



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Germinate

Architecture of Growth

A mixed-use development in Salvokop

Karl-Robert Gloeck
MArch(Prof) UP 2011



Germinate

Architecture of Growth

A mixed-use housing development in Salvokop to stimulate physical and social growth in a disconnected area

by Karl-Robert Gloeck

Submitted in partial fulfilment of the requirements for the degree Master of Architecture (Professional) Department of Architecture, Faculty of Engineering, Built Environment and Information Technology, University of Pretoria

Study leader: Gary White
Course coordinator: Jacques Laubscher

Pretoria
2011

for Tasha

Romans 5:3-5a

And not only this, but we also exult in our tribulations,
knowing that tribulation brings about perseverance and
perseverance, proven character; and proven character,
hope and hope does not disappoint...

In accordance with Regulation 4(e) of the General Regulations (G.57) for dissertations and theses, I declare that this dissertation, 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 dissertation has already been, or is currently being, submitted for any such degree, diploma or other qualification.

I further declare that this dissertation is substantially my own work. Where reference is made to the works of others, the extent to which that work has been used is indicated and fully acknowledged in the text and list of references.

Karl-Robert Gloeck

Full dissertation title:	Geminate: Architecture of Growth, a mixed use development in Salvokop
Submitted by:	Karl-Robert Gloeck
Student number:	25193890
Study leader:	Gary White
Course coordinator:	Jacques Laubscher
Degree:	Master of Architecture (Professional)
Department:	Department of Architecture
Faculty:	Faculty of Engineering, Built Environment and Information Technology
University:	University of Pretoria
Project summary	A mixed-use housing development in Salvokop to stimulate physical and social growth in a disconnected area
Programme:	Mixed-use housing development
Site description:	Gateway into Salvokop, activating the existing pedestrian route
Client:	Mixed client, primarily Yeast City Housing.
Users:	Students and facilitators of the Department of the Built Environment, the built environment industry and the general public
Site Location:	Erf R/406, Salvokop
Address:	c/o Skietpoort Avenue and Koch Street, Salvokop, Pretoria, South Africa
GPS Coordinates:	25°45'36"S, 28°11'13"E
Architectural Approach:	A process-focussed approach whereby guidelines are developed, validated and, along with practical influences, used to substantiate the architectural product
Research filed:	Urbanism and human settlements



0 Background **page x**

Abstract
The Design Process

1 Introduction **2**

The Urbanisation Agenda
The Sustainability Agenda
Definition and History of Social Housing in South Africa
Dissertation Objectives

2 Context & Analysis **10**

Location
Site & History
Aerial History of Salvokop
Site Analysis
Movement Analysis
SWOT Analysis
Statistics



3 Problem & Response 32

Problem Statement
Hierarchy of Challenges
Proposal
Summary of Theories
Summary of Relevant Local Documents
Discussion

4 Framework 50

The Bigger Picture
Problem Statement
Vision & Part
Connect & Preserve
Analysis of existing frameworks

5 Precedents & Testing 66

TAU Village - Pretoria
Joe Slovo Precinct (N2 Gateway project) - Cape Town
Brickfields - Johannesburg
34 Lower Terrace - Pretoria
Mieres Social Housing - Spain



6 Design Development 88

Germinate
Site
Program
Client
Influence of guidelines

7 Technical Resolution 108

Structural System
Services & Circulation
Material Selection
Sustainability
Units

8 Drawings 120

Sketch plans
Sections
Details
Elevations
Perspectives
Model photo's



+ Addendums 140

- Bibliography
- List of Illustrations
- List of Tables
- List of Figures
- Addendum A - SBAT rating tool
- Addendum B - Horizontal Surface Analysis
- Acknowledgements

Abstract

The core idea of the thesis (Germinate: Architecture of Growth) provides the creative impetus, and along with the site, the program (or function), and the client, act as a set of catalysts for the arrival at the architectural product.

The product presents the practical element of the suggested solution, and concludes the exploration of the housing and wider land-use options with the proposal of a mixed-use development to create a relevant intervention in the suburb of Salvokop.

This arrival at the product is justified by guidelines developed as a response to the pressing issues of urbanisation, environmental sustainability, and the need for housing. In addition, a development framework for the entire area of Salvokop is proposed together with

supporting analysis which also contributes to the establishment of these guidelines. Existing local and international theories are considered in order to strengthen the foundation of the argument as is appropriate for this level of post-graduate study.

Once the guidelines are established they are individually tested against a variety of existing local and international precedents. This testing validates the inclusion of each guideline in the entire process, thus justifying their application to the design.

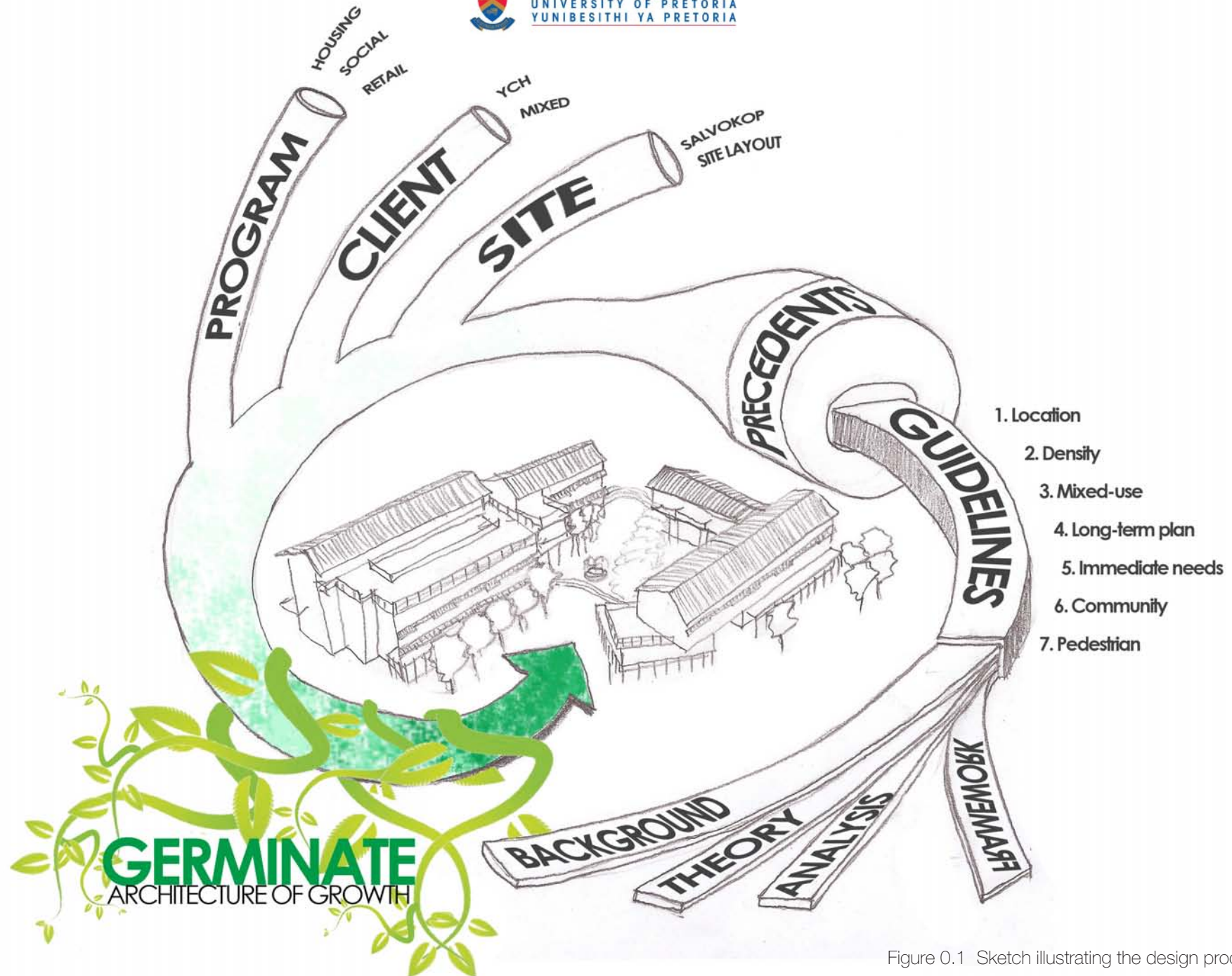


Figure 0.1 Sketch illustrating the design process



Process (chapter)

Research & proposal

Background

Urbanisation
Sustainability
Housing in SA
History of Salvokop
Aerial History

Framework

Connect and Preserve
Phases 1, 2 & 3

Analysis

Pedestrian Movement
Vertical surfaces
Vehicular Movement
Existing Conditions

Theory

Habraken - Supports
Lewis - Front to Back
Hamdi - Small Change
Brand - How buildings
Learn

Local documents

Faster, Harder,
Smarter
Breaking New Ground
Green Paper on
Climate change

Guidelines

1. Located in a functional environment
2. Medium to high density
3. Balanced mixed-use environment
4. Part of a long-term plan
5. Address the immediate needs of locals/residents
6. Facilitate the formation of communities
7. Appropriate & responsive pedestrian scale

Precedents/ testing

International

Mieres Social Housing
Hebertus House
Linked Hybrid
Duren Residential
Complex
Niewmarkt
Simmons Hall
Grenoble

Local

TAU Village
N2 Gateway project
Brickfields



Idea

Practical

Product

(6) Germinate
Architecture of
Growth

(6) Site
2:3 Ratio
Existing buildings
Existing activities

(6) Program
Short-term housing
Permanent rental
housing
Social facilities
Retail
Public space

(6) Client
Mixed client
YEAST City Housing

Salvokop
Reception
Square
(7-8)

Figure 0.2 Diagram explaining the process of design



“South Africa’s cities still reflect an apartheid geography and are low density in nature with the poorest communities tending to live far away from services and employment. This contributes to increased transport emissions.”
(South Africa, 2010: 26)

South African National Climate
Change Response Green paper
November 2010



1 Introduction

The Urbanisation Agenda
The Sustainability Agenda
Definition and History of Social Housing in South Africa

Identifying the challenges faced in the modern built environment, specifically in South Africa, focussing on the situation of human settlements and the need thereof.

The Urbanisation Agenda

According to international statistics in “Population Challenges and Development Goals”, a document compiled by the United Nations (UN, 2005: 10), the next 20 years will see the global process of urbanisation at its most intensive in developing regions across the world.

Although the more developed European and North American countries currently have a higher percentage of their population residing in urban settings, cities in developing countries are still experiencing a considerable growth rate. Whilst the year 2007 marked the point, on a global scale, where the number of urban dwellers surpassed the number of rural inhabitants, this same point will only be achieved for developing regions in 2017. Between 2005 and 2030 an increase of 1.7 billion people has been predicted for urban areas in developing countries. (UN, 2005: 10)

Local and internationally sourced statistics clearly indicate the dramatic migration of population from rural to urban areas in South Africa (South Africa, 2010: 25), (Human Sciences Research Council, 1996). The process of urbanisation has accelerated particularly since the 1990's , a trend which can be directly attributed to the abolishment of Apartheid and in particular the related Group Areas Act . (South Africa, 2010: 27)

The Green Paper on Climate Change published by the Department of

Environmental Affairs in 2010 emphasises the impact of the intensified process of urbanisation occurring in South Africa. Metropolitan areas have the highest rate of expansion and secondary cities are experiencing the second highest growth rate. This growth takes place at the expense of the population of rural areas. Currently 62% of South Africa’s population is estimated to be living in urban areas. (South Africa, 2010: 25)

Even while trying to create sustainable urban settlements, the effects of this rapidly expanding urban population are often more concealed than apparent, unlike the case of their rural counterparts. Although the delivery of services to inhabitants is a more viable and cost-effective pursuit in the denser urban areas, these communities have a more extensive, usually negative impact on their environments than their rural counterparts. This impact stretches well beyond the municipal boundaries. (South Africa, 2010: 25)

This extensive influx of people into the greater urban areas requires an appropriate response from an urban and architectural planning perspective: a response which provides inhabitants with comfortable, liveable environments, whilst responding appropriately to the pressures of increased population density on the urban fabric.

Percent urbanised population

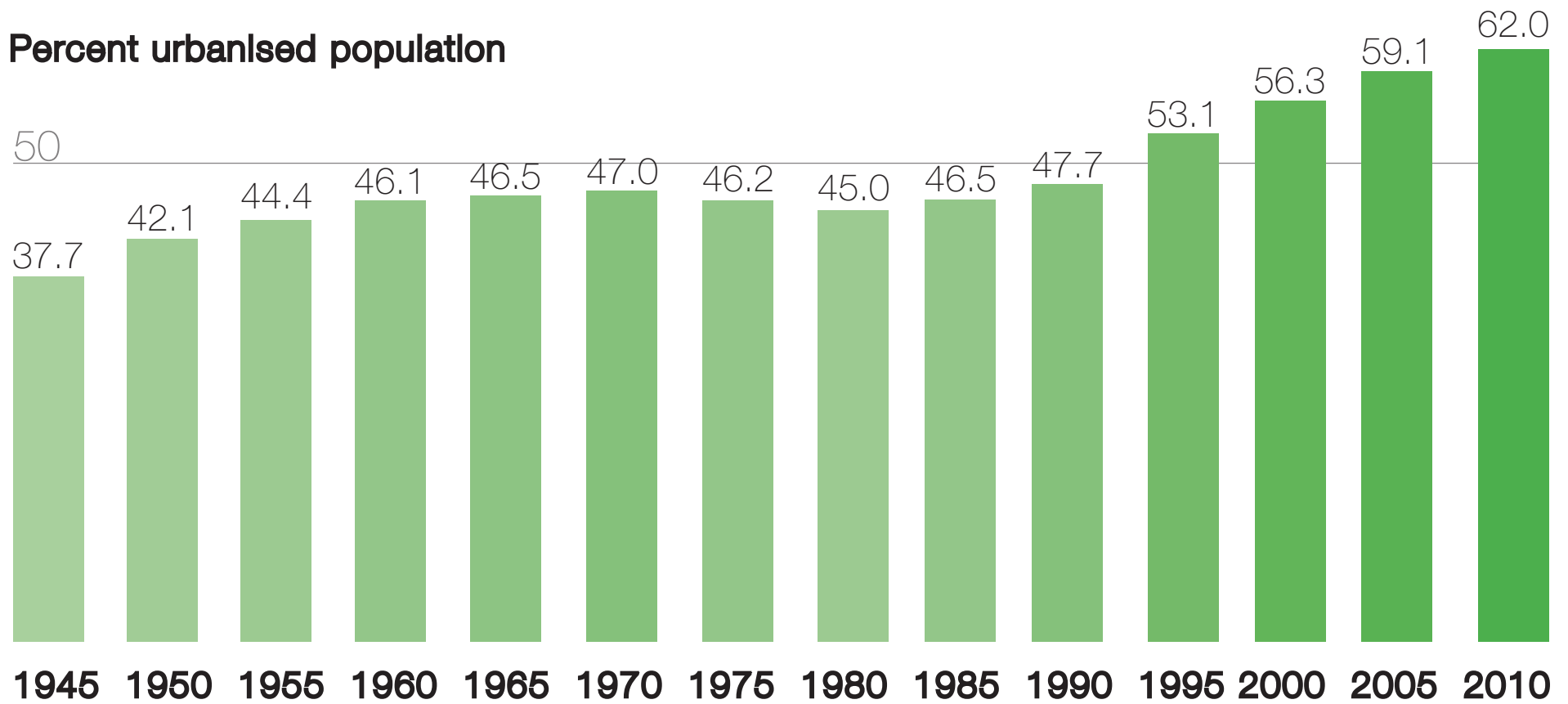


Figure 1.1 Five yearly incremental graph showing the percent of South Africa's urbanised population

The Sustainability agenda

South Africa's main contribution to the process of climate change is through the depletion of non-renewable energy sources. South Africa contributes 41.9% of the African continent's CO₂ emissions. This is due largely to the rich deposits of coal in the country which are used to produce electricity for local consumption and for a number of other Southern African countries. (du Plessis et al, 2003: 244)

It is the author's opinion that the sensitive planning and managing of urban realms is fundamental to creating a balanced and liveable city. However establishments which often claim to be "Green" or "sustainable" are often located far from existing services and infrastructure (a "non-green" set of circumstances in themselves). This developmental pattern contributes to the disintegration of South African cities by encouraging urban sprawl. According to Tonkin (2008: 19) these Greenfield sites offer the opportunity for the establishment of comfortable, low density homes. These superficial benefits are however considerably outweighed by the negative effects which these developments have on the supporting infrastructure.

The manner in which the current Government has delivered subsidised housing on the urban periphery has also exacerbated the problem of urban sprawl. The continuing implementation of the Apartheid city

model (Figure 1.2) ensures transportation difficulties with the majority of residents living on the periphery but working in the (distant) city and its supporting industrial regions. (du Plessis, 2003: 243)

The decentralisation that occurs, as a result of the increase in established periphery communities, including gated communities, is the chief contributor to the otherwise avoidable increase in consumption of fossil fuels due to energy required for transport. This urban sprawl creates a low density residential environment that not only inhibits infrastructure development, but also discourages small-scale economic activities because the minimum threshold population required to support them is too dispersed. This leaves local enterprises unable to compete with larger, more globalised operations, housed in regional shopping malls and department stores. Activities also become isolated as large plots becoming single-use, further promoting the notions of shopping malls and mono-functional landscapes. This is ultimately an inconvenience for the inhabitants of the peri-urban areas as daily tasks can no longer be completed without the use of private transport, a luxury beyond the reaches of a large majority of city dwellers. This pedestrian-unfriendly environment is often too widely dispersed for it to be even rudimentarily covered even by public transport. (Tonkin, 2008: 19)

This situation effectively alienates the poorer members of society and promotes segregation in its most class-specific form. Although this is a quiet hope for developers of gated communities, the process is exacerbating the ever-increasing divide between rich and poor. As concerns for the environment increase and as awareness of the “triple-bottom line” increases in all spheres of development, urban sprawl finds itself out-dated and inappropriate, despite still being the easiest short-term solution to the challenges of urbanisation (Tonkin, 2008: 20).

Increasing density through the provision of medium- to high-density housing is currently the most popular trend internationally. Should this approach be applied locally it could contribute substantially to the reversing of the degenerative and dangerous trend of urban sprawl. (du Plessis, 2003: 250)

A variety of suitable housing opportunities needs to be provided in areas that are close to work opportunities, schools and other public amenities. This can stimulate the growth of a more pedestrian-friendly environment with centralised services and a more concentrated and cost-effective infrastructure.

The Apartheid City

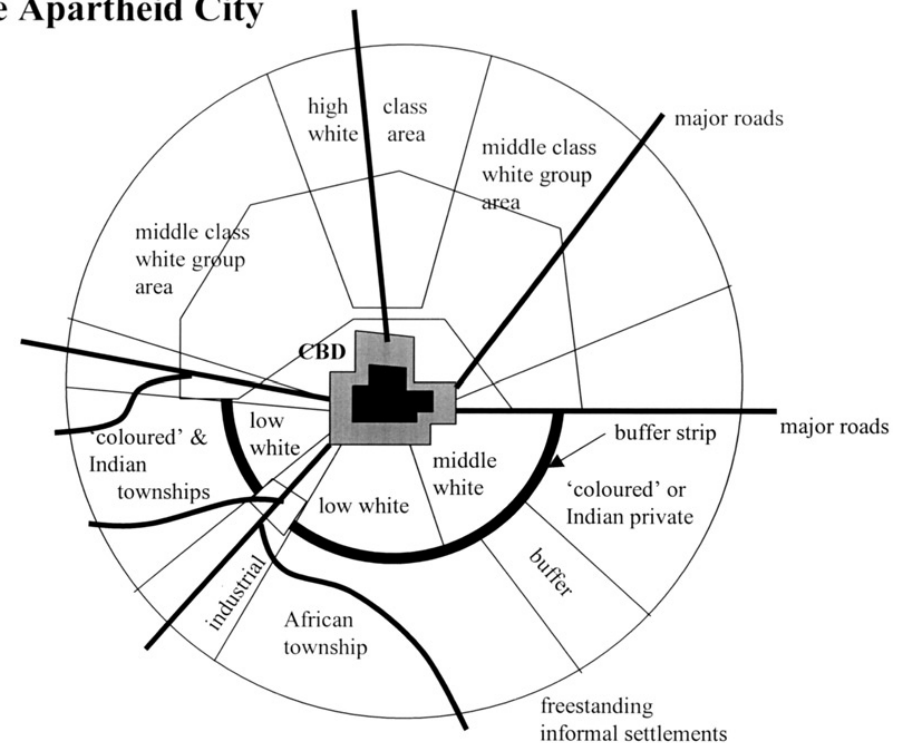


Figure 1.2 Apartheid city structure by M.Napier (2005)

Definition and History of Social Housing In South Africa

Definition

Social Housing in South Africa is housing which is usually delivered and managed by a non-profit social housing institute and spans a variety of accommodation types from transitional to temporary and permanent. Housing units are rented out, maintained and managed by the owning social housing institute. Government involvement includes financial support (with subsidies for the initial capital expenditure as well as for rental), and incentives in the form of reduced tariffs, fast-tracked approval and financial guarantees to encourage the private sector players to deliver these types of initiatives. (SHIFT 20010: 2)

History

Although social housing in South Africa has only been part of governmental vision since 1998 it has evolved dramatically in the this relatively short time, particularly when comparing it to international examples in Europe and elsewhere, where the delivery of social housing has been a “work in progress” for over 100 years. (SHIFT 2010: 1)

1995

The first institutional subsidies are awarded
Government subsidies are paid to institutions providing rental (or rent to buy) housing to households earning less than R3500 a month, in order to recover costs not supported by decreased rental.

The National Housing Finance Corporation (NHFC) is established
The purpose of NHFC is to manage the distribution of subsidies and development of various social housing institutes.

1996



1997

The Housing Act (No 107 of 1997) is implemented

This replaces all previous legislation as it defines the roles of the various spheres of government and sets out principles for housing delivery.

Social Housing Foundation founded

Established by the NHFC to facilitate the delivery of sustainable houses.

The Rental Housing Act (No 50 of 1999) is implemented

This further defines the role of government as well as expectations of tenants and landlords to ensure the proper functions of the rental housing process.

1999

2003

The Social Housing Policy of South Africa is proposed

This policy acts as a framework for the establishment of a funding regime for potential housing institutions, a policy which is later amended and then approved in 2005.

“Breaking New Ground” (BNG) is released

After almost nine years the Minister of Human Settlements (then Housing) releases the new policy which amongst other things drastically redirects the housing delivery from a product based to a process based system

2004

2008

The Social Housing Act (No 16 of 2008) implemented

The latest act further defines the roles of national, local and provincial government in promoting a social housing environment whilst also establishing a regulatory authority to accredit social housing institutions before they receive government funding

Adapted from “History of Social Housing Internationally and in South Africa” by the Social Housing Foundation” (2010: 6-11)



Dissertation Objectives

The aims of this dissertation are by nature firstly **Architectural**, then focussed towards the challenges of **Housing**, to **South Africa**, **Sustainability** and then finally **Community**.

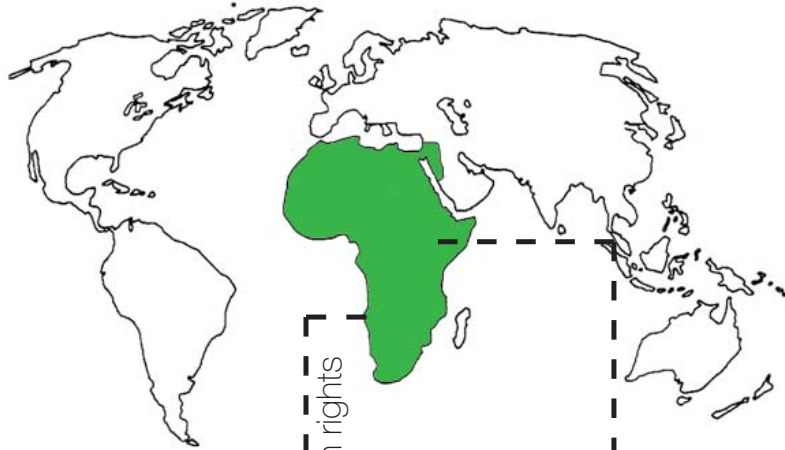


Context & Analysis

2

Location
Site & History
Aerial history of Salvokop
Site Analysis
Movement Analysis
SWOT Analysis
Statistics

Setting the scene and defining the context and situation of the dissertation. Historical and visual contributants and informants of the design and proposal are established. Relevant analyses and statistics are also revealed.



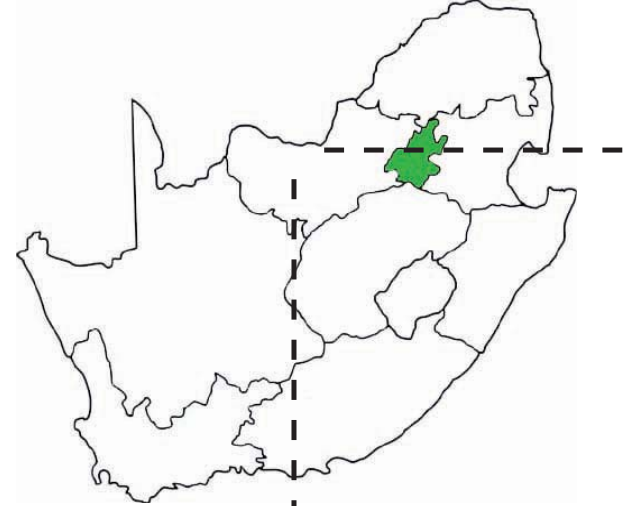
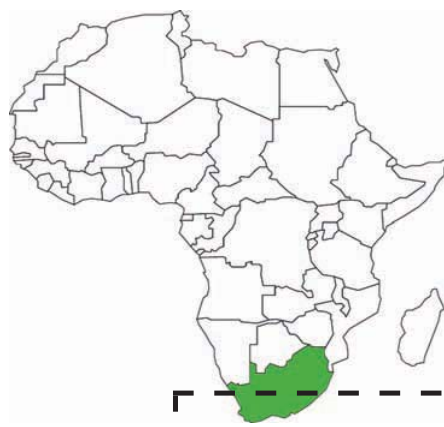
National Debt
Human rights

Poverty
51% of Sub-Saharan Africans are forced to survive on less than \$1.25 a day. (Hunger Notes, 2011)

Unemployment

HIV/AIDS
Approximately 18% of South African adults have contracted the HIV/AIDS infection with 29% of pregnant women estimated to have the virus (Africaw, 2011)

Housing



Service Delivery

Crime

Recent crime stats show that 50% of South Africa's crime occurs in Gauteng, making it (South African Government information, 2011)

Location specific challenges

Location

Africa

South Africa

Gauteng

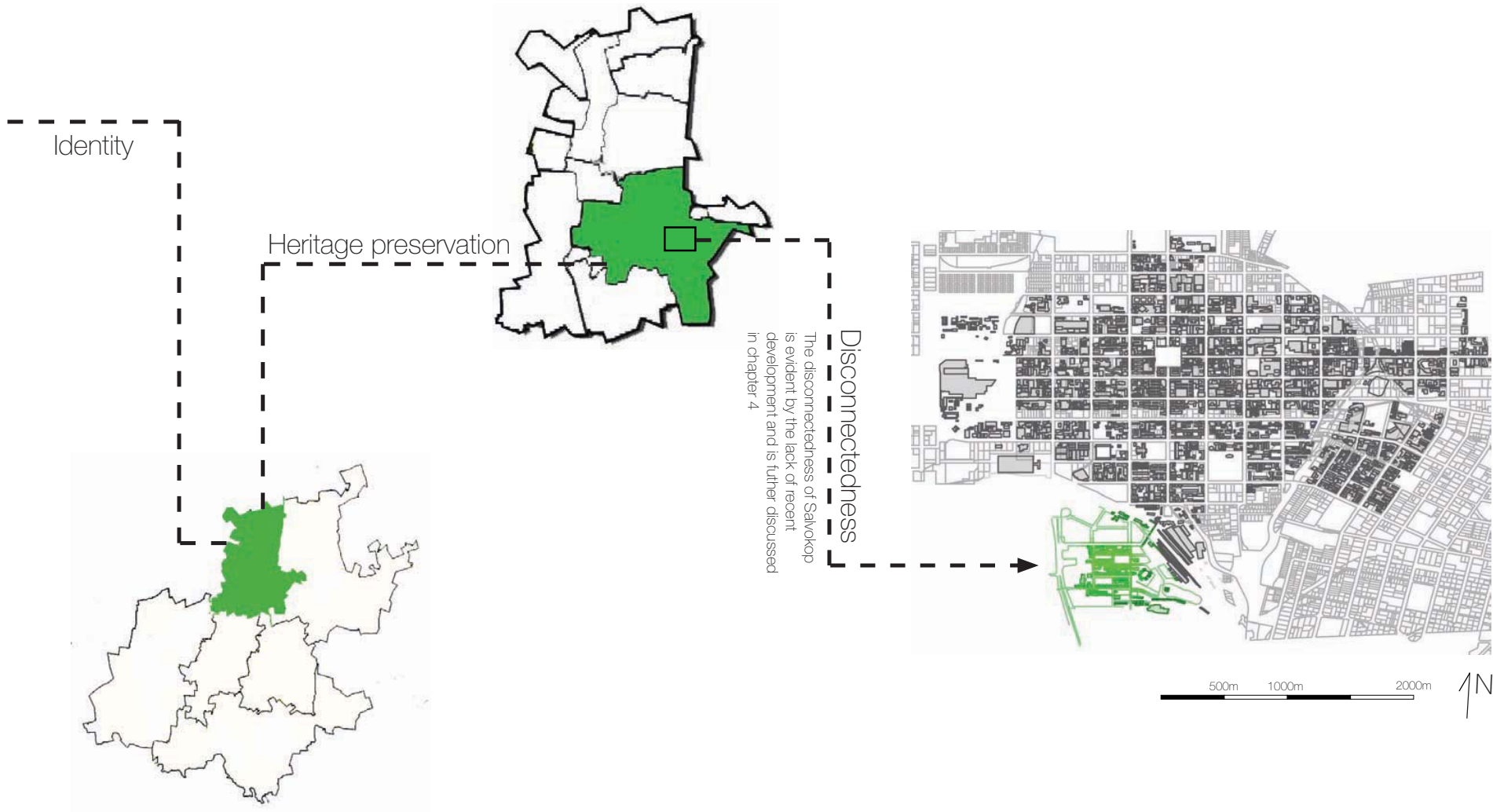


Figure 2.1-5: Maps of various scales
 Figure 2.6: Figure ground map of Pretoria

----- Tshwane ----- Pretoria ----- → Salvokop

Site & History

Salvokop is located in the south-western quadrant of Pretoria, on the southern side of the railway line. The area where Salvokop is located was originally inhabited by the Ndebele people and came to be known as the Transvaal where in 1855 Pretoria was proclaimed as the capital. Development was centred around Market square, spreading to the east and west as north/south development was restricted by the Magaliesberge to the north and Bronberge to the south.

During the First Anglo-Boer War in 1880 the site of Salvokop was known as Time Ball Hill from which the delivery of different types of mail could be signalled to interested citizens in the town. It was in 1886 however, only after the discovery of the main gold reef on the Witwatersrand, that there were enough funds to establish a railway line. With the building of a station being proposed between Market Square and Time-ball Hill. The Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij (NZASM) was established the following year and commissioned the majority of development in the area, including the first station buildings (Illustration 2.7). (de Jong, 2003: 4)

During the New Year's weekend of 1895-6 the Jameson Raid took place south of Pretoria, as the British Colonies attempted to take control of The Zuid-Afrikaansche Republiek (ZAR) which had taken control of NZASM. The outcome of these actions severely compromised British-ZAR relations, eventually leading to the Second Anglo-Boer War of 1899

- 1902, during which time the central workshops of Salvokop were used for cannon maintenance and ammunition production. (de Jong, 2003: 6)

After the war ended in 1902, focus returned to providing a national rail network and NZASM was reinvented as the Central South African Railways (CSAR). As a consequence of this economic activity a residential suburb was established in Salvokop through the construction of a workers compound and a "whites only" railway camp in 1904 (Illustrations 2.8&2.10). (de Jong, 2003: 7)

In 1910 the Union of South Africa was formed and the Cape and Natal railway administrations merged with the CSAR to form the South African Railways and Harbours Administration (SAR [& H]). That same year the corner-stone for the new railway station (Illustration 2.9), designed by Herbert Baker, was laid, marking the beginning of an era of development in the area. (de Jong, 2003: 8)

In 1921, after a number of audits and reports had been submitted to the Union government concerning the inadequate state of housing in the area for railway workers, a new typology of accommodation was developed, allowing residents to construct their own dwellings within a set of predefined guidelines. (de Jong, 2003: 8)

After the general elections of 1948 the legal policy of racial segregation,



1899

Illustration 2.7: The station building with Time-Ball hill in the background to the left

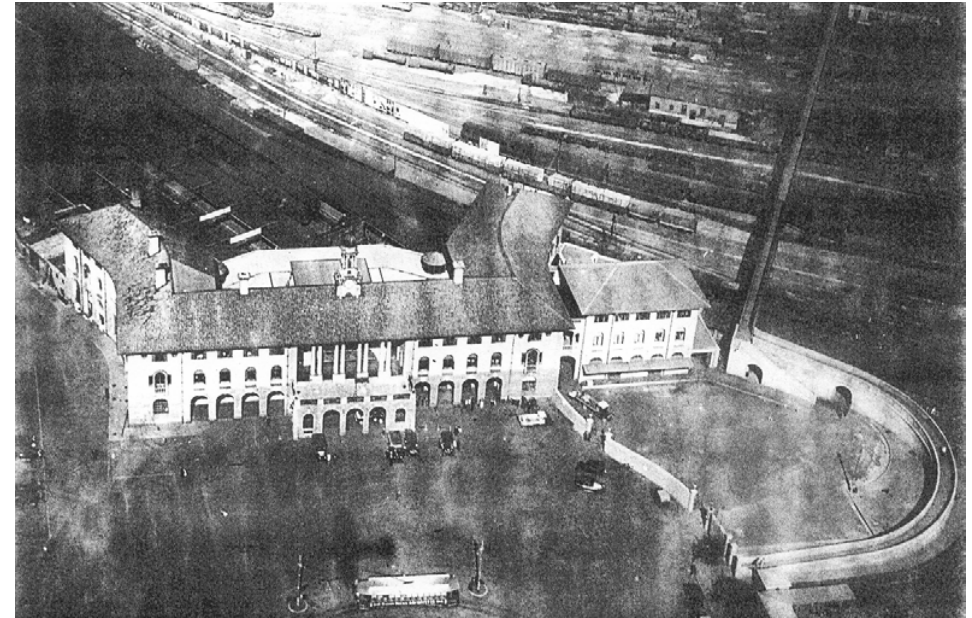


Illustration 2.9: Aerial view of the new Pretoria Railway Station

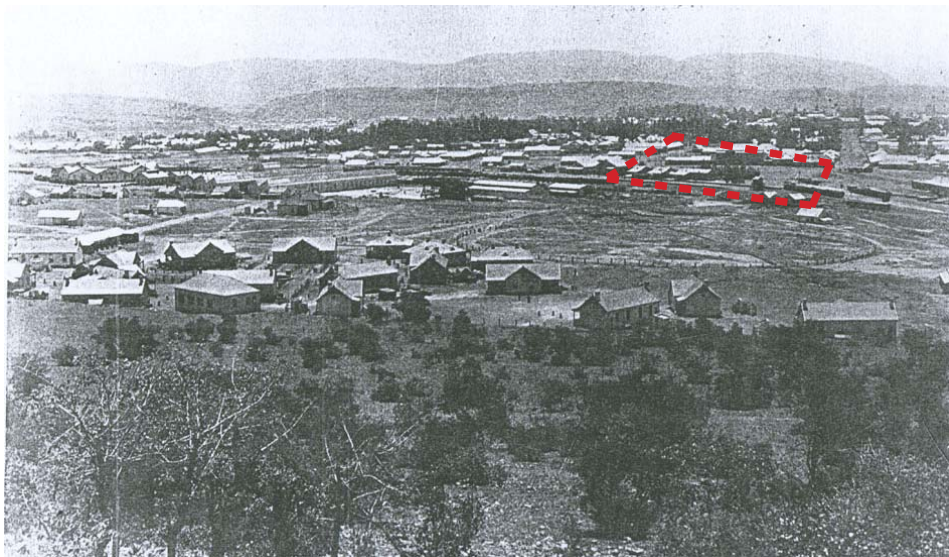


Illustration 2.8: The first NZASM houses with the station in the background



Illustration 2.10: The row-houses of the "White" railway camp

known later as **Apartheid**, was introduced. This resulted in the relocation of all non-white residents of Salvokop, mostly to the township of Mamelodi, approximately 20km away. During the 1960s the last new houses were built in the area, and in 1975 the Minister of Transport approved the upgrading of Salvokop, which resulted in many of the houses being renovated and restored. Only three years later the semi-detached row houses that characterised the centre of the suburb were demolished and the resultant empty site was left undeveloped for over 35 years. (de Jong, 2003: 9)

After President FW de Klerk became State President in 1990 negotiations to end **Apartheid** and its legislative restrictions began. Soon many black workers began to return to Salvokop, significantly increasing the levels of activity in the area. In 2001 angry commuters set fire to Pretoria Station, significantly damaging the roof of the structure (Illustration 2.13). The following year repair work to the station roof commenced. At the same time, the area of Salvokop once again became the focus of development, as Freedom Park was proposed on top of the hill, overlooking the residential suburb which was ear-marked for the re-establishment of an urban precinct. (de Jong, 2003: 10)

Six years after the Pretoria Station fire the line for the newly operational high-speed rail service, the Gautrain, was proposed to run through Salvokop. The proposal was later rejected due to heritage and

environmental reasons. With the area still part of an urban regeneration scheme at least one extra vehicular access road was also proposed into Salvokop, from the north-east to create better accessibility to the suburb.

In 2008 Intersite (the property owning and management arm of the previous administration's SAR&H) proposed an iconic new transport terminal (Illustration 2.12) which would include a Station Deck, Gautrain station, Bus Rapid Transport station, taxi and bus stop as well as shopping and parking, and would greatly increase accessibility to and from Salvokop.

