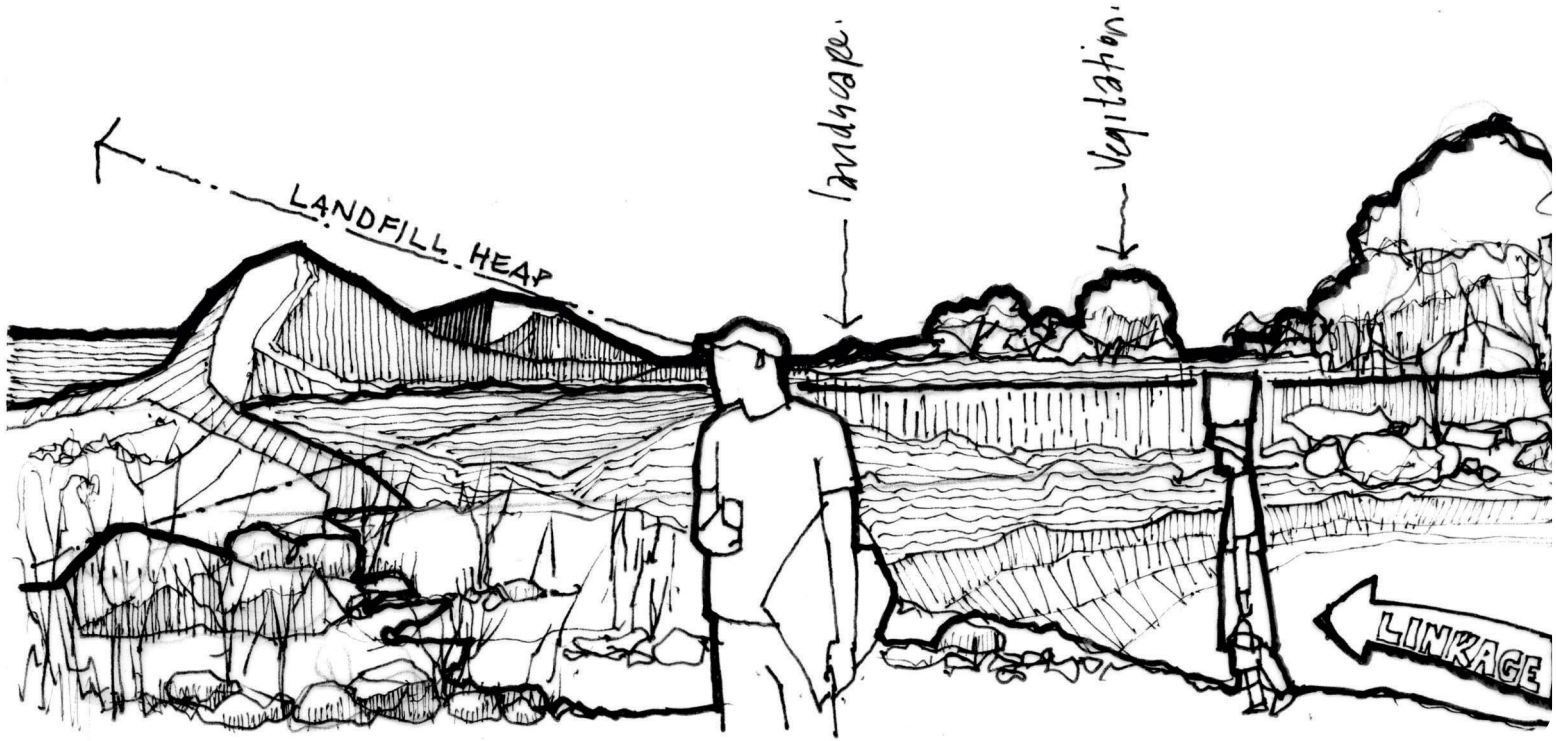

The Mamelodi YOUTH ENTERPRISE HUB

This Masters Dissertation is submitted in partial fulfilment for the degree March (Prof)

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Boukunde 2015

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I would like to thank the following people for their help and support when it mattered the most:

My family back in KwaZulu Natal.

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Lize Wessels, Sebastian Hitchcock, Thembelani Moyo, Nicola Patric, Vipua Rukambe, Mo Dawjee, Arthur Lehloenya and all those who pitched to help towards the end much appreciated.

Abstract

The dissertation investigates the design of a Youth Enterprise Hub on the east periphery of Mamelodi, east of the Pretoria's Central Business district.

It aims to explore the potential for the restoration of social inequality within an emerging township economy in a context that has been historically deprived of any economic infrastructure.

It suggests the integration of a train station, an informal community as well landfill through the proposal of an urban vision which investigates the possibility for the bridging of socio-economic exclusion through a new industrial ethos of innovation, information access, collaboration and skills development.

CONTENTS

Programme: Youth Enterprise Hub and Artisan with Industrial workshops as well co-operative office space.

Site Location: Phumolong, Mamelodi East, City of Tshwane.

Address: Greenview station, Mamelodi

Coordinates: 28°24'34"E, 25°43'51"S

Clients & end-user: The National Youth Development Agency (NYDA), Gauteng Township Enterprise Hubs (TEHs), Master Artisan Academy SA (MAASA), informal settlers, Relaimers of waste.

Keywords: Informal Settlements, Townships, Small to Medium Enterprises (SMME's), Township Economy, Apartheid Spatial Legacy, Resilience, Social inequality

CHAPTER 01 INTRODUCTION

Architecture is 'political' and must represent the demographic of South Africa (Pieterse 2014).

1.1 BACKGROUND

Youth Unemployment in Post-Apartheid South Africa

In post-apartheid South Africa it can be argued whether we all stand an equal chance of making in life. As the young people of this country we cannot claim that we fought for liberation, and yet we are the ones who stand to benefit the most.

According (Statics South Africa [STATS SA] 2015: 1). Reporting on National and Labour Market outcomes amongst youth. Youth unemployment has been marked as a crisis and shock to the economy in the post-war era. This is common in all countries across the globe and South Africa has not been able to escape this global crisis. Over the period of 2008–2015, key labour market rates deteriorated by a larger margin among youth compared with adults, and the frustration of not finding employment has led many young people to become discouraged and exit the labour force altogether (STATS SA 2015: 2).

It is stated that 55% of the youth that are actively looking for employment have qualifications below matric level, this has been said to be a ticking time bomb as the rising number means that youth are unable to acquire the skills and experience needed in order to drive the economy forward STATS SA 2015: 2).

Fig. 1.1
Youth of 1976 during Apartheid Era.

Fig. 1.2
Youth in post apartheid South Africa

Fig. 1.3
Children of Phumolong with reclaimed objects from landfill

Fig. 1.4
Minister of higher Education and Training (left) Edgar Pieterse (Middle) and Cameron Sinclair.

1.3 THE PROBLEM STATEMENT

The architectural expression related to townships remains fragmented and disjointed in relation to other urban environments, this in spite of the dynamic shifts in urban areas related to the economic growth.
The role of the Youth Enterprise Hub attempts to change this lack of expression through the investigation of the following problems.

Urban Issue

In order to understand the urban issues of Mamelodi as a Township, one has to look back and study the background of black settlements in Pretoria. During the period of 1948 to 1960 apartheid zoning was deeply entrenched it terms of spatial planning. In most cases informal settlements remain far from economic opportunities as they were systematically located in fringes. 'fringe cities'

Architectural Issue

The legacy of apartheid planning with rapid urbanisation has led to high levels of informality therefore increasing the demand for employment. It is important to recognise that urban planning and architecture cannot create jobs however the existing physical barriers continue to delay expansion, access and therefore economic growth.

The Research Questions

In to better understand the past and potential of South Africa's segmented, multi layered economy, it becomes imperative to ask the following questions:

- Is South Africa's fast paced formal economy accessible to the informal economy of a place like Phumolong? If not, what urban and architectural interventions can be implemented in order develop this condition?
- What is the potential of self-generated economic activity in an informal context lacking access to basic infrastructure and services such as electricity and transport?
- What strategies are possible in order to overcome the physical barriers that continue to hinder the development of the spatially marginalised?
- What is the potential of the railway in an informal context with an emerging informal economy?

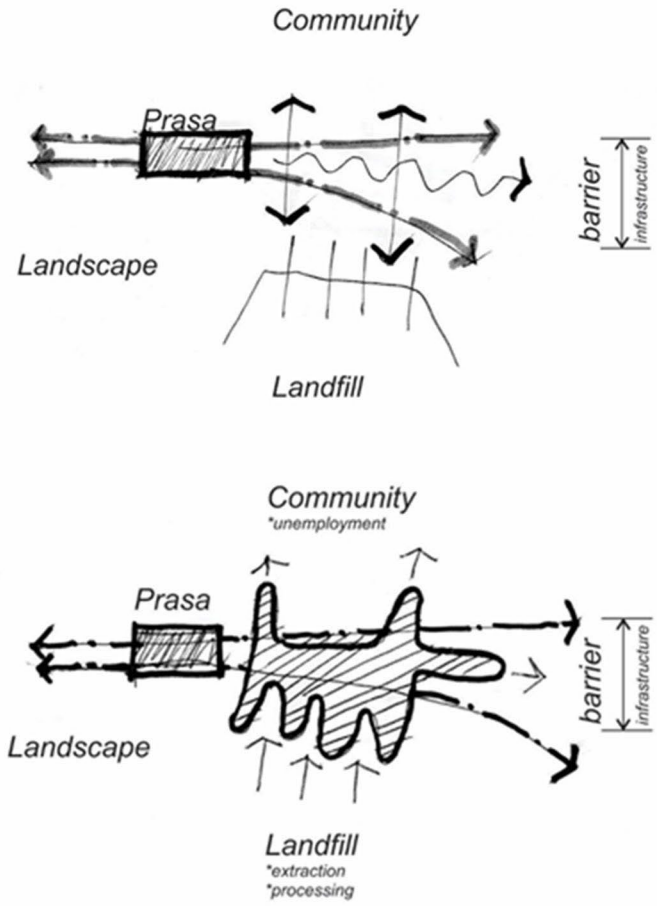


Fig. 1.6
Illustrating concept for the mediation of physical barriers

Fig. 1.7
Women of Phumolong migrating daily to the landfill

1.4 Dissertation Intentions

Countries everywhere are divided into two distinct spatial realms, the rural and the urban. Classic theories of development predict faster growth in the urban sector compared to rural setting. Thus causing rapid rural urban migration therefore increasing the average incomes in both places (Mahajan 2014: 1). The pattern of rising urbanisation is a world phenomenon as cities across the world are powering growth development and modernisation (Mahajan 2014: 1). In the case of South Africa and its cities the spatial realm due the apartheid spatial legacy has been disconnected to such a level that the formal economy is unable to absorb new entrants into the formal job market (Dewar and Uytenbogaardt 1991:16).

The intention of the dissertation is to study the importance of South Africa's township economy, its fast-paced growth in relation to the country's desired objective of faster growth to job creation.
Spatial transformation is necessary in order to optimise access to socio-economic opportunities of informal settlements such as the case of Phumolong, the architectural intention strives to create spaces that allow for self-generated employment through youth programmes, co-operatives and entrepreneurs.

Fig. 1.8
Waste reclaimers on Harthely landfill

Fig. 1.9
Newly renovated GreenView Station

1.5 DESIGN INFORMANTS

Due to the Spatial Legacy of Apartheid many people who live in townships and informal settlements remain far from economic opportunities. Firstly at regional scale the objective is to study the existing spatial development frameworks, in order to observe the present day development and economic patterns. Secondly we will study the visions of the City of Tshwane in order to align it with real world strategic objectives. Then finally we study the principles of NDPG National Development Partnership Grant in order to design and an appropriate Group Urban Vision for Phumolong, which addresses spatial inequalities of the apartheid legacy.

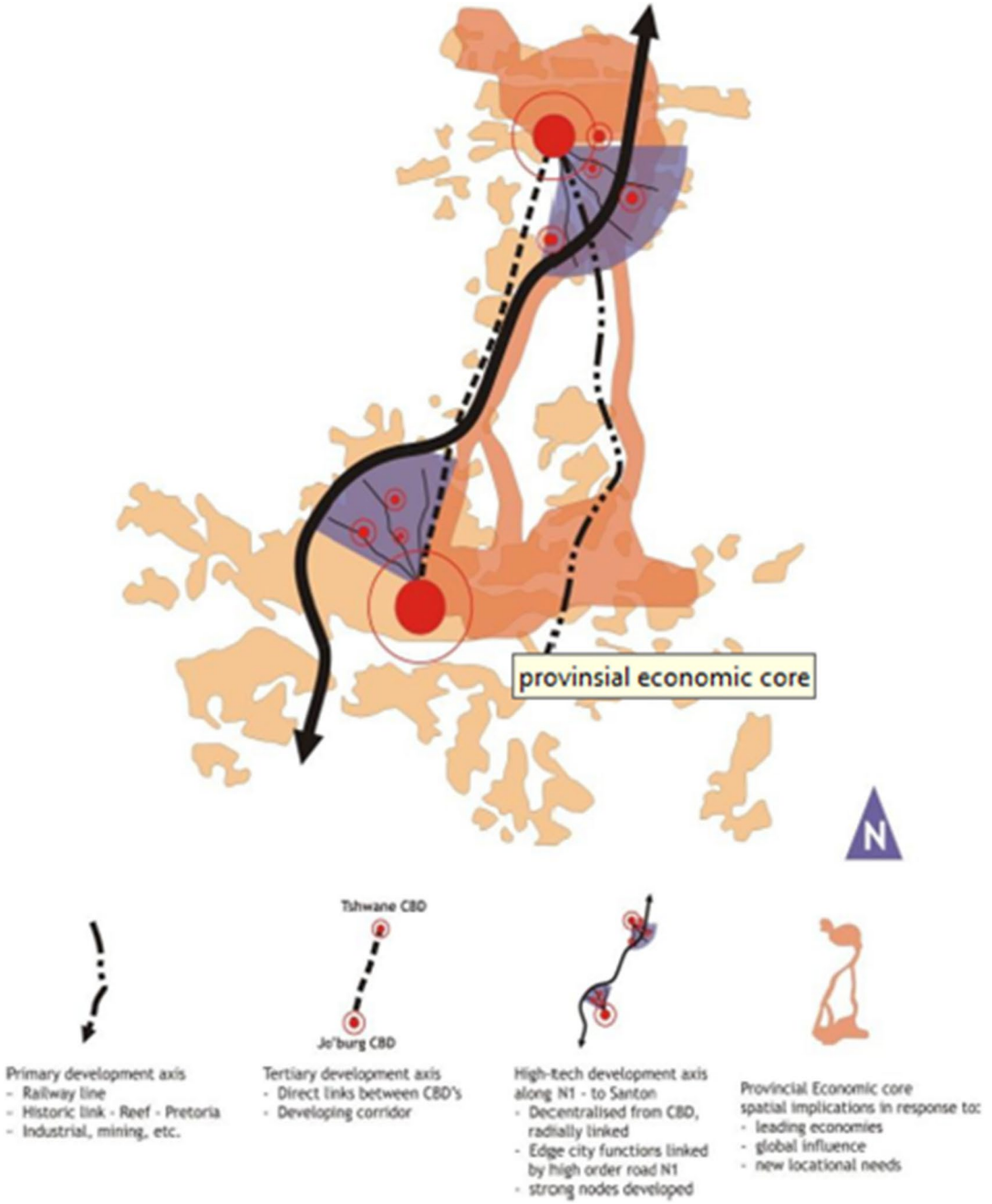
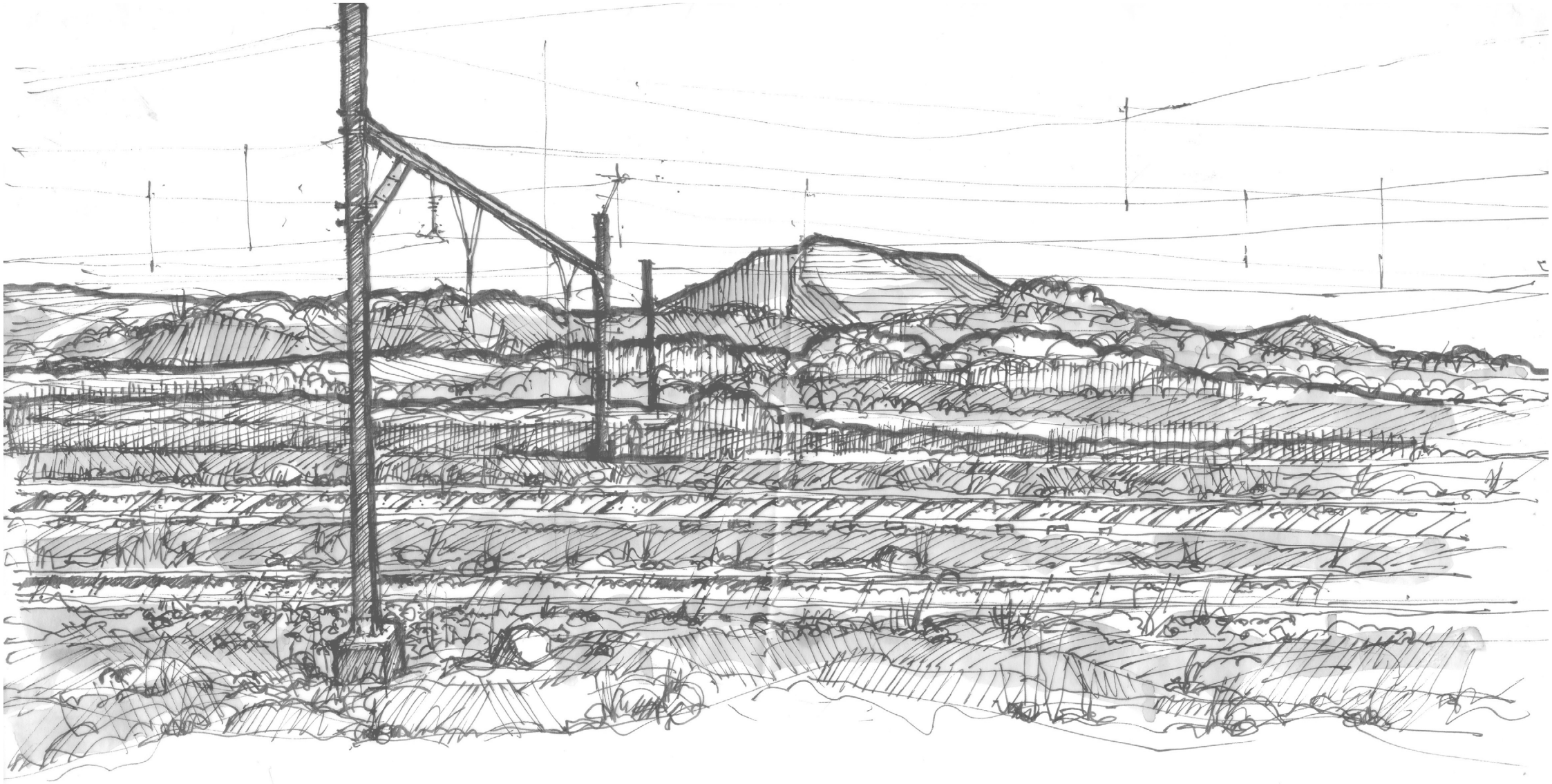


Fig. 1.10
Tshwane Johannesburg interrelationships (City of Tshwane 2012)

1.6 DELIMITATIONS

The dissertation strives to utilise research and theory in order to generate a site-specific solution which can be utilised in any township and informal settlement affected by apartheid spatial legacy through urban policy. However it refrains from the assumption that the model or typology is the ultimate solution to the problem but rather an experimental intervention that could be a catalyst for a larger societal issues such as youth unemployment within the township and informal settlement space 21 years in post-apartheid South Africa.



CHAPTER 02 THE URBAN CONDITION

2.1 Background

Historical Context

Dewar (1991: para 01) suggested appropriately, planning consciousness needs to be firmly rooted on two pillars. The first is humanist. The art of urban planning is concerned with the making of human settlements. The modern contact within which this occurs is dominated by three dynamics: rapid population growth; rapid urbanisation and rapid technological change.

Initially known as Vlakfontein, Mamelodi was established as Black Township in 1951, located 20km east of the city of Tshwane (Pretoria). The first residents of Mamelodi were people who were removed other areas according to the Group Areas Act (1950). The name Mamelodi is the name of which President Paul Kruger was known by black residents meaning 'mother of melodies', as he was known for imitating the whistling of the birds or 'father of the whistling'.

'Phumolong', in Se-Sotho means 'resting place', is the local name for the area occupied entirely by informal settlers and shacks with very limited municipal services. Phumolong has a population of over 27 000 people living in an area 600 thousand square kilometres, there are no hospitals, schools or police stations. There is no formal transport system within the community, women generally walk on foot and men use bicycles in order to get around.

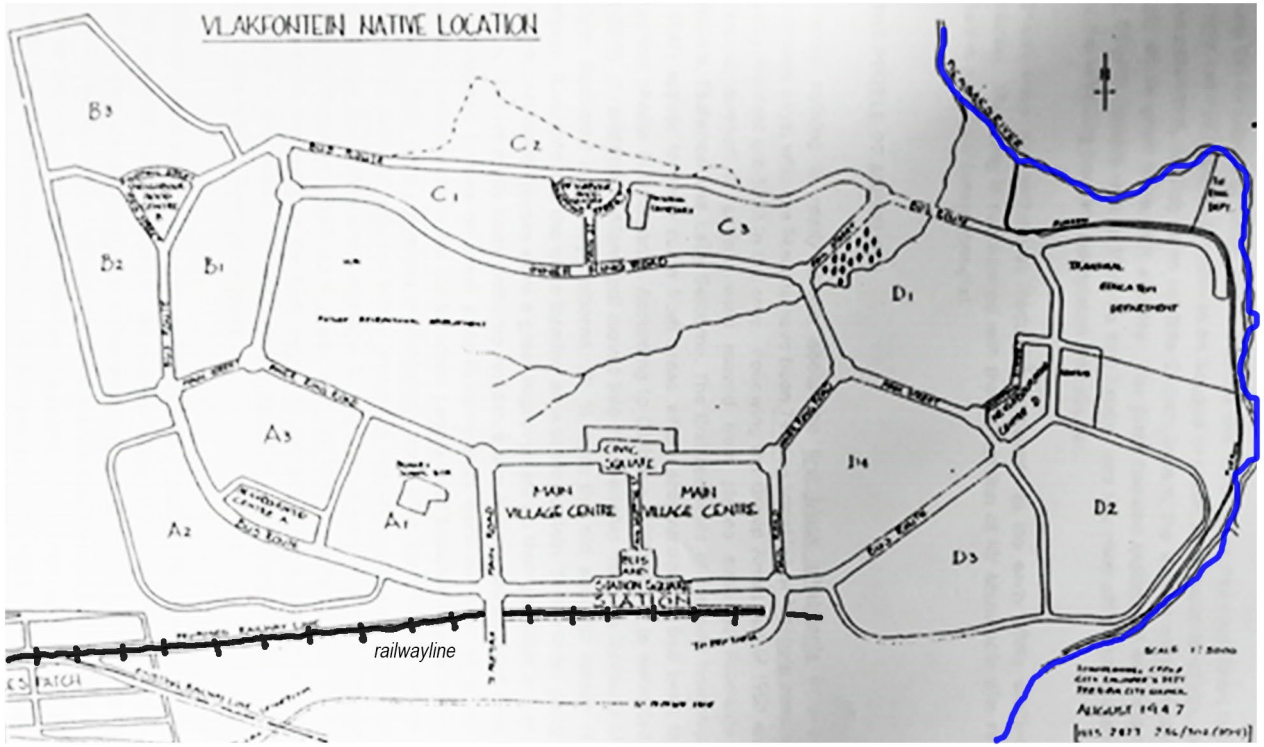


Fig. 2.1
Vlakfontein Native Location in 1947

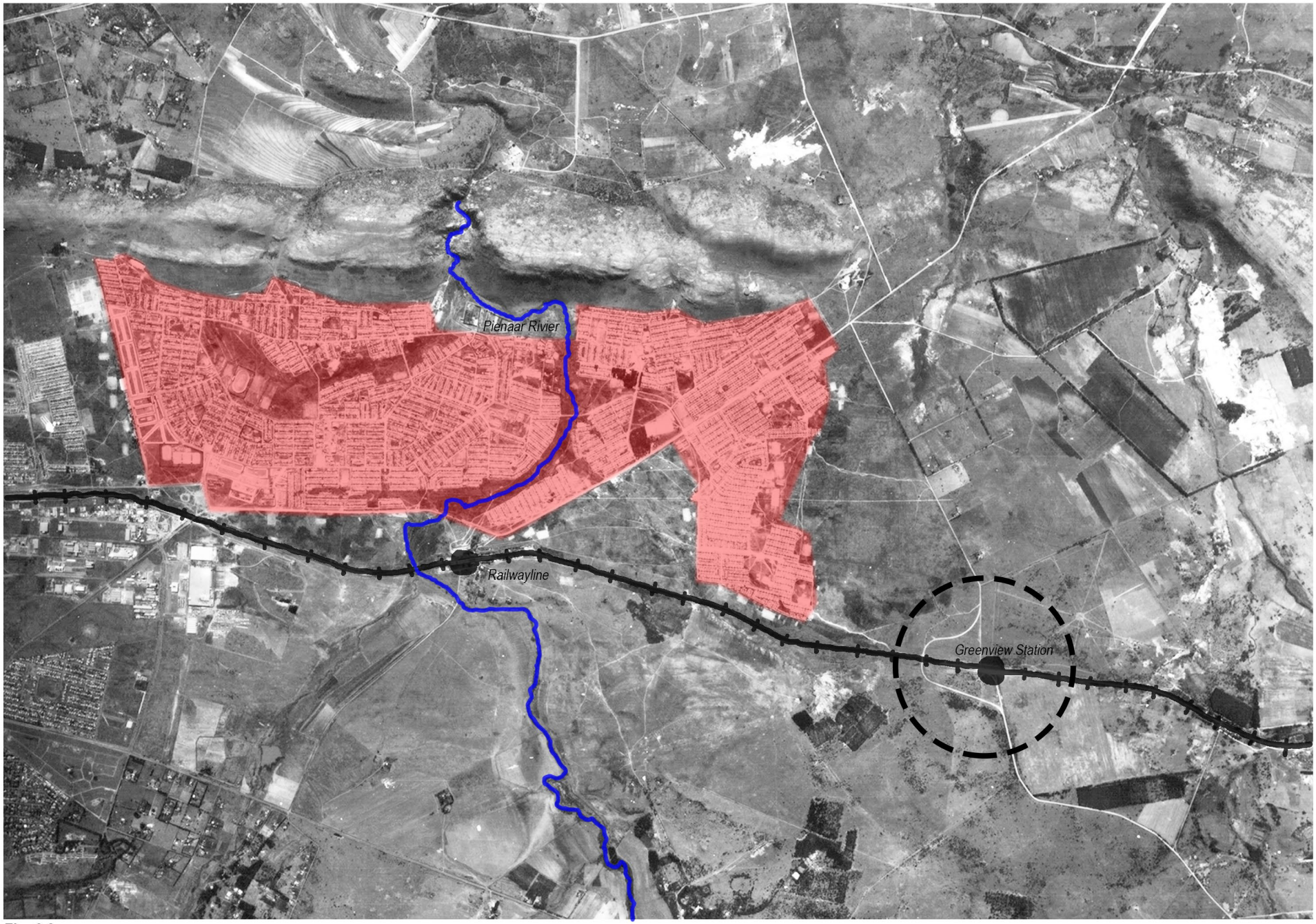


Fig. 2.2
Mamelodi Township in 1976

2.2 THE CURRENT CONDITION

The informal settlement of Phumolong, is found in extension 6 of Mamelodi and located in ward 16 of Tshwane, South Africa Gottsman (2009: 29). The Settlement is almost completely surrounded by the Township of Mamelodi, the south edge of settlement is buffered by the railway line and the newly completed Green View station.

The Tsolosolo Programme by GAPP Architects and Urban Designers identifies issues and opportunities facing the Mamelodi Township area. Mamelodi is located at the periphery of Tshwane and therefore it is separated from developing infrastructure. The inhibited growth towards the east in places such as Phumolong and Alaska has polarised the location of new mass housing schemes as well as the location of infrastructure and transport nodes. Poor north and south connection due to apartheid buffer zoning means that Mamelodi is congested during traffic peak hours on the main access roads. Movement towards the North is restricted due to the ridge of the Magaliesburg mountain and the railway line on the south. The housing is generally of low-density and it is overcrowded in the more informal areas such as Phumolong and Alaska.

There is limited range of socio-economic infrastructure and basic services in the eastern region of Mamelodi therefore creating insecure, unsafe spaces that lack 'sense of place'. Most peri-urban areas of Tshwane are populated by a wide range of inhabitants and cultures with disposable income that gets spent in more established or work opportunity areas therefore further disadvantaging Mamelodi.

Later in the chapter solutions to this urban problem will be explored towards a vibrant economy in Phumolong.

