two areas, without undermining the context. Kliptown CBD was previously a flourishing informal business area where the people of Soweto did their shopping.

In 2005 Walter Sisulu Square was built as part of the urban upgrade for Kliptown CBD which attempted to link the informal business of the area while providing 700 more stalls for the informal traders. The attempt to draw from the historical fabric along Union street, so rich in spatial articulation and programming into Walter Sisulu Square was not successful, as the Square treated the Union street as a tabula rasa and it remains underutilised to this day.

Kliptown is one of the oldest urban multiracial settlements in Johannesburg (established in 1891) and is located about 17 km southwest of Johannesburg’s CBD. Despite its history, it has long been neglected and has a densely-packed population.

From 1903 the area was home to informal settlements and now contains a mixture of formal structures and a large number of informal settlers. According to Blue IQ Kliptown will become “a world-class tourist destination looking at its history, a heritage site offering local and international visitors a unique experience.”

“WE COME HERE”
1.9 CURRENT USERS OF THE FOOTBRIDGE

For this dissertation to come up with a bridging intervention to address the current unsafe crossing situation, it was important to establish the current bridge users and any other different transport modes that cross over. The following are the current users:

1. COMMUNITY AT LARGE

The space around the railway tracks has become more than a trading area, but it has turned into a social and a meeting place for the community.

2. PRIMARY SCHOOL KIDS

The railway tracks is the only place where learners can cross to get to school as there is no school within the informal settlement. The proposed bridge would be a new experience for the school learners.

3. CYCLERS

Is one of the most commonly used transport mood in Kliptown and during the day the railway tracks become bicycle tracks as people cycle over the tracks.

4. TROLLEY PUSHERS

These do not necessary go over the tracks because it is not easy to pull trolleys over the tracks, but the proposed bridge could become their shortcut to the recycling depot, which is near the station.
5. INFORMAL TRADERS

One cannot speak of informal traders without talking about the more formal trades. What is important, though, is how the two live off each other. Union Street succeeds because there is an undersupply of retail space in Africa; the ration of retail space in Africa is 0.01sqm per person as compared with 2.9sqm in the US, 0.5sqm in Latin America, 0.4sqm in Europe and 0.2sqm in Asia (Eicker, Poulsen & Silverman2012). The retail typology best suit pedestrians as it is a pick and go.

6. MOBILE TRADERS

Mobile trading is the single most important point of trading within the area, more especially down Union Street. It gives a good platform to enter into the economy for unskilled and semi-skilled, as well as retrenched people. As it requires no real capital or qualifications. The urban design framework here will attempt to embrace it as an important economic activity.

This form of economic activity adds value to the areas by providing a “people’s vibe”. Union Street remains as the only place in Kliptown with an opportunity for convenience shopping for small items. The perceived conflict of interest between street traders and other stakeholders does not exist.
This dissertation seeks to address the harsh railway tracks that act as an edge between Klip Townsend informal settlement and Klip Townsend CBD. It attempts to achieve a socially and physically connect between Klip Townsend Informal settlement and Klip Townsend CBD, by means of a bridge.

While the temptation to design a physical bridge that will facilitate the crossing over the railway tracks remains the main purpose for this dissertation, the author found even more ‘gaps’ within the context that needed to be bridged through this very same bridge. As a result the bridge it is more of a social bridge, which tempts to address more the discovered ‘gaps’.

This saw the very initial concepts of what a bridge is evolving. The researcher has termed the new bridge a ‘social bridge’ as it seeks to bridge more than the physical gap. The new social bridge will house, or rather, will bridge, the social, economical and, moreover, the education gap. The new hybrid bridge should remain connected to its context, while presenting and opportunity for growth and development in the area. And this will need a clear understanding of the context.

The current users were analysed for the purpose of understanding their needs as they remain key to this new intervention. In the design exploration the author will take into consideration their spatial needs, as the new intervention need to cater for them.
2.1 CLIENTS

City of Johannesburg and Metro trail are the main clients for the project. Because the site spans over the railway line on Municipal land, it will be in the parties’ best interest to have a successful link between the informal settlement and Kliptown CBD.

The two parties will also co-fund the project with SEDA. This approach will yield a great return on investment and it will also provide an enriched urban realm that can be enjoyed by the people of Kliptown. The City of Johannesburg will be responsible for co-managing the building with Kliptown Community Centre.
2.2 POSSIBLE END USERS

1. COMMUNITY AT LARGE

2.1 CLIENTS TO FUND

3. CYCLERS

4. INFORMAL TRADERS

5. PRIMARY SCHOOL KIDS

6. MOBILE TRADING
2.3 PROJECT OVERVIEW

Fig 36: Project Overview (Author 2013)
2.4 RESEARCH METHODOLOGY

The methodology followed in conducting the study is briefly discussed below:

- Data collection and situational analysis

This will be an investigation of factors which lead to the establishment of Kliptown CBD as a vibrant place, using both quantitative and qualitative data collection. The following will be done for purpose of understanding the study are:

- an assessment of the physical characteristics.
- an assessment of the spatial structure, land-use patterns, dynamics and trends of the area with emphasis on residential, retail development and community services;
- an assessment of historic and contextual documentation including development plans and guidelines, strategies etc;
- an assessment of the existing engineering services and public transportation infrastructure.

2.3.1 SITE INVESTIGATION

The site investigation will consist of mapping the area. Through mapping the researcher aims to understand the context in terms of:

- different user groups,
- their various modes of crossing the tracks, and
- spatial needs of the informal traders of the area.

Mapping of the area will be drawn and communicated simply enough to enable the community to better understand and engage with the resultant maps. The premise is that this understanding and engagement will encourage members of the community to contribute layers of their own knowledge to the various maps.

2.3.2 PUBLIC PARTICIPATION

Public participation will involve critical engagement with the various communities. Through this engagement the researcher aims to understand different networks which may be generated by different needs to connect activities on both sides of the railway tracks. This will be achieved through mapping done with individuals crossing the railway tracks. These networks can be used to inform design decisions and more especially, the programming of the building.
2.3.3 **PRECEDENT STUDIES**

Precedent-studies will be conducted in order to identify existing successful and unsuccessful strategies. The precedents selected will be determined by:

- the architectural complexity of the project, with the focus on circulation and programming.
- the sensitivity on how well they address their specific context
- the degree to which the design process was informed by its context.

2.3.4 **SKETCH DESIGN**

The sketch design will include model making to test various interventions at a smaller scale, as the overall design develops.

2.3.5 **ETHICAL CONSIDERATIONS**

While this research will engage with individuals and the respective groups from Kliptown CBD and informal settlement communities, it will take into consideration the following during the process:

- the respect of human dignity, and
- the rights of all stakeholders.

This research will not undermine the right to privacy or opinion, and the right to non-discrimination.

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Fig 38: Sketch design crit with community members (Author 2013)

Fig 39: Author Interviewing community members (Author 2013)
2.4 HYPOTHESIS

Both urban and architectural interventions can either become a catalyst or an inhibitor to growth of positive energy in an area.
CHAPTER 2: KLIPTOWN AND PATTERNS OF URBAN GROWTH

2.1 INTRODUCTION
2.2 KLIPTOWN DEMOGRAPHICS
2.3 KLIPTOWN INFORMAL SECTOR
   2.3.1 KLIPTOWN INFORMAL SETTLEMENT
2.4 URBANISATION IN SOUTH AFRICA
2.5 IMPACT OF URBANISATION IN SOUTH AFRICA
2.6 PATTERNS OF URBANISATION IN SOUTH AFRICA
2.7 RAILWAY CROSSING

CHAPTER KEY ELEMENTS:
- URBANISATION
- KLIPTOWN KEY ELEMENTS
- KLIPTOWN DEMOGRAPHICS
- S.W.O.T ANALYSIS
- RAILWAY TRACK CROSSING POINT: NEW NODE
INTRODUCTION TO CHAPTER

The chapter provides a general idea of urbanization patterns and trends in the current era in South Africa, focusing in particular on the key dynamics and driving forces underlying migration and urbanization. It considers overall demographic trends with regard to migration and urbanization, and points to some of the difficulties with data, and with the analysis of trends and patterns. It provides an overview of Kliptown and what defines the area.

Many of the significant urban transformations in any area are continually to be influenced or generated by the urban conditions. This is more evident in the developing countries around the world. For South Africa in particular informality is the results of urban change. Cities are a reflection of people’s identity at times and this chapter will seek to unpack some this identities in the case of Kliptown. This chapter will also seek to put South Africa and Kliptown on the global scale.
2.2 KLIPTOWN DEMOGRAPHICS

average monthly income
R 1,742.00

Fig 43: Study Area Analysis (Author 2013)
2.3 KLIPTOWN INFORMAL NATURE

The term ‘informal sector’ has been used to describe an economic trend that seems to be evident in most rapidly growing cities: it refers to small-scale trading activities that are mostly not registered enterprises but provide products and services that people use each day.

This is common in Union Street, Kliptown. Today Kliptown remain well known not only because of the Freedom Charter, but because of its vibrant street life being generated by informal sector. However the reality is more complex in Kliptown as we see the formal and informal sector interlinking at some point. Kliptown informal sector can be defined by the following characteristics:

- Small-scale units, comprised of informal own accounts, which runs without regular employees. At times with unpaid family works
- Very few barriers to entry exist, and most of these units require very small initial capital.
- Capital needs are met informally through friends and family.
- Strong informal relationship with suppliers, clients and the State.
- Most of the products and service provided by this units form part of the daily life of Kliptown dwellers.

The informal sector plays a vital role in national economies and, more importantly – in the context of Kliptown – is the livelihood of many informal settlement dwellers (Programme, U.N.H.S. 2003).

It is now generally accepted that the economic activity and employment in the urban informal sector are extremely important in developing countries where population and demand for jobs, goods and services are typically growing more quickly than national averages and too quickly for formal job creation to cope with.
2.3.1 KLIPTOWN INFORMAL SETTLEMENT

While defining Kliptown informal settlement, the other important part is to understand trends and forces shaping informal settlements in general so as to find out why people live where they do.

Kliptown informal settlement was first settled informally in early 1980s. Today the settlement has about 3800 households; this includes the first households which were built during 1800 when Kliptown was still a farm. Thirty years later the settlement remain without adequate sanitation, the settlers still use chemical toilets which are emptied weekly, with communal stand taps for water supply (THE SOUTH AFRICAN INFORMAL CITY 2013).

2.4 URBANISATION IN SOUTH AFRICA

Urbanisation is the process in which the number of people living in cities increases compared with the number of people living in rural areas. Collins states that a country is considered to be urbanised when over 50% of its population lives in urban places.

Amongst the first countries to become urbanized were Great Britain and some European countries. Their urbanisation was relatively slow, allowing governments time to plan and provide for the needs of increasing urban populations.

