

VOLUME II:
LANDSCAPE LABORATORY

ritual and edge as collective informants for public space in the
South African urban environment

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To **my parents:** Bertie and Valda Wilken, for grounding my feet and fertilising my mind.

To **Cari Taljaard.** For never giving up and always believing that we can grow and let grow.

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PREAMBLE

This is Volume II of a six-part investigation. It is comprised of the urban mapping, landscape intervention, and four architectural interventions. These are:

- VOLUME I:** Jeppeshtown: A Prospect Ritual
by Muhammad Dawjee, Albert Smuts,
Kristen Steynberg, Gert van der Merwe
and Charldon Wilken
- VOLUME II:** **Landscape Laboratory**
by Charldon Wilken
- VOLUME III:** Fragrance Factory
by Gert van der Merwe
- VOLUME IV:** At Jeppe
by Muhammad Dawjee
- VOLUME V:** Deconstructing Permanence
by Albert Smuts
- VOLUME VI:** Private Rituals, Public Selves
by Kristen Steynberg

ABSTRACT

This dissertation is an effort to understand the processes and systems housed within the infrastructure of a dynamic urban environment. Jeppestown, or Jeppe, as it is known by its inhabitants, is a post-industrial wasteland on the eastern outskirts of Johannesburg CBD (central business district). This rich cultural landscape was formed over generations by optimistic prospectors intrigued by the illusion of riches posed by the City of Gold.

The project is focused on linking and transforming voids within the urban fabric, which are threatened by gentrification, into a healthy and productive network of public space. Guided by mapping and observation techniques, the designer can formulate the conception for a landscape architectural intervention aimed at maintaining and amplifying certain aspects coinciding with the ritualistic activities of everyday life as established within Jeppestown.

Anchored by a series of social and economic nodes, a spinal development emerges, addressing thresholds between public and private realms by investigating edges as vessels for environmental and social systems. The designer uses a combination of existing characteristics of this urban artefact and newly introduced sustainable design principles to carve a coherent and productive public environment from an amalgamated entity termed the landscape slate.

SAMEVATTING

Hierdie skripsie poog om die prosesse en sisteme soos gehuisves in die infrastruktuur van 'n dinamiese stedelike omgewing te verstaan. Jeppetown, of Jeppe, soos dit bekend staan vir sy inwoners, is 'n post-industriële afval-landskap op die buitewyke van Johannesburg se SBD (sentrale besigheids distrik). Hierdie ryk kulturele landskap is gevorm deur generasies optimistiese 'delwers', geboei deur die illusie van rykdom soos voorgestel deur die Stad van Goud.

Die projek is gefokus daarop om leemtes in die stedelike stof wat bedreig word deur gentrifikasie, te verbind en om te skakel in 'n produktiewe netwerk van publieke ruimte. Gelei deur ontledings- en waarnemingstegnieke, kan die ontwerper die konsep vir 'n landskapargitekturele ingryping formuleer, wat gemik is daarop om sekere aspekte wat gepaard gaan met die ritualistiese aktiwiteite van alledaagse lewe, soos gevestig in Jeppetown, te behou en te versterk.

Geanker deur 'n reeks sosiale en ekonomiese nodes, kom 'n spinale ontwikkeling na vore wat drumpels tussen publieke en private ruimtes adresseer, deur grense (rante) as vaartuie vir natuurlike en sosiale sisteme te ondersoek. Die ontwerper maak gebruik van 'n kombinasie van bestaande karaktereenskappe van die stedelike artefak en nuwe voorgestelde volhoubare ontwerpsbeginsels om 'n samehangende en produktiewe publieke omgewing te kerf vanuit 'n opgeloste en gemengde eenheid, genaamd die landskapleiblok.

APPROACH

The aim of this investigation is to explore a multi-discipline approach between architecture and landscape architecture to intervening in an existing urban landscape; this allows for a more integrated approach to the design, as well as a holistic understanding of the possible connections of urban spaces, and urban spaces with architecture. The urban vision (as discussed in Volume I: Jeppestown - A prospect ritual.) is a joint undertaking, followed by the landscape project, which forms the platform on which the four architectural projects situate themselves.

Due to the nature of this post-industrial urban landscape, the approach includes all fields of the built environment: sustainable design; urbanism and urban settlements; and heritage and cultural landscapes.

METHODOLOGY

Ritual, edge conditions and systems as tools for creating public space and fostering a scene of place.

Utilizing mechanisms of observing space, activities and networks to amplify and curate public space, thresholds and infrastructural components for a healthy urban environment in Jeppestown.

GENERAL STRUCTURE

v.I JEPPESTOWN: A Prospect Ritual

<p>01 mechanisms & lenses</p>	<p>lens one - lives and deaths lens two - ritual lens three - negotiated territories</p>	urban vision
<p>02 the surface</p>	<p>- a landing exercise -</p>	
<p>03 touching base</p>	<p>- site history - - touching base - - jeppe today -</p>	
<p>04 an urban strategy</p>	<p>- conditional amplification - - spatial perceptions - - thresholds -</p>	macro and micro framework
<p>05 the projects</p>	<p>v. II Chardon Wilken - ML(Prof) Landscape Laboratory</p> <p>v. III Gert v.d. Merwe - MArch(Prof) Fragrance Factory</p> <p>v. IV Muhammad Dawjee - MArch(Prof) At Jeppe</p> <p>v. V Albert Smuts - MArch(Prof) Deconstructing Permanence</p> <p>v. VI Kristen Steynberg - MArch(Prof) Public Rituals, Private Selves</p>	site specific individual design & tech.
<p>06 the urban manifestation</p>	<p>- closing statement -</p>	

STRUCTURE

INDIVIDUAL DISSERTATION STRUCTURE

01	setting the stage	theoretical discourse and understanding	background - problem identification - intent - theory component - context and observations
02	welcome to jeppeshtown		inventory and hystory - demarcating the study area - gathering identity
03	searching for clues		- identifying the components of the public realm - contextualizing theory
04	theory in context	conception and design development	setting up the framework - developing the master plan - identifying applicable strategies and systems for the master plan
05	study area framework		design informants - mapping ritual and investigating edge conditions - translating mapping into design -
06	developing the idea		materials - landscape elements and spatial implementation - environmental systems
07	technical investigation	technical component and conclusion	presentation drawing and images
08	illustrating manifestation		- closing statement -
09	drawing the curtain		

GLOSSARY OF DEFINITIONS AND TERMS

1. Top-down approach to spatial planning:

Planning with a defined end goal in mind. This structure is often a preconceived or pre-determined idea which is implemented on a site. The intervention often do not consider existing systems and networks.

2. *Homo sapiens sapiens*:

- 1.) the species who, after all, knows what it is doing.
- 2.) creature whose individuation is an interior folding or “involution” that increases its entanglement with any given ecosystem. (Doyle. 2011)

3. *Homo faber*:

An organism actively creating, rather than created by, its environment. (Doyle. 2011)

4. Jeppe:

The local name for Jeppeshtown

5. CBD:

Central business district

6. Lives and deaths:

Lives and deaths are the ever-fluctuating state of being that influence how current social environments relate to physical fabric. The creation of space can be understood through the mapping of that which withers, giving opportunity for new growth. This not only refers to new and adapted structures, but also to a more wide spread change of context and social presence.

7. Ritual:

This lens consists of a series of activities as embodied by the inhabitants of Jeppe. It aims to address the patterns which manifest when certain activities are in motion on site.

8. Negotiated territory:

Negotiated territory consists of the fluctuating physical space that is determined by programme and circumstance. A physical amalgamation of ritualistic mutuality that manifests self-defined functions and borders that surpass governmental instruction. These spaces are fluid and thus capable of change over time.

9. Post-industrial wastelands:

Degraded landscapes which no longer function the way they were intended to as a result of the exodus of industry from these sites. These sites are often not used to their maximum potential and become vacant areas of land within or around cities.

10. Drosscapes:

Alan Berger (2006) defines drosscapes as those landscapes which “accumulate in the wake of the socio- and spatio- economic processes of deindustrialization, post-Fordism, and technological innovation”.

11. Bohemians:

An unconventional lifestyle often practiced by a class of people with little or no opportunity to better themselves.

12. Productive landscape:

In this dissertation the term refers to a landscape which acts as a sustainable tool, housing processes like water purification systems, urban agriculture and production and allow quality public space to emerge within the urban sphere.

13. Outdoor rooms:

Spaces in the landscape, demarcated by programme or boundaries, acting much like the rooms of a building.

14. Infrastructural space:

In the definition of landscape architecture, infrastructural space in this dissertation refers to all public spaces forming part of the urban sphere.

Eg. Parks, plazas, streets, sidewalks, courtyards, bridges etc.

15. Infrastructure:

In this dissertation infrastructure refers to all the components housed within infrastructural space.

Eg. Water systems etc.

16. Field independence:

A deeper understanding of space beyond physical boundaries. Space is conceptualised from within as a dynamic process rather than a static condition. (Van Rensburg and Da Costa, 2008a)

17. Field dependence:

A reliance on external visual cues resulting in a stronger consciousness of boundary and limitation, and as a cognitive style presents a literal interpretation of space. (Van Rensburg and Da Costa, 2008a)

18. Field interdependence:

An overlap of field dependence and independence where public space is concerned, forming an amalgamation of edges or boundaries (physical and ritualistic). Eg. Within a square, populated by built forms, thresholds occur (physical/ritualistic), which allows for a courtyard typology to manifest. In turn, this again relates to how public space evolve over the course of time and are appropriated by those who inhabit them.

19. Brownfield sites:

Disturbed land previously used for industrial purposes, now decommissioned, neglected and degraded and possibly contaminated. These landscapes are not suitable living environments, yet are often inhabited.

20. Landscape slate:

The combined entity which emerges when layering the fragmented entities of public space, allowing a more coherent composition of transitions between public and private realms to emerge.

21. Conditional amplification:

The primary aim of this strategy is to foster the appropriate micro-conditions necessary to allow Jeppestown to express and appropriate its rooted elements of a becoming identity.

22. Lenses:

Mechanisms which allow for a glimpse into the omnipresent engine (the working of people, places and systems) that is the heartbeat of Jeppestown.

The lens is a tool to observe and understand and map the current conditions which exist in Jeppestown.

23. Synchronicity:

A theory by Carl Jung, stating that in everyday life, certain activities like to occur together without them being reactionary. The theory implies that different interactions that happen within the same scope of time possess a shared and meaningful relationship unbound by a causal link.

24. Jeppe Hypograph:

The graphic depiction of ritual activities that occur in Jeppestown and are situated either in the public or private realm. This graphic depiction of ritual on a public to private scale can be used to determine the nature of thresholds between public and private realms.

25. The grid:

The ordering system used to lay out spatial entities within the urban realm.

Eg. City blocks and streets act as a grid.

26. The spine:

The name of the framework proposal for Jeppestown West in this dissertation.

27. Activity:

In this dissertation this term refers to actions taken by people as part of a daily routine. These actions are categorised and grouped under certain rituals.

Eg. The activity of vending for instance falls under the ritual of services and is mostly practiced in the public realm.

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LANDSCAPE LABORATORY

infrastructure and public space in the urban
environment

"My eyes are shut. I imagine a past landscape, a primordial veld, dotted with prospectors all staking their claims. Aspirant men with big dreams all eager to uncover the riches beneath the Highveld soil. The quest for material wealth has forced this once pristine landscape into unrecognisable terrain. The industrial machine has relentlessly carved and shaped the land into "Johannesburg", a mining town, a city, a metropolis"

- Jaco van den Heever.

MANIFESTO - AN INFORMED NORMATIVE POSITION

One could think of a landscape as an open slate, an unspoiled canvas – a blank page ready to receive the ink of the writer, about to start the first chapter in his new book. But the reality is that landscapes are not derelict slates, nor a blank canvas, and certainly not a white page.

Landscapes are living entities, burdened by the scars of society. These landscapes stand testimony to the ever-changing environment in which we find ourselves. These landscapes are relics – cultural landscapes formed and embellished by the hand of man - and receptors for change, receptors for new cultural layers.

Landscapes are possible receptors for new economic development, sites of transformation and areas to be reclaimed. At the same time they also have the potential to become an operative tool to actively resist the globalizing and homogenizing tendencies of built environments.
- Kelly Shannon (Crysler, 2012:625)

We as human beings inhabit a finite planet in need of curation (Fisher 2011). As curators we devise systems and networks as execution methods for our endeavours as man.

However, these methods we devise are ever-changing, adapting to our needs, changing views, interests and the ever changing environment, as impacted upon by human activities.

Most of our endeavours are based on economic drivers and can be viewed as one of the main components forming part of a top-down approach to space making (Studer 2012). The stage then housing the pallet of systems and networks of a still evolving *Homo sapiens sapiens* can simply be termed ‘the landscape’. The modern day cultural landscape of man, however, is no longer shaped by mere geology, but by the forces of culture, social activity, politics, technology and economics (Silva 2012) as part of the systems and networks created by the ‘triumphant’ man over the forces and processes of nature. Unfortunately, over the years of space and city making, this has allowed man to neglect and exploit nature and its processes, causing environmental destruction and decay.

This too is a phenomenon within the cityscape itself, a sort of urban decay as part of man’s irresponsible attitude toward systems, networks and processes of both nature and urbanisation, niched within the landscape.

This apparent inability of humans to perceive and understand the densely connected nature of their habitat, threatens not only environmental and urban ecosystems, but the very self-definition of humanity itself (Doyle 2011).

We as the curators to the landscape we populate are to act as tinkerers - as is our nature as *Homo faber* - actively implementing fundamental principles as part of a sustainable methodology to the creation of space and city making. Professionals from various built environment professions within the academic sphere have often toiled with creative concepts and theories as model to sustainable development, more often than not leading to controversial implementations and architectural discourse (Gray 2012). This is a result of the overlooking of the socio-political and lack of understanding of environmental processes which impact these proposed models.

The key to this lies in the understanding of the interactions of urban systems; identifying opportunities in infrastructure; and seeing landscape as much as an organizing force, as we see it as a distinct facet of the city.

To create places where people feel embraced, welcomed and comfortable, to make areas for landscape as programme, and to always think of landscapes as places for activities. These spaces are activated by the users, ultimately converting the space not only into a 'beautiful, nice to have' (aesthetic) or 'well-functioning ecological system' (sustainable), but into a place, a destination and valuable asset to the environment of which it has become such an integral part (public realm). In order to 'fix' the environment, we as designers firstly have to 'fix' man and the perception man has of the environment he lives in.

The landscape is always present in the minds of those who live in it, whether they be primitive hunters, farmers, city folk, industrialists, proletarians, or whatever; it is their feeding territory.
(Deunk, 2002:122).

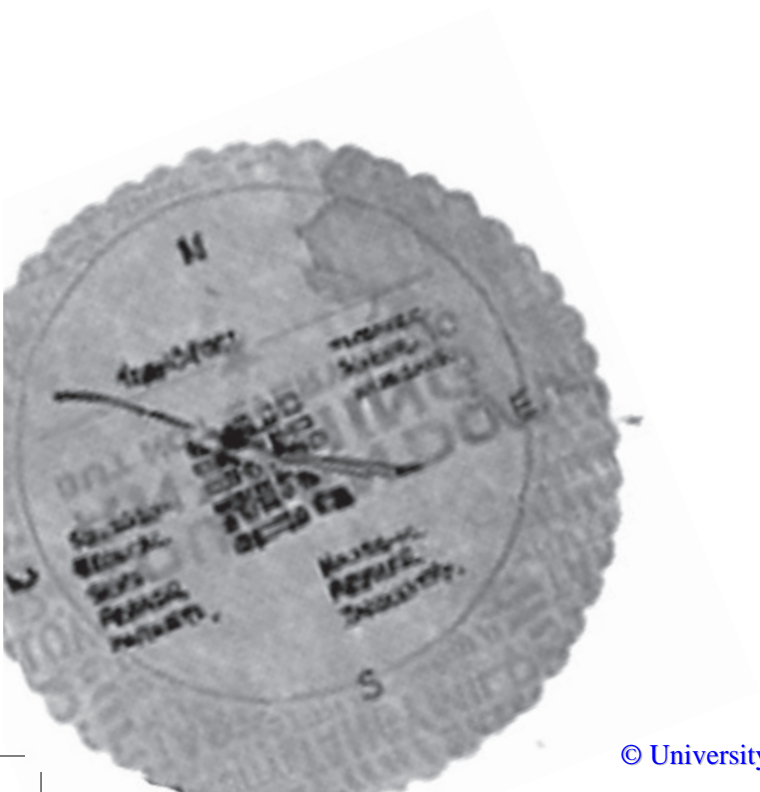
an emotive **ON JEPPE**

Founded in 1886 as an addition to the young mining town of Johannesburg (a then barely scaped grassland, lightly populated by trees and structures of Afrikaner farmers and later colonial rule), Jeppe, as it is known today exists as an island within a vibrant urban jungle – the Metropolis City of Johannesburg, Egoli – the place of gold.

Jeppe – this post-industrial wasteland is home to many an optimistic ‘prospector’ aspiring to ideas of ‘riches’ as promised by the guise which is the Central Business District (CBD) of a profound urban ‘mine’.

Jeppetown to most, however, is not a destination, rather only a bite of an apple on a bus ride through the eastern gateway to a destination beyond. A temporary indulgence in the flavours of a rich cultural landscape, a vibrant community of trust, mistrust, a brief understanding of the self-reflection of what was, what is and the continual yearning for what is to come – what is Jeppetown? An unforgiving state of flux, as impacted upon by internal and external forces, as applied by the hand of man through the turns of society, viewed through the dynamic understanding of time – what is the life and death, the ritual, the negotiated territory (civil insurgency) of what is Jeppetown? To the passersby it makes no sense, yet it is a mirror of what they do not see, that which is Jeppetown.

Jeppe – it is more than meets the eye. Scratching the surface will not make it bleed, only through touching base and by delving through its strata can one begin to perceive what is Jeppe – a testing ground, the conception of an isolated laboratory. A known fact to those in the know, those who are the heartbeat of Jeppe, not the passers-by; that the wealth of Jeppe is not in its ‘gold’, not in its machine-like nature and industrious facades, its iron breath and waking with each new day. No, it is them – those in the know, they are the heartbeat, adding the dynamic nature of this organism of change, always morphing, animating this ‘island’, as encroached upon by (civil) society – they are the cafes, the chop shops, the hostels, the homes, the shelters, the fast food, the litter, the stone, the temporary embellishment in a labyrinth they know – they are Jeppe.



01

SETTING THE STAGE

Chapter 1 explains the background and theoretical text as part of the build up to the investigation of an architectural intervention in Jeppestown.

- 1.1 **background**
- 1.2 **introduction**
- 1.3 **the current dilemma**
- 1.4 **issues**
- 1.5 **problem statement**
- 1.6 **research question**
- 1.7 **hypothesis**
- 1.8 **assumptions and delimitations**
- 1.9 **methodology**
- chapter 1: **summary**

"African cities are struggling to find appropriate solutions that could assist in reclaiming their identities and create a valid African urban expression." (Van Rensburg, 2008)



Figure 1.1. Emotive drawing on the concept of the post-industrial wasteland.

1.1 BACKGROUND

As a result of Apartheid city planning, cities in South Africa in the post-apartheid era are disjoint, containing areas of degradation and neglect. This issue is partially related to the problems associated with urban sprawl and the expansion of suburbia.

These deteriorated areas often extend to the periphery of our cities - post-industrial wastelands and drosscapes - and are usually inhabited by the Bohemians of our society. The landscape holds inherent clues and provides us with tools which can be used to mold the topography and extrapolate the cultural layers into tangible form. These outdoor, and often lost spaces within the urban realm pose great opportunity, not only as productive and regenerative landscapes, but as recreational spaces for the inhabitants of the city. The opportunity of creating good quality and healthy urban space is essential, seeing as many of these city dwellers cannot afford the luxury of private recreational outdoor space. Together with this fact, tourists and visitors to these urban areas look to orientation points as part of the threshold networks located in the urban sphere of cities and built environments.

“While the individual garden remains the ancestor of most landscape design, and while it will continue to be an important source of individual recreation, the fact remains that most urbanities do not nor cannot have access to one. And even when each dwelling unit has its private garden, the most important aspects of an urban recreational environment will lie outside its boundaries. The recreation of the city like its work and its life, remains essentially a social problem”

- Garrett Eckbo (Brown 2000:87)

African cities still have to contend with the legacy of colonialism.
(Adebayo 2000:20)

1.2 introduction_ JOHANNESBURG- THE CONTEMPORARY AFRICAN CITY

According to Steyn (2007:49) the rate of urbanisation in Africa far exceeds that of the western world and while it is still a rural continent, within decades more than half the continent's population will be living in urban centers.

The Metropolis City of Johannesburg, is one of these centers – prone to rapid urbanisation and has adopted the slogan of being a World Class African City (joburg.org), but what is an African City and how does it, with its current infrastructure, respond to the contemporary challenges associated with the rapid rate of urbanisation?

The African city, as defined by Adebayo in his article on *Cities in Africa – A Search for Identity and Sustainability*, is dynamic in nature and often an amalgamation of the traditional city, colonial city and 'European' city (planned according to European urban ethos, often with little regard for the existing landscape on which it is superimposed). Sometimes dual cities exist, where juxtaposition is evident between the 'old' and the 'new' while in other cases hybrid cities, with integrated urban elements, become urban metropolises.



Within the South African context, early town designs of the 1850's can be referred to as remarkable examples of ecologically sustainable development with a strong integration of social, functional aesthetic and symbolic aspects (Holm, 1998). Even though these urban settlements were planned according to regular grid patterns, as opposed to African settlements which developed more organically (Adebayo, 2000), they both share certain aspects of urban planning, emphasising the importance of public space. While neighbourhoods in traditional cities were linked by pedestrian streets and social civic spaces like piazzas and squares (Adebayo, 2000),

the character of the streets of the Voortrekker settlements produced well defined, coherent public spaces, forming outdoor rooms, often overlapping – providing a strong sense of transition and thresholds (Holm, 1998).

Today, suburbs to the Eastern side of The City of Johannesburg, like Jeppestown, no longer stand testimony to the patterns associated with coherent public space and are examples of decades of layering and reappropriation of infrastructure and space in order to suit the needs of the current program or inhabitants.

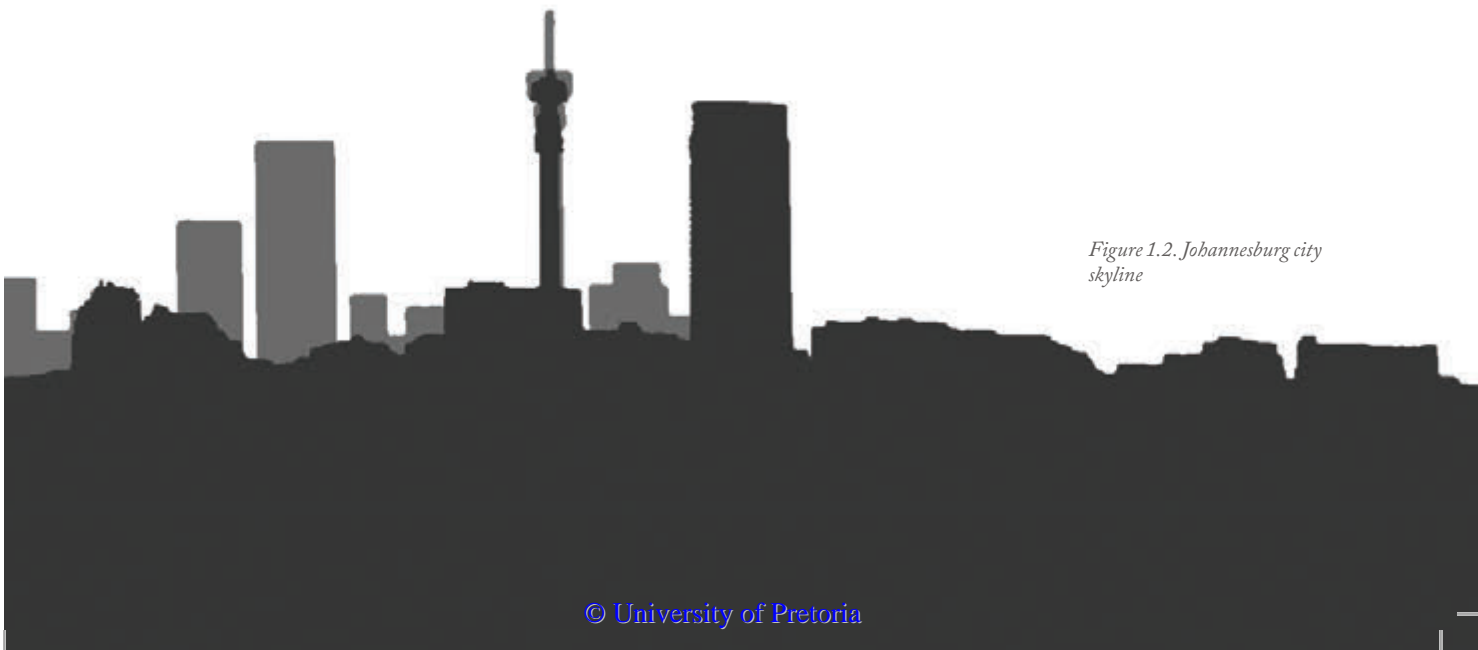


Figure 1.2. Johannesburg city skyline

introduction_ EARLY SETTLEMENTS ON THE WITWATERSRAND

The Pioneer settlements of the 1880's do not reflect in such a strong sense the need for social public space. These settlements or mining camps reflect a dramatic change to a new dynamism, posing a new form of cosmopolitan society with a contrasting way of urban settlement (Holm, 1998). While these settlements were more often than not viewed as temporary installations - functioning like machines, posing a work environment driven towards productivity and efficiency, as opposed to a social and recreational construct - the reality is that these settlements, driven by their earth exploiting nature became permanent embellishments on the South African landscape. Soon these pioneer settlements started to take physical form, with strong grid patterns overlaid on the landscape, inducing the dimensions of erven aimed at accommodating buildings rather than people, with each building unique and rebellious in nature. Temporary materials, like corrugated iron were replaced with the permanence of brick while areas were subdivided into mining and living areas (Holm, 1998).

With the introduction of public services, healthcare and transportation facilities these settlements soon developed into well-functioning towns and later into strong economically driven cities - representing a barren male world of

work, while the suburbs allowed for the retirement to a female paradise of recreation (Holm, 1998). This evolution from mining camp to city created room for functionality and the segregation of functional zones - a hostile environment to the pedestrian: where streets act mainly as traffic channels, plazas and squares as market places and a lack of hierarchy and meaning in urban form resulting in the withdrawal from civic life into the privatisation of living.

Today we find that these concrete jungles, silhouettes of pragmatic incidental forces of process and product, are populated and inhabited still by a kind of 'prospector' as a result of proximity to the illusion of opportunity. Thus it is evident that The City of Johannesburg, as do many cities like it, still deals with problems of colonial/Apartheid planning regimes (Adebayo, 2000) and can generally be considered as an unsuitable living environment (Steyn, 2007).

*Figure 1.3. (top)
Commissioner street -
Young Johannesburg*

*Figure 1.4. (bottom)
Commissioner street -
Present day Johannesburg*



General View of Commissioner Street (from Railway Crossing Jeppestown)

JOHANNESBURG



GENERAL VIEW OF COMMISSIONER STREET (FROM RAILWAY CROSSING JEPPESTOWN)

JOHANNESBURG

“Urban morphology is every material substance, artificial or natural, that makes up the urban artefact”. (Steyn 2007:61)

1.3 the **CURRENT DILEMMA**

Based on the reading of *Space as Ritual*, by Van Rensburg (Van Rensburg and Da Costa, 2008a), the author is of the opinion that place resides in the production of space which accommodates and celebrates the rituals of everyday life. Together with the idea of blurred edges where the transition between the private and public realms exists, one might refer to Berry’s (1992:124) idea of field independence: where space can be understood beyond its physical boundaries, as it is comprised of dynamic processes instead of static conditions. This condition exists in contrast to the idea of field dependence, where boundary and limitation suppresses spatial complexity. These two opposites represent an African/Western dualism according to Van Rensburg (2008:63), where the duality extends to the concept of spatial “ownership”. Within the African context the public realm encompasses all space, except where space is defined to be private through ritual. This can be compared to the European view, where all space is committed to the private realm,

except for that which is publicly designed and designated often by physical boundaries (Van Rensburg and Da Costa, 2008a).

The open and connecting spaces outside buildings house many urban experiences and interactions. These spaces within cities like Johannesburg, however, were based on Modern town-planning theories and are characterised or defined by extensive homogeneous surfaces, fragmented spaces, a deficiency in spatial hierarchy and are often interrupted by isolated architectural endeavours (Van Rensburg and Da Costa, 2008a). These spaces then do not accommodate a good, acceptable quality of life and are subject to the re-appropriation of space by the current inhabitants longing for spatial identity. It is in these conditions where the 'differential space' as termed by Lefebvre (Van Rensburg and Da Costa, 2008a) needs to manifest - where space can be characterised by diversity and heterogeneity, accentuating social-spatial differences.

1.4.1 the GENERAL ISSUE

Landscapes, as impacted upon by man, bear the scars of society. These moments and acts of impact adorn the landscape with certain characteristics, causing (in some cases) certain areas of the landscape to become dilapidated and disconnected.

These sites, often termed brownfield sites or post-industrial sites, comprise the drosscapes of our urban environment. Because of their nature, these fragmented wastelands are not well-suited for living. However they do sometimes become the dwelling places of people willing to live in sub-standard living conditions.

How can landscape and its processes act as a productive and regenerative tool/machine within the urban environment of a post-Apartheid city in the South African context to mitigate/curate the imminent layers added by the hand of man in order to foster a relationship between the complexity of its inherent networks and shared values of humanity?

REGENERATING DISCONNECTED SPACE

SPACE WITHIN THE CITY IS DILAPIDATED AND DISCONNECTED. THE LANDSCAPE POSSESS THE POTENTIAL TO BE A PRODUCTIVE AND REGENERATIVE TOOL, MITIGATING AND CURATING THESE FACTORS



DISCONNECTED

1.4.2 the URBAN ISSUE

FOSTERING SENSE OF PLACE

PUBLIC SPACE IS LIMITED AND FRAGMENTED,
EXISTING IN ISOLATION - THUS THE
CONSERVATION OF OPEN PUBLIC SPACE
BECOMES IMPORTANT IN ORDER TO FOSTER A
SENSE OF PLACE

Public space in urban areas is limited, fragmented and undefined.

The conservation of these open spaces becomes extremely important when dealing with a continual state of flux within the landscape, due to ongoing urbanisation and densification.

Can landscape architecture create a symbiotic relationship within an urban environment, fostering a sense of place, which ties the prospective future to the resilient characteristics of that which it is and has become throughout its history?



ISOLATED

Figure 1.6. Isolated

1.4.3 the ARCHITECTURAL PREMISE

Exploring the possibilities of space-making within the urban environment through (re)connecting 'pockets' of open space, with emphasis on the relationship between man and his environment, aimed at creating a 'green' spine within the city as platform for interaction, recreation and exchange. In order to promote the importance of open space, thresholds between spaces become very important. This can be addressed through the understanding of edge conditions and certain activities niched within the cityscape.

CURATING THRESHOLDS AND EDGE CONDITIONS

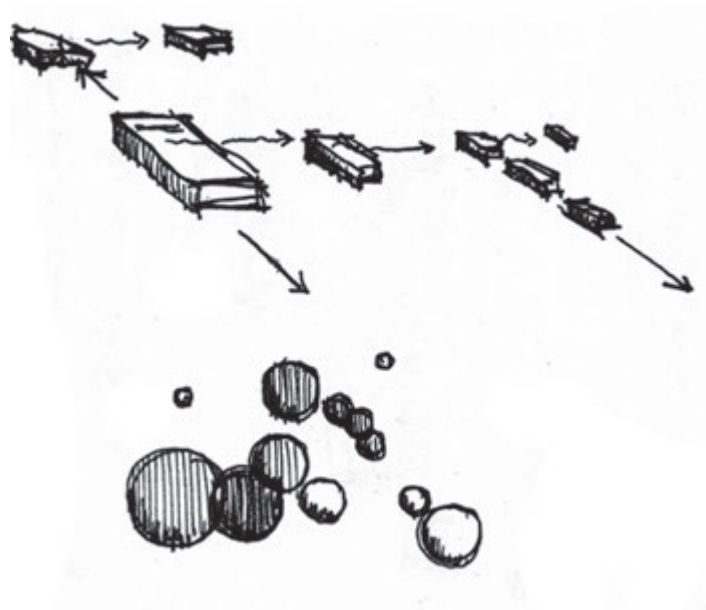
RECONNECTING SPACE AND MAN AND HIS ENVIRONMENT, THROUGH PROMOTING IMPORTANT THRESHOLDS AND EDGE CONDITIONS



RECONNECTED

1.5 the PROBLEM STATEMENT

The City of Johannesburg bears traces of Western city planning typologies which today no longer allows its public spaces to function in the way they were intended to. Thus the current inhabitants appropriate space to suit their imminent needs as niched within the landscape. The landscape acts as a slate, carved by a pallet of rituals and rites of everyday life, forming negotiated territories as a reappropriation of infrastructural space. Therefore it can be argued that the way space was formed in cities, like in Johannesburg and more specifically Jeppestown, as based upon the Western model, is no longer appropriate for economic, social and cultural endeavors.



Open public spaces exist in isolation, divided by the grid. Connecting pockets of open space can form a coherent network of public space within the urban realm, which allows for overlaps in character to emerge. These overlaps house the thresholds with unique edge conditions as illustrated in *Figure 1.8*.

Figure 1.8. Concept diagram - connect pockets of open space and allow overlaps in character to occur

1.6 the RESEARCH QUESTION

How can understanding the different edge conditions and thresholds, together with the ritual reappropriation of public space within an urban context inform new ways of space making within the field of landscape architecture in Jeppestown?

1.7 the HYPOTHESIS

The landscape is the slate housing the processes and rituals of the city, which can be carved by selecting certain textures and brushes from a pallet, aimed at amplification and sustainability in order to allow for the manifestation of an all-inclusive, well-grounded public realm to emerge, where the focus is placed on the elasticity of the evolution of thresholds between the public and private realms.

CONCEPT DIAGRAM

The diagram in *Figure 1.9 on page 21* illustrates the overlaps between edges and the public realm. It is on these edges where many activities occur - activities that have a mentionable impact on the way cities function.

1.8 ASSUMPTIONS AND DELIMITATIONS

The focus of the following document is on the quality of outdoor urban space and the role of infrastructural urban spaces in the definition of landscape architecture. The dissertation abstains from fully addressing and solving issues related to housing, unemployment or of economic nature or other issues not strongly related to the field of landscape architecture. The author accepts the predictions for urbanisation and density and expects Jeppetown to maintain a related identity to its current nature. The author also identifies the current development strategy as being implemented in Jeppe not to be associated with gentrification. Furthermore the outcome of this investigation aims to propose additional strategies in dealing with post-industrial open space within the urban environment.

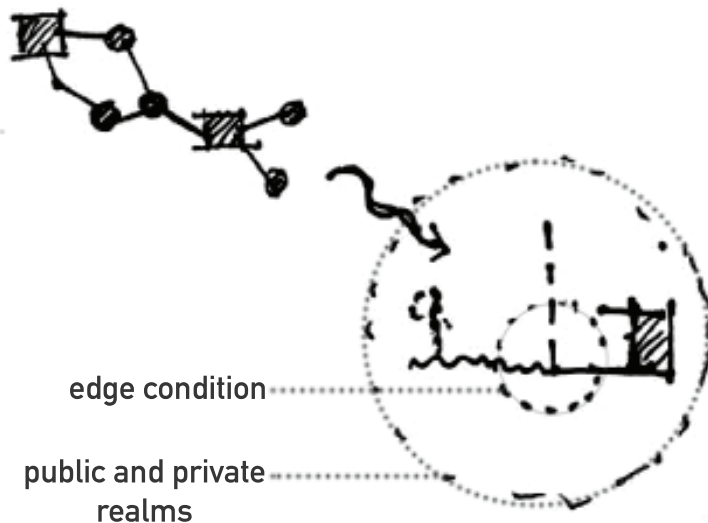
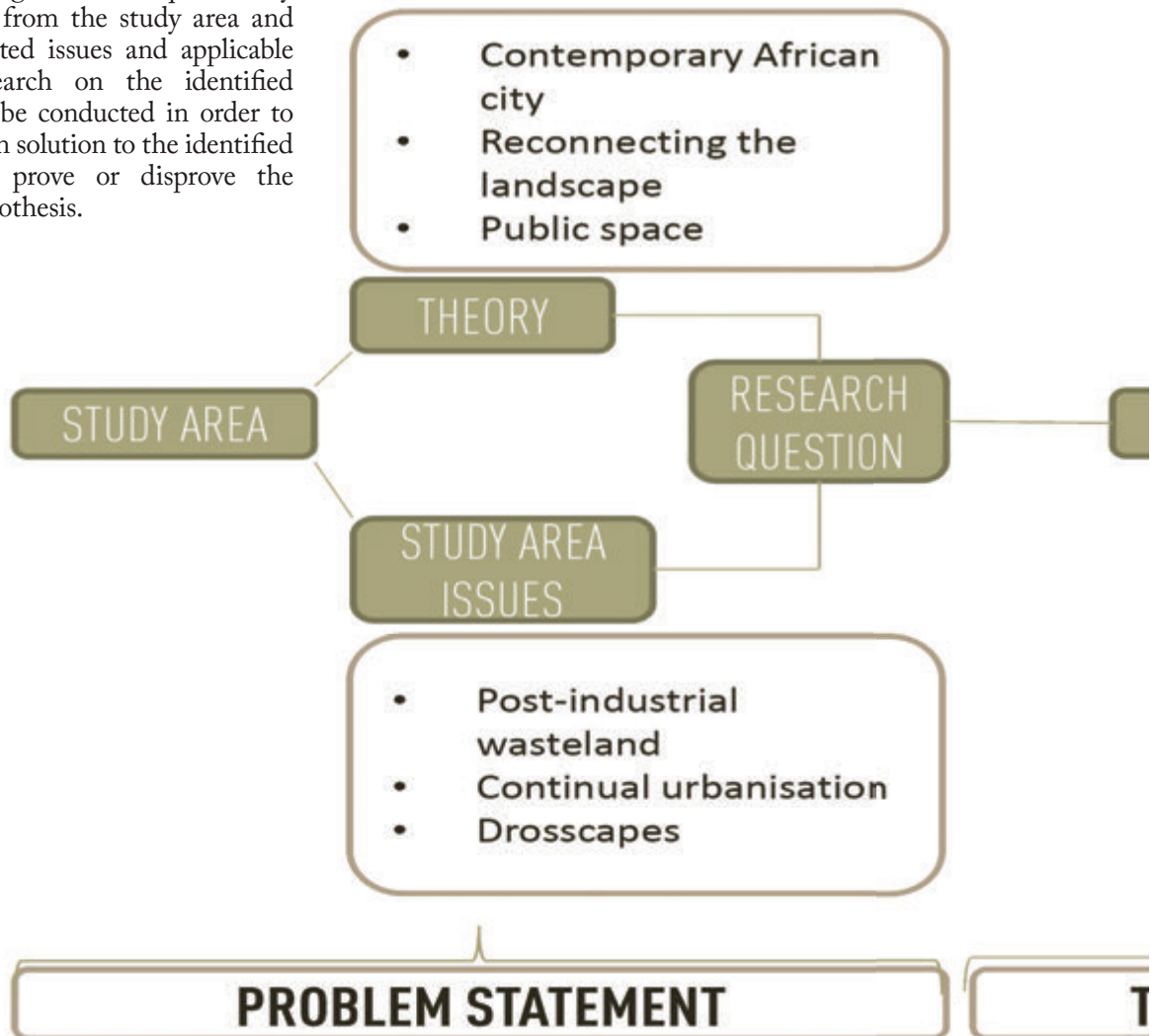


Figure 1.9. Conceptual relationships between edges and realms

1.9 RESEARCH METHODOLOGY

The research methodology indicates the structure followed throughout the investigation, illustrating the progression from formulating a research question by gathering info from the study area and study area related issues and applicable theory. Research on the identified topic needs to be conducted in order to develop a design solution to the identified problems and prove or disprove the formulated hypothesis.



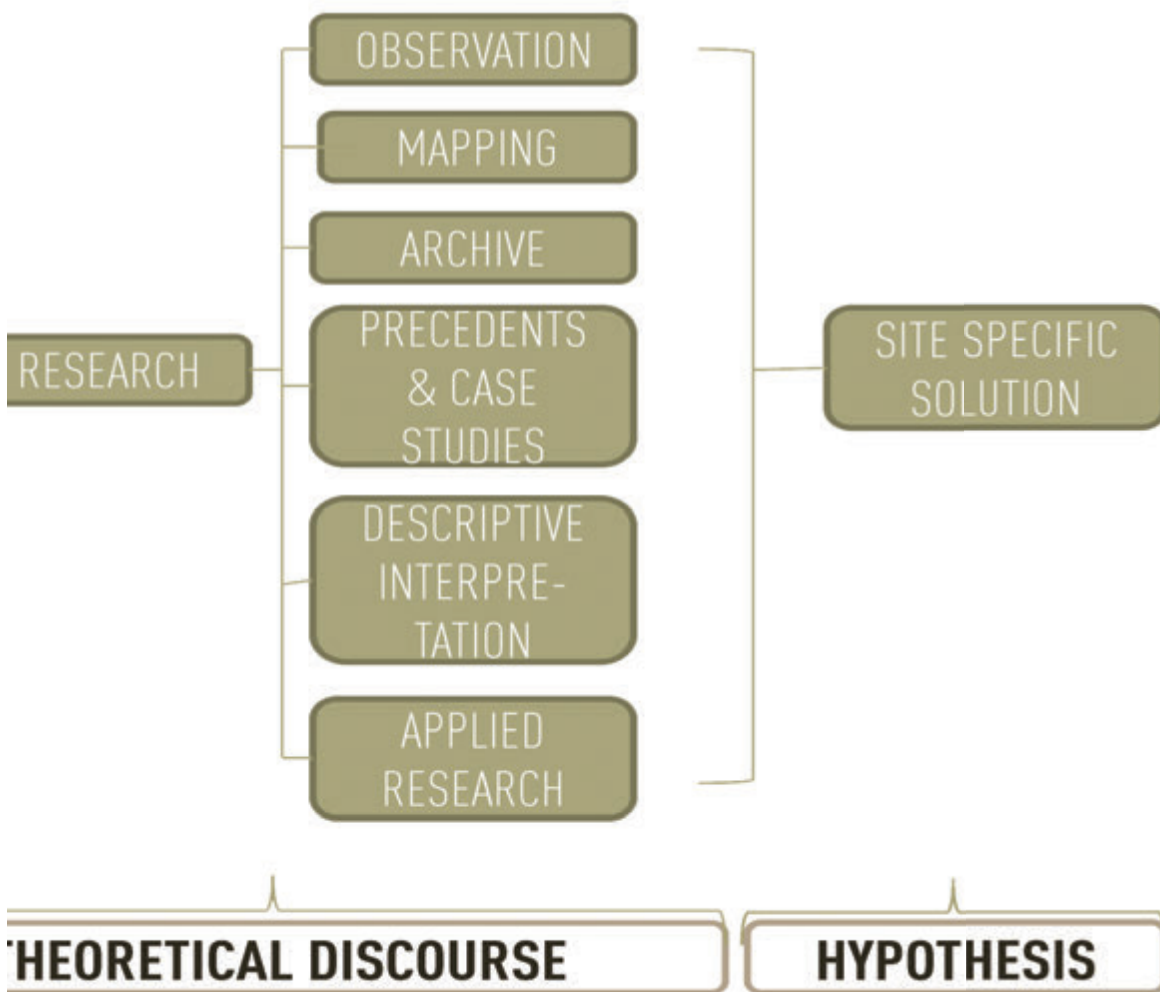
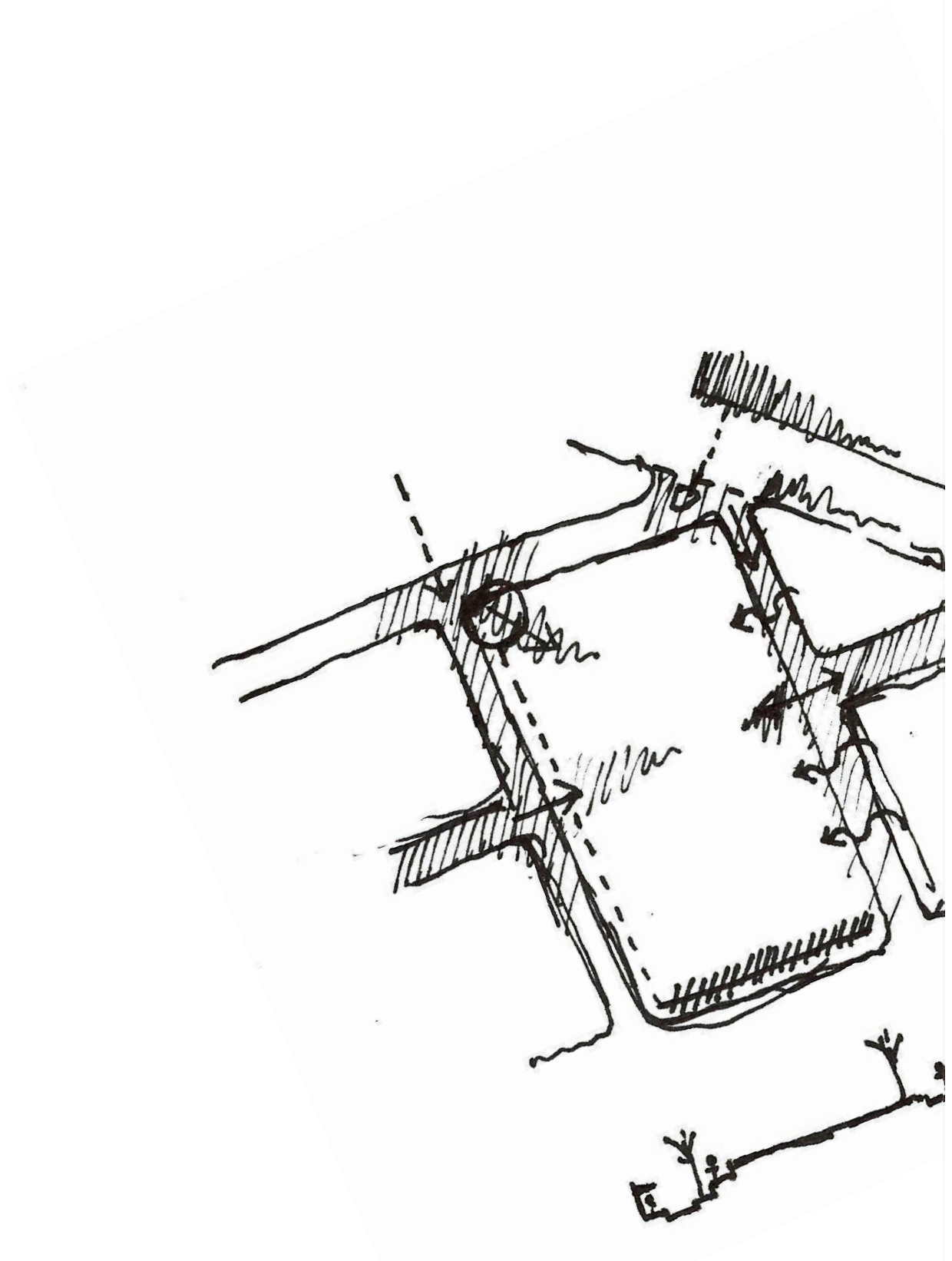


Figure 1.10. Methodology diagram

chapter 1: **SUMMARY**

Public space in post-industrial cities – like Johannesburg, specifically Jeppestown – are disjoint, fragmented and neglected. These spaces lack identity, thresholds and do not represent good quality public space.

The discipline of landscape architecture, however, has the potential to link/connect and enhance these fragments of space in order to facilitate a continual and vibrant open space network. This open space network should be suitable as a base on which architectural interventions can occur and encourage a sustainable living environment.



02

WELCOME TO JEPPESTOWN

Chapter 2 gives a condensed overview of the history and context as is explained in Volume I, as well as to contextualise the reader within a body of theoretical discourse which will impact the development of the design intervention.

- 2.1 **lenses**
 - 2.2 **investigating theory**
 - 2.3 **jeppe as layered entity**
 - 2.4 **context**
 - 2.5 **the quality of life in jeppe**
- chapter2: **summary**

“The city has borne witness to unbridled industrialisation, the conception of the industry and commerce that has become its signature.” J. van den Heefer

2.1 looking through a series of LENSES

It is important to understand the various relationships which drive Jeppe – the relationships between people and people, and people and the built fabric. It is necessary, in order to better investigate these relationships, to view the study area through a series of lenses. This allows the designer to look beyond a basic site inventory and observe that which often remains unseen to the passer by, by identifying patterns in everyday activities and mapping the character of what is Jeppetown.

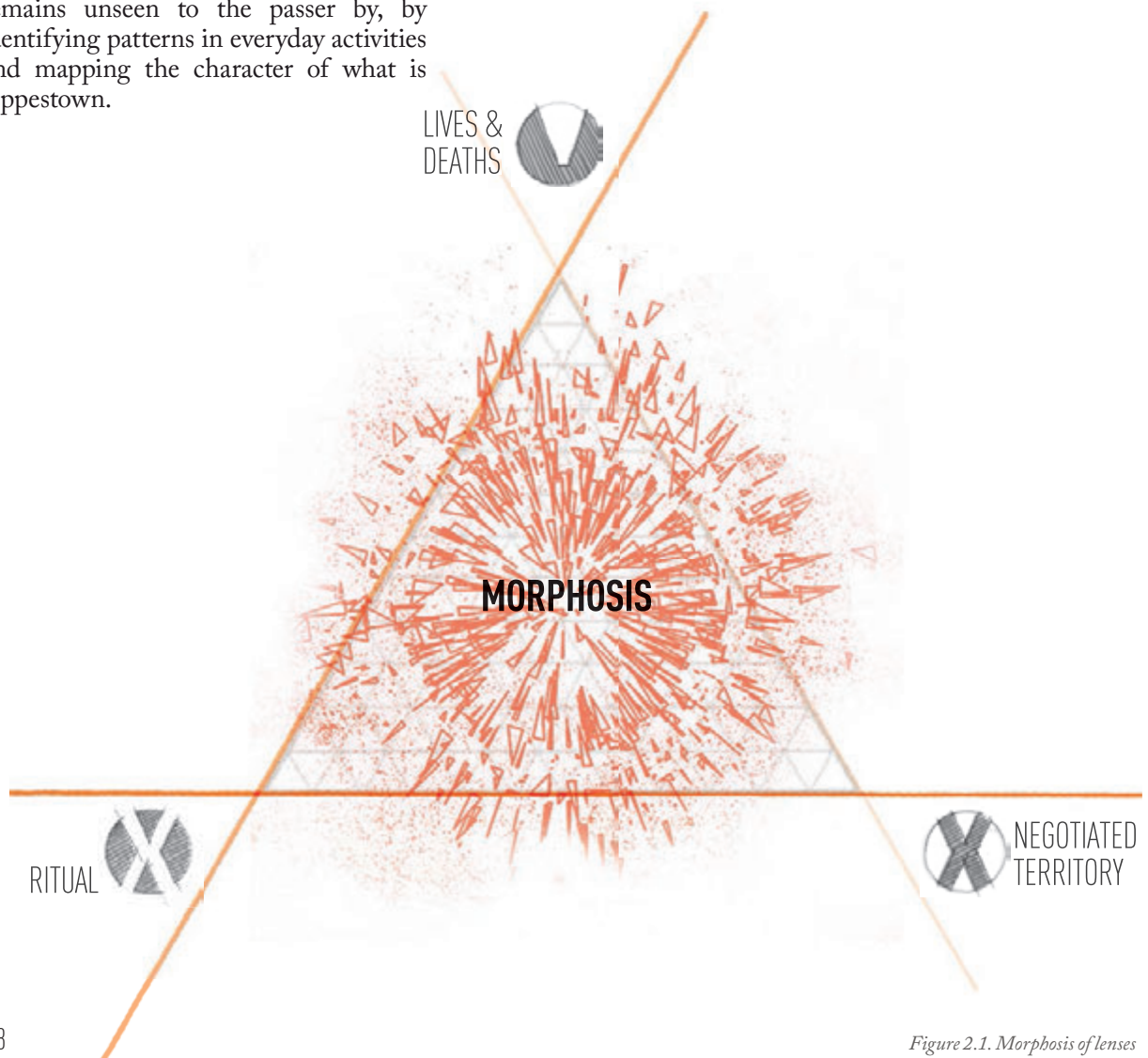
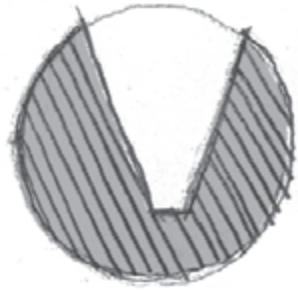
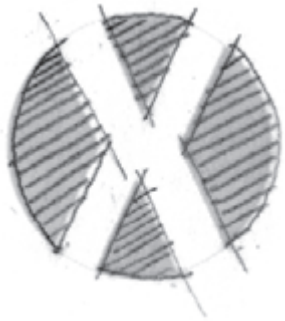


Figure 2.1. Morphosis of lenses

explaining the **LENSES**



Lives and deaths: the lens of lives and deaths mainly relates to building or built fabric which loses its function and regains a new one, when the fabric is changed to suit the needs of the current occupants.



Ritual: this lens consists of a series of activities as practiced by the inhabitants of Jeppe. It aims to address the patterns which manifest when certain activities are in motion on site.



Negotiated territory: this lens refers to the territory which exists between ritual and built fabric, as well as between rituals, and is very much a result of the people to people relationships, or how individuals reappropriate space to suit their current needs.

Figure 2.2. Lenses diagrams

2.2 investigating theory_ THE DYNAMIC NATURE OF SPACE

Space is inhabited by human beings, so by default the conditions of both the internal space of architecture and the external space of the urban environment need to suit the human needs (Van Rensburg and Da Costa, 2008b). While both types of spaces are associated with the public realm, they should also be viewed with regards to the human body and its relationship with space. Together with this, one should consider space as a temporal condition as it is within the African city, where spatial definition is expressed differently: here the public and private realms are adjustable and variable; because of the flexibility and elasticity of edges, as opposed to having fixed and static boundaries (Van Rensburg and Da Costa, 2008b). This means that territoriality occurs temporarily because of the adjustability of streets and public and private spaces, thus allowing public space to be continuously occupied in different ways. When space is viewed as a dynamic entity where the individual is allowed to morph and inhabit a mutable city, it becomes a self-organising system. W H Whyte (Whyte, 1980) suggests that space is influenced by people, while people are influenced by space. Here he

The city is only apparently homogeneous even its name takes on a different sound from one district to the next. Nowhere, unless perhaps in dreams, can the phenomenon of the boundary be experienced in a more ordinary way than in cities. To know them means to understand those lines that, running alongside railroad crossings and across privately owned lots, within the park and along the riverbank, function as limits; it means to know these confines, together with the enclaves of the various districts. As threshold, the boundary stretches across streets; a new precinct begins like a step into the void—as though one had unexpectedly cleared a low step on a flight of stairs.
(Benjamin, 1999:88)

refers to the way in which people use public space and that individuals occupy space in different ways. This phenomenon can be attributed to a series of factors, such as their gender and preferences associated with gender, different time of day, comfort levels as determined by environmental factors, the proximity of space to various human needs, the effective capacity of space and triangulation (Whyte, 1980). Together with the above mentioned factors, space is also influenced by fixed entities in and around public spaces, where opposites define one another, relating back to the figure ground where a distinction can be made between solid and void or positive and negative as allied to the idea of Gestalt (Van Rensburg and Da Costa, 2008b).

“What attracts people most, it would appear, is other people.”
– (Whyte, 1980)

investigating theory_ FIELD INTERDEPENDENCE AND SYNCHRONICITY

Carl Jung developed a theory of synchronicity, in which he argues that certain things or activities 'like' to occur together, rather than occur as result of one another. This means that certain rituals within the study area can be associated with certain aspects of Jeppestown and thus provide particular edge conditions, threshold spaces and realms embodying the negotiated territories of the study area. As a result of new lives or deaths of certain spaces, buildings and areas within Jeppestown, civil insurgence takes root, in addition allowing the process of synchronicity to occur all over again.

In order to better understand how these rituals manifest in physical space it is important to understand the typologies and archetypes associated with them.

After exploring Berry's theories of field dependence and field independence (Berry. 1992:124), it is evident that an overlap of these two theories can exist where public space is concerned. This relates to the idea that within a square populated by built forms, thresholds occur, which allows for a courtyard typology to manifest. The boundaries between existing fabric do not necessarily have to be defined by built form and fixed elements, but can also exist as result of ritualistic activities that occur within the space. In turn, this again relates to how public spaces evolve over the course of time and are reappropriated by those who inhabit them.

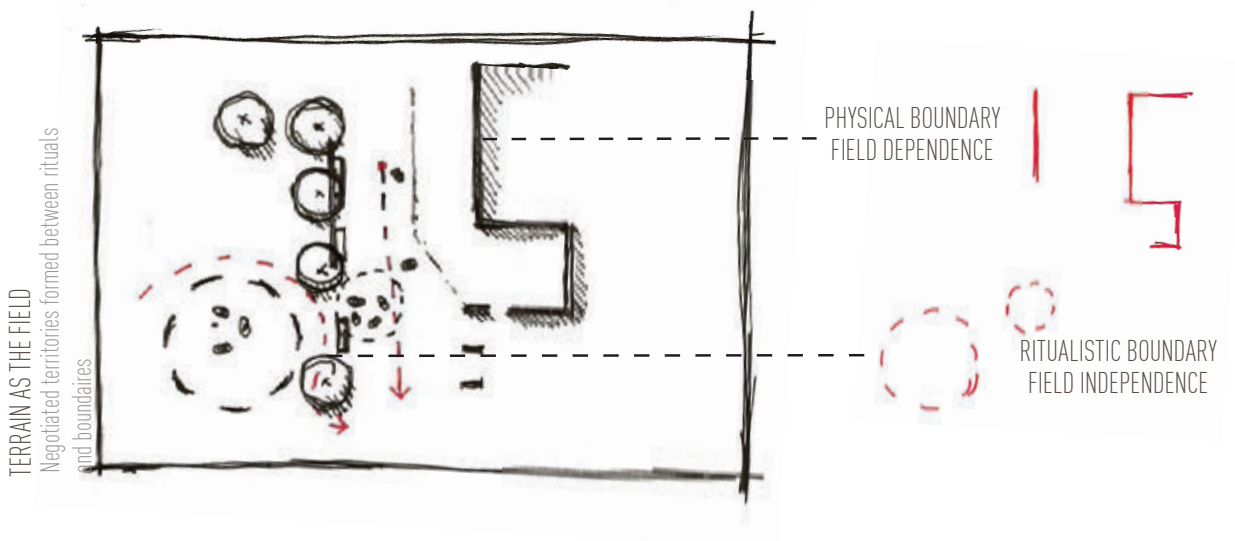
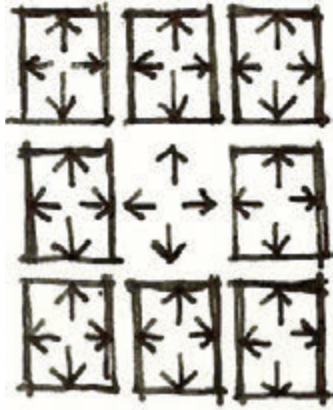
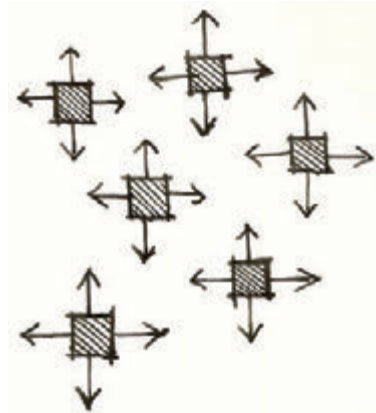


Figure 2.3. Explanation of field diagram

FIELD DEPENDENT



FIELD INDEPENDENT



FIELD INTERDEPENDENT

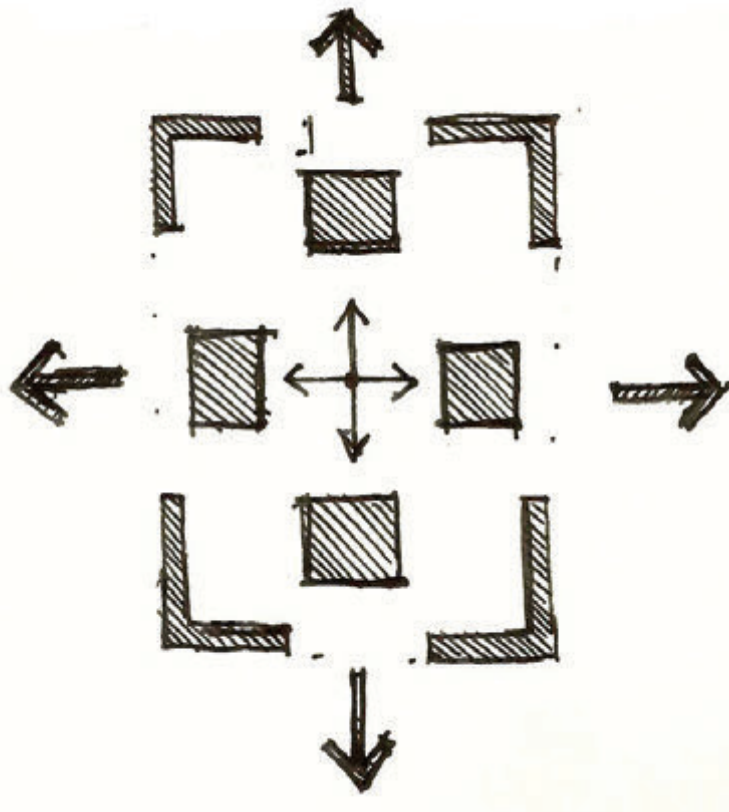


Figure 2.4. Field dependence and Field independence

Figure 2.5. Field interdependence

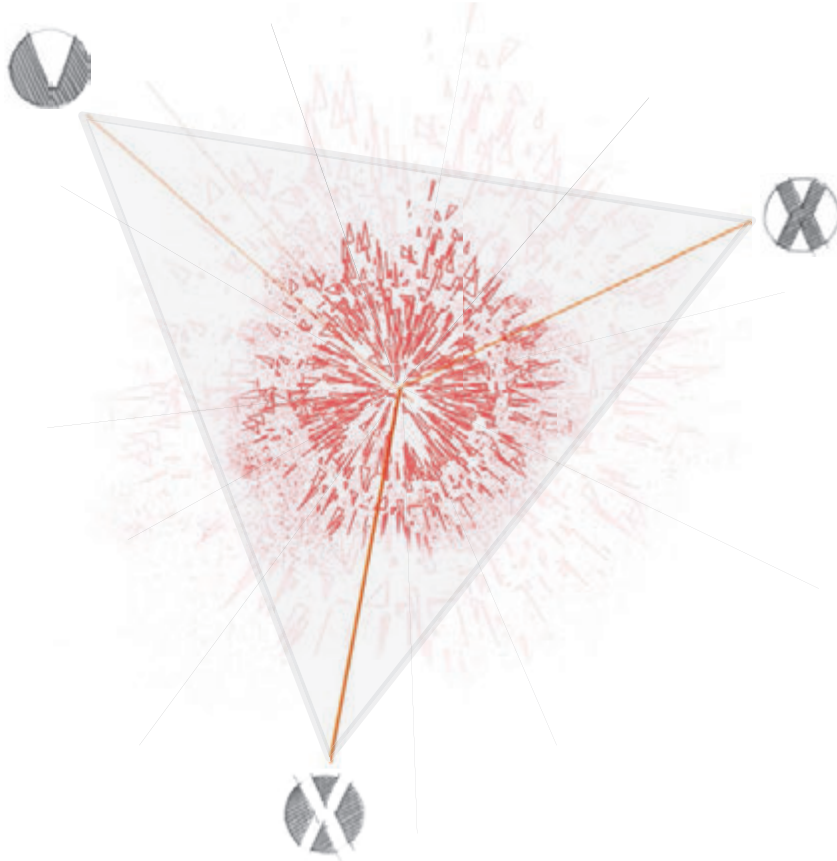
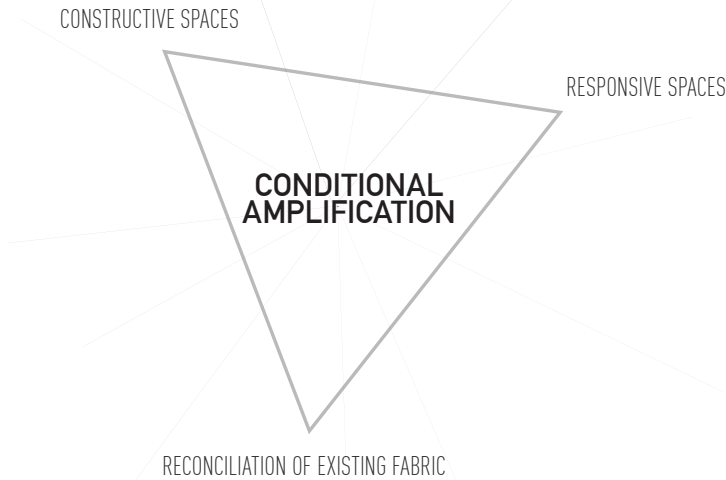


Figure 2.6.
(above) Vision diagram

Figure 2.7.
(opposite, top) Conditional
amplification diagram

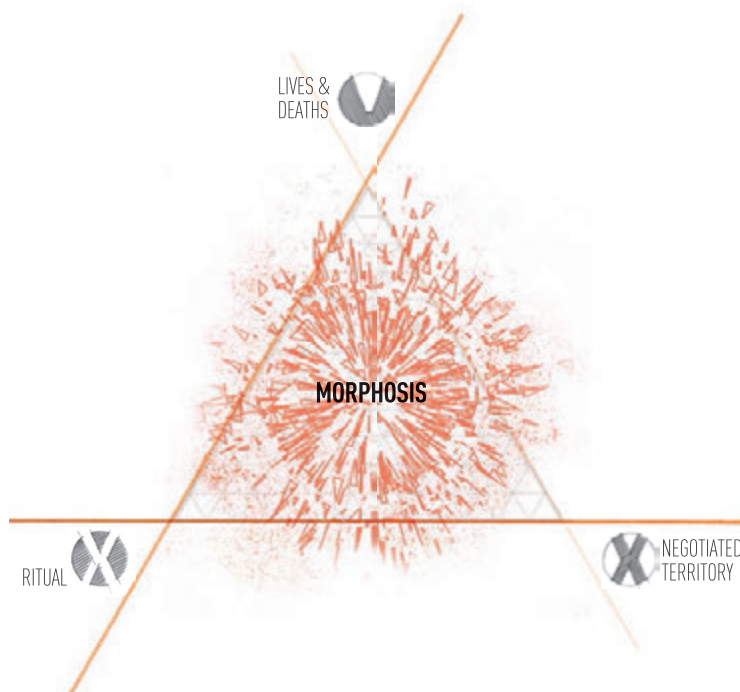
Figure 2.8.
(opposite, bottom) Lenses
diagram

investigating theory_ **CONDITIONAL AMPLIFICATION**



When viewing outdoor urban spaces through a series of lenses, (lives and deaths, ritual, negotiated territory) it becomes evident that the activities embodied by these lenses are either emphasised, combined or overlapped, that very specific spatial qualities emerge. This forms the base for the conception of a theory called Conditional Amplification and can be illustrated through the opposite diagram. (*Figure 2.7 on page 34*)

What the theory then aims to achieve is to not ignore the existing aspects of interest (the three lenses illustrated in *Figure 2.8 on page 34*) which currently occur within the study area, but rather to enhance a certain selection of these aspects, in order to maintain the identity represented by Jeppestown.



investigating theory_ JEPPE HYPOGRAPH

Combining the theories of field interdependence, conditional amplification, and synchronicity, and understanding how these relate to physical form as associated with archetypes, typologies and thresholds, while allowing it to both map and drive the design is difficult. One therefore needs to understand where these overlaps occur, and why they occur where they do. The following diagram (*Figure 2.9 on page 36*), The Jeppe Hypograph, aims to encompass and illustrate the amalgamated theories and show what forces impact public space.

The core of the Hypograph lies in the relationships between what activities occur on site and in which realm (public/private) they are most prominent. Therefore an inherent link exists between certain activities (rituals), thresholds and the edge condition represented by these thresholds and activities.