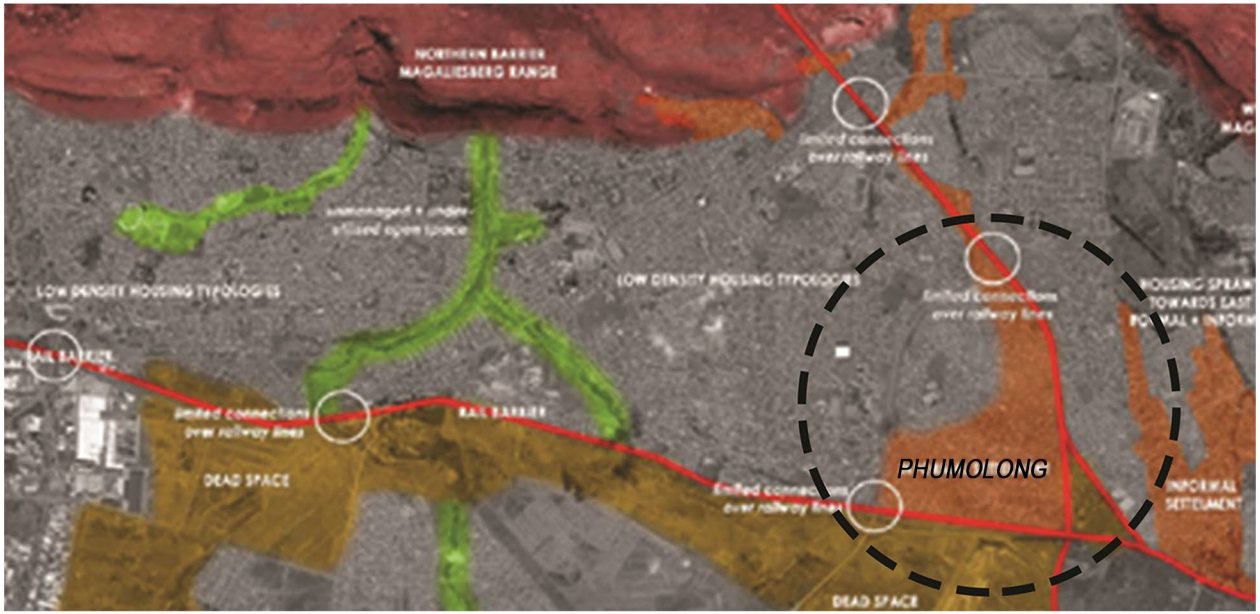


Fig. 2.3
Physical issues faced by Mamelodi (GAPP, 2010)

Fig. 2.4
Harthely Landfill, extraction of resourses

Fig. 2.5
The railway crossing

Fig. 2.6
The informal Settlement of Phumolong

2.3 MAPPING STRATEGY

According to Dewar and Uytenbogaard, the 'urbanisation explosion' occurs predominantly among poor, leading to increasing unemployment and inequality in big cities. Yet despite the magnitude of these problems, very few questions asked about how urban growth should be managed. Dominant urban planning and management practices in South Africa are largely based on either simple ideological considerations, separations or on conventional planning wisdoms developed in Western Europe and the USA'

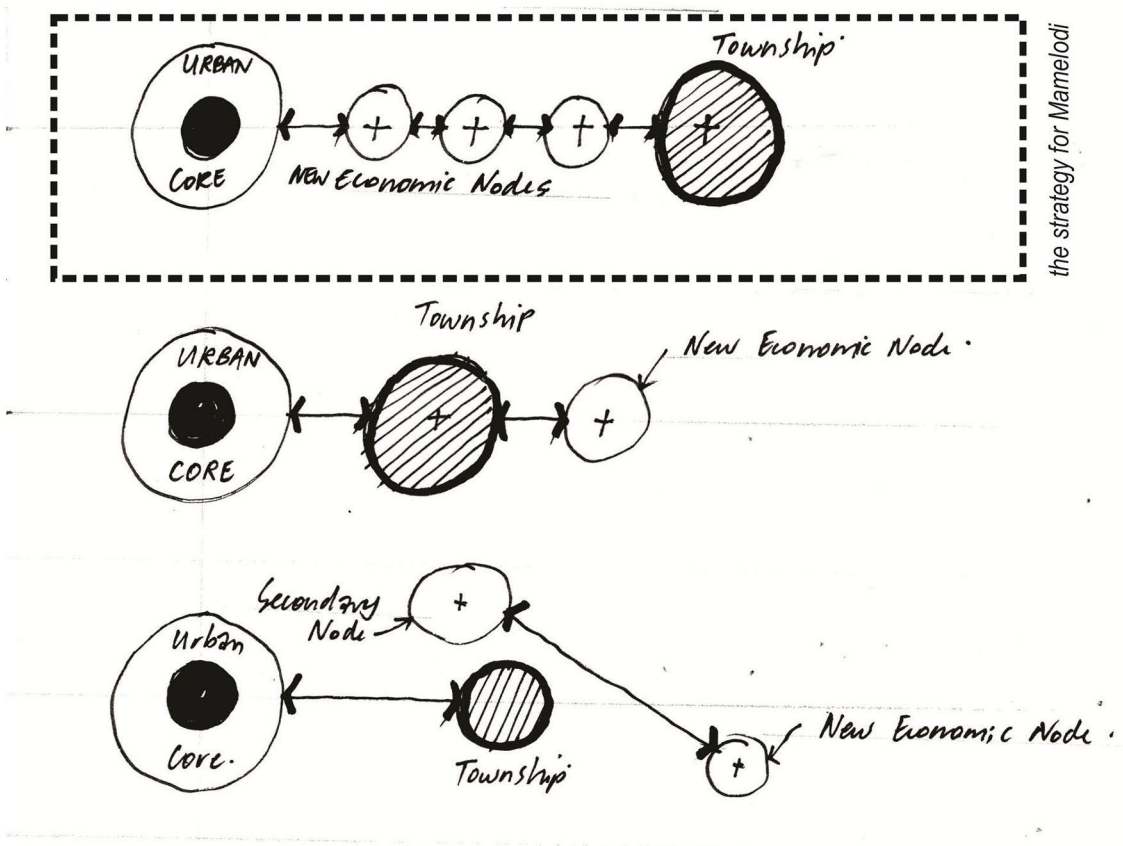


Fig. 2.7
Strategies for improving spatial disadvantage

Fig. 2.4
Aerial image showing urban condition in 2010

Fig. 2.8
Image showing urban condition in 2015

2.4 URBAN MAPPING

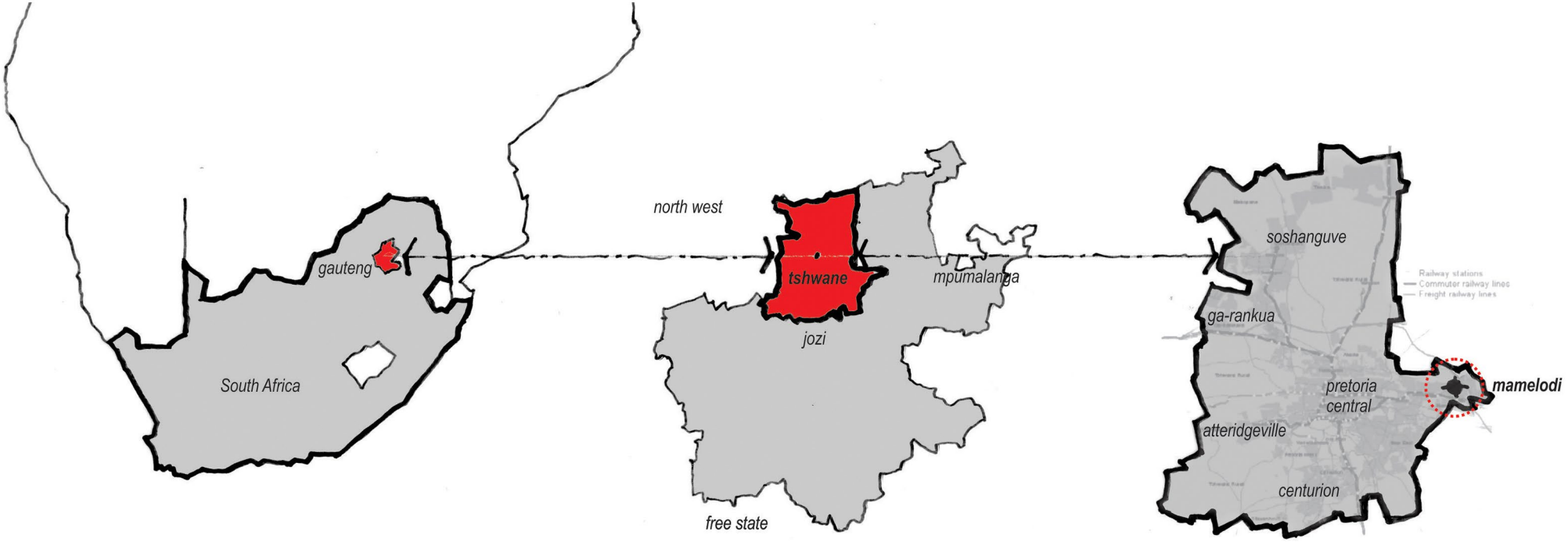


Fig. 2.9
locality diagram

3.3 THE URBAN STRATEGY

The intention of the Urban Vision is to implement urban renewal strategies targeting the informal settlers of Phumolong in order to improve the neighbourhood and public environment for the purpose of enhancing education levels, skills and entrepreneurship.
The township renewal strategies that are studied are the Urban Renewal Programme and the Neighbourhood Development Partnership Grant (NDPG).

The group Vision proposes an activity corridor connecting two important local nodes; the newly upgraded station by Prasa and the existing commercial node located at the intersection between the University of Pretoria Mamelodi and the bus depot.

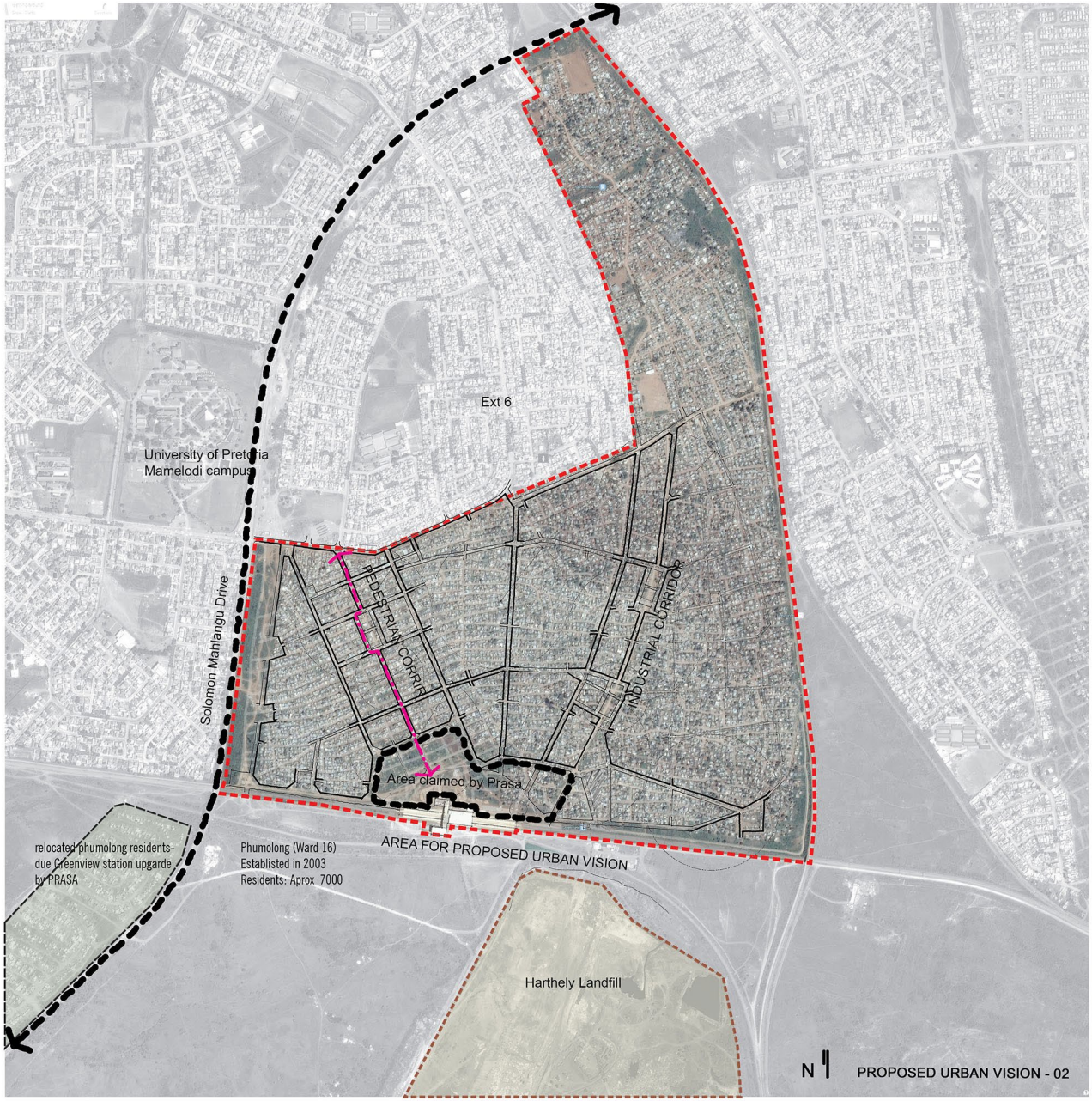


Fig. 3.7
phumolong strategy

2.5 PHYSICAL BARRIERS

Site Analysis

The substation in Green view is one of the oldest structures on the site. It is secured with a fence and sits adjacent to the railway line, the power station is an orientation point to the people of Phumolong

This building is a site office that was erected during the inception of the new Greenview station by Prasa. It houses the project team who work on site, it has meeting spaces, site offices as well as materials and equipment.

This portion of the Rail way line belongs to Transnet, a company which specialises in heavy haul freight. This has been seperated from the commuter line running from east to west, this railway line continues in the south delivering goods to the east rand.

Fig. 2.11
panorama of chosen site

The Resources

The Heatherly Landfill also known as the dumping site was initiated in 1960 as a small dumping ground for Pretorias eastern surburbs, Industrial, organic builders rubble, as well household waste are dumped every single day. The people of Phumolong have found this land fill to be an invaluable resource. Thousands people who live across the railway line cross over daily through the “Site” in order to collect valuable resources.

Fig. 2.42
plan showing the landfill of resourses

Fig. 2.5
The railway crossing

Fig. 2.6
The informal Settlement of Phumolong

2.6 TYPOLOGY STUDY

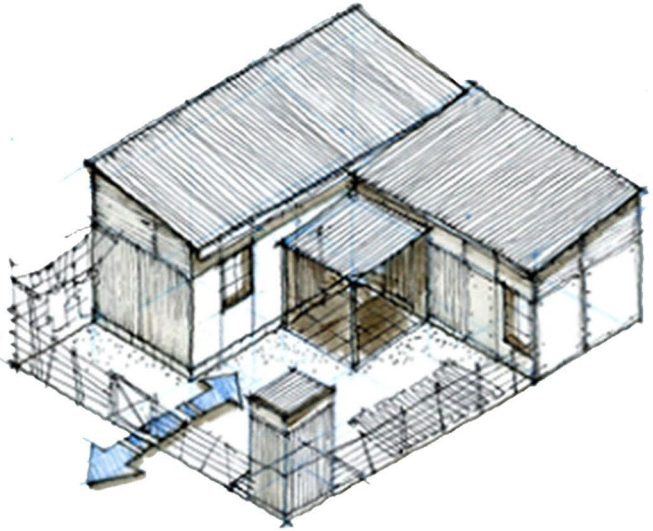


Fig. 2.13
existing conditions on site

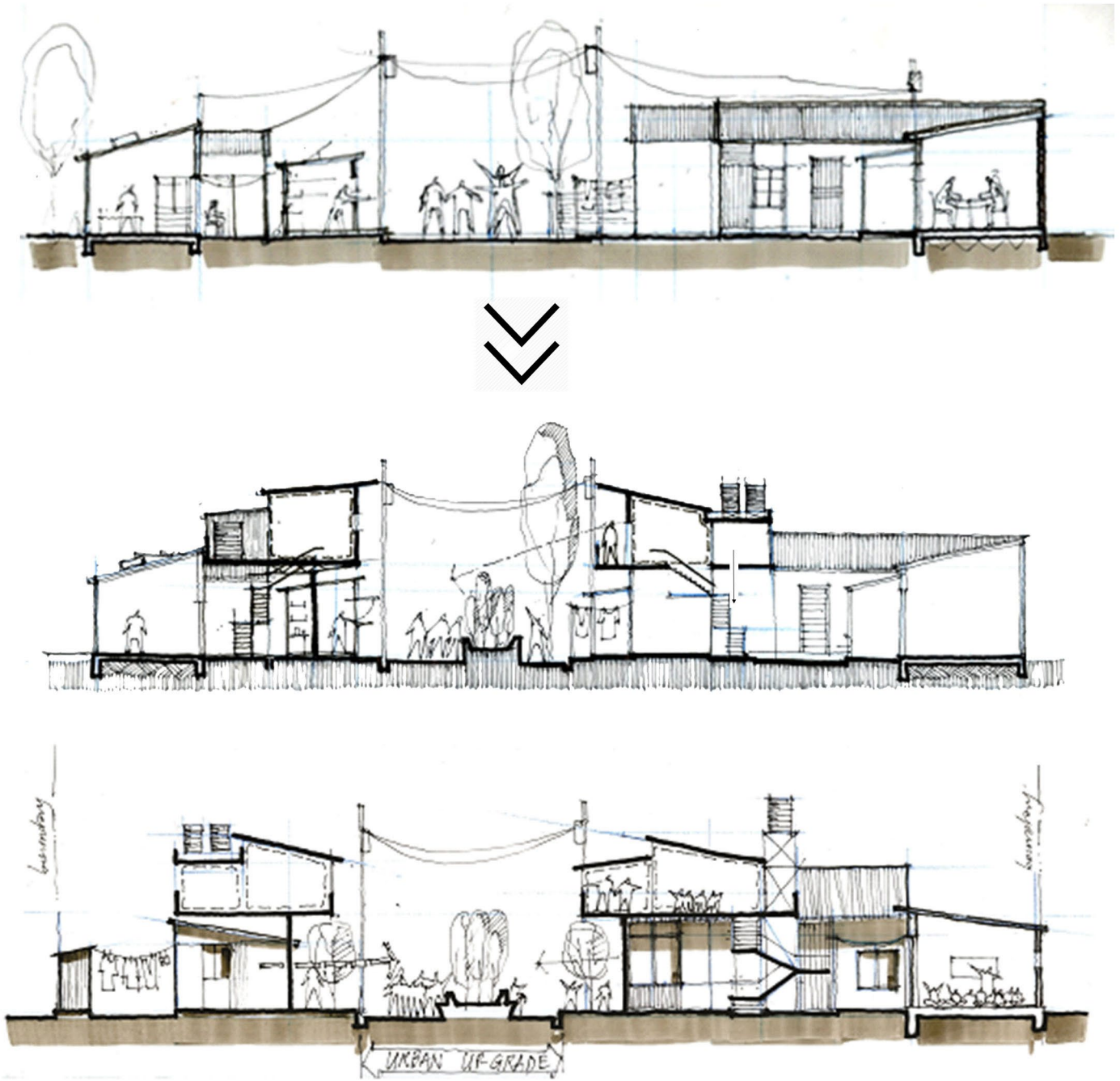
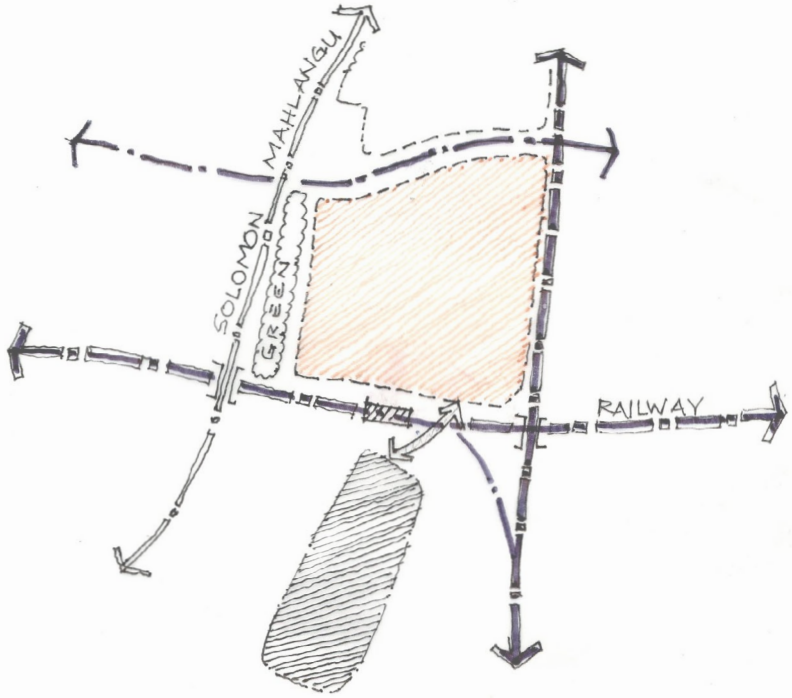
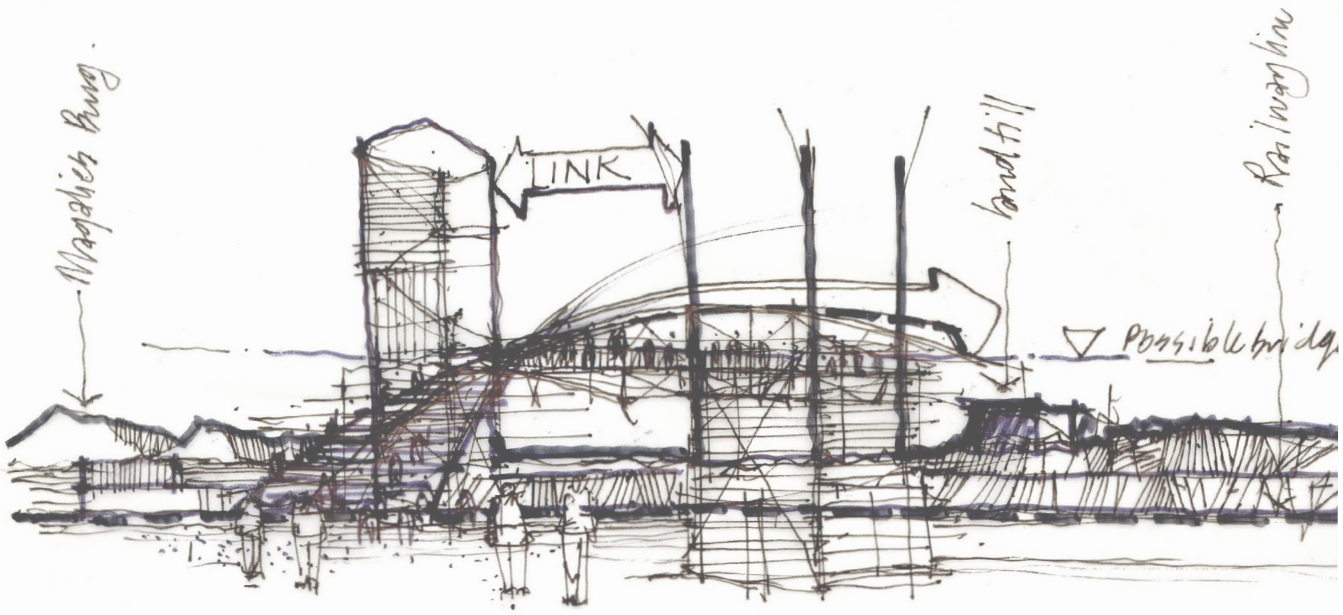


Fig. 2.14
envisaged incremental growth on site





CHAPTER **03** THE URBAN VISION

3.1 INTRODUCTION

3.1.1 Township Renewal

Some corporations claim that in South Africa more than forty per cent of the urban population live in townships, with more than twenty percent living in informal settlements and low income housing estates (SACN. 2015). Townships are generally located furthest from the central business districts and can be classified as formal or informal. They are historically placed far from places of economic activity and employment. Old townships are socially, culturally and economically diverse regardless of their density due to historical racial segregation. It is common amongst the larger townships to have middle income to lower households. However, the majority of township resident are poor with very high unemployment rates.

The intention of the Urban Vision is to implement urban renewal strategies targeting the informal settlers of Phumolong in order to improve the neighbourhood and public environment for the purpose of enhancing education levels, skills and entrepreneurship.
The township renewal strategies that are studied are the Urban Renewal Programme and the Neighbourhood Development Partnership Grant (NDPG). Later in the chapter will be critique of existing framework proposals in order to find the best possible solution for the area.

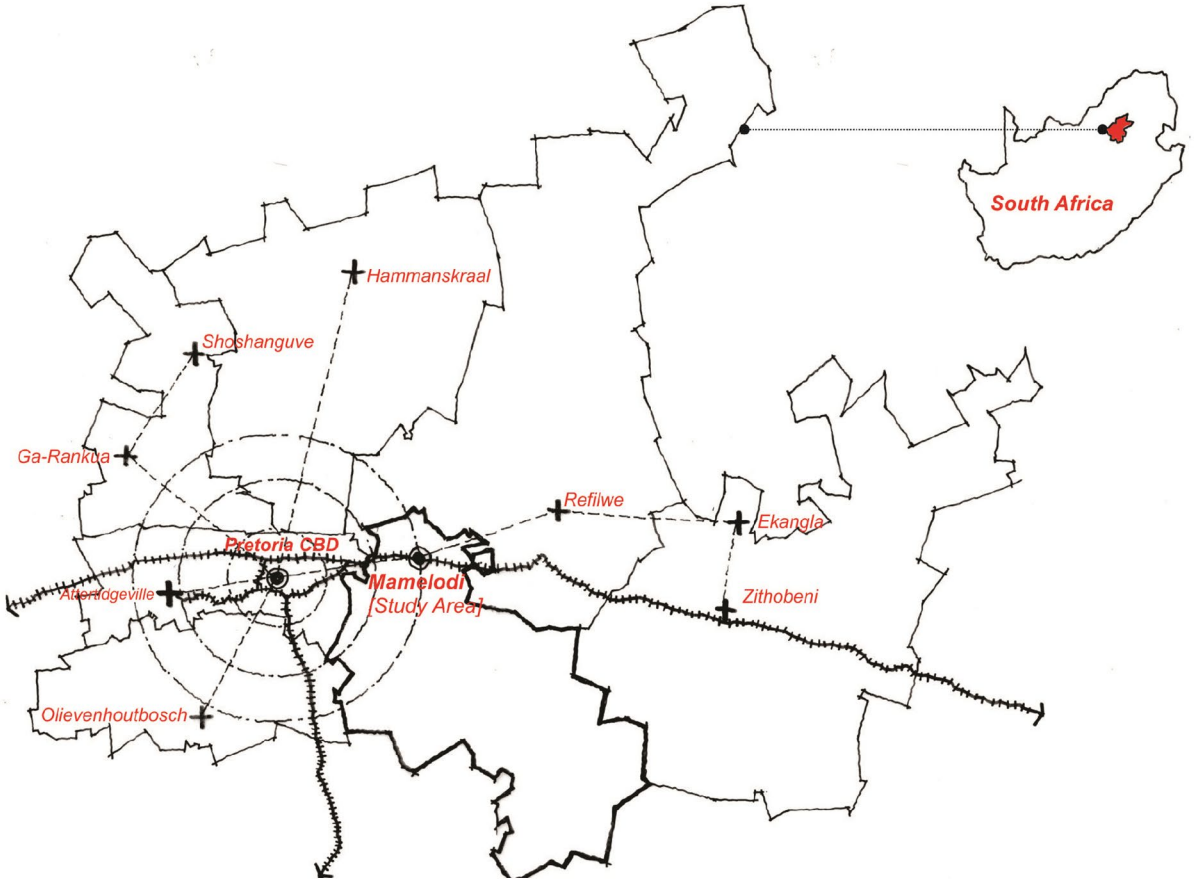


Fig. 3.1
City of Tshwane locality township locality

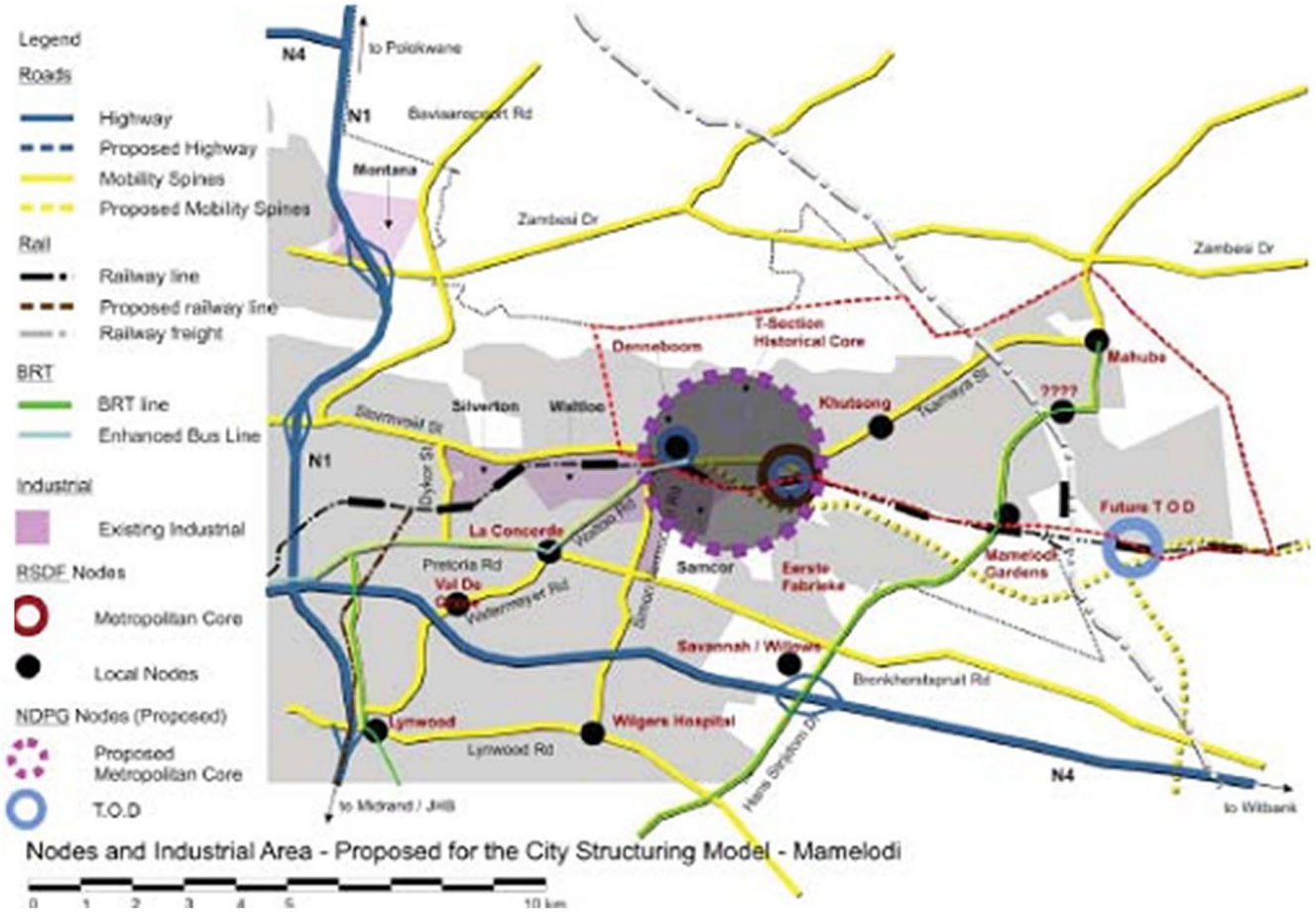


Fig. 3.2
proposed nodes and industrial areas (GAPP 2010)

3.1.1 Township Renewal

The most consulted urban renewal programme is the Tsosoloso Programme by GAPP architects and urban designers. This is was the first comprehensive urban study of Mamelodi therefore serves as guide in understanding the longer term development strategy of the area. The programme is based on a 20 year planning horizon with the objective of developing local opportunity. (GAPP 2010)

Local Node

A local node is centre local precinct with specialist, convenience retail not taller than 3 storeys. Many of these local nodes in the Township of Mamelodi a minimum of mixed-use service and retail facilities.
In the Gapp proposal the these nodes have been identified close major transpotation routes allowing for future growth. The focus is on the local node Solomon Mahlangu road as this can be linked to the development of the new Greenview Station Node, which is envisaged and Urban Precinct and future Transit Orientated Development (TOD)

3.1.1 Township Renewal

Activity Spine

Is a linear mixed-use element of Urban Structure containing an intense concentration of facilities such as retail, office, entertainment, work, service and residential development, which are all focused along a major transportation route. This is the concept used in developing the spatial structure of Phumolong. The Activity spine or corridor connects two major transportation nodes, A local taxi rank with the newly upgraded Green view station by Prasa.

