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going West

Using landscape to regenerate urban form

By PG Smit



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Submitted in partial fulfilment of the requirements for the degree

Magister In Landscape Architecture (Professional)

Department of Architecture, Landscape Architecture and Interior Architecture.
Faculty of Engineering, The Built Environment and Information Technology.
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Lastly I would like to thank God for always carrying me through, I would never have been able to do it without You.



Samevatting

Die mens het n begeerte om in n gesonde omgewing te woon, 'n idee wat nog altyd 'n noue verband gehad het met n gesonde landskap. Pretoria se middestad bied nie meer so n landskap nie, intendeel, die stad is beknop, gevragmenteer en plekkeloos.

Mense trek na heinde en verre om die stad se negatiewe omgewings te ontvlug. Hulle jaag die welige natuur-beelde op pamflette en reklame borde wat die veiligheids komplekse van die ooste van Pretoria adverteer na, min wetende dat die nagevolge van verstedeliking kort op hulle hakke is.

Maar daar moet immers n maniere wees om die mens se begeerte vir n gesonde landskap te vervul sonder die nagevolge van verstedeliking en verwoesting van die eindste natuur waarna hy streef.

Om 'n volhoubare toekoms vir Pretoria te verseker, moet ons ondersoek instel in nuwe maniere om met die probleme van verstedeliking en verval te deal. Hierdie tesis ondersoek die potensiaal om landskap te gebruik as 'n basis waarmee 'n mens die stedelike vorm kan her-rangskik en her-konstrueer op so n manier dat mense die ideale wat hul voor seek kan kry binne n volhoubare stedelike omgewing

Die ondersoek begin op n stedelike skaal om n geheel beeld te kry van die probleme waarmee die middestad worstel en die geleenthede wat dit bied. Dit strek oor 'n verskeidenheid skale om eiteindelik uit te kom by ontwerp en plekmaak. Dit ondersoek kontemporere metodes om landskap te vorm deur om te werk met huidige en historiese stads vormasies, sowel as die sosiale, historiese en omgewings prosesse wat dit oor tyd gevorm het. Dit kyk na die verval, maar eerlike landskap van Pretoria Wes om hierdie voorstelling te toets.

Die voorstelling is dat as mens regtig vir mense 'n gesonde landskap aanbied, een wat hulle kan ervaar en mee vereenselwig, dan mag hul dalk in die stad wil bly en in ruil spontaan stedelike vernuwing aanwakker.



Abstract

Everyone wants to live in a healthy environment, an idea that has always been closely associated with the healthy landscape. Pretoria CBD is no longer a place that offers such a landscape; it is congested, fragmented and placeless.

People move far and wide to get away from its hostile environments, chasing after the high gloss images of nature displayed on the billboards and posters of suburbia. They race to find a patch of land within the security complexes and estates of the east, all the while being savagely pursued by the evils of urban sprawl and decentralization.

Surely there must be a way of addressing mans need and desire for landscape without perpetuating urban problems and destroying the very nature they strive for?

In order to ensure a sustainable future for Pretoria needs to investigate new ways to deal with the urban problems of sprawl and decay. This thesis explores the potential of using landscape as the basis with which one can reorder and reconstruct the urban form in a way that will offer people the ideals they search within a sustainable urban environment.

The investigation starts at a regional scale in order to holistically address urban issues and identify opportunities and then works its way across a range of scales down to detail design and place making.

It looks new methods of constructing contemporary landscapes not by mere superimposition but by working with the current and historic urban fabric as well as the social, historical and environmental processes that have shaped it over time.

It looks to the far from idyllic, yet brutally honest, post-industrial landscape of Pretoria West to construct hybrid landscapes. Arguing that if one were to genuinely offer people a healthy landscape, one they can experience and relate to, the might actually want to live in the city, in return awakening spontaneous urban renewal.



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Fig.1. Pretoria 1855, F D Oerder, Pretoria Art Museum (Bolsmann 2001)



Prologue

From the dawn of time man has always had a close connection to the land. The landscape provided and sustained life. Man has always chosen to settle where the land supplied both his wants and needs; such as safety, placemaking, beauty, recourse and opportunity. He settled near rivers for water, in fertile valleys for food and on hilltops for fortification.

This quest for land is what set the Israelites on a forty year journey through the desert before settling in Canaan, the land of milk and honey. Similarly the Voortrekkers set off from the Cape in search of a land that offered them freedom, belonging and opportunity. For this they faced mountains, disease, and fierce opponents in both man and beast. Many years later a handful of settlers finally reached the banks of the Apies River, the end of their search.

Yet unbeknown to them, this sliver of land nestled between the Magaliesberg and Apies River had been occupied for thousands of years. Before the Voortrekkers founded Pretoria, the land had been occupied by Bushmen, Tswana and Ndebele settlements and would later yield the largest finding of Stone Age implements in all of Africa.

Why is it that across the ages people have settled in this same location? It must be that the land offered them what they needed. Why is it that the city of Pretoria today stands sprawled across this same land; rivers canalized, fertile valleys paved and hills no longer fortified. Its people long to migrate east in search of new land, the greener pastures of fortified clusters and palisade estates.



- 1 Problem in context
- 2 Problem statement
- 3 Study area
- 4 Hypothesis
- 5 Methodology
- 6 Limitations

4.2.1. The development of Pretoria

1855-1930

Pretoria was established in 1855 and was laid out by the Voortrekkers on a Cartesian grid, centred around Church Square. Its development was dictated by prominent natural features such as the ridge and the river systems with large erven and tracts of farmland in between residential developments.

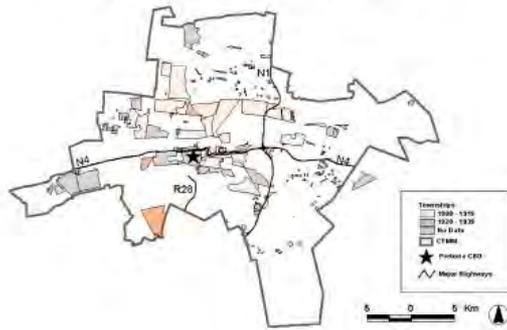
1930-1960

The majority of development up until the 1930s occurred within inner city areas such as Pretoria west, Hatfield, Silverton and Moot area. Then urban areas became more fragmented, moving beyond the ridges, with the development of new 'white' residential areas. Black people living in areas earmarked for white people were resettled in townships on the urban fringe, such as Atteridgeville followed by the dormitory townships of Mamelodi, Eersterust and Laudium, established in the late 1940s and 1950s.

1960-1990

The cities growth accelerated after 1960, with sprawling low-density residential areas to the south-east of the city, and new urban growth centres in Centurion and Akasia. The grid pattern gave way to a curvilinear pattern as the city became more car and less pedestrian orientated. During the late apartheid era (1960 to 1990) this pattern of fragmented urbanisation and separate development was reinforced through development of Soshanguve and Mabopane to the north.

Growth of Pretoria 1900 - 1939



Growth of Pretoria 1900 - 1959



Growth of Pretoria 1900 - 1999

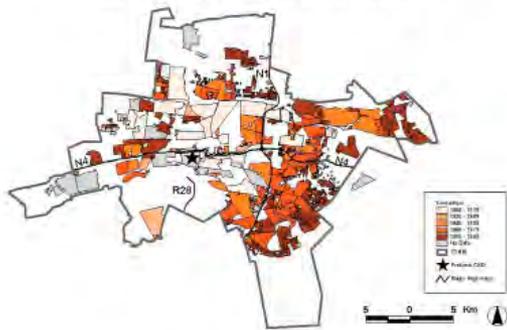


Fig:13. Series of maps showing the growth of Pretoria between 1900-1999 (TOSF vol I 2005: 20).



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01 introduction



Fig.2. Railway in Pta west (Author 2010)



The landscape of the contemporary horizontal city is no longer a place making or a condensing medium. Instead it is fragmented and chaotically spread, escaping wholeness, objectivity, and public consciousness – terra incognita (Berger 2005: 209).



2. Introduction

2.1. Problem in context

2.1.1. State of the city

Pretoria, a modernist industrial city, experienced its heyday under the rule of the apartheid regime in the early 70s. It was during this time that the CBD became synonymous with work and commerce while the tree-lined suburbs were thought to be the ideal living environment. It offered the best of both worlds. Functions were separated in order to perform optimally. The focus was turned to infrastructure and away from people. The city thus became a mono-functional, harsh, static and sterile environment, lacking a sense of place and belonging. Today, like many other modernist cities, Pretoria suffers from large-scale urban decay that can be attributed to a number of factors such as low density, decentralization and sprawl.

The city became subject to decentralization of industry and commerce as well as sprawl caused by low suburban density and a vehicle centred lifestyle. The emphasis shifted from public to private in both infrastructural and social spheres.

The effects of modernist city planning principles coupled with the aftermath of apartheid planning, left Pretoria with a fragmented, uninviting and decaying urban environment. It has become associated with pollution, poverty, crime and congestion. Negative perception hinders development within the CBD as residents perceive it to be an unfavourable living environment. They relocate to the suburbs in search of more favourable conditions in which to live and raise children.

2.1.2. Moving to the suburbs

Man is always in search of the most favourable conditions. If one were to give the average aspiring Pretorian resident the choice between a house in a golf estate in the eastern suburbs of Pretoria, and an apartment in the CBD, the choice would most probably lean towards the golf estate. Why is that?

The reason is what these estates have come to represent. Where the one has gained a negative perception, the other has become the embodiment of affluence and success. Could it be that the suburbs seem to offer something that the city-centre cannot, the promise of the idyllic? This promise comes in the form of space, countryside, community and safety. It represents the ideal healthy and productive lifestyle, closely linked with nature.

The perception is that in order to live this ideal lifestyle one needs to live in the ideal landscape. This has become the dream, the ideal we all strive for.

Developers exploit humankind's desire for the idyllic by creating the perception, through clever marketing, that security estates, complexes and suburbs offer this productive landscape-centred lifestyle.

Let's look at names of some developments in Pretoria east: Woodhill Golf Estate, Silver Lakes, Mooikloof, and even some of the older suburbs such as Faerie Glen and Waterkloof. What these names have in common is that they all represent images of nature.



People buy into these estates because of the image and ideals they stand for and the lifestyle they promise. There is no fault in wanting to live in a healthy and positive environment as this has a direct impact on one's quality of life. However, there is often a gap between the signifier (the housing estate) and the signified (escape from the troubles of urban life and a landscape centred lifestyle). These developments seldom offer the lifestyle they promise and ironically, more often than not, come at a cost of the very images they represent.

They are usually of a low density and located on the outskirts of town where land is readily available. Large tracts of productive farmlands and natural areas are consumed in order to build these estates. They are far from existing infrastructure and require new roads, pipelines, schools and hospitals. Because of their low density these suburbs produce little revenue in relation to the amount of infrastructure and service requirements, thereby placing exceeding strain on already overstretched municipalities. High-density developments require fewer infrastructures to service the same amount of people (TOSF 2005:1).

Large malls and office parks develop at major transport junctions, eliminating the need for most people to ever enter the city. This factor is bleeding the city dry.

Residents are living in small security estates with soaring levies. The high walls isolate them from both the community and nature they so desire.

The perception is that one can escape crime, pollution and harsh environments of the city by moving to the suburbs; however in return this perpetuates urban problems. Ironically it causes further sprawl and decentralization, increasing the cost of energy, infrastructure and commuting distance.

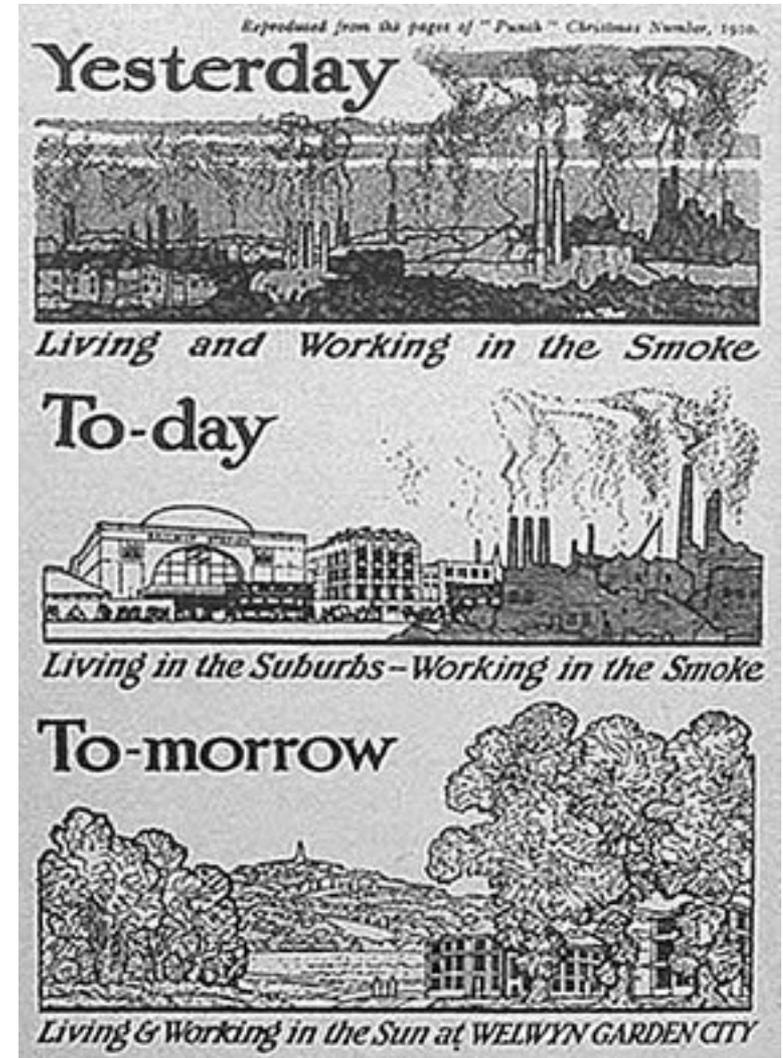


Fig.3. Garden city cartoon by Ebenezer Howard (Ward 1992: 147)



2.1.3. The urban reality

Due to global warming and the global population boom it is becoming increasingly evident that man is living beyond his means. At the Second International Earth Summit held in Johannesburg the progress and implementation of the Agenda 21 protocol was discussed. Among some of the pertinent issues raised was that of food security, protection of natural resources and bio-diversity as well as the reduction of greenhouse emissions and consumption patterns.

In order to reduce carbon footprints and protect valuable productive land, cities need to limit sprawl through densification. This will invest in public transport and protect natural resources. Urbanism is becoming the undeniable way of the future.

2.1.4. Landscape + urbanism = landscape urbanism

There appears to be a two-fold problem: on the one hand we have humankind's desire to live an ideal landscape-centred lifestyle and on the other hand we have issues of urban densification and long-term sustainability. How can the need be addressed for landscape within a high-density urban environment without perpetuating urban problems?

How can one marry the ideal of landscape with that of urbanism?

The theory of landscape urbanism is a fusion of these two widely opposing ideas, creating a comprehensive and mutually beneficial whole.

It argues that landscape should be the primary component of the urban environment. By first creating a healthy landscape, ultimately a healthier urban fabric will be generated.

Through the course of the thesis, this theory and its application on the urban fabric of Pretoria will be investigated. By using landscape urbanism principles one can consider a less desirable area in the city such as Pretoria west, and systematically alter the perception.

Through the study of precedent and appropriate landscape theory, an approach to staging, design and development of the landscape can be initiated in order to create new communities and networks. These will eventually become a catalyst for future development as well as provide more productive, healthy and sustainable living environments within its urban context. Hopefully then people might return to the city.

How can one, through the discipline of landscape architecture, begin to address such complex and far-reaching urban problems in order to instigate urban renewal?

2.2. Study area

Pretoria west has become one of the least 'idyllic' or desirable locations in Pretoria. This industrial sector of the city has long been subject to scorn and neglect from both government and the general public.

Can one through the principles of landscape urbanism transform this fragmented and decayed area, systematically altering perception and ultimately turning it into a desirable location? The need and desire for landscape must be addressed in a sustainable, genuine way that draws people back to the city.



2.3. Problem Statement

The city centre of Pretoria has immense development opportunity within its CBD however despite of this it is decaying due to sprawl and decentralization. This is caused by unfavourable living conditions and a negative perception of the CBD. This development trend is unsustainable and perpetuates urban problems.

2.4. Hypothesis

By using landscape, not urban form, as the departure point one can create healthy living environments the city that will systematically alter perception and encourage people to live in the inner city. This will lead to regeneration and densification of the city and ultimately a more sustainable urban form.

2.5. Research Questions

How can one turn Pretoria west into a healthy and productive environment in a sustainable manner?

What is landscape urbanism and how does it differ from conventional urban design?

How can landscape urbanism along with additional theory and precedent inform an approach?

How can one through analysis, identify problems and development opportunities within the urban fabric?

2.6. Methodology

The thesis will explore this normative position through the study of theory and precedent; through analysis identify problems and opportunities at a range of scales. The potential of landscape architecture will be explored to address issues and unlock inherent and innovative possibilities. These will explore different aspects of landscape architecture from strategic planning and ecological processes to spatial quality and tectonics.

2.7. Limitations

This thesis covers a broad theoretical base across a range of scales; therefore it is not possible to cover all aspects at every scale. The issue of urban renewal is a complex matter comprising of socio-economic, environmental and political issues. As this is a landscape architecture thesis I will focus primarily on the issues that fall within the realm of landscape architecture.

“Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature (Agenda 21, Principle 1: 1992).”



- 1 Background
- 2 Four themes of LU
- 3 Conventional Urbanism
- 4 LU not a new idea
- 5 Disciplinary realignment
- 6 Conclusion



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landscape urbanism 02



Fig.4. A former neighbourhood in downtown Detroit (<http://www.jamesgriffioen.net/index.php?/prairies/lost-neighborhoods>)



3. Landscape urbanism

3.1. Background

3.1.1. Mass decentralization of Detroit

During the first half of the twentieth century the city of Detroit was regarded as the automotive capital of the world. During this time the city experienced immense growth and prosperity and quickly became the fourth largest city in the USA with its population peaking at 1,849,568 in 1950.

Its success could be almost entirely attributed to the economic input of keystone automotive giants such as Chrysler, General Motors and Ford, the latter being the first and largest motor manufacturer in Detroit. In its first phase it comprised of multi-story factories in the inner industrial belt of the city.

In 1928 it relocated to the River Rouge Plant on the outer edge of the city, becoming the world's largest industrial complex. This, coupled with the focus shifting to private modes of transport, resulted in large-scale urban sprawl.

The 1960s saw Ford relocating its operations both nationally and then internationally, therefore downsizing its interests in Detroit. This dealt a massive blow to the city as it formed the basis of its economy. The decentralization of the city's largest industry set it on a downward spiral. Economic, social and urban decay ensued causing many people to leave the city in search of jobs and more favourable living conditions.

Over the next 50 years the city would effectively lose half its population, having receded to only 951,270 by the year 2000. Between 1970 and 2000, over 161,000 buildings were demolished, with thousands more razed every year. The city lost an additional 1% of housing stock per year due to

arson. Every year city officials organise the burning of vacant buildings as part of the Halloween celebrations. This has become known as "Devils Night".

Today the city grid lies deserted with virtually no homes or buildings lining the streets. "Nature is reclaiming many of these empty blocks, with native grasses and trees thriving and turning these once dense inner-city neighborhoods back into greenfields (Schroeppel 2008)."

Detroit, arguably the most thoroughly modern city in the world, was built to service the single-minded imperatives of automobile production. In the first half of the twentieth century Detroit served as an international model for industrial urbanism arranged to optimise profits. In the second half of the twentieth century, the city became one of the greatest examples of sprawl and urban decay (Schroeppel 2008).

It is in this apocalyptic yet mysteriously haunting scene that landscape urbanism found its beginnings.

3.1.2. The emergence of landscape urbanism

Charles Waldheim coined the phrase landscape urbanism [LU], a concept he developed along with fellow landscape architect James Corner and architect Mohsen Mostafavi during the 1990s. It was first publically introduced during the LU conference and exhibition held at the University of Illinois in 1997 (Bouras 2010).

The exhibition featured a number of international projects framing new ways of dealing with contemporary urbanism. Exhibitors included among others, Adriaan Geuze from West 8, Michael Van Valkenburgh, Enric Batlle, Joan Roig, Mapillero/Pollack and Omar Perez. It featured three projects specifically dealing with Detroit.

One of these was a project by Waldheim and Marli Santos-



Munne called “Decamping Detroit”. In this scheme they proposed a four-stage decommissioning of the land in municipal control:

1. “Dislocation”; referring to the disconnection of services.
2. “Erasure”; the demolition of remaining structures and the jump-starting of the native landscape ecology by dropping appropriate seeds from the air.
3. “Absorption”; ecological reconstruction of part of this zone as woods, marshes, and streams.
4. “Infiltration”; the re-colonization of the landscape with heterotopic village-like enclaves (Shane 2004: 59).

The project offered a rather controversial perspective in completely reversing the idea of contemporary urbanism. Here the city is deconstructed in order to give natural process the opportunity to heal the landscape. Only once the landscape has been healed are people placed back into the equation. However this time in a way that respects ecology, giving landscape the highest priority.

Subsequently this theory has gained widespread support not only among students but also among prominent architects such as Rem Koolhaas, and Alvaro Siza. Important projects include Fresh Kills Park, the Toronto waterfront and the much talked about High Line in New York.

LU can be traced to post modern critiques of modernist architecture and planning, condemning it for its inability to produce a “meaningful” or “liveable” public realm, for its failure to come to terms with the city as an historical construction of collective consciousness, and for its inability to communicate with multiple audiences (Waldheim 2005: 38).

It has, over the past decade developed into a new model for contemporary urbanism, one aimed at addressing the relative inadequacy of architecture, urban design and

planning to appropriately deal with the problems our cities are facing. Reuse is proposed and regenerate decaying urban fabric by identification rather than architecture; landscape as the “primary element” or form giver. Landscape can better define urban forms and experiences by widening its focus to include ecological, social and infrastructural programmes (Waldheim 2005: 16).

“So it seems that certain elements within each of the design professions - architecture, landscape architecture, urban design, and planning - are moving toward a shared form of practice for which the term landscape holds central significance, as described though the formulation of landscape urbanism (Corner 2005: 23).”

3.2. Four themes of landscape urbanism

Corner, in the article, Terra Fluxus (Corner 2005: 23), identifies four themes within landscape urbanism:

- 1 Processes over time
- 2 Staging of the surface
- 3 Method of working
- 4 The imaginary

3.2.1. Processes over time

Corner argues that cities are created over time by various cultural and economic processes that are both multi-dimensional and dynamic. He refers to cultural geographer David Harvey, when stating that both modernist and new urbanist planning fail in the sense that they presume that spatial order can control history and process. They created fixed, rigid, spatial frames neither derived from nor redirected by any of the processes moving through it. By



virtue of restricting these processes conflict was caused between cities and their natural and social environments. “New possibilities for future urbanism must derive less from an understanding of form and more from an understanding of process (Corner 2005: 29).”

Landscape urbanism recognises the integration and fluid exchange between social, economic, environmental and infrastructural processes (Waldheim 2005: 43). These processes form part of an infinitely greater system of nature and therefore cannot be treated in isolation. “We have yet to understand cultural, social, political, and economic environments as embedded in and symmetrical with the “natural” world (Corner 2005: 30).”

3.2.2. Staging of the surface

Staging of the surface is concerned with how one deals with the horizontal surface or the field of action in a way that will allow the process to take place over time. These horizontal surfaces include everything from sidewalks and streets, plazas roof space, and constitutes a wide range of scales. Surface is understood as urban infrastructure (Corner 2005: 30).

Where architecture consumes the potential of the site, the urban infrastructure should sow the seeds for future possibility, thereby unlocking the inherent potential of a site as well as supplying it with new possibilities. Rem Koolhaas refers to this concept as “irrigation of fields with potential”.

“Surfaces should be open-ended, permitting a vast range of accommodations and is indicative of an urbanism that eschews formal object-making for the tactical work of choreography, a choreography of elements and materials in time that extends new networks, new linkages and new opportunities (Corner 2005: 31).”

“This attempts to create an environment that is not so much an object that has been designed as it is an ecology of various systems and elements that set in motion a diverse network of interaction (Corner 2005: 31).”

Therefore sites are open to a range of programmatic configurations depending on season, needs and as the desires of residents change. “Design anticipates change, open-endedness and negotiation, strategically preparing the soil for future appropriation (Corner 2005: 31).”

3.2.3. Method of working

LU suggests a reconsideration of traditional techniques and methods of working. (Corner 2005: 30). Any given project should function across a range of scales and involve a variety of professionals, each offering their unique expertise. It calls for a combination of various approaches such as scientific, mathematical, engineering, as well as artistic, poetic and intuitive. It acknowledges the complexity of the urban environment and therefore promotes a complexity in approach (Corner 2005: 30).

A site exists at an unlimited number of scales. The French philosopher Henri Lefebvre in his book *The Production of Space*, developed a diagram of nested scales to analyse space in the formulation of cities. It deals with three different scales: global, private and transitional. Each of these scales is integrated within the other two. Thus there are traces of each scale at every scale and it can support a dynamic and multidimensional differentiation of space (Pollak 2005: 128).

3.2.4. The imaginary

Imagination should still be the primary generator in any creative endeavour. “In many ways, the failing of twentieth century planning can be attributed to the absolute



impoverishment of the imagination (Corner 2005: 32).”

Public spaces are firstly containers of people’s memory and desires, and secondly are places of interaction with people and place. These spaces should capture the imagination and provide opportunity for meaningful interaction. These are the places where people spend their lives, come to relax, to recreate and be inspired.

“Public space in the city must surely be more than mere token compensation or vessels for this generis activity called recreation (Corner 2005: 32).”

Designers should invest in new ways of creating and representing public space, create new ways of interacting and experiencing, imagining new possibilities inspired by the workings of both nature and society.

3.3. Conventional urbanism

“The contemporary city seems to be positioned in a deadly crossfire between nostalgic New Urbanism, Koolhaasian bigness, neo-liberal sprawl and hardcore late modernist segregated planning (Andersson 2010: 83).”

How does LU differ from the conventional urban practice?

The modernist city is usually associated with technology, high density, revenue producing development and infrastructure as well as negative impacts such as congestion, pollution and stress. On the other hand landscape is seen as a means to mitigate the negative impacts of the city, usually in the form of parks, greenways, esplanades, gardens and street trees that offer relaxation, stress relief and recreation (Corner 2005: 23).

Traditionally there has also been a distinct disciplinary categorization, where architects were responsible for buildings. Architects along with planners and engineers were responsible for urban design and landscape architects were usually called in last, to fix what was left through vegetation, earthworks, and site-planning.

Architects = Buildings

Architects + Engineers + planner = Cities

Landscape Architects = Landscapes [Earthworks, planting, open space]

These cities are a product of architecture urbanism where buildings were considered the primary building blocks, woven together by a network of mono-functional infrastructure. The cities displayed both an ignorance of natural ecology and a rigid illiberal urban space system often in conflict with the natural and social environments. Public open space was a product of the left-over pockets of space. LU is the inverse of architecture urbanism. Here landscape is at the forefront placing the primary focus on the public open space network and merging it with urban and ecological infrastructure. Buildings take second priority and are informed by the landscape.

LU also offers an implicit critique of architecture and urban design’s inability to offer coherent, competent, and convincing explanations of contemporary urban conditions (Waldheim 2005: 37). It highlights a new direction within the profession of landscape architecture, one that moves beyond the masking of urban ills through vegetation and earthworks to a broadened focus that includes landscape’s conceptual scope; its capacity to theorise sites, territories, ecosystems, networks, and infrastructures, and to organise large urban fields (Corner 2005: 23).



For Corner, the narrow agenda of ecological advocacy that many landscape architects profess to is nothing more than a rear-guard defence of a supposedly autonomous “nature” conceived to exist as priority outside social and cultural spheres. He considers current-day environmentalism and pastoral ideas of landscape to appear naïve or irrelevant in the face of global urbanisation (Waldheim 2005: 38).

“Landscape is no longer the innocent and idyllic antithesis of the city. Landscape is the arena in which natural and cultural forces of all sorts enter into confrontation (Palmboom 2010: 44).”

3.4. Not a new idea

Waldheim states that landscape urbanism puts forth a “new object” and a “new language”. However, many have opposed this notion that many of the underpinning principles refer to what landscape architecture has been saying all along.

In the article, “Traditions of landscape urbanism”, Bruno De Meulder and Kelly Shannon argue that LU has at least two roots: the heritage of many ancient civilizations in creating settlement structures and the history of both landscape architecture urbanism (De Meulder & Shannon 2010: 69). They refer to various historical entities to support their claims.

3.4.1. Incan empire

The Machu Picchu ruins in Peru, built around 1450 by the ancient Incan empire are an excellent example of landscape urbanism principles. The landscape was the primary generator of form in that the spaces were arranged to best utilise the land. It displays advance human engineering working together with nature in order to best utilise the challenging terrain.



Fig:5. Machu Picchu famous Incan citadel



Fig:6. Olmsteads Emerald Necklace in Boston



3.4.2. Olmstead

The profession of landscape architecture was founded on many of the principles that lay claim to it. For example, Frederick Law Olmstead, the father of American landscape architecture, and Boston's Emerald Necklace (1878-96). It displays the integration of landscape, infrastructure and architecture in the juxtaposition of vehicular, subway, sewer and water infrastructure with that of recreation. "The Emerald Necklace is simultaneously a tidal mitigation system, an automobile parkway, a real estate development project, a public park and a site for urban gardens - all related to an even larger metropolitan system of parks and parkways (De Meulder & Shannon 2010: 70)."

3.4.3. McHarg

It was on these principles that landscape architecture was founded. We cannot deny the contributions of landscape architects such as Ian McHarg; his book *Design with Nature* (1969) underpinning today's ecological approach to planning and design. These pioneers treated landscape as an infrastructure to define urban forms and to meet people's demands for recreation and living.

3.4.4. Contemporary projects

Even projects that claim to fall under the mantle of LU, such as Parc de La Villette (1987) in Paris, Nudo-de-la Trinitat Cloverleaf park in Barcelona (1992) and Landschafts park (1994) in Duisberg Nord, all precede its conception.

It is evident that LU is not a new idea. It does however group together and reiterate a number of otherwise scattered ideas creating a new and relevant agenda for dealing with contemporary urbanism. It brings to light ideals and practices that have been largely forgotten or neglected

over time. These principles have found a renewed urgency in response to the global issues we face today. It is a model for contemporary urbanism, one perhaps uniquely capable of dealing with current issues of radically decentralized urbanisation.

LU has caused controversy and debate within the fields of urbanistic design. This has served both to highlight current urban issues as well as question the theoretical underpinnings of these fields. This has caused a period of intellectual and cultural renewal within the landscape discipline (Waldheim 2005: 37).

3.5. A disciplinary realignment

"Landscape urbanism does not lead to a conflation of the disciplines of landscape architecture and urbanism, as James Corner would argue. They must indeed be redefined with respect to one another, but each retains its own temporal and architectonic dimension. It is precisely the differences between the disciplines and their layerdness that are essential in order to be able to come to grips with the tasks of today (Palmboom 2010: 48)."

Whether or not LU is a discipline on its own has also been a question for much speculation and debate. However, Alan Berger among others, is of the opinion that LU is not a discipline on its own but rather falls within the fields of planning, urban design, architecture and landscape architecture. It has the potential to coexist with the big four, by working within their knowledge structure while constructing a radically different agenda. It utilizes the resources and expertise of these professions to start networking to promote a new agenda. There is no need to develop an entirely new design discipline in order to rethink landscape's relationship to urbanisation (Berger 2005: 209).



The newfound prominence and relevance to discussions of the city - of landscape architecture - can be partly attributed to a global increased environmental awareness. But more importantly landscape has emerged as the most relevant disciplinary locus for discussions historically located in architecture, urban design, or planning (Waldheim 2005: 37).

Berger is also concerned about the fact that landscape architects, architects, and urban planners often lag far behind the processes of urbanisation, scavenging commissions from their jetsam as they change course. It is time for designers to find opportunities within these processes by advocating more ambitious ways of challenging urbanisation, such as landscape urbanism (Berger 2005: 214).

3.6. Conclusion

The landscape urbanism bullshit generator web-based program designed to generate LU phrases: It constructs these phrases by randomly stitching together LU jargon. The irony is that it could slip phrases into just about any of Waldheim or Corners' writings and the reader would be none the wiser (www.ruderal.com/bullshit/bullshit.htm).

The bullshit generator is a comical reference to complex jargon and ever illusive principals of LU. It has been marked by much theorising, much talk and much debate, little of which has filtered through into built projects. The theory is often contradictory and difficult to grasp, even more so its physical application. The theory is far from mature and its argument needs testing and practical evaluation (Yu 2009).

This being said, LU is an exciting and developing field that suggests solutions to current urban and environmental problems. Bridging the gap between man and his environment, it offers insight into ways of creating healthy and sustainable high-density urban environment while regenerating decayed

urban fabric and reusing post industrial sites.

LU has proven itself for large-scale strategic planning and regeneration, yet offers little in terms of small-scale design guidance. How does LU translate into design where theory meets form?

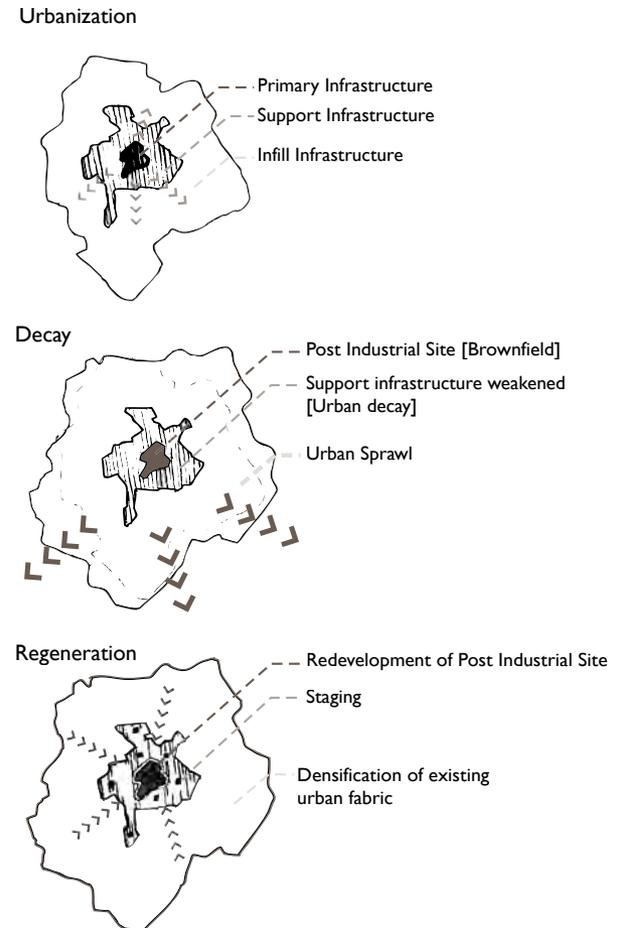


Fig.7. Diagram the urbanization, decay and then regeneration through landscape urbanism



- 1 Introduction
- 2 Background
- 3 Problem
- 4 Existing frameworks
- 5 Alternative approach
- 6 Approach
- 7 Analysis
- 8 Concept



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03

regional scale



Fig:8. Map of the Pretoria West and CBD. showing the study are for the regional scale.



4. Regional scale

4.1. Introduction

In this chapter the problems and opportunities in the central and western districts of Pretoria are analysed in order to develop an approach to dealing with its complex urban fabric.

4.2. Background

Pretoria is situated within the greater city of Tshwane and is South Africa's capital city as well as its centre of government, with a population of approximately 2.3 million. It has a cross-border municipal area located in both the North-West and Gauteng provinces, the latter being one of the wealthiest and fastest growing economic regions in Africa. The city is said to boast the highest per capita income per individual in South Africa and is especially known for its high concentration of educational, research and foreign institutions (TOSF Vol I 2005:2).



Fig:9. Map of South Africa (Author 2010)



Fig:10. Map of Gauteng (Author 2010)

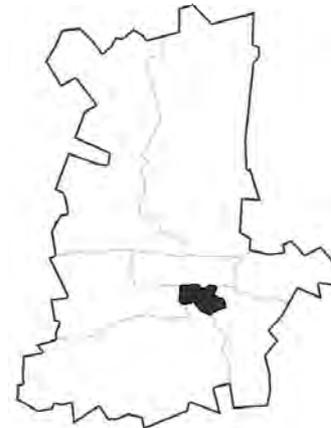


Fig:11. Map of Tshwane (Author 2010)



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Fig.12. Panorama of the Pretoria CBD looking south (Author 2010)



Adaptively reusing this waste landscape figures to be one of the twenty-first century's great infrastructural design challenges (Berger 2005: 199).





1990-1995

The most rapid urban growth took place after 1990. Pretoria's population doubled from 890 000 to 1,76 million between 1991 and 1995. The tremendous growth could be primarily attributed to the abolishment of the "pass laws" regulating access of non-whites to the city.

Many people migrated from the nearby homelands closer to their jobs in the urban areas, causing areas such as Soshanguve to grow from 200 000 people in 1991 to almost 490 000 in 1995. Simultaneously, extensive high and middle income suburban development took place on the south-eastern periphery. Ridges were developed and rivers and streams canalised, destroying vast expanses of the endangered Grassland Biome and devastating Pretoria's environmental resources.

1995-2000

The latter half of the 1990s saw the inner city decay. This was prompted by the relocation of capital to new urban centres in the south-east and north. Large shopping malls and business centres developed further away from the inner city, giving Pretoria a multi-nodal character.

"New suburban development increasingly took the form of walled estates, privatising public space and streets. This phenomenon also took place in more centrally located areas where residents, legally and illegally, erected booms to close off neighbourhood public roads, all in the name of growing crime. Increased 'lifestyle' development, such as golf estates, took root, cutting off public access to Open Space and creating fragmented, isolated 'green pockets' (TOSF vol I 2005:21)." Greenfields and productive land on the south-east periphery of the city experienced increased development pressure, being cost effective and readily available.

2000 and beyond

During the early 2000s more people started moving into the inner city, occupying vacant or converted office buildings and overcrowding existing apartment buildings. This has highlighted the lack of sufficient open spaces within the inner city (TOSF vol I 2005: 21).

In December 2000, 13 municipalities were amalgamated to form the City of Tshwane Metropolitan Municipality, enlarging Pretoria's local government's jurisdiction to 220 000 ha and thereby making it one of the largest in the world. However this was without a significant increase in its city's tax base as some of the poorest and least developed areas in Gauteng and North West have been incorporated into the city (TOSF 2005: 1). Between 1996 and 2001 it experienced a population growth of 20% - 30%. This can be attributed primarily to migration from rural areas, other cities and SADC countries into the province. At the current growth trend Gauteng is said to become the twelfth largest mega city in the world by 2015 (TOSF vol I 2005: 15).



4.3. The problem

The complex urban environment of Pretoria was shaped by a number of unique environmental, social, economical and political influences over an extended period of time. However, the problems it faces are not unique.

The current development trend is perpetuating urban problems such as sprawl, decentralization, low density, fragmentation, pollution and threatened environmental resources. They are in no way as extreme as in the case of the city Detroit (See 2.1.1). However if the current growth rate were to continue and Gauteng were to become the twelfth largest mega city in the world without these issues being addressed, we could expect a similar catastrophic scenario. In light of this, it is time that we take a more aggressive stance towards addressing these problems, such as landscape urbanism.

4.4. Existing frameworks

The municipal authorities are not unaware of these problems. They have commissioned a number of frameworks such as the Tshwane Inner City Development and Regeneration Strategy 2006 Rekgabisa Tshwane Framework, City of Tshwane Spatial Development Strategy, Regional Spatial Development Framework (RDFS) and the Tshwane Open Space Framework (TOSF). These frameworks all have similar goals and strategies and paint a vision for Tshwane as “An internationally acclaimed African capital city that empowers the community to prosper in a safe and healthy environment (TOSF vol I 2005: 15).”

This vision also highlights the following goals for the city:

- It has to be of international standard and contribute to the competitiveness of the city.

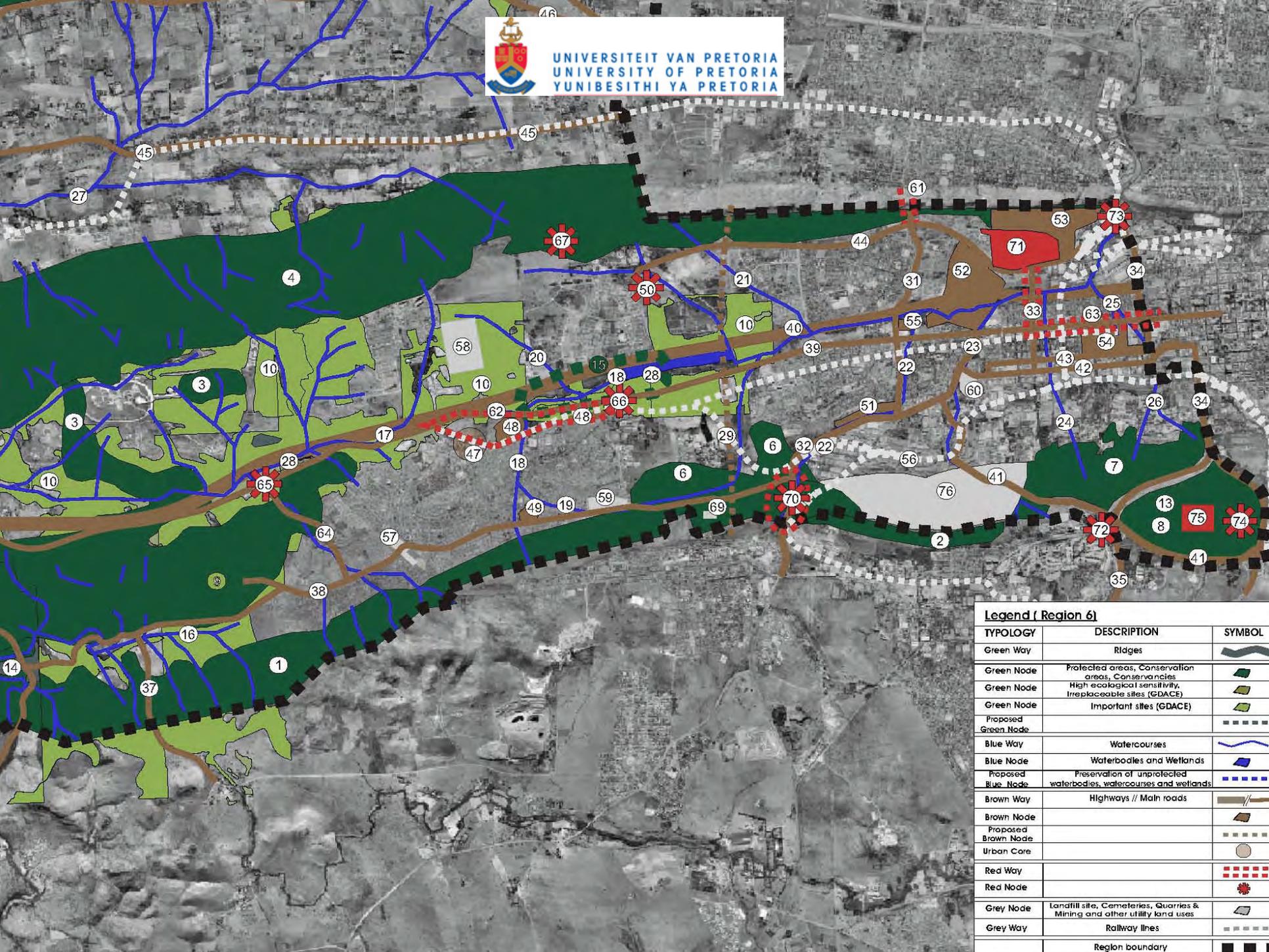
- It has to address the African context.
- It has to be suitable for a capital city and contribute to the image of the city.
- It has to contribute to the social and economic wellbeing of the residents.
- It has to create a safe environment.
- It has to create a healthy environment (TOSF Vol I 2005:5).

These ideals sound good. However most of these frameworks after repeated revisions have still not been implemented and where some components are implemented, they do little to address urban issues, such as the new Department of Education in Paul Kruger Street. This building formed part of the Rekgabisa Tshwane Framework, where it was placed on the important axis forming part of a public boulevard. However the building was designed in isolation and does not relate to its urban context as it is completely fenced off creating sterile environments along its edges. The same applies to the New Foreign Affairs building in Soutpansberg Road. These projects are object driven and do not contribute to the urban fabric of Pretoria.

4.4.1. Tshwane open space framework

The primary objective of the TOSF is the creation of an exceptional Open Space network for the city and its people (TOSF Vol I 2005:2).

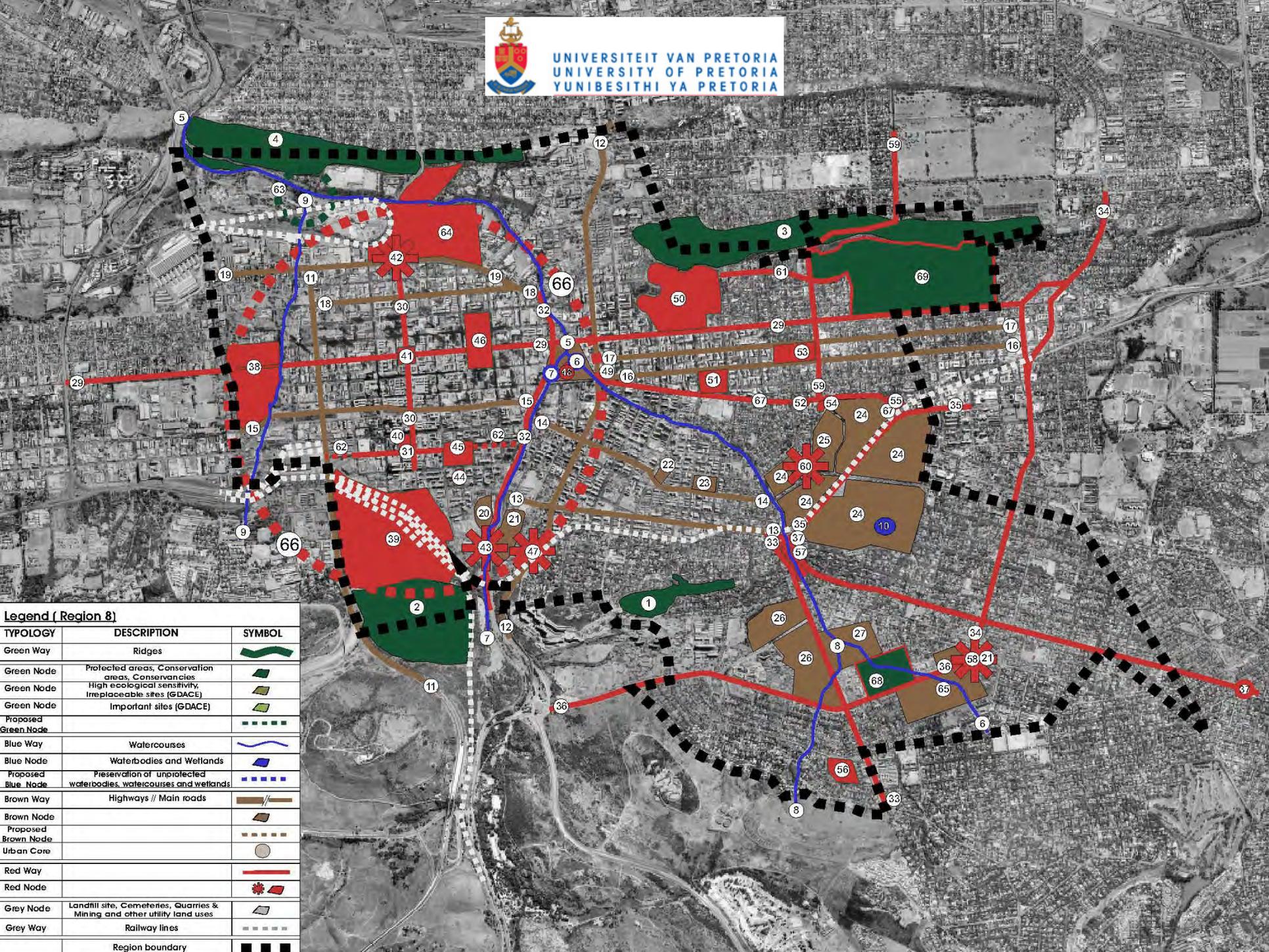
The Tshwane Open Space Framework in my opinion is one of the more successful frameworks because it highlights the importance of open space both from an ecological and social perspective. It is one of the first frameworks that incorporate



Legend (Region 6)

TYPOLOGY	DESCRIPTION	SYMBOL
Green Way	Ridges	
Green Node	Protected areas, Conservation areas, Conservancies	
Green Node	High ecological sensitivity, Irreplaceable sites (GDACE)	
Green Node	Important sites (GDACE)	
Proposed Green Node		
Blue Way	Watercourses	
Blue Node	Waterbodies and Wetlands	
Proposed Blue Node	Preservation of unprotected waterbodies, watercourses and wetlands	
Brown Way	Highways // Main roads	
Brown Node		
Proposed Brown Node		
Urban Core		
Red Way		
Red Node		
Grey Node	Landfill site, Cemeteries, Quarries & Mining and other utility land uses	
Grey Way	Railway lines	
	Region boundary	

Fig:14. Proposal for western district of the TOSF (TOSF vol 2 2005:98).



Legend (Region 8)

TYPOLOGY	DESCRIPTION	SYMBOL
Green Way	Ridges	
Green Node	Protected areas, Conservation areas, Conservancies	
Green Node	High ecological sensitivity, Irreplaceable sites (GDACE)	
Green Node	Important sites (GDACE)	
Proposed Green Node		
Blue Way	Watercourses	
Blue Node	Waterbodies and Wetlands	
Proposed Blue Node	Preservation of unprotected waterbodies, watercourses and wetlands	
Brown Way	Highways // Main roads	
Brown Node		
Proposed Brown Node		
Urban Core		
Red Way		
Red Node		
Grey Node	Landfill site, Cemeteries, Quarries & Mining and other utility land uses	
Grey Way	Railway lines	
	Region boundary	

48 Fig:15. Proposal for central district section of the TOSF (TOSF vol 2 2005: 117).



PTA West. It has made progress in creating awareness and protecting Pretoria's natural resources through legislation and conservation guidelines and proposes a series of 'green', 'blue', 'brown', 'grey' and 'red' nodes and lines. The colours refer to their individual functions; Ecological (green and blue), Socio-economic (brown and grey referring to social and civil infrastructure), and Placemaking (red referring to those with cultural significance.)

4.4.2. Critique

- The TOSF in my opinion takes a far too conservative stance based on conventional planning practices there fore the landscape still subservient to architecture.
- It does not aggressively promote regeneration of the urban fabric by actively addressing urban issues.
- It focuses primarily on land in state control, therefore fails to recognise the vast potential of fragmented and post industrial brownfields sites and therefore cannot accurately address the open space network as a whole.
- Does little to address major rifts within the urban fabric
- It still separates ecological, infrastructural and social functions



4.5. Alternative approach

How can one approach the planning of an open space framework differently? The Milan's PGT or "Green Plan" is an example of a more aggressive approach to open space planning that falls in line with landscape urbanism thinking.

4.5.1. The Milan PGT

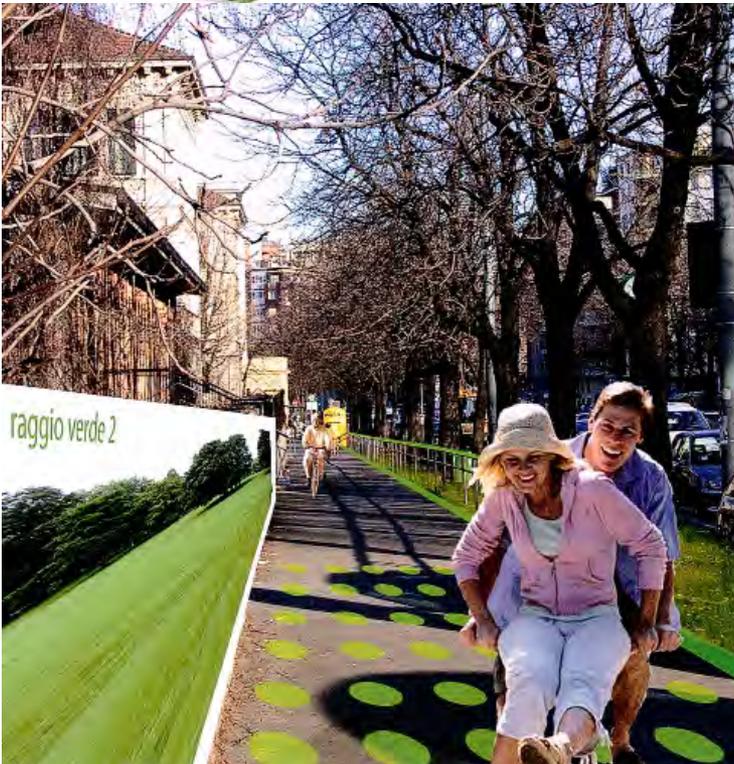
Description

The city of Milan, Italy, has been selected to host the 2015 Universal Exposition; its theme: Feeding the Planet, Energy for Life. In light of this city is rearranging its open space to promote the green potential and together with new existing open space, create a green network in order to promote itself as a more healthy and liveable city. The project forms part of Milan's PGT (Plan for Governance of the Territory) (Kipar 2007: 44).

The Green Plan was commissioned by the city of Milan. The framework was drawn up by the landscape architecture firm LAND. It consists of 1600 hectares with 72 km walking and cycling routes connecting the open spaces and places in the inner city to large metropolitan parks and open spaces on the periphery of the city (Kipar 2007: 47).

The objective was to create a greener city and enhance quality of public open space and urban lifestyle by connecting all the existing and new open spaces, green fields, parks and gardens, public areas, pedestrian and cycling routes, to new open spaces, large metropolitan parks and cultivated fields.

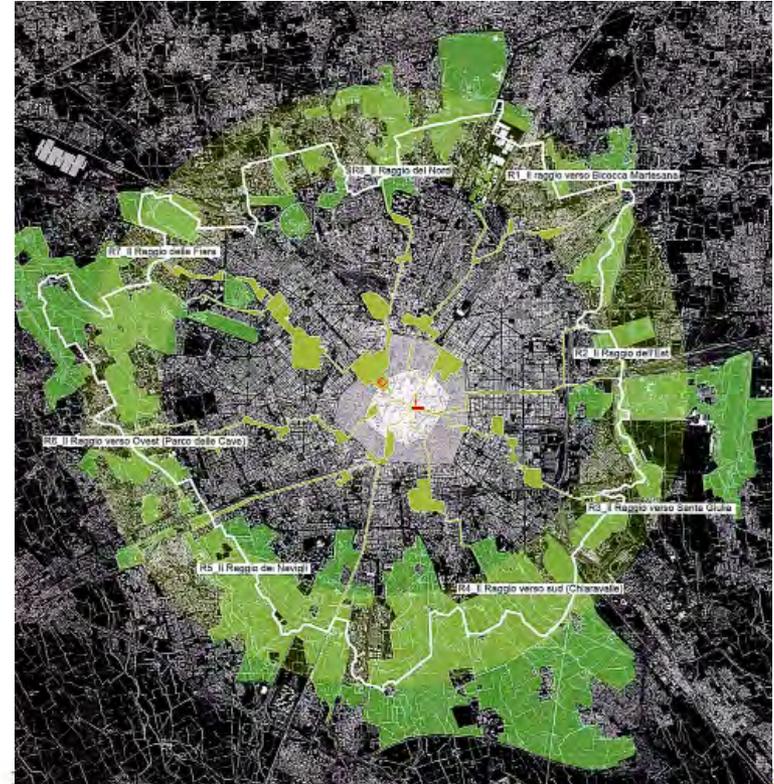
The network also incorporates various modes of transport and other civil infrastructure (Kipar 2007: 48).



Remarks:

- Its core themes are sustainability, regeneration and healthy urban environments.
- A healthy open space network will be able to support a greater density, improved living conditions will positively alter the general perception of the city leading to urban renewal. The city is developing internally and not expanding outwards.
- The landscape connects scattered points of interest and integrates public services of the core with environmental resources of the outskirts. Integrated infrastructure and open space become part of a network of services.
- It pull nature into the city and urbanity into nature there by maximizing the effect of the green areas.

