

for dida Vjeko

# Pretoria City - A spatial field in tension

Tensions as a generator for a mixed-use intervention -

The Intersection of Nelson Mandela Drive and Skinner Street.



Submitted in partial fulfilment of the requirements for the degree of Magister in Architecture (Professional) in the Faculty of Engineering, Built Environment and Information Technology.

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**Abstract** Architecture is a representation of our society's aspirations and of our social, economic and political paradigms. Since 1994, has the city of Pretoria been successfully represented? Does the city succeed architecturally in creating space that is democratic and that embraces our country's diversity?

The large influx of people within the city of Pretoria has created a terrain consisting of a series of contradictions and conflicts. These conflicts and contradictions within the city are a result of social, economic, spatial, physical and historical tensions that exist within society's social, economic and political paradigms. Physical and spatial reactions have occurred as a result of these tensions that exist within the city of Pretoria.

This dissertation will explore these urban spaces that are in tension and investigate what opportunities and limitations such spaces offer the city of Pretoria. The objective is to consider what architectural intervention will arise from the resolution, synthesis or conflict of these tensions. Can these spaces that are in tension within the city foster a new post-apartheid way of city making?



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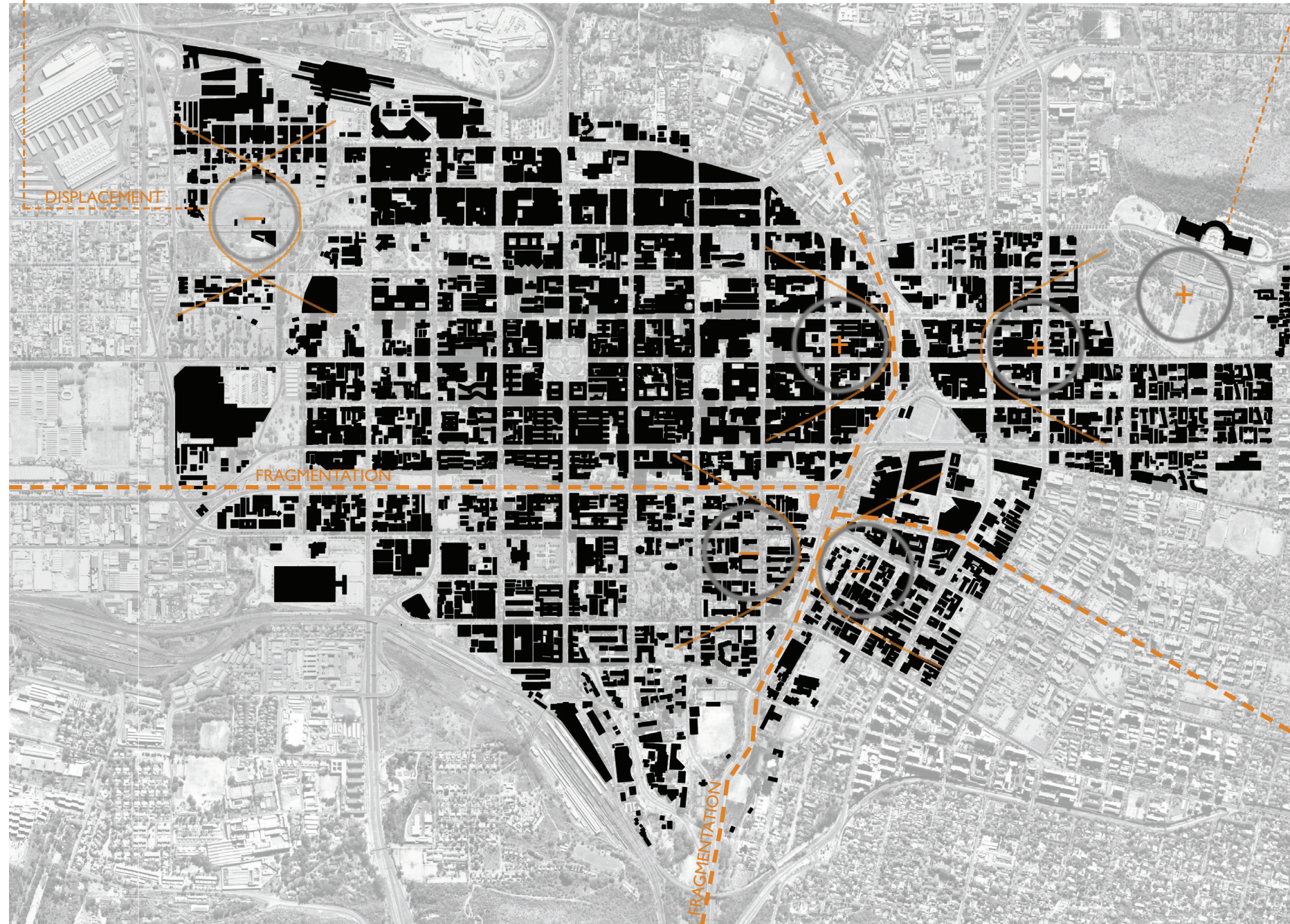
## **01. Preface**



POLARISATION

Apartheid scarring as a result of forced removals in the 1940's. The township of Marabastad had a very dense fine urban fabric but this has changed over the years and much of the urban fabric has been shattered.

The Union Buildings - Once the citadel of apartheid, it is now a symbol of cultural diversity as well as reconciliation.