Urbanisation is most rapid in Third World countries, where the world’s largest cities occur. Mexico City, the world’s largest city, has a population of more than 18 million, estimated to grow to over 26 million people by the year 2000. Sao Paulo, Brazil, has more than 16 million people and will have 24 million in the year 2000 (Collins: 2001).
South African urbanization was previously shaped by apartheid policies that attempted to control the movement and settlement of black people. Apartheid policies attempted to limit access by South Africans classified as ‘Africans’ to cities mainly by introducing ‘homelands’ which most remained in rural areas with limited access to infrastructure. This was to confine blacks to ‘homelands’.

South Africa witnessed a breakdown of these policies from the 1980’s onwards, as cities experienced influx of black people. Up until today some settlement patterns have been remarkably persistent, and movement to cities has not been as rapid as other urbanized countries around the world, as we still see our government persisting to house the poor on the peripheries of the cities.

Todes, Wentzel, Zyl state that research on urbanization and migration in South Africa post-apartheid has been uneven, and has been hampered by a paucity of reliable and systematic data. The chapter will draw together available studies to provide an overview of urbanization patterns and trends. It will also provide some background on the overall demographic trends of South Africans with regards to migration and urbanisation.
Fig 48: Cities over 1 million inhabitants in 1950 (Burdett and Ichioka 2006)

Fig 49: Cities over 1 million inhabitants in 1975 (Burdett and Ichioka 2006)
Fig 50: Cities over 1 million inhabitants in 2000 (Burdett and Ichioka 2006)

Fig 51: Cities over 1 million inhabitants in 2015 (Burdett and Ichioka 2006)
2.5 PATTERNS OF URBANISATION IN SOUTH AFRICA

By the time of the first post-apartheid census in 1996, just over half of the South African population (55.1%) lived in urban areas, and this number grew to 57.5% by the time of the next census in 2001.

Graph 1 shows the historical urbanization levels of the total South African population and by race from 1904 to 2001. From table 1 is clear urbanization rates were higher in previous periods than in the contemporary period, and this suggests that post-apartheid urbanization has not been particularly rapid. Johannesburg and Ekurhuleni grew at rates which were faster than in previous periods. This particular decline mirrors national population growth rates, which fell from 2.7% to 2.4% to 2% p.a. over the same periods (Todes, Wentzel, Zyl, and Cross 2010).

Analysis of 1996 and 2001 census data has revealed several important trends. Perhaps the most important has been a movement of people to cities experiencing economic growth, particularly the Gauteng metropolitan areas and some of the rapidly growing secondary cities. Both economic growth rates and population growth rates were variable in other metropolitan areas and secondary cities (Todes, Wentzel, Zyl, and Cross 2010).

Not all movement follows economic growth; however the availability of housing in cities in some regions has also encouraged movement to these places in the absence of economic growth (Kok & Collinson 2006: 335).

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Date</th>
<th>Johannesburg</th>
<th>eThekwini</th>
<th>Cape Town</th>
<th>Ekurhuleni</th>
<th>Tshwane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Survey</td>
<td>2007</td>
<td>3,889,100</td>
<td>3,463,086</td>
<td>3,487,097</td>
<td>2,714,228</td>
<td>2,345,908</td>
</tr>
<tr>
<td>Census population</td>
<td>2001</td>
<td>3,225,812</td>
<td>3,093,122</td>
<td>2,893,747</td>
<td>2,480,276</td>
<td>1,985,938</td>
</tr>
<tr>
<td></td>
<td>1996</td>
<td>2,639,110</td>
<td>2,751,193</td>
<td>2,563,612</td>
<td>2,016,807</td>
<td>1,682,701</td>
</tr>
<tr>
<td>Average annual growth</td>
<td>2001-2007</td>
<td>3.16%</td>
<td>1.94%</td>
<td>2.00%</td>
<td>1.57%</td>
<td>2.81%</td>
</tr>
<tr>
<td></td>
<td>1996-2001</td>
<td>4.10%</td>
<td>2.53%</td>
<td>2.45%</td>
<td>4.12%</td>
<td>3.37%</td>
</tr>
<tr>
<td></td>
<td>1983-1996</td>
<td>2.04%</td>
<td>3.62%</td>
<td>2.57%</td>
<td>2.90%</td>
<td>3.78%</td>
</tr>
<tr>
<td></td>
<td>1946-1996</td>
<td>2.67%</td>
<td>4.31%</td>
<td>3.70%</td>
<td>2.74%</td>
<td>4.15%</td>
</tr>
</tbody>
</table>

Most data and projections, however, suggest that migration was concentrated on Gauteng, and to a lesser extent on the Western Cape. Figures provided by Statistics South Africa for the nine largest cities suggest that most of these cities grew at relatively rapid rates during the period 2001–2007 (Table 1), but only in a few cases more rapidly than in the previous, inter-census period.

Young adults were the age category most likely to produce a migration of one kind or another. Women aged 15–34 years were very likely to conduct permanent migration for marriage reasons. Culturally, this is usually associated with a dowry or bride wealth transferred from the destination household to the household of origin.

Household moves were another important reason for people in this age group. Male and female young adults were both engaged in temporary migration for reasons of employment and schooling. For female temporary migrants a higher percentage of the reasons was for schooling, and for males working was the reason provided at a higher percentage. For older adult age groups the likelihood of movement was less. Marriage-related reasons were still important for women and increasingly so for men, and work-related temporary migration was relevant for both sexes (Kok & Collinson 2006).
2.6 IMPACT OF URBANISATION IN SOUTH AFRICA

In policy debates and in the popular press, migration and urbanisation are often viewed in a negative light, almost as if they were undesirable problems that need to be rectified or threats that must be avoided (Kok and Collinson 2006). What still needs to be brought to the knowledge of our society is the various forms that migration takes in different settings and that each impacts our cities in different ways socio-economically.

Kok and Collinson state that migration is often seen as the consequence of ruptures, of environmental disaster, economic exploitation, or political or civil tensions and violence. What may not always be understood and appreciated is the fact that migration and urbanisation are processes that offer hope for the future even if this might not be evident from a large scale (city scale) but at least from the point of view of the individual or household.

URBANIZATION AND MIGRATION TRENDS

By the time of the first post-apartheid census in 1996, just over half of the South African population (55.1%) lived in urban areas, and this number grew to 57.5% by the time of the next census in 2001. These figures reflect Statistics South Africa’s (2003) definitions, which focus on classification of types of enumerator areas, but their own exploration of alternative definitions based on density shows that South Africa could be seen as far more urbanized: 64.8% in 1996, growing to 68.5% in 2001 (Statistics South Africa 2003).

One of South Africa’s migration patterns was influenced by households being able to send a temporary migrant, or possess livestock assets, are the households that survive the legacy of the former ‘homeland’ system (Kok and Collinson 2006). It is the case of urbanisation in South Africa, where the urban sectors have developed from the influx of labour from the hinterlands to dig the mines and work as industrial labourers, drivers, security guards, etc (example of Johannesburg).

Graph 1: Urbanization Dynamics 1904–2001. (Kok & Collinson (2006).)
RAILWAY CROSSING.

- Act as barrier
- Crossing is inadequately addressed and dangerous
- Retail activity: A new node emerges
- Inadequate public facility to encourage retail activity.

NEW NODE EMERGE

At the point of crossing a new node emerge, a node which adjust with time of the day.

According to Lynch Nodes are points which are strategically located. They are often the main focal point to which users go to or from. There are often junctions – a crossing or converging of paths. They often have a physical element such as a popular hangout for the individual or a plaza area (Lynch 1960).

The node has become a social platform and a meeting place at the same time. It has become a landmark within the settlement. This node has become a good precedent of how powerful a point of crossing can become. The informal traders come out in the afternoon to strategically position themselves to catch on the afternoon traffic of people going back to their respective homes.
SWOT ANALYSIS

Points listed below are those identified by the researcher after numerous site visits and engagement with the site through different methods. This points aim to point out possible opportunities for intervention. Under these points the researcher looks at the Kliptown as a community which is made up of layers, which can be referred to as a system.

And for a system to fully function it has to have all the elements that completes it, so a community requires different elements that completes it. The points listed below will also identify missing elements.

Some of these points were brought up by the dwellers through platforms that the researcher has established, with the aim to hear and learn from the dwellers.

Strengths
- High volume of pedestrian movement
- Sense of community and unity
- Common view/vision by settlers about Kliptown
- Small scale commercial activity
- High density of dwelling units

Weaknesses
- Lack of urban connection with the surrounding areas
- Lack of well used public infrastructure
- Unsafe areas around the railway tracks.
- Lack of compaction in the CBD
- Lack of educational facilities
- The over scaled square.

Opportunities
- Promote day/night life in the Square by introducing housing and demarcating the square
- High volume of pedestrian movement on Union Street
- Liking of Dlamini and Kliptown CBD
- Creating green ‘belts’ around the exposed railway tracks.
- Providing housing and community facilities within the square

Threats
- Crime
- Floods
- Shops closing up
Chapter 3: THEORETICAL DISCOURSE

3.1 COMPACT CITIES
3.2 URBAN AND SOCIAL ARTICULATION
3.3 FLEXIBLE ARCHITECTURE THAT RESPONDS TO CHANGE
3.4 PUBLIC REALM
3.5 FLEXIBILITY
3.6 10 WAYS TO TRANSFORM CITIES THROUGH PLACEMAKING & PUBLIC SPACES
3.7 KLIPTOWN CONSOLIDATION AND UPGRADE PROJECT

CHAPTER KEY ELEMENTS:
- URBAN RENEWAL PROJECTS
- RELATION TO ITS CONTEXT
- APPROACHES TO URBAN RELATED PROJECTS
3.1 CITIES FOR PEOPLE

Cities do not only develop based on plans and layouts, they are further given form through the continual adjustment and adaptation of the physical environment by individuals and groups. These adjustments are made to accommodate city functions in attempts to improve the living conditions. Consequently the city is an ever-evolving organism which is formed by use over time (Gehl 1987:43).

The city is not a goal in itself; it is a multipurpose shifting organism. It is the actions and activities of the informal activities as well as spaces defined by pedestrians that reveal that there is a particular way in which streets are inhabited (Gehl 1987:43).

Architects designing contemporary shops/houses attempt to incorporate different activities (i.e. living, working and playing) for example, based on historical examples. These activities are expressed differently in different cultures and among different people (Howard. 2012:141).

The above phenomena describe Union Street. The proposed Kliptown ‘Bridge’ will attempt to mimic Union Street or to carry through the “energy” on Union Street, over the railway tracks into the informal settlement. “In order for a street to be truly democratic, room should be left for the individual to infuse the space with some of their own identity – allowing for the co-existence of both formal and informal” (Rowe & Koetter 1996:283).
3.2 COMPACT CITIES

THE STRUCTURE AND FORM OF SOUTH AFRICAN CITIES (figure 59)

Rapid urbanisation is a relatively recent phenomenon in South Africa. The vast majority of urban growth has occurred within the last 50 years. The urbanisation of the majority black population has been much more recent than this. A constant and central theme of the ideology of apartheid was that black people should be viewed as temporary sojourners in towns and cities, to be tolerated only to the extent, and for the period, that their (largely unskilled) labour was required. It is only since the mid-1980s that the relatively unrestricted access of black people into towns and cities has become a reality. Currently, it is estimated that some 54% of the total population is urbanised (Burgess and Jenks 2001).