Fig:16. The Milan “Green Plan“, a network of open spaces connected by 72km walking and cycling routes. (Kipar 2007)

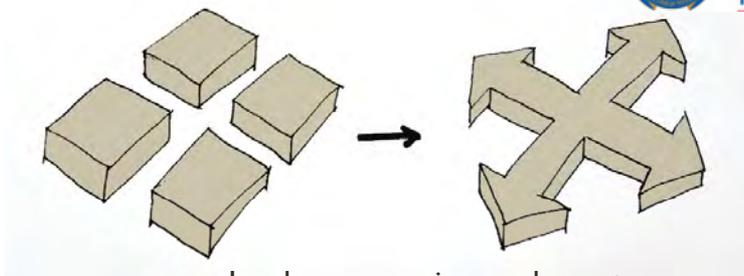


4.6. Approach

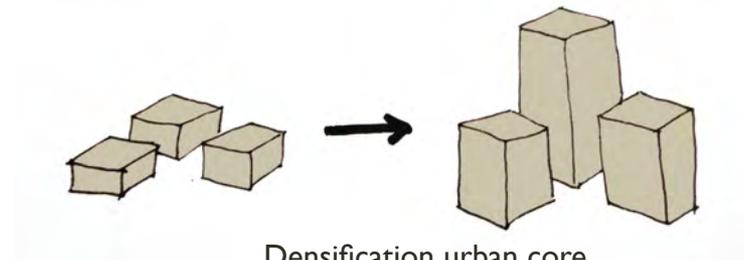
My approach will be to start at a large scale by analysing problems and identifying opportunities then developing and developing a landscape centric approach to dealing with the urban fabric of PTA West.

4.6.1. Objectives:

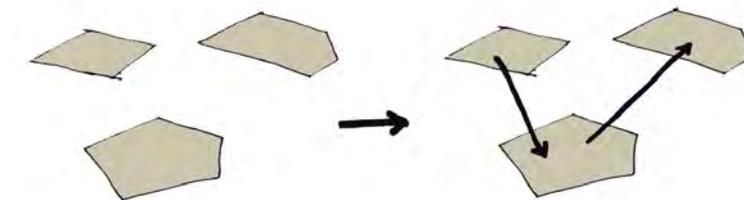
- Connect man to his natural surroundings by creating a network of attractive, sustainable and healthy liveable outdoor living environments with strong identity and spatial quality.
- Catalytic urban regeneration.
- Promote density
- Integrate fragmented sites
- Make use of existing infrastructure and opportunities
- Address negative perception of urban environment.
- Protection and rehabilitation of valuable and irreplaceable environmental resources
- Redevelopment of post-industrial brownfield sites.



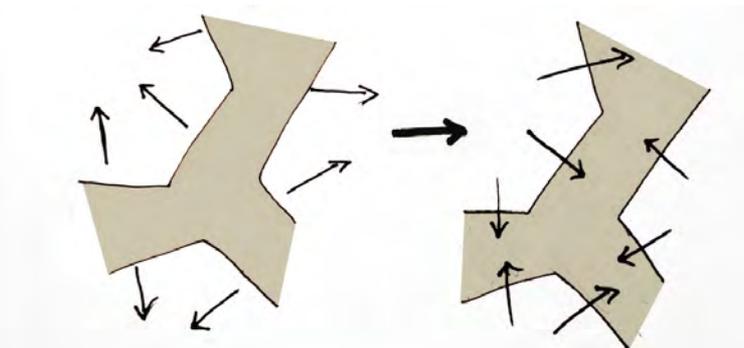
Landscape as primary element



Densification urban core



Stitch fragmented sites



Regenerate urban fabric

Fig.17. Diagrams showing objectives (Author 2010)

4.7. Analysis

4.7.1. Urban Sprawl

A dual action of formal (suburbs) and informal (townships) sprawl is taking place. New low density urban development takes place on the periphery of the city which leaves large sections of under developed land to the city centre and consumes productive farmland and ecological habitat in its wake. These new areas are usually only accessible by private car which in turn release greenhouse gases and require paving that contributes to the creation of heat islands (TOSF vol I 2005: 17).

4.7.2. Low Density

Most of the areas in Pretoria has a very low density of under 20 persons per hectare (p/ha) or ± 4 dwelling units (du/ha). The Highest density is found in inner city areas such as Sunnyside and Arcadia and on the outskirts in the Mamelodi and Soshanguve areas with a density of between 55 and 80 p/ha or $\pm 11 - 40$ du/ha. The highest density occurs in Atteridgeville with a density of up to 160 p/ha or ± 55 du/ha. There is no relation between density and access to public transport or distance from the inner city nor is there a relation between urban form and density. Nowhere in Pretoria is the recommended nodal density of 80-100 du/ha met. Because of this low density public transport is not viable except through high subsidies (TOSF vol I 2005: 23). For example Cairo has a surface area of 780km² with a population of over 8 million. Tshwane on the other hand has a surface area of over 2,200km² with a population of 3, 4 million.

In the western part of the CBD the overall density is very low, despite having a very good existing infrastructural grid that could maintain much higher densities therefore has large infill potential.

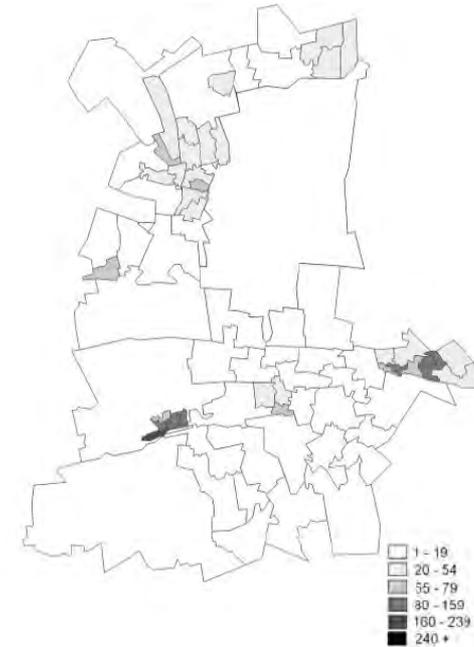


Fig:18. Diagram showing density (TOSF vol I 2005: 20).



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Fig:19. Pedestrian bridge to Salvokop. An example of a rift within the urban fabric of the CBD (Author 2007)

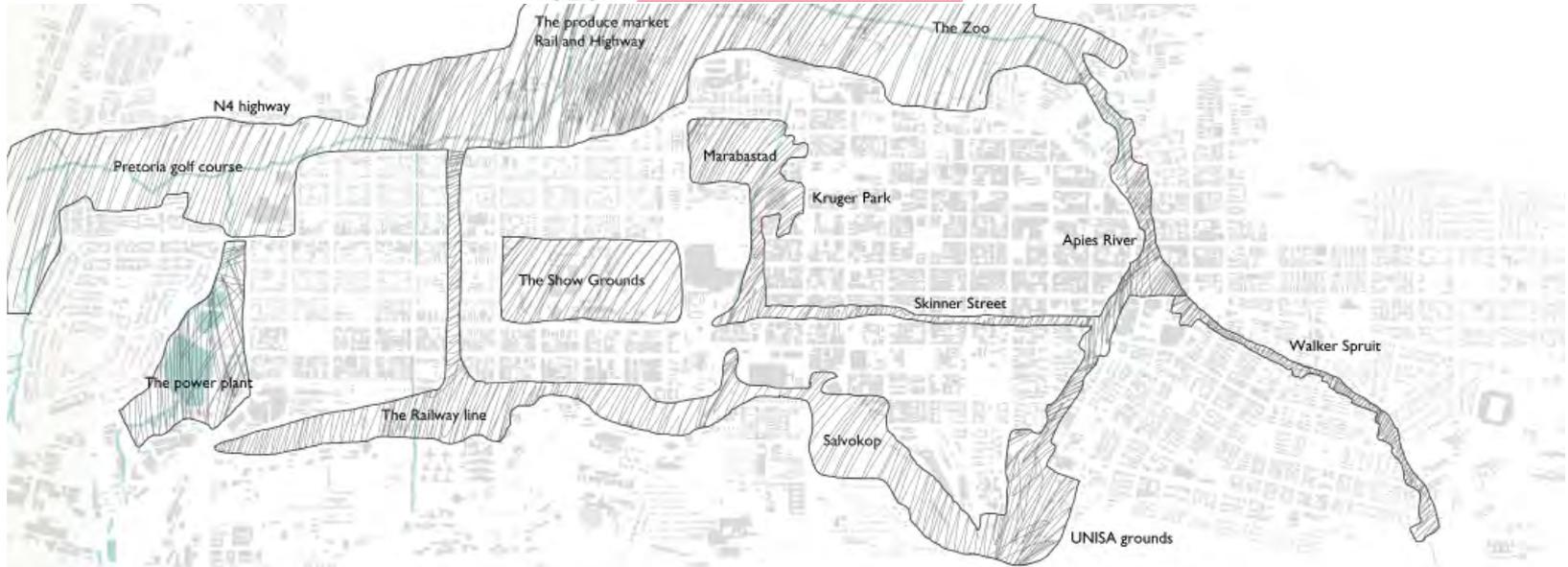


Fig:20. Diagram showing fragmentation (Author 2010)

4.7.3. Fragmentation

The historic urban growth pattern has produced a highly fragmented metropolitan area. The urban fabric is fragmented by the natural ridge and river lines that cut across it as well as large infrastructural schemes such as roads and railways. Vast areas are owned by institutions and therefore not available for development. Other rifts in the urban fabric were caused by politically driven urban planning such as, Skinner Street and large parts of the western CBD. The forceful removals that took place in the CBD during apartheid regime have left large areas of barren land that were earmarked for social housing schemes such as Shubert Park.

Furthermore the zoning practices that separated residential, commercial and work areas, has produced an “inefficient urban structure with long commuting distances and inefficient infrastructure provisioning” (TOSF vol I 2005: 26).

4.7.4. Decentralization

In Pretoria West there has been much decentralization of large business enterprises and anchor industries such as Iscor and Spoornet that have subsequently relocated to other areas on the periphery of the city or to other industrial areas across the country. Pretoria west power plant, one of most iconic industrial strongholds of the west, is set to be decommissioned within the next ten years. The decentralization and decommissioning of these industrial sites leaves behind large tracts of derelict and contaminated land.



4.7.5. Roads and rail

Major roads such as the R21 and N4 link this area to the broader region. It also has a rail system running through it with numerous stations including that of the Gautrain and established bus routes with the addition of a BRT system. The CBD and western Pretoria is well connected through public transport as well Private transport nodes. (TRSDf 29

4.7.6. Services

The west is on the same infrastructural grid as the CBD, however has a much lower density. Thus infrastructure can support a far greater density.

Adaptively reusing this waste landscape figures to be one of the twenty-first century's great infrastructural design challenges (Berger 2005: 199).

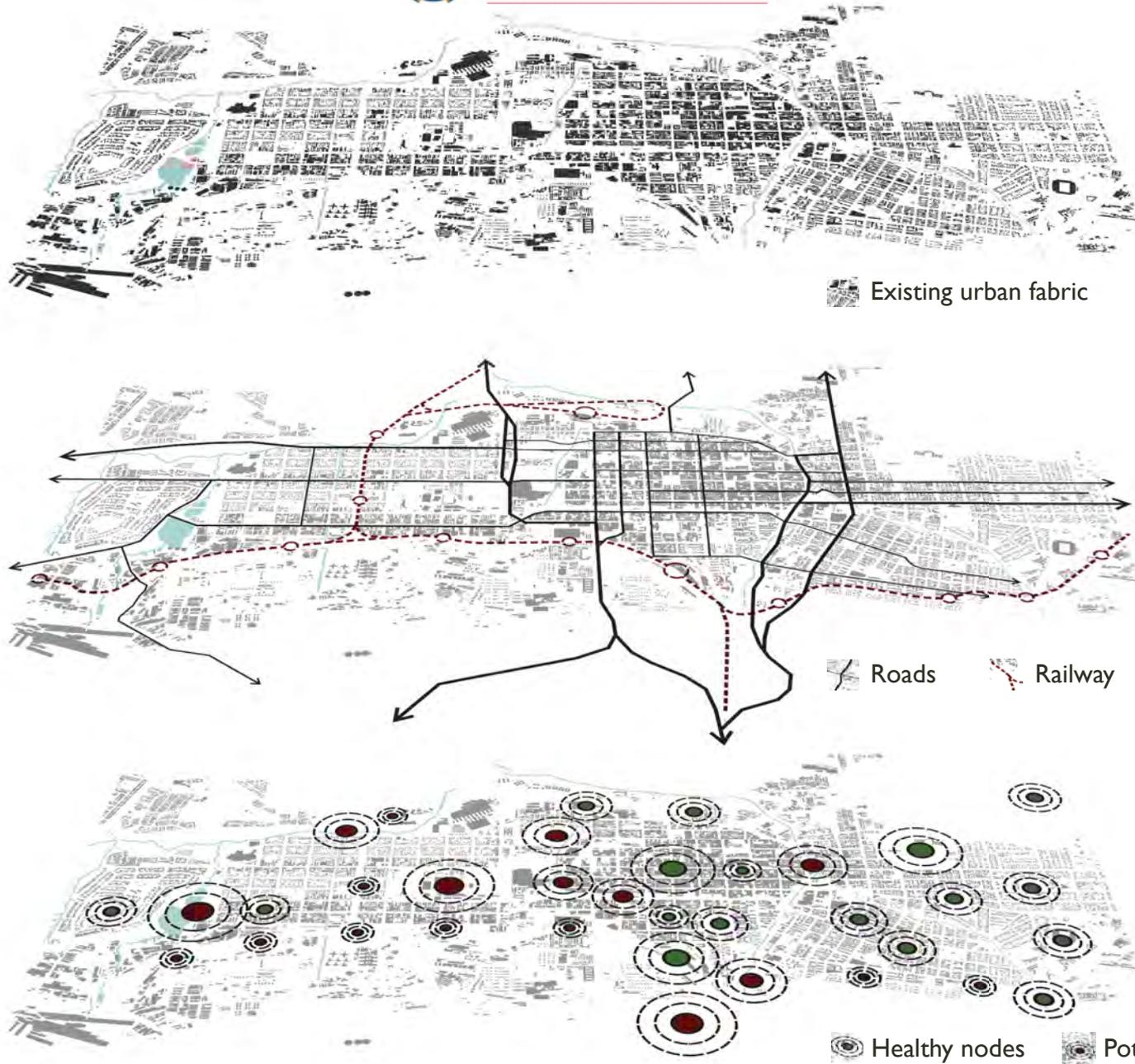


Fig.21. Diagram showing existing infrastructure (Author 2010)



Public open space



Private open space



Lightly disturbance

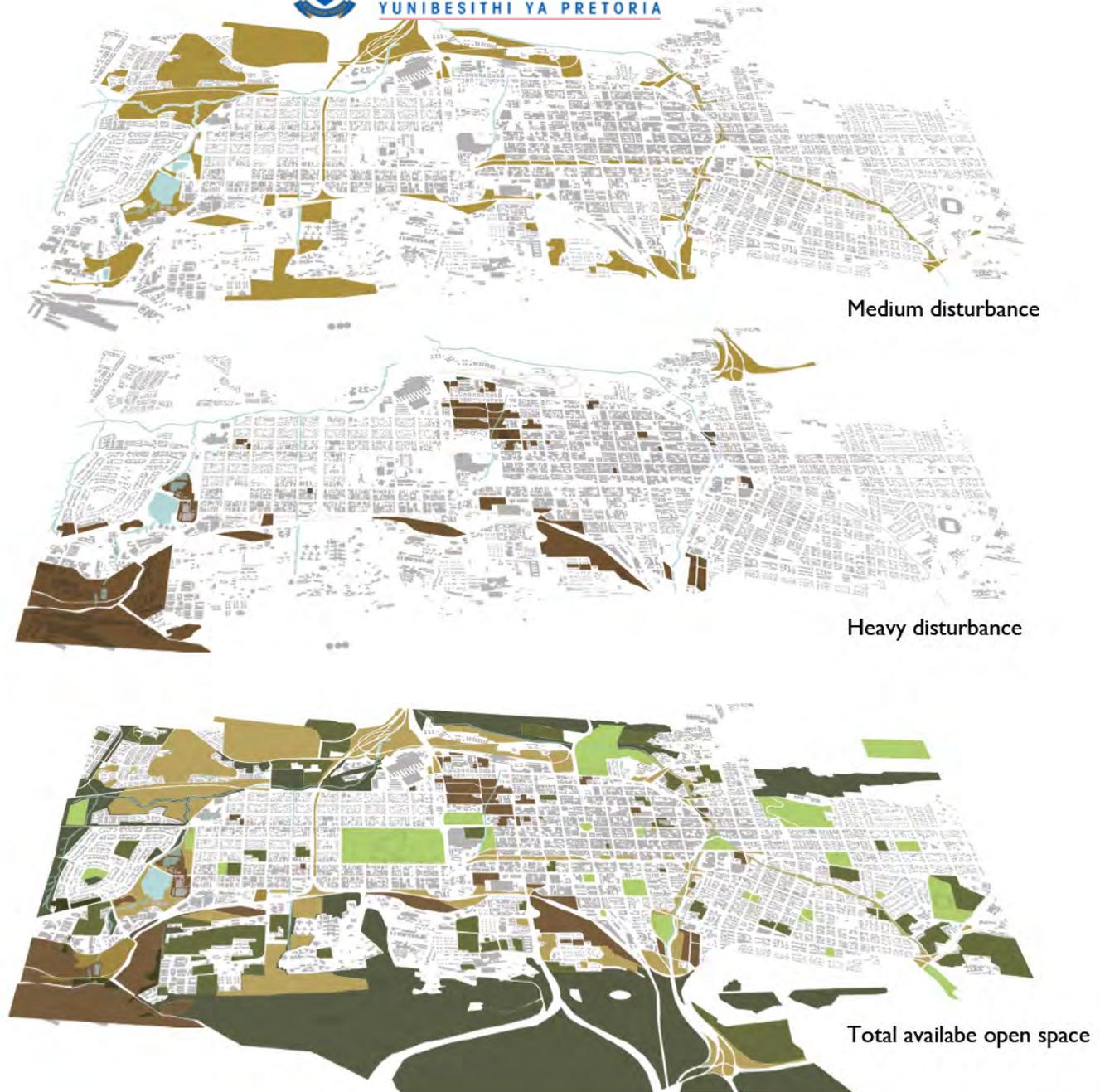


Fig:23. Analysis of Pretorias open space (Author 2010)



4.7.7. Open space

Only 27% of the 220 000 ha that constitutes Tshwane's municipal area is built-up, leaving 73% as some form of Open Space (TOSF Vol I 2005:30).

Of this 4.97% or 11 890 ha is managed by Parks and Horticultural Services. However only 13% or 1 596ha of that is zoned as parks. This means that only 0.73% of the total open space of Tshwane developed public open spaces, such as parks and plazas (State of the environment report 2002: 38).

This highlights the lack of public open space within the city. Areas to the east of the CBD seem to have a healthier open space system. However, to the west there is very little to no well developed public open space (Tshwane 2007: 12).

Public open space has a direct impact on the quality of life of urban residents and is essential for mental, spiritual and physical well being. It fulfils relaxation, recreation and placemaking needs. Open space is necessary in order to give coherent structure and beauty to our cities and should guide urban growth. Open space is also important in maintaining vital ecological services such as air and water purification and the maintenance of biodiversity.

“Quality of life improvements, through the development of parks, recreation facilities and Open Space systems, are critical components of any strategy to attract new economic development, as well as to assist business retention and expansion efforts (TOSF Vol I 2005:58).”

4.8. Concept

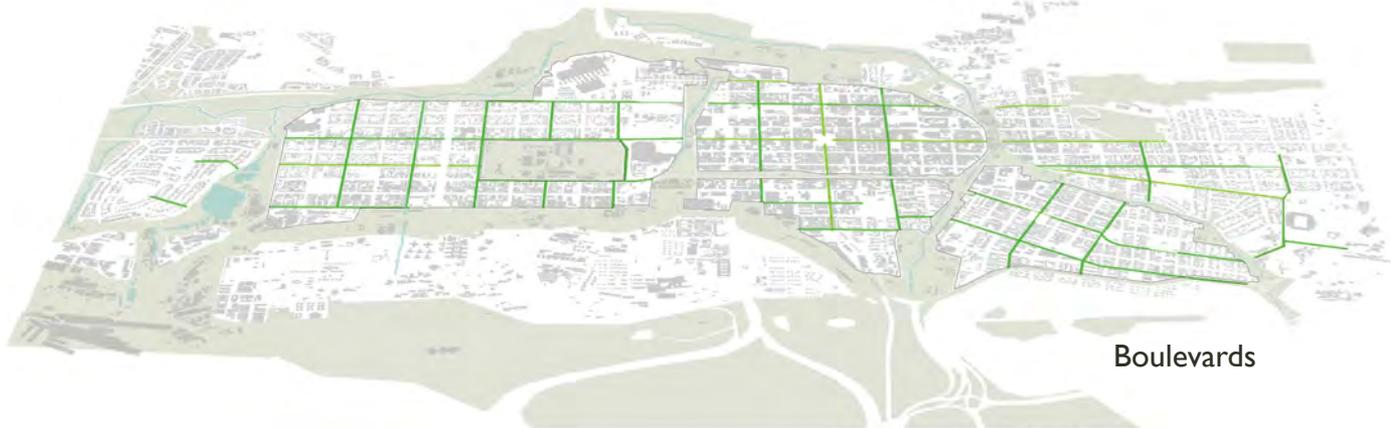
Create a public open space network that incites urban renewal. Create a positive living environment providing both safety and opportunity. Creating an ideal urban living environment that can support a greater density

Landscape architects and other designers of the urban realm should shift a good amount of attention away from small-scale site design in order to consider how we can improve regional landscape deficiencies of the urban realm. (Berger 2005: 209).

Designers must identify opportunities within the production modes of their time to enable new ways of thinking about the city and its landscape (Berger 2005: 211).



Major landscape nodes



Boulevards



Open Space Network

Fig.24. Diagram showing existing infrastructure (Author 2010)



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Fig:25. Open space network (Author 2010)



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Railway



Boulevards

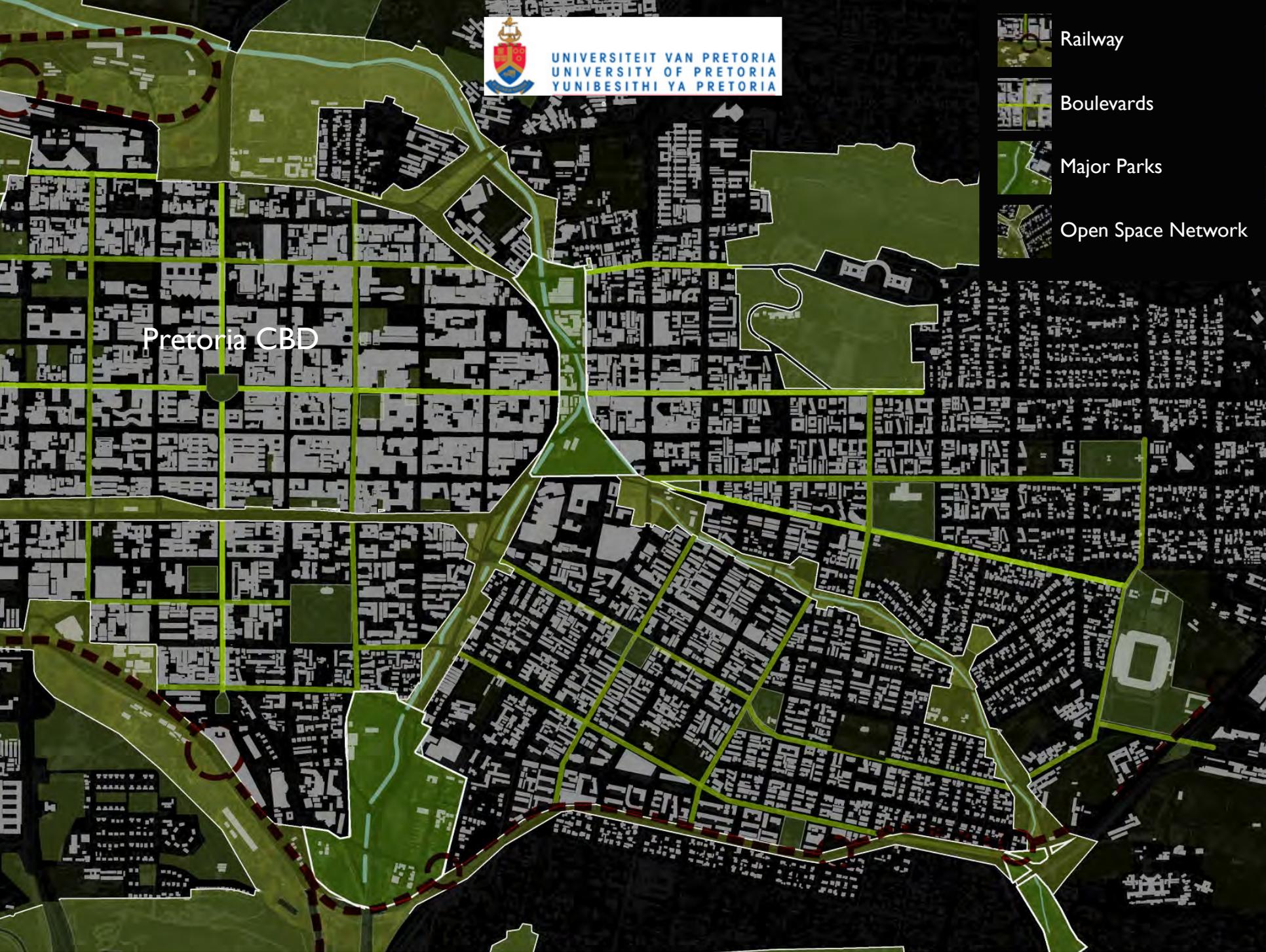


Major Parks



Open Space Network

Pretoria CBD





- 1 Site selection
- 2 Why the west?
- 3 Vision for the west
- 4 Why the power station?



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vision for the west

04



Fig:26. Man walking next to railway (Author 2010)

5. Vision for the west

5.1. Site selection

Of the new 5 major nodes within the open space framework, I have selected the power plant site in Pta West to further my investigation. LU theory suggest a co-operation between the major design fields of the urban realm, therefore West I joined up with a team of 6 architects in order to develop a vision and a broad framework for Pta West.

5.2. Why the west?

Pta West forms part of the sub-support system of the city. It is Pretoria west forms part of the sub-support system of the city. It is significant for both its production and employment functions. These are threatened due to sprawl and decentralization.

The original infrastructural grid of the CBD extends into the west, therefore it is an excellent network of existing infrastructure that can support a much greater density than it currently is. It is well located in terms of major roads and highways and has major railway connections running through. It offers excellent opportunities for public transport.

The area is well connected both provincially and nationally, offering opportunity for trade. It has the potential for mixed use development, therefore offers the opportunity for sustainable social and economic growth.

The area is one of the oldest areas in Pretoria and is significant for both its architectural and industrial heritage.

In the past this area has been severely neglected due to the perception of crime, poverty and pollution that it has gained over time. This negative perception hampers development opportunities within the area.

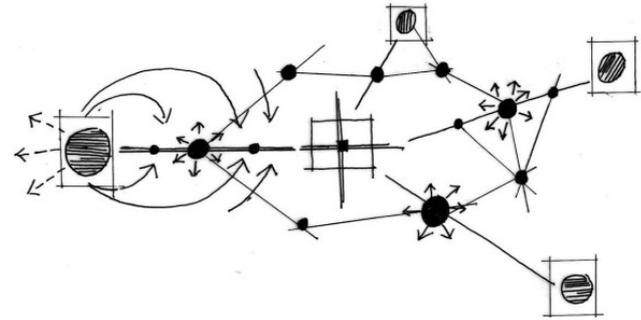


Fig:27. Diagram showing Pretoria West as sub-support cell for the CBD (Group framework 2010)

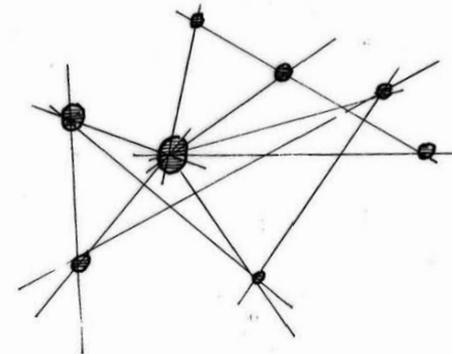


Fig:28. Regional connectivity (Group framework 2010)

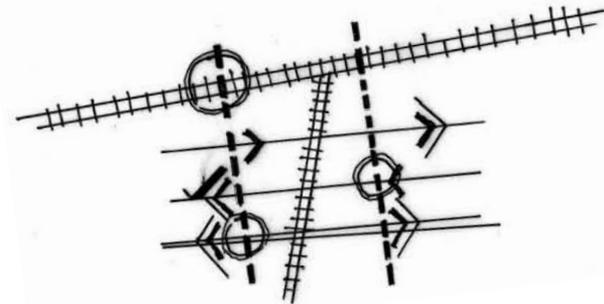


Fig:29. Existing Infrastructure (Group framework 2010)



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Fig:30. Vision for PTA West (Group framework 2010)



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5.3. Vision for west

Develop the west as a high density, mixed use sub-support cell for the city that will encourage growth and investment within the CBD of Pretoria. This is aimed at addressing urban sprawl through the regeneration and densification of areas within the city centre, thereby making use of existing infrastructural opportunities.

Create a healthy, sustainable living environment that will systematically alter negative perception and thereby unlock existing opportunities and allow people to interact with the rich industrial heritage of the area.

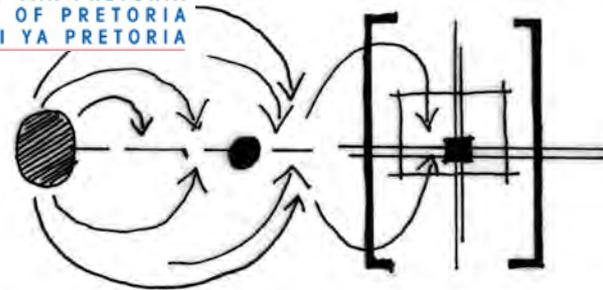


Fig:31. Diagram showing densification of Pta West whilst addressing sprawl (Group framework 2010)

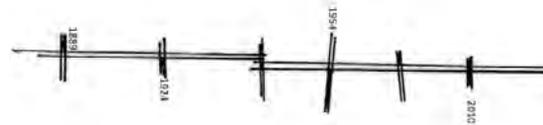


Fig:32. Industrial heritage(Group framework 2010)

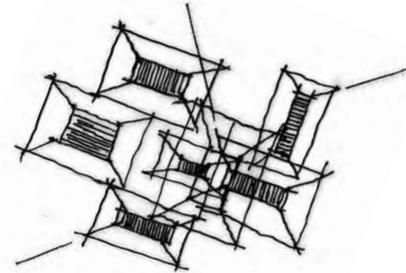


Fig:33. Addressing negative perception affecting development opportunity (Group framework 2010)

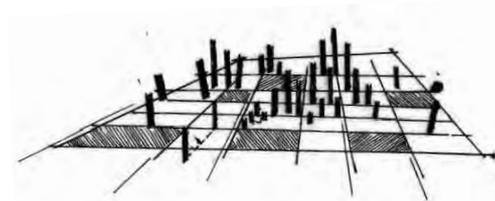


Fig:34. Mixed use development (Group framework 2010)

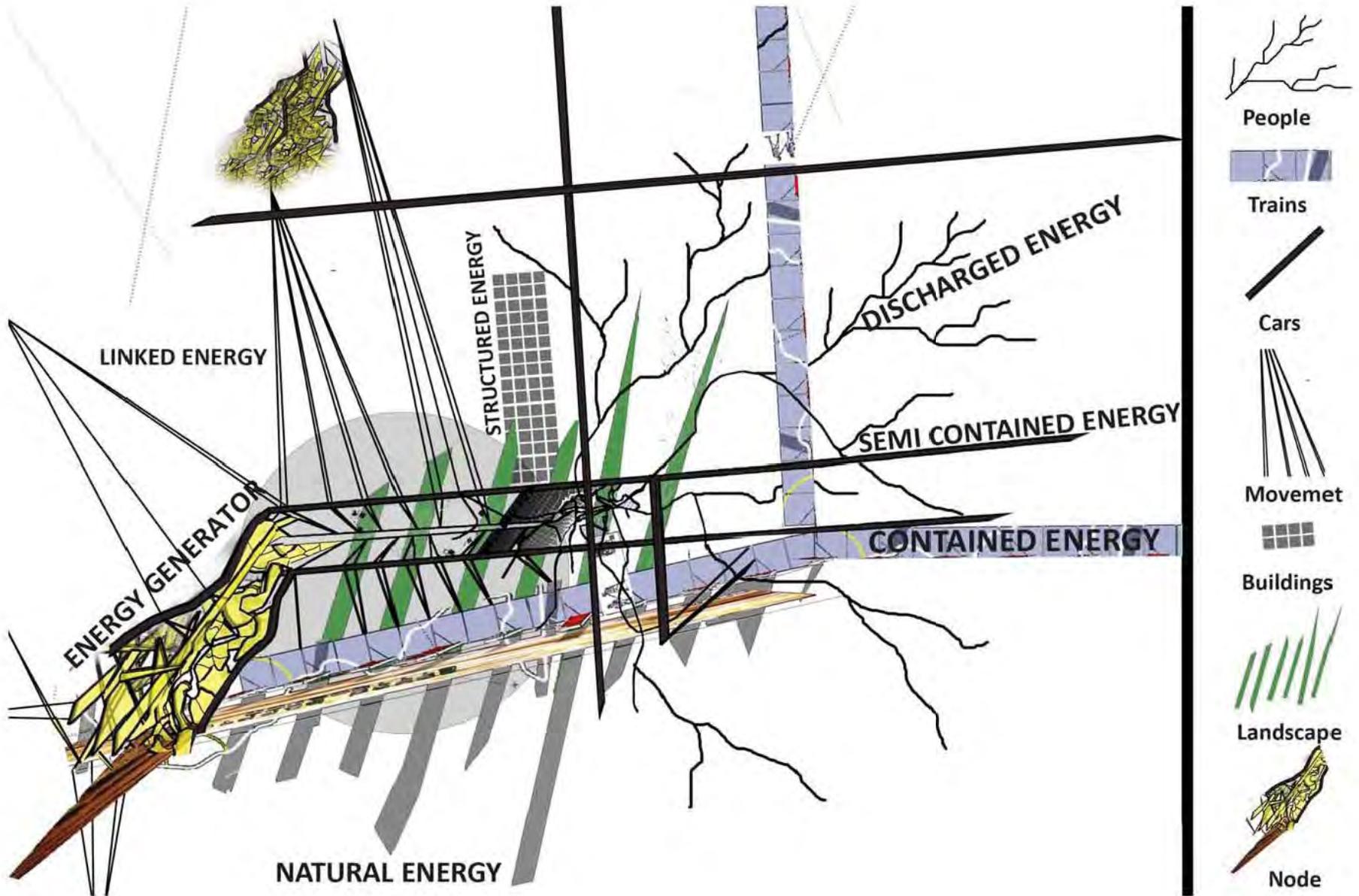


Fig.35. Vision for PTA West (Group framework 2010)



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Fig:36. Vision for PTA West (Group framework 2010)



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5.4. Why the power station?

The power station is one of the oldest and most iconic landmark sites in the west.

It a large portion of undeveloped land that borders a number of major roads and is located next to the railway line, therefore offering excellent access to the site.

It offers opportunity for a vast range of accommodation such as tourism, recreation, housing, agriculture, as well as commerce and production.

The power station will form a node on the activity spines of Mitchell and Souter Street in the west and will act as a catalyst for urban regeneration.

The power plant is set to be decommissioned in the next 10 years because it is no longer economically viable to maintain it. This will lead to the site being abandoned. Without intervention the site will lead to further job loss and decay in the west.

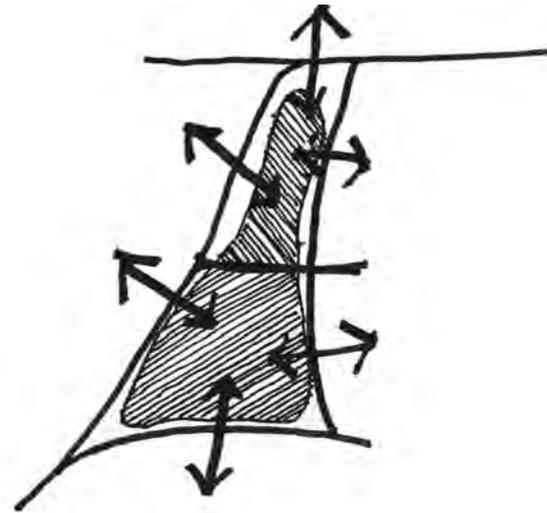


Fig:37. Connection site to its surrounding fabric (Group framework 2010)

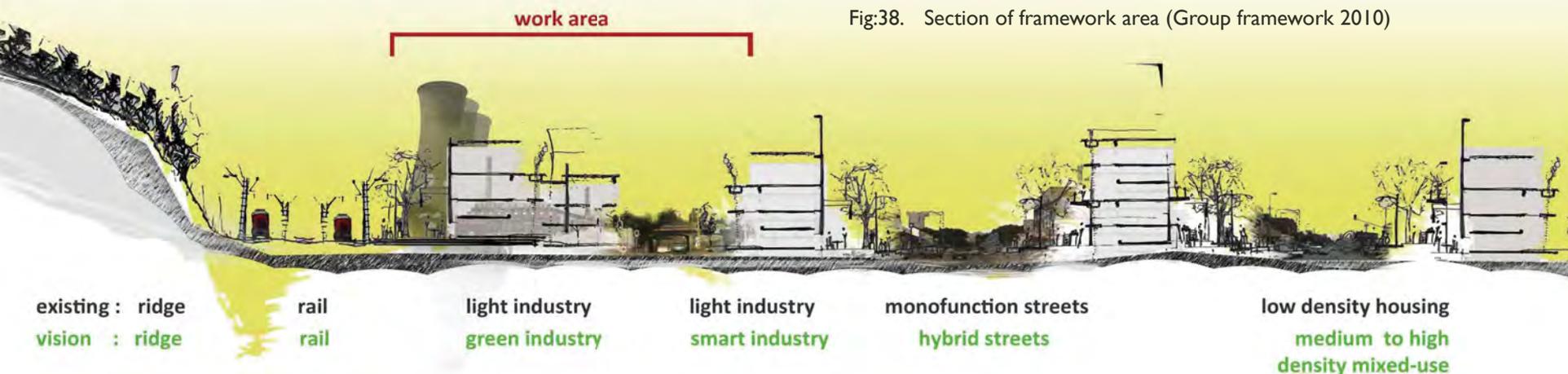


Fig:38. Section of framework area (Group framework 2010)



pta west

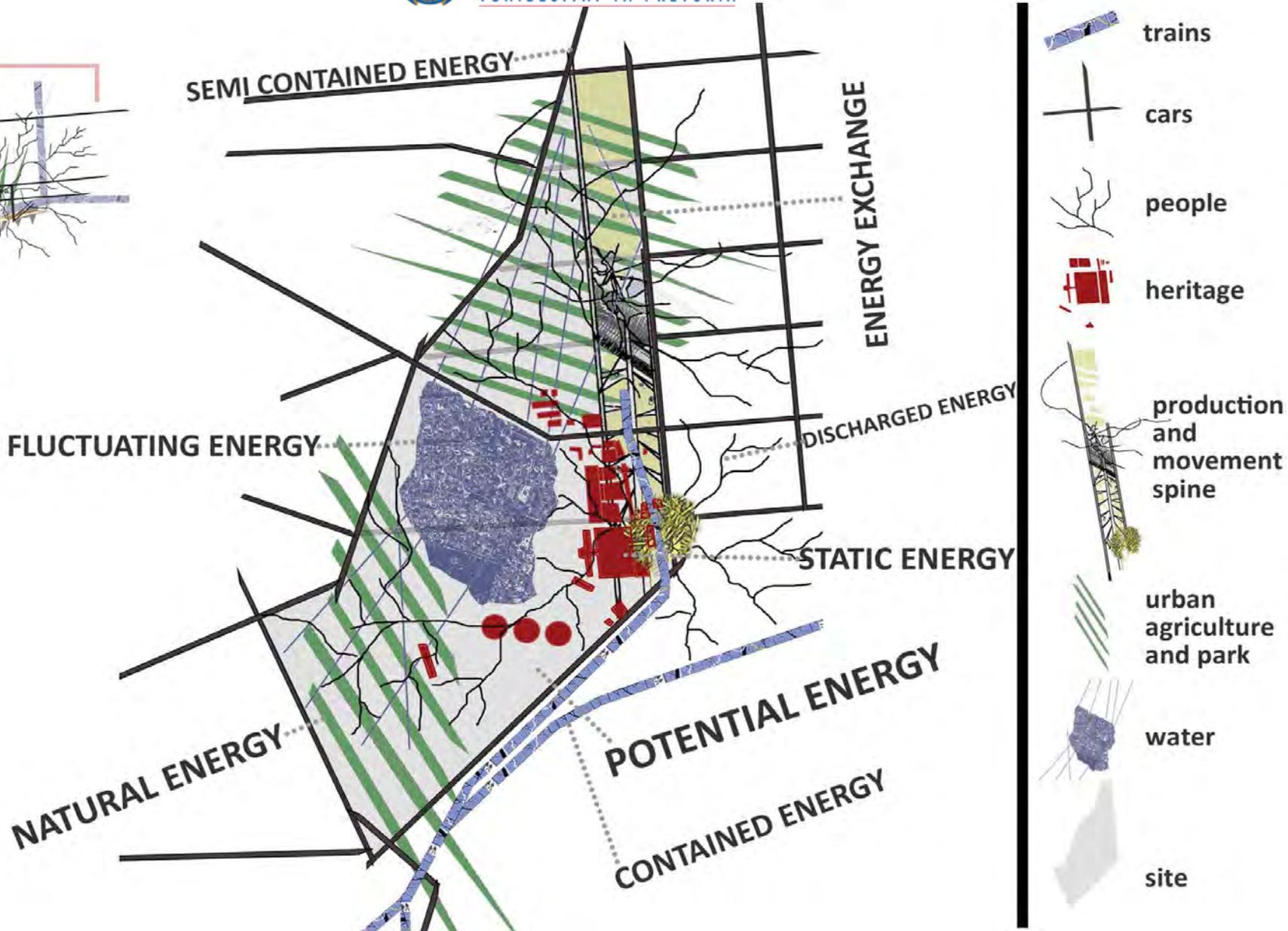
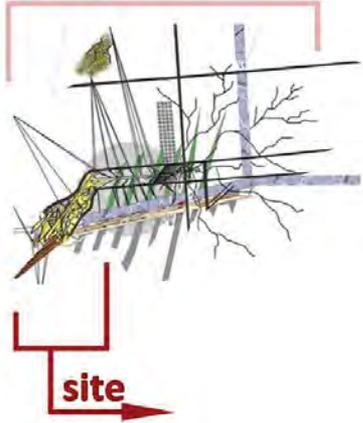


Fig:39. Vision for powerplant site (Group framework 2010)



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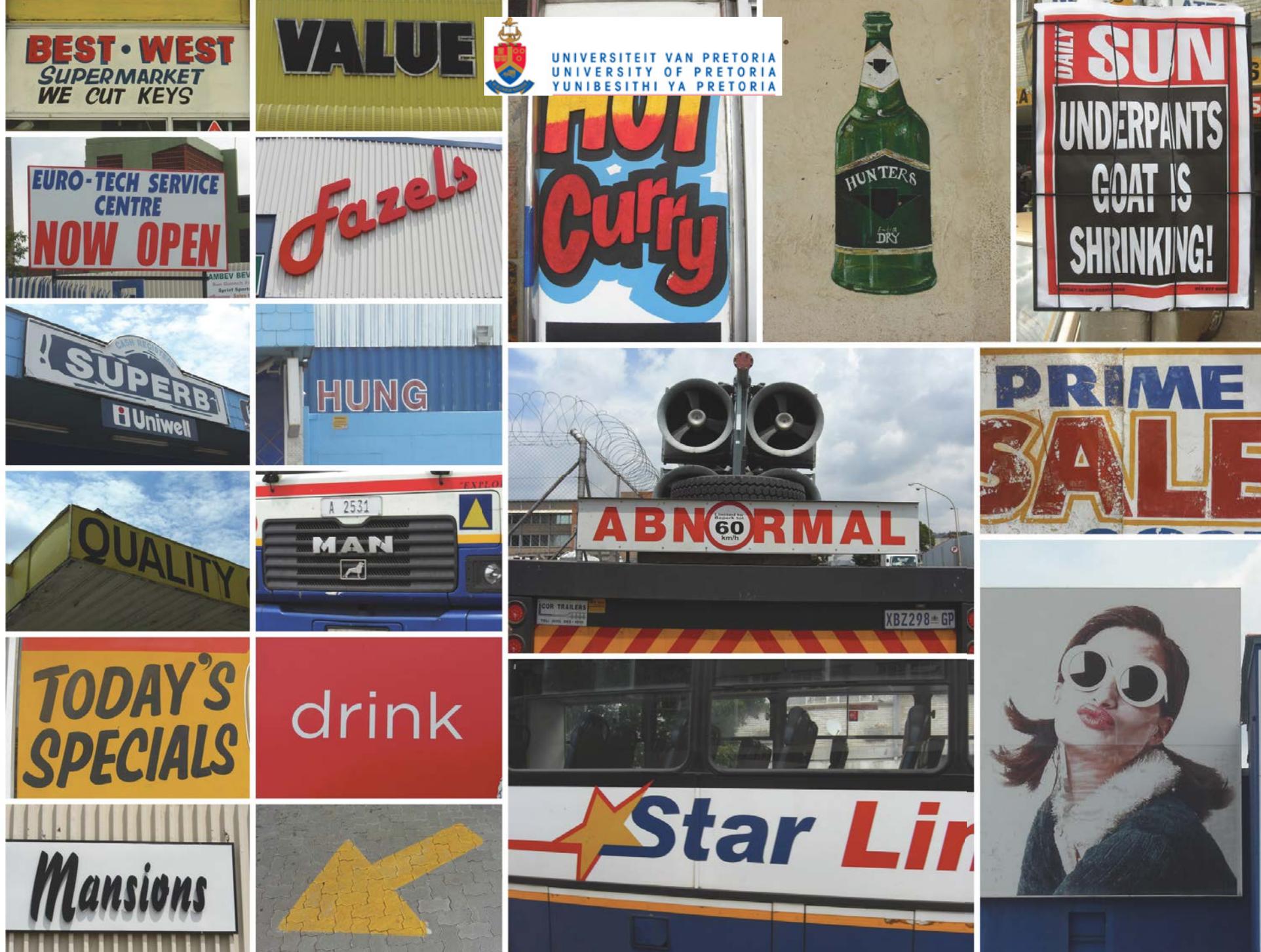
- 1 Objectives
- 2 Analysis
- 3 Site Framework



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site in context

05




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Fig.40. The bright side of PTA West, a digital collage of signage and advertising found in the area (Author 2010).

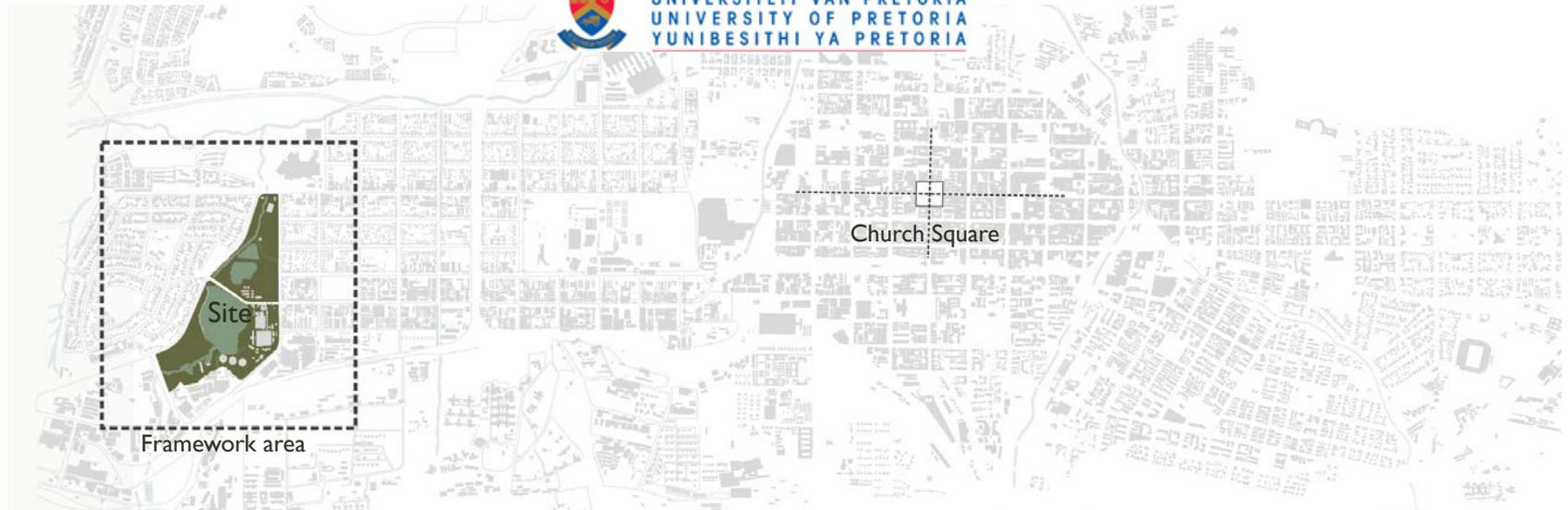


Fig:41. Orientation diagram (Author 2010)

6. Site in context

The group framework supplied an overall vision however more detailed analysis is needed as well as a more detailed framework in order properly address the site. The power plant site currently forms a rift within the urban fabric, separating adjacent communities with little access across it.

6.1. Objectives

- To understand social, ecological and infrastructural system in place
- To integrate site with surrounding urban fabric
- To link site to the broader open space network



6.2. Analysis

6.2.1. Zoning

The area originally consisted of heavy industrial components such as ISCOR and the powerplant and low cost housing for its employees. Over time many of these houses have been turned into lots selling cars, workshops and other light medium to light industrial functions. Vehicle sales and repairs forms a major part of the light industrial sector.

Commercial and mixed use clusters have developed along major roads such as Mitchell and Church Street. The recently developed Quagga Centre to the north of the site is the largest mall in the area. There is a southern strip of heavy industrial function along the railway. The area also has a number of schools and colleges.

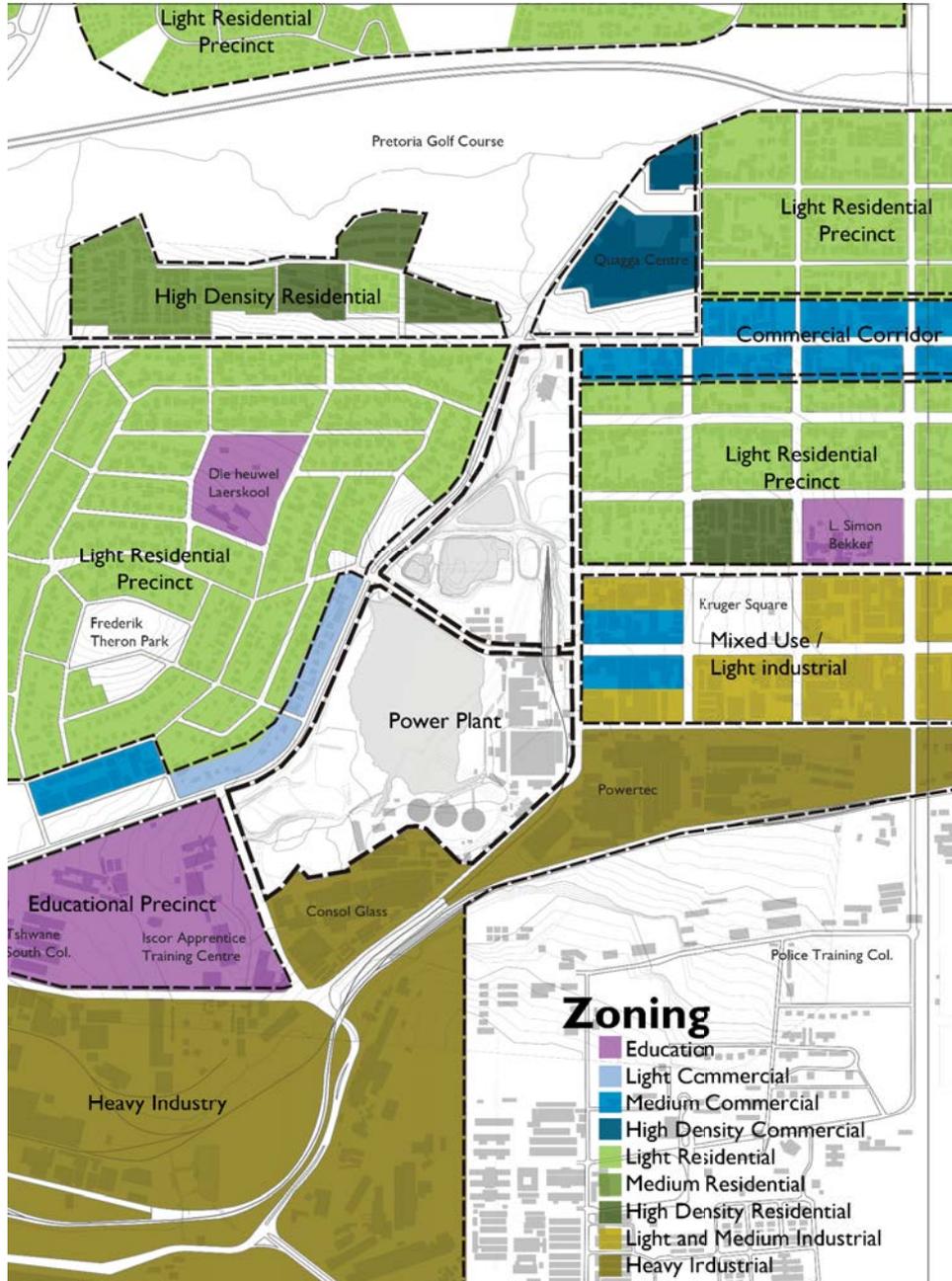


Fig:42. Diagram showing zoning (Author 2010)

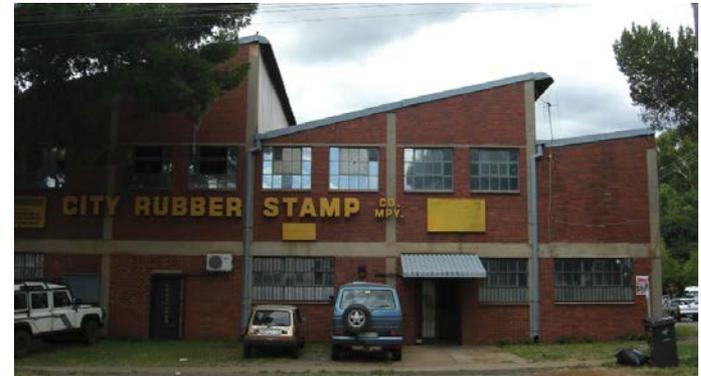


Fig:43. Light industrial (Author 2010)



Fig:44. Light commercial (Author 2010) Author



Fig:45. Residential unit in Proclamation Hill (Author 2010) 81



6.2.2. Transport

The area is well connected to the CBD as well as areas such as Laudium (R55) and Atteridgeville (Church Street). It is also connected to Brits through the N4 and to Johannesburg through the M7 leading to the N14.

The rail system consists of both freight and passenger lines that are part of the national railway system. Furthermore the area has an existing bus system and will eventually form part of Pretoria's BRT network.