The human body

-  - Walking
-  - Standing
-  - Sitting
-  - Lying down

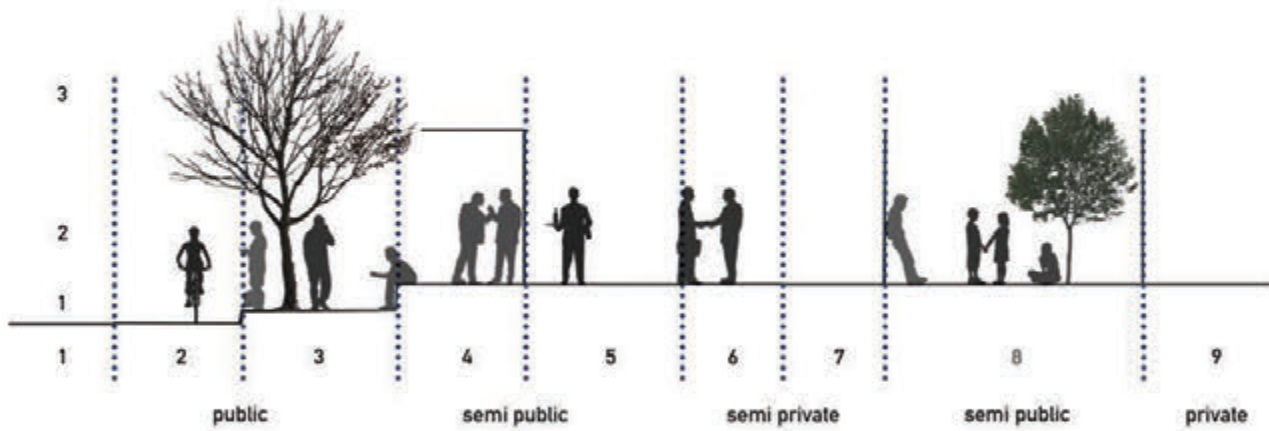
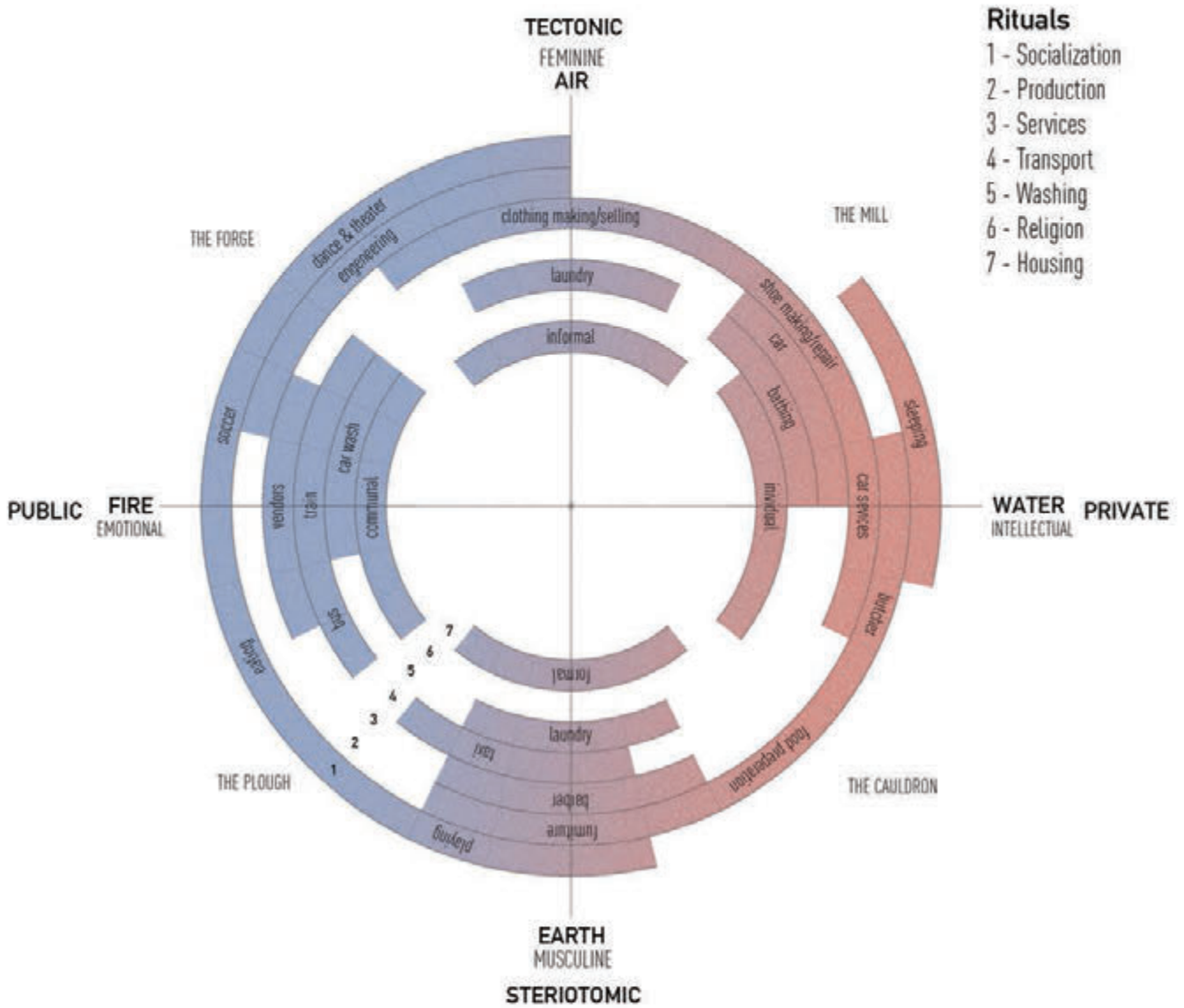
Environmental factors

- Sun
- Wind
- Rain

Systems & objectives

-  rainwater harvesting through using all surface areas of site
-  grey water recycling
-  recycling of all water used
-  alternative energy use
-  urban agriculture as productive landscape
-  sustainable use of water through indigenous low-maintenance planting
-  introduction of 'green' of sustainable design principles allowing the system to act independently
-  educational and interactive facilities

Figure 2.9. (above and opposite) Jeppe Hypograph

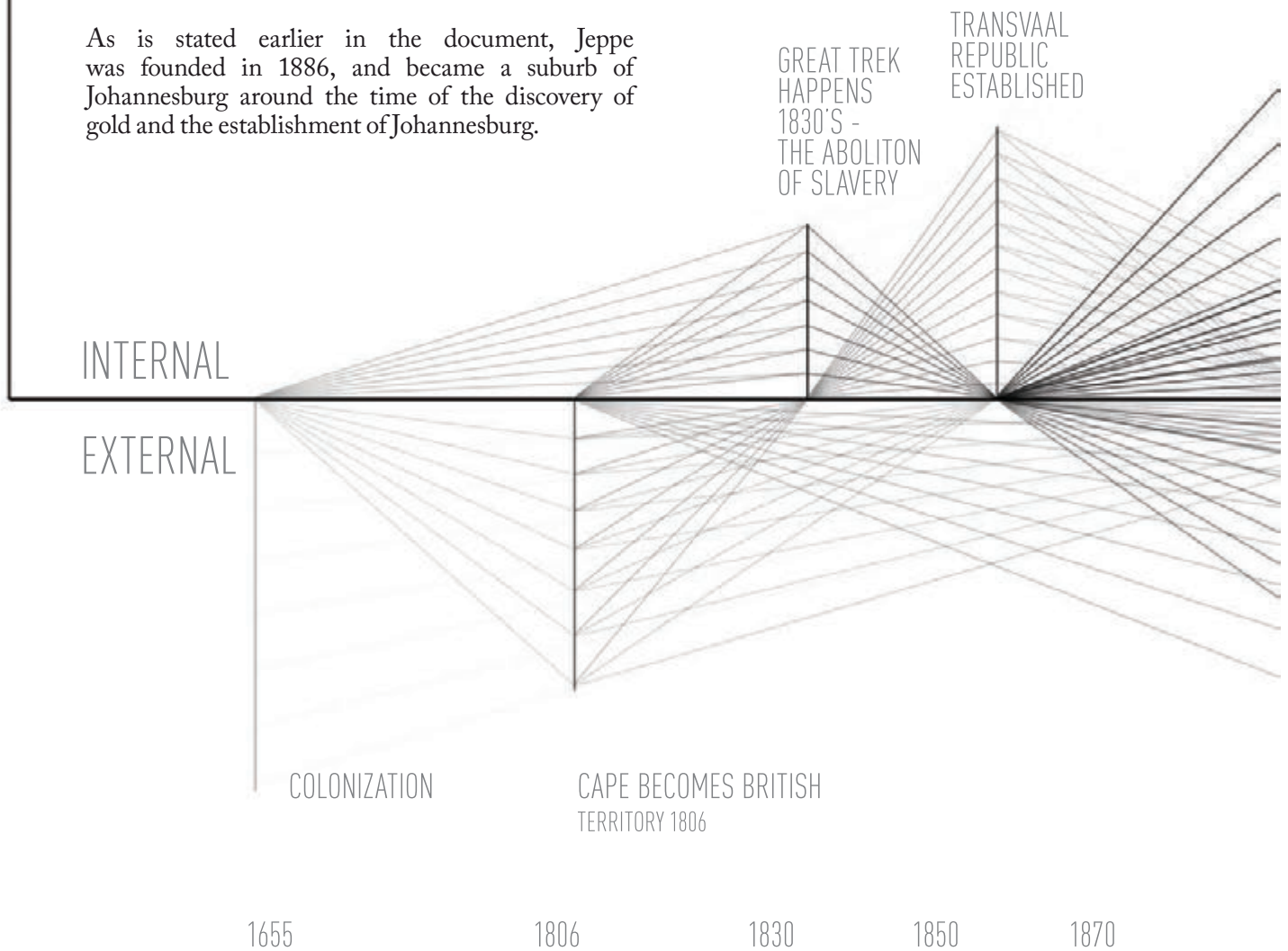


For Johannesburg was still busy growing out of a mining camp, like it will to the end of all time still be growing out of a mining camp (Wessels 1986:87).

2.3 JEPPE AS LAYERED ENTITY

The conceptual diagram below (*Figure 2.10 on page 39*) aims to illustrate the internal and external forces which impacted on the development of Johannesburg and consequently Jeppestown in a timeline of the city.

As is stated earlier in the document, Jeppe was founded in 1886, and became a suburb of Johannesburg around the time of the discovery of gold and the establishment of Johannesburg.



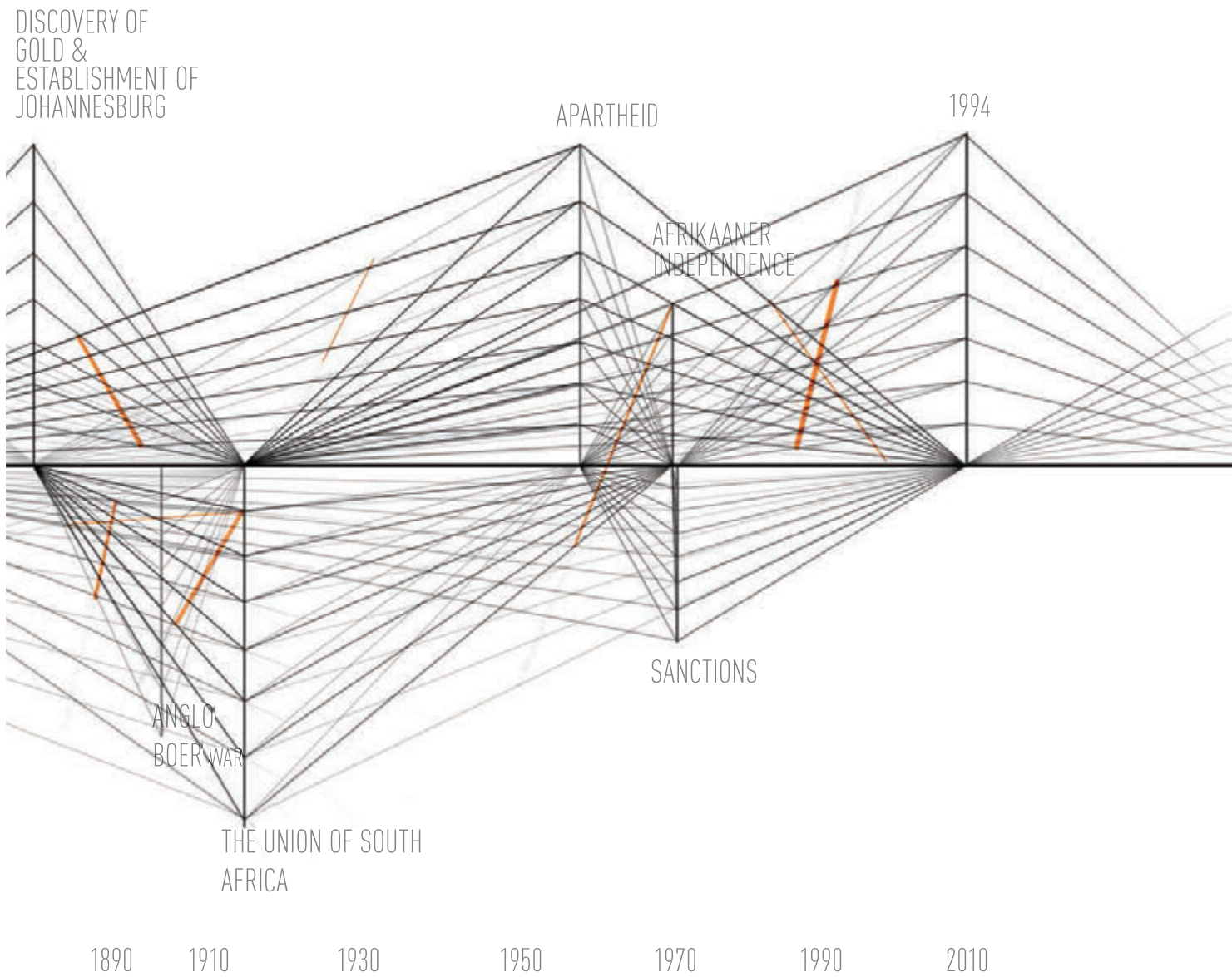


Figure 2.10. Timeline and forces

jeppe as layered entity_ A BRIEF HISTORY

Jeppetown – a very rich cultural landscape – is an eastern suburb of Johannesburg, founded in 1886 by Julius Jeppe as one of the first suburbs of Johannesburg (Jeppe, 1906). Johannesburg evolved from a mining town, into the thriving metropolis, which it is today. These evolutions can be tracked by observing the fabric of the urban realm and provided clues and insight into the history of this portion of town.

After the sinking of the railway line in the 1940's (illustrated in the centre diagram in *Figure 2.11 on page 41*) and the transformation of Jeppe West from a residential area into an industrial zone, many of the inhabitants moved away (interval 6 & 7 in *Figure 2.12 on page 41*).

Today, with the exodus of industry the opposite phenomenon occurs, where inhabitants are moving back and reappropriating the post industrial site to suit their current needs (interval 8 *Figure 2.12 on page 41*).

In order to express the evolution of the landscape it is necessary to view the landscape in a series of intervals – each as a testimony to the characteristics of the landscape at a certain point in time. These landscape intervals can be layered by the various generations of built fabric, which evolved at different times and are explained by the figure below. (*Figure 2.12 on page 41*)



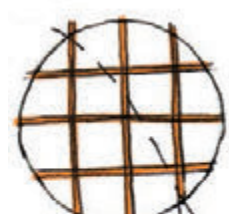
INTERVAL 1
clean slate



INTERVAL 2
farms & spruits



INTERVAL 3
camps & shafts

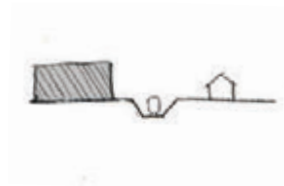


INTERVAL 4
grid & rail

generation I



1904
generation I



1946
generation III



2014
generation IV

Figure 2.11. (top)
Jeppestown generational
land uses

Figure 2.12. (below)
Landscape intervals and
generations



INTERVAL 5
underground pipes



INTERVAL 6
sunken rain



INTERVAL 7
industrial



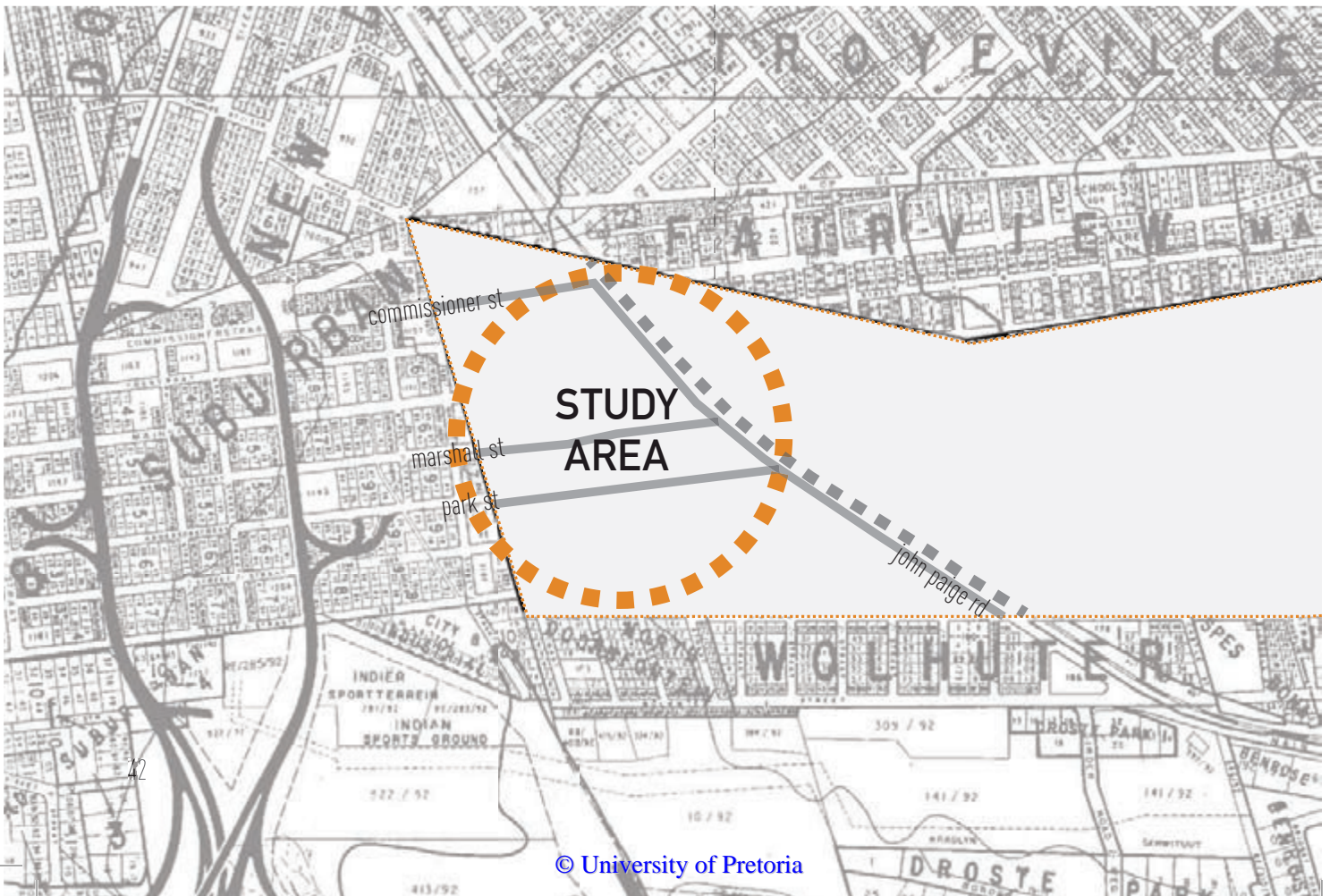
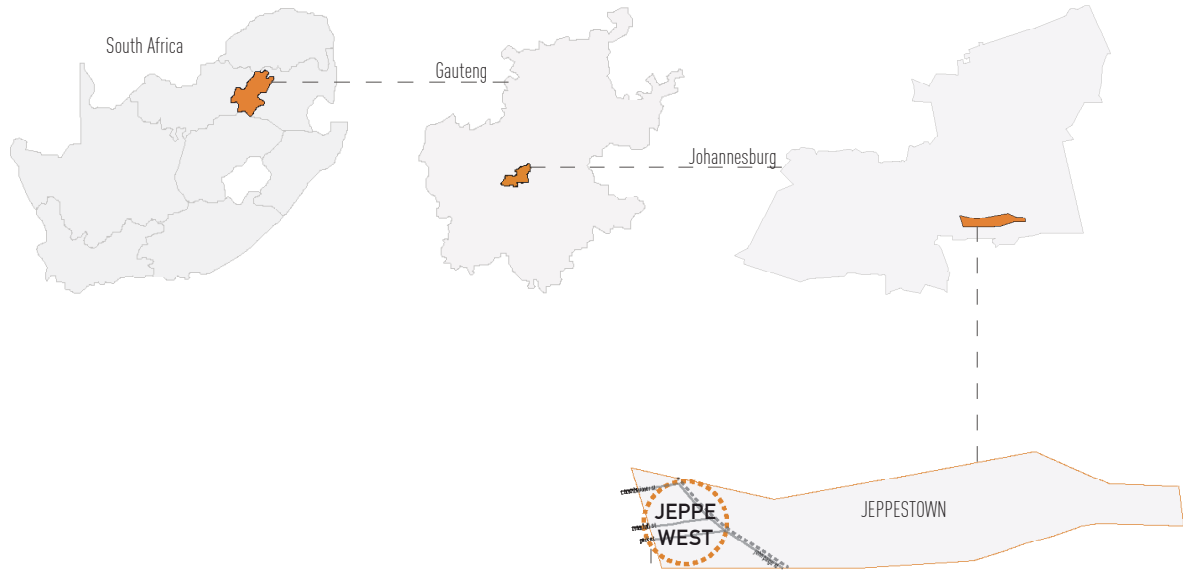
INTERVAL 8
insurgents

generation II

generation III

generation IV

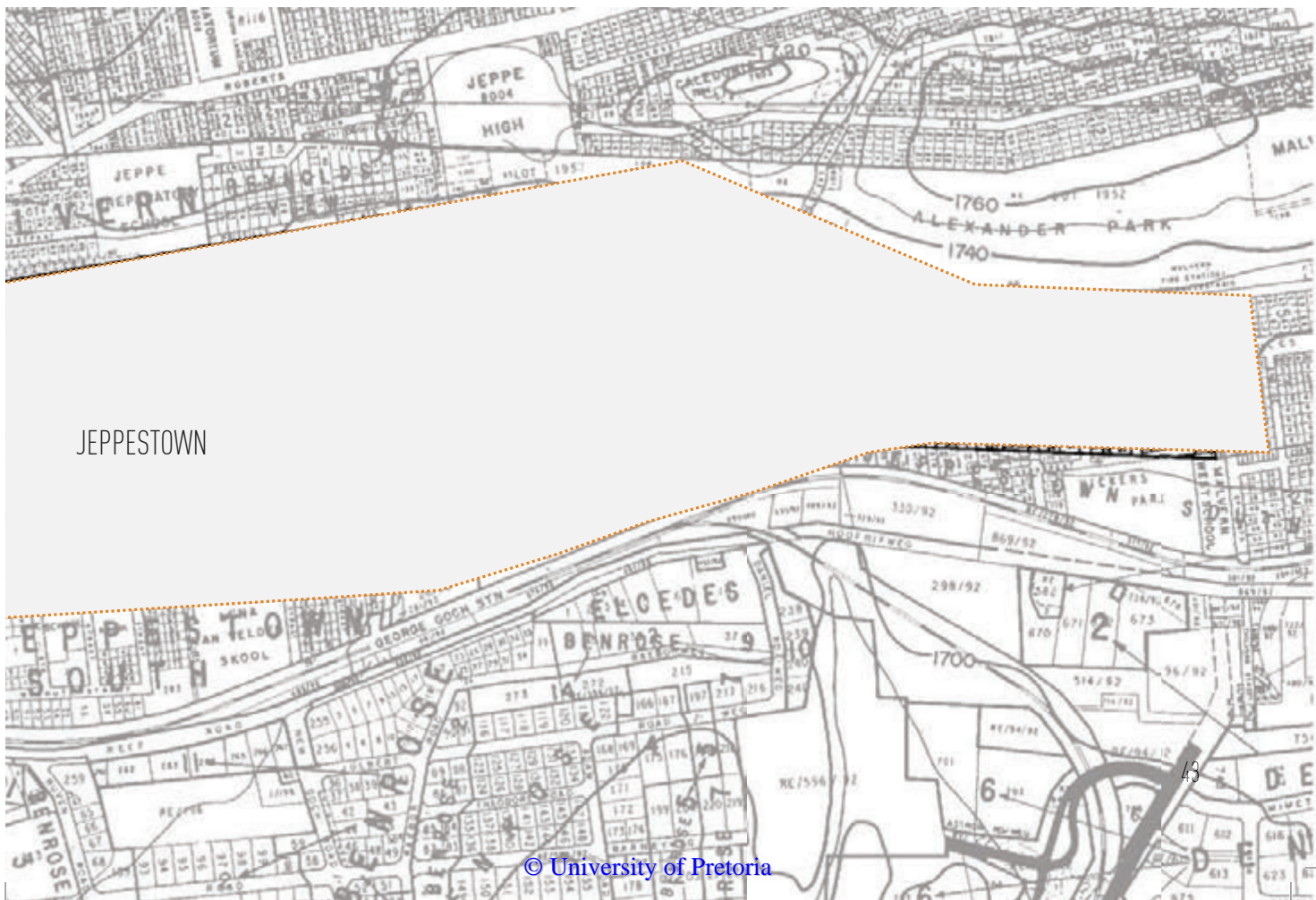
"Since its rapid beginnings, Johannesburg has transformed and fashioned itself according to the ever changing climate of the day." - J. van den Heever



2.4 the context LOCATION

Jeppestown is situated east of Johannesburg CBD and north of the mining belt. Jeppestown can be viewed as the South-Eastern gateway into Johannesburg, when approaching the CBD from the southern townships.

Figure 2.13. Location map
of Jeppestown



the context **ACCESS**

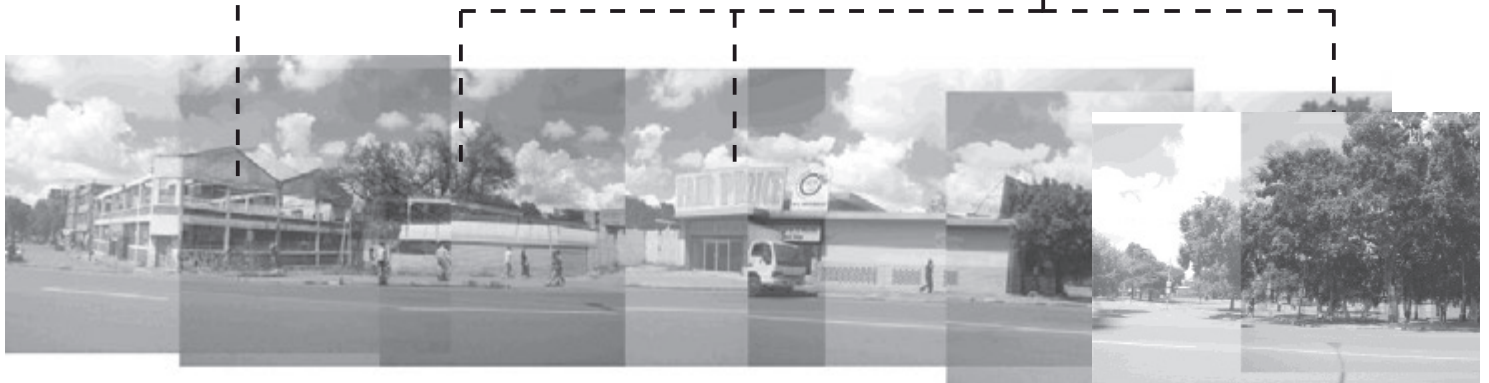
Jeppe West and its inhabitants rely highly on public transport. Most commuters rely on taxis or trains as mode of transport. The nodes where these modes of transport are situated are high in energy and in constant flux, as large groups of people enter or exit Jeppestown Station or leave and arrive at bus stops or taxi drop offs.

There are, however, those who possess their own modes of transport and private vehicles are often seen entering or exiting covered and guarded parking areas or one of the many car repair shops in the area.

Figure 2.14. (below) John Page drive near park street scape indicating living and working conditions.

LIVING IN JEPPE

WORKING IN JEPPE



2.5 THE QUALITY OF LIFE IN JEPPE

“By ‘bohemians’ I mean that class of individuals for whom existence is a problem, circumstances a myth, and fortune an enigma; who have no sort of fixed abode, no place of refuge; who belong nowhere and are met with everywhere; who have no particular calling in life but follow fifty professions; who, for the most part, arise in the morning without knowing where they are to dine in the evening; who are rich today, impoverished tomorrow; who are ready to live honestly if they can, and otherwise if they cannot.”

- Adolphe d’Ennery and Grange, Les Bohemiens de Paris (Benjamin, 1999:428)

WORKING IN JEPPE

LIVING IN JEPPE



the quality of life in Jeppe_ **LIVING CONDITIONS**

With the exodus of industry from Jeppe West, many opportunistic civil insurgents ‘highjack’ these abandoned buildings. This is a result of urbanisation and the illusion of work opportunity closer to the CBD. The buildings do not have the capacity to serve the civil needs of the high load of inhabitants and show signs of an unhealthy living environment.

When Johannesburg was still a young mining town, the suburb Jeppetown, provided a retreat from the city central which was mainly viewed as a working environment. Many a prospector found a place to rest his head in the Wolhuther Men’s Residences – old mining hostels, which are still in use today as a male hostel for renters of a low income bracket (Sticky Situations 2012).

Figure 2.15. (below) John Page drive near station street scape indicating living and working conditions.

WORKING IN JEPPE



the quality of life in Jeppe_ **WORKING IN JEPPE**

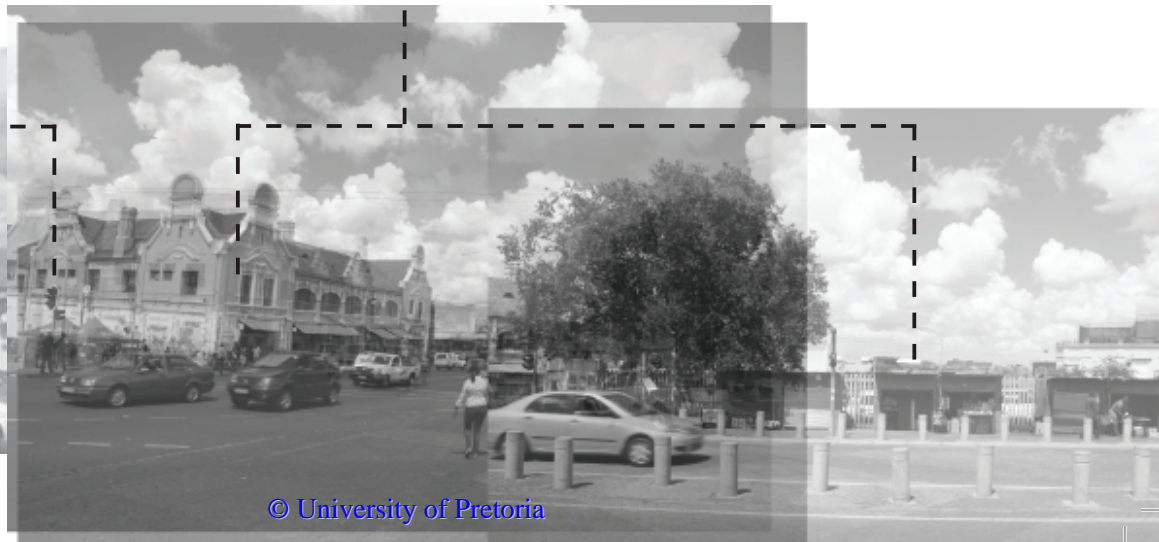
Working in Jeppe for some people, forms part of a long line of family owned stores and businesses. Many a father-son store can be found scattered between the industrial buildings throughout Jeppe West. These shops have a unique character, fragments of a vibrant culture and stand as testament of a time past.

Other work opportunities such as vending and renting a local stall at the Jeppe Station market are fairly common. Most of the inhabitants, however, seem to possess a certain set of skills and therefore finding apprenticeship at a local hairdresser or car repair shop are some of the most common traits among the working community.

LIVING IN JEPPE



WORKING IN JEPPE



chapter 2: **SUMMARY**

By viewing Jeppestown through a series of lenses certain spatial and ritualistic qualities of the site start to emerge.

Public space as represented by the field can be determined by physical boundaries and appear static, but becomes dynamic when activated by ritual, which forms new boundaries and negotiated territories.

These qualities can be enhanced by exploring the relationships between activity, edge conditions and thresholds.

03

SEARCHING FOR **CLUES**

Chapter 3 is mainly concerned with site analysis, site inventory, study area and a conceptual exploration of theory in context.

- 3.1 **inventory of Jeppe**
- 3.2 **the study area**
- 3.3 **study area analysis**
- 3.4 **gathering identity**
- 3.5 **precedents on public space**
- chapter 3: **summary**

The flaneur is the observer of the marketplace. His knowledge is akin to the occult science of industrial fluctuations. He is a spy for the capitalists, on assignment in the realm of consumers. (Benjamin 1999:426)

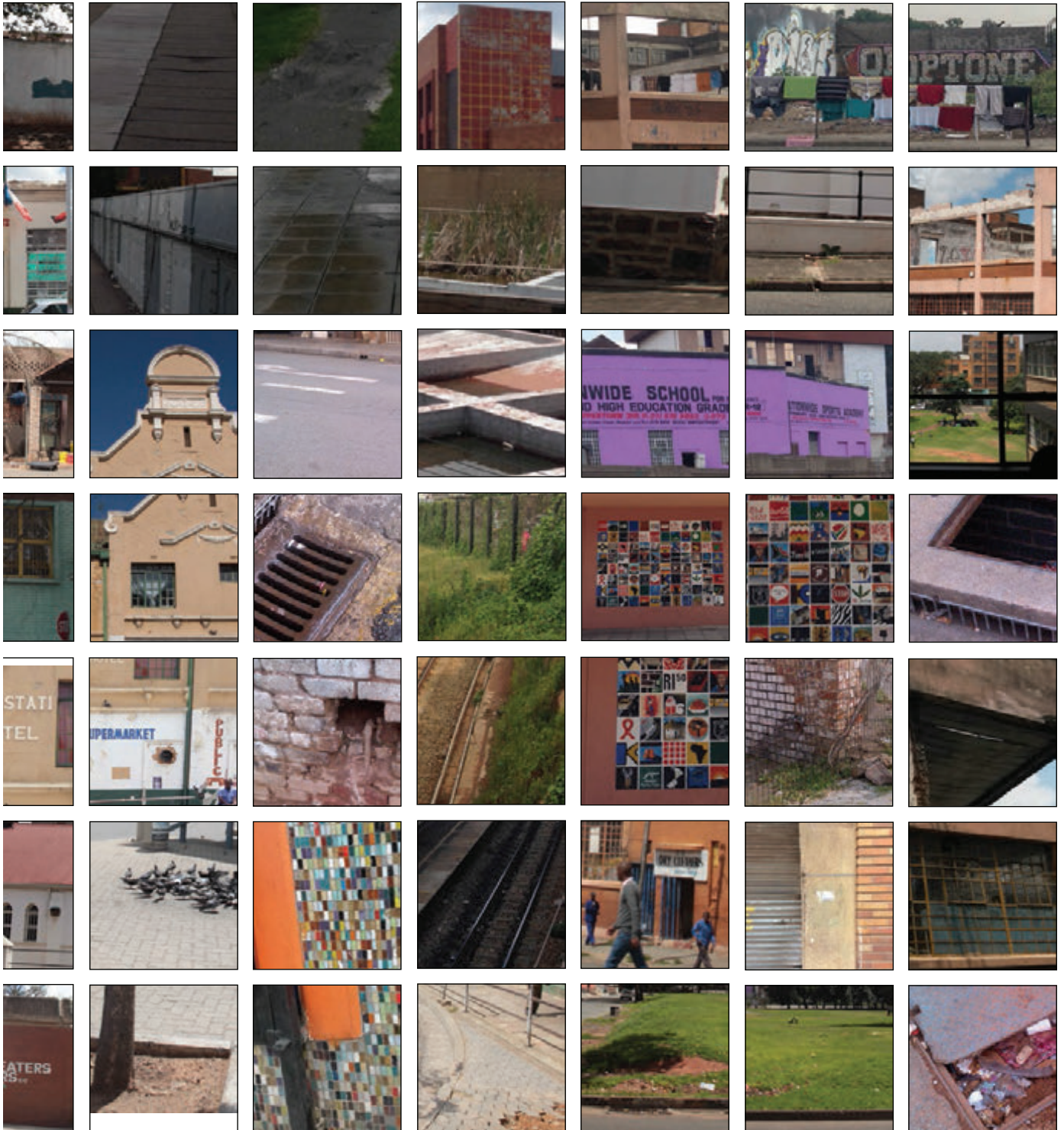
3.1 inventory of jeppe_CHARACTER

Jeppetown has a plethora of historical buildings, public amenities, fast food or take-away shops, shebeens and cafes, street vendors, car repair shops and places of religion, like churches, mosques and synagogues. These instalments within the fabric of Jeppe (Figure 3.1) cater for a vast variety of inhabitants and are integral components in the way Jeppetown functions.

It is important to take an inventory of where these places of interest exist within the city fabric, in order to understand the social networks that stem from the proximity of these shops and amenities. This inventory is shown in Figure 3.2.



Figure 3.1. Site Character
Mood Bord



site inventory_INVENTORY MAPPING





public transport and amenities



service industry business



recreation



skills based business



civic forces



urban problems



the drift



sunken railway



pedestrian & vehicular traffic intensity



Figure 3.2. Site inventory

“Busy urban streets are places for sitting, buying selling and performance.”
– (Dee 2001:89)

3.2 the study area_ IMPORTANT NODES

Coinciding with the inventory and proximity of amenities, certain areas where social networks overlap become prominent. These areas are high in activity and form part of a string of nodes and micro nodes along corridors of movement with social and commercial activity.

Within the context of Jeppe West a series of micro nodes exist along the diagonal line of John Page Drive and the train tracks. These nodes can be attributed to the fact that this is one of the most prominent movement corridors between two major nodes (*Figure 3.3*) which are situated within this portion of town – the station and market precinct to the north (*Figure 3.4*); and the park to the south (*Figure 3.5*). It is along this axis where much of Jeppetown’s character can be experienced and many opportunities for interaction with the amenities of Jeppe exist. Because of the interesting edge conditions formed by the built fabric and activities which occur along this spine, it immediately captivates the mind of the designer and forms an enticing area for investigation.

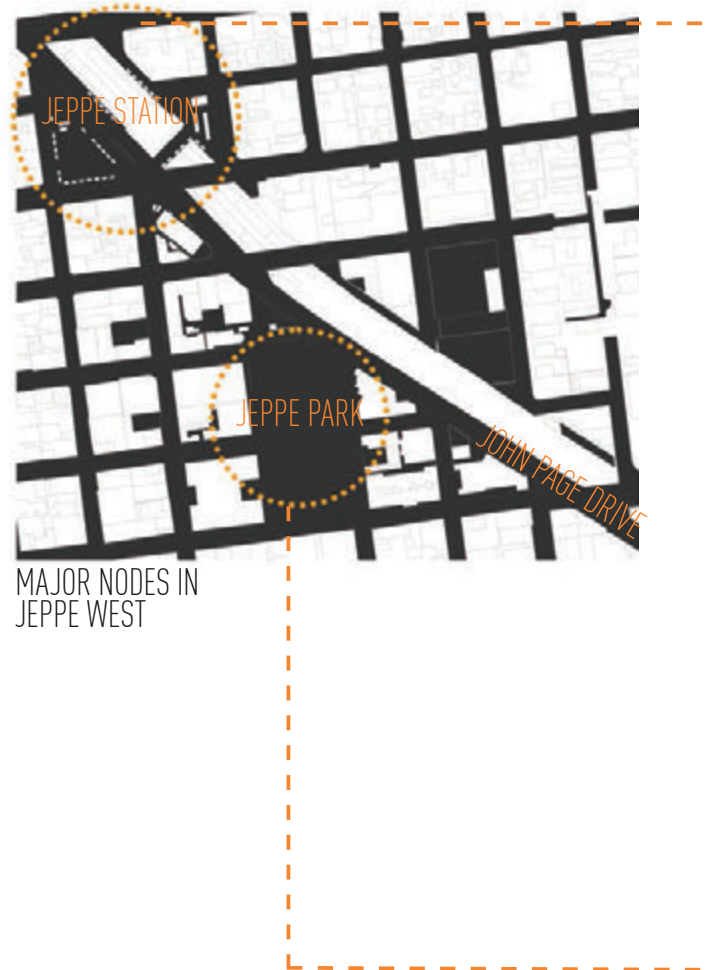


Figure 3.3. (top) Important nodes

Figure 3.4. (bottom right) Images of Jeppe Park



COMMERCIAL & TRANSPORT NODE



Figure 3.5. (above) Images of and around Jeppe Station

RECREATIONAL AND SOCIAL PARK NODE



the study area_ **IMPORTANT CORRIDORS**

The social and commercial corridor, anchored by the station precinct and park, can be designated as the core of the larger study area, which also encompasses the adjacent city blocks and the scar as left by the sunken railway line. These form a sort of buffer zone on both sides. The larger study area (illustrated in *Figure 3.8*) becomes the focus for the landscape architect, while smaller areas, mainly consisting of a single city block populated by buildings from various generations, become the sites for architectural intervention (*Figure 3.6*). Apart from the physical elements as found within Jeppe, one must also bear in mind that certain activities and network patterns are influenced by environmental factors and require investigation. (*Figure 3.7*)



ARCHITECTS SITES



HIGH ACTIVITY AREAS

*Figure 3.6. (top)
architectural sites*

*Figure 3.7. (bottom)
areas of high activity*

THE STUDY AREA

- Landscape and group framework study area
- Architects study areas

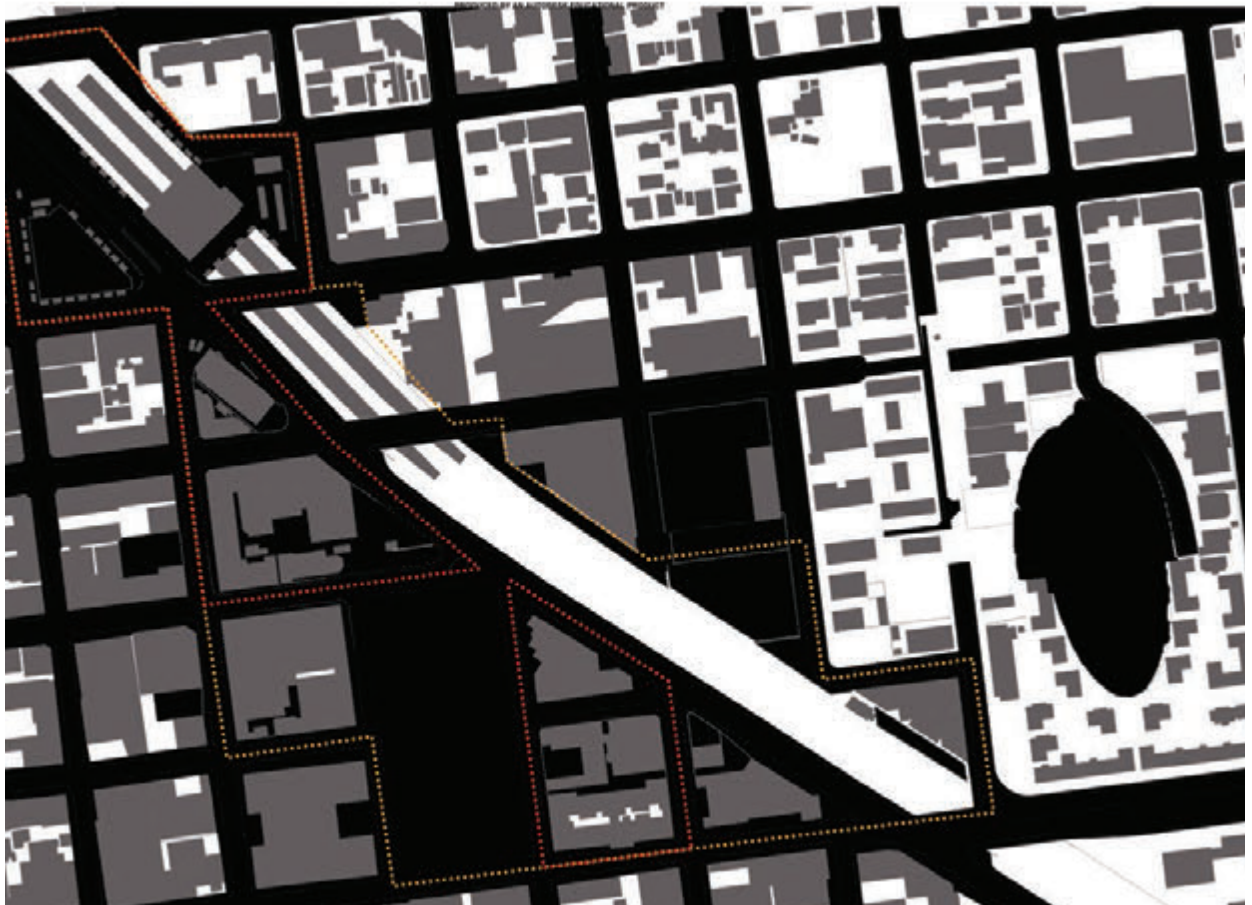


Figure 3.8. study area

3.3 study area analysis_ HYDROLOGY - WATER AND THE CITY

Jeppetown falls in an area subject to a summer rainfall season which receives more than 680mm of rain per annum (refer to *appendix A* and *appendix B*). Johannesburg is known for its Highveld thunderstorms and afternoon showers. The high frequency of precipitation causes a lot of surface runoff as result of the nonporous surfaces within this urban environment.

Jeppetown is built to the east of a natural stream, flowing from the ridges of Johannesburg to the mining belt to the south. This stream has since been canalised and bridged over the decades of construction and city-making in the area (Jeppe, 1906). Jeppetown is built somewhat higher than the CBD of Johannesburg itself and surface runoff therefore flows towards this stream, situated east of the CBD. The stormwater channel in Jeppe is indicated on the map in *Figure 3.9*)

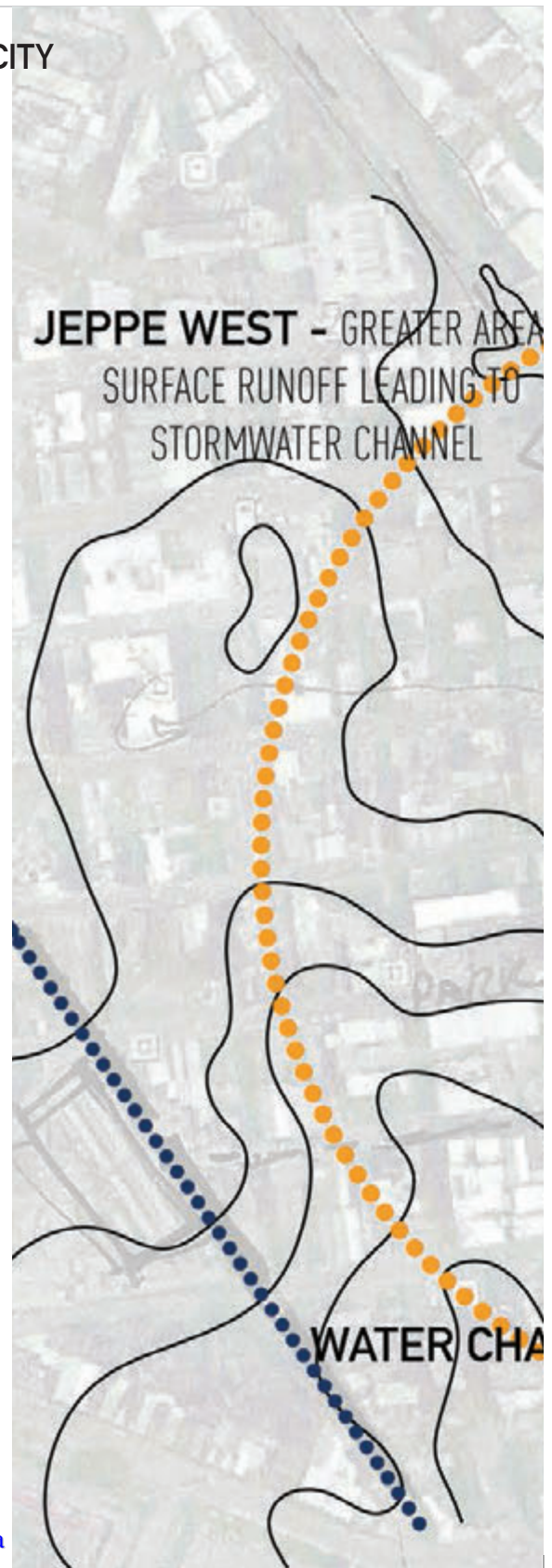
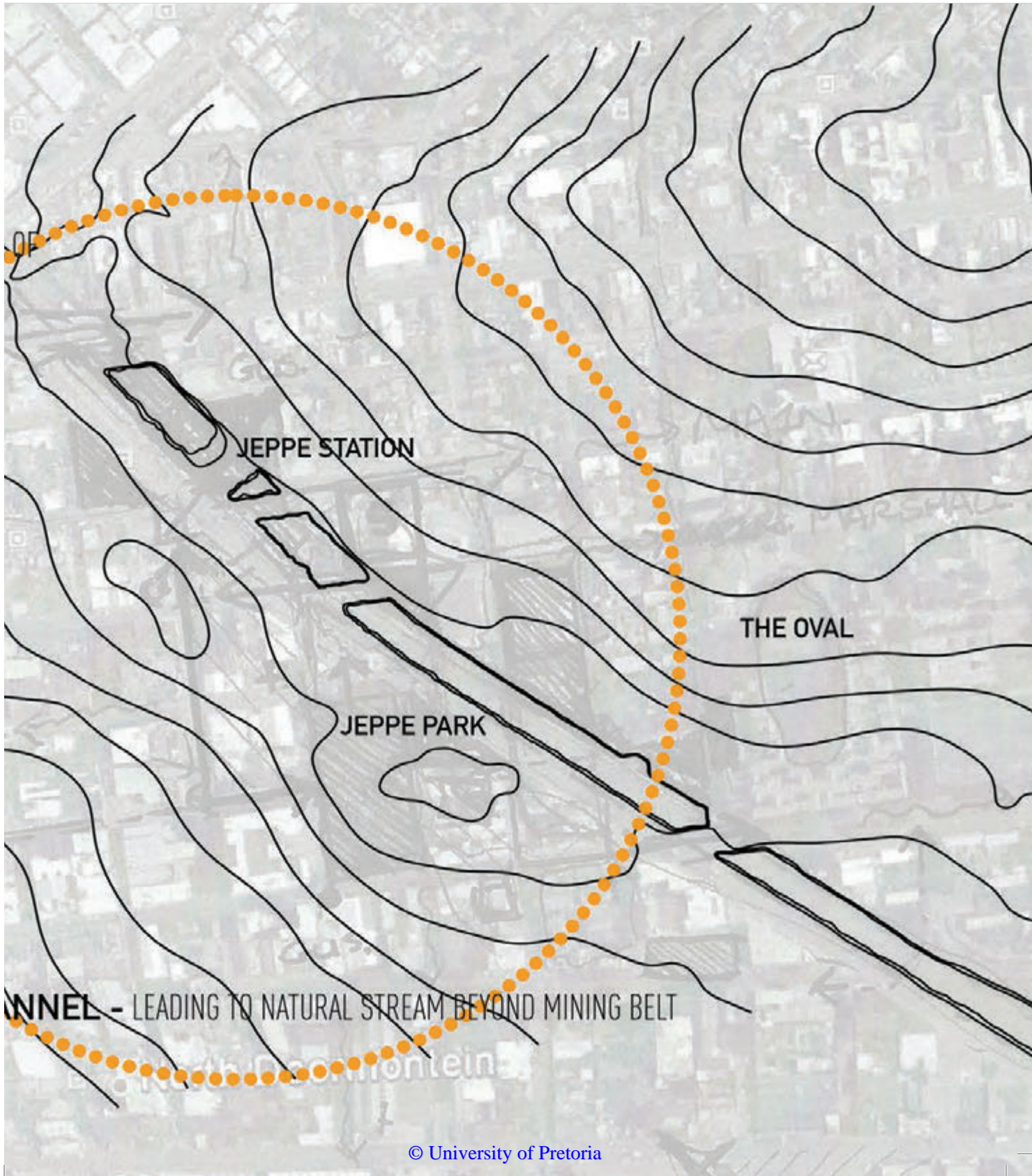


Figure 3.9. Map of Jeppe indicating stormwater channel



study area analysis_ HYDROLOGY - WATER AND THE CITY

Due to the nature of the existing grid and street design, stormwater tends to follow the curb lines and inlets, but because of the general slope, water often flows cross grid, flowing from one street intersection to the next.

The stormwater system in Jeppestown West is particularly old and in poor condition. (See images in *Figure 3.10* and *Figure 3.11*). In some areas stormwater pipes have been removed by some of the inhabitants while in other cases gutter inlet grids are either blocked by solid waste, such as cans and bottles, or have been stolen or broken. The existing stormwater system is shown in a diagram in *Figure 3.12*.

Not only is stormwater an issue, but grey water from the surrounding buildings also flows out onto the streets. The infrastructures of the buildings were not built to handle the load as placed on them by the civil insurgence, and together with the change in function, more water spills out onto the streets and is transported to the natural system beyond.



Figure 3.10. (above) blocked and gridless gutter inlets

Figure 3.11. (bottom right) sidewalks collapsing due to subsurface erosion



CURRENT STORMWATER CONDITIONS AND OPPORTUNITIES



- BLOCKED GUTTER INLETS
- FUNCTIONING GUTTER INLETS

Figure 3.12. (above)
Existing stormwater
diagram



study area analysis_ VEGETATION - PLANTIN IN THE URBAN ENVIRONMENT

As is mentioned earlier in the document, Johannesburg originated from a small mining camp on the Witwatersrand. This area, in its early days, was no more than an untouched grassland, with little or no naturally occurring trees, forming part of the Gold Reef Mountain Bushveld veld type - Egoli Granite Grassland veldtype (Mucina and Rutherford, 2006). Early Afrikaner farmers in the area planted trees they were familiar with, such as Acorn, Oak and Walnut trees. These were often used for windbreaks. The Bezuidenhout family had groves of fruit trees at Judith's Paarl and Cyrildene. Horticultural training programmes were implemented around Zoo Lake and soon residents in Saxonworld, Langlaagte, Parktown and Westcliff, started to plant oaks, London planes and pepper trees as street and property trees. This was mainly a result of the Colonial governance of the town of Johannesburg as an effort to green the suburbs of this growing city (joburg.org).

The city bears the traces of these early efforts of streetscaping and throughout Jeppestown one can still notice some well established specimens of mostly London Plane and oak trees. Together with these scattered clumps of green it is also evident that many trees were removed when areas became rezoned and the city was classified as a working environment – a concrete jungle, surrounded by green suburbs with tree lined streets (Holm, 1998).

When comparing Jeppe-West to Jeppe-East, it is quite evident that the nature of the industrial movement in the area allowed no room for trees, while the suburban eastern section of Jeppestown stands testimony to the tree lined suburbs.

PROMINENT EXISTING VEGETATION EXISTING TREES:

1. *Platanus × acerifolia* - London plane
2. *Quercus palustris* - Pin oak
3. *Quercus robur* - English oak
4. *Pinus halepensis* - Aleppo pine
5. *Syzygium cordatum* - Water berry
6. *Jacaranda mimosifolia* - Jacaranda
7. *Callistemon citrinus* - Red Bottlebrush
8. *Araujia sericifera* - Moth vine
9. *Ipomoea spp.* - Morning glories

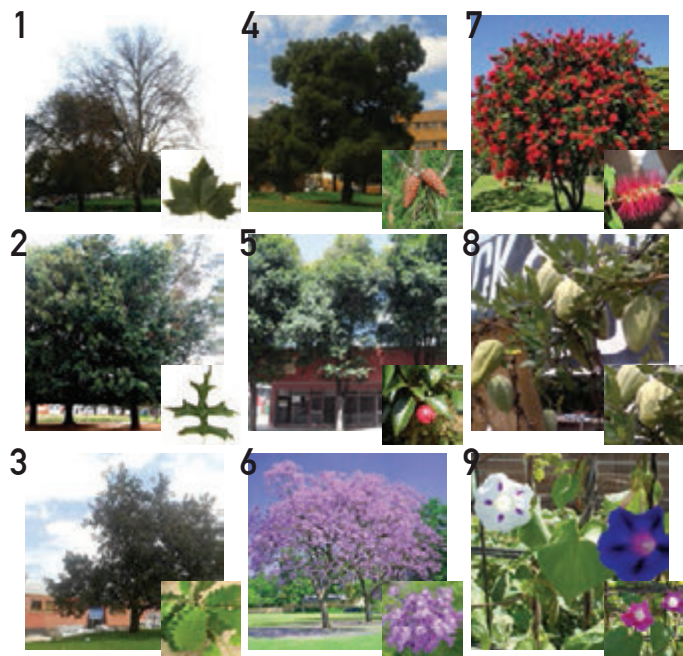


Figure 3.13. Existing vegetation pallet

EXISTING VEGETATION



Figure 3.14. Existing vegetation Jeppe West

study area analysis_ **MOVEMENT - PEDESTRIAN AND VEHICULAR FLOW**

Jeppe West is an area highly reliant on public transport. Jeppe Station is a destination for many commuters. This station acts as a node and intersection for various modes of transport. There are prominent movement corridors existing in Jeppe that are hybrids between vehicular and pedestrian corridors. The diagonal line (John Page Drive and the railway line) cutting through the grid is one of these prominent corridors acting as a gateway into the city from the south-east. John Page Drive also connects the two nodes of the Park and the Station and is widely used by both vehicles and pedestrians. From the park many pedestrians travel to destinations beyond like the Wolhuther Men’s Residences. Other connector streets like Commissioner, Main and Marshall Streets connect to the CBD of Johannesburg and are important vehicular corridors. The streets around the park are generally quiet and don’t receive a lot of vehicular movement.

From the movement mapping (Figure 3.18) can be deduced that the diagonal line of John Page Drive houses a lot of activity and is high in energy, since it accommodates both pedestrian flow and public transport networks. The informal drop off zones and small sidewalks can be viewed as opportunities for infrastructural upgrade and landscape architectural intervention.



Figure 3.16. (top left) John page drive sidewalks

Figure 3.17. (bottom right) Images of Marshall street and Commissioner street

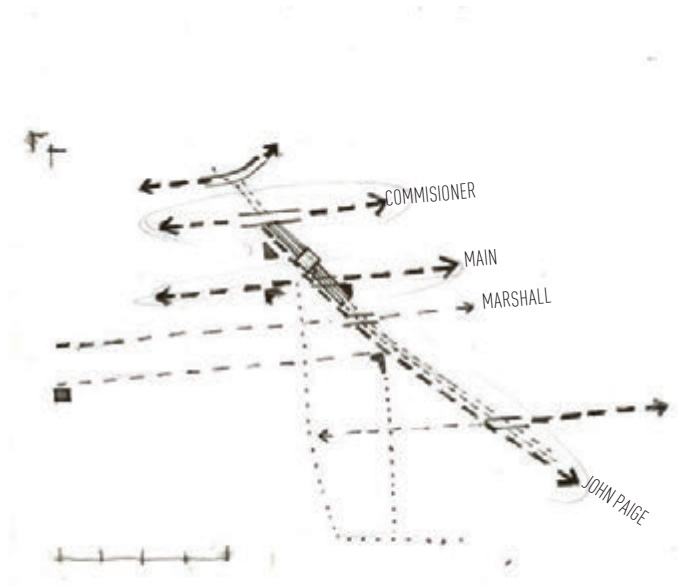


Figure 3.15. (bottom left) Movement diagram

PROMINENT MOVEMENT PATTERNS

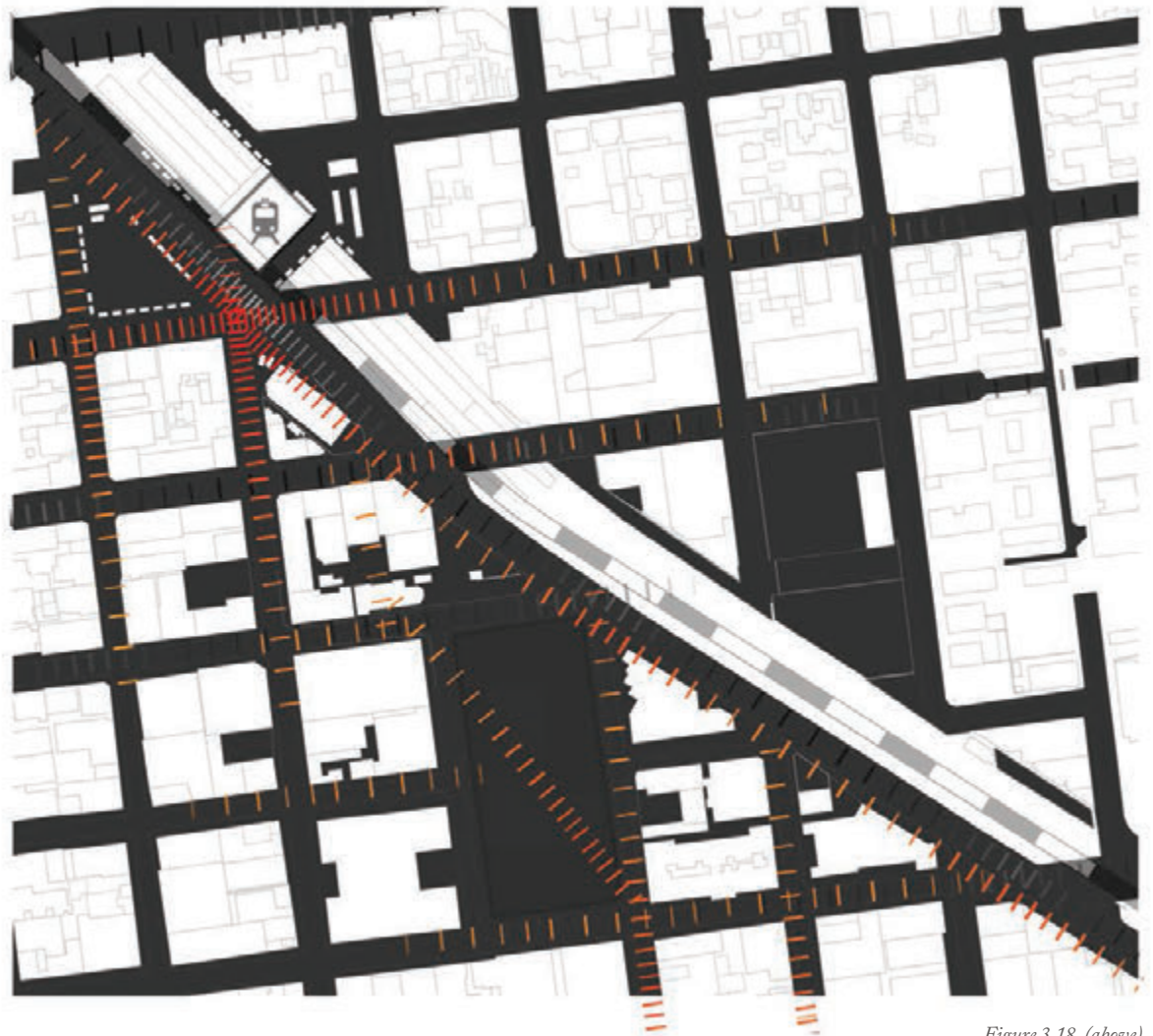


Figure 3.18. (above)
Movement and intensity

LOOKING DOWN MARSHALL STREET



LOOKING UP COMMISSIONER STREET



study area analysis_ **S.W.O.T ANALYSIS**

The following sums up the strengths, weaknesses, opportunities and constraints that the study area holds, as established through S.W.O.T. Analysis:

STRENGTHS:

- Close to public transport node
- Cultural and historic value of buildings and landscape
- Eastern gateway into JHB Central
- Encompasses recreational node of the park
- Prominent traffic systems
- Multiple access
- Strong urban character
- Infrastructural amenities eg. lighting
- Economic opportunities and activities
- Well established trees

WEAKNESSES:

- Degraded and fragmented environment
- Imposing building façades and scales
- Divided by strong streets and rail
- Inappropriate public spaces
- Strict urban fabric
- Inaccessible fabric
- Poorly serviced buildings
- Leveled topography & heat island leads to hot environment
- Lack of biodiversity

OPPORTUNITIES:

- Upgrading public space
- Enhancing existing rituals
- Possibilities to incorporate into existing frameworks
- Connecting urban environments
- Reapportioning urban fabric
- Inserting stronger civic amenities
- Water harvesting
- Urban agriculture
- Major pedestrian activity
- Landmark and gateway intervention
- Mixed use potential
- Revival of businesses
- Spinal development as opposed to precinct

CONSTRAINTS/THREATS:

- Strong activity of Wolhuthers Mens Residences
- Regulations to implement certain programmes
- Privately owned land
- Space for natural systems is limited
- Gentrification of environment
- Looting and walling up of heritage buildings
- Degradation as result of unsustainable environment
- Invasive alien and pioneer plant species taking over

study area analysis **THE PROBLEM TREE OF JEPPESTOWN**

The present-day African city is complex in form and entertains levels of complex problems (Adebayo, 2000). Even though the contemporary African city might share taxonomic principles of western urbanism in terms of its physical form, it is unique on morphological level (Steyn, 2007).

The S.W.O.T Analysis can be consolidated into the Jeppe Problem Tree, which illustrates the main issues associated with an environment like Jeppestown. (Please see *Figure 3.19*).

By focusing on the strengths and opportunities as established through the S.W.O.T Analysis, one might be able to grapple with certain issues associated with the roots of the Problem Tree.

Possible solution:

The compact city - aimed at promoting high density, mixed-use development and integrated development.

DECLINING SERVICES
ENVIRONMENTAL POLLUTION
FRAGMENTATION
INFRA-STRUCTURAL PROBLEMS
HOUSING SHORTAGES
HIGH LAND VALUES
LOW LAND VALUES
LACK OF MANAGEMENT
URBAN POVERTY
UNEMPLOYMENT

ACCESS
CRIME
CORRUPTION
DUMPING
EDUCATION
HEALTH ISSUES
SAFETY

CONCENTRATION OF ECONOMIC AND COMMERCIAL ACTIVITIES
INFORMAL SETTLEMENTS ON CITY PERIPHERIES

NATURAL INCREASE AND HIGH BIRTH RATES

RURAL-URBAN MIGRATION

RAPID URBAN GROWTH

POOR URBAN PLANNING STRATEGIES
JOHANNESBURG MUNICIPALITY - DEPARTEMENT
OF PUBLIC WORKS



“The street is the river of life of the city, the place where we come together, the pathway to the center.” - W.H. Whyte (Whyte 1980)

3.4 gathering identity_ PUBLIC SPACE AND JEPPE'S STREETSCAPES

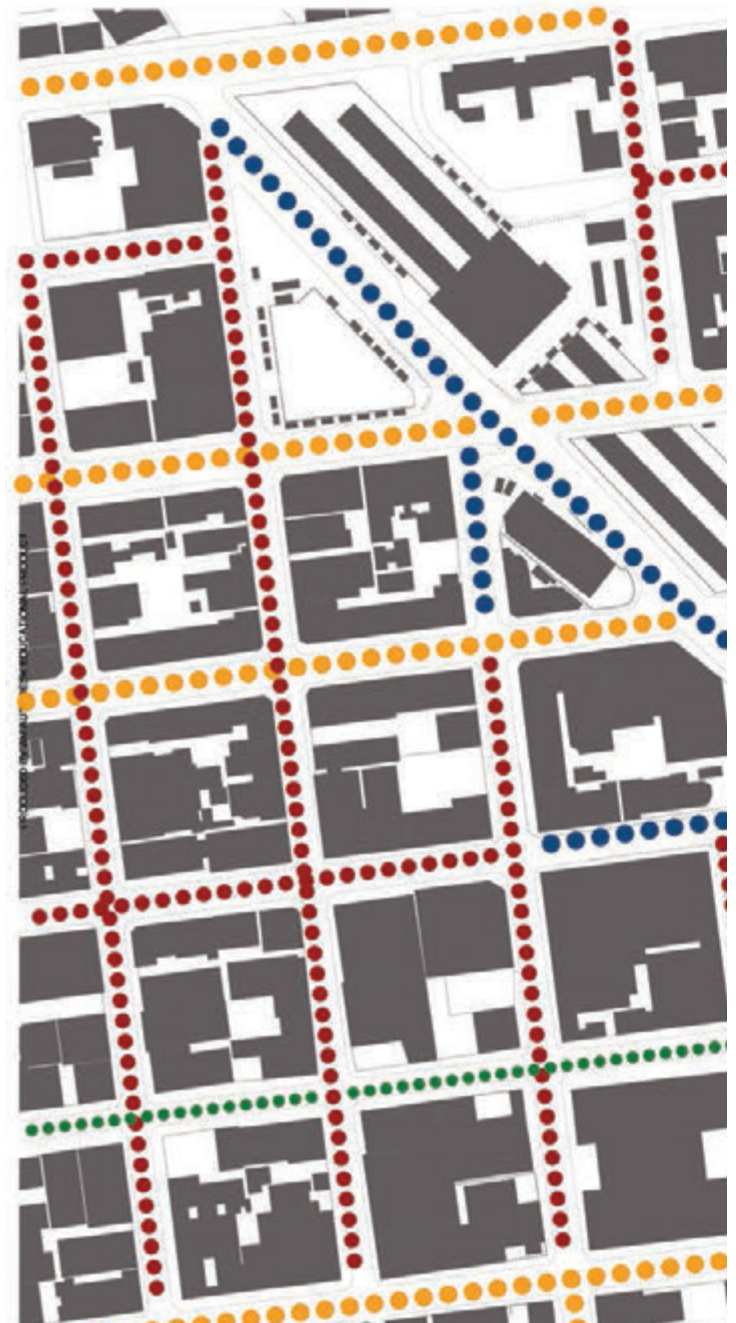
Jeppe has a vibrant street culture. The streets are populated by street vendors, small businesses, recyclers, car wash ports, food stalls, artists, business men and women, construction workers, school kids and many more. Sidewalks play host to all of the above activities, as people move up and down John Page Drive and stop or ponder around these micro nodes created by the various activities as mentioned above.

Some streets are quieter than others. In these streets a constant negotiation occurs between children playing in the street, men and women - jobless - playing cards or gathering on the sidewalks or cars passing by to chop shops housed in the adjacent city blocks.

In other streets small businesses, shebeens, chop shops and vending activities spill out onto the streets. These streets are always busy and are vital to the economic success of businesses in the area.

The largest streets are the connector streets which link the eastern suburbs to the CBD of Johannesburg. These streets are heavily populated by vehicles and minibus taxis, and are lined with on-street parking.

John Page Drive has a unique character as it is an amalgamation of all the above, it is a signature street - a street changing with each city block and the activities they house.



● SIGNATURE STREETS

● CONNECTOR STREETS



● COMMERCIAL STREETS ● RESIDENTIAL STREETS

Figure 3.20. Jeppes street character classification 73

gathering identity_ **HOW PUBLIC SPACE IS USED**

Public space in Jeppe serves many needs. Some spaces are not designed for the many activities they accommodate. This again stands testimony to the reappropriation of space and negotiated territories that are formed within Jeppestown. A unique character emerges from the different use patterns and should be investigated and understood if it is to be preserved during the design process in order to foster a sense of place.

*Figure 3.21. View down
fox street – leading to
maboneng precinct*

gathering identity_ **STREET FURNITURE**

GARBAGE BINS ON JOHN PAGE DRIVE



Figure 3.22. Garbage bins on John Page Drive

Jeppie, because of its layered history and industrial background, has many types of street furniture. Some of these elements are heavy and robust in nature in order to accommodate the high frequency of traffic, people and activities. It is evident however, that these elements are degraded and not well maintained. In some cases various materials are reappropriated to act as street furniture accommodating the needs and uses of the inhabitants of Jeppiestown. The images on this page illustrate various pieces of street furniture documented throughout Jeppie.

PLANTER AT JEPPE STATION AND ON JOHN PAGE DRIVE



Figure 3.26. Ballustrades and landscape lighting

Figure 3.23. Photo of planters

A BOLLARD ON JOHN PAGE DRIVE



Figure 3.24. Bollard on John Page Drive

A WASH THROUGH AT THE STATION



Figure 3.25. Wash trough at Jeppie Station

LIGHTING AT JEPPE STATION



A BALUSTRADE AT JEPPE STATION



A BALUSTRADE AT THE CHURCH IN PARK STREET



3.5 PRECEDENTS ON PUBLIC SPACE

SA EAGLE SQUARE - JOHANNESBURG

Landscape architects: GREENinc

Important aspects:

- - Robust space celebrating the surrounding urban environment.
- - Well detailed street furniture and landscape elements.
- - Retaining and acknowledging existing elements.
- - Richness in materials.
- - Collaboration with other design disciplines.

SA Eagle square, completed in 2001, forms part of the upgraded portion of Hollard Street Mall in Johannesburg CBD. This area was subject to vandalism, neglect and severe urban decay and did not contribute to a healthy urban environment.

As one of the early catalyst rejuvenation projects in Johannesburg, it succeeded in transforming and reclaiming a derelict urban space into a lively, healthy public square.

The materials, paving patterns and artists' interventions add richness and identity to the square, while the layout and simple street furniture lend itself to multi-functional use patterns.

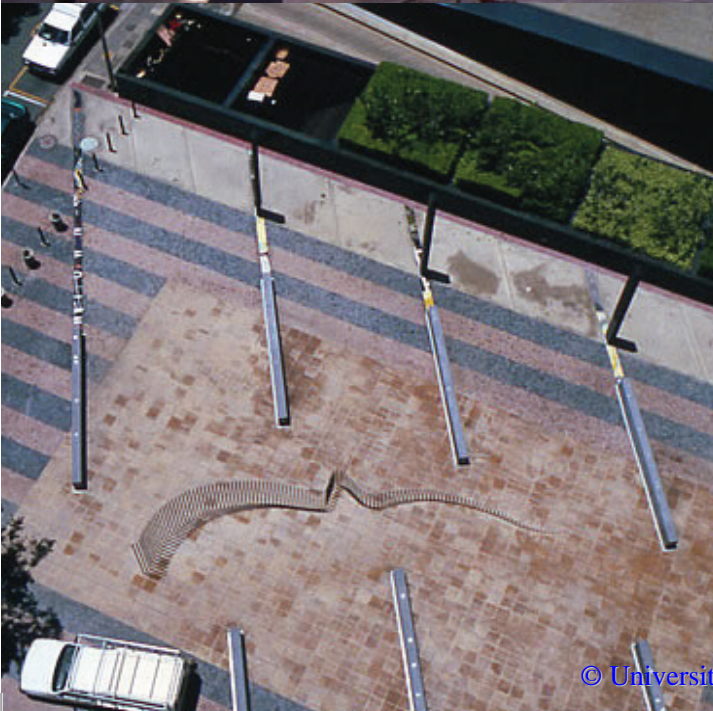
The mosaics cleverly depict the city grid of Johannesburg while simultaneously



Figure 3.27. In-situ cast concrete seating

Figure 3.28. Planters detail pattern in SA Eagle square

Figure 3.29. Paving patterns and mosaic work



capturing the identity and street character of everyday activities by Johannesburg citizens. These depictions range from street vendors to modes of transport and include an image of Madiba.

SA Eagle square is a good example of how urban spaces within the city can be reclaimed and transformed to foster a sense of identity and a healthy urban environment. Simultaneously it is a good example of how inter disciplinary approaches and collaboration with other design disciplines can add to a richer landscape architectural intervention.

“The difficult task of mediating the monumental built form and the indigenous landscape is handled successfully through the conceptual device of a meandering divide, interpreted variously as a raised plinth of massed planting, a sunken court with a geometric landscape, a captured garden between pavilions or an urban square with civic gestures.”