MODERNISM

Burgess and Jenks 2001, state that above all other forces, the structure and form of South African towns and cities have been shaped historically by two ‘ideologies’. The first is the ideology of modernism. Dominant city planning and management systems and policies have been almost entirely imported from the UK, Europe and the US, and have strongly entrenched the urban characteristics of modernism, which includes:

- A strongly anti-urban or pro-suburban ethos. There has been a focus on the free-standing building surrounded by private space as the basic building block of settlements. The single free-standing house on its own plot is entrenched as the image of the ‘good urban life’, even in the case of the lowest income communities, such as Kliptown.

- An emphasis on the separation of the major activities of life (living, working, playing and movement)
Building density and type in African cities has little to do with occupational density and activity because of the informal and temporary character of many of the structures and activities.

The initial planning of relatively large lots, accommodating mono-functional single family units, does not reflect the way they are used nor the densities that develop over time. There is a huge discrepancy between gross layout density, measured in units per hectare, and occupational density, measured in persons per hectare, and there is no correlation between building form and occupational structure. In a study carried out by Senior (1984), the discrepancy is clear. In three different areas developed as detached single-family housing with a floor area ratio of between 0.1 and 0.15, the number of persons per hectare varied from 18 to 92.8 to 120 (Burgess and Jenks 2001). A study was conducted on a strip of the informal settlement in Kliptown to reflect these, as shown below.

Given the realities of the structure and form of these cities, there is an overwhelming need for greater compaction in new urban framework. Most of the reasons commonly cited in favour of compaction all hold in the case of South African cities. These include, for example, the need to reduce movement; to maximise historic investment in utility infrastructure and social facilities; to increase thresholds and thus levels of service; and to increase convenience.
Females: 102
Males: 62
Children: 103

Average Shack size = 13m²
Shacks = 79

Average House size = 90m²
Formal houses = 12

Total of 91 Dwelling units

91 Dwelling Units = 2 107m² = 8m² per person

Fig 62: Informal settlement 'study conducted on one of strip’s (Author 2013)
Nevertheless, there are three key interrelated factors which make such an approach not just ‘nice to have’, but a necessity, which should be away going forward as the country. The first is employment generation, because compaction encourages desifying mixed-use. Burgess and Jenks state that unemployment in South African cities is high (although there are regional variations, the rate is generally in excess of 30%) and growing.

The reality is that a large and increasing number of people have no option but to secure their survival through self-generated income from small businesses (the case of Kliptown informal market). When local markets are intensive, diversification and specialisation, they affect the urban economics in a good way (Burgess and Jenks 2001.212). It becomes cheaper for low-income households to outsource many of the functions that would otherwise be undertaken within the household.

The second factor is that movement on foot is the only mode of travel affordable to a growing majority of urban dwellers. It is therefore necessary to create urban environments that operate efficiently and pleasantly at the pedestrian scale. This demands compaction. The third factor is the necessity to resolve the current problems of public transport. Because of the static historical pattern of urban opportunities and the sprawling nature of growth, the urban system generates enormous amounts of one way movement at peak hours, with a dramatic fall-off in non-peak periods. This pattern, and the pattern of low-density sprawl, makes larger capacity fixed-line movement modes such as the train non-viable.

The major social and environmental consequences that stem from the structure and form of Kliptown CBD suggest that the current pattern of urban development is entirely unsustainable, and that urban compaction is an essential condition for improved urban performance, as it will take advantage of the minimum infrastructure already provided (Burgess and Jenks 2001), however it needs to be accompanied by substantial urban restructuring. Furthermore, directed residential infill, which is a primary policy instrument for achieving greater compaction, cannot be applied ubiquitously—it needs to be used to reinforce positive structural change. This kind of approach will also alleviate the current housing backlog in the country.
3.3 URBAN AND SOCIAL ARTICULATION

Hernández 2012 state that in order to address the particularities of the informal settlement, urban and social articulation will have to focus on the following issues:

- To rethink new connectivities in the urban structure as a whole which generate new centralities and rearticulate existing ones.

- To create conditions of ‘urban life’ in areas excluded from the benefits of urbanity through the ‘creation of the city’, especially in informal areas.

- To use interventions as a means of imprinting a cultural quality on a place; to use urban design itself as an occasion for cultural events.

- To think about collective public spaces as offering not only the opportunity for social interaction but also as powerful infrastructural supports for information, communication and education.

- To reinforce the collective character of space through the configuration of places where the diversity of functions and convivial activities guarantee attractiveness and potentiality.

- To reflect on what would be a rich mode to inhabit urban space that involves incorporating ‘affects’, that is, the capacity to affect and to be affected by the space.

- To think about interventions from the perspective of urban renovation, including local development and infrastructure, which implies a hybridisation of space, landscape and infrastructure.

- To articulate urban interventions with the protection, construction and reconstruction of the surrounding landscape substrata.

Hernández 2012 again states that using urban and social articulation is important to battle against the following negative realities:

- The reduction of the public sphere.

- The transformation of public space into merchandising domains.

- The lack of quality in landscaping due to economic rather than spatial motivations.

Places should be thoroughly interrogated prior to, or as part of, every intervention. It is also necessary to approach cases of urban articulation from the point of view of creating the conditions for an effective and productive international contribution opposed to the globalisation of the economy (which has become a one-way path, a field of restrictions, predefined and mined).
Flexible architecture is the design of buildings that responds easily to change throughout their lifetime. The benefits of this form of design can be considerable as it remains in use longer, fits its purpose better, accommodates users’ experience and intervention, takes advantage of technical innovation more readily, and is economically and ecologically more viable (Kronenburg 2007).

“Human beings are flexible creatures. We move about at will, manipulate objects and operate in a wide range of environments” (Kronenburg 2007).

“Today’s buildings are more like evolving landscapes than classical temples in which nothing can be added and nothing can be removed” (Rodger 2005). Open-ended, adaptable frameworks with large, well-serviced and well-lit floors, on the other hand, offer the possibility for a long life span for the building and a variety of possible uses. This concept relates to the solutions that include spaces that can be used for multiple activities in the short term, as well as having many alternative long term uses depending on future requirements (Rodger 2005).

The current south wing building of Walter Sisulu Square can be regarded as another form of flexible architecture, as it presents itself as scaffolding that has many opportunities, such as the in-filling concept of a new program which will then impact the area in a better way. This will be explored in more detail in chapter six and seven.

Rodger state that public space between buildings influences both the built form and the civic quality of the city, streets, squares or parks. For that reason a balance between the public and private realm become essential in design approach, ‘thresholds’ between public and private which can be similes or physical at times between public and private realm needs special attention to start defining each of these spaces.

Buildings and their surrounding spaces should interrelate and define one another, with external spaces functioning as rooms without roofs (Anon 2005). It is the celebration of public space, and the encouragement of public activities that drives the form of the practice’s buildings. It is the building’s scale and relationship with the street or square that helps to encourage public activity and create a people-friendly environment (Rodger 2005).

The Pompidou Centre in Paris, designed by Richard Rogers in collaboration with Renzo Piano and completed in 1977, illustrates how a building can rejuvenate life in space. The design deliberately dedicated over half of the site to a public piazza, the articulation on elevations become so inviting and that is the threshold referred to above. The public realm, in this case, extends from the square up the facade of the building in the form of ‘a street in the air’ (Rodger 2005).

Fig 63: Flexibility (Author 2013)

Fig 64: Pompidou Centre in Paris,
3.5 INTERDEPENDENCE AS PEOPLE – A PLACE OF INTEGRATION

What Union Road was before the introduction of Walter Sisulu Square building edging the north part of Union Road, was a vivid expression of genuine interdependence of the people of Kliptown (Gehl 1978).

This interdependence was expressed and experienced through physical scale of the built form and the freedom of trading. Streets that reflect peoples interdependence are those that express and creates a sense of place, gathering, excitement and possibility, space where various activities and different age groups of people are permitted to function together side by side, albe to stimulate and inspire one another (Gehl 1978).
3.6 10 WAYS TO TRANSFORM CITIES THROUGH PLACEMAKING & PUBLIC SPACES

Project for Public Spaces (PPS) in partnership with UN-HABITAT came up with 10 Ways to Transform Cities through Placemaking & Public Spaces, to educate a new generation of planners, designers on how to transform cities. Their partnership is helping to advance the development of cities where people of all income groups, social classes and ages can live safely, happily and in economic security and in order to reach these ambitious goals (BKIA 2013). This dissertation look into these 10 ways and drew principles that will be applied in this project, both in analysis and implementation.

THEIR 10 STEPS TO SUCCESS ARE:

No. 1.

Improve Streets as Public Spaces

“Streets are the fundamental public space in every city, but many are choked by traffic” (BKIA 2013).

Considerations in the case of Kliptown:
- 1 out of 10 families in the area own cars. Design streets for the comfort of people and not just for cars
- Keep in mind different types of transport modes.
- Keep in mind the hierarchy of corridors

No. 2.

Create Squares and Parks as Multi-Use Destinations

“A great urban park is a safety valve for the city, where people living in high density can find breathing room. A bad park is a place of fear and danger. A great square can be a focal point of civic pride and help to make citizens feel connected to their cultural and political institutions. A bad square repels people, business, and investment” (BKIA 2013).

Considerations in the case of Kliptown:
- Create parks near or around major public destination
- Encourage a variety of activities around parks
- Create many attractions

No. 3.

Build Local Economies through Markets

“The evolution of cities is based on commerce linking urban and rural economies. Cities emerged because people gathered together at crossroads to exchange goods and ideas. This essential function of urban centres have remained unchanged for centuries.” (BKIA 2013).

Considerations in the case of Kliptown:
- Replacements of traditional markets and encourage growth or markets.
No. 4.

Design Buildings to Support Places

“Buildings with interesting interiors may be architecturally successful to some but it is the architecture that permeates outwards beyond the facade and towards the street level where it engages the city fabric that is the most successful because it is built with the human scale in mind” (BKIA 2013).

It is important to seriously consider what kind of architecture will best serve the people of Kliptown and those who come to visit Kliptown. “Whether we like the structures as pure formal objects is another matter, and not of primary significance. What is truly significant is whether architecture creates a place” (BKIA 2013).

No. 8.

Create a Comprehensive Public Space Agenda

“Both top-down and bottom-up strategies are needed to develop, enhance and manage public space – leadership at the top is essential but grassroots organizing strategies are also integral to its success” (BKIA 2013).

No. 9.

Lighter, Quicker, Cheaper: Start Small, Experiment

Big is not always the answer to the challenges within the area or better strategy. Small moves like creating places to sit, a sidewalk, a cafe, planning a community event, organizing a container garden or painting crosswalks all have positive effects on a community and its public space. “Informal settlements in particular are already accustomed to lightweight, innovative strategies that can rethink their environment, so implementing small changes here and there can really add up” (BKIA 2013).
3.7 KLIPTOWN CONSOLIDATION AND UPGRADE PROJECT

Upgrading is an opportunity to transform informal settlements into liveable communities. Although a new programme has recently been introduced to upgrade informal settlements home to 17% of South Africa’s urban population there are very few clues as to how this should take place. The aim is to create more liveable, sustainable and resilient settlements that can respond to change, as well as develop a more bottom-up approach to urban governance and decision making (Eicker, Poulsen & Silverman 2012).