Despite the radical proposals to regenerate the area little has come to fruition, with most frameworks never advancing past the proposal phase, due possibly to their "blanket" nature, treating seemingly similar areas with a generic solution. Considering the slow pace of development over the last two decades it would appear that this area would probably not benefit from extensive sudden development, but instead a slowly expanding progression of local activities focussed on the creation and growth of community would appear to be more appropriate. A nodular development along the intersection of important circulation axes, as proposed in this document, could encourage development in the precinct, as members of the community begin to take ownership of their surroundings, thus creating a positive environment for living and working.



Figure 2.11: The Proposed GAPP framework for Salvokop with author's site highlighted, 2003



Illustration 2.12: The proposed Intersite Terminal with Salvokop in the left foreground, 2008



Illustration 2.13: The Pretoria Station shortly after the blaze that destroyed the roof in 2001

Aerial history of Salvokop

Changes

Earliest records show the fine residential grain that Salvokop still exhibits in the present day. The maintenance yard north of the suburb is still fully operational.

Pedestrian paths in the south become more pronounced as the suburb is steadily growing.

Additional housing is established in the south-eastern corner of the suburb as more of the area is cleared for development.

Drastic changes to the area are seen due mostly to the large jump in time. The extent of the maintenance yard was reduced severely and the light industrial zone has all but disappeared. The row houses in Salvokop have been demolished and the station has been upgraded.

Maps



1937



1939



1947



1991



Figures 2.14-17 (1937, 1939, 1947 & 1991) Sourced from electronic folder, K Bakker, accessed 5 April 2011

The light industrial zone is now a forgotten landscape with the old Chief Engineers office (now social upliftment project, POP-UP building) the final functioning remnant of the previous era. Vacant sites within the residential area are used extensively as short-cuts with movements paths clearly visible.

The construction of Freedom Park in the south prompts development in the suburb along the main entrance road to the Park. Pedestrian movements have turned vacant sites into wastelands.

The vacant land in the north of Salvokop deteriorates rapidly as scars in the landscape begin to form.

Parking lots for Metro-rail users are implemented on vacant sites as Freedom Park expands, proposing a new main entrance to the east of the existing entrance to protect the frail nature of the suburb.



2001



2005



2007



2009

Figures 2.18-21 (2001, 2005, 2007 & 2009 Sourced from electronic Google Earth, accessed 7 April 2011

2009 Aerial photo Site



Figure 2.22: Site map



Informal traders
Unaccommodated

Over accommodated
Parking lot for metrorail users



Routes intended for vehicular transport
Underutilised



Routes intended for pedestrians
Overutilised

Illustrations 2.23-30: Site photos by Author

Site Analysis

Site as seen from Koch Street Panorama



Illustration 2.31: Site elevation

A site analysis reveals that the suburb of Salvokop is characterised by the predominance of one storey buildings. Disorderly, overgrown areas (Figures G & H) contrast with the formal and structured environment created along Koch Street (E & F), leading up to the existing entrance of Freedom Park. Up to three independent Informal traders have established themselves along a high traffic pedestrian route (A & B) selling fruit. These small kiosks are totally unaccounted for despite operating consistently.

It is the opinion of the author that the little development which the area has experienced is almost completely as a result of the construction of Freedom Park to the south of the suburb, and is development which has not benefitted the community to any great extent. A formal entrance to the Park was proposed and established along Koch Street, which provided the impetus to upgrade the roadway and establish a formal pedestrian boulevard. This overly dramatic axis does not seem to be used as intended, (it was to encourage public activity and development along a well-defined and constructed vehicular route) but instead sees very low levels of traffic, with temporary construction vehicles making up the majority of users.

In dramatic contrast, the long-established, informal pedestrian paths across the vacant sites in the area are in fact the high traffic axes. The high number of regular users (G&F) result in the permanent nature of these paths. No external effort has been made to formalise these routes. Instead, parking lots for businessmen and woman (users of the Metrorail) have been provided for, severely impacting on the nature of the spaces. Although a need for parking does exist, the manner in which parking has been created on this site (D), is, in the opinion of the author, an inappropriate response to a predominantly pedestrian environment. The high fences around the parking lots (C) create boundaries which perpetuate the separation between pedestrian and vehicular transport modes and inhibit the free-flow of pedestrian movement through the area. The latest parking lot, with fences completely surrounding it, has been built on the vacant site in the heart of the suburb (Figure 25). This is yet another illustration of the dominance of the need for parking which is provided at the expense of what is essentially a pedestrian scaled and focussed suburb.

Urban furniture Unutilised, damaged or inappropriate

The street scene (people and activities) is often largely determined by the character of the street furniture (Levy, 1998: 59). In the instance of Salvokop the contribution of the urban fittings is substantially negative as the more formal routes have alienated pedestrians who prefer the more informal routes. Formal seating is left unused whilst dustbins are damaged with parts removed. Furthermore, the placement of bollards which is intended to create a safe walking environment are more accommodating of cars than they are of pedestrians.

An attractive and functional public route is achieved through a coherent interaction of the environment with design. (Levy, 1998: 59). This means that even street furniture needs to be incorporated into a public route in a manner that combines aesthetics and function. Due to the severely neglected nature of the Salvokop street furniture, as evidenced along the main road (Koch street) leading up to the existing Freedom Park entrance, it would be fair to say that these fittings did not contribute positively to the street's aesthetics nor its users' experiences of it.

During a study of pedestrian movement on the site the eight



Illustration 2.32-34: Site photos by Author

benches installed in the area where used only once, suggesting an over-supply of seating facilities in the area. Alternatively it could be reasoned that there is no need for people to sit down in this area as most users of the pedestrian walkway are travelling between the station and their homes or places of work. However, it is the view of the author that this pedestrian thoroughfare is an appropriate route for redevelopment into one which encourages stop-start movement or “space integrators”, as described by Dewar and Louw (2008: 20). As opposed to “space bridges”, which merely move people from one place to the next, space integrators provide reasons for people to stop and interact. This provides opportunities for growth of the community around transport, economic and retail nodes. Given the current state of the physical area and the nature of activities here, these opportunities are non-existent.

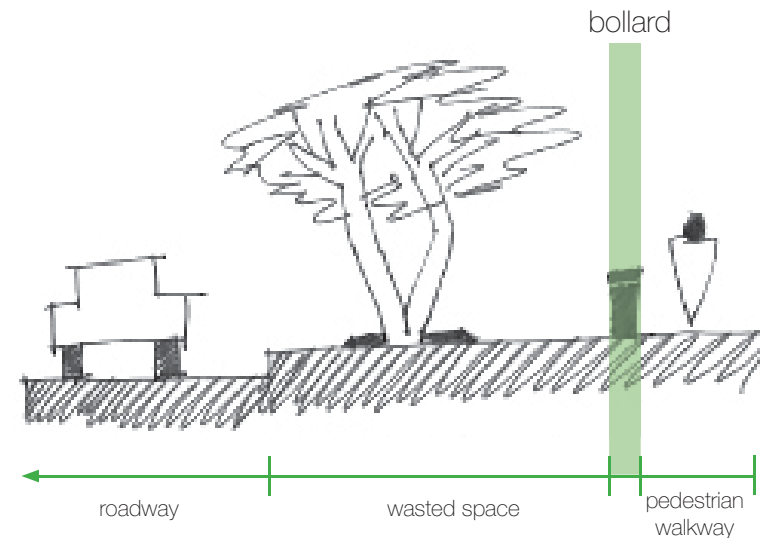


Figure 2.35. Existing section of Koch Street demonstrating the wasted space due to bollard placement

Movement Analysis

An analysis conducted on the movement across the selected site revealed the high levels of activity occurring in that area. People using the footpaths could be broadly classified into five groups:

- Men and woman walking in small groups of one to five
- Uniformed workers ie nurses, security guards, police officers
- Parents taking their children to school or day-care facilities
- Children in uniform walking alone to school
- Cyclists

The two groups that contributed most substantially to those returning to Salvokop from the station were the uniformed workers who had just finished their night shift work, and school children travelling to attend the Jopie Fourie school in the South-West of Salvokop. The group of working adults came from all areas of the Salvokop walking towards the station. Cyclists originated solely from the western regions of the suburb. Some of the workers who use the footpaths are not residents of Salvokop but are instead Metrorail users from other areas of Tshwane who park in the formalised parking lot and walk to the station to catch the “business train” that travels to Centurion and

Johannesburg. These users are however active strictly between 4:00am and 6:30am, they were therefore largely excluded from the analysis.

Other than the two or three small stalls (number dependent on the time of day) selling food and snacks that can be found along the route no other economic activities are presently utilising this opportunity.

Over a morning period of 2.5 hours from 5:55 to 8:25 more than 1000 people crossed the site in either direction, resulting in an average of

1 person every 8 seconds

These results show that area is currently under-utilised as an opportunity for development along a popular pedestrian passage. A formalised route could be established and equipped with local-based economic activities.

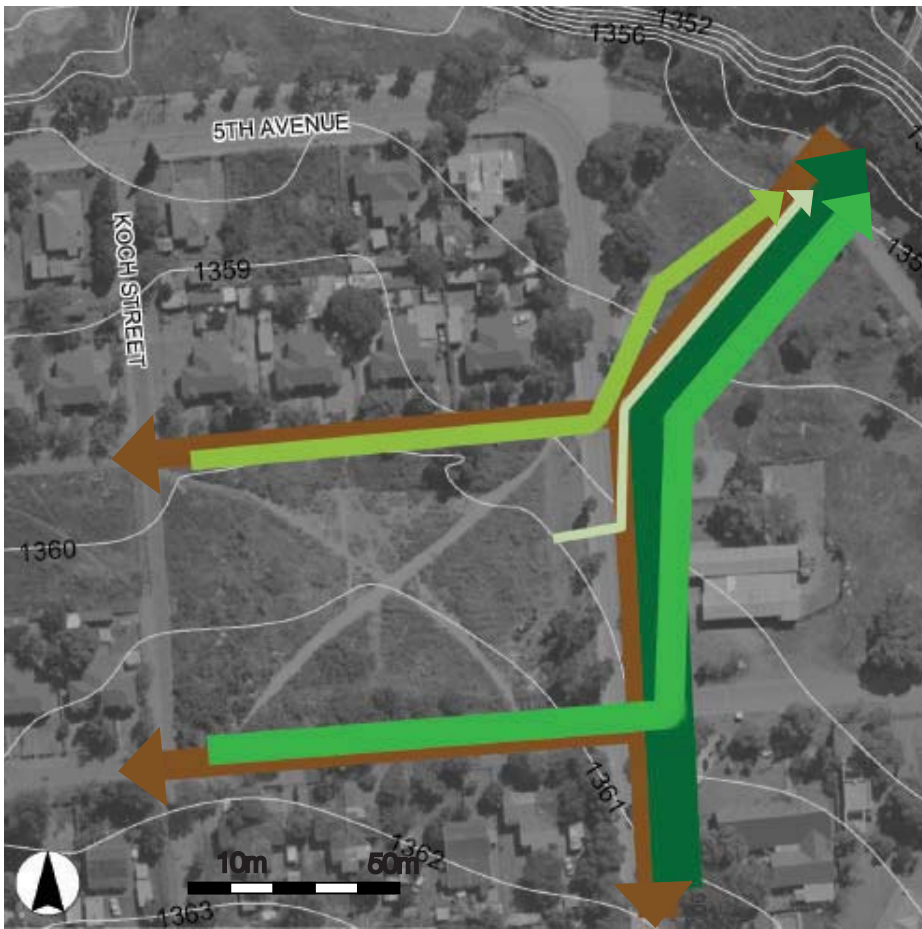


Figure 2.36 : Map indicating analysed movement routes

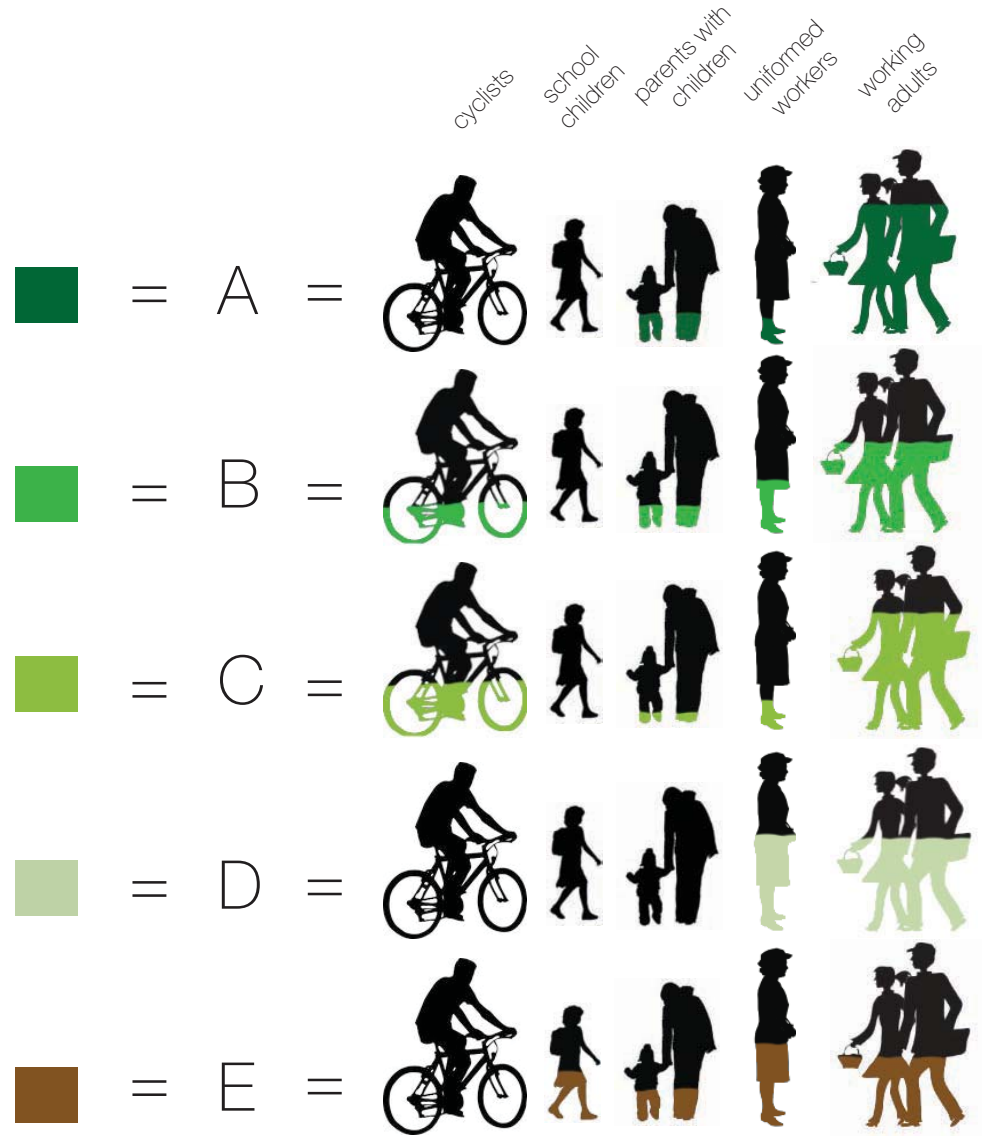


Figure 2.37: Breakdown of users

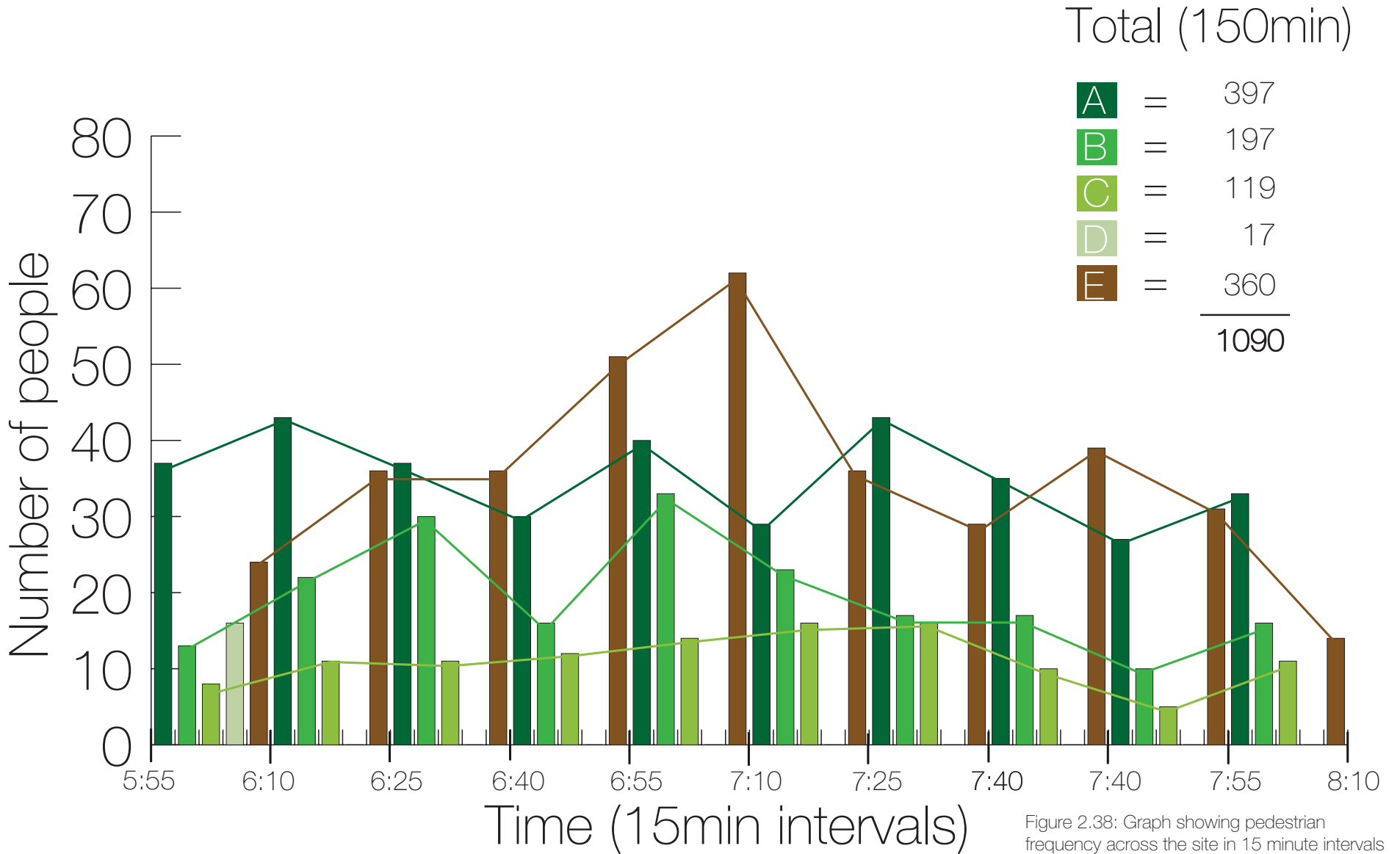


Figure 2.38: Graph showing pedestrian frequency across the site in 15 minute intervals

Relevance of analyses

- The considerable amount of pedestrian activity provides an opportunity for the establishment of a formalised pedestrian orientated route.
- The high level of pedestrian traffic requires an appropriate response regarding surfacing. Pedestrian-friendly, easily maintained surfaces to be considered.
- Although very few cyclists were observed in the area, provision should also be made to encourage this form of transport by providing bike racks and appropriate sloping level changes
- The needs of business men and women who use the park-and-ride facilities can also be catered for through appropriate complementary economic facilities.
- Instead of only providing a surfaced walkway of minimally sufficient width, and with basic street furniture, the opportunity exists to create small nodes thus encouraging development of the informal and micro-economy of the area.
- A wide variety of users utilise this space, with the majority being young working adults. This fact supports the notion that developments in the area should have an economic focus.

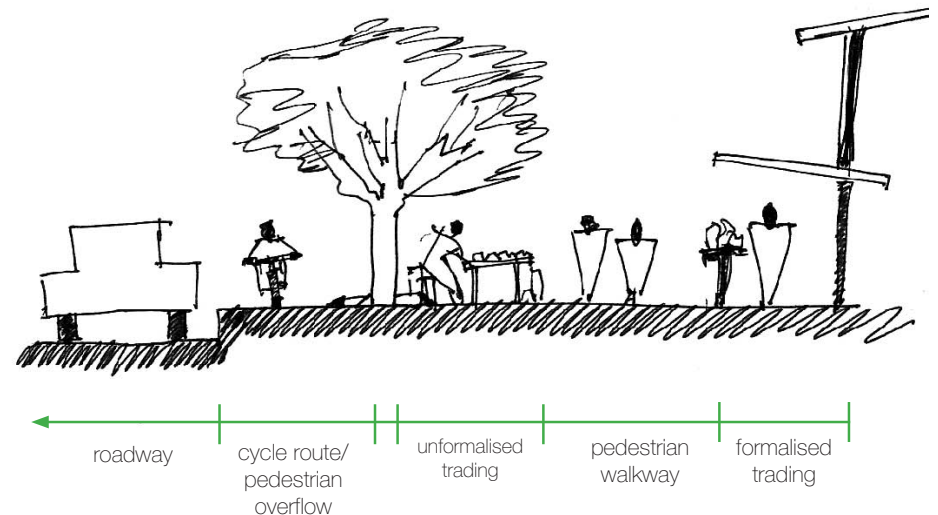


Figure 2.39. Possible use of Koch Street public space

SWOT Analysis

The SWOT analysis reveals the site as having potential as a gateway to connect Salvokop to the city whilst still preserving much of the distinctive identity and heritage of Salvokop as an urban village. A mixed-use development could provide the opportunity for local economies to emerge and flourish whilst simultaneously providing formal housing for those residing in Salvokop in informal accommodation.

In “Marketing Strategies” Ferrell (2008: 124) states that SWOT analyses are only useful if utilised effectively. Establishing the causes of certain occurrences, as opposed to merely determining their characteristics, can contribute to successful analyses. Trends are also highlighted as growth and opportunity indicators, and should be identified before action is taken. (Ferrell, 2008, 121)

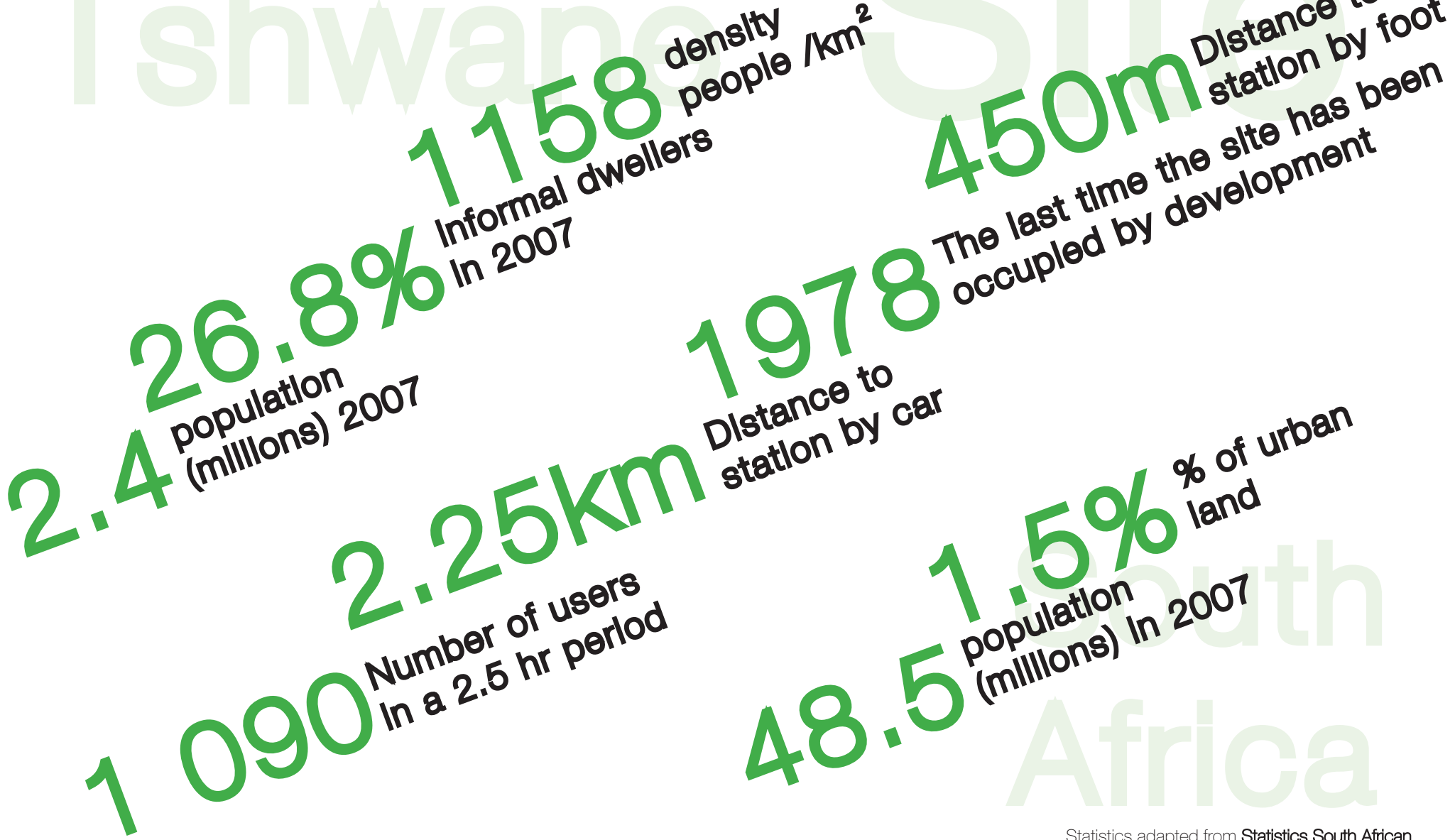
In the specific case the causes of the site’s characteristics are due largely to its location and its vacant state, allowing unrestricted pedestrian movement to occur across it. Should the site be developed with a non-permeable barrier (as appears likely, as suggested by recent developments of a secure parking lot) the site would not receive any pedestrian activity.

Unique identity	Gautrain
High pedestrian count	Mostly under-developed
Important connectivity node	Prime location relative to city
Economic activity	Parking area
	Positive development nearby
	Freedom Park
	Influx of tourists
	Residential area
Barren site	Isolated from city
Visually disconnected	Metro-rail parking
Lack of history	Relatively Under-developed
Poorly maintained	Low-rise development
	Neighbourhood feel
	South of railway

As far as trends are concerned, the site, has, in the last ten years it been included and/or proposed as a pivotal site in all the major framework proposals (Re Kgabisa, Gapp, Intersite - see chapter 4 for detailed analysis of framework proposals). This confirms the officially perceived importance of the site as a gateway into the suburb.



Tshwane Site





“With the diminishing availability of land in relation to the growing number of people means we have to apply new technologies to build better. Again this emphasises the question of densification through social housing.”

Human Settlements Minister Tokyo Sexwale at the National Indaba on Home Building Technologies in September 2010

(Housing in Southern Africa, 2010 : 1)



3 Problem & Response

Problem statement
Hierarchy of challenges
Proposal
Summary of theories
Summary of relevant local documents
Discussion

Determining the exact problem and the related challenges.
A proposal reinforced through the discussion of relevant theories and the manner in which they form the concept, along with other unimportant documents

Problem Statement

The decrease of available land and resources in South Africa, in contrast to the increasing population within cities requires densification and the implementation of social housing to eventually encourage the development of urban communities.



challenges
responses

decreasing
available
land

decreasing
resources

increasing
urban
population

densification +

effective
management +

urban
communities

social housing



Challenges to address

Housing people

Sustainable lifestyles

Density

Formation of communities

Creating belonging

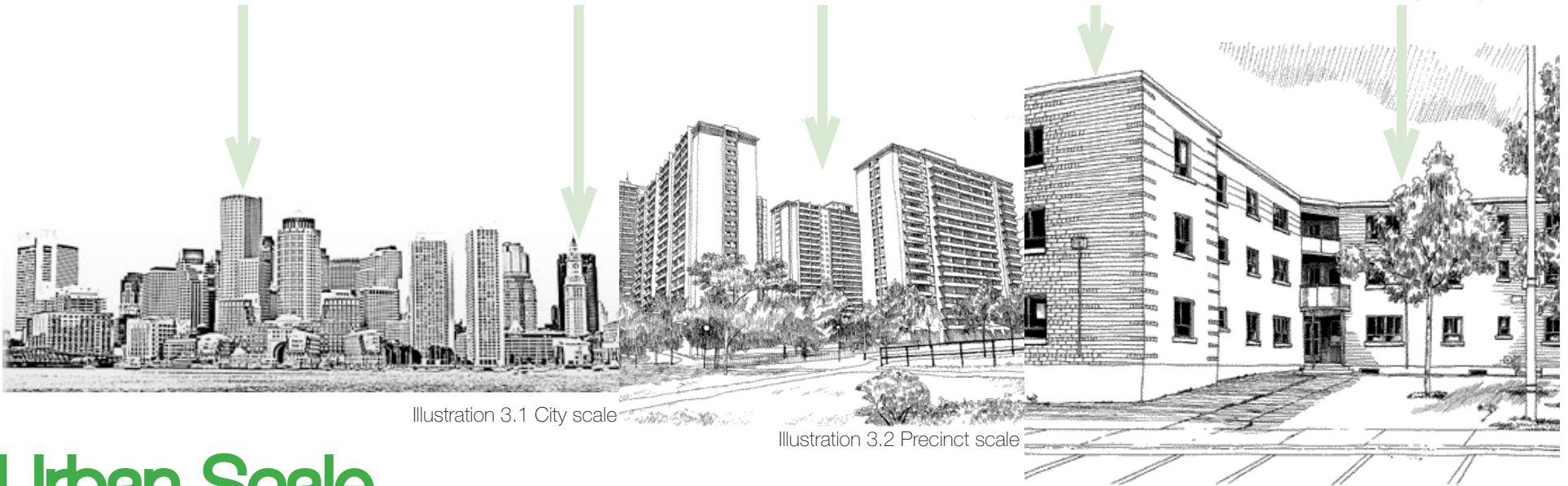


Illustration 3.1 City scale

Illustration 3.2 Precinct scale

Illustration 3.3 Unit scale

Urban Scale

City

Precinct

Unit



Proposal

The author proposes a mixed-use intervention as a catalyst for social and economic growth in Salvokop. The development will allow for the establishment of a gateway to the suburb which is undergoing upliftment. Supported urban elements will include small businesses, existing pedestrian activities and social rehabilitation.

Summary of theories studied

Supports - Habraken (1972)

Supports is one of the primary protagonists of the open building movement and challenges the housing delivery process of post-war Europe suggesting that the development of dwellings needs to include not only the end-user during the process, but also to consider the greater needs of the community. The Modernist view of “effectiveness” is disputed due to its unspecific means of delivery and disregard of site specifics. The expansion of cities and the increased need for housing is likened to the growth of a biological organism, a process which should be directed as opposed to controlled. Housing is portrayed as arising from a diversity of activities performed by the occupant, and highlighting the important social component. **Supports** deals with the fundamental connection between the dweller and the dwelling in what is termed “the natural relationship”, the success of which is determined by the inclusiveness of the architecture and the delivery thereof.

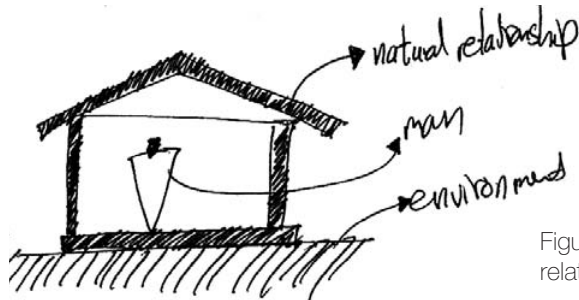


Figure 3.4 Natural relationship

Front to Back - Lewis et al. (2005)

Front to back presents urban housing as a fundamentally all-inclusive issue with specific reference to its nature as an urban-scaled matter. In order for a comprehensive approach to be formulated in order to tackle the matter, evidence regarding urban, social, communal and sustainable influences need to be identified and understood both individually and collectively. Furthermore, aspects of permeability, socio-spatial quality, legibility, flexibility, adaptability, energy efficiency, privacy, variety, activity and vitality need to be addressed to ultimately create housing that will be successful as a development and as a home. In essence **Front to Back** focuses on the establishment of housing in a systematic but sensitive manner, whilst creating a balance between public and private arenas.

Small Change - Hamdi (2004)

Small Change challenges the notion of development through public observation as opposed to the more conventional public participation. Existing activities are identified and utilised to stimulate growth. Economic, cultural, social, residential or circulatory nodes are all considered for positive influence on the broader community. Elements with catalytic properties are added as a layer to the existing activities to stimulate natural growth. This type of development has the potential to be more successful due to its grass-roots nature, where the ideas of regular citizens are sought, realised and expanded, and due to the possibility that the applied or structured systems instituted by external developers will be more acceptable to the society destined to live in them. Furthermore similar activities are connected in a series of networks. **Small Change** is concerned mainly with the growth of emergent systems through its focussed application of structured development as a catalyst for development.

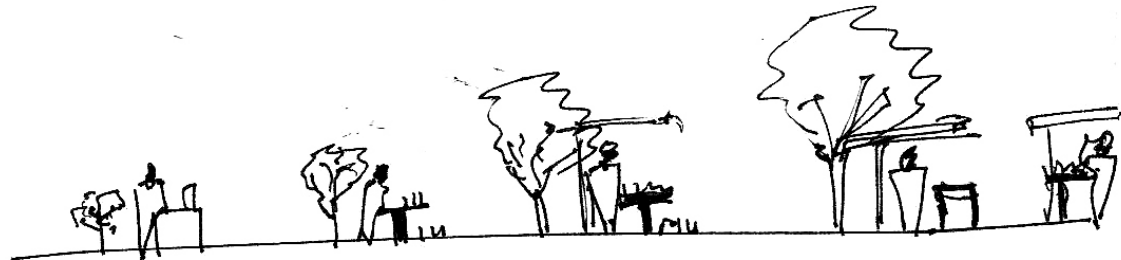


Figure 3.5 Small change

Summary of relevant local documents

Faster, Harder, Smarter

Faster, Harder, Smarter is a vision by the Tsela Tshweu Design Team (consisting of members from the Council for Scientific and Industrial Research (CSIR), The South African Institute of Architects (SAIA), South African Institute for Civil Engineers (SAICE), Council for Scientific and Industrial Research (CSIR), and SHiFT (Social Housing Focus Trust)). The vision is an expression of opportunities within current policy framework prepared for the Department of Human Settlements in order to determine a way forward in the establishment of sustainable and humane settlements in South Africa. The vision is based on ten key principles which focus on the delivery of these inclusionary settlements.

**(Tsela Tshweu Design team,
2010)**

Breaking New Ground

Breaking New Ground (BNG) is the latest government policy with regard to the form of housing delivery. Amongst others, the most drastic change from previous government policies is the progression away from a product orientated system towards a process directed one. This includes end-users' participation in the development of their homes, enhancing perceived value and pride of ownership, which contribute to the success of the entire project.

(South Africa, 2004)

Green Paper on Climate Change

Although only a Green Paper, with no government obligations attached to it yet, the Green Paper on Climate Change (2010) appropriately responds to the steadily declining state of our planet. Aspects of environmental, economic and social change are addressed, spheres which affect the built environment severely. This document therefore serves as a very clear indication of the direction of governmental policy formulation regarding climate change, energy use, waste management and other topics covered by the broader sustainability agenda.

(South Africa, 2010)



Application
The vision is an expression of opportunities within current policy framework prepared for establishment of sustainable and humane settlements in South Africa. The vision is based on ten key principles which focus on the delivery of these inclusionary settlements.

Faster, Harder, Smarter - Tsela Tshweu Design Team

Small Change - N Hamdi
Existing activities are identified and utilised to stimulate economic, cultural, social, residential or circulatory nodes are all considered for positive influence on the broader community. Elements with catalytic properties are added as a layer to the existing to stimulate natural growth.

Front to Back Lewis et al.
Front to back presents urban housing as a fundamentally inclusive issue with specific reference to its nature as an urban-scaled matter. In order for a comprehensive approach to be formulated in tackling the matter, evidence regarding: urban, social, communal and sustainable influences need perceived. Ultimately focussing on the establishment of housing in a systematic but sensitive manner whilst creating a balance between public and private arenas.

“Proper functioning of the natural relationship not only allows the dweller to possess his dwelling in the fullest sense of the word, but simultaneously it allows inhabitants to possess their neighbourhood.”
(Habraken 1972: 98)

ownership can be created without “property”

Supports - N Habraken

Theory
Fundamental

Breaking New Ground (BNG) is the latest policy with regard to the form of housing delivery. Amongst others, the most drastic change from previous government policies is the progression away from a product orientated system towards a process directed one. This includes end-users in the development of their homes, ascribing value and ownership which contribute to the success of the entire project.

Breaking New Ground (BNG) (2004)

2.26.1 Everyone has the right to have access to adequate housing.
2.26.2 The state must take reasonable legislative and other measures, within its available resources, to achieve the progressive realisation of this right.

South African Constitution (1996)

Aspects of environmental, economic and social are addressed, spheres which effect the built environment severely. This document therefore serves as a very likely indication of the direction of governmental policy regarding climate change, energy use, waste management and other topics covered by the broader sustainability agenda.