Figure 3.30. (top right) Use patterns in SA Eagle square Johannesburg

Figure 3.31. (bottom right) Areal view of SA Eagle square Johannesburg

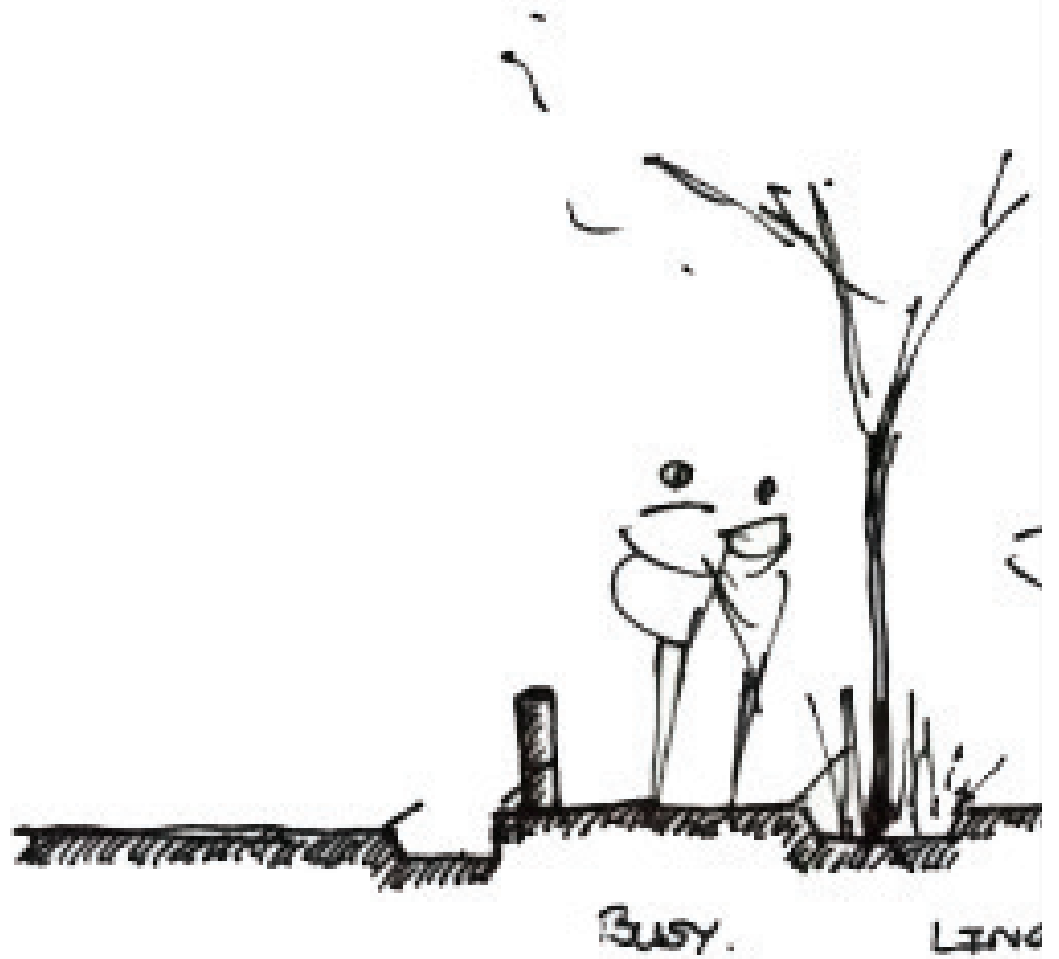
chapter 3: **SUMMARY**

Jeppestown is a rich cultural landscape - an area full of character, with many different built forms, textures and activities.

The infrastructure of the area, however, cannot support the needs of the current inhabitants. Issues like stormwater management also impact the area negatively, causing erosion and ponding. The issue of stormwater management can be addressed as part of the strategies for the landscape design and will be investigated further.

There are two major nodes in Jeppe West, the station and its adjacent plaza and the park with its surrounding city blocks. An inherent link exists between these two nodes, forming a dominant movement corridor - a corridor with vibrant activities and textures. These two nodes and the linkages between them form the basis on which the study area is situated.

The streets in Jeppestown have unique characters that are linked to the functions and activities housed within the adjacent city blocks. It is important to retain some of the aspects associated with the activities and edge conditions which gives rise to the variety of street characteristics illustrated earlier in this chapter. As has already been mentioned, it is evident that John Page Drive is a signature street with a defining character which should also be enhanced.

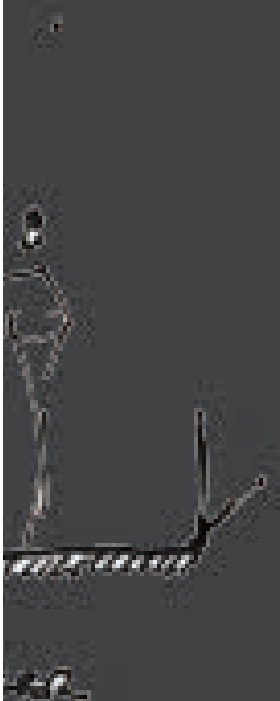


04

THE LANDSCAPE SLATE

Chapter 4 is mainly concerned with framework proposal for the site and the initial conception of a design for a landscape architectural intervention.

- 4.1 **constructing the slate**
 - 4.2 **giving identity to the slate**
 - 4.3 **carving from the slate**
- chapter 4: **summary**



Streets, plazas and designed public spaces have contributed to define the cultural, social, economic and political functions of cities... - Dr. J. Clos

4.1 CONSTRUCTING THE SLATE

In order to understand the public realm and why public space is used or committed to the public realm within Jeppe, one needs to understand the components which form part of the network of public space.

The collective term of the components, when compiled into one entity, can be classified as the slate. The slate forms the base for the landscape architect from which to carve a cohesive public realm. It allows for an alternative view of space making within the city. The landscape can therefore be read, not as fragmented components of public space, grids, blocks and erven, but rather as a continual entity, where these fragments are linked into a network of spaces, which house systems, processes and activities. At the same time it allows the designer to understand the amount of space which can be committed to the public realm to form one entity as the base for a spinal development from which to carve a good healthy, continual public realm within the city. This compilation of components house certain infrastructure which can be modified when carving from the slate, to support both the public realm and the built fabric.

The steps in which the slate is constructed is set out and explained in the next few pages of the document.



Figure 4.1. Five steps of constructing the slate

constructin the slate_ THE FIGURE GROUND STUDY

The figure ground study (*Figure 4.2*) aids the observer in understanding the difference between the grain of the eastern and western portions of Jeppestown. The industrial area to the west cuts and severs the public realm by the masculine and imposing facades of the large scaled buildings. One can clearly identify fragmented pockets of open space or large courtyards, which exist in isolation in-between this sea of large footprints and towering structures.

Figure 4.2.
The figure ground study



constructing the slate_ **SIDEWALKS**

By adding the sidewalks to the figure ground (*Figure 4.3*), it becomes apparent how little space is committed to the public realm. These thin bands of pavement act as the first step into the understanding of negotiated territory, where commerce, social interactions and recreational activities take place. These bands of pavement at the same time house a network of infrastructure and systems aiding the functions of the public realm which do not always meet the eye.

Figure 4.3.
Sidewalks



constructing the slate_ PARKS AND PLAZAS

By adding to the mix the few formal spaces which exist in Jeppe (*Figure 4.4 on page 85*), an illumination of nodes becomes apparent. These are for instance the park and station nodes, which are ritual-based spaces that embrace negotiation and daily flux.

Figure 4.4.
Parks and plazas



constructing the slate_ STREETS

As a result of the lack of public space, especially in Jeppe West, more streets are assimilated into the rituals and events of the inhabitants of Jeppestown. This component of the slate (illustrated in *Figure 4.5*) is one which consumes a large portion of the outdoor surface area and there are ideal examples of reappropriation and negotiated territories which are converted from vehicular corridors into outdoor rooms, governed by the need for public space. Where the streets are viewed as malleable spaces of the slate, the opportunity to reclaim them as designed public space arises.

Figure 4.5.
Streets



constructing the slate_ **COURTYARDS**

When assimilating the courtyards within the study area into the constructed slate (*Figure 4.6*), the amount of space for public use increases. These spaces have the potential to create different scales of public space, aiding access to the sites, which allows for the manifestation of more thresholds between the public and private realms. It allows built fabric and the landscape to interact with inhabitants beyond physical boundaries and increases the possibility of movement networks through the sites, aiding the spinal development.

Figure 4.6.
Courtyards



constructing the slate THRESHOLDS BETWEEN PUBLIC AND PRIVATE REALMS

Coinciding with the diagrams concerning the construction of the grid (Figure 4.1 to Figure 4.6) is a series of simplified sections. These illustrate the relationships between the public and private realms, from the current and existing condition to the longed-for ideal condition. As the slate evolves and more space is committed to the public realm, so does the opportunity of creating more thresholds between the public and private realms. The evolution and adding of realms works in both horizontal and vertical scale in order to promote density, as well as transitional spaces between designated zones. These sections illustrating the current condition and subsequent responses are in Figure 4.7 on page 88 to Figure 4.11 on page 89.

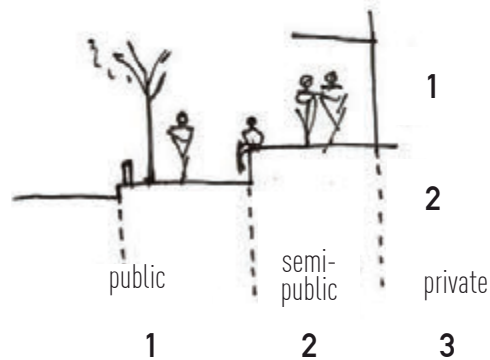
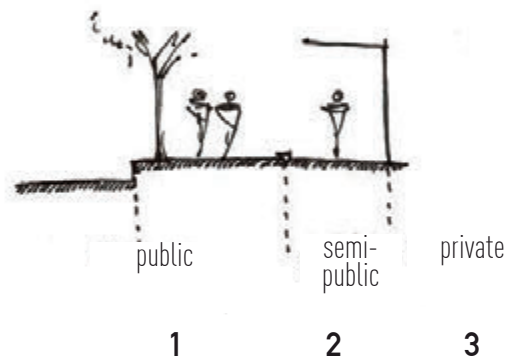
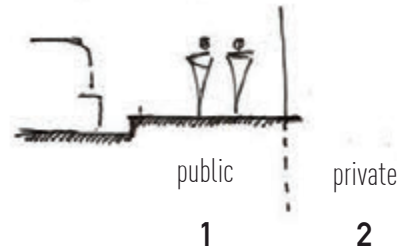


Figure 4.7.
(top) Current condition

Figure 4.8.
(middle) Intuitive
response

Figure 4.9.
(bottom) Amplified
response

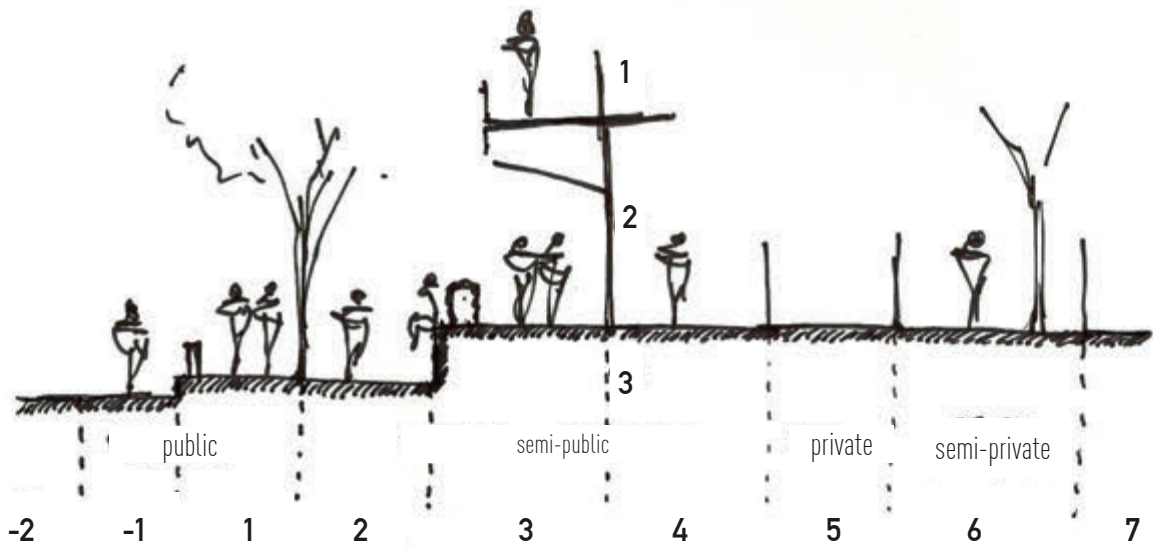
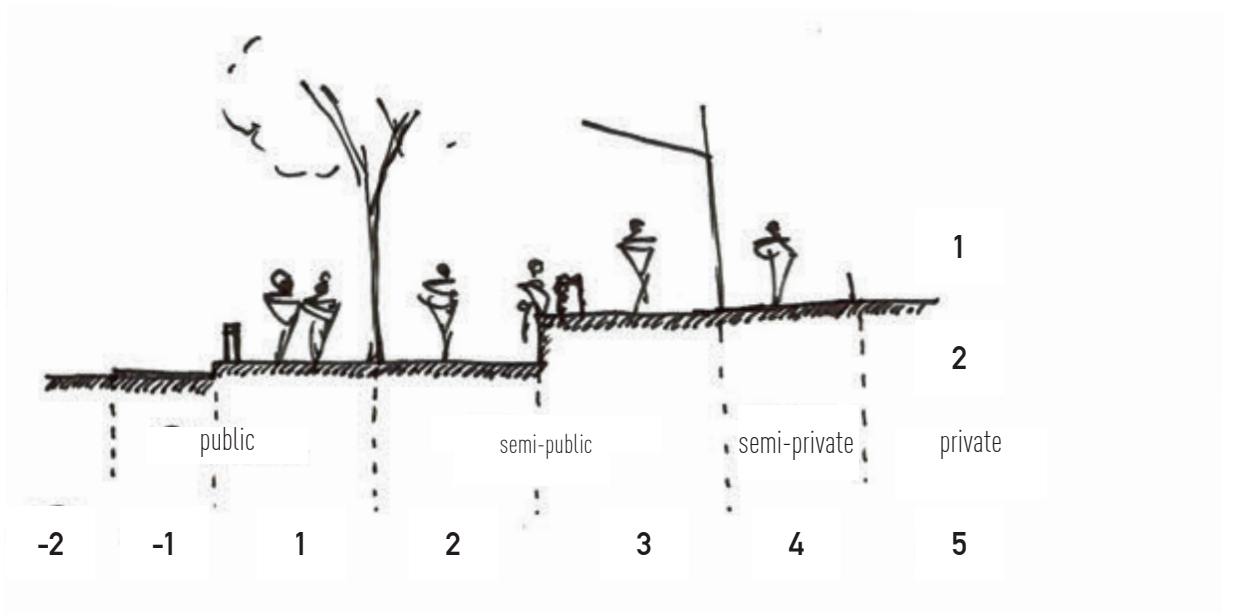


Figure 4.10.
(top) Extended response

Figure 4.11.
(bottom) Ideal condition

...they were – and continue to be – the first element to mark the status of a place, from a chaotic and unplanned settlement to a well-established town or city. - Dr. J. Clos

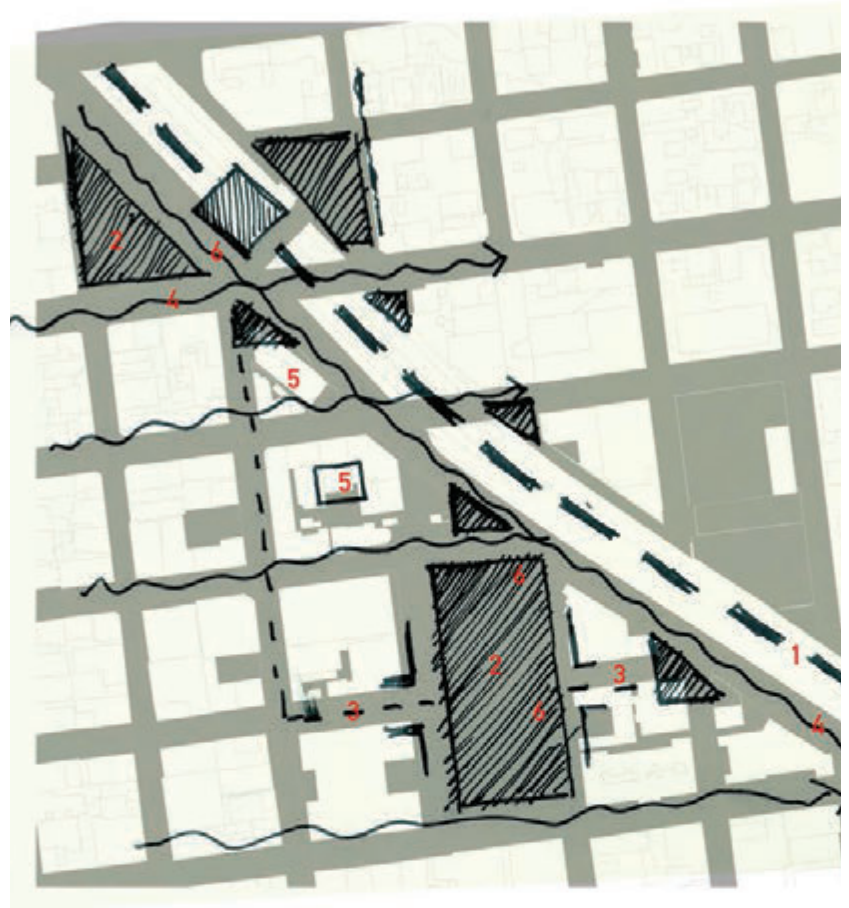
4.2 GIVING IDENTITY TO THE FABRICATED SLATE

It is important to understand the working of the slate and how to distinguish components of the slate even while viewing it as a single entity. Since each component has a different character and a certain set of attributes which influences the working of the slate, one has to identify these as a set of archetypes that comprises the slate.

The components of the slate on site are identified to the right as the following:

- valley
- plane
- canyon
- river
- cave
- lanes/clumps

They are illustrated in images 1 to 5 in *Figure 4.13*, and their positions shown on *Figure 4.12* to illustrate the identity of the slate.





1

valley



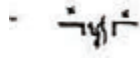
2

plane



3

canyon



4

river



5

cave



6

lanes/clumps



Figure 4.12. (top left) the identity of the slate

Figure 4.13. (below) manifestations of the components of the slate on site



4



5



4.3 carving from the slate **THEORY IN CONTEXT**

Differences and similarities within the African and western worlds:

The Eurocentric ideals of spatial planning emphasises and commits space to form part of the private realm, defined through strict physical boundaries and edges, while the African models of spatial planning emphasises the public realm. More space is therefore committed to be public, using ritual, instead of physical boundaries to define the thresholds between the public and private realms.

Liquefying the edges of a harsh and unforgiving landscape will allow for the manifestation of an all-inclusive, well-grounded public realm to emerge.

The focus is placed on the elasticity of the thresholds between the public and private realms and physical entities in space.

It is important to explore the differences and similarities between the Western and African philosophies of space making, before carving new public space from the landscape slate.

Figure 4.14. Field dependence and field independence in relation to the slate

PHILOSOPHIES OF SPACE:

WESTERN VIEW ON SPACE MAKING:

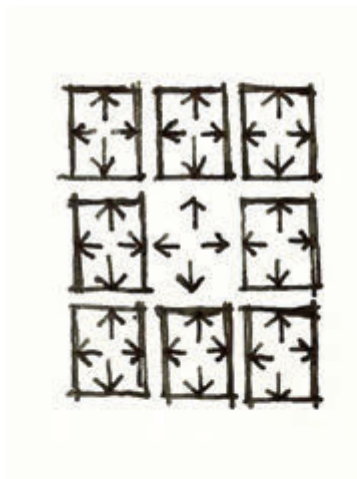
- a. Alone
- b. Material
- c. Pieces
- d. Future
- e. Control
- f. Guilt
- g. Accumulate

AFRICAN VIEW ON SPACE MAKING:

- a. Together
- b. Mind
- c. Whole
- d. Past
- e. Harmony
- f. Shame
- g. Share

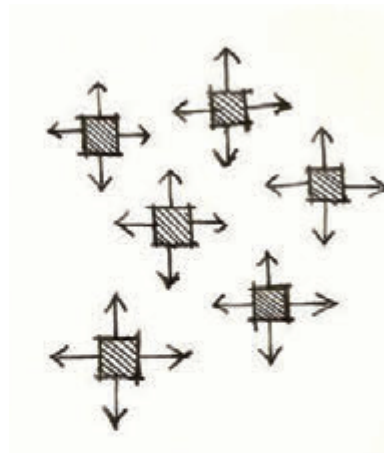
WITH COMPARISON TO THE THEORIES OF FIELD DEPENDENCE AND FIELD INDEPENDENCE:

FIELD DEPENDENCE



FIELD INDEPENDENCE

VS



THE GRID

SPACE EXISTS IN ISOLATION.

- Private realm
- Fragmentation
- Lack of identity
- Strictly defined edges
- Homogeneous environments
- Function/process specific

THE SLATE

LAYERING OF PUBLIC REALM = LANDSCAPE
AS CONTINUOUS ENTITY

- Public realm
- Amplification of existing
- Continual environment
- Connectedness
- Blurred/liquid/elastic edges
- Unique identity
- People and user specific

carving from the slate **THEORY IN CONTEXT**

As set out in the article *Types and typologies of African urbanism* by G. Steyn (2007:54), there are five pertinent urban characteristics of type and typology for space within the Contemporary African city, like Johannesburg.

The first relates to taxonomic and iconographic principles. These are simply form driven entities, where the overlap lies in physical manifestations of structuring elements of space making and introducing a universal concept of space making (Steyn, 2007).

These are for instance organic clusters, rows and enclosures, together with hybrid application of geometrical derivatives such as:

- Grids
- Axes
- Circles

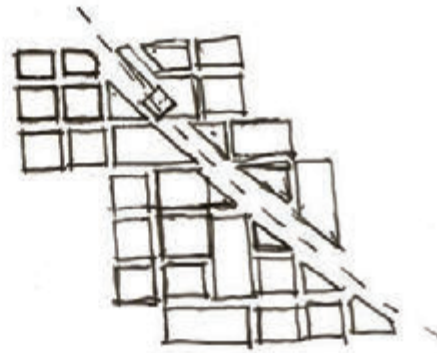
One might also express these in the classical identification of:

- Edges
- Paths
- Nodes

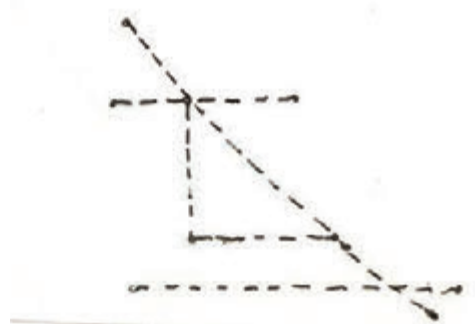
The above is illustrated in *Figure 4.15* to *Figure 4.17*.

Secondly, the urban layout of pre-Colonial settlements responds to site circumstances. This means that traditional construction technologies, geography, climate, commerce and culture play a vital role in the characteristics of city making.

EDGES - REPRESENTED BY THE GRID



PATHS - AXIS



NODES - STATION AND PARK



Figure 4.15. (top left) Grids forming edges

Figure 4.16. (middle left) Paths forming axes

Figure 4.17. (bottom left) Nodes as anchoring elements

Thirdly, streets and squares are places of commerce and a typology for shops below – living above buildings informs the character of these social and interactive spaces (Steyn, 2007).

The fourth attribute being that cities are compact and limited in size and while the scale of the city today might extend to an urban metropolis, neighbourhoods within the city can attain a self-sufficient character associated with high densities (Steyn, 2007).

The fifth attribute addresses the fundamental way in which Africans inhabit space. This is associated with the concept of the rural village, stating that clusters of villages function as individual entities while acting as territorially defined forms (Steyn, 2007). From this it can be deduced that city blocks can act as communities and titled ‘block communities/communities’ where the inhabitants define the programme and physical layout of space.

“Urban morphology is every material substance, artificial or natural, that makes up the urban artefact”. (Steyn:61)

Figure 4.18. (below) Photo illustrating living units above and shops and work spaces below.

LIVING UNITS

SHOPS AND WORK SPACES



carving from the slate **THEORY IN CONTEXT**

APPLYING THE LENSES

Where the lenses of Ritual and Negotiated territory overlaps, place start to emerge. This is a result of the character associated with certain activities which occur in this overlap. Ritual can thus be understood by observing the users and type of activities they are involved in, while negotiated territory can be understood by looking at the scale and character of places where the activities manifest. The combination of these conditions then provide identity to the public spaces housing the rituals that occur within the study area in Jeppestown. Refer to *Figure 4.19 on page 96*.

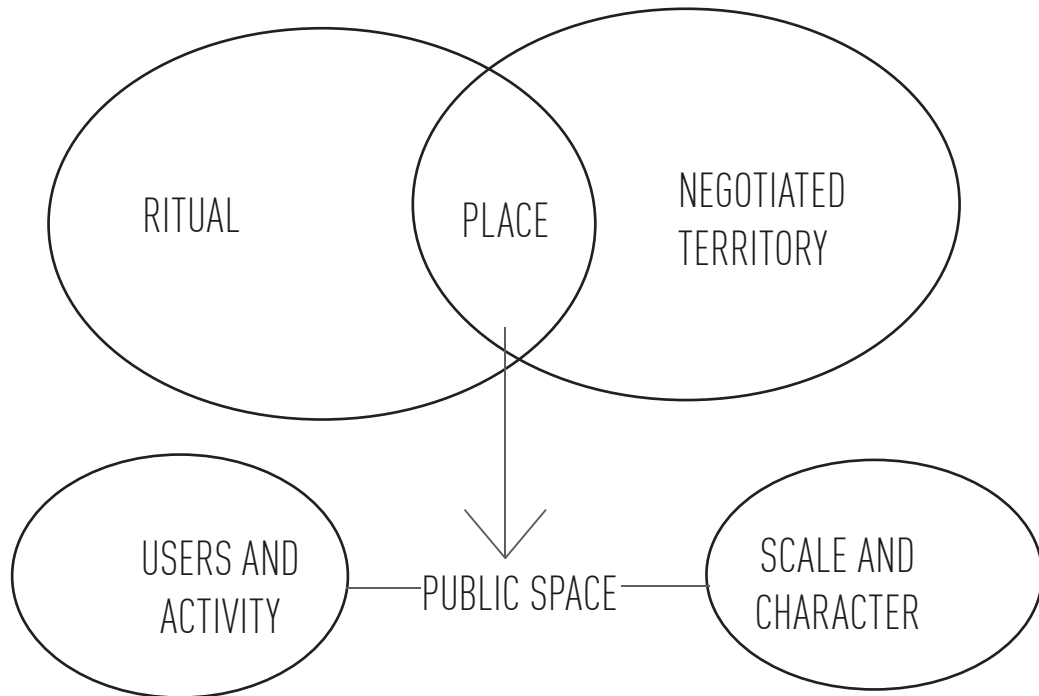


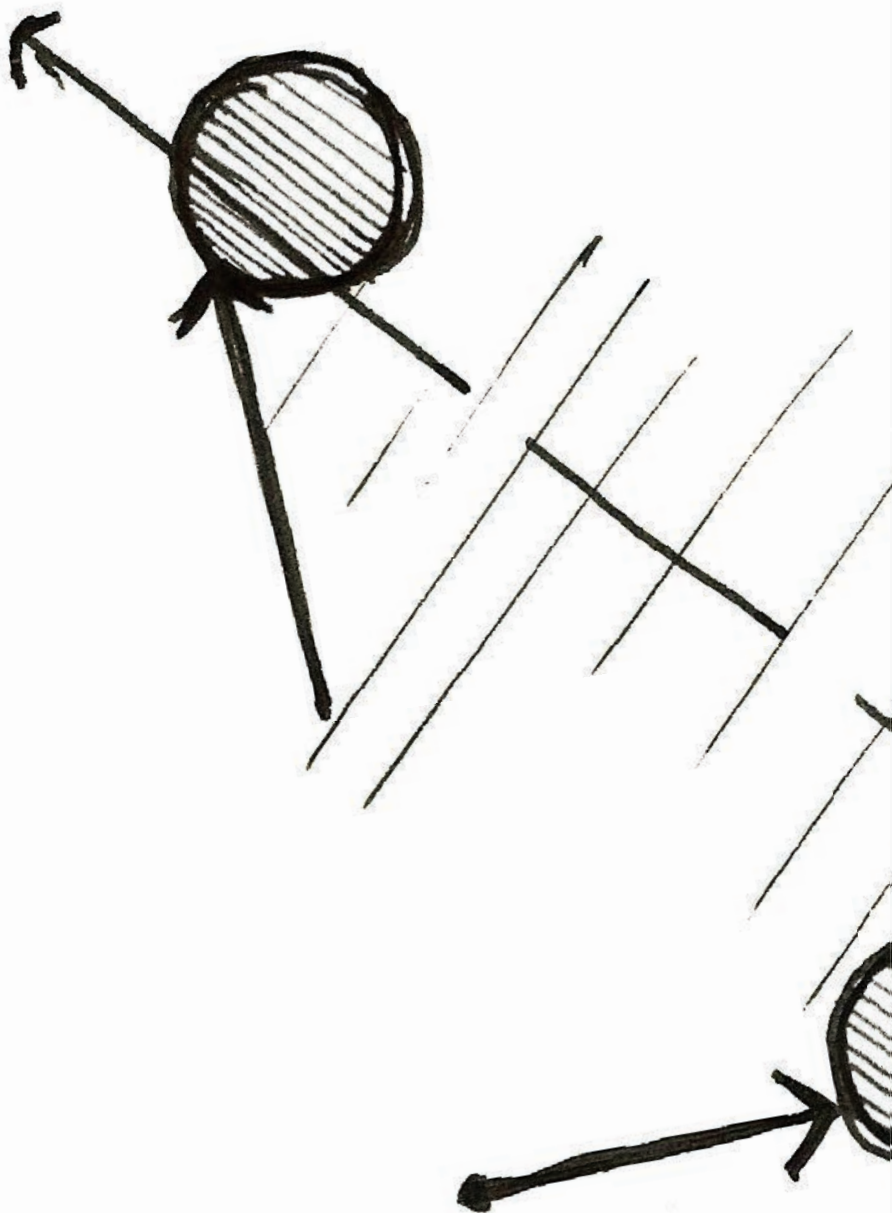
Figure 4.19. The relationship between the lenses, theory and study area

The fragmented components of public space within Jeppestown can be compiled into one entity - the landscape slate. The slate illustrates all these fragmented components as a single continual manifestation of the public realm. It is from this slate that new public space can be carved, based upon the rituals and networks which exist in Jeppestown.

Based upon the theory of field dependence and field independence one can draw similarities between the Western and African philosophies of space making, as part of the hybridized theory of field interdependence. Simultaneously by investigating the characteristics of an urban environment one can better understand the components of Jeppe.

When crossing these theories with the lenses, one might view the physical components as associated with field dependence through the lens of negotiated territory, while viewing all the ritualistic components associated with field independence through the lens of ritual. It is where these two lenses overlap where the public realm is most prominent.

Effectively the slate acts as the field, which can be carved to form new public space rich in thresholds and zones for activities to occur.



05

STUDY AREA **FRAMEWORK**

Chapter 5 is mainly concerned with framework proposal for the study area and the initial conception of a design for a landscape architectural intervention.

- 5.1 **framework proposal**
- 5.2 **developing the master plan**
- 5.3 **programme**
- 5.4 **unlocking the latent potential of the slate**
- 5.5 **master plan strategies**
- 5.6 **precedents**
- chapter 5: **summary**

“A sustainable landscape is one which provides for today whilst looking forward to what will be needed.” (Moughtin, 2005)

5.1 framework proposal _SPINAL DEVELOPMENT

When dealing with a post-industrial wasteland or drosscape within the urban realm, it is important to view the site beyond its boundaries and understand it within its allocated context. In order to allow a regenerative landscape to manifest within Jeppestown, the incorporation of sustainable design principles and strategies are necessary. These sustainable design principles form part of a greater system which allows the city to function like a living organism.

One needs to consider the two prominent nodes within Jeppestown - the station and the park (illustrated in *Figure 5.1* on page 127). These nodes can act as anchor points for a development corridor between the two nodes, a corridor acting like a spine, allowing for expansion beyond and between macro and micro nodes within the city context of Johannesburg. This ultimately allows for a series of design interventions (*Figure 5.1* on page 100), which do not exist in an isolated precinct, but can form part of a spinal regenerative landscape along the train tracks and John Page Drive in Jeppestown, Johannesburg.

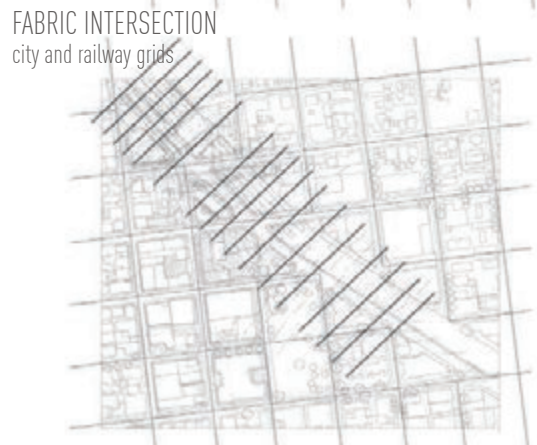
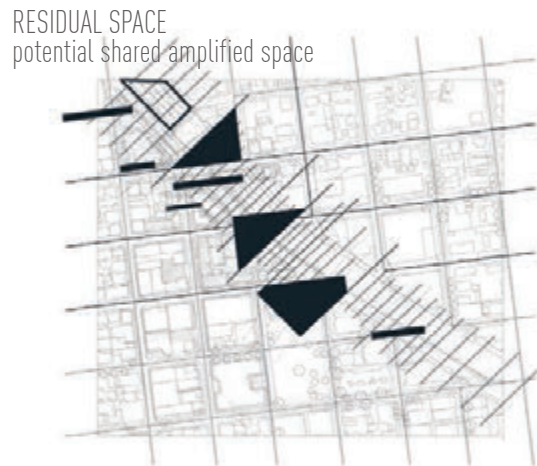
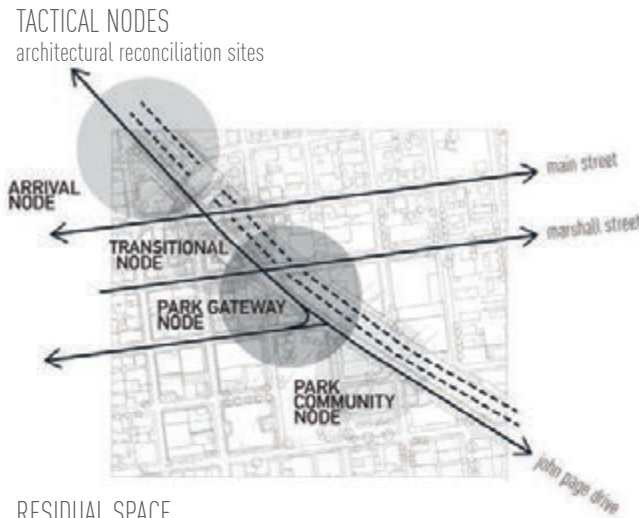


Figure 5.1. (top) Nodes

Figure 5.2. (middle)
Architectural sites

Figure 5.3. (bottom)
Rituals

framework proposal_ **THE PRODUCTIVE LANDSCAPE**



In order to foster a culture of a productive society, a healthy urban interface with a sustainable infrastructure is required. Here the term productive landscape does not only refer to ideas associated with permaculture and urban agriculture, but also to the inherent potential of systems and processes housed within the landscape.

According to A Viljoen (Bohn et al, 2005) in his book *CPUL: Continuous Productive Urban Landscapes* one should consider the landscape in its current state and reconfigure the city to operate within the envelope of its own environmental capacity. This means that it is not necessary to demolish the entire city and rehabilitate the site from a clean slate, but rather that additional systems and networks should be implemented and the existing ones empowered to turn the current footprint into a productive one.

Figure 5.4. (top) Tactical nodes

Figure 5.5. (middle) Residual space

Figure 5.6. (bottom) Fabric intersection

framework proposal CONNECTIONS

The spinal development allows for expansion into the cityscape, since it is not bound by physical boundaries or fences, such as a precinct which exists in isolation. Jeppe west is scattered with important nodes and public spaces, fragmented by the nature of the grid and industrial buildings which currently populate this portion of town. The various connections present are illustrated in the macro framework in *Figure 5.24 on page 120*.

THE MAIN GOALS:

- Connect nodes: station and park
- Enhance and connect public space
- Implement productive landscape systems
- Incorporate stormwater management and the existing stormwater treatment channels
- Connect Jeppe to existing frameworks
- Enhance pedestrian movement and public transport networks
- Enhance existing rituals and provide identity to public space

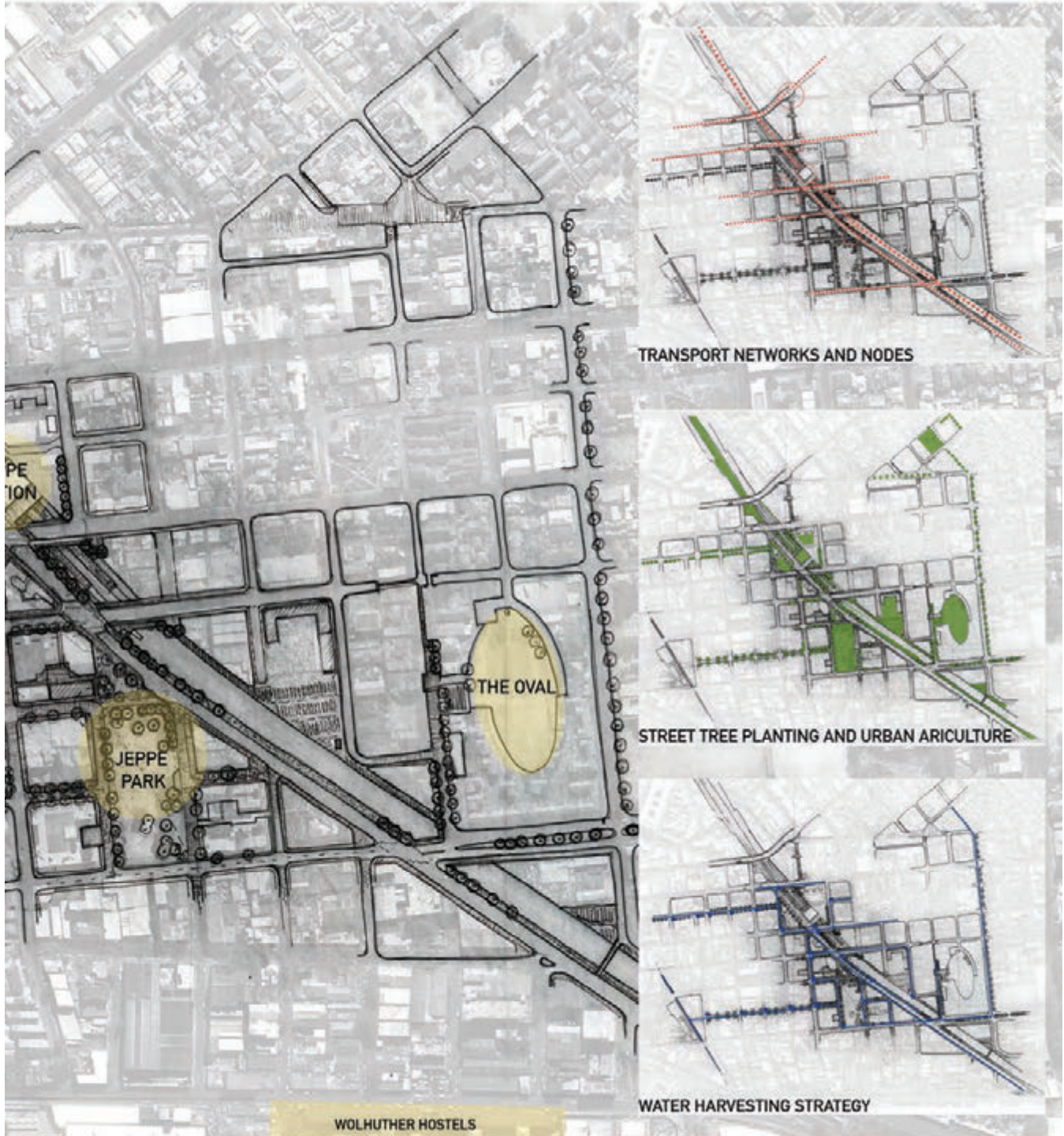
RESPONSIVE ENVIRONMENTS:

PERFORMANCE CRITERIA:

- 1 Legibility
- 2 Permeability
- 3 Richness
- 4 Personalisation
- 5 Visual appropriateness
- 6 Variety
- 7 Robustness



Figure 5.7. Macro Framework connections



framework proposal_ MASTER PLAN

The main goals of the master plan for Jeppestown West is focussed on connecting the nodes of the Park and Jeppe station. It is based on the concept of a spinal development between and beyond these nodes. The master plan is essentially the micro framework for the study area and is a zoom in of the macro framework. While the macro framework mainly addresses connections to other frameworks, the micro frameworks or master plan indicates where the architectural interventions will occur and how they will be supplemented by the landscape around them.

STATION NODE:

Architectural Site 1: (Fragrance Factory)

- Upgrading the existing market
- Implementing new drop off areas for all vehicular modes of transport
- Underground parking
- Closing the section of John Page drive in front of the station in order to allow the manifestation of a large multi functional plaza to emerge as well as a site for architectural intervention.

Architectural Site 2: (At Jeppe)

- Across from the station another site for architectural intervention is located, this becomes the gateway into the corridor leading to the park.

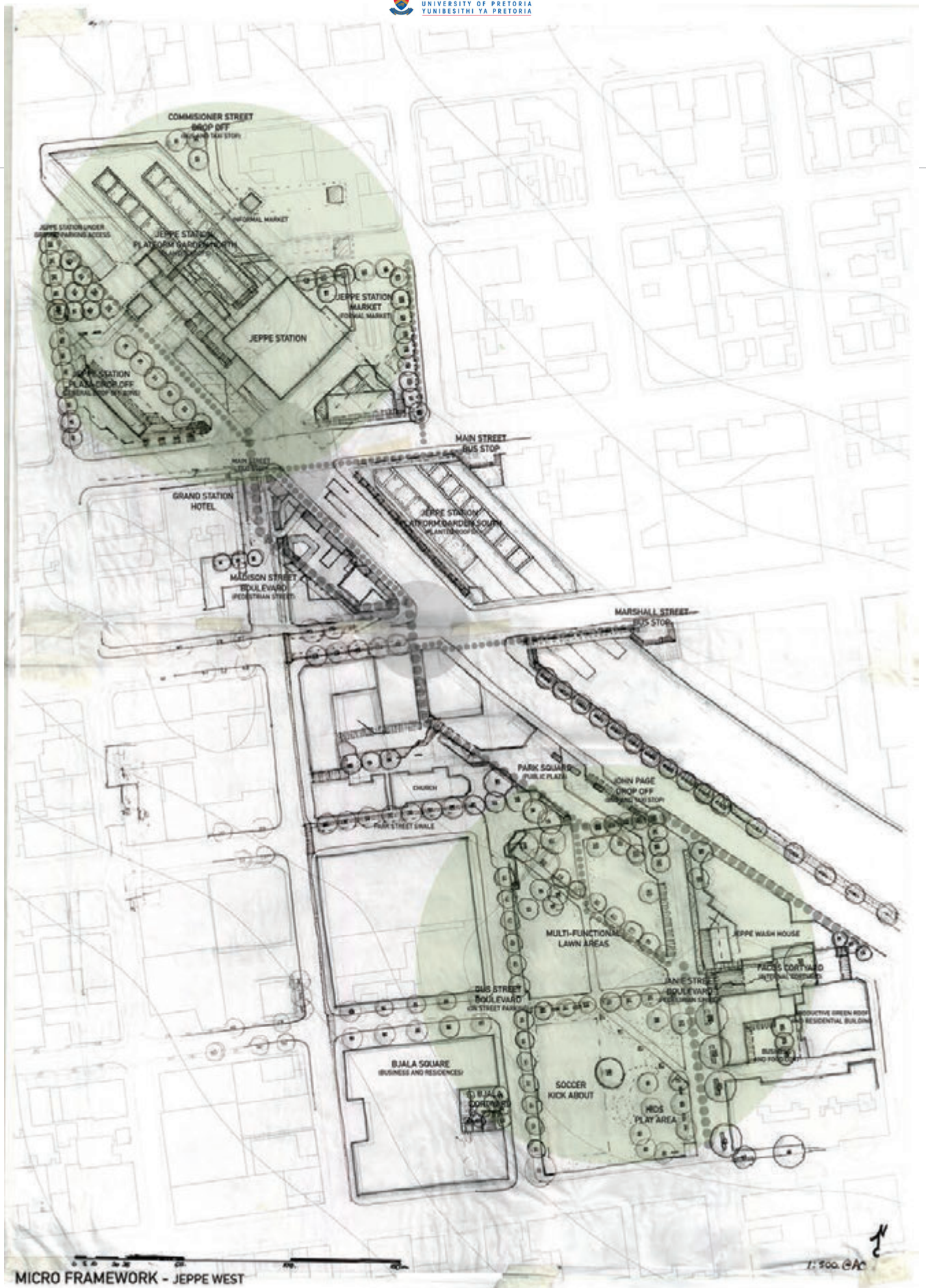
PARK NODE:

Architectural Site 3: (Construction Upon Experience) &
Architectural Site 4: (Private Rituals, Public Selves)

- Implementing a large drop off area for public transport and private transport methods
- Formalising and upgrading existing pathways
- Closing the roads to the east and the north of the park to emphasise the connection to the surrounding sites and enlarge the public realm allocated for commercial, recreational and social activity
- The opening of courtyards within the adjacent sites for architectural intervention, which emphasise movement and the evolution of thresholds between the public and private realms.
- The creation of a large courtyard within the portion of road between two city blocks to the east of the park - this courtyard act as an arcade and activates the buildings adjacent to it.

Figure 5.8. Micro Framework - June Iteration

Figure 5.9. (opposite) Micro Framework - September Iteration



MICRO FRAMEWORK - JEPPE WEST

1:500 ©AC

“Most cities in the developing world share common characteristics: inadequate and deteriorating transport infrastructure; and poor facilities for non-motorized transport (walking and cycling).” - Dr. J. Clos

5.2 developing the master plan_ **DESIGN STRATEGY AND CONCEPTION**

Cities, like anything in life, consist of many components forming part of a greater whole. These components work together in systems in order to allow the city to function like a living organism. One of the most prominent components within Johannesburg CBD is the railway system. As the concept diagram (*Figure 5.12*) illustrates, this system is a central spine connecting micro nodes within the city to macro nodes beyond it. This spine is therefore an appropriate corridor for development, a connector and regenerator running through the landscape, ideal for expansion.

The landscape intervention forms the slate for architectural interventions to occur on, as it addresses infrastructural issues, environmental potential and systems design and explores the connection of the station and park nodes by ‘punching’ into existing fabric and creating a connection corridor which meanders through the courtyards of the adjacent sites.

The design strategy for the master plan design and underlying landscape programme is focused on carving new public space from the landscape slate, informed by existing rituals and territories. The spatial design should be aided by systems design, which can be incorporated into the infrastructure of the site in order to emphasise the idea of a sustainable living environment. Here strategies like water harvesting and purification, together with a planting strategy aiding architectural programme can be implemented. To enrich the qualities of these newly carved public spaces a careful selection of materials, textures and vegetation can be used to define the thresholds between different realms. Edge conditions can then simultaneously be altered through adapting their material, stereotomic or tectonic nature and typology.

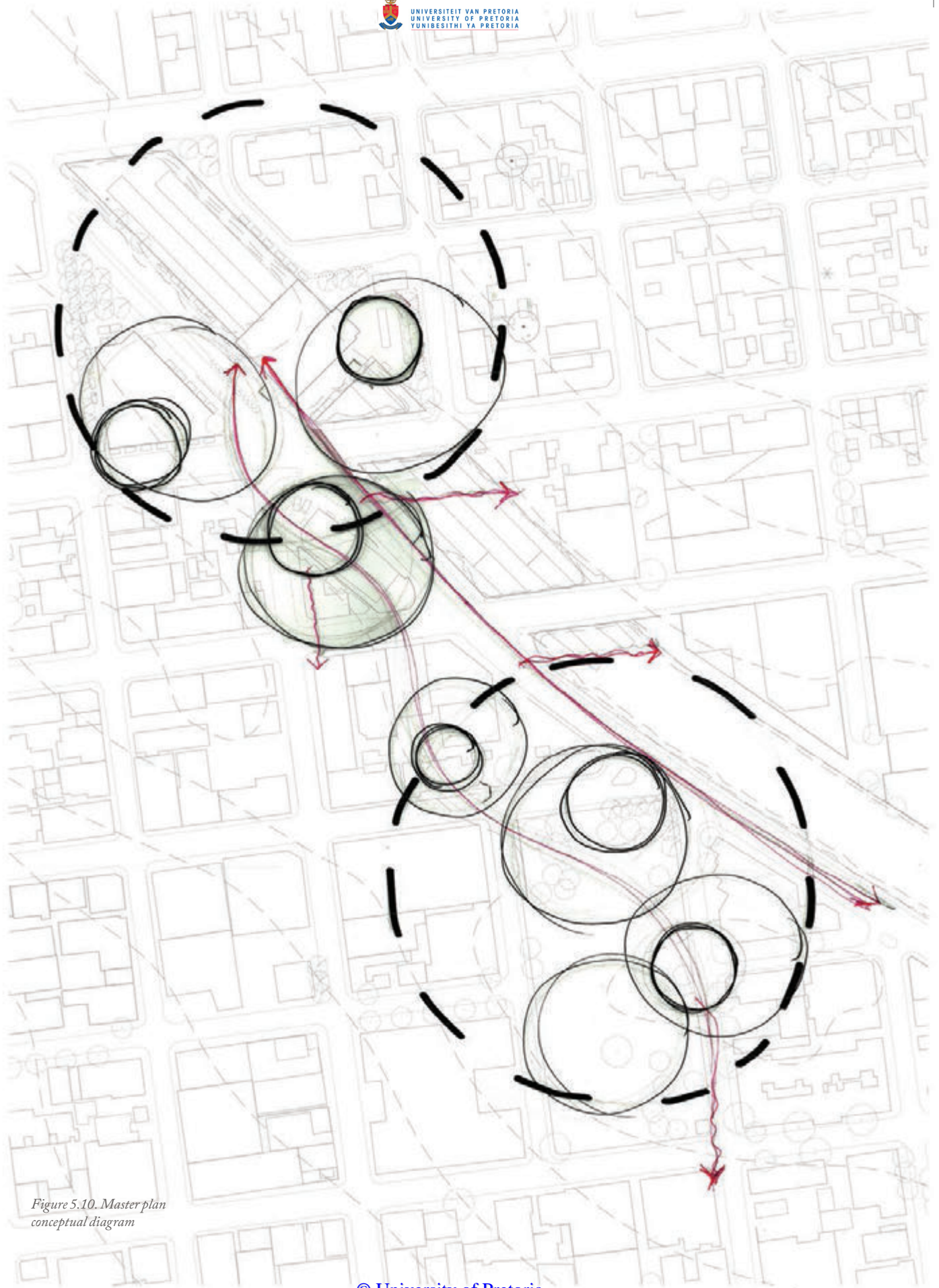


Figure 5.10. Master plan conceptual diagram

developing the master plan_ DESIGN DEVELOPMENT

The initial development for the master plan found its conception in nodes, paths and edges, together with the pattern that emerge when overlaying railway and city grids. The design style is simply derived from these grid intersections and is mainly movement and connections driven. This process and the resulting design is illustrated in *Figure 5.13* and *Figure 5.26 on page 123* (the master plan).

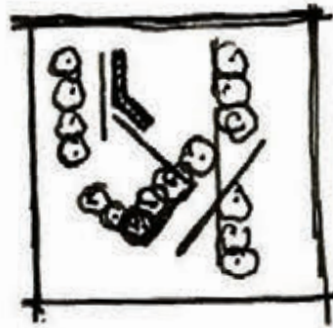
Further more the design is concerned with linking the opened courtyard spaces, by emphasising movement lines and strengthening the idea of a vibrant movement corridor between the park and station nodes.

The rectilinear design form can be seen as a result of emphasising the diagonal lines represented by the railway line. It can be argued that this base design is formalistic in approach and give little attention to the spaces between the park and station nodes, where many rituals reside.

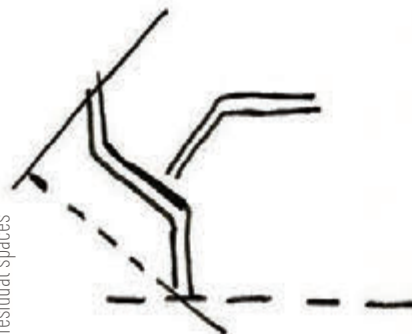
FABRIC INTERSECTION
city and railway grids



EMPHASISING THE GRID
using trees and pathways to
continue and emphasise the grid



GRID CONNECTIONS AND
OVERLAPS
these connections form nodes and
residual spaces



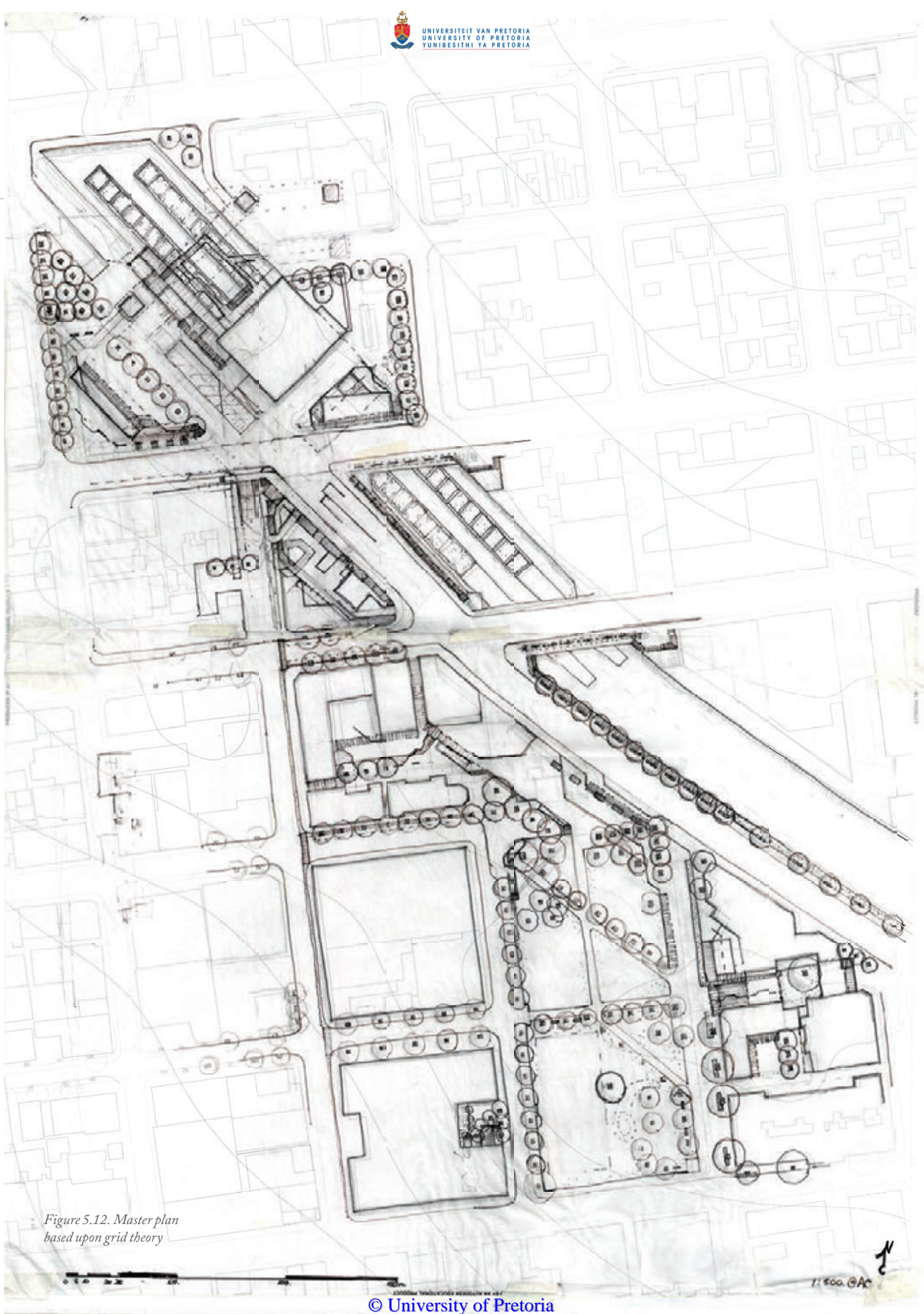


Figure 5.12. Master plan
based upon grid theory

developing the master plan_ DESIGN DEVELOPMENT

The iteration of the base design for the master plan layout aims to address the residual spaces (*Figure 5.15*) found in accordance with the grid intersections. The design (*Figure 5.16*) strives to deviate from the grid pattern and allow the implementation of connection and edges lines of a more organic origin.

This strict allocation of space for activity and connection of all micro nodes associated with the study area leads to an overcomplicated physical manifestation of designed form. It however allows the designer to understand and explore the theory of carving from the slate, where no limitations in design exploration can be ascribed to existing physical boundaries or fragmented landscape entities.

Within this exploration, the value of the landscape slate becomes evident as the newly carved public space clearly evokes the manifestation of a spinal development between the park and station nodes. The spine can be viewed as a single entity or large urban park, with the buildings situated within this park.

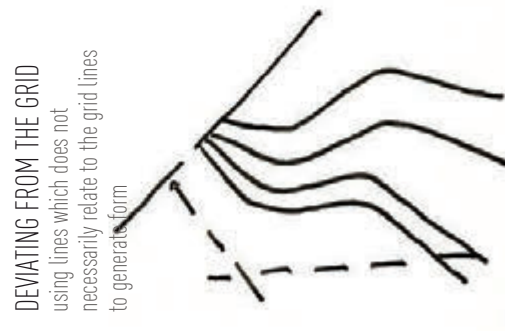


Figure 5.13. Development of residual spaces

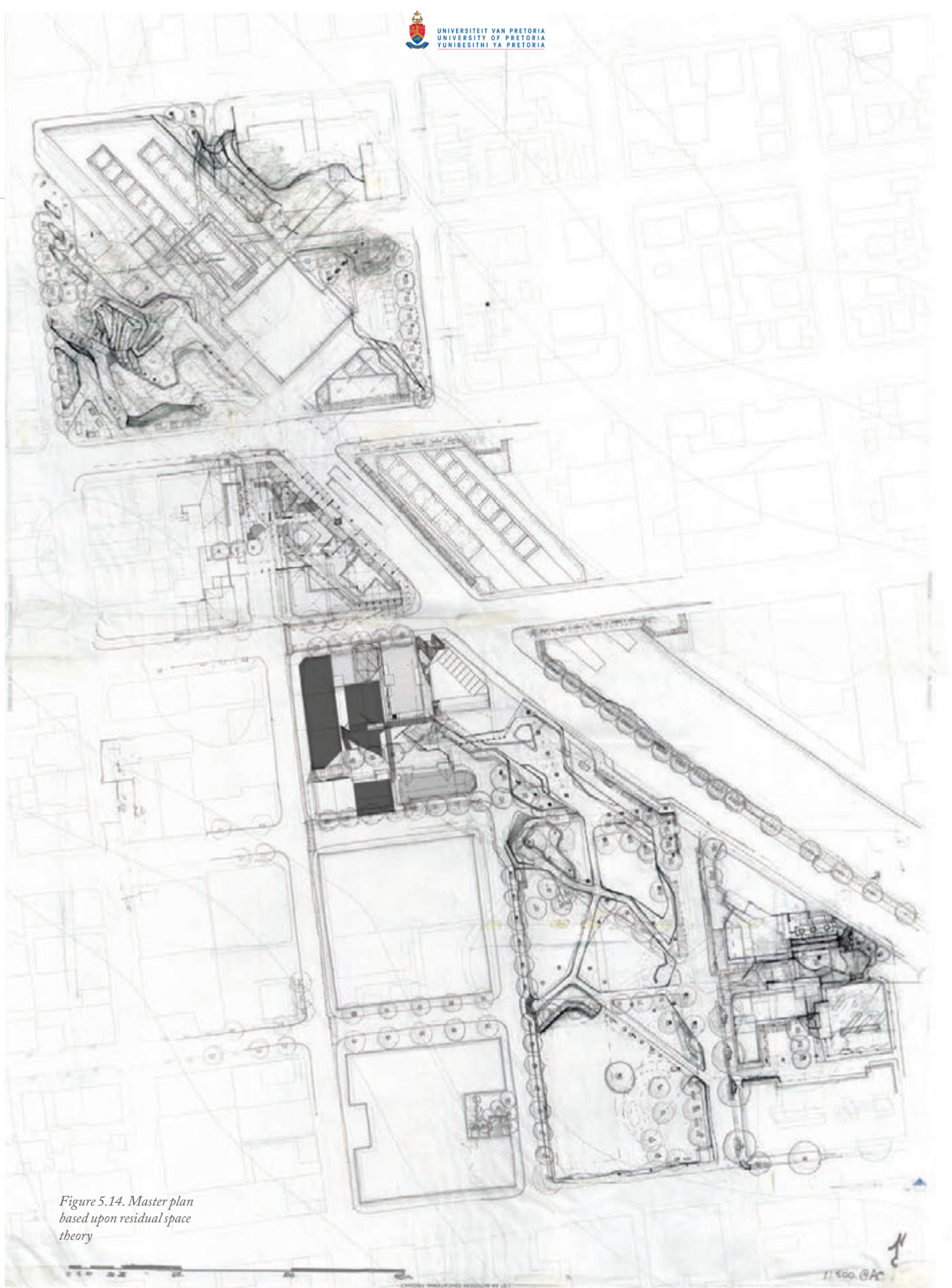


Figure 5.14. Master plan based upon residual space theory

developing the master plan_ DESIGN DEVELOPMENT

This final iteration of the master plan development (illustrated in *Figure 5.17* on page 113) is an amalgamation of the grid theory as well as the exploration of the residual spaces which emerges as result of the grid overlaps.

It can be viewed as a good example of the hybridised theory of field interdependence, where physical fabric or edges form thresholds between outdoor rooms, while housing activities and infrastructural systems.

SECTION A-A



Figure 5.16. Section through planting at station

SECTION B-B



Figure 5.15. Section through plaza at station

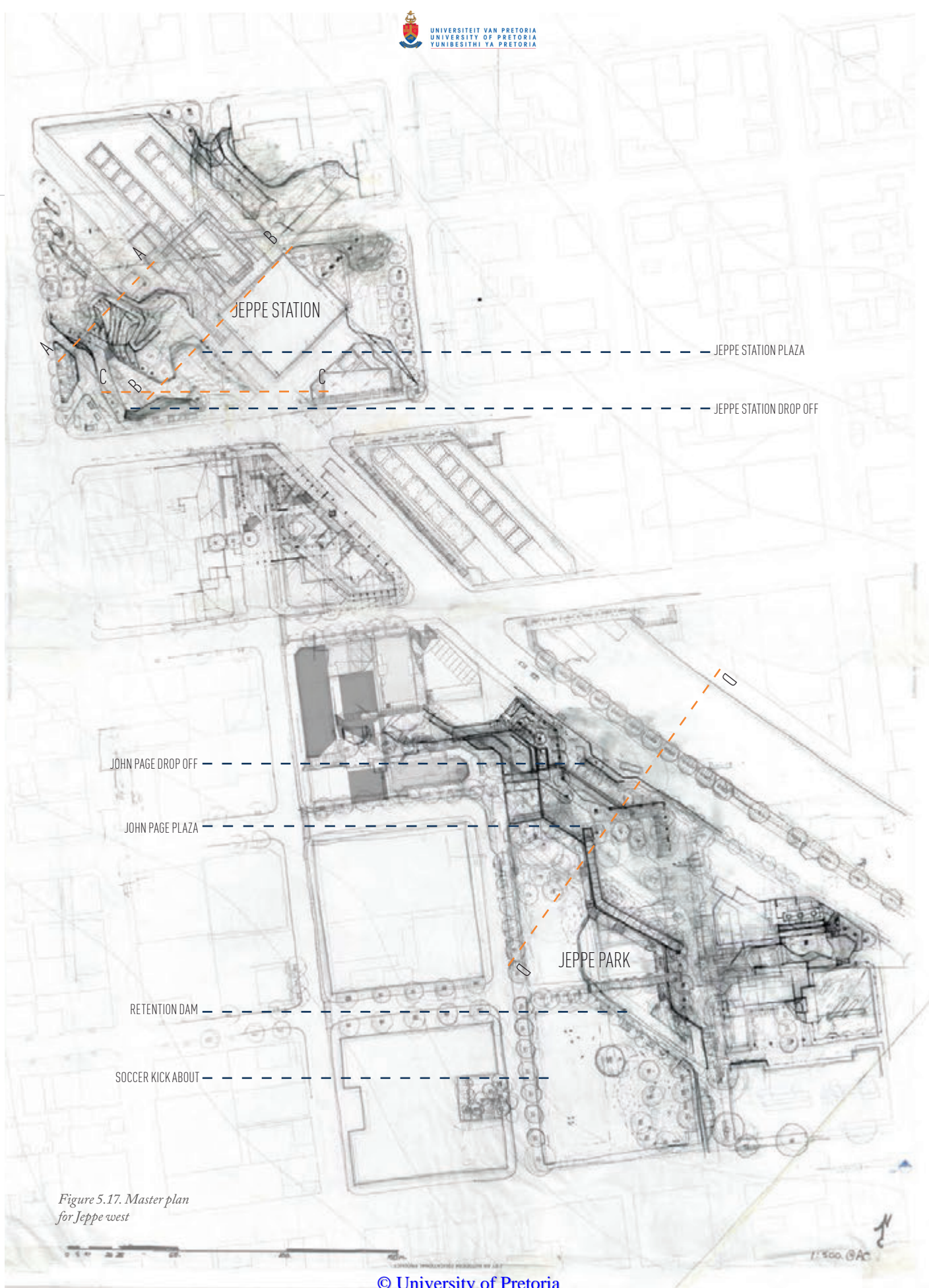
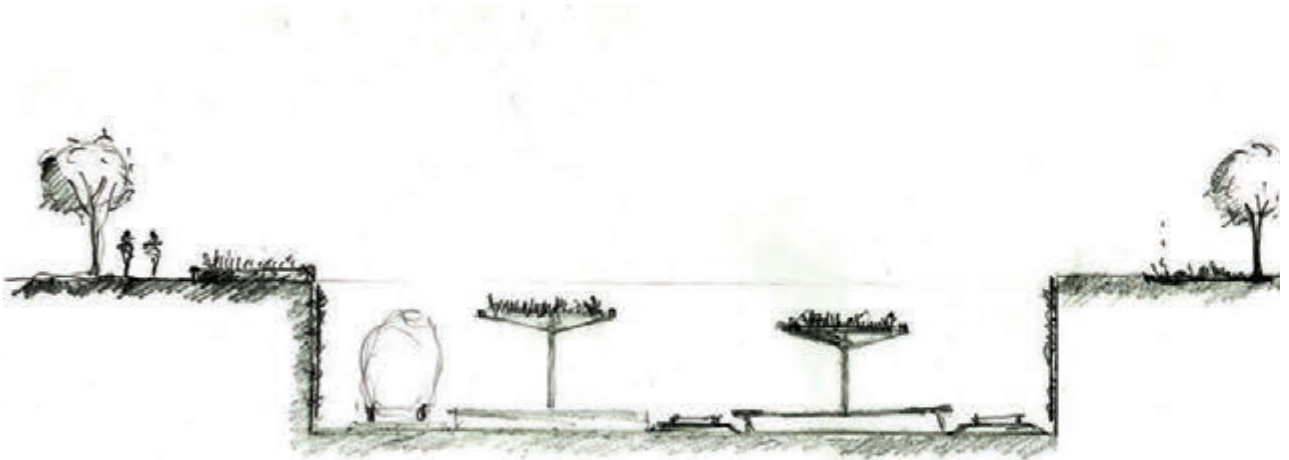


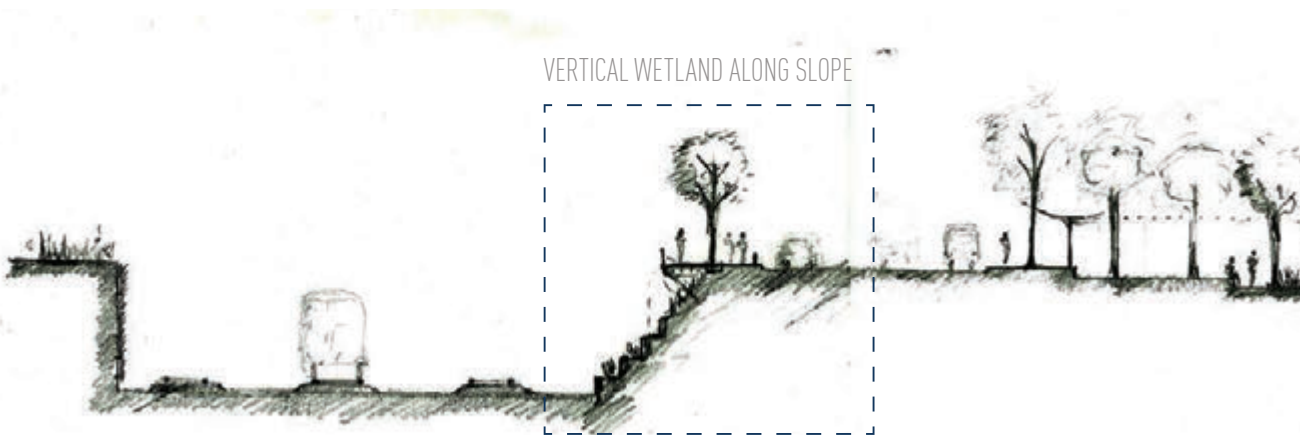
Figure 5.17. Master plan for Jeppe west

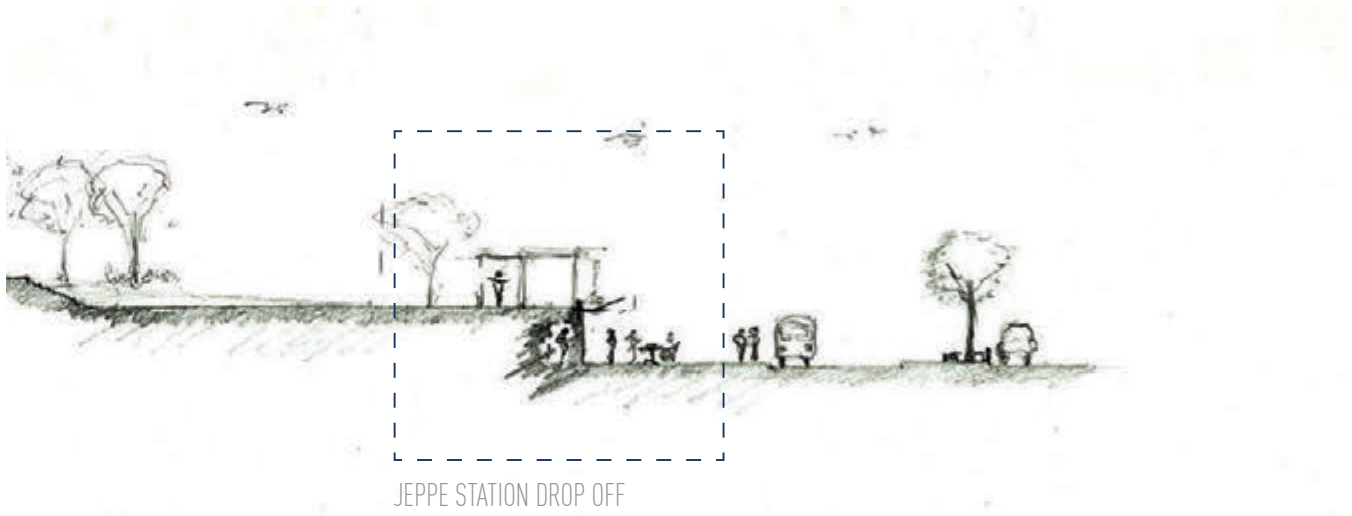
developing the master plan_ **DESIGN DEVELOPMENT**

SECTION C-C



SECTION D-D





JEPPE STATION DROP OFF

Figure 5.18. Section through railway line, plaza and new drop off area at station



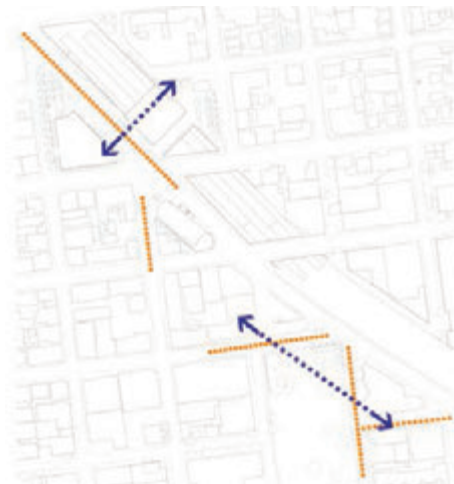
Figure 5.19. Section through vertical wetland and park

developing the master plan_ DESIGN DEVELOPMENT

PRACTICAL CONSIDERATIONS

The following practical considerations were taken into account during the development of the master plan.