ONE COHERENT NEIGHBOURHOOD

In 2010 the Department of Housing of the city of Johannesburg appointed Urban Dynamics, and Albonico Sack Metacity, in association with Cohen Judin, to formulate a comprehensive programme for the total upgrading of the greater Kliptown area. The approach was to produce an integrated turnkey strategy per precinct to inform the formulation of the business plan for the consolidation and upgrading of the area.

The aim was to provide a guide to the housing delivery process, fully utilise the in-fill potential of available plots around the heritage housing stock, expand the range of low-rise medium density housing options, offer mixed-use opportunities where possible, and through an incremental process, consolidate the area by providing adequate new accommodation for all. The framework acknowledges and builds on the history and heritage of the area, to ensure that each development contributes to a coherent whole, and anticipates the future (Eicker, Poulsen & Silverman 2012).

Fig 67: Proposed networking accessibility and function routes (“Kliptown Explored | THE SOUTH AFRICAN INFORMAL CITY” 2013).

Fig 68: Proposed Consolidation and Planning of Kliptown (“Kliptown Explored | THE SOUTH AFRICAN INFORMAL CITY” 2013).
CHAPTER 4: PRECEDENTS AND CASE STUDIES.

4.1 INTRODUCTION TO CHAPTER
4.2 DESIGNING FOR AND WITH STREET TRADER: THE CASE OF WARWICK JUNCTION
4.3 DESIGNING FOR THE COMMUNITY: THE CASE OF KHAYELITSHA MULTIPURPOSE COMMUNITY CENTRE
4.4 SLOVO PARK INTEGRATED NEIGHBOURHOOD
4.5 ELEMENTAL DO TANK- QUINTA MONROY HOUSING PROJECT
4.6 INFORMAL STUDIO: RUIMSIG
4.7 PONTE VECCHIO ON THE ARNO RIVER

CHAPTER KEY ELEMENTS:
- URBAN RENEWAL PROJECTS
- RELATION TO ITS CONTEXT
- APPROACHES TO URBAN RELATED PROJECTS
4.1. INTRODUCTION TO THE CHAPTER

So much focus and energy has been directed toward Urban Renewal Projects across the country over the past decade, and this project can also be looked at as one of the Urban Renewal Project. This project take a different direction and look beyond just physical challenges of a location/s that give “birth” to current Urban Renewal Projects in South Africa today.

This chapter will study both successful and unsuccessful urban renewal projects. It will attempt to look at different projects in relation to its context, it will look at how each project picks on the identity of the area it sits in and as to what extent identity contributes to success of the project. It is arguable that a humane approach in terms of programming and scale remain vital to the success of each and urban upgrade project.

Through the stories that the community of Kliptown have told regarding to what was another urban upgrade project by StudioMAS architects, one can start to understand how vital is “bottom up “ approach when dealing with such context.

This chapter will attempt to unpack different approaches each project took, and over and above it will extract technical lessons which deals with the architectural component if each project. This chapter aims to better understand how to deal with urban upgrade in low density areas and low-income area which are mostly in urban peripheries.

The proposed dissertation project aims at understanding context and extracting design informants from the context, in this case informality that continues to take stage in Kliptown streets on a day to day basis and how to make it better through urban upgrade. This chapter will also be used critically look at successful contextual driven projects.
4.2. DESIGNING FOR WITH STREET TRADER: THE CASE OF WARWICK JUNCTION.

The Warwick Junction Urban Renewal Project has become well known for its inclusion of street traders. This project was tackling urban management and design challenges in the area surrounding the primary transport node in Durban, South Africa. To this day there are few examples in South African where street traders are incorporated into urban planning, Warwick is worth studying to better understand dynamics that exists around the phenomenon of informal traders.

Warwick Junction lies on the edge of the Durban’s inner-city and is the primary public transport interchange in the city. “On an average day the area accommodates 460 000 commuters, and at least 6000 street vendors” (Markets of Warwick 2013). Warwick is the confluence of rail, taxi and bus transport, this has give life to the market. “The Markets of Warwick includes between 5000 and 8000 vendors trading in 9 distinct markets” (Markets of Warwick 2013).

Currently this is the only informally structured market in a public space of this magnitude, and thus establishes itself as the single most authentic African market that South Africa has to offer. The products available vary from beadwork, traditional arts and crafts, traditional cuisine, fresh produce, music and entertainment merchandise, clothing, accessories and traditional medicine (Anon Markets of Warwick 2013). The author will attempt to unpack the complex program of Warwick and how each component add up to the complex program of day to day, which leave off each other. Every program in Warwick depend each other.
Fig 73: Warwick Market (Robson et al. 2009)
Fig 74: Warwick Market Program/elements that make up Wavick Market (Dobson et al. 2009)
TRANSPORT AND TRADING IN WARWICK

These facts and figures indicate the scale of activity in the area. (Source: Dobson, Skinner, Nicholson, & University of KwaZulu-Natal. School of Development Studies 2009):

- 460,000 people walk through it every day.
- 300 buses and 1,550 mini bus taxis depart from here each day.
- 166,000 public transport passengers use Warwick.
- 38,000 vehicles drive through it each day.
- Between 5,000 and 8,000 people trade informally here, earning between R1,000 and R8,000 a month.

The system of Warwick can also be closely compared to a life cycle. What become a lesson to take from this system is how the informal traders have strategically placed themselves where the “feet’s” are going.

FRESH PRODUCE MARKET.

Down from the formal shops, towards Warwick Avenue, is where trucks piled high with fresh mealies which come every morning stop and off load. “They are bought by the vegetable traders and particularly by the sellers of cooked mealies who turn over R1 million a week providing commuters with a hot ‘pick-up-and-go’ snack” (Dobson, Skinner, Nicholson, & University of KwaZulu-Natal. School of Development Studies 2009).

The taxis which line the three busy roads intersecting here make this an ideal spot to attract customers who are hurrying through to catch their transport (train, taxi or bus). It becomes more than a trading platform, but an important interaction node which creates passive surveillance.

As in other areas of Warwick, small fresh produce traders are amongst the poorest. Most of them are women who can take their produce back to their households if it is not sold. There are no shelters or trading counters along these pavements, but painted squares outline individual sites.

The stalls are colourful, and complemented by the products, and the women are friendly. The women must estimate how much produce they need for the day so that not much is left over, buy the produce, run their stalls, pack up at the end of the day or earlier if it rains, and frequently face a long trip home. “If they live too far away or have not made sufficient income in the day to pay for transport home, they face a night sleeping on the streets” (Dobson, Skinner, Nicholson, & University of KwaZulu-Natal. School of Development Studies 2009).
The Early Morning Market

In the late 1990s the city’s Department of Markets spent R13 million on the Early Morning Market renovating this lovely old building and now light filters through the new roof onto a daunting number of stalls filled with fruit, vegetables and other staple food items, as well as fresh flowers.

“The old market was very hot. The fruit and vegetables would spoil quickly. This new market allows the air to move. It is much better” (Dobson, Skinner, Nicholson, & University of KwaZulu-Natal. School of Development Studies 2009).

It is critical for one to understand the challenges at hand, because at times only small changes will have the greatest impact or results, as it is not all the times we have to have the greatest input to see great change. The need for cross ventilation in this case could only be established through engagement with the daily users of space.

The market consists of over 670 stalls, specially designed for fresh produce trading. They have wire enclosures that can be locked at night and the market itself is also locked, so there is no need to find overnight storage. Most traders buy their goods either directly from farmers or from the primary bulk fresh produce market south of the inner city.
Connecting the west side of Warwick with the east

Traditional Medicine Market was originally separated by a busy road. The Zulu word for medicine is ‘muthi’ so this market has become known as the ‘Muthi Market’. The Warwick ‘Muthi’ market is arguably the largest in Africa.

The market was developed along two incomplete freeway glide offs or spurs that run over railway lines, join together and then end with a sheer drop into the road below – a drop that was subsequently painted with the mural described below. The photograph below shows the freeway spurs before they became the Muthi Market.

Later a pedestrian bridge was built that linked the “Muthi” market up well with Warwick Market. This redesign reduced congestion and gave pedestrians an easier route over the roads and station. In addition it gave traditional medicine a standing in the city that it had previously not had.

This is a place where people come for a specific purpose: to buy, to get advice and not just to stare – it is the equivalent of a modern pharmacy. Here a distinction between a ‘Sangoma’ and ‘Inyanga’ is made, because the two are different and perform different activities. Izinyanga (traditional healers) consult from the privacy of small kiosks, while herbalists and healers dispense and sometimes give on-site diagnoses.
The Brook Street Market presents a startling contrast to the rest of Warwick. Anyone walking in here from the Muthi Market over a curved purple pedestrian bridge will want to stop and gaze down over the vast and bustling shopping mall below: a concourse that is in essence a wide street, a few hundred metres long, with a high roof covering it.

THE ARCHITECTURE

Both the trading structures on the freeway splines and the bridge structure are assemblies of separate elements - wooden gum poles, and industrialised steel components - which acknowledge respectively the city’s rural hinterland and its industrial port origins. The architects’ use of timber poles was an explicit reference to the tree as a symbol of shelter, gathering, fertility, and growth. In contrast, the under-slung steel trusses supporting the pedestrian bridge recall the engineered qualities of ship and harbour architecture (Eicker, Poulsen & Silverman 2012).

Trusses are supported at one end on the sheer concrete wall that ends the freeway splines. The other ends are supported on a series of bifurcated sinuous steel columns that look like tree trunks, which in turn transform into bows that support a shade giving, parasol-like structure made of isingtingu [saplings].

Geometries were decided through the process of making a soldered model, photocopying it, scanning the photocopy and tracing its shapes. Fabricated in a simple open-sided shed outside of the city, the structure was erected and assembled over a weekend. Secondary activities were completed within a short period of time (Eicker, Poulsen & Silverman 2012).

Simple, yet providing shelter and continually encourage Warwick trading culture without interruption. Material selection and the form created blends with the context, rather than wanting to dominate. These remain a lesson to be taken into the selected project, Kliptown.
4.3. DESIGNING FOR THE COMMUNITY: THE CASE OF KHAYELITSHA MULTIPURPOSE COMMUNITY CENTRE

The building was intended to be the first phase of a series of receptacles which would support the ongoing development of the township and offer an alternative language to the township development. Situated at the corner of Steve Biko and Walter Sisulu roads the Thusong Services Centre, formerly known as the Khayelitsha Multi Purpose Centre, emphasises its urban statement by creating a strong outside/inside relationship through natural light capturing strategies, which breaks down the scale symbolically.

The intention was to create a centre with a powerful civic presence. The building has a strong rectangle massing of the building with playful facades that attempt to engage on a dialog with the context. The four facades of the building vary, creating a different experience from different lines of access.