Since 1994, the fabric of the city of Pretoria has become more fragmented, more polarized and more diverse than ever before. Like most cities in the country, Pretoria is re-inventing itself. The end of Apartheid, the beginnings of democracy, entry into the global economy and burgeoning neo-liberalism had, in many ways, created new cities (Bremner 2004: 18). The Union Buildings perched on the ridges of Pretoria, once the citadel of Apartheid has become the home of democracy.

CONFLICTS

The proposal of a ring-road in the inner city resulted in the destruction of the urban fabric along Skinner and Nelson Mandela street. This has separated the city in both north-south and east-west directions.

Development within the city is predominantly focused in the northern and eastern parts of the city. The southern and western parts of the city are neglected and as a result the urban fabric is far less dense.

The urban fabric has its back turned along Nelson Mandela and Skinner street. This creates a dead facade along these main movement routes.

CONTRADICTIONS

Figure 1.1. The city of Pretoria in tension (Author, 2010).



## 02. Introduction



## Background

Since 1994, the 'new' city of Pretoria has been released from the confinements of Apartheid past. Like most cities in the country, Pretoria has undergone major changes in the last 10 years. As in Johannesburg, the once controlled and manicured streets, office spaces and parks have been released to all of its citizens and the city has taken on the character found in most cities in a developing world. The streets have become packed with unregulated informal trade, small-scale manufacturing and cross-border trade. Ethnic enclaves have found their place in the shadows of corporate headquarters while middle-class residents have secured themselves in suburbia behind electric fences and guardhouses (Bremner 2004: 19).

Pretoria has rapidly transformed, developing new bonds, intimacies and identities in the midst of or in between the existing rigidities and spatial enclosures of the city. This has resulted in either destructive or constructive practices. Since democracy, streets and intersections have been overrun by practices claiming space in messy and overlapping ways (Bremner 2004: 19). Life within Pretoria's divided landscape continues to be made up of hybrids of real, everyday experiences (Deckler, Graupner, Rasmuss 2006: 4).

Within two contrasting urban experiences of the city of Pretoria – the dilapidated ghettoised existence at the northern periphery of the apartheid city in the township Marabastad, and the theme-park retail space of Menlyn mall – lie complexities of urban life within the post apartheid city. It is within this lived space, somewhere between the themed shopping utopia and the rough-edged, everyday poverty and dystopia, that South African practitioners in the spatial disciplines find themselves practising their art (Deckler, Graupner, Rasmuss 2006: 4).

Within this context, the practice of architecture finds itself confronted with a new set of challenges. There is a complex physical and social landscape that is equally hybrid and diverse, a space in which a multiple of diverse cultures exist and compete for resources and opportunities. Such landscapes within our cities, townships, towns, farmlands and rural 'homeland' spaces are merging as South African society 'opens up' to globalizing forces. As a result tensions have emerged from these landscapes. Tension between wealth and poverty has led to the creation of an ever-increasing division between the rich and poor, the migrants and citizen, men and women and between the spaces people occupy by virtue of their mobility or lack of it (Deckler, Graupner, Rasmuss 2006: 4).



(Opposite: Anti-clockwise from top)

Figure 2.1. Unregulated Informal Trade outside the State Theatre (Author, 2010)

Figure 2.1. Unregulated informal trade on the corner of Boom and Potgieter Street (Author, 2010)

Figure 2.3. Small-scale manufacturing: Welding (Author, 2010)

Figure 2.4. Small-scale manufacturing : Garment industry (Author 2010)

Figure 2.5. Small-scale manufacturing : Undertaker (Author 2010)

Figure 2.6. Ethnic Enclave: Mosque situated within the city centre (Author 2010)



It is within this 'jammed space' of previously distinct cultures and their associated distinct spatial practices that opportunities are created for invention and interpretation within the field of architecture that are fundamentally different from those offered at times of socio-political stagnation. Tensions arise from the current cultural uncertainty of the post-liberation era which offers the rare opportunities for creativity and interpretation of the inherited world (Wolff 2009: 178).

However identifying a series of tensions that exist within Pretoria, will not reveal the manner in which tensions should be dealt with. The aim of the dissertation is to identify such tensions and to explore how they affect the city urbanistically and architecturally. The dissertation will investigate the possible architectural/urban interventions that will arise from the resolution, synthesis or conflict of these tensions. Murray states that the visible appearance of buildings and other assembled material objects that make up the cityscape always gives rise to intuitive or evocative allusions. He further states that city-building processes oscillate between creative interventions, the fashioning of something new that never existed before, on the one side, and selective destruction on the other (Murray 2008: ix).

Urban spaces that are in tension in Pretoria can provide the city with the opportunity to foster a new post apartheid way of city making that encompasses the hybridity and intersections of diverse cultures. In order for an architectural intervention to succeed within a spatial field of tensions certain aspects need to be taken into account:

- Understanding the fractured nature of Pretoria's urban landscape. After apartheid, as with most cities in South Africa, Pretoria's production of urban space was the outcome of unstable mixture of opposing fields of force where the latent tensions between the anxious rich and the desperately poor were never completely out of sight and occasionally erupted into outright conflict in the most unexpected places (Murray 2008 : 4). Can urban space be designed as a cosmopolitan entity – a place where all differences mix together, whether ethnic, racial or religious?
- The design of democratic environments that are inclusive rather than exclusive.
- Establishing points of linkage and connectivity to maximise legibility of the urban fabric.