Green Paper on Climate Change (2010)

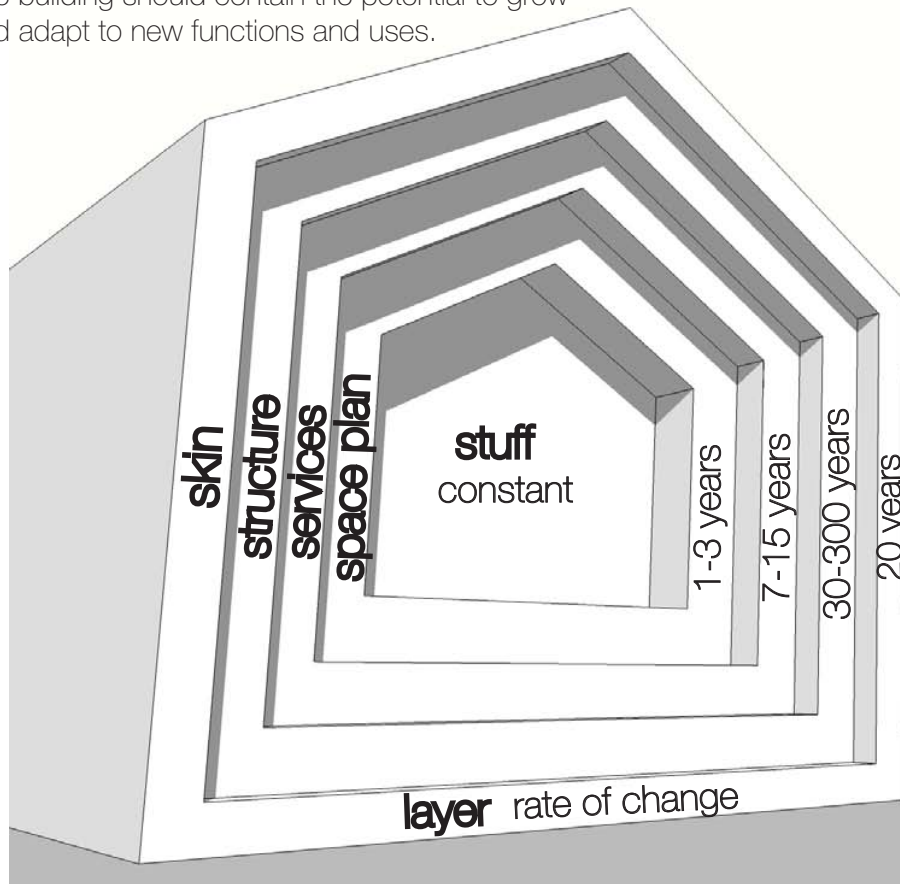
Figure 3.6 Hierarchy of applied theories

Theory related to technical aspects

How buildings learn (Brand: 1994)

A building properly conceived is several layers of longevity of built components (Duffy in Brand, 1994: 12)

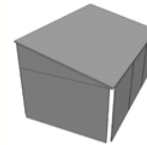
The building should contain the potential to grow and adapt to new functions and uses.



Site is the geographical component, it is eternal and outlasts structures and generations



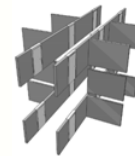
Structure is the essence of the building, changes to these elements are expensive and often fundamentally unfeasible and can last from 30 to 300 years



the **Skin** of a building is the elements which make up the external surfaces and has a close link to technological advancements due to the balance between permanence and flexibility. This layer contributes greatly to the energy efficiency of a building and is changed or significantly modified every 20 years



Services are the working parts of the building and include wiring, heating, cooling and ventilation systems, lights, plumbing and moving installments such as elevators. These can be replaced due to wear and tear every 7-15 years. If services are too deeply embedded into a building it could result in unnecessary demolition



Space plan is the interior layout of a building, the positioning of doors, walls and ceilings that create spaces for different uses. This could change in commercial or office spaces every 3 years



Stuff is the items that users regularly interact with, the furniture as arranged with the space plan. These elements change constantly and can be replaced or relocated daily

site eternal

Figure 3.7-13 Hierarchy of the various building layers

Discussion

The proposal of a mixed-use housing development is intended by the author as a response to a number of theories relating to the development and management of the built environment. The provision of low-cost housing and the process of delivery is a contentious matter and it has already been established that the South African government department tasked with addressing this issue has allocated extensive resources to the situation.

Chapter 2, Section 26 of the South African Constitution, deals with human rights with regard specifically to housing (South Africa, 1996). Not only does the Constitution state that it is the right of every human being to enjoy adequate housing, but the second clause (2.26.2) declares that the state has the responsibility to achieve the realisation of this right (South Africa, 2009). This places the onus on government to refine the existing product as well as the processes of delivery in order to better fulfil their responsibility.

During the first ten years after South Africa's first democratic elections housing delivery was focussed on generating a product and devising a delivery system which was evaluated quantitatively (Osman, 2007). These buildings were eventually termed "1st Generation Houses" and were sufficient as buildings but fell desperately short as homes as

they neglected the spaces that create liveable, homely environments (Dewar, 1998). The continuity of spaces needs to occur not only within the limited interior of individual dwellings, but also through the entire development of which the individual dwellings forms a part. The provision of continuity is described by Chiba (2003: 6-7) as the element of highest importance in the provision of collective housing.

This priority to achieve continuity is perceived as a fundamental design component in the delivery of social housing by Lewis et al in "Front to Back" (2005: 140). The complete integration of a development into its greater urban context, and the factors contributing to the definition of all spaces, whether public or private, need to be considered. These include permeability, legibility, energy effectiveness, variety, privacy, activity and adaptability (Lewis, 2005: 40-44).

These aforementioned considerations, when understood and appropriately applied, determine the quality of the house as a whole as well as that of the spaces around it. This process of understanding quality was not only overlooked by the 1st Generation Housing movement in South Africa but also by European governments when faced with the monumental task of providing emergency housing

- Constitution
of the
Republic
of South
Africa,
1996 - Bill
of Human
Rights**
- 2.26.1 Everyone has the right to have access to adequate housing.
- 2.26.2 The state must take reasonable legislative and other measures, within its available resources, to achieve the progressive realisation of this right.

soon after the Second World War (Habraken, 1972: ix). The need for housing was dire and urgent, and needed to be met with immediate action. The resultant continental surge of development coincided with the Modern **Zeitgeist** (Spirit of the times) which portrayed the home as a “machine for living”, and the process of providing homes was reminiscent of a factory (Habraken, 1972: 64). These factors lead to the complete neglect of the spaces connecting and surrounding houses. The repetition of house designs and the neglect of their spatial context was believed to lead inhabitants beyond a mind-set of disappointment and into one that took offence (Habraken, 1972: 4). This meant that although these houses were supplied to dwellers at substantially lower costs, they were not appreciated due to the lack of humanity in their design and the almost complete lack of community involvement in their genesis .

This process of end-user resentment caused by government subsidised housing occurred again almost 50 years later during the South African government’s delivery of 1st Generation Housing. The nominal achievement of “Freedom” and “Democracy” generated pressures that resemble those faced by European states in the late 40’s and 50’s. This has lead, in South Africa, to a shift in priorities in the delivery of housing from being a product-based system to one

that focusses more on the process of delivery, a more qualitative approach (Osman, 2007)

This new means of delivery was formalised in South Africa in the Breaking New Grounds Policy (BNG) which was accepted by Cabinet in 2004. BNG focuses on the process and ultimately on the needs and wishes of the people the houses are going to be housing. The aspect of community involvement that has now been included in the process is concerned more with presenting new horizons for development as opposed to just giving users what they thought they wanted (Osman, 2007). This has challenged the archaic perception of the architect as the educated professional whose job it is to give the user (the short-sighted lay-man) what the architect believes the lay-man needs. The now preferred combination of a professional point of view with the intrinsic reaction of the user could yield more positive results, steering clear of the notion of sheer “effectiveness” (Habraken, 1972: 3). Once housing can be understood as the physical manifestation of a collection of human activities a clearer objective can be set in attempting to successfully house the nation. (Habraken, 1972: 7)

The activity of the occupant within the housing unit forms one half

of the “natural relationship” according to Habraken in his seminal work “Supports” (1972). The environment in which people live is the second half of this natural relationship. The role of the architect or designer is to interpret and manage this relationship by creating an appropriate response which accommodates the needs of both. The initial inputs of the designer can to a large extent determine the maximum potential of this relationship between inhabitant and the environment in which he/she exists. A fully functional mutual relationship establishes the platform for the dwellers to fully inhabit and eventually possess the dwellings and simultaneously allows the inhabitants of the neighbourhood to take possession of it (Habraken, 1972: 98). Although this process includes the act of taking possession of dwellings it can still be achieved using rental housing, even though the physical structures remain the property of the social housing foundation that established them. Possession involves human action whereas ownership is a matter of legalistically defined entitlement (Habraken, 1972: 18).

As far as the role of the architect is concerned, sustainability is achievable once the occupants have developed a strong desire for a high quality environment. A high quality living environment encourages an appreciation of the natural environment which in

“Proper functioning of the natural relationship not only allows the dweller to possess his dwelling in the fullest sense of the word, but simultaneously it allows inhabitants to possess their neighbourhood.”
(Habraken, 1972: 98)

turn creates a desire of possession. According to Lewis (2005: xv) this appreciation is a key stepping stone towards sustainability, because, once houses are appreciated, they are more likely to last because maintenance and general up-keep tasks are undertaken by residents, who are encouraged by pride and a sense of possession, instead of grudge and obligation. This results in a longer building life-span.

Housing, which represents the living, cleaning, eating and resting portion of living, cannot be completely appropriate or successful if substantially separated from the act of working. Location, accessible to health-care and work opportunities, is the first and most vital aspect to consider for housing (Osman, 2007). The location of housing relative to the location of existing work, health and educational infrastructure is therefore key to success. Location close to important transport, economic or cultural nodes provides residents with an opportunity to interact with their surroundings. Development along potential “space bridges” (Dewar and Louw, 2008: 20) also generates a tension which stimulates the generation of informal economic activities. (Osman & Lemmer, 2005)

It is this type of development that Hamdi identifies and examines

in his book “Small Change” (2004). His case-studies show how purposefully small-scale interventions encourage an existing activity and act as catalysts to stimulate positive growth. The challenge of successful development lies in finding the balance between emergent systems and the overlay of structured designs which can facilitate, not stifle growth (Hamdi, 2004: xviii).

As illustrated in figure 3.6, the process of development proposed by the author in this discussion begins with understanding the existing activity (ie fetching water from a standpipe or selling fruit and sweets to a passer-by), which is the first element. This activity is in response to a need or process (ie the need for water; the opportunity for economic engagement with pedestrians), and will be termed the emergent, the second element of the development process. A third element, ie the stimulant, reacts to the activity by addressing the emergent. This ensures that the catalyst does not overwhelm the original, existing activity by perhaps demolishing it and re-building something more “formalised” or “better” in its place, but instead empowers those involved with the emergent’s processes to better equip them to achieve their goals and to expand their possibilities through broadening horizons - a process involving the realisation of potential; a process akin to the watering of a seed to encourage germination and growth

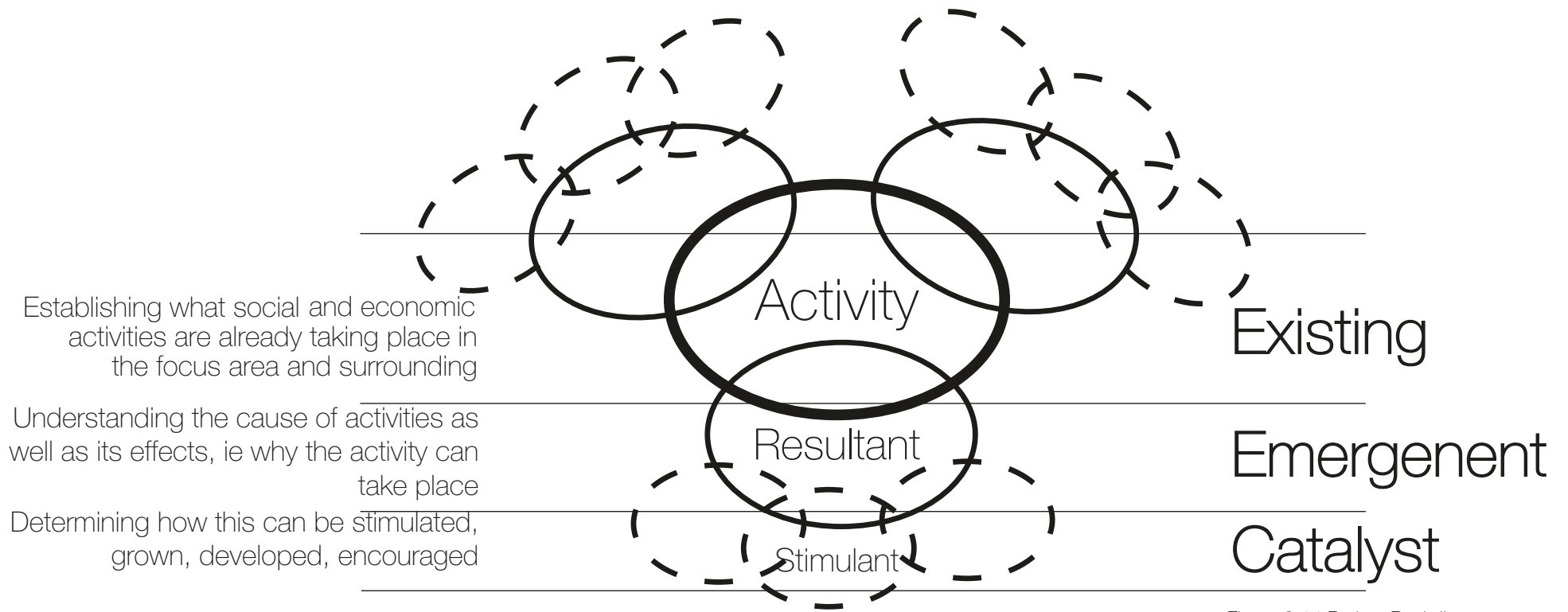


Figure 3.14: Project Parti diagram



N. Hamdi, *Small Change*
(Turnbull, cited in Hamdi,
2009:107).

“Network Governance: An inside-out structure of social organizations and enterprises held together by well-connected and well-networked systems rather than command and control hierarchies or power elites analogous to organic systems”



4 Framework for Salvokop

The Bigger Picture
Problem Statement
Vision & Parti
Connect & **Preserve**
Analysis of Existing Frameworks
Proposal

An understanding of the area of Salvokop and the importance of its unique nature informs the development of a framework for the entire area to guide development towards a common goal.

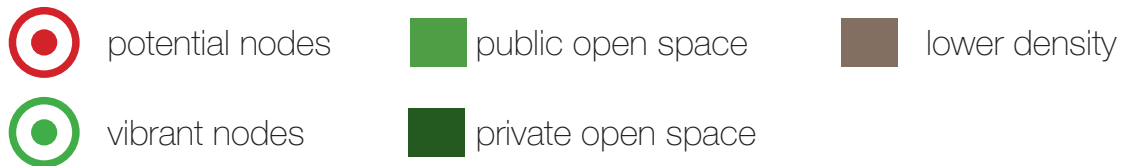


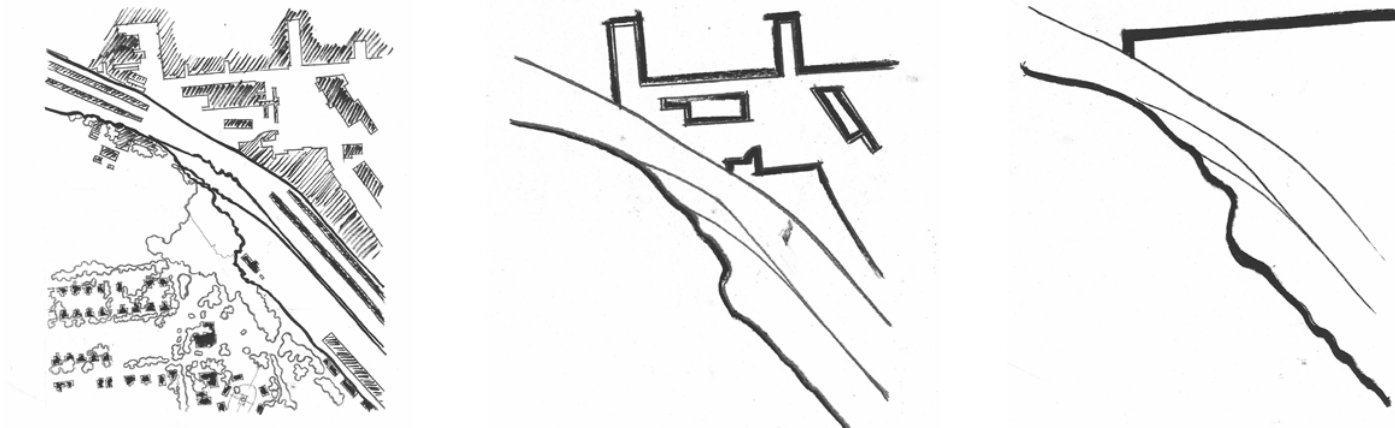
Figure 4.1: Map of Pretoria with vibrant and potential nodes and public and private spaces mapped

The bigger picture

Public and private open spaces in Pretoria Central and Pretoria West were explored and surveyed, and vibrant and potential nodes were identified and mapped. Salvokop was classified as a potential node due to the lack of activity, but counter-balanced by its possibility of becoming an active, high economic and social energy area. Due to its ideal location close to employment opportunities, transport terminals and other amenities it has the potential to develop into a healthy, well-functioning and popular area. But, due to the railway line separating Salvokop from the city the entire area has been insulated from the energy that makes the inner city meaningful. The historic and residential component, combined with the newly established cultural and tourist attraction (Freedom Park) ensure a unique character with the potential of growth

Problem statement for Salvokop

The isolated nature of Salvokop, caused by the railway, has led to the development of a **unique character**. This separation has, however, also resulted in a disconnectedness of **energies and activities** from the rest of the city.



Figures 4.2-4: Character comparison

Framework Vision and Parti diagram

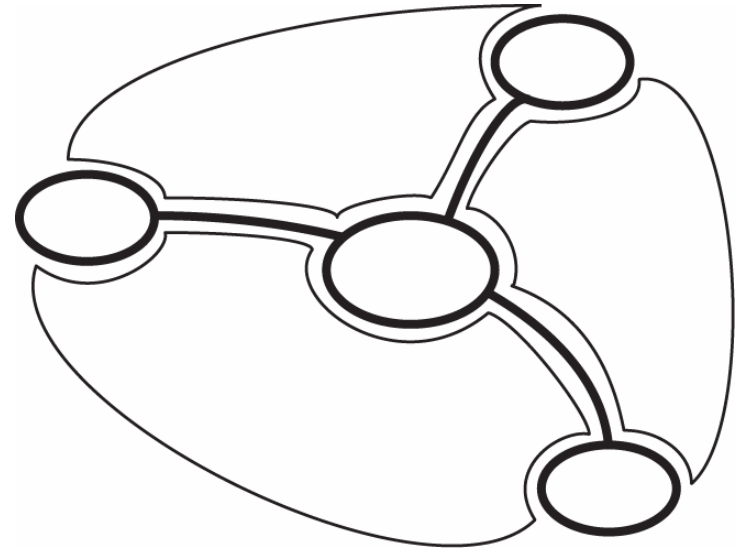
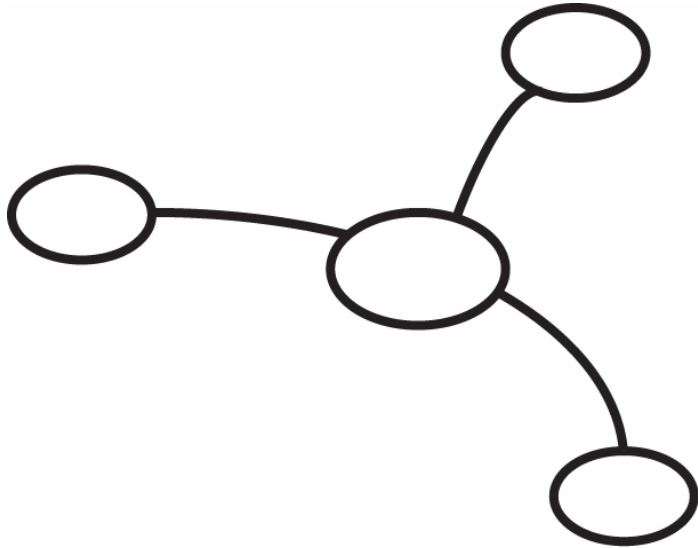


Figure 4.5 Parti diagram 1, Figure 4.6: Parti diagram 2

The **connecting** of different entities whilst still **preserving** the separate identities.

Connect

verb. (kə-nĕkt')

- bring together or into contact so that a physical and/or metaphysical link is established.
- to establish a relationship between unique edges

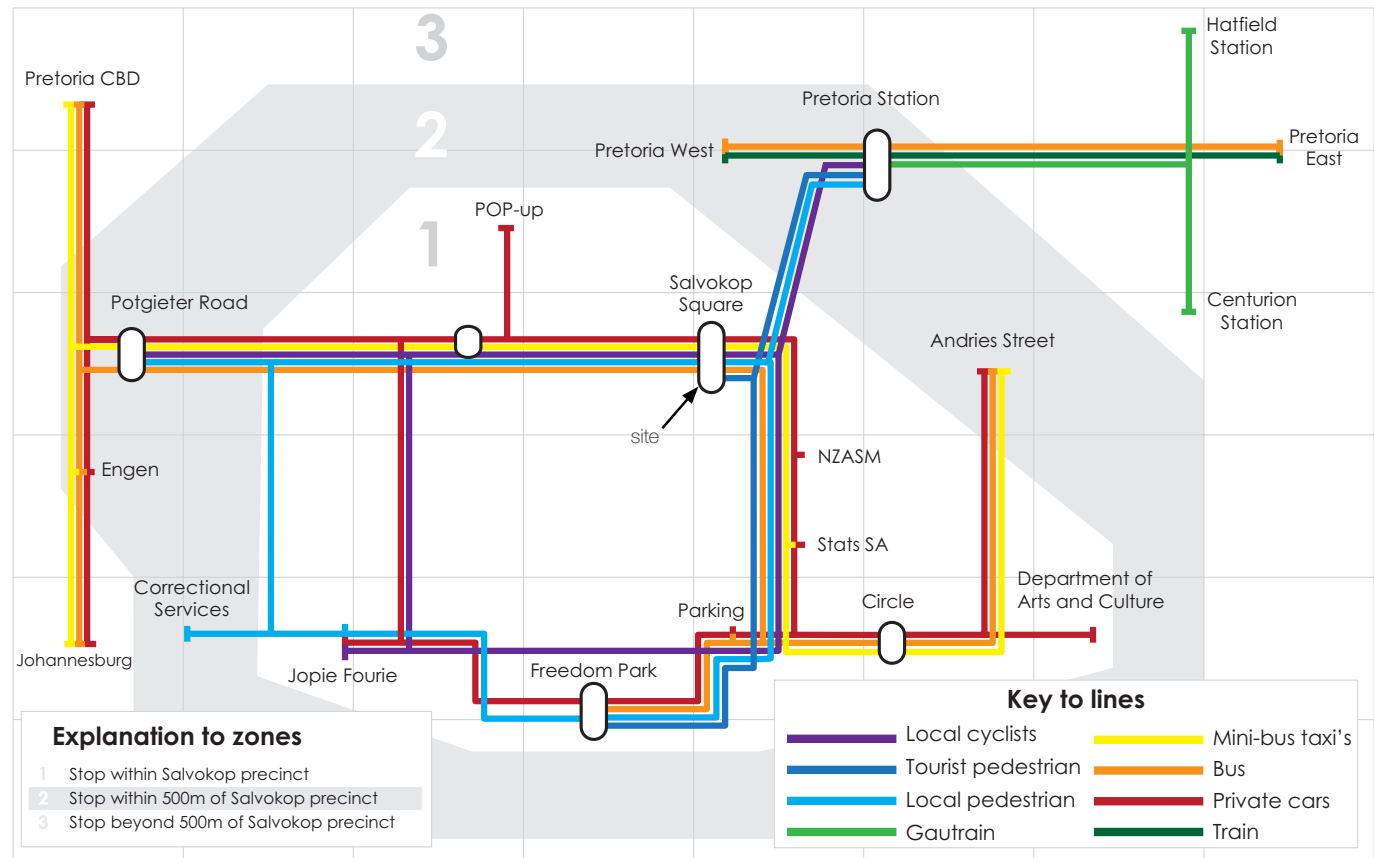


Figure 4.7: Connect Concept

route, destination, landmarks, waste, social, economy, access/accessibility, urban, activation, bridging, transport node, residential, informal trade, public space, industrial, tourism, breathing space, street edge, sustainable, landscape urbanism, urban farming, social housing, planning level, safety, prescription, catalyst, waste landscapes, energies, experience, spatial level, movement, views, activities

Preserve

verb. (prī-zûrv')

- maintaining the fabric of a place in its existing state and retarding deterioration (Burra Charter: 1979)
- maintaining the activities on grass root level and establishing a network (Hamdi: 2004)

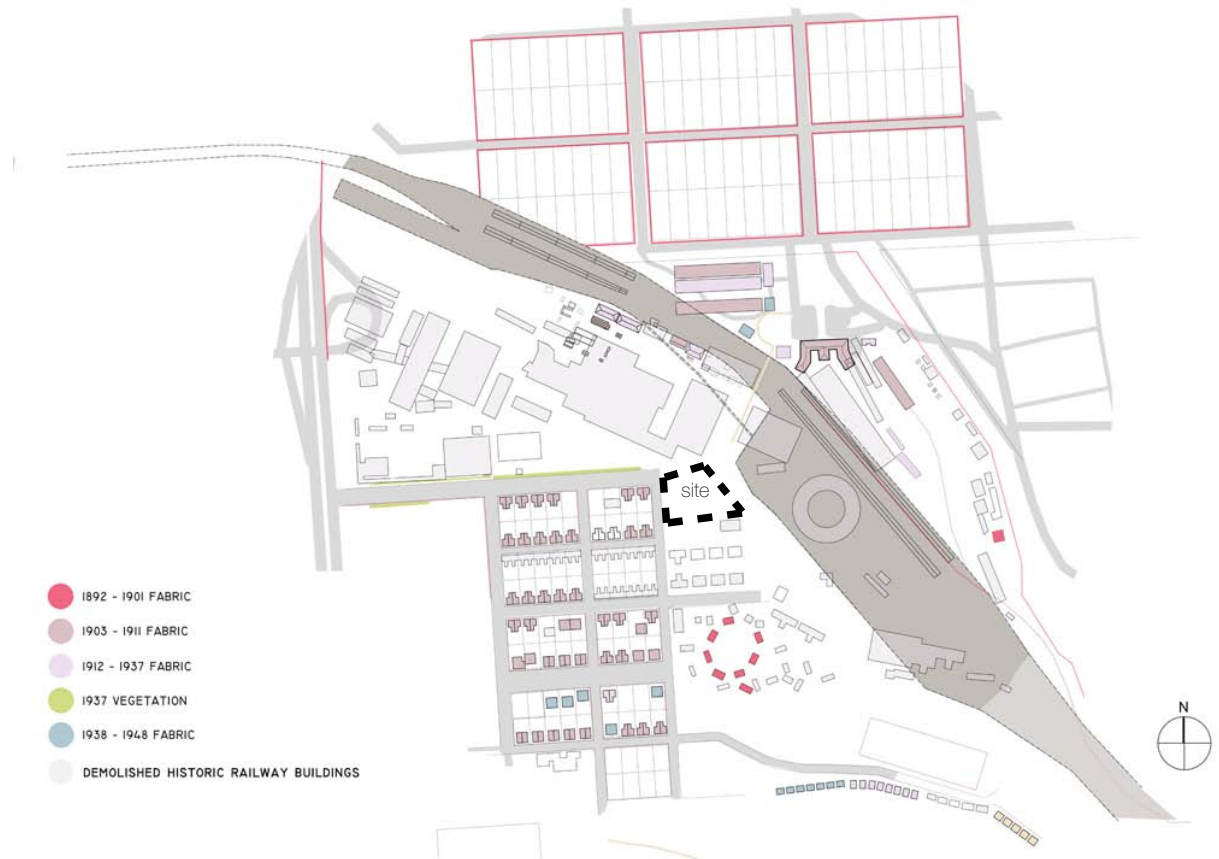
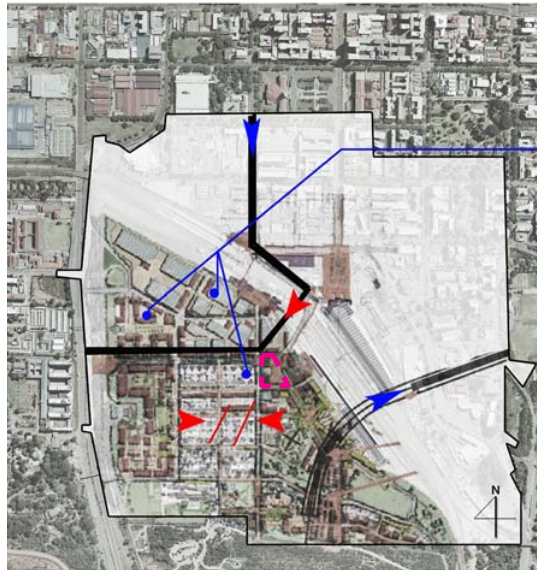


Figure 4.8: Preserve Concept

heritage, conservation, character, identity, waste landscapes, social, ruins, ecology, railway, urban fabric, residential, informal trade, public space, processes, patterns, energies, industrial memory, breathing space, experience, mnemotechnic devices, catalyst, urban village, railway, sustainable, planning level, spatial level, chance encounter, movement, views, activities

GAPP framework



STRENGTHS

- Increased accessibility - new vehicular br
- Respect for historic
- Activation of site - quick & light industrial proposal
- Mixed uses - no monofunctionality - diminished link of Salvokop & city

WEAKNESSES

- Bad vehicular access positioning (north)
- Connections of above and below bridge ignored
- North accessibility becomes a throughfare
- Framework is building orientated & ignores ecological systems
- Focusses on infill
- Quick-fix solution
- Inappropriate handling of heritage

Figure 4.9: Gapp framework strength and weaknesses

Tshwane Open Space framework



STRENGTHS

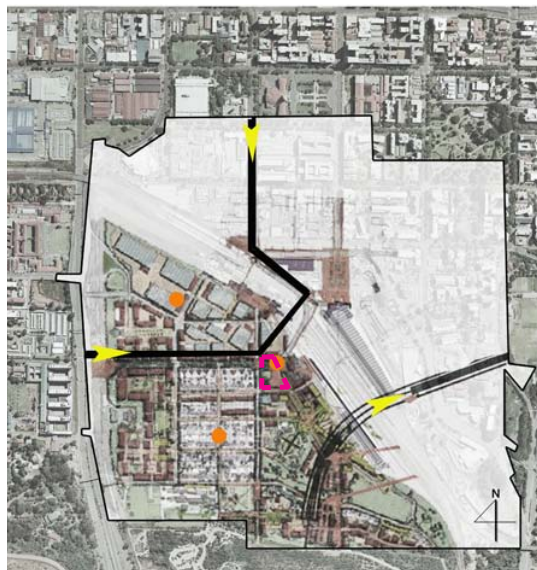
- Focus on greater picture
- Focus on open spaces
- Incorporation of pedestrian and ecology
- Zonal framework

WEAKNESSES

- No specific reference to Salvokop and its character
- No economic or social considerations
- Zonal framework ignores character and detail

Figure 4.11: TOSF strength and weaknesses

Analysis of existing frameworks
site highlighted in pink



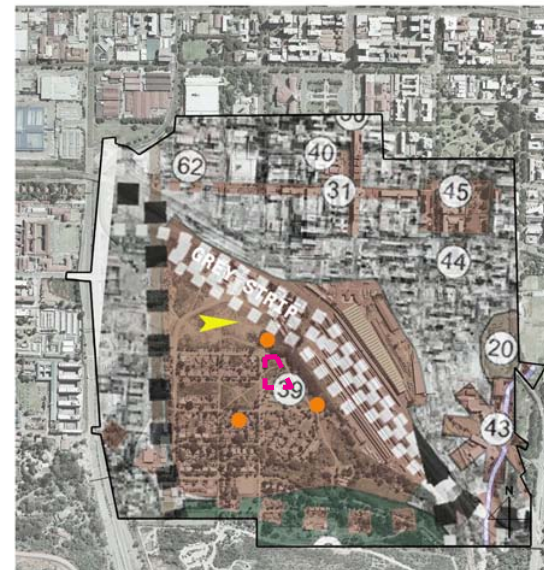
PRESERVE

- Respects historic fabric
- Increases residential
- Does not provide for informal trading spots
- No preservation of existing character and identity
- Planning level that ignores spatial character
- No preservation of open breathing spaces

CONNECT

- Increased accessibility - new vehicular bridges
- Activation of Salvokop which connects it to city
- Bad vehicular access positioning (north)
- North accessibility becomes a throughfare
- No thought for metaphysical connection

Figure 4.10: Gapp framework connect and preserve



PRESERVE

- Incorporation of pedestrian and ecology
- No specific reference to Salvokop and its urban fabric
- Zonal framework ignores character and detail
- Does not address existing activities

CONNECT

- Focus on connecting open spaces
- No economic or social considerations
- Zonal connections and links
- No additional access points into Salvokop - remains isolated and cut off
- No metaphysical connections

Figure 4.12: TOSF framework connect and preserve



Re Kgabisa framework



STRENGTHS

- Strong Paul Kruger street Axis
- Encouraged slow development
- Links Salvokop to city physically and economically
- Increased access to Salvokop

WEAKNESSES

- Memorial based
- Focus on governmental sector
- No focus on character or community
- No environmental consideration

Figure 4.13: Re Kgabisa strength and weaknesses



PRESERVE

- No focus on character or community
- No sign of preservation of the existing urban fabric
- No acknowledgement and response to existing activities and processes on site

CONNECT

- Strong Paul Kruger street connection
- Links Salvokop to city physically & economically
- Increased access to Salvokop
- Governmental uses makes Salvokop an important node in the city
- No metaphysical connections to Salvokop

Figure 4.14: Re Kgabisa framework connect and preserve

Arup framework



STRENGTHS

- Arts and culture activation of Salvokop
- Destination points
- Addition of uses to Salvokop

WEAKNESSES

- No concern for character or community
- No environmental consideration
- No concern for heritage fabric
- No concern for public interface
- Continues to create fenced off islands

Figure 4.15: Arup framework strength and weaknesses



PRESERVE

- No focus on character or community
- No concern for heritage fabric

CONNECT

- Arts and culture link with city
- No metaphysical connection

Figure 4.16: Arup framework connect and preserve

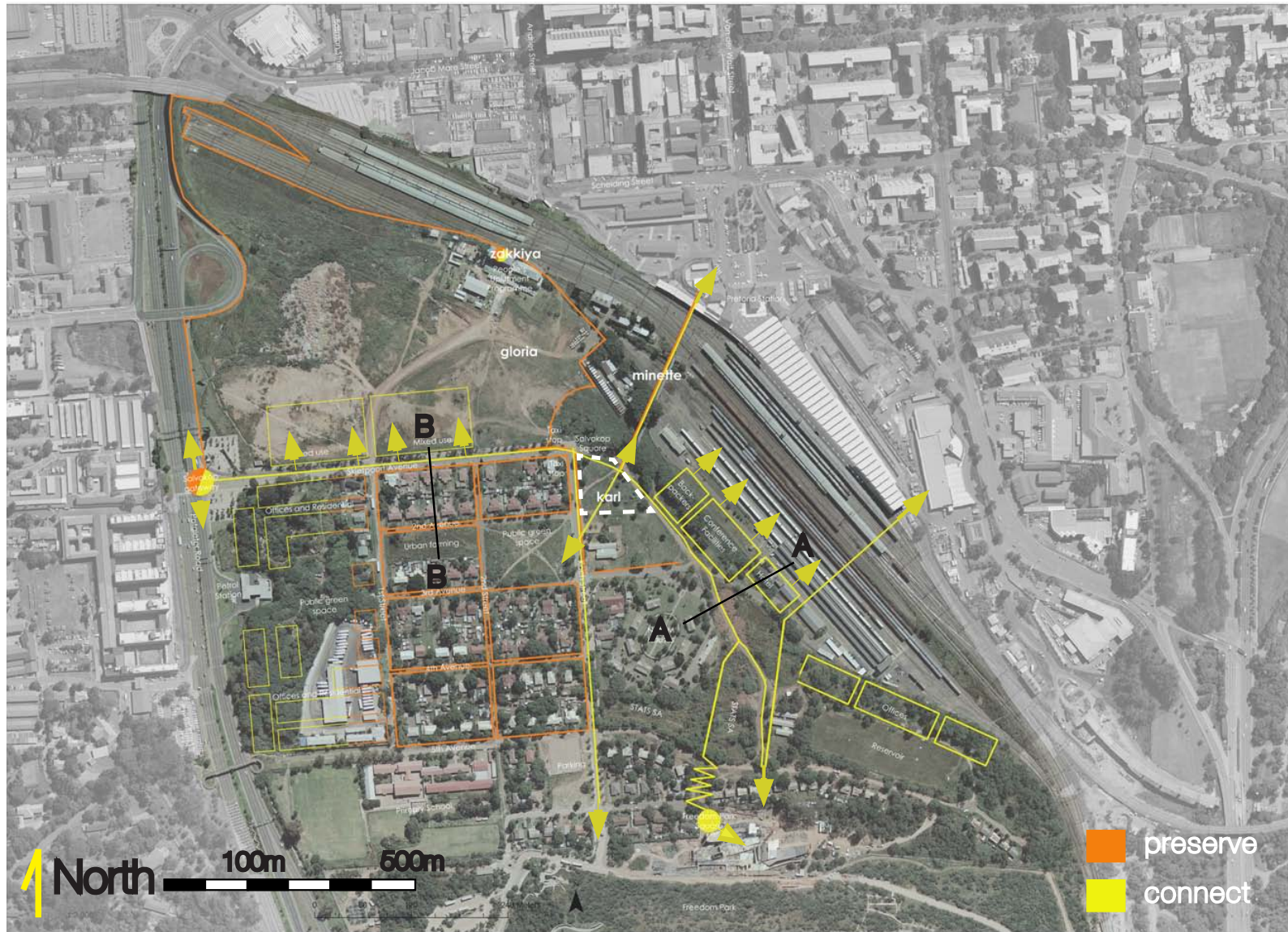


Figure 4.17: Map showing connect and preserve application areas

Proposal

The proposal for Salvokop rests primarily on giving substance to the concepts of “connect” and “preserve”. By connecting existing activities internally and to the rest of the city they will have the opportunity to revive and flourish; this will also increase awareness of the area and promote the efforts to preserve the heritage and to improve the social and economic situation of the local residents.