EXISTING DIVIDES BETWEEN PUBLIC SPACES



WITH RELATION TO THE SLATE



The diagrams in *Figure 5.20* show existing divides between important public spaces. These divides are streets which currently fragment the landscape slate and make it difficult to read these landscape spaces as continual entities.

At the station node:

- John Page Drive separates the plaza to the south of the station, from the market space situated to the north east of the station.
- By closing this section of John Page Drive the opportunity of creating two connected plazas arises.

At the park node:

- Park Street and Janie Street are two low traffic streets currently isolating the park from the adjacent city blocks and the courtyards they provide.
- By converting these streets into pedestrian streets the opportunity of designing a continual urban park, which links these courtyards emerges.

Figure 5.20. Existing divides and possible connections at station and park nodes

EXISTING INTERSECTION CROSSINGS



Figure 5.21. Assimilating intersections into the slate

CROSSINGS AS PART OF SLATE



The diagrams in *Figure 5.21* show two main intersections along John Page Drive. These intersections are difficult to cross, and isolate the street corners and pedestrian flow adjacent to them. If these intersections are assimilated into the landscape slate and developed into 'pedestrian friendly' intersections pedestrian flow will be easier and safer.

Two vehicular bridges (*Figure 5.22*) leading to these intersections connect Jeppe East to Jeppe West. The sidewalks on these bridges are narrow and unsafe for the use of pedestrians. The opportunity of changing these bridges form unsafe barriers to destinations, which enhances the public realm and allow the current edges to house both pedestrian flow and infrastructural systems arise through expanding the sidewalks and enlarging the landscape slate (*Figure 5.22*).

BRIDGES AS BARRIERS

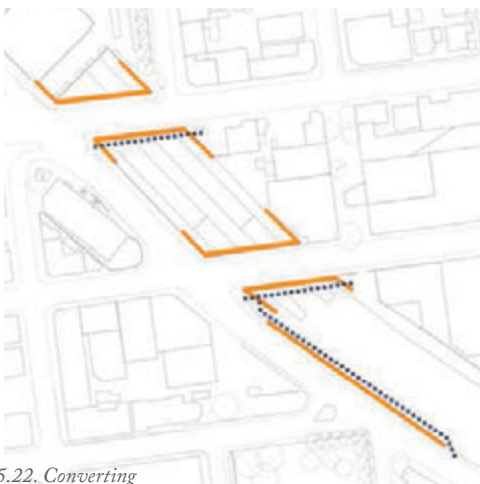
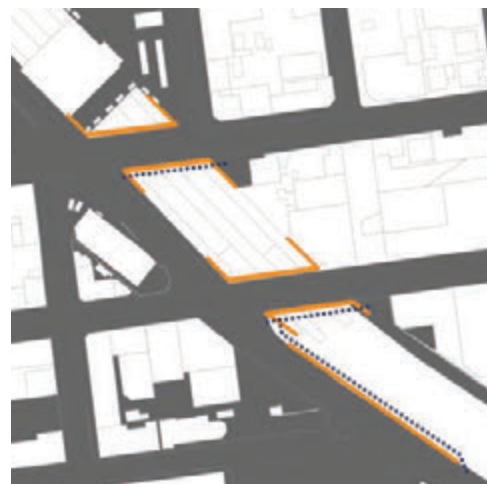


Figure 5.22. Converting bridges to destinations

ENLARGING THE SLATE



5.3 the PROGRAMME

The landscape architectural intervention, as previously mentioned, forms the base for the architects on which to situate their projects.

The landscape is the slate, housing environmental and socio-economic systems and rituals. In Jeppe - a post-industrial area, it is necessary to impliment environmental systems as part of the urban realm. These systems in turn aid architectural interventions and their programme, while also contributing to social and environmental networks.

A cohesion between landscape and building needs to take place. The landscape architectural intervention and its components is the mediator between built fabric, as embodied by existing structures and new architectural interventions, and public spaces within the urban environment. The landscape programme should therefore reflect the objectives of the layout and design strategy for the master plan of the study area.

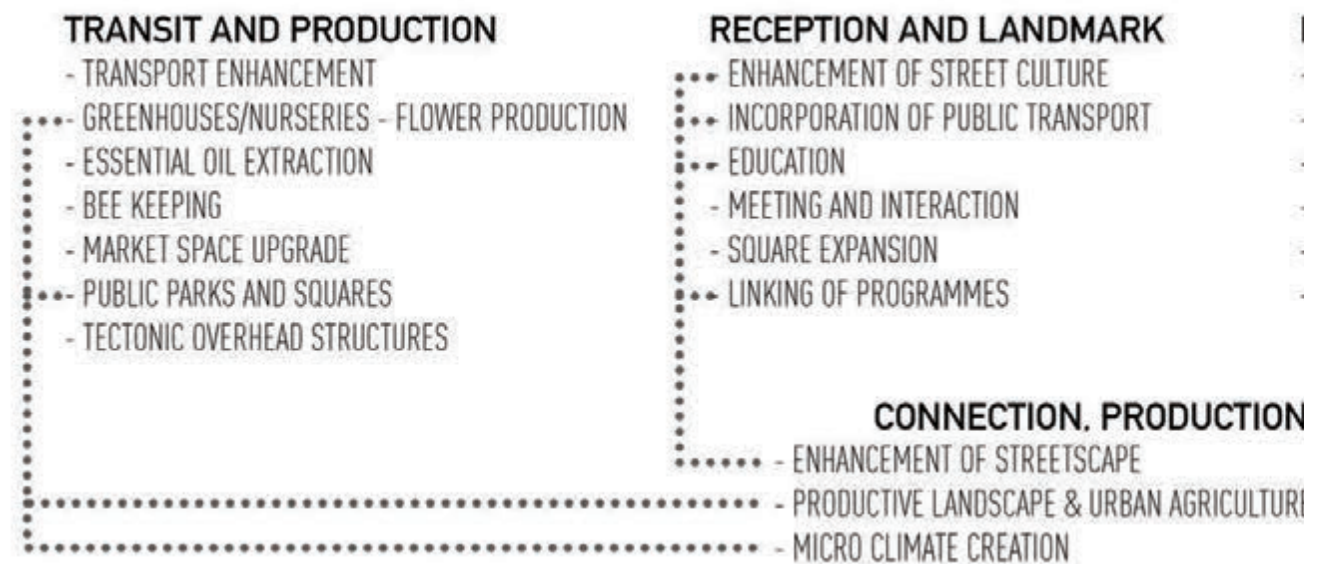


Figure 5.23. Five steps of constructing the slate

The landscape programme can be understood as an amalegamation of aspects of architectural programmes. The landscape programme is therefore focussed on connection and production in its own right, while facilitating new architectural interventions.



5.4 UNLOCKING THE LATENT POTENTIAL OF THE SLATE

As previously stated, the landscape is the slate housing the processes and systems associated with infrastructure and the environment. It can therefore be said that the slate as an entity is embodied with latent potential, which can be unlocked through systems design. One has to identify opportunities in infrastructure where these systems can be implemented (*Figure 5.26*) and developed on a technical level.

Figure 5.24 on page 120 indicates opportunities within the infrastructure of Jeppe West, where systems design can be implemented. The areas identified are mostly situated along John Page Drive and around the sites identified for architectural interventions. The type of systems design for each site coincides with the architectural programme for that specific site, as well as with the physical character of the site and possible systems it can house.

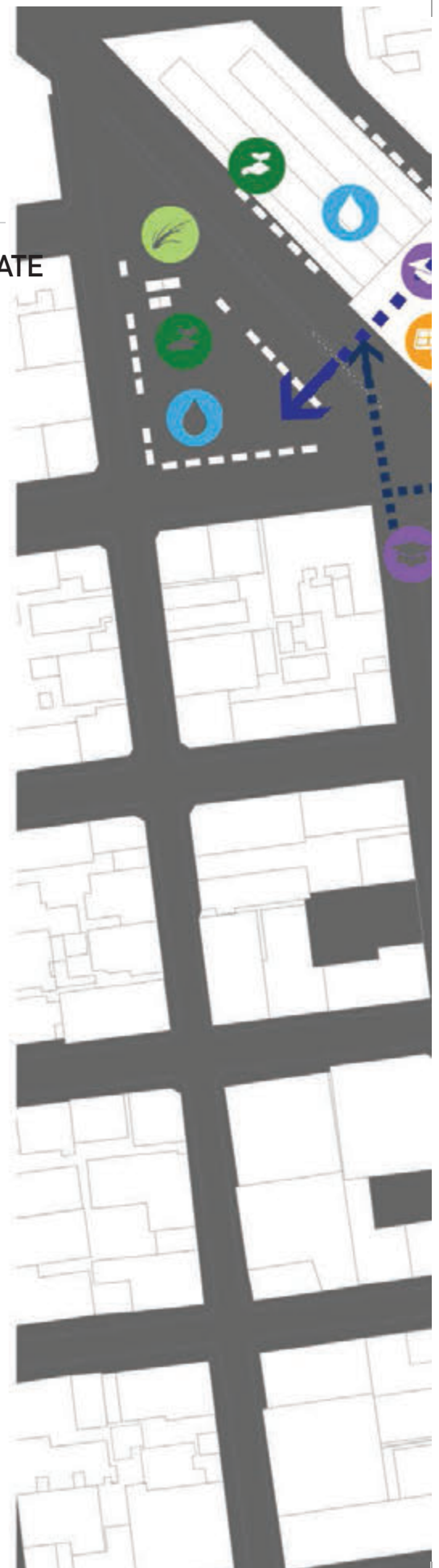
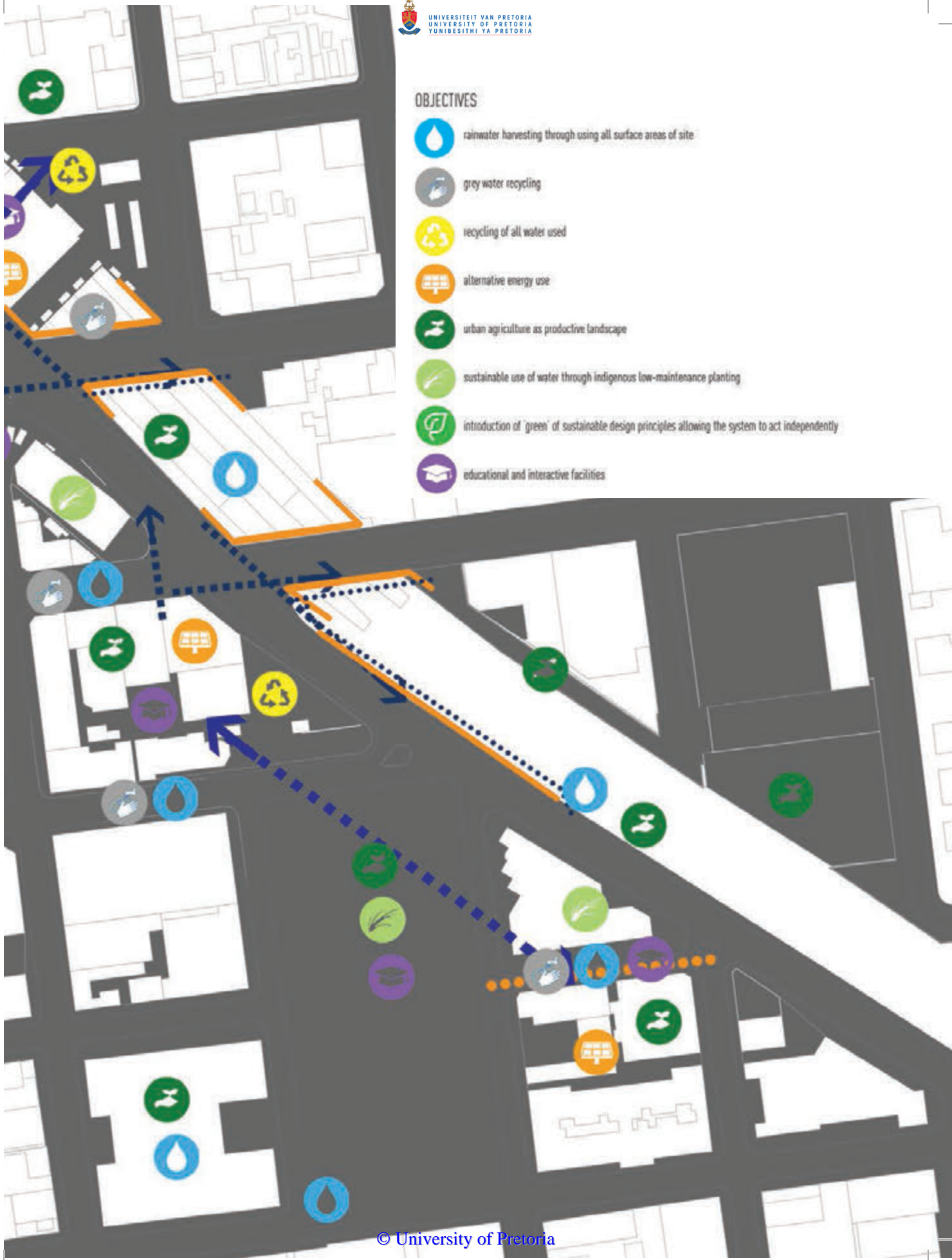


Figure 5.24. Unlocking the latent potential of the slate

OBJECTIVES

-  rainwater harvesting through using all surface areas of site
-  grey water recycling
-  recycling of all water used
-  alternative energy use
-  urban agriculture as productive landscape
-  sustainable use of water through indigenous low-maintenance planting
-  introduction of 'green' of sustainable design principles allowing the system to act independently
-  educational and interactive facilities



5.5 master plan strategies_ MOVEMENT STRATEGY

Movement and circulation routes connect commercial, social and economic nodes and micro nodes and allow users to access, explore and interact with different facets of the public realm.

It is important to structure these routes correctly, to ensure that there are no unused and wasted spaces throughout the landscape.

Circulation routes form the base as structuring element for the master plan and ensure that courtyards are utilised and safer pedestrian movement corridors are installed. These circulation routes can be explained in Figure 5.25 on page 124 where a pedestrian corridor is established which meanders through the city blocks adjacent to John Page Drive. This corridor connects the Jeppe station node and park node with each other and allows for various activities to feed from it and connect to other micro nodes between the station precinct and the park.

Figure 5.26 on page 123 indicates all the system strategies and landscape elements forming part of the public realm which can be layered onto the landscape slate throughout the study area.

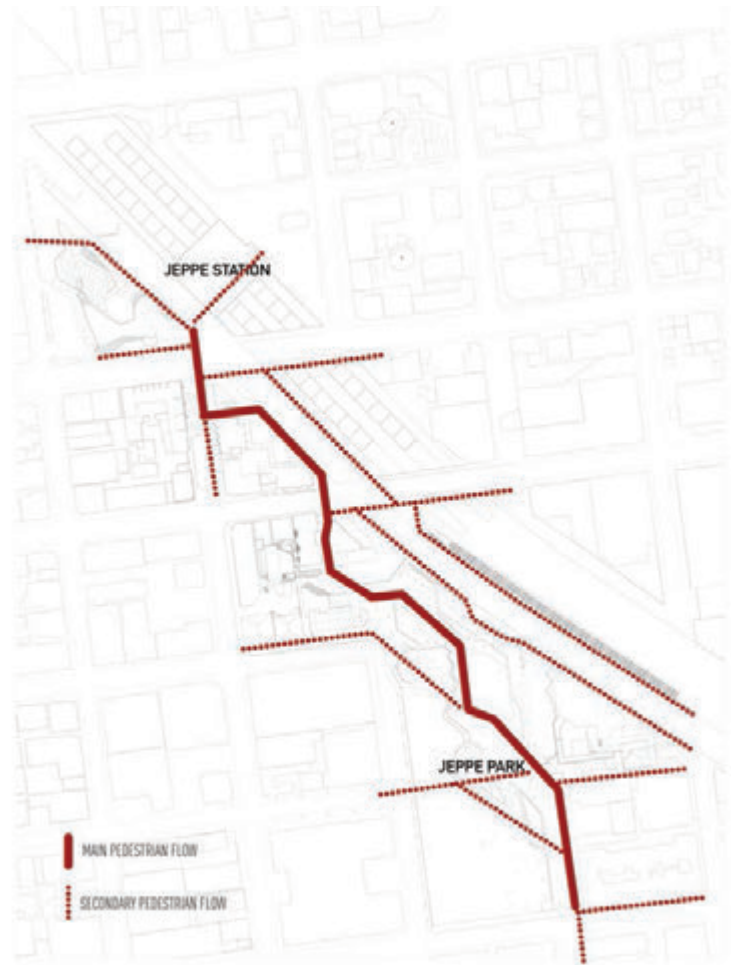


Figure 5.25. Movement strategy on master plan level

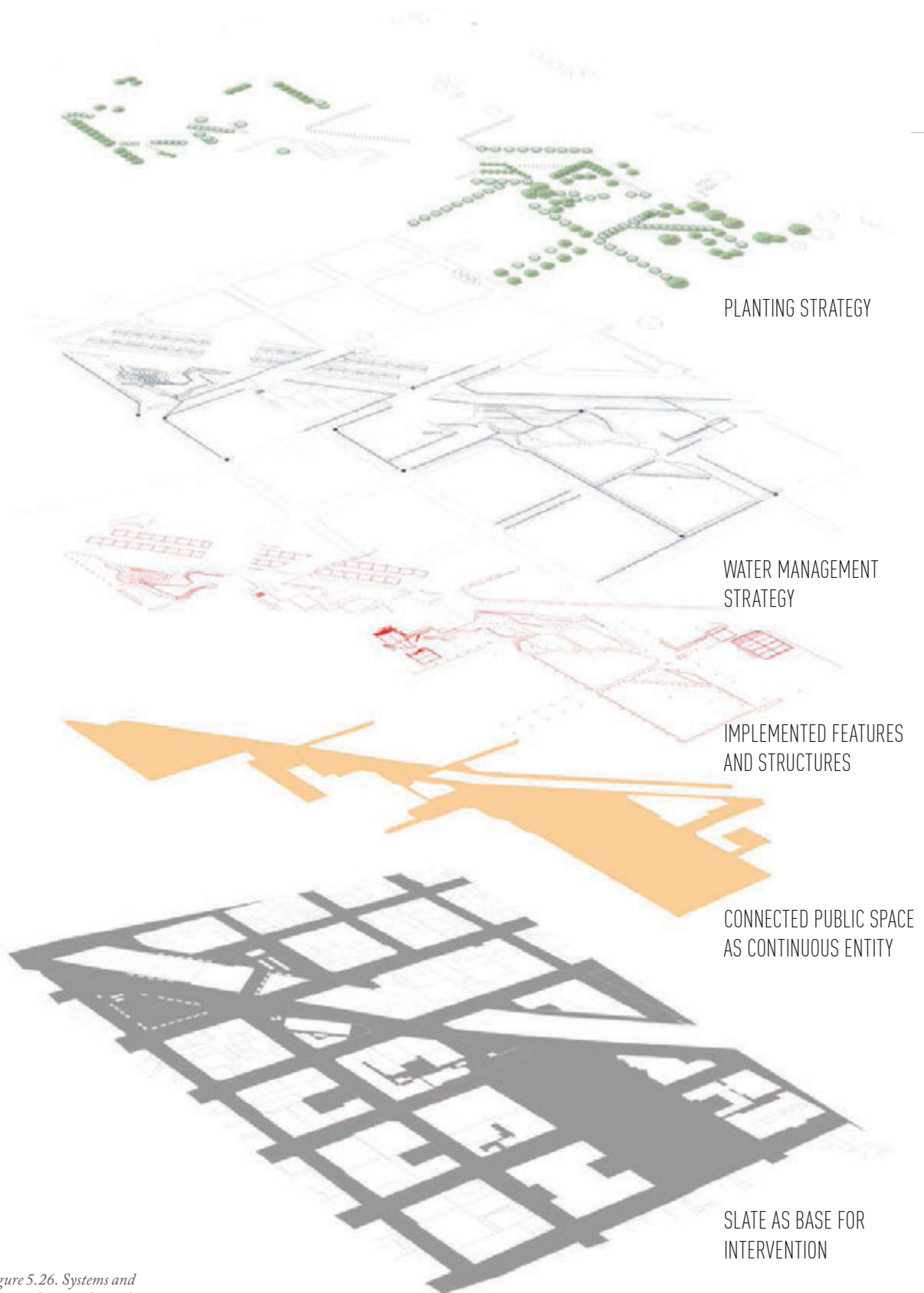


Figure 5.26. Systems and strategy diagram layered onto the landscape late

master plan strategies_ WATER MANAGEMENT STRATEGY

The stormwater management strategy makes use of a combination of bio-swales, gutters, rainwater gardens, detention facilities, retention dams and tanks. These systems allow for the harvesting of surface run-off and the collection of storm water on site. As a purification method an extensive water purification system, consisting of a vertical wetland and a surface flow wetland, was designed and implemented on site. Bio-swales and rainwater gardens contribute to the quality of surface run-off but cannot alone be responsible for healthy water quality.

The study area is divided into a series of catchment basins. These catchment basins contain water purification, harvesting and storage systems, applicable to each of the landscape architectural and architectural interventions and their programmes. In some cases catchment basins can be linked to supplement each other and ensure sufficient water supply year round for the various requirements.

In Figure 5.27 on page 124 the water strategy is illustrated diagrammatically and indicates the steps, processes and storage methods used in the water management strategy. Within the diagram, 3 loops are evident:

- A large outer loop, dealing mainly with stormwater run off.
- An inner loop, dealing with water recycling and use in certain building programmes.
- A tertiary loop, dealing with excess water from the initial two loops.

WATER MANAGEMENT STRATEGY DIAGRAM

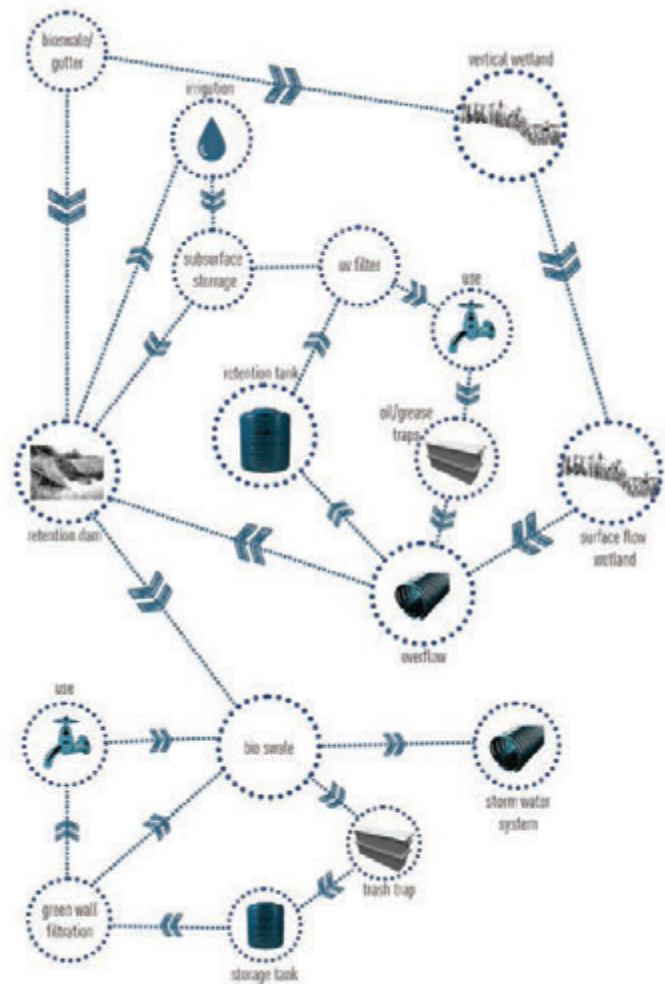


Figure 5.27. (above) Water management strategy diagram

WATER MANAGEMENT STRATEGY AT MASTER PLAN LEVEL

THE DIAGRAM AIMS TO ILLUSTRATE THE WATER MANAGEMENT STRATEGY ACROSS THE SITE. WATER FLOWS FROM THE NORTHER END OF THE SITE (THE STATION) TO THE SOUTHERN PORTION (THE PARK) THROUGH A SERIES OF DETENTION AND PURIFICATION STRUCTURES. THE STRATEGY AIMS TO:

- HARVEST ALL SURFACE RUNOFF
- ALLEEVATE THE GRID AND DETAIN PEAK FLOODS
- PURIFY AND STORE WATER
- RECYCLE ALL WATER USED ON SITE
- RECYCLE GREY WATER

HARVESTING AND PURIFICATION SYSTEMS:

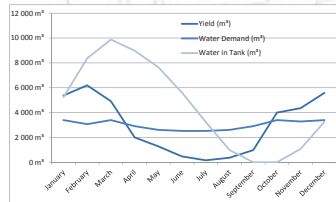
THE WATER MANAGEMENT STRATEGY CONSISTS OF A SERIES OF SYSTEMS AND LANDSCAPE STRUCTURES, WHICH ALLOWS FOR WATER HARVESTING:

- BIO SWALES
- RAINWATER GARDENS
- DETENTION FACILITIES
- RETENTION DAMS AND TANKS
- VERTICAL WETLAND
- SURFACE FLOW WETLAND

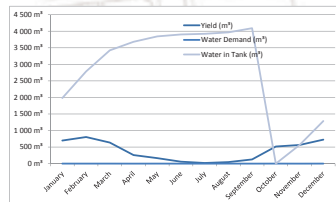
THESE COMPONENTS ARE LINKED TO FORM A NETWORK FOR WATER HARVESTING AND PURIFICATION:

WATER BUDGETS:

CATCHMENT BASIN 1:



CATCHMENT BASIN 2:



CATCHMENT BASIN 3 & 4:

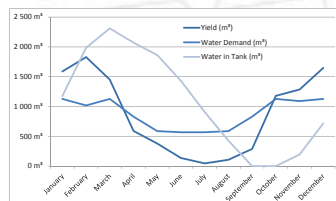


Figure 5.11. Stormwater management strategy on master plan level

master plan strategies_ **PLANTING STRATEGY**

The planting strategy as implemented on site forms part of the goal to create a productive landscape within the urban environment. The main drivers behind the strategy, apart from using a pallet of low maintenance indigenous plants that will encourage biodiversity, are the aiding and facilitating of the architectural programme.

The strategy diagram on the opposite page aims to illustrate the various areas of planting. These areas range from general planting to specific planting for either production of purification purposes.

Call out illustrations of the following systems show where these systems or techniques are implemented:

- Green roofs
- Green walls
- Vertical wetlands
- Surface flow wetlands
- Swales and rainwater gardens
- General planters

GEOLOGY AND MACRO CLIMATE ANALYSIS:

GEOLOGY AND SOIL CONDITIONS:

Johannesburg forms part of the gold reef mountainbushveld and egoli grassland veldtypes.

the geology associated with these veldtypes is characteristic of the Johannesburg dome geology. The geology on which Jeppestown is based consists predominantly of quartzites and forms part of the Witwatersrand rand supergroups.

CLIMATIC DATA:

Johannesburg is subject to a summer rainfall area with dry winters, receiving an average of 680mm of precipitation per year.

Temperatures range from 17-26C max daytime in from winter to summer and 2 - 12C min night time temperatures from winter to summer.

CONSERVATION STATUS:

The vegetation of the area is not threatened, although these areas are subject to rapid rates of urbanisation. Since the project is based in an urban environment, with no natural vegetation, due to extensive hard surface covering, the aim is not to fully restore or rehabilitate

the area, but still to remove invasive species and enforce a philosophy of a productive landscape.

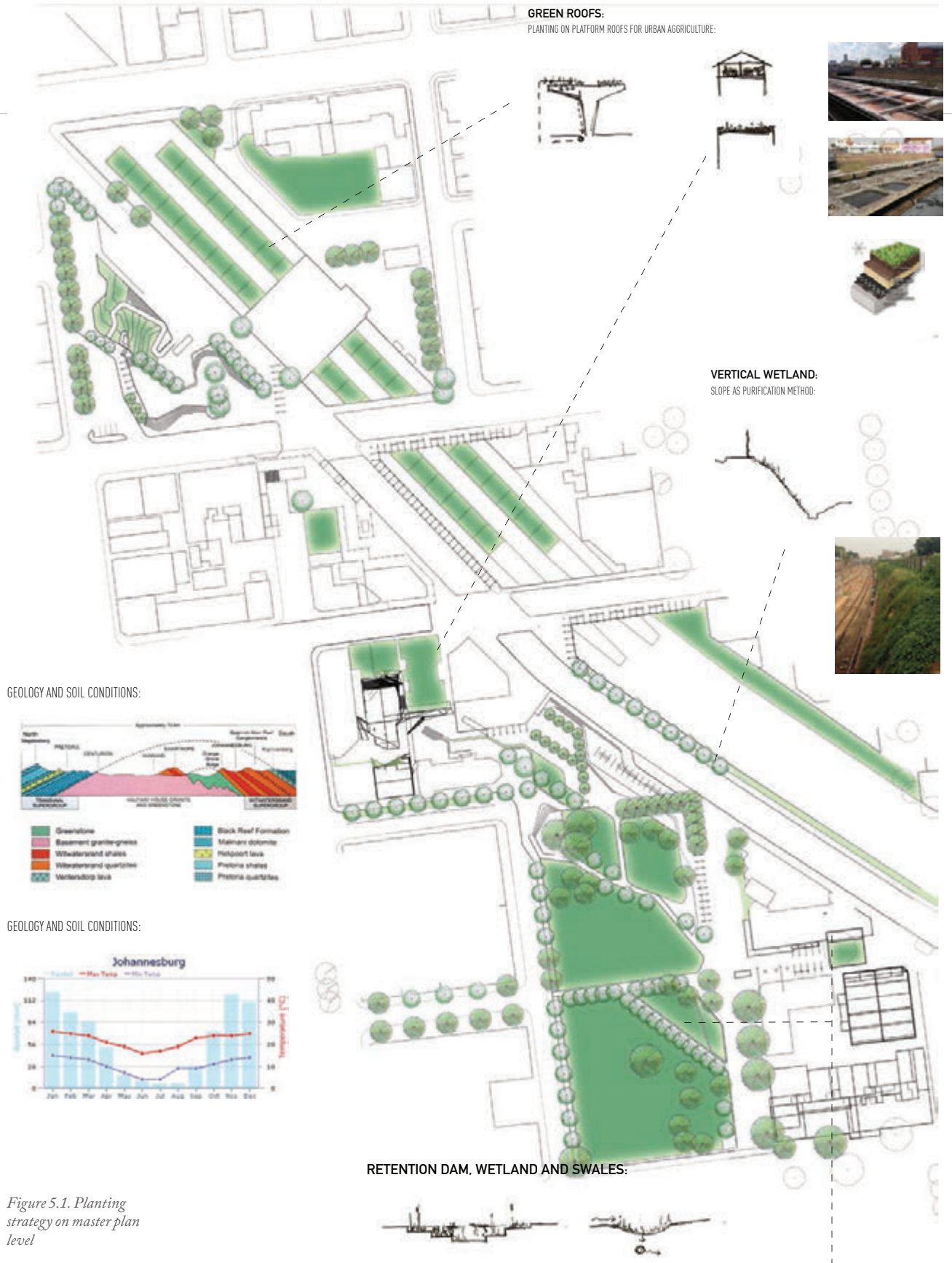


Figure 5.1. Planting strategy on master plan level

master plan strategies_ **SYSTEM DIAGRAMS**

WATER MANAGEMENT STRATEGY - HARVEST, PURIFY AND RECYCLE:

The aim of the water harvesting and stormwater management strategy is to channel surface runoff to swales, rainwater gardens, gutters and collection points. From each collection point to a storage facility, while excess water gets recycled through the system or diverted to the existing stormwater channel at the lower point of the site close to the Mai Mai Market.

The strategy can be explained through the diagram below.

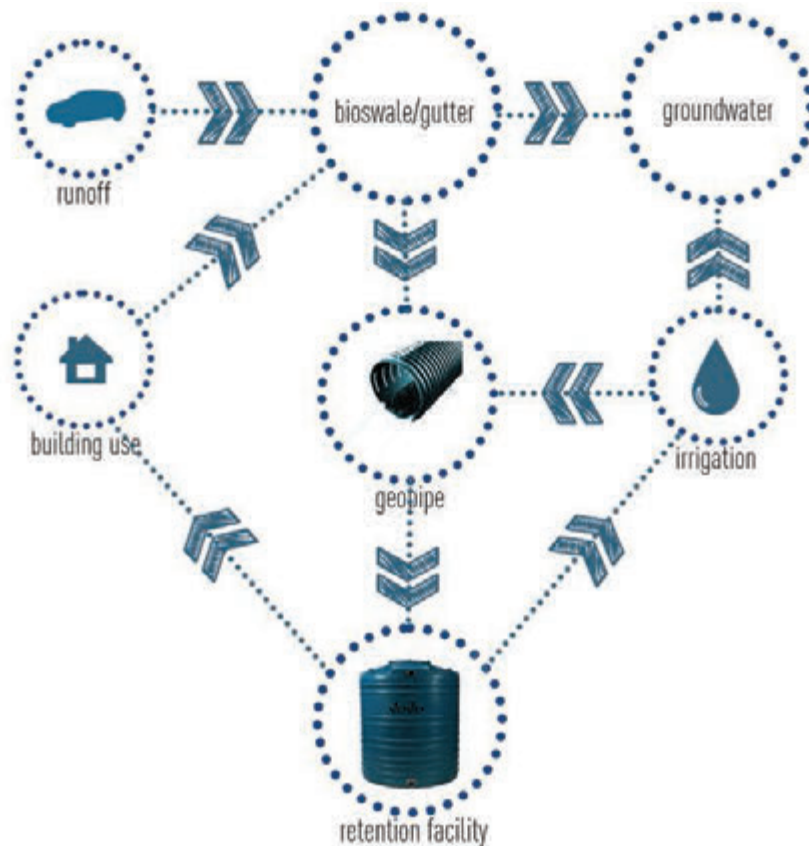


Figure 5.2. Water management diagram

master plan strategies_ **SYSTEM DIAGRAMS**

WATER PURIFICATION STRATEGY - PURIFY AND RECYCLE:

The aim of the water purification strategy is to filter water through a series of filtration systems implemented on site. Water from rainwater gardens or swales already have better water quality. From these swales and rainwater gardens, water enters a wetland system, where final natural filtration takes place. Water from the wetland system and retention dam is used on-site and in the surrounding building facilities or architectural programmes. Once used, water re-enters the system in the form of grey water, which percolates through a series of traps before it is recycled back into the wetland system.

The strategy can be explained through the diagram below.

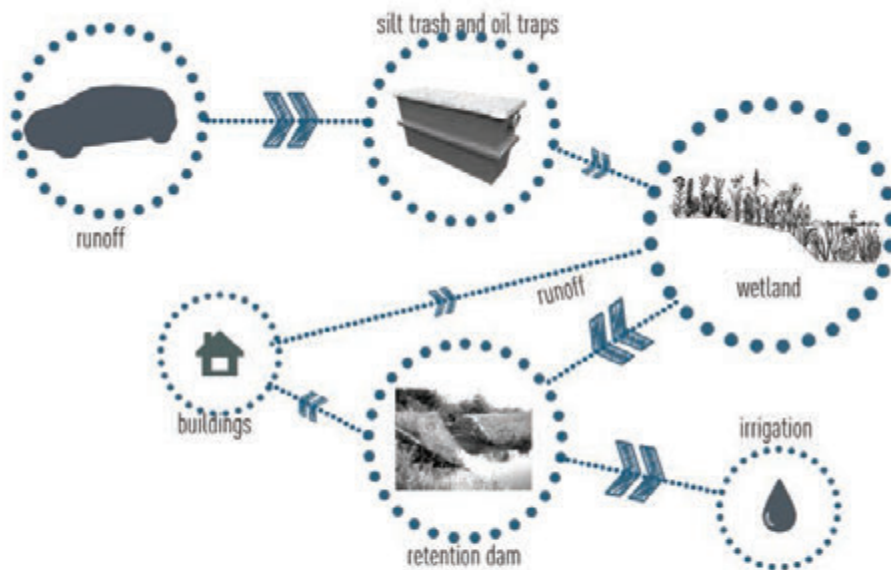


Figure 5.3. Water purification diagram

master plan strategies_ SYSTEM DIAGRAMS

ALTERNATIVE ENERGY STRATEGY - SUSTAINABILITY AND ALLEVIATING THE GRID:

The aim of the alternative energy strategy is to use alternative energy sources as a means of executing processes and activities on site. In order to transport water from certain collection points to storage facilities, energy is required. In this case a combination of solar and submersible pumps is used to transport to a storage facility for use.

To heat water, mostly for the ritual of washing as discussed in Volume VI parabolic collectors are used. This process also allows for alternative energy to be produced.

The strategy can be explained through the diagram below.

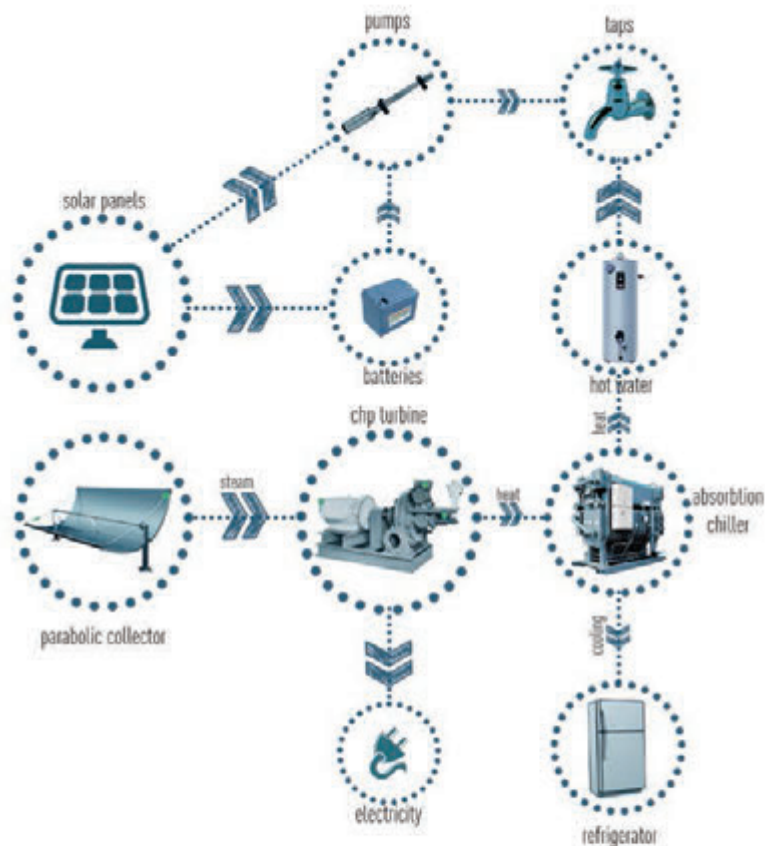


Figure 5.4. Alternative energy diagram

master plan strategies_ **SYSTEM DIAGRAMS**

WASTE MANAGEMENT STRATEGY - HARVEST AND RECYCLE:

The aim of the waste management strategy is to use collected waste from the surrounding areas and programmes on site. Waste can be stored and sorted on site for the appropriate adaptive reuse where possible. The waste management strategy classifies waste into two distinct categories - solid waste and organic waste. Solid waste, in this case mostly steel, gets sorted and reused as discussed in Volume V. The excess waste gets transported off site and recycled elsewhere. Organic waste is transformed into compost through a composting process and can be used in the landscape to aid the productive nature of the intervention.

The strategy can be explained through the diagram below.



Figure 5.5. Waste management diagram

5.6 PRECEDENTS ON LARGE PUBLIC URBAN DEVELOPMENTS

Khayelitsha Harare Precinct 3

Landscape architects: KALA (Tarna Klitzner)

Important aspects:

- Connect and revive open spaces in the townships to act as catalytic nodes for regrowth.
- Passive surveillance through surrounding activities.
- Local, robust materials is used.
- Community involvement and skill development.
- Define the public realm.

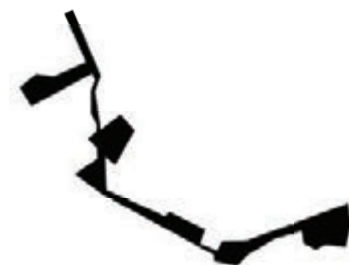
As part of the Violence Prevention through Urban Upgrading (VPUU) initiative a series of play courts, school playgrounds, squares and pedestrian walkways are being developed throughout Khayelitsha.

This development acts as a spine meandering through the township, anchored by a series of Safe Nodes, which houses the above mentioned facilities.

Harare precinct 3 is one of these Safe Nodes aimed at creating an environment fostering identity and high quality

urban space. This is achieved through using local and robust materials for street furniture and hard landscape interventions. A combination of soft and hard spaces allows richness and transition throughout the precinct.

This precinct is a good example of identifying a void in urban infrastructure, converting it into a successful urban park and linking it to a network of public space and urban developments similar in nature.



17.5 ha
2 km long

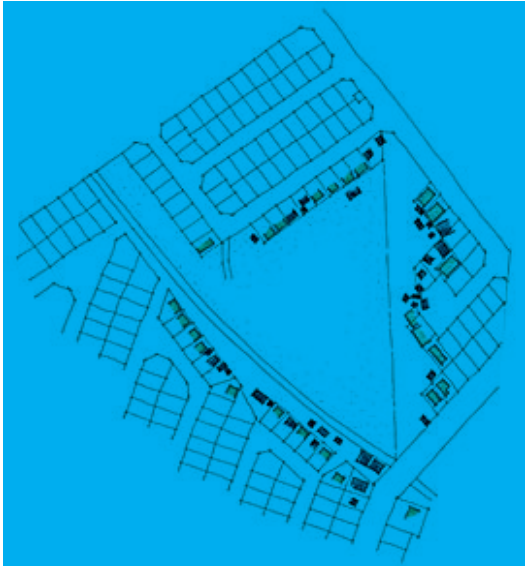


Khayelitsha Harare
Precinct 3

Figure 5.6. (bottom left)
Outline and size of Khayelitsha
Safe Node development

Figure 5.7. (above)
Identification of nodal
development along movement
corridor

VOID IN URBAN FABRIC



DEVELOPMENT NODE IN URBAN FABRIC

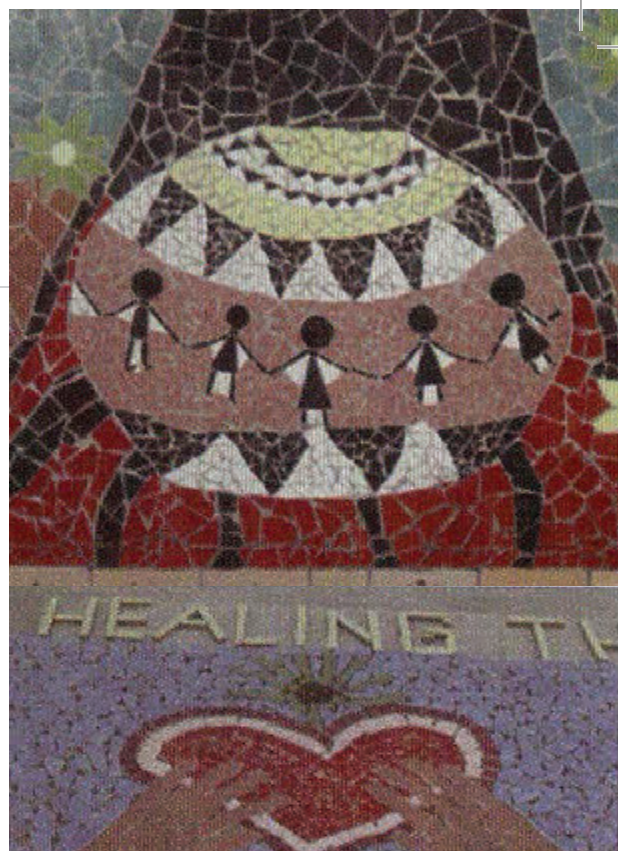


Figure 5.8. Plans indicating development and layering of node

Figure 5.9. (top right) Textures

Figure 5.10. (right) Play equipment from local material

Figure 5.11. (bottom right) Aerial view of Safe Node Precinct 3



positive intervention, safe public space with a sculpture but collapsing play frame and a community centre

PRECEDENTS ON LARGE PUBLIC UBAN DEVELOPMENTS

The Highline

Landscape architects: Field Operations - James Corner

Important aspects:

- Robust space reclaiming the surrounding urban environment.
- Effective adaptive reuse of degraded urban fabric.
- Community involvement.
- Continual linear landscape development.
- Rich in textures and materials.

Located in Manhattan, New York, the Highline reclaims the abandoned elevated freight railway line, transforming it from a lost and undefined urban space, into an iconic landscape endeavour of the 21st century.

This elevated urban park connects to micro nodes throughout the city and links social, commercial and environmental networks that occur within the city. It provides a safe and healthy pedestrian environment within a busy metropolis, allowing users to enjoy

the public realm within the city.

The Highline is a good example of an urban park, which reclaims and revives a post-industrial wasteland in order to foster a sense of identity and healthy public outdoor space. It makes use of robust materials, catering for the high traffic and daily use patterns.

This catalytic development induces urban renewal and mixed use developments, with landscape architectural processes and systems at its core. The project stands as a testimony to landscape urbanist thinking and principles within the context of the 21st century and is a prime example of the immense influence a good landscape architectural intervention can have on a degraded urban environment.



2.9 ha
2.3 km long



Figure 5.12. (bottom left) Outline and size of The Highline

Figure 5.13. (above) The Highline within the urban context

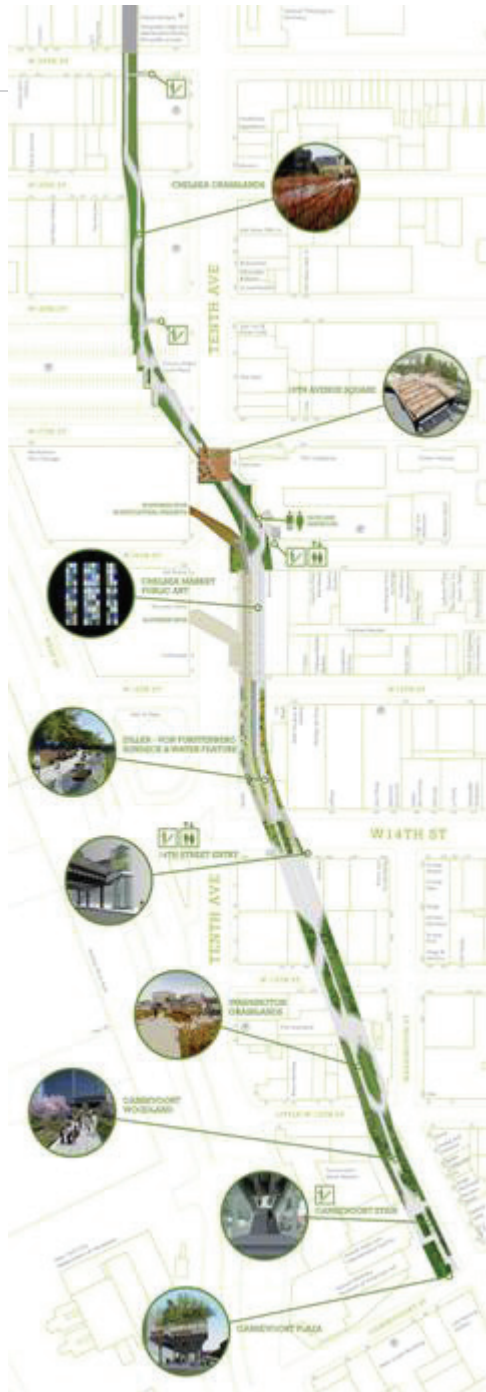


Figure 5.14. (above) Map of the Highline park

Figure 5.15. (top right) The Highline prior to development

Figure 5.16. (right) The Highline during the day

Figure 5.17. (bottom right) The Highline at night

PRECEDENTS ON LARGE PUBLIC UBAN DEVELOPMENTS

Parc de La Villette

Landscape architects: Bernard Tschumi

Important aspects:

- Robust space celebrating the surrounding urban environment.
- Form based upon strong grid layout.
- Strong social layer.
- Remarkable influence on the field of landscape architecture.
- Does not resort to conventional rules of order, hierachy and composition.

Located on the site of a former abattoir and meat market which operated till the late 20th century is the 35ha Parc de La Villette. This park in Paris, France, is another good example how a brownfield site of post-industrial wasteland can be transformed from a vacant and derelict piece of land into a well functioning social environment.

The park is based on a grid, formed by a series of architectural follies in the landscape. The grid is emphasised by

lines which bind planes together. The concept and aim behind the layout was to generate a new model for the urban park in the twenty-first-century. Eventhough this park is a good example of reclaiming lost urban spaces, it does not take environmental systems into account and give little reference to its industrial past.



35 ha

136

Figure 5.18. (bottom left)
Outline and size of Parc de La
Villette

Figure 5.19. (top left) Follies as
structuring members for the grid

Figure 5.20. (bottom left)
Layers of Parc de La Villette -
grid and spaces

Figure 5.21. (top right)
Promenade within Parc de La
Villette

Figure 5.22. (right) Follies
within the landscape of Parc de
La Villette

Figure 5.23. (bottom) Parc de
La Villette in its urban context



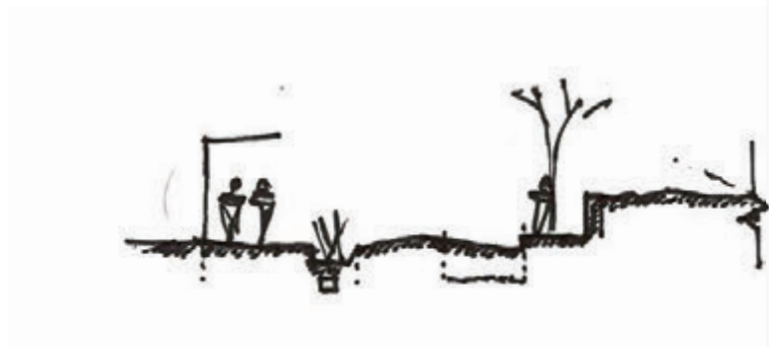
chapter 5: **SUMMARY**

Based on the major nodes, the park and the station, and the movement corridors which exist between these two nodes, a spinal development can be induced. It is on this spine where the architectural interventions are situated.

The framework proposal, as discussed in Volume I and summarised in this chapter, allow for connections to existing frameworks around Jeppe West. Within this framework proposal, a micro framework exists which essentially becomes the master plan for the landscape intervention.

The spinal development allows for expansion into the city beyond the site and does not exist in isolation. This spine is also home to many rituals, various edge conditions and infrastructural components, which will be investigated to upgrade the link between the park and the station to a coherent public corridor fostering identity and sense of place.

The master plan for Jeppe West can be layered with systems and strategies to improve the infrastructural components of Jeppe and enrich the public realm. This adds value by converting issues related with stormwater management into positive water harvesting and purification strategies, which in turn aids the planting strategy. These systems and strategies enforce the idea of a productive landscape forming part of the spinal development in Jeppestown.



06

DEVELOPING THE **IDEA**

Chapter 6 contains the design informants and conceptual exploration of a landscape architectural intervention.

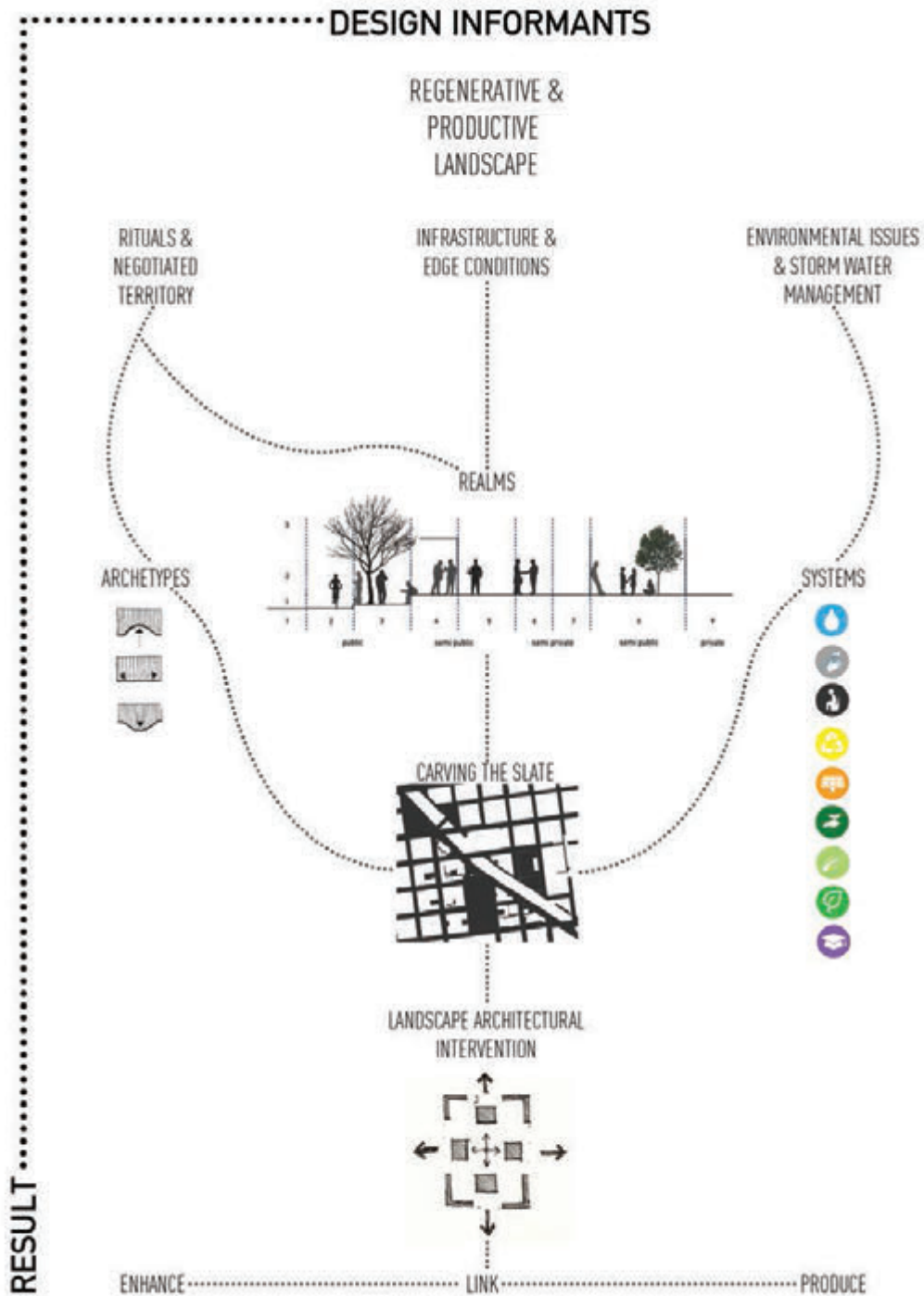
- 6.1 **design informants**
- 6.2 **mapping ritual**
- 6.3 **investigating edge conditions**
- 6.4 **design development**
- 6.5 **precedents**
- chapter 6: **summary**



5.1 DESIGN DRIVERS AND INFORMANTS

The landscape architectural intervention should be able to act as a sustainable catalyst for the socio-economic, ecological and economic post-industrial environment.

The design drivers and informants set the base for the landscape architectural intervention. *(Figure 6.1)* These informants can be gathered from the previous chapters and condensed into a single diagram, which can be used to guide the designer and ensure that the design process encompasses all the components necessary to ensure a holistic landscape architectural intervention.



“... homo sapiens will always organise itself spatially and only a fixed number of possibilities are available to create the basic logical framework for such an artefact (town or village) to sustain itself and survive over time” (Van Rensburg 2008)

6.2 MAPPING RITUAL

Urbanist Jan Gehl said that public activities are either optional or necessary. By considering the ways in which people use and inhabit space it becomes evident that merely grouping certain functions or buildings together is not enough to stimulate the growth of a healthy urban space (Gehl, 2007). One should therefore gather clues from the daily ritual of the users and processes within the urban realm, in order to identify which components of infrastructure and landscape processes to enhance or amplify.

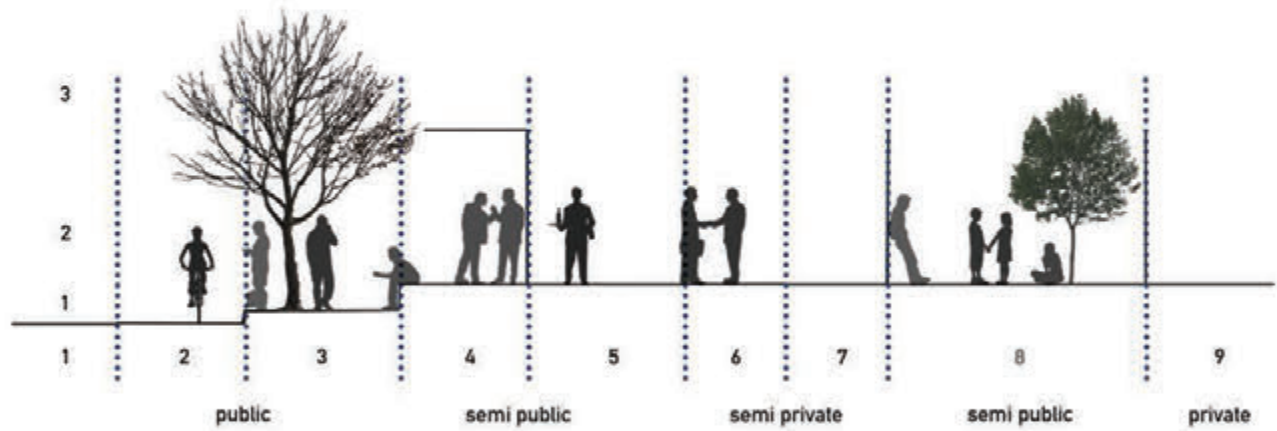
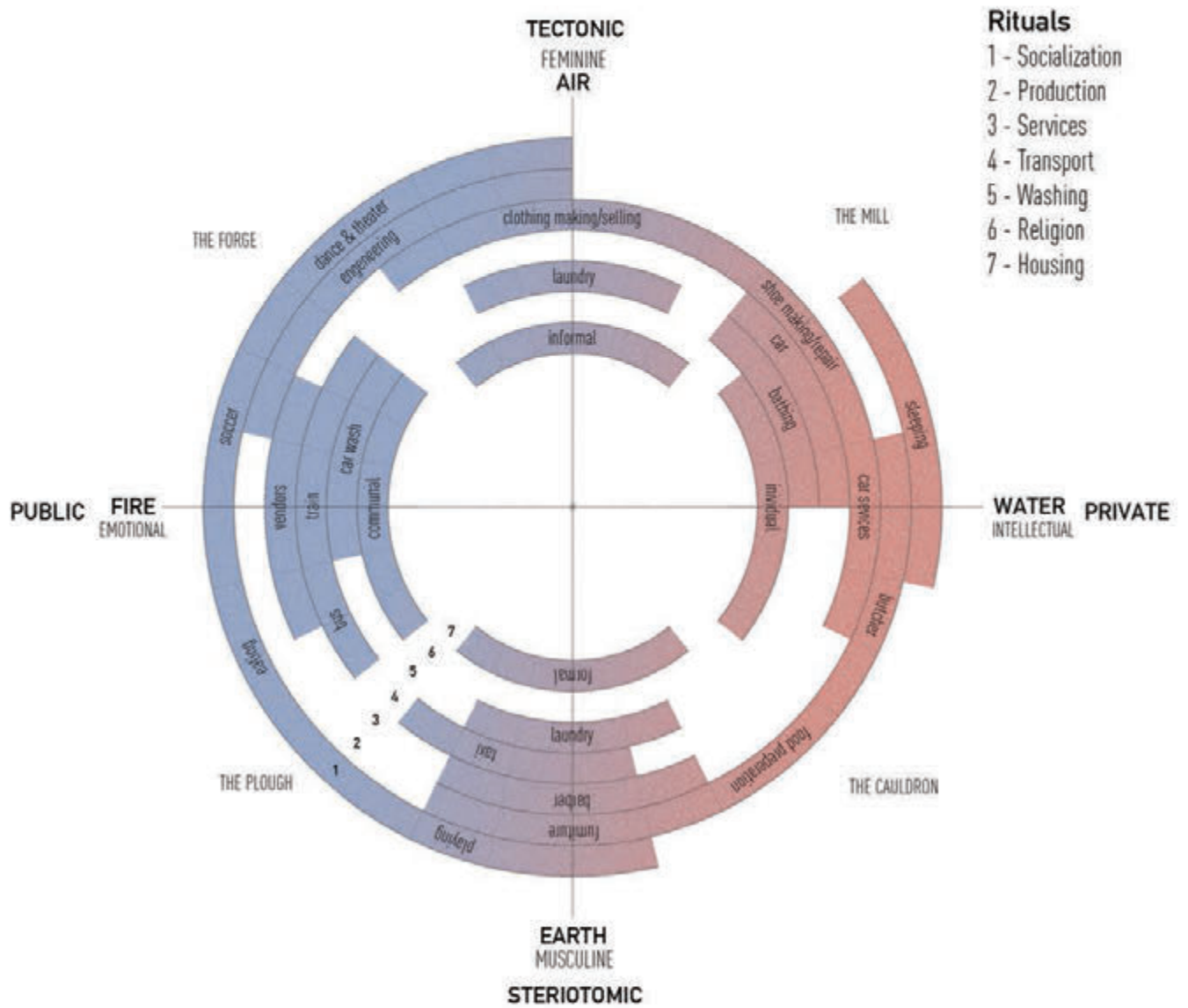
The Jeppe Hypograph, illustrated in *Figure 6.2* is explained earlier in the book in Chapter 2.

By applying the Jeppe Hypograph to the study area, one can observe the social networks and activity patterns that occur within Jeppetown. From this mapping a study of realms (public – private), edge conditions and synchronous activity networks can be conducted. This will give insight into the mechanisms at work in Jeppe and allow the designer to understand which conditions to amplify and how to go about the task of curating the conditions associated with each of these conditions.

The most important fact to stress when applying the Jeppe Hypograph is to constantly relate each activity to a decided position on the spectrum between the public and private realms, in order to determine the nature of the intervention or amplification which will be applied, when carving similar types of spaces from the landscape slate.

EXAMPLE OF HOW THE JEPPE HYPOGRAPH CAN BE APPLIED:

- Under ritual 3 - the ritual of services - falls the activity of vending. This activity occurs mostly in the public realm and therefore it is situated on the Hypograph in row 3 closest to the public pole.
- This activity may synchronise with other activities of various rituals which are also located near the same locus on the Hypograph, for instance: the rituals of transport and socialization.



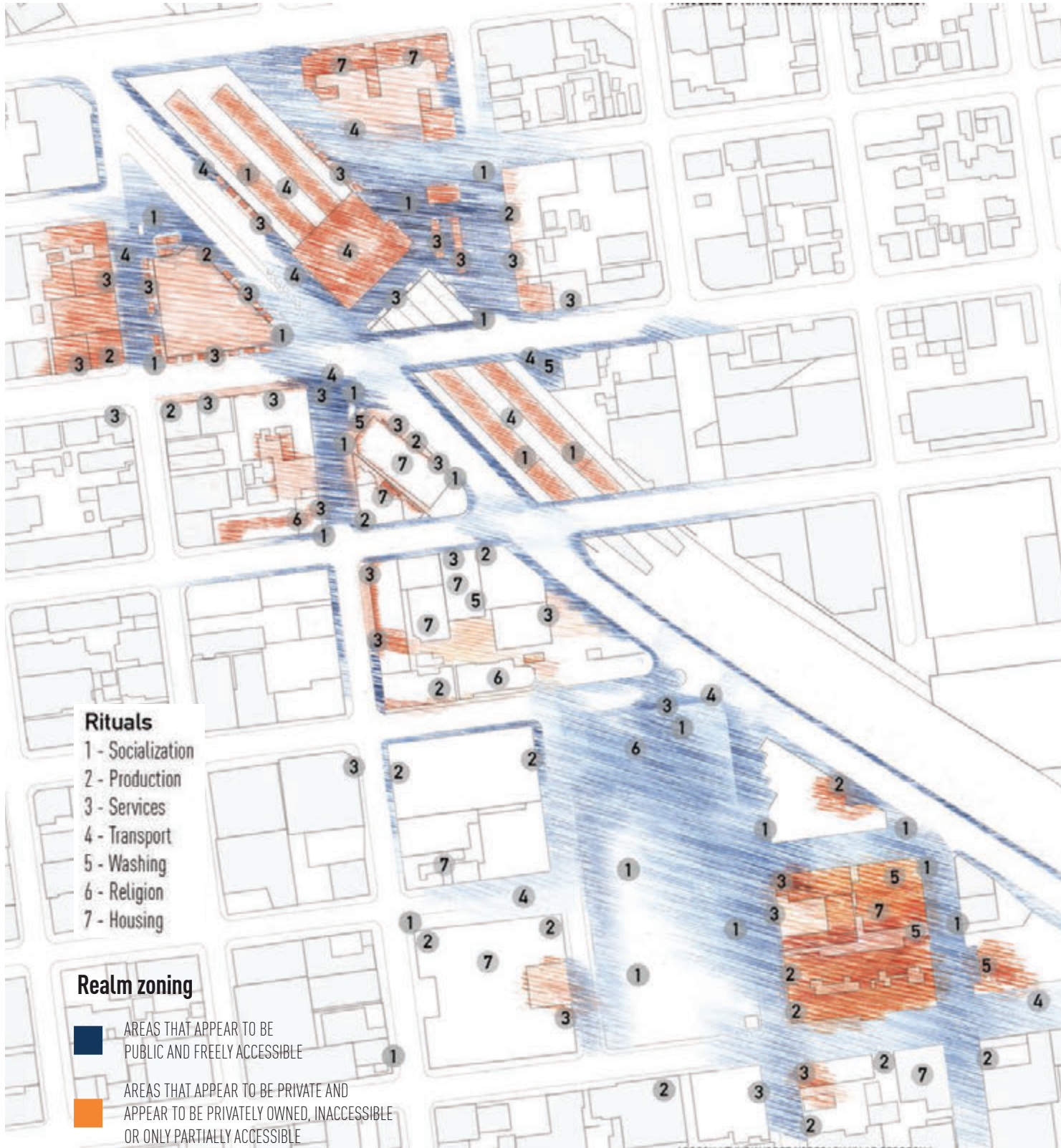
mapping ritual_ APPLYING THE JEPPE HYPOGRAPH

The study area in Jeppestown between the park and the station is populated by a variety of activities; some are perpetual daily rituals, while others are quick fluxes. These activities give character to the Jeppe streetscapes, form thresholds, as they define negotiated territories and play a vital role in the way Jeppe functions.

The diagram in *Figure 6.3*, is a result of applying the Jeppe Hypograph to the site. One can clearly see the concentration and various activities around the macro nodes - the park and the station. It is also clear how these activities manifest on the edges of sites and in some cases how 'dead' - privatised islands occur within a sea of public activity.

In this map physical boundaries are used to determine what appears to be public and what appears to be private. It is also evident that certain activities constantly niche themselves in certain areas on site or along certain edges, which suggest that some site conditions make it ideal for particular activities to occur and that should be investigated.

These gateways - the entrances to the arcades - are thresholds. No stone step serves to mark them. But this marking is accomplished by the expectant posture of the handful of people. Tightly measured paces reflect the fact, altogether unknowingly, that a decision lies ahead. (Benjamin, 1999:92)



mapping ritual_ MAPPING ACTIVITY - socializing

The following sections are activity sections relating to the ritual of socialising and occur mainly within the public realm, which allows for various groups or individuals to interact.

Below five diagrams (*Figure 6.4*, labelled from A - E) have been identified. These are conceptual sections, which indicate how the ritual of recreation manifests on site, and can be embodied in the activities of sleep, conversing and play. Each of these activities relates to a specific position of the human body and requires certain amounts of space. It is therefore important to take these aspects into consideration when conceptualising a landscape intervention.

The essence of these activities are explained on the opposite page, where it is evident that:

- 1: Some sort of overhead plane (trees, overhangs, pergolas etc.) is required for certain activities.
- 2: A defined ground plane (paving patterns, curb lines, lawn areas or with regards to the amount of space the activity consumes), varying in size to suit the requirements of different activities is required.

The essence diagrams for the activities of this ritual is a good example of how ritual defines space and has the potential to create new thresholds.



Figure 6.4. Various manifestations (A-E) of the ritual of socialisation within the study area.

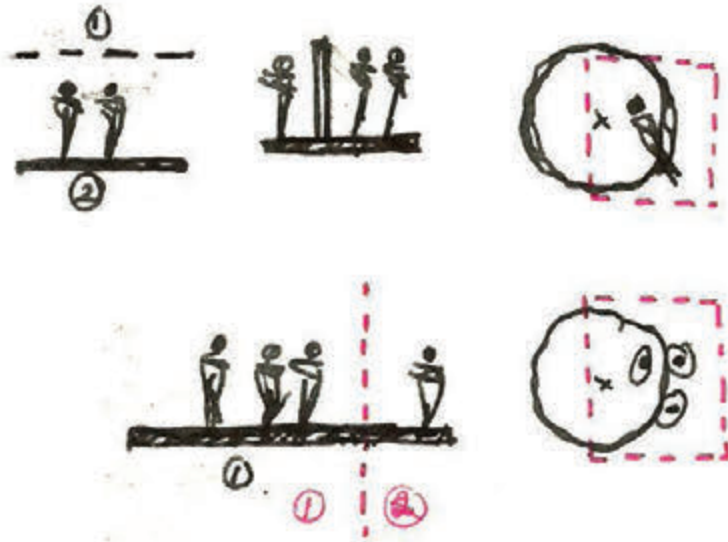
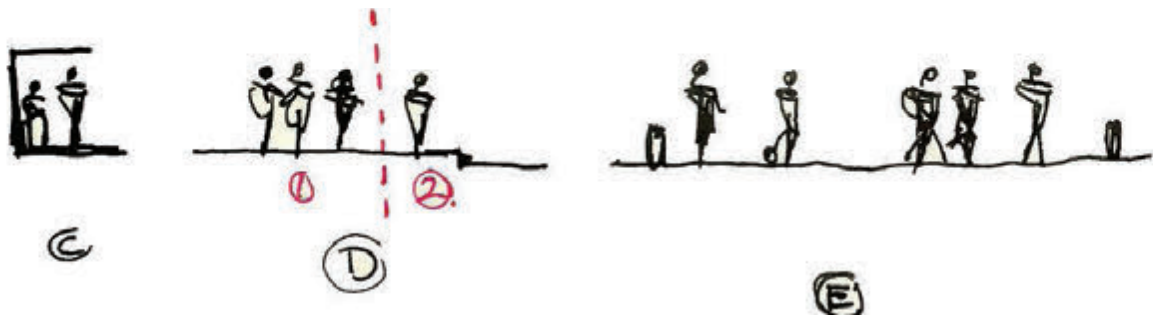


Figure 6.5. Essence diagram for the ritual of socialisation



mapping ritual_ MAPPING ACTIVITY - vending

The sections in *Figure 6.6* on page <?> and *Figure 6.7*, are activity sections relating to the activity of vending. This activity falls under the ritual of services and occurs mainly within the public realm, due to the fact that the activity of street vending is in its nature reliant on large amounts of people in order to be viable.

The diagrams in *Figure 6.6*, (labelled A – E) aim to illustrate how the activity of vending takes place on site. Diagram A for instance, shows a street vendor at the corner of the park and is informal in nature, while diagram B and C show vendors using more permanent structures, either selling from the facade of a building or from a shop.

In *Figure 6.7*, the essence diagram of the activity of vending is illustrated. What is evident on this diagram is:

- 1 - Vendors use a vertical back plane from which to sell.
- 2 - Some sort of overhead plane is required.
- 3 - A defined ground plane is established.

Together with the three planes, the also three zones of transition:

- 1 - Private space of vendor
- 2 - Transitional space where buyer interacts.
- 3 - General public realm.



Figure 6.6. Various manifestations (A-E) of the activity of vending within the study area.