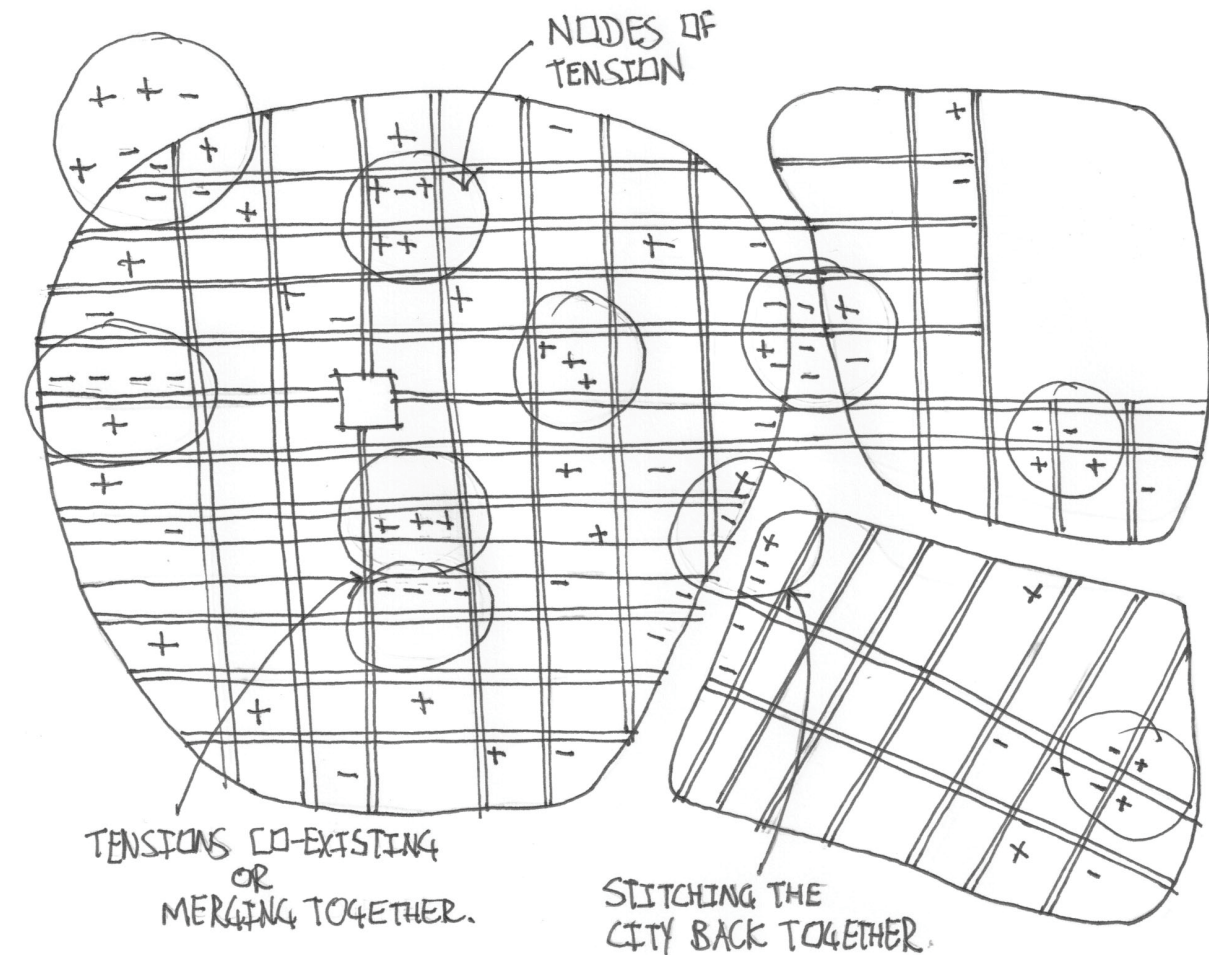


Figure 2.7. The city of Pretoria within a spatial field of tensions (Author 2010)



- Understanding that the urban landscape of Pretoria is an evolving field of spatial tensions and contradictions, in which the physical features of the cityscape are saturated with symbolism and meaning and where the collective memories and imagined futures are inscribed in the built environment (Murray 2008 : 6).
- Understanding that the inner city needs a diversity of functions and facilities to be able to serve an urban society.



Figure 2.8. (opposite)  
A man lying in shrubbery along the canalized Apies river. This is a result of the lack of inclusive environments that exist within the city (Author 2010)





### **03. Research Methodology**

An integration of different research methodologies is used in order to obtain the necessary research needed to fully explore the idea of tensions within the city of Pretoria.



Research focused towards the idea of tensions within the city of Pretoria was completed. The method by which this research was obtained was through a literature study. The literature study offers different points of view that strengthen the overall outcome of the dissertation. Information that was researched pertains to Apartheid's affect on South Africa's cities, its urban environment and its society, specifically focusing on the city of Pretoria. The transition of Pretoria's spatial landscape that occurred after Apartheid is explored in order to find opportunities that exist within Pretoria's new spatial landscape.

The history of the specific site is researched in order to understand the different layers that make up the urban fabric of the city. The historical layering allows for interpretation of this historical information into new design opportunities for the envisaged future of the city of Pretoria.

Once the specific urban space(site) that is in tension is identified the descriptive survey method of research is used. Careful observations of the urban space are documented. The observations provide a clear understanding of the chosen site. Certain patterns and criteria pertaining to the chosen site are drawn from the observations. This data informs the design decisions for the new urban intervention.