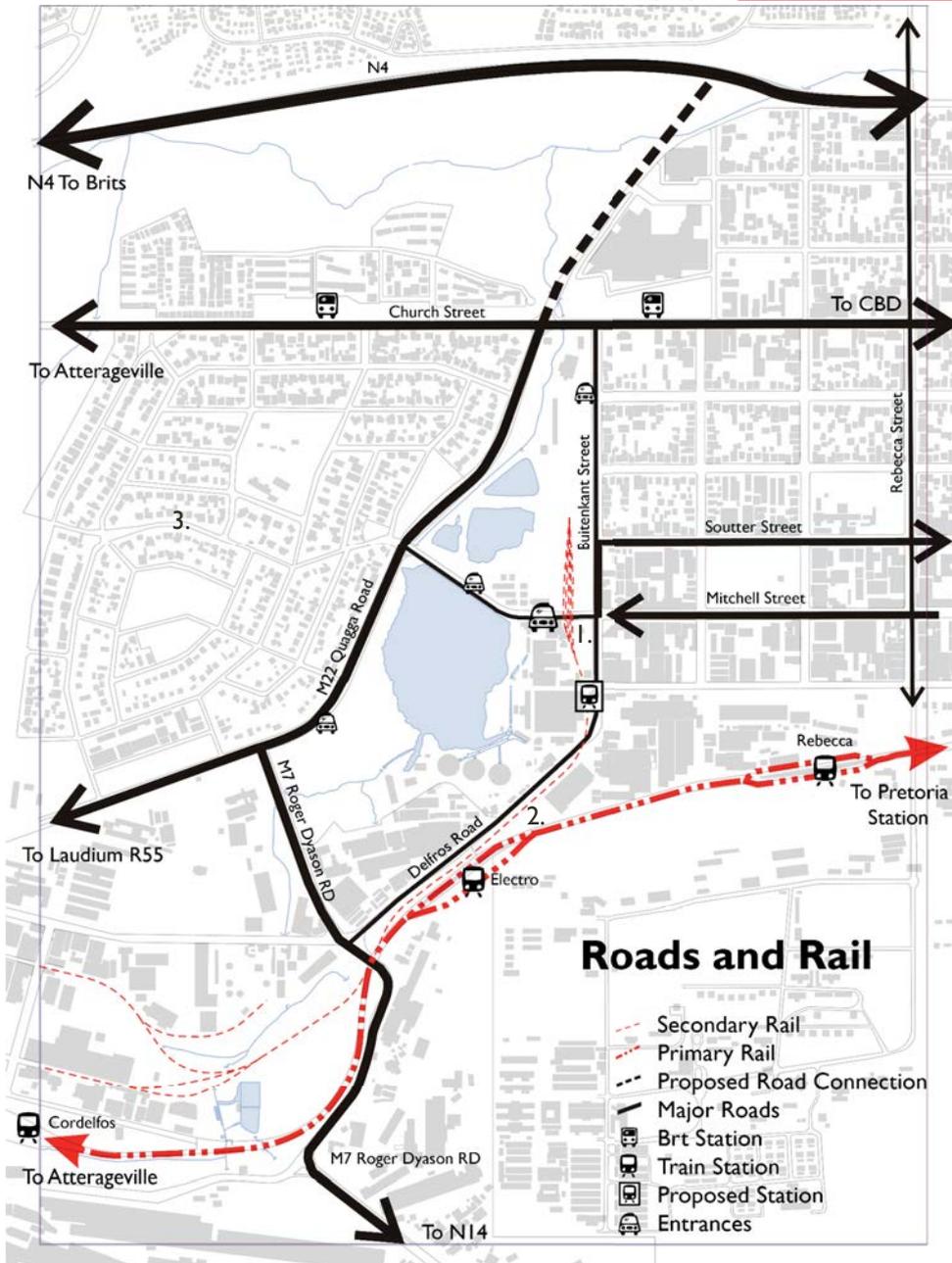


Fig:46. Diagram showing roads and railways (Author 2010)



Fig:47. Intersection of Mitchell and Buitenkant Street (Author 2010)



Fig:48. Electro Station (Author 2010)



Fig:49. Tree lined streets in Proclamation Hill (Author 2010)



6.2.4. Vegetation

Moot Plains Bushveld

The Moot Plains Bushveld biome the natural vegetation type for this region however in PTA West it has mostly been disturbed through development, pollution and invasive species.

Natural distribution

North-West and Gauteng Provinces: Main belt occurs immediately south of the Magaliesberg from the Selons River Valley in the west through Maanhaarrand, filling the valley bottom of the Magalies River, proceeding east of the Hartebeespoort Dam between the Magaliesberg and Daspoort mountain ranges to Pretoria. It also occurs as a narrow belt immediately north of the Magliesberg from Rustenburg in the west to just east of the Crocodile River in the east: also south of the Swartruggens-Zeerust line. Altitude is typically about 1050 – 1450 m.

Vegetation and landscape features

Open and closed, low, often thorny savannah dominated by various species of acacia in the bottomlands and plains as well as woodlands of varying height and density on the lower hillsides. Herbaceous layer is dominated by grasses.

Geology and soils

Soils often stony with colluvial clay-loam but varied, including red-yellow apedal freely drained, dystrophic and eutrophic plinthic catenas, vertic and melanic clays.

Climate

Summer rainfall with very dry winters. MAP from about 55mm in the west to about 700mm in the east. Frost

frequent in winter. Mean monthly maximum and minimum temperatures for Pretoria-Pur 33.6°C and -3.1°C for January and June respectively.

Important Taxa

Small trees:

- *Acacia nilotica*
- *Acacia tortilis* subsp. *heteracantha*
- *Rhus lancea*

Tall shrubs:

- *Buddleja saligna*
- *Euclea undulate*
- *Olea europaea* subsp. *Africana*
- *Grewia occidentalis*
- *Gymnosporia polyacantha*
- *Mystroxyton aethiopicum* subsp. *burkeanum*

Low shrubs:

- *Aptosimum elongatum*
- *Felicia fascicularis*
- *Lantana rugosa*
- *Teucrium trifidum*

Succulent shrub

- *Kalanchoe paniculata*



Woody climber:

- *Jasminum breviflorum*

Herbaceous climber:

- *Lotononis bainesii*

Graminoids:

- *Heteropogon contortus*
- *Setaria sphacelata*
- *Themeda triandra*
- *Aristida congesta*
- *Chloris virgata*
- *Cynodon dactylon*
- *Sporobolus nitens*
- *Tragus racemosus*

Herbs:

- *Achyroopsis avicularis*
- *Corchorus asplenifolius*
- *Evolvulus alsinoides*
- *Helichrysum nudifolium*
- *Hermannia depressa*
- *Osteospermum muricatum*
- *Phyllanthus maderaspatensis*

Conservation

Vulnerable - with only 13% conserved mainly in Magaliesberg Nature Area. Threatened by both urbanization and cultivation. Vulnerable to invasion of more aggressive invasive species.



Fig:50. Image of existing vegetation, Highly disturbed (Author 2010)



6.2.3. Hydrology and quality of water

The natural streams in the area have been severely disturbed over time. Large sections of the streams have been canalized or redirected to supply water to the industrial areas. The streams are also very fragmented due to the number of roads and railway lines crossing it. Due to increased run-off many of the intact sections have been eroded.

Areas that have been disturbed have been overgrown by alien invasive species. Streams are polluted by run-off from industrial areas and townships.

The table below shows the chemical composition found in the power plant dams. This water is discharged into Skinner Spruit.

MONTH: NOVEMBER 2009

1. **EFFLUENT SAMPLES**

PARAMETER	UNITS	STANDARD	DATE: 09.11.09 TIME: 08:00	DATE: 26.11.09 TIME: 08:00
pH		5,5-9,5	8,3	8,2
EC	mS/cm	Intake+75	61,8	66,7
COD-O	mg/l	75	41	40
PO ₄ -P	mg/l	1,0	0,45	0,56
NO ₃ -N	mg/l	10,0	2,24	5,24
SS	mg/l	25	15	22
F COLI	Count/100 ml	1 000	520	600

2. **EFFLUENT DISCHARGED** (MAXIMUM 383,3 MI PER MONTH)

TOTAL: 50,54 MI DAILY AVERAGE: 1,68 MI

DAILY MAX: 5,13 MI DAILY MIN: 1,17 MI

Fig:51. Table showing toxicity screen of water in the man dam

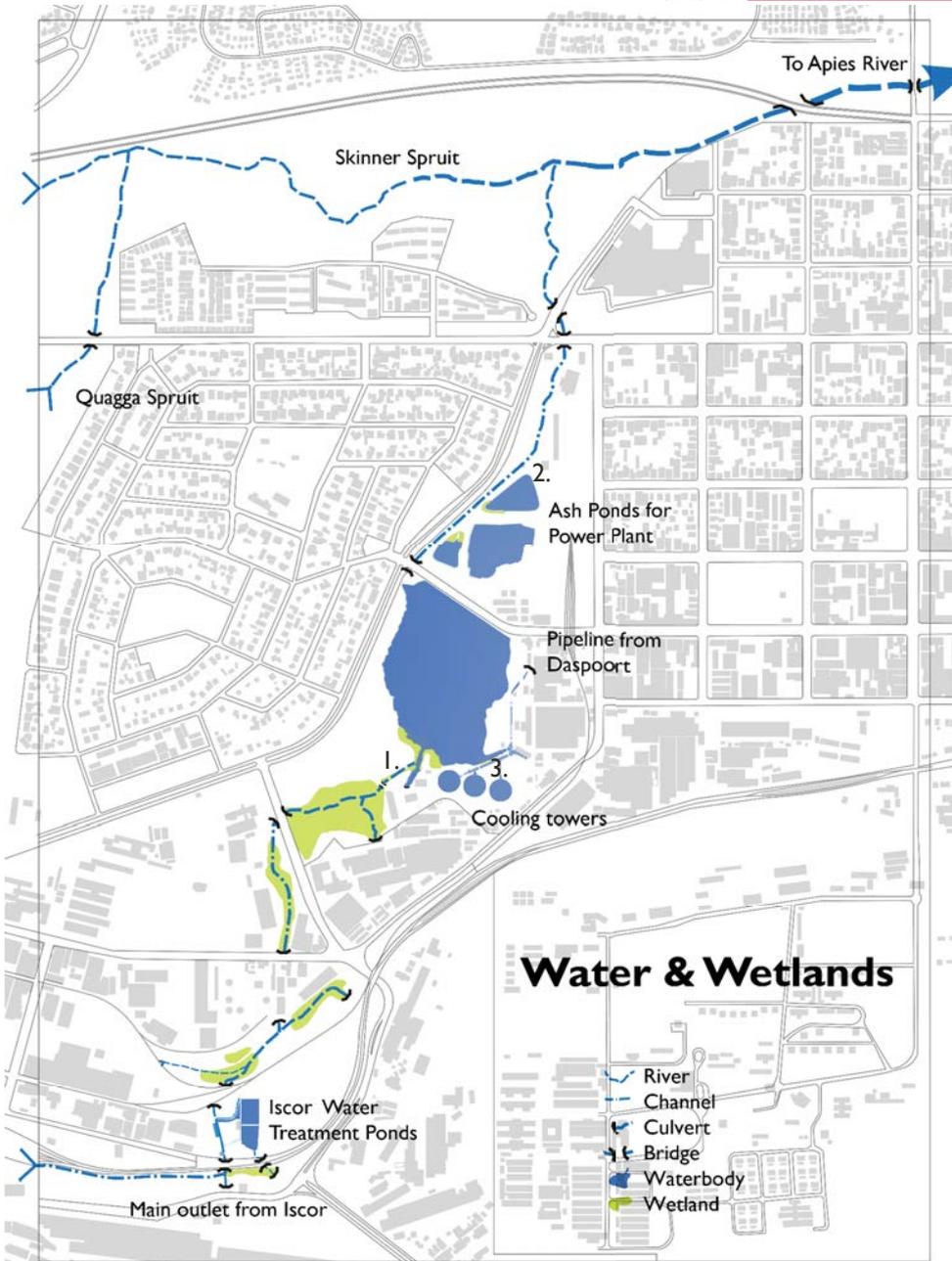


Fig:52. Diagram showing hydrology (Author 2010)

1.



Fig:53. Wetlands and stream flowing into dam (Author 2010)

2.



Fig:54. Northern ash pond (Author 2010)

3.



Fig:55. Channel leading from cooling towers (Author 2010)



6.2.5. Open space analysis

The area has a number of fragmented open spaces. Recreational open space includes that of the historic Pretoria golf course, Frederic Theron Park and Kruger square. Most of the open space in this area has been highly disturbed by industrial action over time and would need bioremediation. Spaces are fragmented however can be linked together to form part of the open space network.



Fig:56. Diagram showing open space analysis (Author 2010)

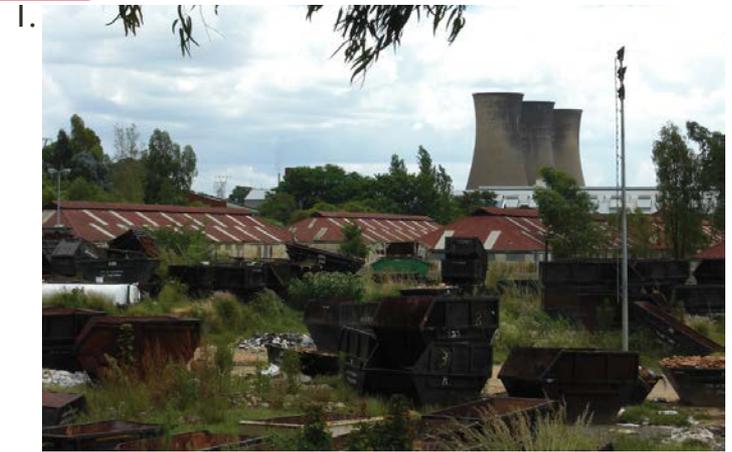


Fig:57. Dumping on brownfields site in industrial area (Author 2010)



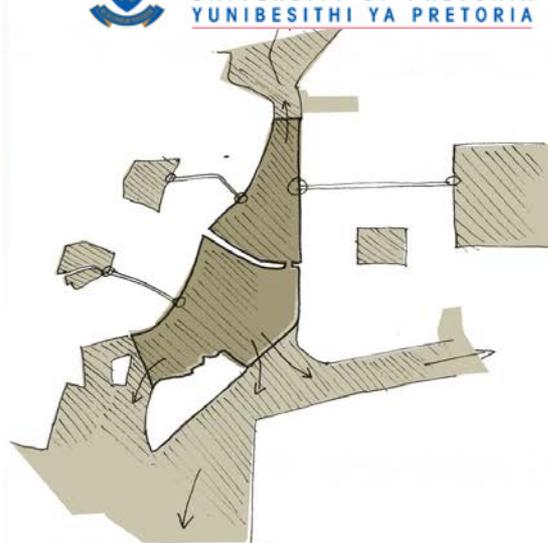
Fig:58. Remains of old structure on site (Author 2010)



Fig:59. Open fields in surrounding areas (Author 2010)



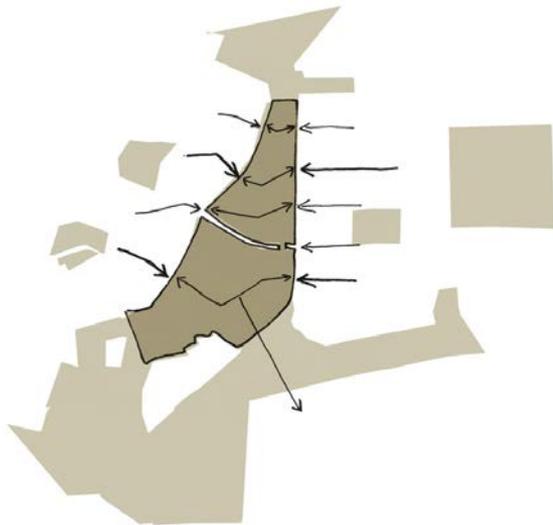
fragmented sites



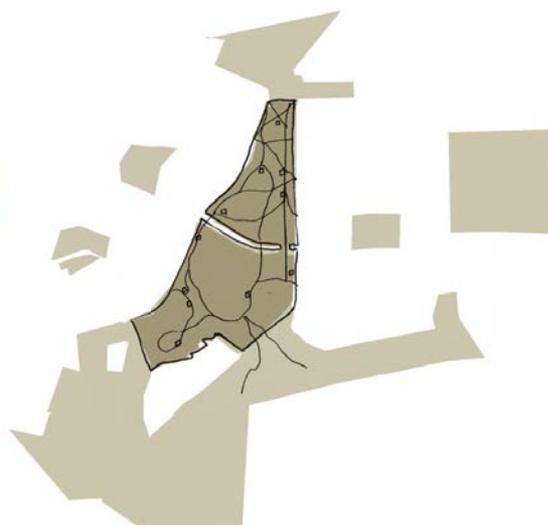
link fragmented sites



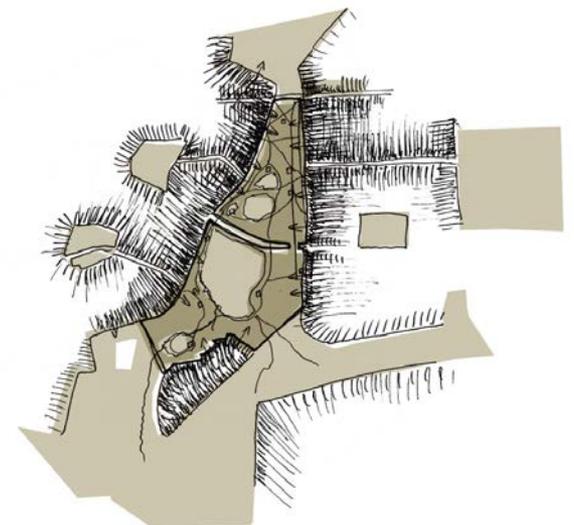
rehabilitate ecological processes



stitch urban fabric



Reprogram site



densification and regeneration

Fig:60. Diagram showing conceptual intentions (Author 2010)

6.3. Framework

The purpose of the framework is to create the necessary links between the site and its surrounding urban fabric; stitching together open spaces, rehabilitating ecological processes and reprogramming the site in terms of movement and program.

The framework promotes overall density and encourages multi storey mixed use development. The site is integrated into the larger open space network and linked to other important open spaces such as Pilditch through tree lined boulevards.

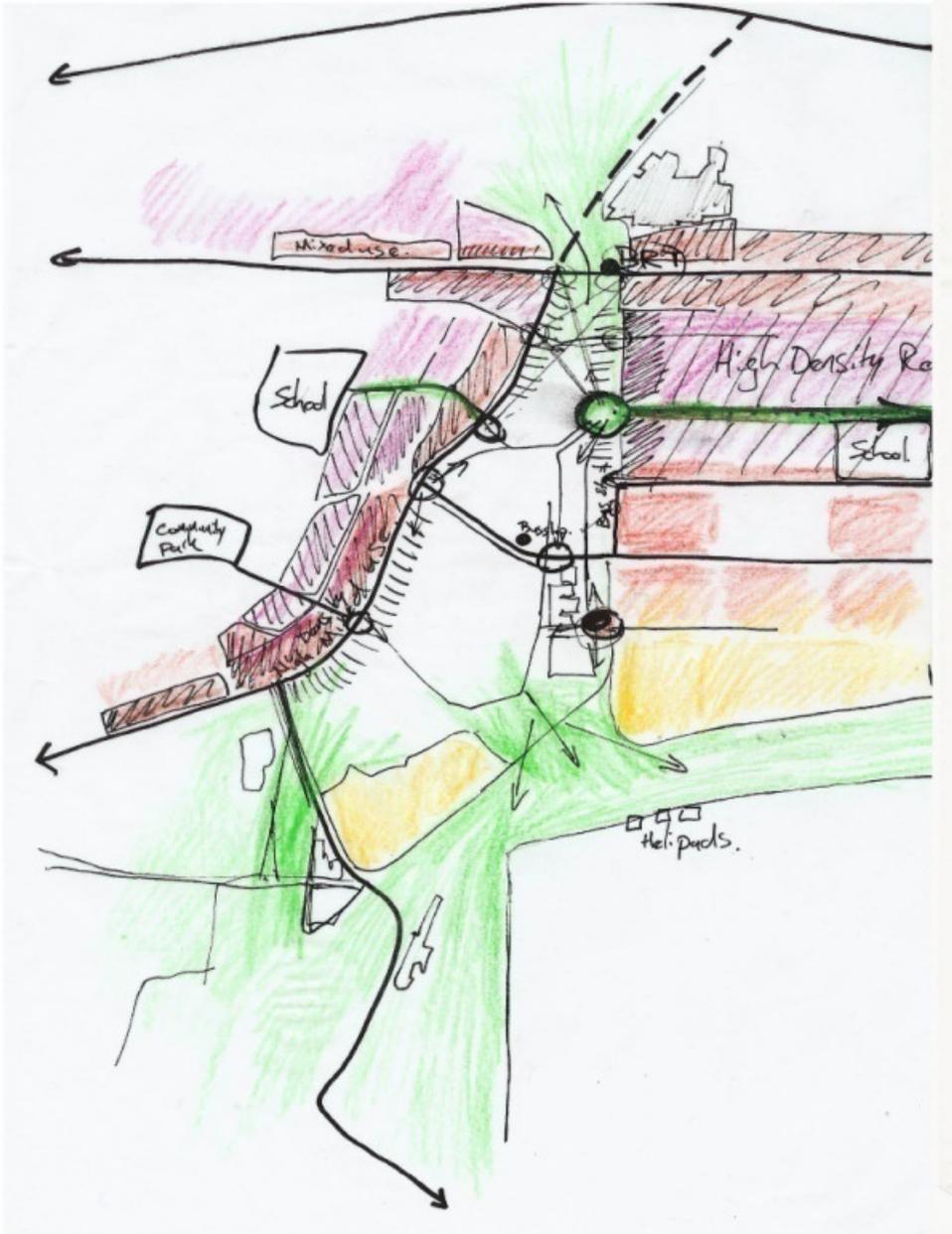


Fig:61. Site Framework (Author 2010)



- 1 Background
- 2 Character of site
- 3 on site process
- 4 Project motivation
- 5 Approach
- 6 Precedents
- 7 Approach
- 8 Concept
- 9 Concept development
- 10 Zones
- 11 Phasing programme
- 12 Design development



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06

site scale



Fig:62. Historic photograph of power plant taken in 1952.

7. Site Scale

7.1. Background

In 1891 the first power plant was established in Schoeman Street however by 1919 the demand for electricity had grown so rapidly that the municipal council decided to relocate operations about 5km west. The original Pretoria West Power Station officially opened in December 1923 and occupied and enlarged a number of times up until 1949, when it was decided to build a new plant next to the existing one. The new plant was constructed in 1952, at a cost of £ 8,372,000 and remains in operation to this day.

The site is a landmark both because of its scale and because of its age and has always played an important role in providing the city with electricity and jobs. Its structures rise up to 80 meters above the ground and offer excellent views of the city, the towers are visible afar off and serve as a beacon in the west. The site offers a strong contrast between man and nature with strange industrial structures within the landscape and vegetation re-colonizing abandoned structures and surfaces as well as numerous topographical and hydrological features. This interaction lends a certain poetic magic to the site.

The future of the power plant is uncertain as it is outdated, ineffective, expensive to maintain and not feasible to upgrade. Therefore the plant is set to be decommissioned within the next 10 years.

However demolishing the plant would be costly and many structures are older than 60 years and are now heritage protected. Therefore it is likely that the plant will be abandoned adding to the patchwork of contaminated sites that define and decay the west.



Fig:63. Historic aerial photograph of power plant taken in 1947
(Author Unknown)

7.2. Character of site

The various industrial and ecological processes working in on the site have over time shaped it into irregular landscape that it is today. These processes have also evolved over time rendering many structures and landforms obsolete therefore free to decay and be overgrown. This has imbued the site with a mysterious yet intriguing character illustrating a rather haphazard dialogue between man and nature. Numerous water bodies and industrial structures create picturesque scenes shielded from the surrounding urban environment by large trees and landforms.





Fig:66. Word depicting character of site (Author 2010)



Fig:67. Inside one of the cooling towers (Author 2010).



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Fig:68. View points (Author 2010).





Fig:69. East ward view of power plant complex (Author 2010).

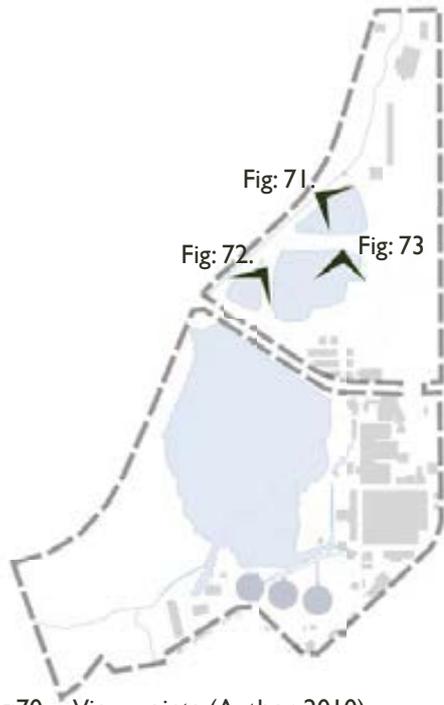


Fig:70. View points (Author 2010).



Fig:71. Northern ash pond (Author 2010).



Fig:72. Western ash pond (Author 2010).



104 Fig:73. Panorama looking south at the eastern ash pond with the power plant in the background (Author 2010)





7.3. On site process

The power plant generates electricity by burning coal. The coal heats up water and creates steam. This steam then turns the turbines that generate electricity. The steam is then released into the cooling towers where it cools off and is then allowed to run into the dam.

Coal contains heavy metals, through the process of burning these heavy metals are released either into the air or in the ash. The ash is transported from the burners to ash hoppers through a high pressure water system fed by the main dam. The coarse ash remains in the hoppers where it can be dumped directly into trucks whilst the finer fly ash is pumped to ash ponds where it is allowed to settle. The ash is then later removed through the use of a tendering process. The heavy metals in the ash are contained as long as the ash remains water-logged. When the ash ponds are drained the water is released into the Skinner Spruit.

These processes have contaminated the soil and the heavily disturbed soil has made way for various invasive and alien plant species.

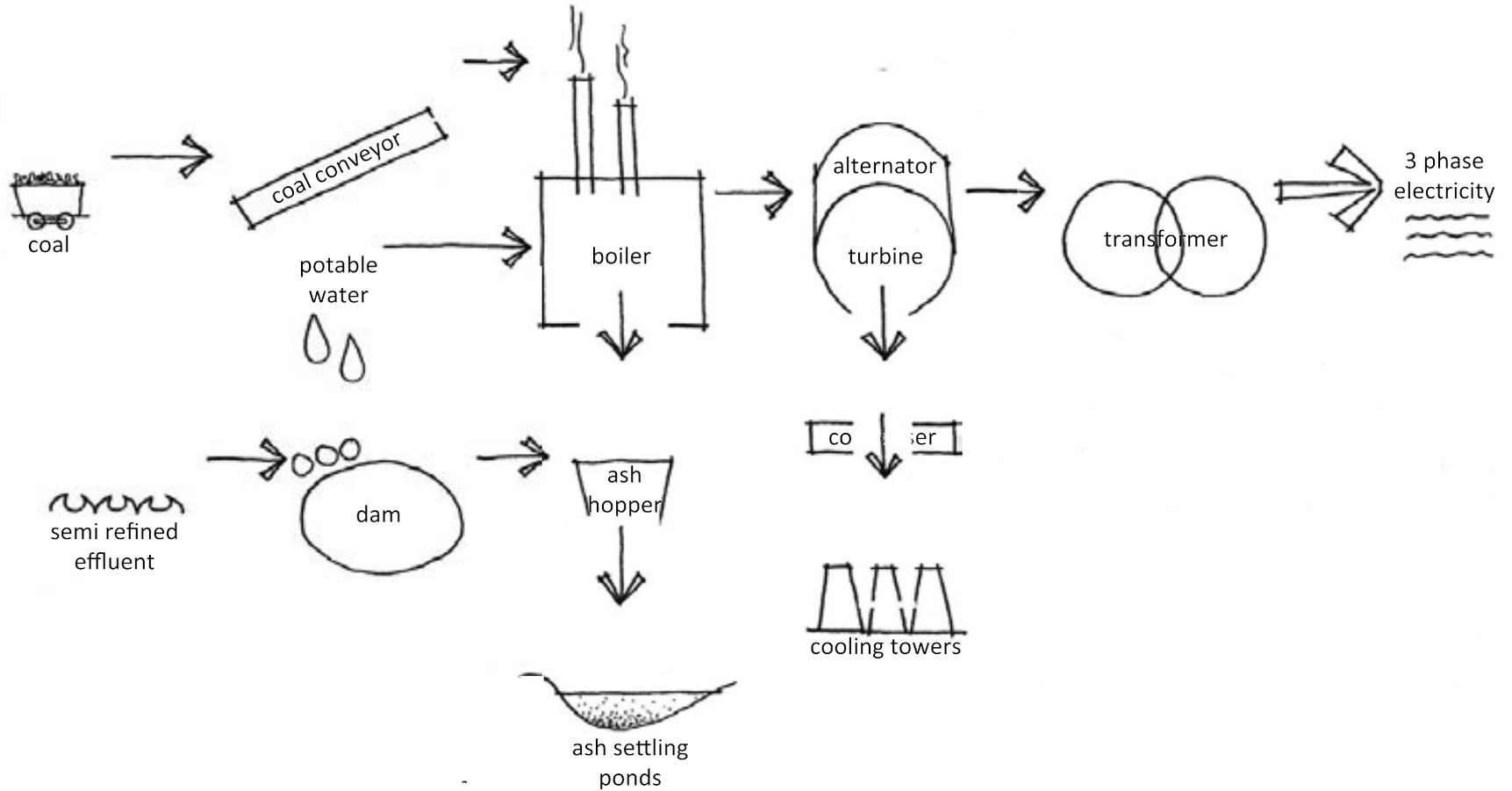


Fig:74. Diagram illustrating the on-site process of generating electricity (Group Framework 2010)



7.4. Project motivation

The decommissioning of the power plant poses a threat to Pretoria west as it will mean a loss of jobs as well. If the plant is left derelict it will further decay the surrounding urban fabric.

However it presents the city with a major opportunity as it is a large site, rich in both heritage and spatial character and close to the CBD. This iconic site offers major development opportunity in terms of both its natural features and landmark buildings. These features may lead to both job creation and urban regeneration.

7.5. Approach

Address the site in such a way as to heal site, address surrounding urban issues and maintain existing character.

The two main informants on this site is the process of healing the site and the other would be the physical and historical character of the site.

7.6. Precedents

There are many examples of post industrial sites that have been successfully converted into regional parks, museums and other public amenities. This has contributed to regeneration of the surrounding urban fabric. I have investigated several of these in order to develop an approach as to dealing with the power plant site.

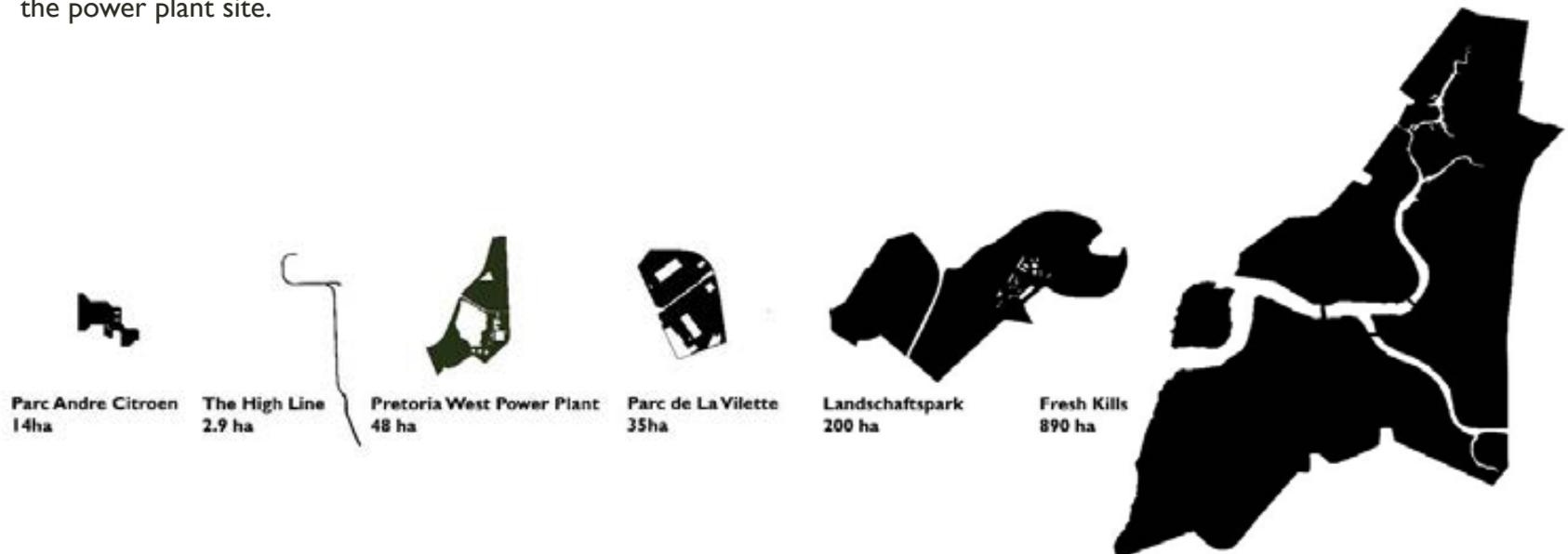


Fig:75. Diagram showing sizes of various post-industrial parks in relation to site (Author 2010)

7.6.1. Parc de La Villette

Background

Parc de la Villette is located in north-eastern Paris, France, on the site of a former abattoir and meat market operating from the late 1860s and closed in 1974.

The 35 hectares park was commissioned by President François Mitterand who issued an international design competition of which Bernard Tschumi was the finalist. The objective was to generate a new model for the urban park in the twenty-first century (Tate 2001: 56).

The park consists of a grid of 'points' (bright red metal follies); a series of 'lines' and 'surfaces'. Tschumi's aim was to try and prove that it was possible to construct a complex urban park without resorting to conventional rules of order, hierarchy and composition. The park has very little reference to its industrial past and does not take natural processes into consideration; however the park has a strong social layer to it. A series of smaller themed gardens such as the bamboo and sound gardens, provide more intimate spaces that do take natural process into consideration. These ironically were not designed by Tschumi (Tate 2001: 56).

The park has had a remarkable influence on the profession of landscape architecture and its theoretical underpinnings.

Fig:76. Philip Starck-designed seats in Parc de La Villette (Tate 2001: 61)



Remarks

The park operates at a regional scale, is similar in size to the power plant and was also constructed on a brownfields site. In the case of La Villette the site was almost completely stripped before the park was constructed and therefore reflects little of the existing character of the site.

The park is successful in the sense that it aided renewal in a post industrial area. It is dynamic because it is event driven. However, it was designed as an object and its fixed form does not address ecological processes nor does it allow for the park to evolve and adapt over time.

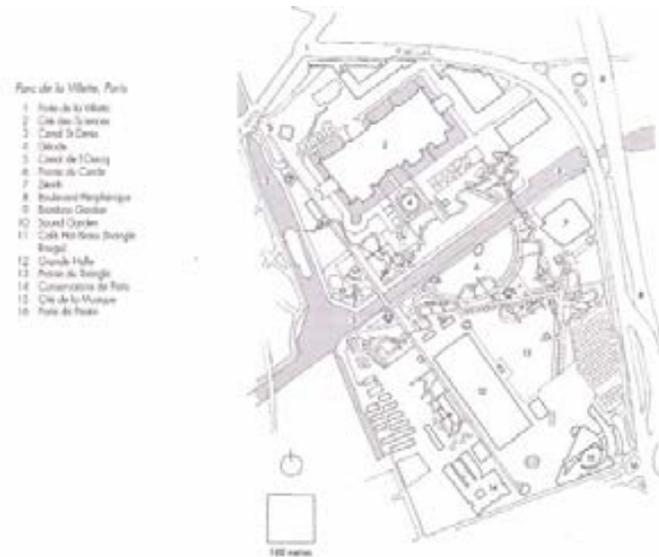


Fig:77. Plan of Parc de La Villette (Tate 2001: 57)



Fig:78. Bamboo and sound garden (Tate 2001: 65)

7.6.2. Landschaftspark Duisberg Nord

Background

Landschaftspark consists of 200 hectares located in Duisburg North, Germany. Duisburg is the Emscher district in north-west Germany that was the largest industrial region in the world. The site included a coal mine and coking plant that ceased production in 1977, and a steelworks that closed in 1985 (Tate 2001: 115).

The site forms part of Emscher Park that opened in 1989 and constitutes a 70 km long green network covering an area of 800 km², of which only 320 km² was not built up. The park was designed by Latz + Partner and officially opened on 17 June 1994.

The brief required that the design adapt and reinterpret the industrial features and natural processes that already occur on site, as well as preserving remaining leftover landscape, rezoning and linking fragmented areas up with main parkland.

The park consists of massive storage bunkers, rail beds, blast furnaces and the main steel works building, that have all been retained as industrial heritage and adapted for public use. Numerous gathering spaces, bridges and walkways connect these various elements while the existing vegetation offers an evolving reflection of the history of the site. Indigenous vegetation has been encouraged and heavily contaminated soils have been removed and rehabilitated. An intricate lighting scheme designed by British light designer Jonathan Park, allows the site to be used at night.

The park is located on major cycling routes that form part of larger historic and cultural tourism routes. The park is well marketed and boasts a range of uses varying from extreme sports to venues for events that generate income for park maintenance.



Fig:79. Landschaftspark Duisberg Nord (Reed 2006: 125)



“Conversion of derelict land into parks in the IBA Emscher often led to destruction of that mysterious atmosphere between decay and revitalization that had made the sites so attractive (Tate 2001: 119).”

Remarks

The steelworks were a barrier for development between two major districts in the city, but this post-industrial brownfield has now become a catalyst for future development and urban regeneration.

Before the steelworks, the natural topography was mostly flat. Industrial processes shaped its unusual landforms over time. Latz embraced the qualities and character of the site and his design is a reaction to its existing potential. The design allows the natural processes of decay and regeneration to take place and therefore the site will adapt and evolve over time.



Fig:80. Landschaftspark master plan (Tate 2001: 115)

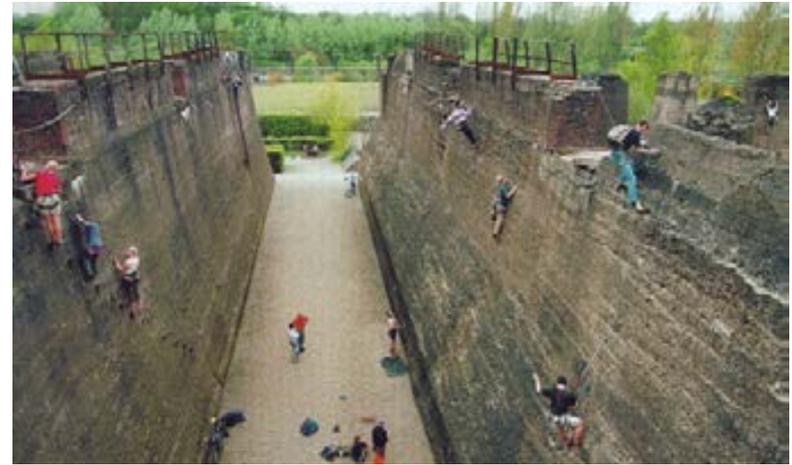


Fig:81. Ore bunker adapted for rock climbing (Reed 2006: 129)



Fig:82. Aerial view of ore bunkers (Reed 2006: 128)

7.6.3. Fresh kills

Background

In 2001 the City of New York conducted a two-stage International Design Competition to redevelop what was once the world's largest landfill, located on Staten Island.

A multi-disciplinary consultant team led by landscape architecture firm, Field Operations, was selected to produce the Draft Master Plan for Fresh Kills Park. Their proposal, lifescape, envisioned the park as a new form of public ecological landscape and a new paradigm for creativity and adaptive reuse. The scheme has informed public involvement and is shaped by time and process.

The park is currently being converted into 896 hectares of public parkland, featuring a beautiful expanse of tidal marshes and creeks and over 65 km of trails and pathways with significant recreational, cultural and educational amenities.

It will be a diverse reserve for wildlife and social life. The scheme is multi layered and the implementation of the project comprises three 10-year phases. Ecological succession is instigated by introducing pioneer species that will in time develop into full-blown eco-systems. The phases also include a series of movement systems, pathways and trails, neighbourhood parks, public art installations, sports, recreational and other amenities

(Field Operations 2006: 6).

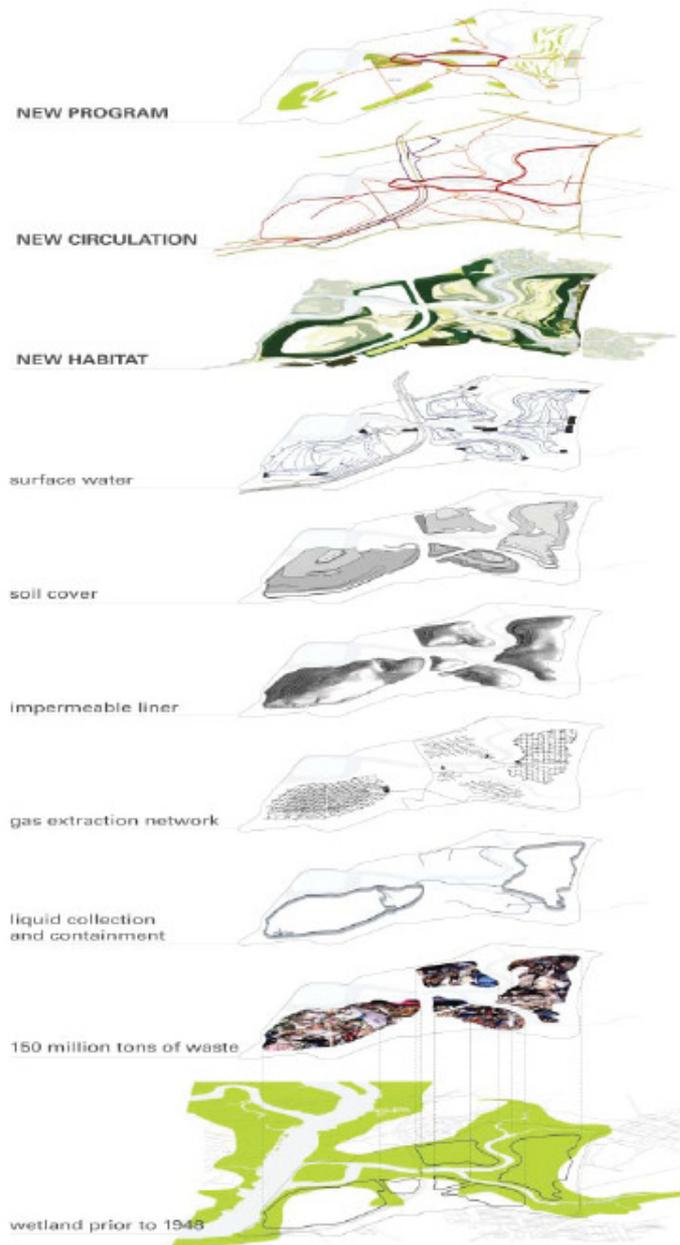


Fig:83. Layering of new processes onto existing (Field Operations 2006: 6)

Remarks

Fresh Kills is a park designed within the LU idiom. It is a contaminated site within an ecologically sensitive area. The departure point is to first contain and heal the damaged and disturbed landscape and then programme it with various socio-cultural and recreational activities.

The park will evolve as processes take fruition, unlocking new potential over time. The framework or masterplan designed by Field Operations acts as a formwork in which these processes take place; in time new opportunities will arise for more specific design interventions on a small scale. Even though the scheme is process based it respects the character of the site evolving out of its existing potential, such as the various wetlands and large mounds caused by years of dumping.



Fig:84. Fresh Kills master plan (Field Operations 2006: 33)



Fig:85. Rehabilitation of Dump site (Field Operations 2006: 32)



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Fig:87. Aerial view of Fresh Kills Park (Field Operations 2006: 7)

7.7. Approach

Of these three precedents investigated, Parc de la Villette is the least process driven and least reacted to the qualities of the existing site. Landschaftspark on the other hand displays how landscapes can respect and interact with the structural heritage of the site while engaging the inherent potential of the existing site. Fresh Kills illustrates how different processes can be layered or coded onto a site to create new potential over time.

The approach in this thesis will be a combination of Landschaftspark and Fresh Kills; focussed on the one hand on the existing potential and on the other the unlocking of eventual new potential. The existing potential or qualities of a site will be termed the qualitative aspects. The processes needed to heal the site and stage development - the quantitative aspects.

How does my approach for the masterplan relate back to landscape urbanism theory? The departure point for this scheme is healing the landscape of this post-industrial brownfield site in order to regenerate the surrounding urban fabric. It is based on Corners' principles of "Processes over time" and "staging the surface" (See 2.2.1 and 2.2.2) where the site is formed over time by the various processes that work on it and intervention is done in a way that will create opportunity for future development.

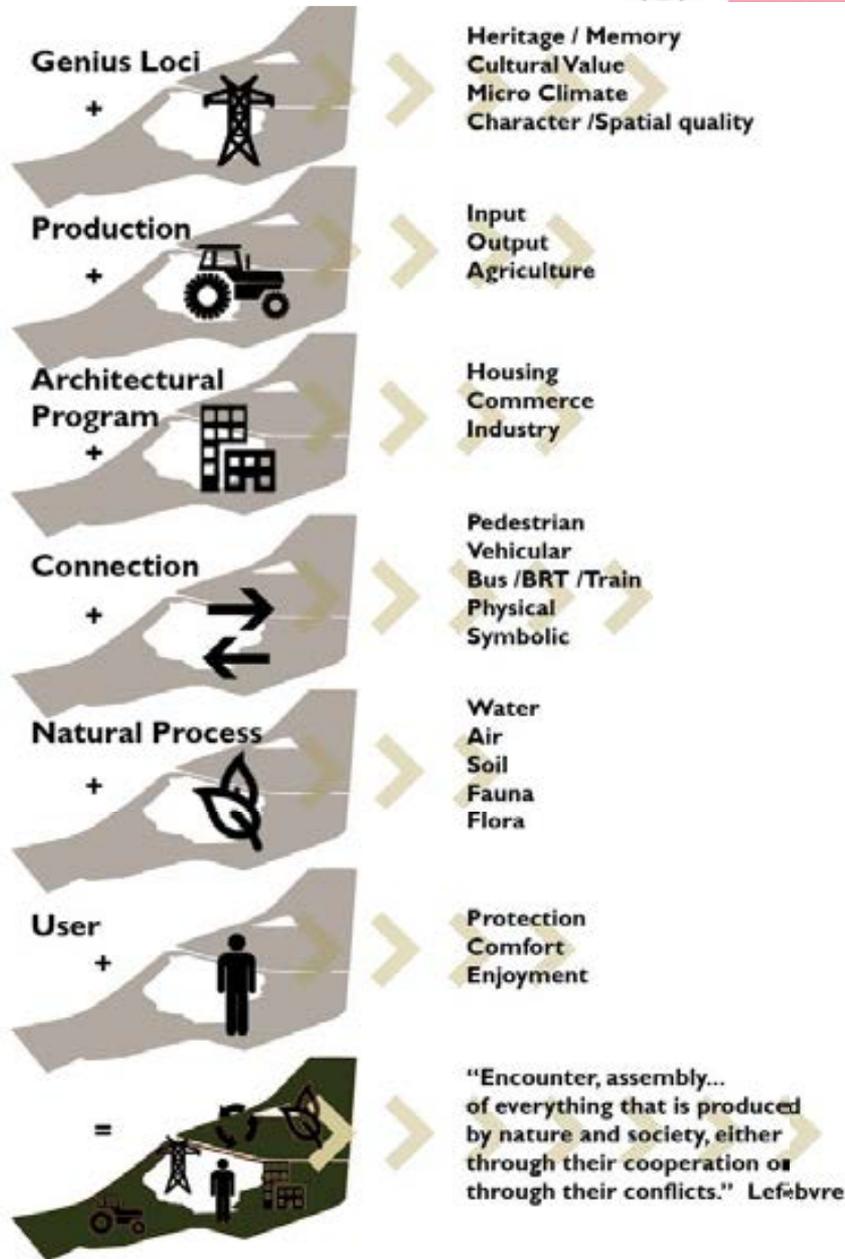


Fig:88. Diagram showing layers (Author 2010)

7.8. Concept

The concept is to change the power station site into a regional park, one that will cater not only for the open space needs of immediate neighbourhoods but also offer regional economic, recreational and tourist attraction that will create investment opportunity in the area.

The master plan will take into account both qualitative and quantitative aspects in order to create a place that emerges from the existing potentials of site and creates new potentials through process.

The concept diagram shows the site and its existing potential (qualitative) and the network of processes (quantitative) that affect it. It is where these two ideas intersect that new design possibilities will arise.

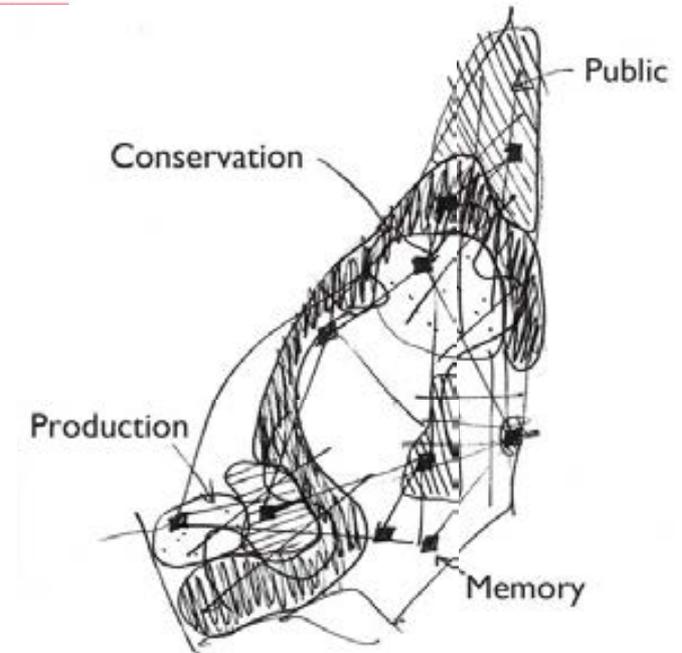


Fig:90. Conceptual diagram (Author 2010)

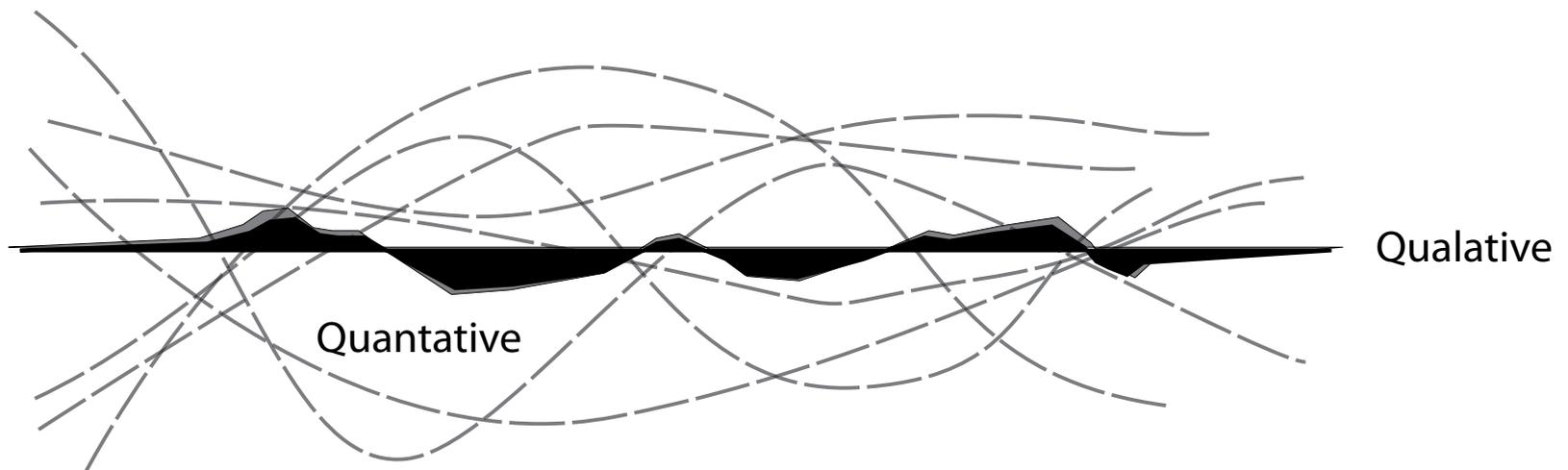
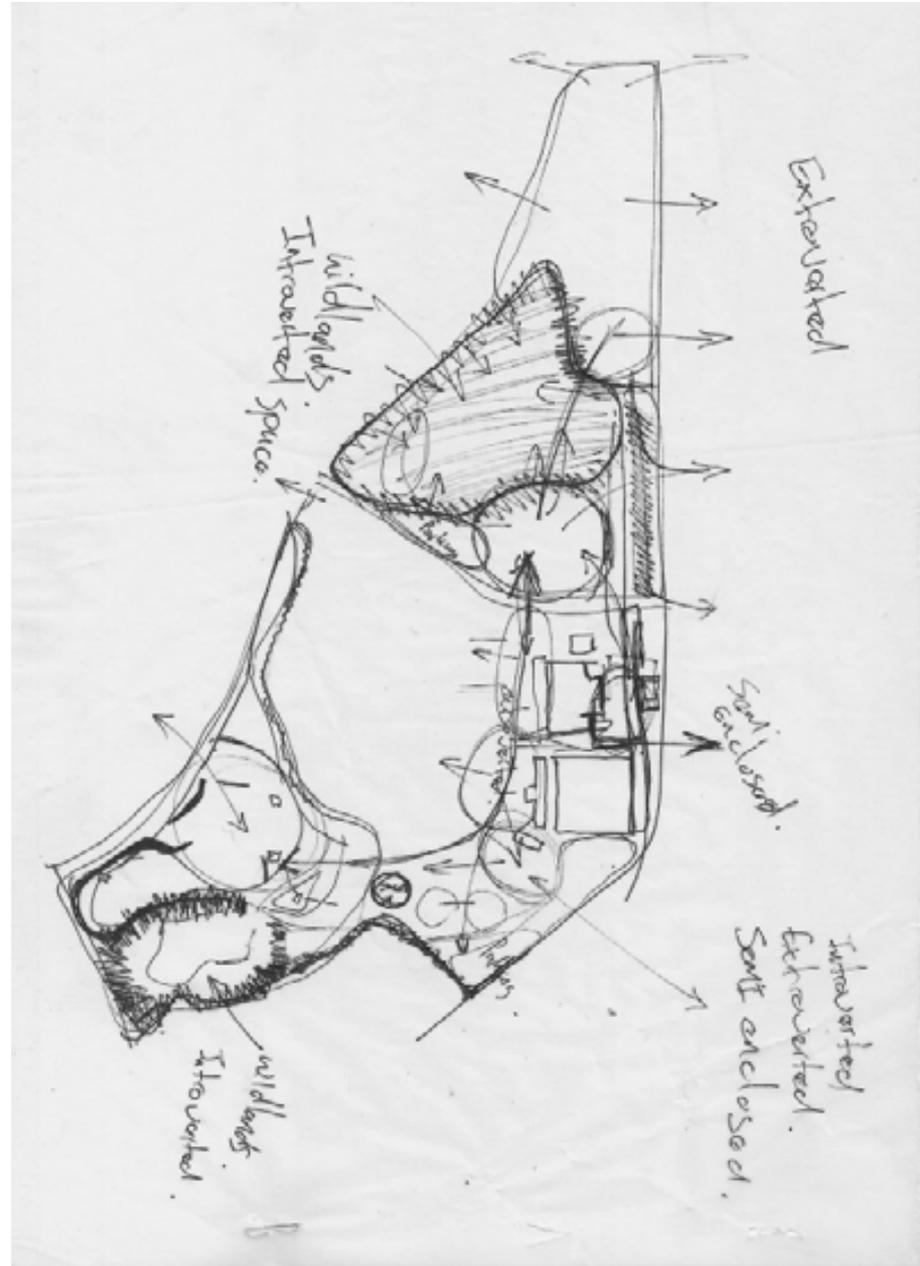


Fig:89. Conceptual diagram showing interaction between the qualitative and quantitative aspects of site (Author 2010)



7.9. Concept development





7.9.1. Qualitative aspects

What are the qualities or features of the existing site that can be engaged with or need protecting?

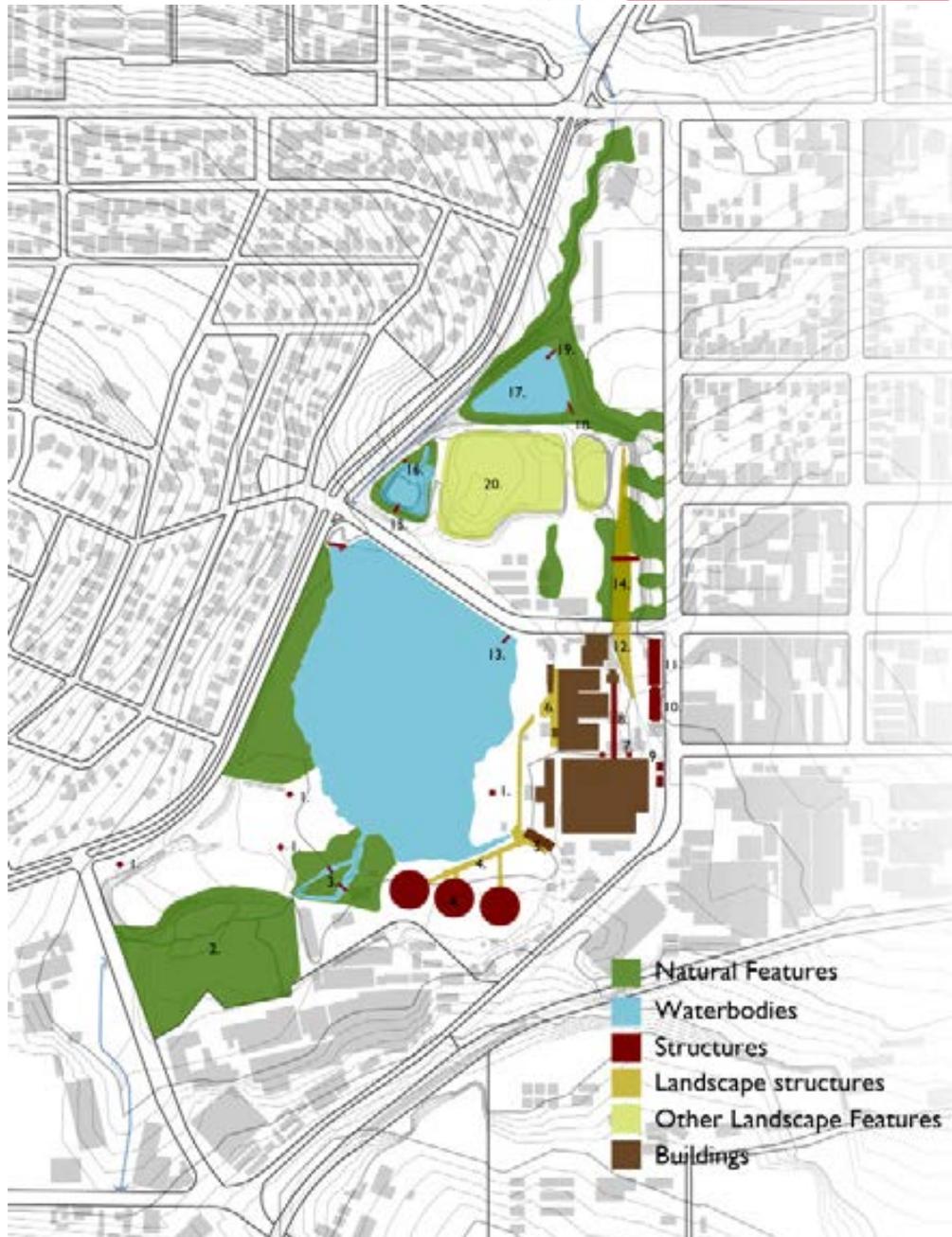
- Existing topographical features
- Existing water bodies and vegetation
- Existing structures
- Existing spatial character

7.9.2. Quantitative aspects

What are the processes and layers that need to be considered in order to regenerate and then reprogram the site?

