

**THE CONSTRUCTS OF AN URBAN  
TOOLHOUSE: (COMMUNITY LEARNING  
CENTRE IN MAMELODI WEST) BY FRAS  
BISSETT SUBMITTED IN FULFILMENT  
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FOR THE DEGREE MASTER OF ARCHI-  
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ENVIRONMENT AND INFORMATION  
TECHNOLOGY UNIVERSITY OF PRETO-  
RIA, NOVEMBER 2019.**

**YEAR CO-ORDINATOR: PROF ARTHUR BARKER**  
**STUDY LEADER: COBUS BOTHMA**



**ABSTRACT** This dissertation responds to the current economic issues in Mamelodi West within the South African economic climate and how it is enforced by the respective spatial legacies. Currently the informal trade sector contributes to approximately half of the GDP of the South African economy (Fioramonti, 2017). Through the investment of social infrastructure on an urban scale, these entrepreneurial activities that have recently been recognised by the South African government could be nurtured into reliable enterprises.

The dissertation will investigate how architecture could function as catalyst for economic growth in public spaces. Therefore the relationships of public space to include production spaces that is focussed on skills development in a sustainable manner.

In general the extension of existing networks play a vital role.

How can an architectural intervention generate sufficient appropriation of public space that would encourage economic growth? On an urban scale the architecture could provide permanence to Mamelodi West and counter the effects of dormitory migration. But also create the opportunity to harness one of humanities greatest resource of all time that is creativity. Creativity can be seen in the everyday appropriation by traders who currently occupy the public, green and open spaces in Mamelodi.

**aan my GOD en VADER wat die jaar vir my moontlik gemaak het.  
VIR TWEE WONDERLIKE OUERS, DEREK & LIZETTE WAT NOOIT  
OPGEHOU BID HET NIE, KYLA DIE BESTE GIRL OOIT.  
BOEMIE & MENE DANKIE VIR JULLE ONDERSTEUNING.  
LEWENSLANGE VRIENDE: JAPIE, die RICHTERS, die  
UYSIES & "THE MASTERLY LADIES & DL GROUP"**



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**DECLARATION** In accordance with Regulation 4(c) of the General Regulations (G.57) for dissertations and theses, I declare that this thesis, which I hereby submit for the degree Master of Architecture (Professional) at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution. I further state that no part of my thesis has already been, or is currently being, submitted for any such degree, diploma or other qualification.

**I FURTHER DECLARE THAT THIS THESIS IS SUBSTANTIALLY MY OWN WORK. WHERE REFERENCE IS MADE TO WORKS OF OTHERS, THE EXTENT TO WHICH THAT WORK HAS BEEN USED IS INDICATED AND FULLY ACKNOWLEDGED IN THE TEXT AND LIST OF REFERENCES.**

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**FRAS BISSETT**

## **PROJECT SUMMARY:**

**TITLE:** THE CONSTRUCT OF AN URBAN TOOLHOUSE.

**ADDRESS:** 580 SHABANGU AVE

**GPS COORDINATES:** -25.713504, 28.335898

**RESEARCH FILED:** HUMAN SETTLEMENTS AND URBANISM

**KEYWORDS:** URBAN, COMMUNITY CENTRE, ENABLING, ADAPTABILITY, LIGHT STEEL FRAME, LSF, MAMELODI WEST.

**PROGRAMME** Community Learning Centre in accordance with urban renewal interventions around the Denlyn Shopping Mall.

**SITE** The northern periphery of Denlyn Shopping Mall, Corner of Maphalla drive and Shabangu Drive in Mamelodi West.

**THEORETICAL PREMISES** The relationship between public space and public appropriable spaces to benefit the public realm. The following theoretical concepts were discussed: appropriation of space, open building typologies, urban agriculture as part public space and skills development and community enablement.

**MAIN RESEARCH QUESTION** How can architecture develop appropriable public space through the implementation of minimal infrastructure? How can an Architectural intervention improve the current urban fabric in Mamelodi West?

**ARCHITECTURAL ISSUE** The current retail building typologies of Mamelodi West does not cater for the spontaneous appropriation of peripheral spaces. Resulting in the isolation of building and public spaces.

**URBAN ISSUE** The spatial legacy of townships in South Africa has created a separate and dependant suburban communities, which does not cater for integrated public spaces, but rather spate entities dislocated from each other. Social and physical infrastructure are being implemented to create an island effect leaving unwanted in-between spaces.

**GENERAL ISSUE** The global economic perspective of increasing poverty and unemployment rates in developing communities.



**1.1 INTRODUCTION** Over the last 25 years the South African demographic has experienced dramatic changes. Along with these changes came various different opinions on the use and social spaces and the implementation thereof. Although these changes allowed for a variety of opportunities various situations of conflict arose between the different occupants of free space. It is clear that that the pre-apartheid spacial model does not accommodate for varied opinions on the use public spaces (Landman, 2016).

**1.2 THE HERITAGE OF TRADING SPACES** Throughout history public space has been an extremely important part of society. Whether it's a plaza, central tree in in a village or the local market. As long as the necessary social interaction needed is provided (Kocaili, 2010). From here forth Victor Gruen designed the first shopping mall to not just become a fundamental part of the urban framework but also act as a multifunctional town centre (Kocaili, 2010:22).

From the ancient times as Prehistoric people started to communicate, the opportunities for trade arise. For the earliest trading interactions took place in the general meeting and gathering spaces as early as 1500 000 years ago (Coleman 2007:19). Although the earliest figurative evidence of trading is evident in Egyptian drawings 1500 B.C. (Coleman 2007:19). For the Egyptians the exchange of goods only happened in small scales as the concept of money was only introduced around the 5th century B.C. (Kocaili, 2010:22).

The Greek Agora is well known to be a successful market place, although it was intended as a gathering space for daily communications. The gatherings was not all social as the first events were to be military

related assembly. Daily instructions and news were also communicated from the councils or king. It was only after the 700s B.C. that traders and crafter started to erect tented trading spaces for the public. According to Coleman, the placement of the Stoa in the Agora was crucial to create a relationship between social interaction and trade in public space (Kocaili, 2010:22). In essence this was the birth of modern urban space (Kocaili, 2010:22).

Over time the importance of shopping centres have vested itself within the mindset of South African citizens. At first glance commercialized retail opportunities would seem like it benefits the community in providing easy access to produce and services. Although the actual effect is that the residents of these developing communities are lured into a life of

debt that results in a state of ill-being. For the most part as described by Montgomery (2013) the implementations of both franchised retail store and other chain stores removes and shortens the lifecycle of money have in that specific community. But also results in a loss of employment opportunities. There are other factors concerning sustainability in general about how these large built cluster requires massive amounts of energy to operate, starting with embodied energy all the way through to the maintenance and upkeep. Therefore I as a designer do agree with the concept of public space were the implantation of the typical shopping mall does not benefit communities in any way.

**1.3 RESEARCH METHODOLOGY** The proposal in general have to consider how the public interact with various implementations of infrastructure as well as the spacial dimensions or intangible spatial associ-

ations with infrastructure will produce.

During 2018 the Honours year students of the University Of Pretoria Department Of Architecture, conducted various field research expeditions in Mamelodi that identified various urban spaces of importance. Through various literature reviews on good urban space, along with the related urban studies and investigations into the informal trade that appears almost out nothing, a combination between quantitative and qualitative research methodology is used. These urban spaces can then be compared to the research from a typical desktop study along with site investigation and analyses from the site in question. There will also be need for a more thorough urban investigation, by analysing spaces visually with the use of photographs and maps of the specific regions.

From there onwards the quantitative study will be used to support theory and conclusion outcomes. This will identify the various key networks of importance along with the shortcomings. The next step will be to apply the conclusions theoretically that in effect will inform the design directly and indirectly on various scales.

**1.4 PROPOSED PROCESS AND APPROACH TO DESIGN** With the general global, local and architectural issues identified through a combination of quantitative and qualitative research methodologies, the next step will be to identifying a specific site that would benefit from urbanisation. However great consideration will be implemented to address factors like the programmes and spatial aspects. The relationships established within certain communities of Mamelodi through the research conducted will provide the necessary platforms for interaction.

These platforms will allow the community to participate in the design process in future generations (Bennett, 2011).

**1.5 DELIMITATIONS AND ASSUMPTIONS** The Site visits, observations, mapping along with casual conversations were used as tool to in obtaining information about the various networks and other relationships between various entities. As part of the programme the project proposal aims to harness the creativity of entrepreneurship, and apply it to benefit the existing community.

Through investigations of the current context and reacting to it. It is assumed that the information provided by the various entities on site are accurate. The dissertations aims to provide design solutions for existing networks in and around the site in order to enable the community

in various ways. Even though the designs are focussed on site specific interventions, the conceptual approach could be used as hypothesis for developing communities in South Africa.

## 2. CONTEXT

### 2.1 HISTORICAL BACKGROUND OF MAMELODI WEST:

Mamelodi as many other township behaves like a parasitic organism. As the community grows and develops, there people start to define their traits and needs. Thus forming their own way of life. Creating routines and habits that individualises

Mamelodi from other townships or suburbs in South Africa. As Mamelodi is mainly a residential township that is situated on the eastern periphery of Pretoria and buffered from the city by an Industrial zone.

Chiloane (1991) states that the intention for Mamelodi was to a labour reserve for Pretoria. In recent years there have been various commercial developments to aid in the decentralisation of the city. However these public and private development opportunities only resulted in a more segregated township, rather to alleviate the effects of poor zoning (Breed, 2008: 218).

However these public and private development opportunities only resulted in a more segregated township, rather to alleviate the effects of poor zoning (Breed, 2008: 218).

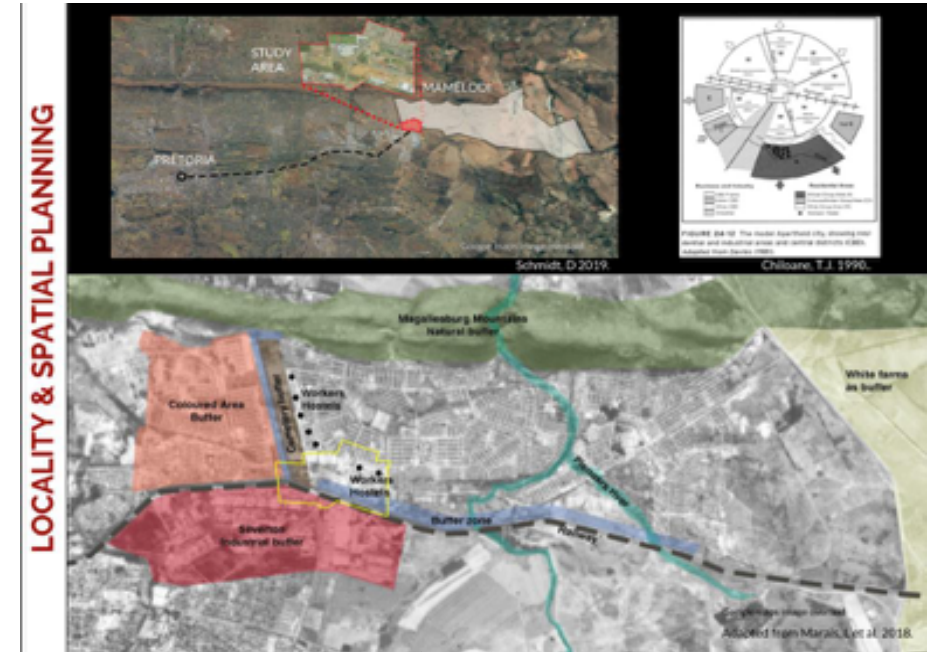
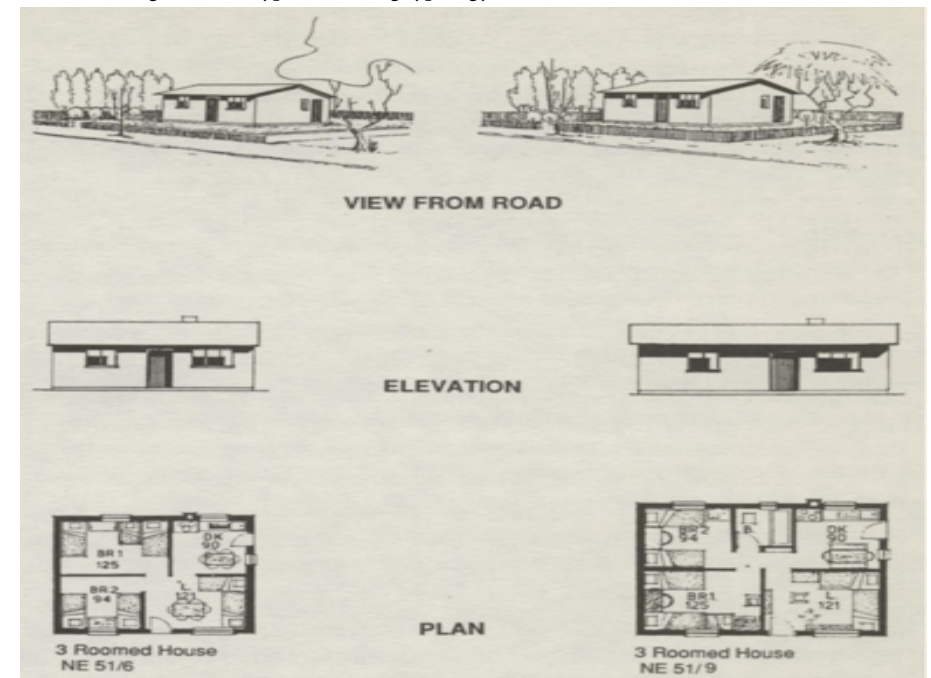


Figure 1 Locality of Mamelodi (Bissett et al, 2019)

Figure 4 The typical housing typology in Mamelodi West (Artefacts n.d)





Mamelodi was established by the Apartheid regime in 1953, originally built on the farm Vlakfontein, to keep the black citizens separate from the whites. Mamelodi is laid out as a suburb, following a grid with the initial use of the NE 59/6 house typology variants designed and incorporated by Douglas Calderwood & Barry Biermann (Artefacts, n.d.).

One of the crucial tactics the Apartheid regime used was to divide and conquer (Michiganintheworld.history.lsa.umich.edu, 2019). This can be clearly seen in the historical layout where the townships have been divided into blocks that separate the respective cultures. See fig. 3 on the right.

The housing typology however not intended as such, functioned very

well in assisting the Apartheid regime in policing townships. As shown in the fig. 4 on page 18.

In general Mamelodi has developed as a normal suburb, with schools, clinics shopping malls etc. the differences are that Mamelodi has mostly been neglected when it comes to sufficient infrastructure and resources specific to their urban needs.

The spatial layout of Mamelodi east relates extremely well to the typically modernist suburban paradigms where there is a constant reminder of power political determination present. The representation of space and specific outcome creates isolated architecture that hinders the development of the urban sphere within the above mentioned context.

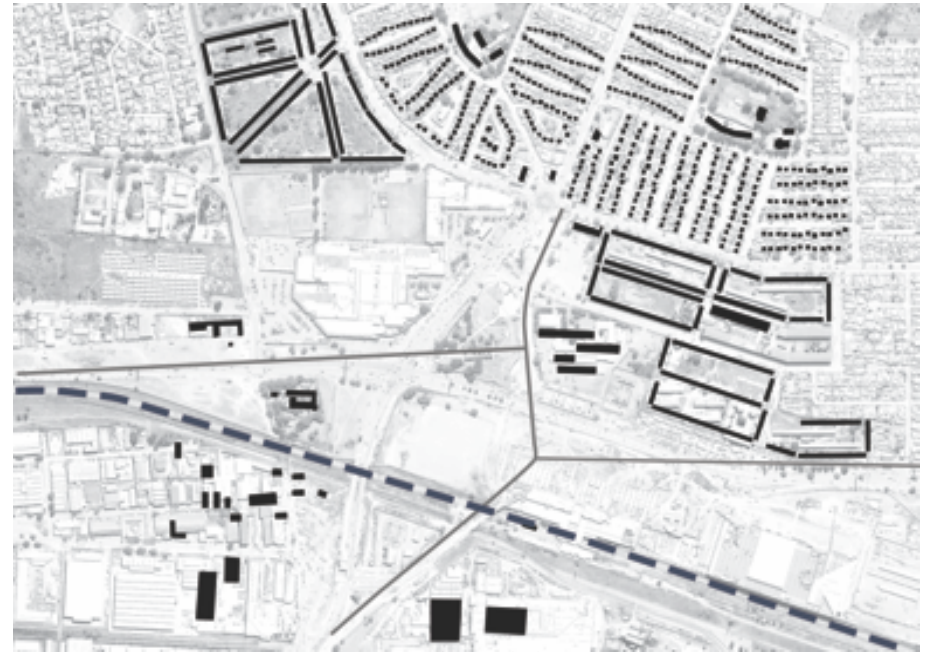


Figure 2 Development of Mamelodi West (Bissett et al)

Figure 3 Historical layout of Mamelodi (bissett et al, 2019)



And Mamelodi suffers from the concrete canyon effect created by various boundary conditions (Breed, 2008: 218).

The representation of architectural contributions shows how the emotional and physical needs of the user has been discarded, with small repetitive housing units that does little to generate originality as well as individuality. Through this the inhabitants are labelled as a single generic entity to serve a modernist society (Steyn 2015: 18).

Figure 5 A bird's eye view of Denlyn Shopping Centre showing the alienated context (adapted from Bissett et al, 2019)



## 2.2 INFRASTRUCTURE

When anybody uses the term infrastructure, the first images that comes to mind is that of bridges, highways, storm water channels and overhead electrical cables with the intensely webbed steel pylons. The image below shows how the different sites have been cut-off from each other with the implementation of physical infrastructure.

With the vast in-between spaces that occurs as a result of the infrastructure configuration, there are various positions in the precinct that provides the opportunity for urban decay.

Throughout Mamelodi West there are public locations where instances of dumping, waste burning that is accompanied by informal nodes of transport and trade.

The argument is not about the discretisation of infrastructure or the necessity it provides, but rather about the implementation of the physical infrastructure.

Figure 6 A bird's eye view of how the physical infrastructure assist in creating an island effect (adapted from Bissett et al, 2019)





### 3. MAMELODI URBAN ANALYSIS

#### 3.1 HYPOTHESIS

By breaching the current island effect in Mamelodi West with the appropriated public space a better cohesion between people and space could be achieved. The benefits of good urban design will improve the economic, social and cultural integration of Mamelodi West.

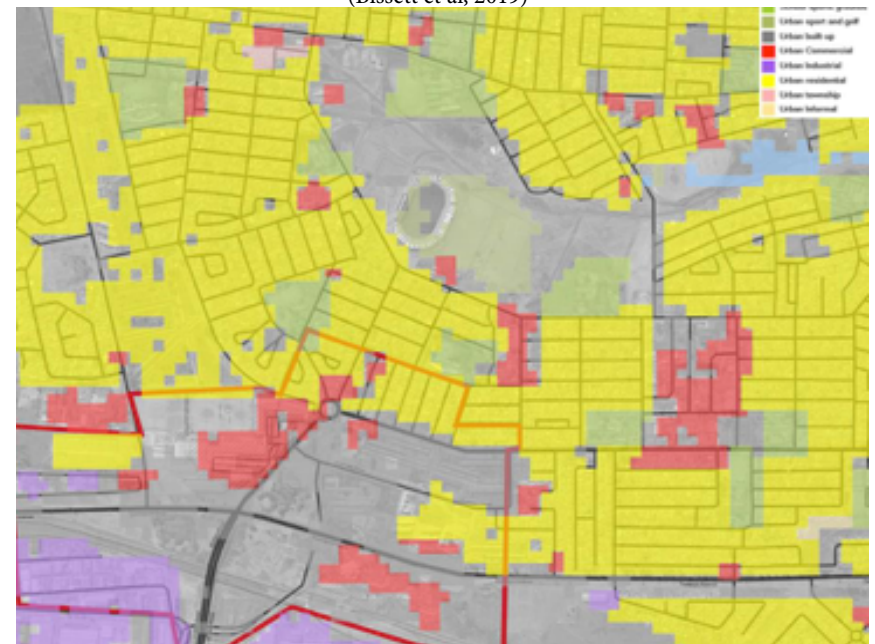
#### 3.2 OBSERVATIONS

In general certain observation were very clear. The spatial segregation formed by the Apartheid government are still in place 25 years after. Mamelodi west consists of a very large residential area as shown in Fig. 8.



Figure 7 The Current island effect in Mamelodi West, adapted from (Bissett et al, 2019)

Figure 8 Urban mapping showing the current zoning as a large residential presence in yellow (Bissett et al, 2019)



Informal trade can and will take place where there are people regardless of space constraints. Informal trade is an important part of the Mamelodi street life. Little regard is paid to zoning regulations and homeowners readily have businesses running from their homes. From the mapping done on informal trade one can clearly see that the highest majority of informal trading happens on the main streets or sidewalks. See fig. 9.

From fig. 9 one can also determine that the informal trade does not follow public green spaces. However the lingering effect has been mapped as well and overlaid with that of informal trade. See fig below.

From fig. 10 we can determine that there are a good correlation between the informal trading space as well as the lingering. However there are plenty of informal traders that is not accompanied by lingering. In essence the onsite observations informed that the traders are setting up on the major pedestrian's routes or vehicular transport access points.



Figure 9 Urban mapping indication the most concentrated informal trade in yellow (Bissett et al, 2019)

Figure 10 Informal trade mapping overlaid with linger places (Bissett et al, 2019)



### 3.3 URBAN ANALYSIS

Ill-defined urban spaces have led to the people of Mamelodi appropriating different spaces in the precinct. This is typical of the informal economy, where people are looking for business opportunities. The activities found in the area are namely tyre shops, informal traders as well as taxi ranks.