The North South Activity spine proposed by GAPP is envisioned to be a major success as it resolves the spatial issue of the poor north and south connections created by apartheid zoning as discussed in chapter two.

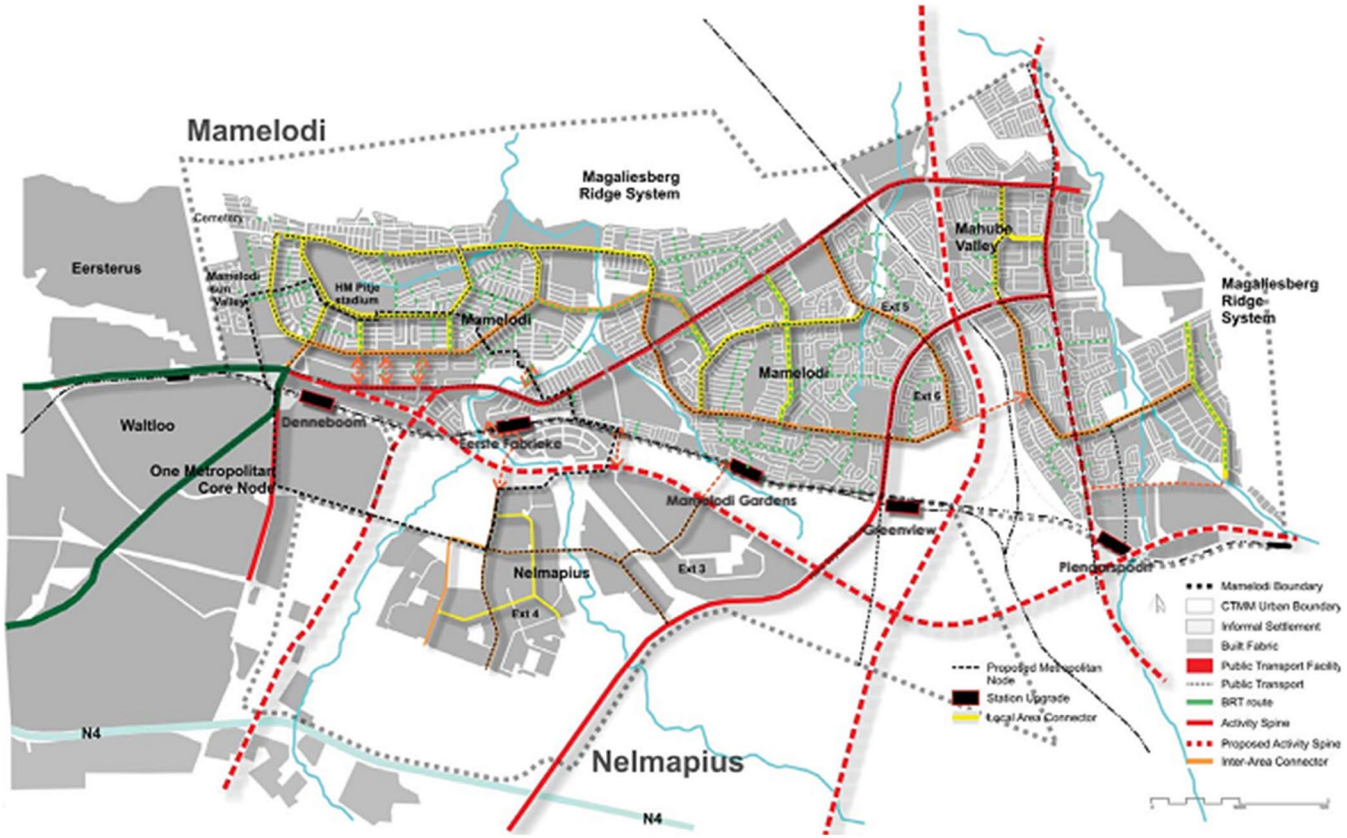


Fig. 3.3
City of Tshwane locality township locality (GAPP, 2010)

3.1.1 Township Renewal

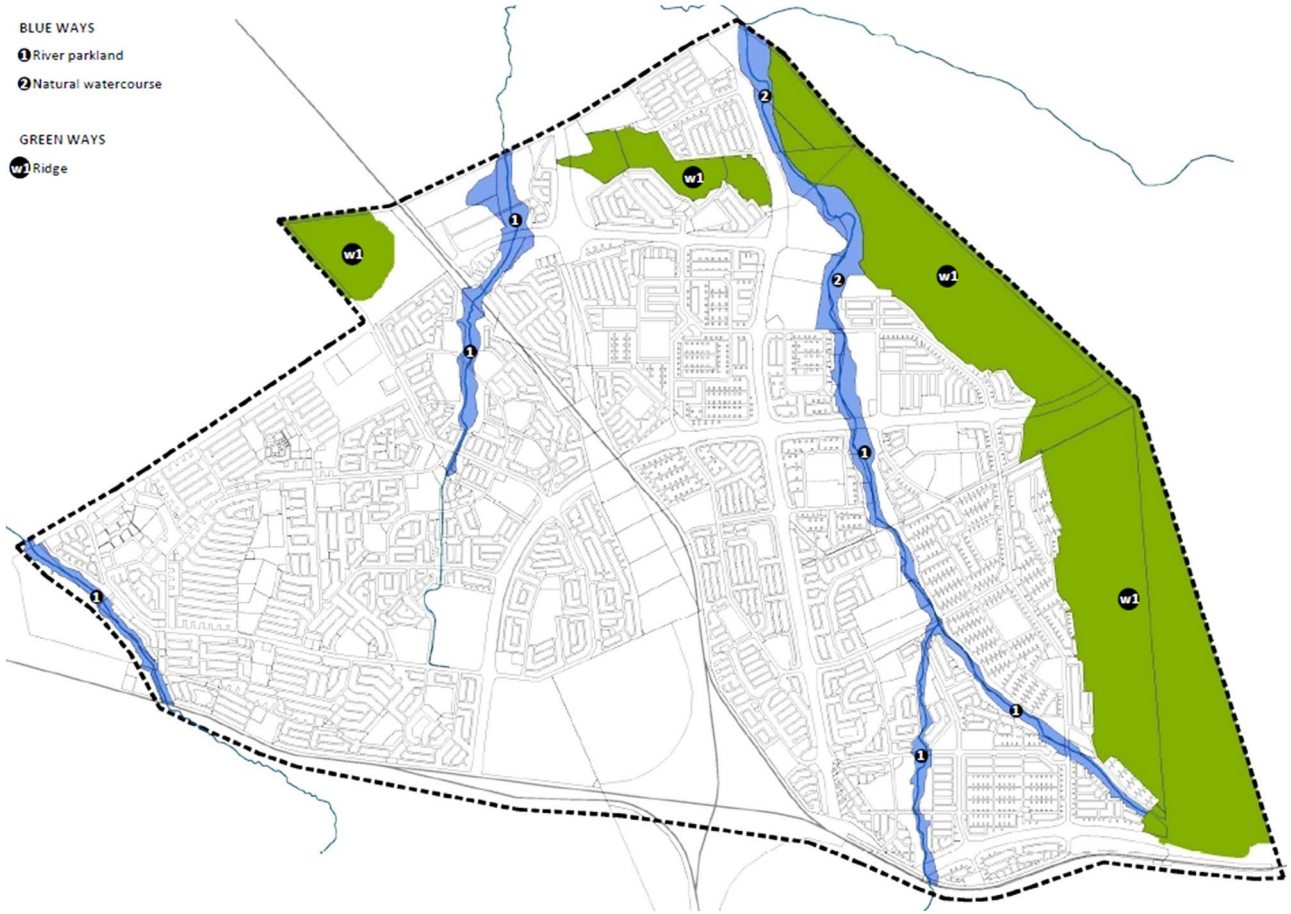


Fig. 3.4
Mamelodi east Precinct (CoT 2013)

Mamelodi East

The Mamelodi East Precinct wich covers Phumolong Informal Settlement greatly differs from the original township of Mamelodi, it has only been developed since 1994 therefore is characterised by large scale RDP housing developments and extensive informal settlements. The open spaces play a pivotal role in the future development of socio- economic spaces. Furthermore the large growth informal settlements means that there is a limit to potential blue and green networks thus reducing the ecological value of the area.

3.2 THE URBAN VISION

Initial Concepts

Fig. 3.5
urban initial concept spatial structure

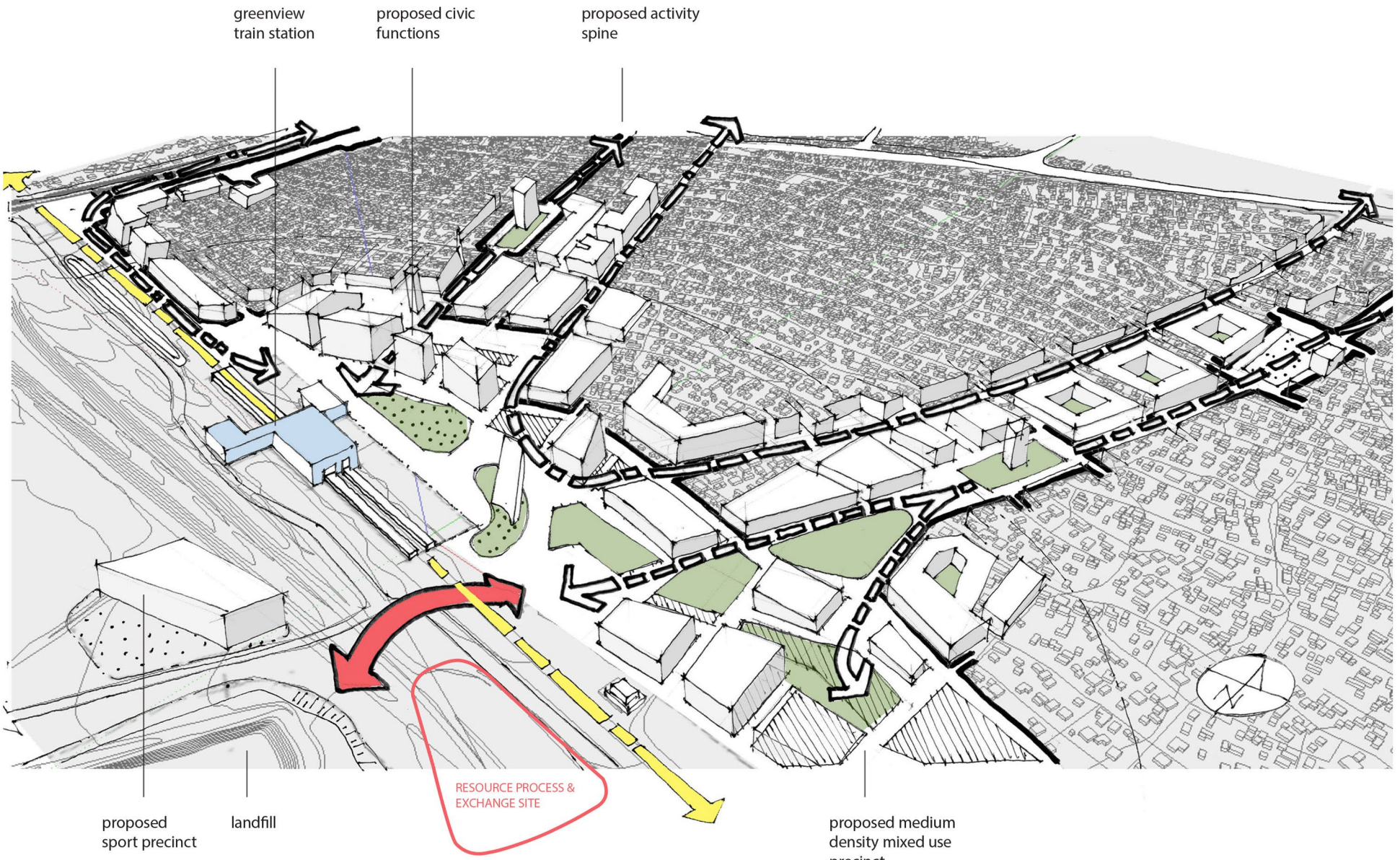


Fig. 3.6
urban initial concept proposed densification

3.3 THE URBAN STRATEGY

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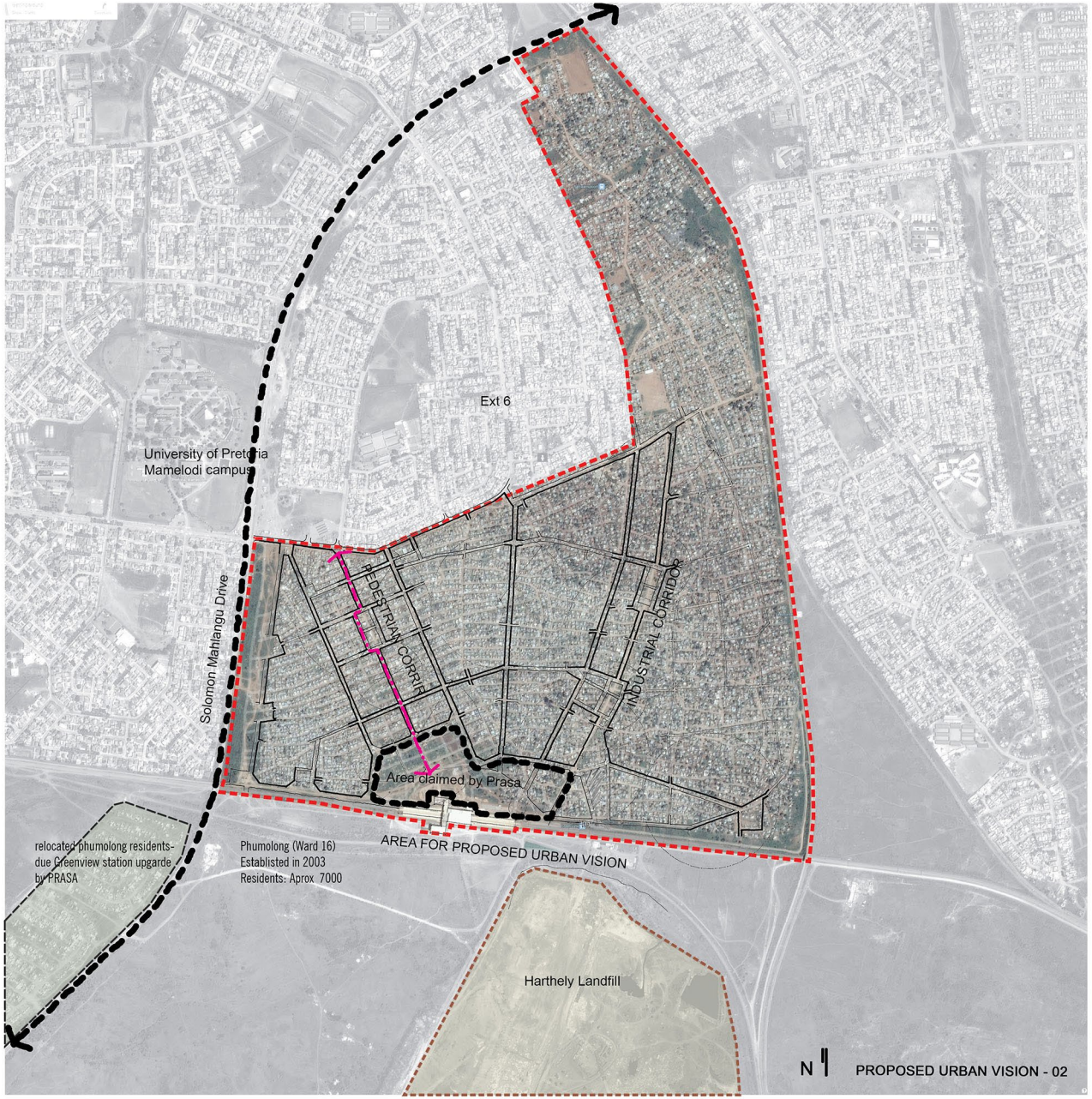


Fig. 3.7
phumolong strategy

Fig. 3.8
group urban Visions

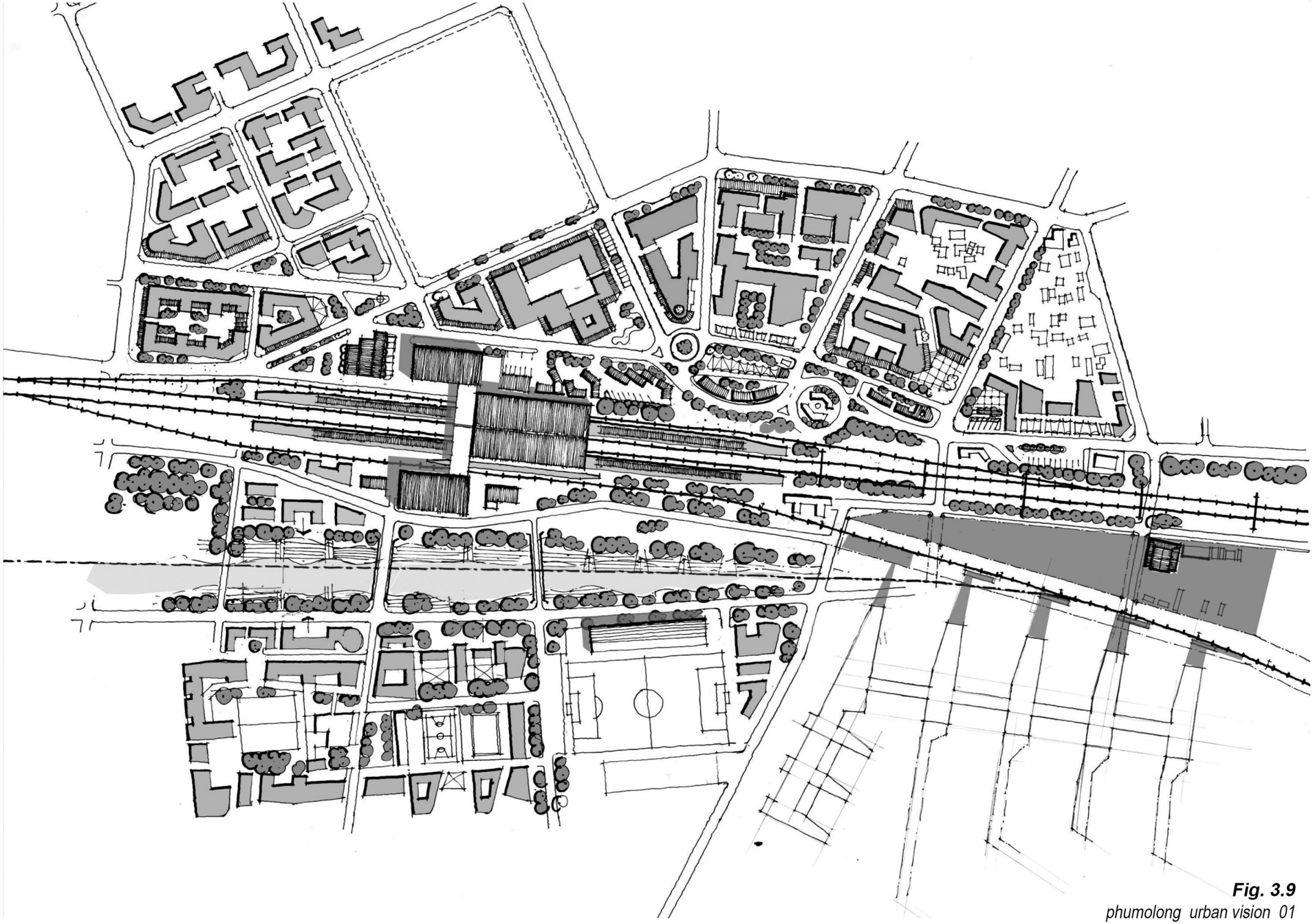


Fig. 3.9
phumolong urban vision 01

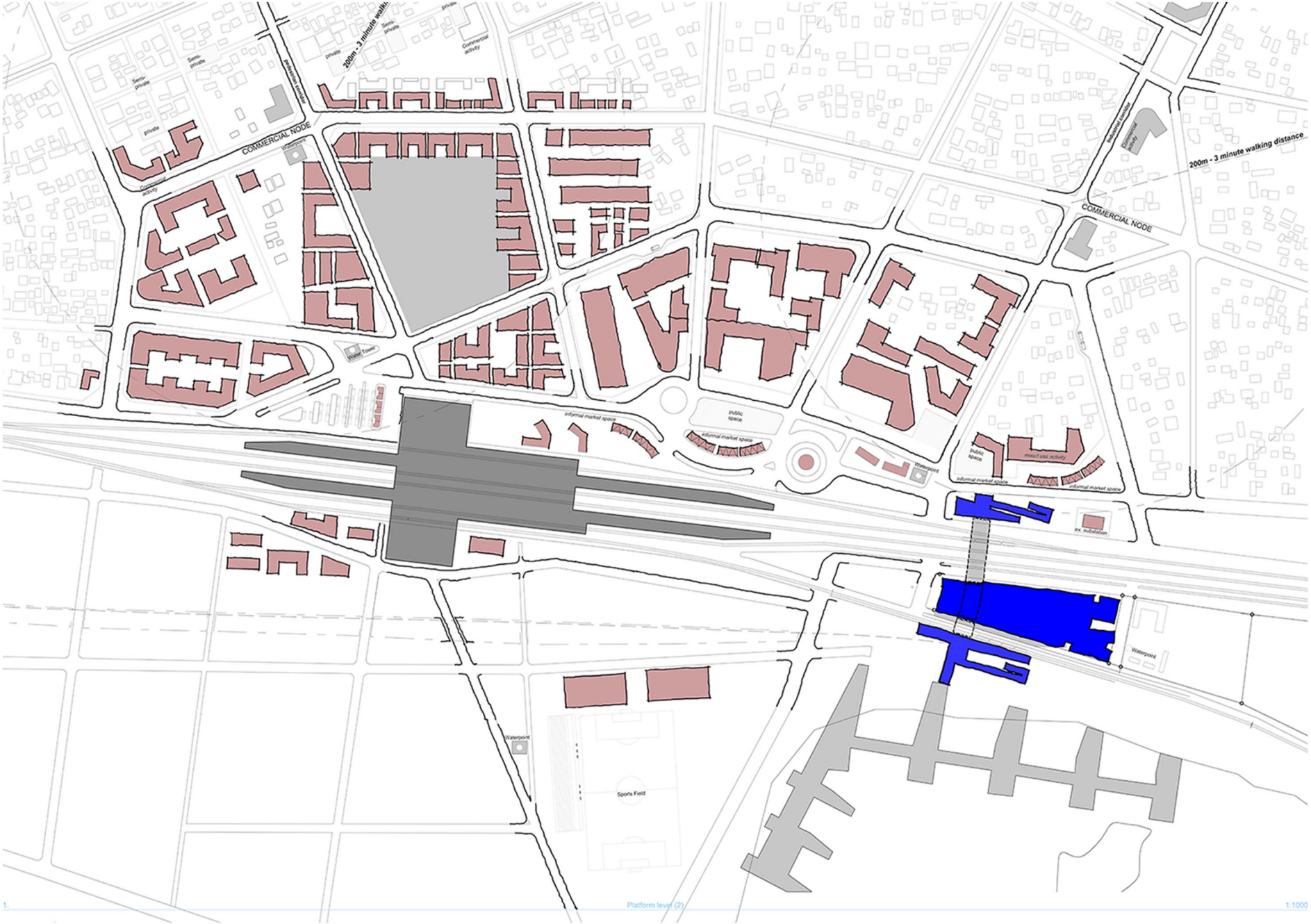
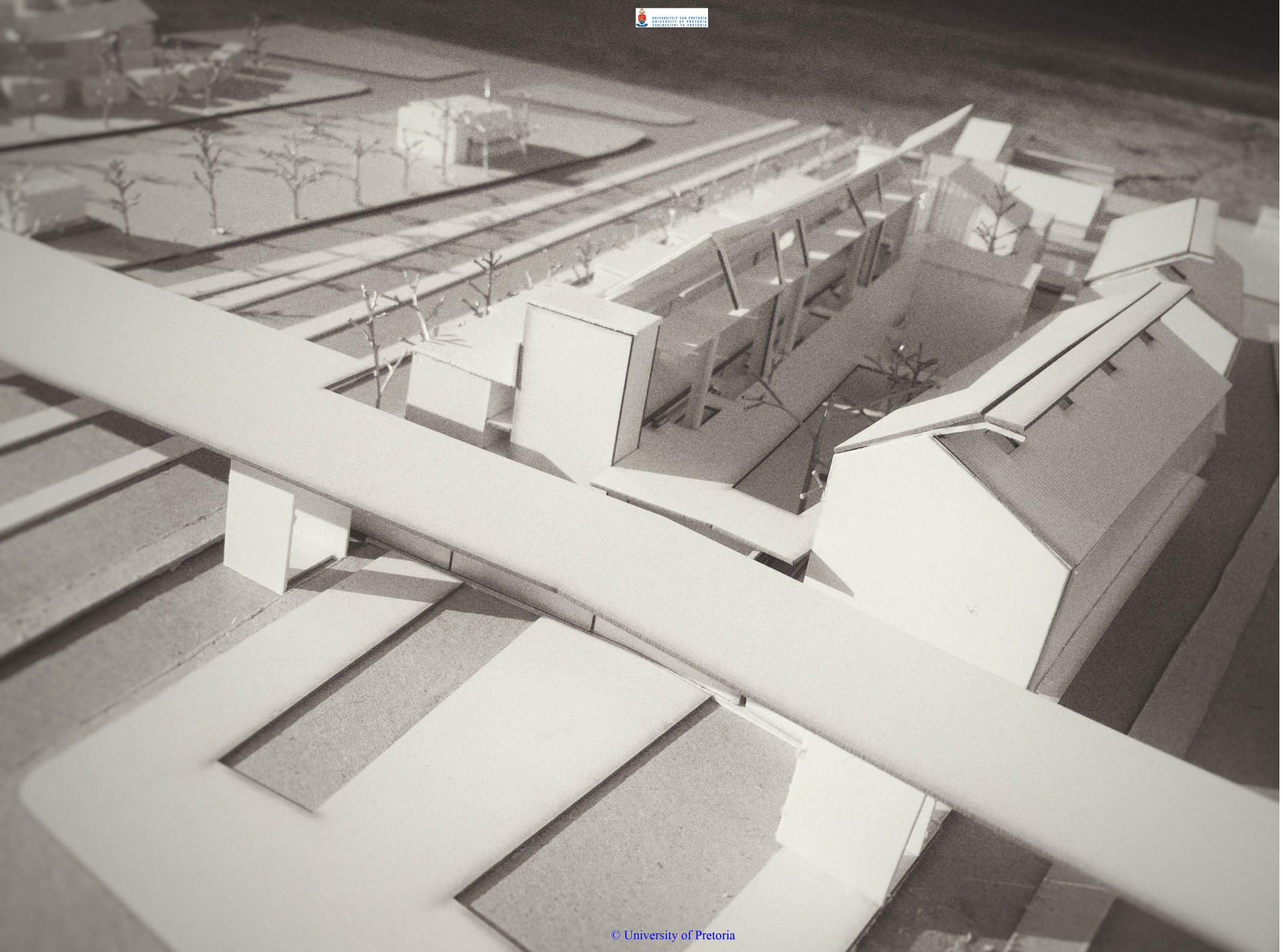


Fig. 3.10
phumolong final vision



CHAPTER 04 THE THEORY

4.1 THE THEORY

4.1.1 The Introduction

It was only in 1948, when the National Party came to power in South Africa and proceeded to implement the principles of apartheid with a country already deeply immersed in colonial segregation, that pragmatism gave way to ideology. The consequences were far reaching with significant transformations of both the urban and rural areas, large-scale forced removals of people, and the redrawing the internal political structures of the state. Race became the dominant element in determining the rights, political and legal, of the members of the population. The map of South Africa and its towns and cities were redrawn on racial lines with different rights assigned to different groups of people with in the different zones.