Whilst existing frameworks considered isolated aspects of the above proposal, a combining of the strengths of each would provide impetus for a healthier city environment.

Connect

The importance of promoting vehicular access is recognised as a key component of increasing the volume and positive impact of the proposed new activities. It is for this reason that a new access road entering Salvokop from Andries Street is proposed. This would link into the important traffic node in the south of the study area, just north of Freedom Park. Skietpoort Avenue would also be extended to link up with the aforementioned node. This extension would also create a pedestrian-friendly street, if combined with traffic calming measures such as paved surfacing.

Pedestrian-only routes (such as the bridge from the station) would be given high priority and appropriately complemented through a widening of walkways and the use of paving material where none currently exist.

Retail, office, conference and hotel facilities proposed on the north-eastern slope overlooking the railway line would provide an opportunity for members of the public to view both the existing Blue Train platform below and the proposed pedestrian-friendly route on the Skietpoort road extension.

Preserve

The suburb’s existing inhabitants, their activities and the buildings they use should be recognised and appropriately responded to. It is for this reason that preservation forms a fundamental role in this development proposal. Although it might slowly evolve in the future, the current residential fabric should be respected and protected, with all the proposed important thoroughfares being directed around the suburban environment in the south-western region of the suburb. The largely abandoned northern area north of the existing Skietpoort Avenue will in all probability experience

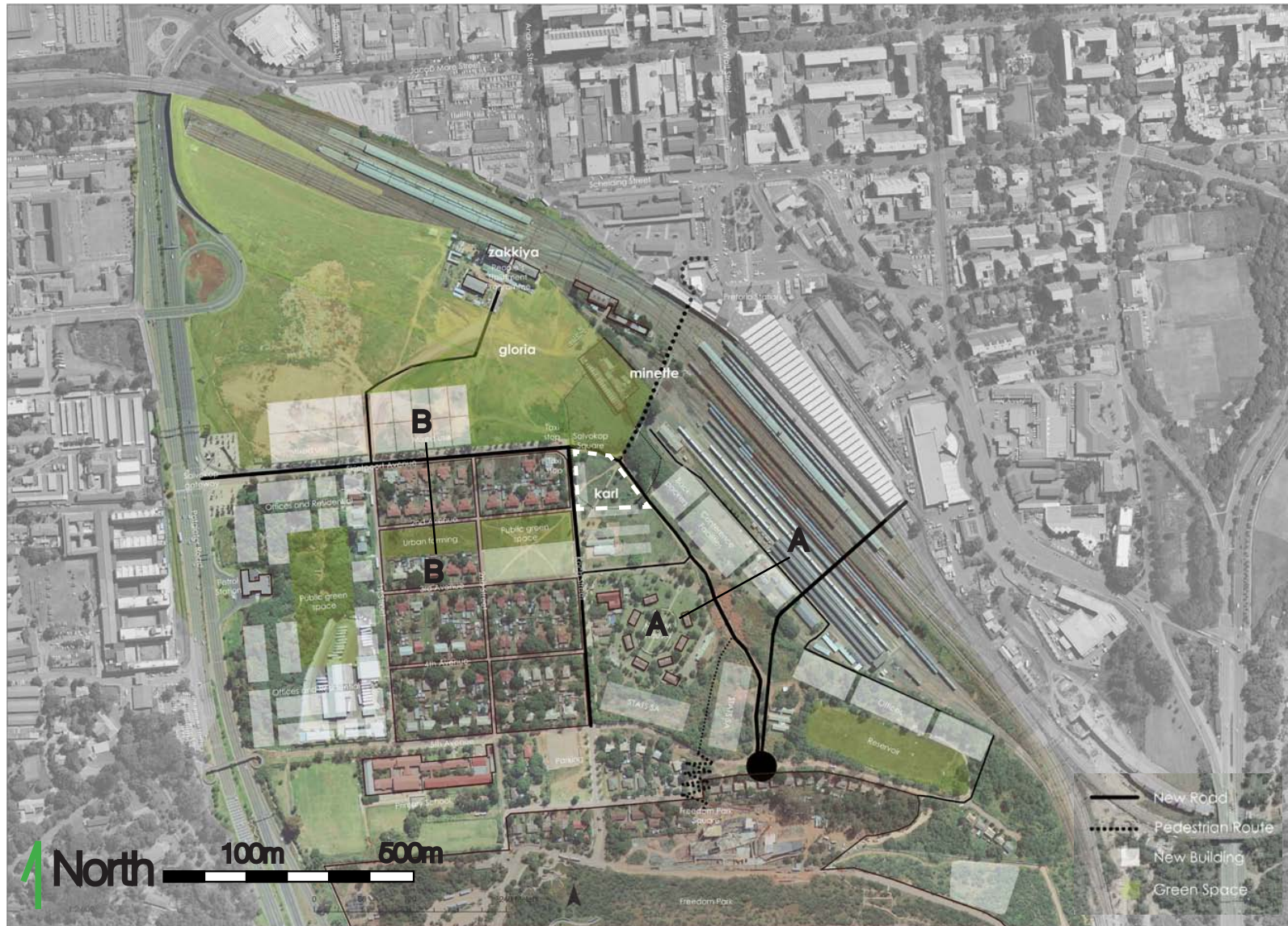
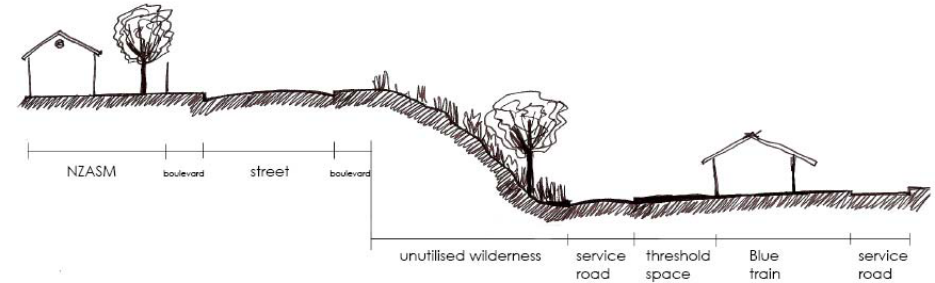


Figure 4.18: Map showing proposal

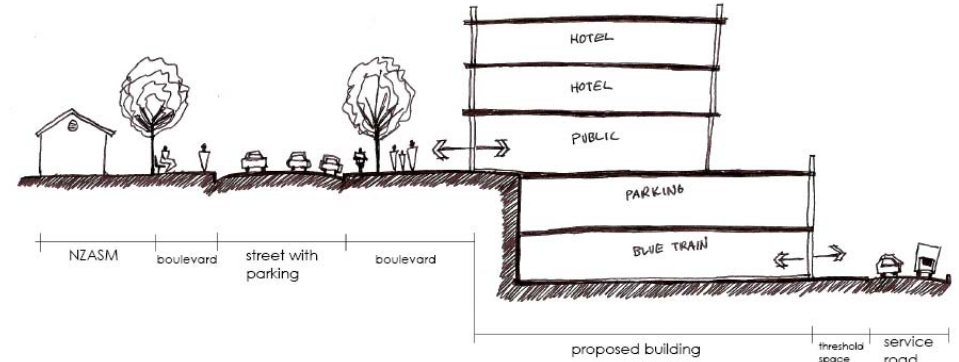
development on the fringes whilst the majority of the area will be transformed into a landscaped wilderness-styled open space (thus avoiding the creation of sterile non-places) that becomes accessible to residents

This proposal is based firmly on balancing both elements of connect and preserve. If Salvokop were to be treated merely as an extension of the CBD, and its unique identity disregarded in favour of introduction of an extensive new network of roadways in order to firmly connect the area to the city, much of the existing character would be destroyed and an opportunity for human scaled re-development would be lost. At the other extreme, if the area were to be too vigorously protected and access even further restricted, it would simply suffocate the existing actives resulting in a continuation of the slow yet steady deterioration of the region as a whole.

Section A-A



before intervention



after intervention

Section B-B



before intervention



after intervention

Figure 4.19: Section A-A before and after proposal implementation

Figure 4.20: Section B-B before and after proposal implementation



Background (chapter 1)

Urbanisation

Sustainability

Housing in SA

History of Slavokop

Aerial History

Combat Urban Sprawl

Managing the increase of people

Importance of location
in the city

- Close to
 - Work
 - Transport
 - Retail
 - Social facilities
 - City Centre

Development of
transport routes

- Train
- Vehicular
- Pedestrian

Affect of Apartheid

Change of housing

Strong heritage environment

Mix of uses

- Heirachy of access
- Circulation
- Services

Salvokop Framework (4)

Connect

Preserve

Changing value of land

Land value
currently low

Considerable potential
for succesful
development

increase of
value

change of
use

Analysis (2)

Pedestrian movements

Balance

Currently under
accommodated

Encourage the existing

Evaluate need
before expansion

Vehicular movements

Currently under utilised

Potential increase due to

- ↳ Tourist activity
- ↳ Increase in development
- ↳ Proposal of new feeder road

Existing conditions

Street furniture

Currently site not of
high value

Developed Guidelines

Located within walking distance from work opportunities or transport terminal

Medium to high density

Address the immediate needs of the locals/residents

Incorporate a balanced mixed-use environment

Appropriate & responsive pedestrian scale

Form part of a sustainable long term plan

Facilitate the formation of communities

(3) Theories

Habraken - Supports

Lewis - Front to Back

Hamdi - Small Change

Brand - How Buildings Learn

(3) Local Documents

Breaking New Ground - 2004

Green Paper on Climate Change - 2010

Faster Harder Smarter - Tsela Tshweu design team

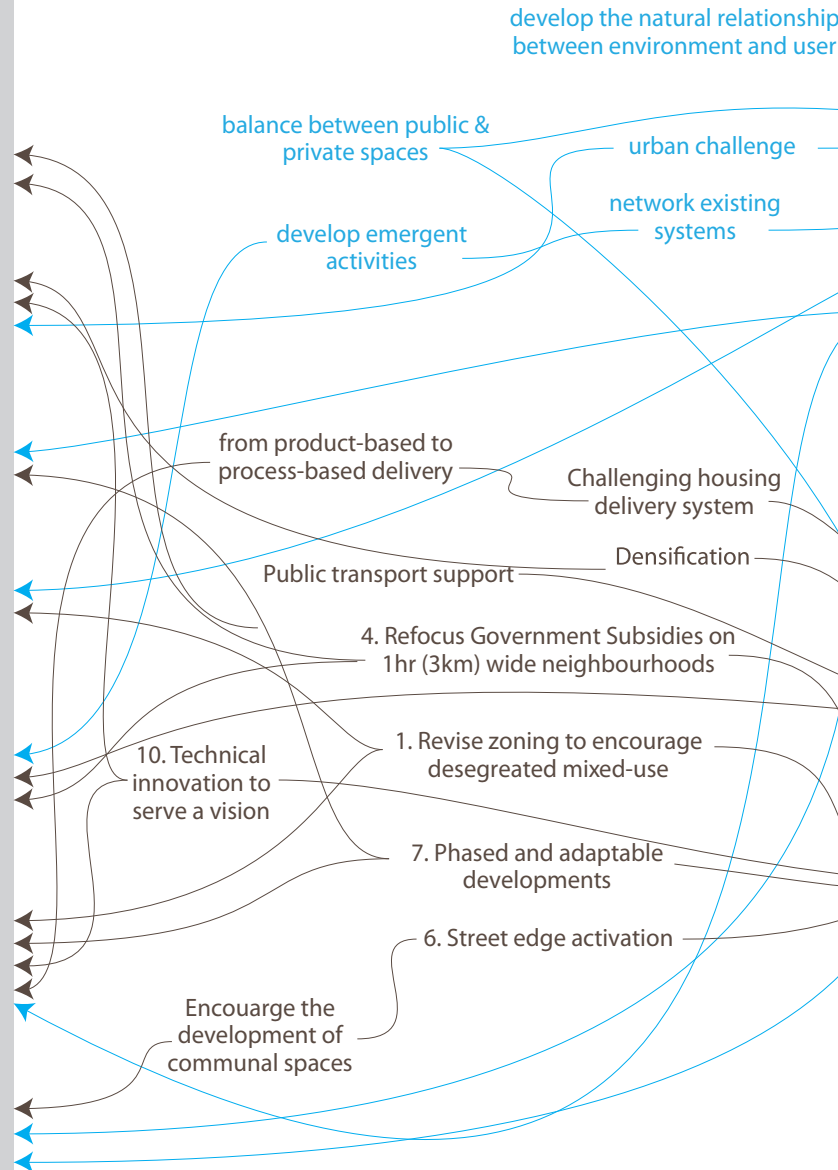


Figure 4.21 Diagram showing the formation of guidelines



Figure 5.1 Montage of various precedents



5

Precedents & Testing



























Guideline Testing vs Precedents
Lessons learnt from precedents
TAU village - Pretoria
Brickfields - Johannesburg
Joe Slovo Precinct (of N2 Gateway project) - Cape Town
Mieres Social Housing - Mieres, Spain
Public Reception Square
Grenoble Residential - Grenoble, France
Duren Residential - Duren, Germany
Linked Hybrid - Beijing, China
31 Lower Terrace - Pretoria
Testing of developed guidelines against existing residential buildings
already implemented locally and abroad. These projects provide
important lessons on background, design and execution of social
orientated housing projects

Table 5.2 Testing of guidelines against precedents

Testing of guidelines against precedents

Guidelines	Local Precedents			
	Tau Village	Brickfields	N2 Gateway	Dewar and Uitenbogaard
1. Located in a functional environment				
2. Medium to high density				
3. Balanced mixed-use environment				
4. Part of a long-term plan				
5. Address the immediate needs of locals/residents				
6. Facilitate the formation of communities				
7. Appropriate & responsive pedestrian scale				
total	3 - 43%	3 - 43%	3 - 43%	4 - 57%

International Precedents

Herman Hertzberger		Aldo van Eyck		Steven Holl					total
Duren Residential	Nieuwmarkt	Herbertus House	Nieuwmarkt	Linked Hybrid	Simmons Hall	Mieres	Grenoble		
									7 - 59%
									9 - 75%
									5 - 42%
									6 - 50%
									5 - 42%
									3 - 25%
									4 - 33%
3 - 43%	3 - 43%	3 - 43%	4 - 57%	4 - 57%	3 - 43%	3 - 43%	3 - 43%		

Lessons learnt from precedents

Tau Village

The Tau Village development demonstrates the possibilities of incorporating a number of different uses into a single development and the importance of implementing a hierarchy of access control measures that also cater for social facilities that require increased control. The location and density displayed by the development is due to existing factors but are nonetheless appropriate for the building's new programme.

Brickfields

The scale of Brickfields means that it has a significant impact on the housing stock for the area and indeed the city of Johannesburg. One of South Africa's first large-scale housing developments to combine opportunities for separate small business premises, as well as units with space to live upstairs and work downstairs and direct exposure to the street and the public. The courtyard typology was also used in this case, with the open space used for parking and children's play areas. A healthy variety of units and types has resulted in a viable mix of users and usages. Also, being part of a larger series of implementation, Brickfields was designed as the housing initiative for broader development.

N2 Gateway project

The immense scale of this Cape Town project has proven to be a stumbling block in achieving successful implementation and ongoing

maintenance of the project. Initially an exciting intervention, much of the original hype has died away as residents have become unhappy due to poor upkeep of the rental units and a lack of attention given to creating and maintaining public areas. This proves the importance of initiating and implementing a system of housing and living that can become sustainable. A valuable lesson to be learnt from this project is the importance of insightful planning of implementation system and how the development functions as a whole.

Mieres Social Housing

Much like Brickfields, the social housing development in Mieres in Spain by Zigzag architects forms part of a much larger development and framework. Mieres exhibits a history similar to Salvokop with its railway and industry background. The fresh application of the courtyard city block with a semi-public space shows the potential of design in a challenging environment. The connection to the site and the manner in which naturally existing informants were used to encourage the design show the possibilities of simply calculate decisions.

Project for a public reception square

The public reception Square illustrates the potential for a public space which is supported by surrounding buildings and landscaping. Mixed use on ground floor with offices or housing above, along with

its location in the middle of the city, close to transport links, provides a platform for a vibrant public environment which also acts as an important information node for new visitors to the city.

Grenoble

The Grenoble Housing block located in a growing city at the foot of the French Alps is part of a larger urban development plan. Environmentally sustainable solutions have been applied, including an innovative system for the façade, but it is the influence as a part of a broader development that makes it so successful. This housing project demonstrates the value of a simple solution as a portion of a larger-scale endeavour.

Duren Residential

Unlike the Grenoble example, Herman Hertzberger's Duren Residential block in Germany does not fit into its environment seamlessly. Instead, an island of housing has been created in a neglected suburb of old houses. With a strong physical connection to its surroundings suburbs by means of pedestrian and vehicular access routes, the project adequately demonstrates the balance between providing for residents and the neighbouring community. A large public green space bisected by an access road and surrounded by double storey-walk-ups ensure a safe environment for inhabitants and the general public to interact in a pleasant outdoor space.

Linked Hybrid

Steven Holl's renowned Linked Hybrid in Beijing challenges the traditional standards of volume for inner city buildings. Breaking the mould for conventional housing blocks the opportunity has been used to create a cluster of eight tower blocks of different heights, linked at different levels. Public functions inhabit the more easily accessed levels whilst over 600 living units complete the complex. The unique pedestrian bridges over seventeen stories above ground level create a unusual interaction for residents and visitors and create niches of activity despite the immense scale of the project

31 Lower Terrace

House 31 in Lower Terrace St, Pretoria provides an example of how a steel structure can be appropriately implemented for residential purposes. Due to the roof being largely a separate component of the structure, it can be simply removed to accommodate the installation of additional stories should the need arise. The corrugated sheeting skin, including face-brick and plastered surfaces, results in a variety of façade that creates a pleasant aesthetic. The large surfaces of glazing are appropriately orientated and afford the building interior a healthy dose of light.

An adaptive re-use project incorporating a variety of uses and functions. The architects of this recently completed (Sept 2010) project were faced with a variety of challenges when converting the abandoned offices of the Transvaal Agricultural Union (TAU) to a mixed-use housing development: first of all, the issue of re-using an existing building and converting its function has specific challenges, and secondly the incorporation of various uses into a single structure.

Re-use

The building's existing blocks A and B were converted and upgraded into housing units, with retail spaces on the ground floor facing the street, whilst a new block (C) was built at the back of the site and accommodates Lerato House, an old age home, a crèche and additional housing units.

Due to the poor condition of the interior, caused by the illegal occupation of the building prior to renovation, a replacement of finishes was desperately required. Selected fittings and refurbishments are simple and heavy-duty, which offer the interior spaces an elementary feel. Combined with the red, blue and yellow paintwork to highlight important structural or circulatory elements (columns, balustrades and central passages) an uncomplicated language is articulated throughout the structure inside and out. Re-appropriation of the



Illustration 5.3: The inconspicuous facade of the TAU building with shops opening up onto the street

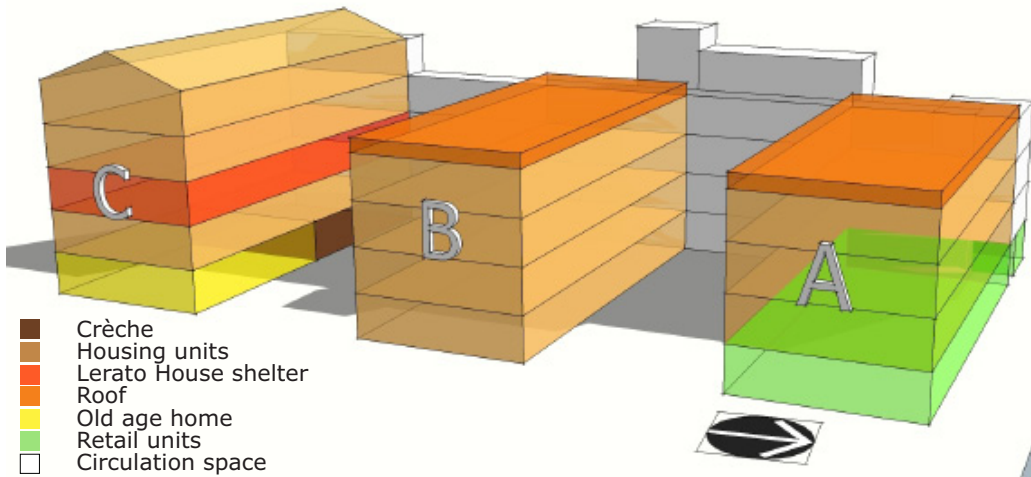
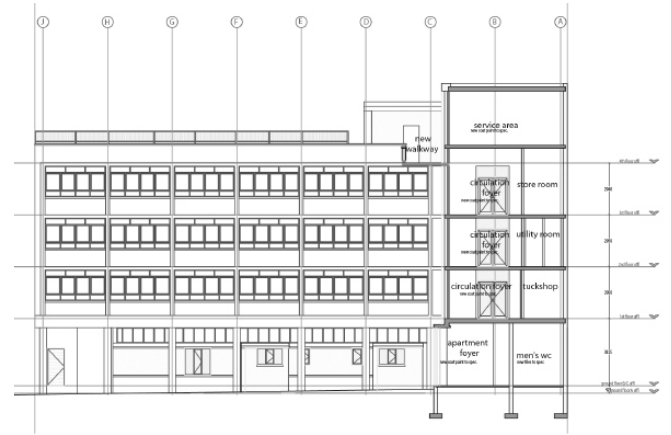
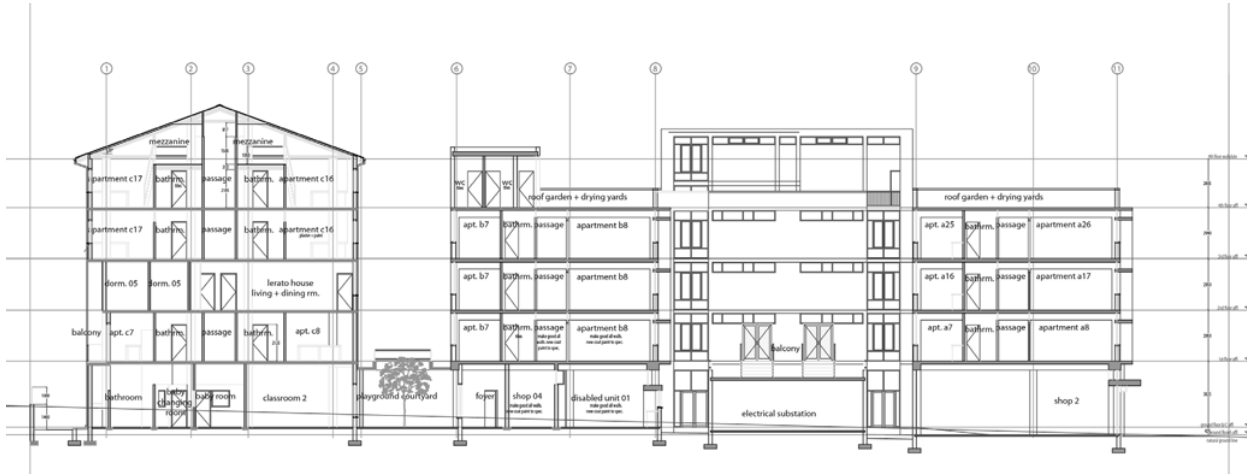
Opposite page:
Illustration 5.4: The quiet green space at the back of the lot provides a peaceful breathing space in the busy city

existing office space proved more of a challenge than originally anticipated when the structure was deemed unsuitable for any extension. This meant that the flat roof was not able to support additional floors or a roof garden unless costly structural upgrades were undertaken. The change in use required a relocation of the central wet services areas required in each of the units. Bathrooms were placed on the inner, passage-way side of the unit to maximise natural lighting into the unit. Unfortunately a similarly healthy dose of light and air could not be afforded to the dark corridors throughout the development due to fire regulations restricting the use of the existing fanlights.

Mixed-use

The development accommodates a healthy variety of uses with retail spaces for small businesses, accommodation for families, couples, working individuals, the elderly and disenfranchised young women, and provides accommodation for pre-schoolers with working mothers. The access to these various uses is controlled primarily through an existing circulation axis located on the west side of the building which was extended into the new C block, whilst the existing vertical circulation shaft between Blocks A and B was retained and easily serves all three blocks. Ease of movement through the ground





floor spaces is required due to the high traffic caused by the need to drop-off and pick-up users of the crèche and old age home facilities. Any additional space on the ground floor was utilized to create small gardens which included the use of old tyres as containers for small plants.

Due to restrictions of time and money the developers' intentions to install components such as solar-water heaters and flower-boxes on the façade could not be realised, and their absence is notable. The simplefunctional language is however successfully sustained throughout, providing a platform for future additions.

The housing units are small but still appropriate, and whilst the majority of the residents prefer the newly built C block which overlooks

the surprisingly tranquil green space at the back of the lot, it is neither the freshness of the new building nor the green space which attracts them, but instead the comparatively quiet, tucked-away environment which it offers so effectively. However where some residents enjoy the peacefulness of block C, others have the easily accessible flat roof directly above which offers stunning night views and on occasion the distant roar of the lion from the Pretoria Zoological Garden.

Conclusion

Although the approach to the construction of the new TAU building does anything but draw attention to itself, as a whole the building provides a uniquely responsive living environment, one shaped by modest green spaces, open gathering areas and living units, all set out in a fashion appropriate to high density city living. The success of this project is confirmed by the extensive waiting-lists for occupation.

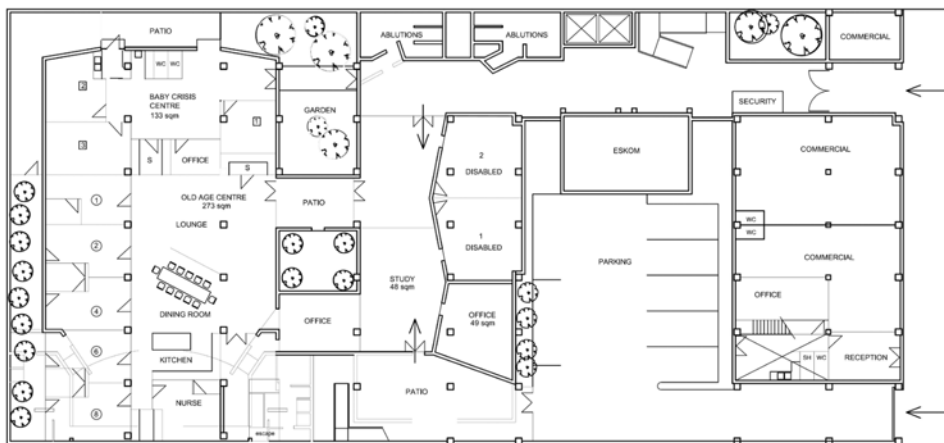


Figure 5.9: Ground floor layout showing commercial spaces, offices, the crèche, old age home and circulation spaces

Opposite page (Clockwise from top right):

Figure 5.5: North elevation of the centre block (B)

Illustration: Computer render showing unit interior

Figure 5.7: Figure showing use allocation

Figure 5.8: North-South Section



Location



Density



Mixed-use



Long-term plan



Immediate needs



Community



Pedestrian

Brickfields - Johannesburg

Savage & Dodd Architects cc, Fee & Chalis Architecture
& Makhene Architect and Associates

Brickfields is part of a larger redevelopment project in the area of Newtown, Johannesburg. Along with two other precincts (C & A/B) Brickfields provides the previously absent residential component to this area which is experiencing much needed upliftment, whilst the Nelson Mandela Bridge and the Metro Mall transport Interchange provide the infrastructure to support the overall regeneration initiative.

Two and three bedroom units are arranged in four storey walk-ups with considerable street frontage around a large courtyard which includes parking and children's play areas. Two tower blocks (nine and ten stories high) located at opposite corners of the precinct provide a high-density living environment and an increased number of residential units. Live-work units are located on edges of the redevelopment facing Ntemi Piliso and Gwigwi Mrwebi Streets, which are important pedestrian routes and provide opportunity for small businesses selling groceries and snacks, or offering personal services such as dry cleaning and laundry services, hairdressing and similar.

Social facilities, including a crèche and a home economics centre, are also incorporated into the development to promote the mixed-use nature of the project.

Simple materials are used throughout with a basic aesthetic created through the utilisation of exposed brick, interspersed with brightly painted plaster finishes which also create visual variety.





Clockwise from top right

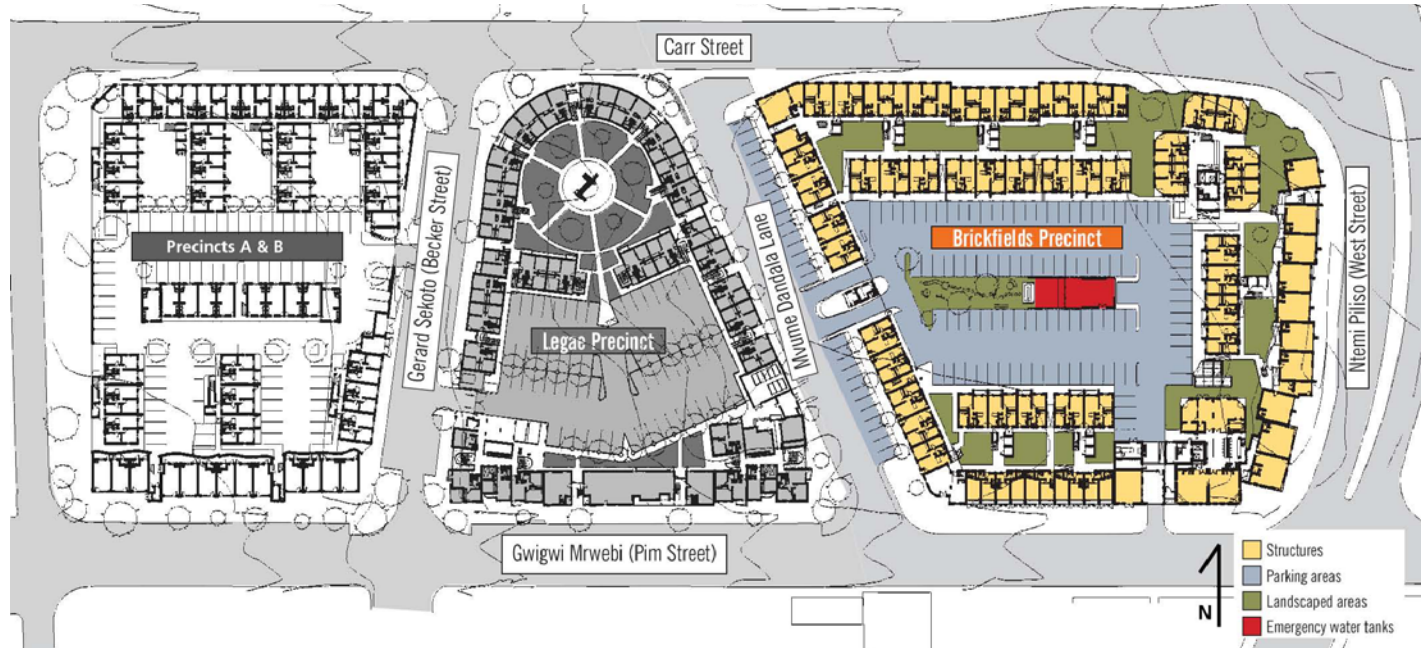
Illustration 5.11: Interface of the shop component of the live-work units with the street

Figure 5.12: Plan of the entire development with the Brickfields precinct in colour

Illustration 5.13 Deserted courtyard spaces inbetween housing blocks originally planned for landscaping

Opposite page:

Illustration 5.10: View of the central courtyard space with parking and childrens' play area, with the nine-storey tower block in the background



Joe Slovo precinct - Cape Town

JSA Architects and Urban Designers

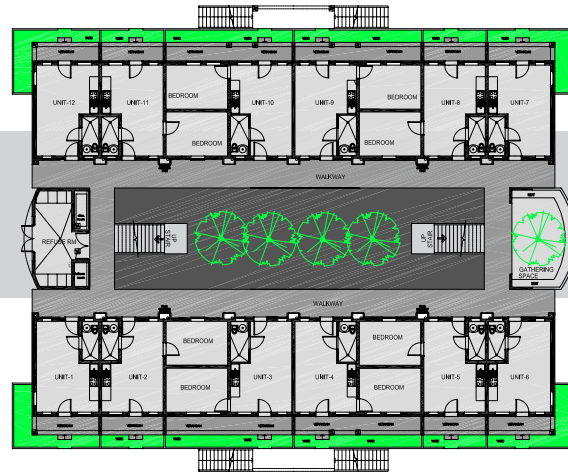
The Joe Slovo precinct was completed in June of 2006 in Langa, Cape Town along the N2 highway and forms part of the larger development known as the N2 Gateway project. The site was chosen because of its proximity to the Joe Slovo Township which allowed the opportunity for an upgrading of existing infrastructure as opposed to the more costly establishment of new infrastructure.

The housing consists primarily of bachelor, and one and two bedroom units arranged in medium density three storey walk-ups. This higher density design capitalised on the opportunity offered by the strategically located land with its ease of access to existing facilities and impressive views of Table Mountain. The units face onto internal courtyards which create a space for social interaction and the hanging of laundry.

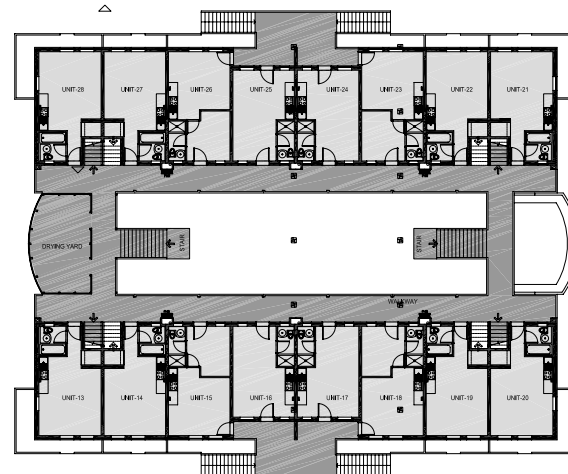
Due to the expansive nature of the development a number of these courtyard blocks were linked with narrow streets creating a network of linked public gathering spaces throughout the development. The extensive scale of the development also informed the design on a smaller scale with robust materials and simple details repeated throughout.

Although largely mono-functional the development does also allow for the operation of small businesses and social facilities such as a crèche and a trading area.





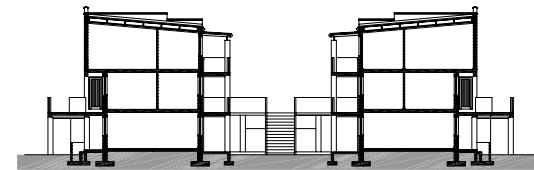
Typical ground floor plan



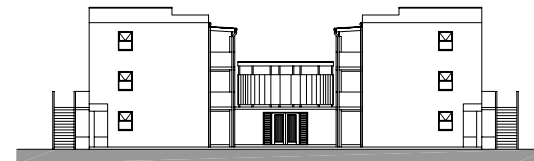
Typical first floor plan



Typical front section



Typical section



Typical side elevation

Opposite page (Clockwise from top-right):

Illustration 5.14: Units have a combination of access from inside and outside the courtyard.

Illustration 5.15: Courtyards are generally darker and used primarily used as clothing hanging space

Illustration 5.16: The extensive installation of satellite dishes indicates the more middle class (as opposed to lower-class) parts of the development
Illustration 5.17: Narrow roads between blocks allow for the circulation of vehicles but miss the opportunity to provide pleasant landscaped strips.

Figure 5.18: drawings showing typical blocks of the three-storey walk-ups

Mieres Social Housing - Spain

Zigzag Arquitectura

Mieres is a small town in the North of Spain with a fading legacy of mining and heavy industry. Situated just to the south of the centre of town is a vacant area awaiting interventions that will result in redevelopment. The proposal for social housing by Zigzag architects was approved for implementation because of its appropriate use of materials and its arrangement of varying sized apartments.

The scheme is based on a conventional courtyard block which is adapted to maximise views of the surrounding mountains and solar gains - which was in accordance of the intention of the architects: that the building would be connected to the site.

The implementation of contrasting façade materials informed users of the distinction between public and private realms. An African hardwood was chosen for the areas facing the courtyard to symbolise a return to nature and the courtyard itself is planted with native grasses and bamboo to create a “secret garden” effect in the form of a semi-public area, a breathing space in the harshness of the surrounding urban environment.