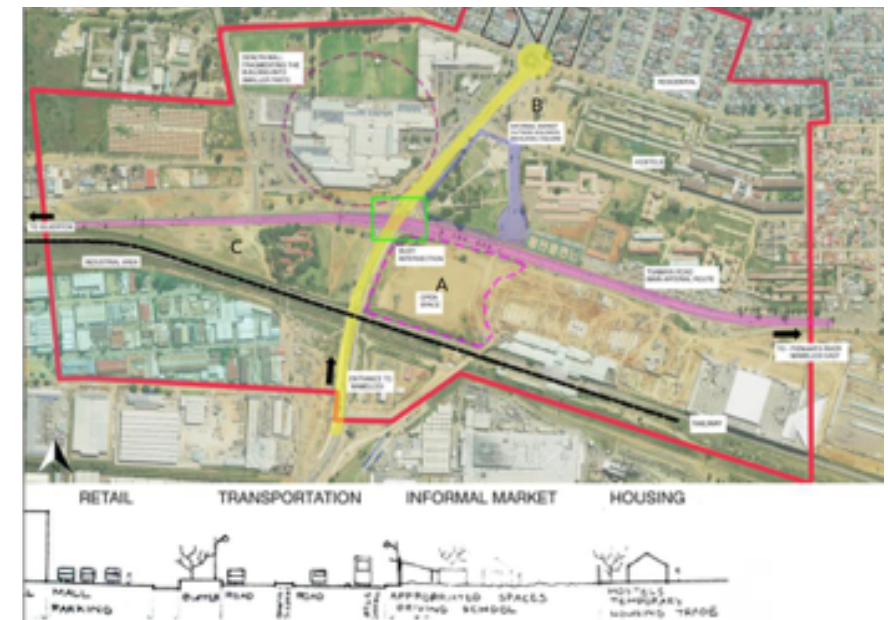
Figure 11 Urban mapping showing that the largest informal trade occurs at the busy transport intersections (Bissett et al, 2019).

### 3.4 DISLOCATED MAMELODI

Even 15 years after the fall of apartheid most South African cities are still contracted by typical urban island effect as shown in fig 7 & 12. Through zoning and other bylaws, little has been done in recent years to counteract the Tshwane Fundamentals of Township and City development. In general the perspective is that centralised transport, social and retail activities are attractive for the soul purpose of economic gains (Fioramonti, 2012). However the social life of the city is hindered as these spaces create dead spots when not in use (Shaw and Hudson, 2009).

The industrial area (and others around Pretoria and perhaps Johannesburg) still employ a large percentage of people. The construction of massive malls in Mamelodi and around Pretoria provides employment for low-skilled labour. The sectors we have shown have very little

Figure 12 Current urban isolation of Mamelodi West (Bissett et al, 2019).





presence within Mamelodi itself and require daily migrations for employment, this reinforces the original spatial planning. Overall Mamelodi is still isolated from Pretoria, a dormitory town, this separation continues to be more defined and the people of Mamelodi provide a large workforce and are removed from the actual places of employment.

### 3.5 MAMELODI GATEWAY URBAN VISION:

In order to promote economic activities and establish Mamelodi as an economic hub, or an independent city the facilitation for various industrial, business and retail opportunities are needed. This will also allow for the development of various new and existing skill sets.

### 3.6 URBAN VISION

The urban vision aims to generate a healthy street life by focussing on three aspects. These aspect are:

**Broken Forms, Landmark Effect and Pedestrian Friendly Experience.**

An investment into social infrastructure would benefit the urban sphere of Mamelodi West greatly. And according to Gnade (2017) it is one of the preferred methods of combatting poverty in developing communities. Therefore the implementation will social infrastructure like, furniture,

dustbins and other landscape architectural needs are important. Once the urban sphere has been augmented, existing businesses like Spaza shops, panel beaters, salons along with other social networks will help the township economy thrive.

### 3.7 PEDESTRIAN FRIENDLY ENVIRONMENTS:

*“If you design for cars you get cars, and if you design for people you get people...” - Fred Kent (Montgomery 2013).*

A key aspect to public space in Mamelodi West is the street. As the site precinct is interrupted by to main roads that act as the main transport arteries connecting neighbouring suburbs and highways. There are an

even higher importance to concentrate on the pedestrian experience as described by Montgomery (2013). Therefore certain urban insertions are applied to enhance the street life.

### 3.8 BROKEN FORMS

The second framework is focused on broken forms. Breaking up large masses, include ‘free green spaces’ and promoting low-cost or social housing. The aim is to increase the density of the social housing vertically to allow for a mixed-use typology that supports living, working social and cultural interactions.

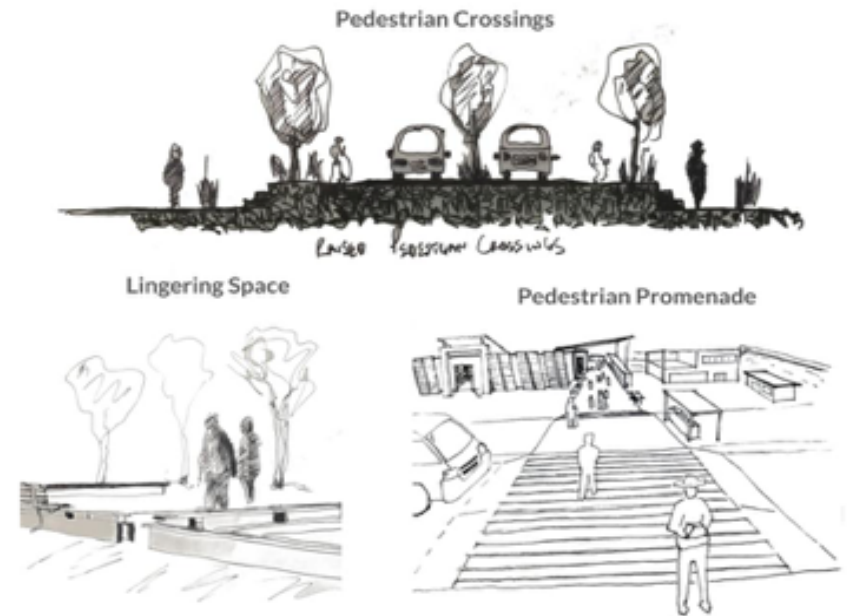


Figure 13 Illustrated here is a risen pedestrian crossing and proposed lingering spaces (Bissett et al., 2019).

Figure 14 The broken forms strategy that form part of the Mamelodi Gateway Urban Vision (Bissett et al, 2019)



### 3.9 CONCLUSION

From the urban investigations, an intensification effect is needed. With the focus on increasing the amount white-collar jobs stationed in Mamelodi West. Thus resulting in a more balanced demographic between blue-collar and white-collar jobs that will allow combat issues like dormitory migration, segregation and othering.

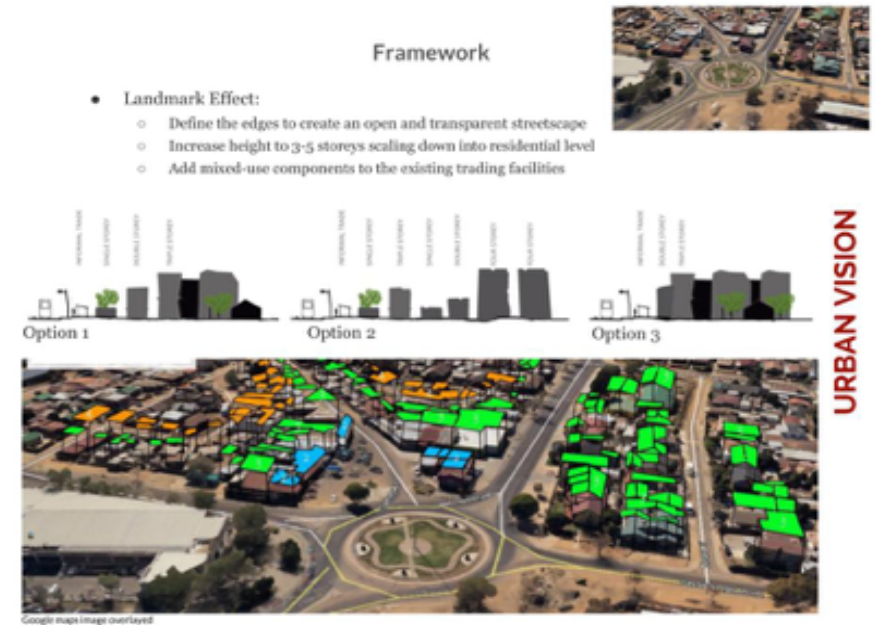


Figure 15 the Landmark effect the forms part of the Mamelodi Gateway Urban Vision (Bissett et al, 2019)

Figure 16 a final summary of the intentions and outcomes aimed at for the Mamelodi Gateway Urban Vision (Bissett et al, 2019)





### 3.10 THE PROPOSED SITE

The Site in Macro Scale:



Figure 17 The Denlyn Shopping Centre indicated in yellow on Macro Scale (Adapted from Google maps. Author, 2019)

The Site in Micro Scale:

The site is located on the northern periphery of phase 5 of the Denlyn shopping mall on the corner of Maphalla and Shabangu Drive.

### 3.11 SITE DESCRIPTION

Shabangu Drive creates a very distinctive contrast between the large grain and the fine grain. The large grain consists of the Denlyn Shopping Mall. Where the fine grain is made up from residential properties. Most of the housing on Shabangu Drive was altered to serve some sort of secondary function, either trading, subletting or storage from the existing back yards.

Figure 18 The site on a Micro Scale ( Department of Geography, Geoinformatics and Meteorology, 2019)







### 3.15 BACKGROUND

Through the recent years South Africa has had a significant density rise in urban centres (Foord, 2010). Along with the crowding metropolitans the need for supporting infrastructure has been widely increased that lead to various debates about the potential benefits of environmental practises in the country (Foord, 2010). Some of these benefits could be initiated by the manifestation of an urban sphere through the implementation of a “green economy” (Kothari, Demaria and Acosta, 2014), by making use of renewable energy resources that could become a vital commodity in everyday trade. Currently the townships in South Africa house a large informal economy to sustain various households economically, although the government relates to this as an illegal economy (Horn, Sofisa & Levin, 1993).

Through the incorporation of market streets as described by Steyn (2008) the government could obtain environmental and social benefits through the principles of earning more and spending less. This allows people to settle closer to opportunities of employment as well as assisting in job creation by encouraging local manufacturing and trade by generating a mixed-use economy. In general the mixed-use urban concepts are formulated from a combination of high density residential as well as mixed land use that is clearly evident in Mamelodi (Foord, 2010). The main research question will be focussed on how architecture can develop public space through the implementation of renewable energy infrastructure. With a hypothesis to generate a sustainable compact city which in effect will result in urban sustainability (Foord, 2010). By considering urban sustainability from a global economic perspective to generally improve the overall wellbeing of residents and users. This will also allow for the opportunity to create a positive interface between the environment and the economy (Borel-Saladin and Turok, 2013) in

developing communities.

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### 3.16 TRANSGRESSED AND SUBVERTED SPACES

The commercial spaces in Mamelodi west contributed largely to the segregation of spaces, which is an architectural issue identified in the urban vision that allows for ‘a typical no-man’s land’. These interstitial spaces allows for an informal appropriation in a creative manner as a result of the short comings of the formalised and rigid developments. At first glance the informal Spaza shops and cafes appears to be nothing more than derelict. It is only within the timeframe of operation that these places are activated and contributes to the economical and urban spheres (Bissett et al., 2019).

### 3.17 INFORMALITY

Throughout the development of Mamelodi, zoned and formalised spatial interactions was organised by local authorities, to such an extent that led to the alienation of public infrastructure.

By means of visual investigation of the historical development of Mamelodi this became evident as shown in the fig. 2, 3 and 4. It became evident from site investigations that the dead spaces that was created was due to a lack of connectivity between different developments. The segregation has caused various issues relating to the disconnect that has aided in an unhealthy urban environment. (Montgomery, 2013).

The term **“INFORMAL ECONOMY”** dates back to the 1970’s that refers to the street vendors in Bogota, garment makers in India, Manila and Mexico City (Carr 2001). Within the South African context the informal application to has been due to constantly increasing numbers of unemployment (Rogerson 1995; Simon 1998). And therefore allows for the statement that the informal economy can be seen as survivalists. Changing and adapting to site, demographic and climate (Moodley, et al, 2018). For most traders the actual structure relates to their condition in being with a nomadic tendency that’s been imitated (Simone 2012).

For many there might be a difference between informal trade and formal trade. However it is all trade, and rather being separated they exist alongside each other. In most cases the restrictions of the formal allows for the informal to attach in a parasitic nature (Anderson and Jenkins 2011).

Architecturally the formal will portray the solid and heavy infrastructure, which remains fixed and constant. As for the informal happens to serve

an instant impulse at first. Using the most cost-effective methods and materials until the function for the required structure has become redundant or lost its structural integrity. In the Mamelodi West context so many informal traders opted to appropriate existing infrastructure to suit their needs.

At first glance the informal will appear as unorganized or a mere random cluster of traders. This is in most instances not the fact as the informal traders could highlight certain issues in the urban framework. In these cases the informal indications will show what certain spaces wants to be. To a large extent the informality could determine a specific context related vernacular architecture. Showing how the users appropriate space spontaneously.

The art of acquiring raw materials and manufacturing a retailable end product covers all the aspects in the trade lifecycle. This also allows for the entrepreneur to obtain a financial benefit in every aspect of the manufacturing process.

**IN GENERAL MOST OF THE INFORMAL TRADE** During the 1970’s it was considered that the formal economy would absorb the informal. Fioramonti (2012) describes in the publication a Wellbeing economy that 38.8% of the GDP in sub-Sahara Africa is generated by the so-called informal economy. And what is further astounding is the fact that 78% of the employed population is employed within the in-

formal economy of sub-Saharan Africa.

As discovered in Mamelodi the entrepreneurial spirit is extremely high, and most traders tend to interact with the skills that comes naturally or that they have acquired through previous work experience or that they have a natural talent for (Fioramonti, 2017).

As for the formalised trade every aspect of obtaining products add to the retail price. The concept of "bulk buying" assist in lowering the individual pricing of products, however it greatly assisted in creating a civilisation that supports waste and disposable lifestyle.

### **3.18 URBANIZED SOCIAL INFRASTRUCTURE**

Infrastructure in public spaces are needed to facilitate the intersection of socialites, thus allowing for the expansion economic and cultural activities. So in essence infrastructure are not just the physical systems of highways, pipes, wires or cables that people generally will refer to, but the platform to create interactive social nodes (Public Culture 16(3): 407 – 209).

As indicated in the urban analysis of Mamelodi West, there is a clear lack of social and public infrastructure as mentioned. This brings me to the notion of people as infrastructure that in effect will emphasize the economic benefits of the urban sphere. Furthermore the activities that are encouraged by social interaction are extremely unique in the sense of the flexibility, mobility and personalised engagements of space (Public Culture 16(3): 407 – 209).

**3.19 MAMELODI ECONOMICAL CONTEXT** The formal and informal parts of Mamelodi are rapidly expanding and are expected to gain 100 000 inhabitants by the year 2020. The fast paced construction methods

do not allow for the consideration of environmental concerns (Patel & Giordano, 2014).

Today South Africa still has a very high coal based energy consumption (Banks and Schaffler, 2006) even though certain efforts towards renewable energy has been initiated. Since 2005, Eskom has been facing a major crisis with the growing energy demand (Banks and Schaffler, 2006). The effects of the energy crisis has led to costly buyback agreements with high end energy users and resulting in a down scaling on production. There was also significant tariff increases approved by the National Energy Regulator in 2010 (Baker, Newell and Phillips, 2014).

Within the current Mamelodi context a large number of the population is sustained through small and medium enterprises (SMEs) (Olawale and Garwe, 2010). By taking the unemployment rate of Mamelodi into consideration, one of the best countermeasures would be to use the informal economy relating to SME's and to exploit it. With the consideration of the Gauteng Township Economy Revitalisation Strategy 2014-2019, large number and wide spectrum of expertise can be found in Mamelodi and many other townships (Gauteng Province, 2014).

**3.20 THE GREEN ECONOMY APPROACH** The Environmental Assessment for Greening of Public Infrastructure Report 2014 indicates that the South African government aims to establish a green economy, which in effect could

reduce the natural resources used for economic growth (Patel and Giordano, 2014) as most of the energy produced in South Africa comes from coal power stations. This will however result in a lower growth rate than what is currently considered as the economic growth rate (Patel and Giordano, 2014) but also threatens the current constructs of South African capitalism (Death, 2014).

The green economy approach allows for innovative design approaches within urban communities that relates to the Mamelodi Township. By taking in consideration the Gauteng township economy revitalisation strategy 2014-2019 (Gauteng Province, 2014), along with other literature the objective is to identify the possibility for the production and procurement of renewable energy and sustainable practices from a privatised perspective, along with the benefits within an urban sphere.

**3.21 FOOD SECURITY IN SOUTH AFRICA** Globally there is a major issue of food security issue. The Sustainable Development Goals (SDGs) aims to solve the hunger issue by 2030. Even though the current food shortage rate is alarming (Maynard, 2019).

According to Statistics SA 6.8 million South Africans experienced hunger during 2017 (Maynard, 2019). Even though the numbers dropped drastically from 13.5 million in 2002 it is still a serious concern.

Along with the National Development Plan (NDP) there are an inter-ministerial National Food Security and Nutrition Plan in place. But with the talks about land reclamation without compensation was a fairly negative impact on the attempts of any food security in South Africa.

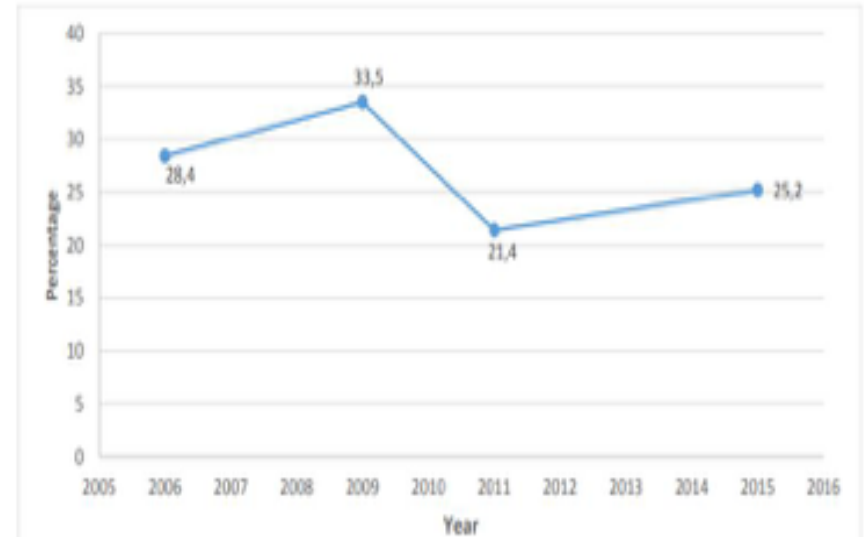


Figure 21 the graph showing an increase in South African Households living below the food poverty line from 2011 until 2016 (Maynard, 2019).

According to the graph above there has been a 4.8% increase in the population of South Africans living below the food poverty line between 2011 and 2016 (Maynard, 2019).

This also directly relates to the decline in amount of households that are involved in agricultural activities (Maynard, 2019).

In general these declines can be measured across the, not only in Gauteng and thus is a national issues as well. Furthermore are there a large amount of households and individuals that experienced hunger in South Africa over the last 15years. The good news is that up to 2017, was that the number of households that are vulnerable to hunger (Maynard, 2019). As indicated in the fig.23 below.

For Gauteng 58.7% of the population are making use of agricultural

activities as an additional source of food for the household (Maynard, 2019). See bar chart below.