- Hydrology
- Ecological succession
- Removal of invasive species
- Bio-remediation of ash ponds
- Access and movement
- Urban densification
- Activities

Fig:92. Cooling towers (Author 2010)



Features that characterise site

1. Electric pylon
2. Wetland
3. Bridges
4. Cooling towers
5. Pump house
6. Concrete canals and sluice
7. Oil tanks
8. Conveyor belt
9. Ash hoppers
10. 1933 coal bunker
11. 1945 coal bunker
12. Railway tracts
13. Water level meter
14. New coal bunker
15. Steel structure
16. Stone sluice
17. Tree lined ash pond
18. Energy dissipater
19. Steel pier
20. Large ash pond

Fig:93. Diagram showing qualitative aspects of site (Author 2010)



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Fig:94. Cooling towers (Author 2010)



Fig:95. Cooling towers (Author 2010)



Fig:96. Ash hoppers (Author 2010)



Fig:97. Pump house (Author 2010)



Fig:98. Water level meter (Author 2010)



Fig:99. Canals and sluices (Author 2010)



Fig:100. Electric pylons (Author 2010)



Fig:101. Under cooling tower (Author)

7.10. Zones

I have divided the site into four zones according to the character and qualities of site.

Zone A

This area is not currently part of the power plant operations and is open to the public and contains some recreational infrastructure, such as lawns, a soccer field and clubhouse.

Zone B

This area is the most secluded due to its irregular topography and large trees. It is the most disturbed or toxic area in the landscape because it includes the ash ponds.

Zone C

This is the main power plant complex containing most of the structures on site. It is the most built up of all the zones.

Zone D

This is the most seemingly natural area on site, containing large open fields and wetland areas.

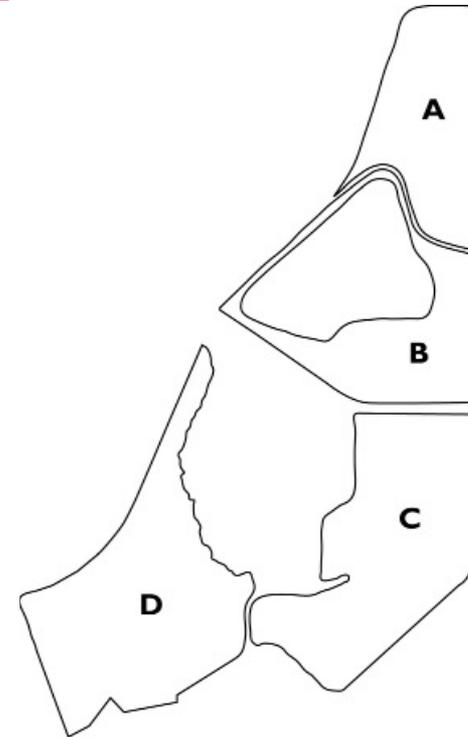


Fig:102. Diagram showing different zones (Author 2010)

7.11. Phasing program

The power plant will only be decommissioned in the next 10 years. Due to the fact that some of these processes will take a number of years to take effect, a phasing programme has been included.

7.11.1. Phase I

Site

Open and develop Zone A and D to public and connect with jogging and cycling trail. Create a series of internal pathways and trails. Connect with context. Develop the dam edge facing Mitchell street.

Zone A

Develop Zone A into a large formalized neighbourhood park with playgrounds and sports fields and large lawns.

Create links across site including pedestrian bridges across canal to stitch together the residential districts on both sides.

Create anchor point for street connecting to station and Pilditch.

ZONE B

Set up plant nursery to salvage existing vegetation where possible and to grow plants for the rest of the site so that by phase 3 large plants are available.

Zone B and Zone C

Power plant still in operation and requires these zones to function and remains inaccessible to public.

Start removing invasive species and replace with indigenous

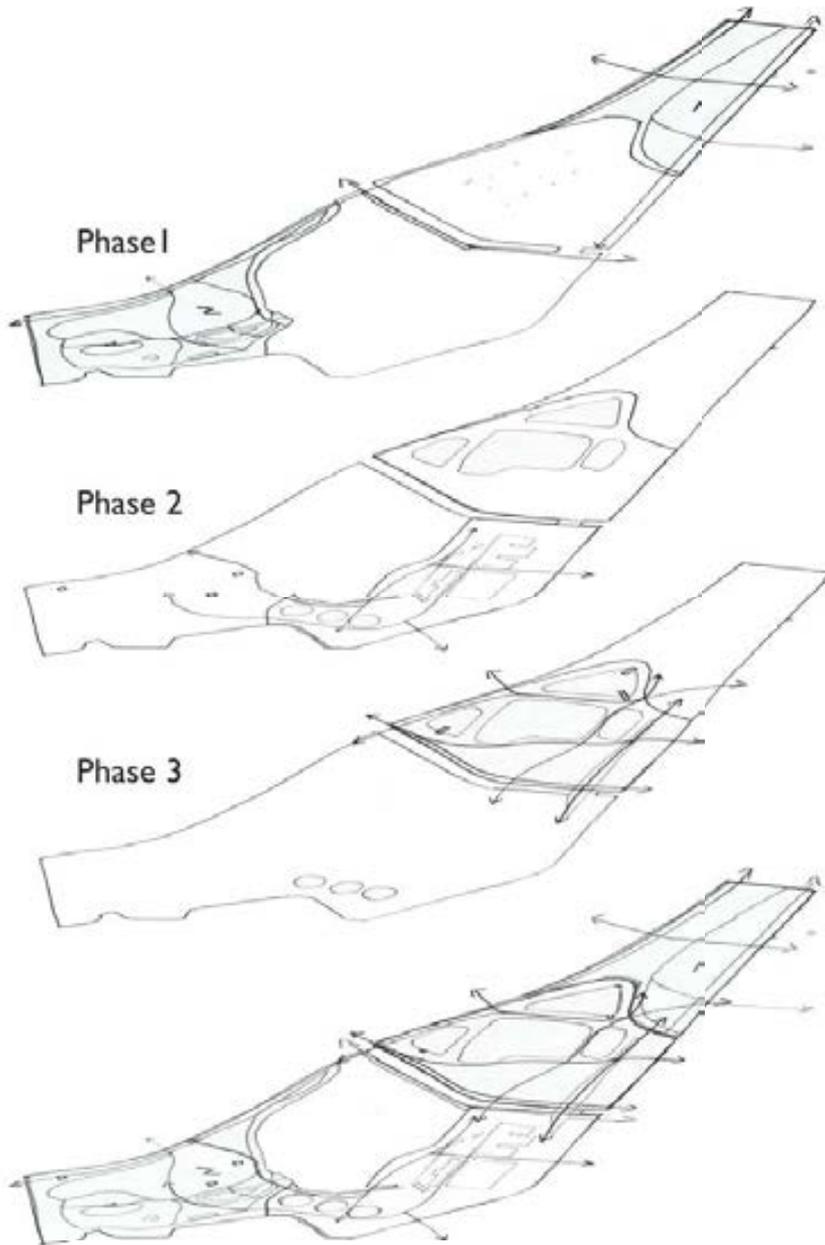


Fig:103. Phasing diagram for site (Author 2010)



species.

Hydro-seed to start process of natural succession. Use ash to manufacture construction materials such as bricks. Use timber from invasive trees that were removed.

Zone D

Restore Zone D into a natural area that can be used for large gatherings, events and socials. Remove invasive species and replace with indigenous. Develop wetland.

7.11.2. Phase 2

Site

Power plant is decommissioned, leaving zone B and C obsolete.

Zone B

Remains closed to public. Plant nursery still in operation. Ash ponds are no longer functional may contain heavy metals, therefore need bio-remediation. A combination of excavation, capping and extraction.

Large ash pond turned into wetland processing grey water from power plant complex while extracting heavy metals from ground. Ongoing removal and replacement of invasive vegetation.

Zone C

Zone c is now opened to the public. Existing structures given new commercial, production and event programmes . Redevelopment of water front. Connect Zone C and D with Pathways. Station opened on Buitenkant street.

Zone D

Pylons no longer in use and are converted into a series of lookout towers.

7.11.3.Phase 3

Site

Phase 3 is an ongoing evolution and appropriation of site. Basic parameters have been set to guide the development of site, while not being too prescriptive.

Network of cycling and walking trails now completed.

Zone B

Through ongoing remediation processes, this section will become safe for pedestrians and can now be opened to public.

A movement network that connects the neighbourhoods together as well as stitching together Zone A and C.

The site will retain its wild overgrown character, industrial structures re-appropriated through programming.

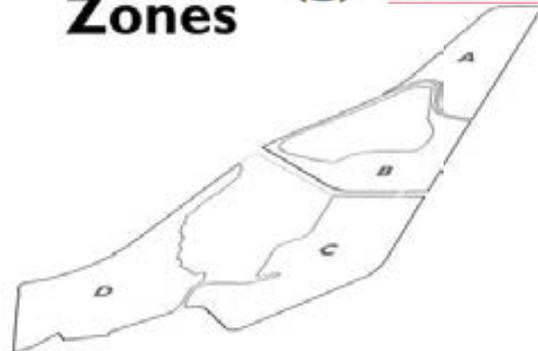
Nursery is now opened to public for both commercial and educational purposes and no longer only propagates plants for the site.

Zone C

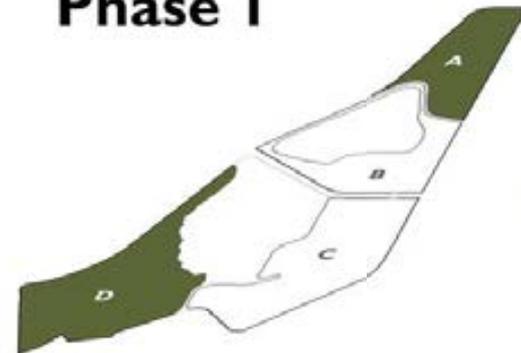
Cooling towers are developed into extreme sport facilities, viewing platforms and installations. Rooftops developed into gardens and outdoor venues.



Zones



Phase I



Year 0

5

Phasing

Power plant still in operation

Zone A opened to public
Zone D opened to public

Community Park with active recreational facilities

Passive recreation facilities such as

Zone C opened

Ecological Processes

Soil

Testing and amendment

Rehabilitation

Samples taken and analyzed by soil specialists. This will determine the condition of the soils and the type of amendments that need to be taken in order to create a healthy growth medium such as balancing pH levels. Topsoil will be harvested and stockpiled and amended for subsequent use.

Zone A

Create a series of pedestrian bridges across channel

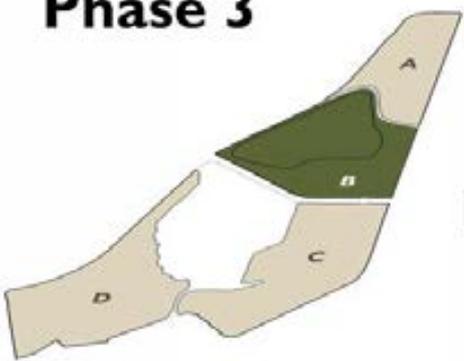
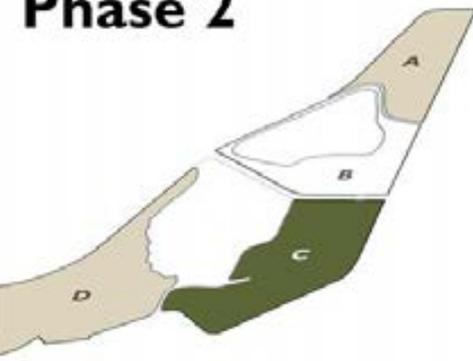
Zone D

Construct a sedimentation pond where water enters the site
Construction of a stormwater overflow swale that bypasses dam

Rehabilitation of existing wetland area with the use indigenous wetland species

Phase 2

Phase 3



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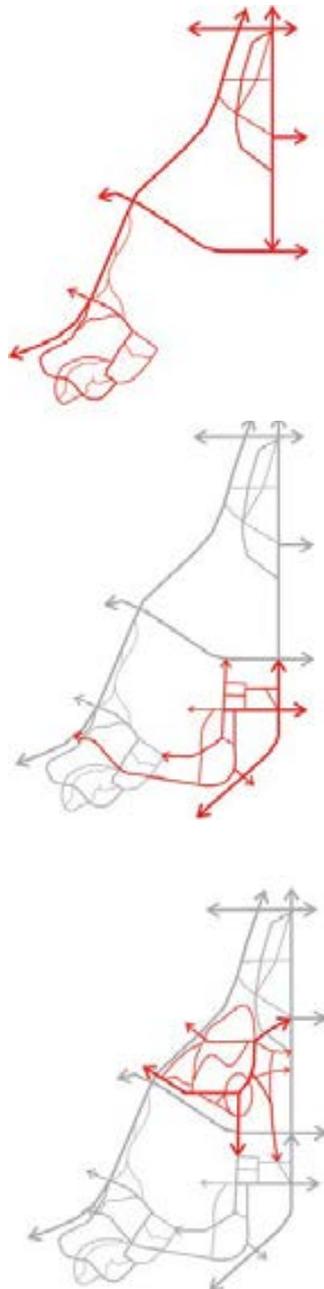
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	nature walks and bird hides, braai facilities and large open fields for events		
Open to public	Commercial and residential cluster offering various tourist, retail, work and transport opportunities, active and passive recreation as well as various venues for events		
Use of Ashponds	Zone B opened to public	Natural area including on site nursery, water treatment wetlands and walking and bicycle trails	
	 Excavation Contaminated soil from smaller ash ponds are transferred to the largest pond	 Capping Contaminated soil is then capped with a layer of topsoil to temporarily contain it.	 Phytoremediation The bunker is then planted with various wetland species and then becomes a grey water treatment facility that will over time extract contaminants from the soil.
Zone B	Construct a series of subsurface and surface wetlands that will treat and polish grey water effluent from the power plant complex before releasing it into Skinner Stream		
Zone C	Capture stormwater from roof surfaces Create various on-site detention facilities that will allow for subsequent slow release Introduce permeable surfaces to allow for infiltration		
	Species and the re introduction of and small animals		



Year 0

5



Removal of invasive species

Secondary ecological succession

Removal of Grade I invasives

Removal of most aggressive and detrimental trees and weeds Through felling

Initial 3 year intensive removal

Follow up

Follo



Replacement program

- Analysis of existing vegetation in terms of spatial, cultural and historical
- Identify suitable replacement and strategies to maintain character
- Establish on site nursery to cultivate replacement species

Replacement program for other invasives that contribute to the character

Ongoing maintenance and monitoring

Aesthetic and remediation goals

- Determine beforehand the important characters of site that need to be
- Determine measures to be taken to reconstruct a healthy ecology
- Develop a strategy as to how to mediate between character of site and

Preparation

- Harvest seeds of existing vegetation in and around the site where suitable
- Store and propagate seeds seed in on site nursery
- Bring in ecologist: to assess existing assess existing planting communities

Introduction of species

- Hydroseed with pioneer species and plant small trees

Introduce shrubs and

130 Fig:105. Movement diagrams (Author 2010)

Fig:106. Matrix of remediation processes (Author 2010)



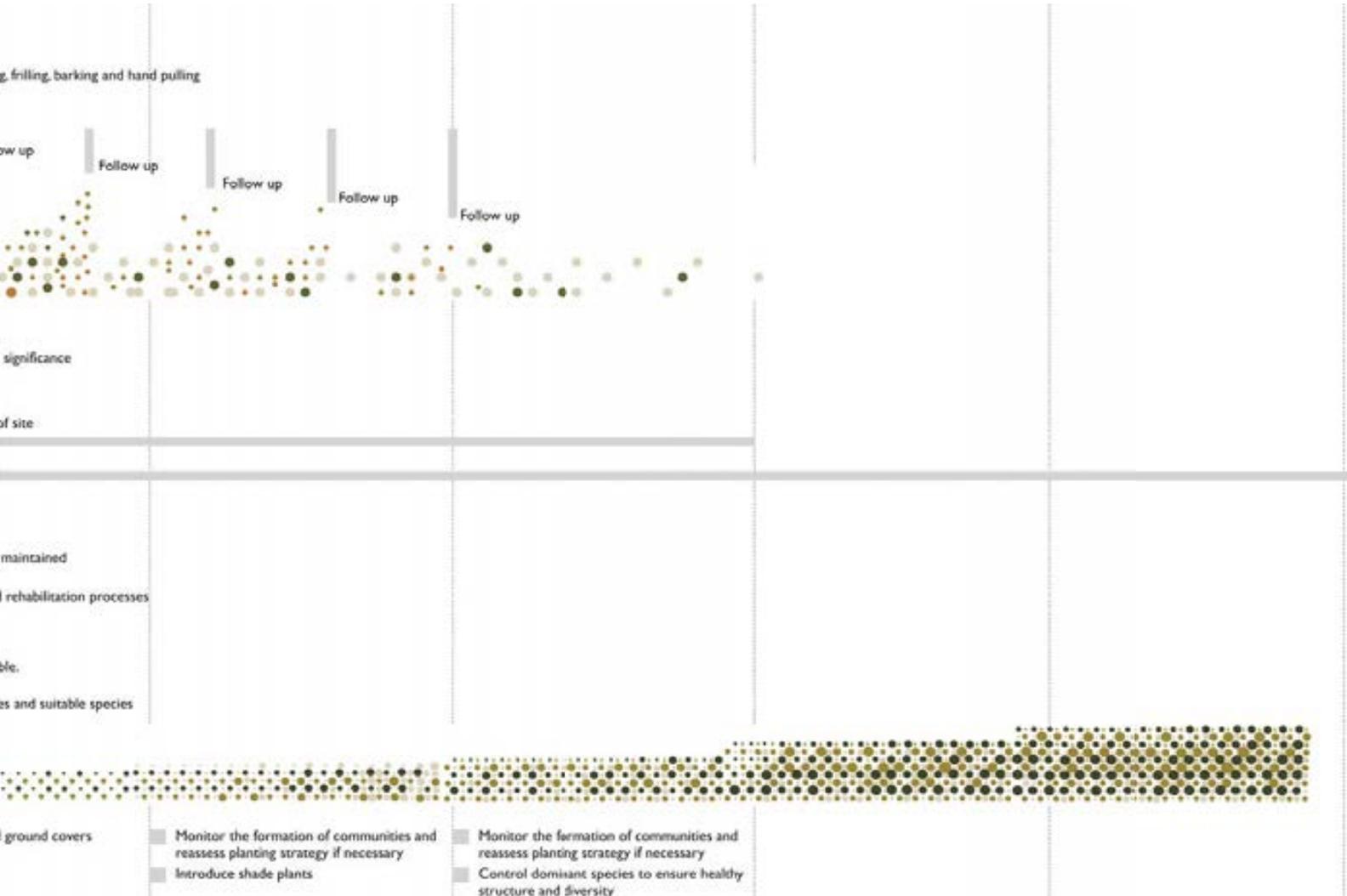
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Fig:107. Digital collage illustrating the vision for zone D (Author 2010)



Fig:108. Diagram showing the conversion of an ash pond into a wetland and the site benefits thereof (Author 2010)

7.12. Design development

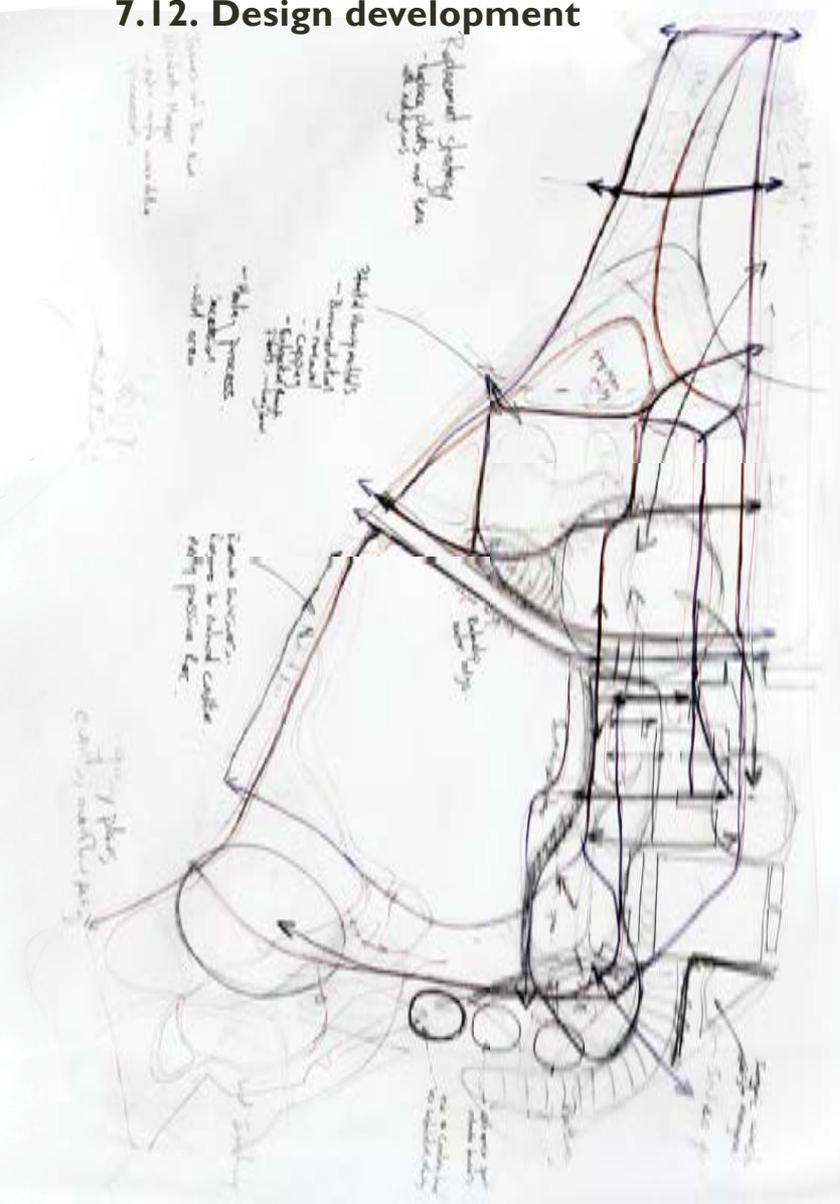


Fig:109. Diagram showing the design development (Author 2010)



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- 1 Focus area
- 2 Concept development
- 3 Design Development



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power plant complex

07



Fig:110. The old turbine hall 1938 (Author 2010)

8. Zone C

8.1. Focus area

Zone C is the heart of park development, has the highest concentration of people and economic opportunity. It is the oldest developed area of the site and therefore has the most historic content. It is the most urban of the zones and is in close proximity to the other group and therefore will most benefit the group as a whole.

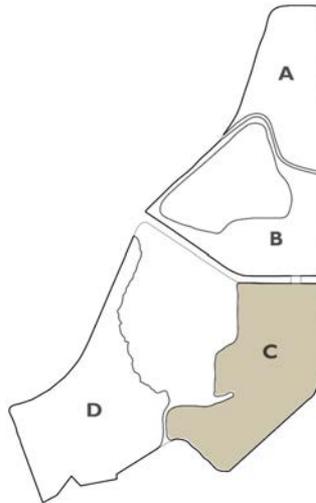


Fig:111. Zone C (Author 2010)

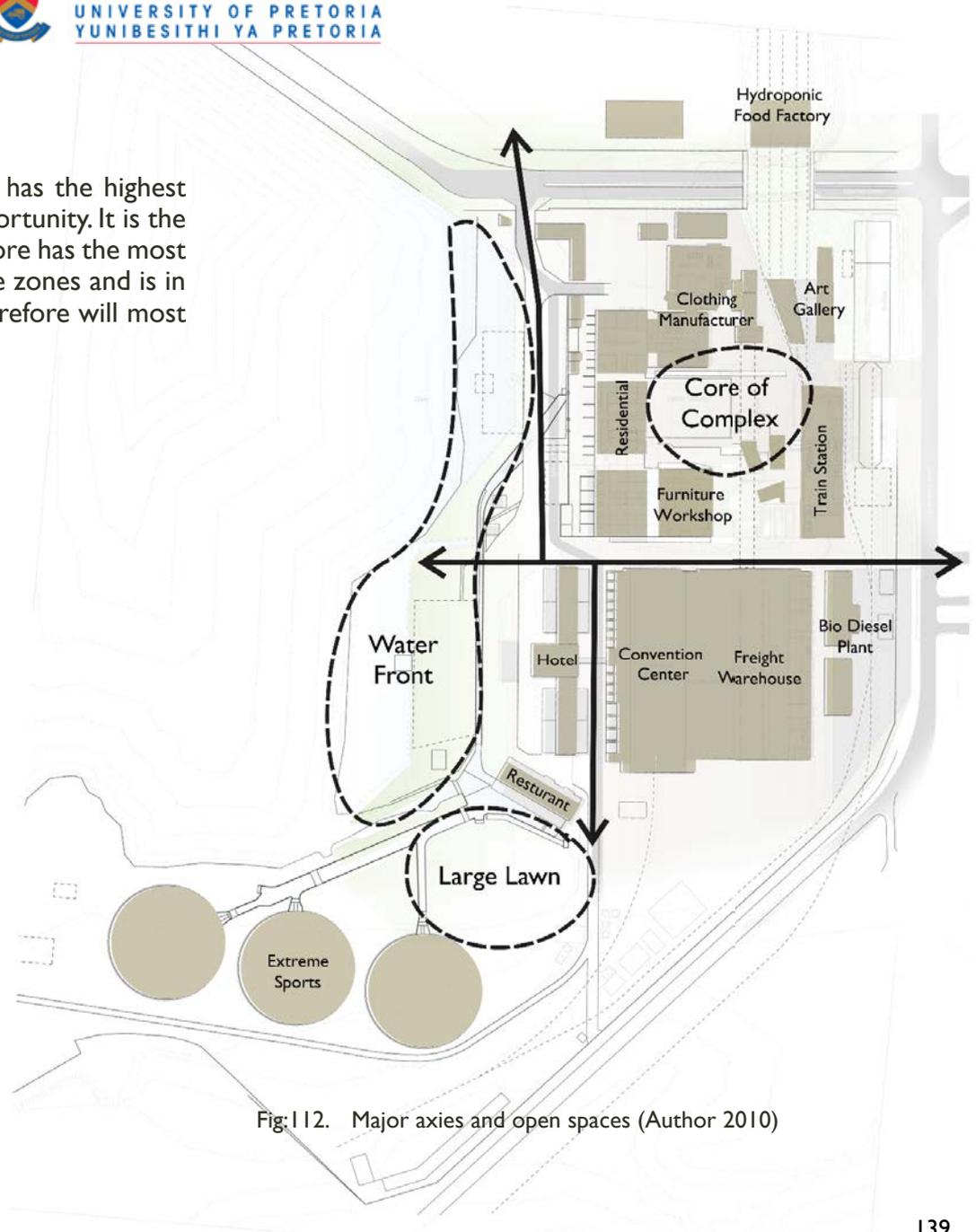


Fig:112. Major axes and open spaces (Author 2010)



8.2. Concept development

8.2.1. Open space system

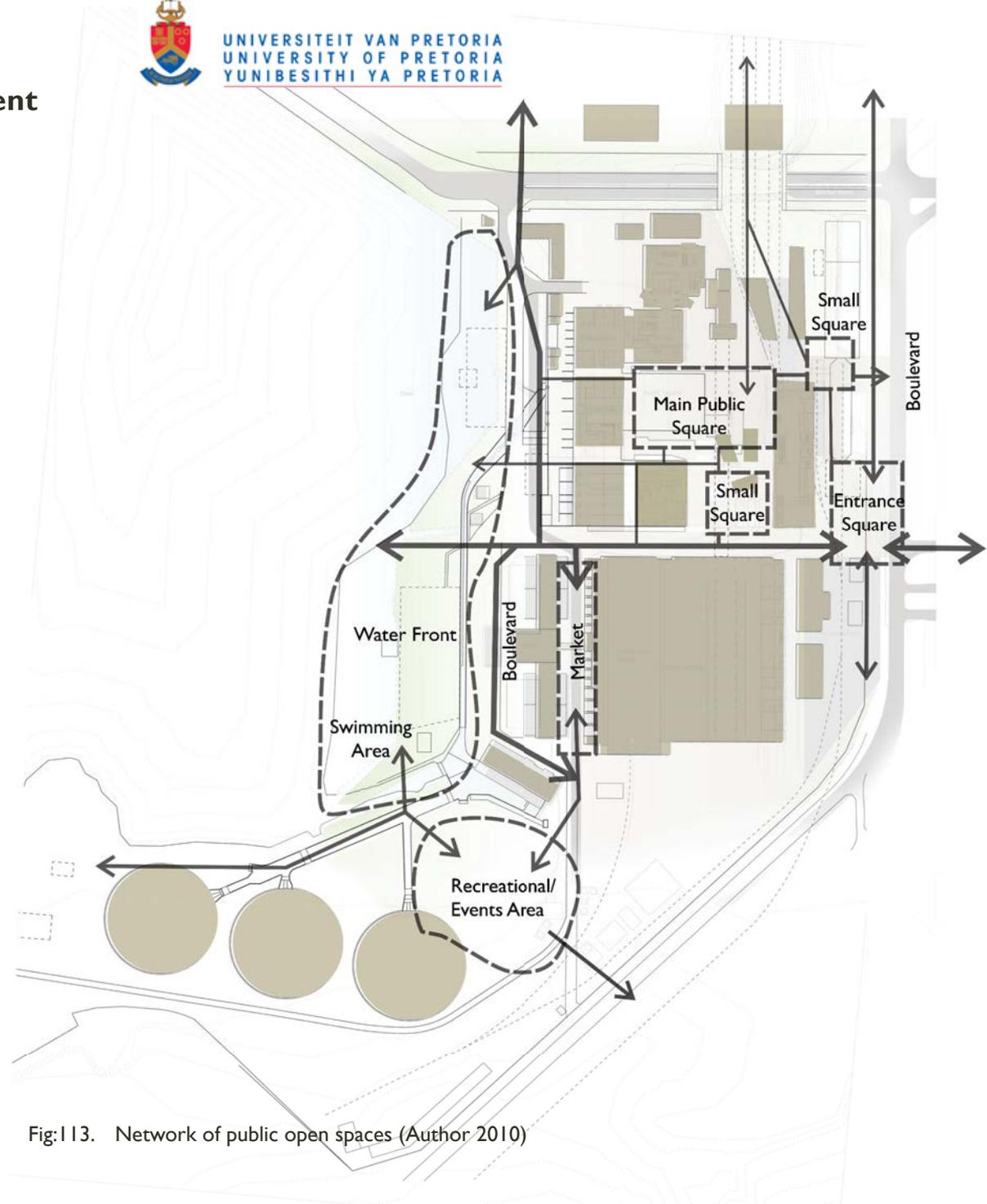
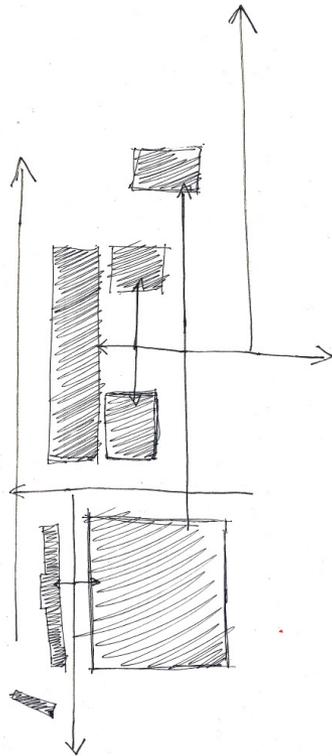


Fig: I 13. Network of public open spaces (Author 2010)



8.2.2. Access and parking Design Development

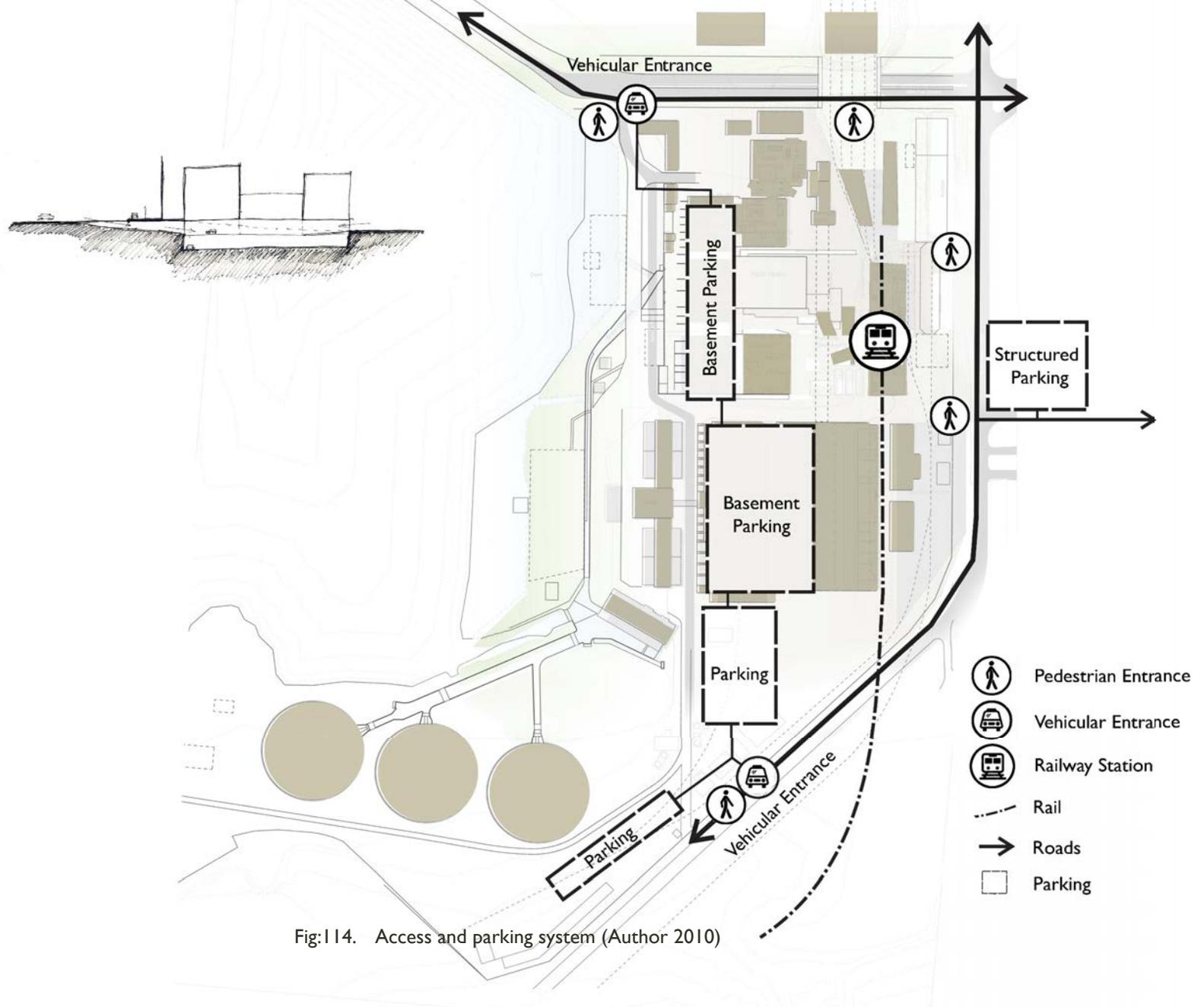


Fig:114. Access and parking system (Author 2010)

8.3. Design Development

8.3.1. Waterfront

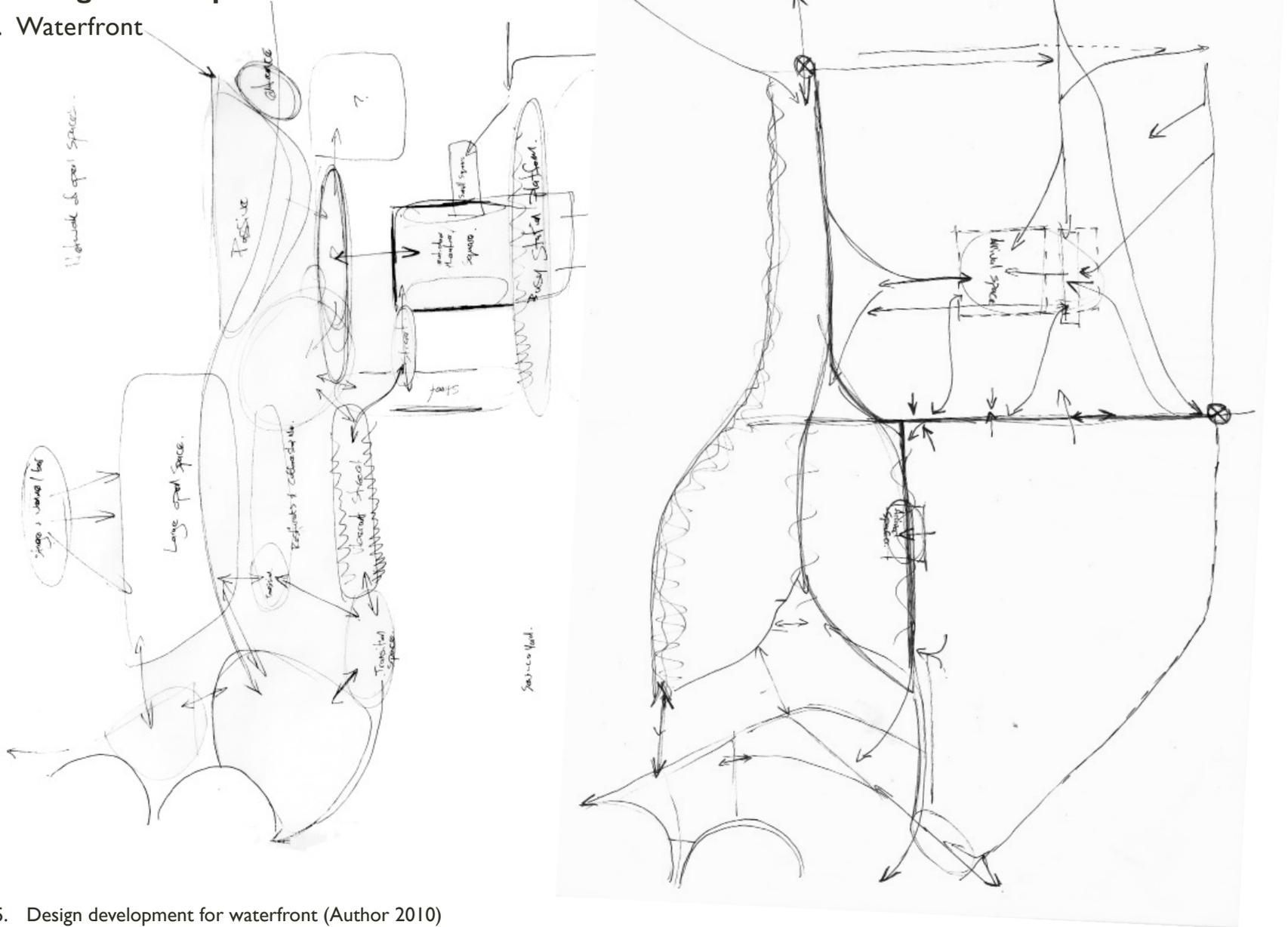
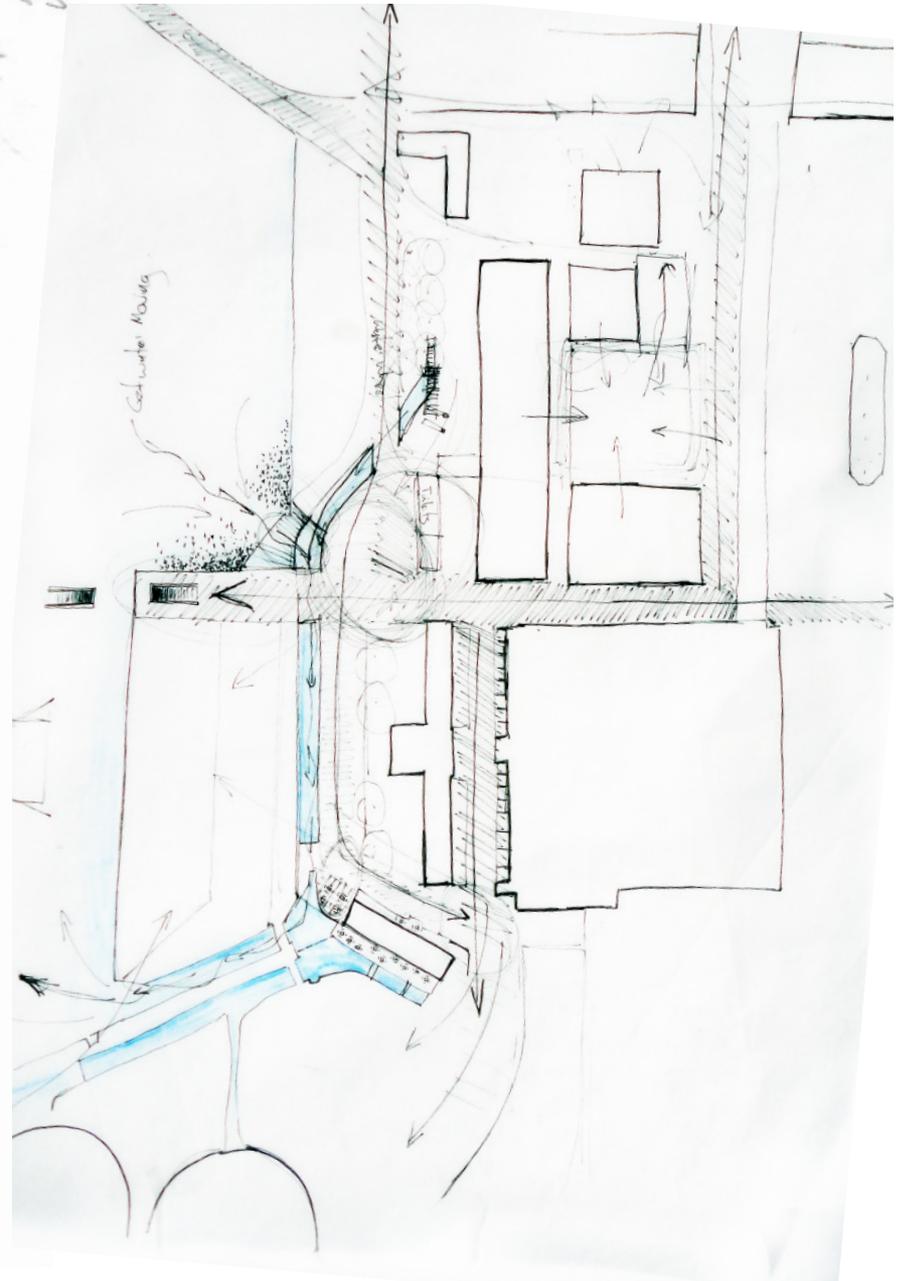
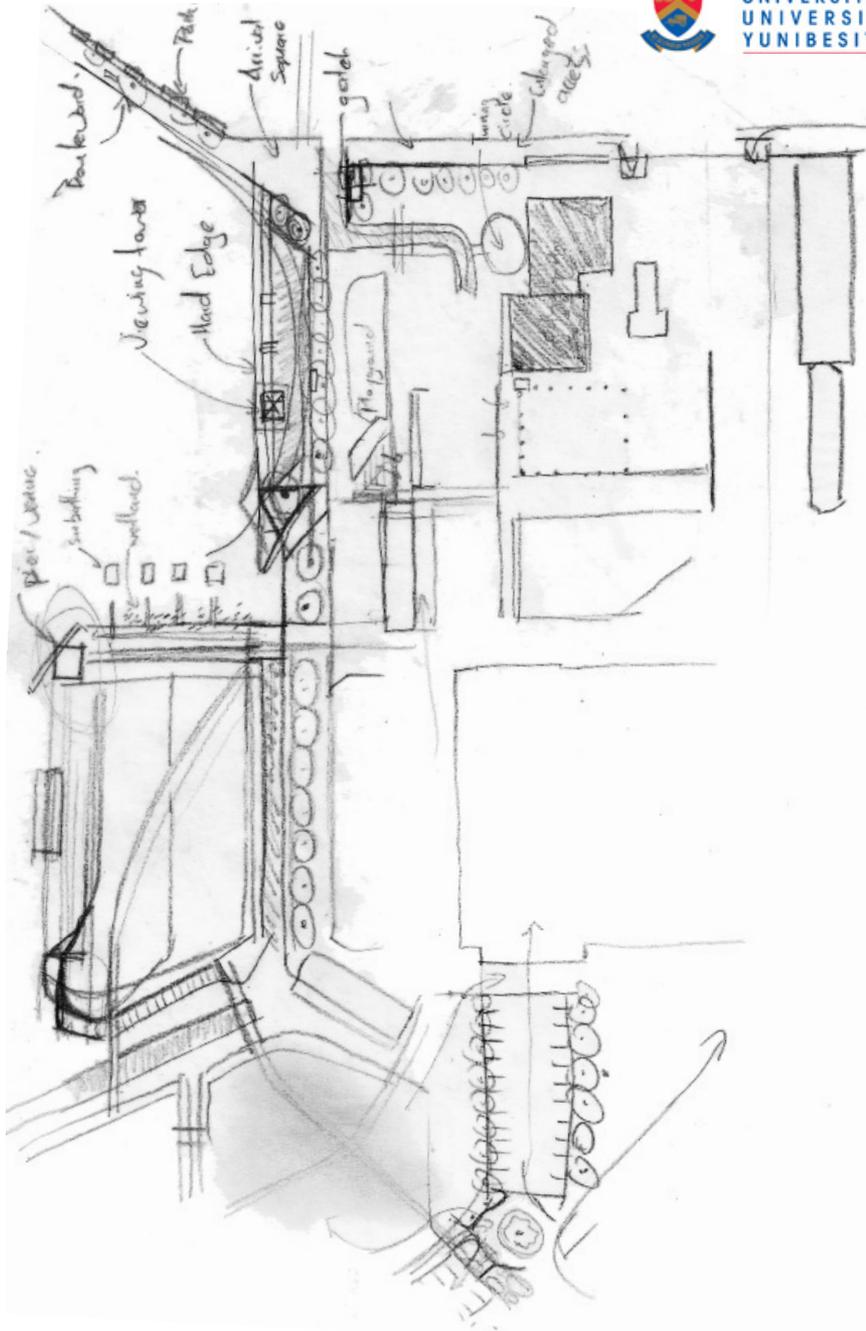


Fig:115. Design development for waterfront (Author 2010)



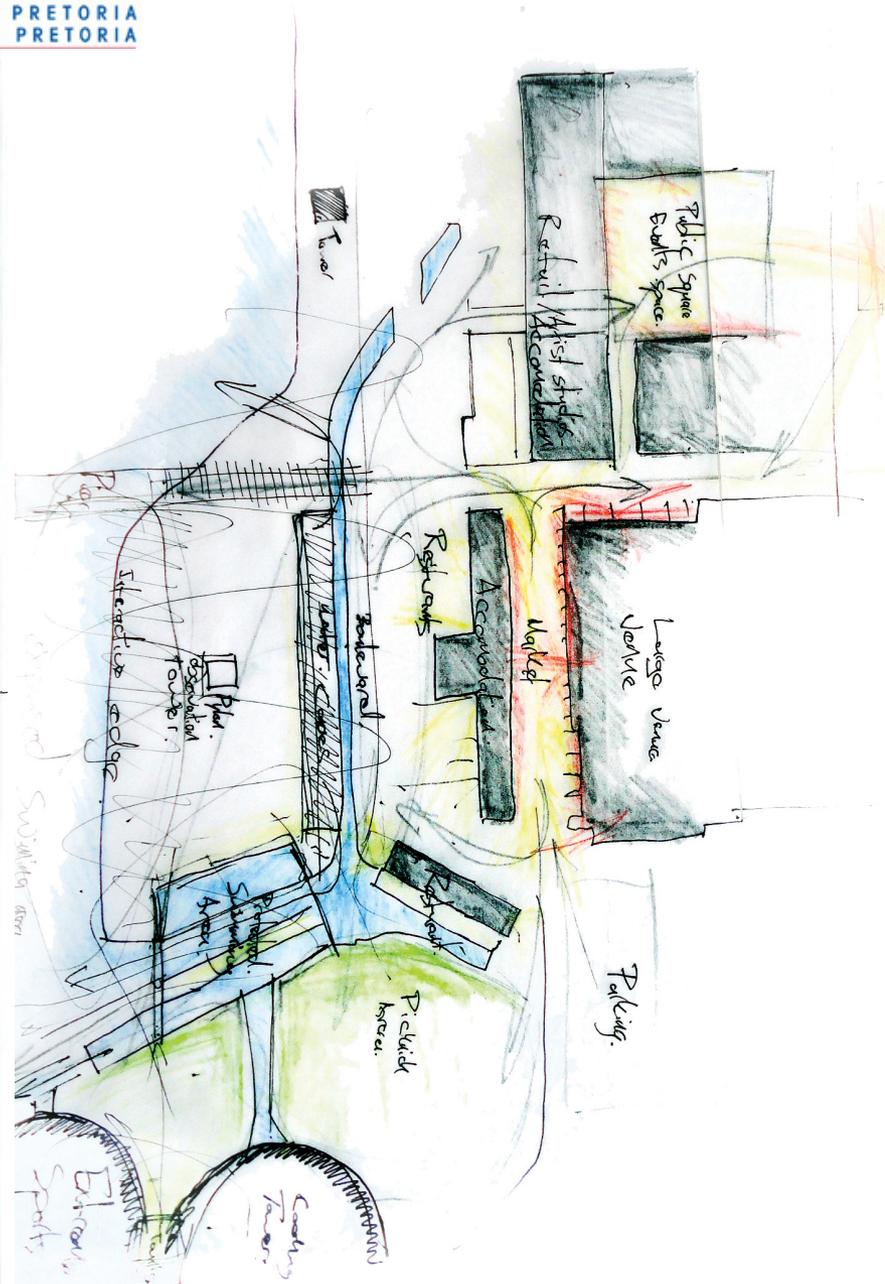
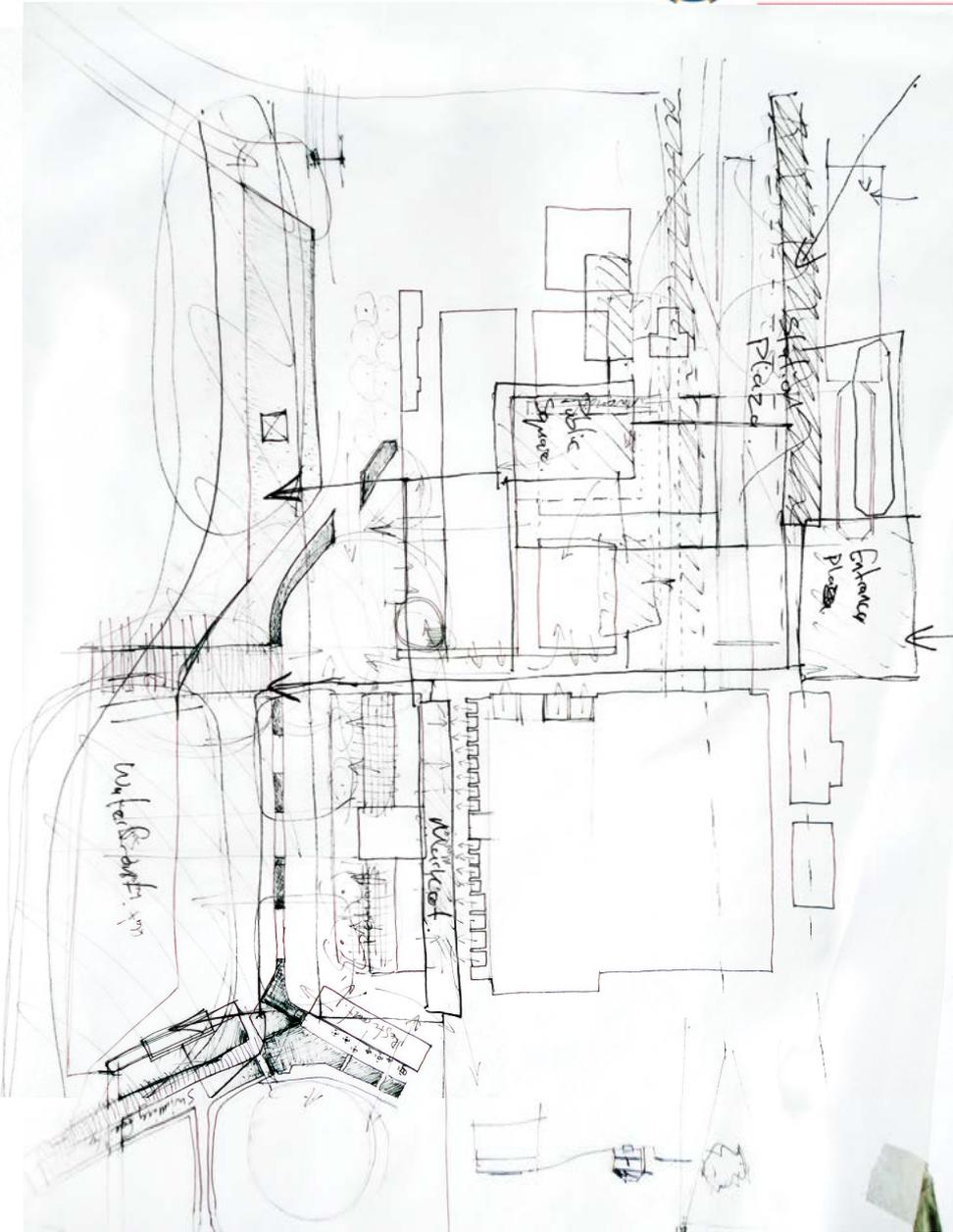


Fig:116. Design development for waterfront (Author 2010)

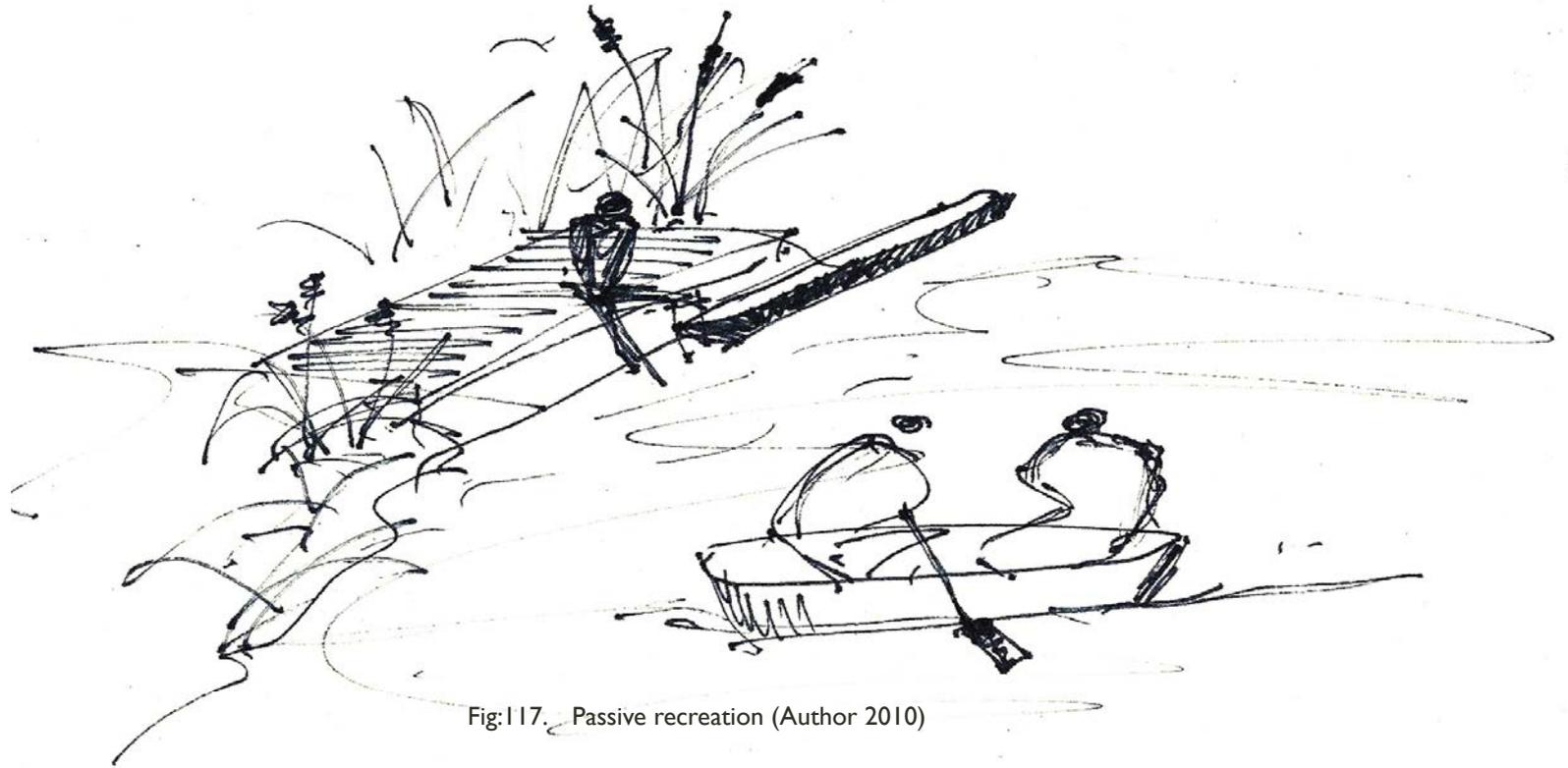


Fig:117. Passive recreation (Author 2010)

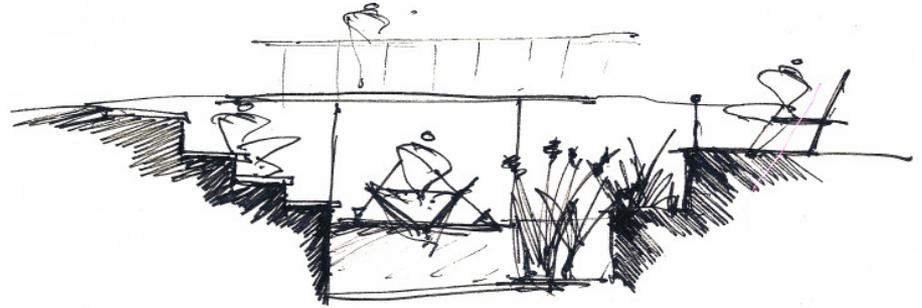


Fig:118. Making canals both user and environmentally friendly (Author 2010)

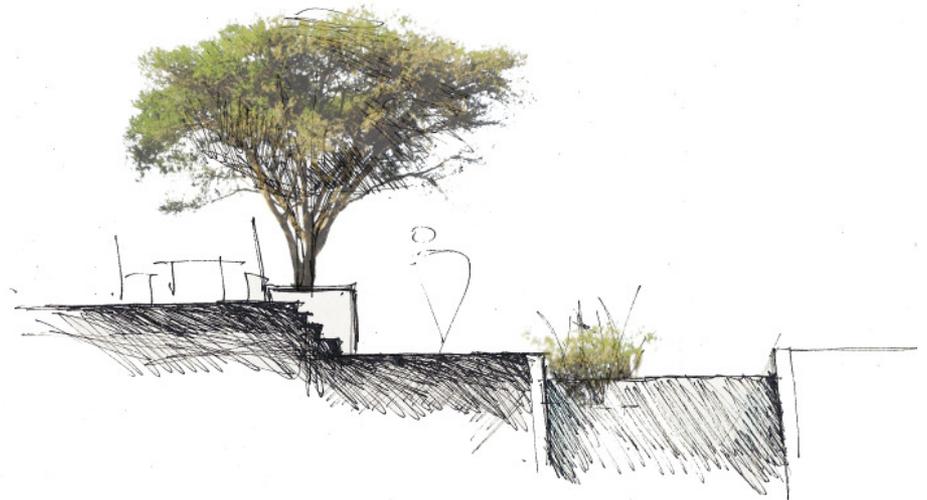


Fig:119. Walkway next to canal (Author 2010)



Fig:120. Vision for waterfront (Author 2010)

8.3.2. Swimming area

The canal can be converted into a swimming and various water activities.