An overwhelming aspect of the scheme has been its capacity to transform a neglected precinct through the application of appropriate architecture. (Slessor: 2011, 54-61)



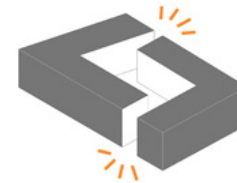
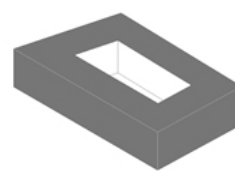
Illustration 5.19 A view of the entrance from the street

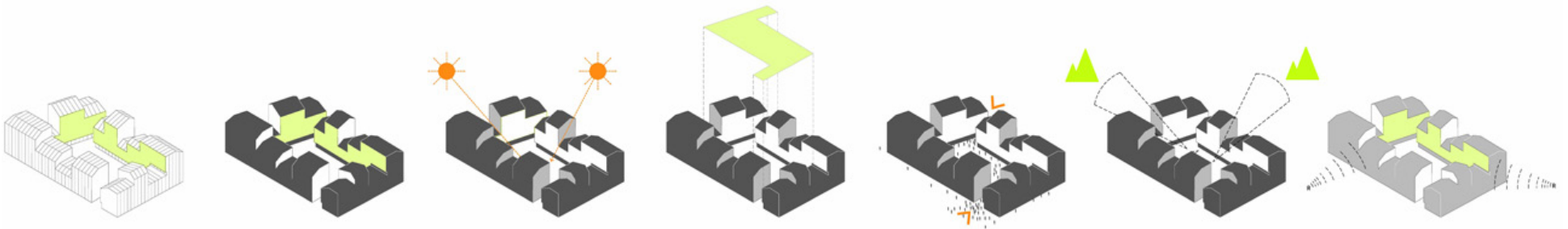
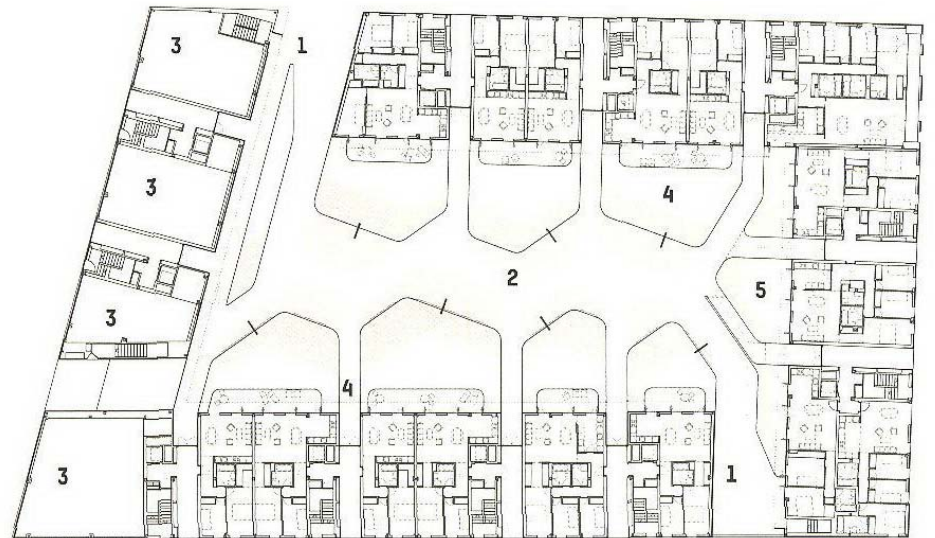
Figure 5.20: A progression of the building form due to various contributing factors

Opposite page:

Illustration 5.21 The paved and landscaped courtyard at the heart of the block

Figure 5.22: Ground floor plan (1. street entrance, 2. courtyard, 3. shops, 4. staircase, 5. apartments)





Project for a public Reception Square

Uitenborgaardt and Dewar

One of the proposals included in *South African Cities: A Manifesto for change* (Dewar and Uitenborgaardt, 1991: 108) was a Reception Square for a South African city. The purpose of the space is to allow for a welcoming public square located close to an important transport terminal. The space receives visitors and guides them towards a place of information. This model is especially relevant in South Africa due to the high number of rural dwellers who are occasional city users. They travel long distances from their rural homes to receive health care, apply for identity documents or to buy items that are not available in their rural centres.

The reception square promotes the establishment of an economic strip giving users immediate access to the relevant shops and services. The arrangement of the surrounding buildings supports the form and function of the square. Multi-storey buildings of moderate density ensure the development is not out of context in the city, whilst landscaping softens the hard edges of the urban landscape.

The reception square proposal provides an important public space for visitors and locals to access a variety of goods and services as well as an opportunity to interact with one another in an open public environment.

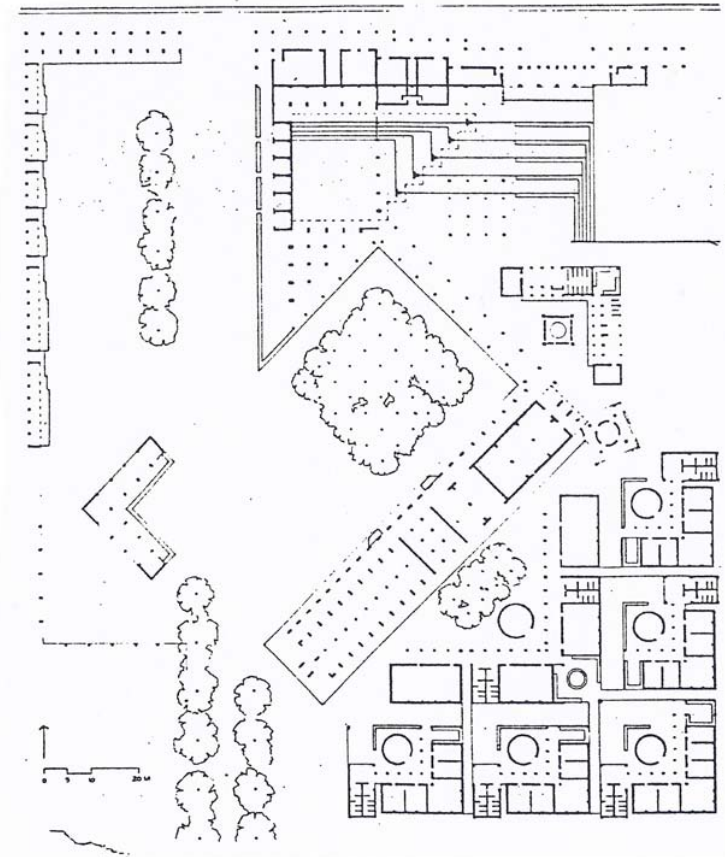


Figure 5.23 Plan of public reception space project



Location



Density



Mixed-use



Long-term plan



Immediate needs



Community



Pedestrian

Grenoble

Eduard Francois

Located in a growing metropolis at the foot of the French Alps the social housing development in Grenoble is an experiment within a greater exploration. Forming part of the zone d' management (ZAC), a well-known urban redevelopment plan, Francois's housing blocks is one of many players in this so-called "eco quarter". Along with a host of other architects and urban planners the entire precinct is being redeveloped, with the intention of having a greater positive impact on social systems whilst conversely having a lighter impact on environmental ones (Slessor: 2010, 72-74).

Innovation on the façades through use of new materials that change over time due to weathering and vegetation growth are only mildly significant in comparison to the larger impact the building has as part of a broader and therefore more substantial development.



Clockwise from left

Figure 5.24 Facade detail which over time will become animated by flourishing greenery

Figure 5.25: Grenoble context, housing block on the right of the street with the Alps in the background

Figure 5.26: Private housing block overlooking the courtyard at the centre of the development

Duren Residential

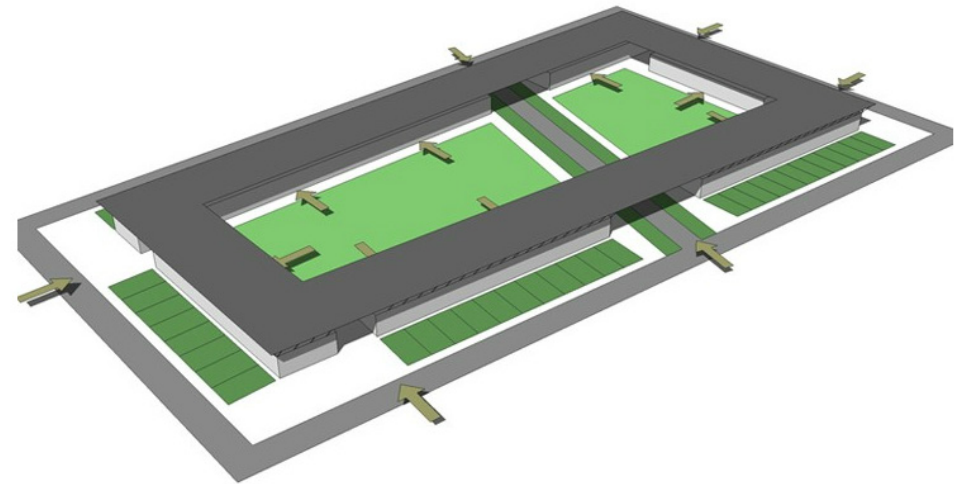
Herman Hertzberger

When viewed in context, it is clear that the residential complex at Duren is not simply “business as usual”. Located in and amongst many run-down welfare houses the housing development by Herman Hertzberger sets an appropriate precedent for what could be. A perimeter block with double storey walk-ups and an access road bisecting the central courtyard allows for a balance between communal interaction and privacy.

The scale of the open space has become an opportunity, and has been adopted by locals from the entire suburb as a town square and meeting place. The development of this open space was not subjected to a sacrifice of socio-spatial quality, but instead it still fulfils the needs of the residents through the implementation of small-scale elements like balconies and galleries (Raith & van Gool, 1998: 18-28).

Viewed as whole, set within a slightly dysfunctional suburb, the residential complex at Duren strikes a balance between the immediate needs of its residents as well as those of the broader community.

Clockwise from top
 Figure 5.27: Image showing the movement through the block and spill over from the housing into the green courtyard
 Figure 5.28: Plan showing the location of the residential development
 Illustration 5.29: View of housing units surrounding a green courtyard





Location



Density



Mixed-use



Long-term plan



Immediate needs



Community



Pedestrian

Linked Hybrid

Steven Holl

Located in the densely populated metropolis of Beijing, Linked Hybrid challenges the notions of horizontality and verticality that so often dominate the urban skyline under the hybrid typology banner. Eight towers of varying height are joined at the base by a ring of structures used to fulfil public functions. This linkage is repeated at the unusual height of about seventeen stories above the ground. This elevated ring of activity spaces provides a platform for the inclusion of more public leisure facilities such as a gym, library, exhibition space, cafeterias and a jazz night club closer to the potential users. (Domus, 2004)

The massive scale of this residential project successfully integrates public space with private living. The emphasis on combining mixed-use and pedestrian-friendly systems is specifically relevant to the high density context in which the building rests, where the private car is not a significant factor. The landscape and the building interact on a three dimensional level, and maintains the privacy of use for residents in certain areas.

The inclusion of a geothermal heating and cooling system makes the Linked Hybrid one of the largest “green” residential projects in the world and ensures the interior remains comfortable throughout the year.



Clockwise from top left
 Illustration 5.30: View of three of the towers and the linking bridges
 Illustration 5.31: View of the first four floors demonstrating the public use on ground floor and residential units above.
 Figure 5.32: Diagram showing the relationship created between horizontal and vertical planes by using the linking bridges

Technical precedent

31 Lower Terrace - Pretoria

Thomas Gouws Architects

The Residence at 31 Lower Terrace Road is a 4 bedroom home with connected studio and quadruple garage and is located in the residential suburb of Menlo Park, Pretoria. The structural frame consists of a steel skeleton with brick infill. A combination of plastered and un-plastered brickwork, together with corrugated sheeting and large panels of glazing forms the skin of the building. The corrugated iron roof is attached to steel rafters which are supported by the structural columns at two places at each of the eaves.

The combination of exposed brickwork and glass and steel on the façade creates a surprisingly home-like aesthetic with large north facing windows allowing light to penetrate deep into the building.



Figure 5.33: View of the street elevation

Figure 5.34: Exploded perspective showing roof assembly





Clockwise from top right
Figure 5.35: View of the various skin construction materials
Figure 5.36: View of the balcony from the street showing the roof structure
Figure 5.37: View during construction showing the structural frame and infill

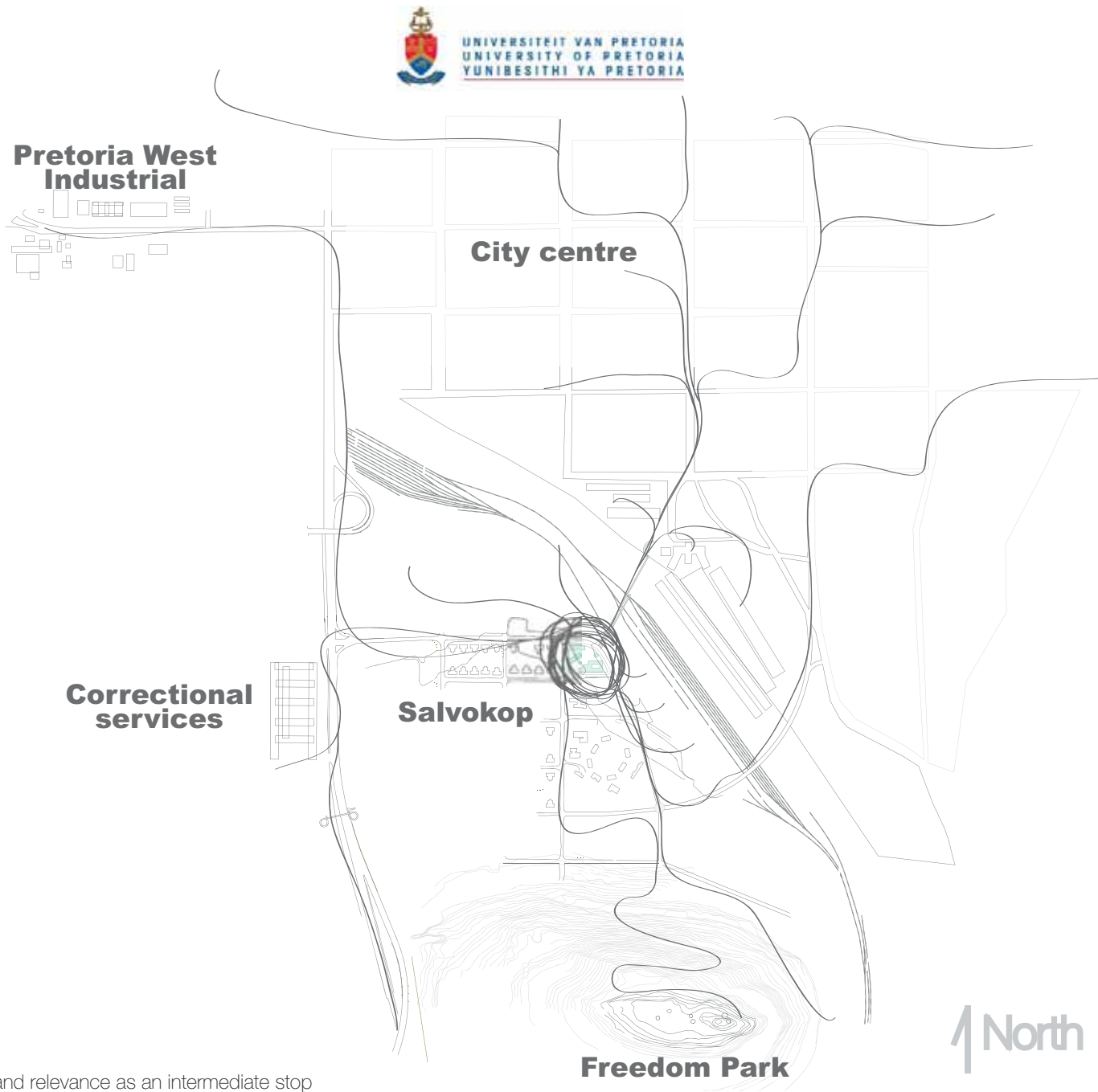


Figure 6.1: Location of site and relevance as an intermediate stop

6 Design development

The Germinate Concept
The Site
Program
Client
Influence of Guidelines

This chapter illustrates the various factors which influenced the design and outlines the various intentions of the scheme, the purpose it serves and the overall intention. The manner in which the guidelines influenced the final product is also illustrated.

Germinate

The idea

Germinate is a development which intends to offer an introduction to the unique environment of Salvokop. The development offers a platform from which other interventions can also grow. The simple nature of the scheme supports this foundation. The type of structural systems employed also allow for a future change of use.

The purpose

The purpose of the scheme is to create a reception space for visitors and residents alike. The provision of housing, social facilities and commercial opportunities ensures relevance to both locals and tourists. The nature of the public space works in harmony with the already established pedestrian route and allows for the establishment of edges containing retail and social amenities.

[jur-muh-neyt]

-verb.

-to begin

to grow or
develop.

germinate

The application

A public space edged by retail opportunities and a coffee shop channels pedestrian traffic towards the rest of the suburb and provides customers for the active building edges. The suburb is built on a considerably more intimate scale when compared to the nearby city centre (to the north) and industrial area (to the west) as is indicated by the contrast in building height.

The Ground floor is almost entirely open to the public, with access controlled only to the crèche and clinic, and at the multi-use space during private events. The first and second floor of the north-most building houses short-term accommodation, whilst the southern building contains rental housing on the upper floors. The free-standing pavilion structure on the Western edge of the site has additional un-programmed open space on the first floor.

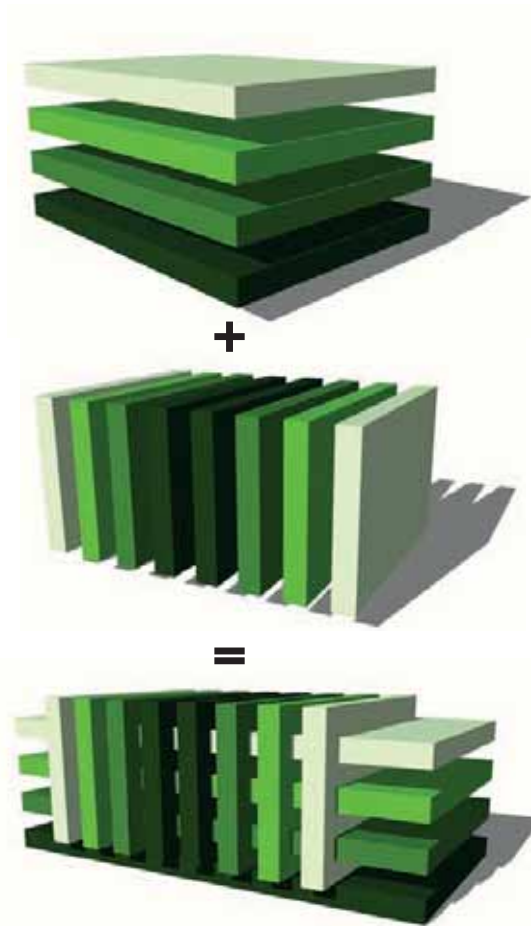


Figure 6.2: Vertical and horizontal variation resulting in choice, encouraging ownership and community

Site

The site is situated in the suburb of Salvokop to the south-west of the Pretoria City Centre, on the north-eastern corner of the existing suburb grid. Once the building restrictions (5m on all sides) are accommodated, the site dimensions are approximately 81x54m with a substantially filleted edge on the North-East corner of the site creating a curved boundary. The aforementioned dimensions relate to one another as a ratio of 3:2, which if expressed in a triangle against a 90° corner generate the angles 56° and 34°.

Both the ratio and the sets of angles influenced the design and layout of the site on plan

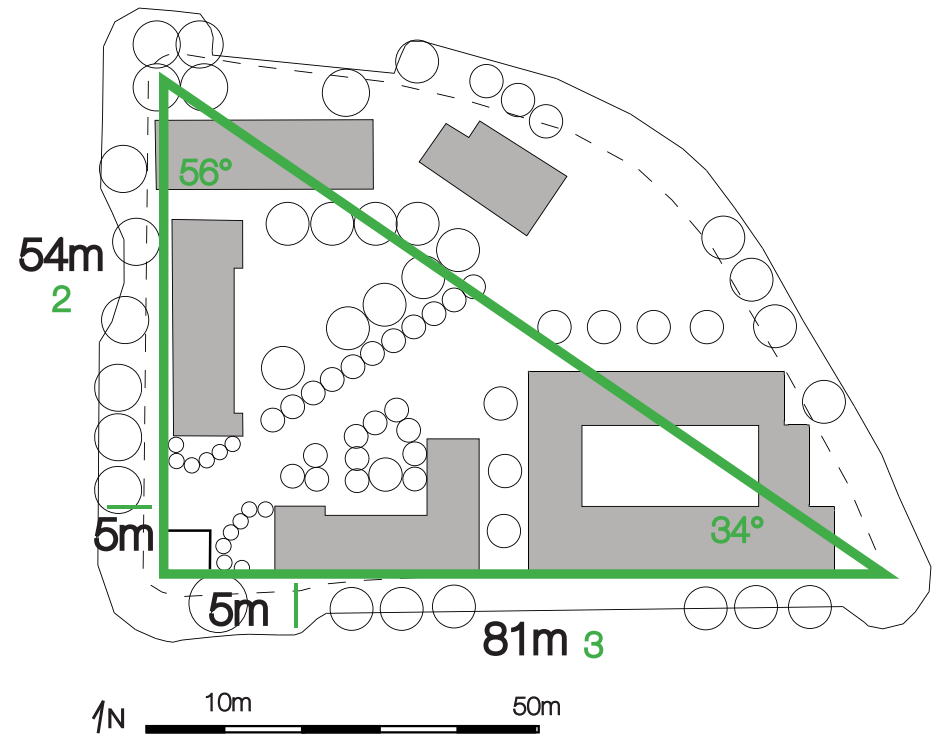


Figure 6.3: Proportions of the site

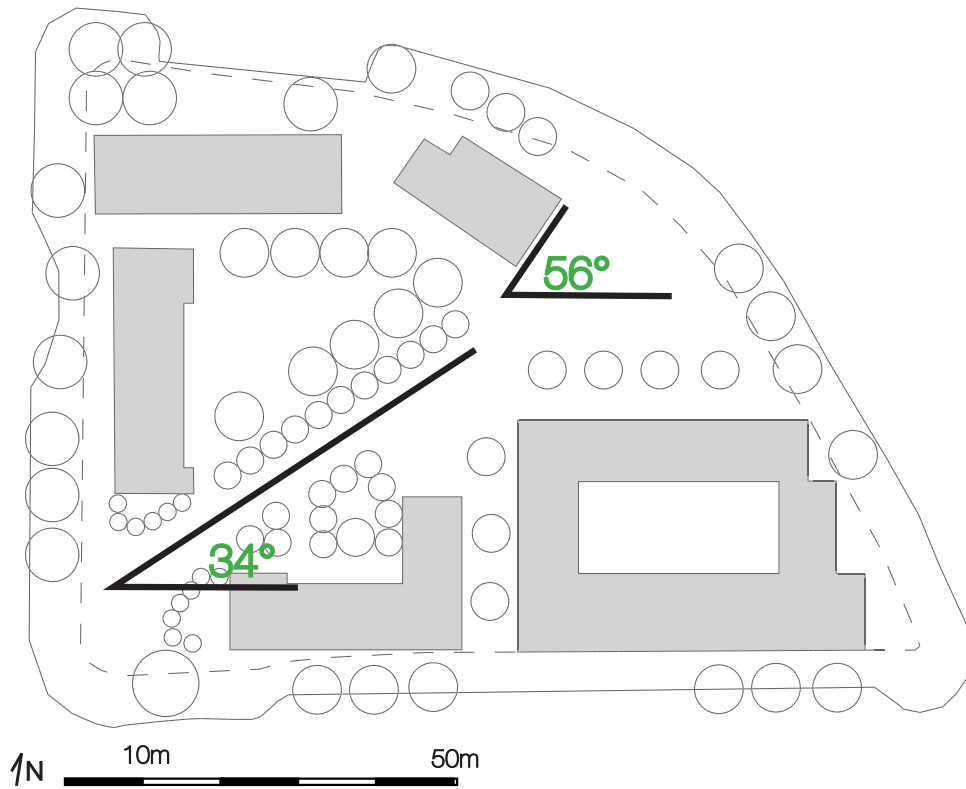


Figure 6.4: Utilised angles of the site on plan

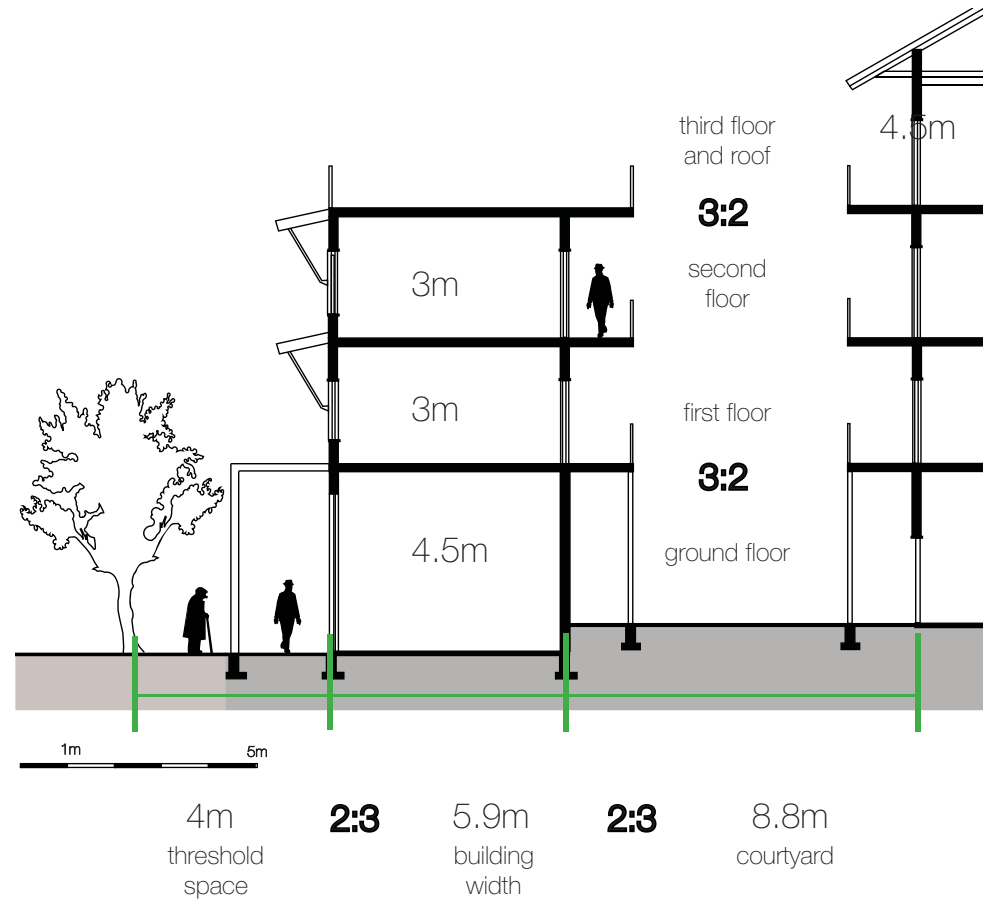


Figure 6.5: Utilised angles of the site on section

Program

Public reception square

The public square on the north-eastern corner of the site acts as a reception space as one enters the suburb. Visitors to the city are often unfamiliar with the overwhelming urban environment. A reception square welcomes and channels users towards points of information whilst providing an introduction to the vibrant and bustling socio-economic climate. Locals can also benefit from the nature of the square as a meeting point for organised as well as unplanned encounters. The nature of the site as a gateway to Salvokop and to the city requires a public area acting as a threshold space.

The surrounding buildings compliment the form and function of the square by creating well-defined edges as well as the opportunity for public activities through the accommodation of shops and social facilities. Landscaping is also appropriately arranged to soften the harsh edges, define the development, and to provide greenery and shading.

Short term housing

Due to the ideal location of the site, in such close proximity to the Pretoria Metrorail and Gautrain stations, as well as to a central bus terminal, an opportunity for short-term accommodation arises. Many users of the city must travel a few hours by bus or train to conduct extra-ordinary business in Pretoria relating to healthcare, business,

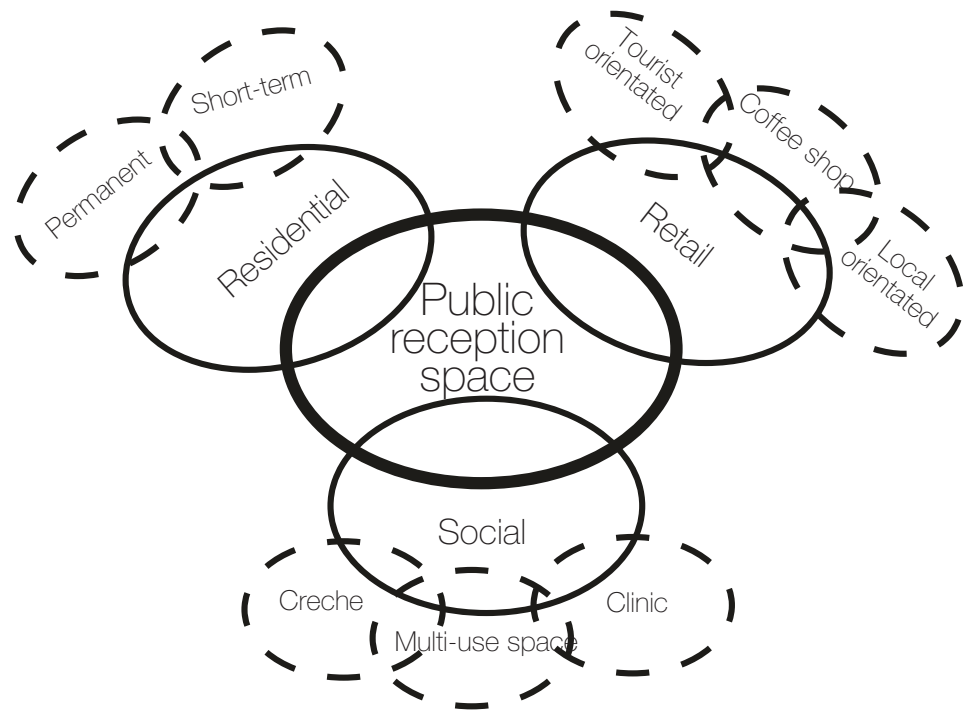


Figure 6.6: Parti diagram applied to function

finances or important documents. Many of these users are unfamiliar with the city and cannot afford the more conventional hotel style short-term accommodation. The prime location of Salvokop and the provision of short-term rental housing allows these visitors to over-night in one-roomed units for a short duration in order to visit a clinic, collect an ID book, apply for work or other tasks that cannot necessarily be completed in one day.

This accommodation will be managed by a centrally located housing office where applicants can pay to receive an access card before occupying their room. Visits will be limited to a few nights.

The design of the housing also allows for student type accommodation, occupancy of which can be renewed and paid for monthly.

Permanent rental housing

The more permanent housing is situated on the southern edge of the site. Once fully occupied, it will provide the threshold population required to sustain the commercial and social facilities. Single bedroom units with a bathroom, kitchen, lounge and dining areas allow for the accommodating of employed semi-professionals, couples or single parents. Units on the first floor also have access to a balcony whilst all units have access to the social areas located on



Figure 6.7: Highlighting the need for short-term accommodation close to the city's amenities

each floor. A pedestrian bridge links the blocks which are separated to allow for public traffic on the ground floor.

Access is controlled through a single entrance and circulation shaft with a fire escape staircase to be utilised in emergencies only.

Commercial/Retail

Approximately ten retail units are provided on the ground floor level, along the edges of the public spaces. Units offer opportunities for small to medium enterprises to settle and begin operating from a fixed location. Double retail units are also available for larger enterprises. These units have full glass frontages with a ceiling height of roughly 4.5m, to encourage public function. The prime location of these units ensures exposure of all tenants to passing pedestrians, thus activating edges of the development focussed more towards tourists visiting Freedom Park and other historical landmarks in the area, with locals on their daily routine travelling to the station or city and home again. A specific unit equivalent to approximately 3 regular retail units has been created and designated as a coffee shop. Its inside and outside seating further energises the public space and makes use of the position's northern aspect.

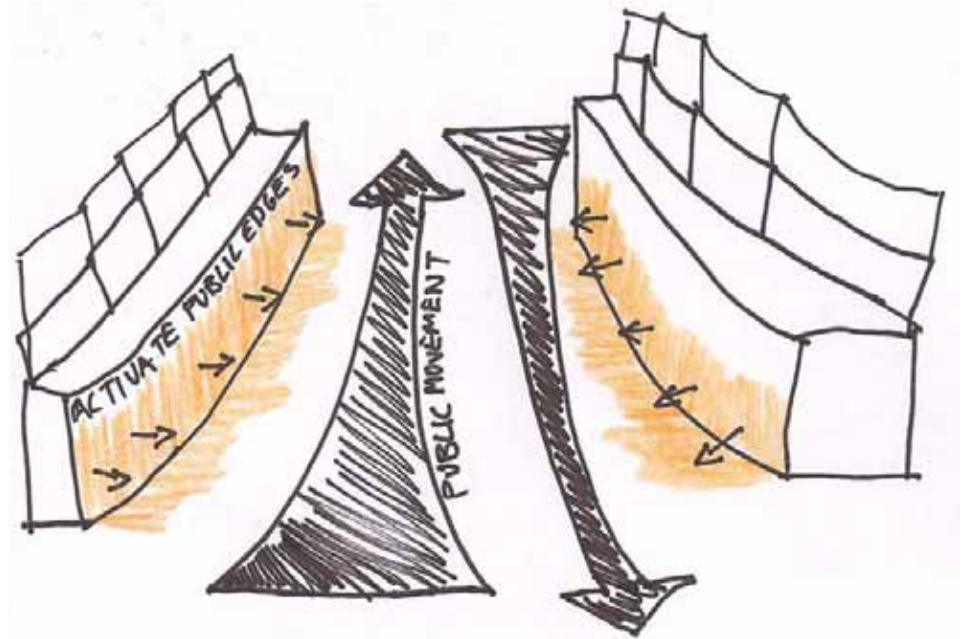


Figure 6.8: Illustration of important edges which can be activated to take advantage of pedestrian movement

Social facilities

Social facilities are provided in the development in order to strengthen the community by providing for urgent needs to be catered for on-site. The clinic in the southern block is accessed directly from the central public space and contains three consulting rooms, as well as a dispensary and an emergency room. The clinic is laid out in such a manner as to allow for ease of access by patients on its northern edge, as well as to provide more secure and private access for management and staff.

The crèche is another social facility proposed for the development, and is located on the ground floor on the southern edge of the main housing block. The more secluded location provides a quieter, more protected environment for the children. Simply portioned play and learning “rooms” flank a central strip of amenities including a kitchen and restrooms, and opens out onto a courtyard which is exclusively for use by the crèche.

A multi-use space is contained on the site’s western edge and can accommodate meetings, exhibitions or private functions. Folding doors on the eastern and western edges ensure that the longer sides of the building can be almost entirely displaced to offer the increased permeability especially appropriate for public events.

Public toilets can also be found on site positioned specifically to serve those working and visiting the development.

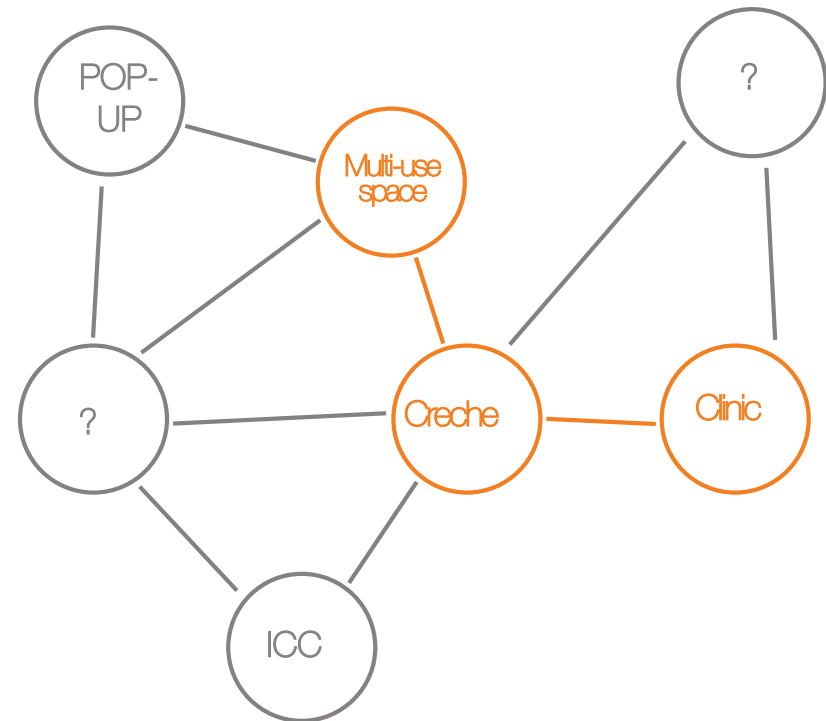


Figure 6.9: Highlighting the possibility of creating a network between new and existing social facilities in Salvokop

Client

The development will be undertaken for a mixed client consortium. In order to successfully manage the wide range of activities the suggested anchor client for the proposed development is **Yeast City Housing (YCH)**.

YCH was founded in 1998 as a Section 21 (not for profit) Organisation, under the auspices of the Tshwane Leadership Foundation (TLF) and their primary mission is to facilitate the delivery and management of a balanced portfolio of housing stock in Tshwane that meets the requirements of individuals, with an important emphasis on working with communities and understanding their needs. A secondary aim is to empower individuals through healthy economic and social systems.

YCH already has a pilot project in Salvokop namely the Inkululeko Community Centre (Figure 12) which houses a preschool care centre, homework facility, children's clubs as well as youth and community development forums (Tshwane Leadership Foundation, 2010)

Established initially in August 2000 primarily as a day-care centre, the Inkululeko Community Centre (ICC) has developed



Illustration 6.10: Yeast City Housing logo



Illustration 6.11: The Inkululeko Care Centre in Koch street, Salvokop

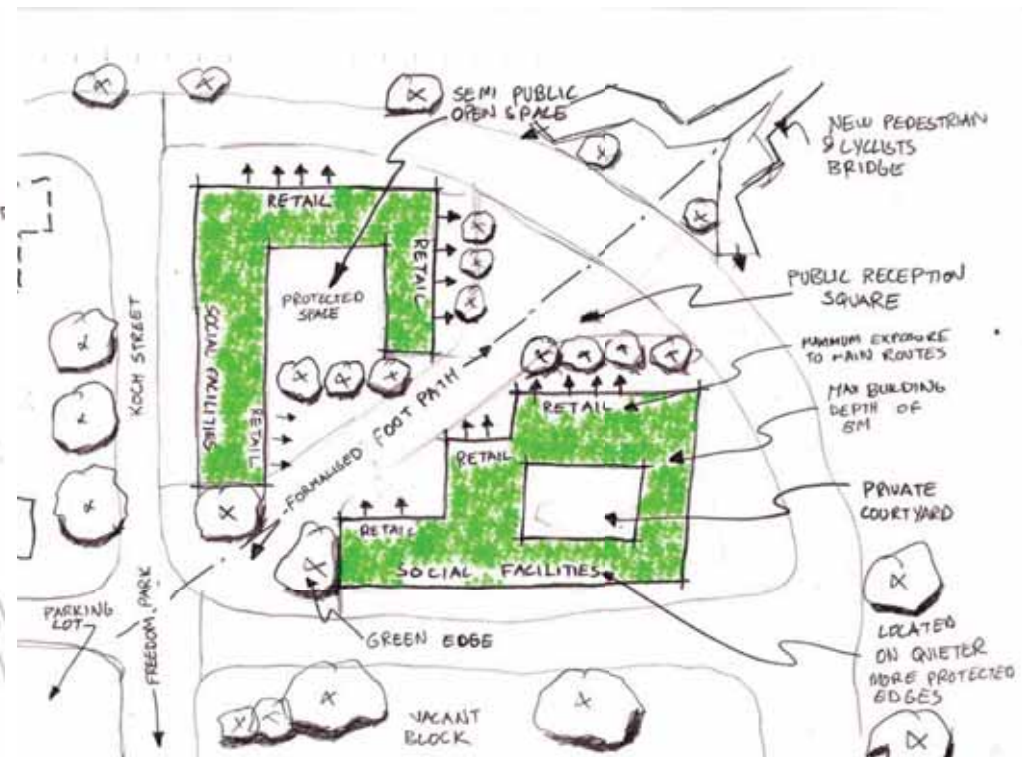
into a facility which caters for a variety of social needs. Childrens' clubs provide children with an opportunity to interact and socialise in a safe environment, and other initiatives develop communities through drama and library facilities. The Centre boasts Salvokop's only swimming pool which is accessible exclusively to the children attending the centre (TLF, 2010). 2005 saw the growth of the centre to include a homework facility for Grade 1-3 learners as well as the provision of extra lessons over weekends for matric candidates. The Centre is an important social development node, also accommodating facilities for community and resident's meetings. The Korpanong Adult Group also meets at the Centre and provides adults the opportunity to discuss issues regarding parental care and HIV/AIDS (TLF, 2010). The multi-functional facility is an example of a holistic social intervention, one of many that have been initiated by the TLF.