From the stacked bar chart on page 35, only 5.6% of households in Gauteng are using agricultural activities as an alternative income. As for household poverty, the percentage of households that received at least one grant increased 29.9% in 2003 to 44.8% in 2016. During 2018, 19.9% of households received social grants as their main income. While 64.8% households received grants after salaries. In other words the amount households depending on the government or 'other' institutions to stay afloat increased by almost 15% in 13 years (Statistics South Africa, 2018). By taking all these aspects into consideration, there are a major food security issues at hand. From the NDP and the

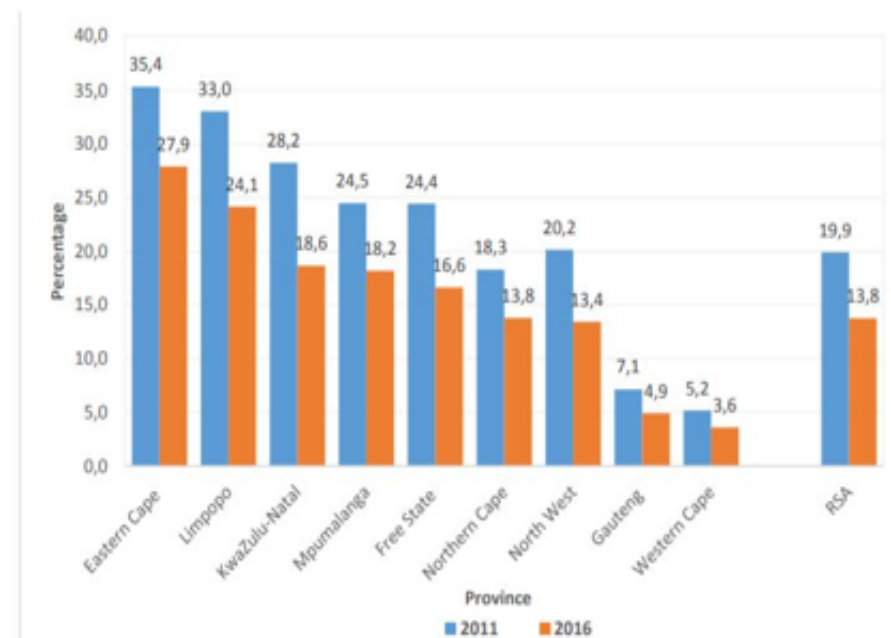
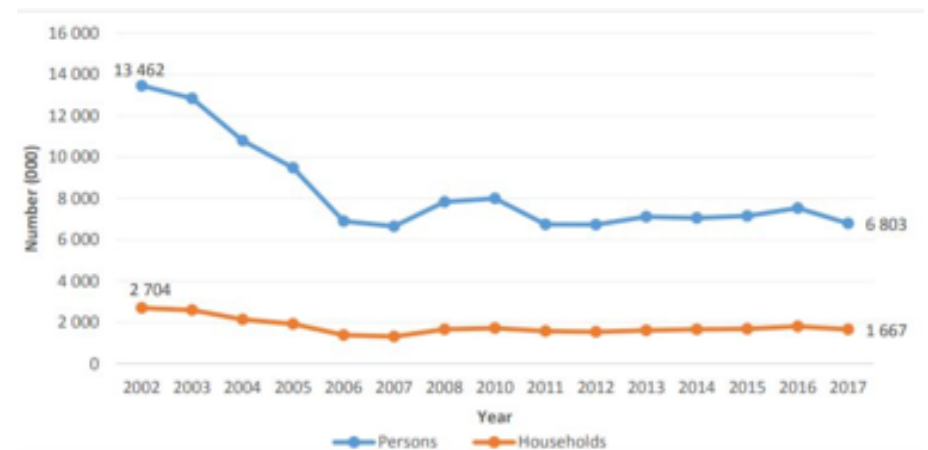


Figure 22 the amount of households that are involved in agricultural activities (Maynard, 2019).

Figure 23 A chart showing the amount of South Africans citizens that are vulnerable to hunger chart (Maynard, 2019).



Gauteng Township Economy Revitalisation Strategy this is an opportunity to decrease the overall household poverty and unemployment issues.

### 3.22 PARASITIC ARCHITECTURE:

The addition of structure, a set of systems that feed of the existing host. Parasitic architecture relates to the adaptive re-use architectural interventions whereby the original function of the existing structures can still be reserved. Resilience of cities is explained as the ability to adjust and mould the functions of the specific infrastructure within cities. The more resilient the cities the easier it will adapt in the future (McDaniel, 2008). Parasitic architecture allows for additions to current pro-

grammes without replacing them. Through the incremental additions of programmes and functions, building can be expanded at a more cost effective rate.

### 3.23 CONCLUSION:

The transformation of the current township layout and dependability on infrastructure play a vital role in achieving urban sustainability within Mamelodi and other townships. Therefore the spatial designers have to consider alternative outcomes as local governing bodies cannot keep up with the rate that townships are expanding. The importance of a green economy within urban life could create for alternative possibilities of privatised sustainable energy production that could generate a



Figure 24 the amount of South Africans per province making use of agricultural activities as an additional source of food (Maynard 2019).

passive income to many of the residents, along with locally constructed and maintained infrastructure to support the community. As mentioned in the Gauteng Township Economy Revitalisation Strategy 2014-2019, local manufacture, job creation and fighting pendulum migration are some of the biggest economic issues to date.

By creating opportunities to combat these issues, the ideal state of economic wellbeing might be achieved in the future. Ideally the process would have allow for community participation to make use of the necessary skill sets and level of adequacy for the construction and maintenance.

This will also create a strong foothold for designers to interact with the communities in the future. Currently the formal trade industry has done very little to assist in developing the informal rivalry, however life always finds a way.





## 4. THE PROGRAMME AND STAKEHOLDERS:

### 4.1 PROGRAMME

The overall programme consists out of two categories with their respective subcategories to support and encourage economic growth through skills development.

These categories are to create Public Space that will encourage entrepreneurship and a Community Learning Centre.

#### 4.1.1 PUBLIC SPACE TO ENABLE ENTREPRENEURSHIP:

From the Mamelodi Gateway urban vision and urban mapping, it is clear that the public space in Mamelodi is situated around the street.

The other important aspect of public space in Mamelodi is that it is constantly serving a function. Through investigating the public spaces and interactions of those who frequently and constantly occupy these spaces, there are an underlying activity that is being pursued along with the social activities. These actual functions performed by the occupants are usually in the sense of traders, ushers for taxi's, commuters, general public and the employed staff by the above mentioned criteria (Bissett et al., 2019).

For Mamelodi the entrepreneurial development has a large cohesion with social activity (Bissett et al., 2019). As Steyn (2008) describes that street trading is a crucial element of developing communities that allows the community to grow and flourish in a natural way. Such is also the case in Mamelodi West.

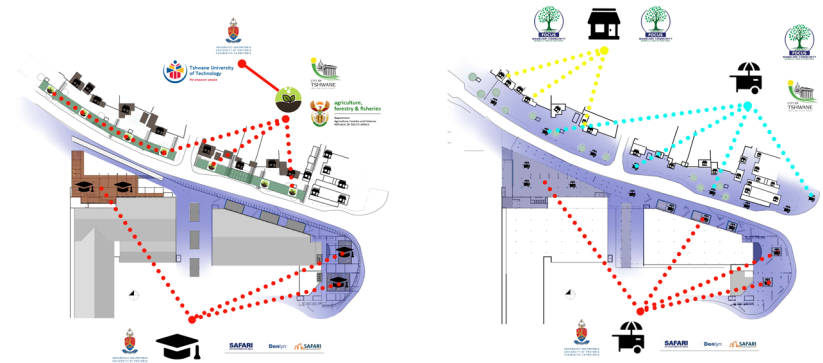
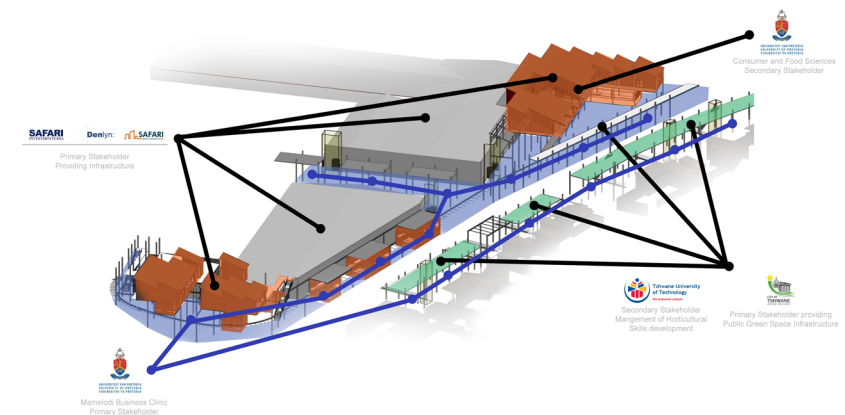


Figure 26 a diagrammatic layout on plan (left is First floor level and right is Ground floor level) about how the programmes and participants

Figure 25 an Axonometric showing how the programs and participants interlink.



#### 4.1.2 PWORK INTERGRATED LEARNING PROGRAMMES:

“To be a good enabler you actually have to be a good provider. But there is a difference in providing in its own right and providing to enable the people to provide for themselves.” Nabeel Hamdi (Hamdi, 2019)

According to Hamdi (2010) there are two types of providing for the community. One would be descriptive, that follows the top down approach. The problem resulting from this situation is that perfectly capable communities are stimulated by it that allows them to become depended. The other means of provision is through charity. There is nothing wrong with charity, but charity can't be used in to solve a development issue. The problem that arises is that these scenarios are not sustainable.

The Mamelodi Community Learning Centre (MCLC) programme is combined out of three subdivided programs that is interlinked but also can

be used separately from each other. Fioramonti (2017) states the importance of the organizational structures for a community to become a participating aspect of a larger economy. These structures are founded on a basic knowledge and skill base.

For developing communities the best starting point for any economical intervention is to start with what the community knows. Therefore the following subdivisions are focussed on in the Community Learning Centre.

- P1: Business and administrative skills development.
- P2: Horticultural and Environmental Practices.
- P3: Food and Consumer Sciences.

These programmes are chosen to assist with the overall urban condition of Mamelodi West.



Figure 27 Diagram showing the relationship between the stakeholder (safari Investments Denlyn: Safari Developments), the facilitator (Mamelodi Business Clinic) and end user (Mamelodi West community members)

### **MAMELODI BUSINESS CLINIC:**

The occupation of chain stores situated in the Denlyn Shopping Mall was a large contributor to the birth of informal trade in and around the complex.

The Mamelodi Business clinic is situated in Mamelodi East, and provides the necessary tools and skill to educate the SSMe's to become a vital contributors of the GDP (Fioramonti, 2017).

The Business Clinic will function as the link between the other sub programmes. Thus allowing to complete the product life cycle. The end result of the programme is to create a business model that aims to facilitate for the incorporation of the production stage through to a finished product.

The most important part is that the current business owners are acknowledged and supported in their endeavours. In no way are their current skills and experience to be replaced or undermined. But rather learned from as every community functions and cooperates in their own way.

## TSHWANE PARKS AND HORTICULTURE:

Food security is a major concern with rapidly increasing urban metropolitans in Mamelodi but also around the world. However the expanding cities are not assisting to breach the various problems that a community or country would have to face relating to this regard and one of many solution to addressing these environmental concerns are through the implementation of organic urban agriculture systems (Bohn and Viljoen, 2005).

There are a wide variety of planting methods and maintenance issues when it comes to implementing organic food gardens. Especially if one starts producing to obtain certain goals like: produce to be sold at market for instance. These practices are the kind of basic skills the community would greatly benefit from.

The Landscape and Horticulture Technology courses at Tshwane University of Technology is an ideal facilitator in accordance with the City of Tshwane Municipality as a primary stakeholder acting on behalf of the Department of Agriculture, Forestry and Fisheries (DAFF). In essence will City of Tshwane Supply the infrastructure. Whereby Tshwane University of Technology will provide training and education in order to manage the implementation and day to day operational along with the maintenance and other care needed. A further benefit to this programme is that public green space will be made available to the public.

## CONSUMER AND FOOD SCIENCES:

Many of the traders in and around the site would only redistribute good on a smaller scale. With very little consideration how and what their clients actually need.



Figure 28 Diagram Showing the relationship between the stakeholders (Department of Agriculture, Forestry and Fisheries & the City of Tshwane, Parks and Horticulture department), the facilitators (Tshwane University of Technology, Horticulture Department).

This is where the Consumer and Food Sciences programme at the University of Pretoria plays an important role. Through the appropriate research and skills developments, the community in Mamelodi can benefit from making use of adequate food preparation. This will also allow the community to come together socially, to create a community kitchen that would cater for communal needs, whether it be feeding the homeless, or having a shared cooking experience with their neighbours. Allowing to form better bonds between people.

The actual programme will be focussed around the preparation of consumables, for either traders, schools or the home cook. For many these skills can create the opportunity to become a cook in a formal kitchen, or just have the knowledge to supply a nutritious healthy meal to loved ones.

#### **4.2 Intended Users:**

The architectural intervention is intended to mainly serve the community of Mamelodi West.

Along with the obvious resource shortcomings in developing communities one of the bigger issues are the educational gap between those who are educated and uneducated. In order to breach this gap of 'othering' hand allow the local community to freely participate in the Learning Community Centre, a combined effort is needed between existing tertiary educational institutions and the community. The University of Pretoria currently provide several outreach programmes that is managed through the Mamelodi east Campus like: Mamelodi Business Clinic. The Economy faculty (EMS) and Institute of Food and Nutrition. Therefore the intended project will act as a satellite node for the current Mamelodi East campus.

Tshwane University of Technology currently have a landscape technology

and Horticulture tertiary programme available whereby the practical implication of the course is outsourced to Tshwane Parks and horticulture department. After consideration of the necessary programmes and skills to be implemented, these tertiary institutions will provide the best outcomes to achieve the necessary goals. In general the main stakeholders are the current local community of Mamelodi. With the focus on the local communities business owners.

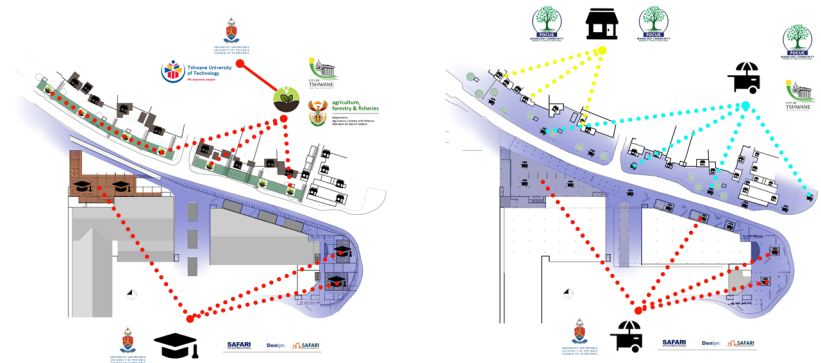


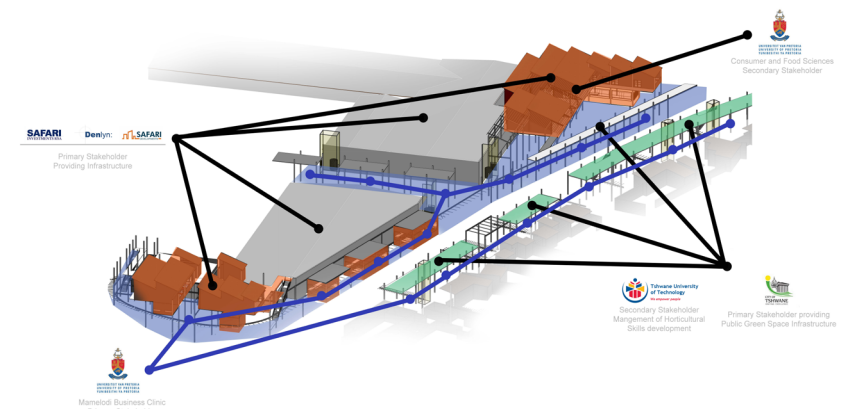
Figure 26 a diagrammatic layout on plan (left is First floor level and right is Ground floor level) about how the programmes and participants

Figure 25 an Axonometric showing how the programs and participants interlink.

#### 4.1.2 STAKEHOLDERS

The primary Stakeholders are Safari Investments. Due to the current site phenomena, the Denlyn Shopping Mall (owned by Safari Investments) are renting out structure within the Mall’s parking lot to informal traders. This is also combined with a transport node consisting with a formal taxi rank and Tuk-Tuk station.

The Denlyn Mall owners, Safari developments has started to cater for informal trade around the current shopping mall parking. This phenomena however the adapted facilities do not allow for occurred from existing storage units that was converted by informal traders to suit their needs. The provision of services are the facilitators, and therefore providing the community with the necessary physical infrastructure.





## 5. THEORETICAL ARGUMENT

Intended Vision: Mamelodi west has developed into a city, separate from the Tshwane with the ideal that the citizens of Mamelodi needs Pretoria to survive. This might come as a shock as to most, but it is Pretoria that needs the townships around it to survive as described by Hamdi (2010) in 'A Placemaker's Guide'. Throughout the world there are townships and slums that have been built around the cities to supply the cities with a workforce (Hamdi, 2010).

### 5.1 THE OPEN BUILDING

One of the most the biggest concerns within the urban environment in architecture is about the adaptability and flexibility of buildings (Kendall, 1999). In general for South Africa and specifically in Mamelodi this

is also true. Groák (1992) states that people in general never knows what they want. And continuous that knowing what one actually want is far from what is actually needed. By taking the effect of technology advancement into consideration, we as designers will never be able to design a building that will cater entirely for the user's needs. Therefore a building can't ever be completed (Groák, 1992).

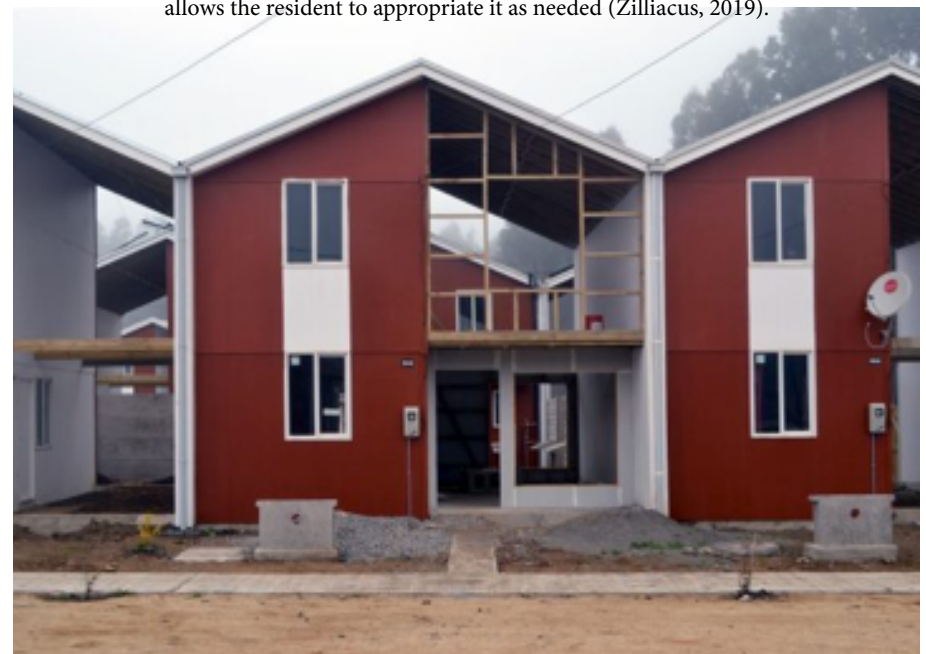
By considering the notions from Groák (1992), it is clear that we as designers need to allow for the user to define their immediate surroundings. Alejandro Aravena constructed the "half A House" community project located in Elemental, Chile.

The approach to this social housing scheme was adopted from John



Figure 27 the Half a House social housing scheme (Zilliacus, 2019).

Figure 28 the Hal a House social housing scheme celebrating an open building design that allows the resident to appropriate it as needed (Zilliacus, 2019).



F.C. Turner's concept that people could build what they wanted for themselves (Zilliacus, 2019). The original intention was that the houses function as an ongoing project. Firstly started as a top down approach but then handed over for the resident to finish. This provides the flexibility and adaptability for the residents to achieve as they might need or want, but also at a rate they can afford.

In the Mamelodi West for most of the informal traders the concept of a survivalist come to mind. Meaning that they will use the most cost-effective approach to erecting the necessary structures in order for them to survive.

## **5.2 PLACEMAKING:**

Placemaking can be referred to as a philosophy and a practical process.

According to the Inner City of Johannesburg initiative, placemaking is about creating social spaces that encourages public interaction (The Johannesburg Inner City Partnership, 2019). The process refers to people occupying certain spaces spontaneously. In the Mamelodi West context it mostly refers to the informal traders as well as the occupants lingering in public spaces frequently. However this does not exclude the commuter or pedestrian passing through hastily to get home or going to work. According to Hamdi (2010) for placemaking to happen, three things need to come into existence. And those are Appropriation Attachment and a sense of identity

## **5.3 SPATIAL APPROPRIATION**



The term place making and the architecture of opportunities, is used by Nabeel Hamdi's in "The Placemaker's Guide to Building Community". Place making in this instance refers to space used on a regular basis, but also at different intervals. To able to make a place, the users only have to occupy it once (Hamdi, 2010).

Making places fit for change- change becomes an integral part of design planning.

### **ATTACHMENT**

Attachment has to happen in order to provide significance of a space. Once a certain significance has been established the space will be translated as a place.

After the appropriation of a space, the informal trader will continue to

furnish, decorate or adorn the specific space. In essence this will act as an identifier of some sort like signage. However the formal trader will do the same. But due to the permanence the furnishing becomes more elaborate.

### **IDENTITY**

Identity will be established automatically. There are various identities that would be an identity of a collective and the other is the identity of the individual.

In Mamelodi the identity of informal traders varies as a collective from the more formalised traders. Whereby the informal traders have a survivalist approach that follows through to appropriation and attachment in temporary manner. As for the formal traders have a more permanence identity.

There are also a wide range of individuality concerning informal and formal traders. When it comes to formalised trading, the individuality might be limited. Depending on the structure they occupy. For the informal traders they have the ability and freedom to recreate trade as it they wish. From using a car as storage for goods, to having temporary sleeping cubicles under their service tables.

#### 5.4 ADAPTABILITY

Adaptability is just another translation for change. The question is how to design for change? With adaptability there are three main factors to consider about adaptability (Hamdi, 2010):

- Variability of the vernacular – the meaning of vernacular changes with its context. The best way to identify the vernacular is to observe

what people do.

- Concept of conviviality – the ability of people to stamp their identity on place
- Theory of loose parts – how do we open up choice in a way that we plan, rather than close choices off because we got to deliver on projects?

Sustainable health and inclusion through the use of community gardens: Following the well-being concept mentioned by Fioramonti (2010) allows for the implantation of an ecological design theory. Ecological design theory.

## **5.5 SUSTAINABLE HEALTH AND INCLUSION THROUGH THE USE OF COMMUNITY GARDENS:**

Following the well-being concept mentioned by Fioramonti (2010) allows for the implantation of an ecological design theory.

Ecological design theory: theories enforced by nature of interconnectedness and the holistic characteristics of the earth's ecosystems (Yeang, 1995: viii).