4.1.2 The Definition

The Term 'apartheid' was one of the most emotive in the political vocabulary of the second half of the twentieth century. The Afrikaans word apartheid has become the universally employed nomenclature for legalized and enforced racial and ethnic discrimination, notably in fields of residential segregation, job opportunity and political rights. In its original form, derived from the parent Dutch language, the word meant 'separateness' or apartness' However in the twentieth century is assumed a political usage denoting a legally enforced policy to promote the political, social and cultural separation of racially defined communities.

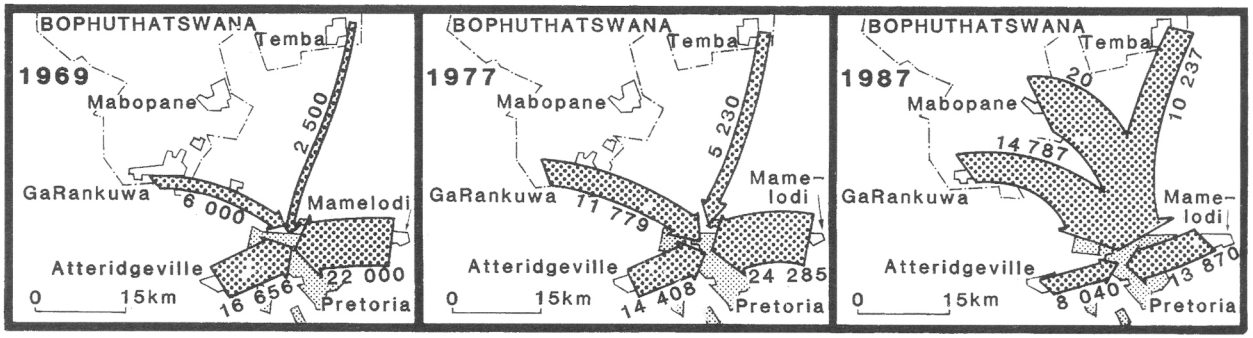


Fig. 4.1
changing patterns of daily African commuter traffic in Pretoria (Christopher, 2001)

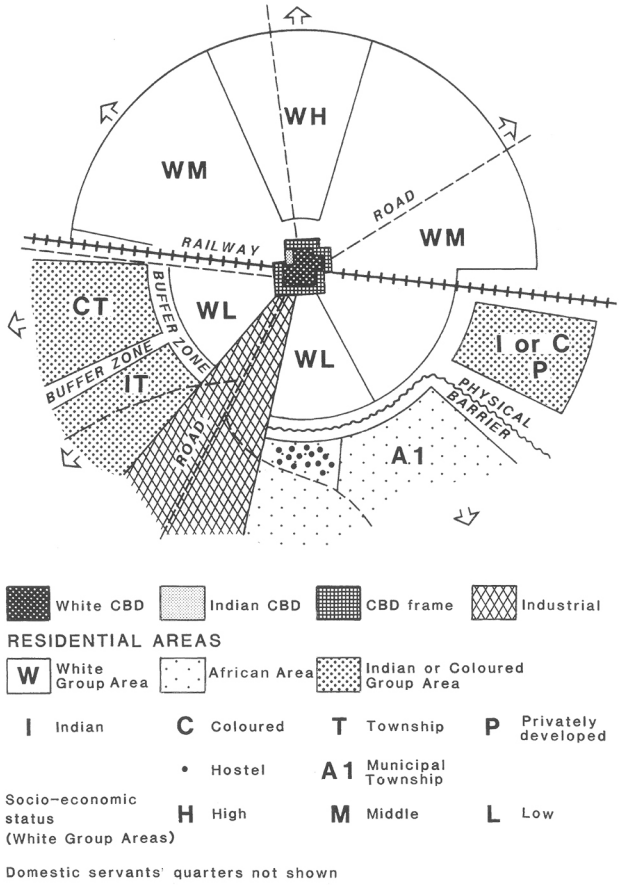


Fig. 4.2
The model of the apartheid city (Christopher, 2001)

4.1.3 The Apartheid City

Christopher (1994: para. 1) stated that Pre- apartheid South African cities their varying mixture of racial integration and enforced separation were described as 'segregation cities', as such they resembled complex heritage similar to that of British colonial cities, their administration deviated between enforcing racial segregation, accommodation and even selective integration. The results of this were generally un-tidy concerning issues of ethnic diversity of the urban population. It this untidiness of the nineteenth century city which was in conflict with white South African Ideas of town planning, racial order was evident in state driven administrative reconstruction in the post-Second World War era.(Christopher 1994:48) By 1950 major pieces of legislation designed to create a new apartheid city were enacted with the Group areas act being the most effective in driving the extensive development of townships, forced removals from 'white areas' gave existence to some of South Africa's largest Townships today including Mamelodi.

4.1.4 Reconstruction and Urban Planning

The reflections (Mabin et al. 1999: 276). On the brief prospects for real and progressive urban reconstruction are as follows, The experience that South Africa has of reconstruction in the 20th century demonstrates the role that war and social instability has had in planning initiatives. During each period of extreme stress and turmoil, it can be assumed that all areas of urban planning may be a primary tool for reconstructing society. On all occasions where there has been commitment for reconstruction lack of implementation has played a factor and therefore failure was to follow. In late years of apartheid failure was due to economic stagnation and revolt against the state. In post-apartheid South Africa urban reconstruction is an exciting prospect as new visions can accommodate a far wider participation and development than in previous planning.

4.2 CONCLUSION

Urban and spatial planning has played a major role in shaping our inherited spatial legacy. South Africa has had only 21 years of democracy, the current government has only instituted change only as far as legislation and strategies such as the National Development Plan. Its is up to the future architects and urban designers working had in hand with civil society, academia and government in order to impliment change in township and informal settlements.

CHAPTER 05 PRECEDENTS

5.1 LANGA TOWNSHIP BRIDGE

Langa Station is situated between the district of Langa to the south and the industrial area of Epping 1 to the north. An existing undercapacity subway connecting the two areas is now being replaced by a 100 m long x 10 m wide “skywalk” bridge structure.

The length of this structure was not only determined by the spacing of the existing rail tracks, but provision had to be made for a possible future rail link between the airport and Cape Town CBD and a future Integrated Rapid Transport route on the northern side of the station. At each end of the bridge commuters are able to approach or leave the structure via either staircases or ramps. A high priority for PRASA is to accommodate special-needs passengers (SNPs), so ramps or lifts have been provided at each of the stations, wherever possible.

A 1 500 m² ticket purchase and circulation concourse area is being constructed over the two main platforms. This area provides sufficient space for a minimum of grade C level of comfort (a Metrorail standard) for peak-hour commuters at all times while moving through the station complex.

As the station had to remain operational throughout the construction period, a large amount of off-site construction was done. All track spanning beams and slabs were precast and all superstructures were prefabricated from structural steel.

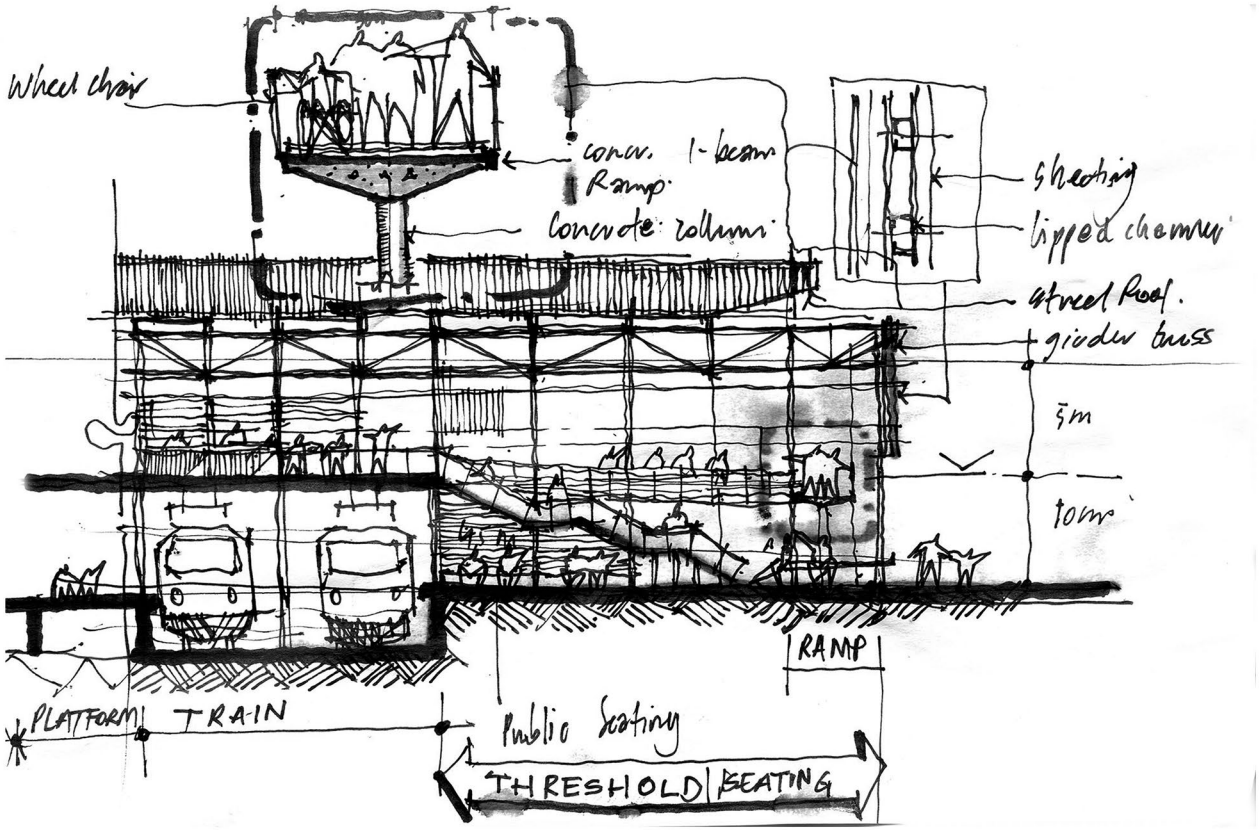


Fig. 5.1
bridge and entrance precedent

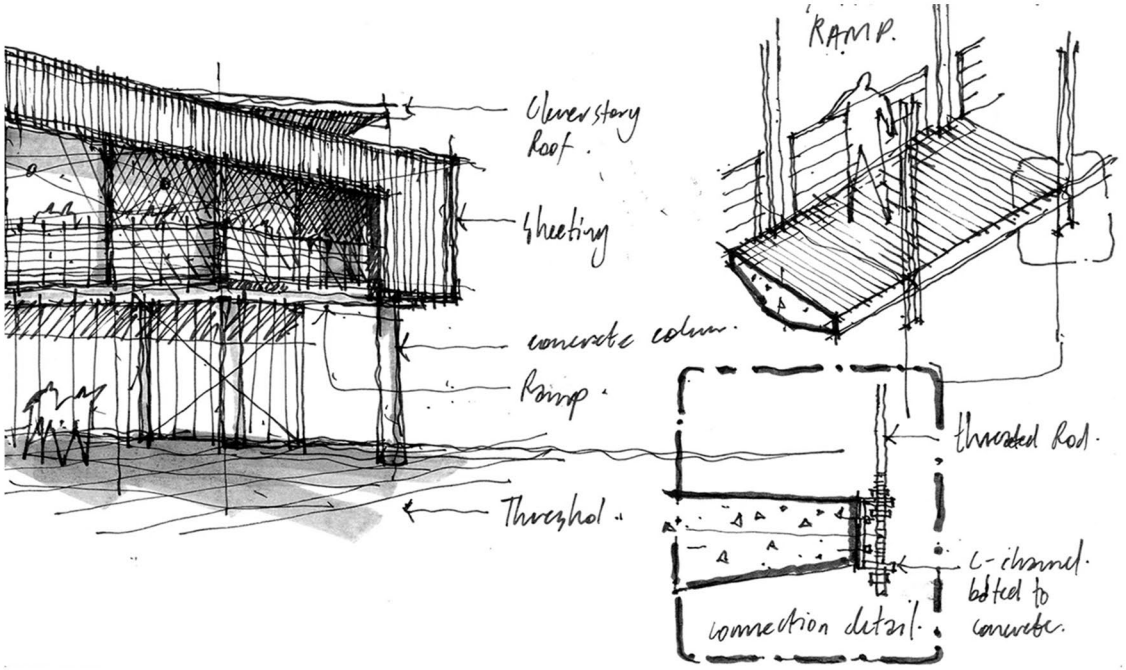
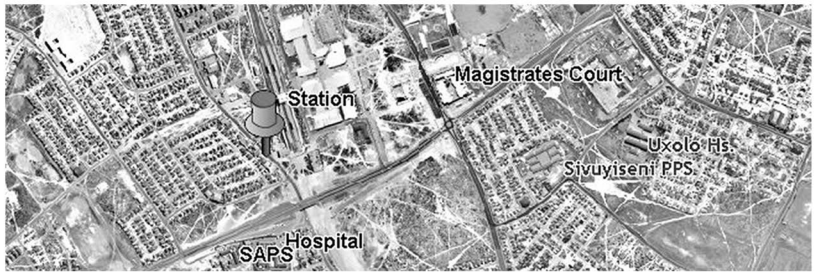


Fig. 5.2
bridge and entrance precedent

5.2 KHAYELITSHA LIBRARY

It has become clear that broad sets of policies and strategies to fight crime and violence need to be effectively addressed in the context of social and economic development. To reduce some of the underlying causes of crime and violence and in addition to strategies of law enforcement and violence prevention, the different sectors of urban develop

The first half of the study period was devoted to a situation and needs analysis, while the second half concentrated on projectdesign. There was continuous interface with the City of Cape Town and the people of Khayelitsha and their representativebody throughout the study.
When moving from analysis to project planning the conceptual framework known as the "triangle of violence" was used, i.e. a set of interventions was developed which are directed at discouraging a potential violator, supporting the victim of violence and to arrange the physical environment in a way which helps reduce the incidence of crime.
The proposed project approach is essentially one based on spatial selectivity, and it is a two prong one:
• Within the township of Khayelitsha three "safe nodes" will be created where a number of facilities, which have the potential to reduce violence, will be clustered. The nodes will tackle a number of the people's needs at the same time: e.g. police protection, facilities like safe houses for battered women, youth clubs, adult education centres. The safe nodes will also function as transport nodes.
• The node concept will be complemented by area-based interventions. A Social Development Fund will be made available to the most deprived areas adjacent to the safe nodes for the establishment of community-based infrastructure and facilities, such as kindergardens, water and sewerage pipes etc.



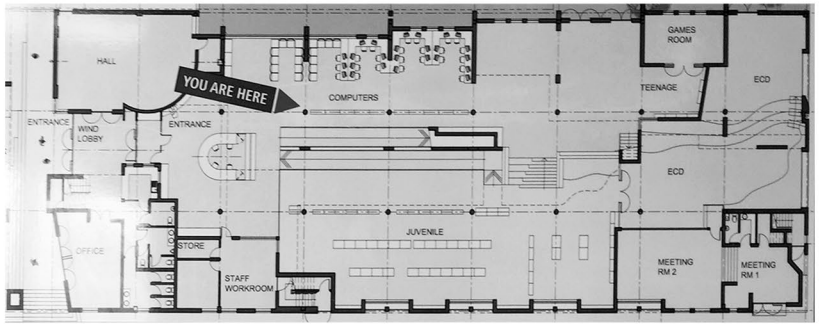


Fig. 5.3
library facility precedent

5.3 STOCK ROAD STATION

Philippi, Cape Town
ACG Architects and Development Planners
KHM Architects
2003

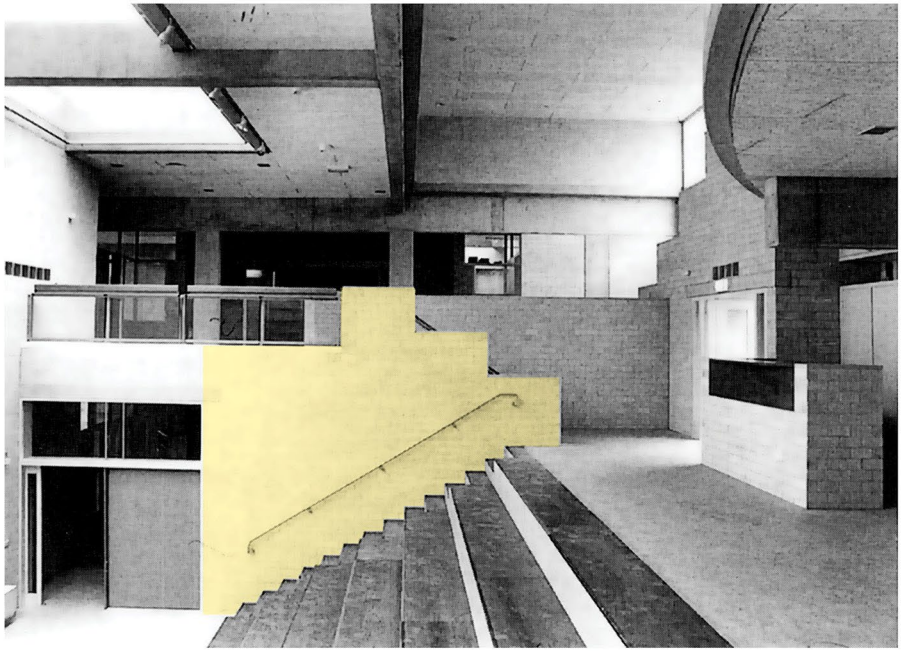
Stock Road Station, perpendicular to the Joe Qqabi Transport Terminus, creates another landmark in this newly established transport precinct. Accessible also from a pedestrian bridge, circulation, commuter facilities and operational areas are judiciously organised into a cohesive whole. The built form was determined by rational considerations, easy expansion and deep penetration of light. Similar to its companion, robust materials have been used, dominated by off-shutter concrete, brick infill and galvanised steel. A large steel frame for planting adorns the longitudinal north façade and edges are animated by en route trading kiosks. Combined, these two transport facilities make a powerful urban gesture unleashing the envisaged potential of much-needed and well-considered development framework.

Fig. 5.4
tectonic precedent

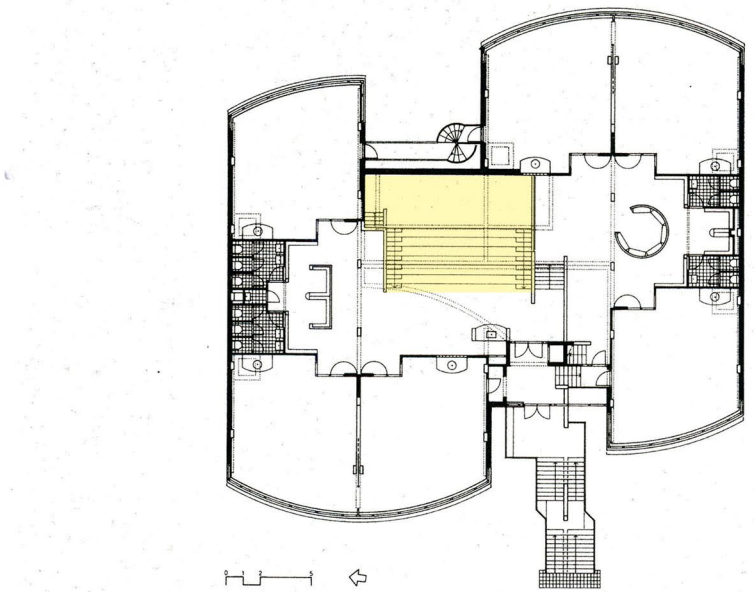
5.4 De Evenaar School

Herman Hertzberger is an Amsterdam born architect. His major influences in the 20th century architecture, is to challenge early modernist belief that “form follows function” – That shape of the building is defined by its own purpose. Hertzberger believes that the core function of a building does not provide the total solution to space: it is a framework that should enable its users to interpret and define how they inhabit it. His buildings flexible ”in-between” spaces that encourage our deeper human needs of dwelling and social activity.

Parapets Bordering staircases are very often placed slant wise, following the direction of the hand-rail. This is indeed in many cases the most obvious solution, whereby an indication of the presence of this the stairs is given in a quite logical way. But the situation where a parapet is so positioned that it offers a view of something, as in ‘De Evenaar’ it invites people to lean their elbows on the top, or even to sit on it. Whenever something is going on people want somewhere to pause and watch – and that itself is enough reason to try to let the architecture of the location contribute to potential seating capacity. So in this case it is a good idea to have, instead of the usual slanting parapet divided into stepped sections with horizontal coping that is wide enough to lean your elbows on or sit on. And if, as in this case, the wall is of masonry, the design is much easier to execute since there is no sawing of bricks to be done.



THE PARAPET



THE INBETWEEN SPACE

“open teaching classroom concept”

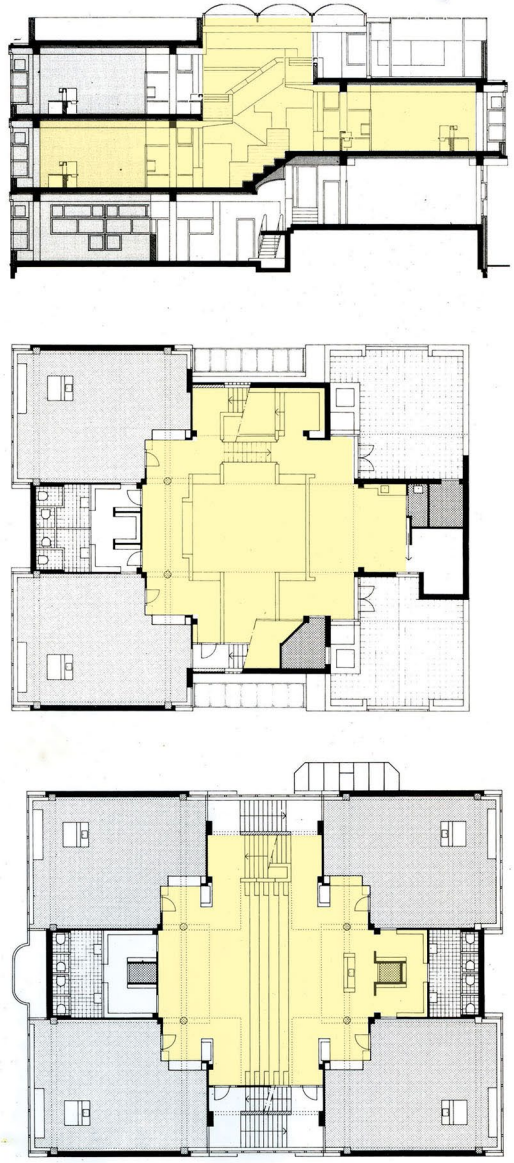
Fig. 5.4
the parapet and in-between space

5.5 APOLLO SCHOOLS

"Whatever the architect does deliberately leaves undone – the way he concerns himself with enclosing or opening – he always influences, internationally or not, the most elementary forms of social relations. And even if social relations depend only to a limited extent on environmental factors, that is still suffient reason to aim consciously at an organization of space that enables everyone to confront the other on an equal footing"

THE SPLIT LEVEL DESIGN

The school hall in Apollo primary has a split level amphitheatre-like organasation, which greatly increases the range of visual contact. Situations of players and audience arise easily and spontaneously: children sitting on the treads of stairs connecting the two levels soon start behaving like an audience, thereby challenging the players on the lower level to give what you might call a performance. The split-level design of the central space not only gave rise to the adoption of the amphitheatre idea, it also provided a point of attachment for six class rooms, disposed into two groups of three with maximum mutual visibility. This visual link draws all the classrooms together in a way that would not be possible with a strict division into super imposed storeys.
The hall space fictions rather like a big communal class, where the teachers also have their own space.