The Kastrup sea bath is an example of an elegant swimming area located in previously contaminated water. Another example is the Copenhagen Harbour Bath by big architects.

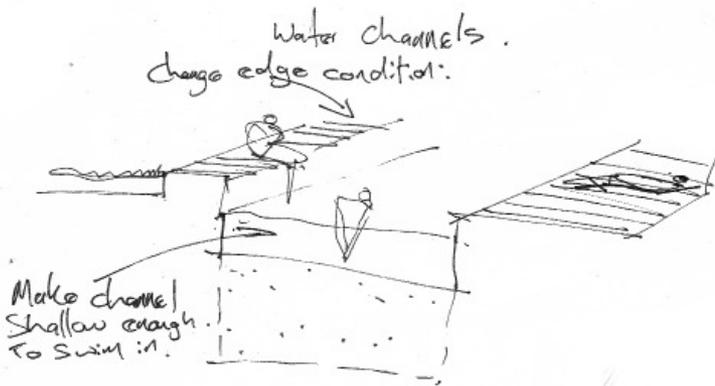


Fig:124. Aerial view of Kastrup sea bath plan (<http://davidreport.com/blog/200705/kastrup-sea-bath/>)

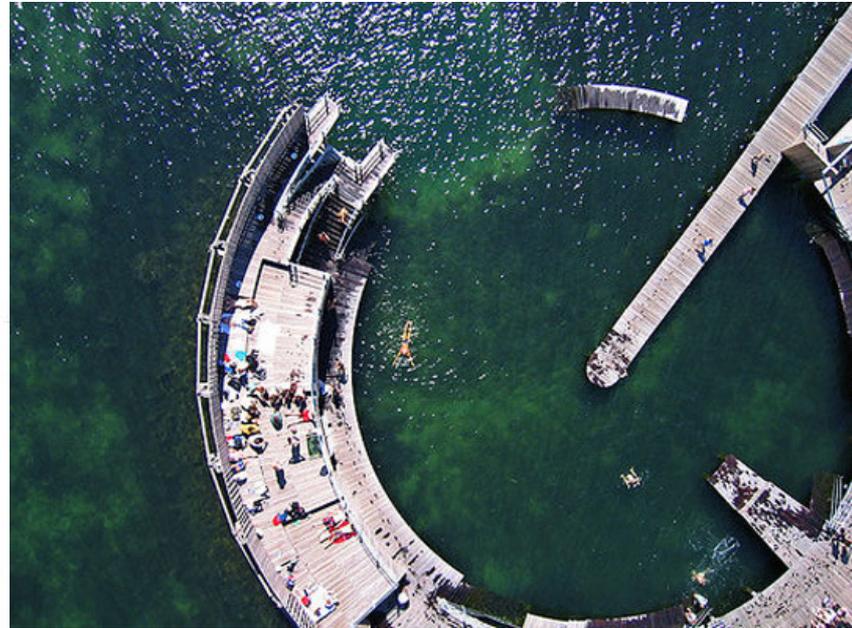


Fig:122. Aerial view of Kastrup sea bath plan (<http://davidreport.com/blog/200705/kastrup-sea-bath/>)



Fig:123. Kastrup sea bath view from shore (<http://davidreport.com/blog/200705/kastrup-sea-bath/>)

8.3.3. Market

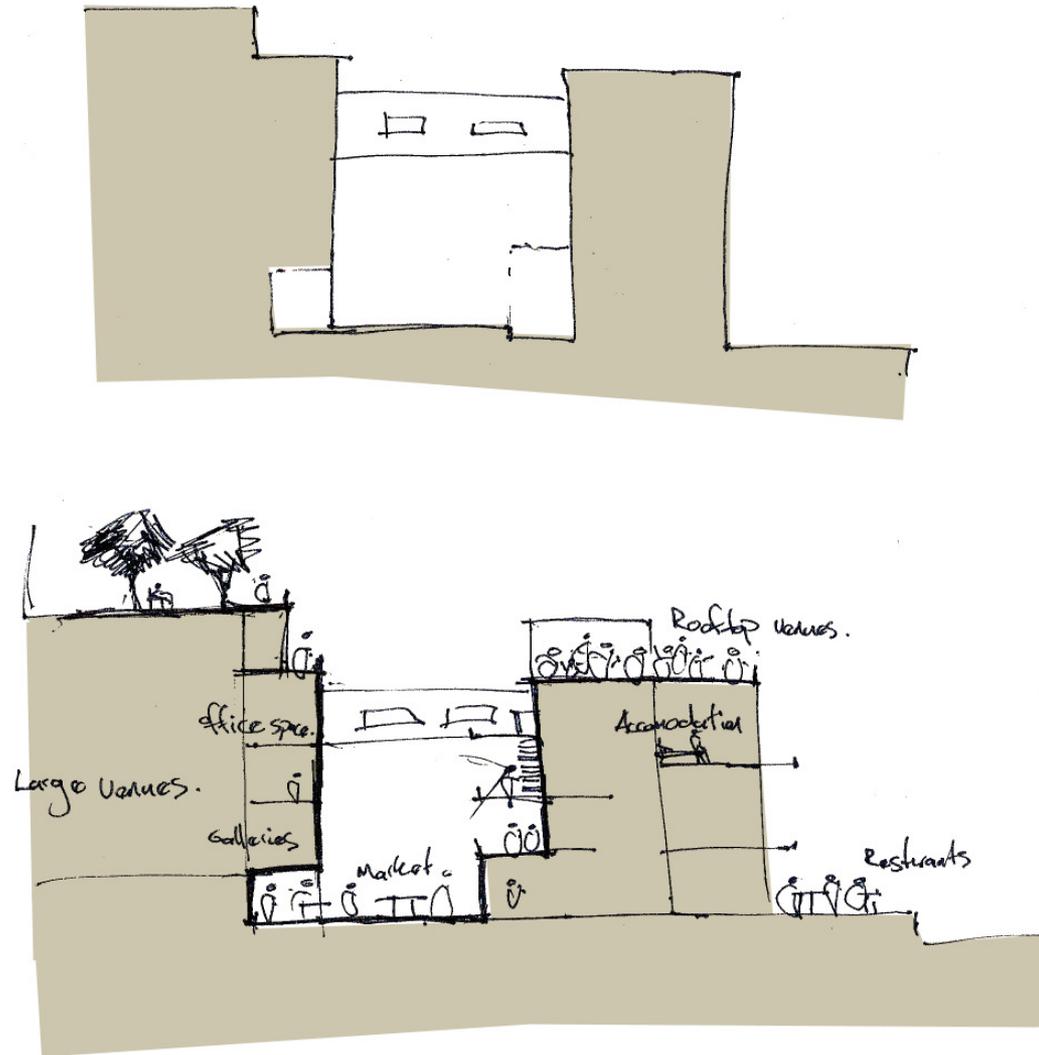


Fig:125. Converting old transformer room stalls into market (Author 2010)



Fig:126. Vision for square (Author 2010)

8.3.4. Public square

The public square is situated inside the remains of a condemned building that has been gutted. Its existing structure offers exciting design opportunities to juxtapose structure and ecology.

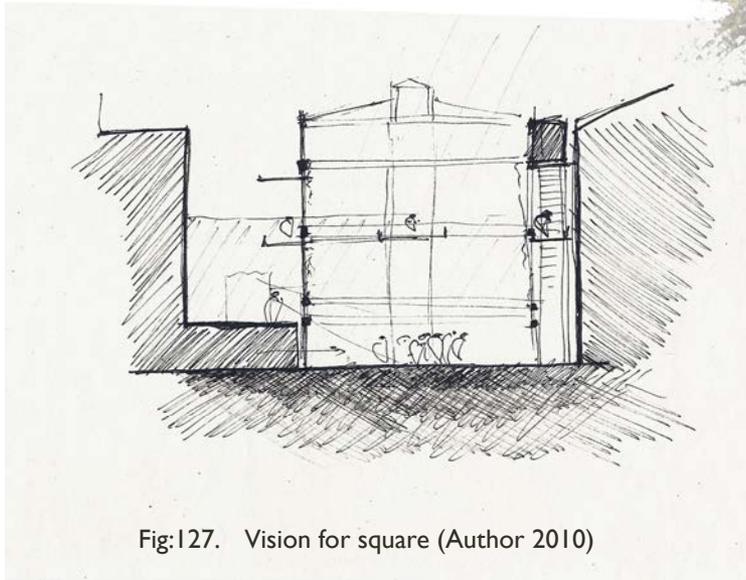


Fig:127. Vision for square (Author 2010)

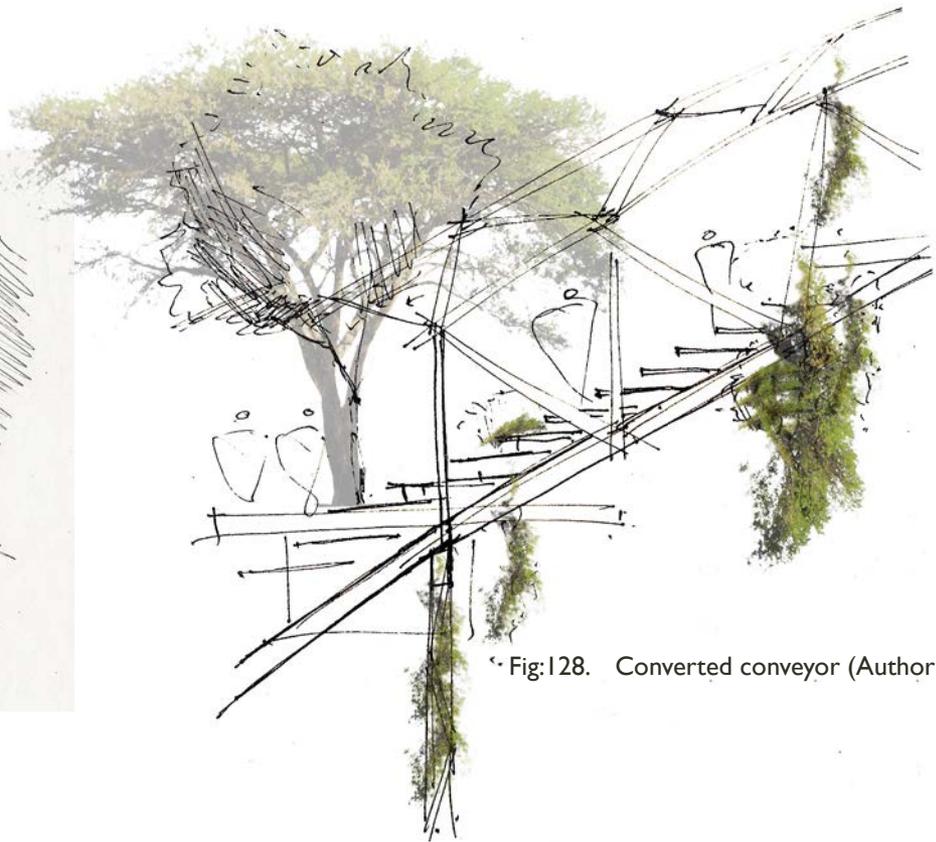


Fig:128. Converted conveyor (Author 2010)

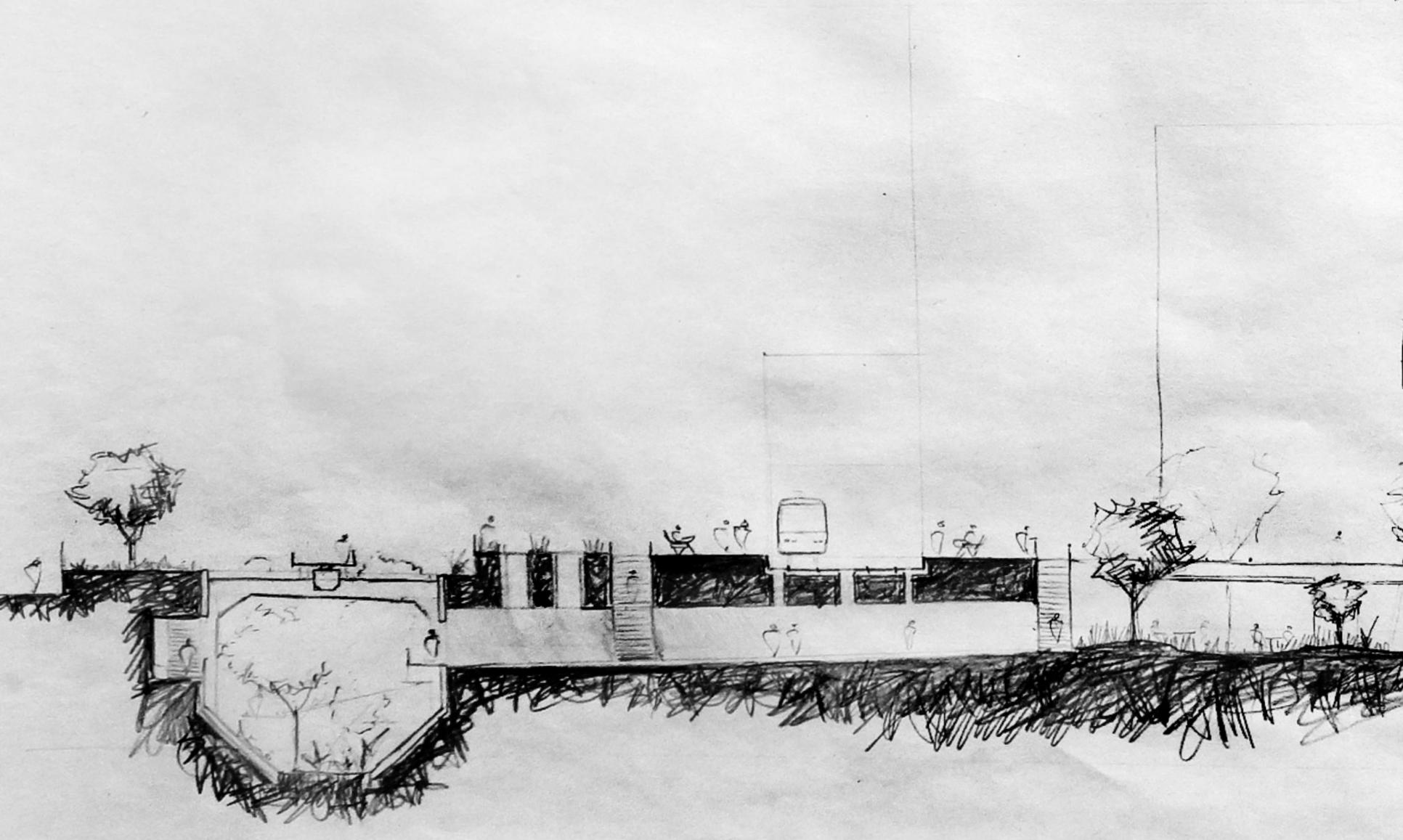
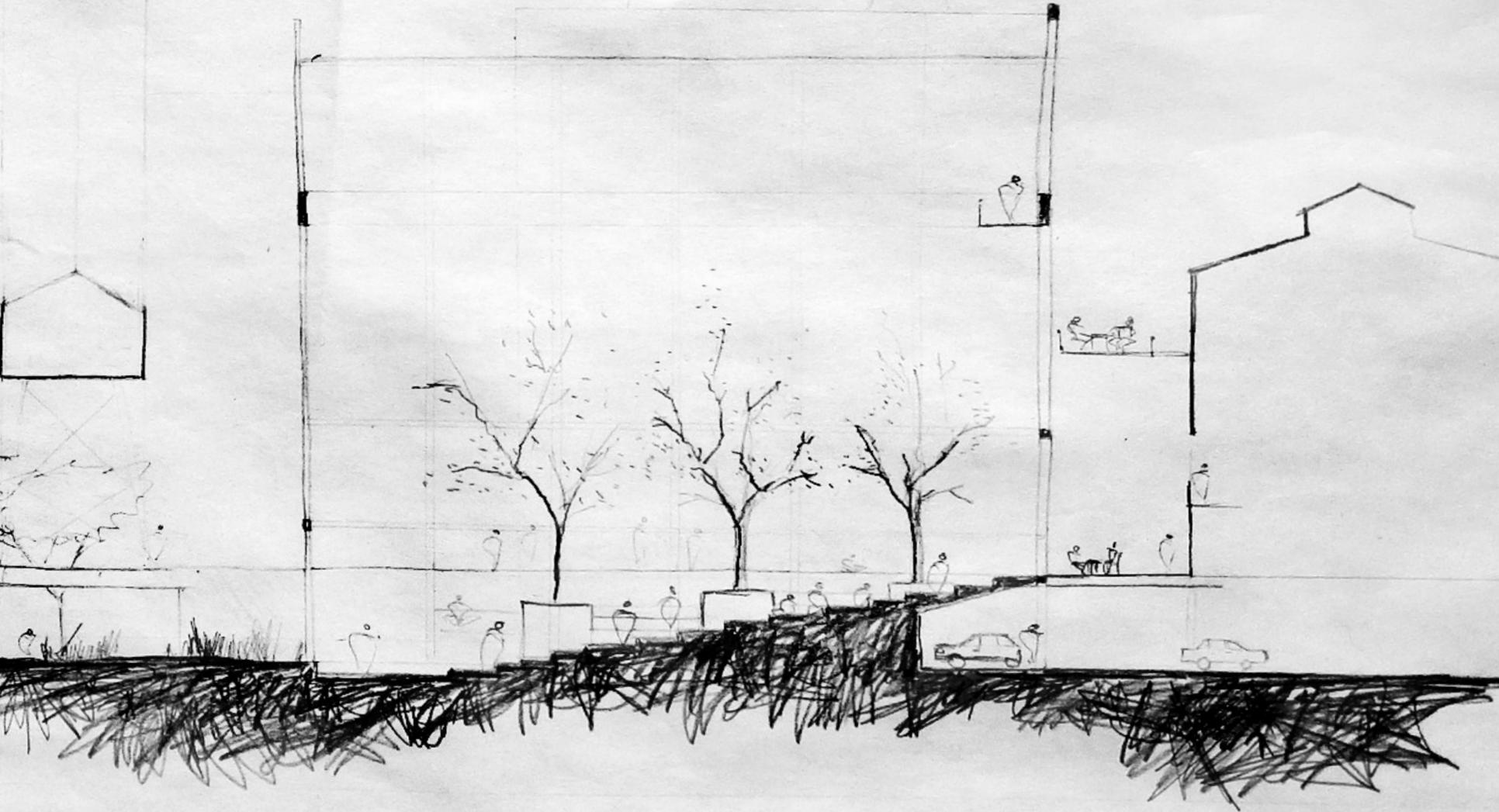


Fig:129. Section through square and old coal bunker. (Author 2010)





- 1 Focus area
- 2 Problem
- 3 The detail of LU
- 4 Supporting theories
- 5 Approach
- 6 Analysis
- 7 Concept
- 8 Concept development
- 9 Design development



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design development 08



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Fig:130. View of historic coal bunkers 1933 and 1945 (Author 2010)

9. Design development

9.1. Focus Area

The area I have selected for my detail intervention is the parcel of land between Buitenkant Street and the new train station. It is bordered by Mitchell Street to the north and the new bio-diesel plan to the south. The site includes the 1933 and 1945 coal bunkers.

9.2. Problem

The site forms the entrance to the power plant complex as well as the station. The existing coal bunkers form a barrier between the street and the station, blocking access. This is further perpetuated by the height difference between the street and the station ranging between 1 m and 3 m.

The bunkers are both older than 60 years and are therefore protected under SAHRA act, therefore cannot be removed. The bunkers are between 6 m and 11 m deep making them difficult to access.

Furthermore in context of the broader open space network, the site needs to contribute to a healthy and sustainable urban environment at a detailed scale.

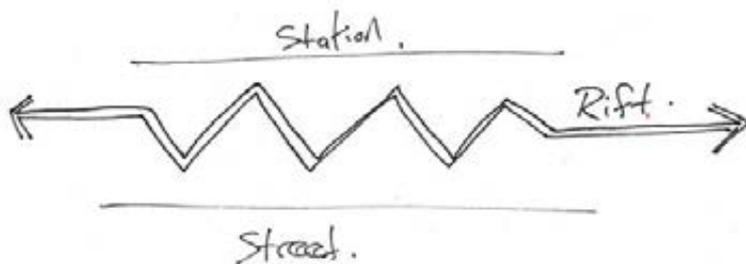


Fig:131. Diagram showing bunker as barrier of rift (Author 2010)



Fig:132. Diagram showing Focus area (Author 2010)



Fig:133. New orientation of plans with North to the left (Author 2010)



Fig:134. Digital Collage showing a series of spaces. (Author 2010)



“What make a space memorable or meaningful is not necessarily related to its function but rather to the intricate quality of space (Gehl 2007: 16).”

9.3. The detail of landscape urbanism.

When it comes to detail design, landscape urbanism offers very little design guidance. It remains a rather illusive body of theory that operates best at large scales where it has no need to be too prescriptive. Though the principles certainly have merit when dealing with the complexity of contemporary urban environments and often filter to a small scale, LU cannot address the complexity of every-day life, nor in fact does it try to.

It is easy to state that sites should be process driven and should be open ended so that they can evolve over time and accommodate multiple functions. Also that they should capture the imagination and use new and innovative methods of operations. But how does that relate to form? How does it look, feel, sound and taste?

In my opinion LU is not a design profession on its own nor can it be. It remains a body of theory that binds together the urban design professions to a state of enhanced intercommunication and a greater consciousness. In other words, LU provides the vision in which architecture, landscape architecture, and urban design and planning work together to achieve healthier, more sustainable urban environments that deal with current and relevant urban issues. It lays the foundation of a healthy landscape and unearths new potentials which make individual design interventions possible.

The design professions still function in their individual capacity, each with its unique contributions. With the combined contributions and inter-relationships of these professions we can most accurately address design problems at a detail scale.

LU is not all inclusive and there will always be need for other theories and design practices, although these can slot into a broader formwork it creates.



Fig: 135. Vegetables garden between coal bunker and fence (Author 2010)



9.4. Supporting theories

It is at the detail scale however that man interacts with landscape; it is here that he experiences and relates to it. There are many theories and principals outside of LU that can aid detail design while not conflicting with its broader principals.

9.4.1. Jan Gehl

Jan Gehl is an acclaimed theorist and urban designer who believes that public space should change along with the society they serve, or they will soon become redundant. This resonates with Corners theory of processes over time.

He continues by saying that where function is dominant, quality is often neglected and in a society where public space becomes a matter of choice the quality of space is crucial to the success thereof. The quality of the public spaces has, in the present day society, to be carefully attended to, or the spaces will not be used. We live “in a time where lively, attractive, safe and sustainable, with healthy individual lifestyles have become increasingly important (Gehl 2007: 17).”

He believes there are three essential aspects of public open space. These are:

1. Protection
2. Comfort
3. Enjoyment

1. Protection

Good public spaces offer protection against accident, insecurity and discomfort such as vehicle traffic, crime, violence as well as unpleasant sensory experiences. This

could be achieved by creating a safe pedestrian environment that offers a good mix of uses and activities, thereby ensuring passive surveillance. Basic considerations such as shade or shelter from wind or rain should also be considered as well as lighting and 24 hour activity.

2. Comfort.

Pedestrians should have excellent opportunity for walking, good level surfaces free of tripping hazards and other obstacles and harassments. Spaces should offer pleasant and interesting views, appropriate opportunity for either standing or sitting. Good public spaces offer opportunity for seeing as well as hearing and talking. It should cater for diverse age groups as well as active and passive recreation.

3. Enjoyment

Creating thoroughly enjoyable spaces is highly dependent on utilizing the qualities, attractions and special amenities found in and around city spaces (Gehl 2007: 20).

These spaces should be dimensioned according to the human body and senses so that the visitors feel comfortable. They should further provide opportunity to enjoy positive climatic aspects, provide interesting sensory experiences, fine views and overall enjoyment.

9.4.2. Newman & Jennings

Peter Newman and Isabella Jennings, in their book *Cities as Sustainable Ecosystems: Principals and Practices* highlight the importance of sense of place in creating sustainable cities. They too have ideas that resonate with Corners ideas. They state that a sense of place encompasses a feeling of connection to a place, a lived engagement with people and land, and an understanding and appreciation of the patterns and processes in time and space (Newman & Jennings 2008:

145).

They go on to say that in developing connections between people and their bioregion, creates a greater sense of belonging. It offers psychological enrichment and encourages sustainable practices, as people develop ties of affection for their environments. Ecological design begins with the intimate knowledge of a place. It is small-scale and direct, responsive to local conditions and people. If we are sensitive to the nuances of place, we can inhabit without destroying thereby utilising existing potential while retaining its initial character. "Designing for place is one of the core principles of ecological design (Newman & Jennings 2008: 145)."

They offer five strategies for fostering sense of place:

1. Protecting important existing elements and their natural and cultural heritage
2. Designing to make historical and current social and ecological processes more visible

3. Connecting the urban form with the wider bioregion
4. Using cultural practices and the arts to nurture and deepen a sense of place
5. Discover city "song lines" (the patterns that people form in habituating the city)

9.5. Approach

My approach to dealing with the design at this scale will be a combination of the above mentioned principles and the qualitative and quantitative approach developed earlier in the master plan scale.

The qualitative aspects at this scale include the inherent potential and heritage of the existing structures and the experience it can offer the user. On the quantitative side aspects such as movement, hydrology and sustainability will be considered.

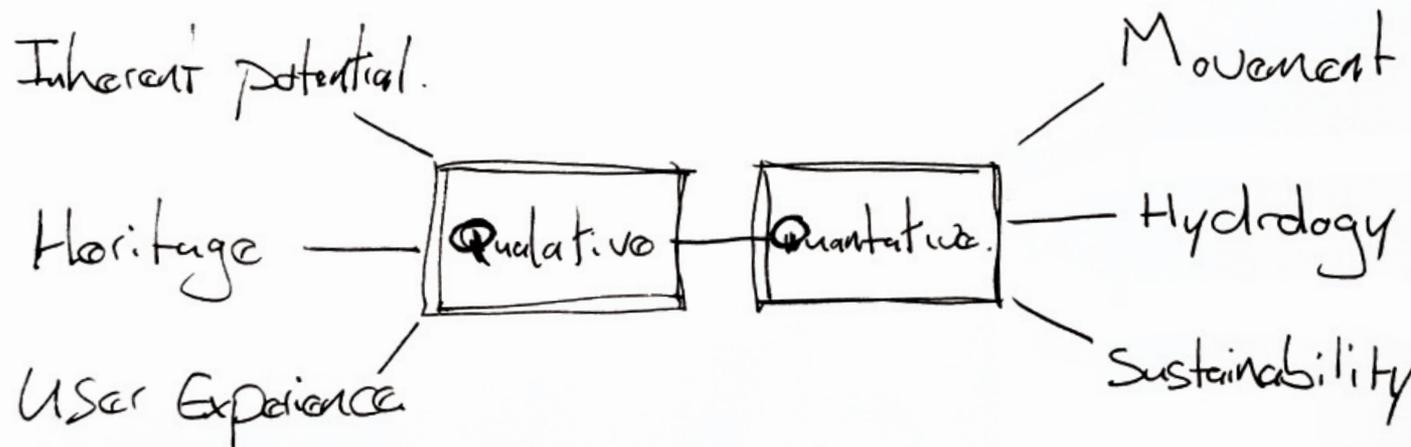


Fig:136. Diagram showing qualitative and quantitative aspects (Author 2010)



Fig:137. View of coal bunkers (Author 2010)



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Fig:138. North-East-ward panorama of site (Author 2010)



Fig:139. South-ward panorama of site (Author 2010)



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Fig:140. Inside bunker A (Author 2010)



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Fig:141. Inside bunker B (Author 2010)

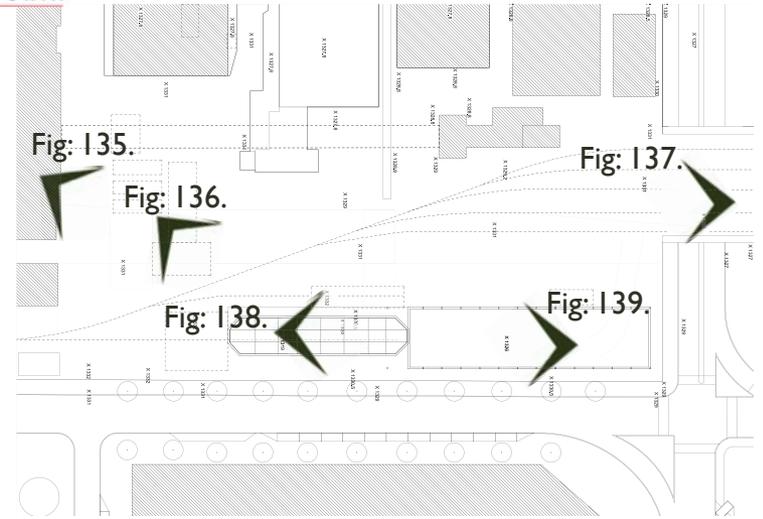


Fig: I42. Viewpoints for panoramas (Author 2010)

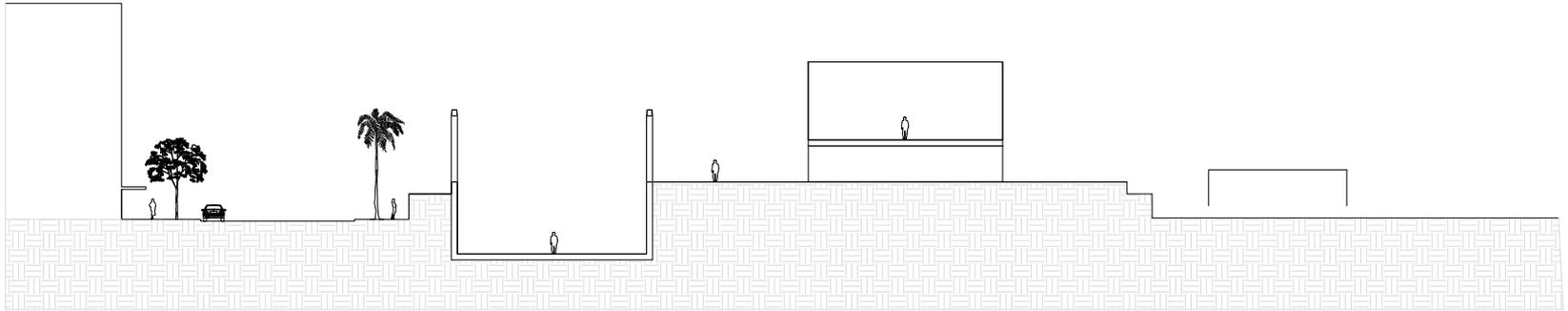


Fig:144. Existing section AA (Author 2010)

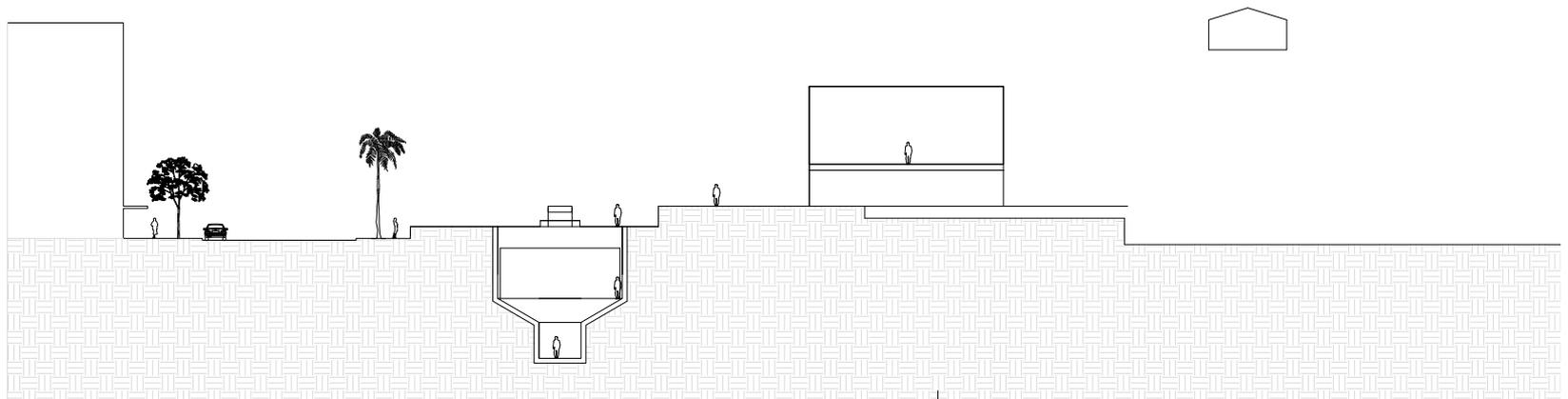


Fig:145. Existing section BB (Author 2010)

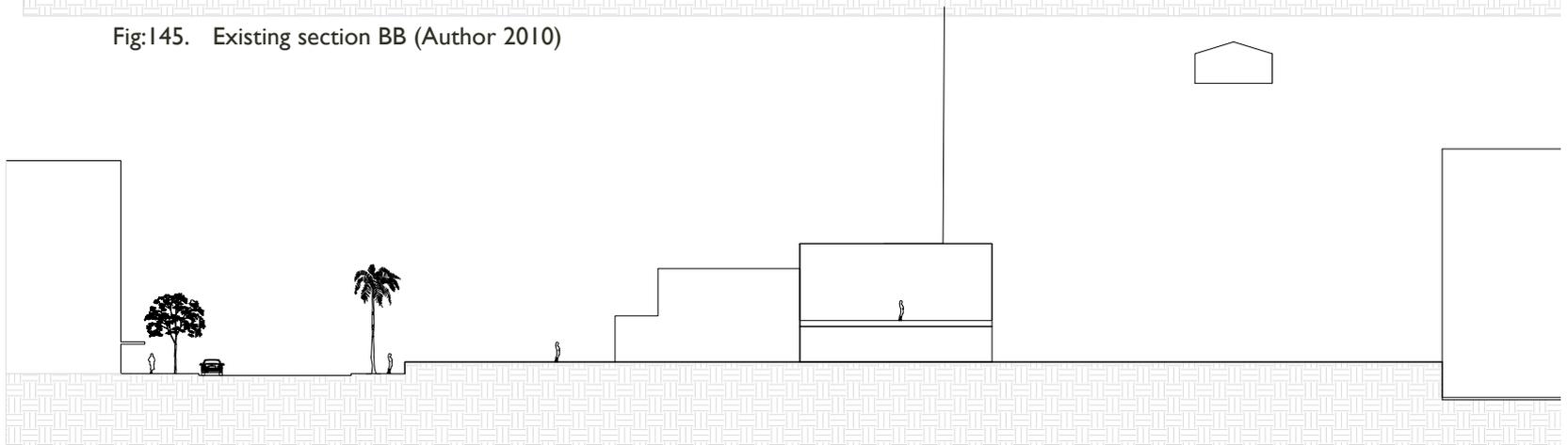


Fig:146. Existing section CC (Author 2010)

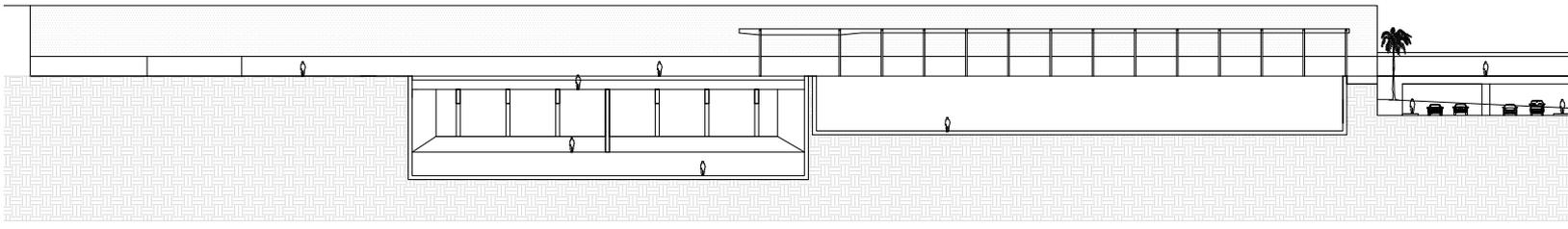


Fig:148. Existing section DD (Author 2010)

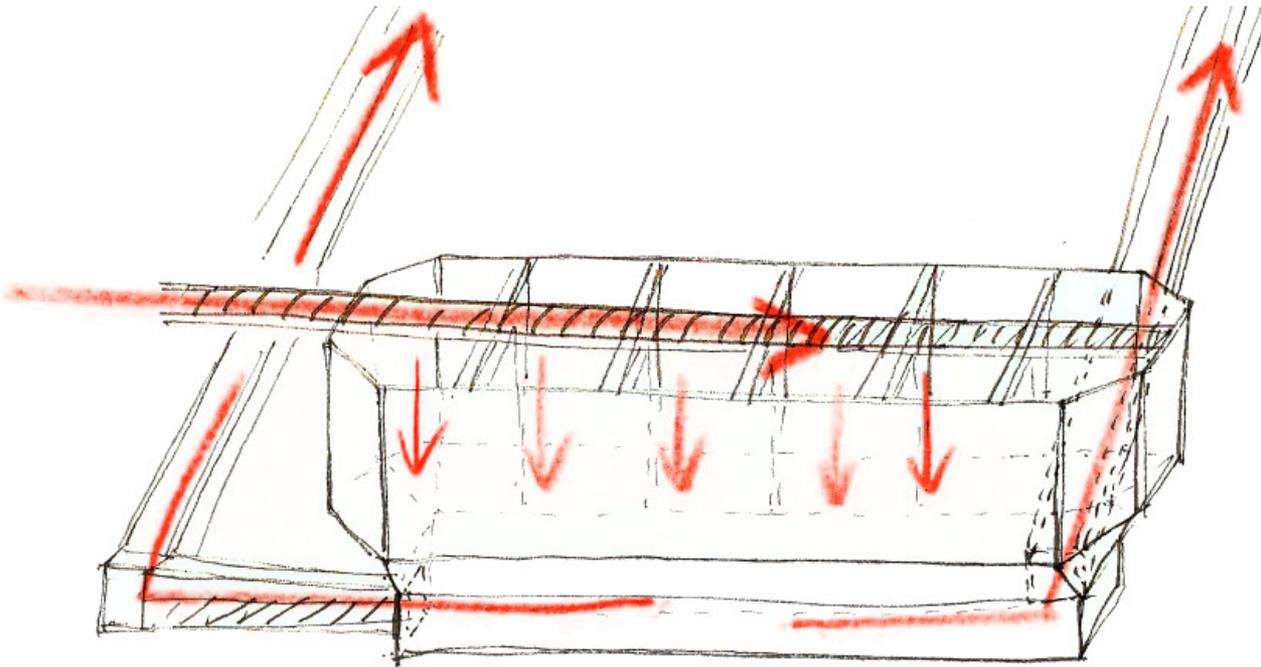


Fig:147. Diagram showing process of storing and extracting coal through old conveyors (Author 2010)



9.6.1. Statement of significance

The landscape of the power plant site is one that has shifted and evolved over time. With every addition made the land was cut and filled giving it its irregular character and leaving traces of that which has gone before.

The structures were built between 1933 and 1945. There is a certain mystery connected to them because no one who knows exactly how they use to operate or where the ducts use to enter into the bunkers. There are pipes and underground tunnels that lay dormant waiting to be rediscovered. It speaks of an age gone by. Now one can still relate the bunkers to the powerplant, but in years to come the powerplant itself will become an artefact of bygone process. The 1933 bunker was never emptied of its contents. The coal that remained have over time become the growth medium for a chaotic forest.



Fig:149. Excavation of 18933 bunker (Power station archive)



Fig:150. Moving of coal (Power station archive)



Fig:151. Raised walkways in Andre Citroen Park (<http://architypes.net/image/parc-andre-citroen-walkways-over-gardens>)



Fig:152. Romantic garden (<http://malcolmkirk.com/images/gallery/3>)

9.7. Concept

The bunkers were once of key importance on the site, because they were the vessels in which the coal was contained. Coal is the fuel that the power plant runs on; it is the source of energy that gives life to the city. The bunkers also protected the surrounding environment from being contaminated by coming into contact with the coal.

Once the plant is decommissioned and redeveloped into a cultural and economic centre, the plant will run on a new fuel; the people who will inhabit and pulse through it will be the new source of energy. The plant will then once again provide power to the city - this time not to generate electricity but to regenerate urban form.

The concept for the site is firstly to create a series of bridges and entrance squares to facilitate access to the site and station, thereby addressing the functional requirements.

Secondly to create a series of spaces or gardens within the bunkers that allow people to move through, to rest for a while and then move on. These spaces will offer an escape from the fast previous urban environment surrounding it. This is a poetic inversion where the bunkers now protect its internal environment from the contamination of the everyday urban environment.

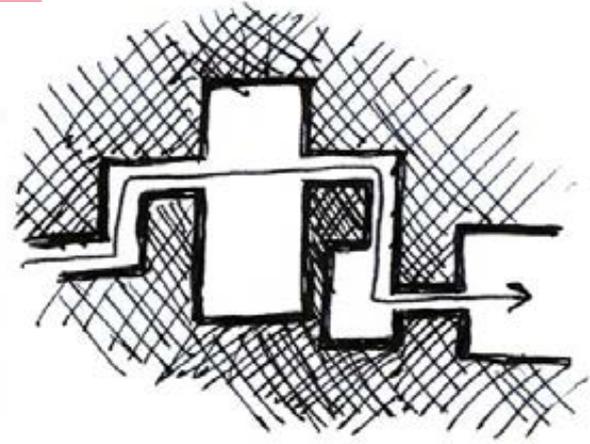


Fig:153. Series of Spaces (Author 2010)

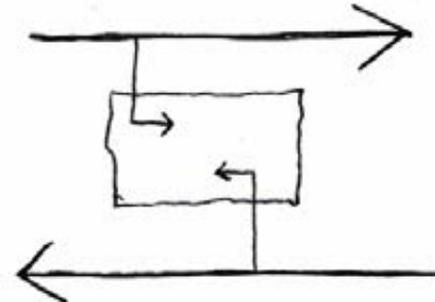


Fig:154. Detour spaces (Author 2010)

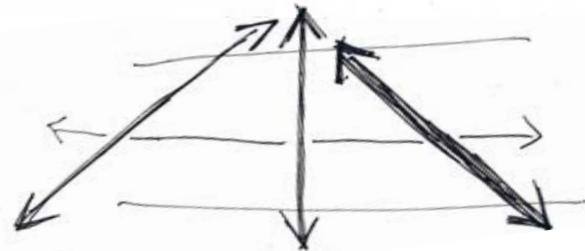


Fig:155. Bridging the bunkers (Author 2010)

9.8. Concept development

9.8.1. Inherent potential

What opportunities does the site offer that will influence the design approach and programming?

The Bunkers are sunken, therefore are visually cut off from its surroundings, offering seclusion. They are located in the middle of various busy movement systems, but because of their articulation they have the potential to become islands of escape.

Bunker A is introverted in its articulation and therefore offers more intimate spaces whereas bunker B is more extroverted and therefore will have more public functions.

Bunker B is equipped with an overhead crane that runs on a concrete structure, offering the opportunity to move things in and out of the bunker. Bunker A on the other hand has an existing overhead railway structure that can facilitate movement.

The different surface levels offer exciting design challenges.

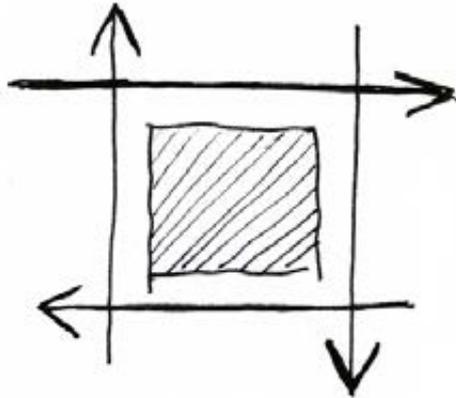


Fig:156. Bunkers function as island of escape (Author 2010)

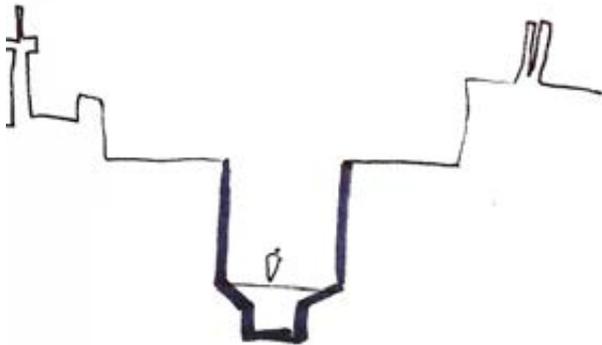


Fig:157. Seclusion from surroundings (Author 2010)

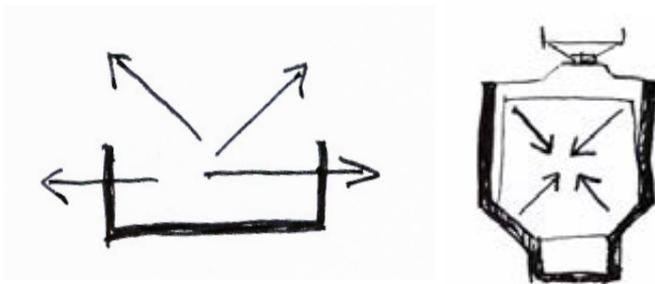


Fig:158. Extroverted and introverted bunkers (Author 2010)

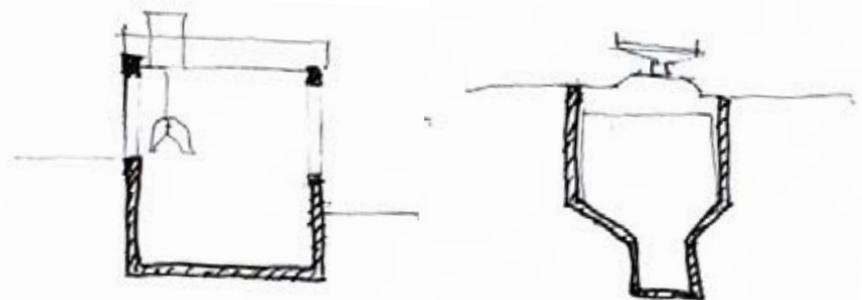


Fig:159. Existing Structures (Author 2010)

9.8.2. Heritage

The because of their age and vital historical function the bunkers the design must have a strong heritage component.

Therefore the major structures and unique features must be maintained. However in order to access and reprogram the bunkers it will require modification. The approach to heritage will be one that reveals historic processes and structures through showcasing them or by contrasting them.

New materials have to contrast old, without distracting attention and fixtures will either be mounted onto or suspended from existing structures. New circulation routes will be cut behind existing structures to insure the integrity of the internal volumes of the bunkers.

The design should be both bold and sensitive allowing people to experience and explore the narratives of the site.

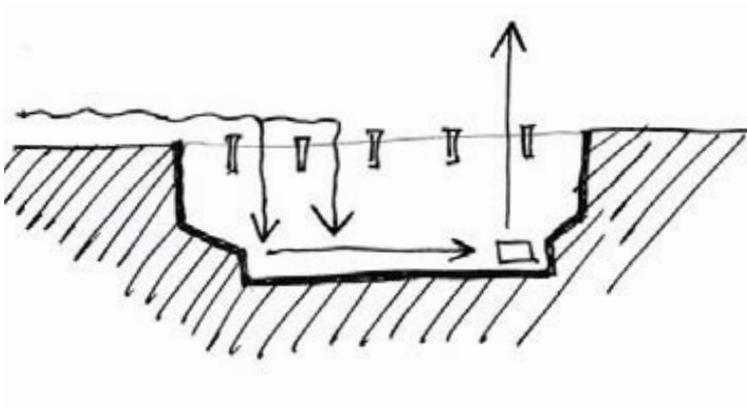


Fig:160. Historical process (Author 2010)

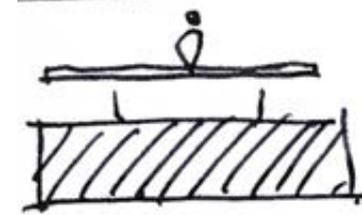


Fig:161. New interventions hover mounted onto existing (Author 2010)

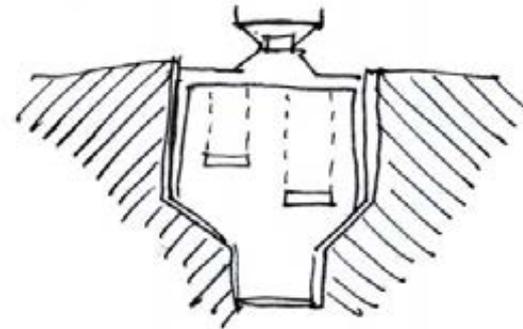


Fig:162. New interventions suspended from existing (Author 2010)

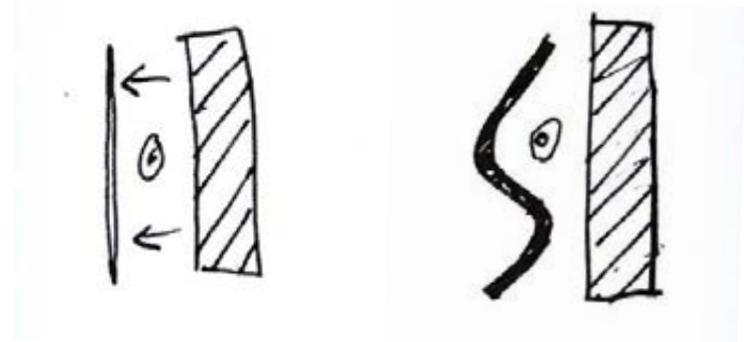


Fig:163. Cut in behind and contrast existing structure (Author 2010)

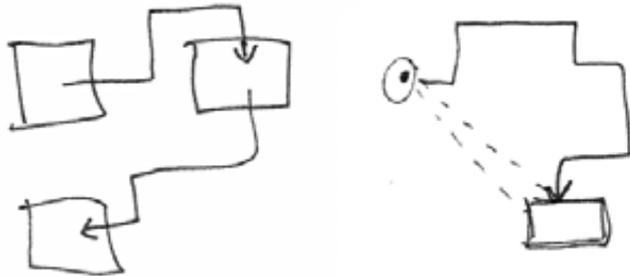


Fig:164. Series of spaces offering hints of the next (Author 2010)

9.8.3. User experience

It is at this scale that people experience landscape the most intimately. How does one address the need for landscape at a detail scale in order to address problems at an urban scale?

The answer is that the landscape should provide the escape, the recreation and the relaxation that the suburbs provide. Places with a strong identity where one can interact with nature at an intimate level. These spaces should be easily accessible by the general public but also provide the safety and comfort of private gardens.

This draws one back to the medieval and romantic notions of walled garden, where the garden was a place of beauty that excludes negative influences of the outside world.

The series of walled gardens must offer an alternate reality where one can enter and as one moves across thresholds one is further and further removed from reality.

Theses spaces must offer a variety of peaceful yet stimulating environment which the user can explore, each offering hints of the next one.

The user should be able to experience the bunkers from all angles.

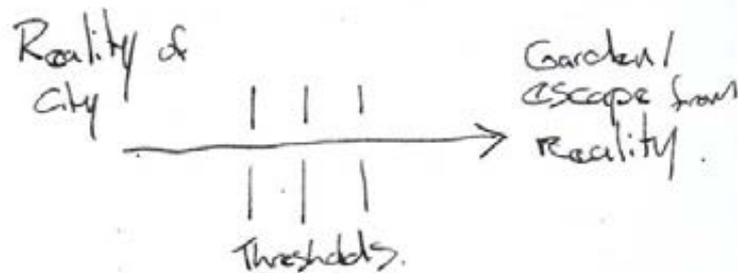


Fig:165. Series of thresholds (Author 2010)

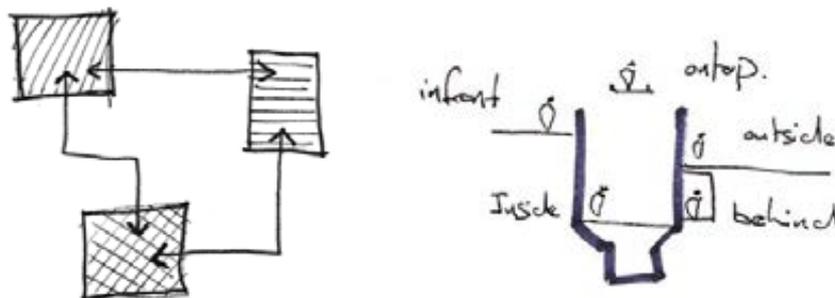


Fig:166. Variety of spatial characters and levels of experience (Author 2010)

9.8.4. Movement

Movement is one of the most important informants within the design with the first priority of linking the street to the station and secondly navigating the level differences.