Precedents that deal with the same aspects that the new urban intervention encounters are researched. The design considerations appropriate to the new urban intervention are highlighted and inform the design decisions.

Theories of urbanism and architecture are explored in order to obtain insight into how and why certain parts of the city are in a constant spatial field of tension. Theories of urbanism and architecture offer various approaches in tackling the idea of tensions within the city Pretoria.



## 04. The Idea of Tensions





Tension: "a strained (political, social, etc.) state or relationship." The Concise Oxford Dictionary

••••• Tensions ••••• Political ••••• Economical •••••

Political, economical and social relationships are more often than not, always in a state of tension. In South Africa, since 1994, cities have undergone major change in terms of these already fragile relationships. The end of Apartheid liberated all of the country's citizens and people claimed space within the city in messy and overlapping ways. There was a significant increase in migration from rural areas into the city. This resulted in a hybrid and diverse landscape where multiple publics exist and compete for resources and opportunities. The lack of regular work, affordable housing, and social security for ordinary people has resulted in economic tensions between wealth and poverty which leads to the creation of social tensions between rich and poor, migrants and citizens and men and women (Deckler, Graupner, Rasmuss 2006: 4). The tensions that arise from the diverse and fragmented landscape of Pretoria result in spatial reactions that are visible both urbanistically and architecturally.

Murray describes the urban landscape not only as a built environment subject to radical alteration and modification but also of a constellation of outward signs that convey a host of overlapping, intersecting, and sometimes conflicted meanings (Murray 2008: ix). The relationship between these outward signs (tensions) and the urban fabric is not simply a series of magnetic poles that sit in opposition to each other. Within the context of an individual project and its specific demands, the tensions and urban fabric may manifest itself as two sides of a sliding scale thereby creating two opposing forces that are active, not passive (Wolff 2009 : 178).



Figure 4.1. The homeless claiming space within the city (Author 2010)



Figure 4.2. Unregulated informal trade along pavements (Author 2010)



Spatial Reactions

••••• Historical ••••• Social •••••

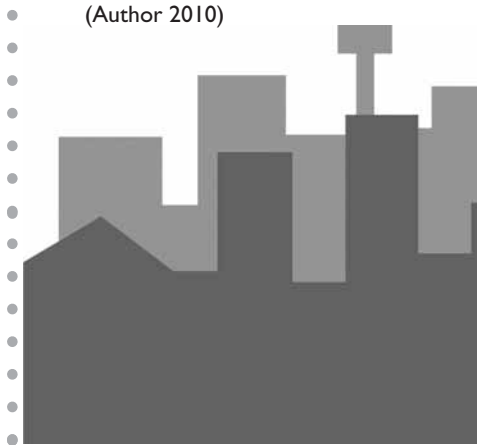


Figure 4.3. Palisade fencing used to block access to space that was once public (Author 2010)



Figure 4.4. The old synagogue barricaded by two layers of barbed wire fencing (Author 2010)

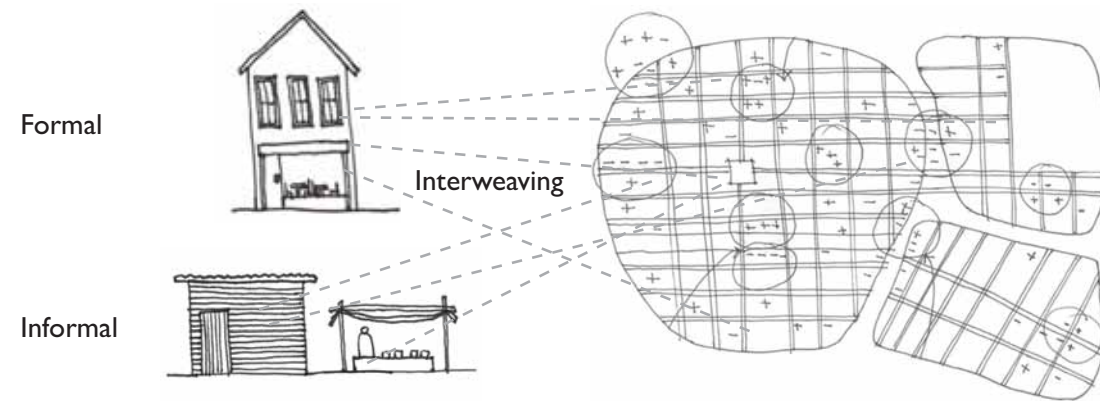
Physical Reactions



The realm of architecture is one of apparent stability, but is actually one of restrained force or of forces held in equilibrium. The traditional role of architecture has been one of reassuring us that things are under our control but it is quite another thing to think of architecture as 'in tension'. Architecture in tension suggests a struggling architecture, humanity with limited control of nature, and of itself. The forces in such architecture are activated, not pacified (Woods 2009: 1).

Murray reiterates this notion of forces within an 'architecture in tension' being activated. He describes the city-building processes as oscillating between creative interventions, the fashioning of something new that never existed before, on the one side, and selective destruction, erasure, and elimination, on the other. The result is a hybrid layering of architectural sites, woven together and juxtaposed in sometimes strange and seemingly odd combinations (Murray 2008: ix).