A mixed-use development could further empower the TLF to make an even greater positive impact on the lives of Salvokop inhabitants. Situated approximately 100m north of the ICC, the proposed development could form an important network extension, with the centre in providing important social services, focussed around a variety of housing options.

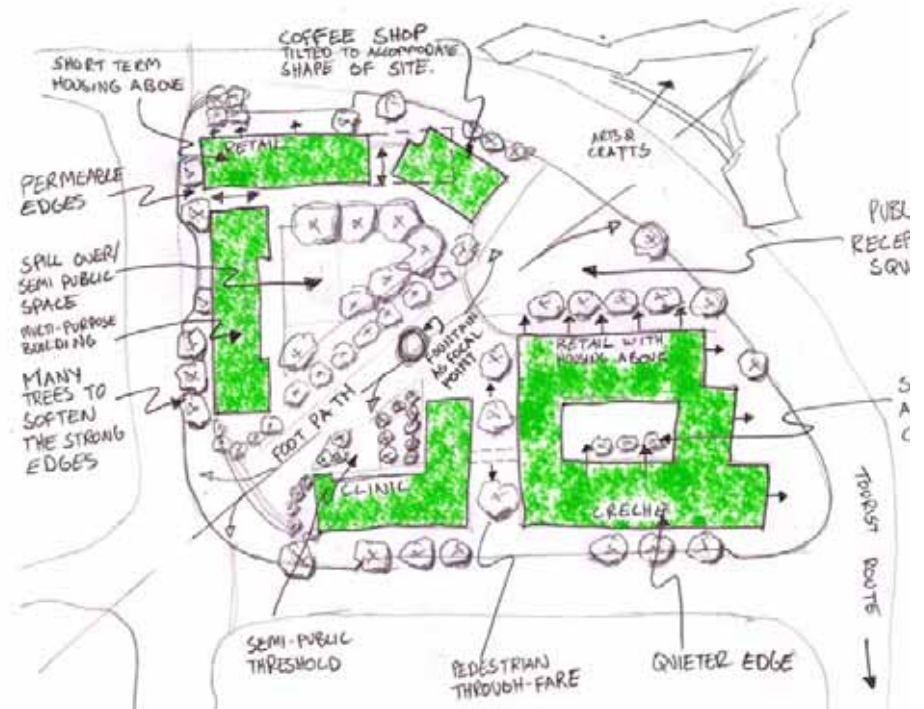


Illustrations 6.12-17: Activities of the Inkululeko Community Centre

Design development



Figures 6.18-21: Development of design with site influences



Public space pedestrian flow

Pedestrian movement is an important design informant in this context. Fast moving pedestrians moving purposefully through the site are accommodated with direct routes across the site. Conversely, users wandering through the development intent on exploring are provided with a variety of options and routes. Many places are also provided for pedestrians to stop and wait, either at the coffee shop or in the shade of one of the many trees.

space heirarchy

The inclusion of facilities that span the spectrum of public to private usage requires the inclusion of a variety of spaces and the clear demarcation of the threshold between them. The pergola proposed as an edge around the majority of building faces adds impact to the formation of intermediate spaces between the public and the private. The variety of routes and positioning of open spaces also contribute to the hierarchy of spaces.



Figure 6.22: Visualised pedestrian routes and possible destinations



Figure 6.23: Hierarchy of spaces

overflow spaces

Due to the favourable climatic conditions in the region, outdoor spaces on ground floor are included as “outside rooms.” These spaces are positioned to allow for a spill-out from either the retail or social facilities. The central green space is particularly important as an overflow for the multi-use facility located on the western edge of the site. This space could potentially accommodate a gazebo for private (closed) functions or less formal public gatherings.

vegetation

The nature of public spaces require that “breathing spaces” be created within the direct pedestrian flows. Vegetation of varying size is introduced on site to create permeable edges to different spaces. The placement of larger deciduous trees on the northern and western façades in particular also assists in shading the interiors during warm summer afternoons. The trees planted around the central green space provide shade for picnics or public functions.

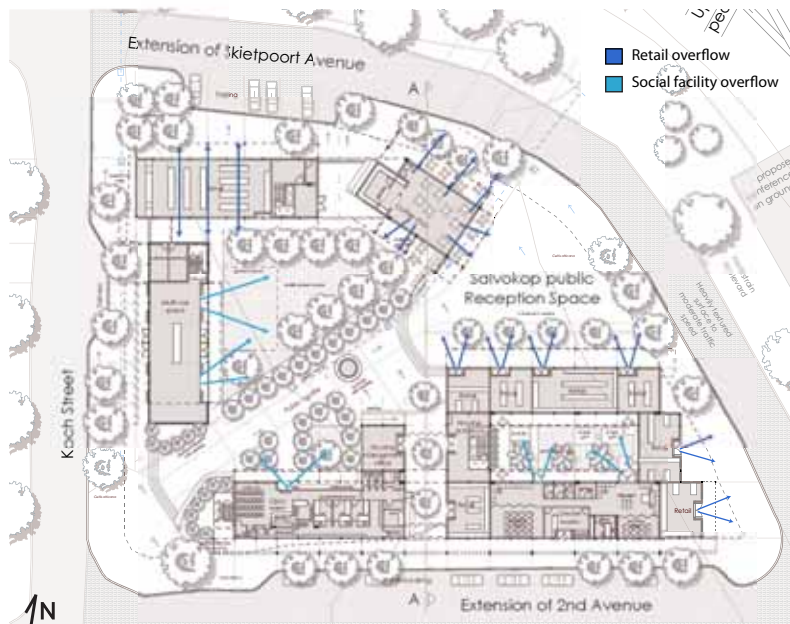


Figure 6.24: Interaction between inside and outside spaces for retail and social facilities

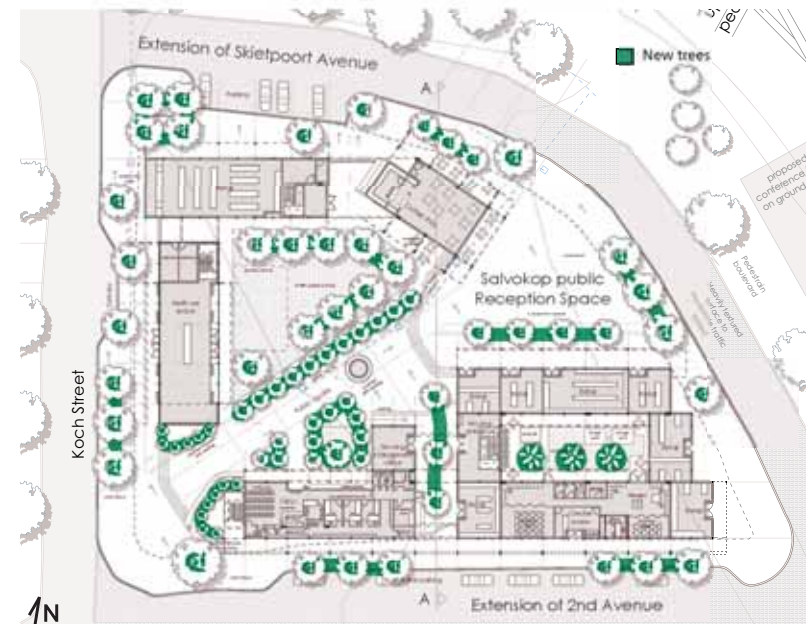
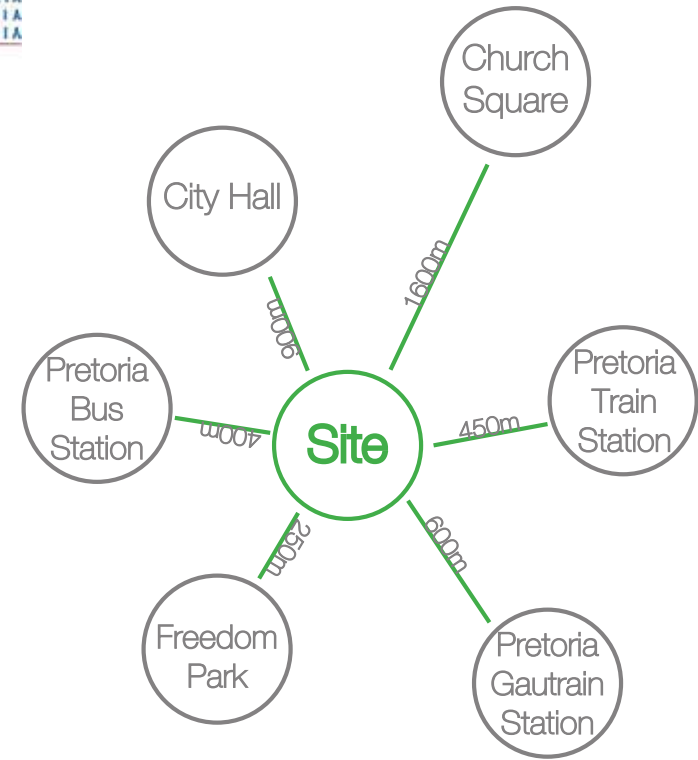


Figure 6.25: Location of new trees to enhance the public space



Influence of guidelines

Once appropriate guidelines have been established and tested against existing precedents they could be applied to a design. Along with requirements and influences imposed by the site, the client and the idea, each guideline influenced the decisions taken in the process of arriving at a final product.

1. Location

The location of Salvokop relative to the city and important transport nodes sets a foundation for a well-positioned development. Residents will easily be able to travel to work in the city and beyond, whilst visitors to the city or surrounding area will just as easily be able to visit the development. By locating a mixed-use development in such close proximity to a transport terminal, the chances of establishing successful and sustainable business operations and the formation of a viable community are also increased.

Figure 6.26 Location relative to important points nearby

Opposite page left to right

Figure 6.27: Different densities across the site

Figure 6.28: The various uses incorporated

- 4 storey (>10.5m)
- 2 storey (4.5-7.5m)
- 3 storey (7.5-10.5m)
- 1 storey (<4.5m)



- Social
- Retail
- Residential (long-term)
- Residential (short-term)
- Restaurant



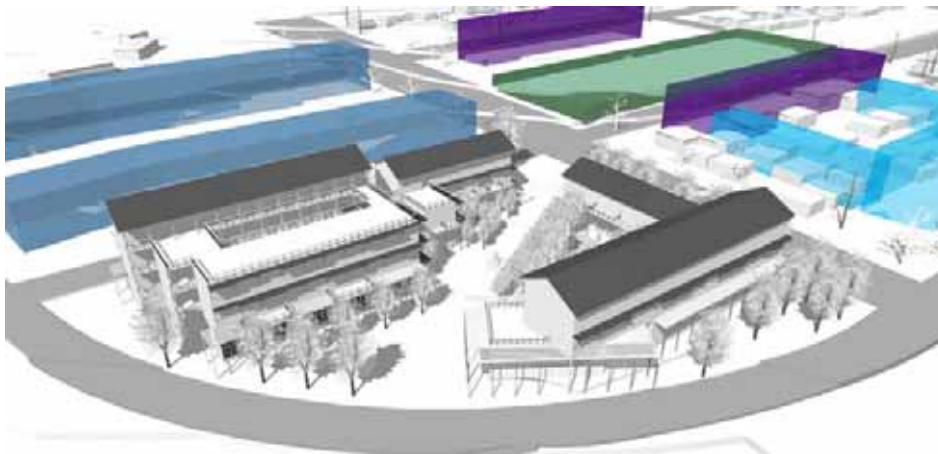
2. Density

The ideal location of the site requires appropriate and effective use of the land. Previously used as an on-grade parking lot, a medium density mixed use residential development of 90 dwelling units/hectare (du/ha) is proposed (Tonkin, 2008 :12). This density appears to be appropriate and will ensure that more users benefit from the site. A higher density was found to be inappropriate and would have required a vastly over-scaled development in comparison to the rest of the suburb which comprises of single storey buildings. Because the site is so strongly disconnected from the Central Business District (CBD) by the railway track virtually no relation with the city centre's taller buildings can be established.

3. Mixed-use

The inclusion of a range of residential, commercial and social facilities ensures a diversity of services to a broader spectrum of users. For many the development will become home, whilst for others it will become an opportunity to establish a business. The range of social facilities also ensures that the development becomes a place of value to the community, to receive health or child care. The greater the diversity of uses the development offers, the wider the range and sources of support and patronage that become available to it.

1st phase
2nd phase
3rd phase
Public green space



retail
housing
creche
clinic

} formed around
existing footpath

4. Long term plan

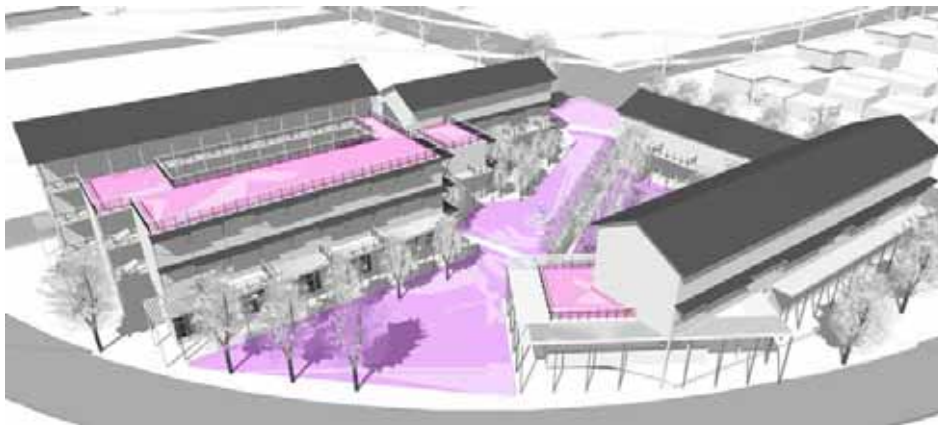
Many developments of this nature can become obsolete due to an inability to expand or change use. The proposed structural system and the manner of this development's layout allow the buildings and spaces surrounding it to be extended easily, to be adapted or simply to be disassembled to accommodate new functions or purposes. This ensures that the entire development is part of a long term solution for the area, for as long as the will to maintain its relevance remains.

5. Immediate needs

When planning developments that include housing it is important to also address the urgent needs of the community and other potential users of the space. The provision of short term housing as well as social facilities such as the crèche and clinic, provides individuals with the essential basic facilities, whilst adding a meeting space and an area for private functions accommodates the needs of the broader community. Public open spaces throughout the proposed development also encourage less formal, but equally necessary use of the site.

Figure 6.29: Framework and proposals of surrounding sites

Public open space
Private open space



Pedestrian routes



6. Communities

The formation of communities cannot be forced, but should rather be provided for. The generous allowance of public space for both commuting pedestrians and less energetic users enables chance encounters and other rendezvous. A coffee shop which overlooks the public square offers locals and visitors a warm reception when returning from or en route to the city. More private spaces intended for use by residents of both blocks create opportunities for social interaction and the formation of stronger communities.

Figure 6.30: Communal spaces

Figure 6.31: Pedestrian routes

7. Pedestrian

Due to the main and most direct connection to the city being the pedestrian bridge, as well as the predominately car-less nature of the suburb, pedestrian travellers must become the priority. The preservation and formalisation of the previously existing footpath, combined with the activation of the edge condition of buildings overlooking the main flow ensures a direct and pleasant experience for all traversing the site on foot. A variety of options and a hierarchy of routes allows a dynamic experience for users, providing an opportunity to decide on a course when en route to their destination or simply exploring.



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA



7 Technical Resolution

Structural systems
Sustainability
Material overview
Materials

The argument related to technical choices made within the architectural solution. The materials and systems employed with the structure are discussed.

Structural systems

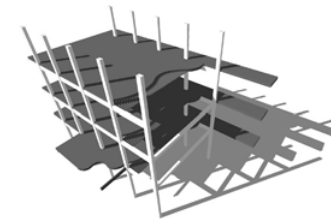
Concrete vs Steel

Concrete and steel were both considered for the structural frame of the buildings, and although concrete is a more cost-effective choice, steel was selected because it is able to span longer distance and can be disassembled and re-used. Steel also matched the intended aesthetic for the development with its lightweight .

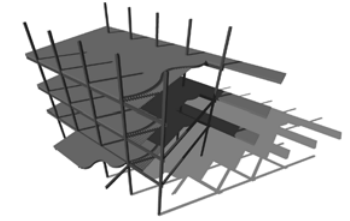
The nature of the separate components (pergolas and roofs) which are attached to the main structure require steel fittings, and although these could also be fixed to a concrete beam or column, the same versatility would not be available, should these fittings have to be removed, extended or adjusted. The challenge of meeting the required fire resistance standards could be solved by the application of intumescent paint to exposed structural steel elements.











Table 7.1: Advantages of using a concrete structure vs steel frame

concrete structure



steel frame structure



cost		
ease of construction		
flexibility		
weight		
span distance		
connection		
disassembly		
intended aesthetic		
fire resistance		
total	4	6

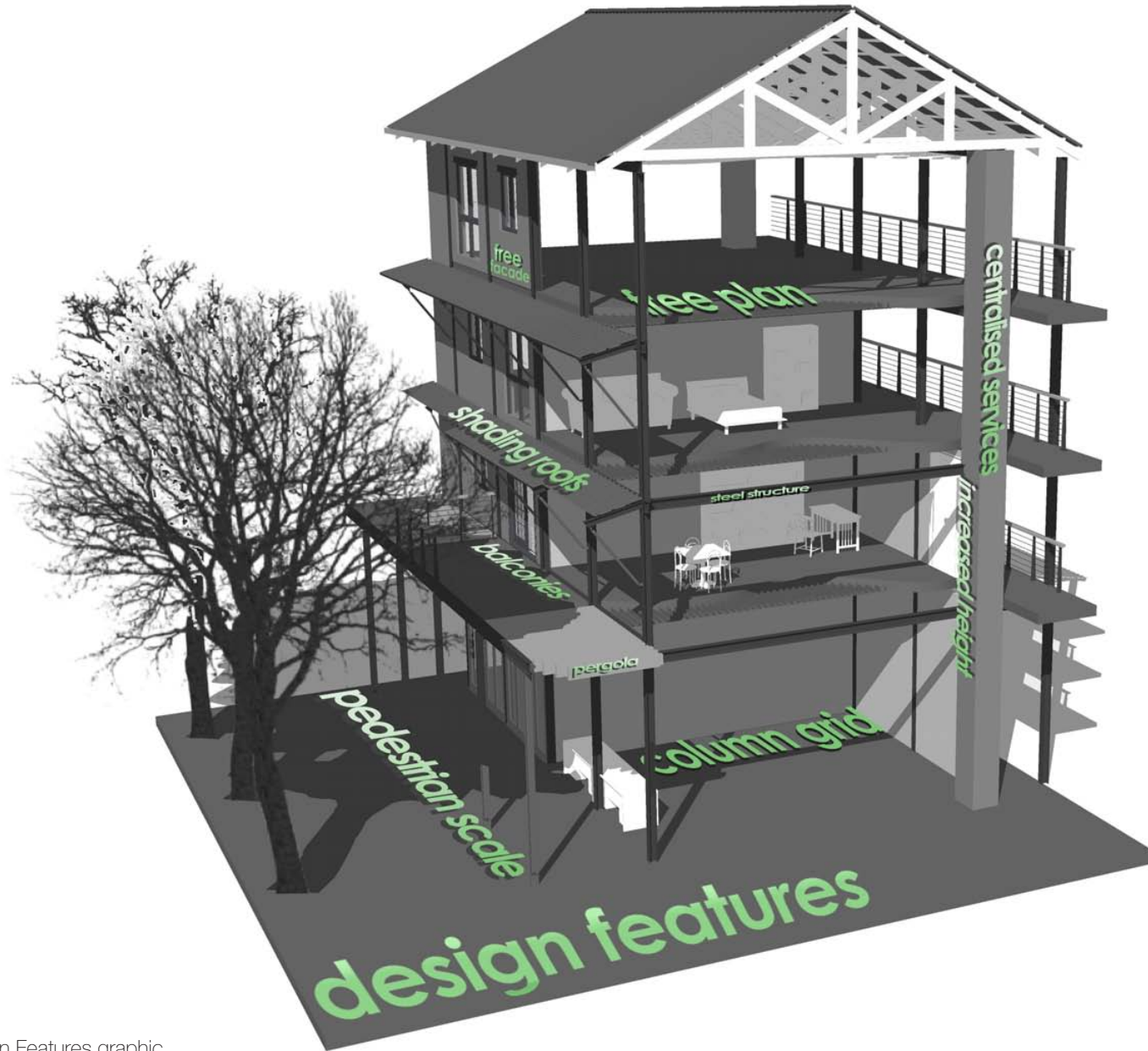


Figure 7.2: Design Features graphic

SUSTAINABLE BUILDING ASSESSMENT TOOL (SBAT-P)

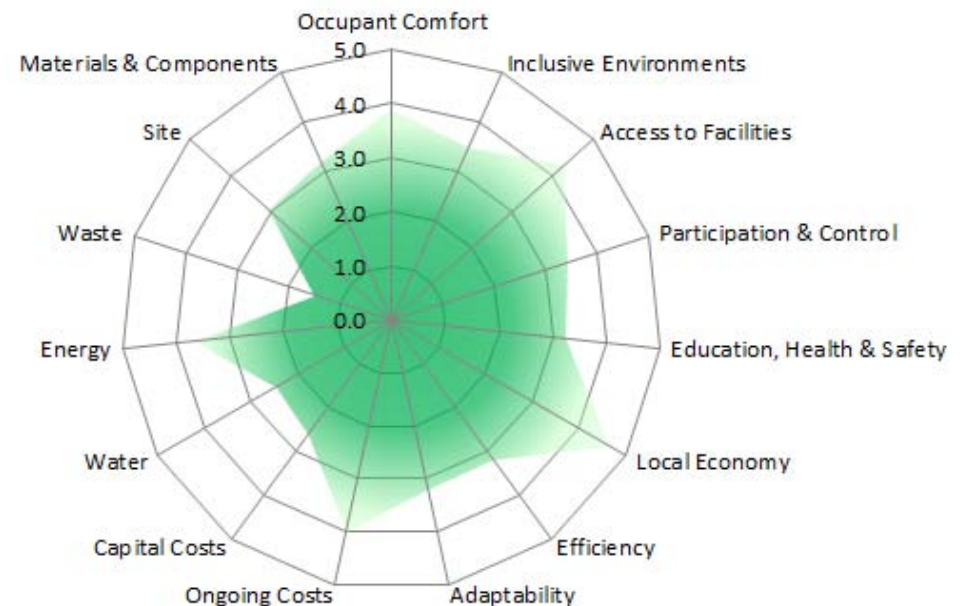
Project title: Germinate: Architecture of Growth Date: October 2011
 Location: c/o Skietpoort Avenue and Koch Street Undertaken by: Author
 Building type: Mixed-use residential

Sustainability

The Sustainable building assessment tool (SBAT) as developed by the CSIR was tool was applied to the design in order to measure the impact on the environment. Application of the tool showed strengths in the social area - particularly in the fields of occupant comfort and access to facilities. This is due largely to the development's central location and its nature as a primarily housing scheme.

Lower scores were recorded in the environmental section showing that the more attention could be given to the development of a recycling system as well as the installation of alternative energy harvesting sources. A retrofitting of these systems is possible and could drastically increase scores in this section. These considerations were initially not applied due to restrictions in budget.

Overall the scheme is classified as GOOD. This supports the aim of establishing a well-blanced development which supports the community. (See Addendum A for full tool).



Social	3.7
Economic	3.5
Environmental	2.8
Overall	3.3

Classification: GOOD

Figure 7.3: SBAT graph



Material overview

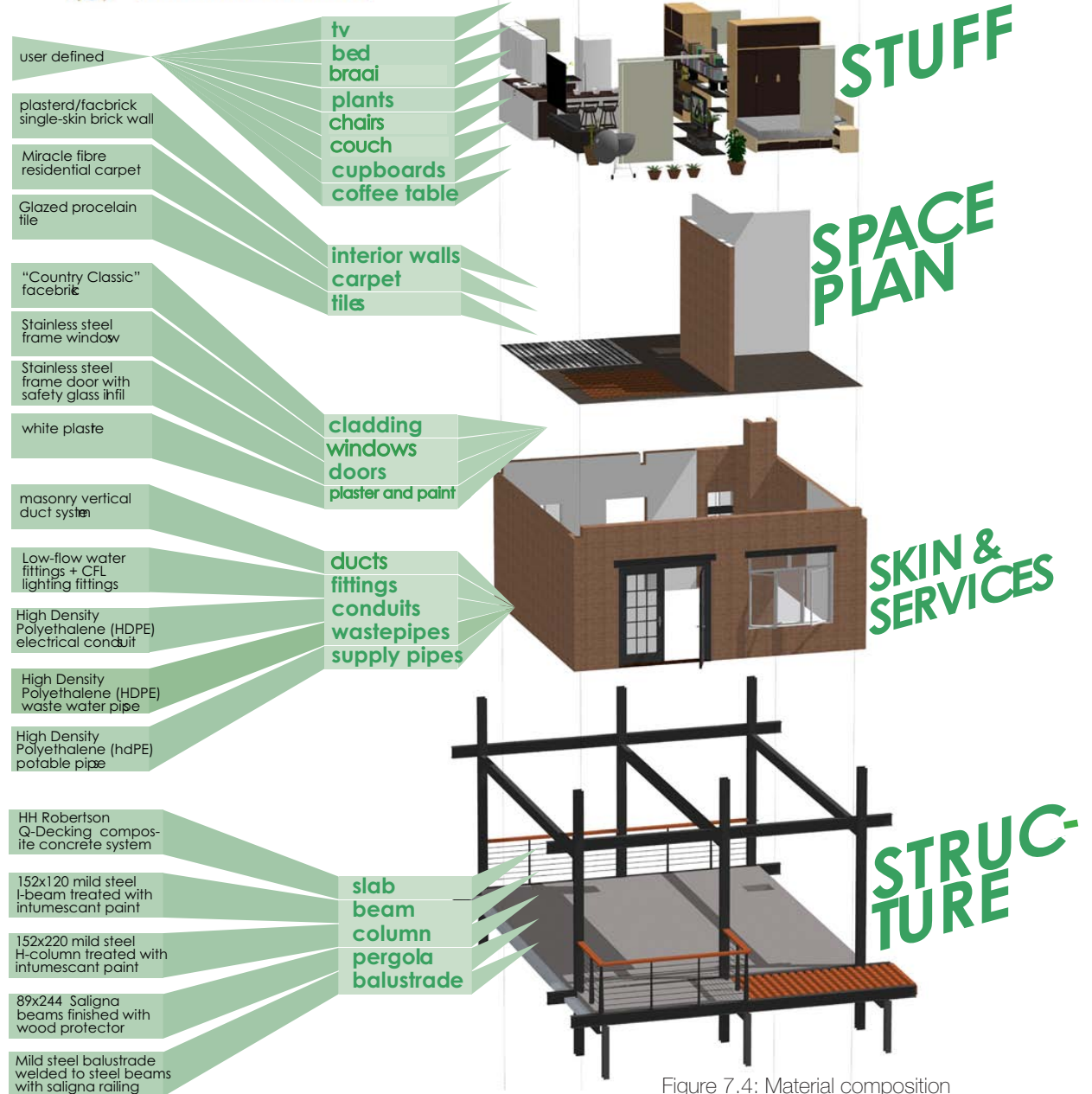


Figure 7.4: Material composition



Materials

Building Skin

For the infill, a combination of white plastered masonry and a red “Country Classic” style face-brick from the Satin Corobrick range was selected. Both materials are represented in many of the existing free-standing dwellings in the area. The natural red or tan colour of the exposed soil in the region also influenced the selection of colour of face-brick for the Freedom Park development and in this case is also a contributing factor in the choice made.



Country Classic Satin FBS





Clockwise from top right

Figure 7.7: Map showing the red/tan colour of exposed earth

Illustration 7.8: View of the Freedom Park building

Illustration 7.9: Typical Salvokop residence with facebrick and plaster combination finish

Opposite page

Illustration 7.5: Plastered wall finished with white paint

Illustration 7.6: Country Classic Satin FBS











Pre-cast slabs vs cast-in-situ

For a floor slab a conventional reinforced slab was deemed unfeasible due to the larger span distances between the supports of the steel frame. A pre-cast concrete slab with a steel reinforced screed topping and a composite cast-in-situ slab with permanent galvanised steel formwork were the two plausible options explored.

In this specific application the composite concrete decking proved more appropriate.

Although not offering the same long-term flexibility, versatility or aesthetic appeal as the pre-cast slabs, the composite slab proved more cost effective and easier to assemble due to the elimination of a need for building cranes. The more accommodating nature of the slab regarding wired services allowed for the elimination of a suspended ceiling. Compatibility of connection with steel was also a considerable positive factor since the galvanised formwork could be easily attached to the steel beams. This connection would be far more complicated and expensive in the case of pre-cast concrete.

Table 7.10: Advantages of using pre-castconcrete slabs vs composite concrete slabs with permanent formwork

	Pre-cast slabs with topping	Composite concrete decking
cost		
ease of construction		
flexibility		
weight		
span distance		
versatility		
compatibility with steel frame		
aesthetic		
services accomodation		
total	4	6

timber pergola

The intermediate edges created by the timber pergola along the edges of the building were important for the design in that they were required to create thresholds between the open public spaces and the solid mass of these buildings.

A Forest Stewardship Council-approved (FSC) South African sustainable hardwood (Saligna), treated with VOC-Compliant water-based nano-particle wood preservative was selected for the pergola. The timber is mechanically attached to the building columns with a bolt system and supported by steel columns to those of the buildings, to create a boulevard. Amenity lighting, installed on ground level to accentuate the vertical elements, completes the component.

The deep beams ensure stability and block out uncomfortable early morning and late afternoon sunlight, whilst allowing an otherwise well lit, refreshing environment. The high volume ensures summer sun is largely blocked whilst winter sun is allowed to fall deep into the ground floor facilities.



Figure 7.11: Computer generated image of timber pergola during summer

Figure 7.12: Computer generated image of timber pergola during winter

Illustration 7.13: Texture of Saligna

Units

The southern block of the development consists mainly of economically sized 1 bedroom and two bedroom units. A single bachelor unit can also be found on each level.

Some of these units are slightly bigger and can accommodate an extra bed or study nook. Each bedroom can accommodate a double bed or twin beds and is fitted with floor to ceiling cupboards. Additional storage space as allowed for in the entrance area. Bathrooms contain a standard on-counter hand wash-basin, a toilet and bath. A full oven and stove as well as a washing basin are installed amongst standard veneered kitchen counter tops with storage space below counter and overhead where appropriate. Lounges can accommodate one or two couches as well as four bar-stools allowing the kitchen counter to double as a breakfast table.

The intent behind the unit design is to provide comfortable spaces which are feasible in the bigger picture of the entire development. Emphasis was placed primarily on the four spaces that are considered as communal (entrance, kitchen, lounge and balcony) and are therefore arranged accordingly. Units are placed with bedrooms and lounges facing towards north wherever possible, unless where this coincided with the public walk-way in which case privacy was prioritised.