A series of terraces is introduced to mitigate the significant level differences. These serve a dual function of navigating the level difference and creating spaces.

There is a hierarchy of movement routes ranging from direct routes to secondary and tertiary routes. This allows the user to decide how much of the site he is willing to explore.

9.8.5. Hydrology

Bunker A forms the lowest point of on site of up to 11m below ground level. Thus water will naturally congregate there, thus it will now form part of the storm water strategy as a detention facility to store water for subsequent slow release. The water will pass through vegetation and soil filters that will cleanse it in the process. Some of this water can then be used for irrigation purposes.

9.8.6. Sustainability

In terms of sustainability, the design will rely heavily on materials recycled and manufactured from site. It will also look to labour intensive construction methods as a means of job creation.

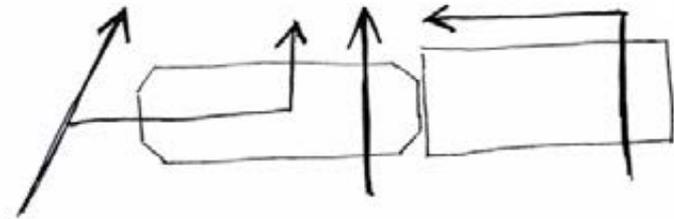


Fig:167. Bridging of bunkers (Author 2010)

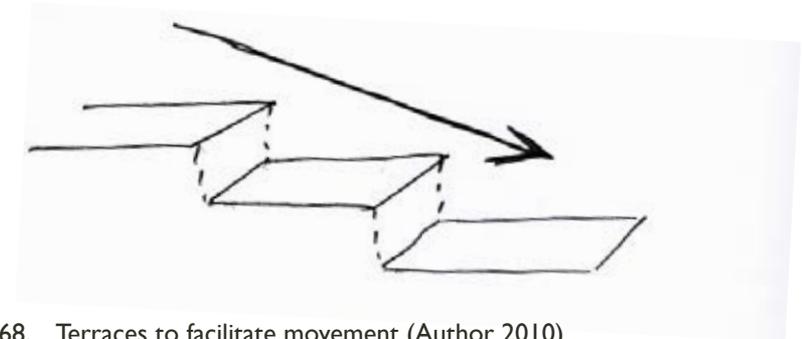


Fig:168. Terraces to facilitate movement (Author 2010)



Fig:169. Retention and filtration of water (Author 2010)

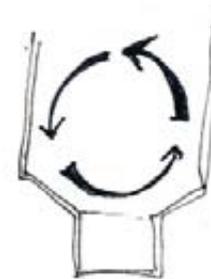


Fig:170. Use of recycled materials to construct design (Author 2010)

9.8.7. Other principles

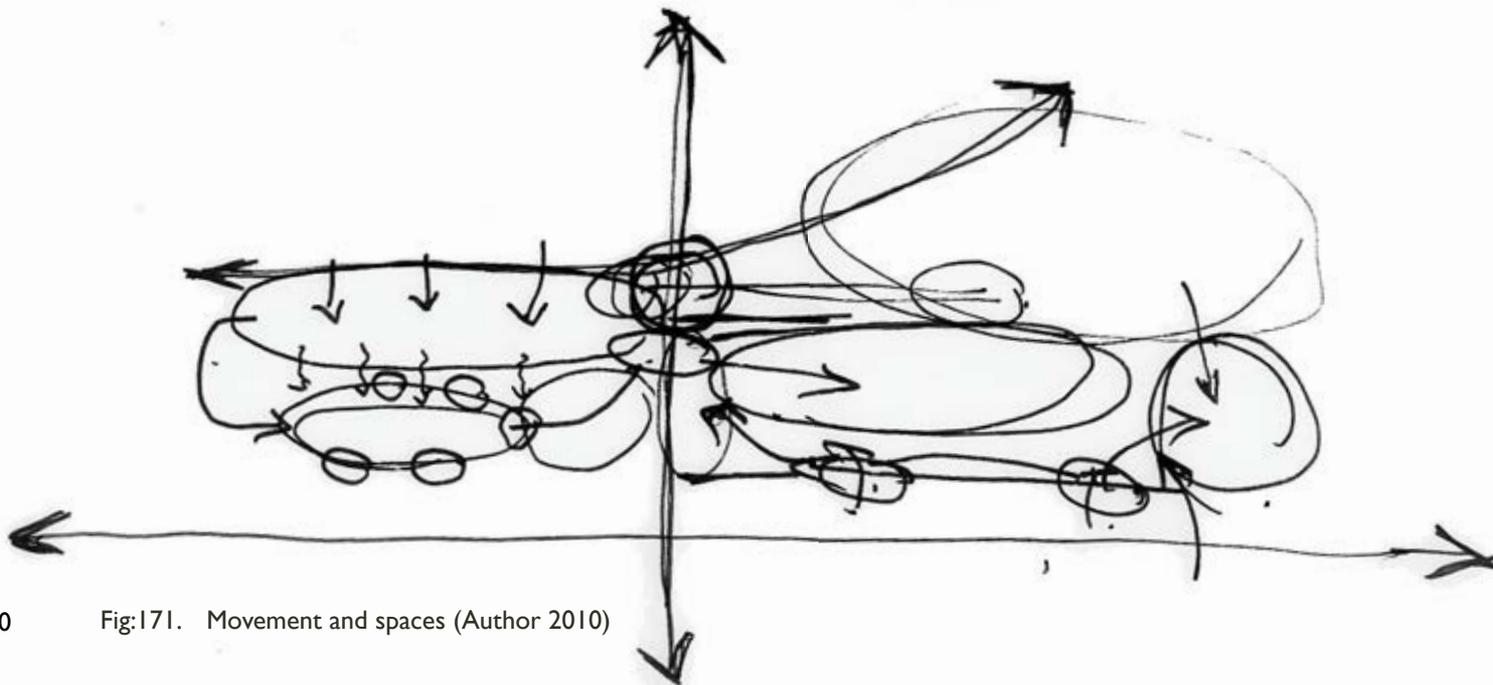
In terms of Gehl's theory of protection, enjoyment and comfort the design should offer passive surveillance and controlled access. It should also provide good and comfortable access with ample opportunity for seating. Micro climate should also be taken into consideration. Furthermore the design should offer interesting sensory experiences.

According to Newman & Jennings theory the existing elements and character should be safeguarded whilst making historical and current social and ecological processes more visible. It is also important to connect urban form with the wider bioregion, thus using elements such as vegetation to reference the broader region.

Furthermore using cultural practices and the arts to nurture and deepen a sense of place. The design should eventually form part of the day to day activities of the surrounding community.

9.9. Design development

9.9.1. Context



180 Fig:171. Movement and spaces (Author 2010)

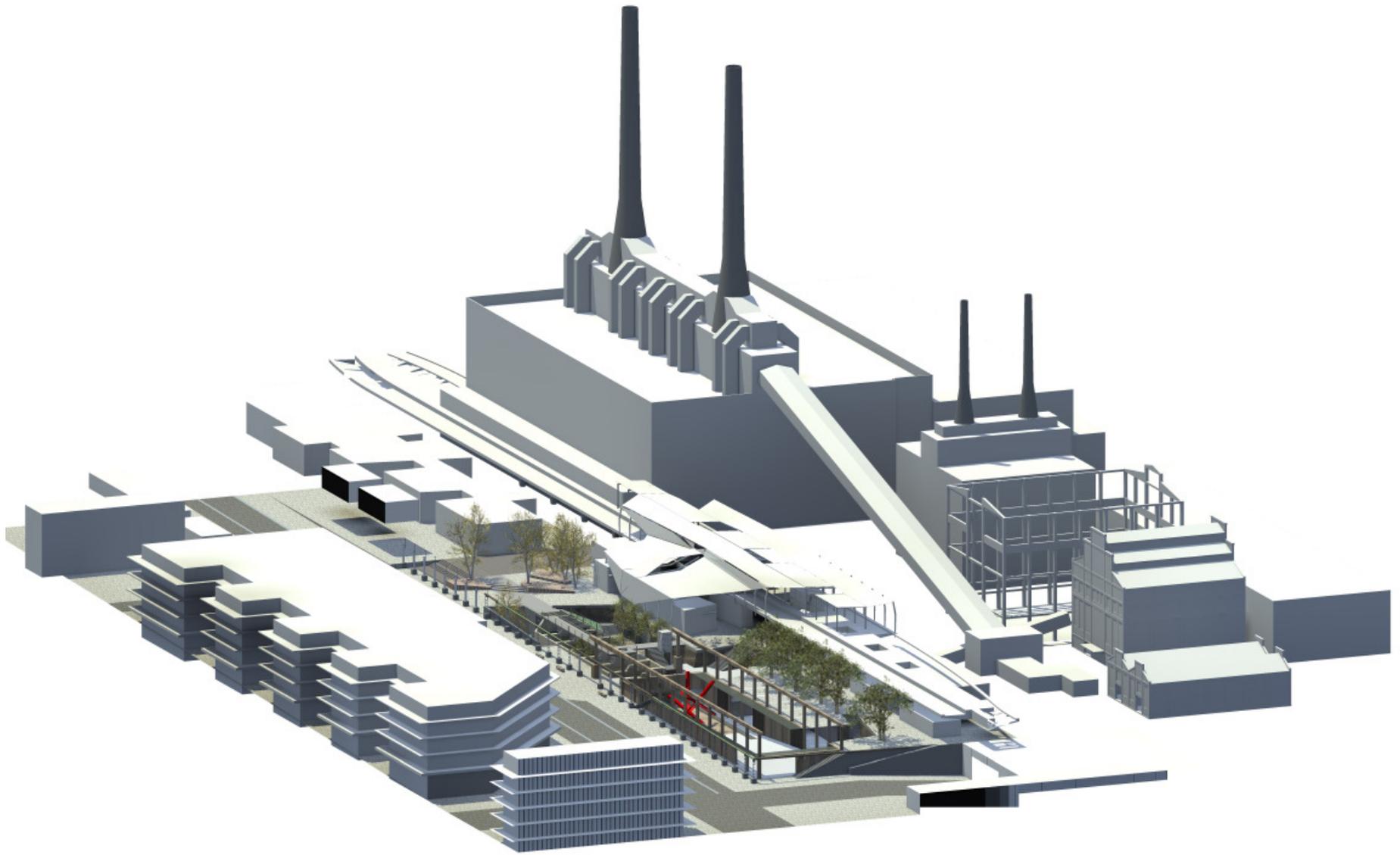
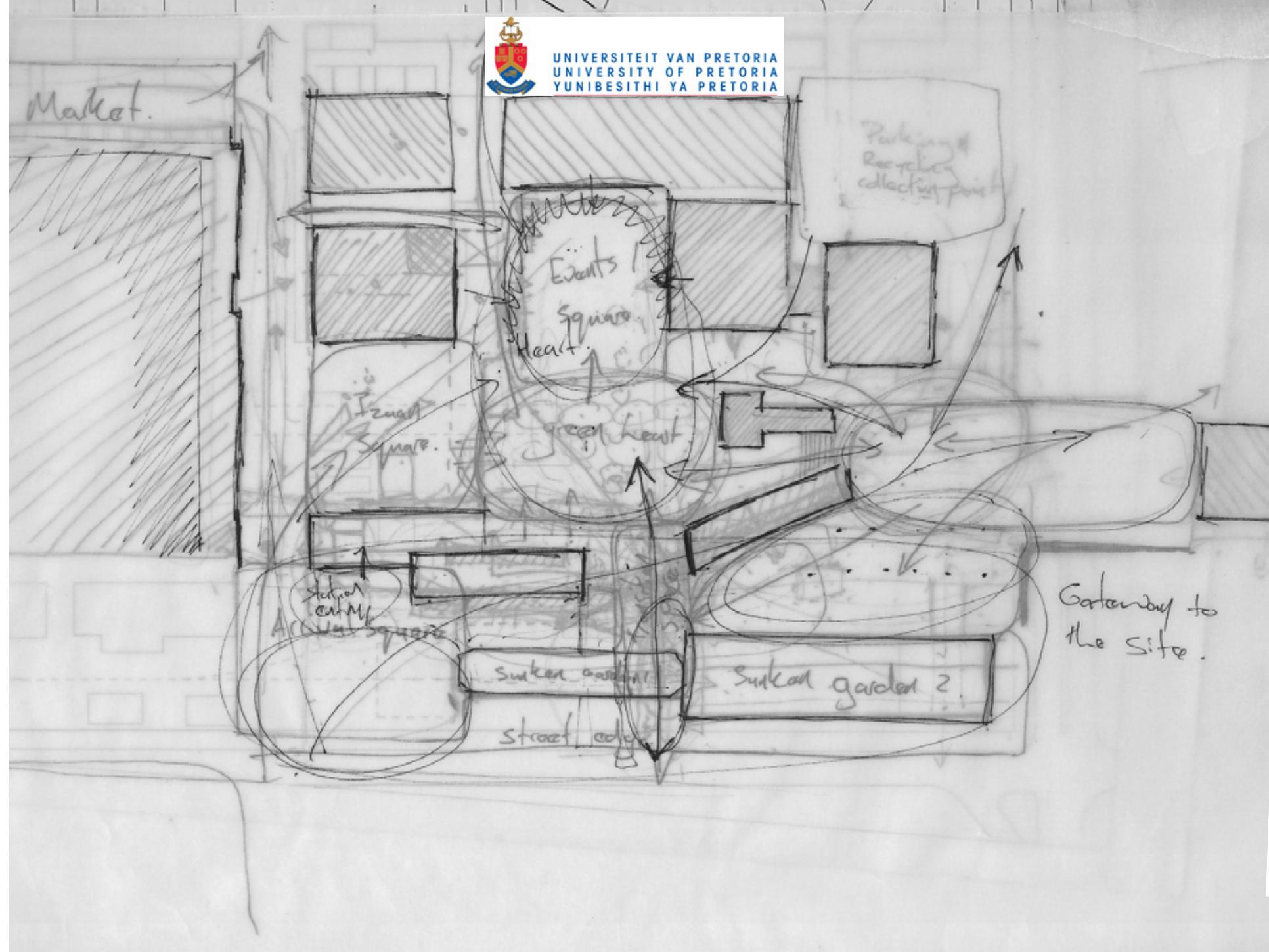


Fig:172. The design in context (Author 2010)



182 Fig:173. Diagram identifying public open spaces and the connections between them (Author 2010)

9.9.2. Shaping of levels

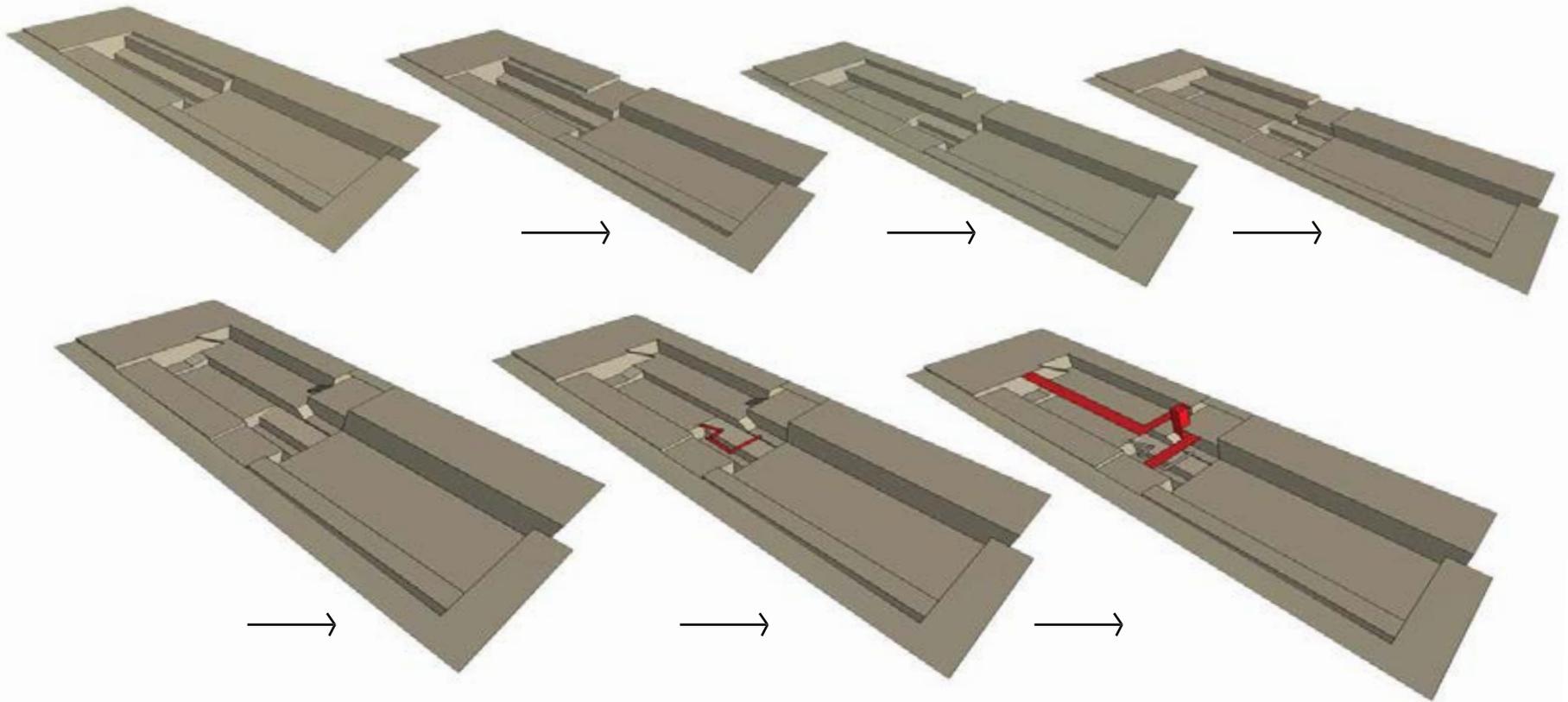
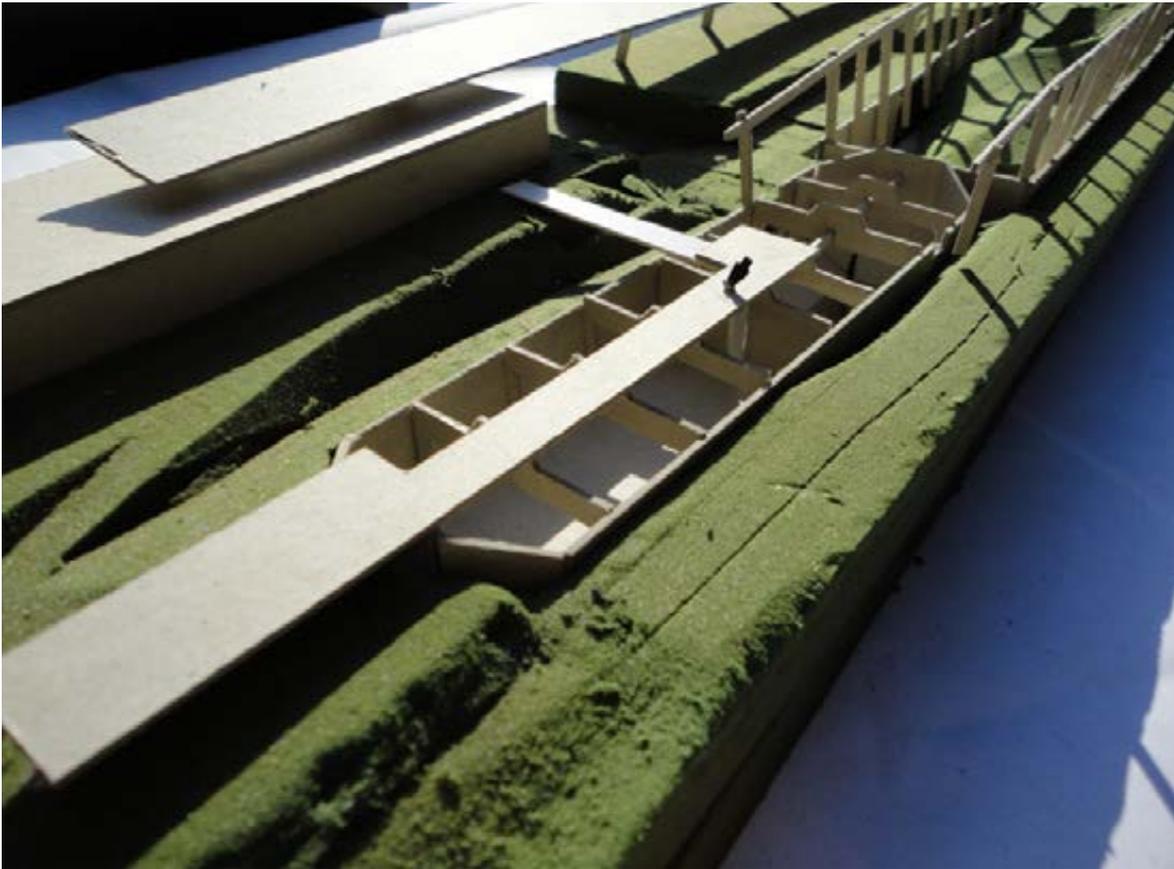


Fig:174. Shaping of levels to create spaces and facilitate movement (Author 2010)



9.9.3. Working models



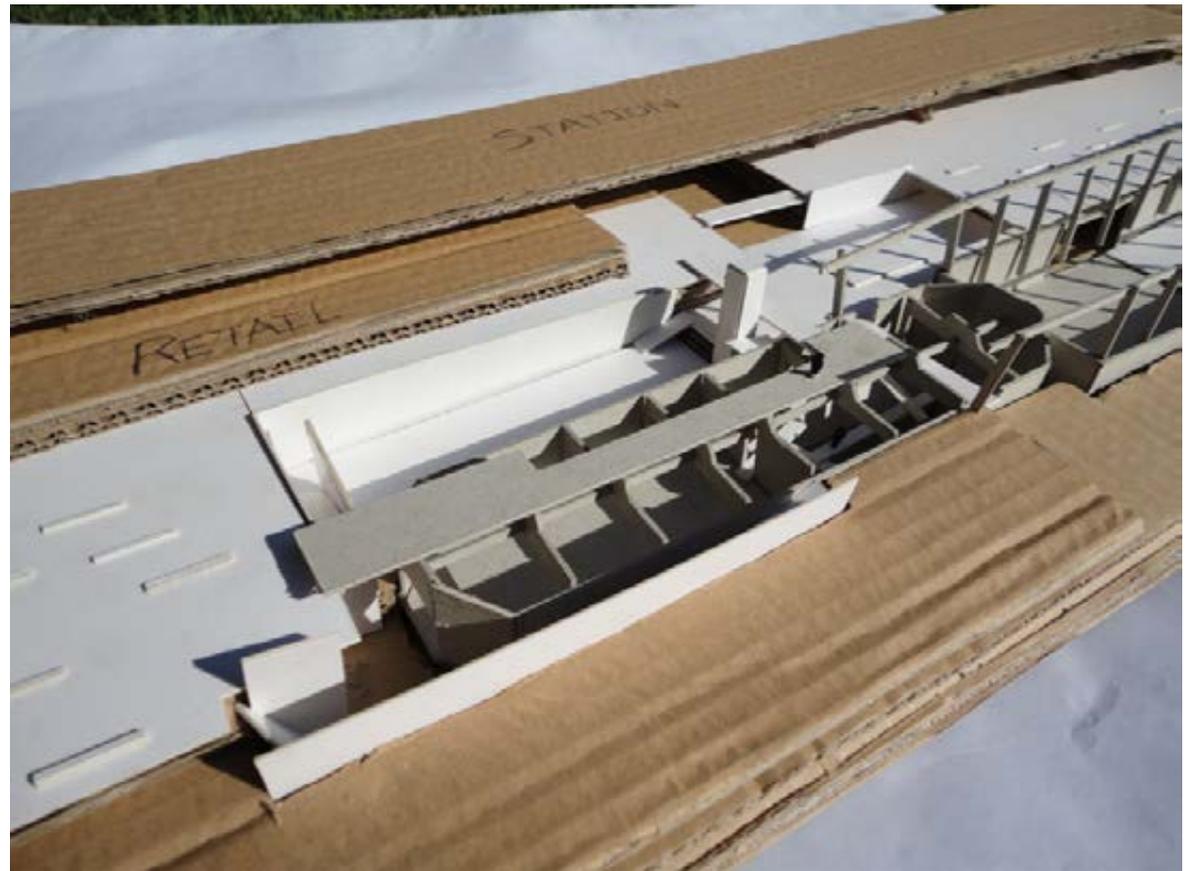


Fig:175. Working models exploring spatial impacts of design decisions (Author 2010)

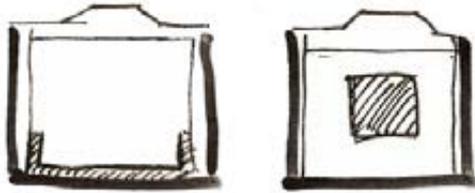


Fig:176. Intervention must line nor fill space (Author 2010)

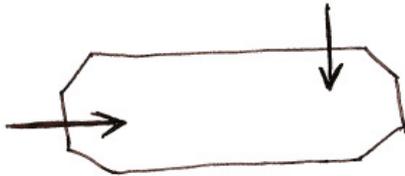


Fig:177. Entrances based on historic process (Author 2010)

9.9.4. Bunker A

The internal volume of the bunkers is important both symbolically and spatially and should therefore not be obstructed. Intervention should take place on its edges thereby respecting the volume.

The entry points the bunker were determined by the location of the old conveyors, thereby symbolising man as new energy source.

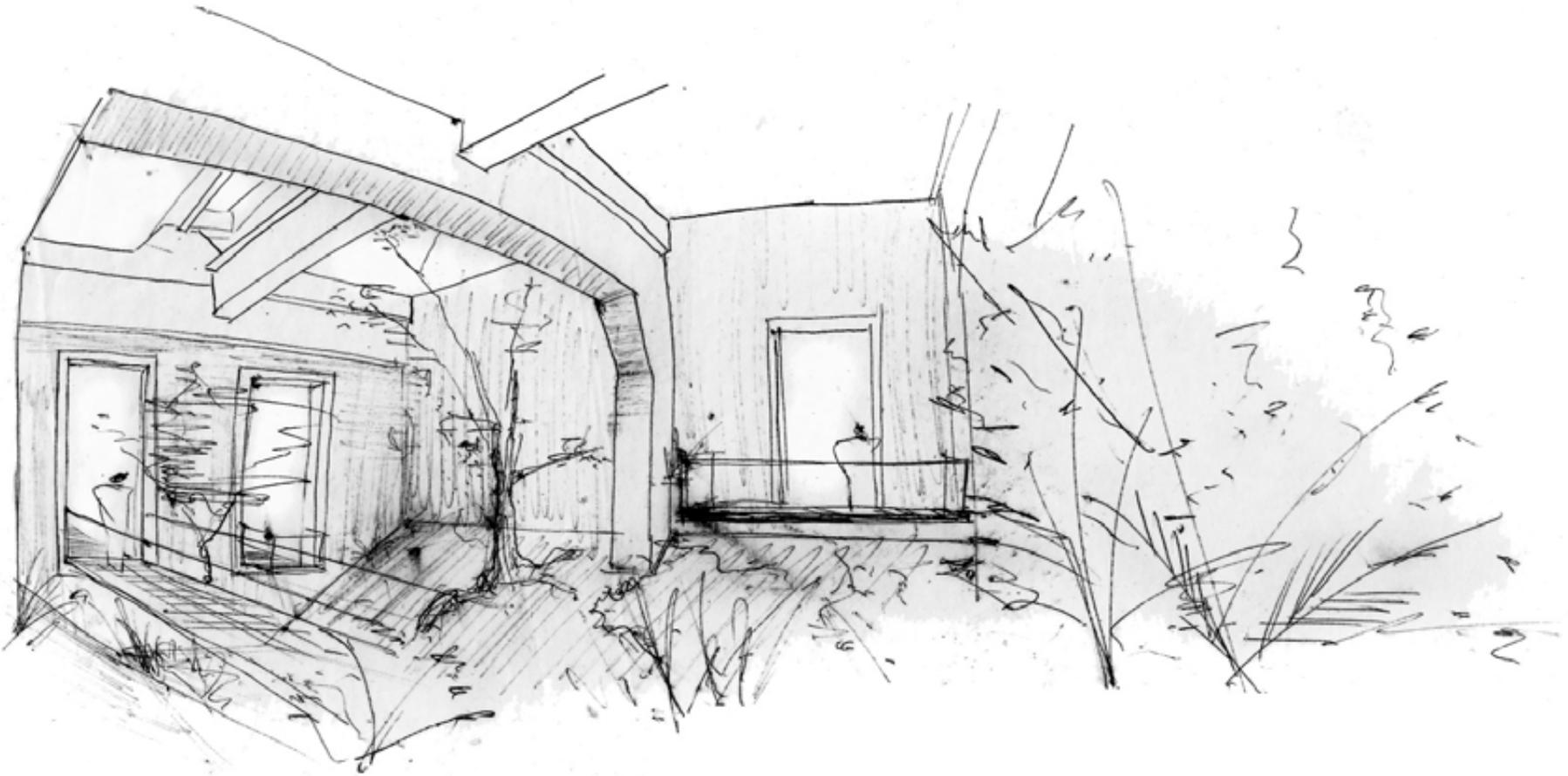


Fig:178. Vision for Bunker A (Author 2010)

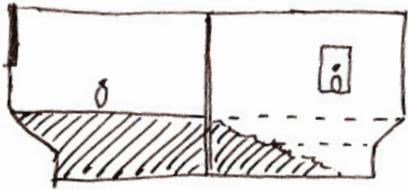


Fig:179. Entrances based on historic process (Author 2010)

Because the sides of the bunker are at an angle it is difficult to use therefore certain areas of the bunker will be filled to create level surfaces. However in order to display the full extent of the bunker the northern section will only be partially filled at an angle. This will serve two purposes, firstly to maximise the sun angle as well as create a basin for detaining water for slow subsequent release.

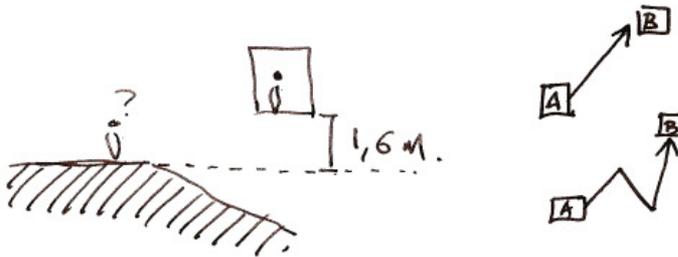


Fig:180. Entrances based on historic process (Author 2010)

The level difference between the entrance in the northern section and the platform in the southern section is approximately 1.6m and will have to be linked by at least 18m of ramp. The distance between these two points is only 15m. Therefore the ramps need to wind its way between these points in order to make up the height difference.

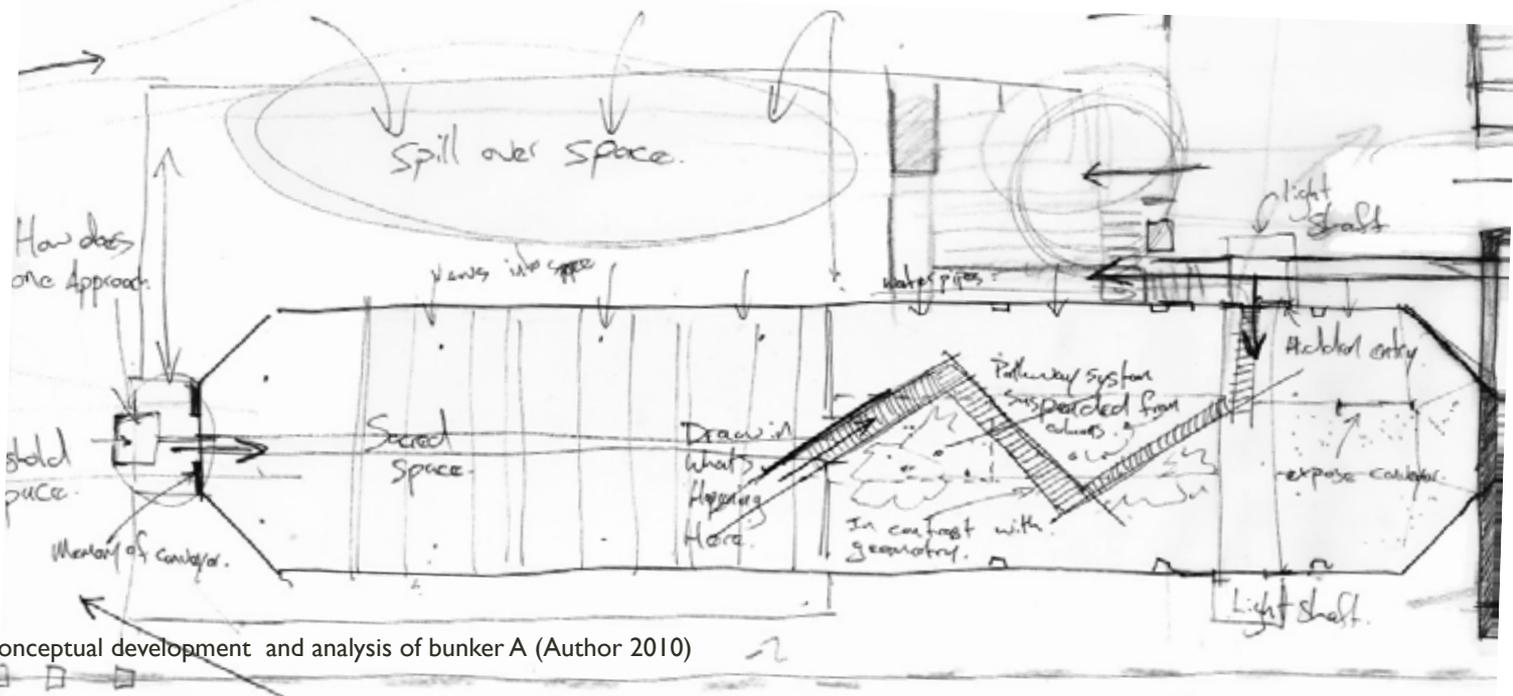


Fig:181. Conceptual development and analysis of bunker A (Author 2010)

Ramps are suspended from overhead columns and their intervals dictate where the ramps can be anchored. A model was used to determine the composition of the walkways.

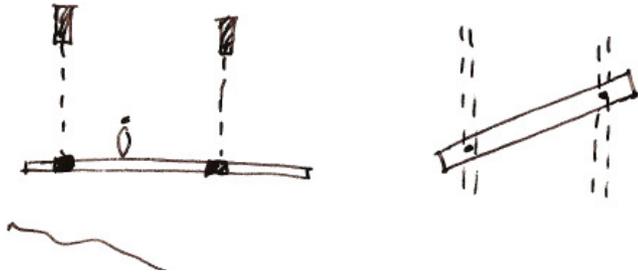


Fig:182. Diagram showing suspension of walkways between columns (Author 2010)

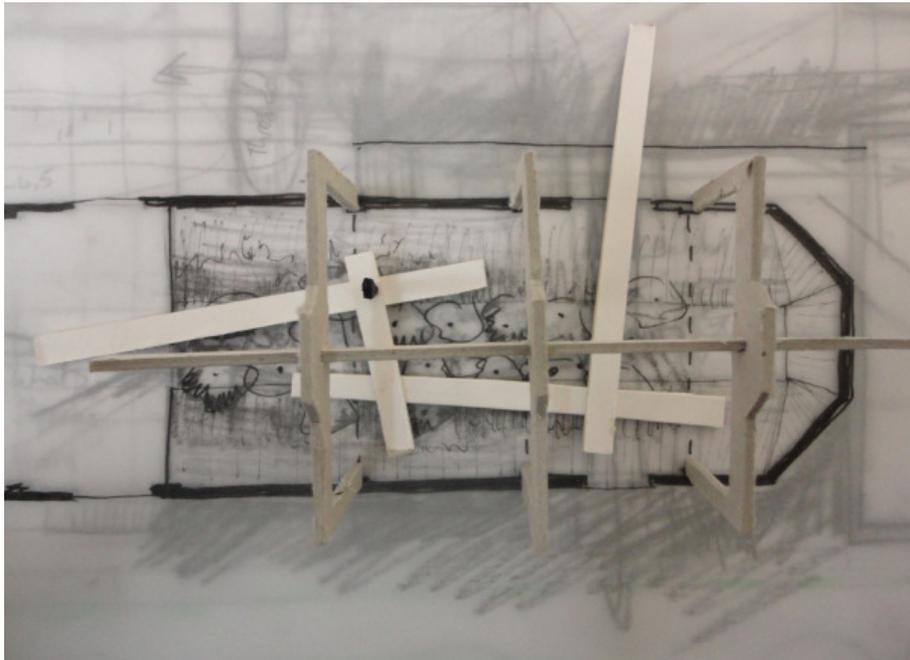
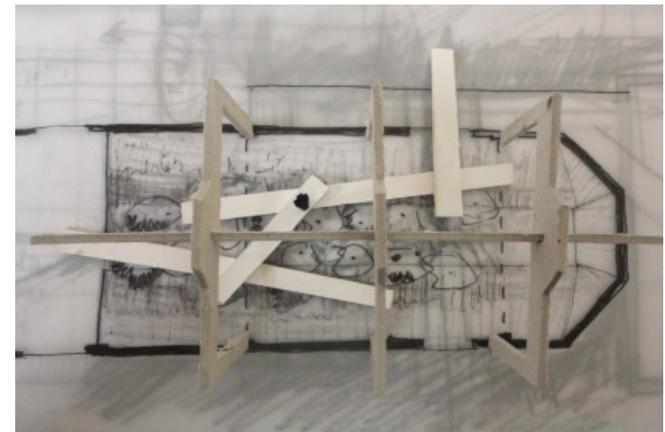
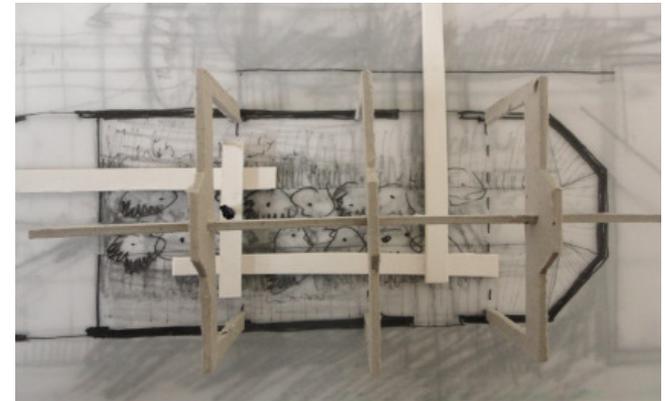
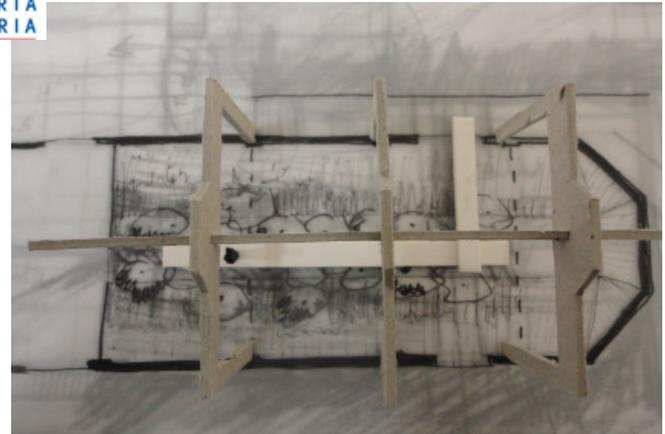


Fig:183. Model development of suspension of walkways between columns (Author 2010)



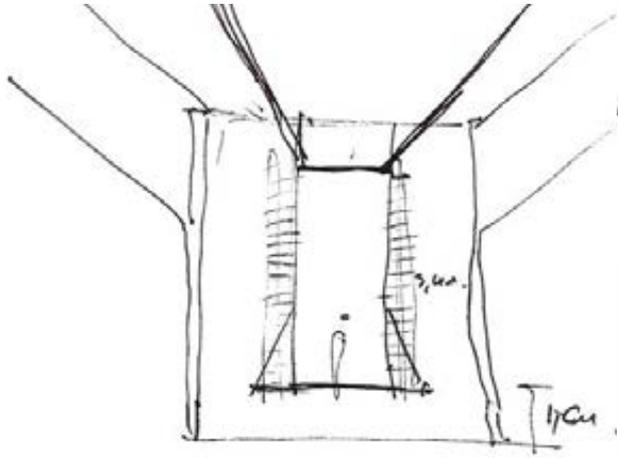


Fig:184. Entrance (Author 2010)

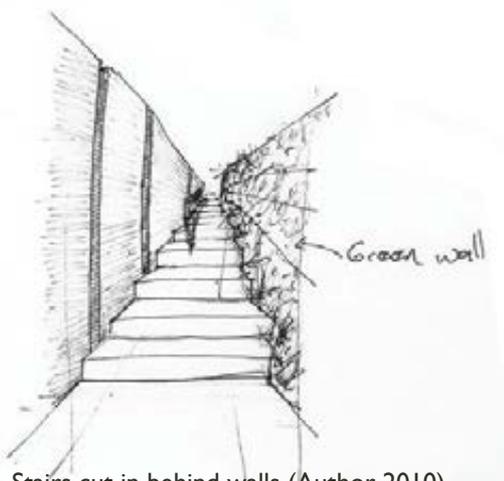


Fig:185. Stairs cut in behind walls (Author 2010)

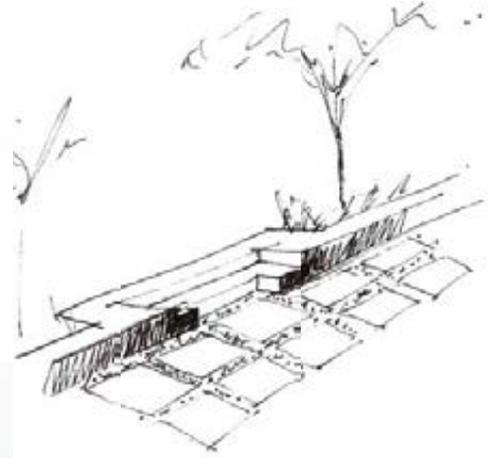
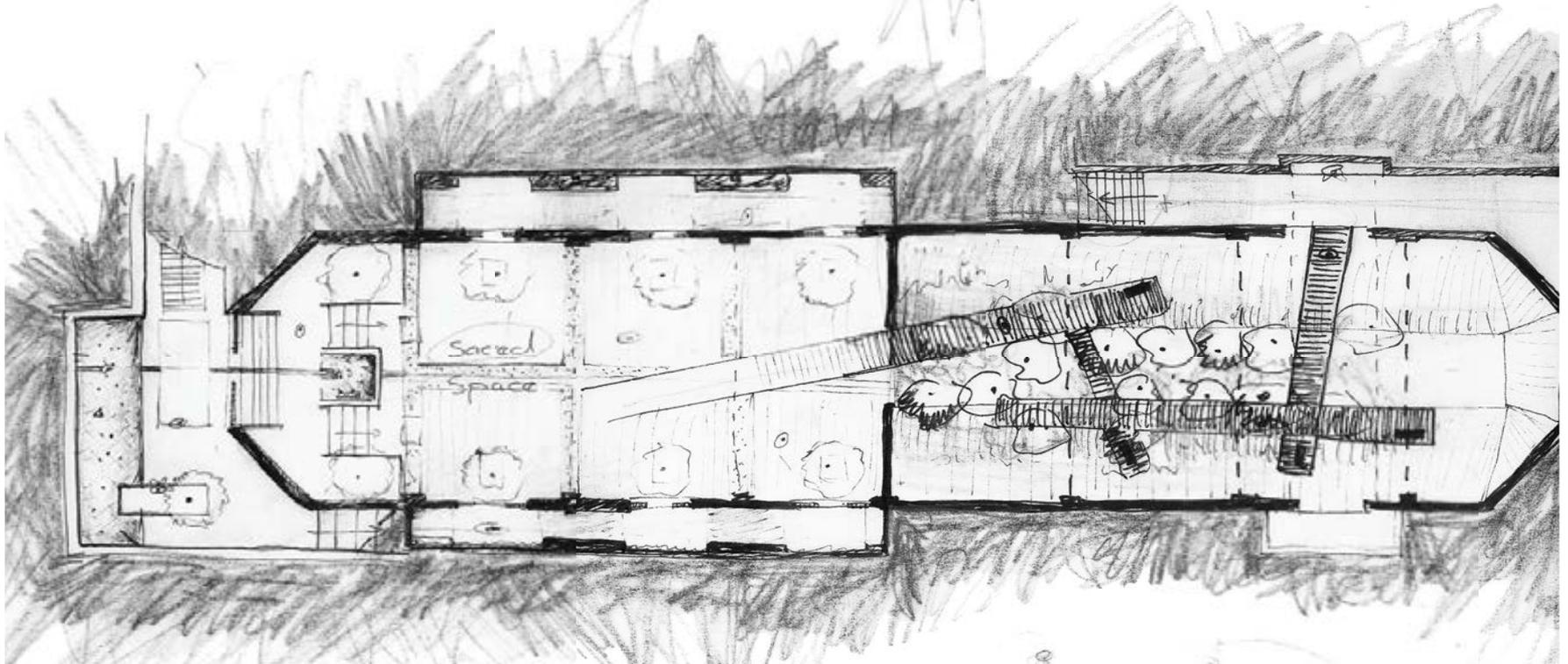


Fig:189. Seating area (Author 2010)



190 Fig:186. Design development bunker A (Author 2010)

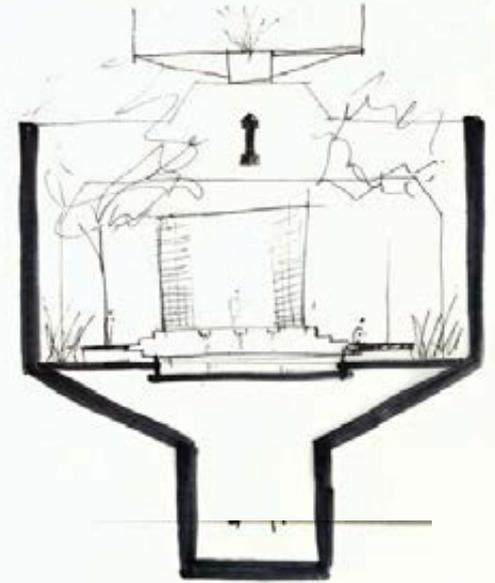
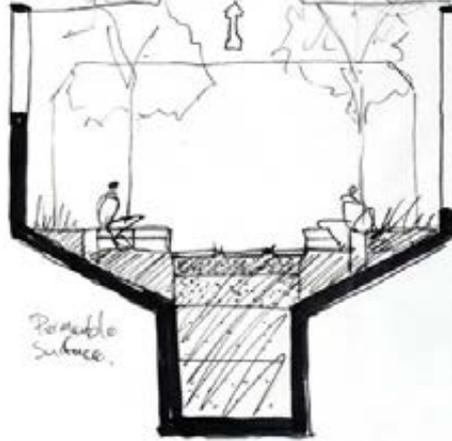
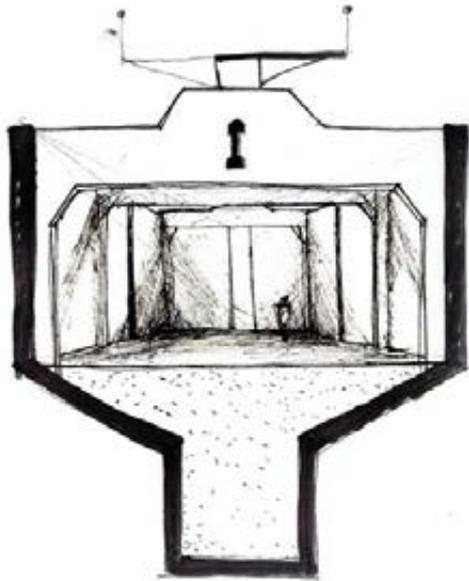


Fig:187. Introduction of the lift (Author 2010)

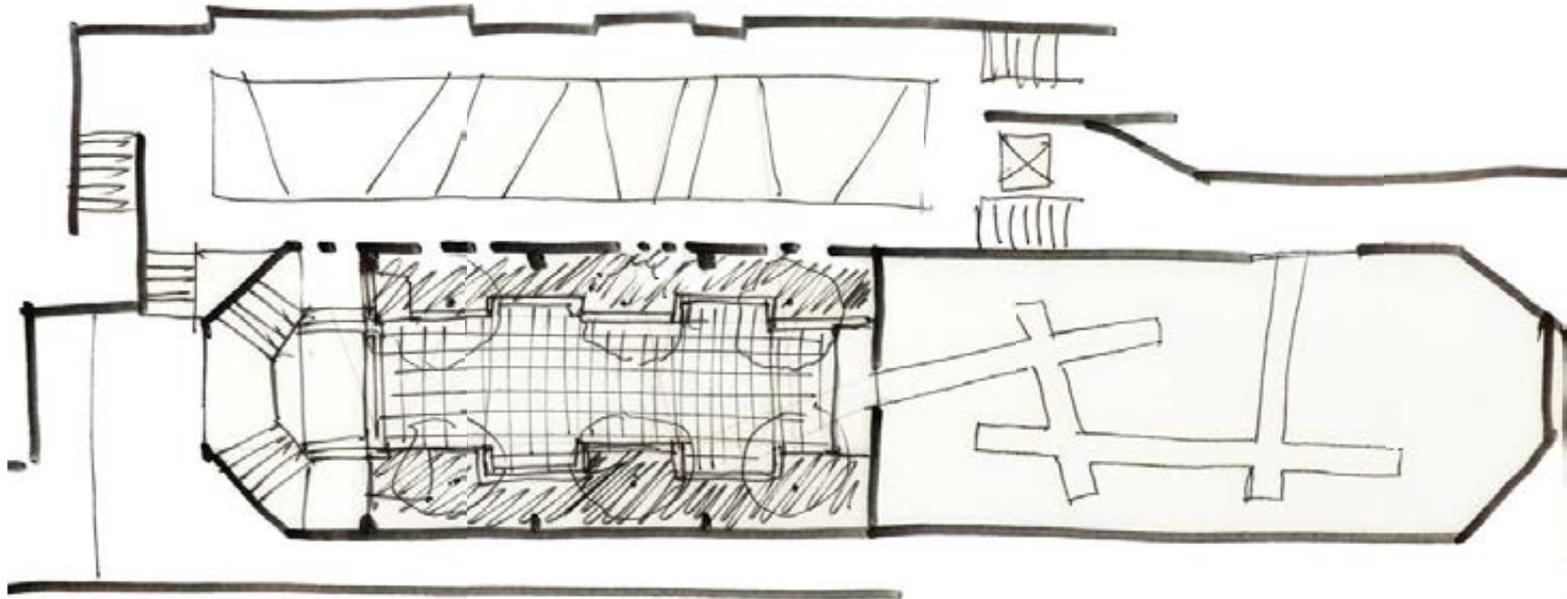


Fig:188. Design development, cutting away behind bunker walls to create spaces bunker A (Author 2010)

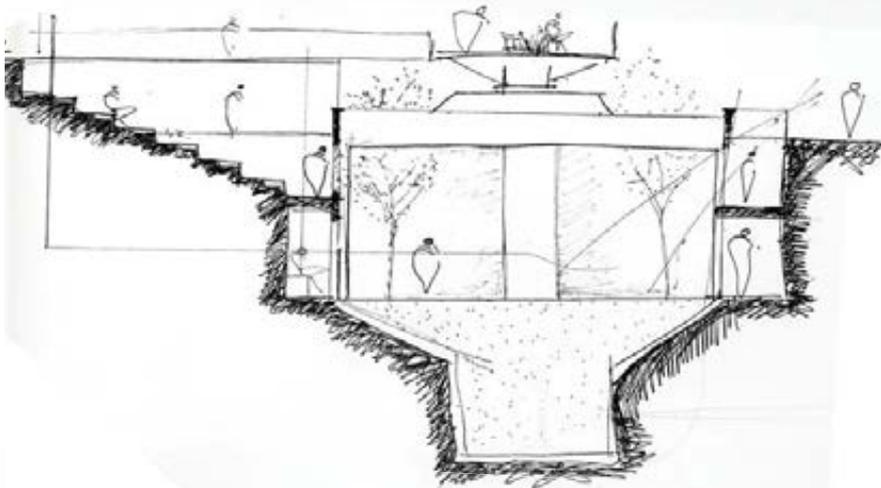


Fig:190. Cutting in behind bunker walls (Author 2010)

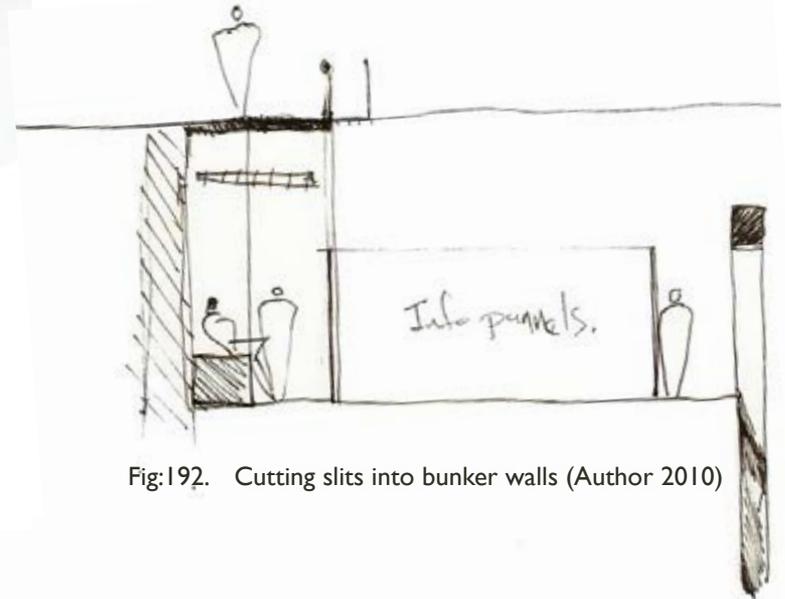


Fig:192. Cutting slits into bunker walls (Author 2010)

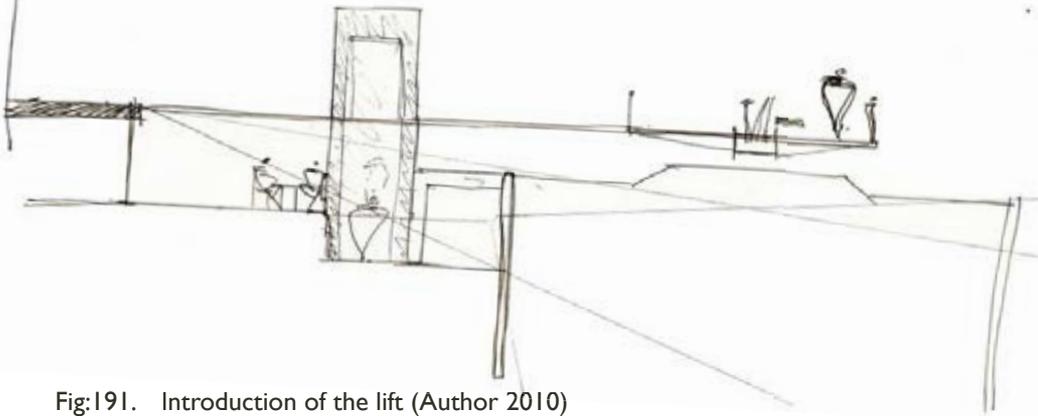


Fig:191. Introduction of the lift (Author 2010)

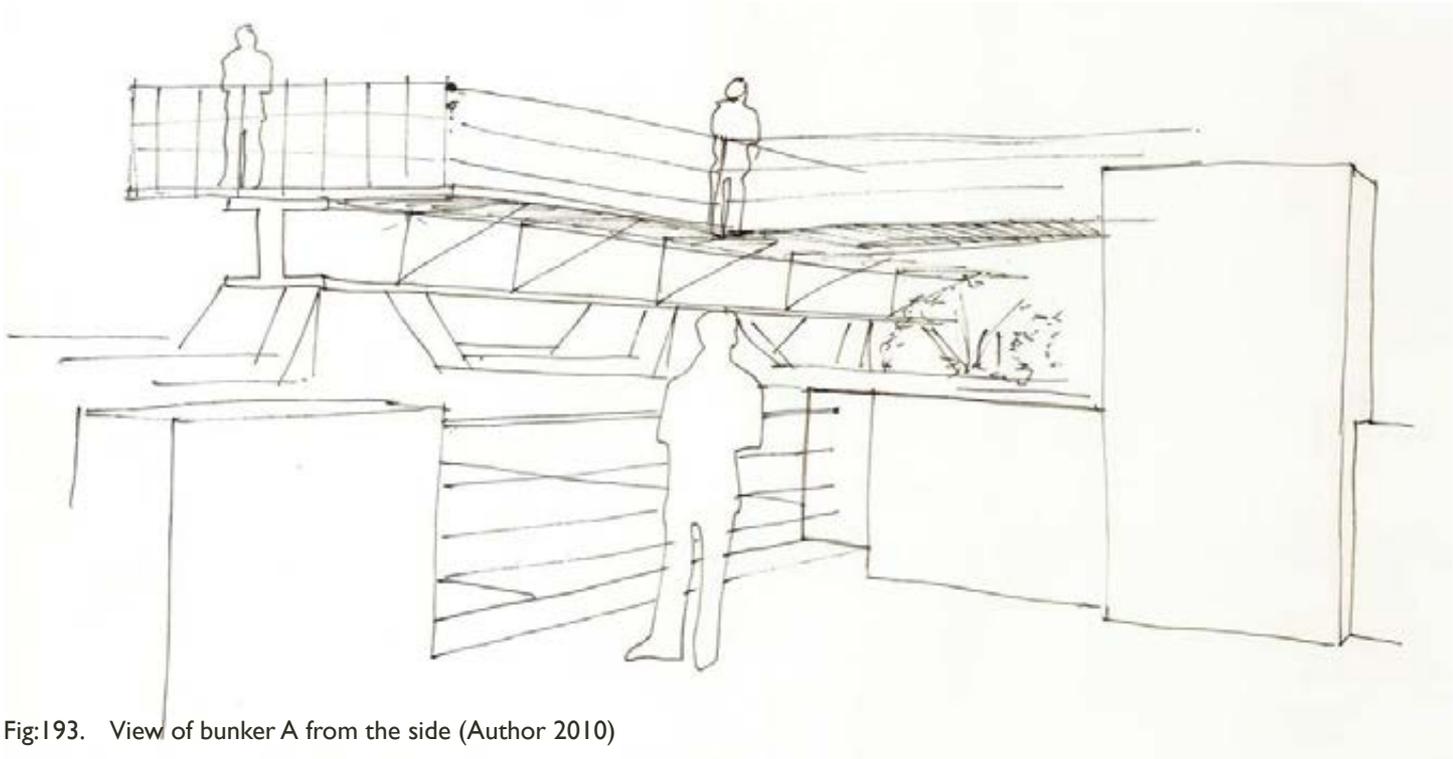


Fig:193. View of bunker A from the side (Author 2010)

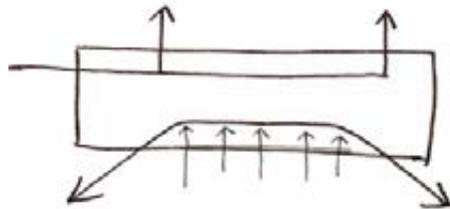


Fig:194. Entry points (Author 2010)



Fig:195. Soft landscape in harsh bunker (Author 2010)

9.9.5. Bunker B

Bunker B is more open and versatile than bunker A. It is also only partially sunken on the street side and creates a dead facade. Thus creating interaction with the street is important. Its character is extroverted in that it is open to the sky and can be engaged with at various surface levels. It is also easy to look into the bunker.