## Economic Tension



### I. Informal | Formal

There is a constant movement of people between the townships that surround Pretoria and the city centre. This influx of people into the city is a result of people trying to make a living within the city or accessing other forms of urban life that the township does not offer (Mbembe & Nuttall 2004: 357). The city has therefore become a complex configuration of lived space, neither rural nor urban. There is no urban alternative to the rural place. Chicken feet are cooked and sold on the pavements of the central city suburbs while a rural chief will drive the latest luxury sedan. The city has become an interweaving of practices and value systems of different worlds that overlap onto one another in increasingly complex ways (Bremner 2004: 23).

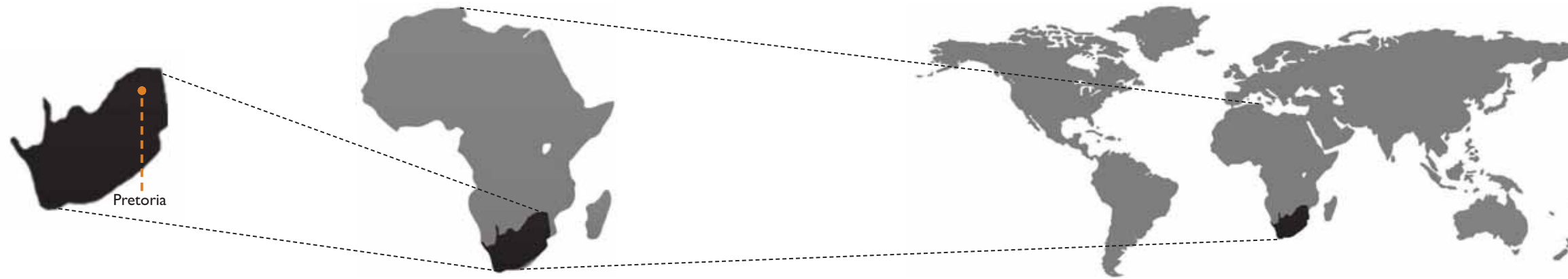
As in Johannesburg, the out-migration of large-scale corporations and commercial business from the inner city has occurred. Therefore the demand for space within the inner city has shifted away from office complexes for corporate tenants and toward small retail outlets catering to low-income consumers, housing for low-income families, and secure places where informal traders can sell their merchandise. The physical decay of the inner city has been brought about due to the changing nature of the socio-economic activities that occurs within the city and the built environments inability to accommodate the changing functions and uses of city space (Murray 2008: 70).

Yet, as a result of this disinvestment from the inner city and the disappearance of apartheid regulations that governed the use of urban space, the city has created spaces that allow people who have been excluded from formal economic activities, the room for small-scale (largely black-owned) business enterprises. This has led to small-scale traders, roaming hawkers and petty entrepreneurship to gain a foothold in the urban landscape. Both spatially and economically the survivalist trade, illicit commerce, and immigrant entrepreneurship have become significant structural features of the inner-city (Murray 2008: 56, 70).



Figure 4.5. - 4.8. Photographs showing the formal fabric of the city as a backdrop to the unregulated informal trade that occurs along the city's streets. (Author 2010)





## I. Identity | Universality

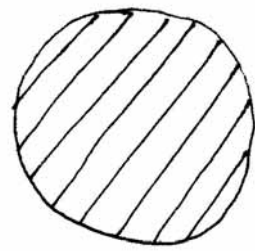
What is the affect that modernisation/globalisation has on the identity of a city? What gives Pretoria its identity? AbdouMaliq Simone argues that not only is the city made up of tunnels, bridges, roads, wires, ducts, highways, electricity and automobiles but in the first instance the African metropolis is made up of “people”, “bodies”, “intersections” and “networks”. These are the entities that create the character and identity of an African metropolis. They form the topographical connections that give meaning to practices of social reproduction across city time and space (Simone 2001).

Since the transition to democracy in 1994, South African cities have become sites of debate and critical engagement for the re-configuring and remixing of identities - racial, gender, spatial and many more. How do architectural practitioners reposition themselves in an African context, or more specifically South Africa?

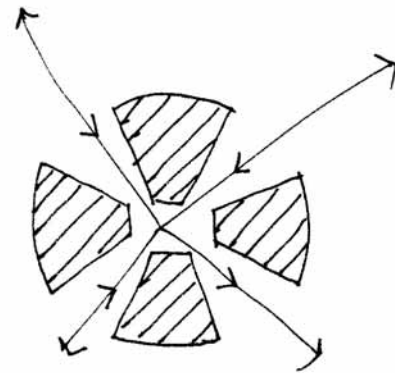
The manner with which the histories of marginality are dealt with and where it fits into global capitalism will become important in re-establishing our identity within the African continent (Deckler, Graupner, Rasmuss 2006: 4). As a result of globalization, Murray poses several questions that are pertinent to the process of reframing ‘contemporary’ architecture of South Africa.

- How does architectural practice respond to the needs of a multiple of different cultures?
- Do apartheid histories affect our thinking about spaces and different cultures?
- How do we re-imagine the built environment in a post-modern, globalising world of hyper-reality?
- Can ‘contemporary’ architecture in any way be seen as being detached from the project of modernity?