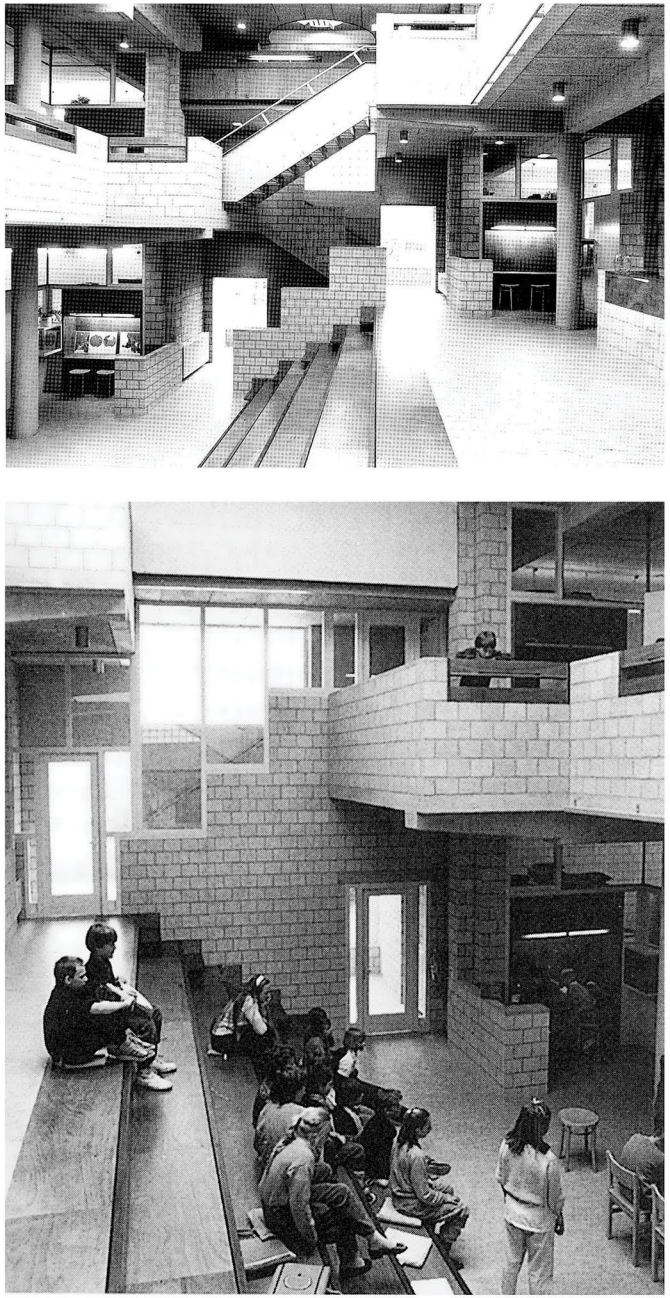


Fig. 5.5
split level design

5.6 SALISBURY CLAIMS HOUSING

Noero Architects

Project: Unbuilt
Client: Murray & Roberts
Location: Johannesburg, South Africa
Date: 1994

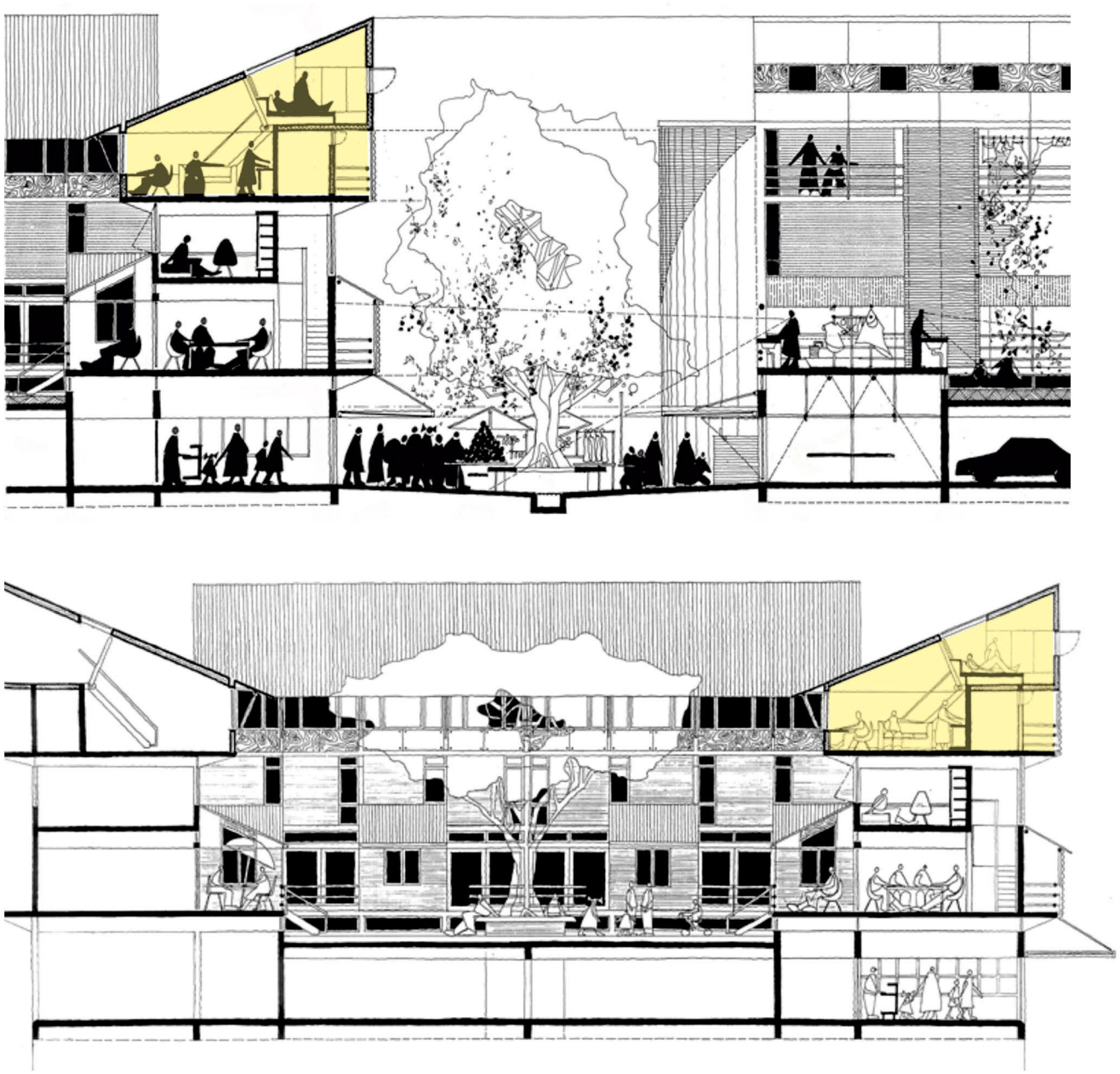


Fig. 5.6
mixed use and adaptability

5.7 SEVEN FOUNTAINS PRIMARY

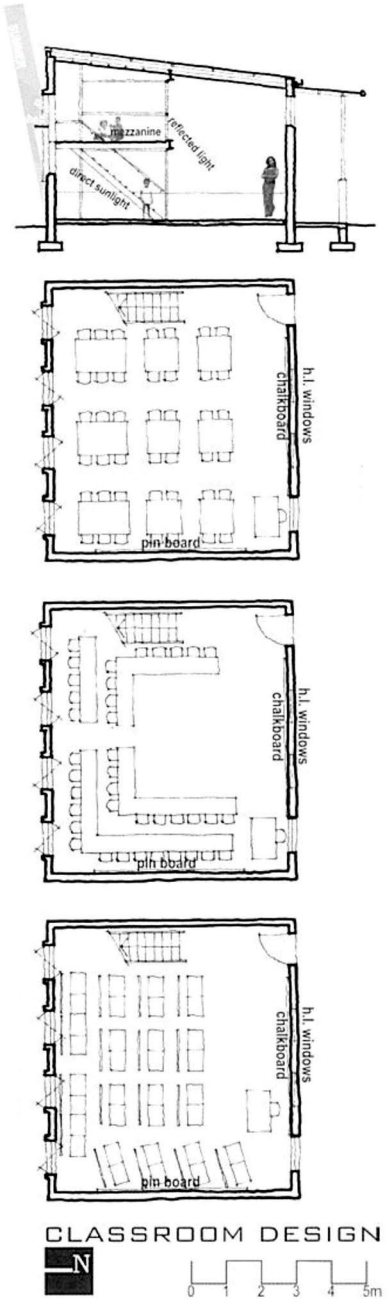
In creating a sustainable school in Shayamoya East Coast Architects identified a number of key design interventions that, through little or no extra cost, could improve the quality of the teaching and learning spaces whilst at the same time reducing both the running costs for the schools and the environmental impact of the buildings.

PASSIVE LOW ENERGY DESIGN

Carefully considered solar orientation of the main learning areas means that they take full advantage of the seasonal & daily solar cycles to ensure that classrooms are cool in summer and warm throughout the icy winters. All of the occupied areas are well insulated to improve thermal comfort. Good natural light improves the quality of the visual environment. Glare and heat gain are reduced through appropriately positioned solar shading and light shelves

RAINWATER MANAGEMENT STRATEGY

Rainwater is collected from all impermeable surfaces, stored in an underground reservoir then pumped to header tanks and gravity-fed to flush toilets. Low consumption fittings and appliances reduce the volume of water used.



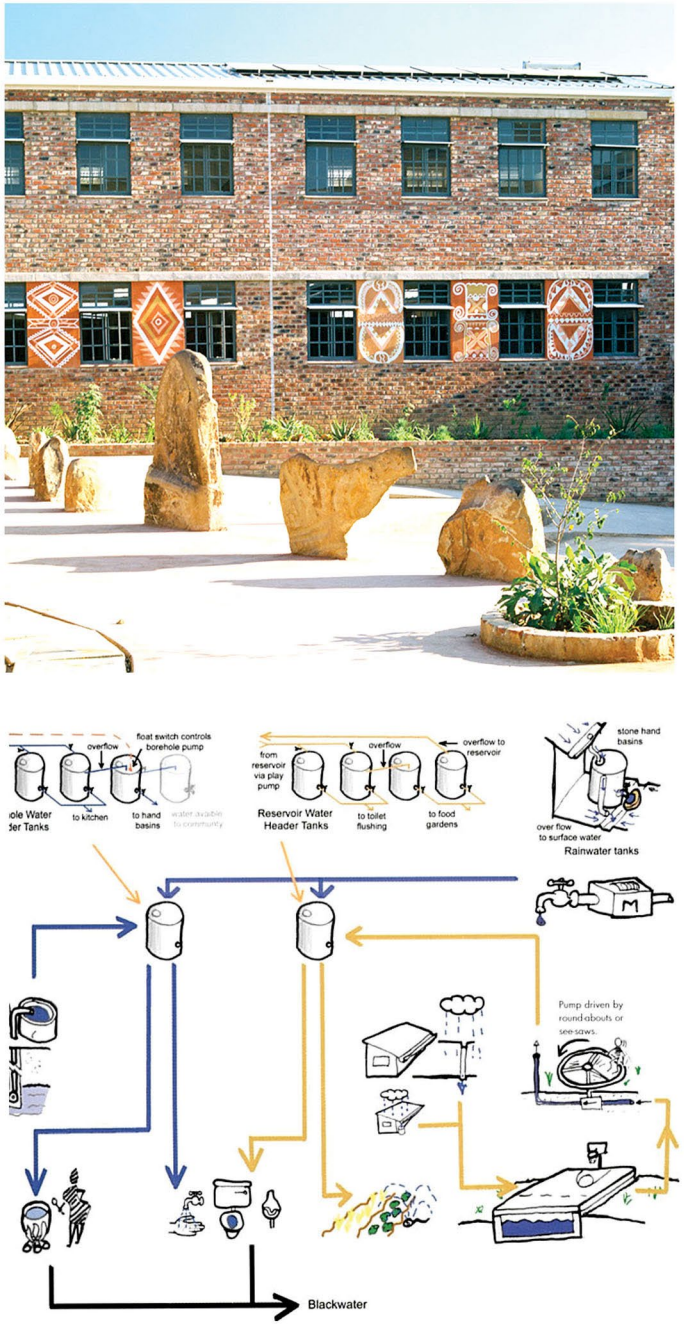


Fig. 5.7
sustainable strategies / classroom design

5.8 CONCLUSION

A majority of infrastructure projects studied in this chapter were sourced in Cape Town. As part of this research I visited cape in July 2015, the findings were that the funding for Township redevelpopment is better utilised, communication between stake-holders is better therefore the excecution of projects is seamless. Phumolong and Mamelodi can take precedence not only in the architecture but also in the excecution and management of projects.

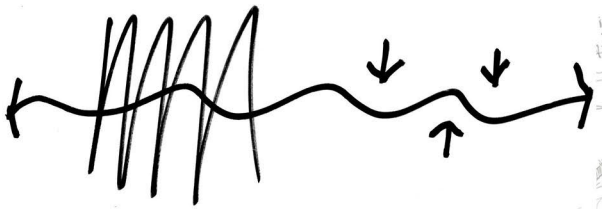
CHAPTER **06** DESIGN DEVELOPMENT

6.1 DESIGN DEVELOPMENT

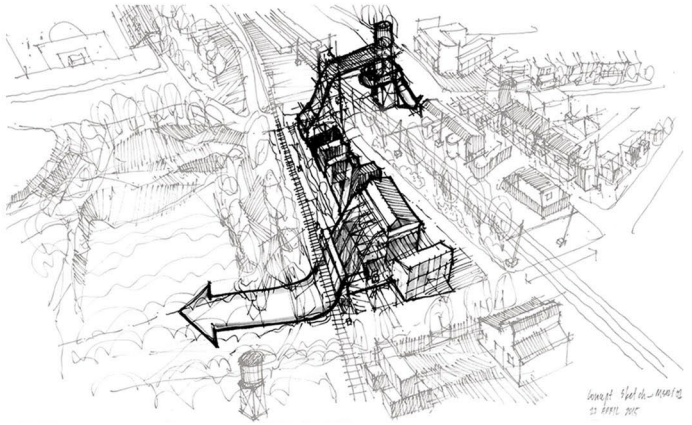
6.1 DESIGN DEVELOPMENT

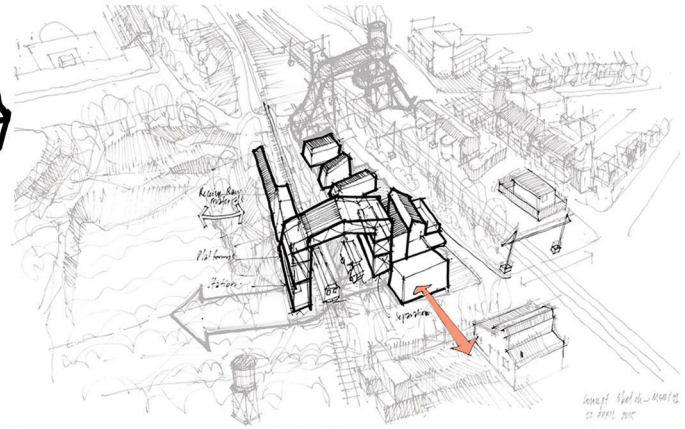
DESIGN INTENTION

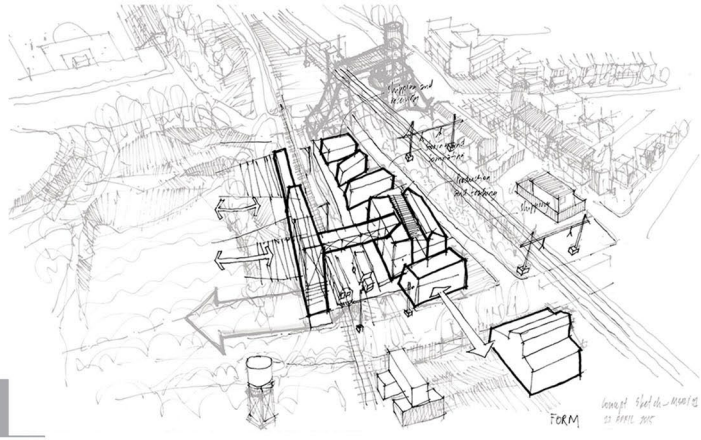
On a macro level the dissertation focuses on the integration of existing networks within the community as well as the networks of the re-claimers of the Heatherly landfill. The architectural intervention is intended to facilitate for programmes of an industrial, processing and educational nature. The aim of the youth Enterprise Hubs is to facilitate for the creation of centres for social and economic opportunities targeting un-employed youth through co-operatives, entrepreneurs, and small and medium enterprise (SMEs).



negotiating boundaries







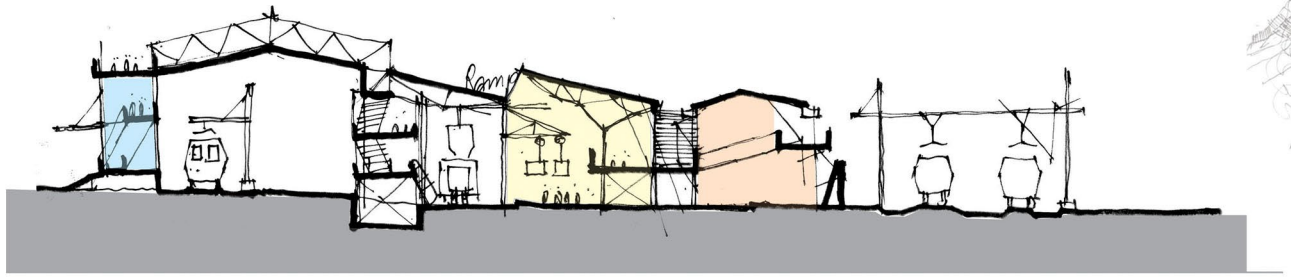


Fig. 6.1
conceptual exploration: bridging the divide

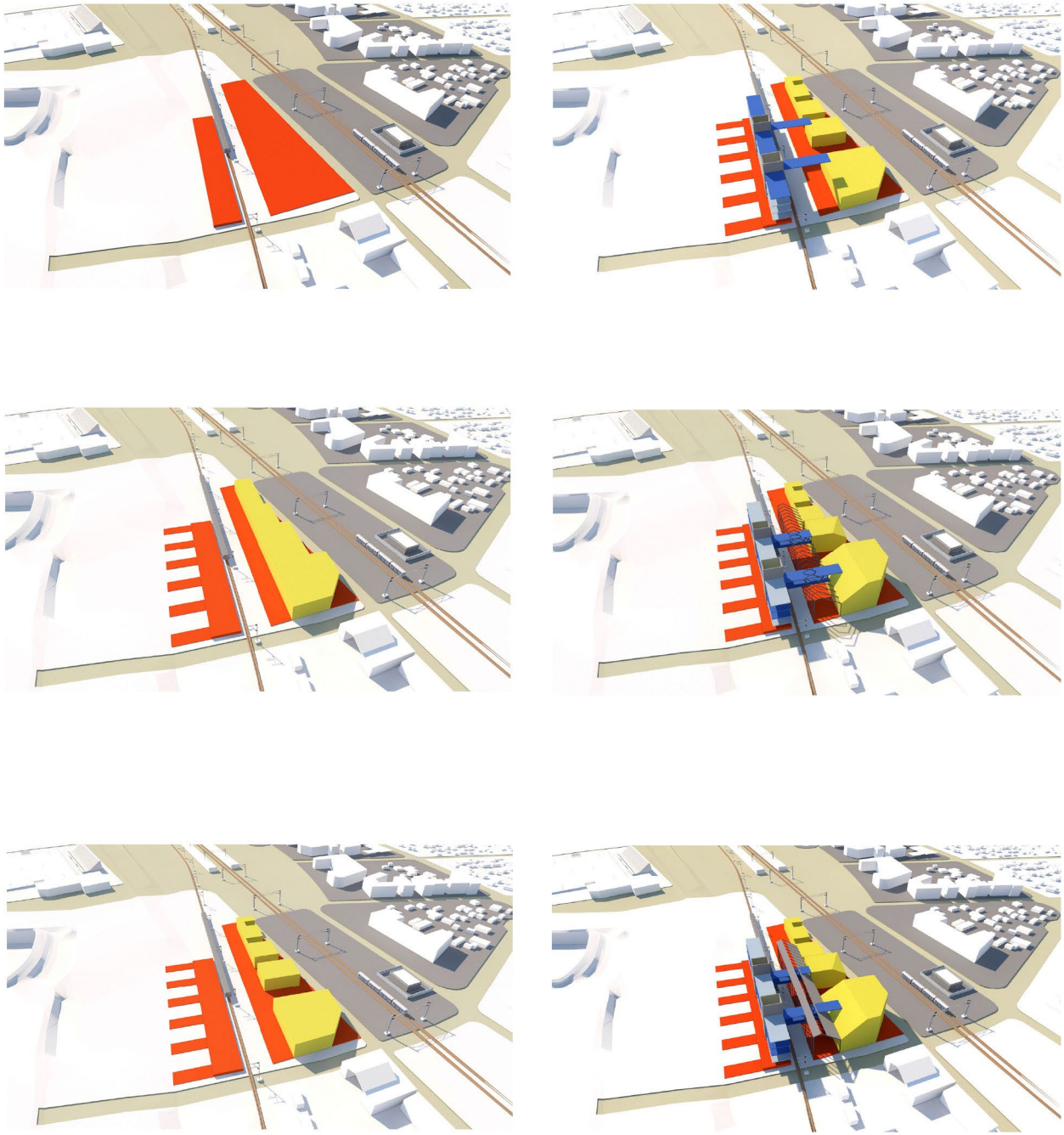


Fig. 6.2
conceptual structural exploration

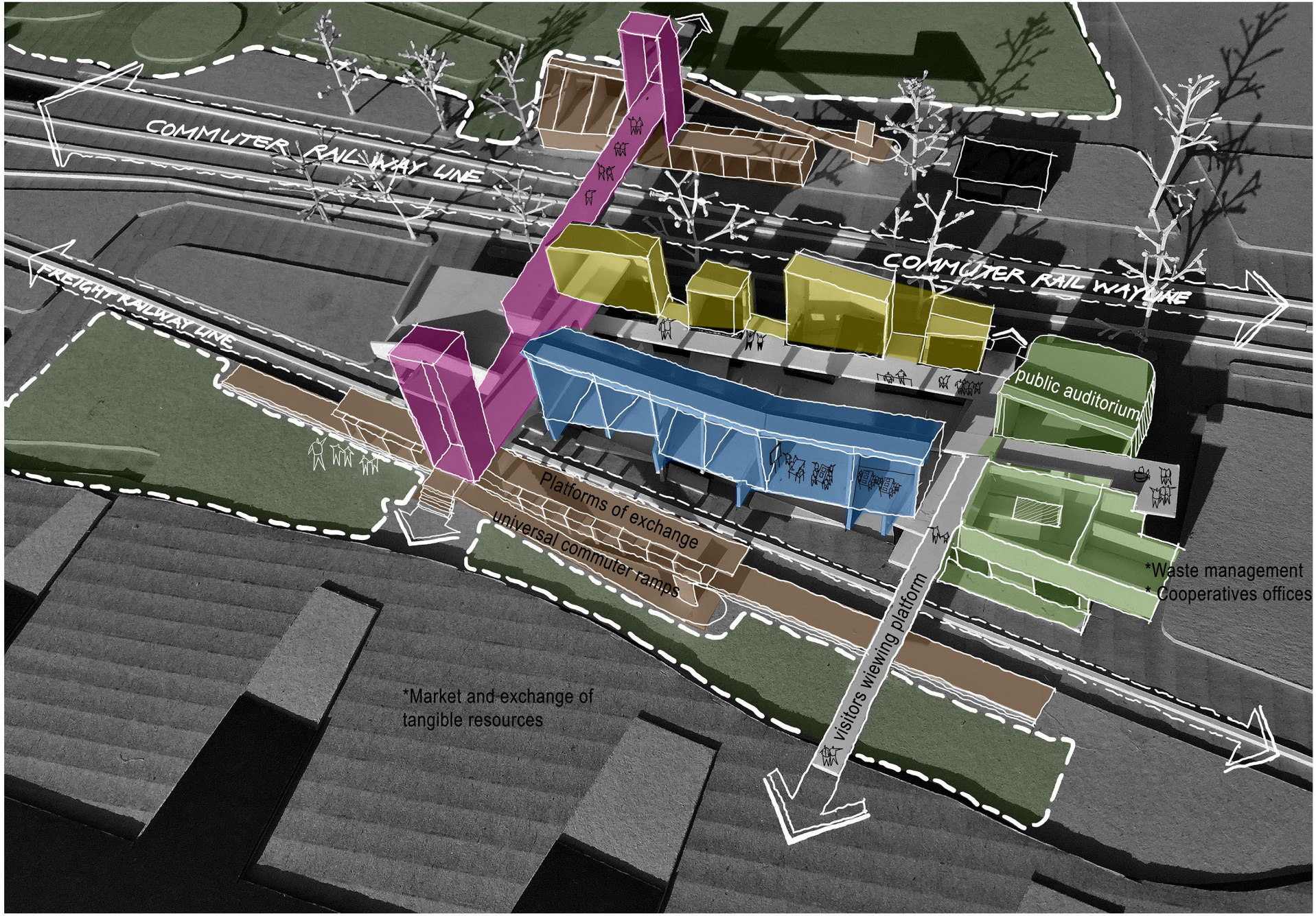
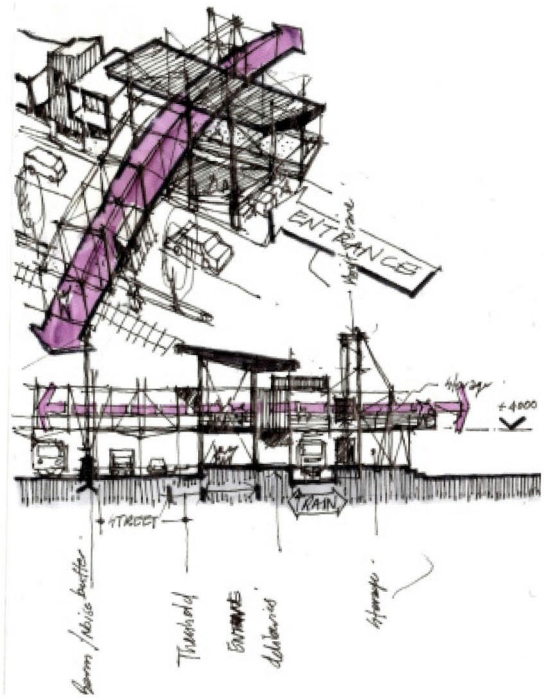
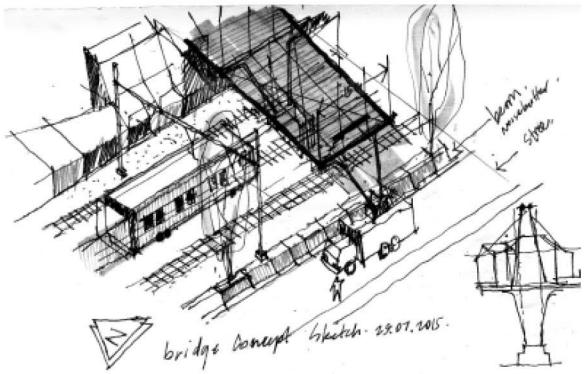
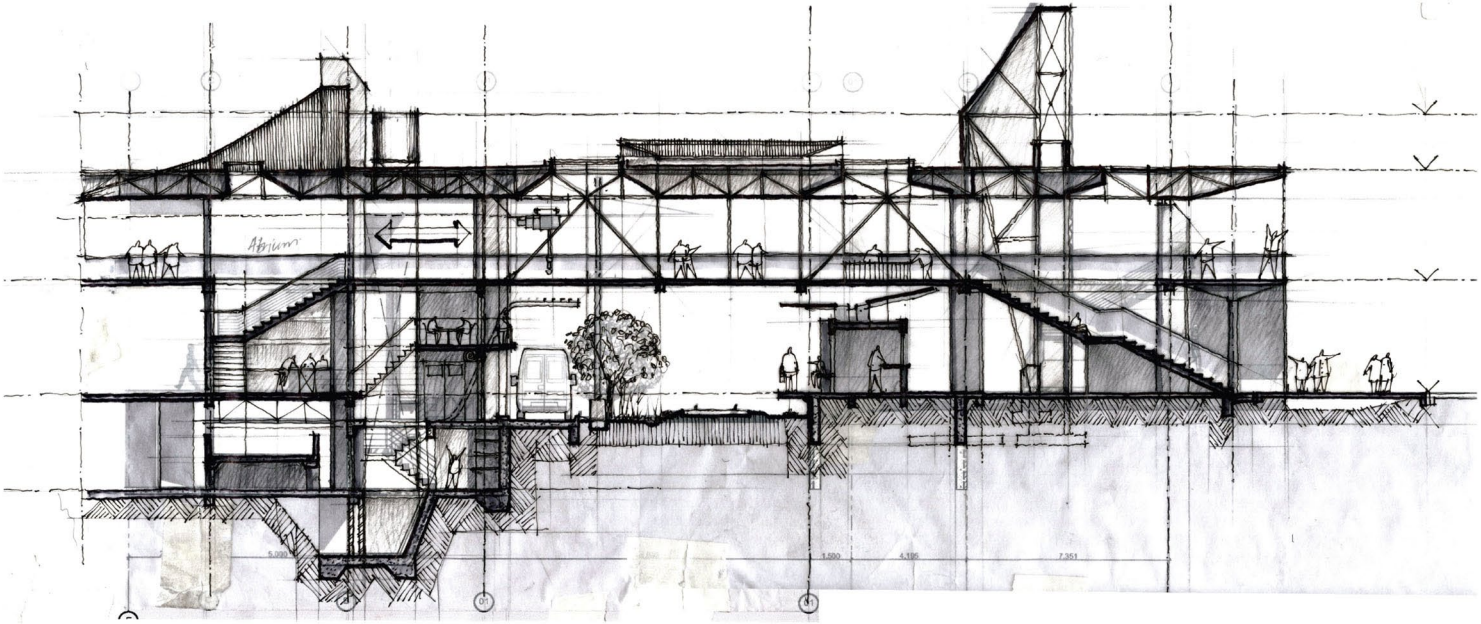