The bunker is quite a harsh environment and the initial ideas were to cut into the sides and introduce a soft landscape inside. Turning the bunker into a wetland or a display of natural succession with walkways and sheltered seating spaces.

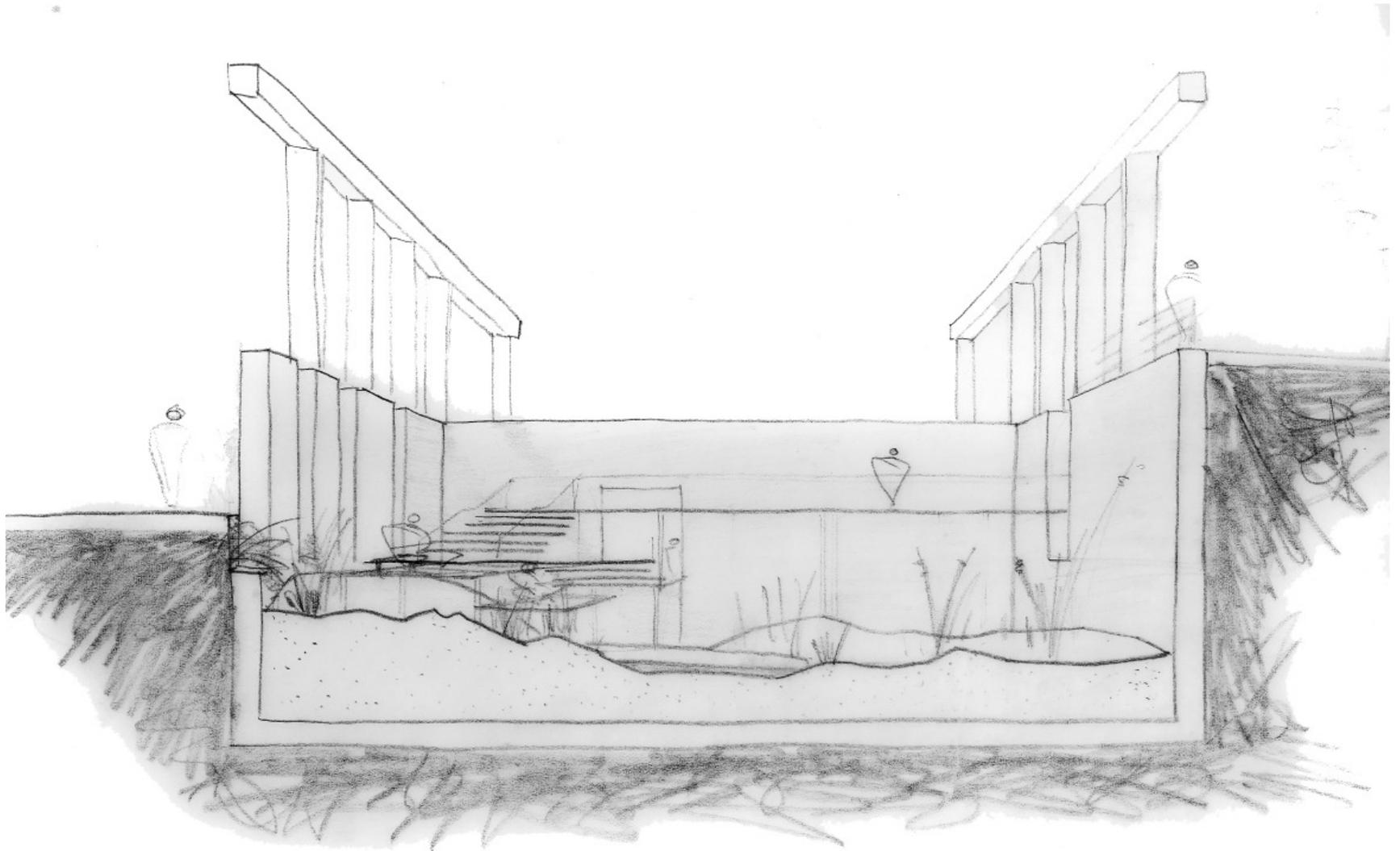


Fig:196. Section showing vision for Bunker B (Author 2010)

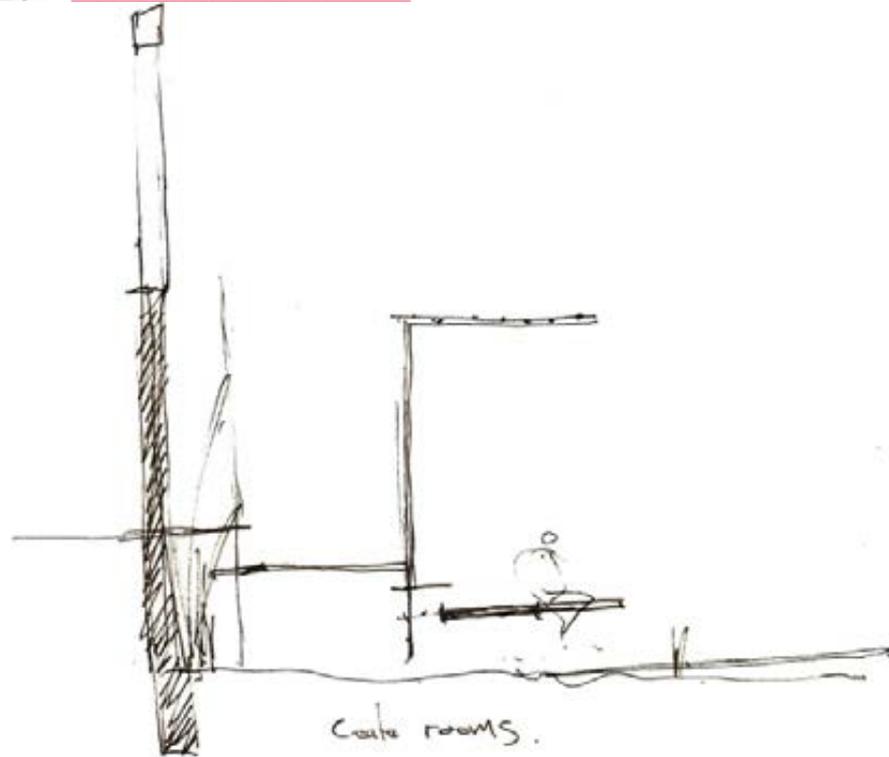


Fig:197. Creating platforms and natural over natural landscape in Bunker B (Author 2010)

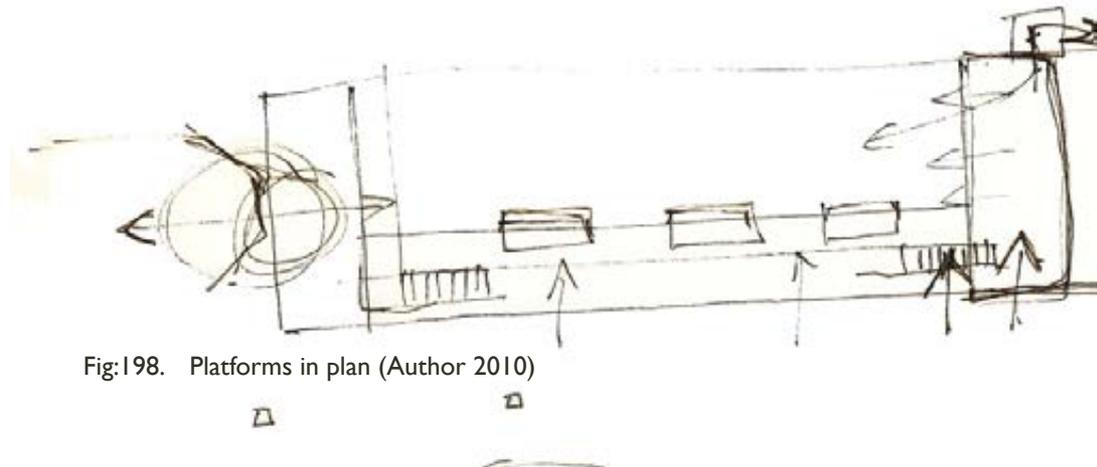


Fig:198. Platforms in plan (Author 2010)



The overhead structure is a key feature of its historic function the bunker and offers many possibilities. In this proposal it was not being fully utilised. The other problem was that the integrity of the initial structure was being lost through this intervention

This coupled with its multi level access and good views brought about the concept of turning it into a rotational exhibition space for larger than life sculptures such as Tate Modern in London however smaller and outdoors. The crane and overhead structure can then be used both for installations and moving things around, offering a robust and versatile space.

The bunker would then house or create energy that will fuel the site. The exhibition space could be launched by creating huge sculptures by using local artist and the mass scrap metal from the dismantled plant. These sculptures can then later be moved into the park making way for new and exciting exhibitions.

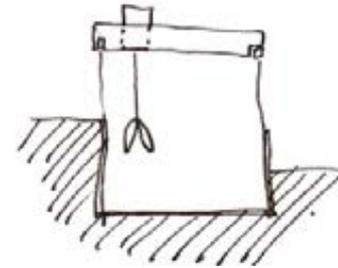


Fig:199. Overhead crane structure (Author 2010)

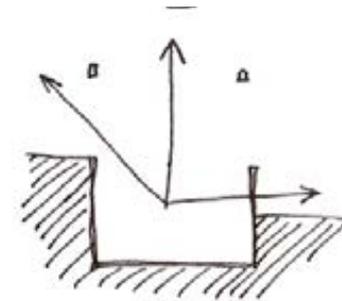


Fig:200. Connection to sky and surroundings (Author 2010)

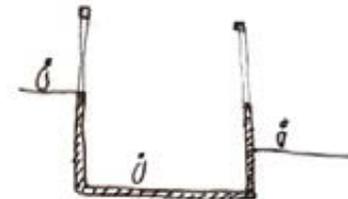


Fig:201. Levels of interaction (Author 2010)

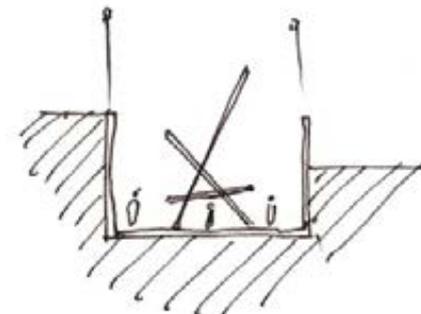


Fig:202. Converting bunker into a gallery (Author 2010)

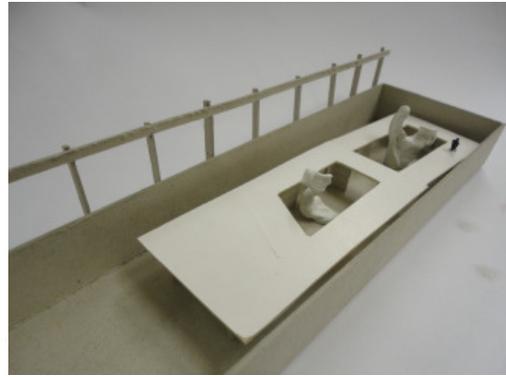
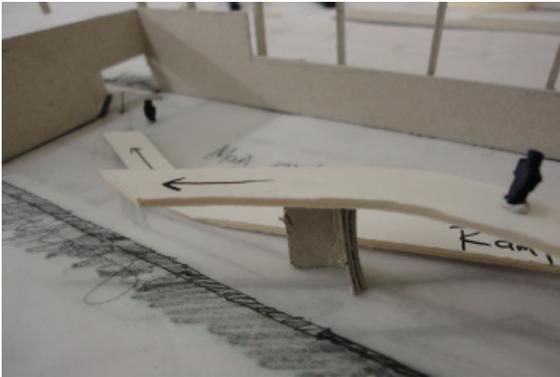
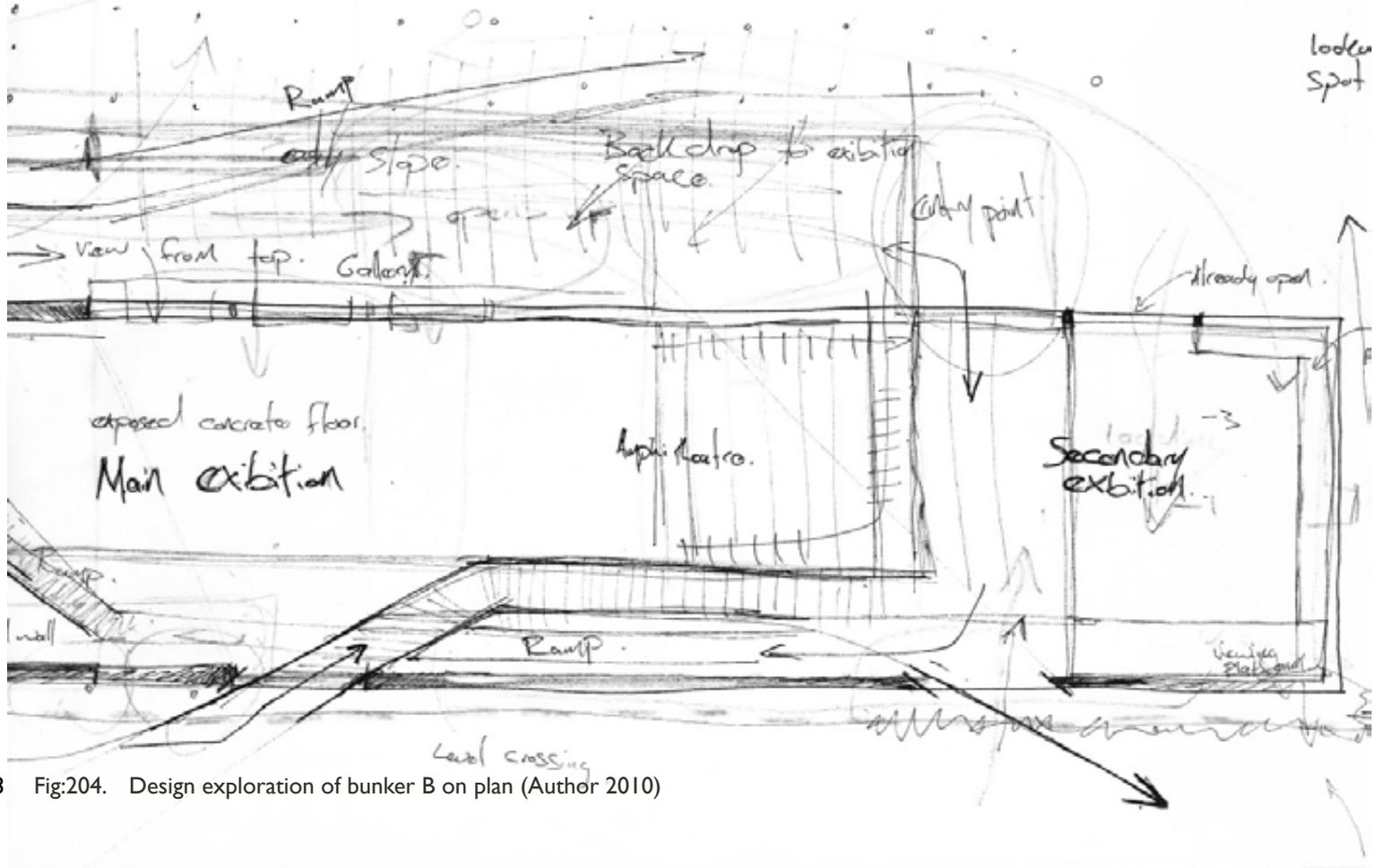


Fig:203. Model exploration of gallery in bunker B (Author 2010)



198 Fig:204. Design exploration of bunker B on plan (Author 2010)

This now creates the problem that the bunker can no longer be freely accessible from the street and requires controlled access. The street now needs a new form of interaction.

This is achieved by once again cutting into the bunker wall to create viewport and screens such as seen in Jean Novel's Center de Poblenou Park in Barcelona.



Fig:207. Controlled access (Author 2010)

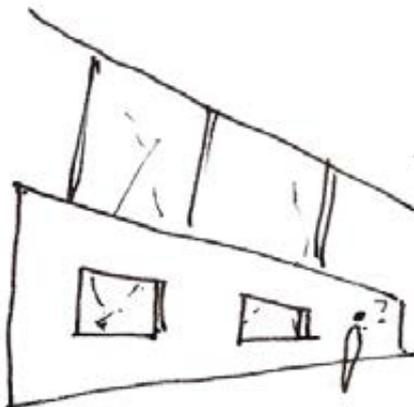


Fig:208. Viewports in bunker walls (Author 2010)



Fig:205. Gate by Jean Novelle in Center de Poblenou Park (<http://www.designws.com/fotopagina08/barcelona12.htm>)



Fig:206. Viewports in boundary wall creates interaction with street (<http://2.bp.blogspot.com>)

Entry square

This square is the main pedestrian entrance from the Buitenkant Street to the train station and power plant complex. The most important consideration is movement and secondly creating pleasant micro climates for seating areas.

This is achieved through creating strong unobstructed routes that link points of interest and the placing of large deciduous trees in areas of low traffic.

The initial idea was to create raised planters with seating walls however planted areas function as catchment pits for surrounding paved areas therefore cannot be raised.

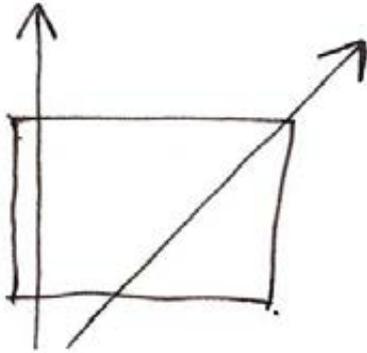


Fig:209. Main movement across square (Author 2010)



Fig:210. Deciduous trees for shade (Author 2010)

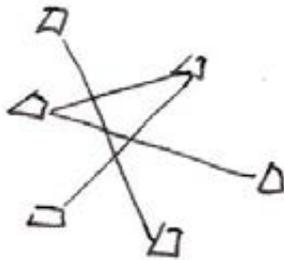


Fig:211. Connecting points of interest (Author 2010)

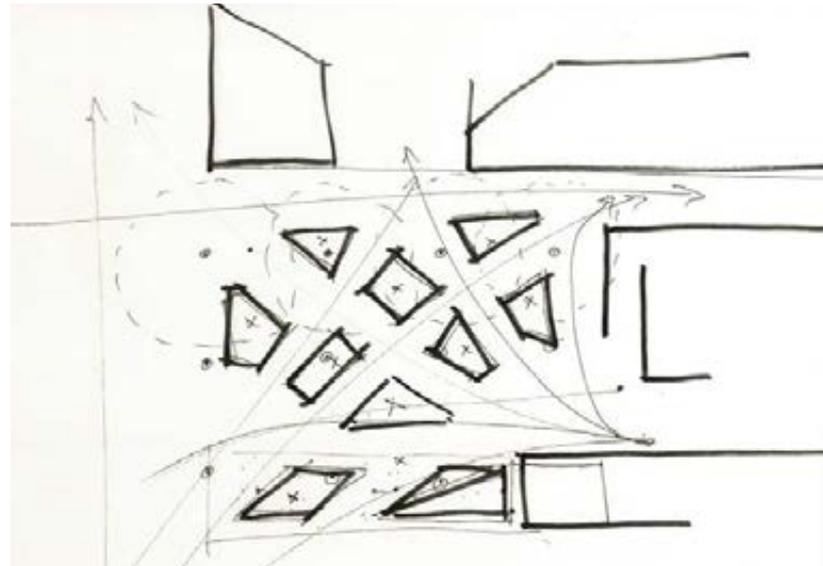


Fig:212. Defining busy and quiet zones (Author 2010)

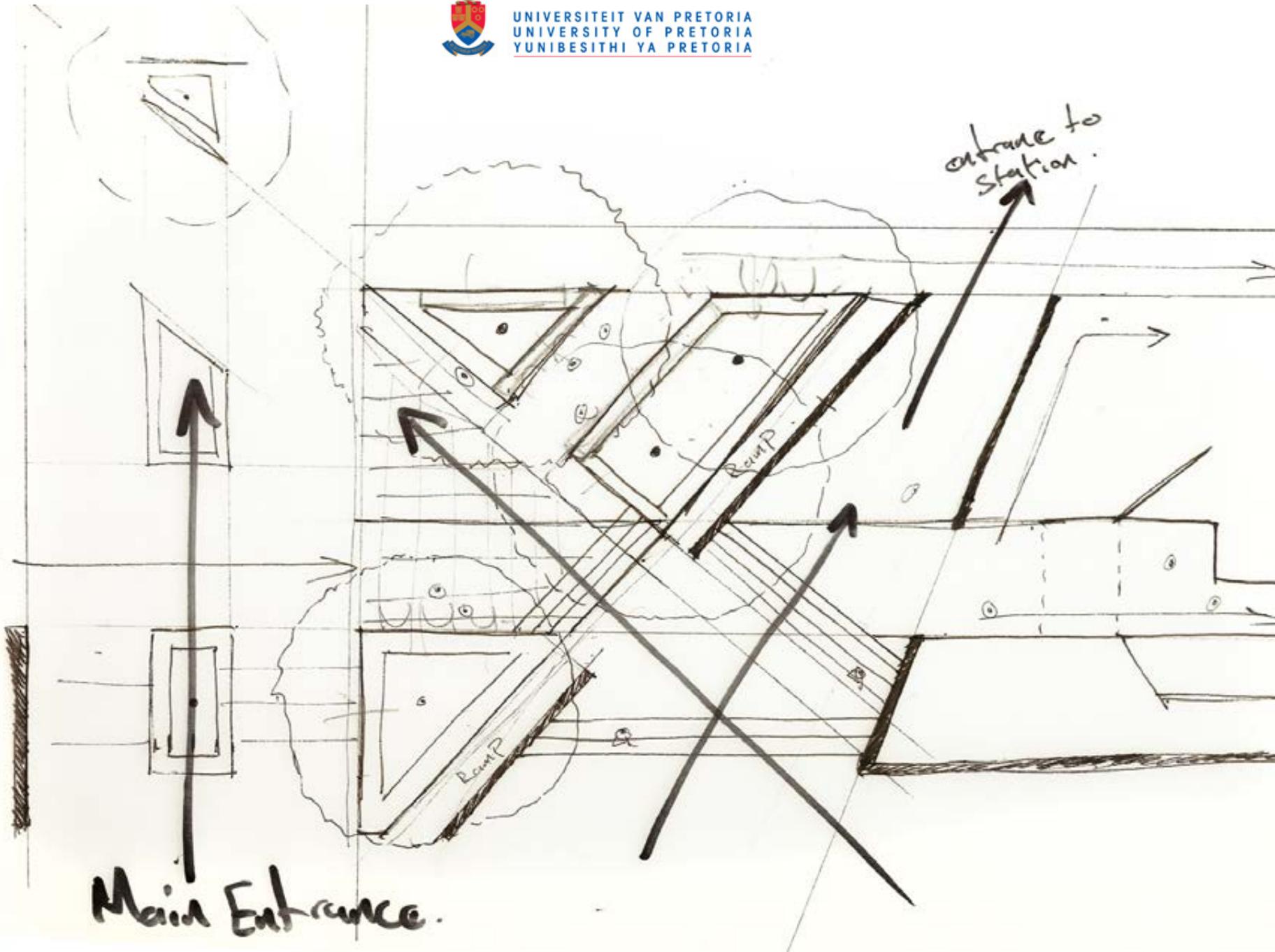


Fig:213. Plan showing the development of the entrance square (Author 2010)



Fig:214. Vision of bunker B as exhibition space (Author 2010)
202



“In a landscape urbanism strategy, the site becomes the controlling instrument of the interface between culture and nature; site phenomena are generative devices for new forms and programs (De Meulder & Shannon 2010: 73).”

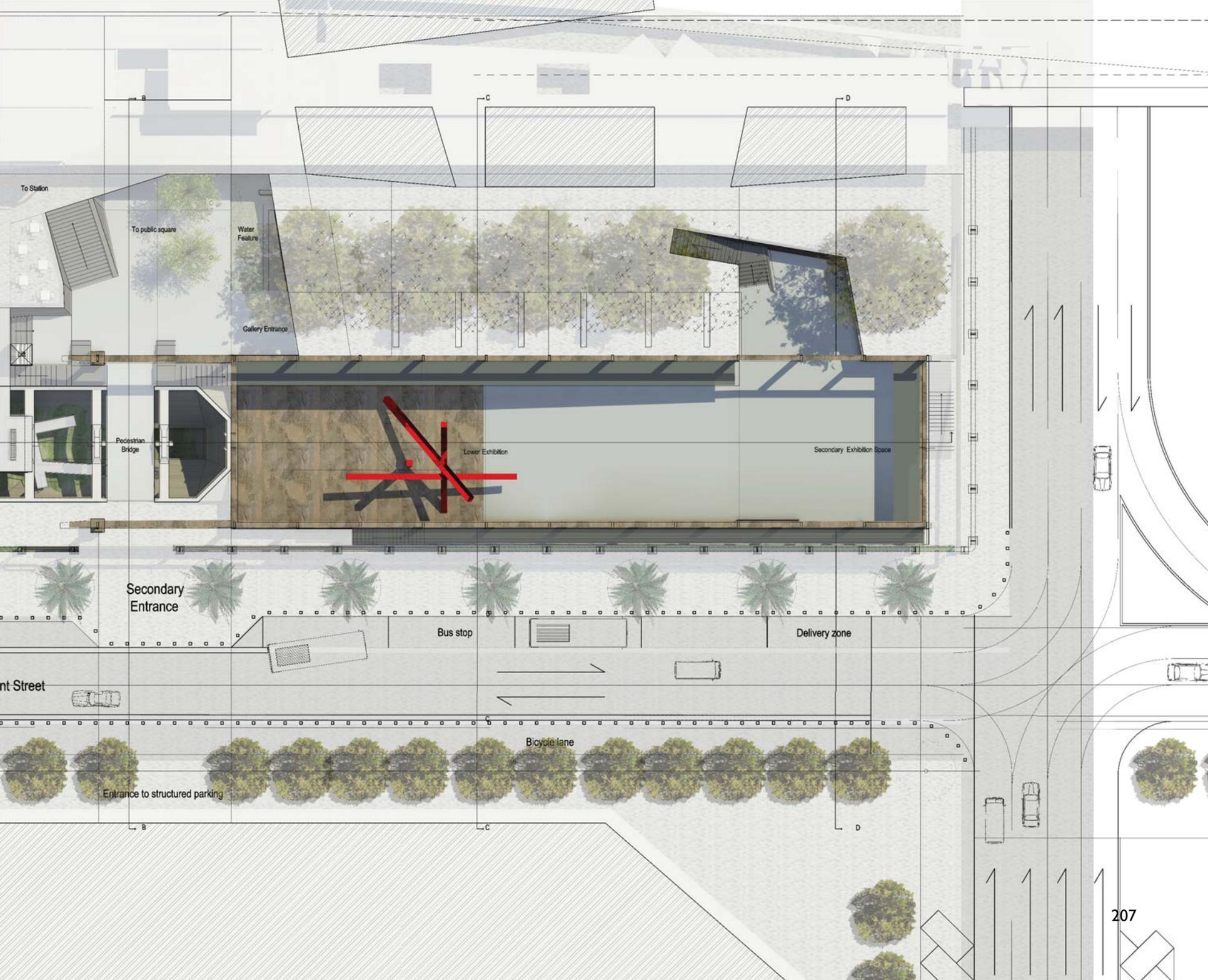
- 1 Plans
- 2 Sections
- 3 Perspectives
- 4 Model

detail design 09

Ground Floor Plan



Fig:215. Ground Floor Plan, not to scale (Author 2010)
206



To Station

To public square

Water Feature

Gallery Entrance

Pedestrian Bridge

Lower Exhibition

Secondary Exhibition Space

Secondary Entrance

Bus stop

Delivery zone

nt Street

Bicycle lane

Entrance to structured parking

Upper Level Plan

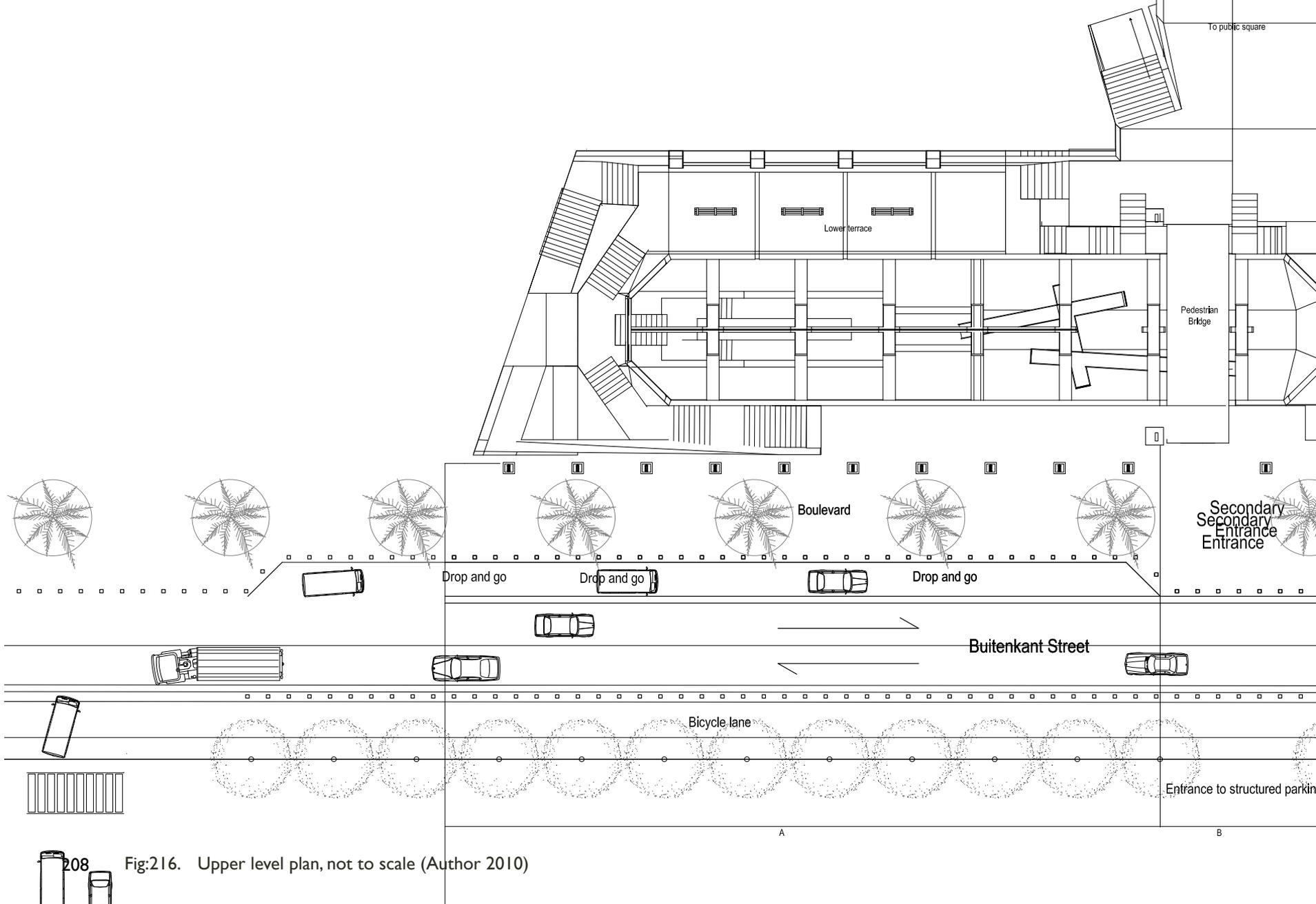
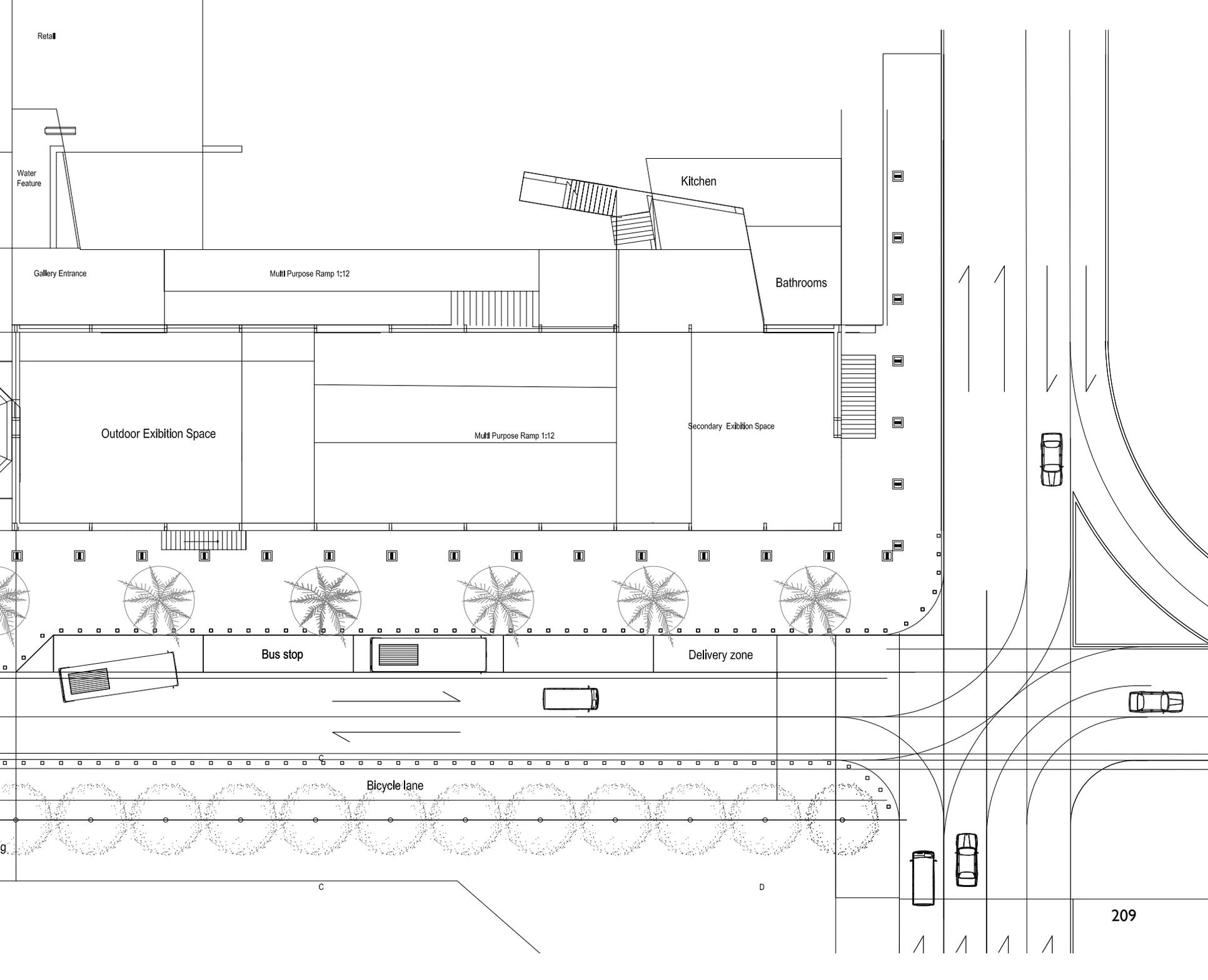


Fig:216. Upper level plan, not to scale (Author 2010)



Lower Level Plan

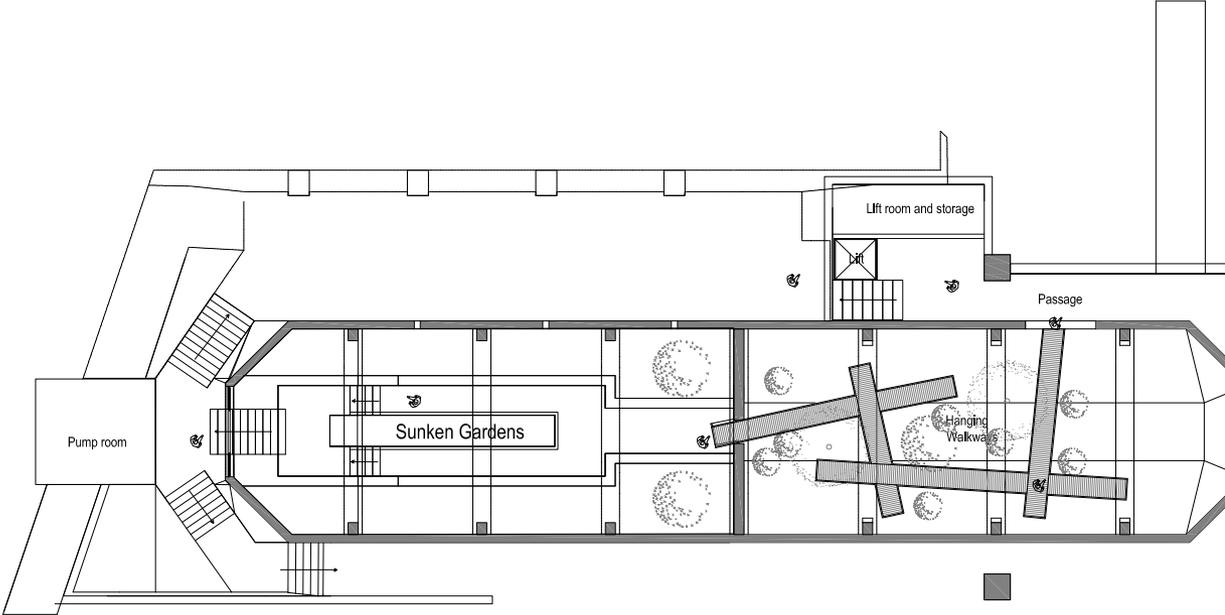
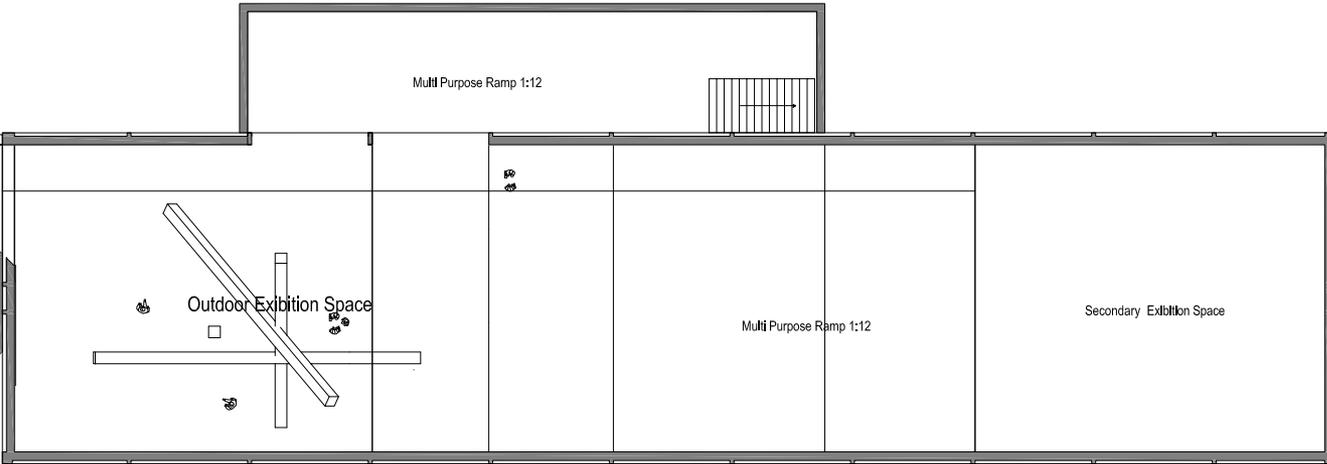


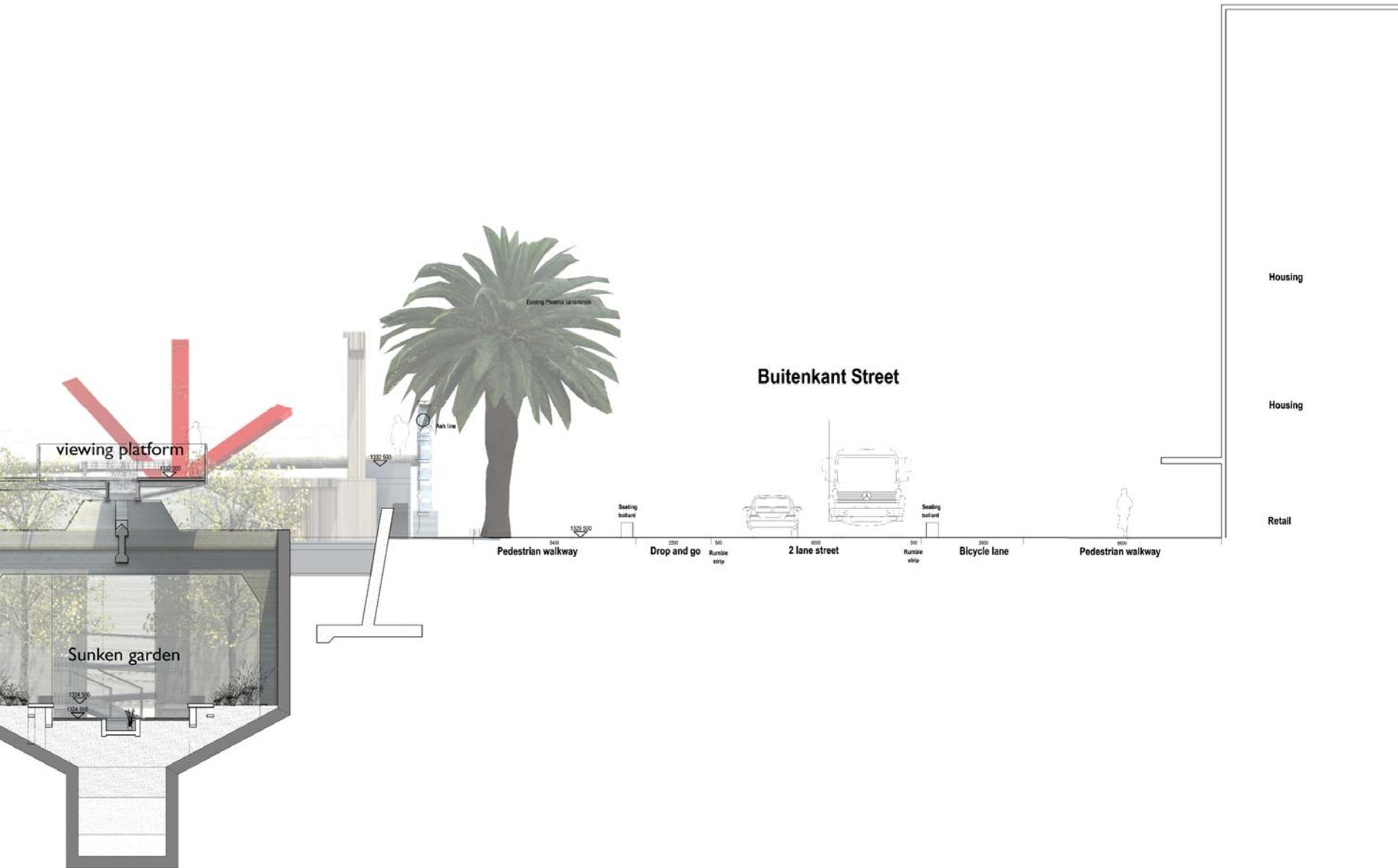
Fig:217. Lower level plan, not to scale (Author 2010)
210



Section AA



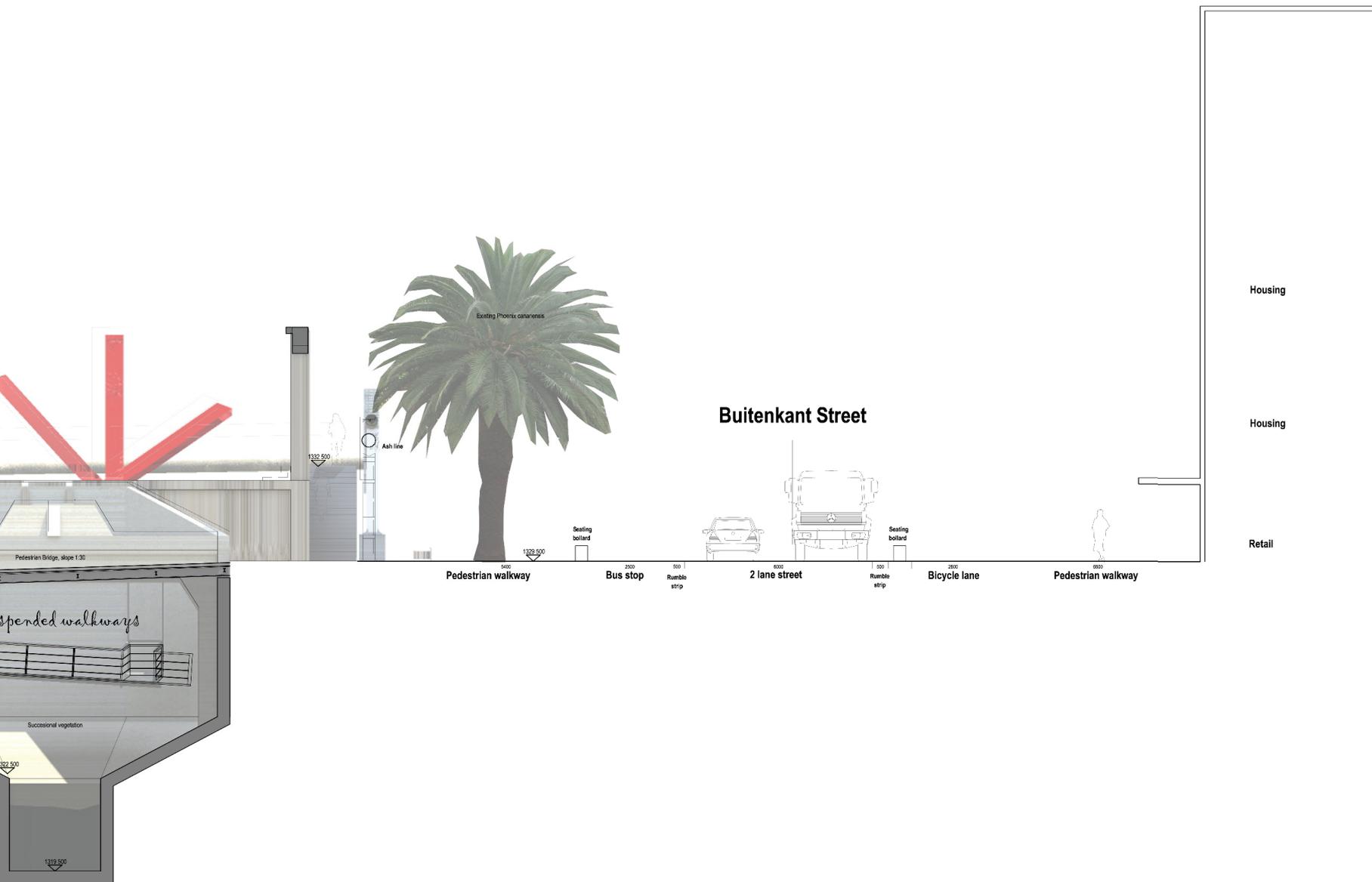
Fig:218. Section AA, not to scale (Author 2010)
212



Section BB



Fig:219. Section BB, not to scale (Author 2010)
214



Section CC

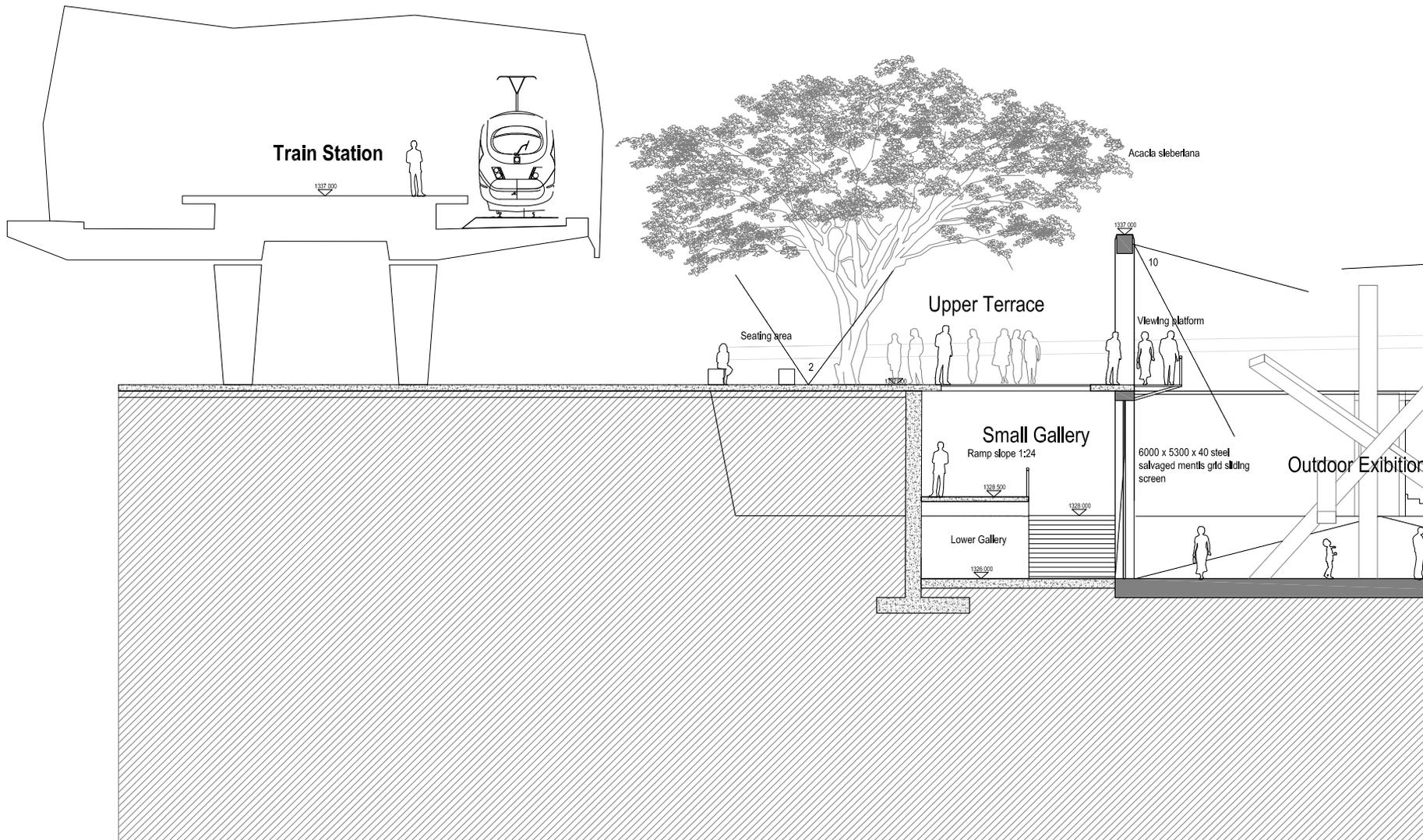
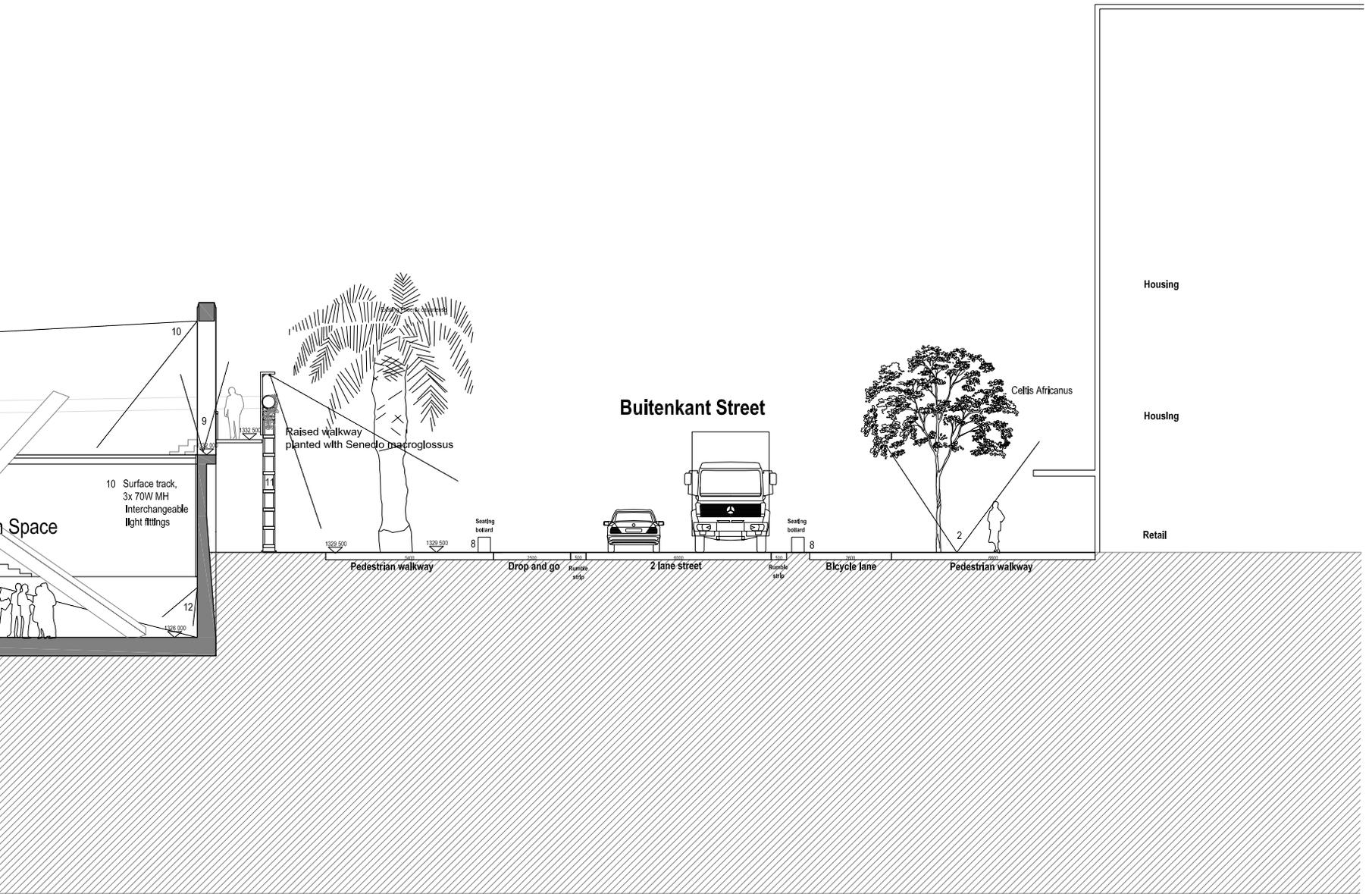
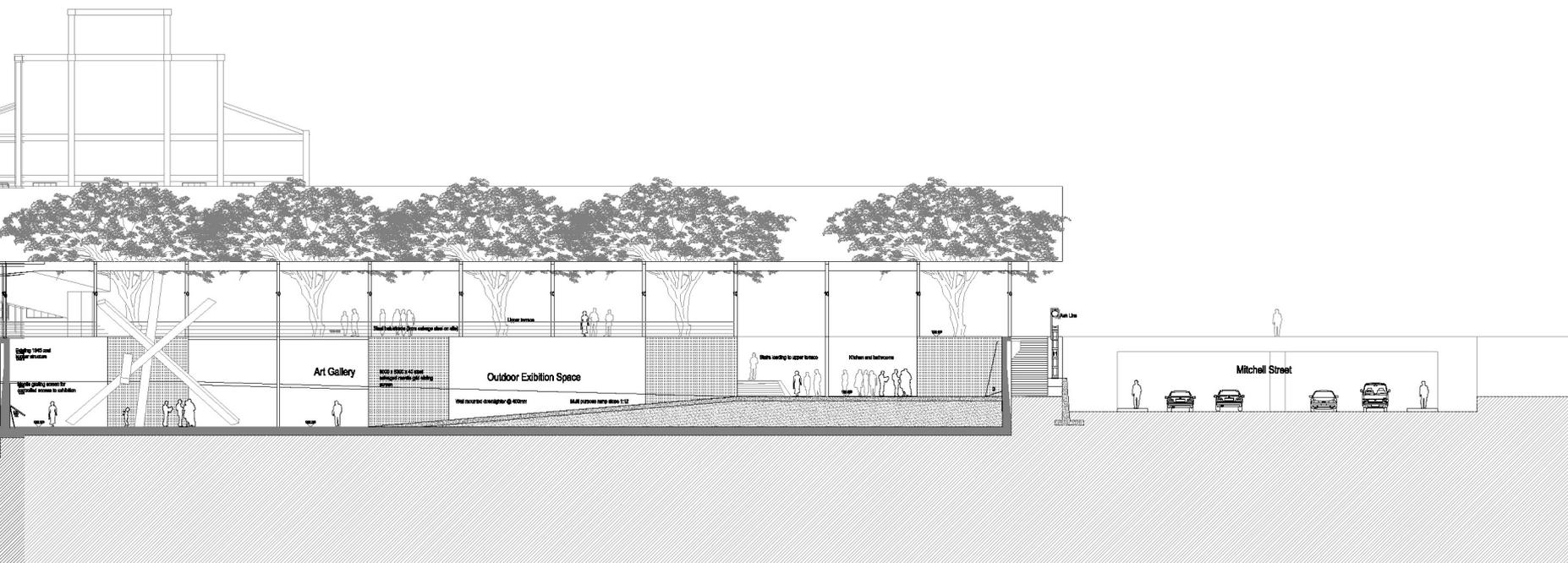