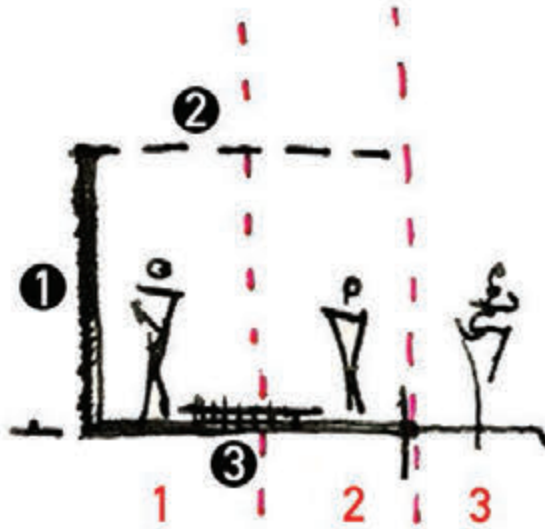
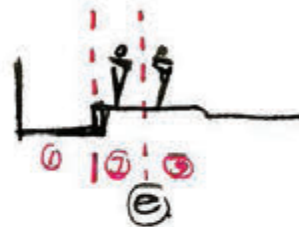


Figure 6.7. Essence diagram relating to the activity of vending



mapping ritual_ MAPPING ACTIVITY - transport

The following sections are activity sections relating to the ritual of transport – public vehicular transport in particular. The most common modes of transport are bus and minibus taxi system, which form part of the series of activities relating to the public realm. It is a group activity and should be viewed as an integral part of infrastructure and how the inhabitants of Jeppe commute.

The activity sections A and B (*Figure 6.8*) are from two specific areas - A is situated at the park, while B is typical of the drop off areas around the station.

When viewed in plan (as in *Figure 6.9*), it is clear where the different realms occur and how this activity influences space around it, by forming temporary negotiated territories and thresholds through ritual.

On the essence diagram (*Figure 6.9*), zone:

- 1 - represents the general public realm as a movement space or space for vending.
- 2 - represents the amount of space required by people waiting for the mode of transport or getting on and off the vehicle at certain points in time.
- 3 - represents the bay or lane the vehicle occupies when allowing passengers to get on or off.
- 4 - the general traffic lane

It is important to take into consideration the amount of space required for this activity and that large fluxes of people will occupy an area for a short period of time. One might supplement this ritual by grouping it with other rituals like selling - particularly the activity of vending.

Figure 6.8. Manifestations of the ritual of transport within the study area.

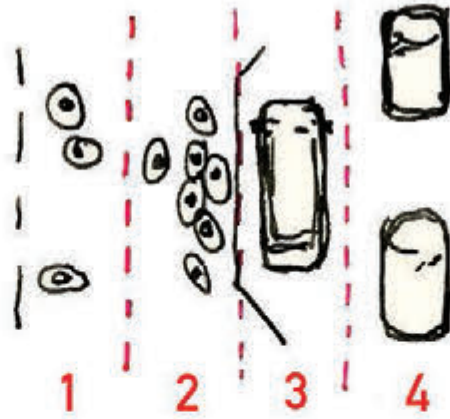
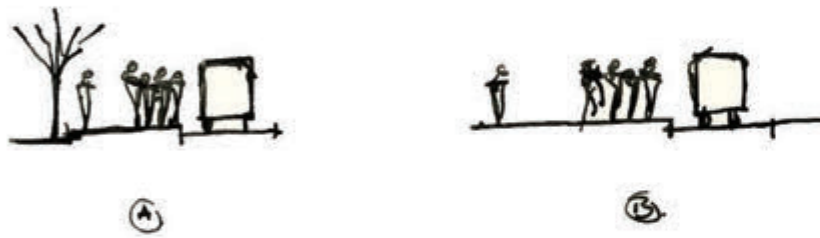


Figure 6.9. Essence diagram relating to the ritual of transport



“There is no logic that can be superimposed on the city; people make it, and it is to them, not buildings, that we must fit our plans.”
- (Jacobs, 1958:5)

mapping ritual_ **ACTIVITY EXAMPLES WITHIN THE STUDY AREA**

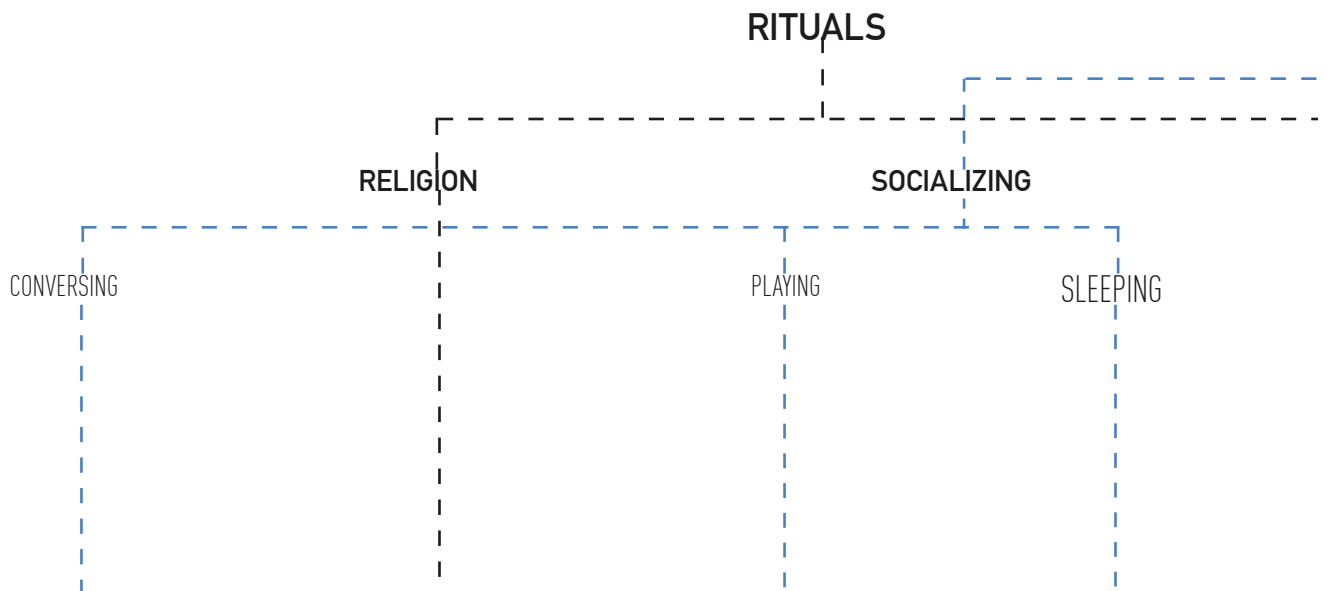
The figures on the following pages are examples of activities within the study area and can be related back to the Jeppe Hypograph and the activity sections as illustrated in the previous pages 145 - 153.

These site photos capture character together with use of spaces and inform the design of edges and spaces receptive to ritual.

Figure 6.10. (top) On site photos illustrating rituals of services and socializing

Figure 6.11. (bottom left) On site photo illustrating rituals in the park

Figure 6.12. (bottom right) Photo illustrating rituals around the park





VENDING

BUTCHER

OBSERVING

VENDING

SERVICES

TRANSPORT

VENDING

MINI-BUS TAXI





HANGING LAUNDRY



VENDING

RITUALS

WASHING

SERVICES

SOCIALIZING

PLAYING

CONVERSING

Figure 6.13. (top left)
Photo of laundry

Figure 6.14. (top middle)
Photo's illustrating the
ritual of services

Figure 6.15. (bottom left)
Photo of kids playing in
the street





MEN'S HAIR CUTTER

VENDING

SERVICES

RELIGION

VENDING

COMMUNAL CHURCH

Figure 6.16. (bottom middle) On site photo illustrating men conversing

Figure 6.17. (bottom right) Photo of religious gathering in the park



“Edges are of immense importance conceptually and physically in landscape design because they can support diverse human uses and have important experiential and cultural meanings.” – (Dee 2001:117)

6.3 INVESTIGATING EDGE CONDITIONS

As part of the study of the rituals within the study area, a study of certain edge conditions was also conducted.

When observing where activities occur within the study area it becomes evident that certain activities manifest along similar edge conditions, which suggests a pattern. This pattern can be divided into three main categories as illustrated on the opposite page. (*Figure 6.18 to Figure 6.20*)

An edge, be it a sidewalk, boundary wall, shop front, lane of trees, a fence line, or even a pedestrian pathway, can either accept, reject or assimilate ritual. This causes a negotiated territory to occur between ritual and built fabric, each characteristic of the associated activity and spatial requirements thereof. It is in the opinion of the author that the manipulation of these edge conditions (through understanding the spatial requirements for activities to manifest as established through the activity mapping) will allow certain activities to be amplified.

These edges can be either manipulated through:

- Enhancing the existing condition,
- Changing the material and texture,

- Changing the permeability of the edge,
- Adapting a stereotomic or tectonic architectural typology.

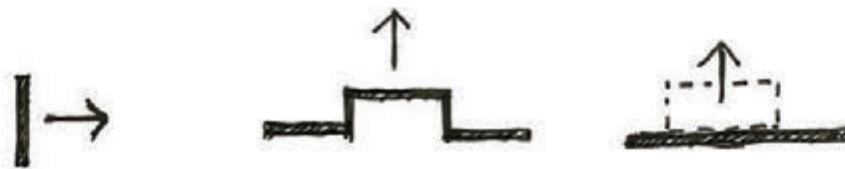
One should think of edges as being a combination of mass and space simultaneously (Dee, 2001), a hybrid condition which facilitates ritual as a vibrant social environment and once more relates to the theory of field interdependence.

The abovementioned can be linked directly back to the Hypograph (*Figure 6.2*) realm evolution section and should be taken into account when carving new public spaces from the landscape slate.

EDGES THAT ACCEPT RITUAL



EDGES THAT REJECT RITUAL



EDGES THAT ASSIMILATE RITUAL



Figure 6.18. (top) edges that accept ritual

Figure 6.19. (middle) edges that reject ritual

Figure 6.20. (bottom) edges that assimilates ritual

investigating edge conditions **_STUDY AREA**

EDGES HAVE AN INFLUENCE ON THE TYPE OF RITUAL:

- Heavy/strong edges = Less permeable
- Light edges = More permeable

The diagram in *Figure 6.21* is a mapping of the current edge conditions within the study area from the station to the park. The relationship (rejections, acceptance or assimilation) between ritual and the type of edge (heavy or light) is illustrated.



- Heavy edges
- Light edges

By changing the edge condition and making the courtyards, which is now part of the slate and under the architects' control, accessible to the public and ritual activity, a greater manifestation of realms emerge.

The diagram in *Figure 6.41 on page 174* illustrates the conceptual alteration of the facades of buildings in an attempt to make them more permeable and encourage elastic edges which are more receptive to ritual.

NEW FACADE CONDITIONS:

- Friendly facades: more permeable, assimilates/accepts ritual
- Indifferent facades: less permeable, allow some ritual to occur in certain directions.



Figure 6.22. Proposed edge conditions

"I do not want to see landscape (architecture) as a dividing line between inside and outside. Instead I would like to create a fluid transition between a building and its site, so that you will always feel connected to the land" (Lin 2000:129).

6.4 design development THE FOCUS AREA

The focus area, highlighted in *Figure 6.23*, for the sketch plan and detail design investigation of this dissertation is situated along the northern end of the park node. This area facilitates many rituals of Jeppe and pose the opportunity to investigate how these rituals can be amplified and how new rituals can be accommodated within this focus area.

The focus area is also anchored by two architectural investigations. To the north of the park an architectural intervention is proposed which deals with the rituals of services and productions, specifically addressing the activity of recycling solid waste. At the same time the city block is opened up to allow access into the courtyard, which houses commercial and recreational activities.

To the east of the park an architectural intervention is proposed which deals mainly with the ritual of washing, under which the activities of bathing and doing laundry is addressed. This intervention also aims to amplify the existing commercial activities around the city block which forms a micro node adjacent to the park.

These architectural endeavours are strongly related to the land intervention, as they both are housed on the landscape slate and connected through the park node. There is also a strong connection to systems design, with regards to water purification and urban agriculture - again emphasising the importance of a productive landscape within the urban context.

Volume V and VI deals with these architectural investigations respectively and will be referred to throughout this document.

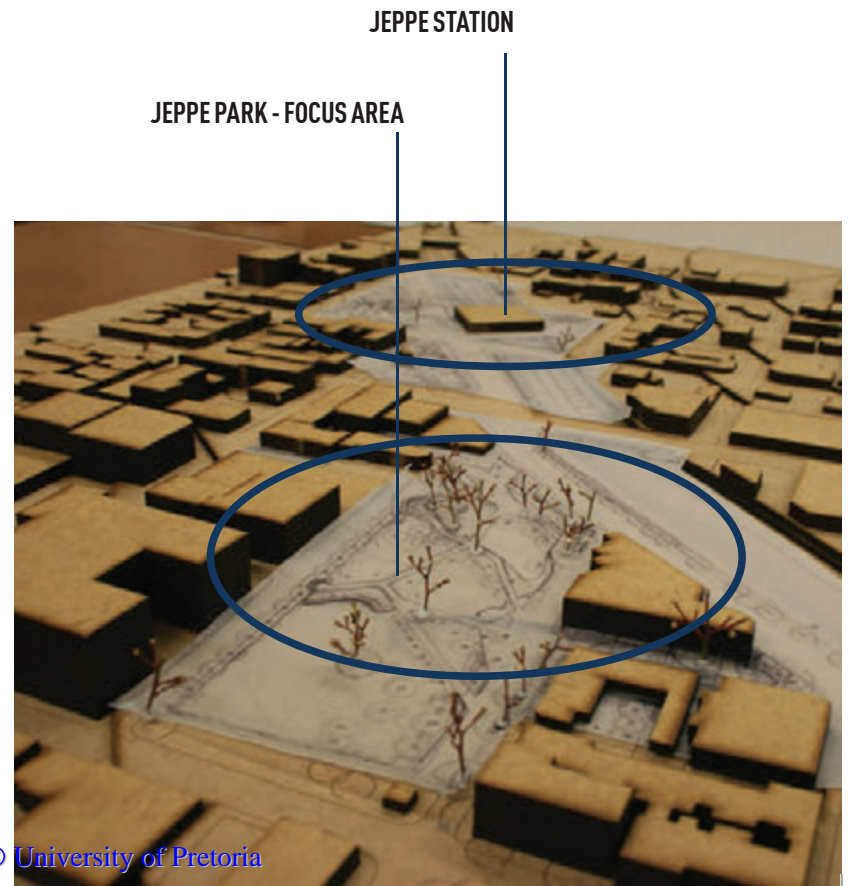


Figure 6.23. Context model for master plan area

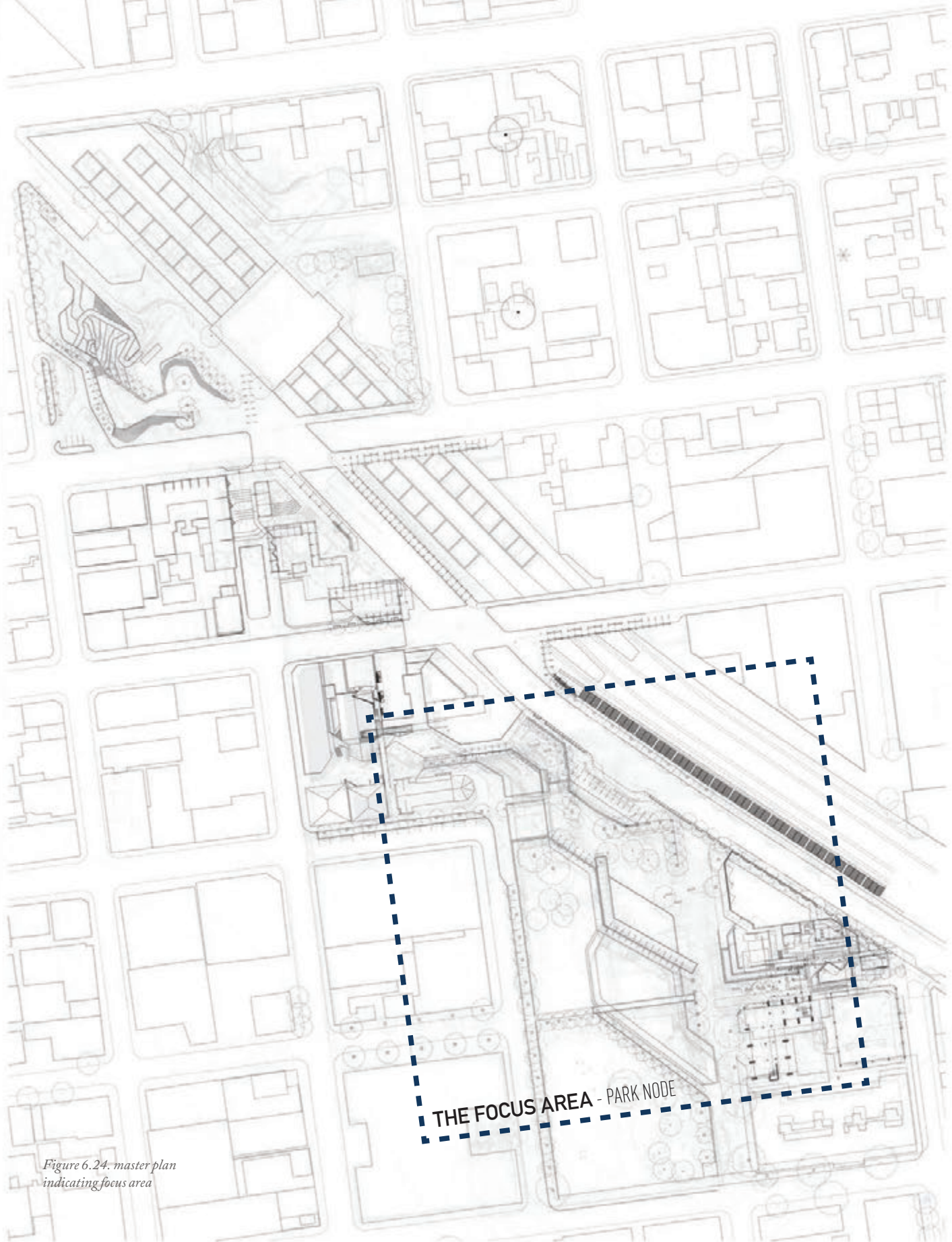


Figure 6.24. master plan indicating focus area

design development_ DESIGN STRATEGY

Building on the design strategy as set out for the master plan, new public spaces are carved from the landscape slate. The design of these spaces is informed by existing rituals which occur on site. The aim is to create good, healthy and robust public spaces by manipulating edge conditions and physical elements to facilitate and amplify certain rituals within the focus area.

These designed areas, newly carved public spaces and edges can be layered with functional components to aid water harvesting and planting strategies as set out on master plan level. In order to change the perception of a place, it is important to identify opportunities in infrastructure and to think of the landscape as a place for activities and a place activated by the users. This will lead to many better understanding the processes and networks, be it social, economic or environmental, housed within the city.

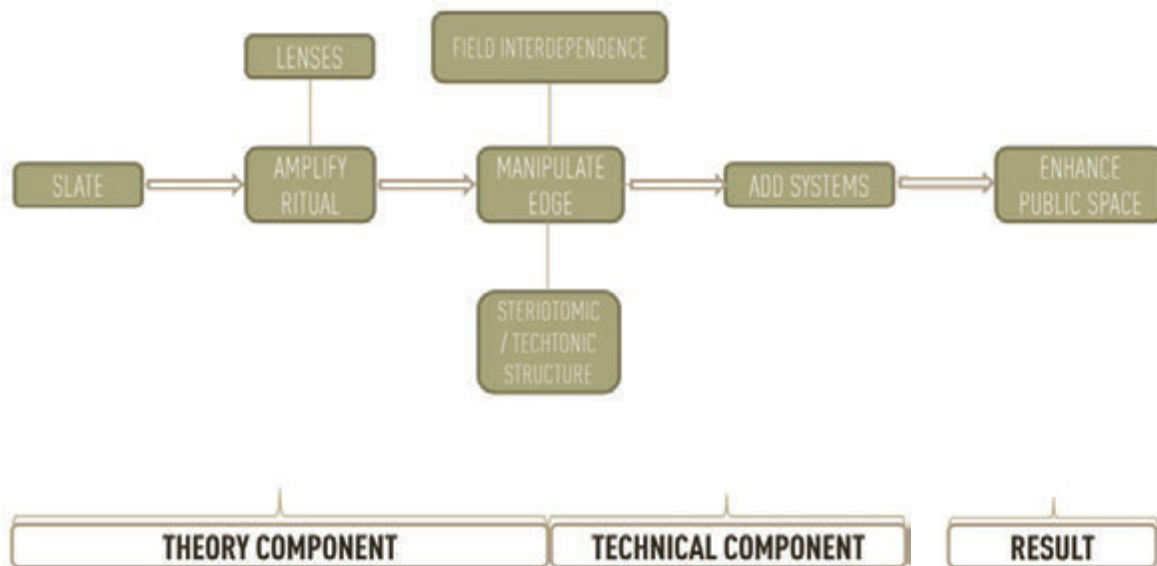


Figure 6.25. Design strategy diatram for the focus area

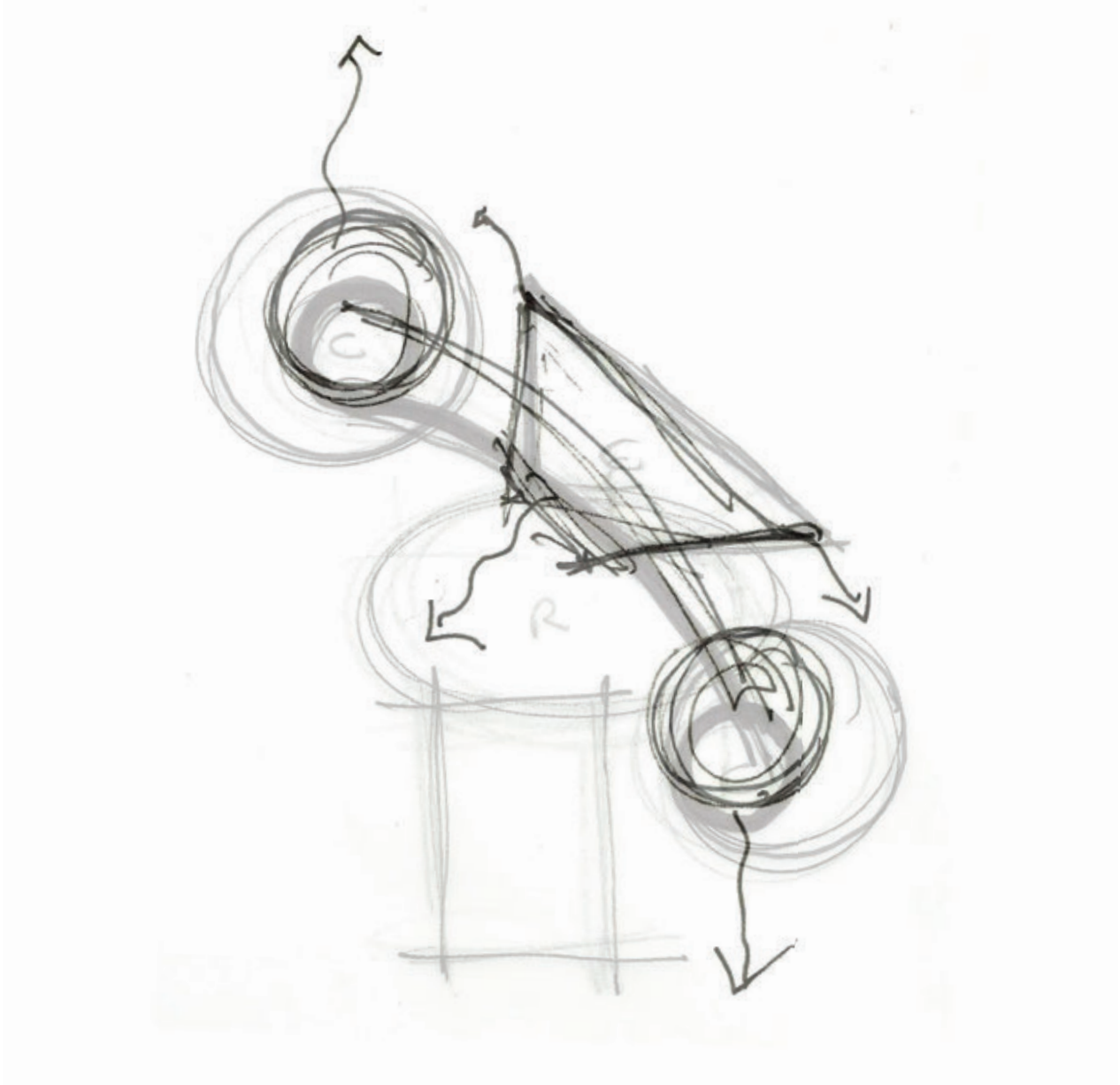


Figure 6.26. Concept diagram for the focus area

design development CONCEPTION AND APPROACH

The layout for the focus area is based on the existing movement patterns (Figure 6.27) which occur in the area. Anticipated movement corridors are proposed, based upon the assumption of high activity micro nodes where new open courtyards exist. Together with movement patterns the zoning for the focus area is based upon the existing rituals and activities which occur in and around the park node.

Together the movement and zoning (Figure 6.26) diagram form the core for the landscape intervention and can be explained in the zoning diagram in Figure 6.28.

In addition, areas of potential of where architectural and archetypical landscape zones can occur are also identified. These zones aid the conception of an all inclusive, well-grounded and robust public realm. An urban park which allows for appropriation of space, populated by multifunctional landscape components.

MOVEMENT AS SKELETAL STRUCTURE FOR DESIGN

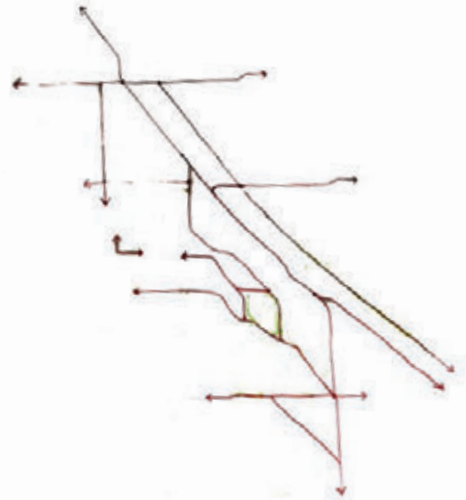


Figure 6.28. Prominent movement patterns through the focus area

OUTDOOR ROOMS HOUSED WITHIN THE LANDSCAPE

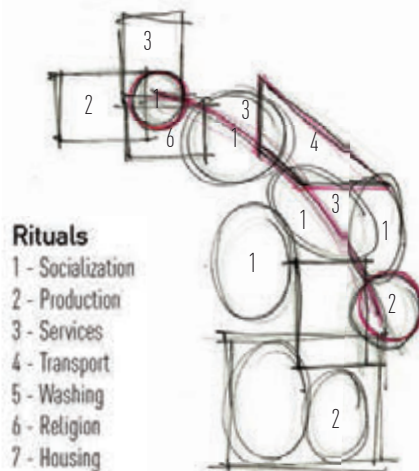


Figure 6.27. Zones for ritual activities within the focus area

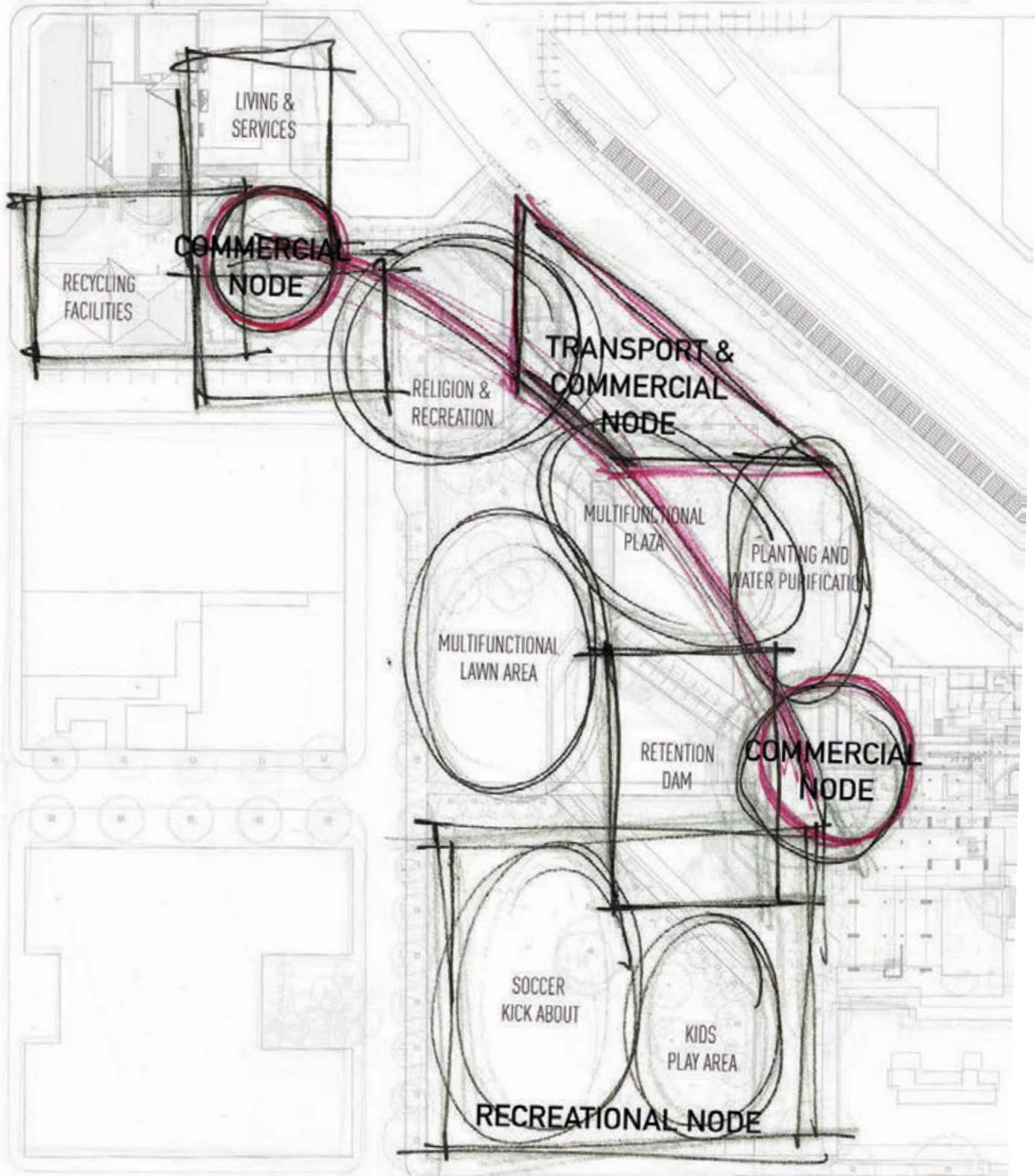


Figure 6.29. Zoning diagram for focus area

“Courtyards potentially enable close interaction between indoor and outdoor life because the architectural and landscape spaces are interwoven.” – (Dee 2001:71)

design development_LAYOUT AND SPATIAL QUALITY

The images in *Figure 6.29* and *Figure 6.30* illustrate the initial layout for the design of the focus area as based upon the master plan development. The design for the focus area includes a new drop off area at the park

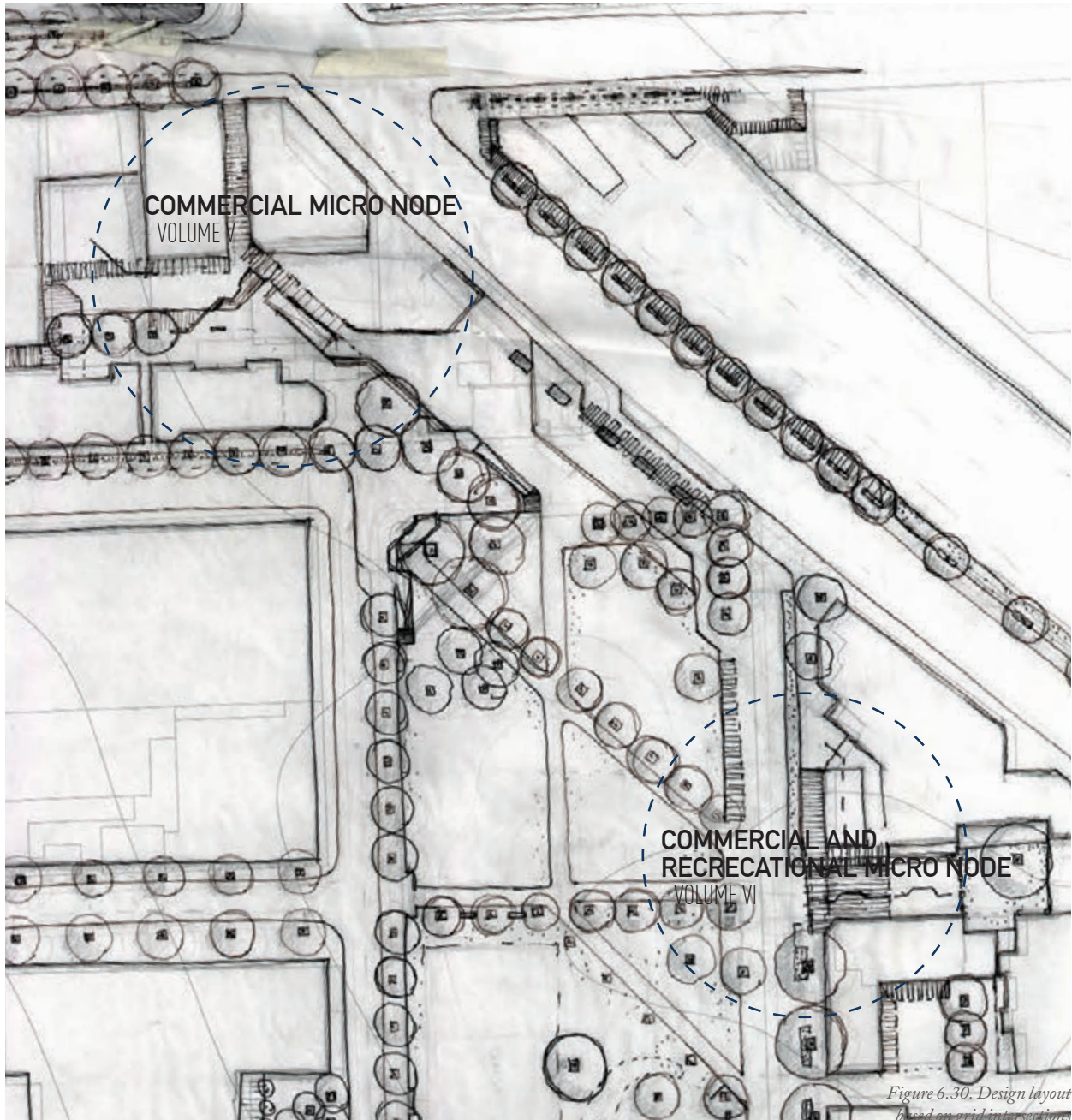


Figure 6.30. Design layout based on grid intersections

as well as spaces which can be occupied by the ritual of services, which is focused on the activity of selling. Simultaneously the design aims to connect the commercial and recreational nodes which exist within the courtyards of the adjacent city blocks where the architectural interventions for Volume V and Volume VI are based.

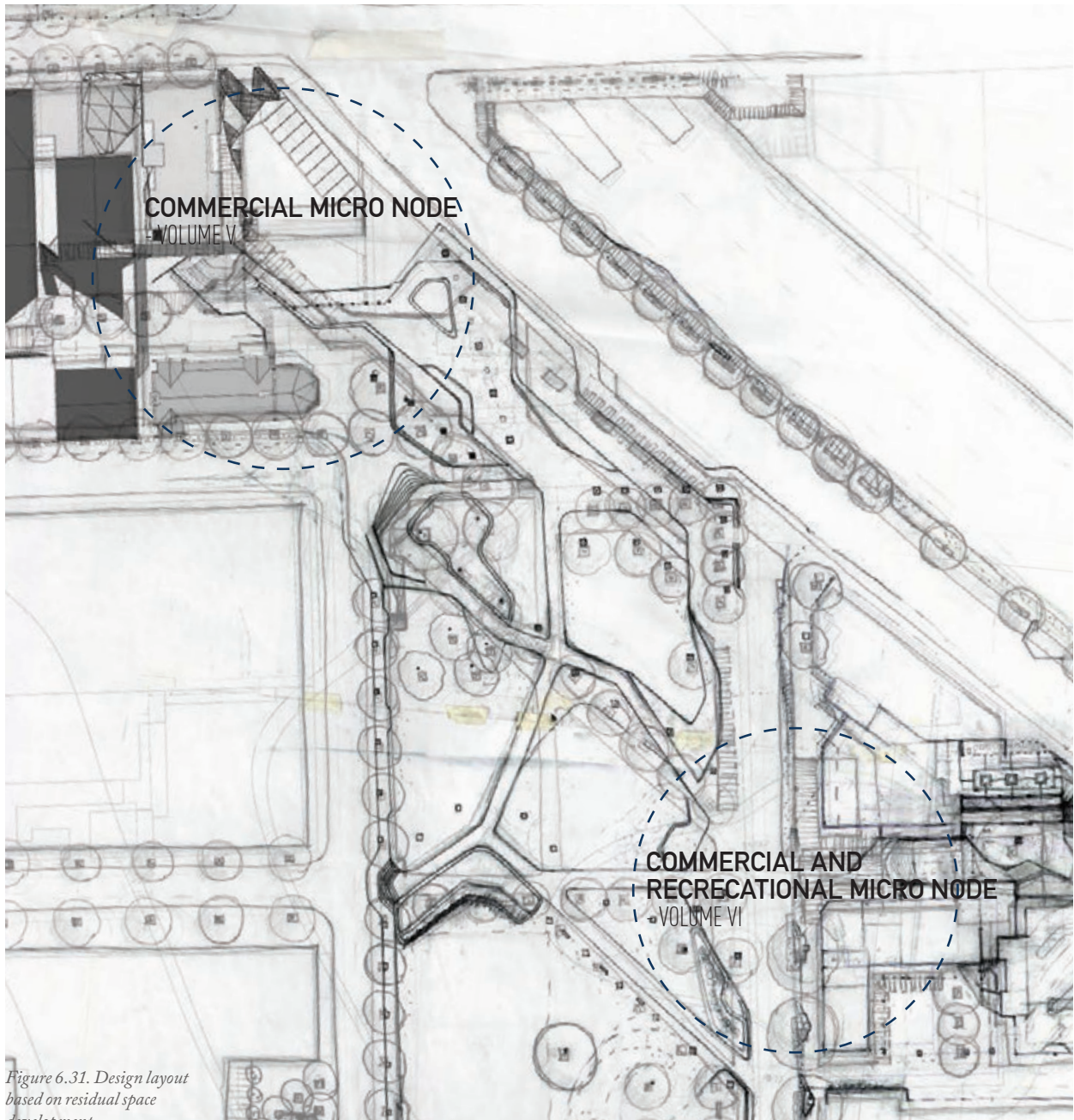


Figure 6.31. Design layout based on residual space development

design development_LAYOUT AND SPATIAL QUALITY

ANALYSING THE LANDSCAPE ARCHITECTURAL DESIGN IN TERMS OF:

LAYOUT

- The landscape is fragmented by the random layout and ordering of landscape elements.
- This layout is successful in connecting open spaces in the urban environment, but fragments these spaces internally by not respecting the edge conditions and transitions between various outdoor spaces.

CONNECTIONS

- As a result of the lack in hierarchy of pathways and the large amount of possible access points into the park, the plaza and drop off area it becomes difficult to navigate through this urban environment.
- The small entrances and pathways along main pedestrian routes cause congestion at the intersections of these pathways or routes with courtyards and micro nodes.

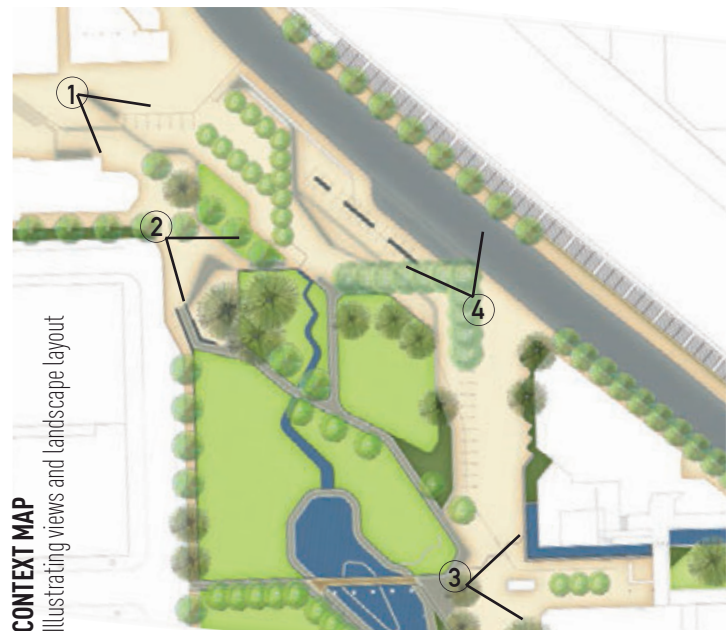


Figure 6.32. (above) Design layout and render

Figure 6.33. (1) View towards park from northern courtyard

Figure 6.34. (2) View towards park and plaza

Figure 6.35. (3) View towards Facus courtyard

Figure 6.36. (4) View towards drop off area on John Page Drive

1



2



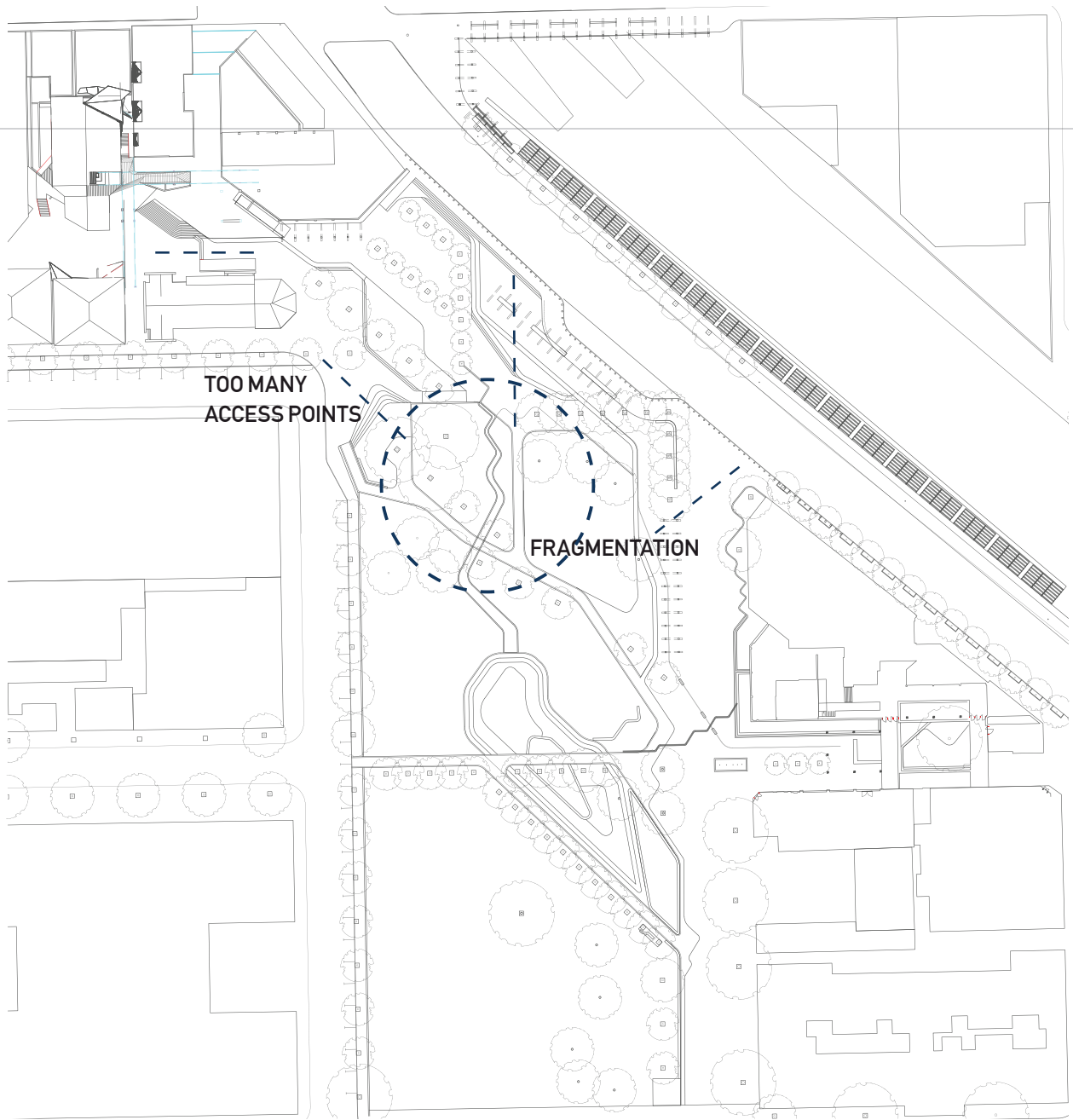


Figure 6.37. Design analysis diagram



design development_ LAYOUT AND SPATIAL QUALITY

After evaluating the design for the focus area in terms of its layout and spatiality, the designer came to the conclusion that the form of the design causes spaces to read as fragmented entities and individual carvings of the landscape slate. It is therefore necessary to re-evaluate the layout of the design with regards to fixing certain functions to multi-functional edges. This allows the designer to make a single carving from the landscape slate, which houses both rituals and systems and adds value to the public realm both spatially and infrastructural.

Streets, plazas and designed public spaces have contributed to define the cultural, social, economic and political functions of cities... They were – and continue to be – the first element to mark the status of a place, from a chaotic and unplanned settlement to a well established town or city. (Clos, 2013:11)

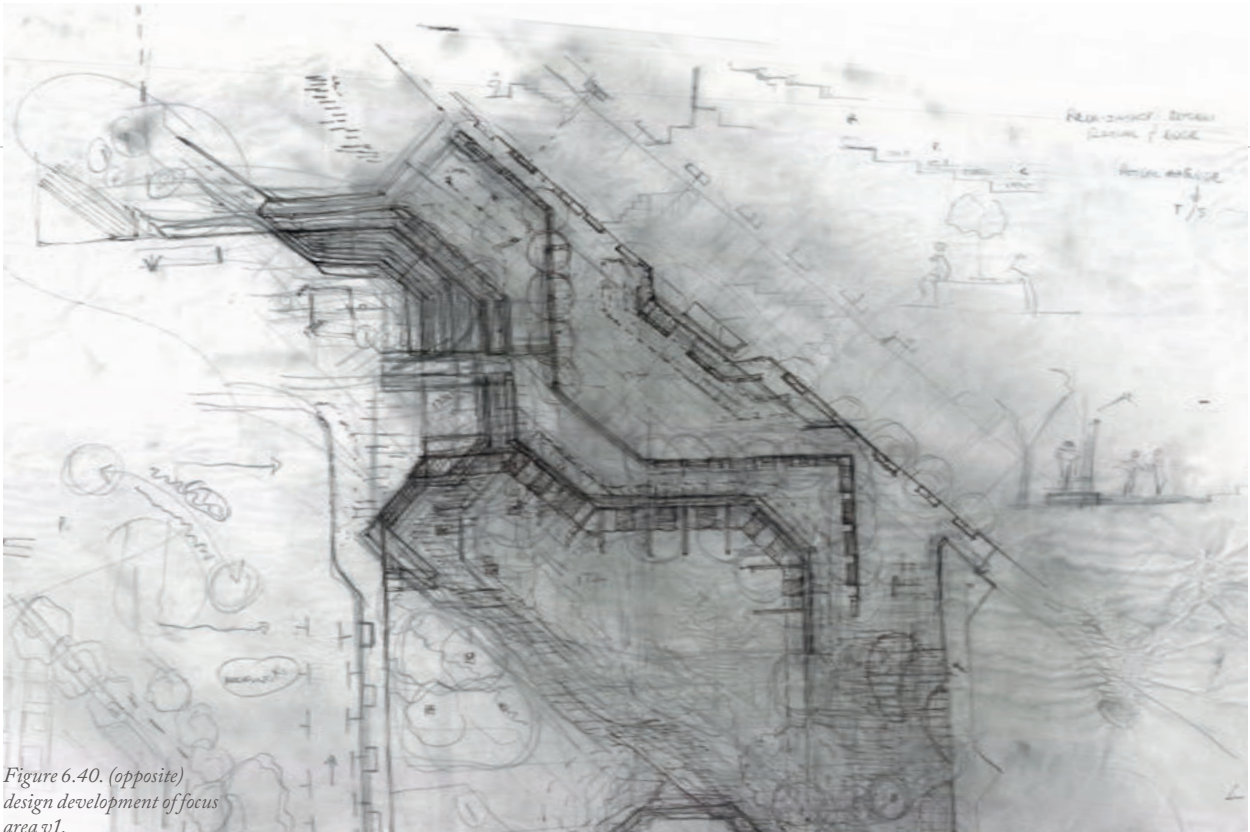


Figure 6.40. (opposite)
design development of focus
area v1.

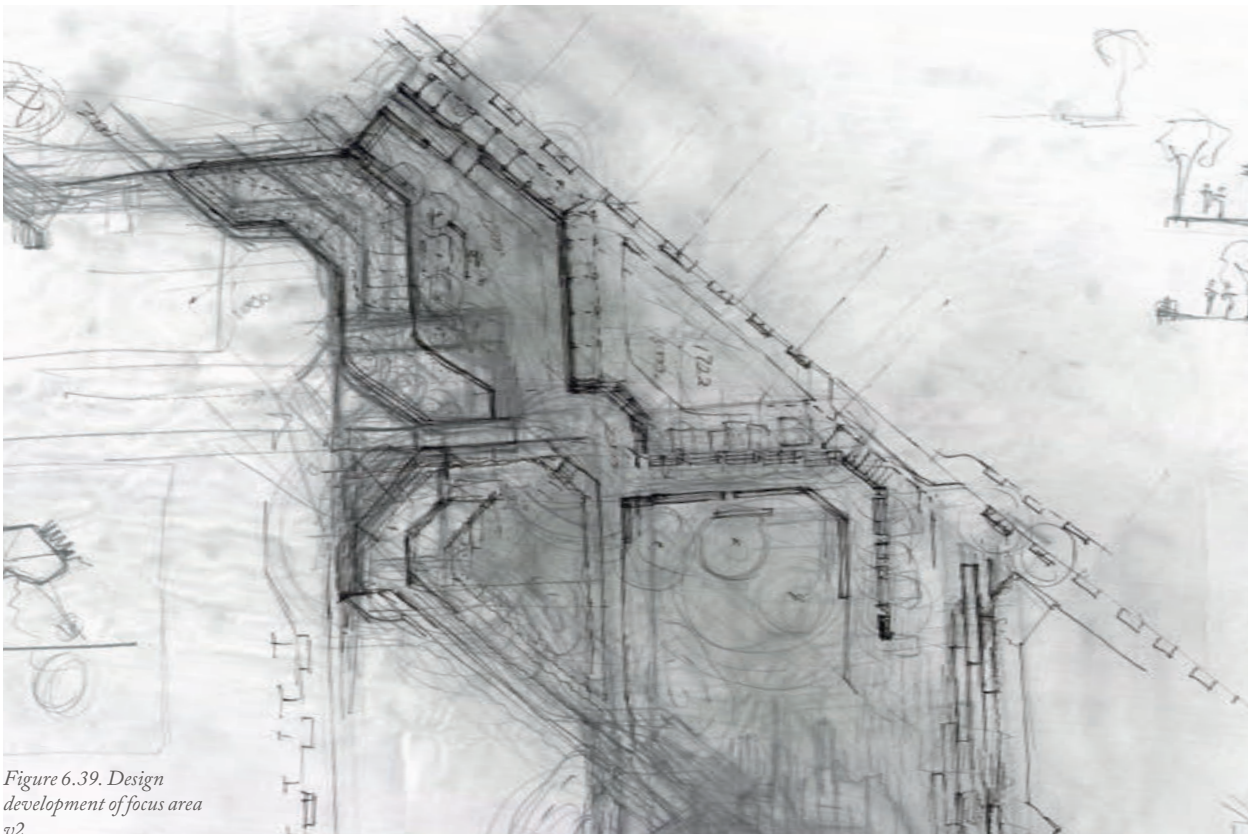


Figure 6.39. Design
development of focus area
v2.

design development_LAYOUT AND SPATIALITY

ANALYSING THE LANDSCAPE ARCHITECTURAL DESIGN IN TERMS OF:

LAYOUT

- The iterated layout emphasises a continual and coherent public realm.
- Edges are respected and become vessels for rituals and environmental systems. (*Figure 6.41 on page 174*)
- Celebrated edges define outdoor rooms which act as informants for spatial layout.

CONNECTIONS

- A clear movement corridor is established. This main route is supplemented by strategically selected sub routes. These secondary movement corridors aid in the connection of micro nodal networks and allow the main spine to branch into the urban fabric.
- A limited amount of access points aid the hierarchy of movement routes and makes it easier to navigate through this public environment.

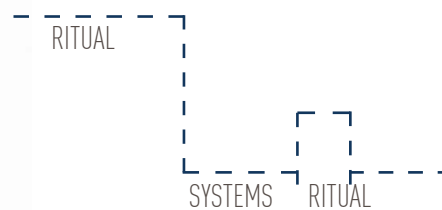
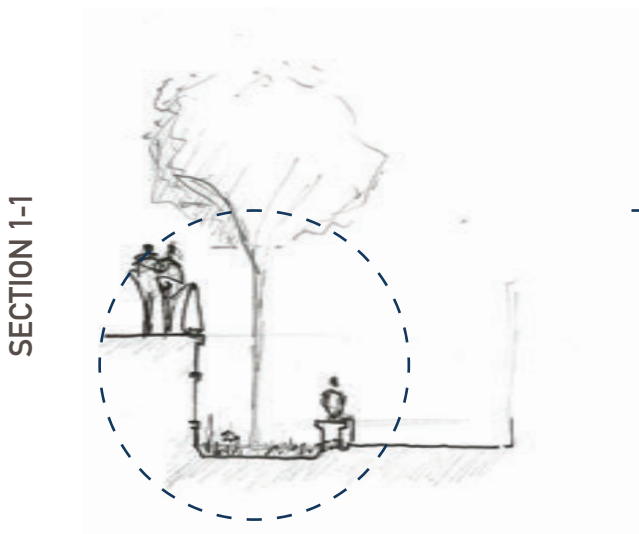


Figure 6.41. Section through retaining wall, planter and plaza

Figure 6.42. Diagram illustrating edge as vessel

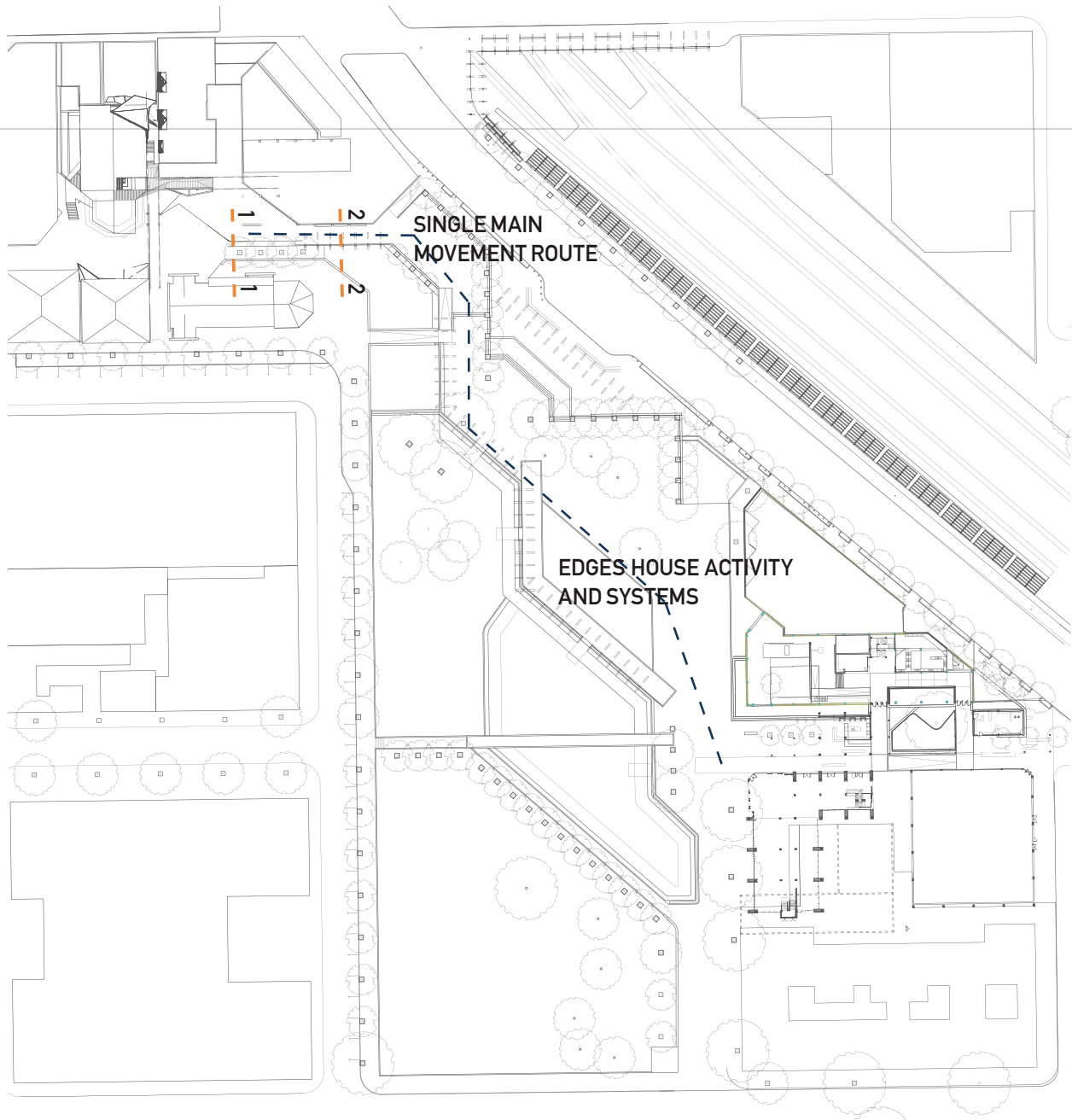
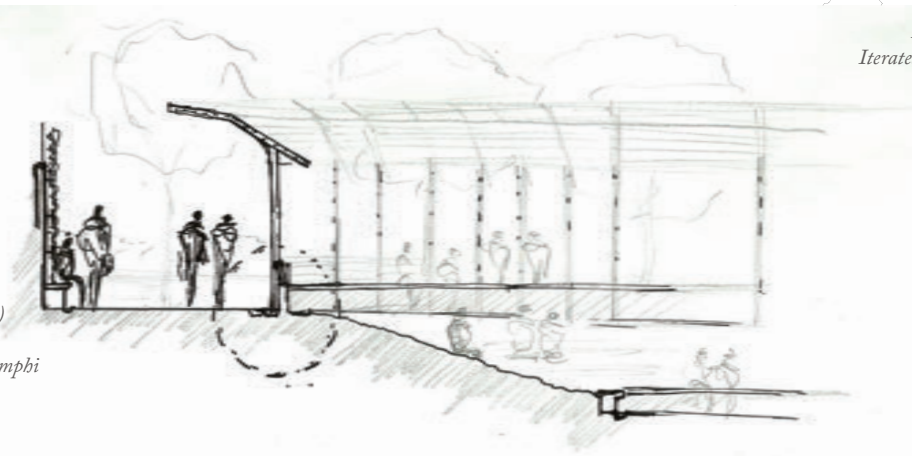


Figure 6.44. (above)
Iterated layout and analysis
for focus area

SECTION 2-2

Figure 6.43. (bottom)
Section 2-2 through
entrance and sloped amphi
at pJohn Page Plaza



design development_ LAYOUT AND SPATIAL QUALITY

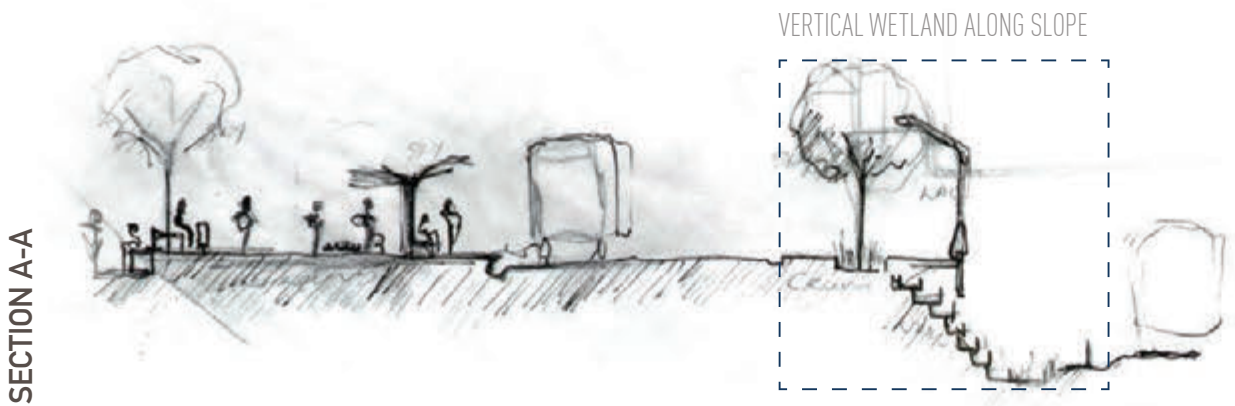


Figure 6.45. Section through drop off area and vertical wetland on John Page Drive

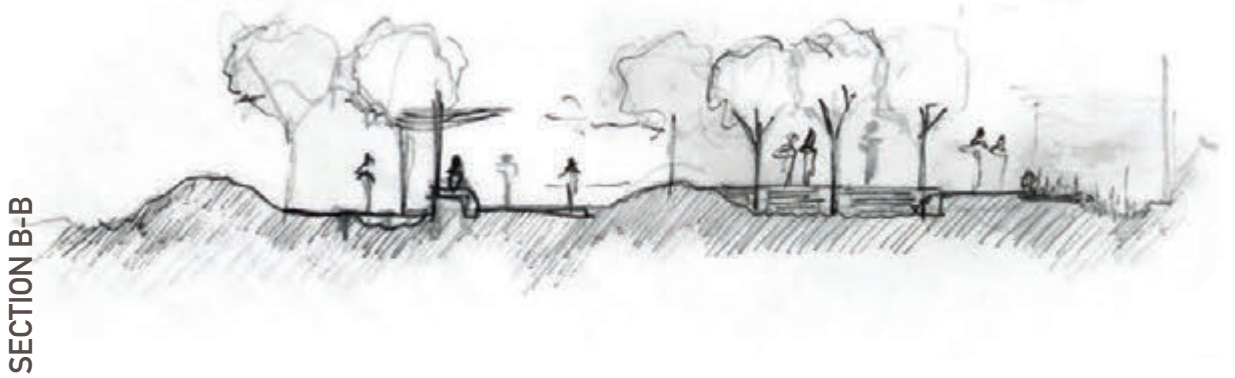
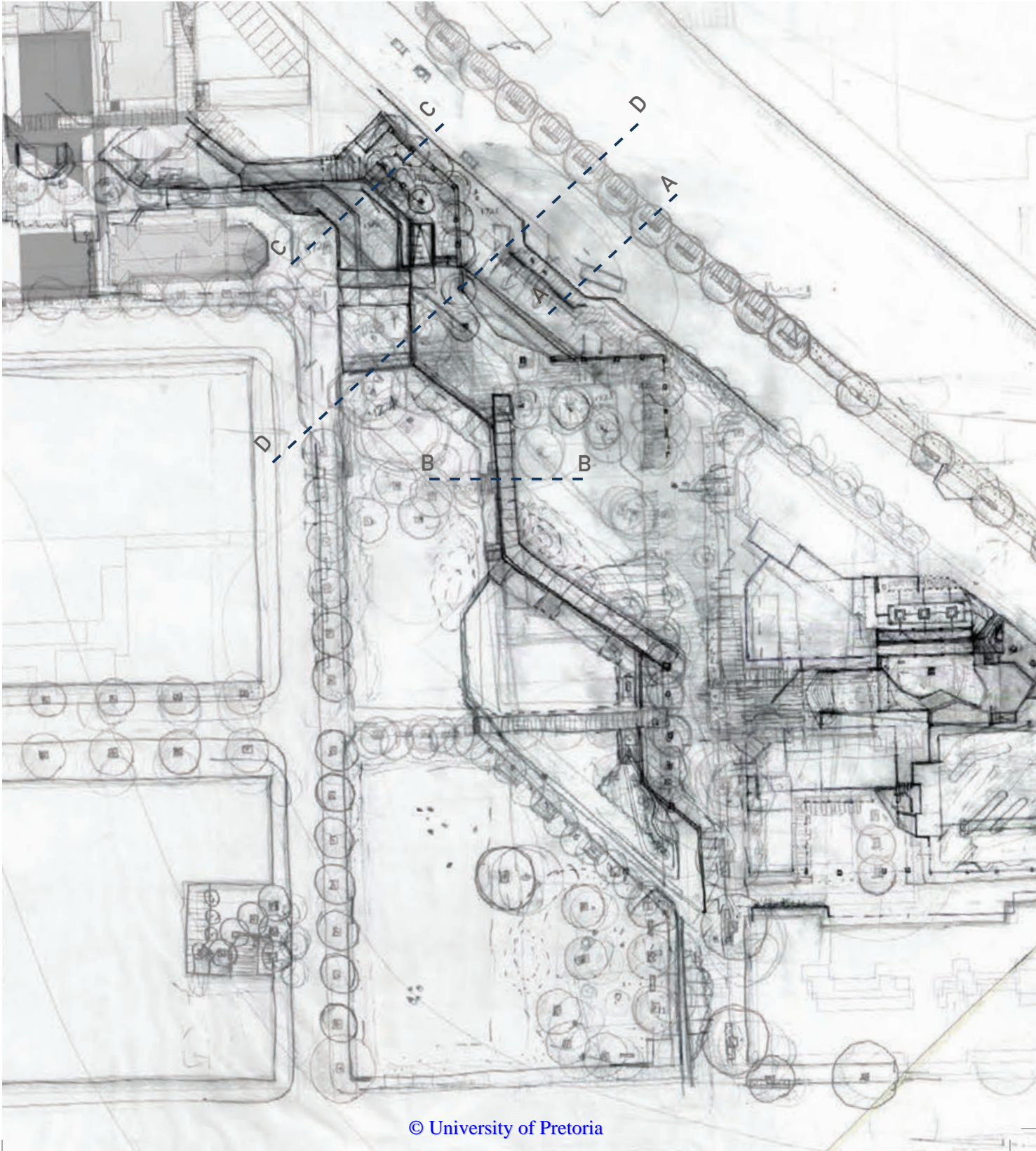
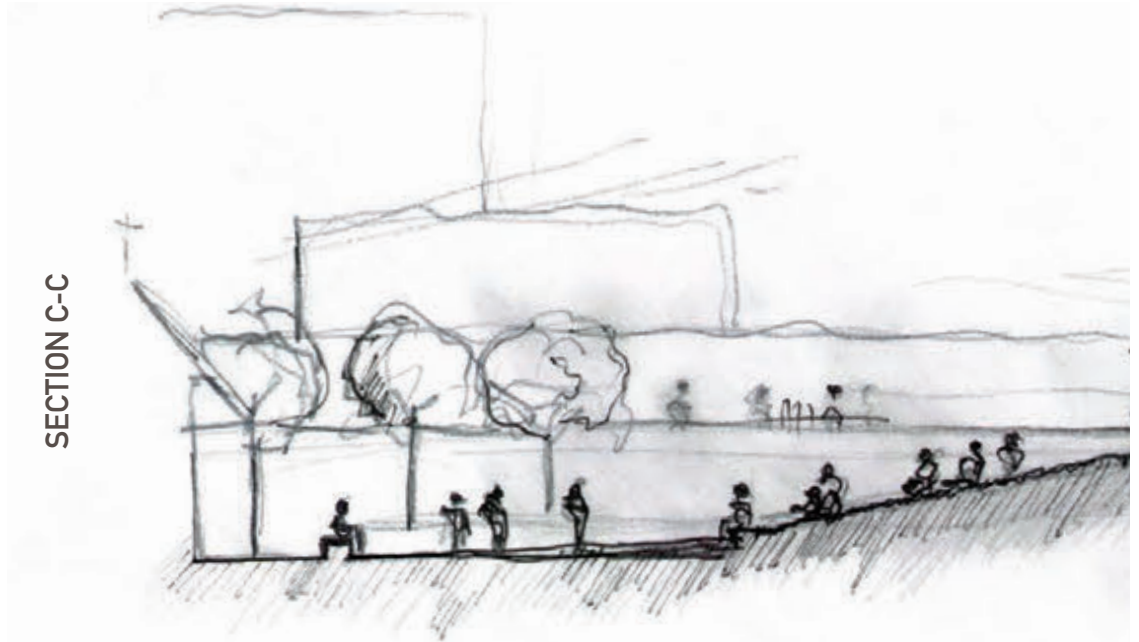


Figure 6.46. Section through walkway at northern entrance to park



design development_ LAYOUT AND SPATIAL QUALITY

SECTION C-C



SECTION D-D





Figure 6.47. Section through sloped amphitheater and market space near old church

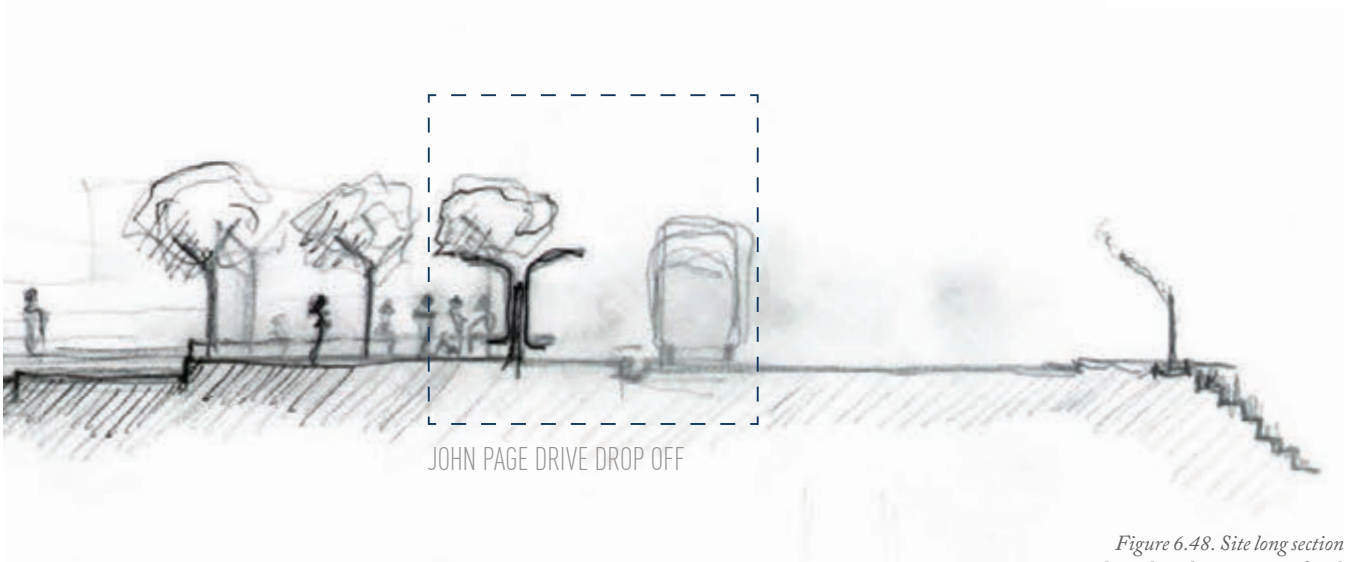


Figure 6.48. Site long section through northern portion of park

6.5 PRECEDENTS ON PROGRAMME

PARQUE DIAGONAL - BARCELONA

Landscape architects: EMBT - MIRALLES

Important aspects:

- Robust space celebrating the surrounding urban environment.
- Edges well addressed and treated.
- Richness in materials.
- Designed spaces for both cultural and environmental systems.

This is a good example of a landscape architectural intervention acting as a catalyst for new development, encouraging the use public urban space.