1 Bedroom unit

31-39m²
1-3 people
34 units

2 Bedroom unit

47m²
2-5 people
8 units

Bachelor unit

26m²
1-2 people
2 total units

Short-term unit

6.3m²
1 person
48 units



Typical unit



Figure 7.14: Bird's eye perspective view of a typical 1 bedroom unit



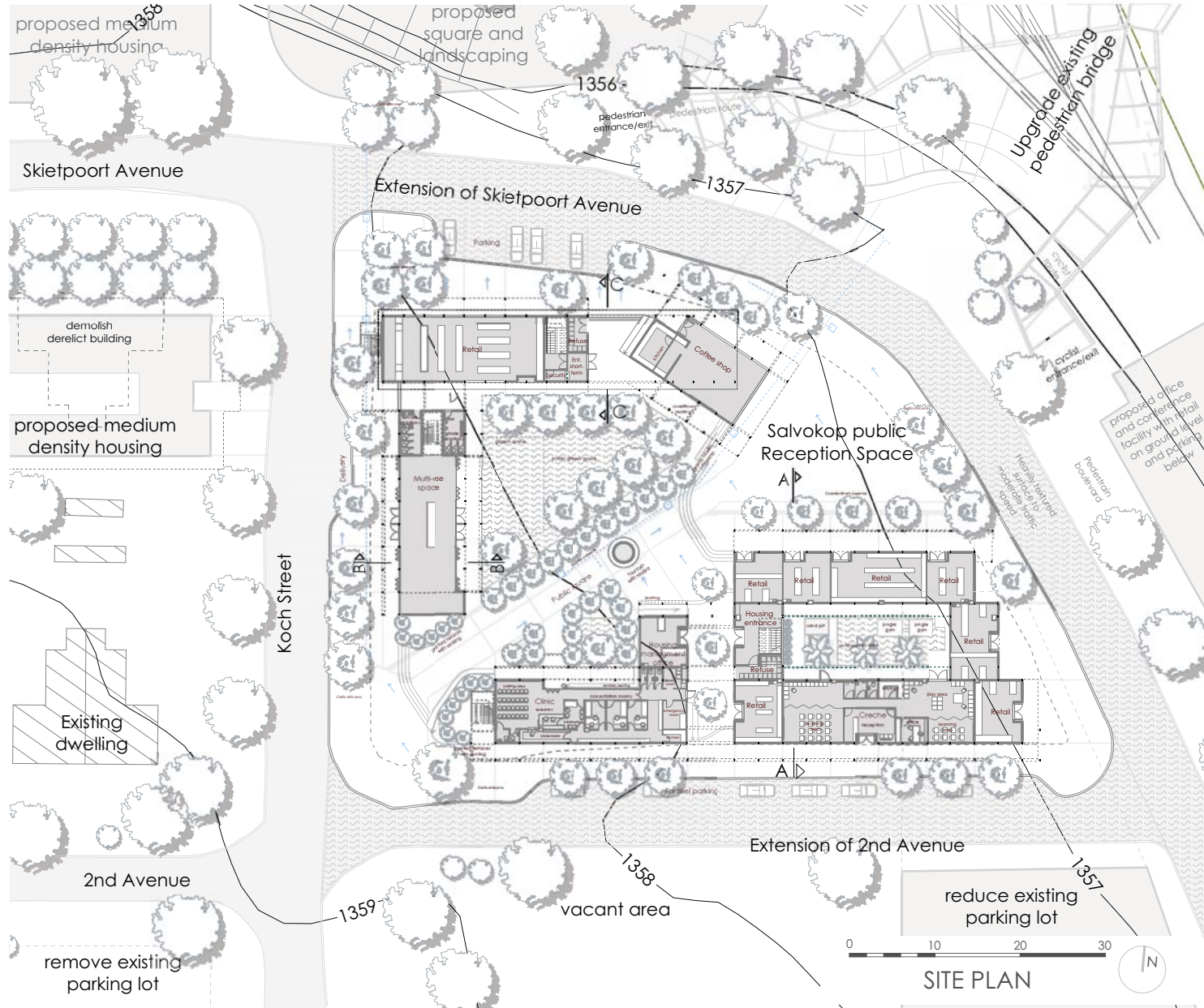
Richard Rogers
"Design is about giving order, scale
and beauty to the buildings and the
space between them"



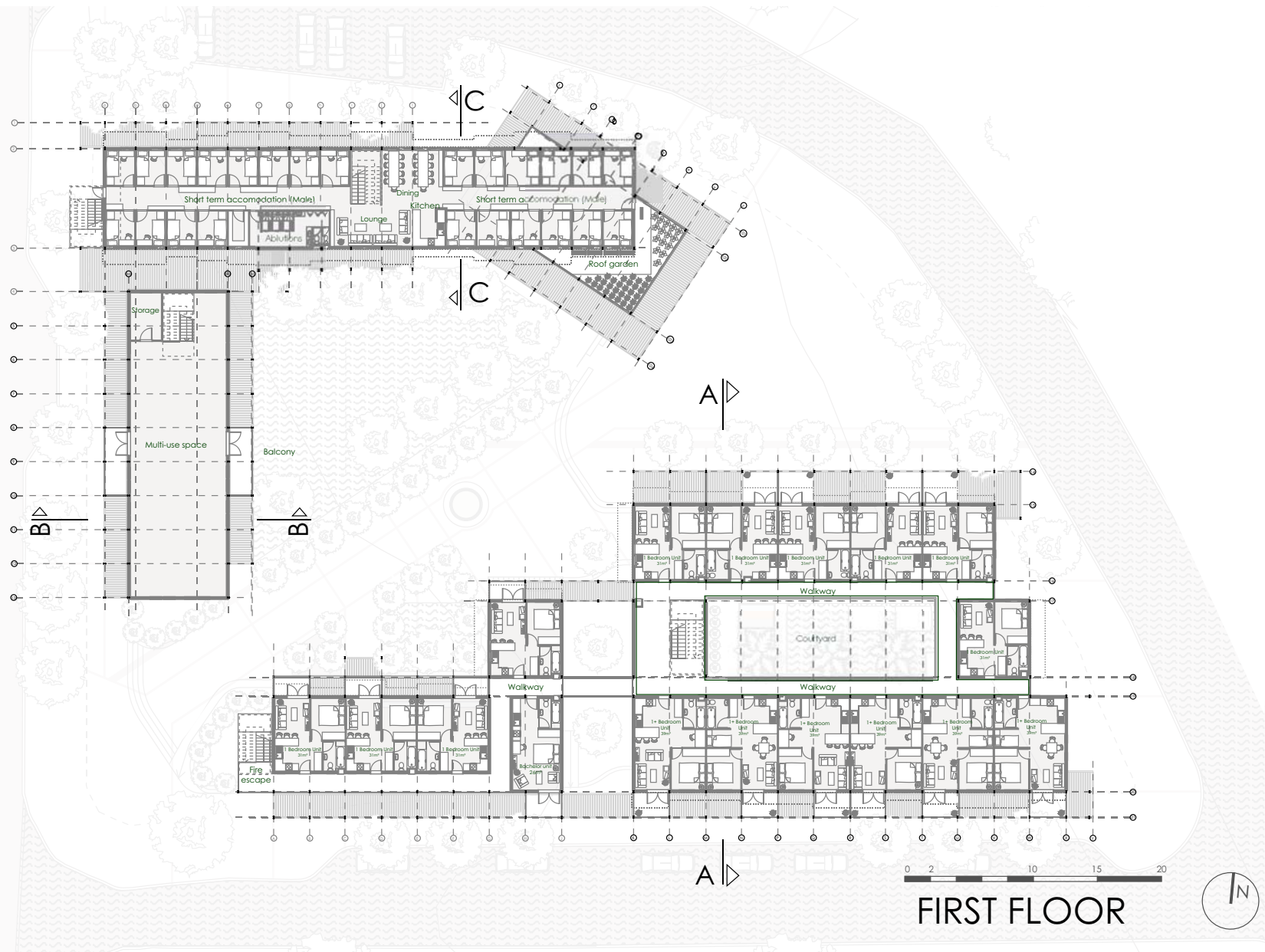
8 Drawings

Sketch plans
Sections
Details
Elevations
Perspectives

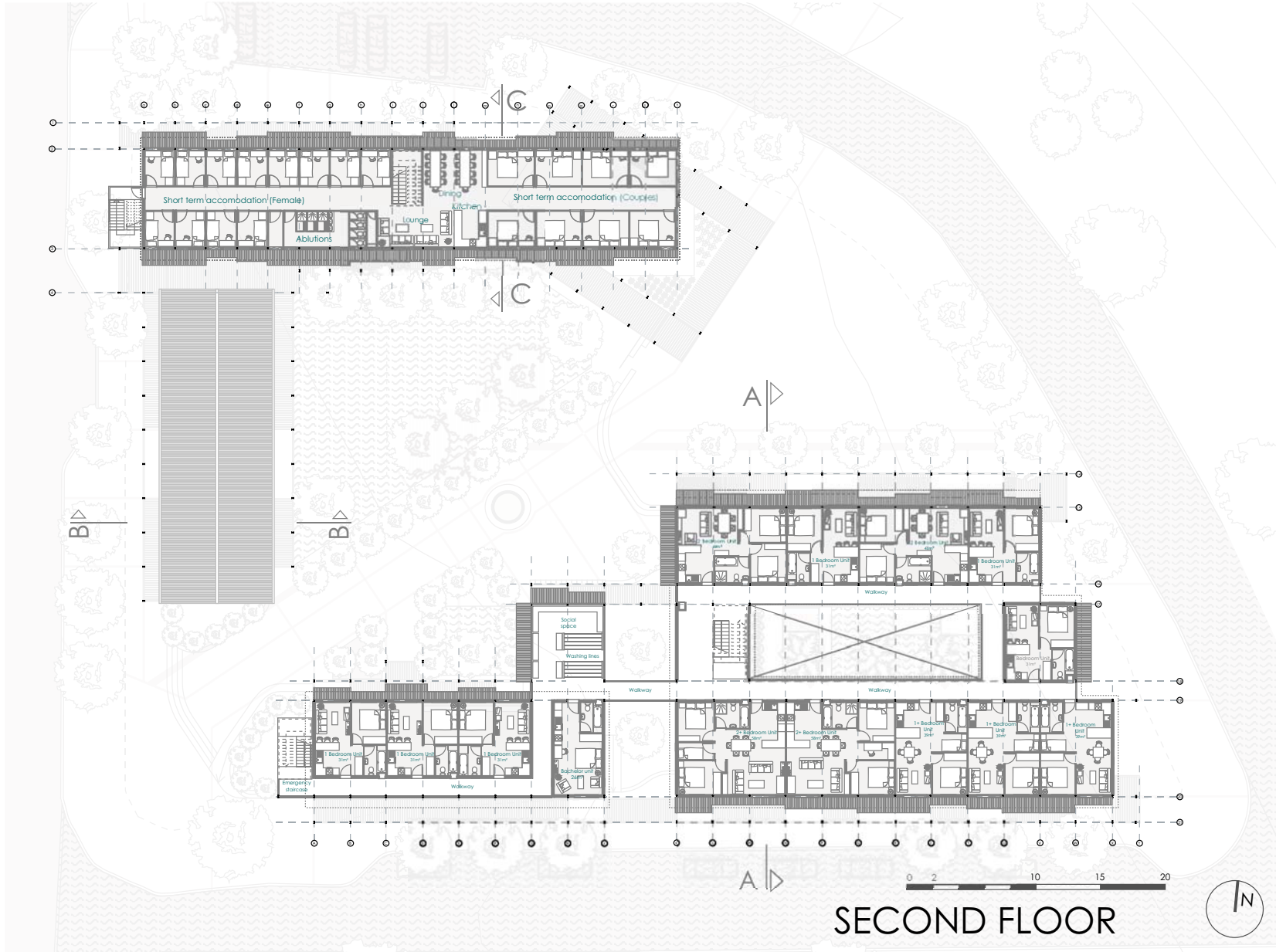
Reduced representations of relevant 2D and 3D drawings which present the building design and the spaces created as a result, details of connections etc.



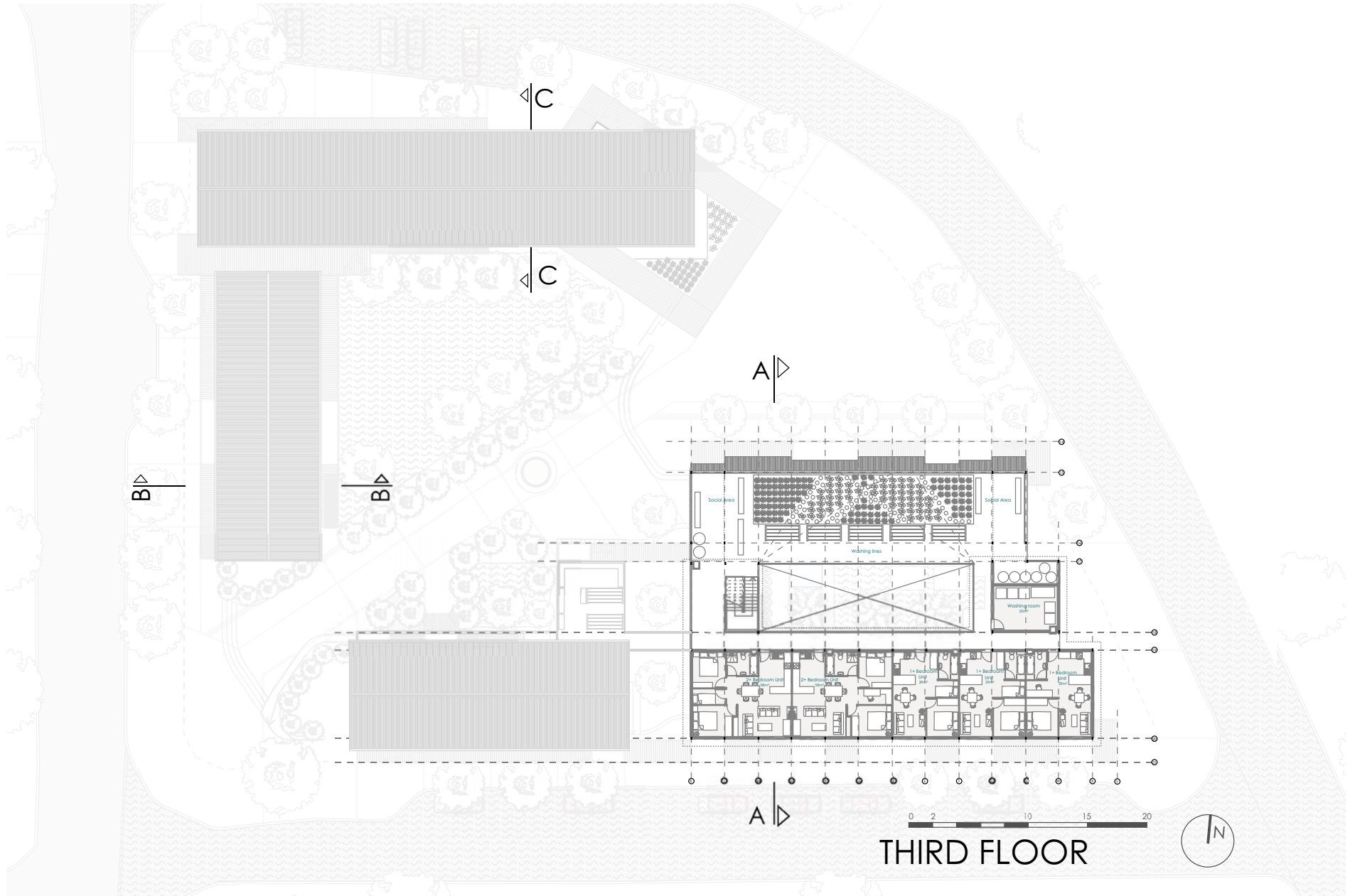
SITE PLAN

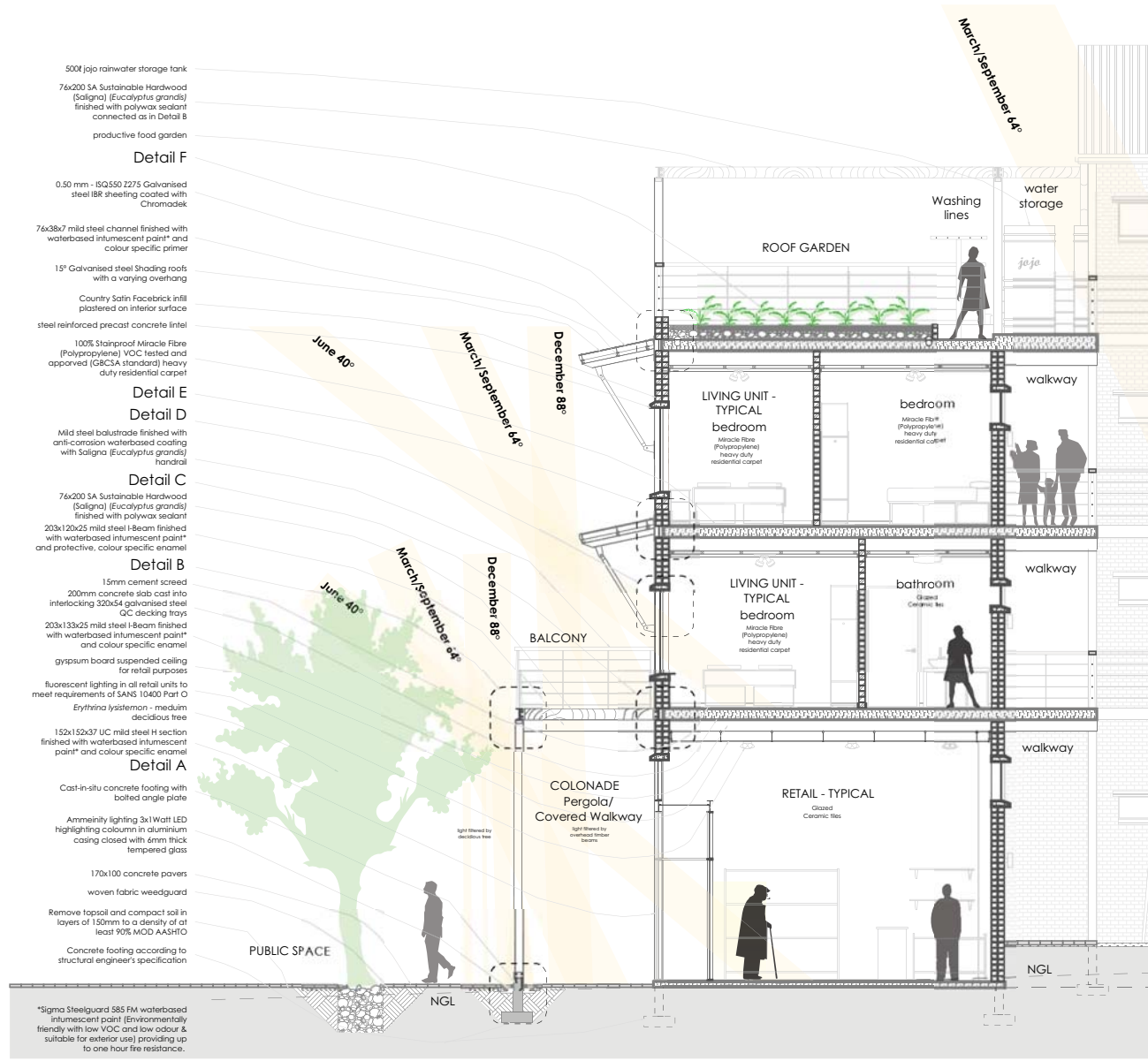


FIRST FLOOR

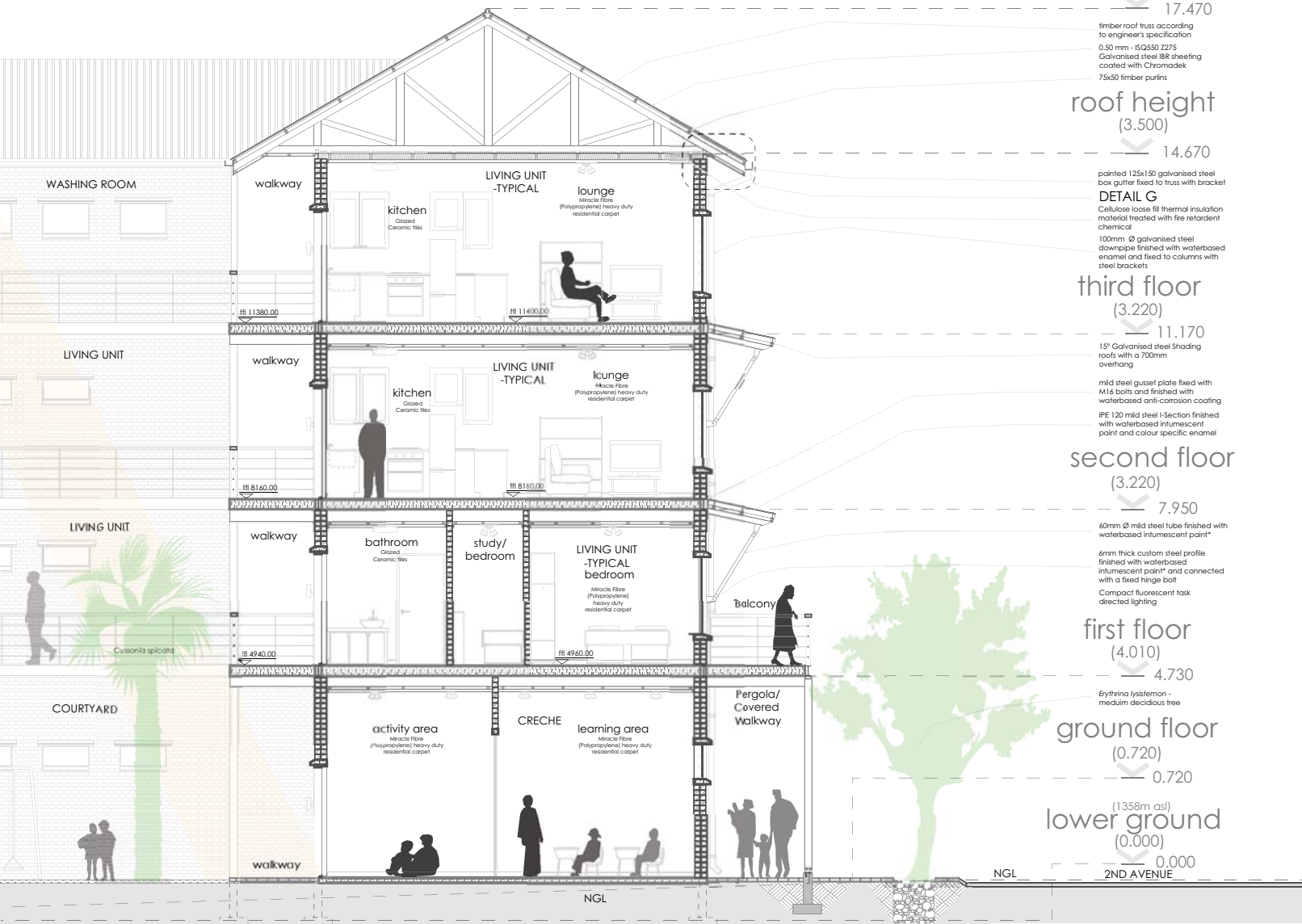


SECOND FLOOR





*Sigma Steelguard 585 FM waterbased intumescent paint (Environmentally friendly with low VOC and low odour & suitable for exterior use) providing up to one hour fire resistance.



top of roof
(2.800)

17.470

- timber roof truss according to engineer's specification
- 0.50 mm - ISQ550 2275 Galvanised steel BR sheeting coated with Chromadek
- 75x50 timber purlins

roof height
(3.500)

14.670

- DETAIL G
- 100mm \varnothing galvanised steel downpipe finished with waterbased enamel and fixed to columns with steel brackets

third floor
(3.220)

11.170

- 15° Galvanised steel Shading roofs with a 700mm overhang
- mild steel gusset plate fixed with M16 bolts and finished with waterbased anti-corrosion coating
- PE 120 mild steel Section finished with waterbased intumescent paint and colour specific enamel

second floor
(3.220)

7.950

- 60mm \varnothing mild steel tube finished with waterbased intumescent paint*
- 6mm thick custom steel profile finished with waterbased intumescent paint* and connected with a fixed hinge bolt
- Compact fluorescent task directed lighting

first floor
(4.010)

4.730

- Erythrina lysistemon - medium deciduous tree

ground floor
(0.720)

0.720

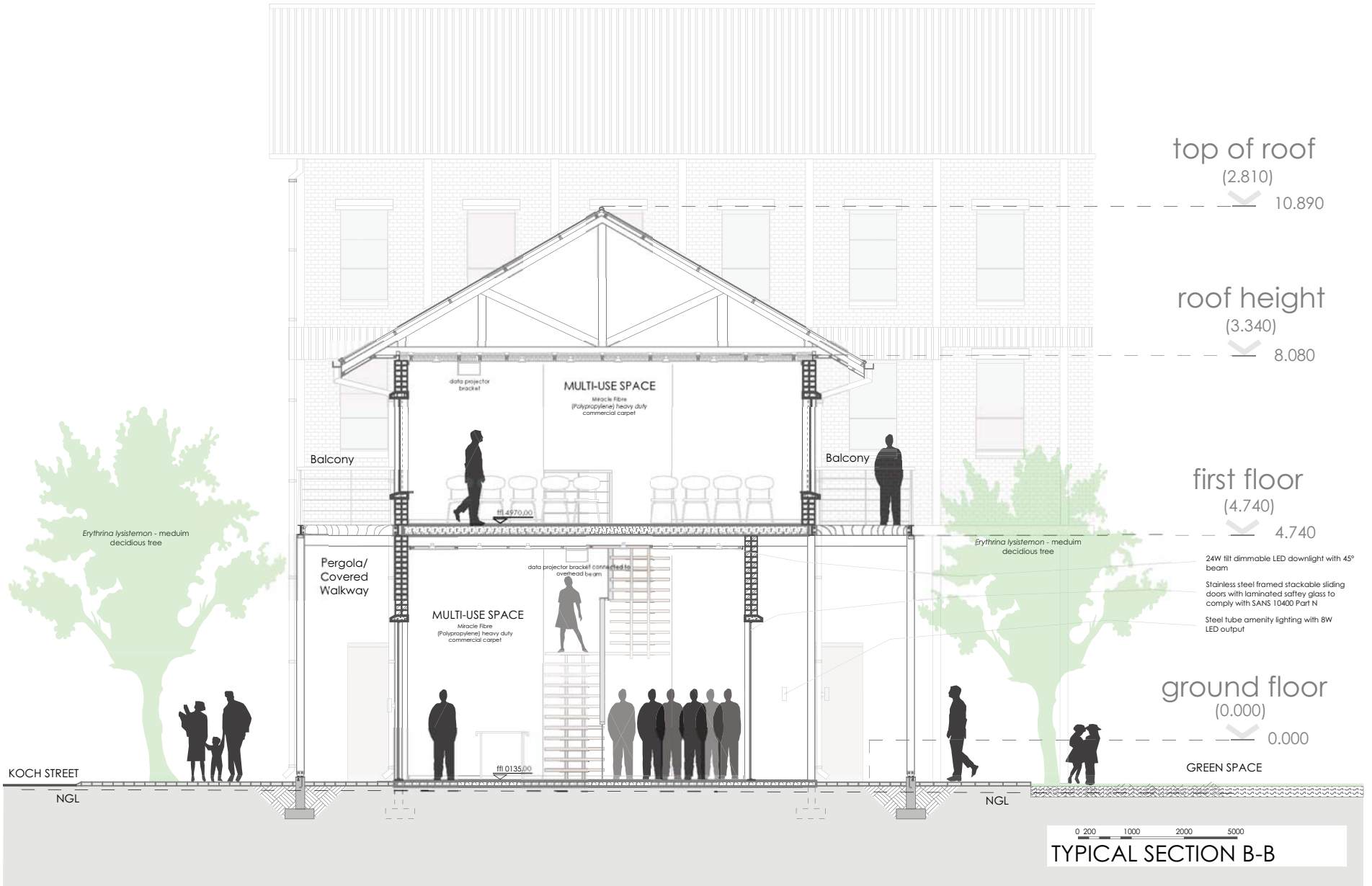
lower ground
(0.000)

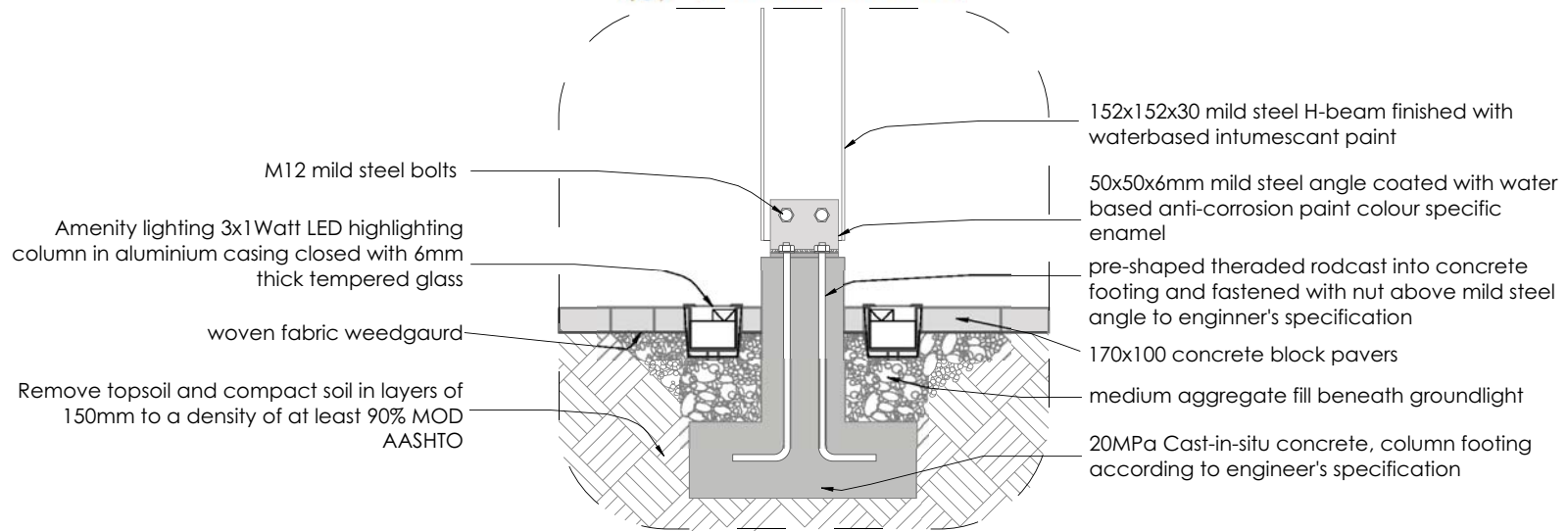
0.000

NGL 2ND AVENUE

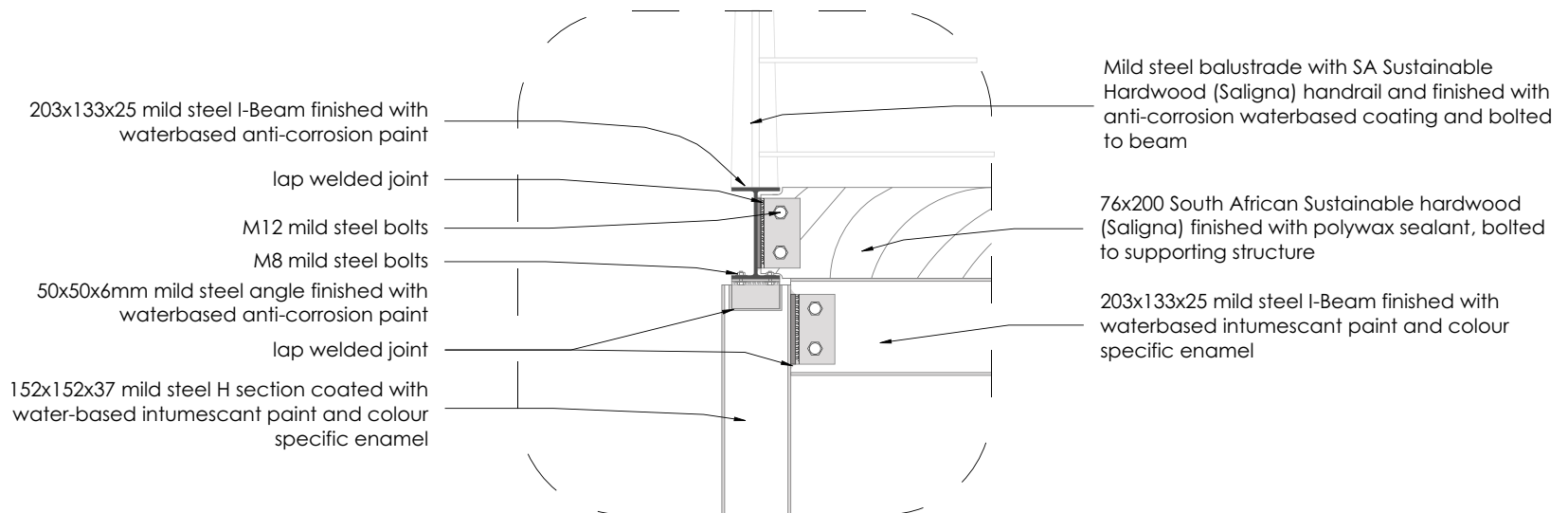
0 200 1000 2000 5000

TYPICAL SECTION A-A 1:50





DETAIL A



DETAIL B



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

top of roof
(2.820)

14.680

roof height
(3.400)

11.860

second floor
(3.400)

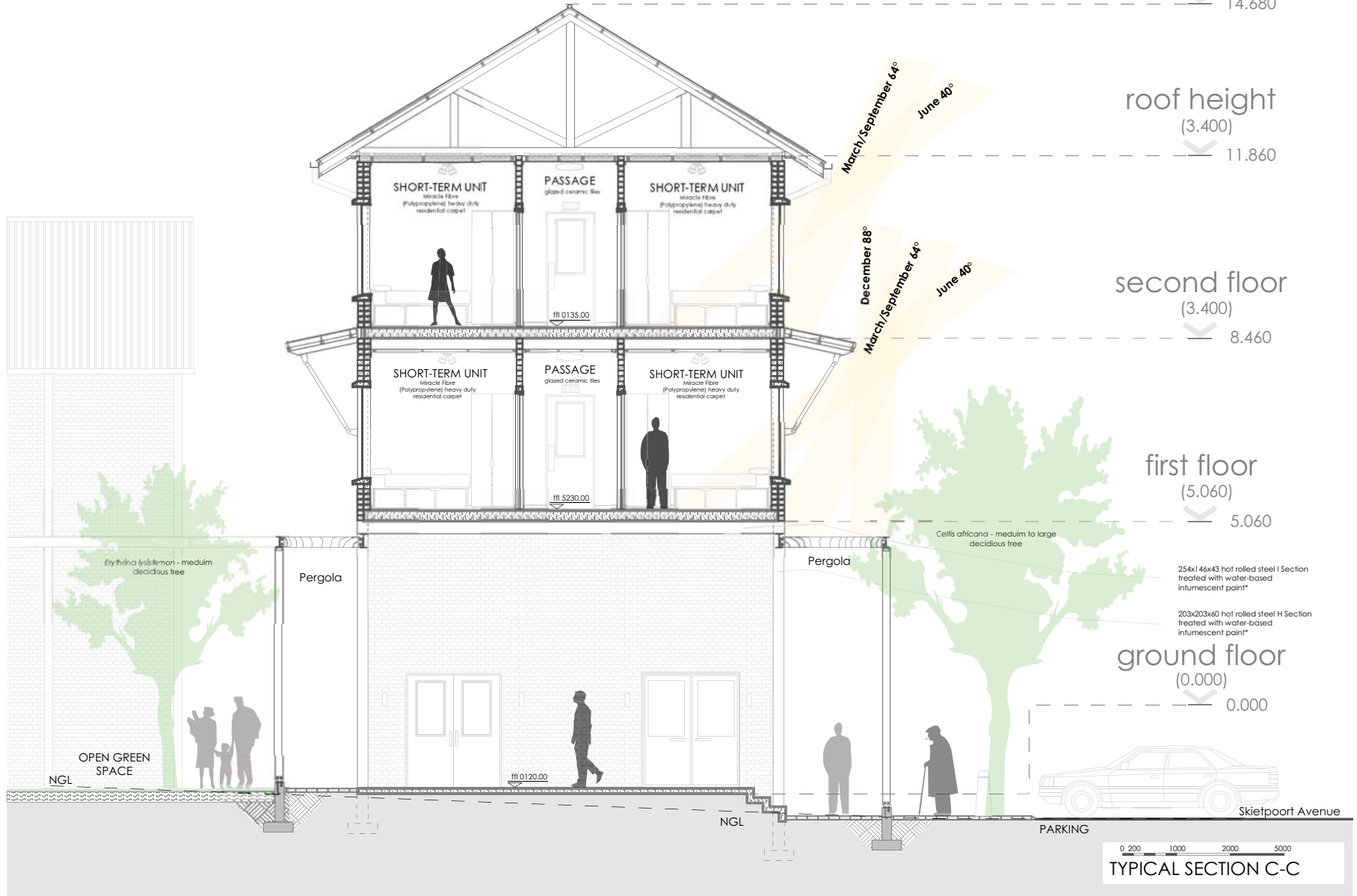
8.460

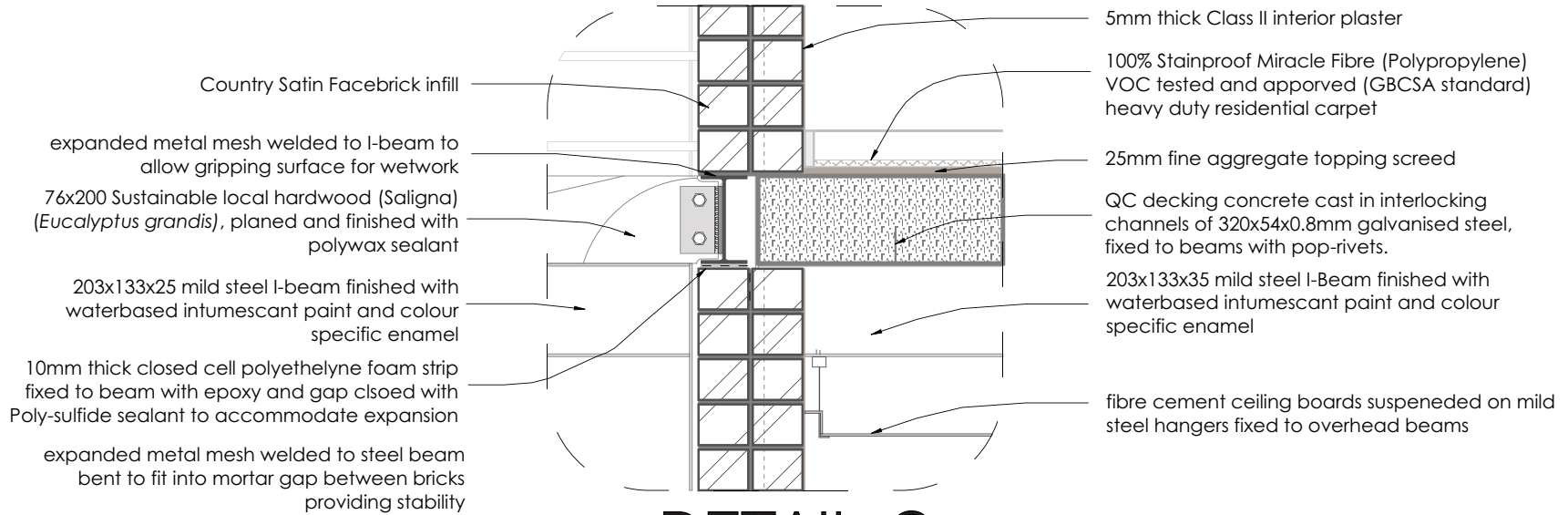
first floor
(5.060)

5.060

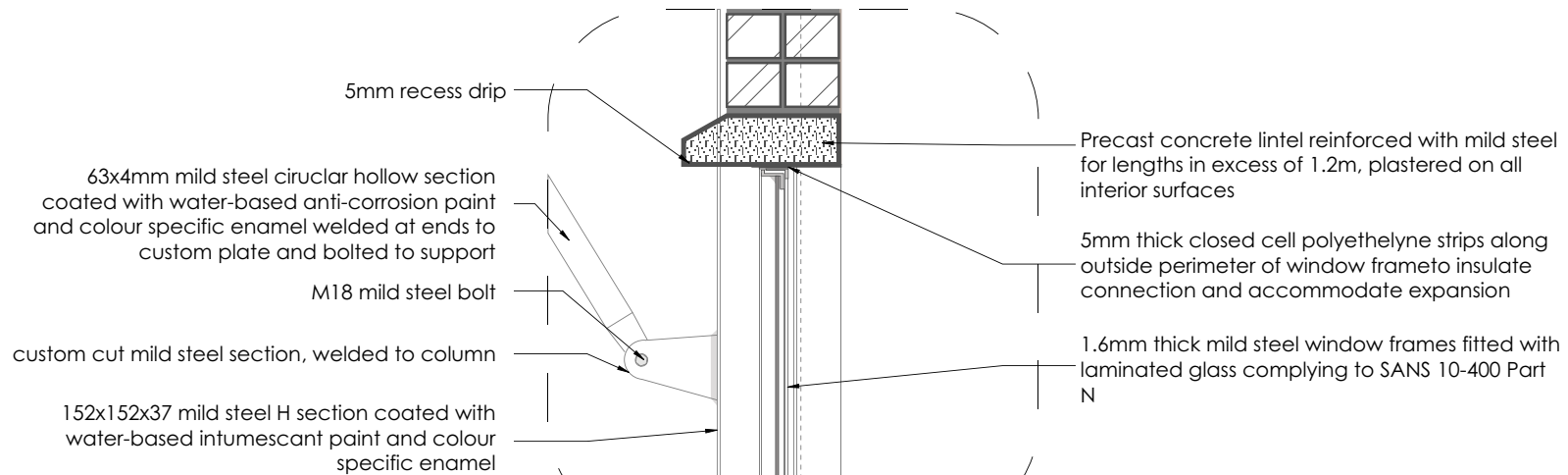
ground floor
(0.000)

0.000





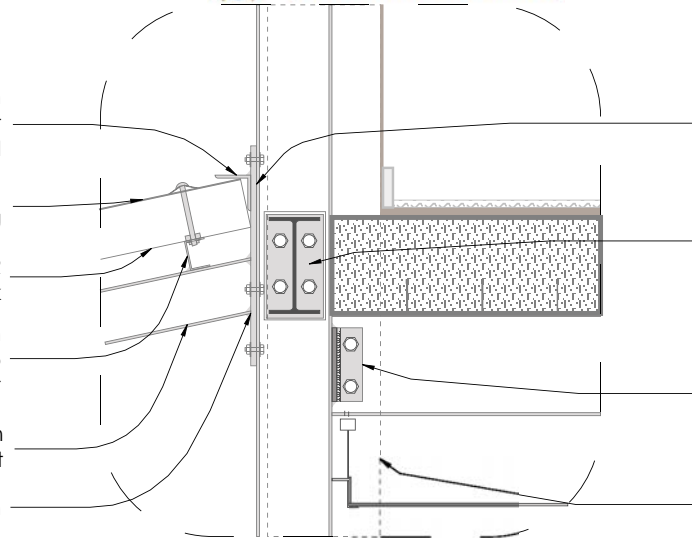
DETAIL C



DETAIL D



- 63x6mm equal sided mild steel angle section finished with water based anti-corrosion paint and fixed with lap joint weld
- 15° Galvanised steel Shading roofs with a 1370mm overhang
- 0.50 mm - ISQ550 Z275 Galvanised steel IBR sheeting coated with Chromadek
- 60x30 mild steel channel finished with waterbased anti-corrosion paint and fixed to beam with lap weld joint
- 100x80 mild steel I beam finished with waterbased anti-corrosion paint
- butt joint welded connection



- 12mm thick mild steel plate finished with water based anti-corrosion paint
- 12mm thick mild steel plate finished with water based anti-corrosion paint, lbutf welded to I-beam and bolted with M12 bolts to H-column
- 6mm L-shaped mild steel section finished with waterbased anti-corrosion paint, welded to H-column and bolted with M12 bolts to I-beam
- facebrick infill

DETAIL E



NORTH ELEVATION



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

20mm topping screed with 20mm overhang on either side

topsoil to minimum depth of 200mm

expanded metal mesh welded to steel beam bent to fit into mortar gap between bricks providing stability

305x165x54 mild steel I-Beam finished with waterbased intumescent paint and colour specific enamel

80mm layer of light coloured, smooth non-absorbent natural stones of 15mm nominal size

double layer of Polymer modified bitumen membrane waterproofing on 40mm minimum thickness screed to fall minimum 1:40 and covered with a geocomposite drainage layer of minimum density of 210g/m²

Stainless steel rain water outlet

80mm Ø HDPE drainage pipe cast into concrete slab at minimum fall of 1:80

DETAIL F



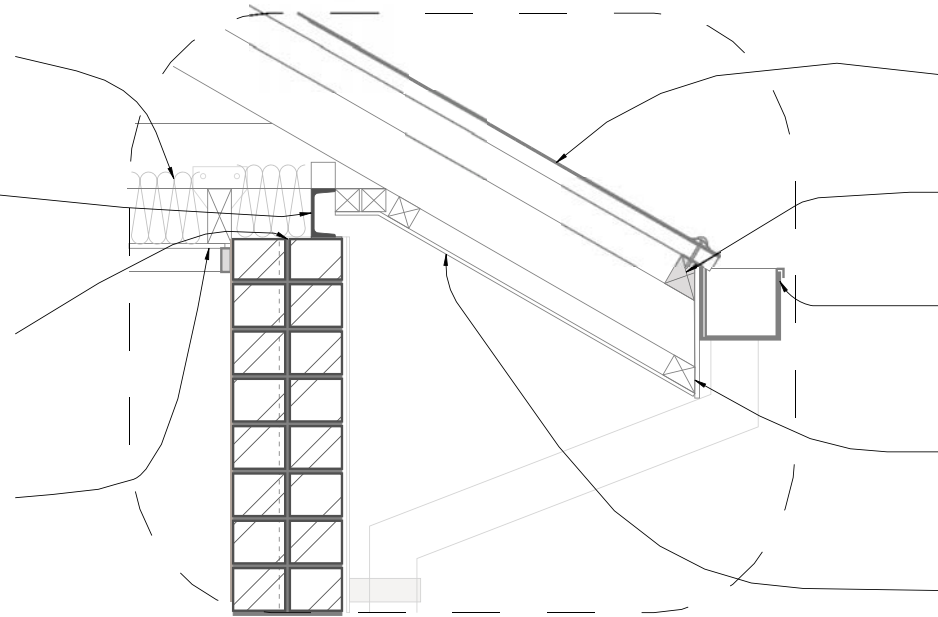


Cellulose loose fill thermal insulation material treated with fire retardant chemical laid to a depth of min 100mm

120x55x12.5 mild steel PFC coated with water-based intumescent paint and colour specific enamel bolted to supporting column with L-shape 10mm thick steel plate

250 long strip of expanded steel mesh bent into L shape and welded to underside of steel roof beam and cast into mortar of brickwall to provide stability.