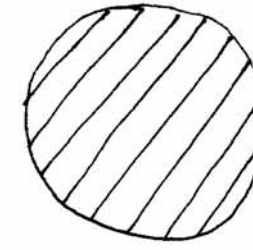
Lipman states that contemporary architecture should create a built environment that we are to feel at home with and can identify with. Physical qualities of the places where we live – the light, the climate, the shape and pitch of the land – as well as the experiences, historical and current, of the people should be known by the architect in order to avoid creating the alienating sameness that dominates the architectural trend within South Africa. The set of ideas Lipman mentions reiterates Tzonis and Lefaivre’s ideas of Critical Regionalism – an approach to design that recognises and invites us to recognise, that it is only by attempting to understand our pasts critically that we will be able to give shape to the future (Lipman 2003).



Exclusive



Inclusive



Self



Other

## 2. Exclusive | Inclusive

Developments in the city are mainly commercially or governmentally driven and tend to reduce architecture to scenography. These buildings act as free-standing objects creating new boundaries, enclosures and mono-functional identities. This has resulted in creation of exclusive environments. These environments exclude the broad spectrum of functions and diversity that are necessary within the city. Planner Vanessa Watson identifies the similarity between the postcolonial South African spatial design to that of the postmodern found anywhere else in a globalising world in which poverty and wealth are increasingly polarised and in which new publics are competing with the old for resources and access to urban facilities (Deckler, Graupner, Rasmuss 2006: 6).

The abundance of enclosed suburban shopping centres, fortified office complexes, gated residential complexes, underground parking garages with restricted entry, interior gardens, landscaped atriums and isolated gathering spaces has taken the conventional role of most of Pretoria's town squares, public parks and downtown sidewalks as sites of everyday social interaction. These publically inhabited yet privately owned cocooned urban environments are expanding and have fundamentally changed and reshaped the uses and meanings of urban space not only in Pretoria but across South Africa. The barriers and fortified complexes that char-

acterise these cocoon urban environments are visible signs of the growing paranoid urbanism and fortress mentality that exists in urban South Africa (Murray 2008: 61).

The tension between exclusive and inclusive environments provides the opportunity for the design of a built environment where the walls and the ceilings, do not really matter and must therefore be made as transparent and functional as possible. The spaces created and the movements that are made possible within these spaces are primary (Bouman, Mulder 2002: 72 - 74).

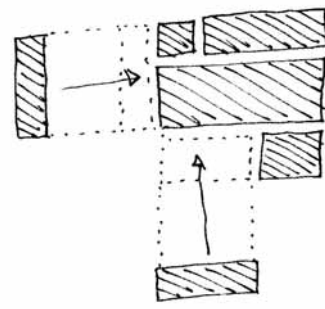
## 3. Self | Other

Most governmental and commercial developments built within the city of Pretoria follow the trend of creating secure self-sufficient cocoons that internalise and privatise all the diverse functions and activities that create a vibrant city: coffee shops, magazine stands, book stalls, chemists, hairdressers. Employees that are within these new monoliths never have to leave their secure environment thereby avoiding altogether the threatening, chaotic, multi-cultural muddle around it. The city has ceased to exist for the people who work within these monoliths. These new investment "islands" have created a vacuum within the city as retail and office space remains abandoned, open sites are converted into parking lots and buildings are demolished (Bremner 2004: 55 - 58).

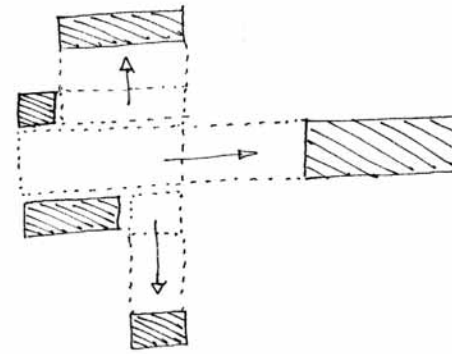
Most modernist urban planners are more concerned with the notion of a utopian ideal, seeking to bring every aspect of urban life under a particular organizing scheme of perfection that they favour at a particular moment. They use the Cartesian conception of space as a central organising principle that is empty and waiting to be filled up with urban life and to be subdivided and demarcated. Modernist planners tend to abstract space in terms of straight lines, right angles and serial repetitions. This approach fails to establish a relationship with the material realities of daily life and the way people live within

an urban environment. A widening gap is formed between the idealistic image that the modernistic planners have envisaged and the people who are actually dependant on the social conditions and ambiguities of city living (Murray 2008 : 72).

Within this globalised world nobody has a single culture any longer, but all participate in a multiplicity of 'cultures'. What was once a homogeneous, low-information monoculture has now become a high-information, heterogeneous cultural process; the transformation process of temporary coalitions, collisions, hybridizations and migrations that we call 'city life' (Bouman, Mulder 2002: 72 - 74).



Emplacement



Displacement

Apartheid's spatial development policies that forced people to move subsequently created a 'new' culture within Atteridgeville. These 'cultures' can be referred to as being translocalities. The challenge for spatial development within this context is, instead of trying to create a single public domain, to create an atmosphere for the establishment and co-existence of a diversity of public domains (Bouman, Mulder 2002: 72 - 74).