Fig 86: Thusong Service Centre (“Thusong Service Centre (Khayelitsha)” 2013)
A sense of ‘cheerfulness’ is created by the natural light entering the building via the saw-tooth roof, the Lexan sheeting on the west facade, the white walls and the subtle play of shadow on the roof terrace created by timber pergola and the punctuated facades. The limited palette of colours and materials is made dynamic by attention paid to the detailing of the building, the effects of light and the differences in textures.

The building desired an aesthetically pleasing and functional resolution, using light and materiality to create a foreground sense of place- a building which is long-lasting, of high quality and offers universal architectural joys that defy the widespread connotations associated with townships (“Thusong Service Centre (Khayelitsha)” 2013)

**KEY LESSONS**

- Context texture as a design informant
- Capturing of natural light strategies
- Development of the image of the area
Chapter 4  Precedent Studies

Fig 90: Thusong Service Centre, Ground floor plan ("Thusong Service Centre (Khayelitsha)" 2013)

Fig 91: Thusong Service Centre: Section ("Thusong Service Centre (Khayelitsha)" 2013)
4.4. SLOVO PARK INTEGRATED NEIGHBOURHOOD

Slovo Park, an informal settlement wedged between Coronationville and Crosby on the west of Johannesburg. The urban design framework for Slovo Park, an informal settlement, takes informality as its starting point. “The framework explicitly acknowledges the existing informal housing processes, informal business activities, informal trade and the informal transport operators within the settlement” (Eicker, Poulsen & Silverman2012). The urban framework attempts to link Slovo Park to its surroundings, while the new housing attempts to join the informal to the formal (Eicker, Poulsen & Silverman2012).

Through this precedent the author will unpack this project from an urban design point of view and underpin some of the keys urban intervention that will see the objectives of this project being achieved. One can argue that the project deals with a “fragile” context were the line between making and breaking it is so fine, as we have seen in the case of the Kliptown’s massive building project. This is why the author selected to study this project as it relates with the one selected for this dissertation in Kliptown.

Fig 92: Slovo Park: informal trading Section (Collective 2012)

KEY LESSONS

- Holistic response to the context + state of affairs
- Strong urban intervention
- Investment into the public realm
KEY URBAN INTERVENTION:

1. PEDESTRIAN ORIENTATED DESIGN

There is a clear understanding that very few residents in the area own cars, hence the framework put a lot of emphasises on pedestrian orientated design, which leads to clear demarcation of routes. Block sizes have been kept deliberately small to create more walkable neighbourhoods. Traffic calming measures have been put in place where pedestrian and vehicle mix, and pedestrians become priority (Eicker, Poulsen & Silverman2012).

The is a tendency by motor vehicle drivers of looking down on pedestrians. Giving priority to pedestrians especially in context such as Kliptown will create more walkable streets in an area where pedestrians historically dominated. One will remember the criss-crossing by pedestrians on the open land which today Walter Sisulu Square seats. Delivering the project beyond the physical infrastructure, into a ‘social’ infrastructure.

2. URBAN MARKETS

In response to existing informal trade in the area, the framework made generous provision for urban market within public space and along the pedestrian movement route and where transport interchange exists, allowing small scale entrepreneurs a chance to earn a living (Eicker, Poulsen & Silverman2012).

Throughout most urban interventions or upgrades this is well talked about on paper. But throughout these urban upgrades which talk about incorporating informal traders we still witness informal traders going back to their original space and in some instances re-appropriating spaces provided with. The main reason to leave most of the south wing of Walter Sisulu square open on the ground was to allow the informal trading that existed in the area to continue. However the space does not suit the activity it was made for as traders find it uncomfortable during winter due to the building being overscaled.
KEY URBAN INTERVENTION:

3. CONNECTIVITY

The urban design approach emphasises connectivity both social and physical. Through connectivity it intends to link disenfranchised communities to the broader society while creating a platform for social cohesion. These connections have been achieved through a road network that links Slovo Park to its adjoining neighbourhood. Major routes have been programmed such that they can accommodate mixed-use while they do not undermine the current informal trading activity. These major routes are foreseen as high economic activity spines for Slovo Park.

The framework was envisaged in such a way that the connecting routes ensures continuity of the urban fabric. This remains vital for the selected project for this dissertation as there is a need for directing the growth and the energy of Kliptown. The Slovo Park project touches on the appreciation of the informal activities of the area, and this is key to the success of Kliptown project. It is critical to understand the growing patterns of Kliptown both economical and spatial before making decisions (Eicker, Poulsen & Silverman2012).

4. PUBLIC SPACE

The framework envisaged significant investment in the public realm as the major structuring element of the settlement. A network of public spaces was designed to respond to the user’s needs, enhance new opportunities, and encourage a sense of pride and ownership. Public spaces in Slovo Park project is seen as primary spaces where people interact and experience urban life (Eicker, Poulsen & Silverman2012). The question that can be asked is what is more valuable to the residents?
The architect Alejandro Aravena and a group of professionals from the Faculty of Architecture, Design and Urban Studies at the Pontificia Universidad Católica de Chile were asked by government authorities to assist in finding a solution to a complex problem posed by the need to settle one hundred families on a well located and therefore expensive half-hectare plot of land near the centre of Iquique, a medium-sized city in northern Chile (Hernández et al. 2012).
The inhabitants had occupied the land for at least thirty years, with no legal rights, no sanitation and in very precarious shelters. The project was to fit within the budget provided by the Housing Solidarity Fund, one of MD NU’s social housing programmes; therefore, the total cost per house, including the land, could not exceed US$10,300. At current building costs, this amount would allow, at most, the construction of structures with thirty square metres per dwelling, an area which is clearly insufficient to house a whole family.

The designers chose, thus, to use the available resources to build the core of a house that could be expanded by their beneficiaries in the future. The initial unit would provide all the necessary components of the house: water, sewage and electric installations, and the kitchen, bathroom and stairs. The result was an ingenious ‘parallel building’ of houses built in twos, one over the other, allowing for horizontal growth at ground level for the ground floor houses and vertical growth for those above.

**KEY LESSONS**
- Incremental design approach
- Community upliftment- socio-economically
- Uplifting community image
Incremental strategy

Fig 100: Ground floor  (“Elemental Iquique Original” 2013)

Fig 101: First floor super structure  (“Elemental Iquique Original” 2013)

Fig 102: First floor perspective  (“Elemental Iquique Original” 2013)

Fig 103: Complete structure perspective  (“Elemental Iquique Original” 2013)
Chapter 4  Precedent Studies

Fig 104: Longitudinal section ("Elemental Iquique Original" 2013)

Fig 105: Cross section ("Elemental Iquique Original" 2013)

Fig 106: Elevation ("Elemental Iquique Original" 2013)

Fig 107: Elevation ("Elemental Iquique Original" 2013)
People were working on farms in this area. In 2006 the settlement started growing and other people joined us while they were looking for job opportunities. The City installed some toilets in the area to service the people. There were about a hundred toilets and two main water tanks where we fetch water” (“Ruimsig” 2013).
INFORMAL STUDIO BACKGROUND:

“The INFORMAL STUDIO: R U I M S I G forms part of a necessary shift in the education of built environment professionals in the field of informal settlement upgrading in South Africa” (Deckler 2013). The informal studio was developed in 2011 by 26’10 south Architects in partnership with the Goethe-Institut, the University of Johannesburg (UJ) and NGO Ikhayalami. The first course was run with sixteen UJ architecture Masters students over a seven-week period. The students worked together with eight ‘community architects’ from Ruimsig, an informal settlement on the western periphery of Johannesburg, on strategies for the immediate and long-term improvement of the settlement (Deckler 2013).

Fig 109: Negotiation of Space by Resident (Ruimsig 2013)

RE-BLOCKING

The informal studio came up with a re-blocking strategy which recorded community driven proposals for immediate improvement to be undertaken by residents themselves. Re-blocking is concerned with making minimal physical adjustments, most of which can be implemented by residents themselves, in order to improve immediate living conditions. The main objectives of re-blocking in Ruimsig are the equitable distribution of land, addressing overcrowding and the activities of slumlords, the adjustment of movement routes to legal road widths (for improved circulation and passage of emergency vehicles) and the creation of improved public and semi-public spaces. The changes, informed by an urban framework, would facilitate the eventual formalisation of the settlement.
Fig 110: Ruimsig Figure ground before intervention (Deckler 2013)
RE-BLOCKING MAP

To date 65 structures have been moved and upgraded from the most congested part of Ruimsig to better positions within the settlement.

Fig 111: Ruimsig Re-Blocking Map (Deckler 2013)
4.7. PONTE VECCHIO ON THE ARNO RIVER

The Ponte Vecchio (Old Bridge) is a medieval bridge spanning the river Arno in Florence. It is one of the few remaining bridges with houses built upon. The Vasari corridor that runs over the houses connects the Uffizi with the Pitti Palace on the other side of the river.

The pedestrian bridge is often teeming with tourists and the many musicians, portraitists and other entertainers create a constantly vibrant atmosphere. The bridge is at its most beautiful at dusk, especially when seen from the Ponte Santa Trinità.

The Ponte Vecchio is the oldest bridge in Florence. It is believed that a bridge already existed here during the Roman times. Its current appearance dates back to 1345 when it was built to replace a bridge which was destroyed by a flood. Houses were built on the bridge, a common practice in large European cities during the Middle Ages (“Ponte Vecchio” 2013).
Ponte Vecchio is not a connector of Uffizi with Pitti Palace, but it offers what the author refers to as an experience while bridging or connecting using a physical bridge. What creates this experience is the program on the bridge.

This can open a strong debate between poetic architecture and meaningful architecture which is completed by its relevant program, this already setup a good point of departure for conceptualizing a Kliptown bridge.

**KEY LESSONS**

- Contextually aspirate structure and model and a well articulated elevation that clearly represents the human scale.
- Mixed use.
- Great contribution to the economy of Florence.
- The bridge is not only an economical platform, but also and economic platform.
Fig 115: Ponte Vecchio Old Bridge sketch ("Ponte Vecchio" 2013)
CHAPTER 5: ENGAGING WITH CONTEXT

5.1 CONTEXTUAL STUDY
5.2 SITE ANALYSIS
5.3 SWOT ANALYSIS
5.4 WALTER SISULU SQUARE
5.5 USERS

CHAPTER KEY ELEMENTS:
- MAPPING KLIPTOWN TO UNDERSTAND KLIPTOWN
- WHY THE NEED TO CROSS THE RAILWAY TRACKS
- KLIPTOWN GROWTH
- DESIGN PRINCIPALS
5.1. INTRODUCTION TO CHAPTER

The design process which was followed to come up with the programme and the design brief for current Walter Sisulu Square gave rise to this chapter. This chapter seeks to understand the context and underpin some of the most crucial design informants for the proposed design intervention. This is archived through engaging with both the physical and social context of the study area.

The author uses a special mapping methodology referred to as critical mapping in this dissertation. It is referred to as critical mapping because it is used to inform some of the design decisions, both in the design of the programme and the physical architectural intervention. This kind of mapping is conducted with the local residents and also using aerial photographs.