When we consider an ecosystem there is no waste. Everything is utilised to suit the next stage of energy transferral (Yeang, 2006: 22). Mamelodi

in general has this way to upcycle materials that most of us would call waste.

## **5.6 THE PEDESTRIAN EXPERIENCE**

The pedestrian experience in Mamelodi allows you to walk vast distances between transport nodes or facilities. On the sidewalks one would find the engaging traders trying to get your attention. And on the other side there will be a constant flow of minibus taxis hooting to get your attention. Experiencing Mamelodi from the perspective of a pedestrian clearly shows the lack of consideration for public spaces. In general there are sidewalks running along alienated public properties that's fenced off from the public.

## THE EFFECT OF SHOPPING MALLS IN SOCIETY

Throughout the modernist movement the idea of centralisation was the sustainable aim to living. But as the populations grew, and the masses needed transportation, roads became congested and suburbs became the eternally bad cul-de-sac.

### 5.7 SHOPPING MALL SHIFTING PARADIGM

In South Africa throughout history the typical shopping mall model has become a benchmark of public space. Dictated by the modernist movement along with ideals of Frank Lloyd Wright with his typical sub-

urban island approach.

However with the development of cyberspace and digital interfaces the typical shopping mall is changing drastically. In recent years the ED-CON Group has indicated that they will need a 48% reduction levies to maintain their lucratively. Along with cheaper rental agreements comes the reduction of space for most retail industries. During 2016 - 2017 the rented floor space was reduced up to 4.3%. And the actual foot-count/sqm reduced with an estimated 3.9%. A further decline in lease space is also expected while the current retail sector vacancy rate is settles at around 2.5% per year (South African Property Owners Association, 2017).

Overall there is a decline in people visiting shopping malls, but at the same time they spend more on occasion. By taking these factors into consideration within the developing community context leaves for future abandoned shopping malls.

This leaves the question: what do we do with all that space? Throughout the United States in America the current trend is to convert existing and abandoned retail shopping malls into luxury residential estates.

### **QUASI SPACE**

According to Landman (2016) Quasi space is defined as freely accessible private space, usually owned by a private entity. The accessibility

of the space is regulated and controlled in such a way to suit the owners and or tenants ideals.

Along with the regulation of the space, there are few instances where users do not have to make use of some type of monetary reimbursement. Currently most spaces are situated in shopping malls that are within highly populated urban centres.

### **INFORMAL SETTLEMENT ISSUE**

The issue of slums described by Hamdi in “The Placemaker’s Guide to Building Communities” is not that it needs to be discarded, transformed or formalised in anyway. However the solution is to accept that there

will always be slums.

There will always be the so-called “mob” with very different cultural preferences pertaining to housing, employment and cultural practices. The concept of tabula rasa (clean slate) has been applied to lower income communities. Along with the zoning regulations created isolated living environments. In effect quasi space regulates user spontaneity and in most cases it is regulated by independent security contractors.

## 5.8 SKILLS DEVELOPMENT

As discovered in Mamelodi the entrepreneurial spirit is extremely high, and most traders tend to interact with the skills that comes naturally or that they have acquired through previous work experience or that they

have a natural talent for (Fioramonti, 2017). The art of acquiring raw materials and manufacturing a retailable end product covers all the aspects in the trade lifecycle. Many of the current skill sets have some behaviour aspect to it.

And has been a practice that has been passed down through generations. This is where the typical Mom and Pop shop typology comes to mind. For many a formal education could not be afforded, and even if it could be there might be a limiting effect that takes away from the greater entrepreneurial endeavour. However the basic concepts and principles will save every trader the time and money if applied in the correct manner.

The intention of the overall programme is not to have an extremely

rigid or fixed set of rules and guide lines. This is where the business incubators will link public space and the respective programmes. The incubators could be seen as a practical introduction into the real world with real world issues. The close proximity to actual learning centre will allow for skilled mentors to guide the students through various challenges and opportunities in an uncontrolled environment.





## 6. PRECEDENT STUDIES

### 6.1 Kayelitsha Service Centre & Pay Point:

Architects: Piet Louw, Anton Roux

Location: Khayelitsha

Client: City of Cape Town

Date of Completion: 2002

**BACKGROUND** The Tygerberg Municipality commissioned the construction of service pay points in strategic locations to aid with civic significance. The programme is centred around the payment of rates and levies (Deckler, Grauper and Rasmuss 2008).

**DESIGN** The design consists of four main buildings that shares a similar architectural language. The building contest the informal urban fabric, creating an iconic focal point. The edge conditions extends the programme from a mere civic centre to public space (Phaidon 2004). Programme: Integration of civic building typologies. The civic centre act as an activity generator with a constant flow of users throughout the spaces. The creation of public space through the use of covered gathering spaces, steps to sit on around a courtyard

**KEY OBJECTIVES** The incorporation of public space was done very successfully. The public space addition adds an extra dimension to the programme, and thus allows it to be appropriated for not just longer

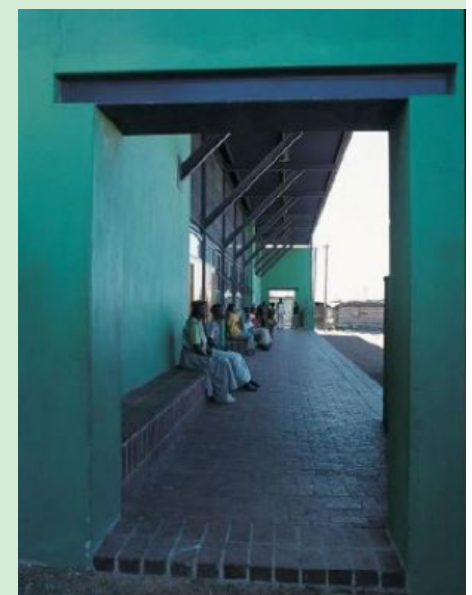


Figure 31 Public interaction with a civic building (Phaidon, 2004)

Figure 32 the Pay points (Phaidon, 2004)



Figure 33 Layered Facade (Phaidon, 2004)



periods of use, but also different spontaneous activities. Therefore the extensions of the building and program past the boundary line is some of the issues that's relevant to Mamelodi West.



Figure 34 the relationship to context (Phaidon, 2004)

Figure 35 Scale used to create an Icon (Phaidon, 2004)



## 6.2 WARWICK JUNCTION

Architects: Architects Collaborative CC,  
Lees & Short, Laren Beni, Mike Legg Architects CC, OMM Design  
Workshop, Langa Makhanya & Associates, MA Gafoor Architects, Em-  
mett & Emmett, Matic Van Zyl, Lee Saunders & Kooblal & Steyn  
Location: Berea, Durban  
Client: The eThekweni Metropolitan

**BACKGROUND** Warwick Junction is an example how the natural phenomena of informal trade has been structured to serve the community best. With approximately 460 000 commuters moving through the mar-

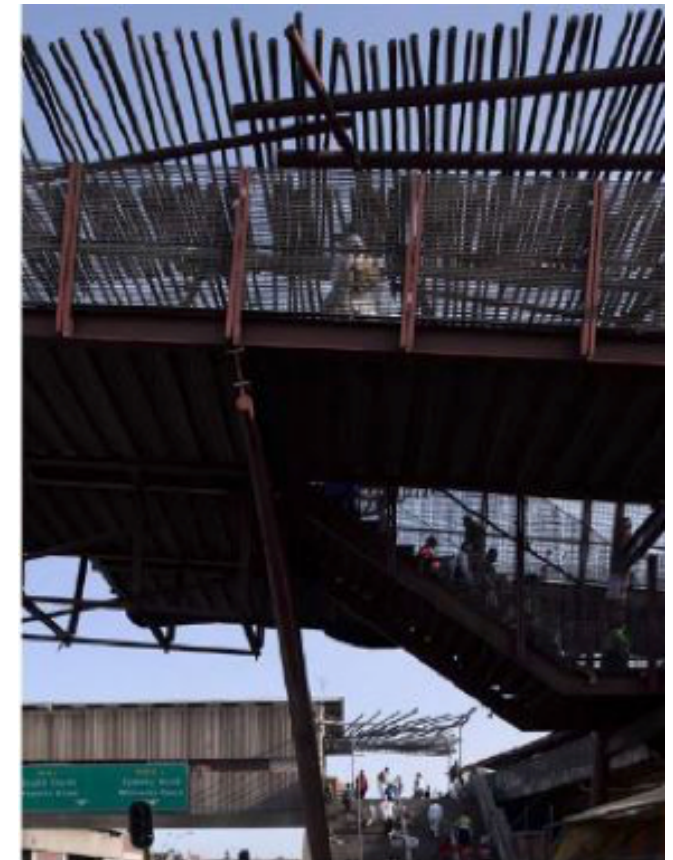
ket every day. The market allows for up to 8000 vendors. There are currently a wide variety of traders dealing with clothing, fruit & vegetables, fish, meat, spice etc. (Challenging city imaginaries: Street traders' struggles in Warwick Junction, 2009).

**DESIGN** A various range of alterations has been added in the effort assist in urban renewal through the interconnection between trade and transport.

### PROGRAMME

1. Addition of the muthi market.
2. Early morning market.

Figure 36 the pedestrian bridge at Warwick Junction catering for trade (Dobson, 2001).





3. Herbs traders market
4. Provision of water and sanitation
5. Establishing of threshold or physical boundaries between vehicles and traders.
6. Infrastructure for box street trading.
7. Informal trade policy renewal

Key objectives: The interventions allows for the addition of shelters to aid traders from the elements. In some cases the traders are too specific to adhere to rigid designs interventions. And thus simple and adaptable infrastructure will be needed.

There have been a large social cohesion among the different groups of traders. The infrastructure allowed for supporting programmes to develop. Thus aiding in job creation for stock ushers, and maintenance personnel.

The various markets follow their own hierarchy, with the more formal trading at higher levels, and the more informal on the ground floor. When designing for informal trade and formal trade it is important to allow space for the programme to develop naturally.

There are guidelines to follow, but the informal economy along with skill levels and personal preference is very specific to each personality type. And that makes it almost impossible to create a specific design for informal trade.

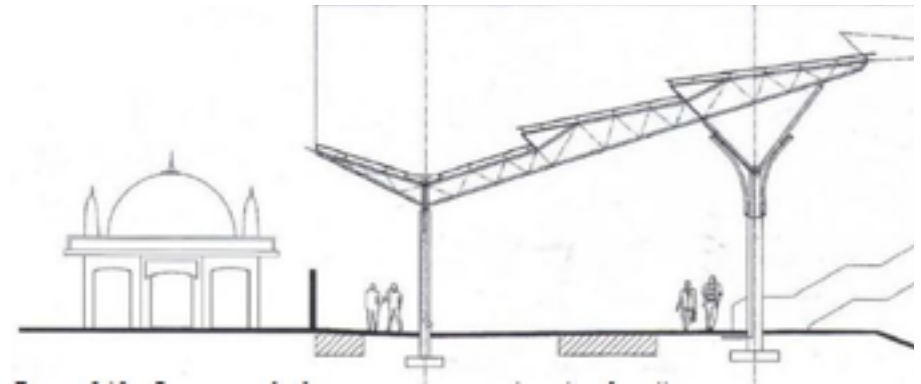


Figure 38 The provision of covered infrastructure (Dobson, 2001).

Figure 37 the covered market space (Dobson, 2001)



### 6.3 BARAGWANATH PUBLIC TRANSPORT INTERCHANGE & TRADERS MARKET

Architects: Urban Solutions Architects and Urban Designers.

Location: Soweto, Gauteng

Client: City of Johannesburg

**BACKGROUND** Baragwanath public transport interchange change connects is a transport connection between Johannesburg and Soweto. The vast site had incredible challenges in the sense that the balance and cohabitation of transport and traders needed to be addressed.

**DESIGN** The programme caters for approximately 500 traders and the supporting infrastructures like management, storage, services etc.

along with this is there also 22 bus ranks and a taxi rank to accommodate 650 minibus taxi's.

The intervention is laid out along the length of the site, as an arcade using concrete. The arcade or promenade act as a movement corridor between different transportation nodes. The corridor creates a visual icon that is also used by traders to from where they can appropriate the spaces. On can clearly identify the landmark structures to show the main access points.

**KEY OBJECTIVES** Although the structure is rigid and prominent, there are plenty physical and visual links that interrupts the edges to deal with interface. The scale acts well with the use of the site. The inter-

Figure 39 entrance as prominent focal point



Figure 42 pedestrian Promenade

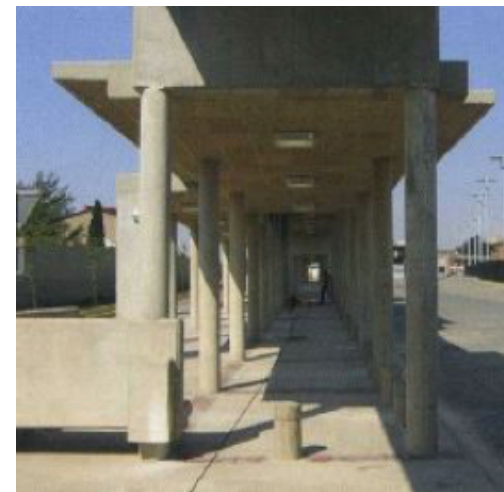


Figure 40 the landmark created to indicate movement



vention also creates a hierarchy in regard to the different methods of transport, but in no way undermines the importance of each.

The importance of pedestrians are celebrated in their own way. The infrastructure supplied allows the secondary programmes to flourish in the same way the pri

Figure 41 Public seating at the taxi rank



## 6.4 PROGRAMMATIC PRECEDENTS:

### Behavioural aspect of Markets:

In Mamelodi, the informal markets tend to shift change and settle in a very organic manner. Within this specific networks everyone have a way to position themselves so that they get the best exposure to the public interface. It is important to allow for the traders to set-up in a way that they are comfortable.

### Anchor Tenant:

Within the context of the site describe in the urban vision, the Denlyn

Shopping Centre would function as a large anchor for traders. As the public rushes to chain stores, the traders uses the opportunity to cater for their shortcomings (Dewar and Watson, 1990: 42). These traders would usually situate themselves closely to the anchor buildings to intercept the pedestrian traffic (Dewar and Watson, 1990: 42).

### Hierarchy:

Naturally some sort of hierarchy will form between traders. Creating different sections of trade as the user passes through the space. As shown in the image below the mobile pavement trader usually sets up in the in between spaces and in space were the level of pedestrian traffic is the highest.

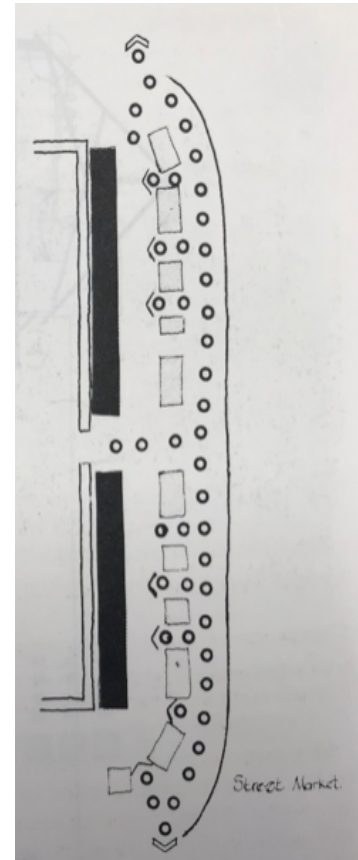


Figure 43 Natural Market Hierarchy. The formal traders stall are at the and the informal pavement traders are intercepting the pedestrian traffic (Dewar and Watson, 1990: 42)

Figure 44 Ideal market layouts to generate enough sufficient traffic (Dewar and Watson, 1990)

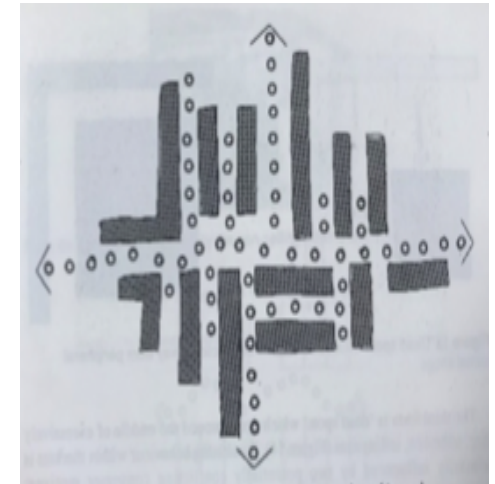
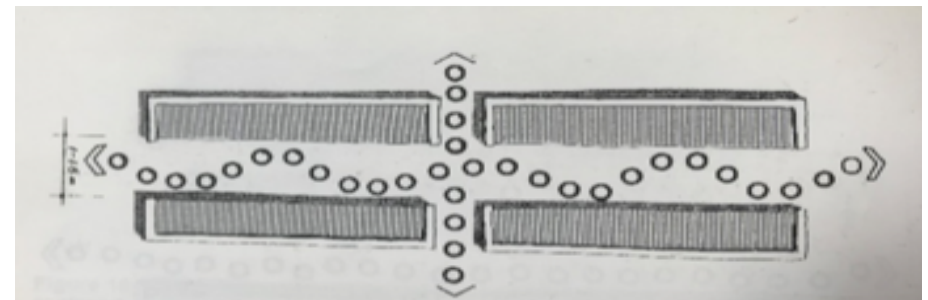


Figure 47 the most appropriate stall run (Dewar and Watson, 1990)





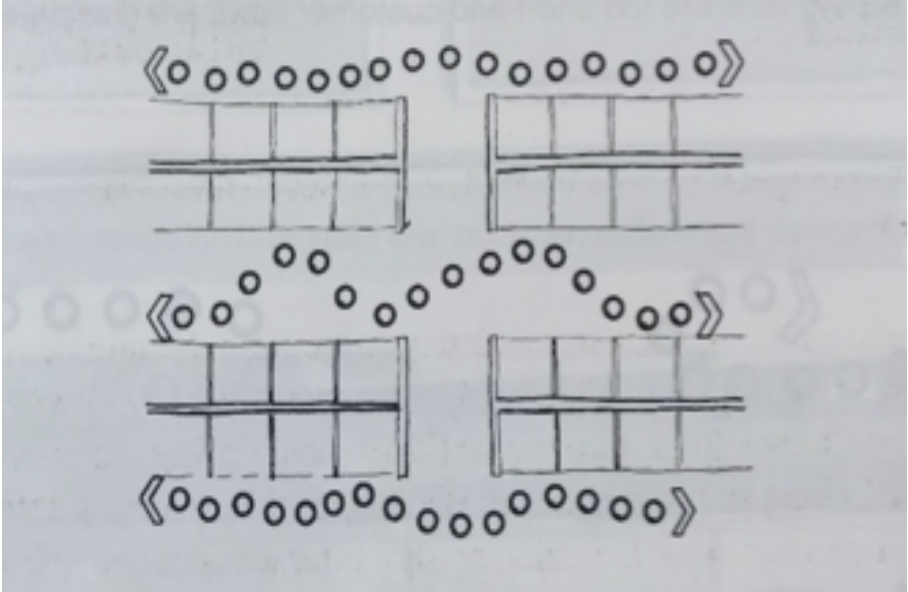


Figure 47 the most appropriate stall run (Dewar and Watson, 1990)

Figure 46 the ideal with between market stalls in order to become appropriated (Dewar and Watson, 1990)

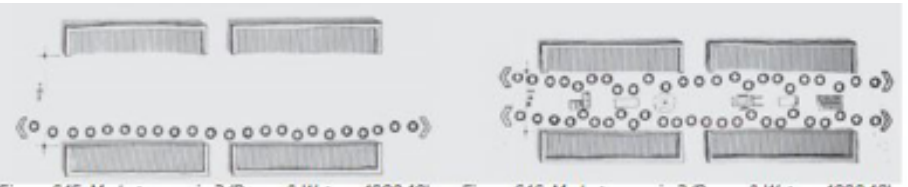
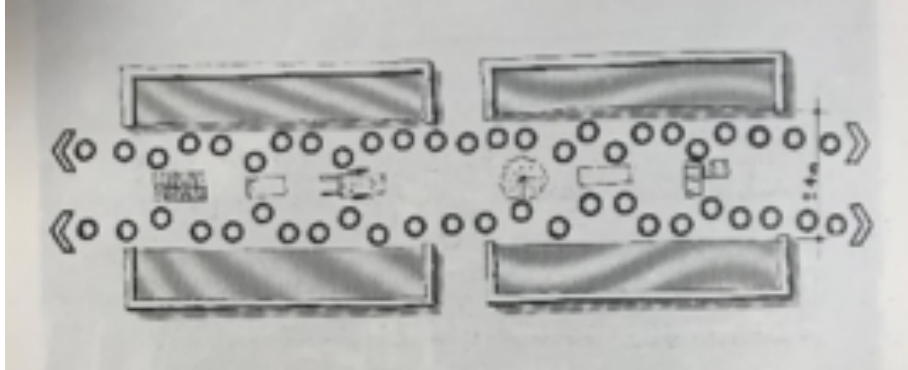


Figure 46 the ideal with between market stalls in order to become appropriated (Dewar and Watson, 1990)





## 7. CONCEPTUAL APPROACH

Buildings are never finished. As the environment user and the needs of the users in an ever changing world changes constantly, the inhabitants will always try and change or adapt it to better suit their needs (Groák, 1992). And in that sense we need the informal to identify the direction we should aim at to go forth (Anderson and Jenkins, 2011). For informality comes from spontaneous appropriation of space and infrastructure and have the ability to show the shortcomings in design.