#### 4. Displacement | Emplacement

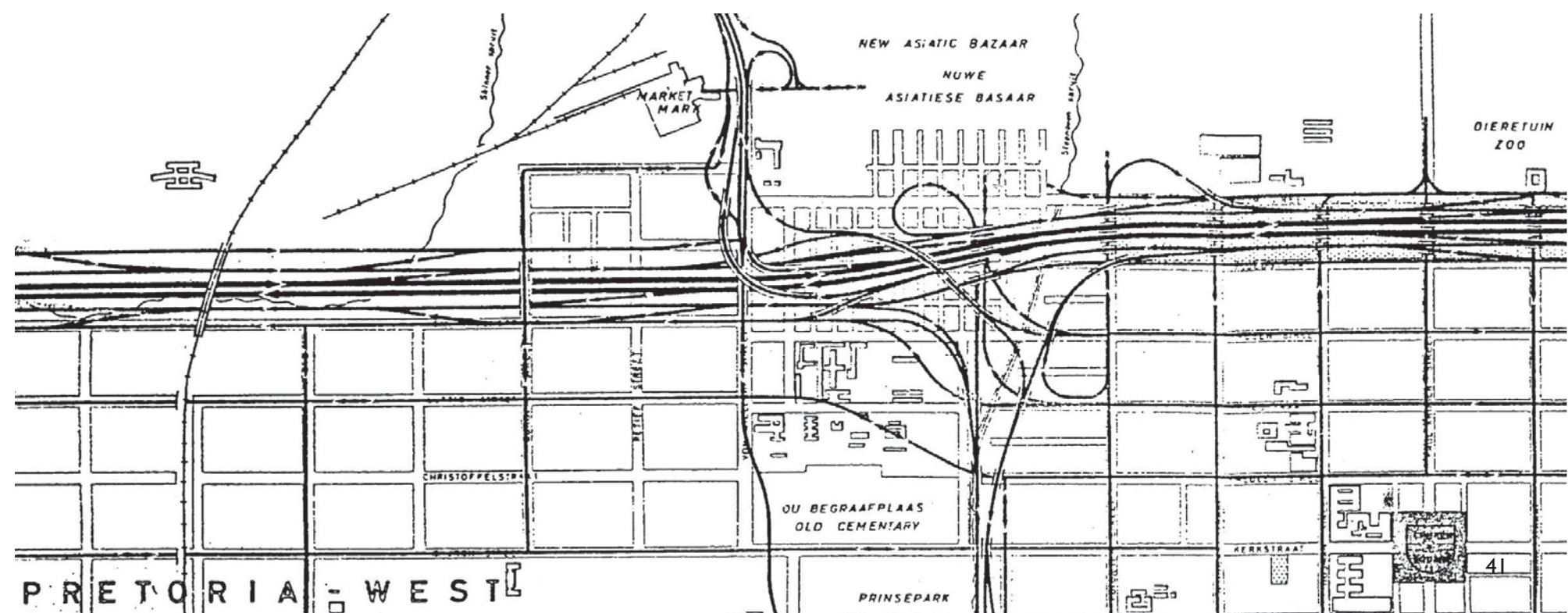
During apartheid, Pretoria and other South African cities homogenisation and fragmentation of its urban landscape was overlaid by a purposefully political ordering of space. This was a deliberate intervention into the shaping of the cityscape and took its cues from the modernist planning scheme while simultaneously drawing on colonial notions of racial superiority (Dewar 1999 : 368 – 375; Mabin 1999 : 269-277). The functionalists' method of land-use zoning, described by Henri Lefebvre (1991 : 317) as being responsible for the "fragmentation, breakup, and separation under the umbrella of bureaucratically decreed unity," had laid the foundation for an idealized segregated city that was based on racial difference (Murray 2008: 63).

Racial segregation occurred within South Africa's cities and many people were displaced to townships. Proposals, such as the 1975 ring-road, were designed to get rid of Pretoria's oldest township Marabastad. The reason for the removal of Marabastad was that the townships geographical position adjacent the inner city (barely 4 blocks north of church square) was regarded as an encroachment into 'white space' (Fisher, le Roux, Mare 1998 : 153,155). Since 1994 many people, that were previously displaced, have moved back into the city. This has led to emplacement, whereby people have acted on positioning themselves within the

city and claiming space either informally or formally. Historically, the African continent has been and still is a space of flux and translocation with multiple nexuses of entry and exit points. The movement and translocation of people will continue around, within and through the city of Pretoria (Simone: 2001).

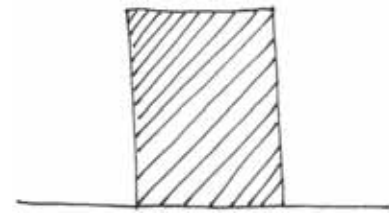
As a result of the displacement and emplacement of people in and around the city different cultural enclaves have been created or destroyed. In the township of Marabastad, a vibrant culture was destroyed due to forced removals of people to Atteridgeville in the 1940's.

Figure 4.9. The section of ring-road around Marabastad Township in 1960. (Architecture Archives, University of Pretoria, 2010)

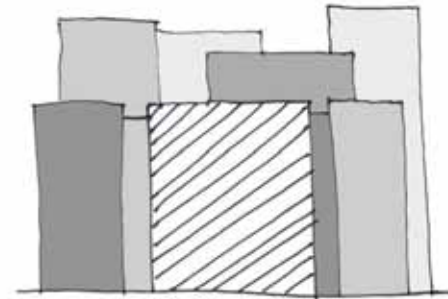




## Contextual Tensions



Conservation



Development

new development. This is done in order to ensure that appropriate decisions are made when going ahead with such a development. The conservation principles should help guide the design in such a way that the new building will be able to harmoniously adapt to its historical context as well as contemporary life. Existing culturally significant buildings allow the opportunity for a new development to gain richness and a new insight in the way in which its spaces and functions are to be arranged. The significant building can act as a design generator thereby influencing the design of the spaces within the new development.