Fig 116: Union Road Clothing Market (Unknown Author)
5.2. MOVEMENT SIMULATION STUDY

This dissertation identifies movement as a crucial element, as it attempts to address the unsafe crossing of the railway tracks. The following analysis shows the development of Kliptown built-form from 1938 to 2013, from which movement simulation is conducted to understand the relation between built form and movement.

Movement simulation movement maps show the desired movement lines, from which the strong desire to cross over the railway tracks emerges. This is evident across all the years. The impact of the Walter Sisulu Square was felt and this came through in the year 2010. This was mainly because of the long narrow building which makes almost impossible to continue with desired movement.

Fig 117: Movement Simulation of the existing foot bridge extracted from a video footage of the (Author 2013)
Chapter 5  Engaging with the Context

Fig 118: Built Form 1938. (Bremner, Low, and Merwe 1998)

Fig 119: Simulation of Movement hierarchy 1938 (Author.2013)

Fig 120: Built Form 1952 (Bremner, Low, and Merwe 1998)

Fig 121: Simulation of Movement hierarchy 1952 (Author.2013)

Fig 122: Built Form 1980 (Bremner, Low, and Merwe 1998)

Fig 123: Simulation of Movement hierarchy 1980 (Author.2013)

Fig 124: Built Form 1996 (Bremner, Low, and Merwe 1998)

Fig 125: Simulation of Movement hierarchy 1996 (Author.2013)
CONCLUSION

The above study show how the fine grain of Kliptown started and how it developed over time. The study shows clearly how movement was key to the development on Kliptown.

LESSONS
- Desired movement lines are closely linked with nodes or destinations
- People walk where they feel comfortable walking
- People enjoy walking along a string of activities, in this case a point of interaction, (trading points, seating points, etc)
- When points of interaction are opposite each other they generate strong movement lines.
5.3. MAPPING KLIPTOWN

The following mapping will reveal the actual nature of the study area in terms of day to day functions and uses which impact the local residents.

The following mapping is done to understand what the study area ‘houses’. This mapping offers the most recent and accurate depiction of what really happens in Kliptown. The author refers to a community as a system which needs certain elements for it to be a sustainable community or system, elements such as schools, health care facilities, etc. From this mapping the author aims to understand what elements are found existing or missing in this very system of Kliptown.
Fig 129: Kliptown Formal Housing (Author 2013)

Fig 130: Kliptown Informal Housing (Author 2013)
Fig 131: Kliptown Pedestrian Movement (Author 2013)

Fig 132: Kliptown Vehicular Movement (Author 2013)
Chapter 5  Engaging with the Context

Fig 133: Kliptown Formal Trading  (Author 2013)  
Fig 134: Kliptown Informal Trading  (Author 2013)
Fig 135: Kliptown Sports and recreation facilities (Author 2013)

Fig 136: Kliptown Educational facilities (Author 2013)
5.3.1. OVERLAYING OF KEY ELEMENTS

Three of the most memorable elements of Union Road which are simultaneously a key to the success of Union Road are overlaid for more analysis from which the following key lessons are take from.

KEY LESSONS

1. Informal traders strategically position themselves at cross routes or where a shop is set off the pavement to allow them some space, in formal traders are ‘eyes’ into the streets for safety.

2. There is a very special relation between the three elements and in the design exploration they should not be an attempt to separate them, but strategically encourage them to co-exist.
5.4. CRITICAL MAPPING

A critical mapping was conducted by the researcher in an attempt to understand the nature of crossing. This critical mapping is used to determine whether the crossing of railway tracks is temporal or permanent.

Critical mapping involved mostly those who were found crossing, where they had to point out their respective point of origin (point a) and destination (point b). The following series of maps are a clear representation of the mapping.

EDUCATIONAL CROSSING

In the morning (06:30-07:30) and early hours of the afternoon (13:00-16:00) it is learners who cross from Kliptown informal settlement going to their respective schools on the outskirts of Kliptown, mainly Eldorado Park. Most of these learners are in primary school, aged between 5-15 years.

TRADING CROSSING

While during the day the settlers ‘criss-cross’ the railway tracks mainly for trading reasons in Kliptown CDB. They are either going to sell or buy from Kliptown.

Both trading and educational crossing suggests that the crossing is permanent, because as long as people live in Kliptown informal settlement there will forever be a need for trading and education. This mapping becomes more useful for developing the brief for the new Kliptown ‘Bridge’.
Fig 140: School kids crossing for education reasons (Author 2013)

Fig 141: People crossing for social reasons (Author 2013)
Fig 142: Kliptown: People crossing for trading reasons (Author 2013)

Fig 143: People crossing for transport reasons (Author 2013)
The conducted critical mapping was to establish reasons why people need to cross. These reasons are used to inform the program of the new intervention in Chapter six.

The overlaid reasons for crossing is to show the intensity of the flow of people crossing the railway tracks on a normal day. These map also suggest a new node at the crossing point. These will be taken into consideration in the design development.
5.5 UNION ROAD ACTUAL LAND-USE MAP

Fig 145: Actual Land Use map of Union Road (Author 2013)
5.5.1 UNION STREET 2003
Fig 146: Photographic record of South side of Union Road, 2003. (26'10' 2003)
5.6. WALTER SISULU SQUARE OF DEDICATION COMMEMORATES THE SIGNING OF THE FREEDOM CHARTER.
STUDIOMAS ARCHITECTS AND URBAN DESIGN

Walter Sisulu Square of Dedication commemorates the signing of the Freedom Charter. The Square attempts to celebrate the idea of a new nation, democracy, equality and freedom. The main square it is a space with trees, which represent a meeting, playing, trading or resting space for people. It is sub-divided into nine smaller squares that represent the nine provinces we have in South Africa.

Fig 147: Walter Sisulu Square (Author 2013)

Fig 148: Walter Sisulu Square site plan (“Walter Sisulu Square Aerial | Flickr - Photo Sharing!” 2013)
The Square provides a gathering space with a podium for speakers on the west side, terminated on the east by ten pillars symbolising the articles of the Charter. At the heart of the square a conical structure marks its actual signing and a grid of cross-shaped benches reinforces the allegory or enfranchisement. The northern and southern ledges are flanked by buildings of cultural, institutional and commercial use. “The disposition of the functions reminds one of the Aristotelian dictum that a market place should always be next to a civic square, but in an implicitly subordinate location” (Joubert 2009).

The vastness of the Square is contentious; some refer to it as a ‘white elephant’, others find it intimidating. Today it has become a monument that is freestanding without much connection to anything other than marking their historic significance, resulting in isolation. Yet the project problematises the issue of memorialisation in the late twentieth and twenty-first centuries. “Social critics are or the opinion that memory can obscure history.
“The Square seemed another planet from the life that surrounded it. The sites, sounds and smells of Kliptown had been removed to make way for this massive, sanitised space” (Christa 2008).

If one is to ask what went wrong some of the main issues to consider is that a major focus was on the construction of the buildings on the square, the taxi rank, road works and new warehouses for the businesses relocated away from Union Road, while there was no focus on how the new buildings would impact Union Road and how it will be used.

WHAT IS THE DEFINITION OF DEVELOPMENT?

By definition development is the process of bring about good change. It has to do with positive impact and is also associated with positive growth. The concept of development has become so popular in the 21st century, in South Africa more especially after 1994. It is often associated with health, education, housing and environment. This can take different directions and quite often it focuses on people. If Johannesburg Development Agency was in the interest of people in the instance of Kliptown one can argue that what was meant to be developed was cleaned out, as Kliptown was known for ‘shopping’. As many of Kliptown residences say that they have no sense of connection to the new square, the area remains undeveloped when looking at the definition of development.

VOICES OF PEOPLE ON THE GROUND?

This is what one of the residents who moved to Kliptown in 1954 as a young nurse and midwife had to say about Kliptown: “When they thought they were improving things, they made it worse, when we only had the bucket system; they used to clear the buckets on Monday, Wednesday and Friday. Now with the easy-Loo’s, with those 44-gallon drums, they only drain them fortnightly. By the time they come and drain them, they have such big worms. I decided I’m keeping my bucket” (Christa 2008).

“Those JDA people made so much empty promises, says one of Kliptown residents who now uses a wheelchair. They asked me to be part of their forum. I said I would, but I told them I do not have transport. Transport is not a problem, they said. We will come and pick you up. They did not do it even once”.

In 2006 informal traders were moved from the paving on Union Road back into the covered trading space, and asked to pay a rental fee of R120 to be under the covered market area on the South wing, and if not their stock would be taken by the metro police (Christa 2008).
5.6.1 ANALYSIS OF THE SQUARE
Fig 156: Typical Union Road Section

Fig 157: Typical Union Road Section
5.6.2 S-BUILT DRAWINGS OF WATER SISULU SQAURE
S-BUILT DRAWINGS OF WATER SISULU SQAURE
Chapter 6: DESIGN DEVELOPMENT

6.1 URBAN FRAMEWORK
6.2 WALTER SISULU SQUARE DEVELOPMENT STUDY
6.3 URBAN STRATEGIES
6.4 PROGRAM
6.5 CONCEPT EXPLORATION
6.6 CONCEPT 5: BUILDING A APPROACH
6.7 INSERTING PROGRAM
6.8 CONCEPT DEVELOPMENT AND EXPLORATION
6.9 CONCEPT MODEL

CHAPTER KEY ELEMENTS:
- URBAN FRAMEWORK
- TRANSLATING PRINCIPALS INTO DESIGN
- MAPPING AS THE GENERATOR OF PROGRAM
- SKETCH DESIGN
6.1. URBAN FRAMEWORK

This part of design will look at Kliptown and its surroundings from an urban design point of view. It will continue building up from the macro scale analysis to help establish a framework from which one point from the framework will be taken and developed into an architectural intervention.

The urban design approaches relay the context challenges of socio-economic, environmental and disconnection which came through the processes of analysis, review and consultation with community. The framework objective is best integrating the area and provides guidelines for future development, which will lead into compact urban living which aims to integrate every day activity.

The urban designing framework promotes compact living conditions. It seeks to lay out guidelines for upgrade and development towards compact living conditions. It will find ways to incorporate the existing culture of trading of Union Street.

Fig 159: Kliptown Study area (Author 2013)
6.1.1 URBAN GRID CONTINUITY

The city grid is a structure in a formal structure in place that guides the growth of any city. From an urban scale Kliptown CBD and the surrounding areas have suffered from the discontinuity of Union Street. Union Street has so much potential of carrying human traffic into the Kliptown CBD, while opening a whole lot of other economic opportunities. The Urban design framework suggests continuing Union Street over the railway tracks through the proposed bridge down into Dlamini.

LEGEND
- Red: Existing
- Orange: Railway Tracks
- Blue: Proposed

Fig 160: Kliptown Major Routes (Author 2013)
Fig 161: Kliptown Urban Intervention (Author 2013)
6.1.2 RE-BLOCKING

Kliptown informal settlement is densely packed with shacks, mostly from the north side of what was known as Union Street. It is almost impossible to identify access routes into the settlement.

The area has a density of 107 units per hectare, which means every unit has about 93 square meters.