With the combination of programmes that are depended on each other, but that can also function on their own, there will be supporting programmes that will have the opportunity to develop only after the implementation of the original design. By taking these ideas into consideration, it is important to understand the lifestyle of the residents residing in Mamelodi West and how they would approach the aspects of construction and development (Mills 2012).

Following the appropriation methods the informality are so accustomed to, allows for a specific approach followed to dealing with the site. The hierarchy is determined by the existing occupation from site and the effects of the social and physical infrastructure.

Fig. 50 indicates a conceptual urban link running along the main transport routes. The intention is facilitate the neighbourhood with an edible green belt. The green belt consist of an aquaponics installation for urban agriculture. However the infrastructure aims to connect the various formalised trade that originates form residences on the street. The green belt does

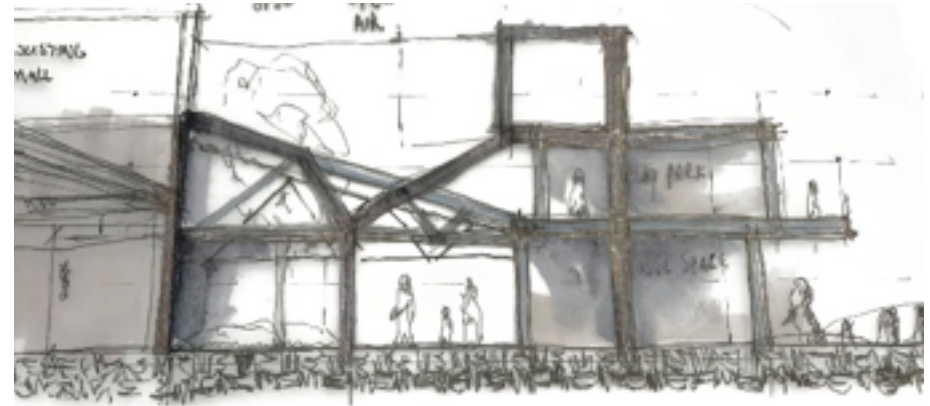


Figure 49 Conceptual sketch

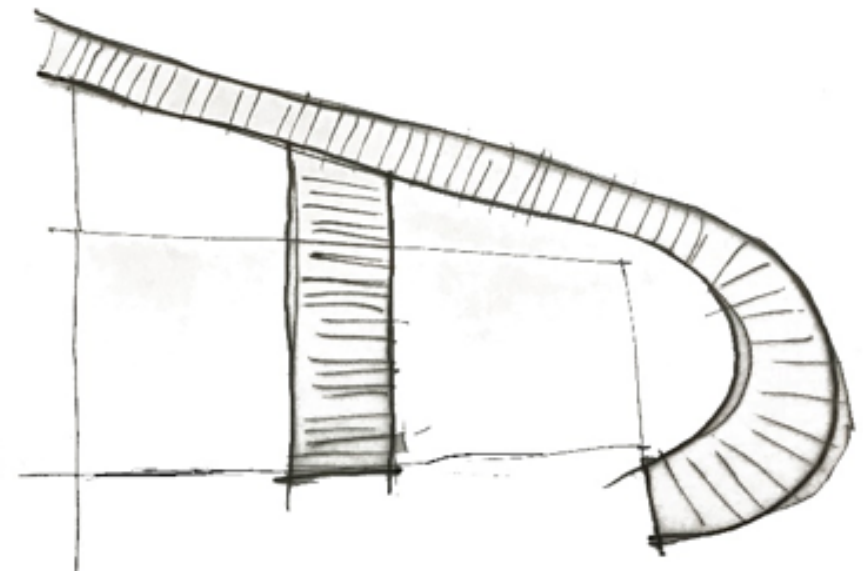


Figure 50 Parti Diagram.



## 8. DESIGN DEVELOPMENT

**8.1 SITE** The site is located on the northern periphery of phase 5 of the Denlyn shopping mall on the corner of Maphalla and Shabangu Drive. Shabangu Drive creates a very distinctive contrast between the large grain and the fine grain. The large grain consists of the Denlyn Shopping Mall. Where the fine grain is made up from residential properties. Most of the housing on Shabangu Drive was altered to serve some sort of secondary function, either trading, subletting or storage from the existing back yards. The existing Denlyn Mall has a vast scale. One of the challenges and opportunities are to mediate the appropriate scale between the residential and retail/commercial.

### 8.2 SITE AS INFORMANT:

Through various site visits I found that the SSME's in the vicinity rely on the host (Denlyn Shopping Mall) to obtain various products. From the site photos there are a number situations to indicate that the users either traders or general public lack the necessary infrastructure. Denlyn Shopping Centre is currently renting these units to informal traders. There are no services supplied. The structures has been appropriated by the traders to fit their specific needs. A fruit and vegetable trades used a makeshift shade cloth addition to obtain more space.



Figure 53 Formal traders using the street scape on site.

Figure 54 informal transport node for localised transport





### 8.3 MATERIALITY

The materiality within the precinct consists of a variety of materials to serve different functions. In general a plastered brick and mortar construction or stereotomic. For informal traders in and around the site a tectonic materiality presides. Therefore in most cases the hierarchy is indicated by the permanence of the specific structures.

### 8.4 MOVEMENT

The site is constantly used to connect the Denlyn Shopping Mall to the rest of the residential areas of Mamelodi West. There is also an informal transport node that established itself by means of the use of short distance taxi.



Figure 55 the dead facades creating quasi spaces in the Denlyn Shopping mall on site.

Figure 56 Pedestrians lingering on site.



Figure 52 Traders appropriating available infrastructure





Figure 57 underutilised public space due to a lack of social infrastructure.  
Figure 59 the current sidewalk and layby conditioning Shabangu drive.



Figure 58 the view of Shabangu Drive looking West



Figure 60 Informal traders utilizing the sidewalk on Shabangu Drive





Figure 61 Informal traders on Shabangu drive intercepting the pedestrian traffic on the right. on the left is the informal localised transport node.

## 8.5 Denlyn Shopping Mall: Architectural Language of Denlyn Shopping Mall.

The shopping mall has two distinct architectural styles. On a large scale the nearby residential is represented, relating to heritage of typical NE/56 house typology. Creating a typical “stoep” or veranda or patio as public space for the users. At a certain point in time the parapet wall is interrupted very dramatically with a modern barrel vault constructed out of steel.



Figure 62 the current architectural language of the Denlyn Shopping Centre.

Figure 63 different architectural styles used in the Denlyn Shopping Centre.



### **8.6 Materiality:**

The materiality within the precinct consists of a variety of materials to serve different functions. In general a plastered brick and mortar construction or stereotomic finish is visible. However once you enter the shopping mall a clear combination of steel and brick infill is present.

The columns have a heavy stereotomic presence combined with a light tectonic structure.

For informal traders in and around the site a tectonic materiality presides. Therefore in most cases the hierarchy is indicated by the permanence of the specific structures.

### **8.7 Movement:**

The site is constantly used to connect the Denlyn Shopping Mall to the rest of the residential areas of Mamelodi West. There is also an informal transport node that established itself by means of the use of short distance taxi.



## Design Development:

### Iteration 1:

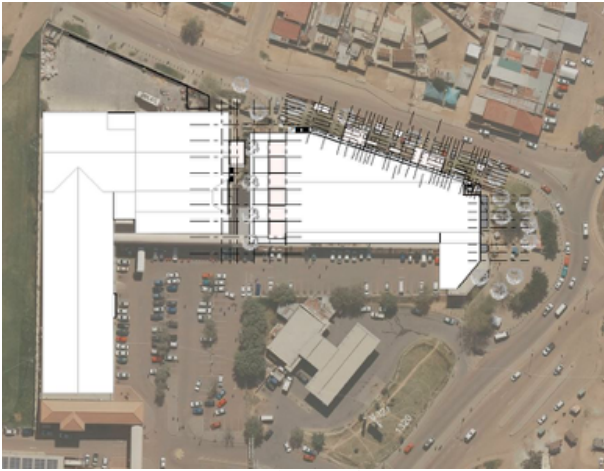


Figure 64 Site layout of Iteration 1.

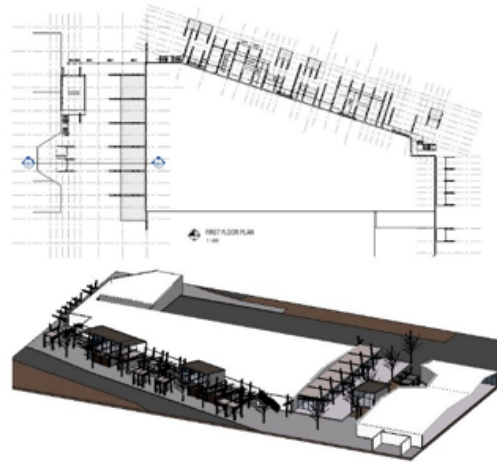


Figure 66 First floor plan and Axonometric View of iteration 1.

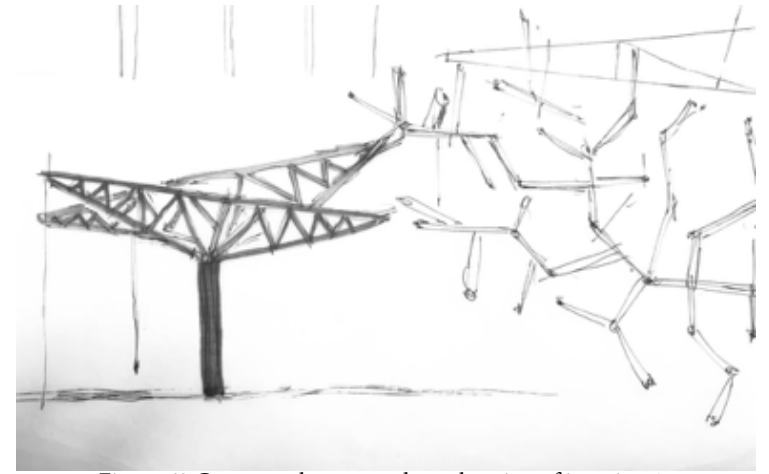


Figure 68 Conceptual promenade exploration of iteration 1

Figure 65 ground floor layout of iteration 1, attempting to maximise the street scape on Shabangu drive.



Figure 67 Conceptual section, that act in a parasitic manner.

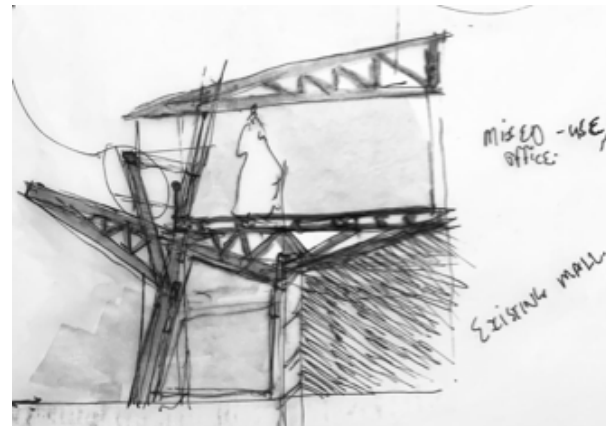
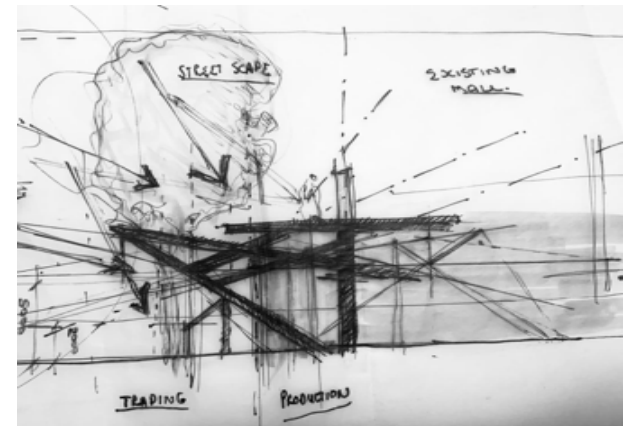


Figure 69 Conceptual from to allow for sustainable design methodologies in Iteration 1.



## Iteration 2:

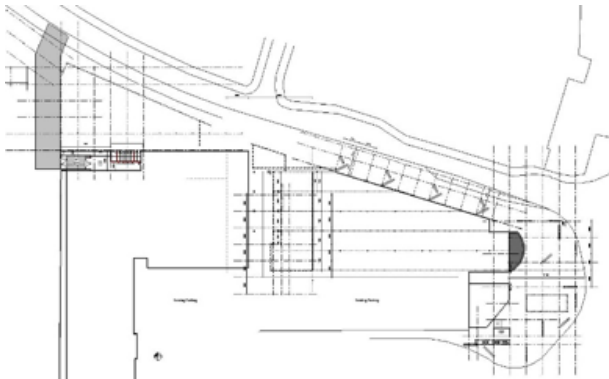


Figure 70 Plan layout of Iteration 2, attempt to utilize the delivery yard more efficiently as well activation the public space on the eastern periphery.

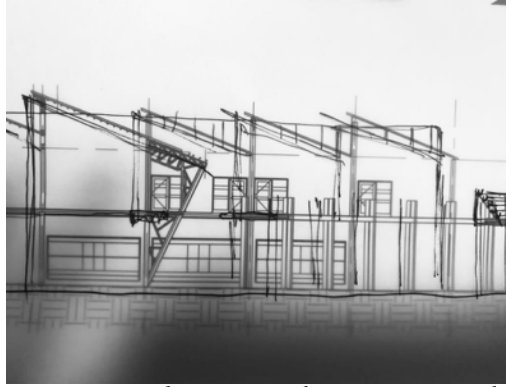


Figure 72 Form and structure exploration in Sectional diagrams

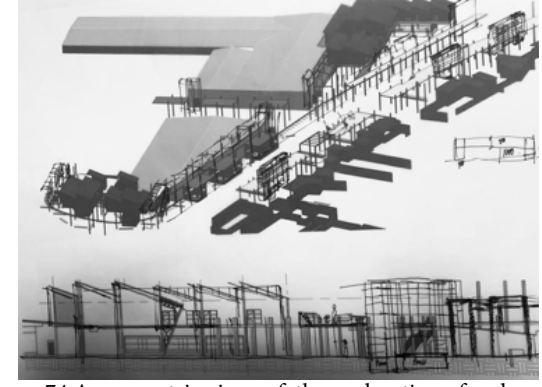


Figure 74 Axonometric views of the exploration of scale and form in regard to existing context

Figure 71 investigating the greenbelt.

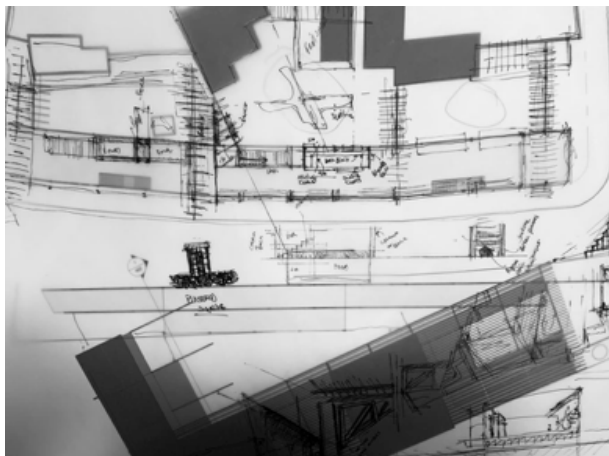
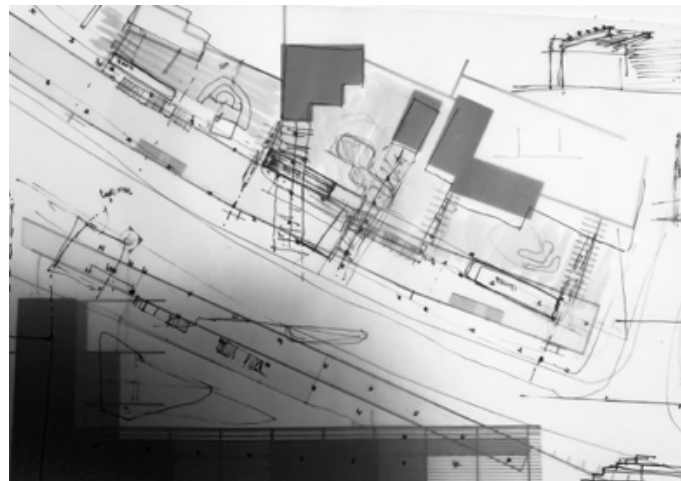


Figure 73 Green belt design alteration so it relates to the existing immediate context.



### Iteration 3:

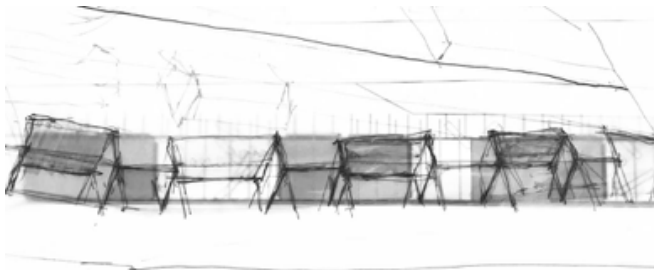


Figure 75 Conceptual approach to interacting with the 'dead northern wall' of the Denlyn Shopping Centre.

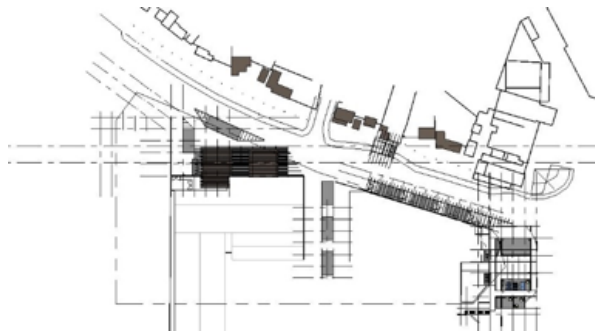


Figure 76 plan layout of iteration 3. The public interface cuts into the existing, mall structure

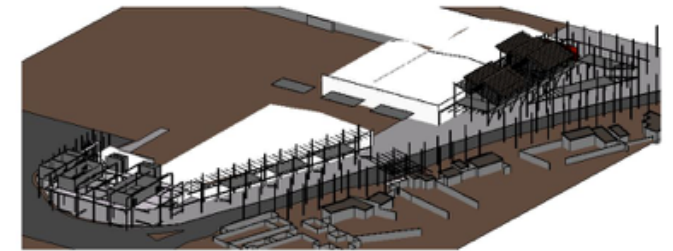


Figure 77 Axonometric view of Iteration 3

Figure 80 the greenbelt is intersected by bus stops in iteration 3.

Figure 78 Tool sheds of the greenbelt that is presented as light boxes.

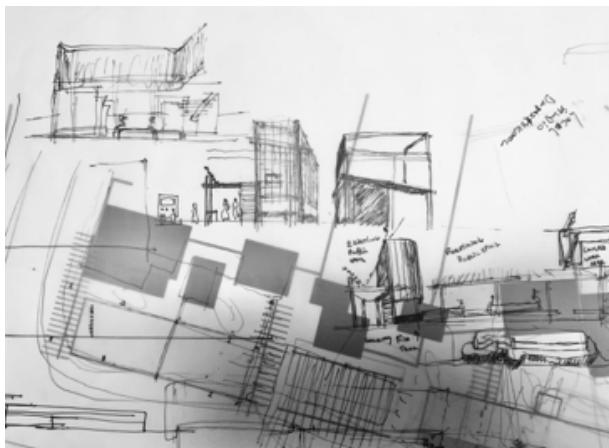


Figure 79 Sectional exploration that focus on utilizing natural light.