The design is rich in material and robust, as it allows for multi-functional uses and activities to occur. Not only is it an example of good circulation space, but simultaneously consider environmental systems like water storage and sustainable landscape planting.

From this precedent study can be gathered that neatly packaged edges can house both environmental systems and ritual while delivering a coherent and legible public environment.

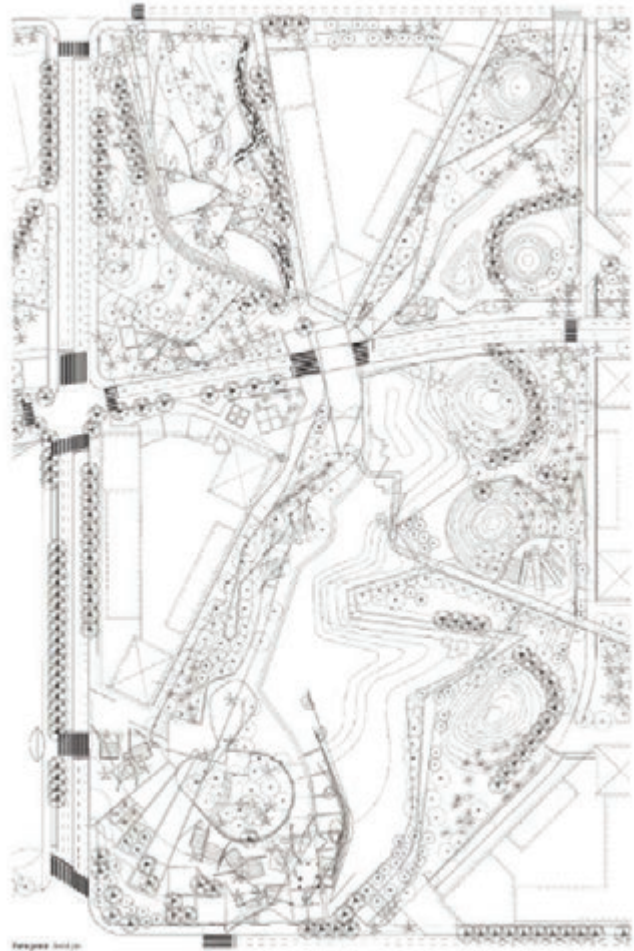


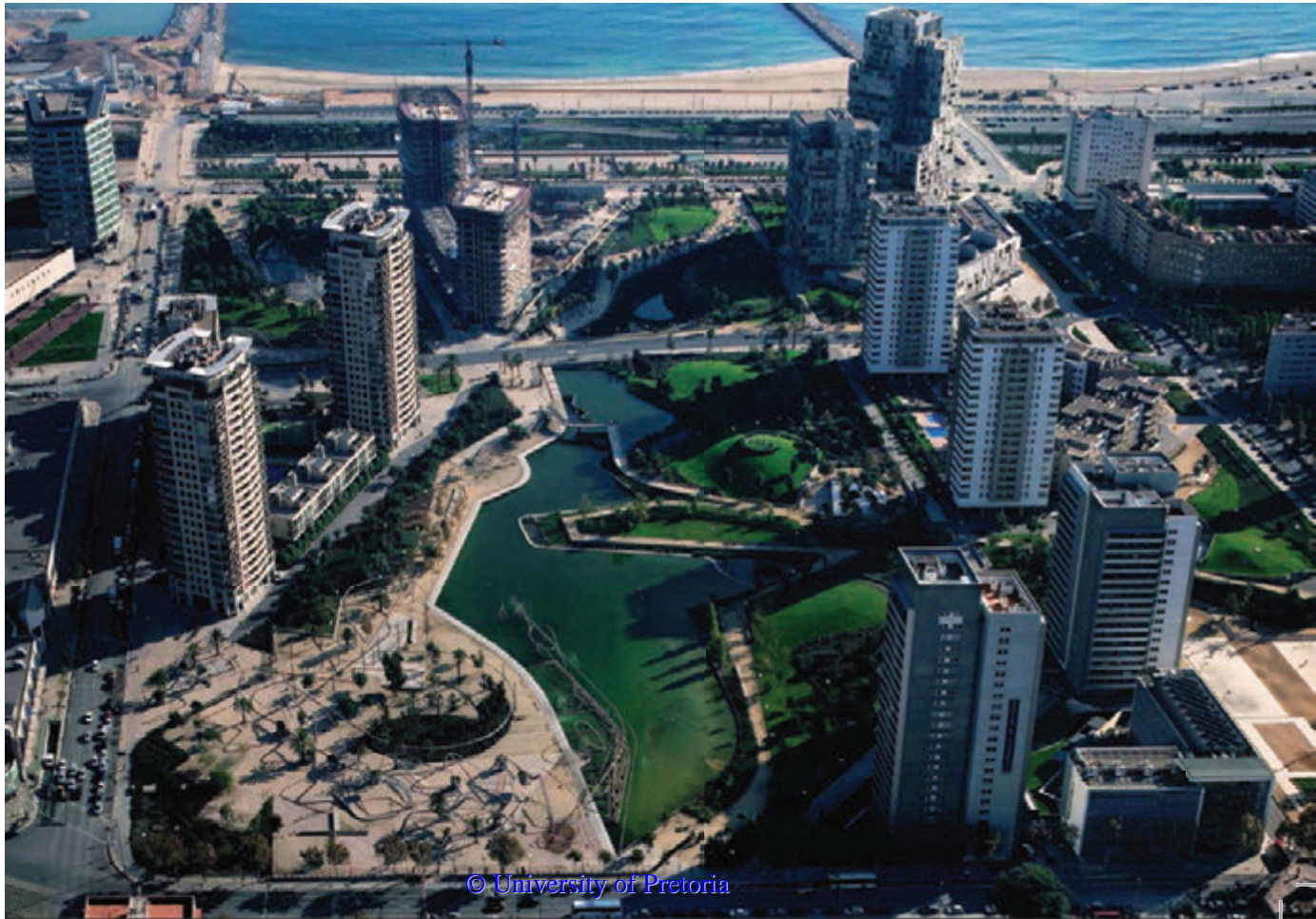
Figure 6.49. (above) Plan of urban park layout

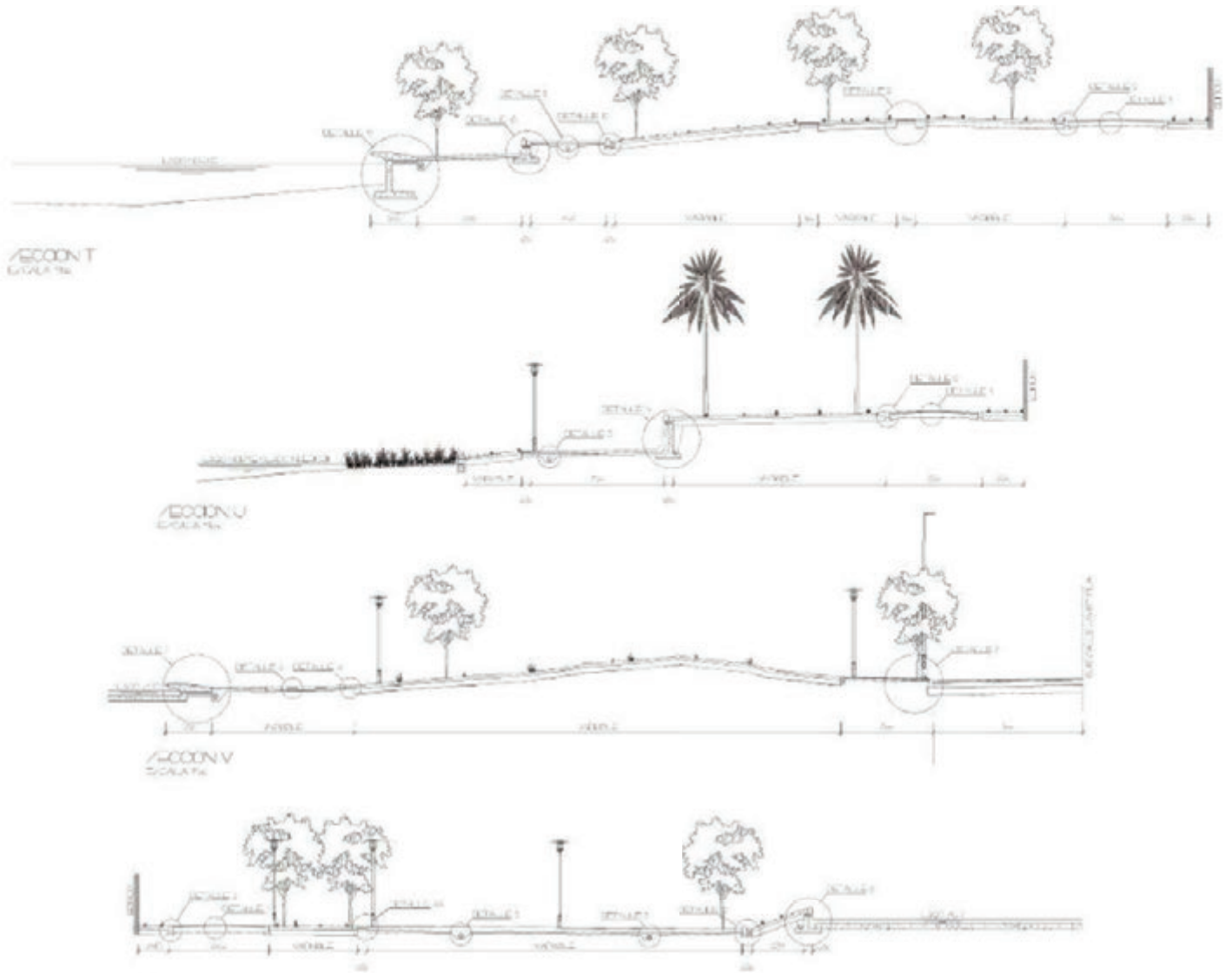


Figure 6.50. (middel) View to northern border of park over large dam.

Figure 6.51. (below) Aerial view of the urban park in its context of mixed use development

Figure 6.52. (above) A series of vignettes showing edge conditions between soft and hard areas and use of materials.





The sections above illustrate landscape elements in context and show how certain elements are used to construct topography and illustrate how edges house certain functional components. These edges form the thresholds between various landscape spaces and define areas for different landscape finishes - from hard to soft etc.

Figure 6.53. (above)
Sections through urban
park

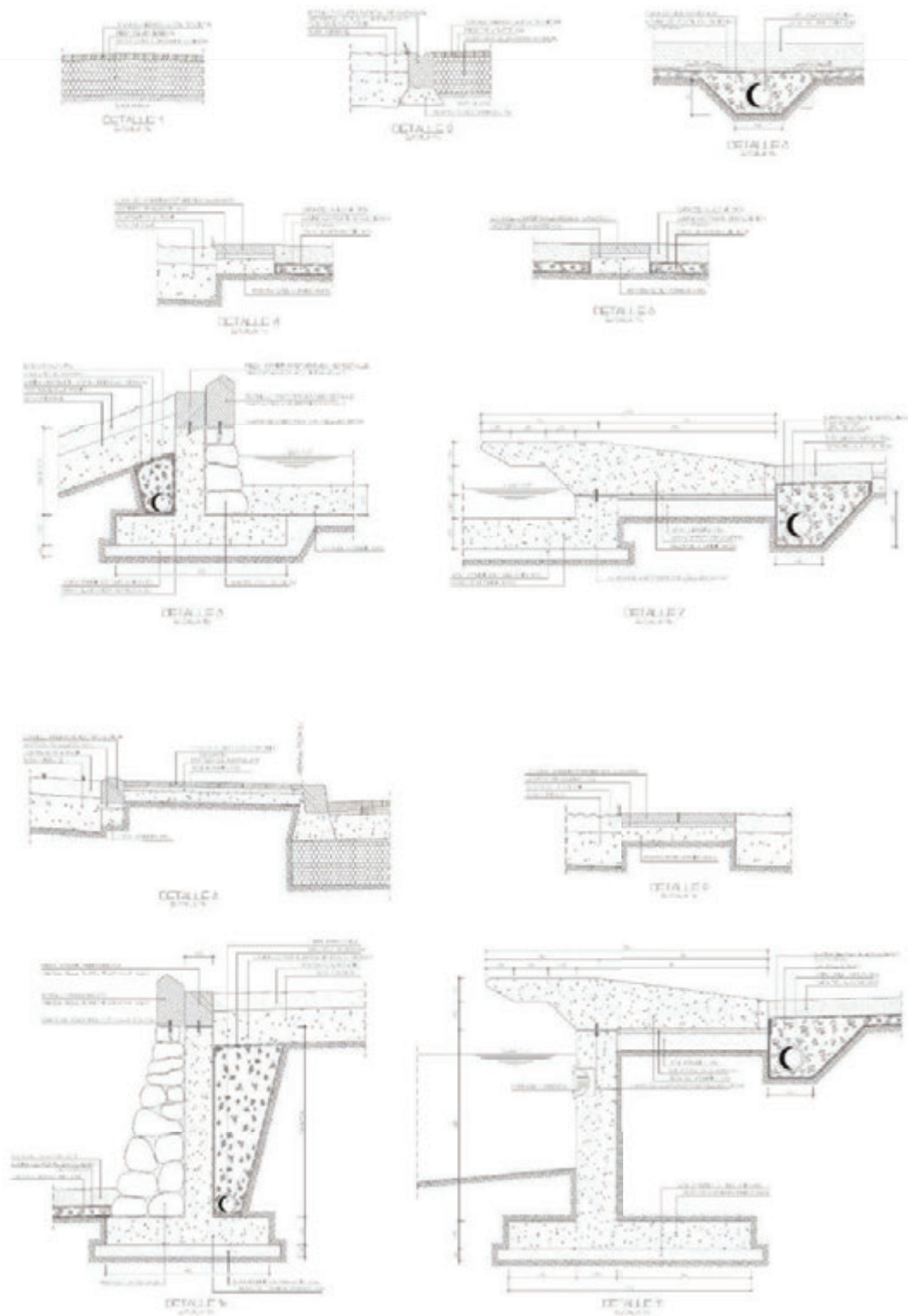
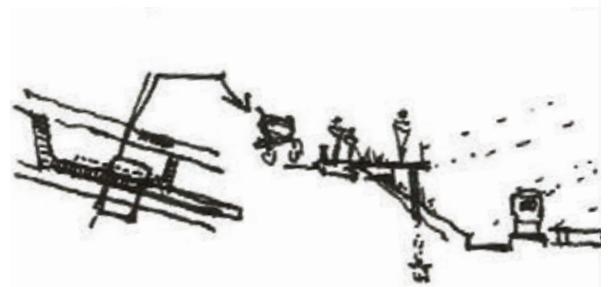


Figure 6.54. (above)
Details of landscape
elements

chapter 6: **SUMMARY**

The design is informed by the lenses, edge condition and environmental issues. The lenses of ritual and negotiated territory are most prominent, as ritual embodies activities that occur within the study area. These activities are associated with a variety of edge conditions, which either accept, reject or assimilate ritual. By modifying the physical boundaries and edges in Jeppe, the public realm can be enlarged and certain rituals can be amplified.

The design layout for the focus area is an amalgamation of the grid, residual space, where ritual is housed and the programme requirements for the architectural interventions. Public space is carved from the landscape slate, forming a continual urban park which houses architectural interventions and programmes, ritual activities and environmental systems. The newly carved spaces are enveloped by edges, which accommodate both rituals and systems and act as thresholds between the transitional realms of landscape and between building and landscape.



07

technical INVESTIGATION

Chapter 7 contains the technical investigation for the landscape architectural intervention and is mostly concerned with sustainable systems design and detail design of certain landscape structures and elements.

- 7.1 **materials**
- 7.2 **landscape elements**
- 7.3 **water**
- 7.4 **vegetation**
- 7.5 **alternative energy**
- chapter 7: **summary**

7.1 materials MATERIALS

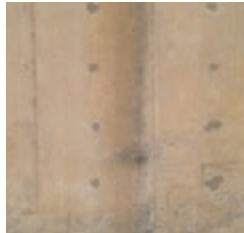
Jeppie has evolved over many years and is layered by materials and finishes (*Figure 7.1*) from different building generations. These materials add character to the area and are robust in nature. However, because of the vast mix of materials, the area lacks identity and a material pallet should be selected to enforce the idea of a spinal development between the station and park nodes.

Facade materials are good examples of the reappropriation of material and constant layering of material. Brick work for instance does not always match, while plastered and concrete walls become canvases for murals and graffiti. Some fragile elements, such as mosaic work and old stone work stand testimony to a pre-industrial generation in Jeppie.

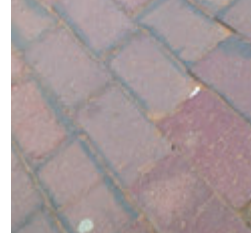
STONE WORK AT CHURCH
IN PARK STREET



MOSAIC



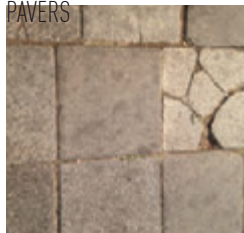
DIFFERENT PAVERS AND
BOND



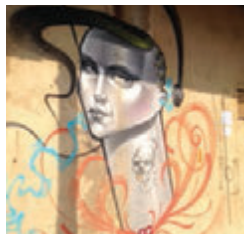
LAYERING OF BRICK AND
PLASTER



PRE CAST CONCRETE
PAVERS



MURALS



PRE CAST CONCRETE
GRID COVER



CONTEMPORARY PAVING
INSTALLATION - BRICK
AND CONCRETE

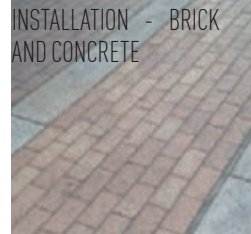
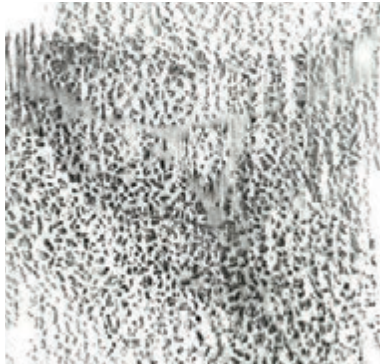


Figure 7.1. Existing material pallet

PRE CAST CONCRETE PAVER JOHN PAGE DRIVE

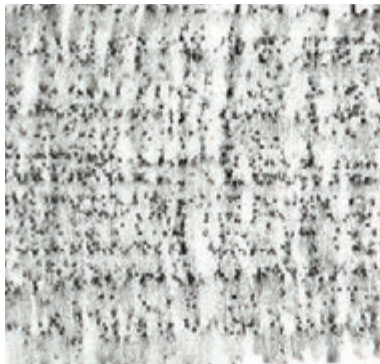


The texture study below illustrate the different grain of some of the materials in Jeppe. Most of the materials are robust and can be reapropriated in the design.

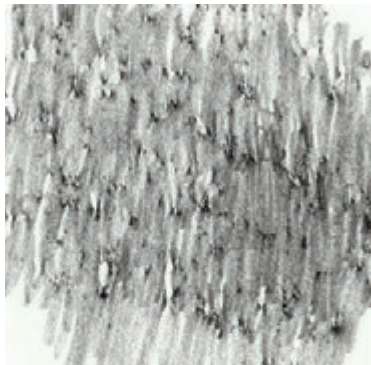
Old pavers, both brick and concrete (if suitable) can be re-used as pavers, while unsuitable pavers can be used in renomattress conxtruction for dams and swales as explained later in this chapter.

New materials, especially in pathways can be altered to obtain a similar character as illustrated in *Figure 7.2* to retain and enhance the identity of Jeppe throughout the landsdcape design.

PRE CAST CONCRETE GUTTER



TAR ON FACUS DRIVE



STEEL BALLUSTRADE ON MAIN STREET



MIZAIEK ON PARK STREET



Figure 7.2. Texture study

materials_ PROPOSED MATERIAL PALLET AND PHILOSOPHY

PHILOSOPHY

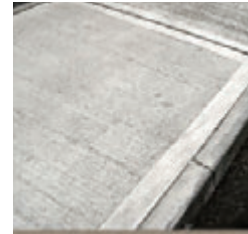
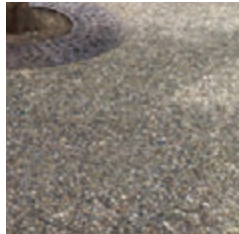
- Provide identity and character by consulting the existing elements, structures and materials in Jeppe West.
 - The materials and elements that form part of the landscape design intervention needs to be robust, durable and amplify positive qualities of the area.
 - Structures needs to be simple, multi-functional and able to withstand the environmental conditions.
 - Simultaneously, certain edges and structures need to accommodate environmental systems and aid the water harvesting and planting strategies
- as set out on master plan level.
 - Materials can designate thresholds and boundaries.

FLOOR FINISHES

PRE CAST CONCRETE



CONCRETE



STEEL

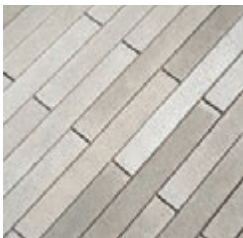


CONTEMPORARY PAVING INSTALLATION - BRICK AND CONCRETE

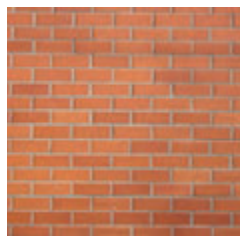


WALL AND LANDSCAPE ELEMENT FINISHES

IN SITU CAST CONCRETE



BRICK



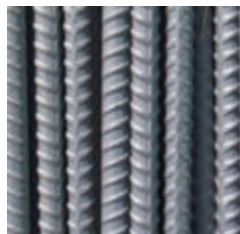
MOSAIC



RENO MATTRESSES



STEEL



LOCAL GRAFFITI

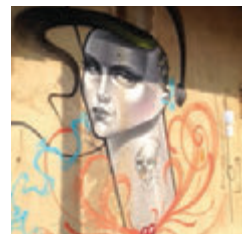


Figure 7.3. Proposed material pallet

“The landscape architect does not consider the design of paths, spaces and edges separately but as integrated wholes.” – (Dee 2001:88)

7.2 landscape elements **CONCEPTUAL EXPLORATION**

BALLUSTRADE AND SUSPENDED WALKWAY ALONG RAILWAY LINE AND JOHN PAGE DRIVE

The ballustrade is made up of rebar, wrapped around a steel tube and a steel welded to a steel flat plate, which in turn is bolted to another steel section (either a t section or a flat plate) depending on the application and fixing of the ballustrade. (either to a vertical or horizontal surface)

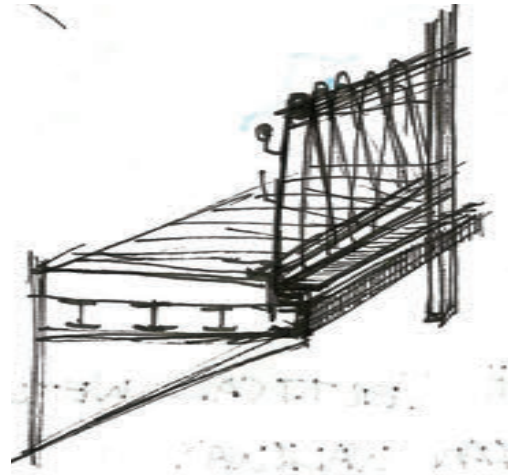


Figure 7.4. (left) Conceptual construction detail

Figure 7.5. (above) Conceptual design development for ballustrades

PERGOLA STRUCTURE

The pergola structure in *Figure 7.6* is made up of rebar, welded to square steel members. These members are fixed to either base plates and bolted to the support structures, like seating or retaining walls. These pergola structures continue along the main movement corridors and ensure a coherent identity and language. These structures also house landscape lighting, in both the post and the overhead members, to ensure that movement corridors are safe and useable at night.

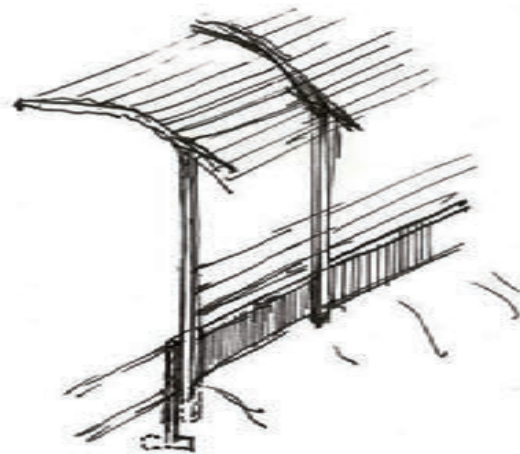
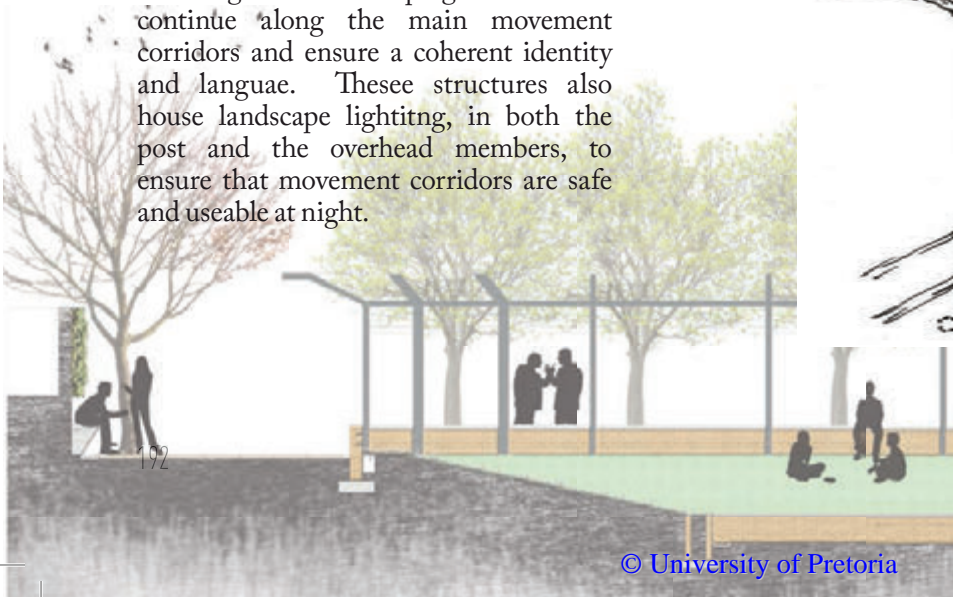
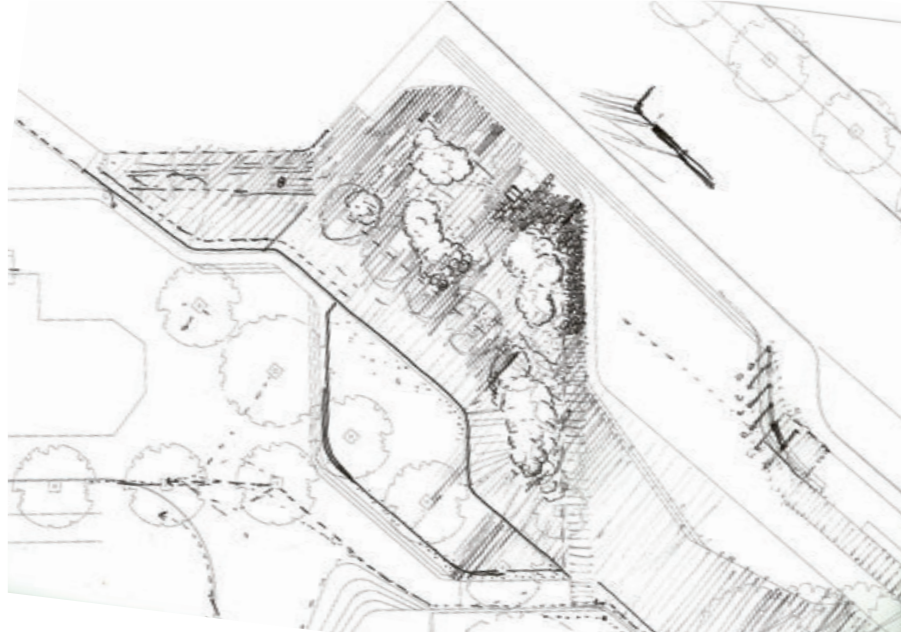


Figure 7.6. Conceptual development for pergola structures





The paving plans in *Figure 7.7* do not illustrate individual pavers, paver sizes or material, only that long, linear pavers emphasizing the layout and orientation of certain landscape areas are to be used. The aim is to use long linear pavers (probably pre-cast concrete pavers) for the majority of the landscape area, while main circulation routes will be finished with a different material (probably in-situ cast concrete slabs).

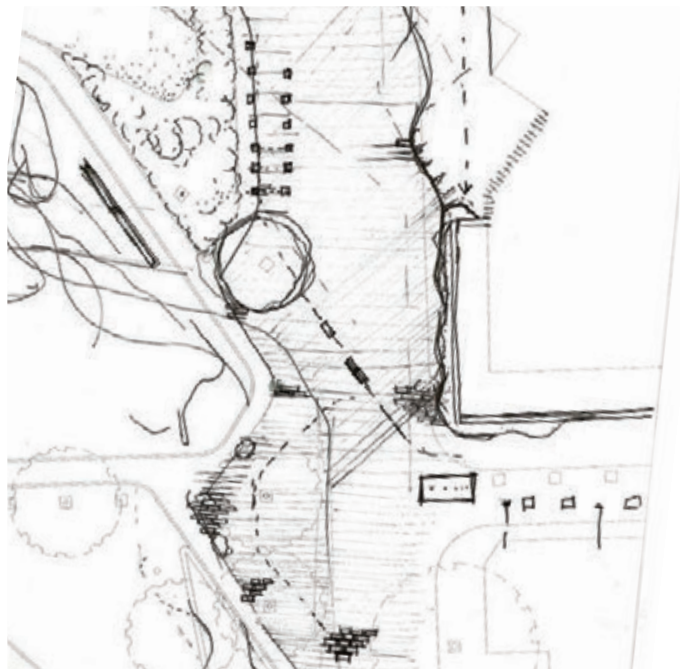


Figure 7.7. Early paving concept plans

landscape elements **CONCEPTUAL EXPLORATION**

The section below is a general cut through the plaza along John Page drive and illustrates the various levels, textures and finishes and some landscape elements.



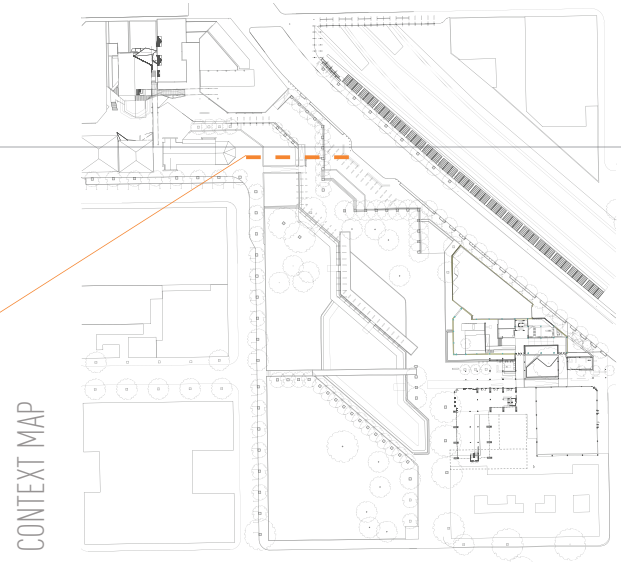
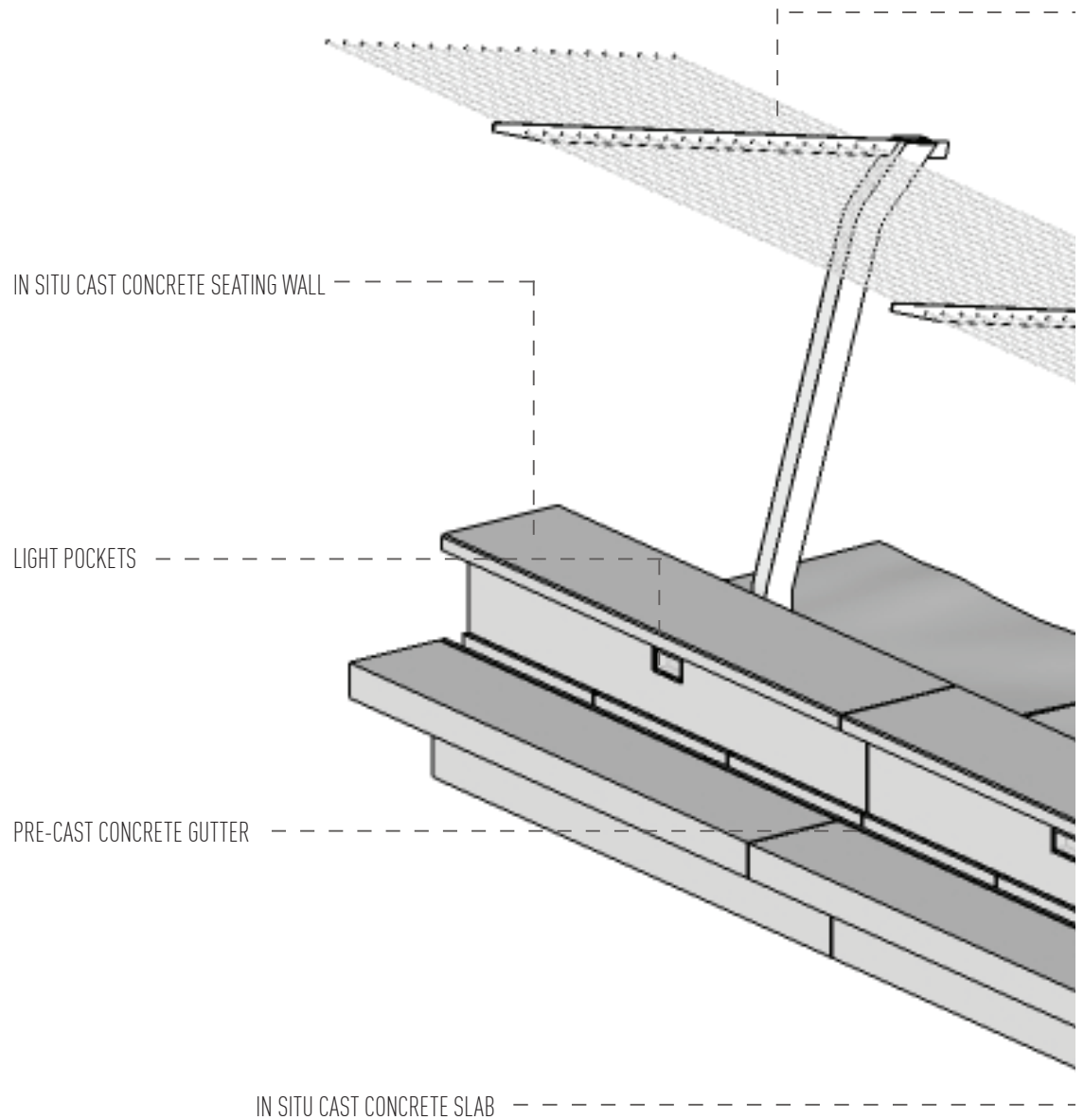


Figure 7.9. Section through John Page Drive plaza



Figure 7.10. Landscaping concept plans

landscape elements_ **PERGOLA AND SEATING WALL**



RE-BAR AS PART OF SHADING STRUCTURE

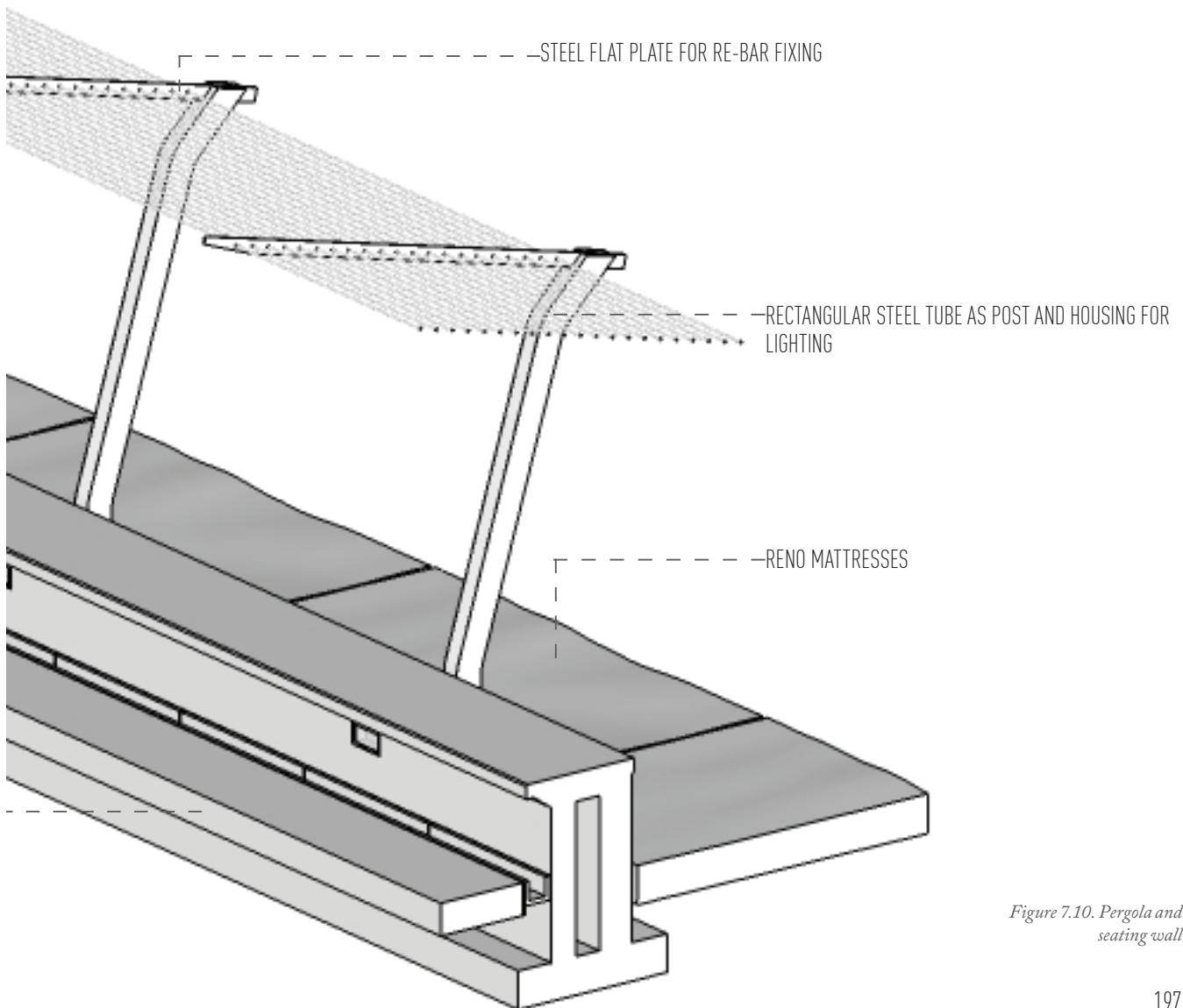


Figure 7.10. Pergola and seating wall

landscape elements_ PEDESTRIAN BRIDGE

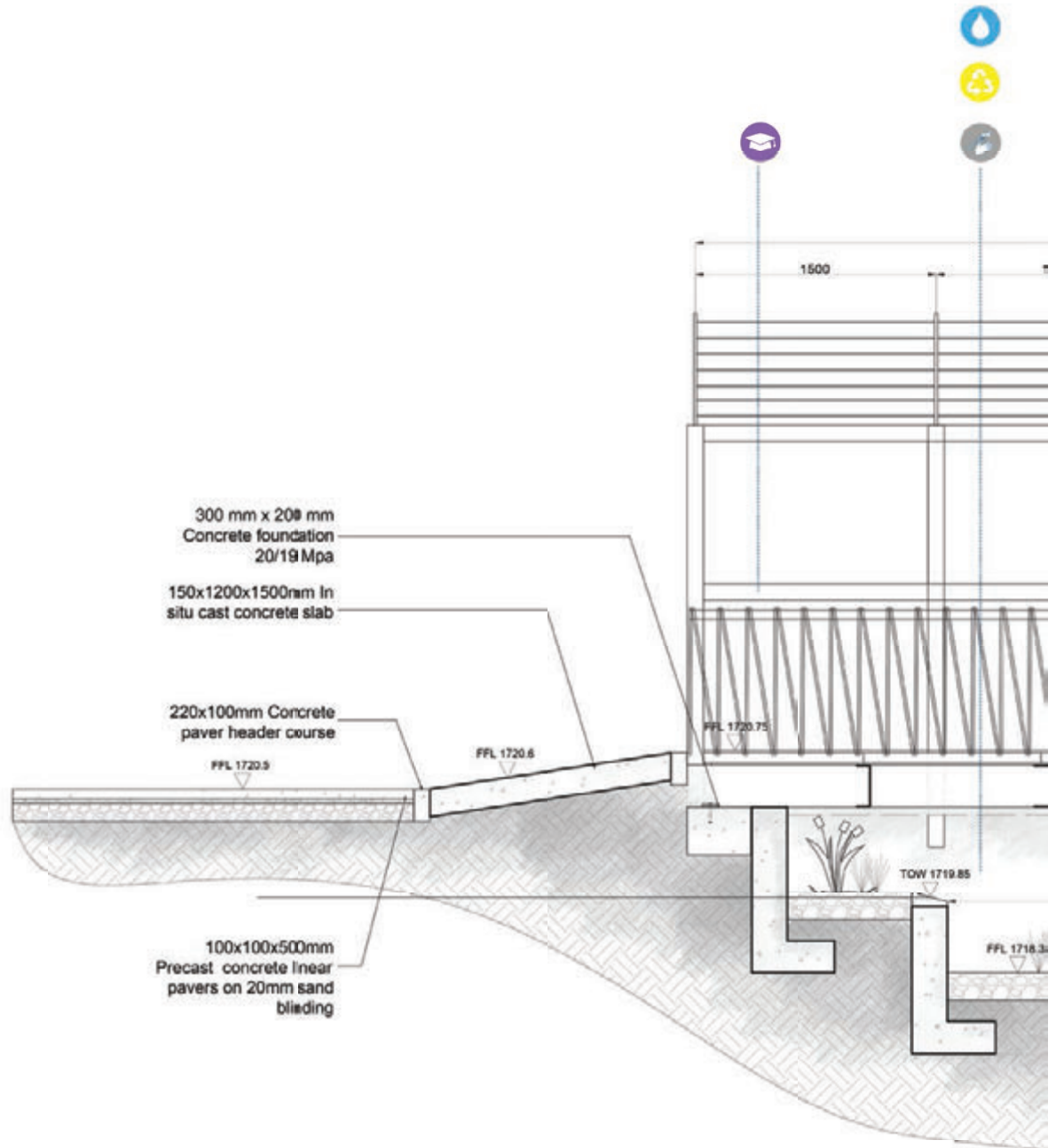
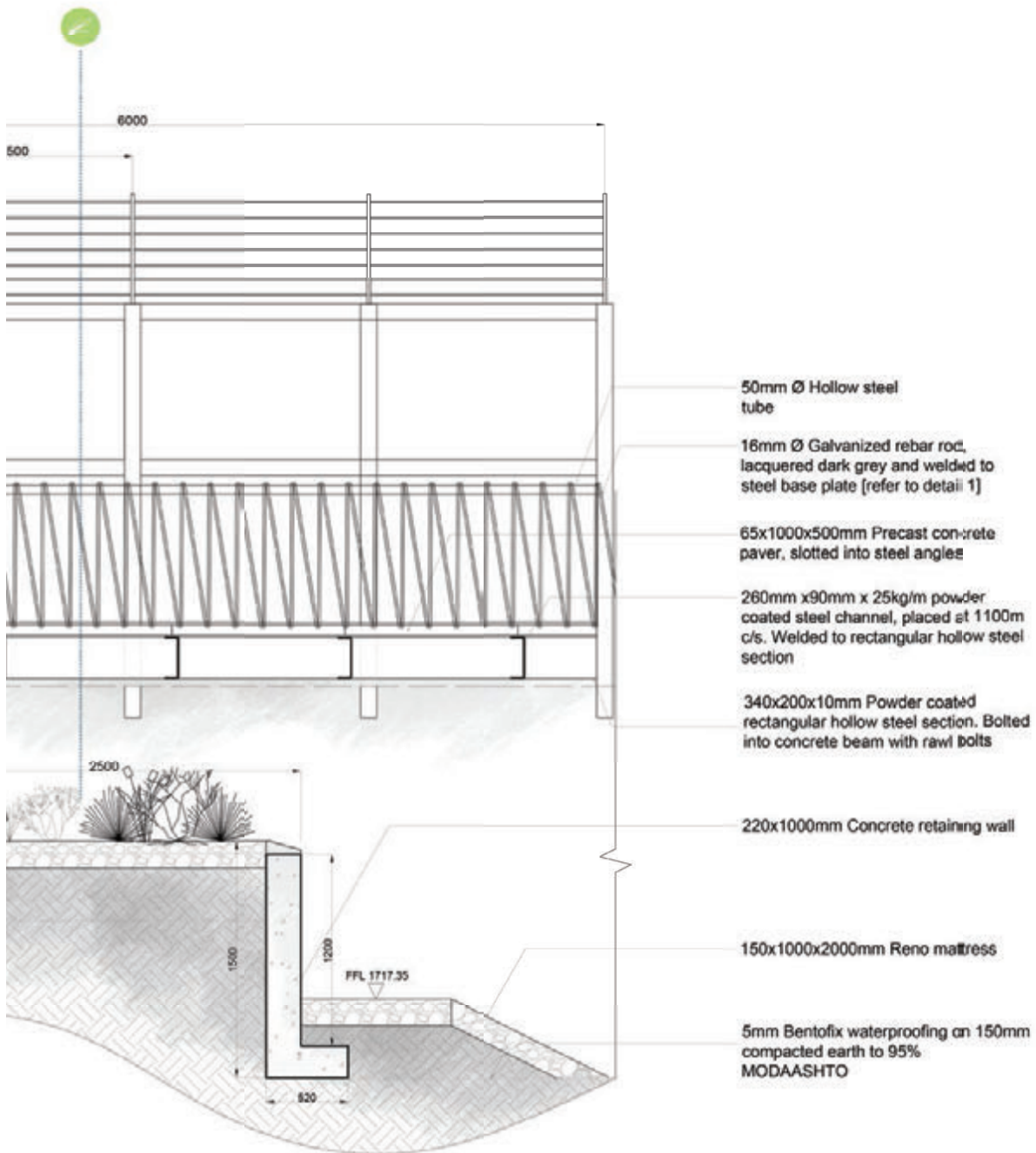


Figure 7.11. (top) Section through pedestrian bridge over retention dam

JEPPE PARK RETENTION DAM PEDESTRIAN BRIDGE



landscape elements **TECHNICAL INVESTIGATION**

SECTION THROUGH BRIDGE OVER DAM

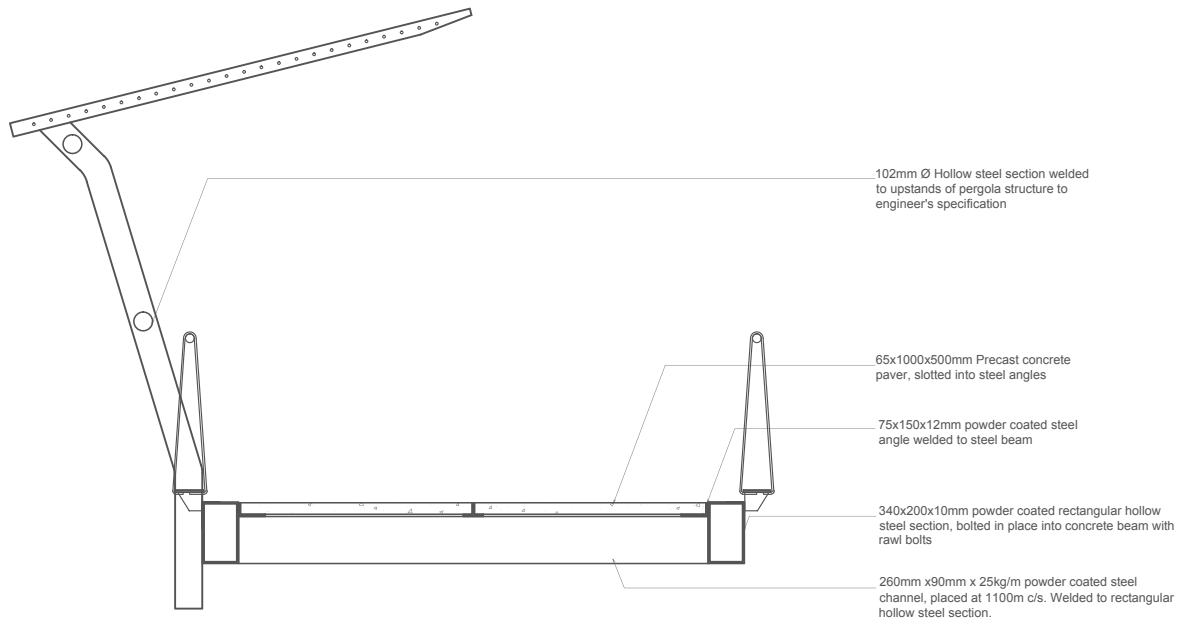


Figure 7.12. Section through pedestrian bridge over retention dam

SECTION THROUGH BRIDGE FOUNDATION

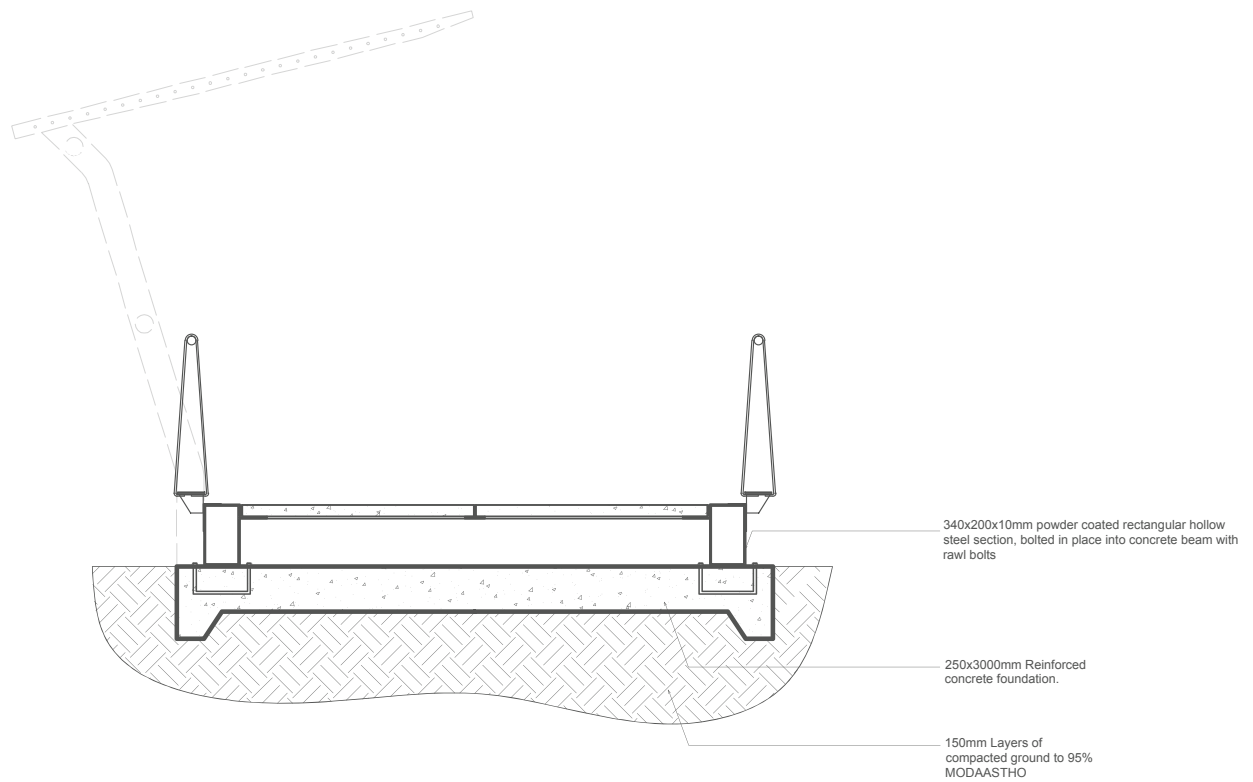


Figure 7.13. Section through pedestrian bridge over retention dam - foundation

7.3 water_SWALES AND RAINWATER GARDENS

Bio-swales require a large amount of space to effectively handle the vast quantities of water during peak floods which often occur in an urban environment. It is for this reason that the number of bio-swales implement on site can be seen as a direct result of the amount of space available. In some areas, for instance along sidewalks, street edges and parking lanes, the option of rainwater gardens was favoured.

The positive attributes of rainwater gardens as landscape installation:

- Softens the hard edge between street and sidewalk.
- Acts as buffer zone between vehicular and pedestrian realms.
- Collect, slow and purify surface runoff.

The positive attributes of bio-swale implementations:

- Large areas that can slow and detain stormwater and surface runoff.
- Act as purification system for surface runoff.
- Increase planting area and soft landscaping elements.
- Aid biodiversity and plant communities.

On page 202, *Figure 7.15* illustrates the conceptual idea for swale implementation. Water is collected in a geotype and transported to a central collection pit. The possibility of replacing the geotype with bentofix waterproofing exists, as this will ensure that less height is lost and less energy is required to a collection point, as water will flow over the surface of the waterproofing.

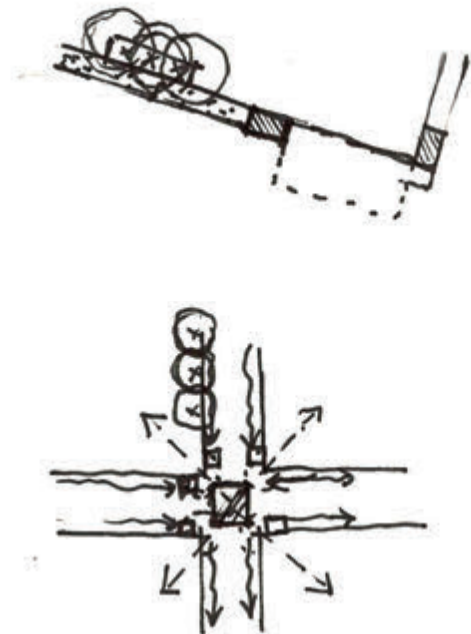


Figure 7.14. (left) Collecting surface runoff at existing gutter inlets

swales and rainwater gardens **CONCEPT DEVELOPMENT**

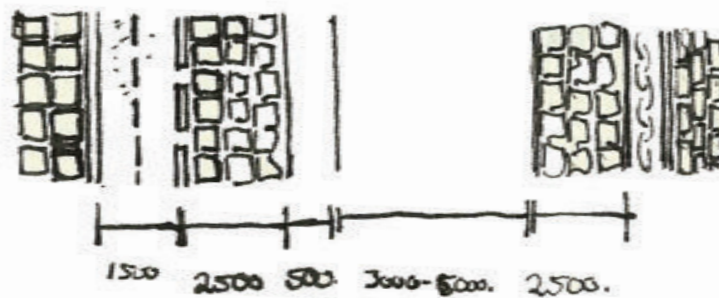
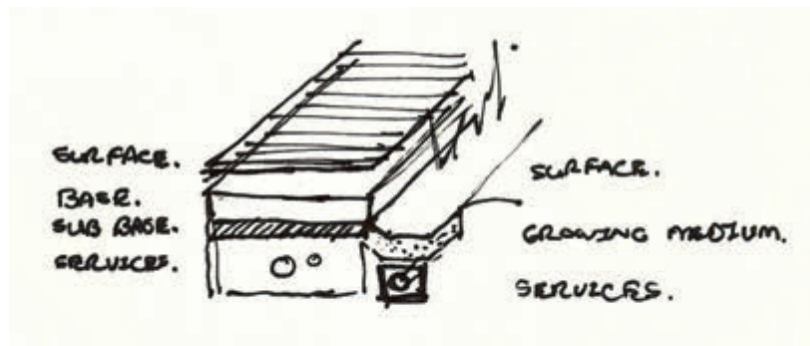
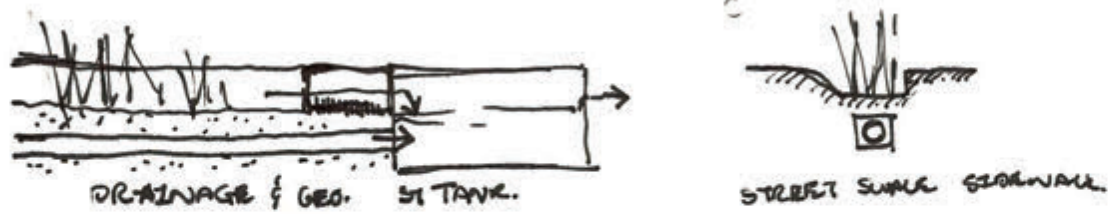


Figure 7.15. (above) Harvesting storm water via bio swales

water_ WATER PURIFICATION - WETLAND INSTALLATIONS

Water purification is a vital aspect with regards to the success of the design, as the element of water contributes to both architectural and landscape programmes.

Surface run-off is one of the main water sources and needs to be slowed, purified and stored before it can be used. On the slope along the tracks and John Page drive, a vertical wetland system has been implemented. This system is a surface flow wetland and purifies water through natural filtration processes.

The positive aspects of the vertical wetland (*Figure 7.18*) as landscape installation:

- Requires less space than a horizontal system.
- Creates a buffer zone between the railway line and the public realm.
- Increases biodiversity by creating micro habitats.
- Collect, slow and purify surface runoff.
- Reduces heat island effect along a main pedestrian corridor due to high vegetation and moisture content.

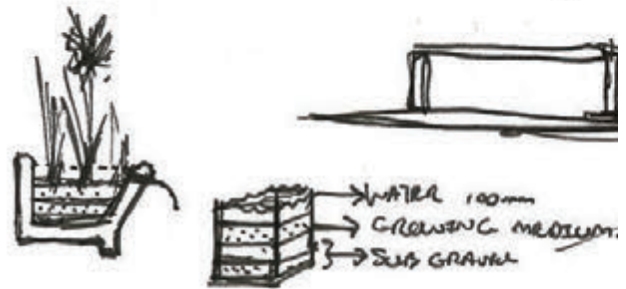
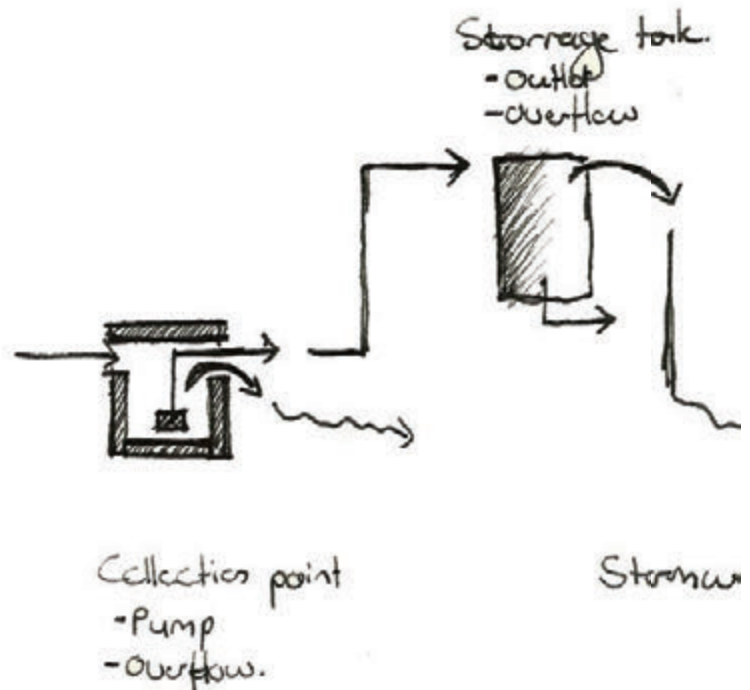
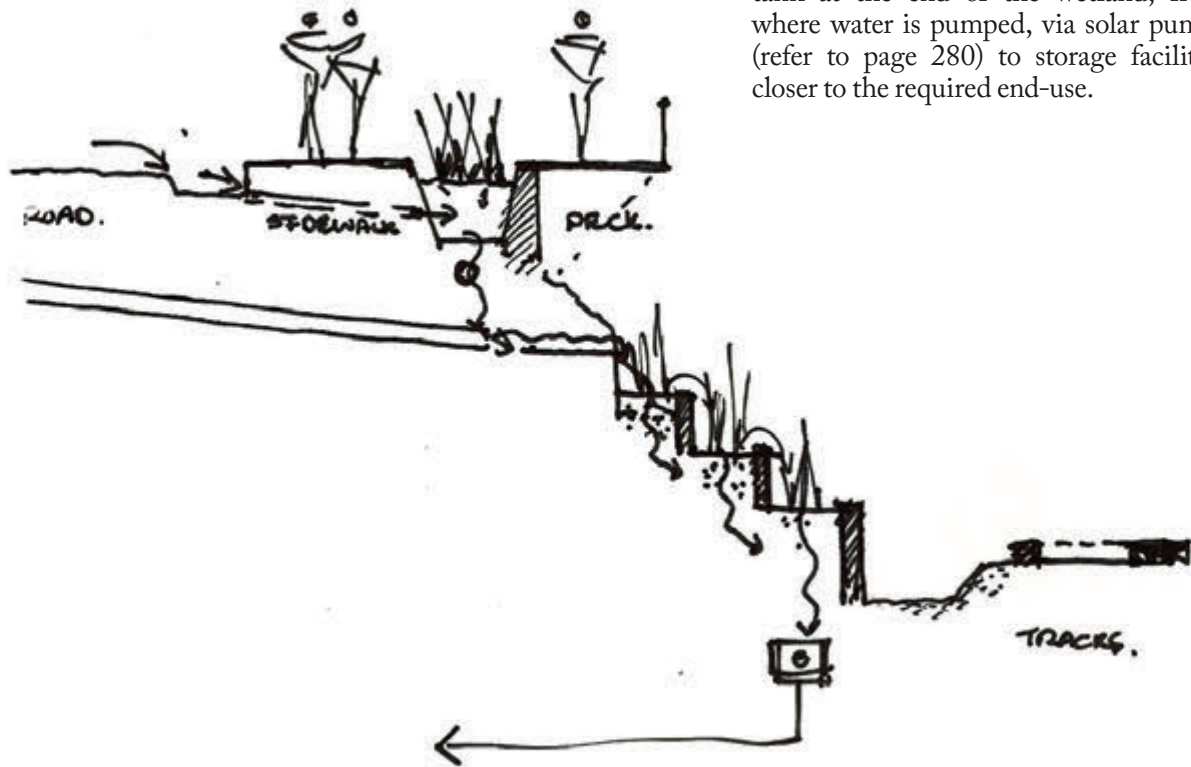


Figure 7.16. Through size and growing medium exploration



vertical wetland_CONCEPT DEVELOPMENT

As explained in *Figure 7.177*, surface runoff enters the vertical wetland system and meanders from trough to trough. These troughs are planted with water purification planting (explained on pages 229 -231) to remove pollutants. Water is collected in a sub surface water storage tank at the end of the wetland, from where water is pumped, via solar pumps (refer to page 280) to storage facilities closer to the required end-use.

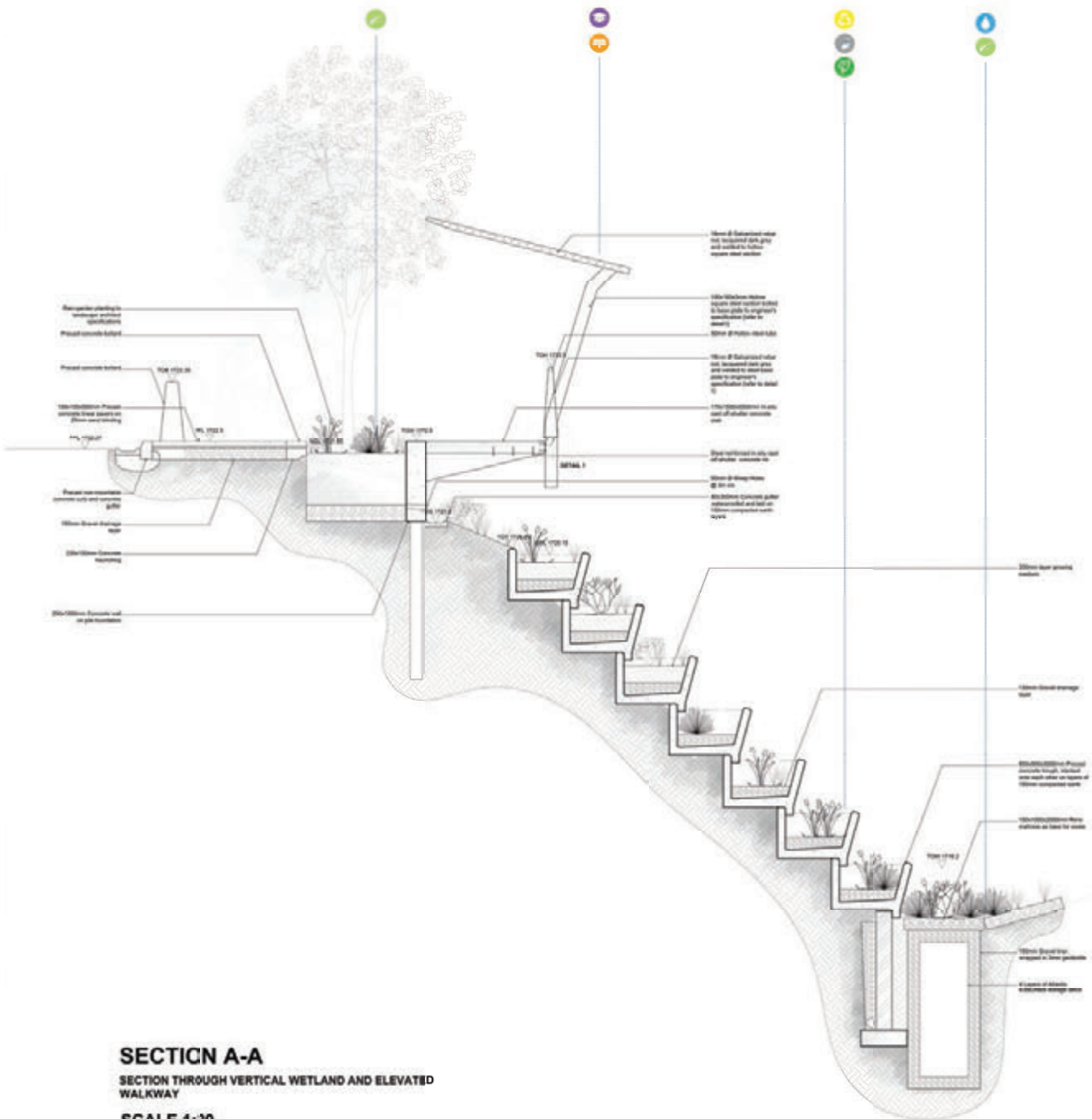


→

Water System.

Figure 7.17. Purifying and collecting water through vertical wetland system

vertical wetland TECHNICAL DEVELOPMENT



DETAIL 1 - FIXING FOR BALLUSTRADE OF ELEVATED WALKWAY:

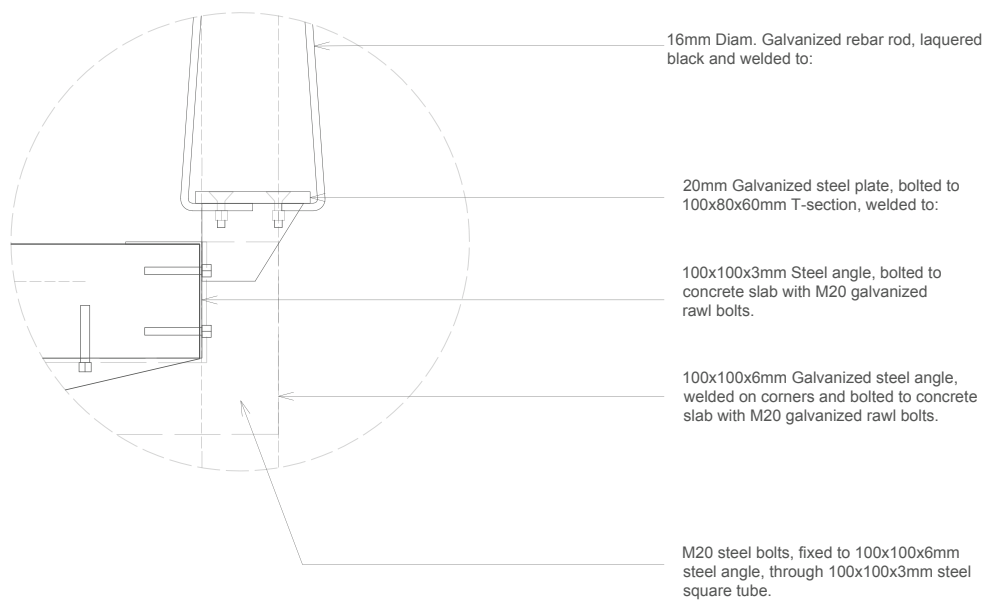
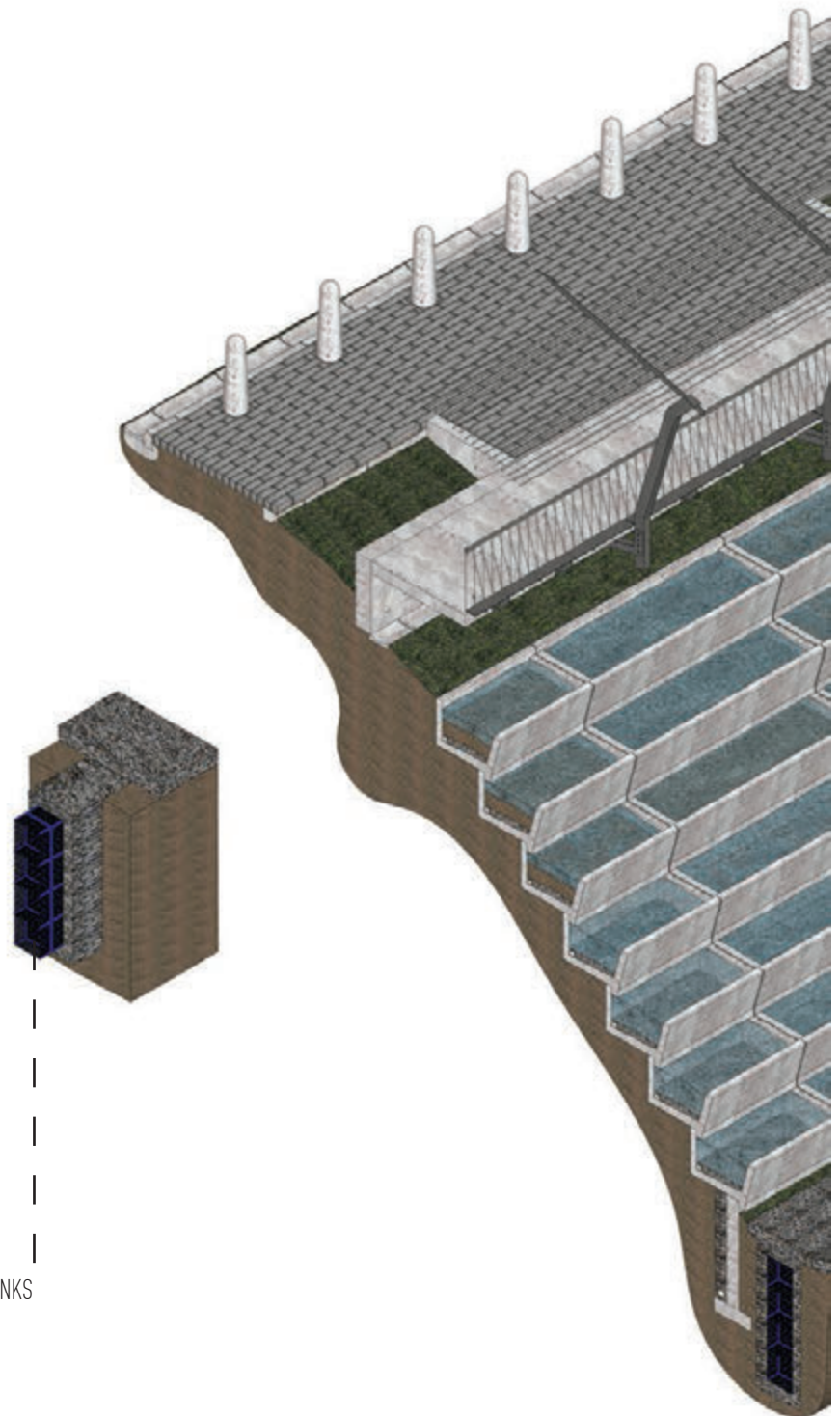


Figure 7.18. Technical section through vertical wetland

Figure 7.19. (top right) detail for ballustrade fixing

vertical wetland **AXONOMETRIC**



ATLANTIS SUBSURFACE STORAGE TANKS

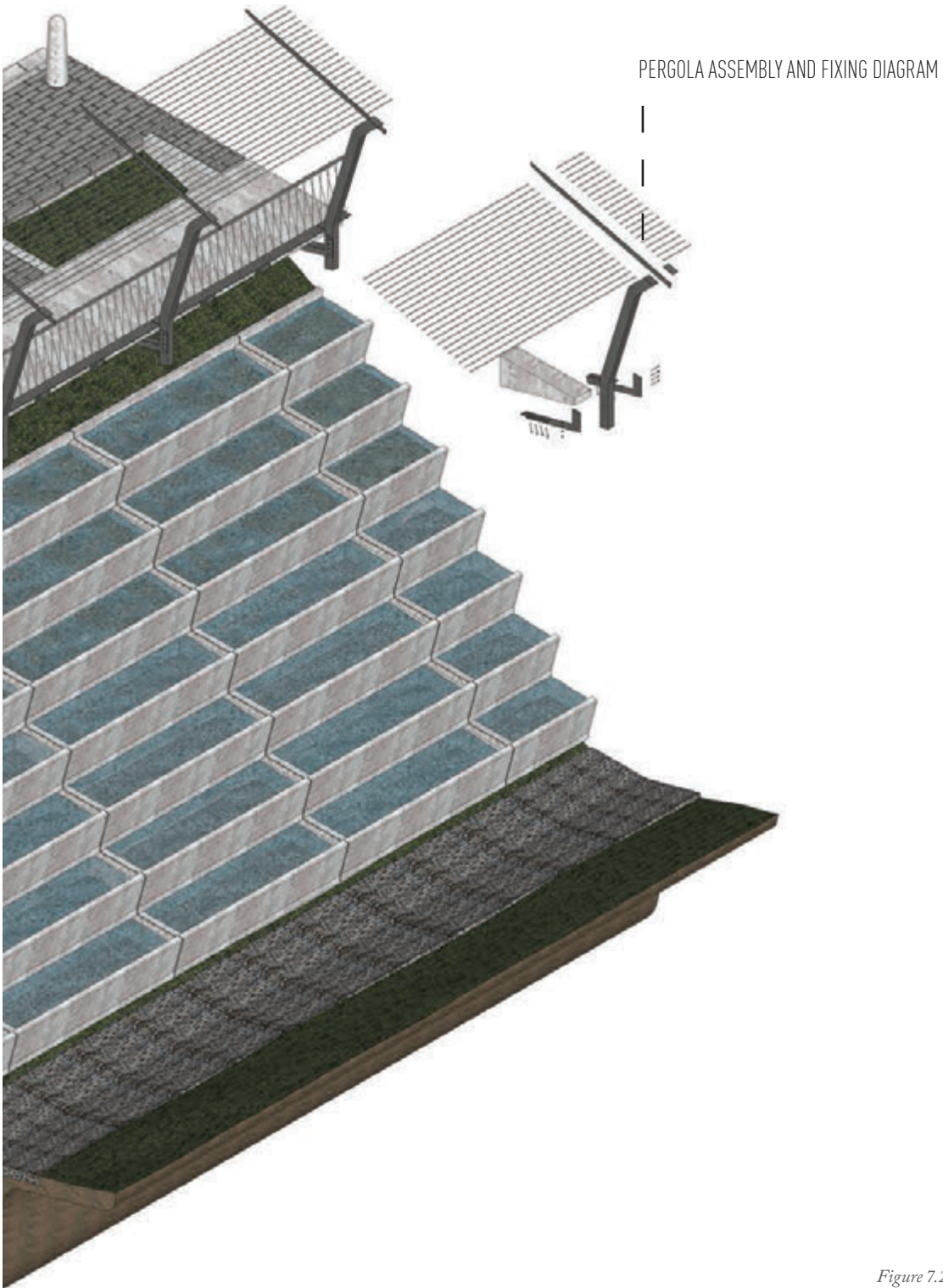


Figure 7.20. Axonometric view of vertical wetland 209

water_ WATER STORAGE FACILITIES - RETENTION DAMS AND TANKS

Various water retention facilities exist on site in the form of under ground storage tanks (*Figure 7.12*), water towers, general water tanks and retention dams (*Figure 7.11*). In some cases these facilities work together as a interconnected system in order to maximise the amount of water stored on site. Storing water on site holds various advantages as it:

- Alleviates the grid.
- Ease of accessibility.
- Short transport distances.
- Act as aesthetic amenity.
- Creates opportunity for habitat creation adding biodiversity value.