By re-blocking space will be created access routes which are just enough for emergency vehicles to access the settlement in times of disasters. This will create an opportunity for the municipal to run basic infrastructure. Re-blocking also will address protect against the spread of fires.

The main objectives of re-blocking are to:

1. Equally distribute the land, address overcrowding and activities of slumlords.
2. Adjustment of movement routes to suitable roads width (for improved circulation of both passage and emergency vehicles.
3. To create improved public and semi-public spaces.
6.1.3 RAILWAY TRACKS

The piece of land edging the railway tracks remain undeveloped. In a context like that of Kliptown every piece of land is valuable, and it must be able to be used such that it can yield results almost immediately; as a result, we have such great density within the informal settlement.

In an attempt to create a better place within Kliptown, and to deal with the safety of the people the strip of land on both sides of the railway tracks will be developed into active green space and productive green space.

- Active green space: The proposed active green space is mainly a park that edges the railway tracks from the east. This is to create a more active edge which runs north-south connecting back to Kliptown railway station. This park can also be used for outdoor activities such as family picnics, cycling, running, etc.

- Production green space: Agriculture remains one of the key strategies to alleviate poverty in communities. The community garden concept is one of the key strategies to increase awareness of possibilities around agriculture. The production green space is mainly community gardens for growing crops. The Community Gardens will be mainly vegetable gardens. This will also run north-south on the edge of the railway tracks. This will become a new buffer zone between the houses and the railway tracks.

Fig 164: Concept Sketch (Author 2013)
6.1.4. LANDSCAPE

The 30m buffer strip around the wetland that runs North-South separating Dlamini and Freedom Square informal settlement becomes an important aspect as a natural feature for this part of the framework. This strip will be developed into a recreational open land, which will include play grounds, sporting activities and ecologically-related activities and most importantly urban agriculture. This development and will not just enhance passive surveillance, but it will address poverty in the surrounding communities.
Fig 167: Map Showing wetland (Author 2013)
The Railway station constantly attracting people. The above figure shows the intensity of pedestrian movement on the edges of the railway tracks. The proposal is to create both productive and active green space which will create a safe environment around the track edges.

The large leftover land edging the railway tracks remain unused and unsafe. This is mainly because of lack of productive activity for the land.
The proposed productive and active green space take into consideration the possible of nodes that could emerge in future, linking into the already-existing route.
Fig 173: Kliptown : Section through the railway tracks (Author 2013)

Fig 174: Kliptown : Section through the proposed new recreation facility (Author 2013)
Fig 175: Section Through Open space as it is  (Author 2013)

Fig 176: Section Through Proposed Active Green space   (Author 2013)
6.1.5 URBAN IN-FILL

Most of Kliptown’s CDB blocks have a “missing tooth”, mostly behind the built form which is holding the south side edge of the Union Street.

The urban design framework will not interrupt what the settlers have come up with already, but instead it will encourage it and guide it to its full potential. The best way to deal with urban fragmentation it is to fill in what is missing by elements that complete or make a good city to be; this part of the urban design framework will do just that.

6.1.6 URBAN COMPACtion

Kliptown CDB has a very low compact level when looking at it the built form of the CBD. Because of limited infrastructure in and around the area, the urban Frame work suggests a new model to which will compact the area to fully utilize its infrastructure.

This model will also address fragmentation of Kliptown CBD, while suggesting a mix of daily life activity of the community to happen with the CBD rather than to be spread.
6.2 Walter Sisulu Square development study: superimposed development of Union Road on the current Walter Sisulu Square.

This study is done to understand the development of both Union Road and the Square. The development study is used to inform and justify the reason behind breaking through the current existing square and building on the square.
Fig 183: Vision Sketch of Water Sisulu Square  (Author 2013)
Fig 184: Kliptown: Routes intersecting Water Sisulu Square (Author 2013)

Fig 185: Kliptown: Proposed Routes intersecting Water Sisulu Square (Author 2013)

LEGEND
- **Existing**
- **Railway Tracks**
- **Proposed**
6.3.1. APPROACH TO THE SQUARE

After all the analysis of the existing square, the major finding was that the current Square was underutilised and this was because of the lack of a programme which the community could relate to. The following are interventions that address the Square:

1. A lesson from the development study that was done above has strongly influenced the intervention of reintroducing roads through the Square. Reintroducing roads would demarcated the vast open Square and will allow for a more human Square in terms of the physical scale, and for different activities to take place at the same time without interfering with each other. The new roads through the Square will be more pedestrian friend such that they could be closed off at certain times of the day or when the is a much bigger event that would ake up the entire Square.

Fig 186: Kliptown :Water Sisulu Square as built (Author 2013)  
Fig 187: Kliptown :Water Sisulu Square Strategy-1 (Author 2013)
2. The second intervention would be to introduce mixed-use developments along the new roads. These mixed use developments would have housing components in them, as a way to encourage more people to live in the Square and not just visit. These will see people take charge of the Square and infusing their identity into the Square.

3. Third intervention is about reprogramming the existing building surround the Square with program that will encourage the surrounding communities to visit the Square even more.
6.4. PROGRAMME.

Because of the living conditions within the informal settlement that this intervention bridges from or to, the proposed programme seeks to bridge the social and educational gap that exists within the settlement.

One of the strong concepts of this dissertation is using the context as a design informant, this very same approach aid in coming up with interventions which does not work against the context, but encourage growth.

Because of the lack of adequate space within the respective learners’ homes, for learners to do their homework after school, this facility becomes a community facility in the sense that school children can meet for group work from their respective schools. As much as retail remains one of the strongest activity down Union Road, this bridge has become more than a retail bridge, but a ‘knowledge bridge’ at the same time. It has the following facilities-

1. Community library- this is a library that is dedicated to the learners as well as the community
2. E-learning Facility- the e-learning facility is a facility that offers access to information on the internet.
3. Homework space.
4. Retail – the retail component is on the ground floor, which has been versioned as a new street that penetrates the building in the heart.
5. Art Studios- Art studios are provided for those who wish to still acquire some skills beyond the age of being in a formal school.
6. Study group facility these are spaces where a group of learners can meet to do group work or group studying
7. Indoor sport
8. Social Space

PROGRAMME MIX

From the program analysis of the existing square we have seen how important programme is, as different programmes can impact the use of one building differently. The following is an illustration and exploration of the proposed program and how it will impact the use of the building. A key in this project is to constantly have the building used.

EXTRACTING THE PROGRAM FROM THE MAPPING.

Because of the desire to link two areas through an architectural intervention it was important to create a programme that would reinforce the desire for those in the informal settlement to feel the need to go into the Kliptown CDB and Kliptown to go into Kliptown informal settlement.

It becomes even more important to refer back to the mapping and establish what each one of the need for crossing are are.
Fig 191: Programme-Mix (Author 2013)
Fig 193: Programme-Mix (Author 2013)
6.4.1 BRIDGE PROGRAMME

The bridge is more than a piece of infrastructure to be used for getting over the railway tracks safely. It is conceptualised as a public street where outdoor activities could take center stage. While walking in and out of Kliptown one notices how important a street is;

1. Meeting at the bridge
2. Seating at the bridge
3. Playing at the bridge
4. Trading at the bridge

It is used as playing space, meeting space, trading space, seating while looking at the traffic flow. All these activities are taken into consideration, they are designed into the bridge and they become pausing moments along the bridge.

Fig 194: Bridge Programme strategy (Author 2013)
6.5. CONCEPT EXPLORATION

1. The initial concept was to come up with an intervention which would ‘marry’ or bring together the CDB and the informal settlement. The first attempt was to pull the giant south wing of the square over the railway tracks which would stitch the two settlements which are separated by the railway tracks. The challenge of the scale both physically and programmatically was still unresolved and could lead to another giant white elephant.

2. The development saw the first attempt falling off, and the focus shifting to capturing the strong two direction of movement, of Union Street running east-west and the railway line running south-north. Still in an attempt to bring together the two areas, the main objective in this case was to cross the east-west energy over the railway tracks through the informal settlement into the far west settlement called Dlamini. The second attempt was direct and immediate on the railway tracks.
3. The third attempt was isolation from one of the major urban upgrade of the area being the square. What this attempt does is to kick up on the east west energy over the railway tracks using ramps. The question as to what would make people make use of this new intervention was arising.

4. Because all the attempts had their strengths. There was a strong need to marry all the strong elements from each concept that were tried out. Which lead to both physical and social bridge which talks to the physical scale and the programmatically scale of the context.
The fifth attempt is very close to the fourth attempt. The ramp is turned into a new street which goes from the heart of the building and this is what unlocks the full potential on this fourth attempt.
6.5.1. REFLECTION ON CONCEPT DEVELOPMENT

Because of the desire to link two areas through an architectural intervention it was important to have an architectural intervention that will affect the two areas holistically and never undermine the finds gathered through the intense mapping conducted. Which all of the first attempts were missing.

- The first attempt had both scale and programmatically challenge, more especially on the side of the informal settlement
- The second and third attempts were isolation to the most of the square.
- The fourth attempt can be regarded as a success as it was addressing both sides of the railway tracks.
6.6. CONCEPT 5: BUILDING APPROACH

1. Building in context as it is.
2. The first approach to the existing building in attempt to introduce a new 'street', (in this case the ramp is referred to as the new street) was to remove some of the heavy structure members of the existing building to allow for the new street.

3. Taking the ramp through the building. From the mapping done we have learnt that people walk and cross where they feel safe and feel comfortable to walk. We have also observed that people walk where they can be seen and look at others, and this is the nature of people.

4. In-filling the existing structure. The floor plates are introduced to the existing structure. This goes back to the street concept as the in-filling presents a platform for new buildings that will complete the new street.
6.7. INSERTING PROGRAM

Fig 207: Inserted Program  (Author 2013)
6.8. CONCEPT DEVELOPMENT AND EXPLORATION

Fig 208: Concept section (Author 2013)

Fig 209: Concept section (Author 2013)

Fig 210: Concept section (Author 2013)
6.8.1. SOLIDS AND VOIDS

The section below talks to concept of in-fill of the existing building. It shows the left over spaces as the design gives the feel of solids and voids.

Fig 213: Section Showing solid and void (Author 2013)
Fig 214: Section Showing solid and void (Author 2013)
6.8.2 EXPLORING CONNECTION BACK TO GROUND

SKETCH SHOWING THE NEW PUBLIC STAGE AND HOW IT CAN RELATE BACK TO THE PUBLIC

Fig 215: Cross-Section Sketch (Author 2013)

Fig 216: Cross-Section Sketch (Author 2013)
The facades could become the new cinema projection walls and the square as a public, cultural and performance venue.

Punching facades to breaking the scale of the building.
Fig 217: Cross-Section (Author 2013)
Fig 218: Cross-Section (Author 2013)
6.8 CONCEPTUAL MODELS

SPORTS HALL
LEARNING SPACE
ART STUDIO
INFORMAL TRADING SPACE
HOMEWORK SPACE
LIBRARY
CHANGE ROOMS
Chapter seven explores technical aspects of the proposal. Various technical aspects of the existing structure have been analysed to understand the tectonics of the existing building, such that the highlighted tectonics can be reinterpreted within the scope of the design. The tectonics are drawn from the various research exercises and aim to work with the existing structure.