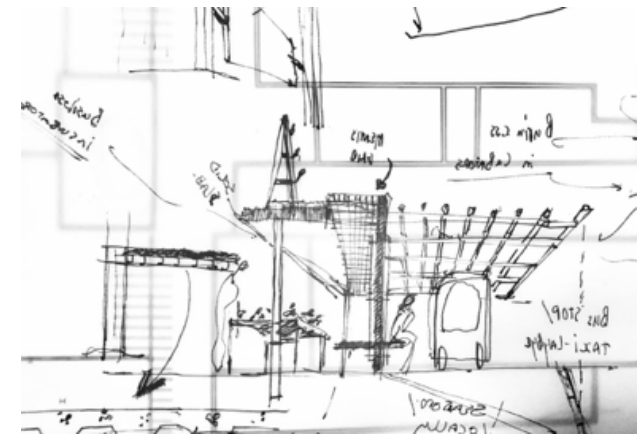
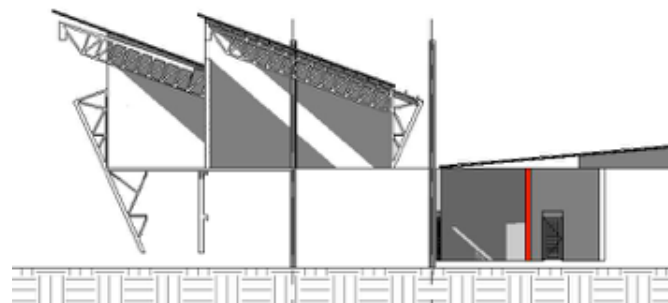
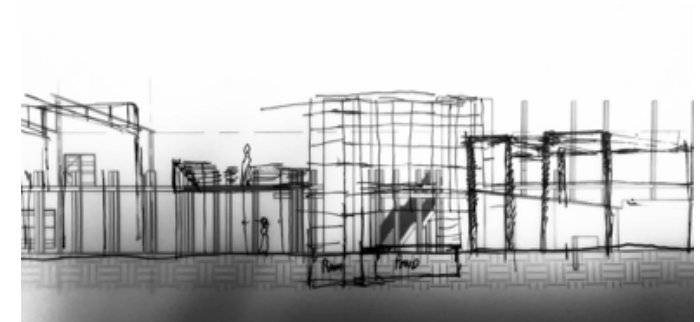


Figure 81 Light box Scale





## Iteration 4:

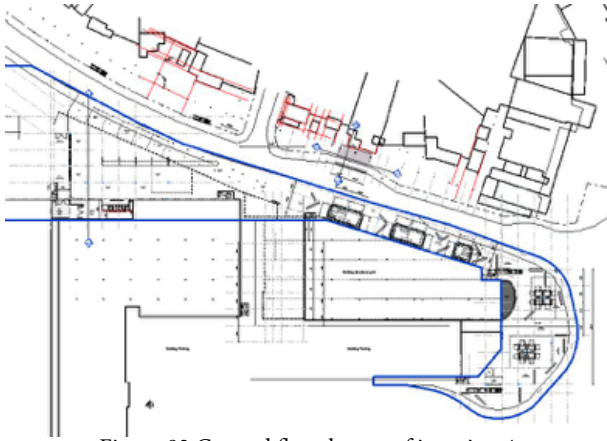


Figure 82 Ground floor layout of iteration 4

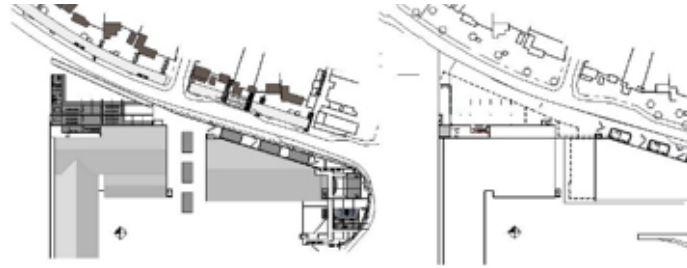


Figure 83 the relation between first floor and ground floor of iteration 4



Figure 84 Iteration 4 showing the use of rainwater harvesting as a design element to correlate with the light boxes from the green belt

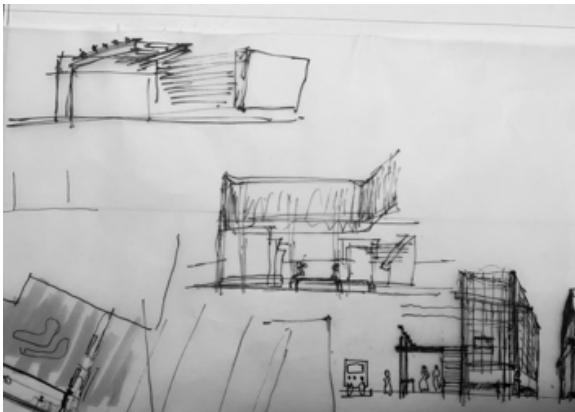


Figure 85 Sketches investigating the look and feel of the public spaces under the light boxes.

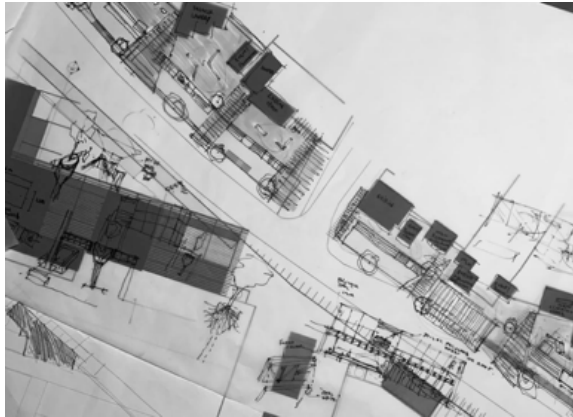


Figure 86 the greenbelt iteration 4.r.

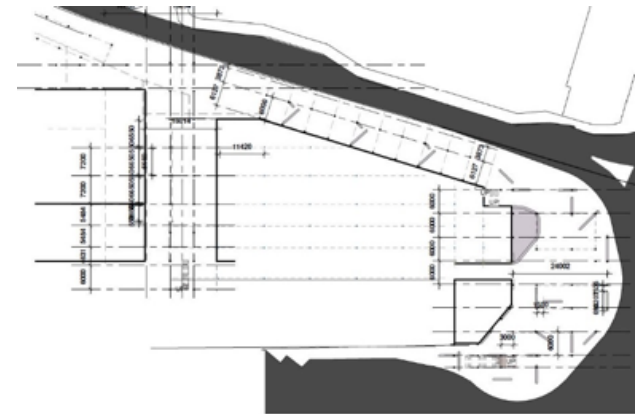


Figure 87 Ground floor plan for iteration 4

Iteration 4:

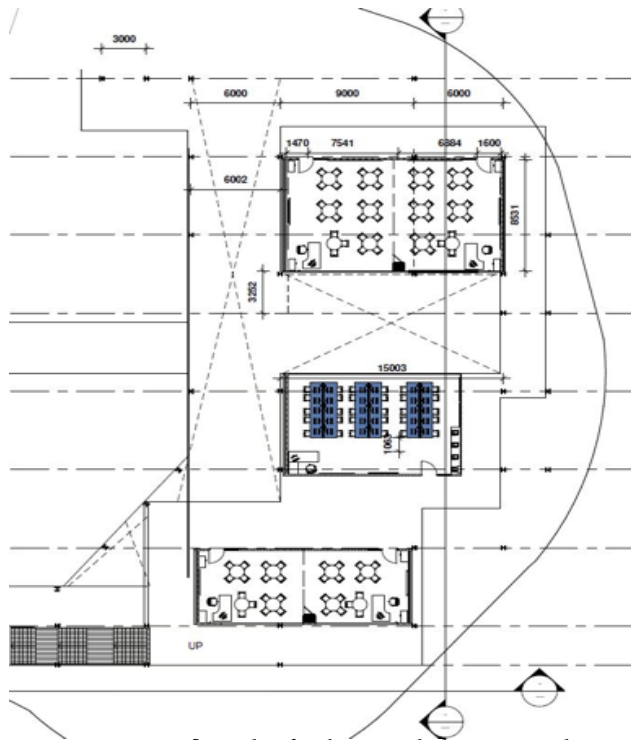


Figure 88 First floor plan for the Mamelodi Business Clinic Iteration 4

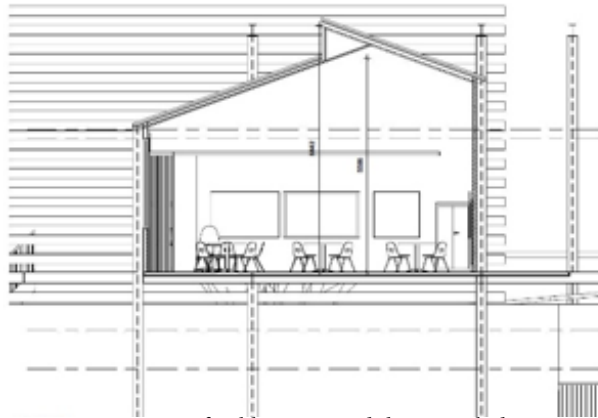


Figure 89 Section of public space and the Mamelodi Business Clinic.

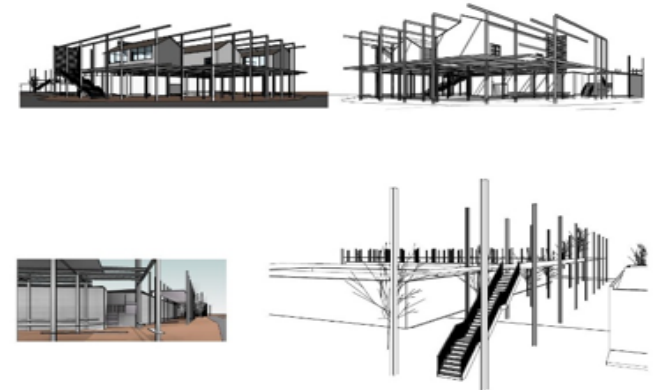


Figure 91 Perspectives from a Southern direction looking at the Mamelodi Business Clinic

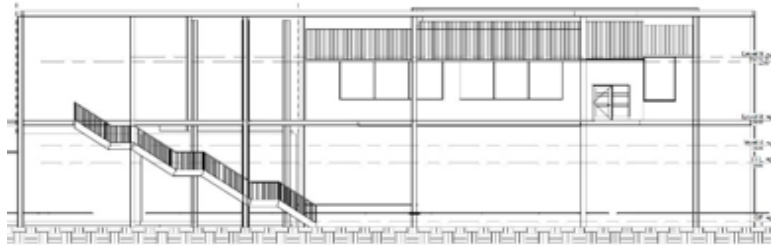


Figure 90 South Elevation of the Mamelodi Business Clinic and public space below.

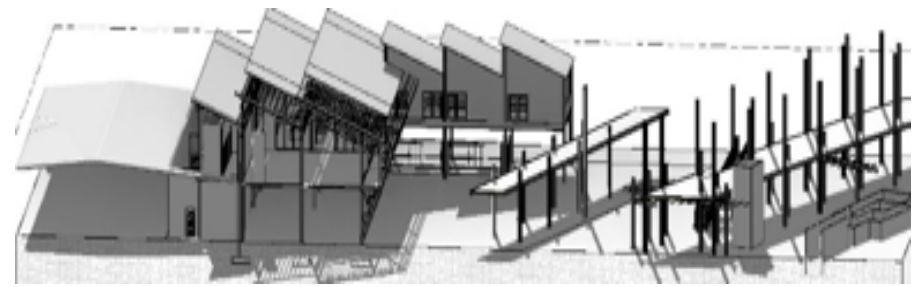


Figure 92 Axonometric section showing the public space and the community kitchen above.

Final Design - PLANS:



GROUND FLOOR PLAN  
1:200

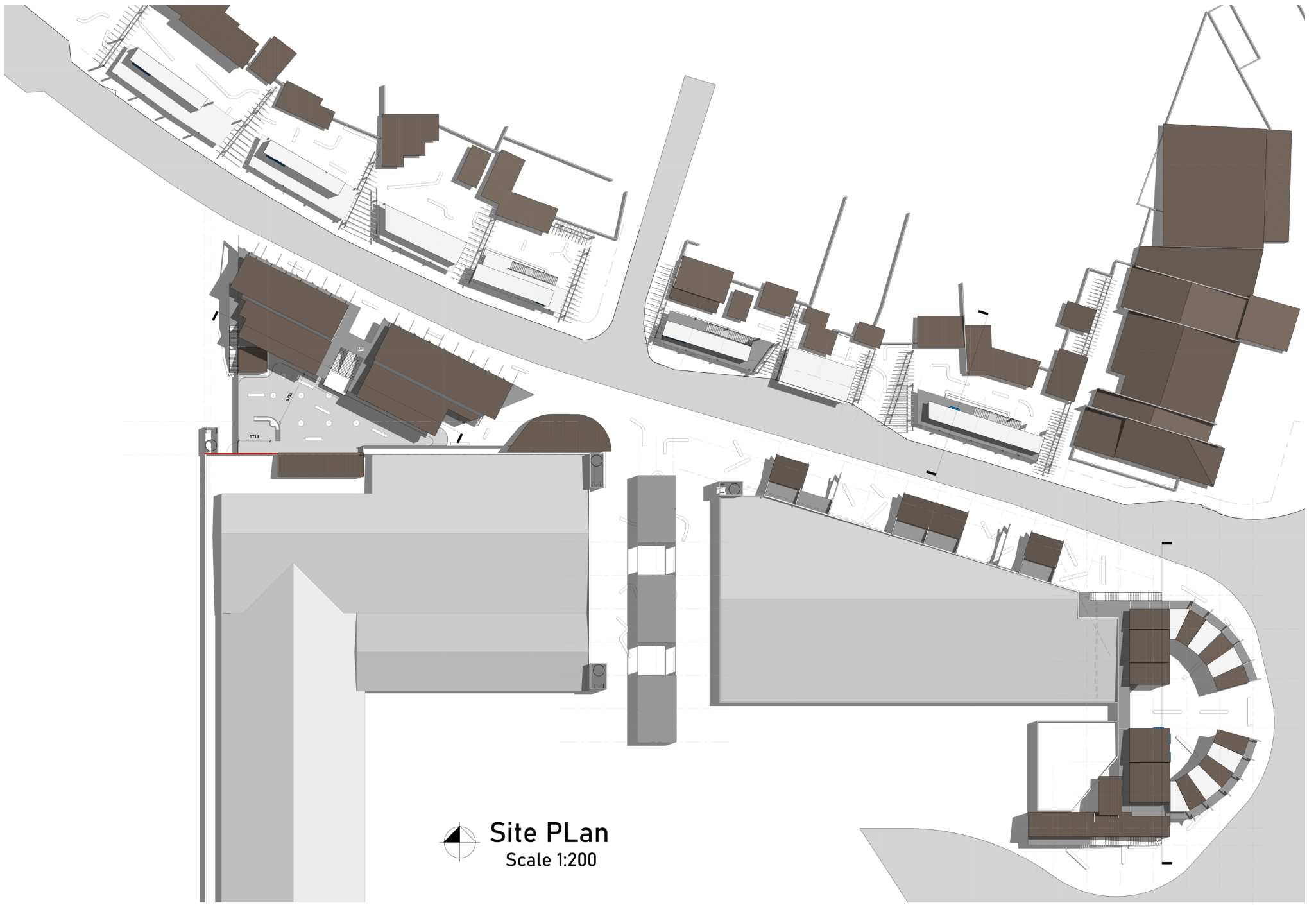


 **First Floor Plan**  
Scale 1:200





**Second Floor Plan**  
Scale 1:200



Site Plan  
Scale 1:200



Final Design PERSPECTIVES:



Figure 96 View from the business clinic

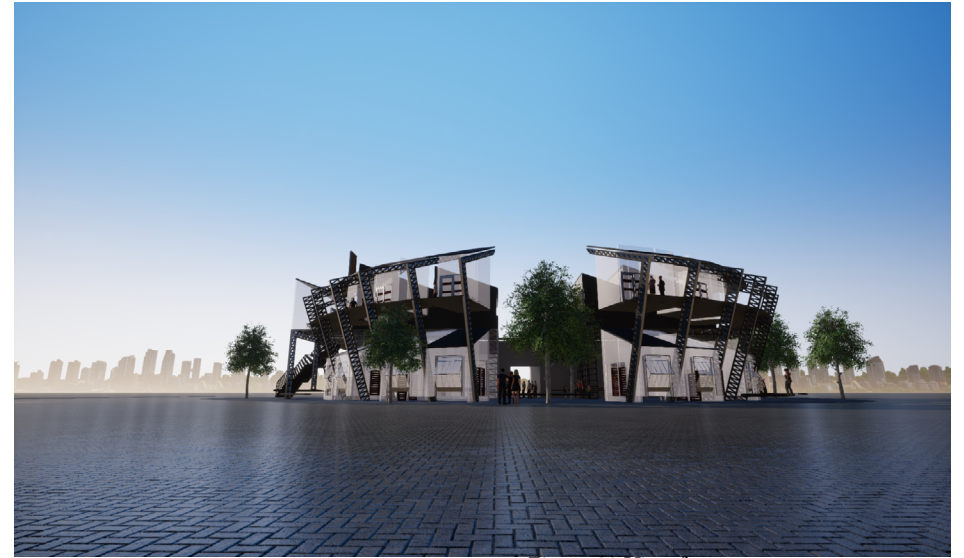


Figure 98 View from east

Figure 97 View of the business incubator

Figure 99 View of the alterations in the mall.





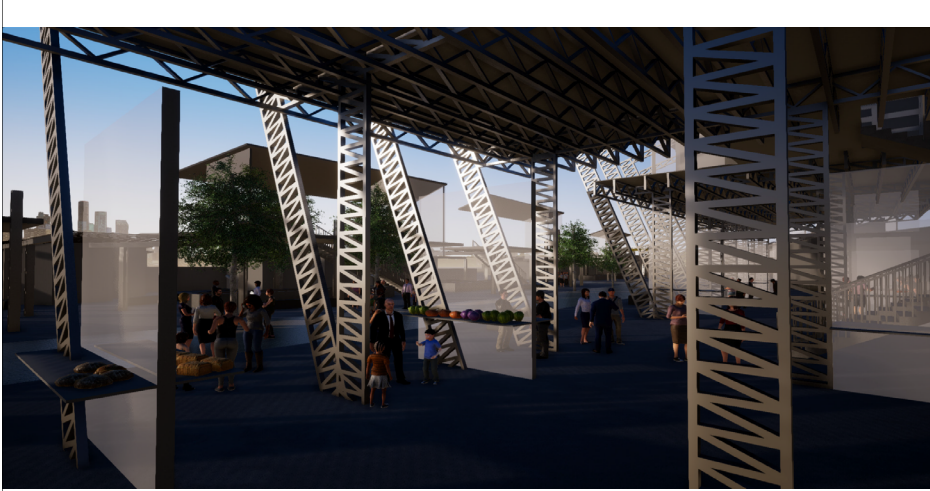


Figure 100 View of informal trading spaces

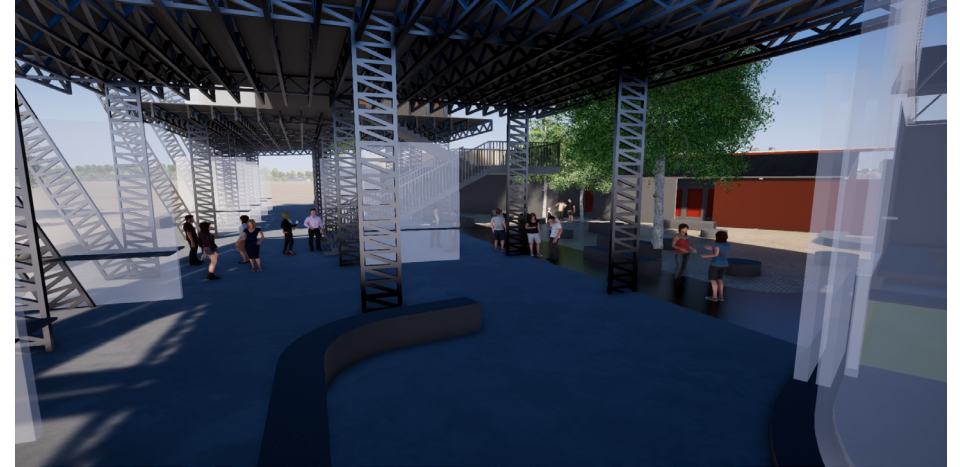


Figure 103 View from the western food truck

Figure 101 Interior view of the Food sciences class room

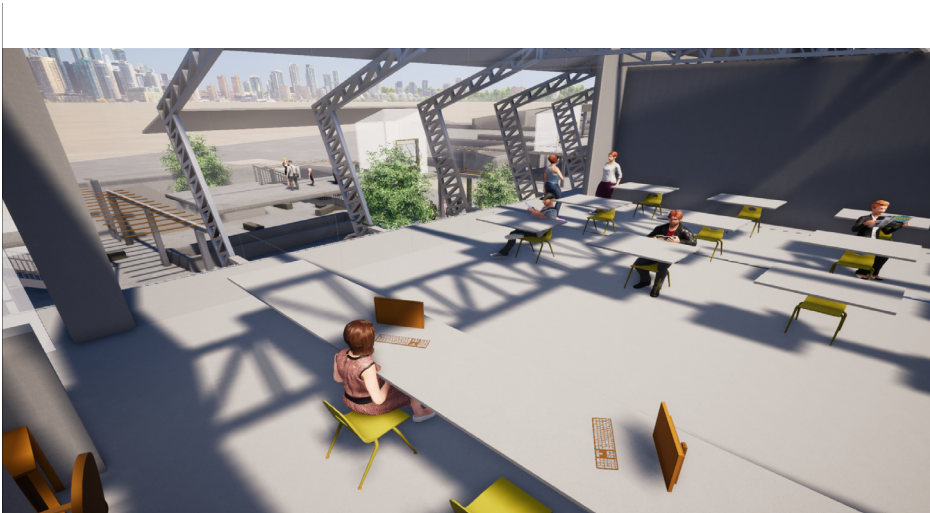
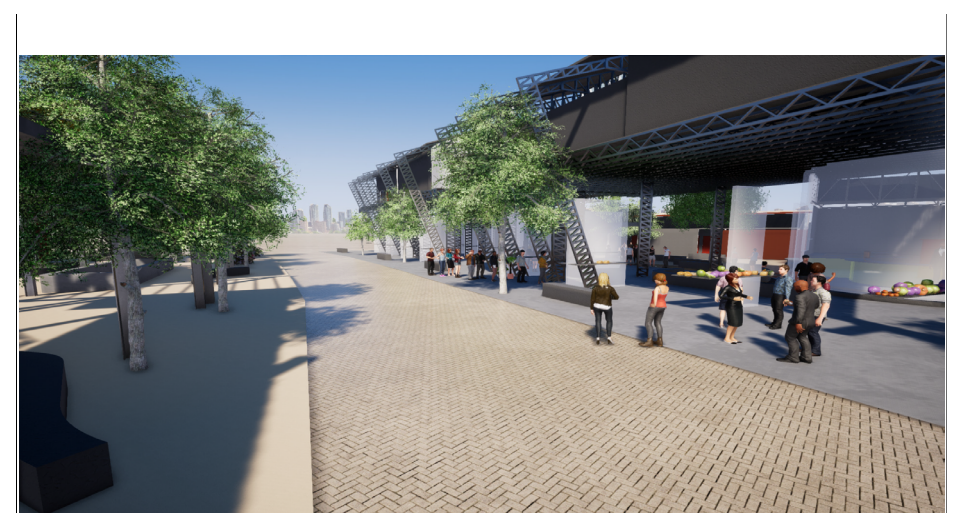


Figure 102 View along the street from west





## 9. TECHNIFICATION:

Introduction: In a constantly expanding urban sphere, throughout developing communities there is a constant need for infrastructure. Along with the developing of infrastructure that creates in-between spaces connecting the social and physical infrastructure. In achieving sustainability one will also improve the general wellbeing of its residents. Creativity can be seen in the everyday appropriation by traders who currently occupy the public, green and open spaces in Mamelodi. “as long as it stands, its good...” Maurice

Many of the traders in Mamelodi don't have the luxury to be concerned about the 'how' and 'with what' they are building their informal trading

stall. But rather the 'as long as it stands and as cheap as possible. But don't forget that it has to happen right away.