6mm thick fibre-cement ceiling board nailed to 115x50 timber branderings with 35x4mm diameter galvanised serrated ceiling nails at 150mm centres



1mm IBR hot-dip galvanised mild steel roof sheeting fixed to purlins with 6mm diameter 65mm galvanised steel roof screws with galvanised steel and neoprene flanged washers

50x75 timber purlins at max spacing of 1200mm nailed to timber rafter

200x150 deep 0.8mm thick continuous hot-dip zinc-coated carbon steel sheet gutter laid at 1:500 fall onto 40x5 galvanised mild steel brackets which are fixed to timber roof purlins at max 1000mm centres

15mm flat pressed fibre-cement fascia board drilled and fastened with countersunk 5mm diameter x 50mm cadium plated screws at max 750mm centres

10mm thick flat unpressed fibre-cement eaves enclosure nailed to 50x50 timber branderings which are nailed to timber rafters

DETAIL G



BRIDGE ARRIVAL ELEVATION

Illustration 8.1-2 Computer rendered perspectives of the exterior



VIEW OF RETAIL EDGE



COFFEE SHOP AND SQUARE



WEST ELEVATION



AERIAL VIEW



BALCONIES AND ROOFS ON THE NORTHERN FACADE

Opposite page

Illustration 8.3 Computer rendered perspective of the exterior

Top to bottom

Illustration 8.4 Computer rendered perspective of the exterior

Illustration 8.5-6 Computer rendered perspectives of a one bedroom living unit



INTERIOR PERSPECTIVE OF A LIVING UNIT



INTERIOR PERSPECTIVE OF A LIVING UNIT



LIVING UNIT WITH BALCONY

Illustration 8.7 Computer rendered perspective of a one bedroom living unit from the north



MODEL PHOTOS

Illustration 8.8-12 Photographs of the final model



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

140

Germinate - Architecture of Growth



+ Addendums

- Bibliography
- List of Tables
- List of Illustrations
- List of Figures
- Addendum A - SBAT
- Addendum B - Horizontal texture study

Bibliography

- AFRICAW, 2011, Major problems facing South Africa today, <http://www.africaw.com/major-problems-facing-south-africa-today>, accessed 4 October 2011
- ARCHITECTUURSTUDIO HH, Rotterdammerstrasse housing, Source http://www.ahh.nl/index_en.html, accessed 23 September 2011
- COROBRIK, 2009, Country Classic Satin, http://www.corobrik.co.za/Country_Classic_Satin_FBS, accessed 21 September 2011
- CHIBA, 2003, **The Japan Architect**, Projects of Collective Housing, Shinkenchiku-Sha, 2003
- DE JONG. R, 2003, Salvokop Heritage Audit, Cultmartix CC
- DEWAR. D, 1998, Settlements, change and planning in South Africa since 1994. In **blank__ Architecture, apartheid and after**, David Philip Publishers
- DEWAR. D & LOUW. P, 2008, The urban design and planning work of Louw and Dewar, **Architecture SA**, September/October 2008, p18-23
- DEWAR. D & UITENBOOGAARDT. R, 1991, **South African Cities: A Manifesto for Change**, University of Cape Town: Urban Problems Research Unit
- DOMUS, 2004, Steven Holl. Eight Towers and a Flying Ring, **Domus**, December 2004, <http://www.domusweb.it/en/architecture/steven-holl-eight-towers-and-a-flying-ring/> Accessed: 4 October 2011
- DU PLESSIS C, IRURAH D & SCHOLES R, 2003, The built environment and climate change in South Africa, *Building Research & Information*, 31: 3, 240 — 256
- DU PLESSIS. C, and LANDMAN. K, 2002 A Sustainability Analysis of Human Settlements in South Africa. Publication No. BOU C368, CSIR, Pretoria
- FERREL. OC, 2008, **Marketing Strategies**, Mason: Thomson South-Western
- HABRAKEN NJ, 1972, **Supports: An alternative to mass housing**, translated by B. Valkenburg, 2nd ed, UK: Urban International Press
- HAMDI N, 2004, **Small Change**, UK: Earthscan
- HOUSING IN SOUTHERN AFRICA, New Technology for housing, October 2010
- HUMAN SCIENCES RESEARCH COUNCIL, 1996 Socio-economic Atlas for South Africa. Pretoria: HRSC Publishers
- HUNGER NOTES, 2011, 2011 World Hunger and Poverty Facts

- and Statistics, <http://www.worldhunger.org/articles/Learn/world%20hunger%20facts%202002.htm>, accessed: 4 October 2011
- JONES LANG LASALLE, 2011, City Sketch, http://www.us.am.joneslanglasalle.com/SiteCollectionImages/city_sketch.jpg, Accessed May 2011
- LEVY. RM, 1998, The Visualisation of the street. In **Images of the street: planning, identity and control in public space**, Edited by NR Fyfe, New York: Routledge, p59-27
- LEWIS et al, 2005, **Front to Back: A design agenda for Urban Housing**, Oxford: Elsevier
- OSMAN. A, 2007, Study notes from ONT 300 lecture on "Social Housing" in May 2007
- OSMAN, A & LEMMER, C. 2002. Architecture and housing: changing perceptions in the new South Africa. The case of Pretoria University in Housing construction, an interdisciplinary task. XXX IAHS World Congress on Housing. Vol1. Coimbra
- PROTEA TIMBERS, 2011, Species photographs, <http://www.protea-timbers.co.za/samples.htm>, accessed 4 October 2011
- RAITH. F & VAN GOOL. R, 1998, Residential Complex at Duren, Germany, **Domus**, April 1998, pages 18-28
- SLESSOR. C, 2010, Buildings - 169, **Architectural Review**, October 2010, pages 68-75
- SLESSOR. C, 2011, Buildings - 218, **Architectural Review**, April 2011, Volume 229, Issue 1337, pages 54-61
- SOUTH AFRICA, 2004, Breaking New Ground Policy
- SOUTH AFRICA, 2010, National Climate Change Response Green paper
- SOUTH AFRICA, 1996, Constitution of the Republic of South Africa, as ammended in 2009
- SOUTH AFRICA GOVERNMENT INFOMATION, 2011, Gauteng's crime prevention strategies begin to bear fruit, <http://www.info.gov.za/speech/DynamicAction?pageid=461&sid=21494&tid=42506>, accessed: 4 October 2011
- SPECIFILE, 2010, Clay face bricks selected for hapo at Freedom Park, http://www.specifile.co.za/Specifier/index.php?option=com_content&view=article&id=507:clay-face-bricks-selected-for-hapo-at-freedom-park&catid=1:news-now&Itemid=64, accessed: 21 September 2011

- STATISTICS SOUTH AFRICA, 2007, Community Survey, Basic Results: Municipalities, www.statssa.gov.za accessed on 18 April 2011
- SHIFT, 2010, History of Social Housing Internationally and in South Africa, http://www.shf.org.za/downloads/shftoolkit/Documents/small_First%20Document-Drop%20Down%20Box%202.pdf, Accessed: 13 April 2011
- STEVEN HOLL ARCHITECTS, 2009, Linked Hybrid, <http://www.stevenholl.com/project-detail.php?type=housing&id=58&page=0>, accessed 4 October 2011
- TORONTO NEIGHBOURHOODS, 2011, St James Town, http://www.torontoneighbourhoods.net/regions/toronto_downtown/28.htm accessed: May 2011
- TSELA TSHWEU DESIGN TEAM, 2010, Faster Harder Smarter: Working towards a shared vision for human(e) settlements
- TSHWANE LEADERSHIP FOUNDATION, 2010, Inkululeko Community Centre, <http://www.tlf.org.za/icc.htm>, Accessed: 4 May 2011
- TONKIN. A, 2008, **Sustainable medium-density housing**, Cape Town: Development Action Group.
- UNITED NATIONS, 2005, Population Challenges and Development Goals, New York: Litho in United Nations

List of Tables

- 5.2 Testing of guidelines against precedents, by Author
- 7.1 Advantages of using a concrete structure vs steel frame, by Author
- 7.10 Advantages of using pre-castconcrete slabs vs composite concrete slabs with permanent formwork, drawn by Author

List of Illustrations

- 2.1-5 Maps of various scales, sourced from www.worldatlas.com, accessed April 2011
- 2.6 Figure Ground map of Pretoria, Electronic copy accessed, March 2011
- 2.7 The station building with Time-Ball hill in the background to the left electronic folder, K Bakker, accessed March 2011
- 2.8 The first NZASM houses with the station in the background, electronic folder, K Bakker, accessed March 2011
- 2.9 Aerial view of the new Pretoria Railway Station, electronic folder, K Bakker, accessed March 2011
- 2.10 The row-houses of the "White" railway camp, electronic folder, K Bakker, accessed March 2011
- 2.11 The Proposed GAPP framework for Salvokop, 2003, electronic folder, K Bakker, accessed March 2011
- 2.12 The proposed Intersite Terminal with Salvokop in the left foreground, 2008, electronic folder, K Bakker, accessed March 2011
- 2.13 The Pretoria Station shortly after the blaze that destroyed in the roof in 2001. electronic folder, K Bakker, accessed March 2011
- 2.23-30 Site photos by Author
- 2.31 Panorama compiled by Author with site photos by Author
- 2.32-34 Photos of street furniture, by Author
- 3.1 City Scale, Source: http://www.us.am.joneslanglasalle.com/SiteCollectionImages/city_sketch.jpg, Accessed May 2011
- 3.2 Precinct Scale, Source: http://www.torontoneighbourhoods.net/regions/toronto_downtown/28.html, accessed May 2011
- 3.3 Unit Scale, Source: http://fyishowcase.com/blog/wp-content/uploads/2010/11/Regent-sketch_27.gif, accessed May 2011
- 5.3 The inconspicuous facade of the TAU building with shops opening up onto the street, by Author
- 5.4 The quiet green spaces at the back of the lot provides a peaceful breathing space in the city, by Author
- 5.6 Computer render showing unit interior, Roos Architects
- 5.10 View of the central courtyard space with parking and childrens' play area, with the nine-storey tower block in the background, by Author
- 5.11 Interface of the shop component of the live-work units along the sidewalk, by Author
- 5.13 Deserted courtyard spaces in-between housing blocks originally planned for landscaping, by Author
- 5.14 Units have a combination of access from inside and outside the courtyard, by Author
- 5.15 Courtyards are generally darker and used primarily used as clothing hanging space, by Author
- 5.16 The extensive installation of satellite dishes indicates the more middle class (as opposed to lower-class) parts of the development, by Author
- 5.17 Narrow roads between blocks allow for the circulation of vehicles but miss the opportunity to provide pleasant landscaped strips, by Author
- 5.19 A view of the entrance from the street, R Halbe, The Architectural Review April 2011
- 5.21 The paved and landscape courtyard at the heart of the block, R Halbe, The Architectural Review April 2011
- 5.24 Facade detail which over time will become animated by flourishing greenery, P. Raftery, The Architectural Review, October 2010
- 5.25 Grenoble context, housing block on the right of the street with the Alps in the background, P. Raftery, The Architectural Review, October 2010
- 5.26 Private housing block overlooking the courtyard at the centre of the development, P. Raftery, The Architectural Review, October 2010
- 5.29 View of housing units surrounding a green courtyard, source: http://www.ahh.nl/index_en.html, accessed September 2011
- 5.30 View of three of the towers and the linking bridges, source: <http://www.stevenholl.com>

- com/project-detail.php?type=housing&id=58&page=0, accessed October 2011
- 5.31 View of the first four floors demonstrating the public use on ground floor and residential units above. source: <http://www.stevenholl.com/project-detail.php?type=housing&id=58&page=0>, accessed October 2011
- 5.33 View of the street elevation, by Author
- 5.35 View of the various skin construction materials, by Author
- 5.36 View of the balcony from the street showing the roof support structure, by Author
- 5.37 View during construction showing the structural frame and infill, by Author
- 6.11 The Inkululeko Care Centre in Koch street, Salvokop Photo by Author
- 6.12-16 Activities of the Inkululeko Community Centre, Source: <http://www.tif.org.za/icc.htm> accessed: April 2011
- 7.5 Corobrick Country Classic Satin FBS http://www.corobrik.co.za/Country_Classic_Satin_FBS, accessed September 2011
- 7.6 Plastered wall finished with white paint, <http://www.polishedplastercompany.co.uk/polished-plaster-textured-white-233-p.asp>, accessed October 2011
- 7.7 View of the Freedom Park building, Sourced from bulding<http://www.specifile.co.za>, accessed September 2011
- 7.9 Typical Salvokop residence demonstrating facebrick and plaster finish, photo by Author
- 7.13 Colour and texture of natural Saligna, source: <http://www.protea-timbers.co.za/samples.htm>, accessed October 2011
- 8.1-2 Computer rendered perspectives of the exterior, by Author
- 8.3 Computer rendered perspectives of the exterior, by Author
- 8.4 Computer rendered perspectives of the exterior, by Author
- 8.5-6 Computer rendered perspectives of a one bedroom living unit, by Author
- 8.7 Computer rendered perspective of a one bedroom living unit from the north, by Author
- 8.8-12 Photographs of the final model, by Author

List of Figures

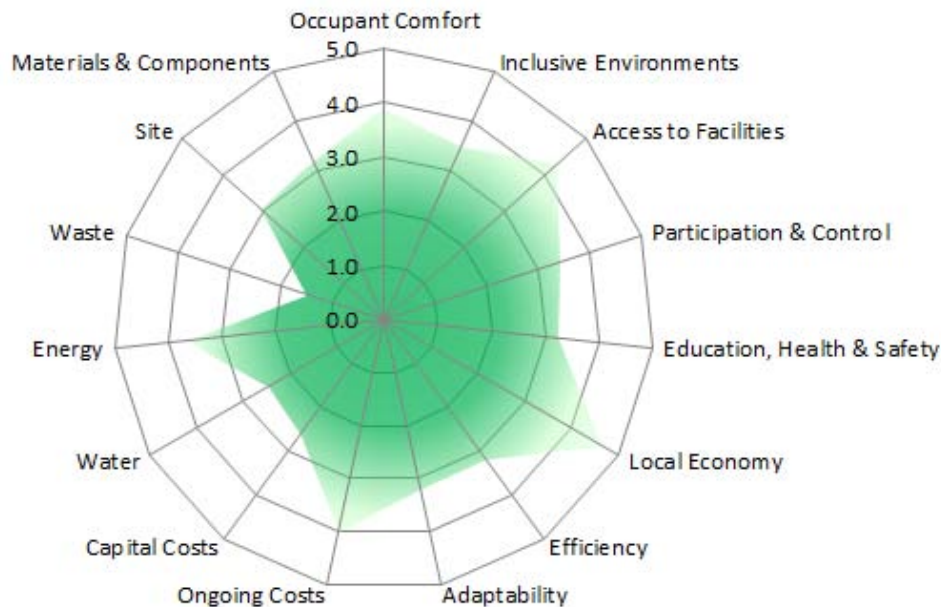
- 0.1 Sketch illustrating the combination of
- 0.2 Diagram showing the process of design, Drawn by Author
- 1.1 Five yearly incremental showing percent of South African urbanised population
Graphic: Author, Information: Human Science Research Council 1996
- 1.2 Apartheid city structure by M.Napier. Source: du Plessis and Landman (2002)
- 2.14-17 Aerial maps of Salvokop 1937, 1939, 1947 & 1991 Sourced from electronic folder, K Bakker, accessed 5 April 2011
- 2.18-21 Aerial maps of Salvokop 2001, 2005, 2007 & 2009 Sourced from electronic Google Earth, accessed 7 April 2011
- 2.22 Site map, Modified by Author, Original Source: Google Earth, Accessed April 2011
- 2.35 Existing section of Koch Street demonstrating the wasted space due to bollard placement, Sketch by Author
- 2.36 Map indicating analysed movement routes, edited Google earth map accessed 9 April 2011
- 2.37 Breakdown of Users, compiled by Author
- 2.38 Graph showing pedestrian frequency across the site in 15 minute intervals, drawn by Author
- 2.39 Possible use of Koch Street public space, sketch by Author
- 3.4 Natural relationship, sketch by Author
- 3.5 Small Change, sketch by Author
- 3.6 Structuring of theories, by Author
- 3.7-13 Hierarchy of building layers, by Author
- 3.14 Project Parti diagram, drawn by Author
- 4.1 Map of Pretoria with vibrant and potential nodes and public and private spaces mapped, by G. Di Monte
- 4.2-4 Character comparison, by M Teessen
- 4.5-6 Parti Diagrams, by Author
- 4.7 Connect Concept, by Author
- 4.8 Preserve concept, by Z. Khan
- 4.9 Gapp framework strengths and weaknesses, by G. Di Monte
- 4.10 Gapp framework connect and preserve, by G. Di Monte
- 4.11 TOSF strengths and weaknesses, by G. Di Monte
- 4.12 TOSF connect and preserve, by G. Di Monte
- 4.13 Re Kgabisa framework strengths and weaknesses, by G. Di Monte
- 4.14 Re Kgabisa framework connect and preserve, by G. Di Monte
- 4.15 Arup framework strengths and weaknesses, by G. Di Monte
- 4.16 Arup framework connect and preserve, by G. Di Monte
- 4.18 Map showing proposal, by Z. Khan
- 4.19 Section A-A before and after proposal implementation, by Author
- 4.20 Section B-B before and after proposal implementation, by M. Teessen
- 4.21 Diagram showing the formation of guidelines, drawn by Author
- 5.1 Montage of selection of precedents
- 5.5 North elevation of centre block (B), Roos Architects
- 5.7 Figure showing use allocation, Roos Architects
- 5.8 North-south Section, Roos Architects
- 5.9 Ground floor layout showing commercial spaces, offices, the creche, old age home and circulation spaces, Roos Architects
- 5.18 Drawings showing typical blocks of the three-storey walk-ups, JSA Architects
- 5.20 A progression of the building form due to various contributing factors, The Architectural Review April 2011
- 5.22 Ground floor plan, The Architectural Review April 2011
- 5.23 Plan of public reception space project, D. Dewar & R. Uitenboogaardt, 1991
- 5.27 Image showing the movement through the block and spill over from the housing into the green courtyard, source: http://www.ahh.nl/index_en.html, accessed September 2011
- 5.28 Plan showing the location of the residential development, source: http://www.ahh.nl/index_en.html, accessed September 2011
- 5.32 Diagram showing the relationship created between horizontal and vertical planes

- by using the linking bridge, source: <http://www.stevenholl.com/project-detail.php?type=housing&id=58&page=0>, accessed October 2011
- 5.34 Exploded perspective showing roof assembly
- 6.1 Location of site and relevance as an intermediate stop, drawn by Author
- 6.2 Vertical and horizontal variation resulting in choice, encouraging ownership and community, drawn by Author
- 6.3 Proportions of the site, drawn by Author
- 6.4 Utilised angles on site plan, by Author
- 6.5 Utilised angles of the site on section
- 6.6 Parti diagram applied to function, by Author
- 6.7 Highlighting the need for short-term accommodation close to the city's amenities, by Author
- 6.8 Illustration of important edges which can be activated to take advantage of pedestrian movement, by Author
- 6.9 Highlighting the possibility of creating a network between new and existing social facilities in Salvokop, by Author
- 6.10 Yeast city housing Logo, Sourced from www.ych.co.za, accessed 10 April 2011
- 6.18-21 Development of design with site influences
- 6.22 Visualised pedestrian routes and possible destinations, drawn by Author
- 6.23 Hierarchy of spaces, drawn by Author
- 6.24 Interaction between inside and outside spaces for retail and social facilities, drawn by Author
- 6.25 Location of new trees to enhance public space, drawn by Author
- 6.26 Location relative to important points nearby, by Author
- 6.27 Different densities, by Author
- 6.28 The various uses incorporated in the development, by Author
- 6.29 Framework and proposals for surrounding sites, by Author
- 6.30 Communal spaces, by Author
- 6.31 Pedestrian routes, by Author
- 7.2 Design features graphic, by Author
- 7.3 SBAT graph, by Author
- 7.4 Material composition, by Author
- 7.7 Map showing the red/tan colour of exposed earth Modified by Author, Original Source: Google Earth, Accessed April 2011
- 7.11 Computer generated image of timber pergola in summer, by Author
- 7.12 Computer generated image of timber pergola in winter, by Author
- 7.14 Bird's eye perspective view of a typical one bedroom unit, by Author

Addendum A - SBAT rating tool

SUSTAINABLE BUILDING ASSESSMENT TOOL (SBAT-P)

Project title: Germinate: Architecture of Growth Date: October 2011
 Location: c/o Skietpoort Avenue and Koch Street Undertaken by: Author
 Building type: Mixed-use residential



Social **3.7**
Economic **3.5**
Environmental **2.8**
Overall **3.3**

Classification: GOOD



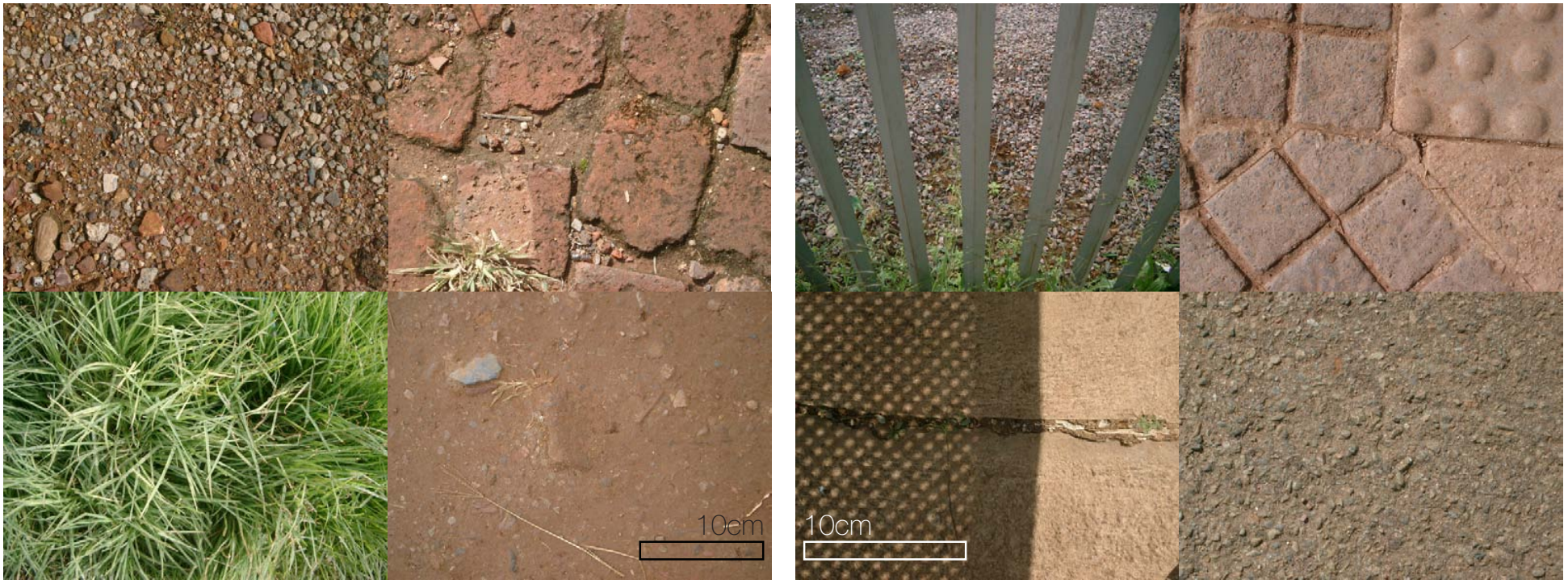
Building Performance - Social				
Criteria	Indicative performance measure	Measured	Points	
SO 1 Occupant Comfort				3.9
SO 1.1	Daylighting % of occupied spaces that are within distance 2H from window, where H is the height of the window or where there is good daylight from skylights	80	0.8	
SO 1.2	Ventilation % of occupied spaces have equivalent of opening window area equivalent to 10% of floor area or adequate mechanical system, with unpolluted air source	100	1.0	
SO 1.3	Noise % of occupied spaces where external/internal/reverberation noise does not impinge on normal conversation (50dbA)	60	0.6	
SO 1.5	Thermal comfort Temperature of occupied space does not exceed 28 or go below 19°C for less than 5 days per year (100%)	50	0.5	
SO 1.5	Views % of occupied space that is 6m from an external window (not a skylight) with a view	100	1.0	
SO 2 Inclusive Environments				3.5
SO 2.1	Public Transport % of building (s) within 400m of disabled accessible public transport	80	0.8	
SO 2.2	Information High contrast, clear print signage in appropriate locations (100%)	70	0.7	
SO 2.3	Space % of occupied spaces that are accessible to ambulant disabled / wheelchair users	40	0.4	
SO 2.4	Toilets % of space with fully accessible toilets within 50m	100	1.0	
SO 2.5	Fittings & Furniture % of commonly used furniture and fittings (reception desk, kitchenette, auditorium) fully accessible	80	0.6	
SO 3 Access to Facilities				4.3
SO 3.1	Children All users can walk (100%) / use public transport (50%) to get to their childrens' schools and creches	75	0.8	
SO 3.2	Banking All users can walk (100%) / use public transport (50%) to get to banking facilities	75	0.8	
SO 3.3	Retail All users can walk (100%) / use public transport (50%) to get to food retail	100	1.0	
SO 3.4	Communication All users can walk (100%) / use public transport (50%) to get to communication facilities (post, telephone and internet)	80	0.8	
SO 3.5	Exercise All users can walk (100%) / use public transport (50%) to get to recreation / exercise facilities	100	1.0	
SO 4 Participation & Control				3.5
SO 4.1	Environmental control % of occupied spaces able to control their thermal environment (adjacent to openable windows/thermal controls)	85	0.9	
SO 4.2	Involvement % of users actively involved in the design process (workshops / meetings with models / large format drawings)	0	0.0	
SO 4.3	Social spaces Social informal meeting spaces (parks / staff canteens / cafes) provided locally (within 400m) (100%)	100	1.0	
SO 4.4	Sharing facilities 5% of facilities shared with other users / organisations on a weekly basis (100%)	100	1.0	
SO 4.5	User group Active representative user group involved in the management of the building / facilities / local environment (100%)	60	0.6	
SO 5 Education, Health & Safety				3.3
SO 5.1	Education Two percent or more space/facilities available for education (seminar rooms / reading / libraries) per occupied spaces (75%). Construction training provided on site (25%)	75	0.8	
SO 5.2	Safety All well used routes in and around building well lit (25%), all routes in and around buildings (25%) visually supervised, secure perimeter and access control (50%), No crime (100%)	50	0.5	
SO 5.3	Awareness % of users who can access information on health & safety issues (ie HIV/AIDS), training and employment opportunities easily (posters/personnel)	100	1.0	
SO 5.4	Materials All materials/components used have no negative effects on indoor air quality (100%)	100	1.0	
SO 5.5	Accidents Method in place for recording all occupational accidents and diseases and addressing these	0	0.0	

Building Performance - Economic				
Criteria	Indicative performance measure	Measured	Points	
EC 1 Local economy				4.7
EC 1.1	Local contractors % value of the building constructed by local (within 50km) small (employees<20) contractors	90	0.9	
EC 1.2	Local materials % of materials (sand, bricks, blocks, roofing material) sourced from within 50km	95	1.0	
EC 1.3	Local components % of components (windows, doors etc) made locally (in the country)	100	1.0	
EC 1.4	Local furniture/fittings % of furniture and fittings made locally (in the country)	80	0.8	
EC 1.5	Maintenance % of maintenance and repairs by value that can, and are undertaken, by local contractors (within 50km)	100	1.0	
EC 2 Efficiency				3.2
EC 2.1	Capacity % capacity of building used on a daily basis (actual number of users / number of users at full capacity*100)	55	0.6	
EC 2.2	Occupancy % of time building is occupied and used (actual average number of hours used / all potential hours building could be used (24) *100)	50	0.5	
EC 2.3	Space per occupant Space provision per user not more than 10% above national average for building type (100%)	85	0.9	
EC 2.4	Communication Site/building has access to internet and telephone (100%), telephone only (50%)	80	0.8	
EC 2.5	Material & Components Building design coordinated with material / component sizes in order to minimise wastage. Walls (50%), Roof and floors (50%)	50	0.5	
EC 3 Adaptability				3.8
EC 3.1	Vertical heights % of spaces that have a floor to ceiling height of 3000mm or more	100	1.0	
EC 3.2	External space Design facilitates flexible external space use (100%)	100	1.0	
EC 3.3	Internal partition Non loadbearing internal partitions that can be easily adapted (loose partitioning (100%), studwall (50%), masonry (25%))	25	0.3	
EC 3.4	Modular planning Building with modular structure, envelope (fenestration) & services allowing easy internal adaptation (100%)	100	1.0	
EC 3.5	Furniture Modular, limited variety furniture - can be easily configured for different uses (100%)	50	0.5	
EC 4 Ongoing costs				4.0
EC 4.1	Induction All new users receive induction training on building systems (50%), Detailed building user manual (50%)	50	0.5	
EC 4.2	Consumption & waste % of users exposed on a monthly basis to building performance figures (water (25%), electricity (25%), waste (25%), accidents (25%))	75	0.8	
EC 4.2	Metering Easily monitored localised metering system for water (25%) and energy (75%)	100	1.0	
EC 4.3	Maintenance & Cleaning Building can be cleaned and maintained easily and safely using simple equipment and local non-hazardous materials (100%)	100	1.0	
SO 4.5	Procurement % of value of all materials/equipment used in the building on a daily basis supplied by local (within the country) manufacturers	75	0.8	
EC 5 Capital Costs				2.6
EC 5.1	Local need Five percent capital cost allocated to address urgent local issues (employment, training etc) during construction process (100%)	100	1.0	
EC 5.2	Procurement Tender / construction packaged to ensure involvement of small local contractors/manufacturers (100%)	50	0.5	
EC 5.3	Building costs Capital cost not more than fifteen % above national average building costs for the building type (100%)	80	0.8	
EC 5.4	Sustainable 3% or more of capital costs allocated to new sustainable/indigenous technology (100%)	30	0.3	
EC 5.5	Existing Buildings Existing buildings reused (100%)	0	0.0	
Building Performance - Environmental				
Criteria	Indicative performance measure	Measured	Points	
EN 1 Water				2.5
EN 1.1	Rainwater % of water consumed sourced from rainwater harvested on site	10	0.1	
EN 1.2	Water use % of equipment (taps, washing machines, urinals showerheads) that are water efficient	90	0.9	
EN 1.3	Runoff % of carparking, paths, roads and roofs that have absorbant/permeable surfaces (grassed/thatched/looselaid pavin/ absorbant materials)	20	0.2	
EN 1.4	Greywater % of water from washing/relatively clean processes recycled and reused	40	0.4	
EN 1.5	Planting % of planting (other than food gardens) on site with low / appropriate water requirements	85	0.9	
EN 2 Energy				3.7
EN 2.1	Location % of users who walk / use public transport to commute to the building	80	0.8	
EN 2.2	Ventilation % of building ventilation requirements met through natural / passive ventilation	95	1.0	
EN 2.3	Heating & Cooling % of occupied space which has passive environmental control (no or minimal energy consumption)	90	0.9	
EN 2.4	Appliances & fittings % of appliances / lighting fixtures that are classed as highly energy efficient (ie energy star rating)	100	1.0	
EN 2.5	Renewable energy % of building energy requirements met from renewable sources	0	0.0	
EN 3 Waste				1.5
EN 3.1	Toxic waste % of toxic waste (batteries, ink cartridges, fluorescent lamps) recycled	75	0.8	
EN 3.2	Organic waste % of organic waste recycled	0	0.0	
EN 3.3	Inorganic waste % of inorganic waste recycled.	75	0.8	
EN 3.4	Sewerage % of sewerage recycled on site	0	0.0	
EN 3.5	Construction waste % of damaged building materials / waste developed in construction recycled on site	0	0.0	
EN 4 Site				3.1
EN 4.1	Brownfield site % of proposed site already disturbed / brownfield (previously developed)	40	0.4	
EN 4.2	Neighbouring buildings No neighbouring buildings negatively affected (access to sunlight, daylight, ventilation) (100%)	100	1.0	
EN 4.3	Vegetation % of area of area covered in vegetation (include green roofs, internal planting) relative to whole site	25	0.3	
EN 4.4	Food gardens Food gardens on site (100%)	100	1.0	
EN 4.5	Landscape inputs % of landscape that does not require mechanical equipment (ie lawn cutting) and/or artificial inputs such as weed killers and pesticides	40	0.4	
EN 5 Materials & Components				3.2
EN 5.1	Embodied energy Materials with high embodied energy (aluminium,plastics) make up less than 1% of weight of building (100%)	100	1.0	
EN 5.2	Material sources % of materials and components by volume from grown sources (animal/plant)	20	0.2	
EN 5.3	Ozone depletion No materials and components used requiring ozone depleting processes (100%)	100	1.0	
EN 5.4	Recycled / reuse % of materials and components (by weight) reused / from recycled sources	0	0.0	
EN 5.5	Construction process Volume / area of site disturbed during construction less than 2X volume/area of new building (100%)	100	1.0	

Addendum B - Horizontal textures

Informal

Formal



Illustrations 2.32-39: Site photos by Author

Circulation is the fundamental informant for the condition of the vertical surfaces. Along routes where pedestrians are expected wide boulevards equipped with street furniture are empty, whilst the informal paths (often the shortest route available) where people do walk are bustling with activity and small stalls selling fruits and sweets.

The informal surfaces include (clockwise direction) loose gravel, old pavers, compressed sand and unkept grass. These surfaces (with the exception of the grass) are most frequently used by pedestrians travelling to and from the station. These surfaces are not maintained and evolve over time.

The formalised surfaces include (clockwise direction) gravel for parking, smaller and larger concrete pavers and asphalt for the roadway. These surfaces are considered formal due to their intentional nature. They are preserved through maintenance and the intention is for them not to change over time.

The formal surfaces are generally not appropriately located and are not therefore not used as intended whilst the informal

surfaces are created due to the informal circulation of pedestrians.

Any development, as proposed in this dissertation, should respond appropriately to the nature of the vertical surfaces. Informal areas that experience high levels of traffic could be developed and encouraged through the establishment of appropriate paving surfaces. The quality of the experience as seen from the user on a small scale should also be considered.

Acknowledgements

Tasha, for always believing in me
Mama & Papa, for your unrestricted support
Loni, for your prayer and encouragement
Katy, for your reassuring and graphical input
and Christopher, for your valuable linguistic recommendations