Fig. 6.3
conceptual model: showing site justification







Threshold Section Production/ Market & Exchange

scale 1:100

Fig. 6.4
bridge development

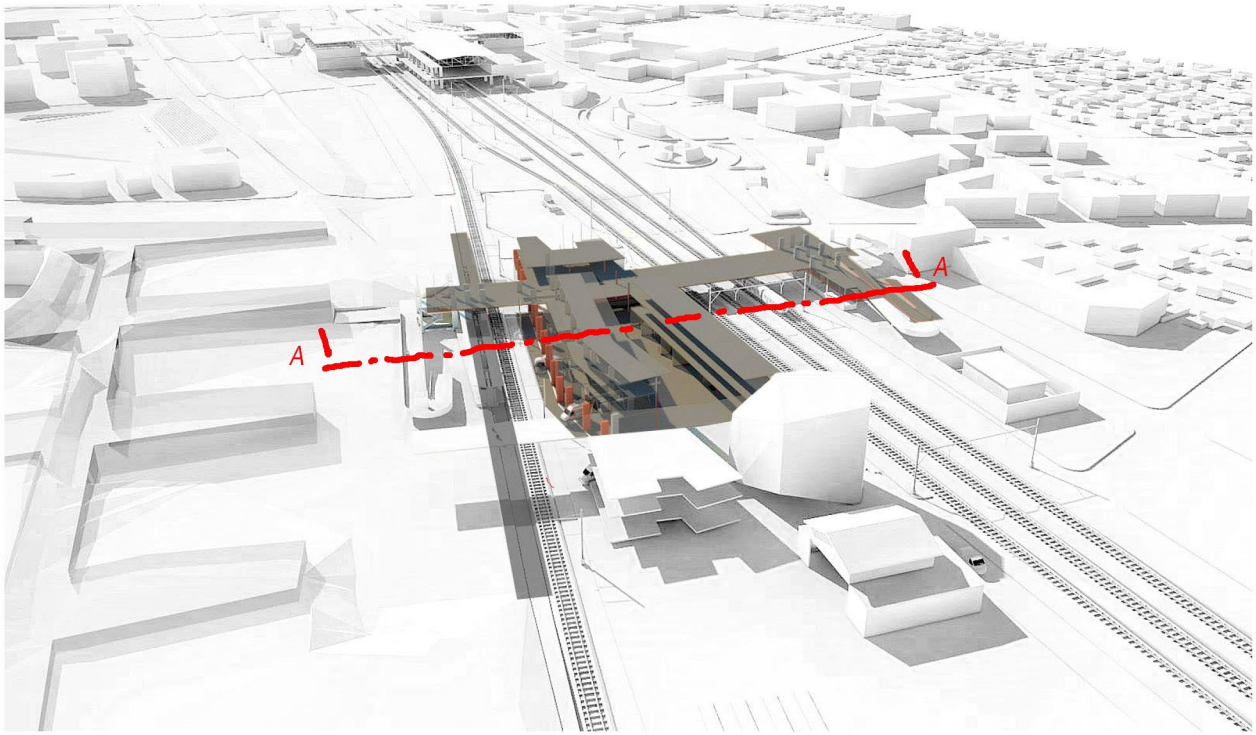


Fig. 6.5
conceptual massing: section A-A

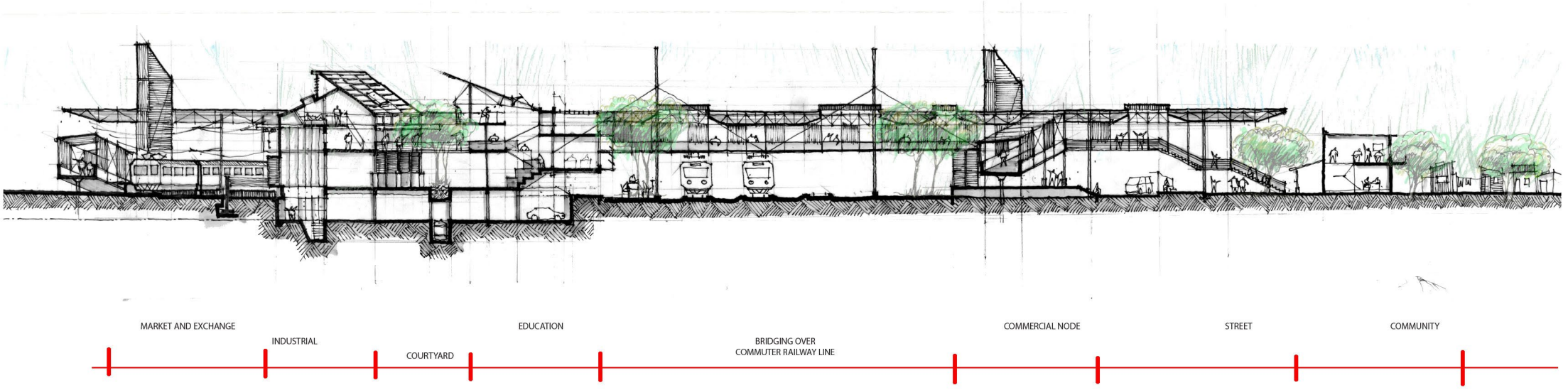
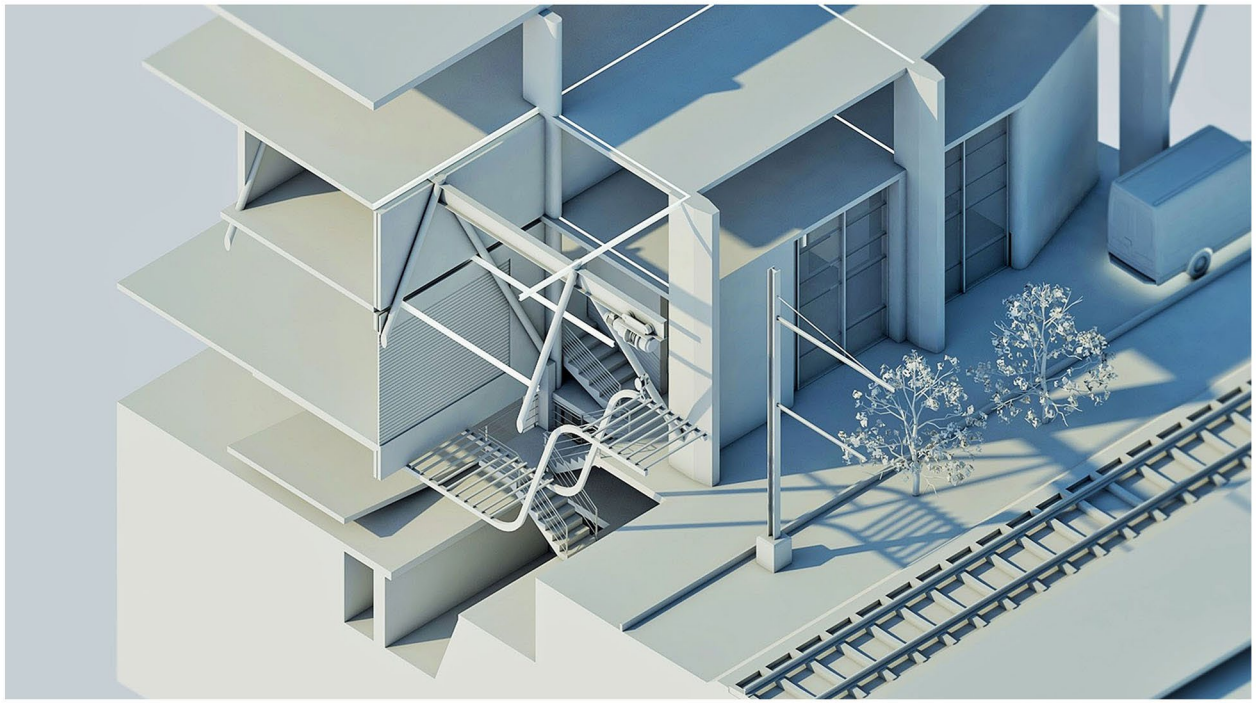


Fig. 6.6
conceptual section: final iteration



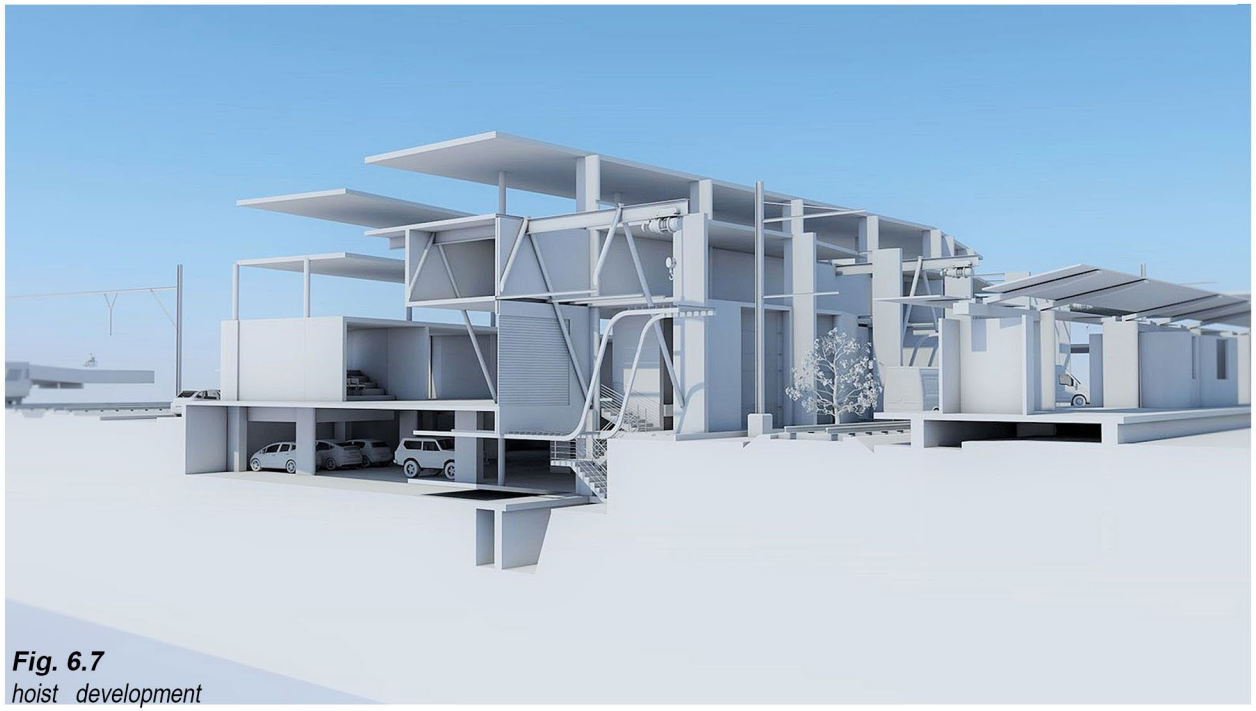
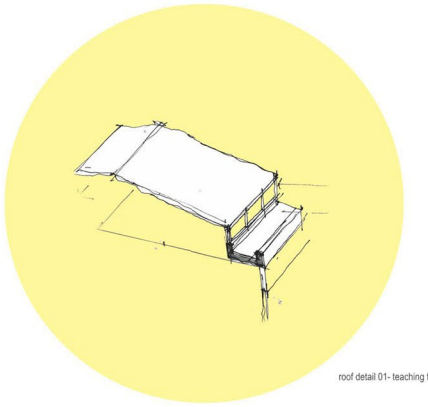
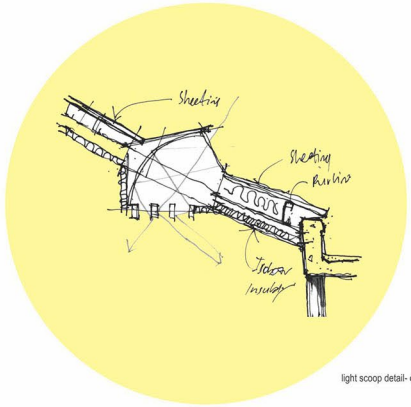


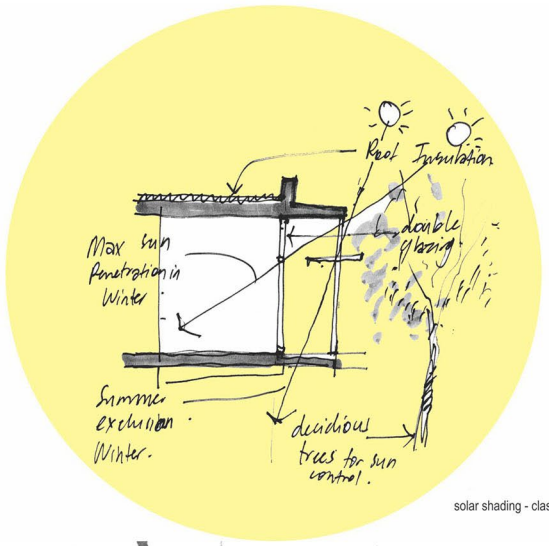
Fig. 6.7
hoist development



roof detail 01- teaching facility



light scoop detail- open teaching facility



solar shading - classroom

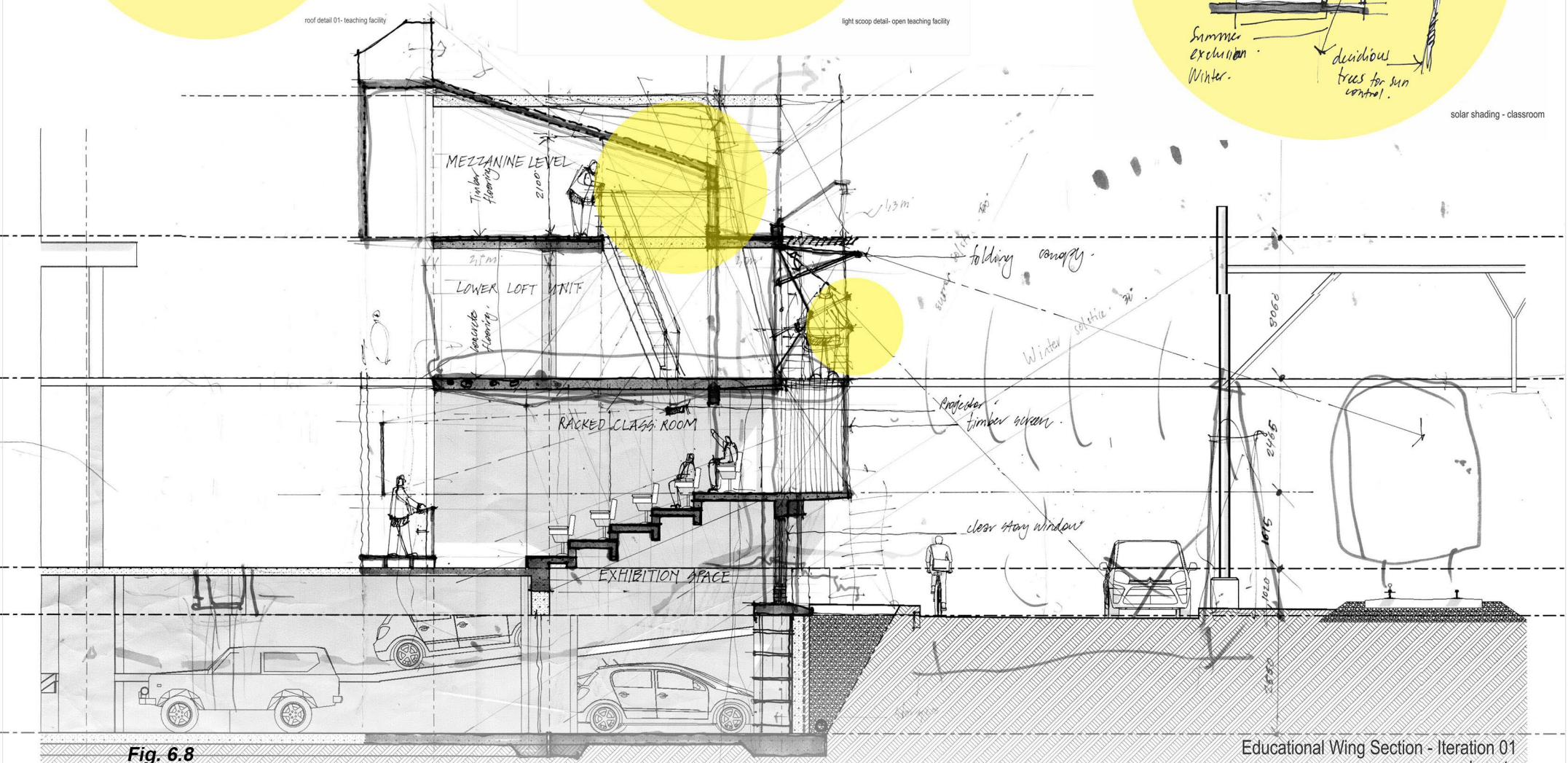
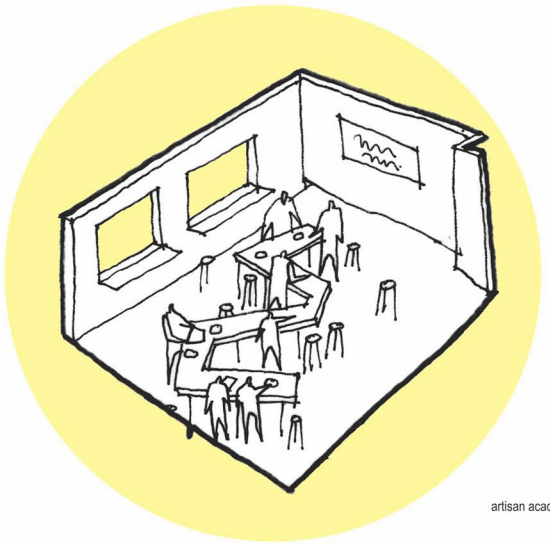
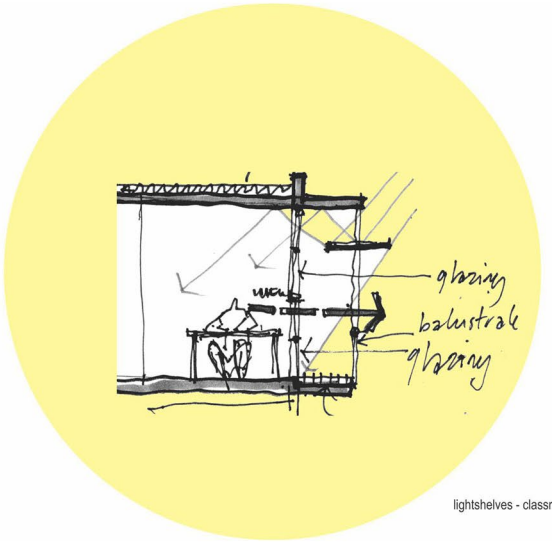


Fig. 6.8
conceptual section: final iteration

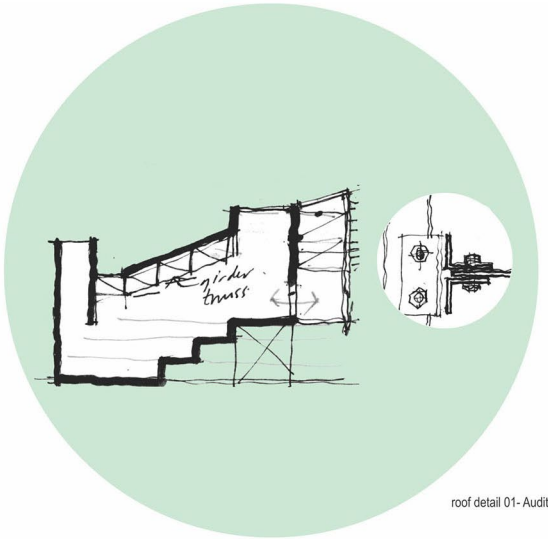
Educational Wing Section - Iteration 01
scale : nts



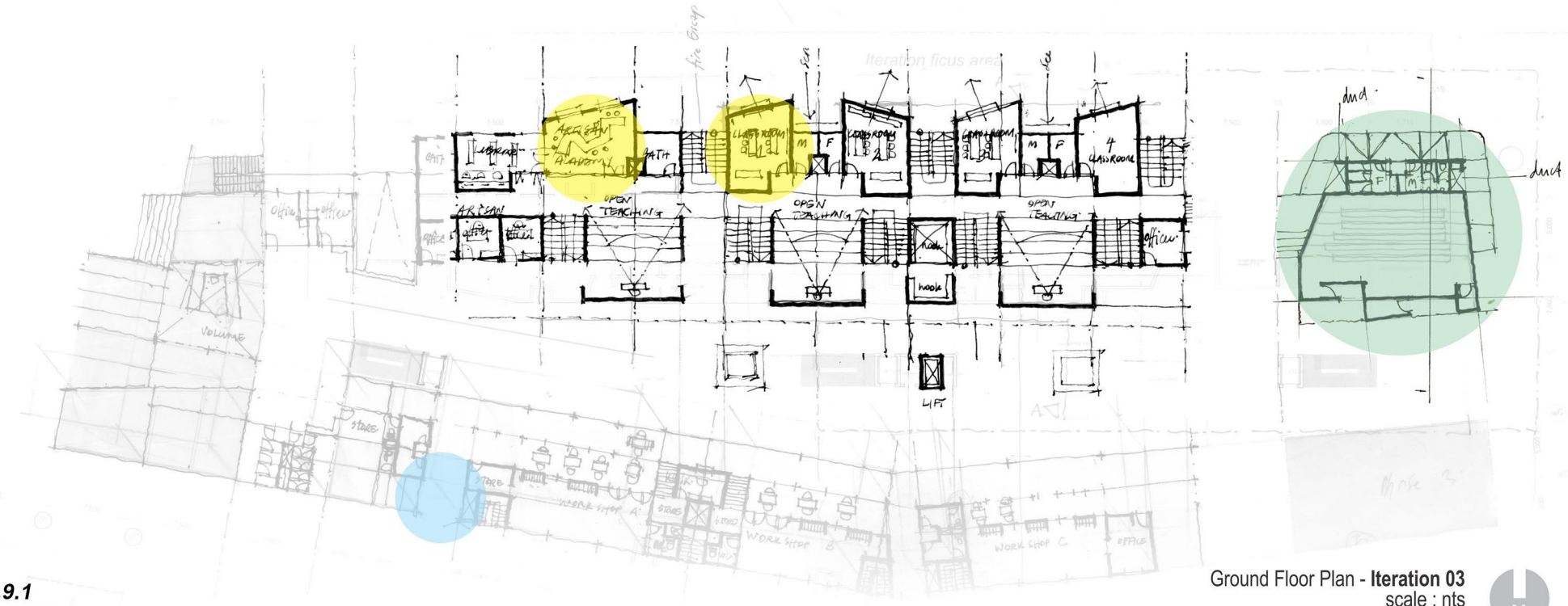
artisan academy



lightshelves - classroom

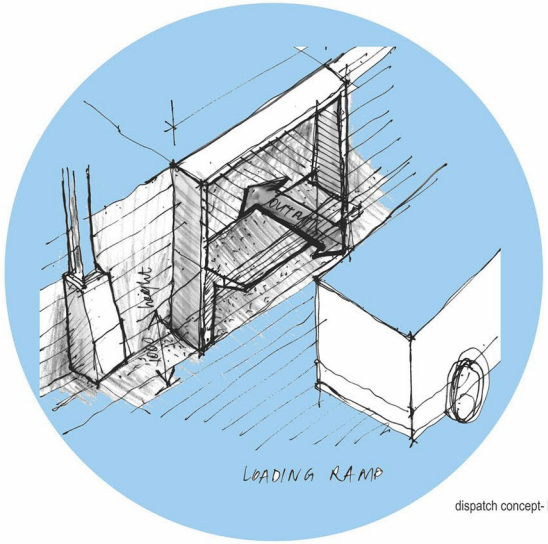


roof detail 01- Auditorium screen

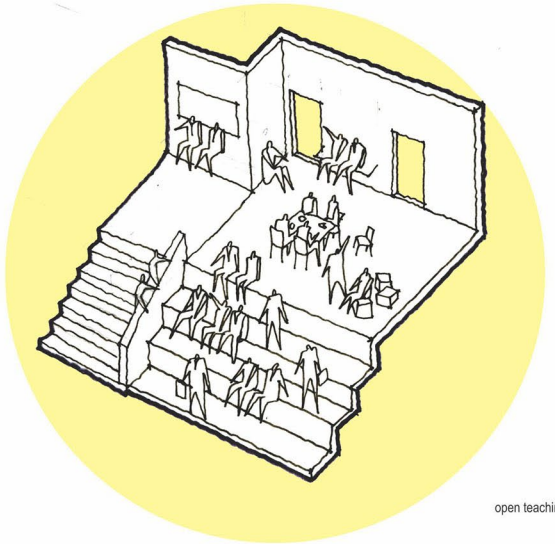


Ground Floor Plan - **Iteration 03**
scale : nts

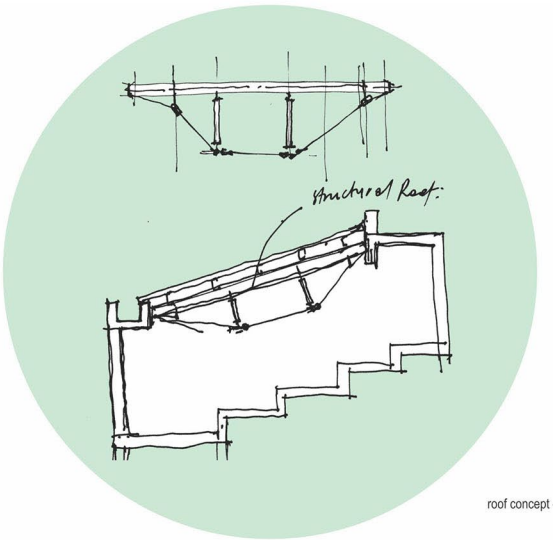
Fig. 6.9.1
design development



dispatch concept- loaading ramp detail



open teaching facility



roof concept - auditorium

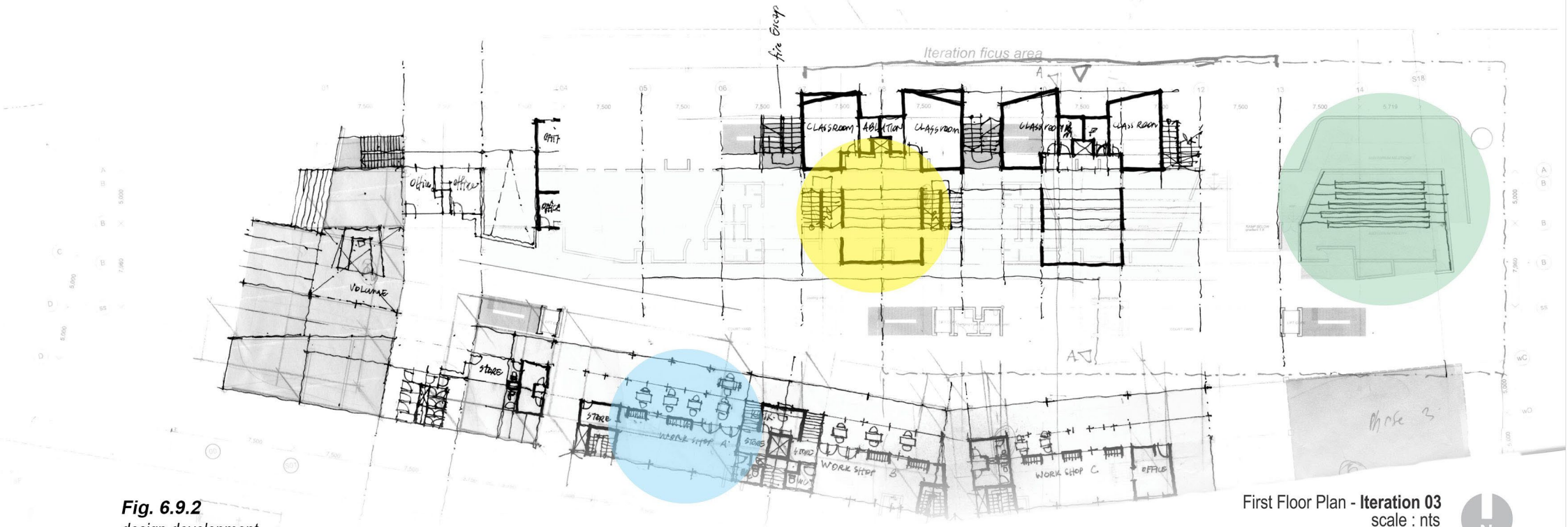
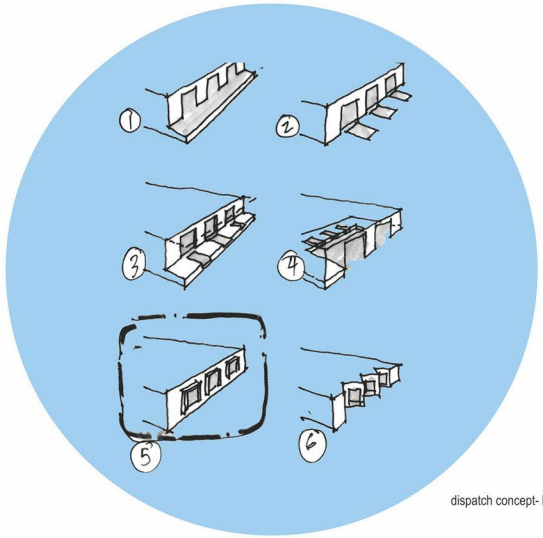
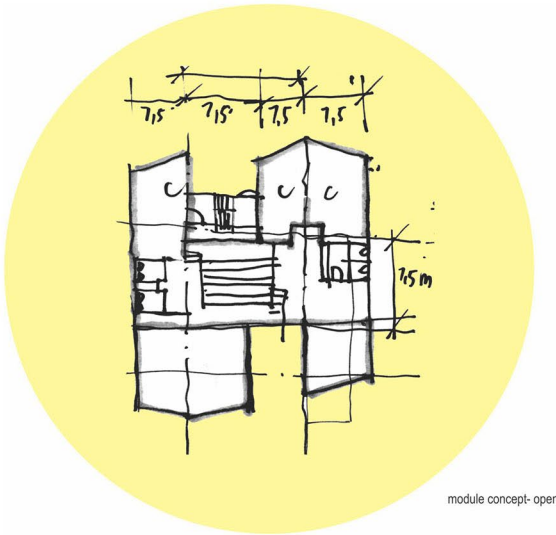