Most of the trading facilities erected by traders are to shield the natural elements. Keeping the sun out, getting a rain cover or jus brace against the harsh winter and August winds. In general a plastic lining works great for them. It is easy to attach to any almost any structure. Whether using steel wire, screws or nails, as long as it stay in its place. Others with a better financial standing tend to aim at the vastly over produced commercial Gazebo. This 3m x 3m intervention will provide the adaptability, and mobility what most traders want.

It also allows for the adaptable trading schedules as well as trade cate-



Figure 104 An Informal Trader Stall that caters for the most basic needs. Note the Materiality

Figure 105 Informal traders stalls that make use of a wider range of materials



gories. Available from almost any general good store. Quick and easy to erect and remove. Also very easy to transport.

**9.1 MACRO-CONTEXT** From a historical aspect, Pretoria and Mamelodi is divided by a buffer zone. This buffer is known as Silverton. Mostly a industrial suburb that houses various industries like vehicle assembly plants, various miscellaneous steel and concrete plants.

Also a large amount of factory outlets that provide various products like food and drink, plastics, home renovations (construction) and engineering services. (insert picture)

**9.2 IMMEDIATE CONTEXT** Within the immediate vicinity of the site, a typical residential suburb, the preferred vernacular building methods are that of brick and mortar with cement tile roofs and steel framed doors and windows. However the This might be seen as very basic, but to residents it is perceived as stability, permanence accompanied by a sense of belonging. (insert picture) For most parts of Mamelodi, the informal settlements are a reality. This also very visible as homeowner's uses the typical "shack" for alterations. Mostly due to financial reasons. A quick and simple floor with timber poles and timber beams. From there it is easily cladded with corrugated iron sheets that is fixed with either steel wire or nails.



Figure 106 an informal trader stall making use of a variety of materials.

Figure 107 painted signage leaving a 3m x 3m opening for a gazebo/stall. This is an indication of the adaptability that is needed.





### 9.3 WHAT IS CONSTRUCTION FOR INHABITANTS OF MAMELODI?

Question (to trader): how do you build you're or change your shelter?

Answer (from trader): if it is big or difficult we call the guy from down the road to build. And if it small or easy I will use wire or rope tope fix things, the roof I put rocks on so the wind doesn't take it.

In general the construction is a secondary aspect. As long as it's cost effective, with little hassle it will be more than needed. Until a trader starts settling in, it is then when they realize how particular they are. And everyone is different. Has to be facing this way, needs to have a back wall, has to accommodate their spotter etc. The good has to be

packed out on that part of the table or counter. Those are just general requirements for most.

As a result the trading stall differ in shape, size and volume. In order to meet all these demands, the construction has to be interchangeable. The trader who might be an elderly lady assisted by a primary school child, or a fully grown man, must be able to change it quickly with little effort so that it meets their desired needs. (insert picture)

**9.4 HOW CAN THE TECHNICAL RESOLUTION AND MATERIAL CHOICES BENEFIT MAMELODI WEST?** When working with developing communities the ideal building construction will be to make use of

local skills. By introducing a skills transfer programme the community could benefit from the skills learned. Therefore it is important that vernacular practices are taken into consideration.

A thorough investigation into the existing practices one can identify the practices that the community has skills in as well as what the community relates to.

**THE GRID** Due to the elongated intervention, the most appropriate and functional layout to allow for various technical advantages is to use a 6m x 6m grid. The grid allows to fit various types of infill wall panels at industry standards. Therefore the wastage can be limited. However the intervention is not fully bound by the grid, but allows for various adaptations within these guides. At certain stages the grid can be altered to 3m x 6m, or 1.5m x 3m and so on.

It is clear that a large part of the trading community benefits from a 3m x 3m gazebo size space. This is mainly for trading purposes. With alternative possibilities of production spaces that would increase the

overall volume and space to a 6m x 6m module. Alternatively there are also different variations available like a 4.5m x 6m, or a 4.5m x 3m.

**THE CONSTRUCTION PROCESS** The manufacturing process needs to happen on site. Working with Light Steel Frame construction allows for the on-site assembly. Therefore the necessary steel members are pre-cut and ordered from a factory. These members will be numbered and identified with the necessary adjustments made for an instant assembly.

From the delivery, accompanied to site with instructions to assemble roof trusses, wall panels and floor joists. Light and Lighter Connec-

tions: the use of steel refers to the notion of light and temporary. In regard to the overall construction, heavier and more permanent construction is framed with mild steel beams and columns. Along with the same temporary fixations to allow for future interventions.

### 9.5 THE STRUCTURAL SYSTEM AND DETAILING:

Light Steel Frame structure (LSF) for Walls, floors & Roofs

Roofs: IBR corrugated roof sheets to be used fixed to a LSF C-section roof panel on a grid @ 400mm centres. The roof joist will be spaced at 400mm c/c. A typical LSF roof truss design as per engineer specifications. The roof trusses will have a min depth of 380mm. ISO Board ceiling panels to be used. A combination of thermal and acoustic

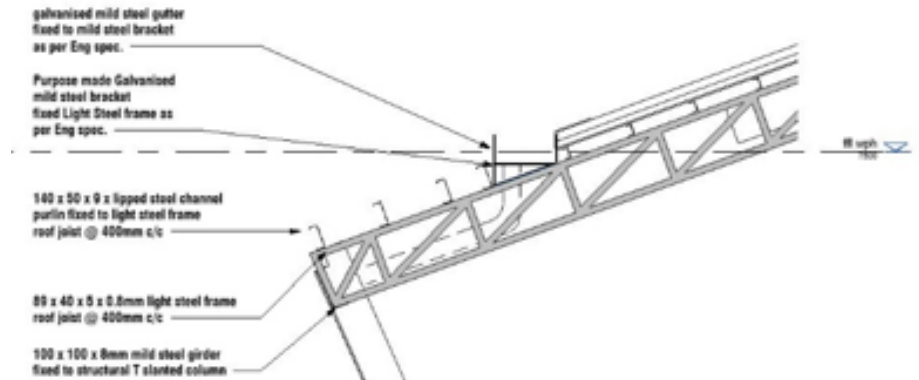
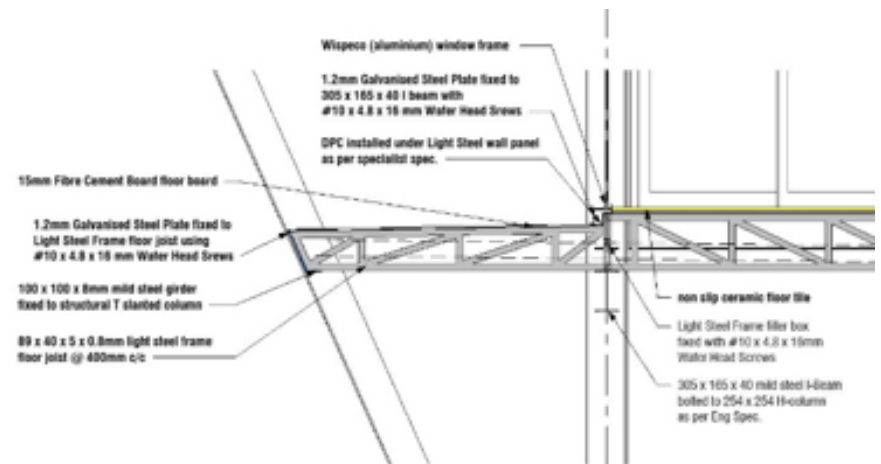


Figure 108 Detail technical exploration on the combination of LSF and Mild gauge steel structures

Figure 109 Balcony floor detail consisting of LSF and mild guage steel construction.



ceiling boards will be fitted in between Top-Hat purlins. Therefore the roof joists will be exposed. Additional exposed cable trays to run along the internal spaces that will accommodate any services need like: extraction fans and air-conditioning, electrical cables, fire prevention and water.

**Walls:** LSF wall panel with 38mm IBR wall cladding fitted with 60mm Sagex EPS with a density of 30kg/m<sup>3</sup> long with a 12mm OSB board fixed to the LSF using Fischer thermofix 6H-NT 80 fixings at max 600mm spacing. Isover Cavity Batt 102mm with a density of 14kg/m<sup>3</sup> and internal wall finish to be 15mm Gyproc Gypsum and painted to specification.

**Floors:** Interior LSF floor joist min 380mm depth @ 400mm c/c as per engineer specification with a timber suspended floors or 19mm Shutter ply or tiled 15mm Fibre Cement Board fixed with 4.9 x 42mm self-drilling screws @ 150mm c/c. Internal floor finishes vary as per plan.

#### **Infill Systems: Walls and Partitions (see details & sections)**

Wall types vary as per plan.

100mm thick composite wall system comprised of 2 x 25mm Thermo-gal Polygala Multiwall, fixed to LSF structure.

Filler panels to be installed using FrameCAD Tri-Fix Brackets or similar.

Floor and wall panel connections using Hurricane Brackets and self-drilling Wafer Head Stitching Screws.

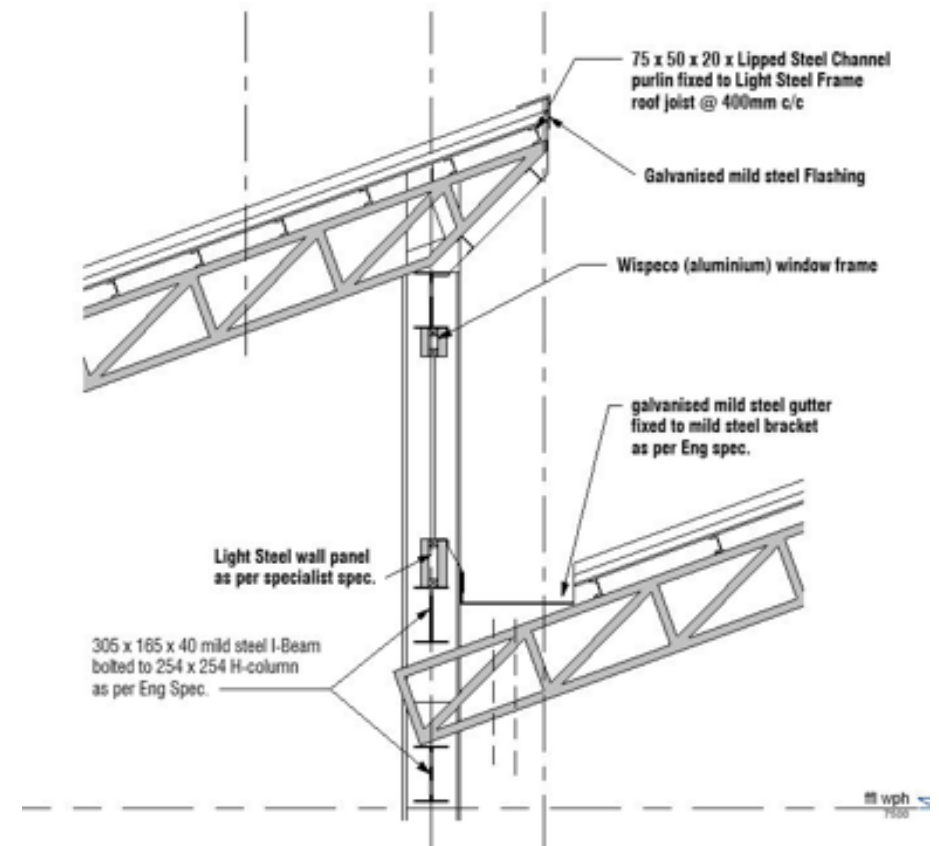
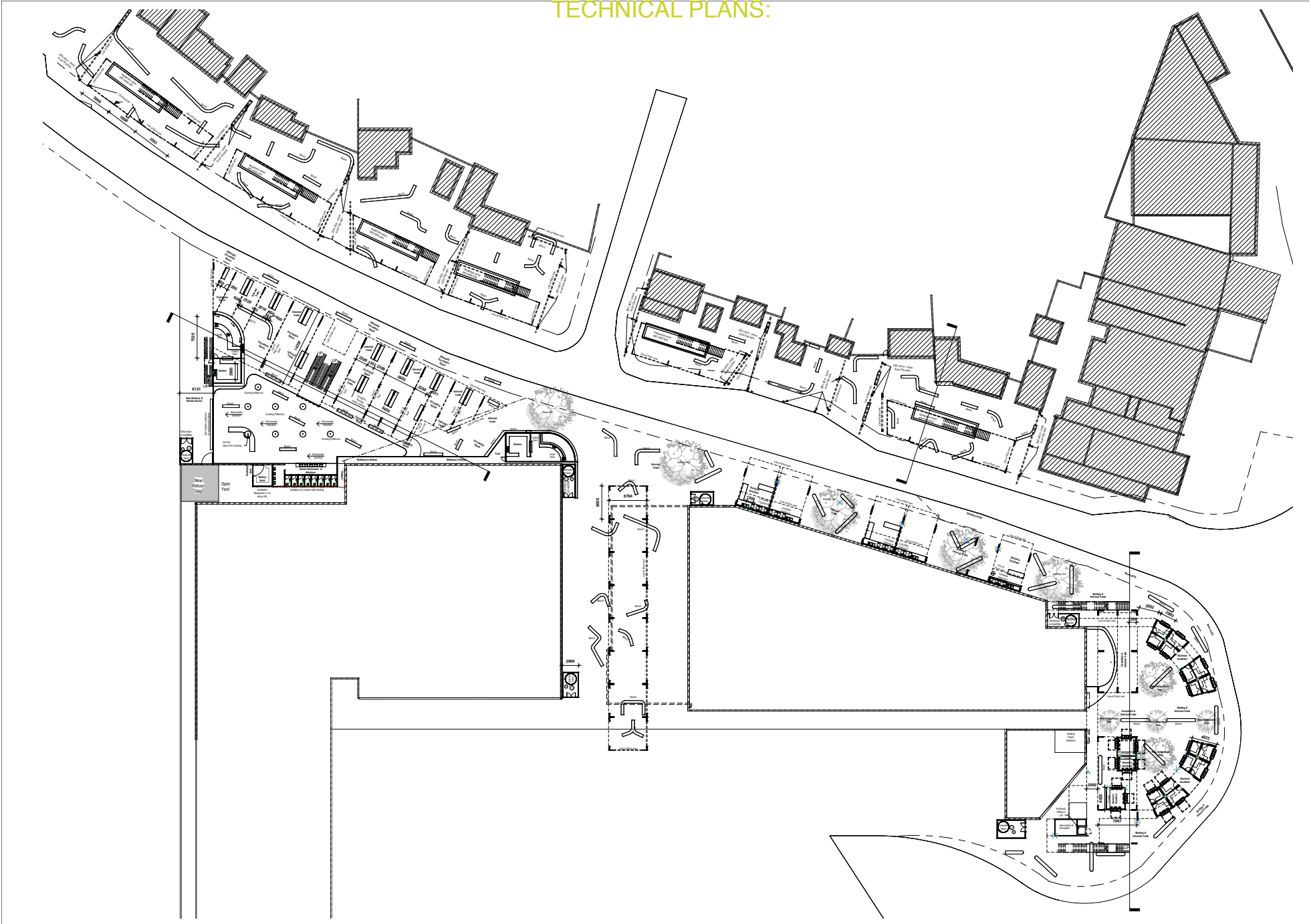


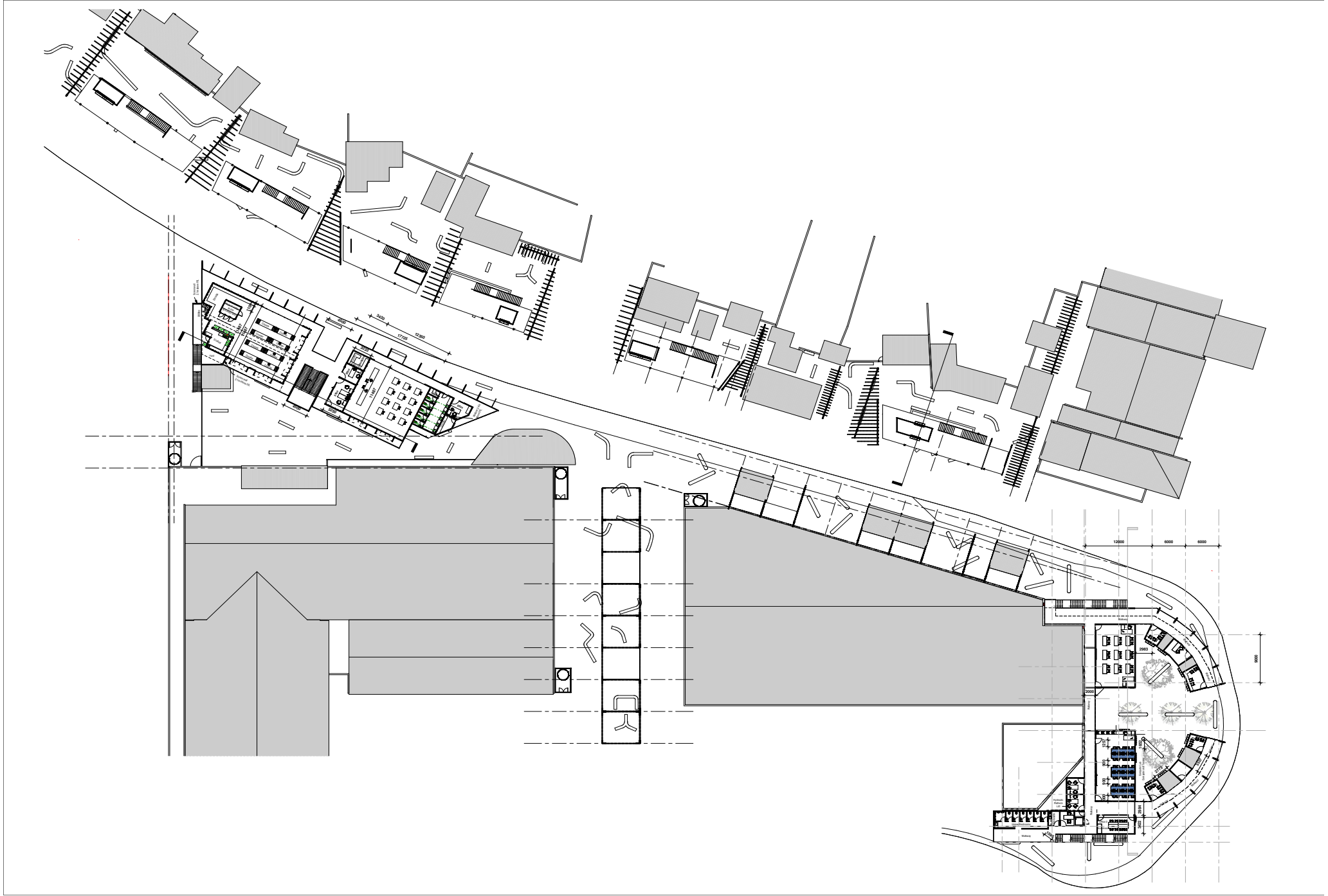
Figure 110 Roof detail showing the clerestory windows and box gutters. .

Joist to wall panel using Kare Industries Wafer Head Screws  
SD1016W2Z3FP 4.8 x 16mm or similar as per engineer specification.  
IBR to Joist fixing using Kare Industries Wafer Head Screws  
SD1016W2Z3FP 4.8 x 16mm or similar as per engineer specification.  
Joist to wall panel using Kare Industries Wafer Head Screws  
SD1016W2Z3FP 4.8 x 16mm or similar as per engineer specification.  
IBR to Joist fixing using Kare Industries Wafer Head Screws  
SD1016W2Z3FP 4.8 x 16mm or similar as per engineer specification.



TECHNICAL PLANS:

















## SUSTAINABILITY & SERVICES

**Rainwater Harvesting:** Rainwater harvesting will happen over two separate phases. Phase 1 will be the existing Denlyn Shopping mall roof adjacent to the architectural intervention and phase 2 the new public and green spaces.

Water demand for phase 1 is determined by the occupation of the community learning centres, along with the formal and informal trade. The water demand for phase 2 is calculated using an average irrigation and aquaponic fish tank size.

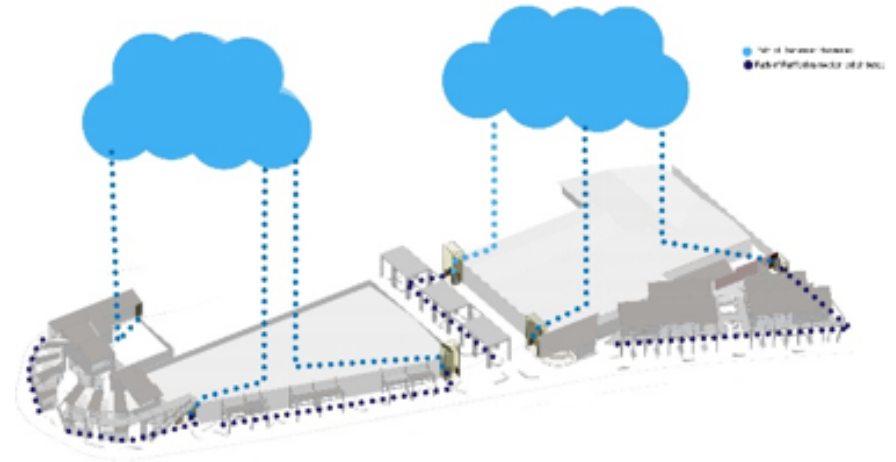


Figure 116 Rainwater Harvesting diagram.