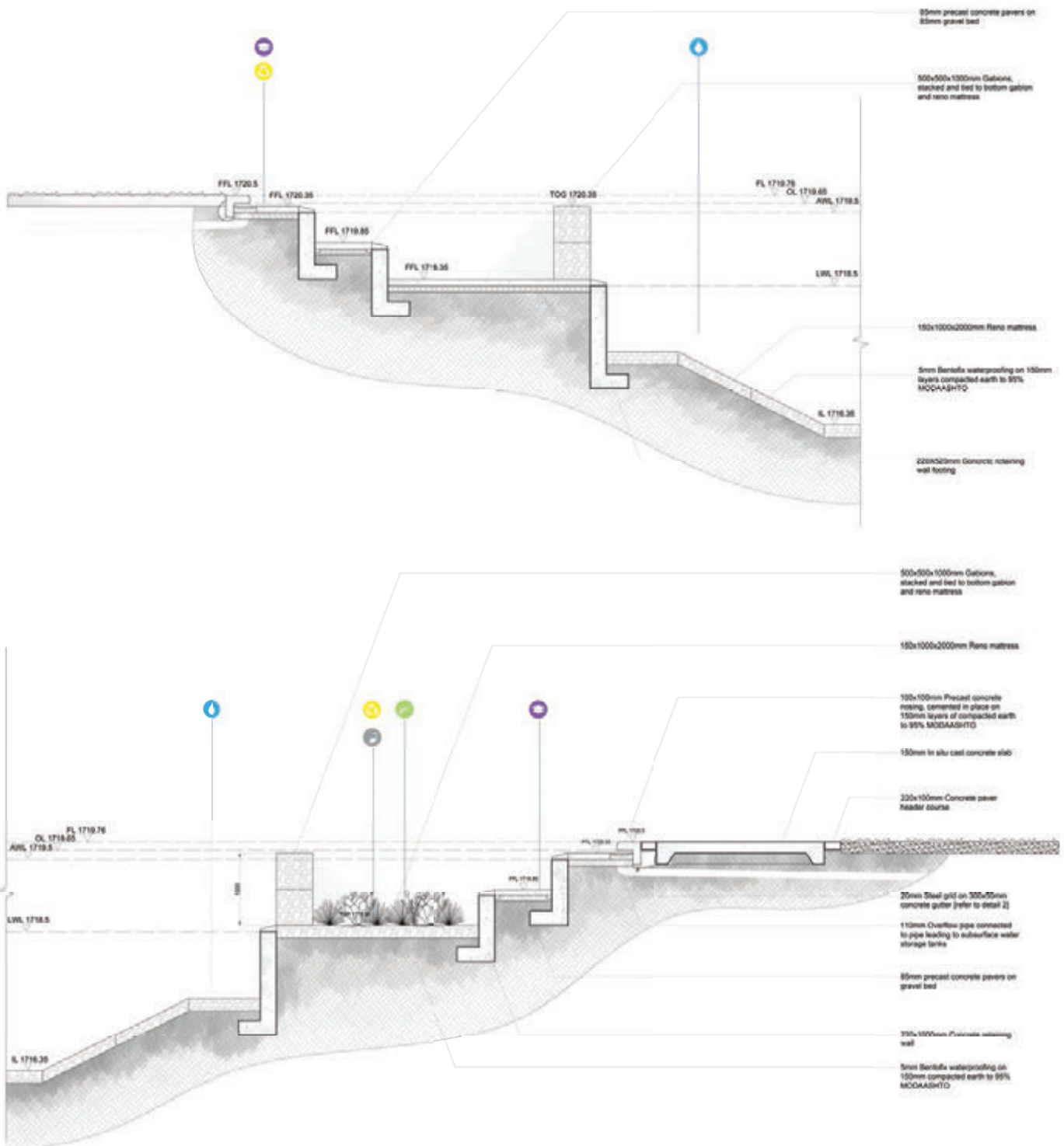
Even though more storage facilities (JoJo tanks, basement storage, etc.) exist on site and might be discussed in Volume V and Volume VI, the focus in this dissertation is placed on the underground storage facilities and the open storage facility or retention dam. Both these storage facilities also purify water and store the greatest portion of water required for the activities, processes and architectural programmes on site.

As part of the landscape intervention, the Atlantis sub surface water storage system was selected. This system consist of plastic modules, which area assembled and stacked together to form retention facilities with large capacities. Some of the components for the Atlantis tank system (like Flow-Cell) can also be used in other landscape implementations, such as green roofs and walls.

Figure 7.21. (top) Jeppe park retention dam water storage - lawn edge

Figure 7.22. (bottom) Section through Jeppe park retention dam - pathway edge

JEPPE PARK RETENTION DAM - OPEN SURFACE STORAGE FACILITY:



water_WATER STORAGE PLAN

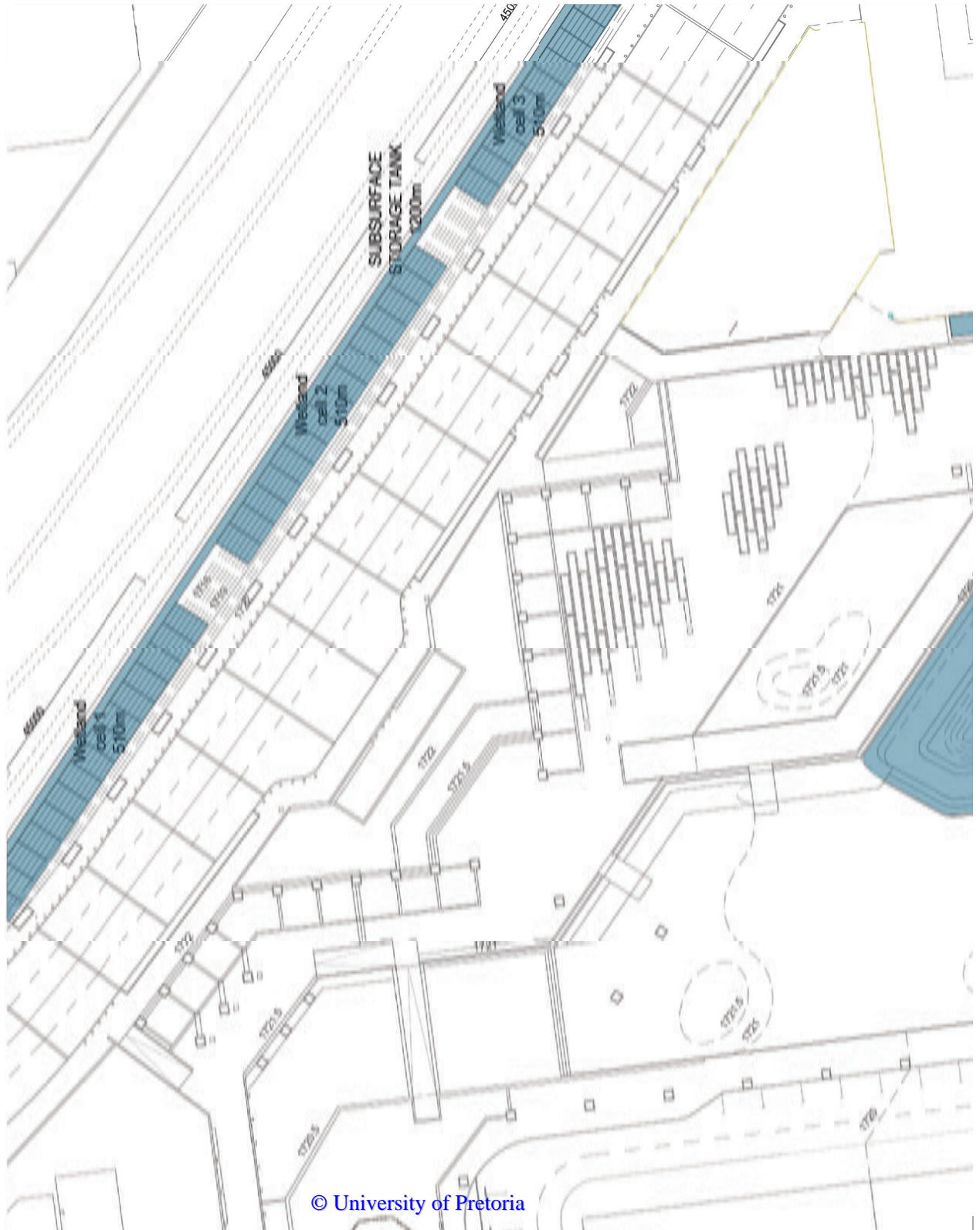
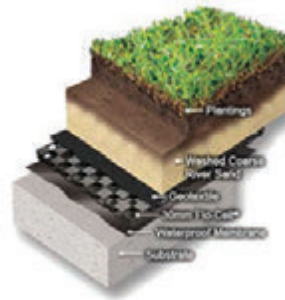




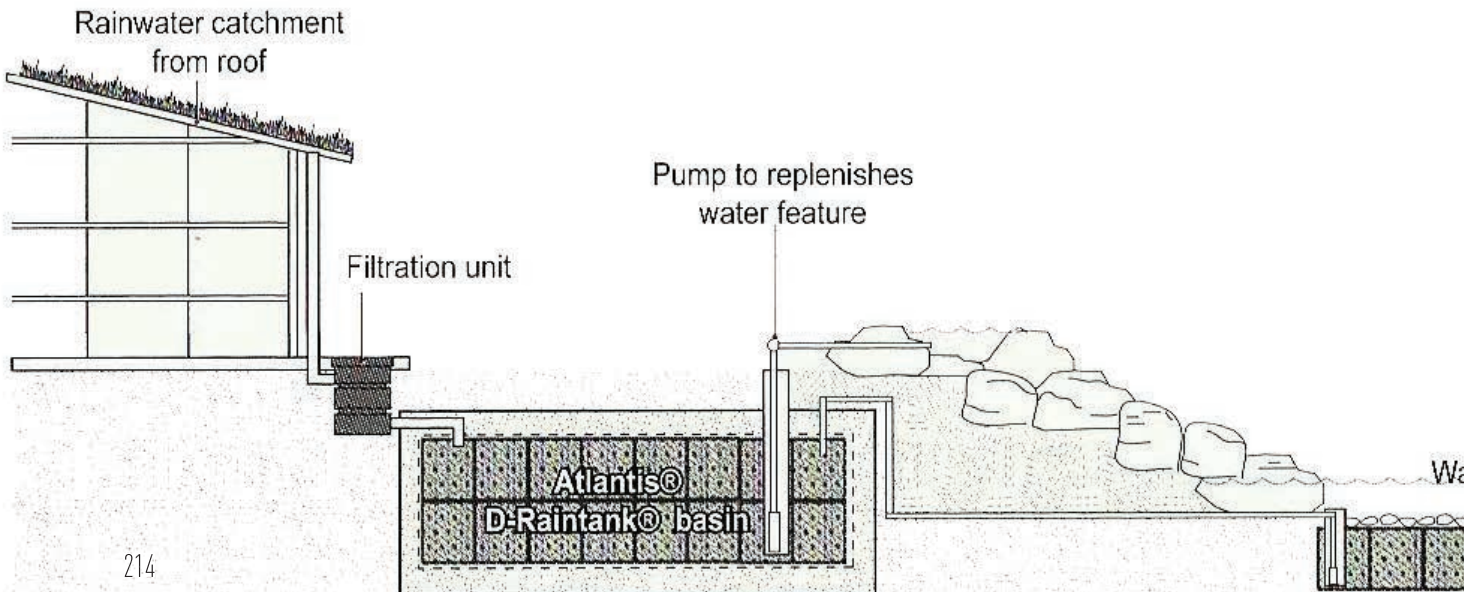
Figure 7.23. Water storage plan
213

water_ WATER STORAGE FACILITIES - RETENTION DAMS AND TANKS

As part of the landscape intervention, the Atlantis sub surface water storage system was selected. This system consist of plastic modules, which area assembled and stacked together to form retention facilities with large capacities. Some of the components for the Atlantis tank system (like Flow-Cell) can also be used in other landscape implementations, such as green roofs and walls.



Flo-Cell® 20mm



ATLANTIS SUBSURFACE TANKS - UNDERGROUND STORAGE FACILITY:

Flo-Tank®
ideal for VOID FILL

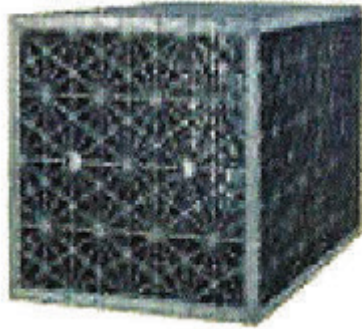
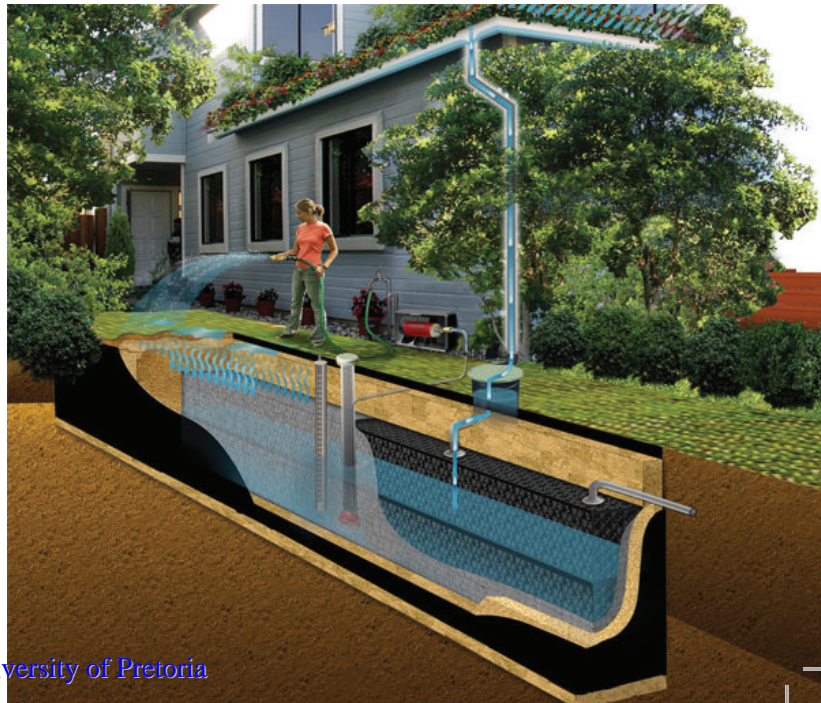
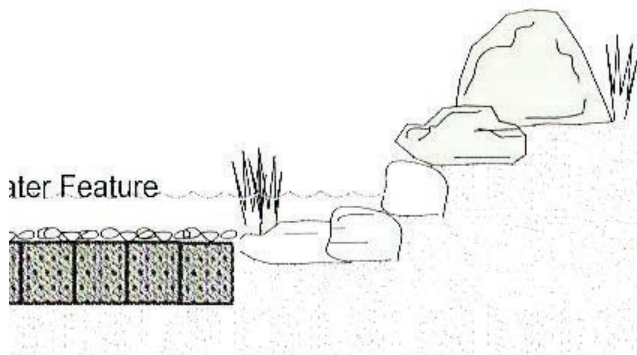


Figure 7.24. (bottom) Atlantis subsurface storage tanks

Figure 7.25. (middle right) Atlantis tank Flo-Tank module

Figure 7.26. (left) Flo-Cell drainage cell and green roof application



7.4 vegetation_ PLANT SELECTION

As part of the planting strategy an extensive planting palette, consisting of trees, shrubs, ground covers, herbs, perennials, ferns and wetland planting was compiled. This main planting palette can be further de-constructed into smaller planting pallets for specific use or application on site. These pallettes can also act as plant communities, in which plants interact to induce habitat creation. This in turn adds to the idea of creating a landscape rich in niches and biodiversity.

With regards to the plant selection for the planting palette preference was given to:

- Water purification
- Seasonal change
- Sun and shade planting
- Diversity in height, texture and colour
- Maintenance and hardiness

At the same time, with architectural programme in mind, when selecting plants specifically for these programmes, preference was given to:

- Essential oil value and fragrance
- Soothers, tonics and refreshers
- Relaxation
- Rejuvenation

These plants with the above mentioned qualities has to be mass planted in order to ensure the success of the architectural programmes of:

1. Essential oil extraction - as discussed in Volume III.
2. Herbal bathing, aiding the ritual of washing as discussed in Volume VI.

TREES

- 1 *Bolusanthus speciosus*
- 2 *Celtis africana*
- 3 *Combretum erythrophyllum*
- 4 *Diospyros whyteana*
- 5 *Euclea crispa*
- 6 *Heteropyxis natalensis*
- 7 *Olea europaea subsp. Africana*
- 8 *Pappea capensis*
- 9 *Rothmannia capensis*
- 10 *Syzygium cordatum*
- 11 *Vangueria infausta*
- 12 *Ziziphus mucronata*

SHRUBS

- 1 *Buddleja saligna*
- 2 *Buddleja salviifolia*
- 3 *Hibiscus calyphyllus*
- 4 *Pelargonium graveolens*
- 5 *Plectranthus fruticosus*
- 6 *Strelitzia reginae*
- 7 *Rhamnus prinoides*

vegetation_ **PLANT LISTS**

GROUNDCOVERS

- 1 *Agapanthus praecox*
- 2 *Bulbine frutescens*
- 3 *Clivia miniata*
- 4 *Dietes bicolor*
- 5 *Dietes grandiflora*
- 6 *Felicia amelloides*
- 7 *Geranium incanum*

CLIMBERS

- 1 *Jasminum multipartitum*

WATER PLANTING

- 1 *Adiantum capillus-veneris*
- 2 *Aponogeton distachyos*
- 3 *Chondropetalum tectorum*
- 4 *Crinum bulbispermum*
- 5 *Crinum macowanii*
- 6 *Cyperus sexangularis*
- 7 *Gomphostigma virgatum*
- 8 *Gunnera pepensa*
- 9 *Hesperantha coccinea*
- 10 *Juncus glaucus*
- 11 *Juncus effusus*
- 12 *Kniphofia ensifolia*
- 13 *Marsilea schelpiana*
- 14 *Nymphaea nouchali*
- 15 *Nymphoides thunbergiana*
- 16 *Nymphoides indica*
- 17 *Typha capensis*
- 18 *Vallisneria aethiopica*
- 19 *Zantedeschia aethiopica*

HERBS

- 1 *Lavandula dentata*
- 2 *Lavandula stoechas*
- 3 *Lavandula x allardii*
- 4 *Lavandula x intermedia*
- 5 *Lavandula sidonie*
- 6 *Rosmarinus officinalis*
- 7 *Borago officinalis*
- 8 *Nepeta cataria*
- 9 *Symphytum officinale*
- 10 *Hyssopus officinalis*
- 11 *Salvia officinalis*
- 12 *Origanum majorana*
- 13 *Monarda fistulosa*
- 14 *Matricaria recutita*
- 15 *Calendula officinalis*
- 16 *Achillea millefolium*
- 17 *Ocimum basilicum*
- 18 *Mentha spp.*
- 19 *Allium schoenoprasum*
- 20 *Thymus spp.*
- 21 *Foeniculum vulgare*
- 22 *Stachys officinalis*
- 23 *Myrtus spp.*
- 24 *Melissa officinalis*
- 25 *Cilantro*

TREES



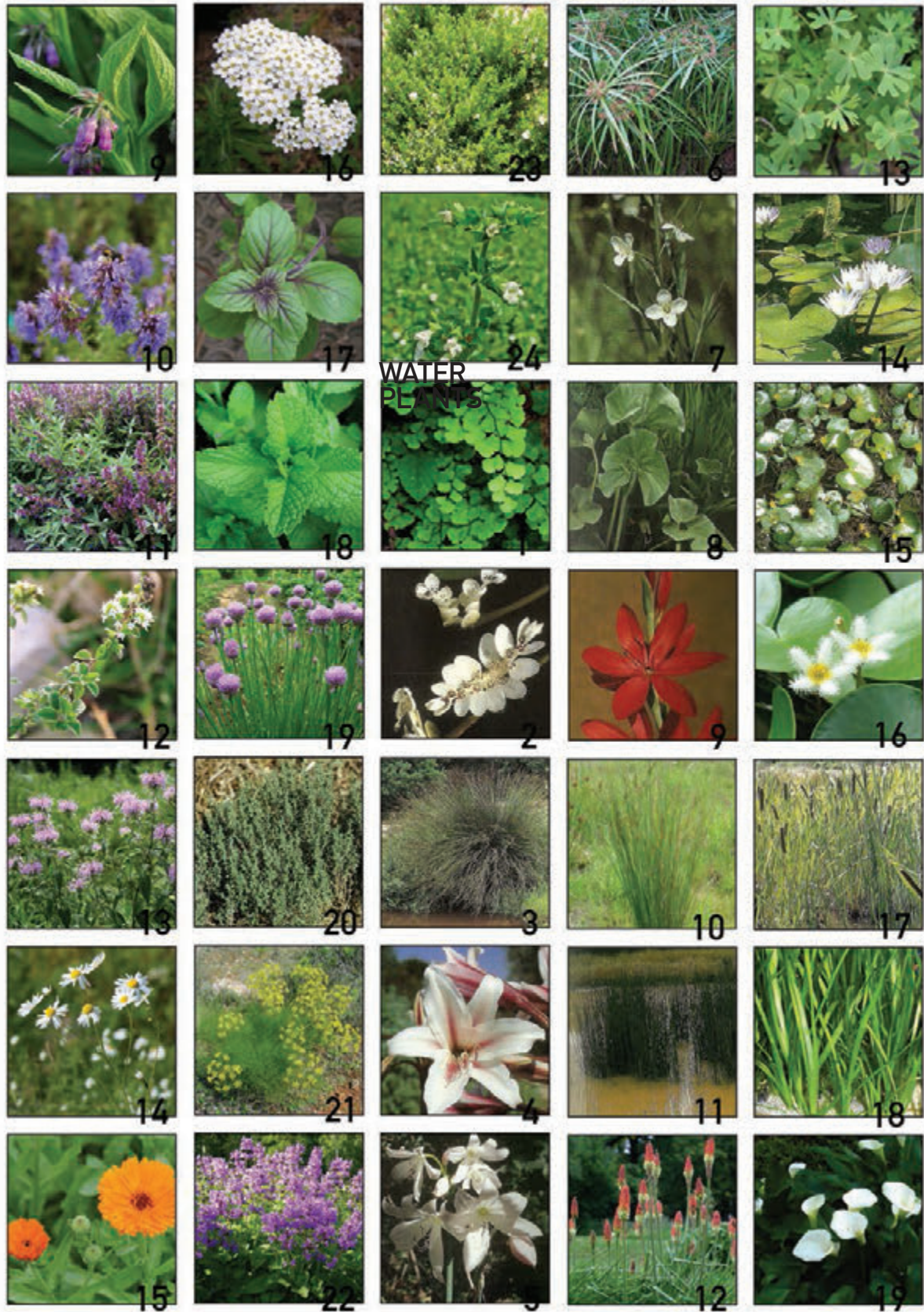
CLIMBERS



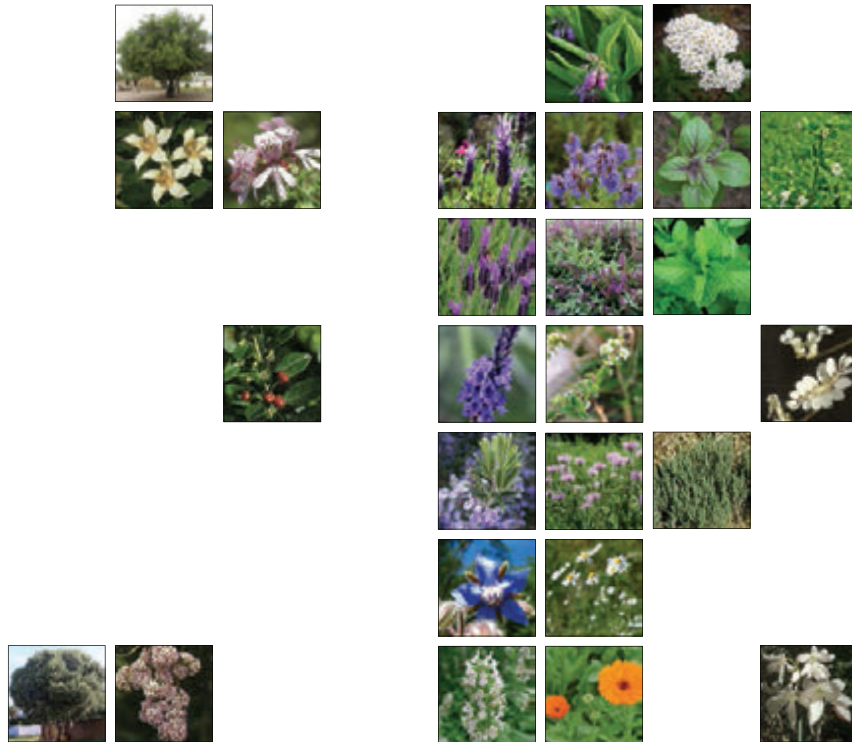
HERBS

SHRUBS

GROUND
COVERS



HERBAL BATHING



The herbal bathing palette (*Figure 7.14*) is comprised of some trees and shrubs, but mainly consists of a selection of herbs which can be used for cleansing purposes either in fresh or dried form. These herbs add a sensory experience to the ritual of washing, but can simultaneously be used to add aromas and flavors in food preparation and can be planted among other plants throughout the landscape as companion planting. The herbs contained in this palette can also be grown fairly easily by the inhabitants of Jeppe and might add economic value to the community if a partnership is established between the inhabitants and the architectural intervention as discussed in Volume VI.

Figure 7.28. Herbal bathing planting pallet

vegetation_PLANTING PALLETS

SWALE PLANTING



The planting palette for swale planting (*Figure 7.15*) consists of plants which can tolerate high amounts of water, whilst acting as water purification vessels. These plants are hardy and overlap with plants associated with a riparian community.

WATER PURIFICATION



The water purification planting palette (*Figure 7.16*) contains wetland plants which are good water purifiers. These plants do not only add functional value to the water purification system, but add aesthetic value and increase biodiversity within Jeppe as they form niches and micro habitats.

Figure 7.30. Water purification planting palette

vegetation_ PLANTING PALLETS

The edible and cut flower planting pallettes (*Figure 7.17* and *Figure 7.18*) were not chosen for architectural programme or landscape programme specifically, but are rather by products of the main palnting pallette. These planting pallettes however, do add value to the Jeppestown community, as they have both edible and aesthetic value. Cut flowers might also aid economic endeavours.

*Figure 7.31. (top) Cut flowers
planting pallet*

*Figure 7.32. (bottom) Edible
planting planting pallet*

vegetation_PLANTING PLAN

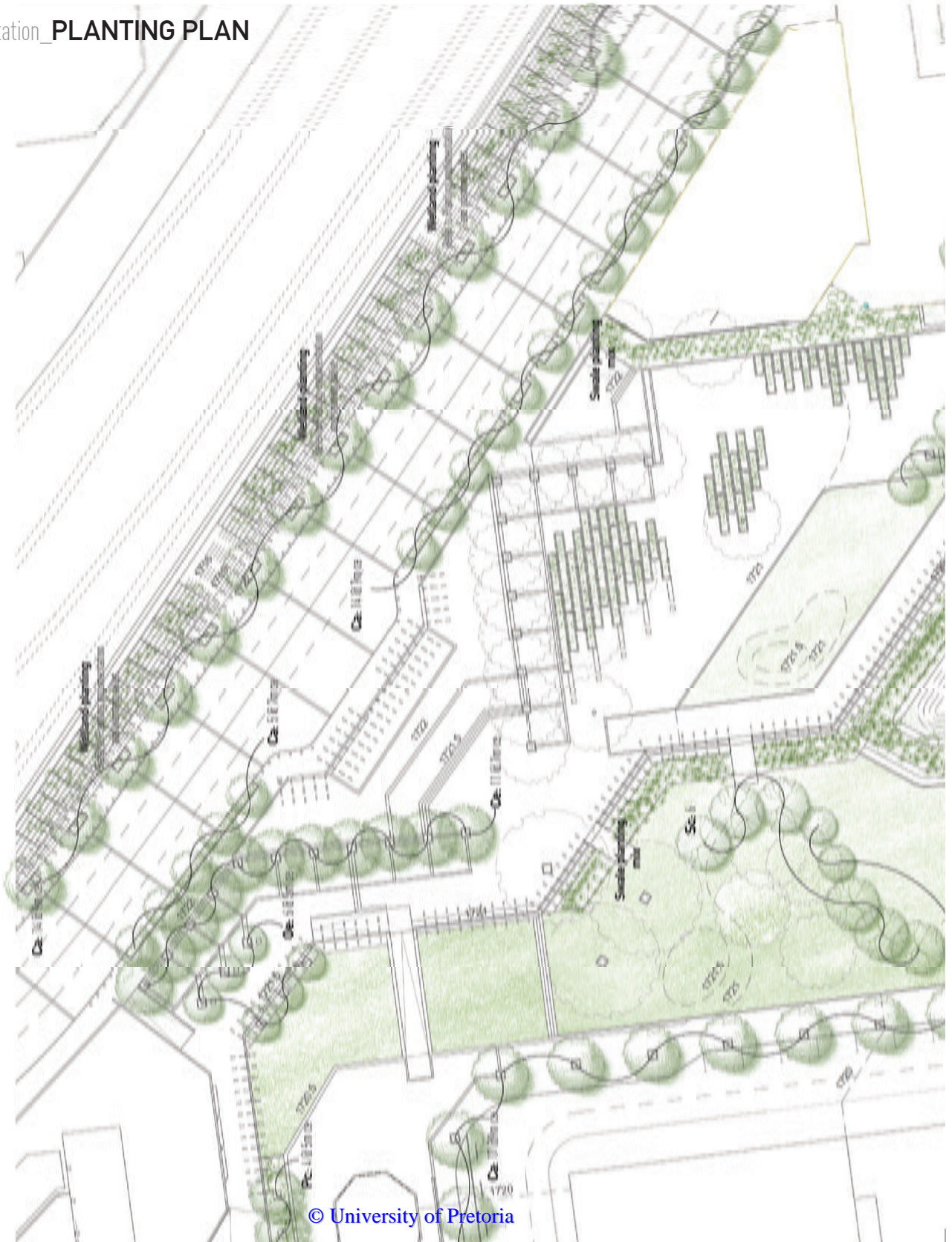
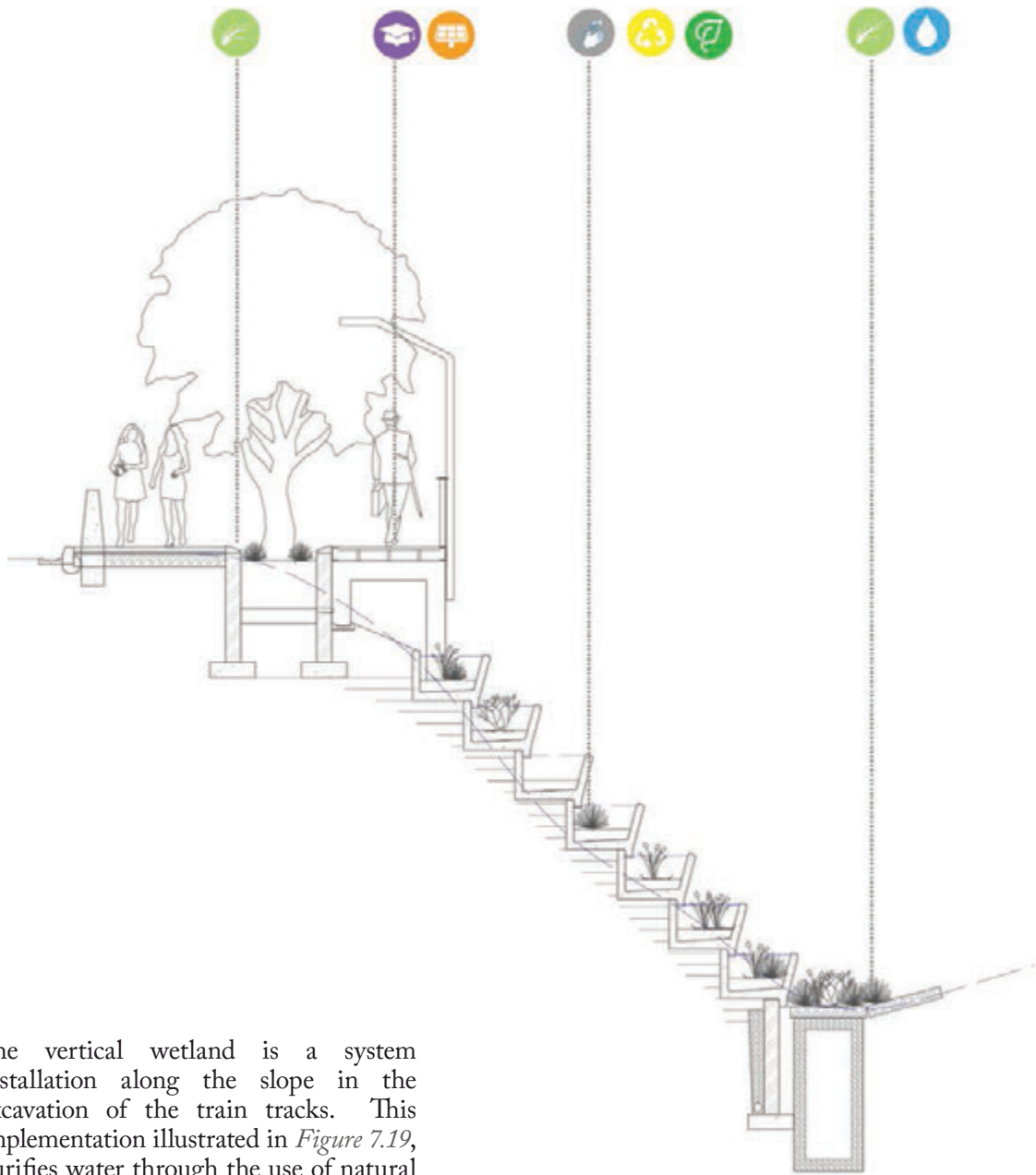




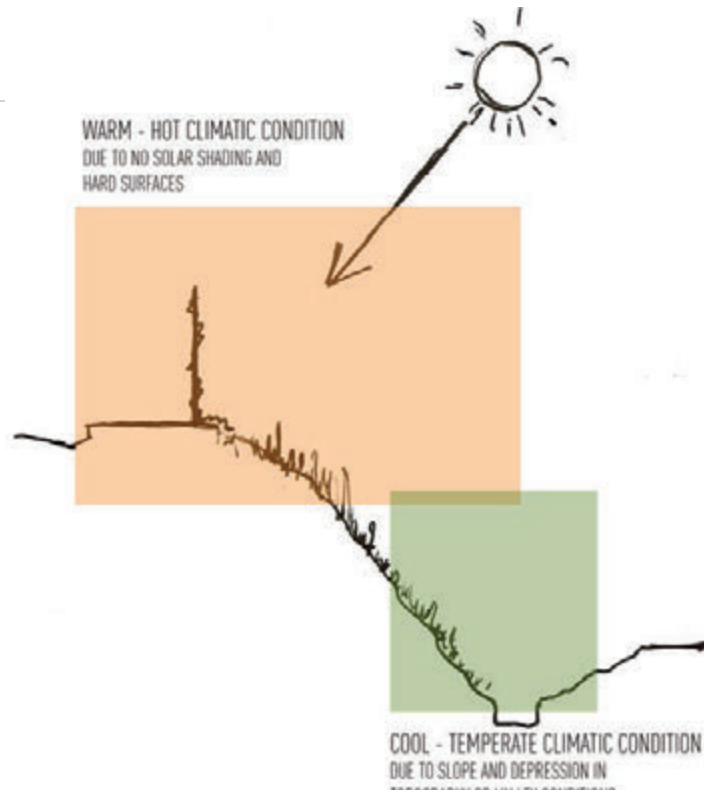
Figure 7.33. Water storage plan
227

vegetation_ **PLANTING IMPLEMENTATION - VERTICAL WETLAND AND RAINWATER GARDEN**



The vertical wetland is a system installation along the slope in the excavation of the train tracks. This implementation illustrated in *Figure 7.19*, purifies water through the use of natural filtration systems as housed with the wetland.

EXISTING CONDITION:



PROPOSED CONDITION

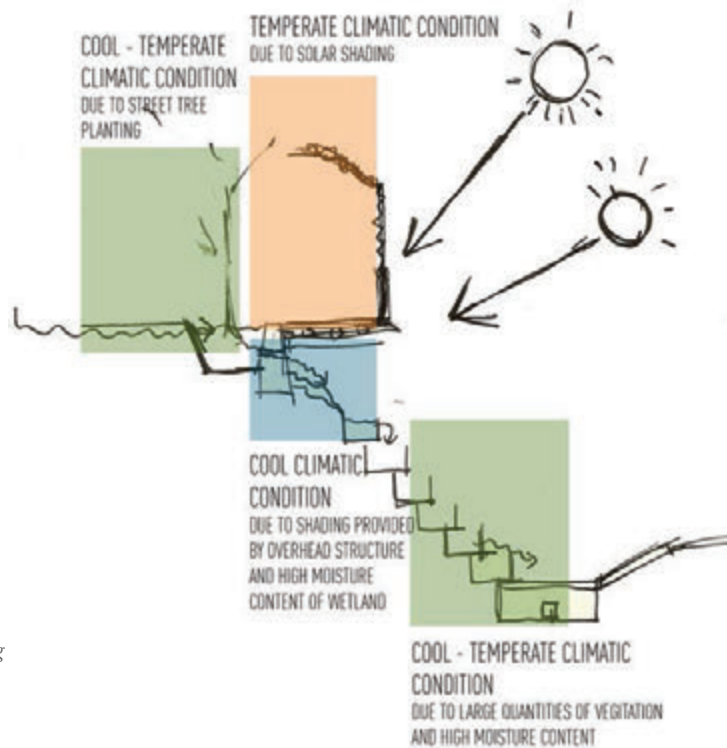


Figure 7.35. (top) Existing micro climatic conditions

Figure 7.36. (bottom) Proposed micro climatic conditions

vegetation_PLANTING IMPLEMENTATION - VERTICAL WETLAND AND RAINWATER GARDEN

RIPARIAN COMMUNITY

Riparian communities have great value to their surrounding environments, as the biodiversity within these communities is so high. They provide niches for various species and act as food source to many fauna and flora. Not only is the biodiversity aspect of great importance, but they also have great recreational value, as humans are drawn to water and tranquil, beautiful environments. The riparian community implemented in the design is illustrated in *Figure 7.22*.

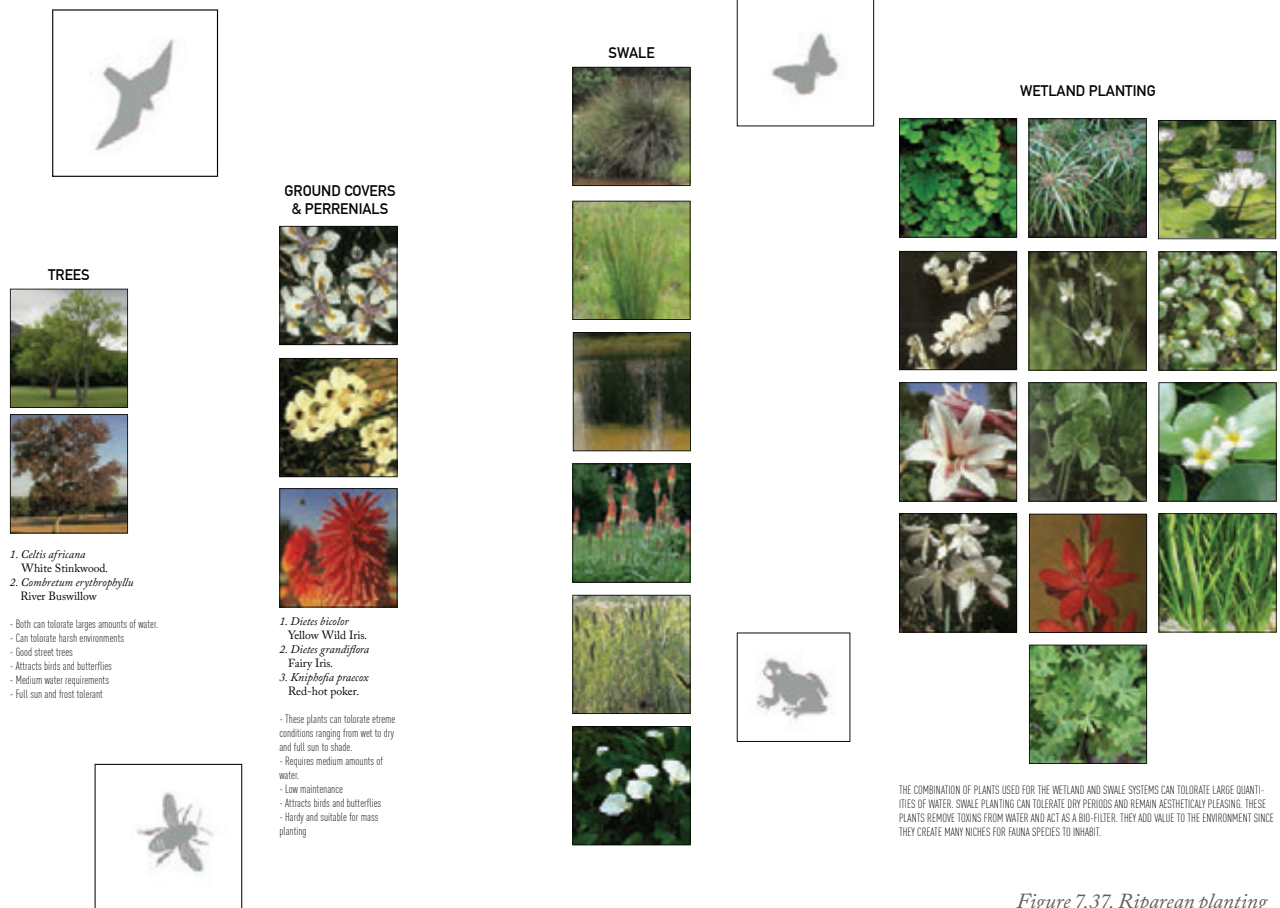


Figure 7.37. Riparian planting community

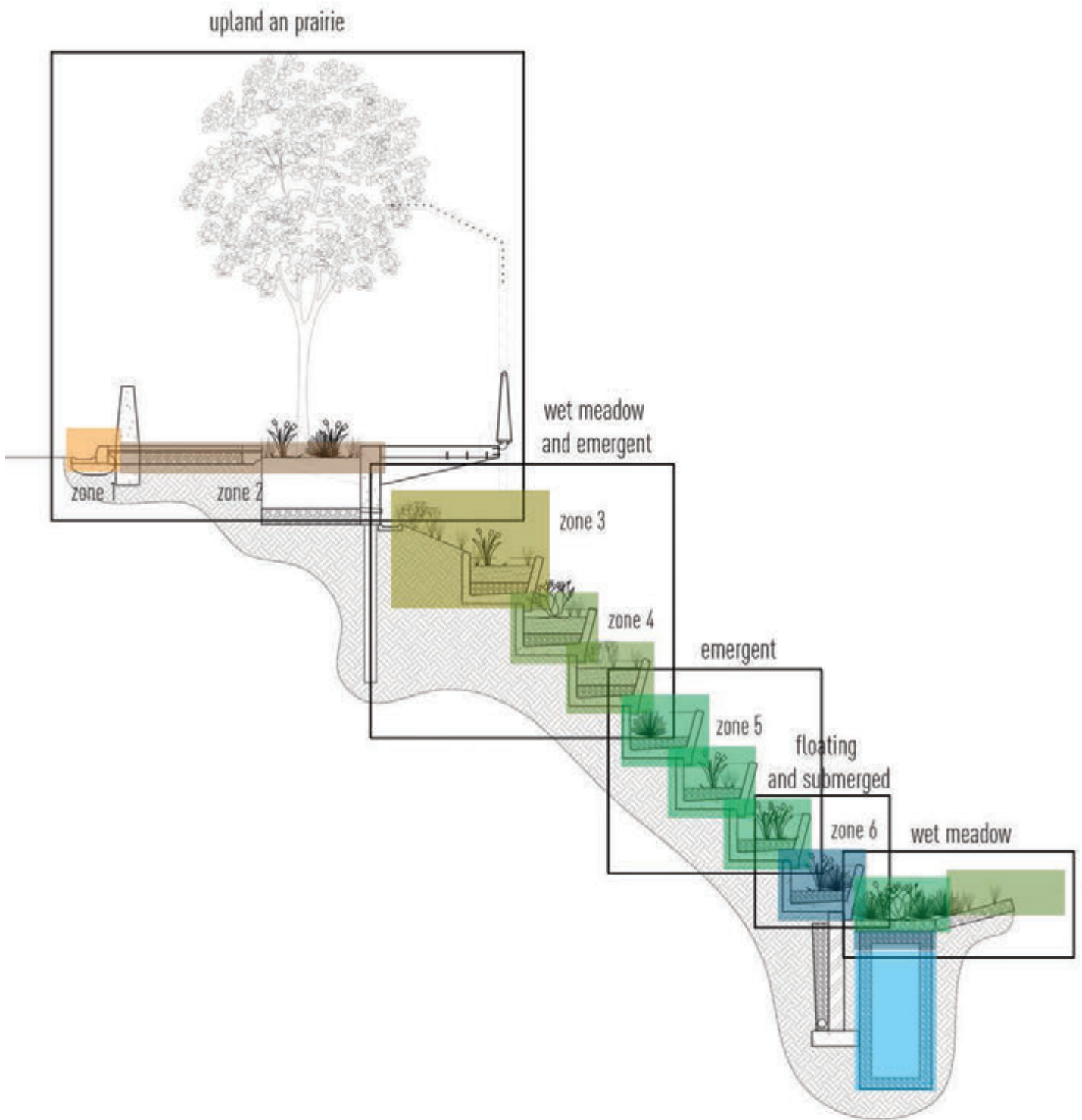
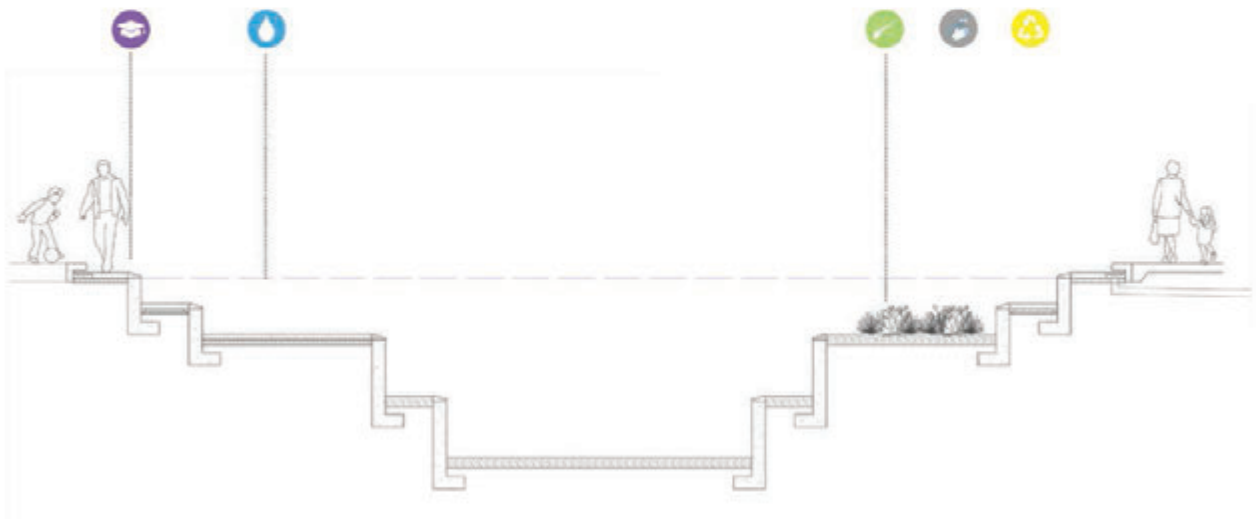


Figure 7.38. Vertical wetland water quality diagram

vegetation_ **PLANTING IMPLEMENTATION - RETENTION DAM AT PARK**

The retention facility at the park (*Figure 7.24*) is a large retention dam which is fed by a swale inlet and overflow from another wetland system. This implementation stores and purifies water through the use of natural filtration systems which are housed within the wetland. The planting community used in the retention dam is illustrated in *Figure 7.25*.



UPLAND AND PRAIRIE

TREES



GRASSES, GROUND COVERS, FERNS PERRENIALS AND HERBS



WET MEADOW



EMERGENT



FLOATING AND SUBMERGED



Figure 7.40. Retention dam
planting community

vegetation_ IRRIGATION STRATEGIES

The nature of the design - being a productive landscape - requires certain irrigation strategies.

In accordance with the water harvesting strategy, surface runoff is channelled to swales, rainwater gardens and planters. The landscape slate is moulded in such a way, that surface runoff can act as a passive irrigation system for the majority of the general vegetation on site.

Apart from passive irrigation, drip and furrow irrigation is a necessary implementation with regards to urban agriculture. These areas cannot sustain themselves merely through passive irrigation, as that will result in a poor yield.

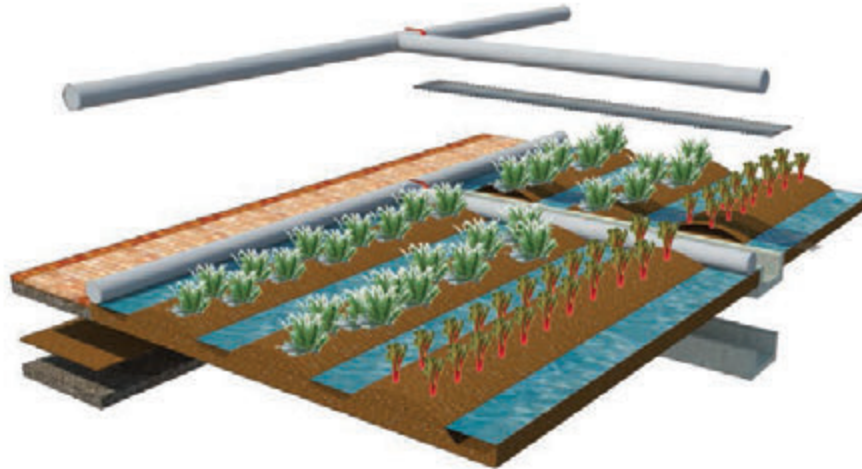
Furrow irrigation is implemented where large areas of agriculture is concerned, for instance on the platform roofs or in allotments along the tracks. (See *Figure 7.26*)

Drip irrigation is implemented in controlled smaller areas and where planter boxes is concerted. This system can be easily manage to irrigate each planter individually or extensive green roofs with irrigation schedules. (See *Figure 7.27*)

Both these systems, drip and furrow, can be illustrated on the opposite page.

In other areas spray irrigation is implemented - for instance large lawn areas in the park and the soccer kick about.

JEPPE STATION PLATFORM ROOFTOP GARDENS - FURROW IRRIGATION:



PLANTER AND EXTENSIVE GREEN ROOFS - DRIP IRRIGATION:

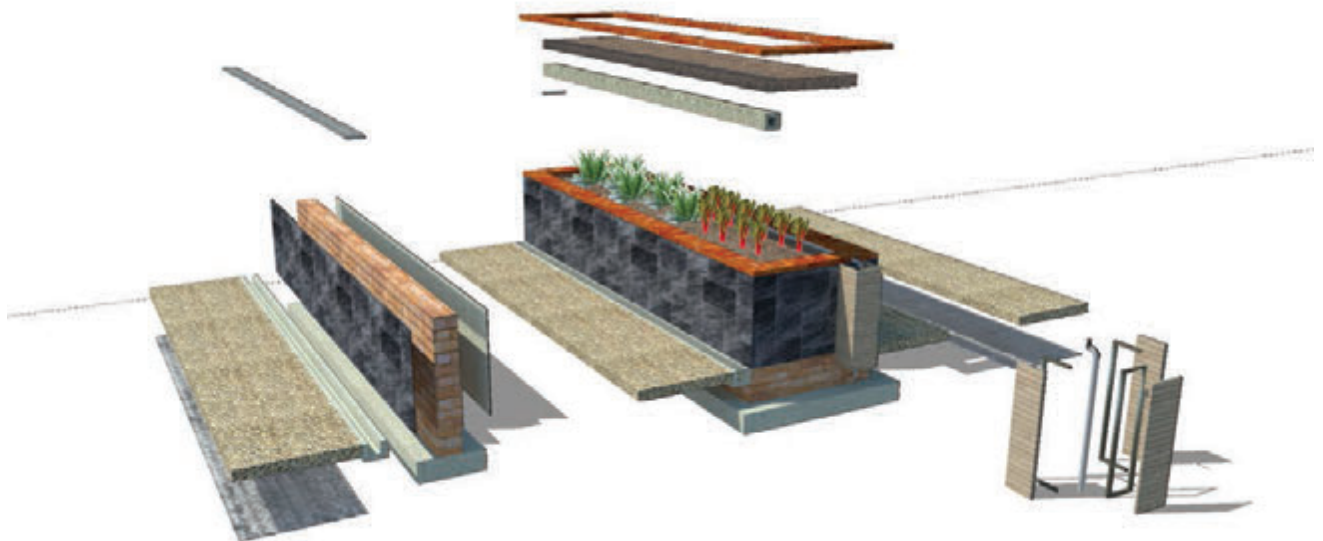


Figure 7.41. (top) Furrow irrigation system

Figure 7.42. (bottom) Drip irrigation system

7.5 alternative energy_ **SOLAR PUMPS AND LIGHTING INSTALLATIONS**

Transporting and circulating water requires a lot of energy. Using energy from the grid is not a sustainable solution with a fossil fuel poor future. Solar panels is a more sustainable and viable alternative.

Harvesting solar energy holds many benefits:

Solar pumps can transport water over great distances.

LED lights can be powered to illuminate the landscape development in Jeppe at night.

The power grid is alleviated.

Even though the initial cost of installing solar harvesting systems might be high, solar energy is free and renewable.

Solar energy does not cause pollution and can be used to heat water or used for cooking.

Solar cells require relatively low maintenance.

Solar energy harvesting systems are easy to install.

In Jeppe, this alternative energy source is well suited to serve the needs of the systems with which it is associated. (Refer to Appendix E).

chapter 7: **SUMMARY**

The material palette for the focus area is based upon the existing industrial nature of Jeppe West and is of a robust nature. This will ensure longevity and durability and also add value, by enhancing character and fostering identity.

Water harvesting and purification implementations play a vital role in the success of both architectural and landscape architectural programme. These structures or implementations enrich the urban environment of Jeppe, by converting issues associated with water management into resources.

Vegetation strategies and implementations enforce the idea of a productive landscape. The planting palette is extensive enough to act over a series of programmes and create biodiversity and pleasant micro climatic conditions within Jeppestown.

NOTE: Please refer to Appendix D for a sustainability analysis of the proposed landscape architectural intervention.

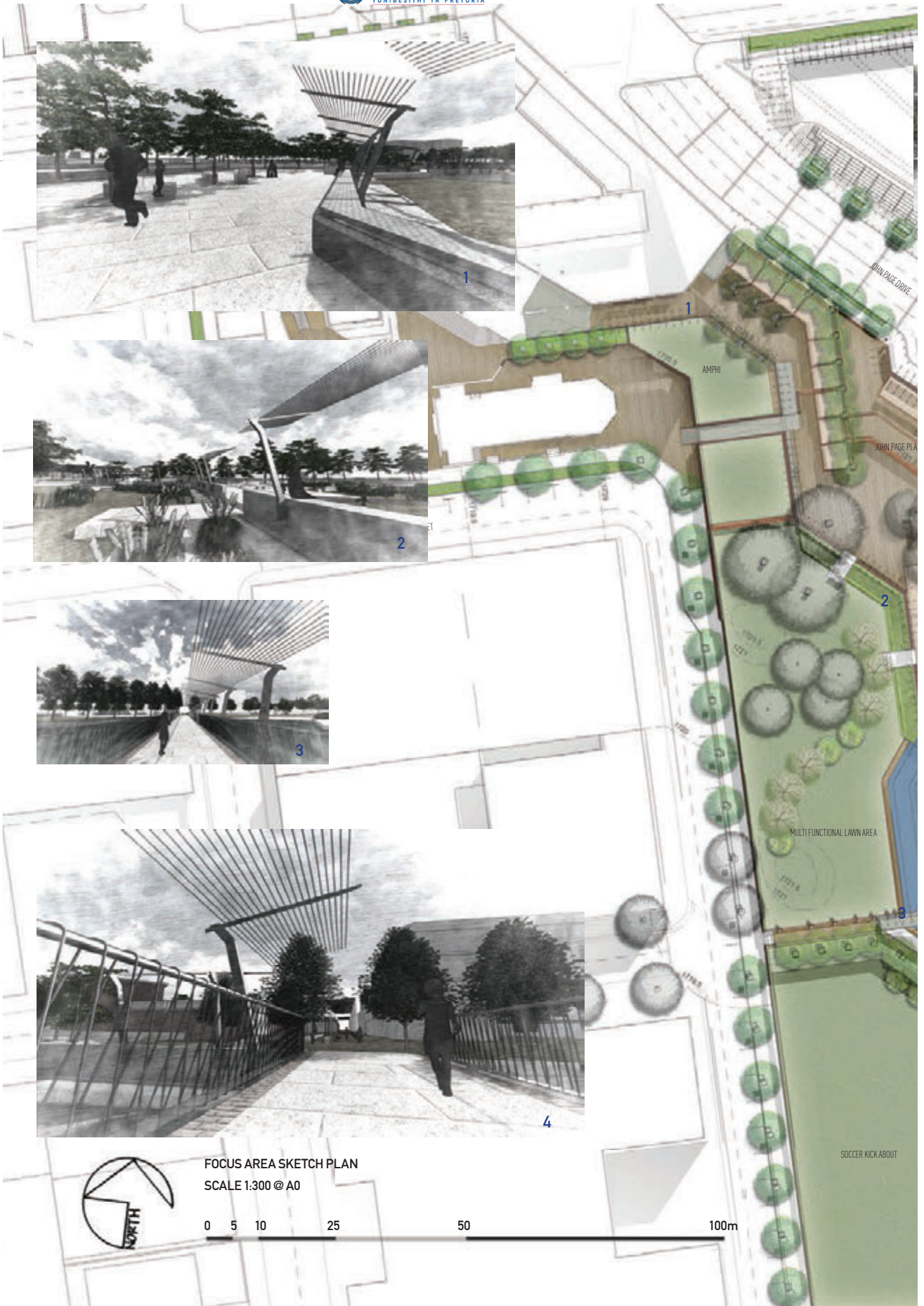
08

illustrating **MANIFESTATION**

Chapter 8 contains the design drawings for the focus area.

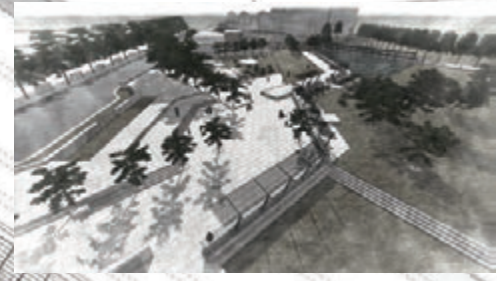
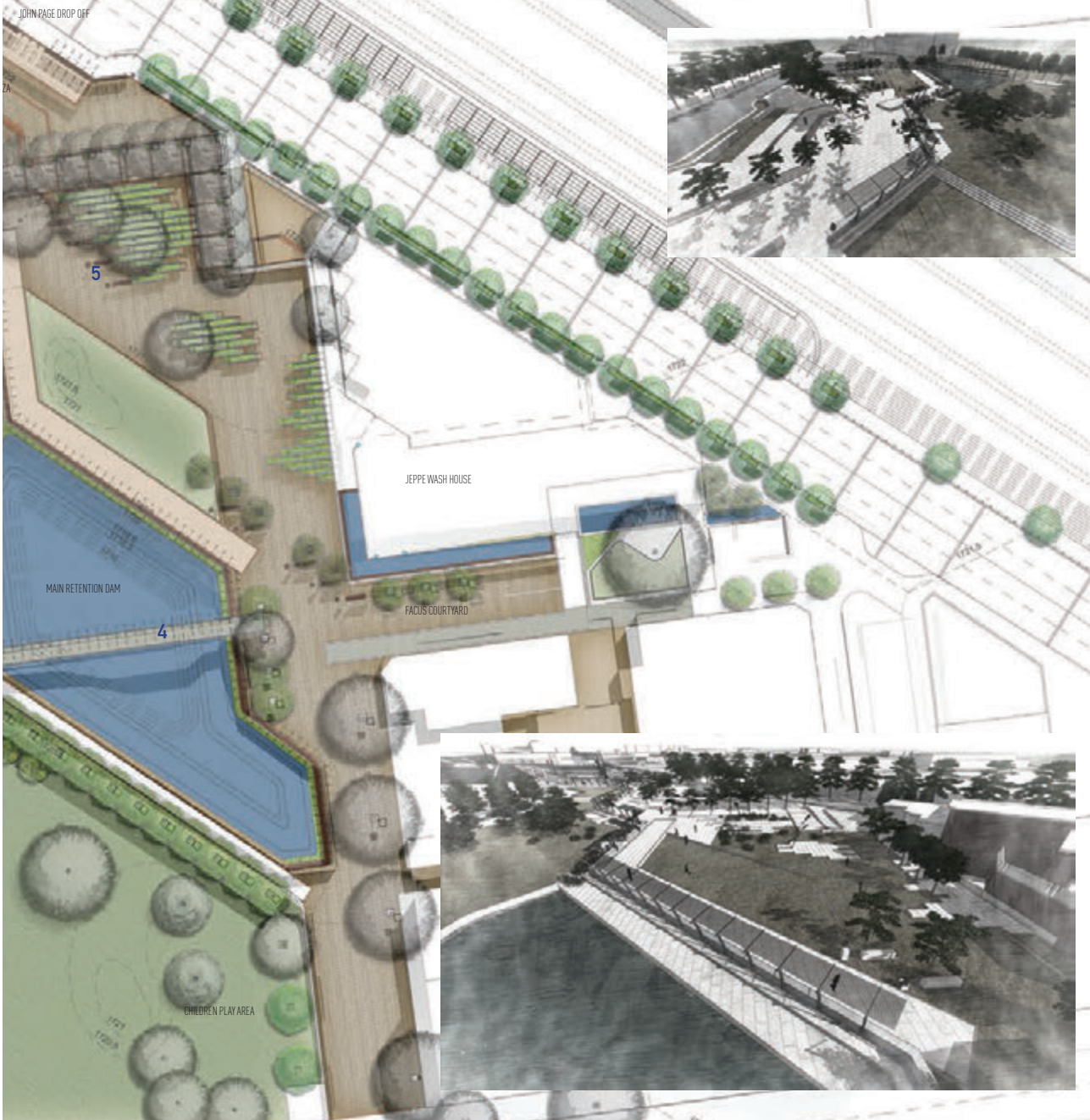
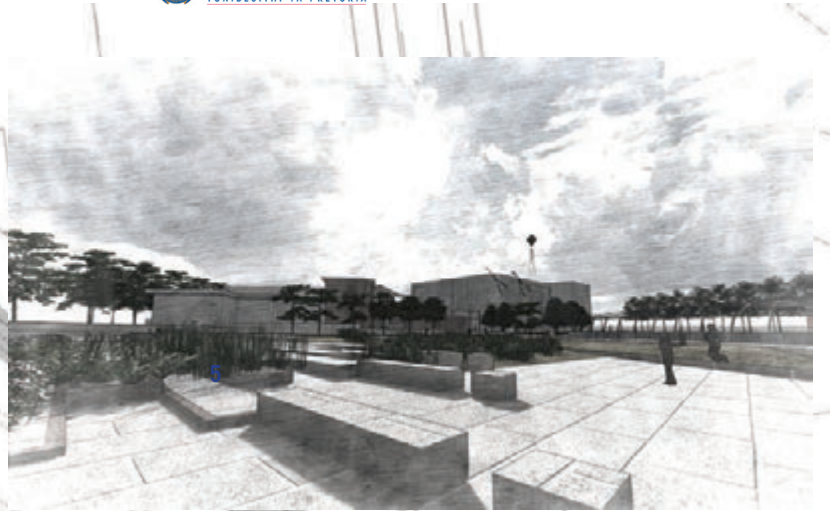
- 8.1 **sketch plan**
- 8.2 **focus area long sections**
- 8.3 **short sections**

8.1 SKETCH PLAN FOCUS AREA - PARK NODE

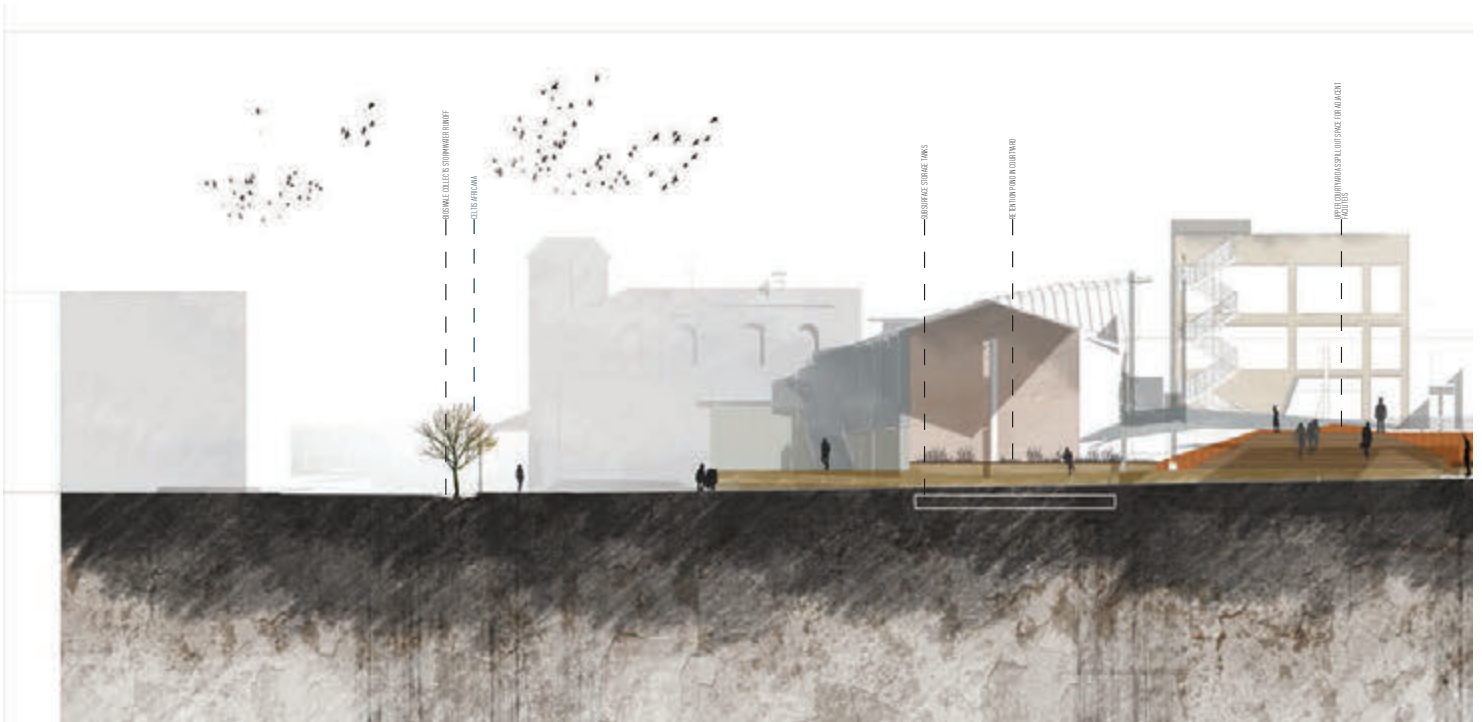


FOCUS AREA SKETCH PLAN
SCALE 1:300 @ A0

0 5 10 25 50 100m



8.2 FOCUS AREA LONG SECTIONS



SECTION A -A

SECTION THROUGH NORTHERN CORTYARD AT PARK





SECTION B - B

SECTION THROUGH PARK (NORTH-SOUTH)





SECTION 2 - 2

SECTION THROUGH AMPHI AND ENTRANCE TO PARK







SECTION 4 - 4

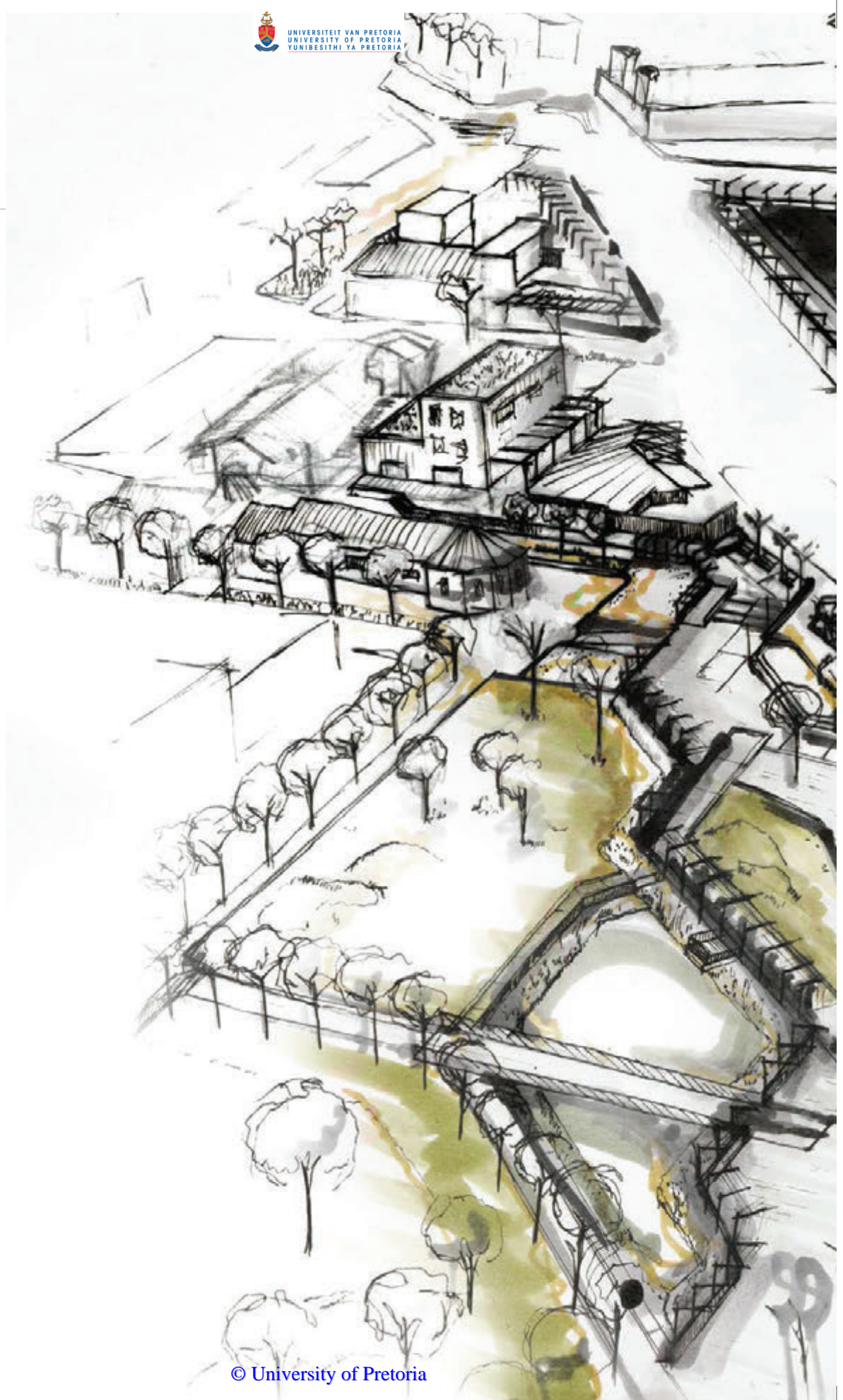
SECTION THROUGH TERRACE AND PLAZA AT PARK

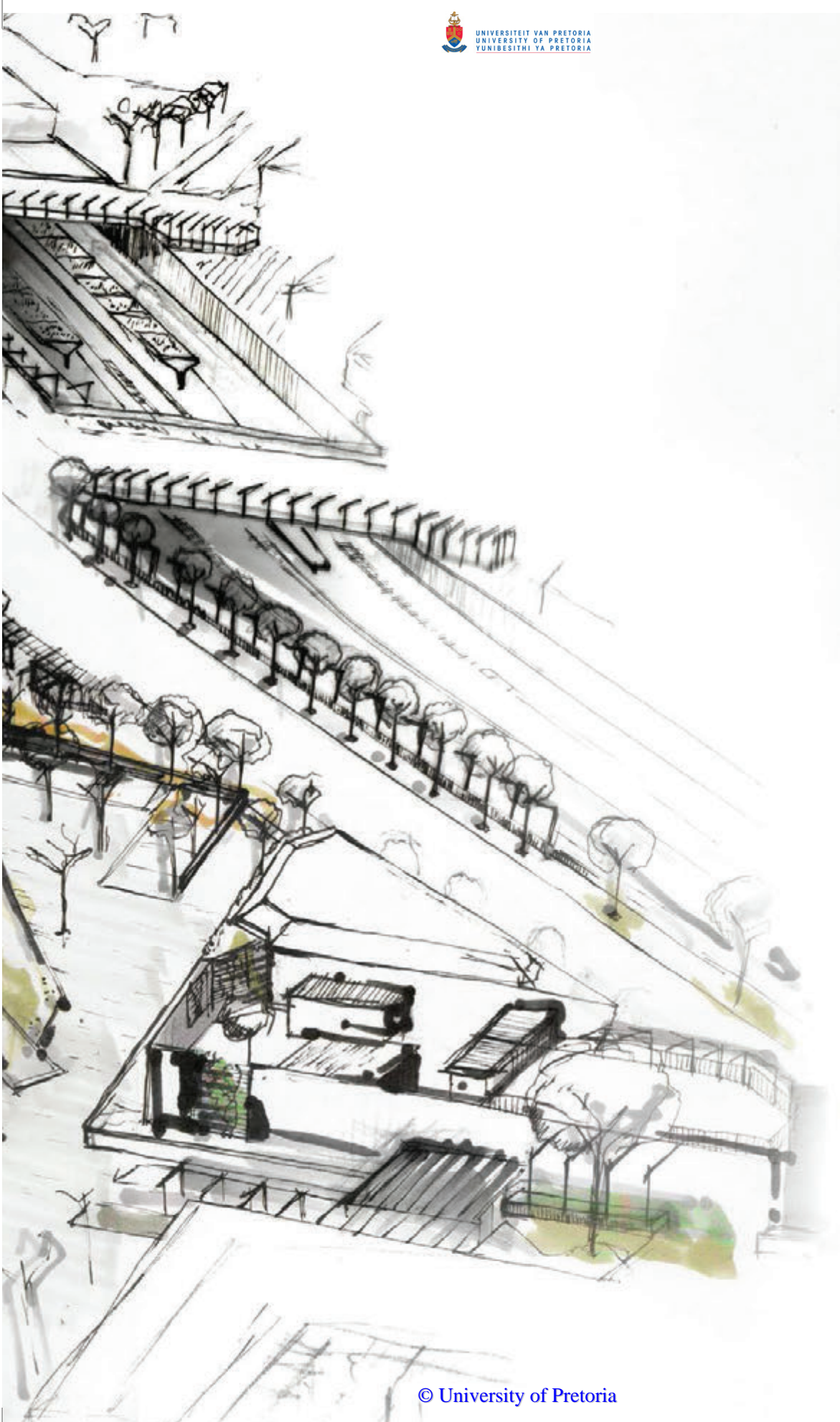


SECTION 6 - 6

SECTION THROUGH RETENTION DAM, SEATING WALL AND PROMENADE







09

drawing the **CURTAIN**

Chapter 9 contains the concluding remarks on this dissertation.