Fig. 6.9.2
design development

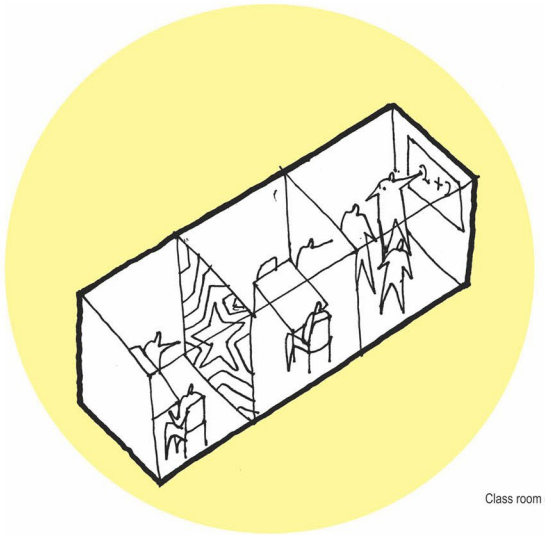
First Floor Plan - **Iteration 03**
scale : nts



dispatch concept- loaading ramp



module concept- open teaching facility



Class room diagram

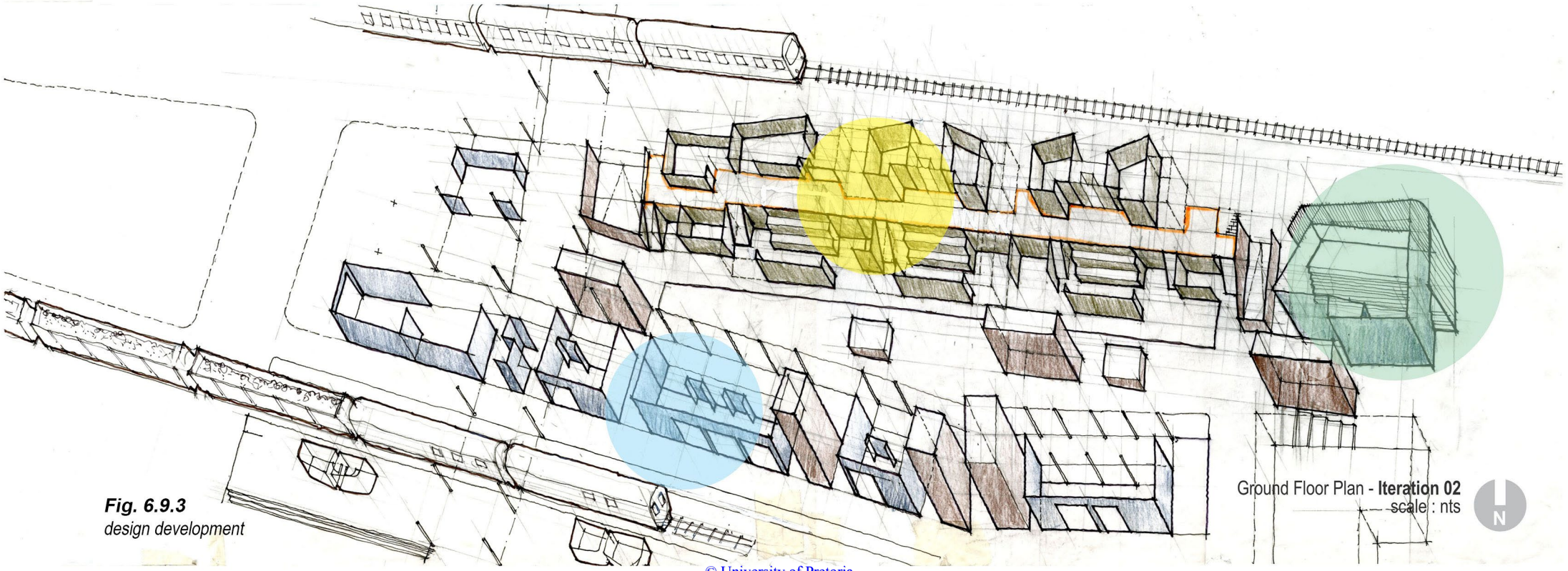
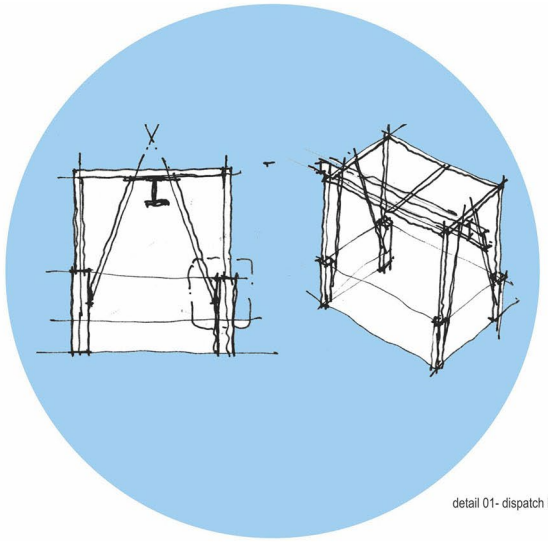
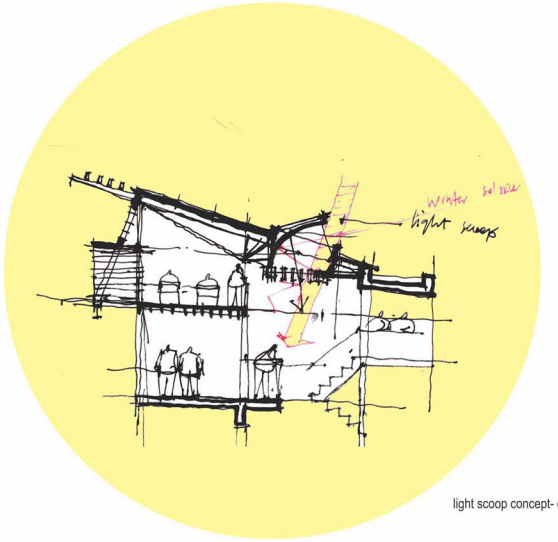


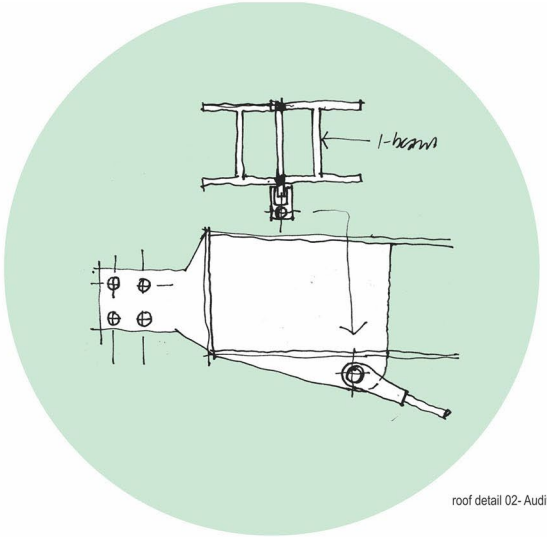
Fig. 6.9.3
design development



detail 01- dispatch hoist



light scoop concept- open teaching facili



roof detail 02- Auditorium roof

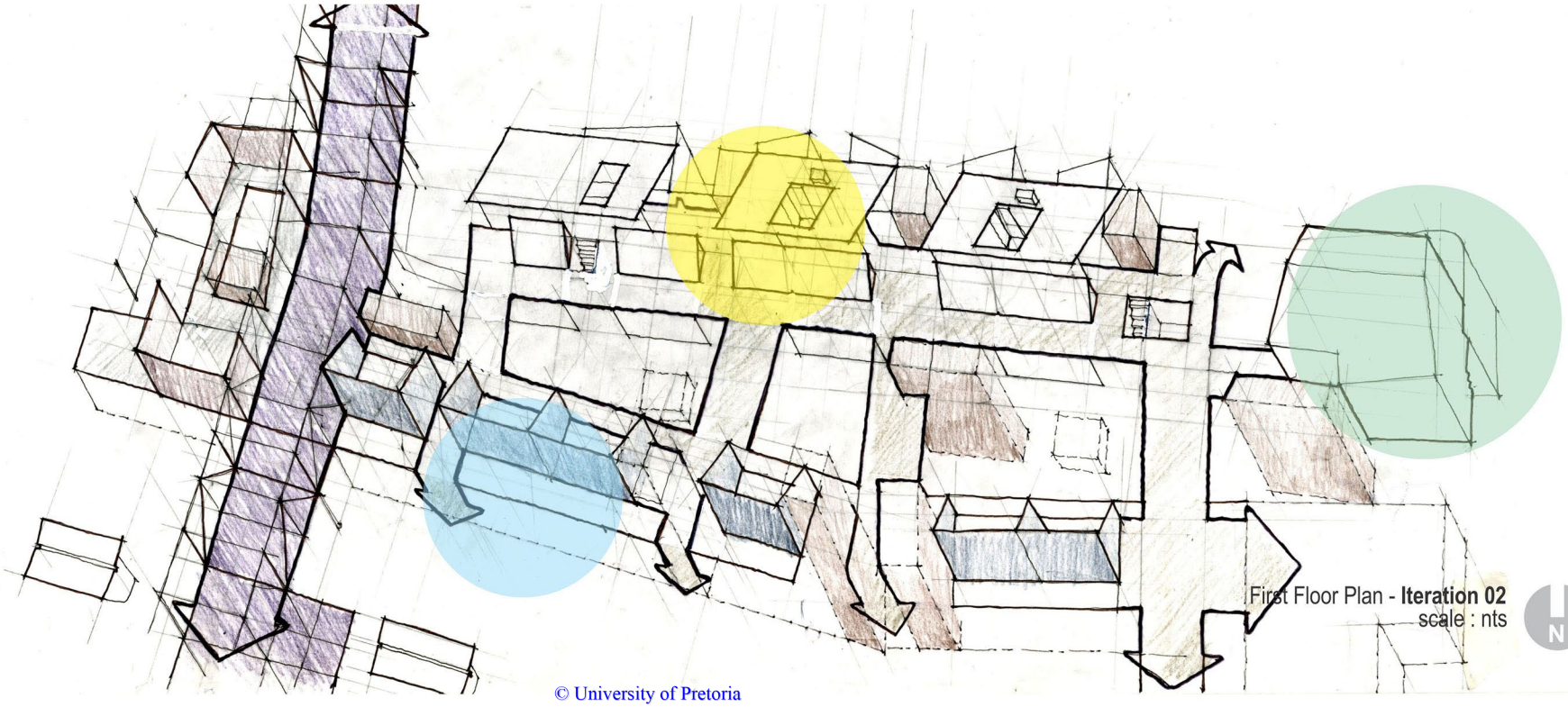


Fig. 6.9.4
design development

7.0 TECHNICAL CONCEPT

CHAPTER 07 TECHNICAL CONCEPT

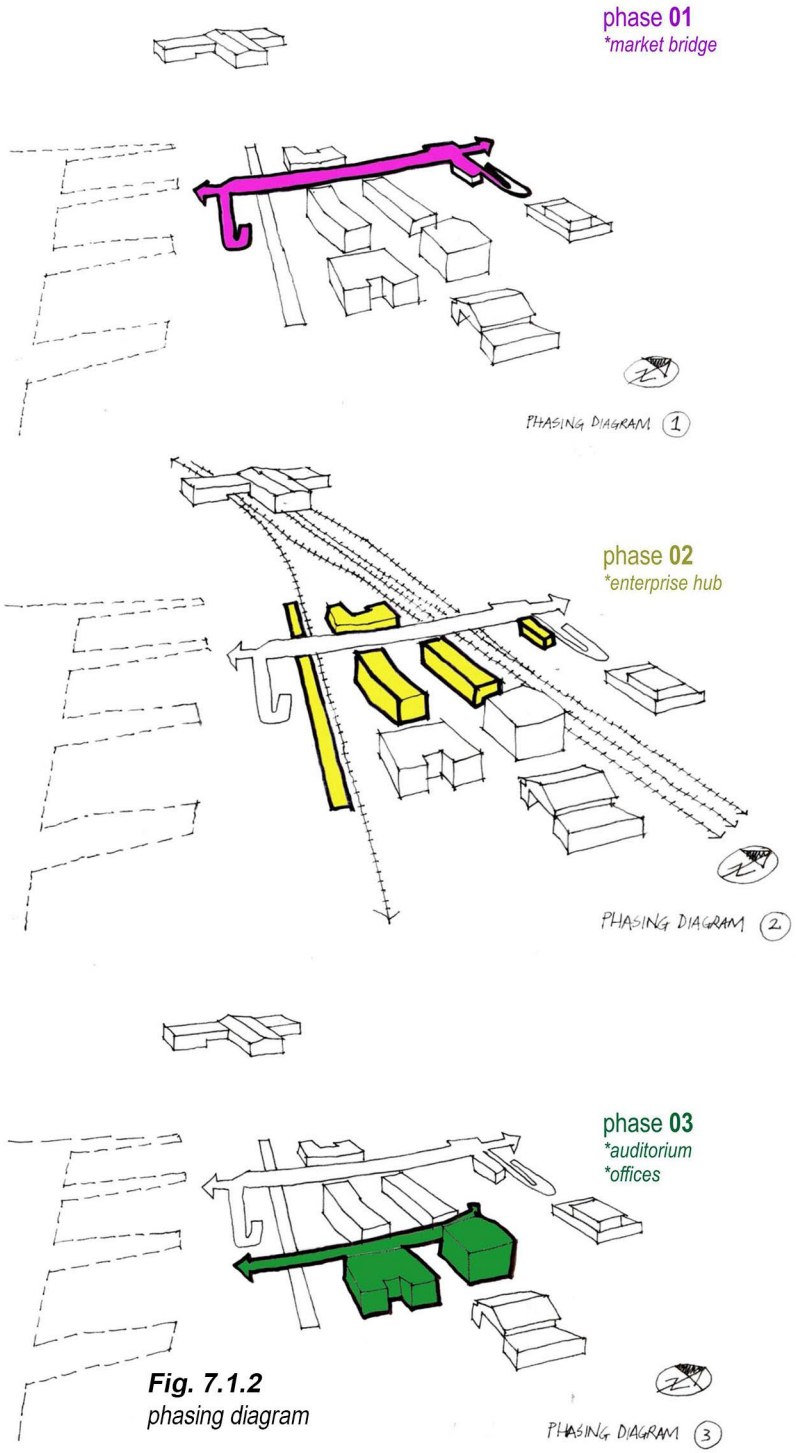


Fig. 7.1.2
phasing diagram

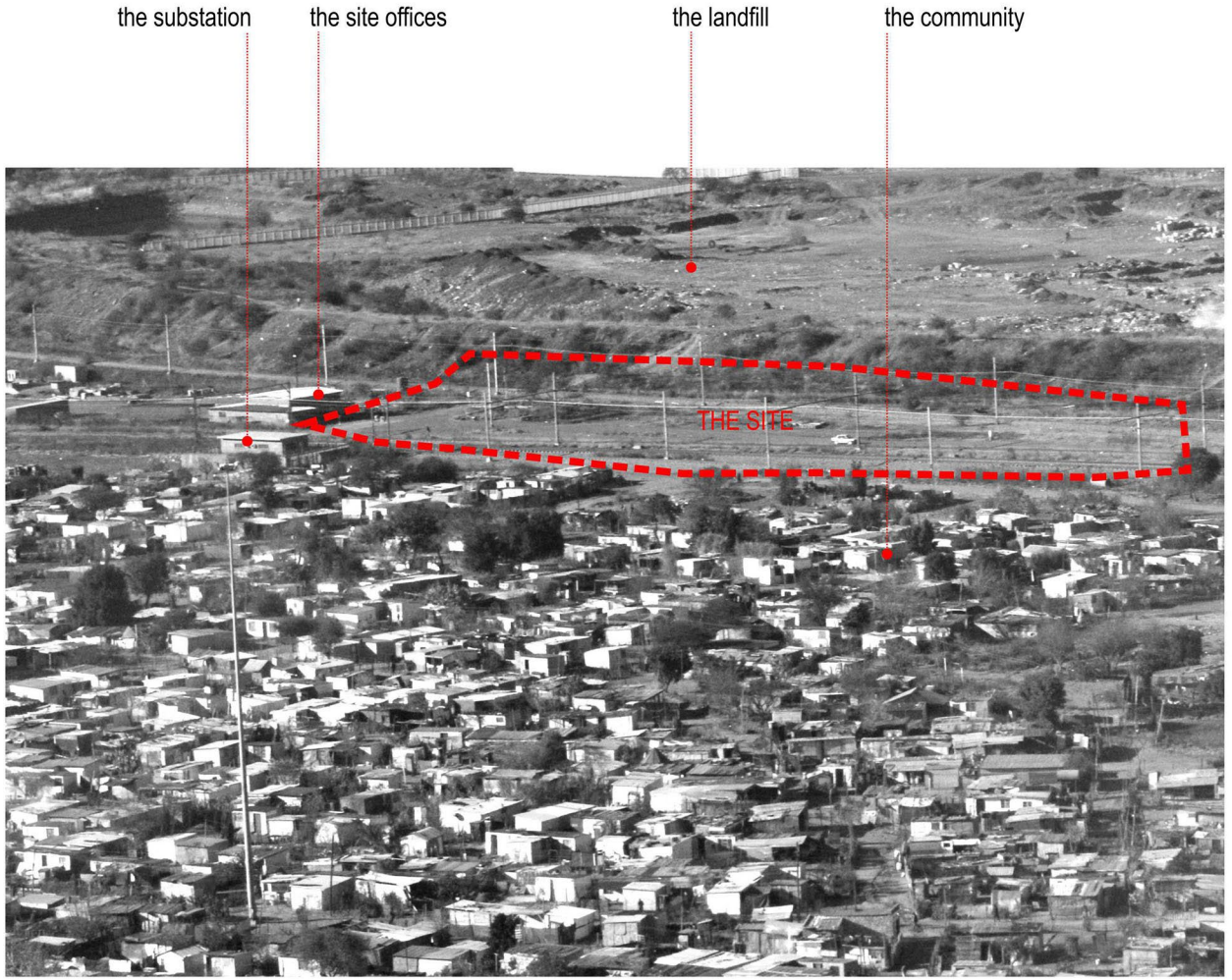


Fig. 7.1.2
Aerial image of Phumolong (Randall, 2015)

Fig. 7.2
site plan and programme

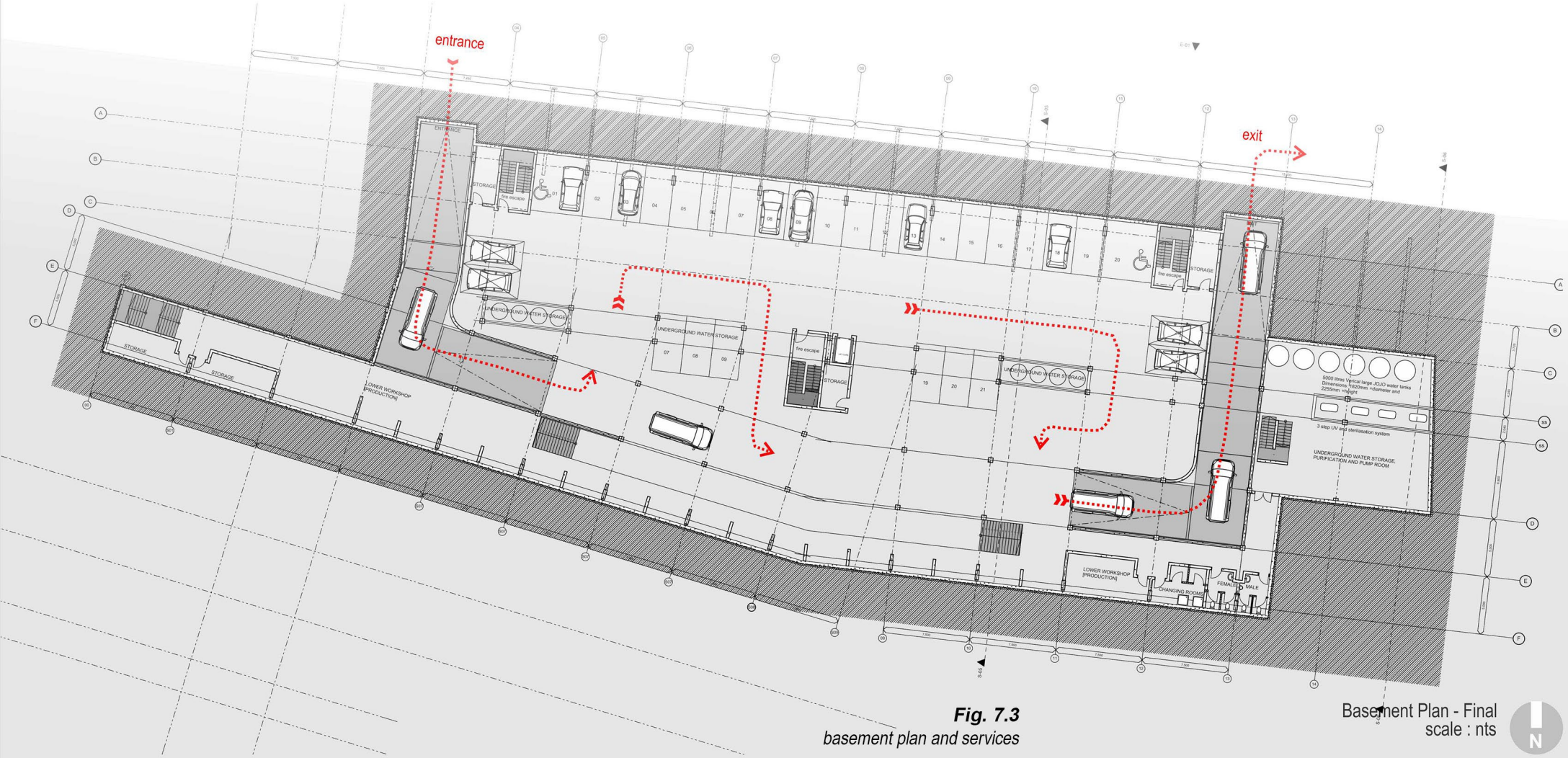


Fig. 7.3
basement plan and services

Basement Plan - Final
scale : nts

Fig. 7.4
ground floor plan

Fig. 7.5
sketch (SMITH, 2015)

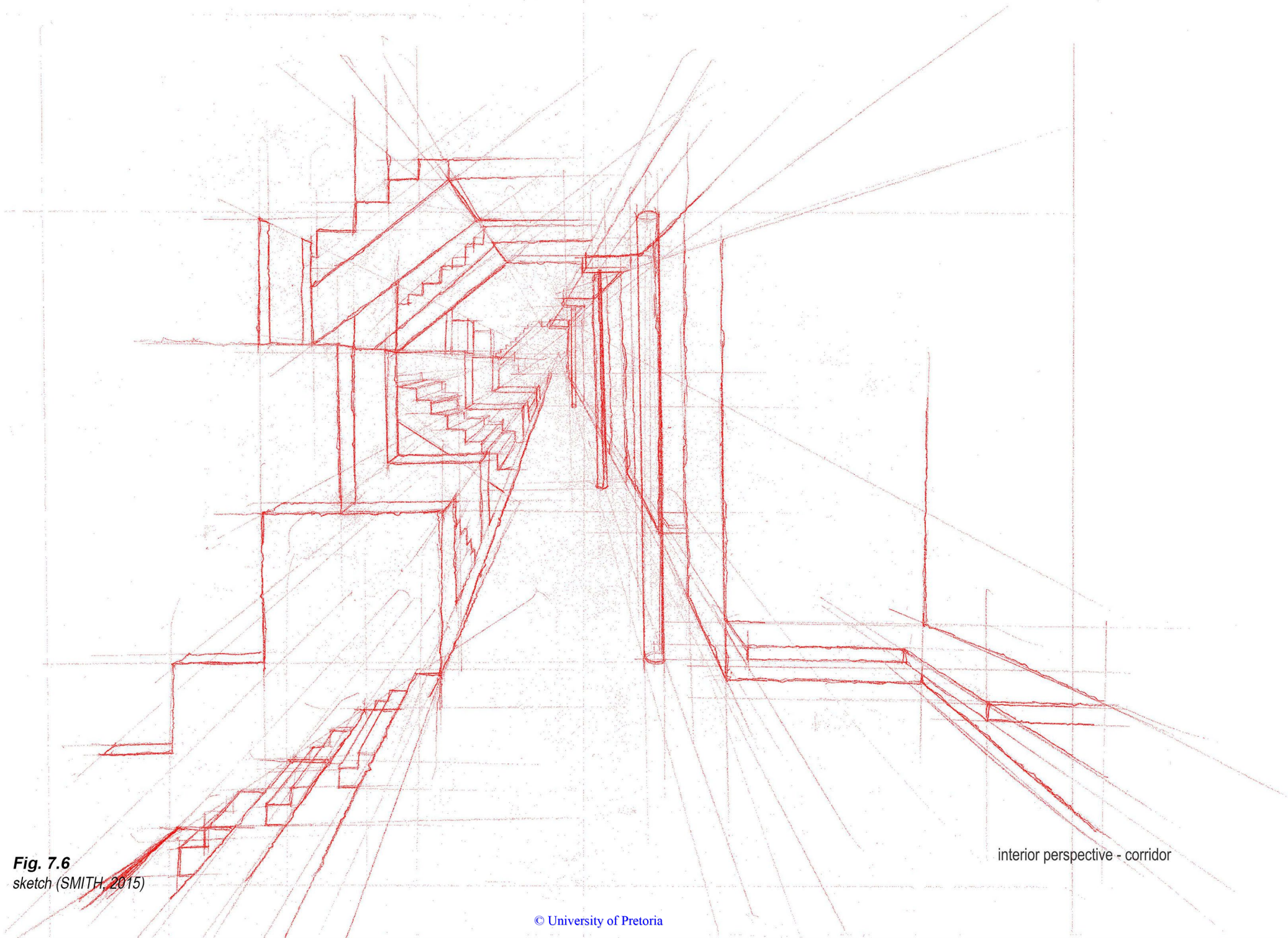
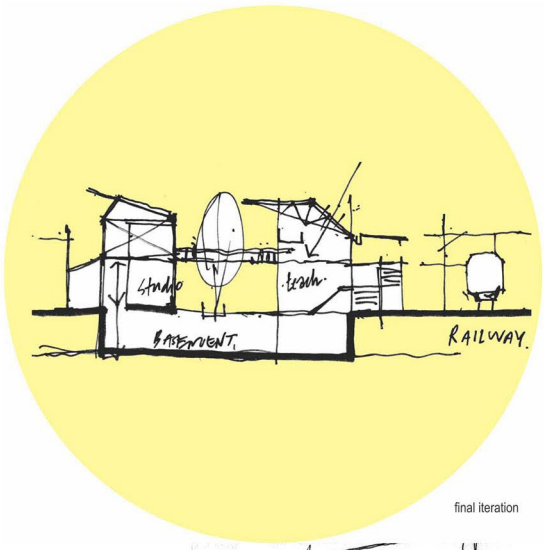


Fig. 7.6
sketch (SMITH, 2015)



final iteration

SOLAR COLLECTORS

A solar thermal collector collects heat by absorbing sunlight. A collector is a device for capturing solar radiation. Solar radiation is energy in the form of electromagnetic radiation from the infrared (long) to the ultraviolet (short) wavelengths.