Figure 118 The water budget for phase 2. The green belt

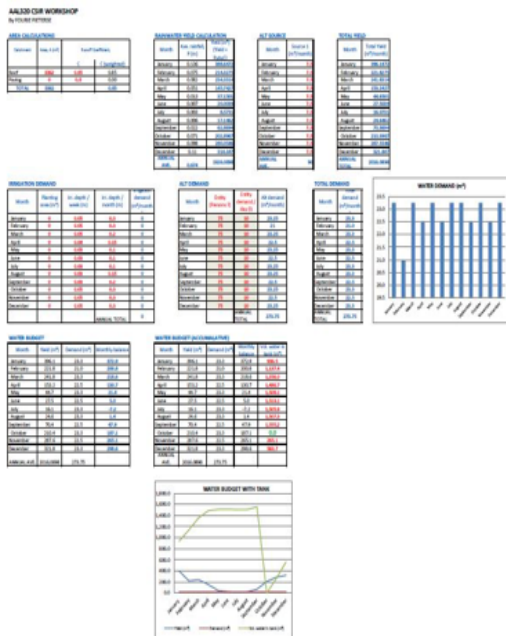
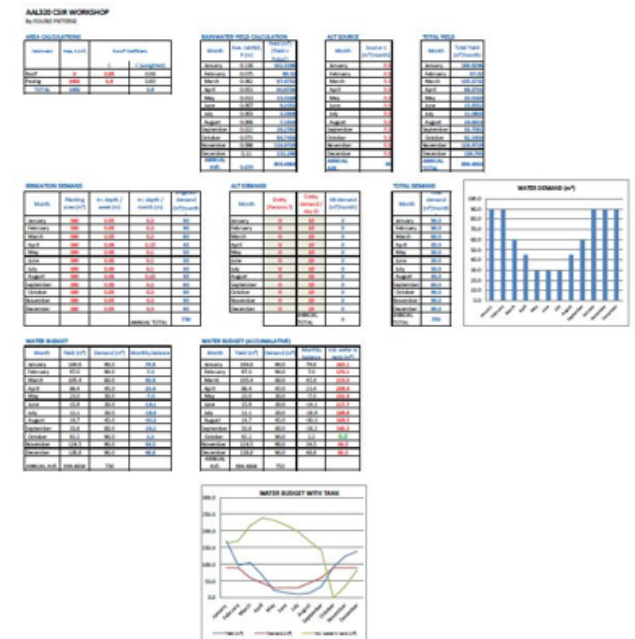


Figure 117 The calculated water budget of phase 1. The parasitic structure around Denlyn Shopping Mall.



## 9.6 SUSTAINABLE SYSTEMS:

Passive sustainable design approaches development.

The environmental design principles followed does not allow for direct sunlight to penetrate the space during the summer months. Therefore appropriate roof overhangs are implemented along with the use of sunscreens to provide shaded external spaces during the hot months of the year.

Ambient natural lighting is an extremely important aspect of the design. For convenience the skills development contains clerestory windows to the South. These windows light will provide good quality light at a

constant rate through the day.

## 9.7 VENTILATION - HEATIN & COOLING:

As most part of the will have a high heat load, especially a kitchen mechanical ventilation is needed. The proposal would not benefit a conventional air conditioning within the kitchen spaces. But rather system that will focus on the circulation of air movement. The mechanical ventilation will also form part of the extractor fans that needs to be provided according to regulations.

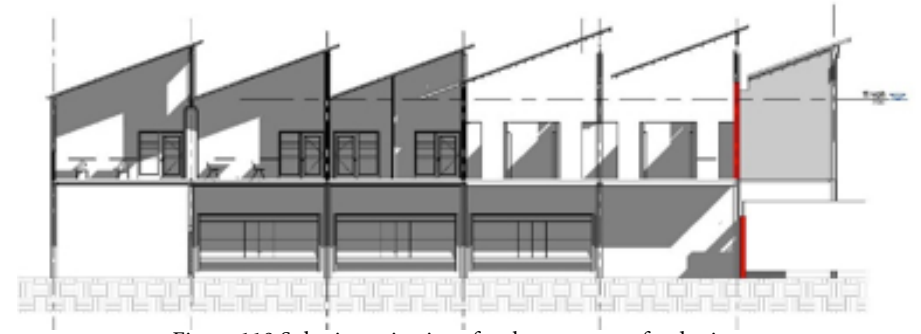
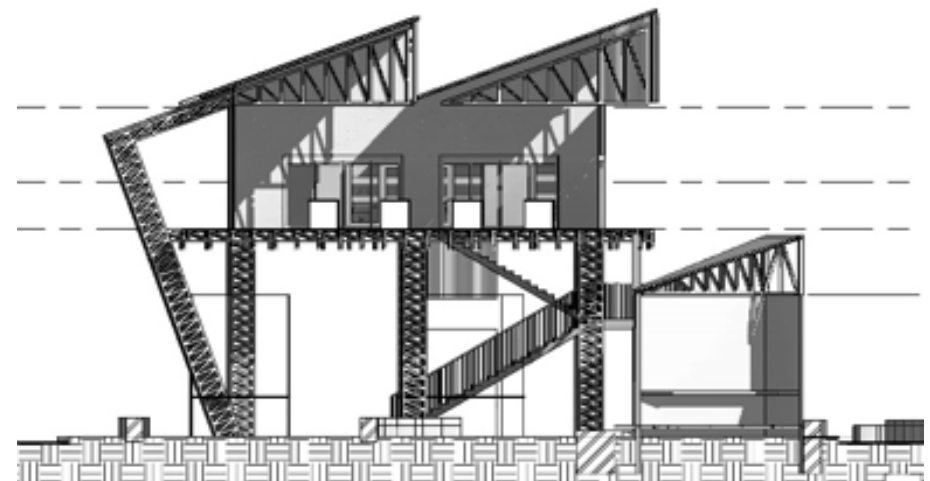


Figure 119 Solar investigations for the consumer food sciences

Figure 120 Solar investigation



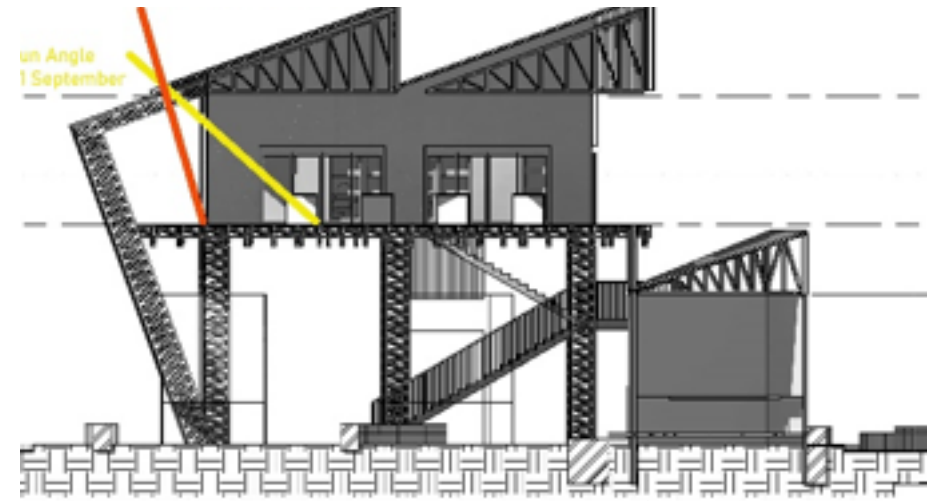
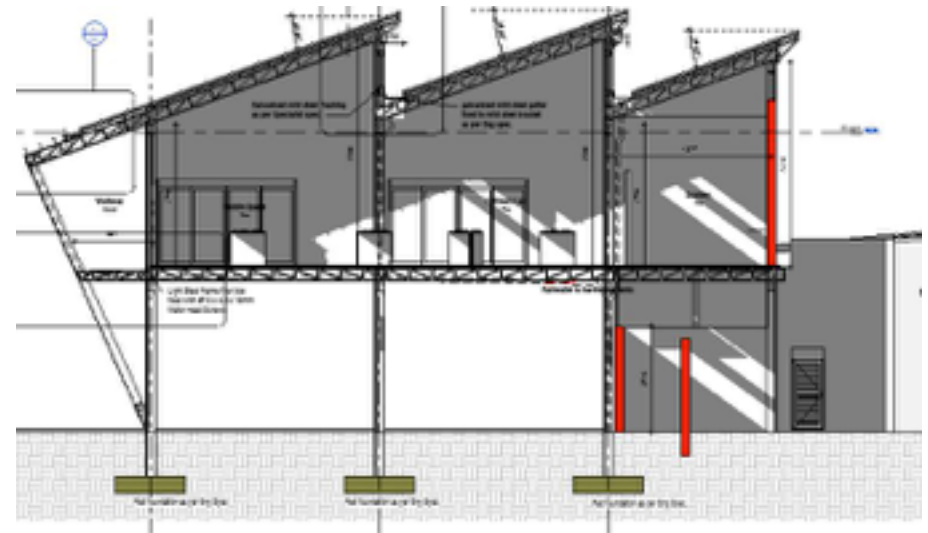


Figure 121 Winter & Summer sun angles

Figure 122 Section showing shading effects of the clerestory windows on the southern side.





## 10. Conclusion:

### Project Summary:

The current economic climate of South Africa is degrading at a rapid pace with high unemployment rates, high living rates along with issues of food security and service delivery that threatens peaceful and productive communities.

In Mamelodi West there is a clear survivalist attitude visible in the sense of formal and informal trade. The interventions by community members are located around the public spaces. These public spaces (the streets) forms links between the different transportation nodes. For most parts of the precinct in question, the formalised public spaces are neglected and underutilised.

At first glance informality appears to be unorganised, illegal and a menace. Most would argue that the informal would encumber the formal and vice versa. It is through this notion that allows for the development of what seems to be quasi space.

The architectural design investigates the relationship between formal and informal as contradicting benchmarks and how these trade networks can allow for the various skills development in order to ease the struggle for well-being.

Therefore the intention of this dissertation is to explore the complexity of public space and trading related activities. By critically observing and interacting with traders the informal has shown various degrees of adaptability and self-organisation that follows certain natural hierarchies.

In alignment with the urban vision the dissertation identified certain social and economic opportunities that arose from the trade founded in Mamelodi West to generate the necessary programmes.

The site is located on the northern periphery of Denlyn Shopping centre. On the corner of Maphalla Street and Shabangu Ave eastwards of the roundabout.

On approach from a southern direction along Maphalla Street, Denlyn shopping centre has is bordered off facing towards the provided parking. On the eastern periphery there are an entrance that forms an axial corridor to the mall. The site start at the specific entrance following the mall structure toward the west. From there the pedestrians will experience a dead northern façade, followed by a deliv-



ery yard along Shabangu Ave.

The opposite side of Shabangu Ave is a typical residential suburb. The southern boundary walls of these residences are interrupted by various entrepreneurial activities that aims to attract the passing by pedestrians with bright signage. The activation of the sidewalk with a promenade that houses the aquaponic systems allows for an alternative skills development platform on the second level. However on the ground floor through the creation of a series of courtyards linking the established trading facilities and the existing public spaces.

For many the site becomes an intersecting platform where the architecture interacts with the urban context, stereotomic language of the Denlyn Shopping centre, but also the small residential scale and grain.

Project Conclusion:

The design is an enquiry into how a formal architectural invention can assist and promote the socio-economic development and growth through skills development programmes relating to the informal trade industry.

The programmes relates directly to the existing activities found on site by providing the appropriate infrastructure that enables so-

cio-economic activities but also allows for the growth as well as the future needs thereof. The public realm is an important aspect of design, and therefore allows for a fast paced movement as well as plenty lingering spaces.

Adaptability is an important aspect that relates to the spatial arrangements, and therefore the spatial provisions are iterated to enhance the possibility of different scenarios. The tectonic nature of the design allows for skills development as well as an interface that creates the opportunities for adaptability through the following interventions:

1. The Light Steel Frame structure follows the notion of how informal trade is neglected and shun in society. In many situations the informal acts in a parasitic nature attaching to so sort of host.
2. The edges of the urban corridor is framed with a bigger scale in order to announce the hierarchy of the programme. The community learning centres also provide the basic necessities for informal and formal trading with no fixed layout that the traders have to follow.
3. The Light steel frame structure is designed to be assembled on site, but also to be deconstructed as the need may arise.
4. The tectonic materiality contrasts the stereotomic of the existing urban grain. The contrast effect draws attention to the con-

struction methods of the intervention, and through this the structure will assist the public and users to broaden their way of thinking. This will allow Mamelodi West to develop an alternative vernacular building practices for LSF construction.

The design intervention responds to the varying scale of the surrounding fabric by breaking up the enclosed mall typology and creating a material language that responds to the residential segment of the suburb.

The simplest provision of urban defining and core infrastructural elements allows for endless possibilities of adaptable spaces.

Some key findings and comments:

The scheme has a lot of potential. The green belt works well and is very well intergrated as a productive public space. The residential trading conversions and courtyards needs more activation.

The structure needs to certified by a Specialist and/or Engineer. In that regard the LSF web system may need to be adjusted in width or converted to a composite column.

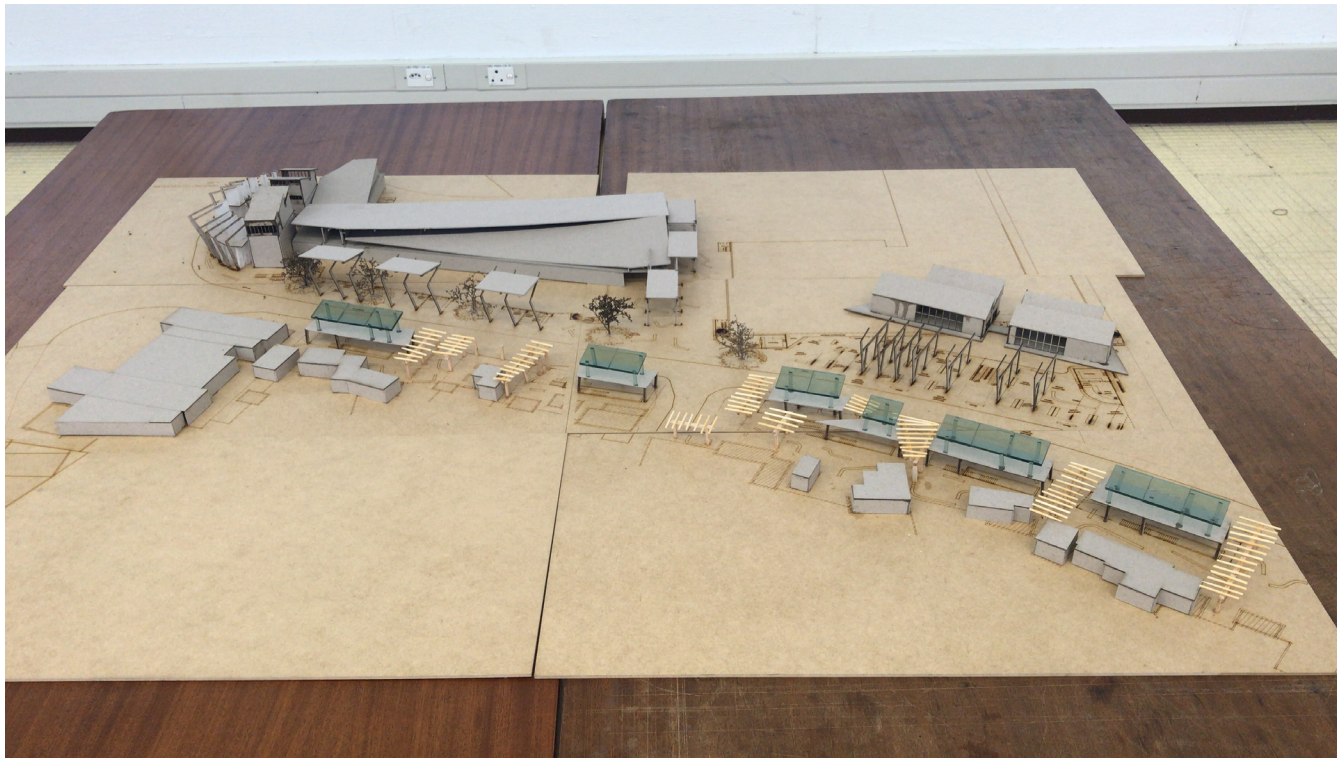
A LSF Struture could form the basis of the layout, but would determine diffucult to alter if LSF is used if the general public needs to accuire materials. However the traders and users are allowed to “Shopfit” the strucuture themselves with available materials.

Fibre cement floorsboards tend to crack easily as the LSF structure tends to have plenty lateral movement and a adifferent material should be used like OSB floor boards (Marine Plywood).

Future development of the “green belt” has not been presented. The assumed prediction would be that this area increases in density rapidly, aloowing for production and living spaces asbove the existing trading spaces overlooking the “green belt”.

In general the scheme relates well to the current cultural and socio-economical issues foun in Mamelodi West today. The schems also deals with the current economical and unemployment issues in South Africa in a vernacular manner. The scheme aims to educate the residents of Mamelodi West, but is not limited to Mamelodi and makes for a realistic solution.

## FINAL MODEL & PRESENTAION:



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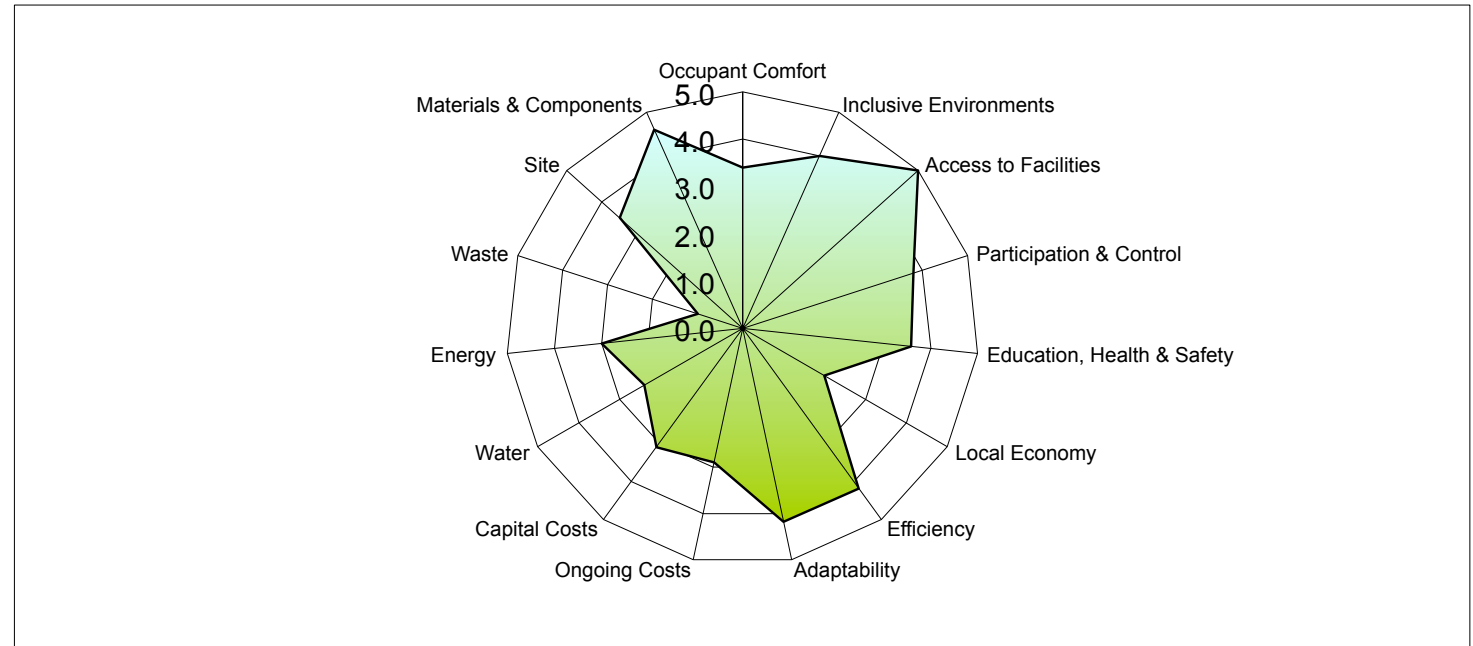
## APPENDIX

# SUSTAINABLE BUILDING ASSESSMENT TOOL (SBAT- P) V1

## SUSTAINABLE BUILDING ASSESSMENT TOOL (SBAT - P) V1.

Used as an impact assessment tool during the designing process, the SBAT system aids in providing possible approaches towards reducing the buildings impact on the environment.

PROJECT		ASSESSMENT	
Project title:	Urban Toolhouse	Date:	Oct-19
Location:	Mamelodi West	Undertaken by:	F BISSETT
Building type (specify):	COMMUNITY CENTRE	Company / organisation:	
Internal area (m2):	890	Telephone:	Fax:
Number of users:	180	Email:	
Building life cycle stage (specify):	Design/Construction/Operation		



**Social** 4.0

**Economic** 3.3

**Environmental** 2.9

**Overall** 3.4