Fig:220. Section CC, not to scale (Author 2010)





Section EE

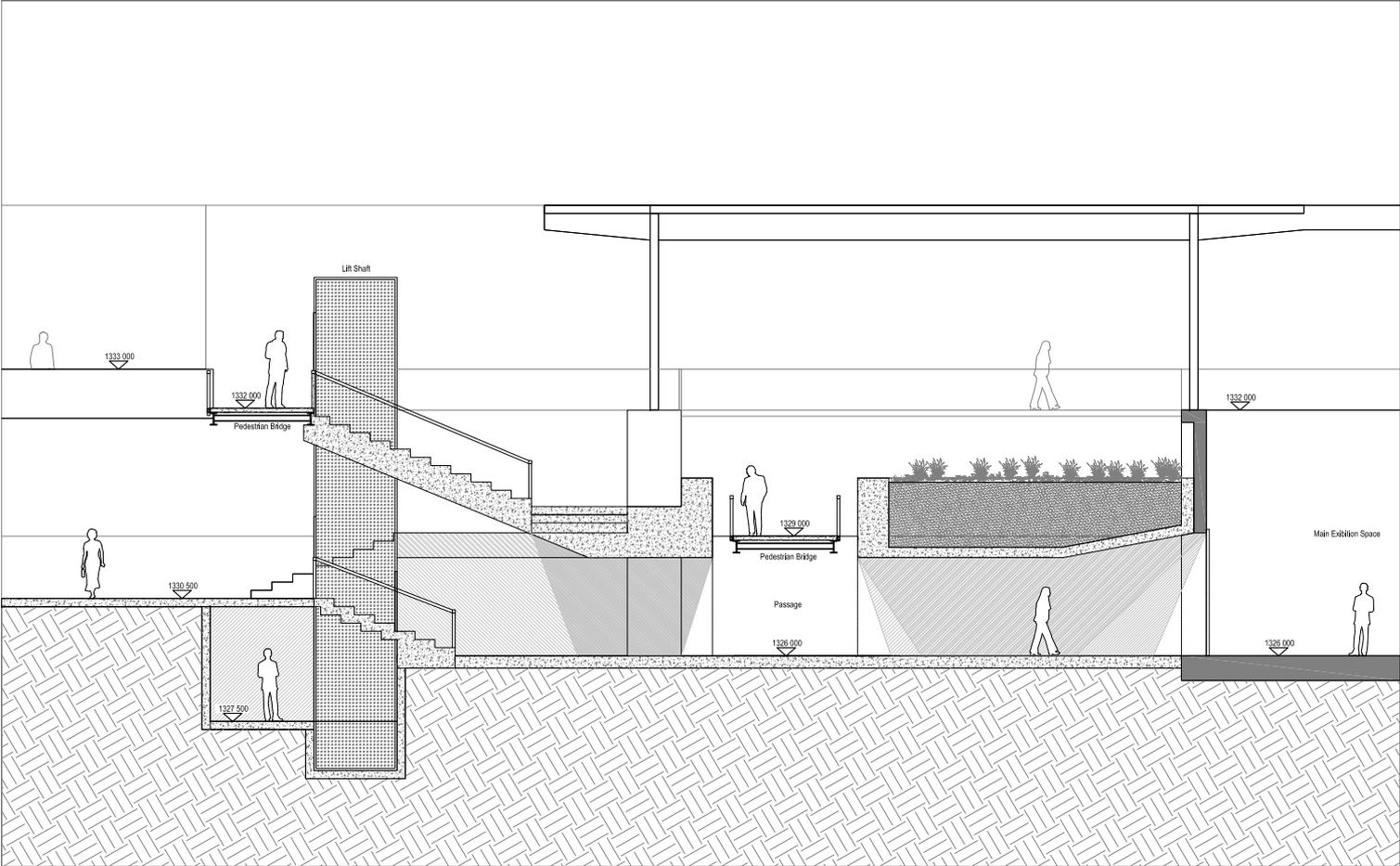


Fig:222. Section EE, not to scale (Author 2010)
220

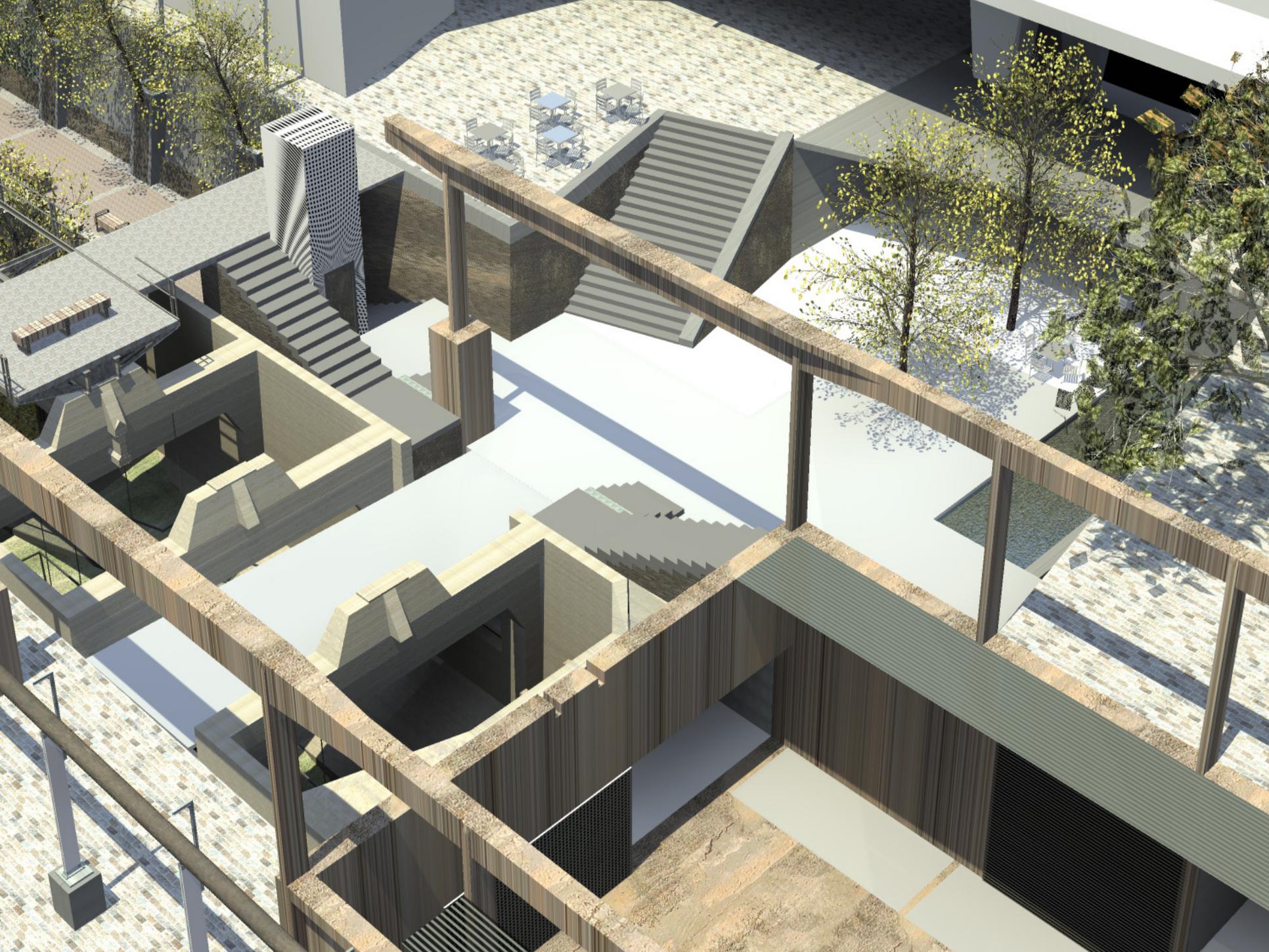
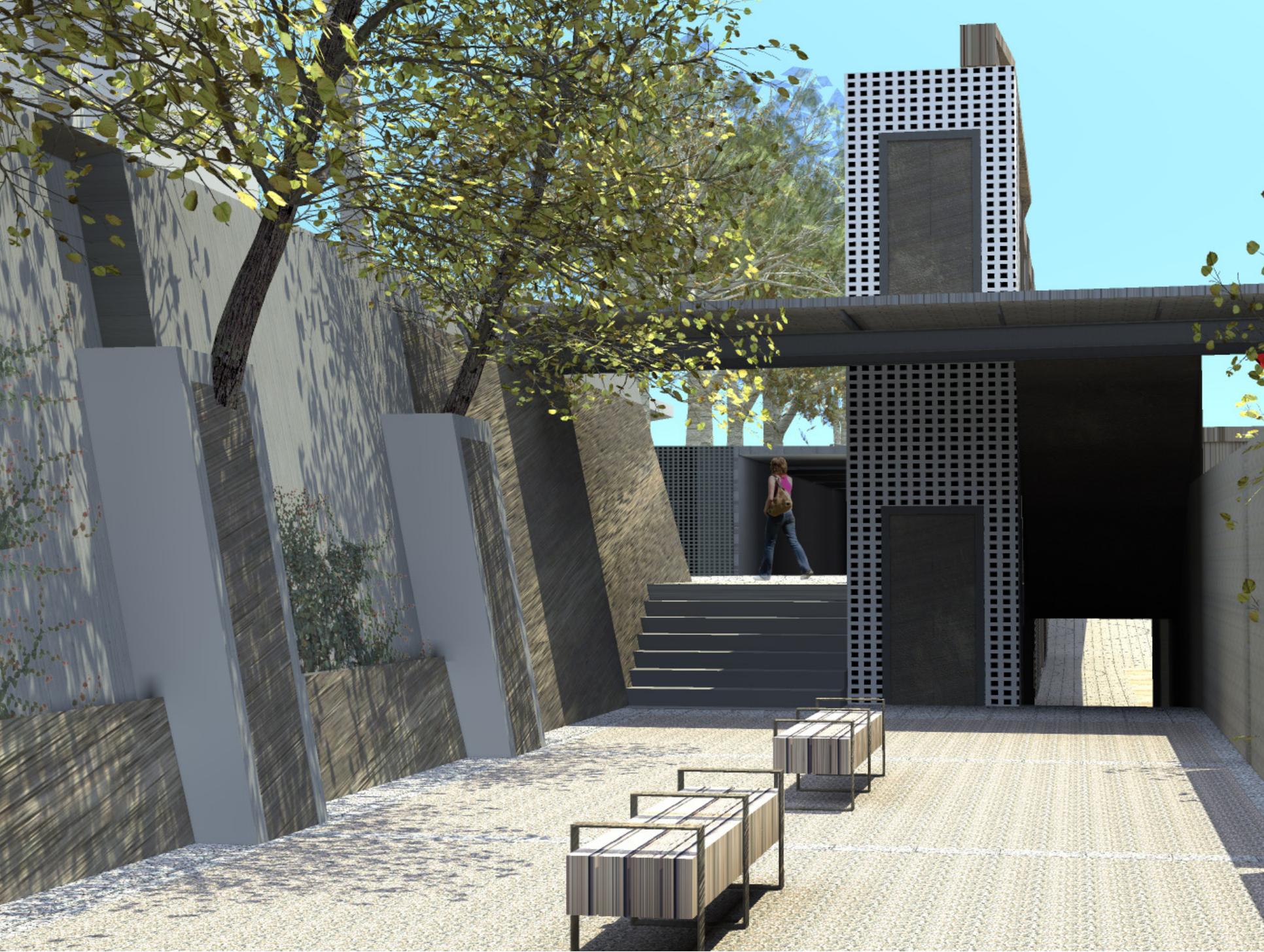


Fig:223. Rendering of aerial view of pedestrian bridge (Author 2010)



222 Fig:224. Day time rendering of lower terrace (Author 2010)

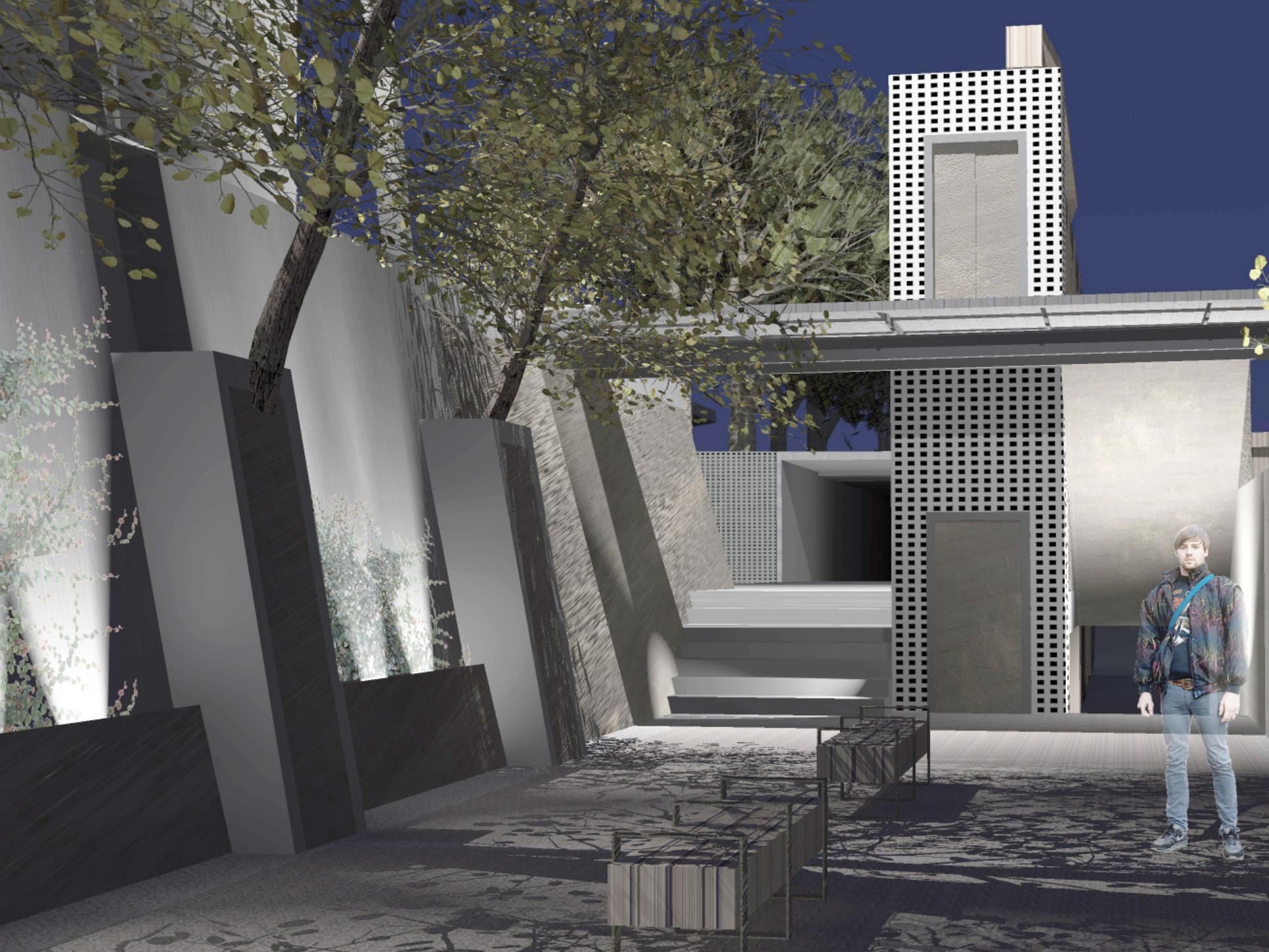
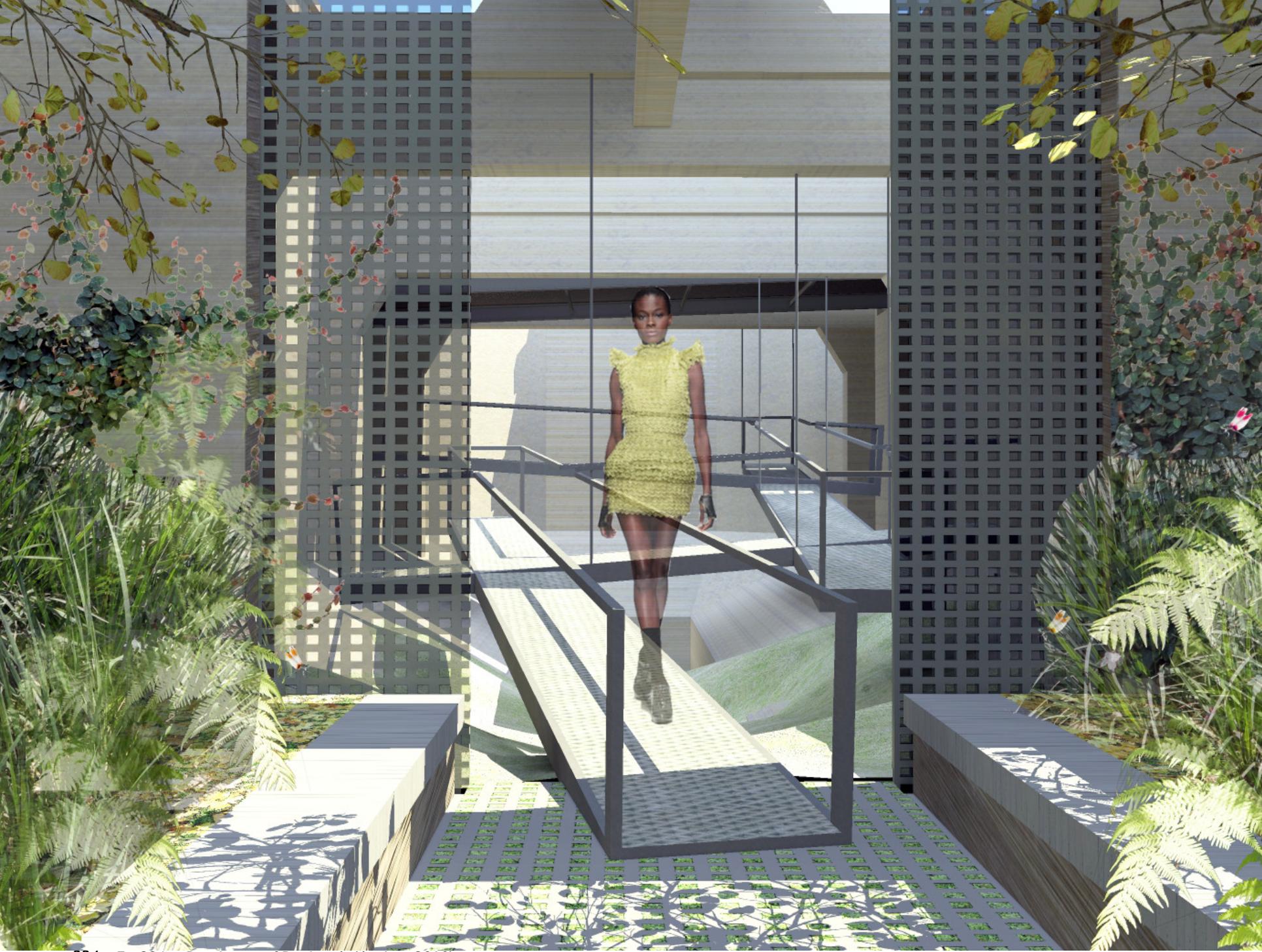


Fig:225. Night time rendering of lower terrace (Author 2010)



224 Fig:226. Rendering of Bunker A (Author 2010)

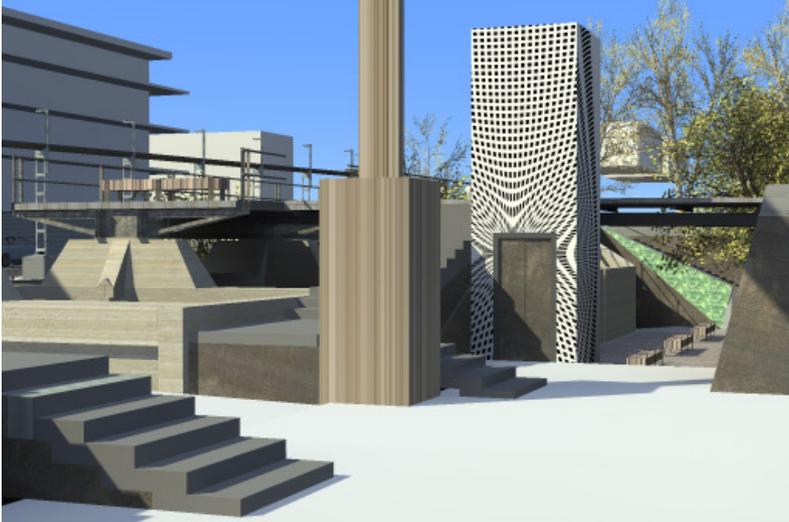


Fig:227. View of elevator shaft and viewing platform (Author 2010)



Fig:228. View of Entrance Square (Author 2010)



Fig:229. Birds eye view of intervention (Author 2010)

Final Model

Fig:230. Photo of bunker A (Author 2010)



Fig:231. Photo of pedestrian crossing to station (Author 2010)



Fig:232. Birds eye view of intervention (Author 2010)
226

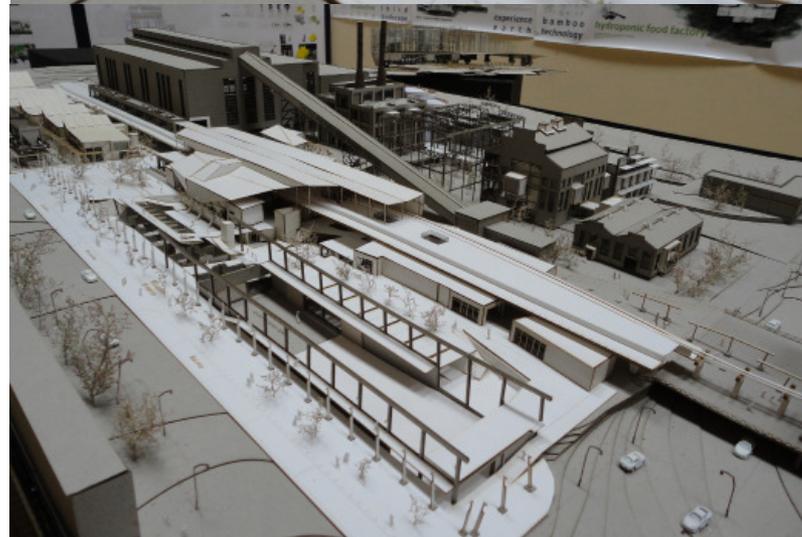




Fig:233. Birds eye view of intervention (Author 2010)

- 1 Movement
- 2 Vegetation
- 3 Materials
- 4 Details

10
technical

Landings

8m level difference/1.5m intervals for landings
=5.3 landings

5 landings x 1.2m length for landing
= 6m needed for landings in total.

Ramp at slope 1:15

1m rise= 15m distance

thus 8m rise =120m distance

6m landing +120m distance = 126m ramp

Ramp at slope 1:12

1m rise= 12m distance

thus 8m rise =96m distance

6m landing +96m distance = 102m ramp

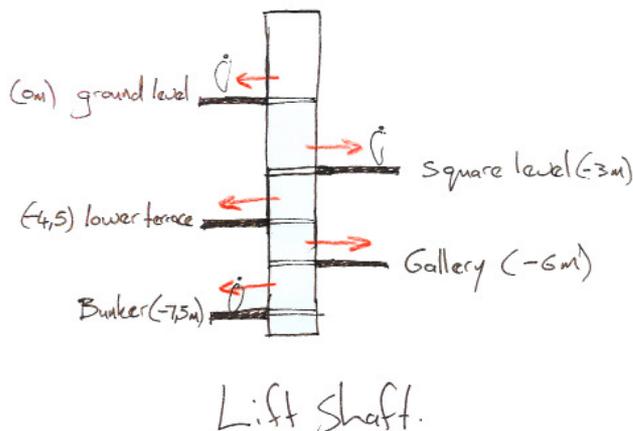


Fig:234. Different levels that need to access lift (Author 2010)
230

10. Technical

10.1. Movement

The various areas of the design require easy access for the disabled. However a ramp needs to have a min slope of 1:12 with a landing of 1.2m long at every 1.5m interval (SABS 0400 SS2: 152)

The level differences in the design add up to a total of up to 8m. The first attempt was to create a ramp that comfortably navigates this height difference at a slope of 1:15.

In order to navigate 8m at slope 1:15 will require 126m of ramp in total. Because of spatial restrictions the ideal ramp of 126m is not feasible, and thus the minimum requirement of 1:12 will have to be used. In order to navigate 8m at slope 1:12 will require 102m of ramp in total.

Even though 1:12 is 24m shorter than 1:15 it will still have severe spatial implications. 102m of ramp is also not ideal because it is uncomfortable to walk on and will be exhausting for the disabled to transverse. At 1.5m wide the ramp would occupy a floor space of 153m²

An alternative to this would be using a lift. This will have less severe design implications as it requires a min of 1.1m x 1.4m and a small machine room.

The three lift systems investigated include: Traction elevators, machine-room less elevators and hydraulic platform lifts.

Traction elevators are heavy duty lifts for large multi story buildings and require a lift room on top of the lift. In the design the lift needs to be as subtle as possible therefore the extra height of the lift room is not ideal. This type of lift is over kill for such a minimal height.

Machine-room less elevators don't require a lift room as

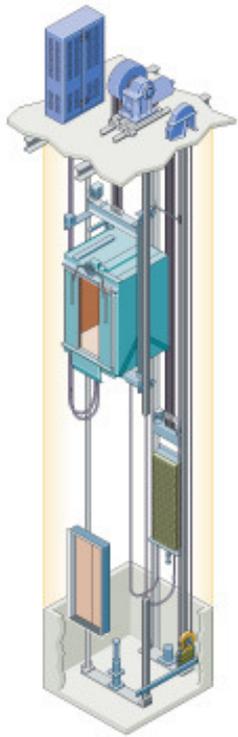


Fig:235. Traction elevators
(www.OtisGen2.com)

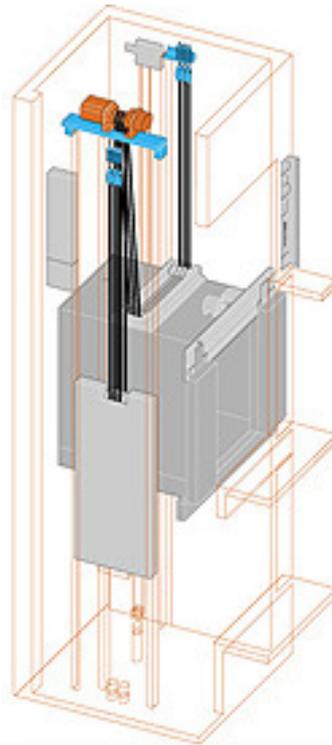


Fig:236. Machine-room less elevators
(www.OtisGen2.com)



Fig:237. Hydraulic platform lifts.
(http://www.lift-mech.com/pro_hpl.html)

the machine is fitted within the shaft. This is more appealing because it takes up less space and will have a smaller visual impact. These lift operate between two and 30 stories.

The third option investigated was the hydraulic platform lifts. These lifts ideally operate between two and five stories and require a minimal pit depth of between 120mm and 1400mm however require a pump room. This option is most feasible because it is the cheapest and the lift is not dependent of its shaft, therefore offering multiple interesting design solutions and finishes.

The lift needs to be accessible from two sides in order to access intermediate levels. The key to the placement of the lift is finding a spot that all of the various levels intersect.



Fig:238. Hydraulic platform lifts. 231
(http://www.lift-mech.com/pro_hpl.html)

10.2. Materials

The approach to sourcing material and construction is based on consideration such as heritage, making use and recycling of onsite resources and uplifting the surrounding community through job creation skills development.

The existing resources on site include timber from the large invasive trees that will need to be removed, steel from the dismantling of power plant boiler rooms, ash from the clearing of the ash ponds and plant material from the already established on site nursery. This is aimed at job creation, skills development and saving of construction costs.

10.2.1. Timber

There are many large hard wood invasive trees on site such as blue gum and eucalyptus that would be ideal for decking and site furniture. The initial idea was to tie in with the onsite furniture workshop in order to create site furniture from these trees. However in order to process these trees the timber would have to be transported to a lumber mill processed there and then returned to site. This outweighs any initial benefits due to the fact that there are relatively few trees and no lumber mills in the area.

Alternatively the timber can be put through a shredder in order to create wood chips that can be used for mulch throughout the park.

10.2.2. Steel

The existing power plant contains large amounts of mild steel plates, profiles, balustrades, pipes and grating. In Pretoria West there is a large pool of steel working skills due to the various industries and workshops, thereby using steel will create jobs for the immediate community and use existing skills.

10.2.3. Vegetation

The onsite nursery is already established in phase one and therefore can cultivate plants for successive phases. Plant cultivated in the nursery creates jobs and can supply the design with well establish plants at a low cost. For example trees can be grown from seedlings and transplanted into the design at a later stage offering established vegetation at a fraction of the cost.

10.2.4. Ash

Fly ash can be used for a number of applications including the manufacturing of cement, bricks and rammed earth walls, it can also be used to stabilise soil and increase fertility and water retention. The PPC cement factory is located in Pretoria west, and already utilises ash from the power plant and because of its close proximity concrete will be sourced from there.

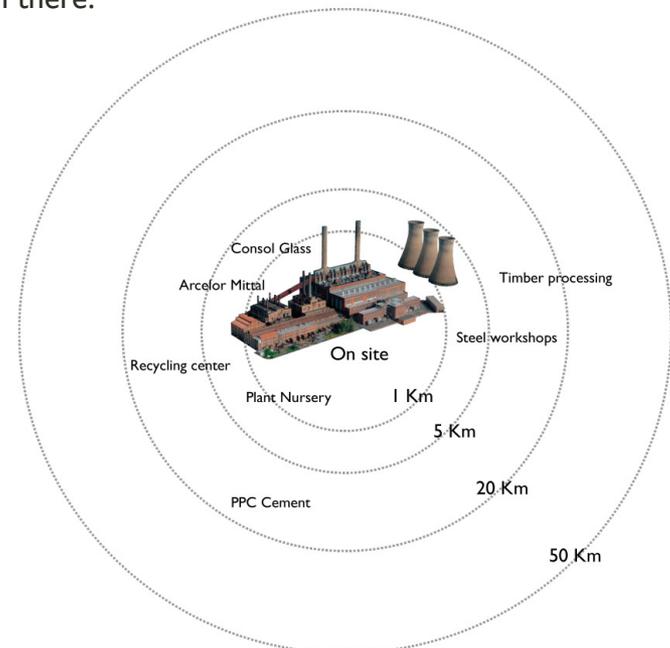


Fig:239. Source distance of materials (Author 2010)

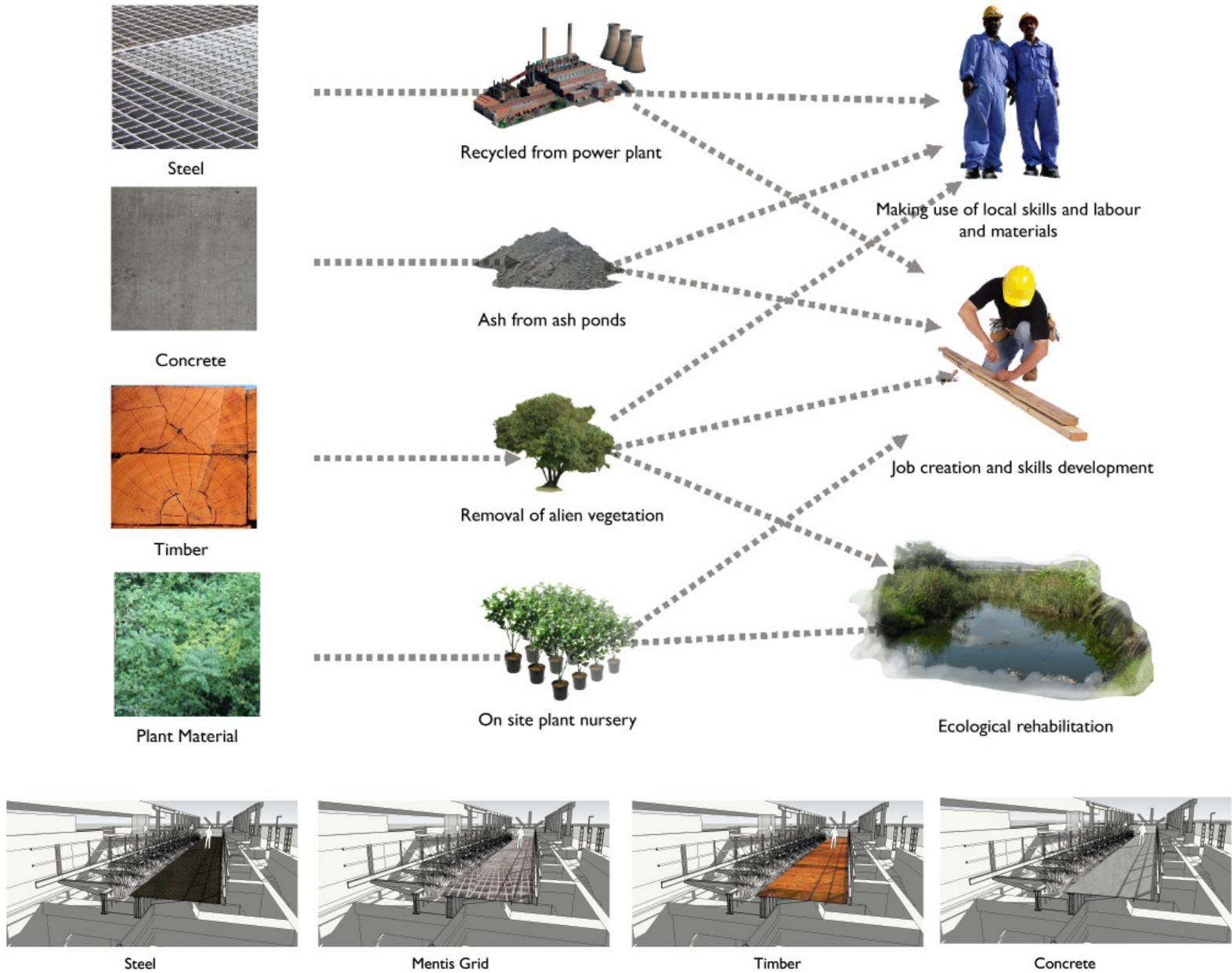


Fig:240. Conceptual intention for selection of materials (Author 2010)

10.3. Vegetation

10.3.1. Entrance Square

The entrance square experiences full sun and can thus be compared to a northern slope. It should facilitate pedestrian movement between the street and the station and provide shaded seating areas. Once movement lines have been drawn there is little room to plant trees and therefore the trees should have a spreading crown.

The tree selected is a *Acacia sieberiana var. woodii* or Paperbark Thorn. It reaches a height of 12m and has a spreading crown of up to 16m. This will provide ample shade whilst not obstructing movement as well as attract birds and insects.

In the planter at the foot of the trees vegetation must be at least 0.5m tall in order to accompany seating around the planters. Species include *Gladiolus dalenii*, *Watsonia pillansii* and *Crocsmia aurea*.

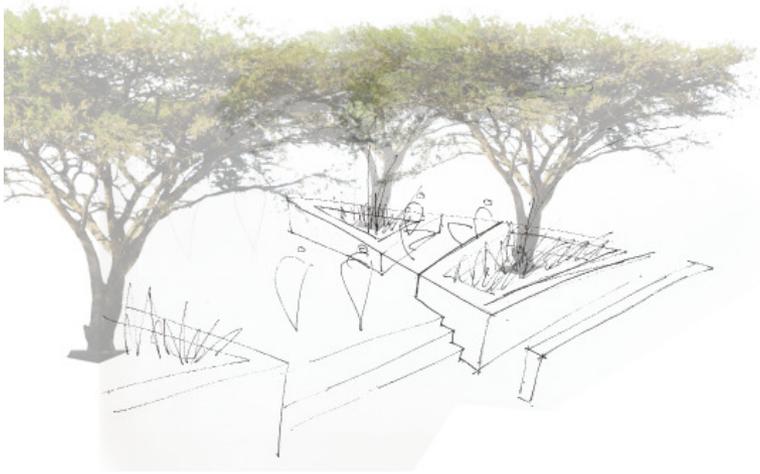


Fig:241. Conceptual image of entrance square (Author 2010)

10.3.2. Bridge

The bridge experiences full sun. Planting should create a safety barrier but not grow too high. Planting should spill over and hang into the spaces below therefore *Rhoicissus tridentate* or bushman's grape was selected.

10.3.3. Bunker A

Bunker A is sunken and partially covered by overhead structure therefore semi shade. It creates similar environments to that of a kloof. Therefore the species selected will be those naturally found within kloof areas of the Magaliesberg. Species include *Ficus abutilifolia* or large leaved rock fig, various ferns such as *Thelyperis confluens* or the lady fern and *Adiantum capillus-veneris* or maidenhair fern as well as perennials such as *Schizostylis coccinea* or crimson flag and *Scardoxus puniceus* or royal paintbrush.

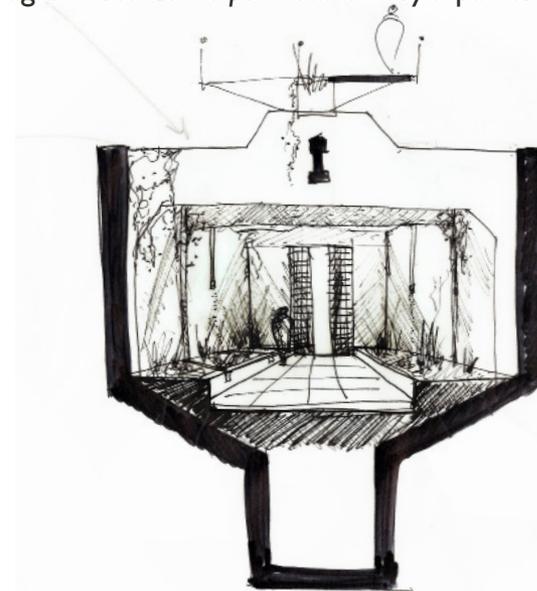
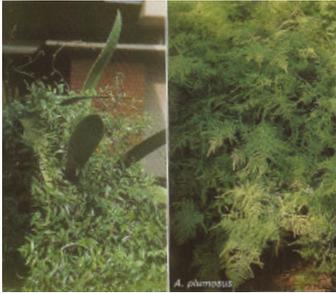
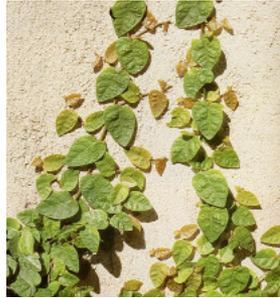


Fig:242. Bunker A with overhead bridge (Author 2010)

Creepers



Asparagus asparagoides



Asparagus asparagoides

Bunker A north



Brachiaria serrata



Eragrostis chloromelas



Eragrostis lehmanniana



Monocymbium cerasiforme



Schizachyrium sanguineum



Cymbopogon excavalus



Digitaria eriantha



Themeda friandra



Hyparrhenia hirta

Bunker A south

Shrubs



Buxus macowanii



Pteris vittata



Freylinia Tropica



Euclea crispa

Ground covers



Scardoxus puniceus



Schizostylis coccinea



Chlorophytum saundersiae



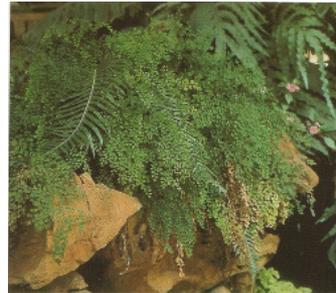
Knipovia praecox.



Crocosmia aurea
236



Watsonia spp.



Adiantum capillus-veneris



Cyperus proliifer

Trees



Acacia sieberiana



Ficus natalensis



Ollea europea. Subs. Africana

Viewing platform



*Asparagus densiflorus
spengere*



Senecio macroglossus



Dietes grandiflora



Crocsmia aurea

10.4. Details

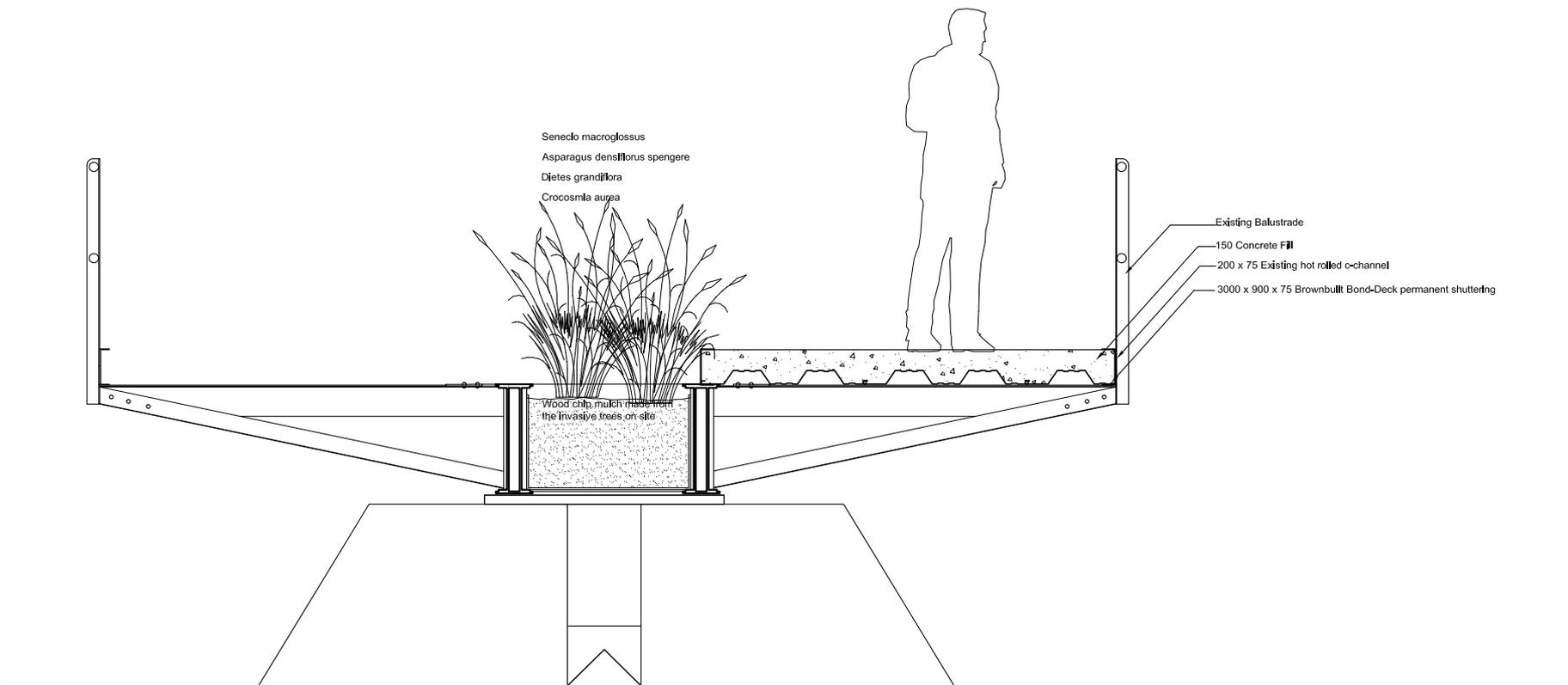


Fig:243. Detail of Viewing Platform, not to scale (Author 2010)

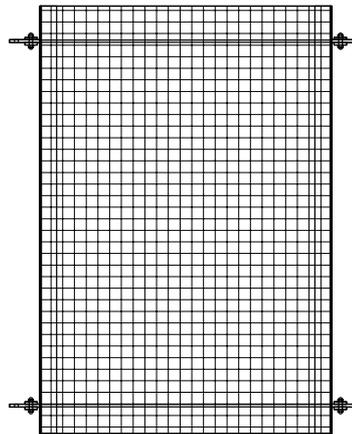
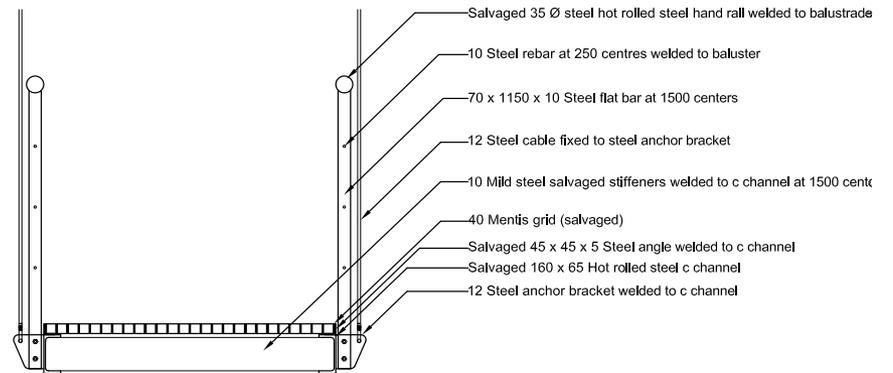
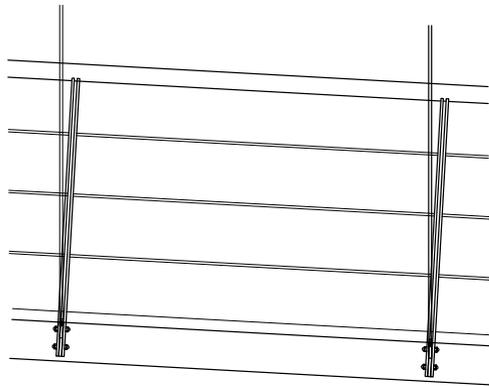


Fig:244. Detail of suspended walkways in bunker A (Author 2010)

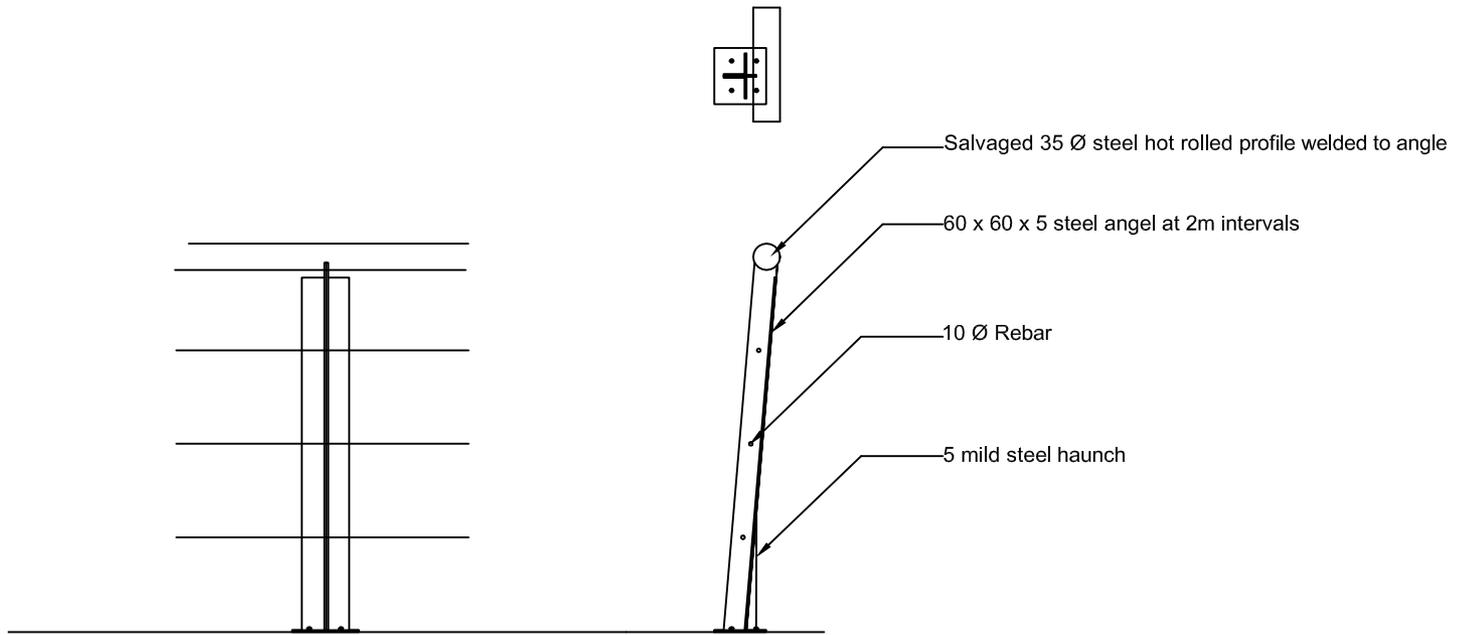


Fig:245. Ballustrade Detail, not to scale (Author 2010)

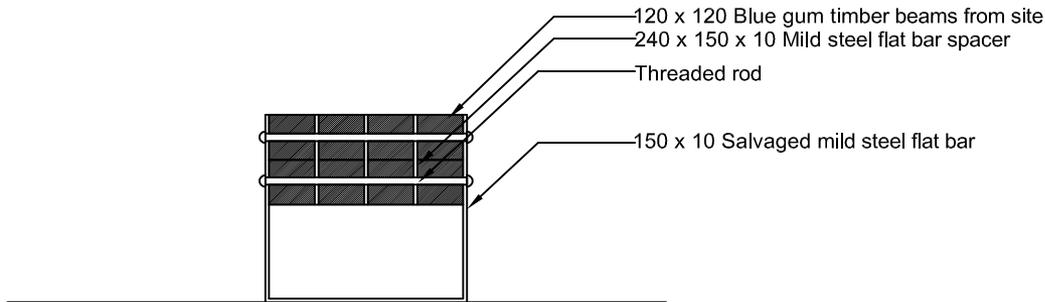


Fig:246. Bench detail (Author 2010)

II. Conclusion

The aim of this thesis was to develop an approach to dealing with existing urban fabric of the Pretoria inner city in a way that would address large scale problems of decentralization, sprawl and placelessness and ultimately urban decay.

It argues that the unhealthy living environments in the city is one of the primary causes of these problems, and by using the landscape based approach found in landscape urbanism, one can create healthy urban environment that will address people's needs in a sustainable uplifting way.

Through the study of this theory in conjunction with precedents an approach was developed as to how fragmented and under utilised sites could be used to create a healthy, landscape orientated urban fabric. This approach investigated process as a means to first heal the sites over time, then reprogram them once the sites are healthy.

The investigation revealed that these process are not merely that of ecological rehabilitation but that there are various social and historical process that have shape the site over time, imbuing it with character and unique potentials.

Therefore the approach had to incorporate qualitative and quantitative aspects solving both functional requirements but also addressing character and experiential qualities of site.

It was found that landscape urbanism could not be used exclusively or in isolation from the design professions as it did not offer the necessary guidelines when it came to detail design, therefore additional theories had to be investigated to supplement it. It proved that the individual design profession of architecture, landscape architecture and urban design all

have their rightful place and individual strengths required to accurately address the richness of urban form required to engage with everyday life.

The urban environment has a direct impact on the quality of life of its residents. If they are happy, protected and supported by their environment, they will grow and flourish. If their environment is unhealthy they will stagnate or set off to find somewhere more promising.

The detail intervention therefore became a combination of quantitative and qualitative aspects merged with intuitive design and landscape architectural practice. It attempts to engage the existing qualities of the site through innovative responses to create contemporary everyday urban spaces. It used wasted and decayed sites to generate urban spaces that offer people what they need in terms of escape, relaxation, recreation and connection to their environment whilst solving functional requirements and ultimately addressing large scale urban problems in an attempt to regenerate urban form.

“No matter how ambitious or far reaching the above outlined practices (of Landscape Urbanism) may be, at the end of the day there will still be doors, windows, gardens, stream corridors, apples, and lattes. There is an inevitable intimacy with things that characterise a rich urban experience. The failure of earlier urban design and regionally scaled enterprises was the oversimplification, the reduction, of the phenomenal richness of physical life (Corner 2005: 32).”



Fig:247. Going west (Author 2010)

Epilogue

Having searched in vain for many years man was once again left disappointed; this time by the empty promises of suburbia. In discontent he spends all his time commuting back and forth to his Tuscan villa that looks uniquely identical to every other house in the complex. He arrives home exhausted, his children are fighting over the Nintendo, his wife is moaning that she never sees him and the frustrated dog is chewing his favourite shoes. He steps onto his crowded balcony overlooking the millions of cluster houses spread across the valley. He sighs, trying to fight the realisation that somehow there must be more to life.

Once again sets off in search new land but this time he does not need to look to far, unexpectedly he finds himself walking in the tree lined streets of Pretoria West, where to his amazement he finds himself immersed in a scene of vibrant activity. Couples hold hands whilst doing window shopping, children race to meet their friends at the park, a man walking his dog. Cyclist zoom by an old couple peacefully walk the endless trails that meander around lakes, through orchards and fields all within walking distance of their home.

The man walks past the station where passengers return from a day of work not weighed down by hours of commuting but with a novel under one arm and a bag of groceries they bought from the organic market on their way home. Neighbours make casual conversation as they bump into each other on the corner.

As he walks he is intrigued by the overgrown ruins of ancient industrial structures, he explores. Soon finds himself enveloped in a series of walled gardens, water steams drown out the vibrant city noise and the lush vegetation calms the senses. Filtered light dapples the undergrowth. He finds himself reflecting on his life, overwhelmed he sits down, a smile of content spreads across his face. He realises that finally, he has found what he was looking for.

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