upper loft

view of courtyard

hoist area

lower loft

pedestrian bridg

dispatch

workshop space

courtyard

planter

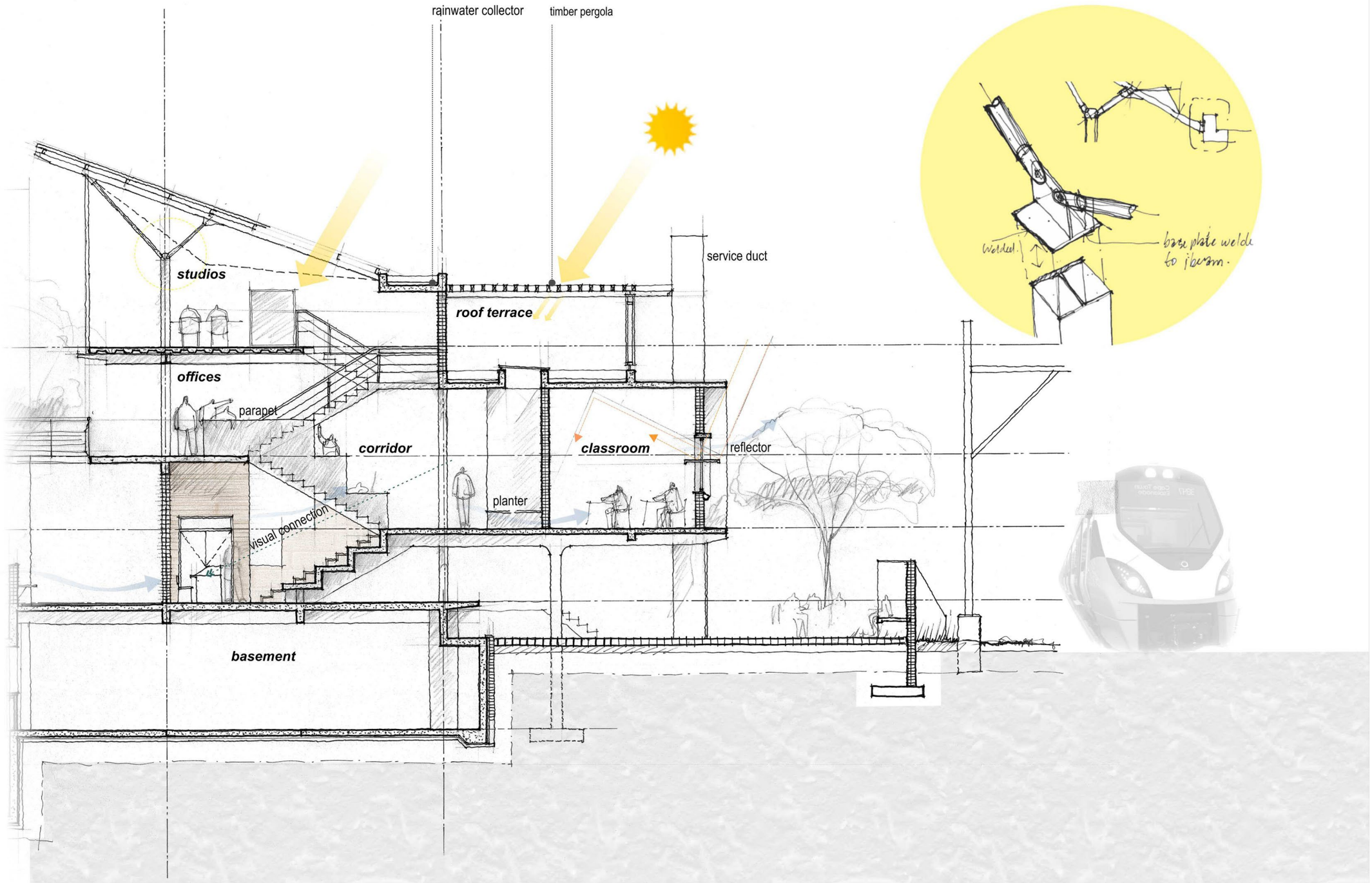
concrete sleeper paving

lower workshop

basement

compacted soil

Fig. 7.7
final section



Section - A A
scale : nts

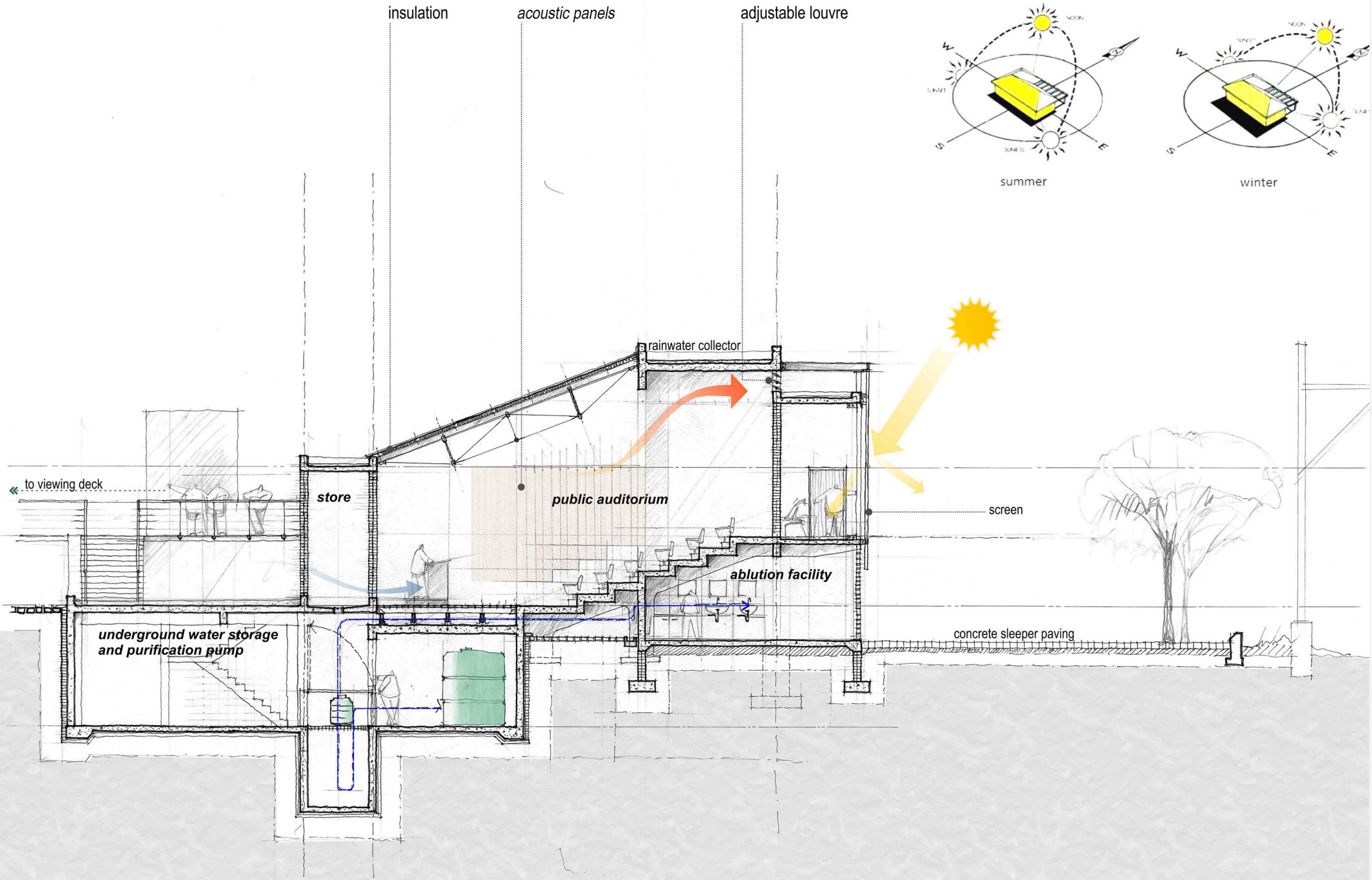


Fig. 7.9
auditorium section B B

Section - B B
scale : nts

Fig. 7.10
material and systems diagram

Section - A A
water harvesting strategy

7.0 TECHNICAL CONCEPT

The technification of the scheme is split into three parts: Primary, Secondary and Tertiary.

1. The Primary Structure is the concrete basement, where the earth is excavated, then the concrete column and beam structure are constructed in order to serve as base for the multi-functional programme above.

2. The Secondary Structure is located on the ground floor, the structural elements are rigid (stereotomic) and serve as thermal mass and insulator of sound as this is where the teaching facilities are located.

3. The Tertiary method of construction is a light steel frame structure, designed as generic modular system in order to allow for future development vertically, should the original programme of the building change in the future.

The technological and sustainable systems have been integrated into the design process in order to allow the building to adapt to its context in robust and future proof manner. The sleepers scattered on site will be reused at structural and landscape elements in order to respond to the immediate environment and develop a new architectural language.

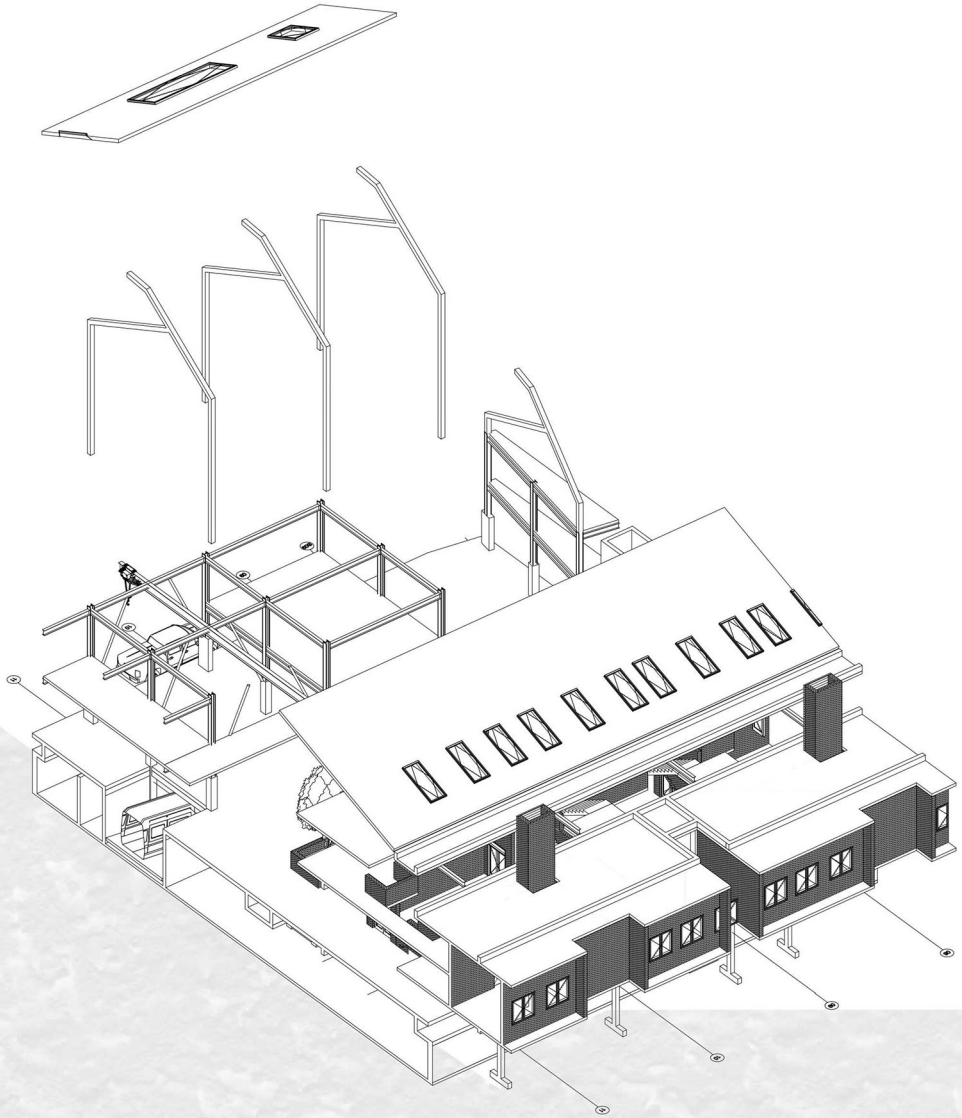


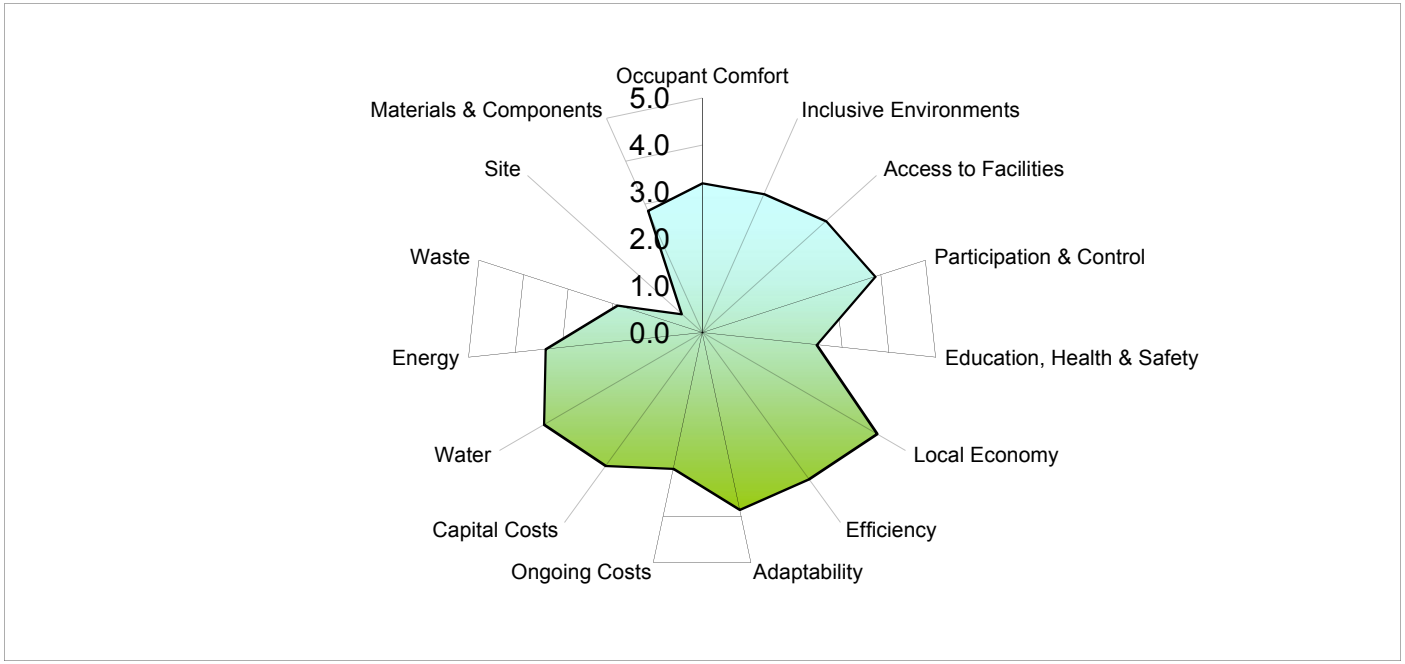
fig 7.11 exploded axo

exploded axonometric
structural analysis

7.12 SBAT RATING TOOL

SUSTAINABLE BUILDING ASSESSMENT TOOL (SBAT- P) V1

PROJECT		ASSESSMENT	
Project title:	The Mamelodi Youth Enterprise HUB	Date:	2015/12/10
Location:	Mamelodi	Undertaken by:	
Building type (specify):	Community	Company / organisation:	
Internal area (m2):	2100 mqs	Telephone:	Fax:
Number of users:	120	Email:	msizimkhize01@yahoo.com
Building life cycle stage (specify):	Design/Construction/Operation		



Social	3.3	Economic	3.7	Environmental	2.5
		Overall	3.2		

8.0 REFERENCES

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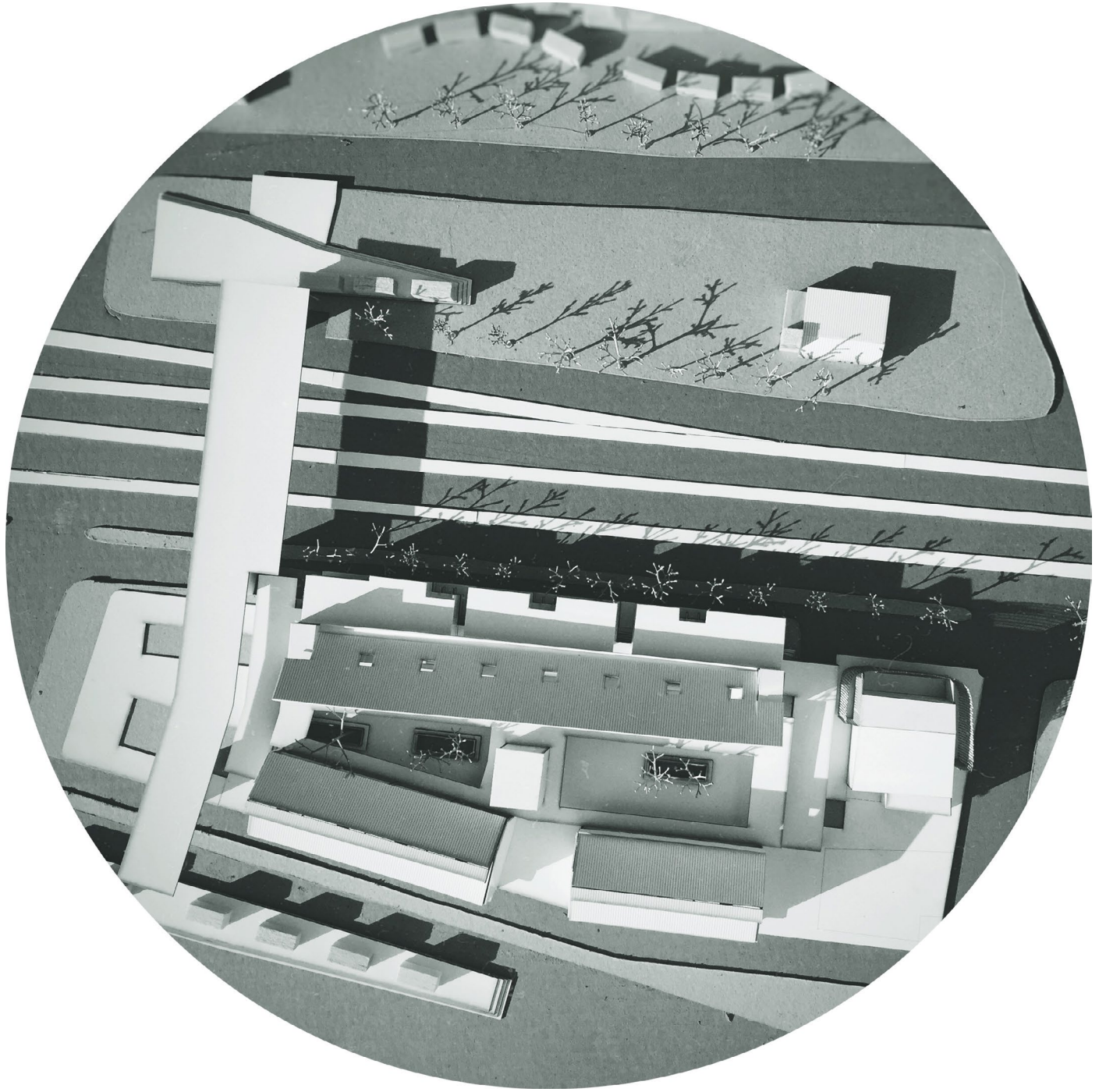
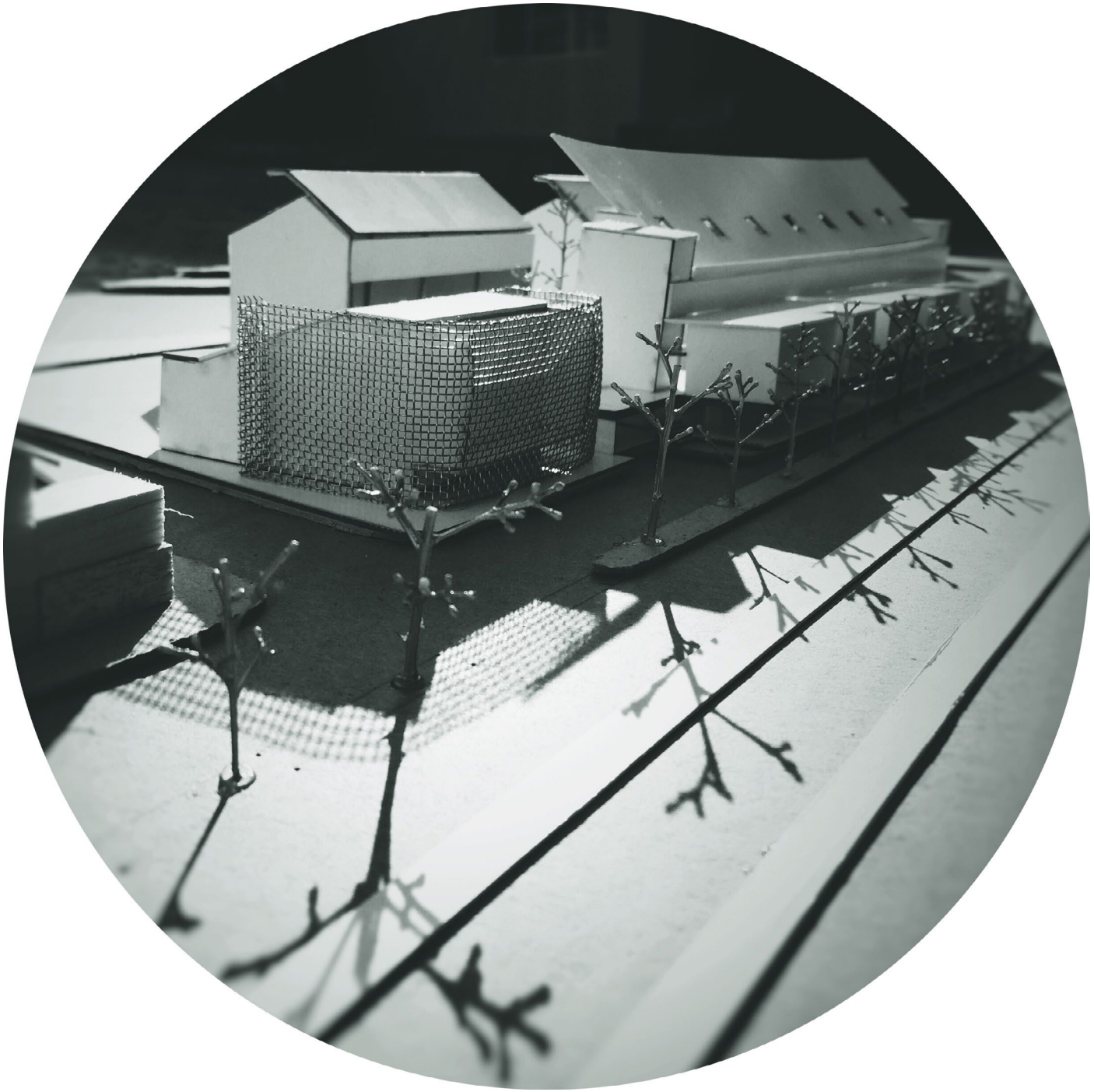
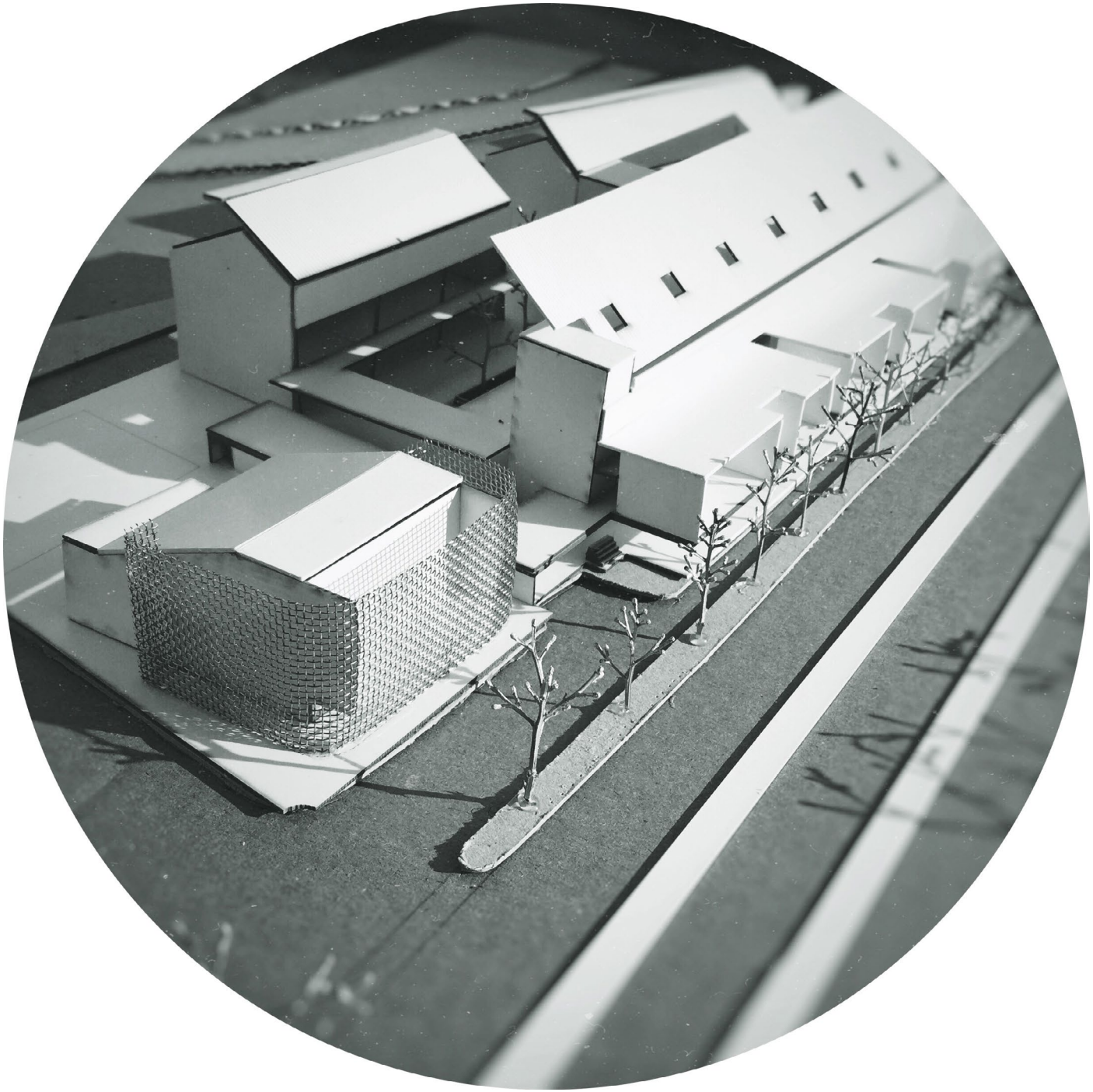
8.1 ABBREVIATIONS

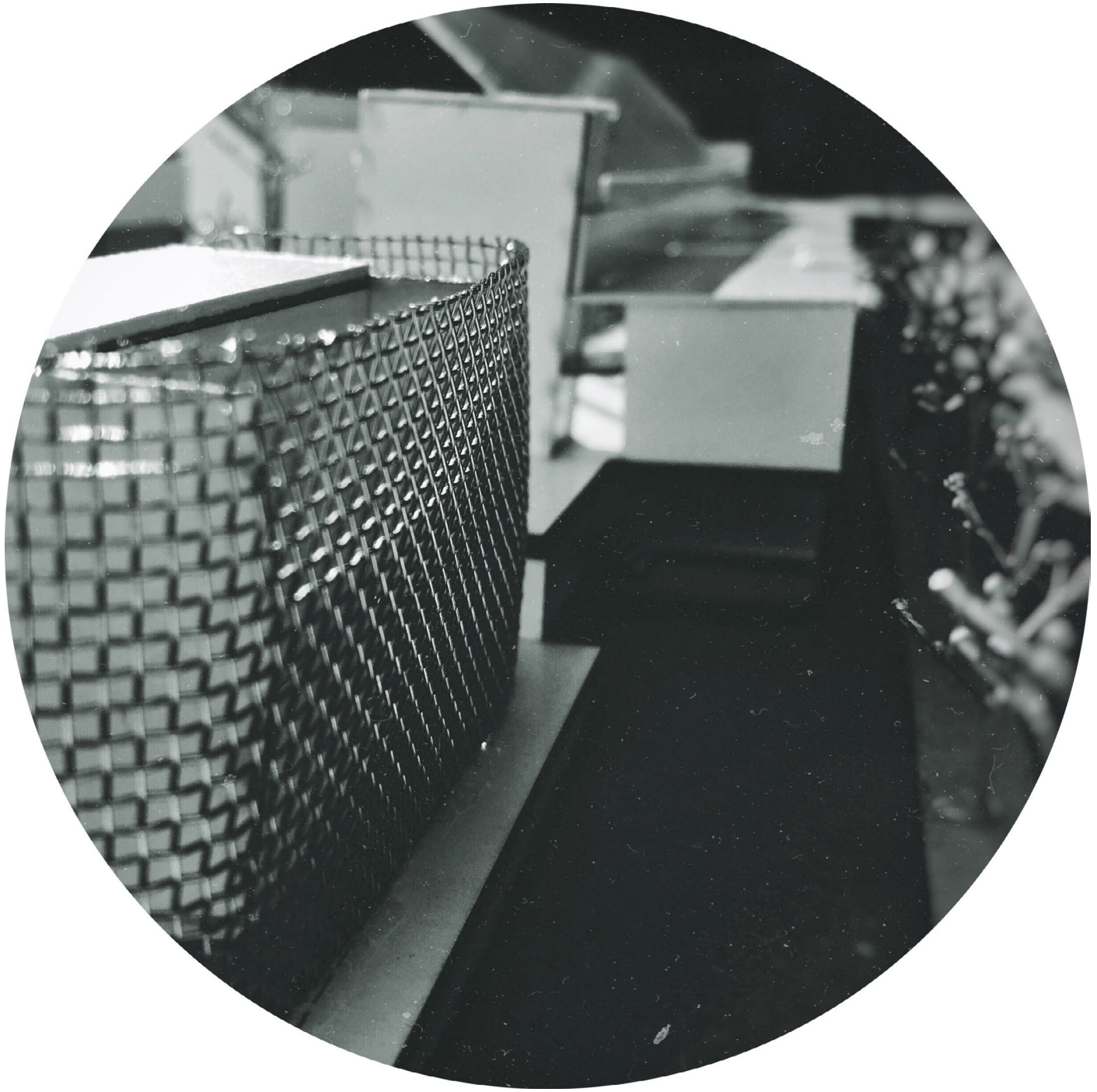
Statics South Africa	STATS SA
National Treasury	DNT
The National Development Plan	NDP
Spatial Development Framework	SDF
Transit Orientated Development	TOD
South African Cities Network	SACN

9.0 PHOTOS OF MODEL









10. LIST OF FIGURES