Fig 219: Kliptown, Walter Sisutu Square South Wing (Author 2013)

CHAPTER KEY ELEMENTS:
- LESS INTERRUPTING CONSTRUCTION SYSTEMS AND TECHNOLOGY
- EXTRACTING SKIN TECHNOLOGY FROM THE CONTEXT
- SYSTEMS TO SUPPORT INTERVENTIONS

7.1 TECHNICAL RESOLUTION
7.2 POTENTIAL ENERGY SOURCES AND WATER CONSERVATION STRATEGIES
7.3 PRODUCTIVE GREEN SPACE STRATEGIES
7.4 STRUCTURAL CONFIGURATION
7.5 RESOLUTION
7.1. STRUCTURAL ANALYSIS OF THE EXISTING BUILDING.

The existing building has a robust super structure that defines the building and remains evident from far as one approaches the building. The system employed in this building's primary super structure is made up of a 3.6 meter by 3.6 meter concrete column (diameter 350mm). All columns are at a slight angle. This was to mimic the forest of trees that to be on this particular site (Nobel 2011). Existing columns hold up a ring beam that the spreads out the roof load.

This structural grid provides an opportunity for the structural system to be articulated in a different way such that the spans can vary from 3.6 meter to 7.2 meter spans, North- South direction keeping a 7.2 span south west. This will allow for more room space.
1. FOOTING AND WATERPROOFING
2. DIAMETER 350mm CONCRETE COLUMN
3. 600 X 585deep CONCRETE BEAM
7.1.1 PRIMARY STRUCTURE

The New Structural Grid

The new structural grid fits in within the existing structural grid because the existing columns were mainly to mimic the forest of trees that use to be in site as the natural landscape. As a result not all the columns are needed for the structural purpose of carrying the load into the ground. The new structural grid has a 3.6m minimum span and a 7.6m maximum span. The new structural grid is mainly to allow for more room space for the proposed programme. It does not undermine the structural stability of the building.
7.2 PROPOSED STRUCTURE

The secondary structure looks at the structural concept of a tree house, where the tree trunk is regarded as the primary structure. In this case the existing structure which is made up of concrete columns which are at the slight angle are regarded as the primary structure.

The tree house concept employs beams as the secondary structure. These beams are then fixed directly to the primary structure. These beams are prefabricated structural members. The very same principal is employed in this scope of work. This will help with speeding up the construction and it will work well with existing primary structure. Because the building is currently being used, this construction method will not put the use of the building on hold is unlike the constructing with concrete that will need form work and a 28 day curing period.
The type of beam employed is CASTELLATED STEEL BEAMS

Advantages:

- The primary advantage of castellated beams is the improved strength due to the increased depth of the section without any additional weight
- The holes that have been cut out can be used to run services.
- Ideal for prefabricating

Rule of thumb

Recommended span over depth (L/h) ratios for beams and trusses: Floor beam 20 to 25
\[
d/20-25=\text{Span}
\]

\[
d/20-25= 7200\text{mm (the longest span of the structural grid)}
\]

In this case the unknown factor is ‘d’.

\[
d= 7200/20= 360\text{mm.}
\]

Types of beam: IPE 200. (157 X 176 X 82). This will be cut and rejoined to form a castellated beam of 358mm depth.
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STRUCTURAL SYSTEM ADVANTAGES

- Reduction in construction time
- Cost effective
- Safety in construction
- Increase in the quality of construction.
- Reduction of construction waste

Fig 227: Structural perspective (Author 2013)
FLOOR SLABS

The idea of constructing the proposed intervention in the most efficient way continues to dominate both construction technology and the selection of materials. Using prefabricated material will eliminate the number of days which the whole site day to day activity will have to stop.

ECHO SLAB SYSTEM

An Echo floor is a system of reinforced hollow-core concrete floor slabs used for flooring. This system has been employed for flooring in this scope of work. This is mainly because it is one of the most efficient flooring systems and that it works well with structural grid.
Fig 230: Structural System (Author 2013)
7.3 ROOF

1. Existing roof
   - Working with the existing roof showcase the idea of reusing and it rehabilitates what was rejected by people of the area.
   - It requires less resources

The existing roof is kept because it fits well with the context and it presents the opportunity to teach the people of Kliptown that one does not always have to demolish buildings as a sign of dissatisfaction. Additionally, it has a good opportunity to become a rainwater catchment facility, mainly because of its pitch and the way it has been articulated as well. But it has a good opportunity to become a rainwater catchment facility, mainly because of its pitch and the way it has been articulated as well. For the proposed community gardens to survive, water remains vital.
WATER: RAIN WATER HARVESTING

Formula:

\[ \text{Rainfall harvest} = (RA \times AF \times 0.9) \]

RA - Roof Area
AF - Amount of Rainfall (Johannesburg Average monthly rainfall 59mm)
0.9 - Amount of total rainwater expected for harvesting.

Fig 232: vegetables (Author 2013)
7.4 SKIN IN CONTEXT

Building skins have never been as fascinating and challenging as they are today. They determine the visual identity and character of the architecture. Not only do they do that, but they also influence how people respond to particular buildings.

Performance and creating comfortable spaces in response to the climatic conditions are arguably some of the most important roles of a building. Not only is performance considered in the design and selection of building skin in this project, but the context is further analysed for different skin technologies as well.

The most commonly used material within the context is applied to the building skin in a more innovative technology which will respond to the climatic conditions of the area. This kind of an approach presents an opportunity to educate local residents as well.

Below are site pictures showing skin technology in context, followed by a series of concept sketches for the skin as exploration.

Fig 233: Existing Brick Work (Author 2013)

Fig 234: Existing corrugated sheeting as cladding (Author 2013)
CONCEPT SKETCH
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Fig 235: Site Plan (Author 2013)
Fig 243: Longitudinal Section 1-1 (Author 2013)

Fig 244: Cross Section 10-10 (Author 2013)

Fig 245: Cross Section 6-6 (Author 2013)
Fig 248: Section Showing existing, demolished and new (Author 2013)
NOTES

1. Derbigum SP4 waterproofing system on 50mm cement screed to fall
2. Concrete copping
3. Pre-cast concrete beam to eng. detail.
4. Galvanized corrugate sheeting fixed on 75 X 50mm timber
5. 100 X 50mm galvanized steel channel on 75 X 50 mm timber
6. 100 X 50 galvanised steel channel
7. 75 X 50 timber fixed to brick wall with self tapping screws
8. 150 X 75mm galvanized steel section bolted on steel beam section to eng. detail

Fig 250: Typical Skin section (Author 2013)
Derbigum SP4 waterproofing system on 50mm cement screed to fall

50mm cement screed to fall on 150
Pre-fabricated Hollow slab laid to manufactures spec.
Concrete copping

Pre-cast concrete beam to eng. detail

Galvanized corrugated sheeting fixed on 75 X 50 timber

100 X 50 galvanized mild steel channel bolted on brick wall

254 X 167 galvanized mild steel H-section beam bolted on existing concrete column to eng. detail

Existing PVC downpipe

Existing concrete column

Drain with domed grating

254 X 167 galvanized mild steel H-section beam bolted on existing concrete column to eng. detail
external applied insulation system to manufacturers spec.

Galvanized corrugate sheeting fixed on 75 X 50 timber

150 X 75mm galvanized steel section bolted on steel beam section to eng. detail

254 X 167 galvanized mild steel H-section beam bolted on existing concrete column to eng. detail

floor tiles on 25mm thick cement screed 150 Pre-fabricated Hollow slab laid to manufacturers spec.
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Fig 253: Detail 1 not to scale (Author 2013)

- Derbigum SP4 waterproofing system on 50mm cement screed to fall
- 50mm cement screed to fall on 150
- Pre-fabricated Hollow slab laid to manufactures spec.
- Concrete copping
- Pre-cast concrete beam to eng. detail
- Galvanised corrugate sheeting fixed on 75 X 50 timber
- 100 X 50 galvanised mild steel channel bolted on brick wall
- 254 X 167 galvanised mild steel H-section beam bolted on existing concrete column to eng. detail
- Existing PVC downpipe
- Existing concrete column
- Drain with domed grating
- 254 X 167 galvanised mild steel H-section beam bolted on existing concrete column to eng. detail
10mm thick hardwood fixed on 50 X 75 Rectangular hollow section

50 X 75 Rectangular hollow section welded on 50 X 75 Rectangular hollow section, bolted on the floor

glass

100 X 65 galvanised mild steel angle bolt on steel base plate

50 X 50 galvanised mild steel channel welded on 100 X 65 galvanised mild steel angle

Existing concrete column

Aluminium window frame to comply with SANS 1651

Drain with domed grating

Floor tiles on 50mm thick cement screed

254 X 167 galvanised mild steel H-section beam bolted on existing concrete column to eng. detail

100 PVC downpipe

UNIVERSITY OF CAPE TOWN
Drain with domed grating

Floor tiles on 50mm thick cement screed

150 Pre-fabricated Hollow slab laid to manufacture spec.

254 X 167 galvanised mild steel H-section beam bolted on existing concrete column to eng. detail

100 PVC downpipe

Existing concrete column

Concrete copping

50 X 50 galvanised mild steel channel welded on 100 X 65 galvanised mild steel angle

25 X 75 treated timber section fixed on 50 X 50 galvanised mild steel channel

100 X 65 galvanised mild steel angle bolt on steel base plate
8.1 CONCLUSION

KEY ELEMENTS
- FINDINGS
- LESSONS
8.1. CONCLUSION

As much as this dissertation began as platform on enquiry in the area of Kliptown, aiming at bridging the gap between Kliptown informal settlement and Kliptown CBD, it ended up with both urban and architectural intervention. One of the questioned asked was how can architects and urban designers learn from the specific area and draw ways of encouraging growth in the area from itself.

The initial foundation of the dissertation was to critically engage with the all the elements of Kliptown in attempt to come up with the type of Architectural intervention that would facilitate growth in a developing context, in this case Kliptown.

One of the discovered challenges was the architectural responsibility of articulate what the user’s needs are in a area such as Kliptown and merge it with what the urban nature of the area needs. Without understanding the context it is very difficult to articulate an architectural intervention that will satisfy the needs of the users and the urban nature of the area, while facilitate growth through an architectural intervention.

The process which this dissertation followed of engaging with the context in different levels led to a social bridge. The social bridge which responded to physical, social and educational needs of Kliptown, and still allowing the complicity of the Kliptown, which can be challenging to manage its operation, to exist in it. Although the process of engagement and was crucial in order to determine an appropriate design solution it ended up taking longer to could the process of engagement.

The every same process of engagement guided the design of social bridge’s programme, the urban design interventions, the sustainability of the materials, the design of the construction process, the structure, detailing and consideration of future maintenance requirements, such that the bridge does not become another ‘white elephant’ in Kliptown.
REFERENCE LIST

BOOKS


PUBLISHED ARTICLES AND PAPERS


WEBSITES