- 9.1 **conclusion**
- 9.2 **future prospects**

IN CONCLUSION

The landscape architectural intervention accomplishes its initial intent of creating a coherent, healthy network of public space within the urban environment.

The following needs to be emphasised and should be viewed as key findings and possible informants for future design endeavours of similar nature:

- Physical edges within the urban context can act as vessels for social activity, environmental system implementations and thresholds between public and private spaces.
- Ritual can define boundaries, as activity requires space. Outdoor public spaces should be designed to accommodate a combination of activities and multi-functional uses.
- The landscape is comprised of many components which should be viewed as a continual and interconnected entity, with the potential to act as a productive and regenerative tool within the urban environment.
- People and activities attract other people to space, therefore activities should be seen as interconnected events, simultaneously working together in a network which informs and orchestrates the way a public space functions.
- A neatly packaged landscape architectural intervention within the urban environment, ensures space for future adaptation and expansion.

The landscape architectural intervention goes beyond physical boundaries as it incorporates systems and infrastructural components, connects to existing frameworks and public transport networks and allows for future expansion into the urban fabric of Johannesburg. It can be concluded that the landscape architectural intervention achieves the its goal in evoking a spinal development, which unlike a precinct does not exist in isolation.

The use of lenses to view the urban environment aided in the mapping of key aspects of Jeppestown, which is housed

Paper is a very forgiving medium - topography of site however, is not.
Yet, the terrain is embedded with immense latent potential seeping with
clues- silent cues to the designer of what it wants to become.
- Author 2014

within the rituals and activities occurring in the urban environment. It is important to note that these key aspects should be viewed as opportunities and informants, rather than problems in need of a solution. It is in these aspects (rituals, activities, re-appropriation of space and mixture of materials) that a layered and unique character arises. This character is maintained and amplified through the careful placement of landscape components which leans themselves to re-appropriation of space, because of their robust and simple nature.

The latent potential as embed within the landscape slate is unlocked and communicated through a series of water harvesting and purification systems and structures, which is aided by planting implementations. These systems and implementations add value to the community in Jeppestown, as it solves issues related to the poor infrastructure of the post-industrial landscape of Jeppestown - thus the aim of applying sustainable design initiatives and principles as part of the public realm was achieved.

From this dissertation, which deals with real world issues related to urban public life, it is evident that landscape architecture has the potential to transform a degraded environment into a thriving social and economic hub for revival, while serving the needs of the current inhabitants, by fostering identity, providing public amenities and allowing for multi-functional use of public spaces.

The landscape is an omnipresent facet of human life. It acts as an organism with the power to enrich, enhance and revive often lost and forgotten public spaces within the urban environment. It is essential to preserve, maintain and utilize public space within the continually densifying urban centres of South Africa.









APPENDIX

SUPPLEMENTRY **INFORMATION**

The appendix contains supplementary information with regards to the dissertation.

climatic data
biomes and distribution
water calculations
sustainability analysis tools

APPENDIX A - TABLES AND CLIMATIC INFO

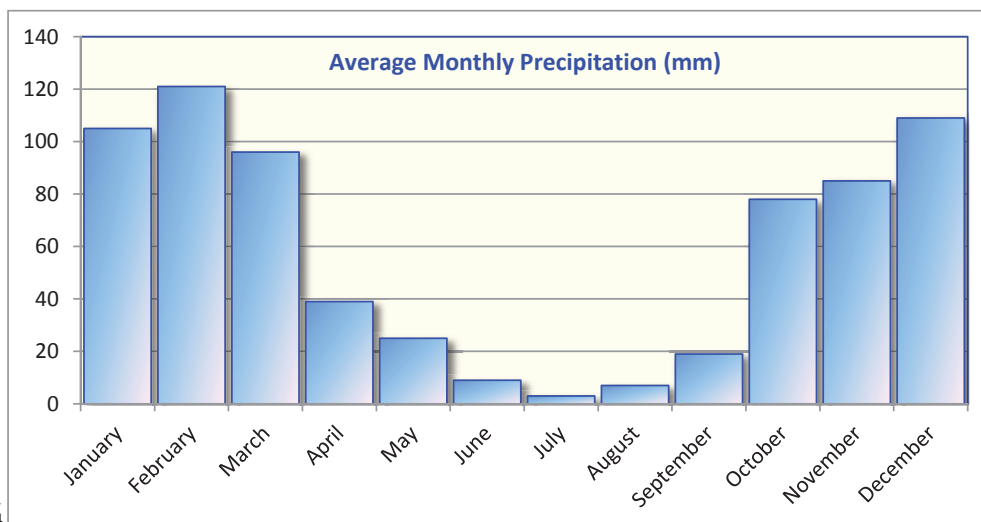
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POSITION: 25°44'S, 28°11'E

HEIGHT: 1330M

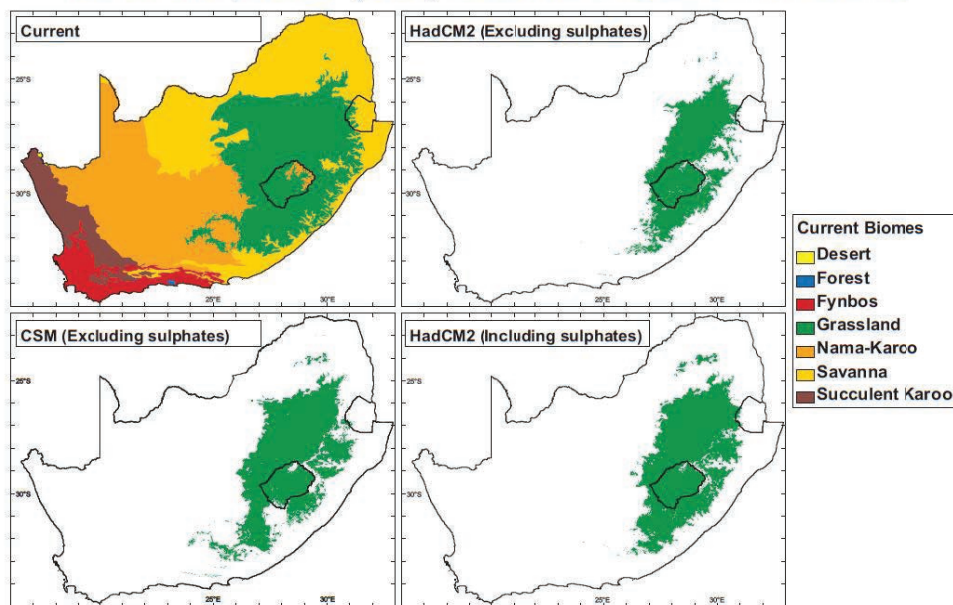
PERIOD: 1961-1990

	MONTH	Temperature			Precipitation			
		Highest Recorded	Average Daily maximum	Average Daily Minimum	Lowest Recorded	Average Monthly (mm)	Average number of Days \geq 1mm	Highest 24hr rainfall (mm)
1.	January	36	29	18	8	105	14	160
2.	February	36	28	17	11	121	11	95
3.	March	35	27	16	6	96	10	84
4.	April	33	24	12	3	39	7	72
5.	May	29	22	8	-1	25	3	40
6.	June	25	19	5	-6	9	1	32
7.	July	26	20	5	-4	3	1	18
8.	August	31	22	8	-1	7	2	15
9.	September	34	26	12	2	19	3	43
10.	October	36	27	14	4	78	9	108
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	YEAR	36	25	12	-6	696	87	160

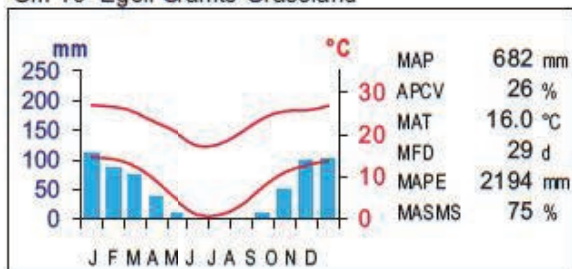


APPENDIX B - BIOMES AND DISTRIBUTION

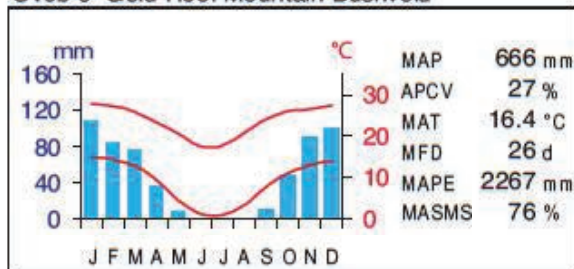
Current and potential (2050) distribution of South African biomes



Gm 10 Egoli Granite Grassland



SVcb 9 Gold Reef Mountain Bushveld



APPENDIX C - WATER CALCULATIONS

CATCHMENT BASIN 1

YIELD

Yield (m³) = P x A x C (Where P=precipitation (m), A=area (m²), and C=run-off coefficient)

Area of Catchment: (Per surface)	Area (m ²)	Run-off Coefficient
Roofing	3 000,00 m ²	0,9
Paving	19 371,00 m ²	0,8
Veldgrass	625,00 m ²	0,4
Lawn	8 900,00 m ²	0,4
Planting	550,00 m ²	0,3
Gravel		0,7
Grey water	29 000,00 m ²	1
TOTAL:	61 446,00 m²	0,83

	MONTH	Precipitation Average Monthly (mm)	Area	Run-off Coefficient	Yield P(m) x A(m ²) x C
1.	January	105 mm	61 446 m ²	0,83	5 373 m ³
2.	February	121 mm	61 446 m ²	0,83	6 192 m ³
3.	March	96 mm	61 446 m ²	0,83	4 912 m ³
4.	April	39 mm	61 446 m ²	0,83	1 996 m ³
5.	May	25 mm	61 446 m ²	0,83	1 279 m ³
6.	June	9 mm	61 446 m ²	0,83	461 m ³
7.	July	3 mm	61 446 m ²	0,83	154 m ³
8.	August	7 mm	61 446 m ²	0,83	358 m ³
9.	September	19 mm	61 446 m ²	0,83	972 m ³
10.	October	78 mm	61 446 m ²	0,83	3 991 m ³
11.	November	85 mm	61 446 m ²	0,83	4 350 m ³
12.	December	109 mm	61 446 m ²	0,83	5 578 m ³
	YEAR	696 mm	61 446 m²	0,83	35 616 m³

DEMAND

IRRIGATION DEMAND

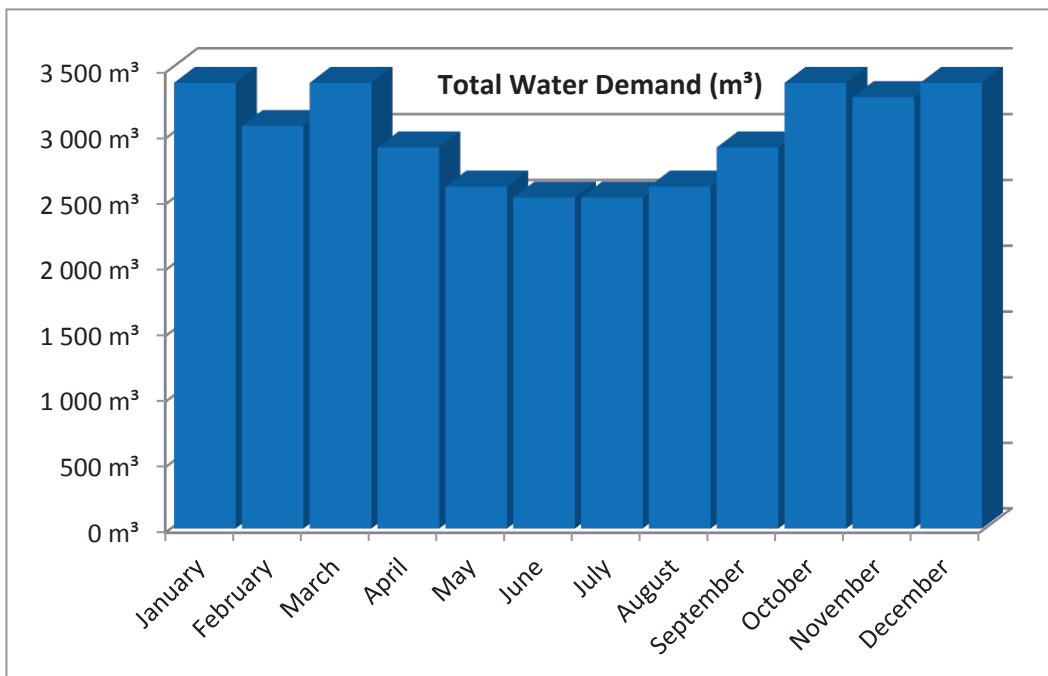
	Planting Area (m ²)	Irrigation Depth per week (m)	Irrigation Depth per month (m)	IRRIGATION DEMAND (m ³)
January	8 900 m ²	0,040 m	0,177 m	1 577 m ³
February	8 900 m ²	0,040 m	0,160 m	1 424 m ³
March	8 900 m ²	0,040 m	0,177 m	1 577 m ³
April	8 900 m ²	0,030 m	0,129 m	1 144 m ³
May	8 900 m ²	0,020 m	0,089 m	788 m ³
June	8 900 m ²	0,020 m	0,086 m	763 m ³
July	8 900 m ²	0,020 m	0,086 m	763 m ³
August	8 900 m ²	0,020 m	0,089 m	788 m ³
September	8 900 m ²	0,030 m	0,129 m	1 144 m ³
October	8 900 m ²	0,040 m	0,177 m	1 577 m ³
November	8 900 m ²	0,040 m	0,171 m	1 526 m ³
December	8 900 m ²	0,040 m	0,177 m	1 577 m ³
YEAR	8 900 m² (Average)	0,032 m (Average)	1,646 m (Total)	14 647 m³ (Total)

DOMESTIC DEMAND

	Number of Individuals	Water / capita / day (Litres)	Total Water / month (Liters)	DOMESTIC DEMAND (m ³)
January	1	58 545 l	1814 895 l	1 815 m ³
February	1	58 545 l	1639 260 l	1 639 m ³
March	1	58 545 l	1814 895 l	1 815 m ³
April	1	58 545 l	1756 350 l	1 756 m ³
May	1	58 545 l	1814 895 l	1 815 m ³
June	1	58 545 l	1756 350 l	1 756 m ³
July	1	58 545 l	1756 350 l	1 756 m ³
August	1	58 545 l	1814 895 l	1 815 m ³
September	1	58 545 l	1756 350 l	1 756 m ³
October	1	58 545 l	1814 895 l	1 815 m ³
November	1	58 545 l	1756 350 l	1 756 m ³
December	1	58 545 l	1814 895 l	1 815 m ³
YEAR	1 (Average)	58 545 l (Average)	1775 865 l (Total)	21 310 m³ (Total)

TOTAL DEMAND

	IRRIGATION DEMAND (m ³)	DOMESTIC DEMAND (m ³)	TOTAL WATER DEMAND
January	1 577 m ³	1 815 m ³	3 391 m ³
February	1 424 m ³	1 639 m ³	3 063 m ³
March	1 577 m ³	1 815 m ³	3 391 m ³
April	1 144 m ³	1 756 m ³	2 901 m ³
May	788 m ³	1 815 m ³	2 603 m ³
June	763 m ³	1 756 m ³	2 519 m ³
July	763 m ³	1 756 m ³	2 519 m ³
August	788 m ³	1 815 m ³	2 603 m ³
September	1 144 m ³	1 756 m ³	2 901 m ³
October	1 577 m ³	1 815 m ³	3 391 m ³
November	1 526 m ³	1 756 m ³	3 282 m ³
December	1 577 m ³	1 815 m ³	3 391 m ³
YEAR	14 647 m³ (Total)	21 310 m³ (Total)	35 957 m³ (TOTAL)



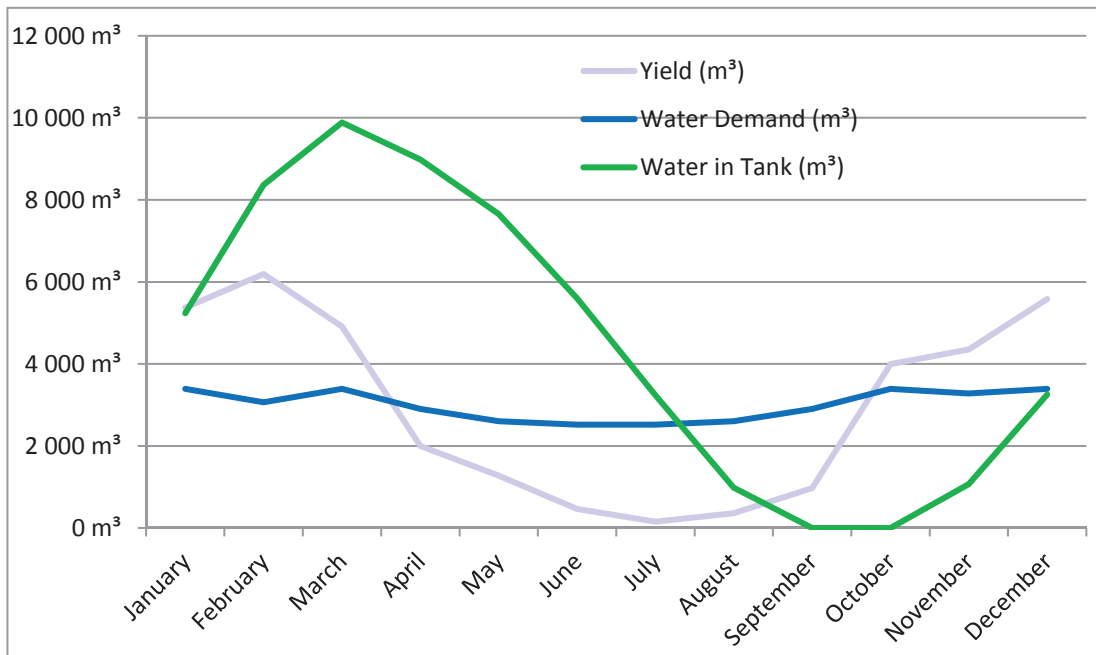
BUDGET

	YIELD from onsite runoff (m ³)	DEMAND total onsite water demand (m ³)	Monthly Balance	Water in Tank/Reservoir (m ³)
January	5 373 m ³	3 391 m ³	1 982 m ³	5 235 m ³
February	6 192 m ³	3 063 m ³	3 129 m ³	8 364 m ³
March	4 912 m ³	3 391 m ³	1 521 m ³	9 885 m ³
April	1 996 m ³	2 901 m ³	-9 05 m ³	8 980 m ³
May	1 279 m ³	2 603 m ³	-13 24 m ³	7 656 m ³
June	461 m ³	2 519 m ³	-20 59 m ³	5 597 m ³
July	154 m ³	2 519 m ³	-23 66 m ³	3 232 m ³
August	358 m ³	2 603 m ³	-22 45 m ³	987 m ³
September	972 m ³	2 901 m ³	-19 28 m ³	0 m ³
October	3 991 m ³	3 391 m ³	600 m ³	0 m ³
November	4 350 m ³	3 282 m ³	1 068 m ³	1 068 m ³
December	5 578 m ³	3 391 m ³	2 186 m ³	3 254 m ³
YEAR	71 573 m³ (Total)	35 957 m³ (TOTAL)		

Greatest volume of water in tank/reservoir at any time is the minimum capacity of the tank **9 885 m³**

Safety Factor: 1,5 Final Tank/Reservoir Size: **14 827 m³**

Proprietary Tank Volume: 2090 000 l
(e.g. Jojo Tanks) 2 090 m³ Number of Tanks needed **8**



APPENDIX C - WATER CALCULATIONS

CATCHMENT BASIN 2

YIELD

$$\text{Yield (m}^3\text{)} = P \times A \times C \quad (\text{Where } P=\text{precipitation (m), } A=\text{area (m}^2\text{), and } C=\text{run-off coefficient)}$$

Area of Catchment: (Per surface)	Area (m ²)	Run-off Coefficient
Roofing	3 992,00 m ²	0,9
Paving	3 308,00 m ²	0,8
Veldgrass		0,4
Lawn	441,00 m ²	0,4
Planting	770,00 m ²	0,3
Gravel		0,7
Grey water	55,00 m ²	1
TOTAL:	8 566,00 m²	0,78

	MONTH	Precipitation Average Monthly (mm)	Area	Run-off Coefficient	Yield P(m) x A(m ²) x C
1.	January	105 mm	8 566 m ²	0,78	704 m ³
2.	February	121 mm	8 566 m ²	0,78	811 m ³
3.	March	96 mm	8 566 m ²	0,78	643 m ³
4.	April	39 mm	8 566 m ²	0,78	261 m ³
5.	May	25 mm	8 566 m ²	0,78	168 m ³
6.	June	9 mm	8 566 m ²	0,78	60 m ³
7.	July	3 mm	8 566 m ²	0,78	20 m ³
8.	August	7 mm	8 566 m ²	0,78	47 m ³
9.	September	19 mm	8 566 m ²	0,78	127 m ³
10.	October	78 mm	8 566 m ²	0,78	523 m ³
11.	November	85 mm	8 566 m ²	0,78	570 m ³
12.	December	109 mm	8 566 m ²	0,78	730 m ³
	YEAR	696 mm	8 566 m²	0,78	4 664 m³

DEMAND

IRRIGATION DEMAND

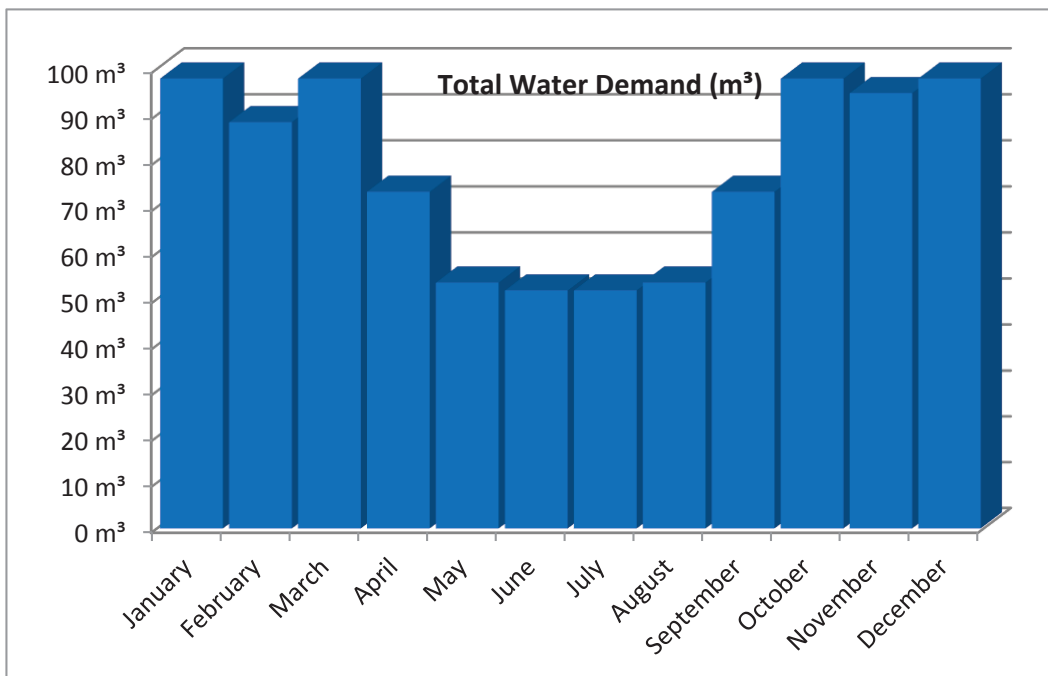
	Planting Area (m ²)	Irrigation Depth per week (m)	Irrigation Depth per month (m)	IRRIGATION DEMAND (m ³)
January	500 m ²	0,040 m	0,177 m	89 m ³
February	500 m ²	0,040 m	0,160 m	80 m ³
March	500 m ²	0,040 m	0,177 m	89 m ³
April	500 m ²	0,030 m	0,129 m	64 m ³
May	500 m ²	0,020 m	0,089 m	44 m ³
June	500 m ²	0,020 m	0,086 m	43 m ³
July	500 m ²	0,020 m	0,086 m	43 m ³
August	500 m ²	0,020 m	0,089 m	44 m ³
September	500 m ²	0,030 m	0,129 m	64 m ³
October	500 m ²	0,040 m	0,177 m	89 m ³
November	500 m ²	0,040 m	0,171 m	86 m ³
December	500 m ²	0,040 m	0,177 m	89 m ³
YEAR	500 m² (Average)	0,032 m (Average)	1,646 m (Total)	823 m³ (Total)

DOMESTIC DEMAND

	Number of Individuals	Water / capita / day (Litres)	Total Water / month (Liters)	DOMESTIC DEMAND (m ³)
January	20	15 l	9 300 l	9 m ³
February	20	15 l	8 400 l	8 m ³
March	20	15 l	9 300 l	9 m ³
April	20	15 l	9 000 l	9 m ³
May	20	15 l	9 300 l	9 m ³
June	20	15 l	9 000 l	9 m ³
July	20	15 l	9 000 l	9 m ³
August	20	15 l	9 300 l	9 m ³
September	20	15 l	9 000 l	9 m ³
October	20	15 l	9 300 l	9 m ³
November	20	15 l	9 000 l	9 m ³
December	20	15 l	9 300 l	9 m ³
YEAR	20 (Average)	15 l (Average)	9 100 l (Total)	109 m³ (Total)

TOTAL DEMAND

	IRRIGATION DEMAND (m ³)	DOMESTIC DEMAND (m ³)	TOTAL WATER DEMAND
January	89 m ³	9 m ³	98 m ³
February	80 m ³	8 m ³	88 m ³
March	89 m ³	9 m ³	98 m ³
April	64 m ³	9 m ³	73 m ³
May	44 m ³	9 m ³	54 m ³
June	43 m ³	9 m ³	52 m ³
July	43 m ³	9 m ³	52 m ³
August	44 m ³	9 m ³	54 m ³
September	64 m ³	9 m ³	73 m ³
October	89 m ³	9 m ³	98 m ³
November	86 m ³	9 m ³	95 m ³
December	89 m ³	9 m ³	98 m ³
YEAR	823 m³ (Total)	109 m³ (Total)	932 m³ (TOTAL)



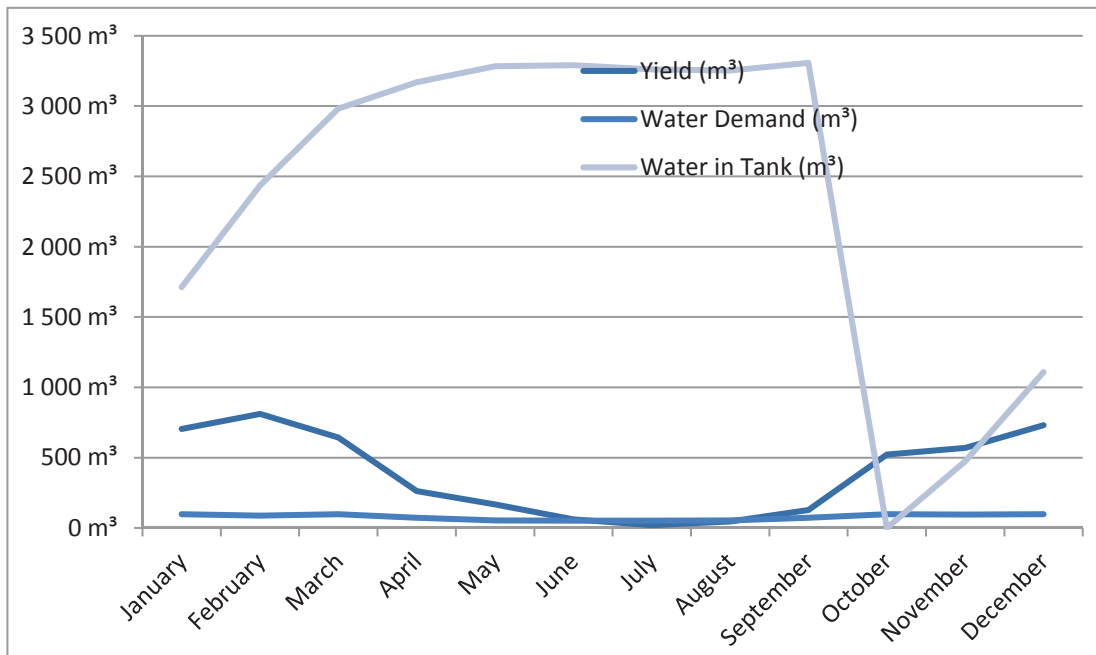
BUDGET

	YIELD from onsite runoff (m ³)	DEMAND total onsite water demand (m ³)	Monthly Balance	Water in Tank/Reservoir (m ³)
January	704 m ³	98 m ³	606 m ³	1 713 m ³
February	811 m ³	88 m ³	722 m ³	2 436 m ³
March	643 m ³	98 m ³	545 m ³	2 981 m ³
April	261 m ³	73 m ³	188 m ³	3 169 m ³
May	168 m ³	54 m ³	114 m ³	3 283 m ³
June	60 m ³	52 m ³	8 m ³	3 292 m ³
July	20 m ³	52 m ³	- 32 m ³	3 260 m ³
August	47 m ³	54 m ³	- 7 m ³	3 253 m ³
September	127 m ³	73 m ³	54 m ³	3 307 m ³
October	523 m ³	98 m ³	425 m ³	0 m ³
November	570 m ³	95 m ³	475 m ³	475 m ³
December	730 m ³	98 m ³	633 m ³	1 108 m ³
YEAR	5 596 m³ (Total)	932 m³ (TOTAL)		

Greatest volume of water in tank/reservoir at any time is the minimum capacity of the tank **3 307 m³**

Safety Factor: 1,8 Final Tank/Reservoir Size: **5 953 m³**

Proprietary Tank Volume: 10 000 l
(e.g. Jojo Tanks) 10 m³ Number of Tanks needed **596**



APPENDIX C - WATER CALCULATIONS

CATCHMENT BASIN 3 & 4

YIELD

$$\text{Yield (m}^3\text{)} = P \times A \times C \quad (\text{Where } P=\text{precipitation (m), } A=\text{area (m}^2\text{), and } C=\text{run-off coefficient)}$$

Area of Catchment: (Per surface)	Area (m ²)	Run-off Coefficient
Roofing	1 407,00 m ²	0,9
Paving	12 172,00 m ²	0,8
Veldgrass	0,00 m ²	0,4
Lawn	2 264,00 m ²	0,4
Planting	6 697,00 m ²	0,3
Gravel		0,7
Grey water	1 200,00 m ²	1
TOTAL:	23 740,00 m²	0,64

	MONTH	Precipitation Average Monthly (mm)	Area	Run-off Coefficient	Yield P(m) x A(m ²) x C
1.	January	105 mm	23 740 m ²	0,64	1 587 m ³
2.	February	121 mm	23 740 m ²	0,64	1 829 m ³
3.	March	96 mm	23 740 m ²	0,64	1 451 m ³
4.	April	39 mm	23 740 m ²	0,64	590 m ³
5.	May	25 mm	23 740 m ²	0,64	378 m ³
6.	June	9 mm	23 740 m ²	0,64	136 m ³
7.	July	3 mm	23 740 m ²	0,64	45 m ³
8.	August	7 mm	23 740 m ²	0,64	106 m ³
9.	September	19 mm	23 740 m ²	0,64	287 m ³
10.	October	78 mm	23 740 m ²	0,64	1 179 m ³
11.	November	85 mm	23 740 m ²	0,64	1 285 m ³
12.	December	109 mm	23 740 m ²	0,64	1 648 m ³
	YEAR	696 mm	23 740 m²	0,64	10 523 m³

DEMAND

IRRIGATION DEMAND

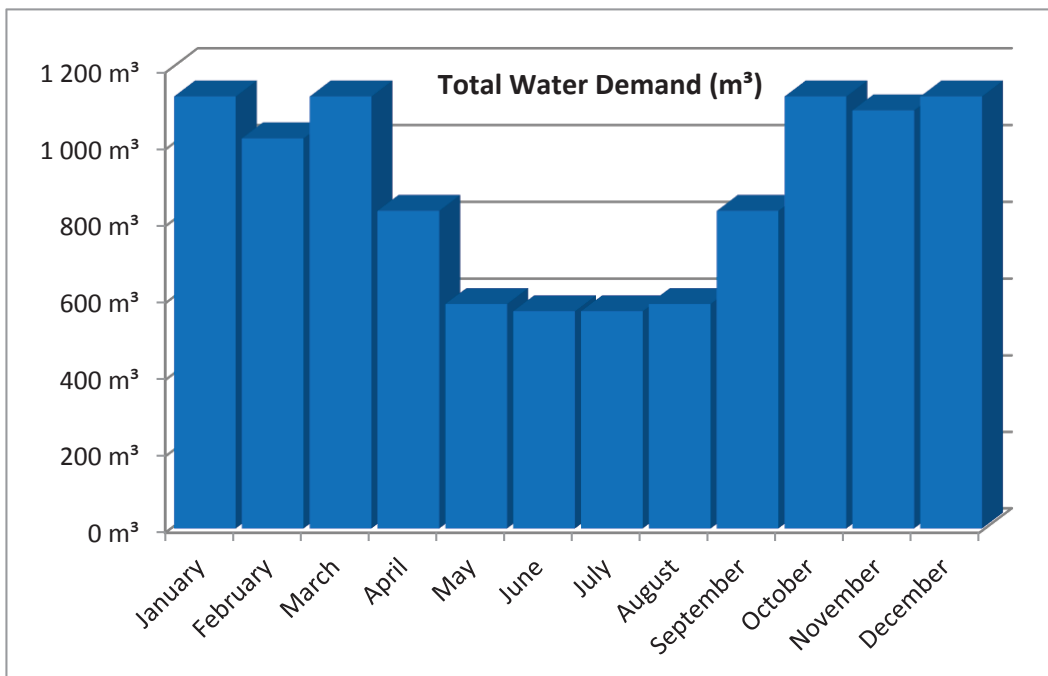
	Planting Area (m ²)	Irrigation Depth per week (m)	Irrigation Depth per month (m)	IRRIGATION DEMAND (m ³)
January	6 100 m ²	0,040 m	0,177 m	1 081 m ³
February	6 100 m ²	0,040 m	0,160 m	976 m ³
March	6 100 m ²	0,040 m	0,177 m	1 081 m ³
April	6 100 m ²	0,030 m	0,129 m	784 m ³
May	6 100 m ²	0,020 m	0,089 m	540 m ³
June	6 100 m ²	0,020 m	0,086 m	523 m ³
July	6 100 m ²	0,020 m	0,086 m	523 m ³
August	6 100 m ²	0,020 m	0,089 m	540 m ³
September	6 100 m ²	0,030 m	0,129 m	784 m ³
October	6 100 m ²	0,040 m	0,177 m	1 081 m ³
November	6 100 m ²	0,040 m	0,171 m	1 046 m ³
December	6 100 m ²	0,040 m	0,177 m	1 081 m ³
YEAR	6 100 m² (Average)	0,032 m (Average)	1,646 m (Total)	10 039 m³ (Total)

DOMESTIC DEMAND

	Number of Individuals	Water / capita / day (Litres)	Total Water / month (Liters)	DOMESTIC DEMAND (m ³)
January	1	1 500 l	46 500 l	47 m ³
February	1	1 500 l	42 000 l	42 m ³
March	1	1 500 l	46 500 l	47 m ³
April	1	1 500 l	45 000 l	45 m ³
May	1	1 500 l	46 500 l	47 m ³
June	1	1 500 l	45 000 l	45 m ³
July	1	1 500 l	45 000 l	45 m ³
August	1	1 500 l	46 500 l	47 m ³
September	1	1 500 l	45 000 l	45 m ³
October	1	1 500 l	46 500 l	47 m ³
November	1	1 500 l	45 000 l	45 m ³
December	1	1 500 l	46 500 l	47 m ³
YEAR	1 (Average)	1 500 l (Average)	45 500 l (Total)	546 m³ (Total)

TOTAL DEMAND

	IRRIGATION DEMAND (m ³)	DOMESTIC DEMAND (m ³)	TOTAL WATER DEMAND
January	1 081 m ³	47 m ³	1 127 m ³
February	976 m ³	42 m ³	1 018 m ³
March	1 081 m ³	47 m ³	1 127 m ³
April	784 m ³	45 m ³	829 m ³
May	540 m ³	47 m ³	587 m ³
June	523 m ³	45 m ³	568 m ³
July	523 m ³	45 m ³	568 m ³
August	540 m ³	47 m ³	587 m ³
September	784 m ³	45 m ³	829 m ³
October	1 081 m ³	47 m ³	1 127 m ³
November	1 046 m ³	45 m ³	1 091 m ³
December	1 081 m ³	47 m ³	1 127 m ³
YEAR	10 039 m³ (Total)	546 m³ (Total)	10 585 m³ (TOTAL)



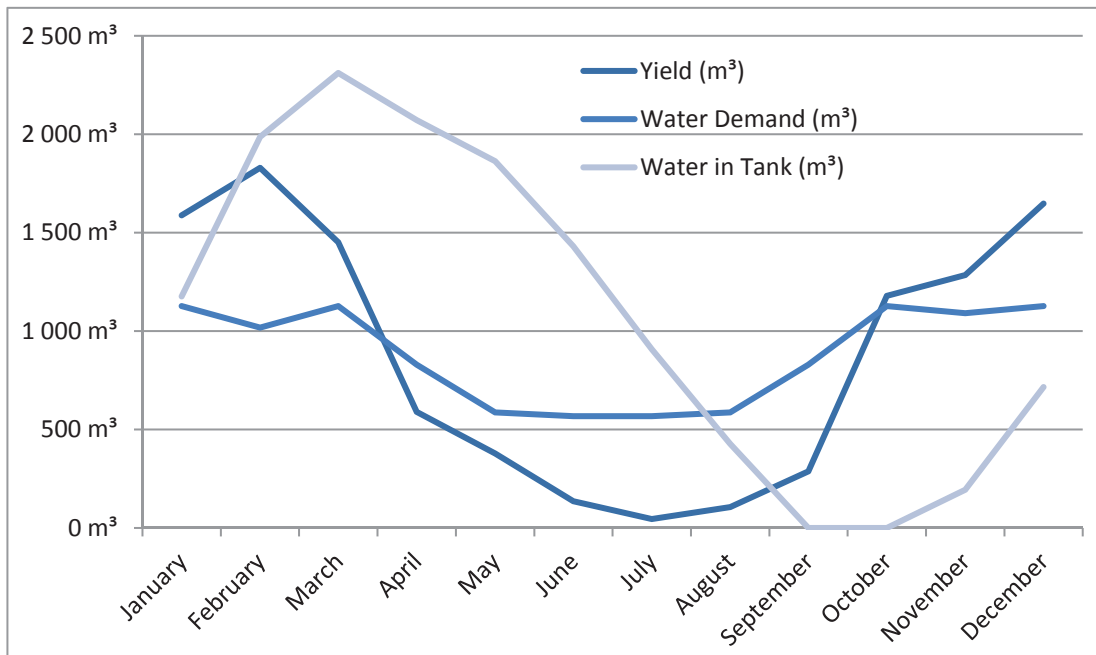
BUDGET

	YIELD from onsite runoff (m ³)	DEMAND total onsite water demand (m ³)	Monthly Balance	Water in Tank/Reservoir (m ³)
January	1 587 m ³	1 127 m ³	460 m ³	1 176 m ³
February	1 829 m ³	1 018 m ³	811 m ³	1 987 m ³
March	1 451 m ³	1 127 m ³	324 m ³	2 311 m ³
April	590 m ³	829 m ³	-2 40 m ³	2 072 m ³
May	378 m ³	587 m ³	-2 09 m ³	1 863 m ³
June	136 m ³	568 m ³	-4 32 m ³	1 431 m ³
July	45 m ³	568 m ³	-5 23 m ³	908 m ³
August	106 m ³	587 m ³	-4 81 m ³	428 m ³
September	287 m ³	829 m ³	-5 42 m ³	0 m ³
October	1 179 m ³	1 127 m ³	52 m ³	0 m ³
November	1 285 m ³	1 091 m ³	194 m ³	194 m ³
December	1 648 m ³	1 127 m ³	521 m ³	715 m ³
YEAR	21 107 m³ (Total)	10 585 m³ (TOTAL)		

Greatest volume of water in tank/reservoir at any time is the minimum capacity of the tank	2 311 m ³
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Safety Factor:	1,5	Final Tank/Reservoir Size:	3 467 m ³
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Proprietary Tank Volume: (e.g. Jojo Tanks)	10 000 l 10 m ³	Number of Tanks needed	347
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APPENDIX D - SUSTAINABILITY ANALYSIS TOOLS

13	0	0	1: SITE CONTEXT	Possible Points:	13
Y			CONTEXT P1.1	Limit development on farmland	
Y			CONTEXT P1.2	Protect floodplain functions	
Y			CONTEXT P1.3	Conserve aquatic ecosystems	
Y			CONTEXT P1.4	Conserve habitats for threatened and endangered species	
6			CONTEXT C1.5	Redevelop degraded sites	3 to 6
4			CONTEXT C1.6	Locate projects within existing developed areas	4
3			CONTEXT C1.7	Connect to multi-modal transit networks	2 to 3

3	0	0	2: PRE-DESIGN ASSESSMENT + PLANNING	Possible Points:	3
Y			PRE-DESIGN P2.1	Use an integrative design process	
Y			PRE-DESIGN P2.2	Conduct a pre-design site assessment	
Y			PRE-DESIGN P2.3	Designate and communicate VSPZs	
3			PRE-DESIGN C2.4	Engage users and stakeholders	3

19	0	0	3: SITE DESIGN - WATER	Possible Points:	23
Y			WATER P3.1	Manage precipitation on site	
Y			WATER P3.2	Reduce water use for landscape irrigation	
5			WATER C3.3	Manage precipitation beyond baseline	4 to 6
4			WATER C3.4	Reduce outdoor water use	4 to 6
5			WATER C3.5	Design functional stormwater features as amenities	4 to 5
5			WATER C3.6	Restore aquatic ecosystems	4 to 6

36	0	0	4: SITE DESIGN - SOIL + VEGETATION	Possible Points:	40
Y			SOIL+VEG P4.1	Create and communicate a soil management plan	
Y			SOIL+VEG P4.2	Control and manage invasive plants	
Y			SOIL+VEG P4.3	Use appropriate plants	
5			SOIL+VEG C4.4	Conserve healthy soils and appropriate vegetation	4 to 6
4			SOIL+VEG C4.5	Conserve special status vegetation	4
4			SOIL+VEG C4.6	Conserve and use native plants	3 to 6
5			SOIL+VEG C4.7	Conserve and restore native plant communities	4 to 6
6			SOIL+VEG C4.8	Optimize biomass	1 to 6
4			SOIL+VEG C4.9	Reduce urban heat island effects	4
4			SOIL+VEG C4.10	Use vegetation to minimize building energy use	1 to 4
4			SOIL+VEG C4.11	Reduce the risk of catastrophic wildfire	4

35	0	0	5: SITE DESIGN - MATERIALS SELECTION	Possible Points:	41
Y			MATERIALS P5.1	Eliminate the use of wood from threatened tree species	
3			MATERIALS C5.2	Maintain on-site structures and paving	2 to 4
4			MATERIALS C5.3	Design for adaptability and disassembly	3 to 4
4			MATERIALS C5.4	Use salvaged materials and plants	3 to 4
3			MATERIALS C5.5	Use recycled content materials	3 to 4
5			MATERIALS C5.6	Use regional materials	3 to 5
3			MATERIALS C5.7	Support responsible extraction of raw materials	1 to 5
3			MATERIALS C5.8	Support transparency and safer chemistry	1 to 5
5			MATERIALS C5.9	Support sustainability in materials manufacturing	5
5			MATERIALS C5.10	Support sustainability in plant production	1 to 5

25	0	0	6: SITE DESIGN - HUMAN HEALTH + WELL-BEING		Possible Points:	30
3			HHWB C6.1	Protect and maintain cultural and historic places		2 to 3
2			HHWB C6.2	Provide optimum site accessibility, safety, and wayfinding		2
2			HHWB C6.3	Promote equitable site use		2
2			HHWB C6.4	Support mental restoration		2
2			HHWB C6.5	Support physical activity		2
2			HHWB C6.6	Support social connection		2
4			HHWB C6.7	Provide on-site food production		3 to 4
0			HHWB C6.8	Reduce light pollution		4
4			HHWB C6.9	Encourage fuel efficient and multi-modal transportation		4
1			HHWB C6.10	Minimize exposure to environmental tobacco smoke		1 to 2
3			HHWB C6.11	Support local economy		3

15	0	0	7: CONSTRUCTION		Possible Points:	17
Y			CONSTRUCTION P7.1	Communicate and verify sustainable construction practices		
Y			CONSTRUCTION P7.2	Control and retain construction pollutants		
Y			CONSTRUCTION P7.3	Restore soils disturbed during construction		
5			CONSTRUCTION C7.4	Restore soils disturbed by previous development		3 to 5
3			CONSTRUCTION C7.5	Divert construction and demolition materials from disposal		3 to 4
4			CONSTRUCTION C7.6	Divert reusable vegetation, rocks, and soil from disposal		3 to 4
3			CONSTRUCTION C7.7	Protect air quality during construction		2 to 4

20	0	0	8. OPERATIONS + MAINTENANCE		Possible Points:	22
Y			O+M P8.1	Plan for sustainable site maintenance		
Y			O+M P8.2	Provide for storage and collection of recyclables		
5			O+M C8.3	Recycle organic matter		3 to 5
5			O+M C8.4	Minimize pesticide and fertilizer use		4 to 5
3			O+M C8.5	Reduce outdoor energy consumption		2 to 4
3			O+M C8.6	Use renewable sources for landscape electricity needs		3 to 4
4			O+M C8.7	Protect air quality during landscape maintenance		2 to 4

11	0	0	9. EDUCATION + PERFORMANCE MONITORING		Possible Points:	11
4			EDUCATION C9.1	Promote sustainability awareness and education		3 to 4
3			EDUCATION C9.2	Develop and communicate a case study		3
4			EDUCATION C9.3	Plan to monitor and report site performance		4

6	0	0	10. INNOVATION OR EXEMPLARY PERFORMANCE		Bonus Points:	9
6			INNOVATION C10.1	Innovation or exemplary performance		3 to 9

YES ? NO

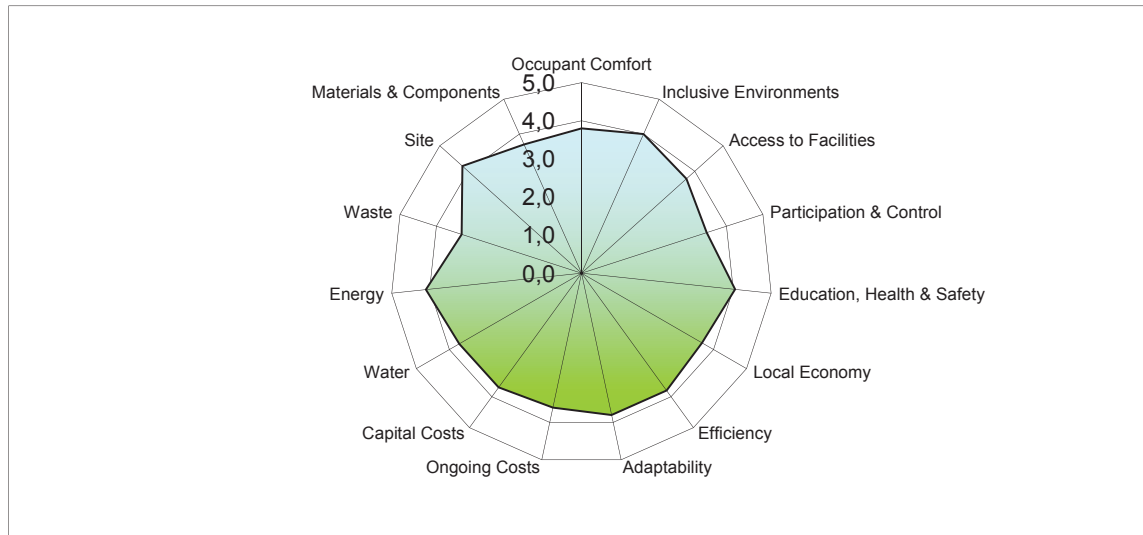
183	0	0	TOTAL ESTIMATED POINTS		Total Possible Points:	200
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KEY	SITES Certification levels	Points
YES Project confident points are achievable	CERTIFIED	70
? Project striving to achieve points, not 100% confident	SILVER	85
NO Project is unable to achieve these credit points	GOLD	100
	PLATINUM	135

APPENDIX D - SUSTAINABILITY ANALYSIS TOOLS

SUSTAINABLE BUILDING ASSESSMENT TOOL (SBAT)

PROJECT		ASSESSMENT	
Project title:	Landscape Laboratory	Date:	2014-10-02
Location:	Johannesburg	Undertaken by:	C. Wilken
Building type (specify):	Residential/Community/Commercial	Company / organisation:	University of Pretoria
Internal area (m ²):		Telephone:	Fax:
Number of users:		Email:	
Building life cycle stage (specify):	Design/Construction/Operation		



Social	3,8	Economic	3,7	Environmental	3,8
Overall		3,8			

Building Performance – Social

Criteria	Indicative performance measure	Measured	Points
S0 1 Occupant Comfort		<i>Explanatory notes</i>	3,8
S0 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
S0 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		90
S0 1.3 Noise	% of occupied spaces where external/internal/reverberation noise does not impinge on normal conversation (50dba)		70
S0 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%)		70
S0 1.5 Views	% of occupied space that is 6m from an external window (not a skylight) with a view		70
S0 2 Inclusive Environments		<i>Explanatory notes</i>	4,0
S0 2.1 Public Transport	% of building (s) within 400m of disabled accessible (20%) and affordable (80%) public transport		90
S0 2.2 Information	Comprehensive signage provided (50%). Signage: high contrast, clear print, signage in appropriate locations and language(s) / use of understandable symbols / manned reception at all entrances (50%)		80
S0 2.3 Space	% of occupied spaces that are accessible to ambulant disabled / wheelchair users		90
S0 2.4 Toilets	% of occupied space with fully accessible toilets within 50m along easily accessible route		50
S0 2.5 Fittings & Furniture	% of commonly used furniture and fittings (reception desk, kitchennette, auditorium) fully accessible		90
S0 3 Access to Facilities		<i>Explanatory notes</i>	3,7
S0 3.1 Children	All users can walk (100%) / use public transport (50%) to get to their childrens' schools and creches		80
S0 3.2 Banking	All users can walk (100%) / use public transport (50%) to get to banking facilities		80
S0 3.3 Retail	All users can walk (100%) / use public transport (50%) to get to food retail		50
S0 3.4 Communication	All users can walk (100%) / use public transport (50%) to get to communication facilities (post/telephone/internet)		80
S0 3.5 Exercise	All users can walk (100%) / use public transport (50%) to get to recreation/exercise facilities		80
S0 4 Participation & Control		<i>Explanatory notes</i>	3,5
S0 4.1 Environmental control	% of occupied space able to control their thermal environment (adjacent to openable windows/thermal controls)		80
S0 4.2 Lighting control	% of occupied space able to control their light (adjacent to controllable blinds etc/local lighting control)		80
S0 4.3 Social spaces	Social informal meeting spaces (parks / staff canteens / cafes) provided locally (within 400m) (100%)		90
S0 4.4 Sharing facilities	5% or more of facilities shared with other users / organisations on a weekly basis (100%)		70
S0 4.5 User group	Users actively involved in the design process (50%) / Active and representative management user group (50%)		25
S0 5 Education, Health & Safety		<i>Explanatory notes</i>	4,1
S0 5.1 Education	Two percent or more space/facilities available for education (seminar rooms / reading / libraries) per occupied space (75%). Construction training provided on site (25%)		70
S0 5.2 Safety	All well used routes in and around building well lit (25%), all routes in and around buildings visually supervised (25%), secure perimeter and access control (100%)		95
S0 5.3 Awareness	% of users who can access information on health & safety issues (ie HIV/AIDS), training and employment opportunities easily (posters/personnel/intranet site)		80
S0 5.4 Materials	All materials/components used have no negative effects on indoor air quality (100%)		80
S0 5.5 Accidents	Process in place for recording all occupational accidents and diseases and addressing these		80

Building Performance - Economic

Criteria	Indicative performance measure	Measured	Points
EC 1	Local economy	<u>Explanatory notes</u>	3,7
EC 1.1	Local contractors	% value of the building constructed by local (within 50km) small (employees<20) contractors	65
EC 1.2	Local materials	% of materials (sand, bricks, blocks, roofing material) sourced from within 50km	70
EC 1.3	Local components	% of components (windows, doors etc) made locally (in the country)	80
EC 1.4	Local furniture/fittings	% of furniture and fittings made locally (in the country)	80
EC 1.5	Maintenance	% of maintenance and repairs by value that can, and are undertaken, by local contractors (within 50km)	70
EC 2	Efficiency	<u>Explanatory notes</u>	3,8
EC 2.1	Capacity	% capacity of building used on a daily basis (actual number of users / number of users at full capacity*100)	80
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)	80
EC 2.3	Space per occupant	Space provision per user not more than 10% above national average for building type (100%)	60
EC 2.4	Communication	Site/building has access to internet and telephone (100%), telephone only (50%)	90
EC 2.5	Material & Components	Building design coordinated with material / component sizes in order to minimise wastage. Walls (50%), Roof and floors (50%)	70
EC 3	Adaptability	<u>Explanatory notes</u>	3,9
EC 3.1	Vertical heights	% of spaces that have a floor to ceiling height of 3000mm or more	80
EC 3.2	External space	Design facilitates flexible external space use (100%)	90
EC 3.3	Internal partition	Non loadbearing internal partitions that can be easily adapted (loose partitioning (100%), studwall (50%), masonry (25%))	60
EC 3.4	Modular planning	Building with modular structure, envelope (fenestration) & services allowing easy internal adaptation (100%)	90
EC 3.5	Furniture	Modular, limited variety furniture - can be easily configured for different uses (100%)	70
EC 4	Ongoing costs	<u>Explanatory notes</u>	3,6
EC 4.1	Induction	All new users receive induction training on building systems (50%), Detailed building user manual (50%)	50
EC 4.2	Consumption & waste	% of users exposed on a monthly basis to building performance figures (water (25%), electricity (25%), waste (25%), accidents (25%))	80
EC 4.2	Metering	Easily monitored localised metering system for water (50%) and energy (50%)	70
EC 4.3	Maintenance & Cleaning	% of building that can be cleaned and maintained easily and safely using simple equipment and local non-hazardous materials	80
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	80
EC 5	Capital Costs	<u>Explanatory notes</u>	3,7
EC 5.1	Local need	Five percent capital cost allocated to address urgent local issues (employment, training etc) during construction process (100%)	80
EC 5.2	Procurement	Tender / construction packaged to ensure involvement of small local contractors/manufacturers (100%)	80
EC 5.3	Building costs	Capital cost not more than fifteen % above national average building costs for the building type (100%)	50
EC 5.4	Technology	3% or more of capital costs allocated to new sustainable/indigenous technology (100%)	80
EC 5.5	Existing Buildings	Existing buildings reused (100%)	80

Building Performance – Environmental

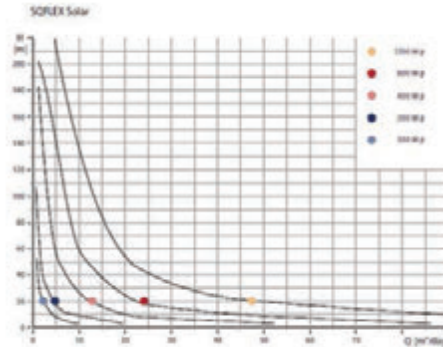
Criteria	Indicative performance measure	Measured	Points
EN 1	Water	<u>Explanatory notes</u>	3,7
EN 1.1	Rainwater % of water consumed sourced from rainwater harvested on site		90
EN 1.2	Water use % of equipment (taps, washing machines, urinals showerheads) that are water efficient		70
EN 1.3	Runoff % of carparking, paths, roads and roofs that have absorbant/semi absorbant/permeable surfaces (grassed/thatched/loose laid paving/ absorbant materials)		60
EN 1.4	Greywater % of water from washing/relatively clean processes recycled and reused		90
EN 1.5	Planting % of planting (other than food gardens) on site with low / appropriate water requirements		60
EN 2	Energy	<u>Explanatory notes</u>	4,1
EN 2.1	Location % of users who walk / cycle / use public transport to commute to the building		80
EN 2.2	Ventilation % of building ventilation requirements met through natural / passive ventilation		90
EN 2.3	Heating & Cooling % of occupied space which relies solely on passive environmental control (no or minimal energy consumption)		80
EN 2.4	Appliances & fittings % of appliances / lighting fixtures that are classed as highly energy efficient (ie energy star rating)		90
EN 2.5	Renewable energy % of building energy requirements met from renewable sources		70
EN 3	Waste	<u>Explanatory notes</u>	3,3
EN 3.1	Toxic waste % of toxic waste (batteries, ink cartridges, fluorescent lamps) recycled		60
EN 3.2	Organic waste % of organic waste recycled		90
EN 3.3	Inorganic waste % of inorganic waste recycled.		80
EN 3.4	Sewerage % of sewerage recycled on site		10
EN 3.5	Construction waste % of damaged building materials / waste developed in construction recycled on site		90
EN 4	Site	<u>Explanatory notes</u>	4,2
EN 4.1	Brownfield site % of proposed site already disturbed / brownfield (previously developed)		95
EN 4.2	Neighbouring buildings No neighbouring buildings negatively affected (access to sunlight, daylight, ventilation) [100%]		90
EN 4.3	Vegetation % of area of area covered in vegetation (include green roofs, internal planting) relative to whole site		90
EN 4.4	Food gardens Food gardens on site (100%)		95
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		50
EN 5	Materials & Components	<u>Explanatory notes</u>	3,7
EN 5.1	Embodied energy Materials with high embodied energy (aluminium,plastics) make up less than 1% of weight of building (100%)		70
EN 5.2	Material sources % of materials and components by volume from grown sources (animal/plant)		80
EN 5.3	Ozone depletion No materials and components used requiring ozone depleting processes (100%)		80
EN 5.4	Recycled / reuse % of materials and components (by weight) reused / from recycled sources		70
EN 5.5	Construction process Volume / area of site disturbed during construction less than 2X volume/area of new building (100%)		70

APPENDIX E - ALTERNATIVE ENERGY

SOLAR PUMP SYSTEM

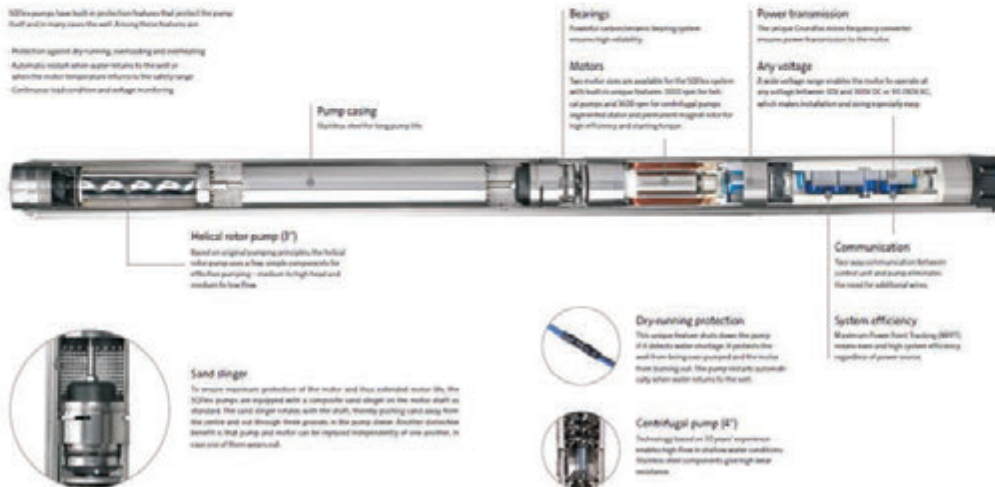
SOLAR PUMP SYSTEM:
Grundfos Pumps - SQflex model
- solar powered and good for remote locations

- 13m³ water per day
- 6hr solar exposure
- 5 SQFlex 2.5 - 2N pumps
- 1.5 GF 43 solar cells 1 x 2m



The SQFlex Solar performance curves are based on:

- Irradiation on a tilted surface
- $H_t = 6 \text{ kWh/m}^2$ per day
- 20° tilt angle
- Ambient temperature at 30°C
- 20° northern latitude
- 120V DC



BIBLIOGRAPHY

Adebayo, A. Cities in Africa: A search for identity and sustainability. Paper delivered at the African Regional Conference on African Solutions: Towards Sustainable Urban Development, Pretoria, 2000.

Alive Architecture [Online] Available: < http://www.alive-architecture.co.za/_the-boiler-room/jaco-van-den-heever/ > [Accessed: 7 September 2014]

Benjamin, W. 1999. *The arcades project*, Harvard University Press.

Berry, J. 1992. *Cross-cultural psychology*. Cambridge: Cambridge University Press.

Berger, A. Drosscapes. In: Waldheim, C. *The Landscape Urbanism Reader*. New York: Princeton Architectural Press. 2006

Bohn, K., Howe, J., & Viljoen, A. (Eds). 2005. *Continuous Productive Urban Landscapes: Designing Urban Architecture for Sustainable Cities*. Oxford: Architectural Press.

Brown, J. 2000. *The Modern Garden*. Princeton Architectural Press; New York.

Clos, J. 2013. Streets as public spaces and drivers of urban prosperity. *United Nations Human Settlements Programme*. UNHABITAT

Doyle, R. 2011. *Darwin's Pharmacy: Sex, Plants and the Evolution of the Noösphere*. University of Washington Press.

Fisher, R.C. Clarke, N.J. 2011. *RED Article*. University of Pretoria

GEHL, J. 2007. *Public spaces for a changing public life*, Taylor and Francis, Abingdon, Oxon.

Green Infrastructure [Online] Available: <<http://ec.europa.eu/environment/nature/ecosystems/>> [Accessed: 4 June 2014]

Holm, D. 1998. Kerkplaats and Capitalists. *Architecture of the Transvaal*, 54-77.

JACOBS, J. 1958. Downtown is for People. *The exploding metropolis*, 168.

Jason Silva. 2012. Video recording. The Beginning of Infinity. United States of America. Directed by Jason Silva.

Jeppe, C. 1906. *The Kaleidoscopic Transvaal*, Chapman & Hall.

Jeppestown The Oval Framework by JHC. Online: <http://www.rudi.net/system/files/images/fig13-1e.jpg> [Accessed 3 June 2014]

Maboneng precinct map. Online: <http://www.mabonengprecinct.com/properties/developments/property-residential/#prettyPhoto/0/.jpg> [Accessed 3 June 2014]

Moughtin, C. & Shirley, P. 2005. *Urban design: Green dimensions*, Routledge.

Mucina, L. & Rutherford, M. C. 2006. The vegetation of South Africa, Lesotho and Swaziland, South African National Biodiversity Institute.

Shannon, K. Landscapes. In: Crysler, C. G., Cairns, S. & Heynen, H. (eds.) *The SAGE Handbook of Architectural Theory*. 2012. SAGE: Los Angeles: 625 -638.

Steyn, G. 2007. Types and typologies of African urbanism. *South African Journal of Art History*, 22, 49-65.

Sticky Situations. 2012. Jeppe park report. Johannesburg.

Stoffberg, H., van Rooyen, G., 2012. Structuring Thinking: Plotting a way for more active engagement with theory in landscape architecture, in *South African Landscape Architecture: A Reader*. Editors: H Stoffberg, C Hindes & L Muller. Pretoria: UNISA Press: 179–194.

This-Evensen, T. 1987. *Archetypes in Architecture*. Norwegian University Press. Oxford.

Van Rensburg, R. J. & Da Costa, M.-A. 2008a. Space as ritual: contesting the fixed interpretation of space in the African city. *South African Journal of Art History*, 23, 30-42.

Van Rensburg, R. J. & Da Costa, M.-A. 2008b. Space as ritual: rethinking spatial strategies in the African city. *South African Journal of Art History*, 23, 43-55.

Waterman, T. 2009. *The Fundamentals of Landscape Architecture*. AVA Publishing; South Africa.

Wessels, Z. & Bosman, G. 2013. The city vernacular in South Africa. *Vernacular Heritage and Earthen Architecture*, 227.

Whyte William, H. 1980. *The social life of small urban spaces*. Project for Public Spaces. New York.

Young, G. 2013. Landscape Urbanism - The Seam, Lecture notes distributed in the unit, Room 1-10 Boukunde Building, University of Pretoria, 8 October 2013

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DECLARATION

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 Magister in Landscape 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.



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