### I . Conservation | Development

Within cities, certain portions of the built environment are protected by the local municipality as the particular piece of the built environment is either of historical or cultural value. These protected buildings, parks and monuments etc. are regarded as a cities heritage – an urban cultural landscape. Traditionally a landscape is considered as a piece of natural scenery that people experience and enjoy. Landscape whether natural or urban consists of visible features such as physical elements (the built environment) and human elements (human activity) (Griffe: 2008).

The harmonious cohesion of such elements from the past, present and future define a city's identity. The world's population is increasingly becoming more urban with a predicted two thirds of the population living in cities by 2025 and cities lie at risk of being defaced and losing their identity. The paper 9 charter (UNESCO) defines methods in safeguarding the cultural and historic elements of cities while promoting the development of cities as well. The charter looks at cities as a whole rather than isolating certain sites which leads to the approach of emphasizing the intricate links between heritage, conservation and development (UNESCO: 2002).

To fundamentally reshape the existing built environment of cities is extremely difficult. Structural configurations of cities become

fixed and are tightly anchored in their own histories and deeply rooted in the histories of their surroundings (Murray 2008: 7). The existing built environment of a city therefore acts as an historical document and embodies the values of traditional cultures. Areas within the built environment that have cultural or significant value are being threatened, damaged or destroyed by urban development. This more than often leads to irreversible cultural, social and economic losses (Washington charter 1987). Heritage and development are therefore inseparable entities that foreshadow the concept of 'sustainability' – preserving a cities heritage for the benefit of future generations. Culture is the bridge between the two, the vital ingredient for kneading a harmonious balance between past, present and future (UNESCO: 2002).

In order for a building, area, monument etc. to be classified as being culturally significant within the context of the city the building must be older than 60 years or the building, within the historical context of the city, is one of the few remaining examples of a unique architectural movement.

When approaching the design of a new building on or near a culturally significant site, certain conservation principles (Burra Charter, Vienna Charter, and Washington Charter) need to be taken into account by the decision makers that are involved in the



### Precedent: Spittelau Viaducts Social Housing Project

Location: Vienna, Austria (1994 - 2005)

Architect: Zaha Hadid

Program: Housing, restaurants, bars, offices (mixed-use)

Concept:

The Danube Canal is one of Vienna's under-used central spaces, having been forgotten for decades. Recent regeneration projects started to change this here and along the extensive system of viaducts built under Otto Wagner for the metropolitan railway in the 1980's. The Housing project consists of a series of apartments, offices and artist's studios that weave like a ribbon through, around and over the arched bays of the viaduct. The viaduct itself is a protected structure, and may not be interfered with. The three-part structure playfully interacts with the viaduct, generating a multitude of different outdoor and indoor spatial relationships.

The perception of these is intensified by the response of the architectural language to the different speeds of the infrastructural elements – cars on one of Wien's busiest roads, trains on an old viaduct, boats on the Danube Canal and pedestrians and cyclists along its waterfront. Public outdoor spaces are enlivened via the infill of bars and restaurants under the arches of the viaduct. An additional challenge was posed to the project, as the program consists mainly of social housing, though studios and offices are mixed in. The geometrical and material play of a linear brick viaduct and a twisting white new building creates a successful outside space, enhancing the public value of the site (Phaidon 2008: 497; Hadid 2005).

### DESIGN CONSIDERATION

This precedent clearly shows the successful resolution between development and conservation. The lost space which runs underneath the viaduct is revitalized and the new housing development harmoniously adapts to the historical context enhancing the public relationship between the viaduct and building.

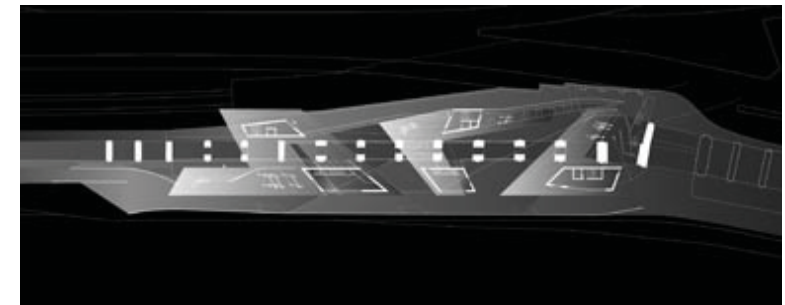


Figure 4.10.  
Ground floor plan (Hadid 2005)

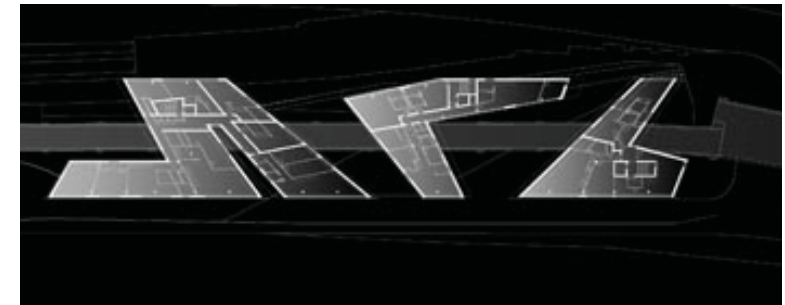


Figure 4.11.  
First floor plan (Hadid 2005)

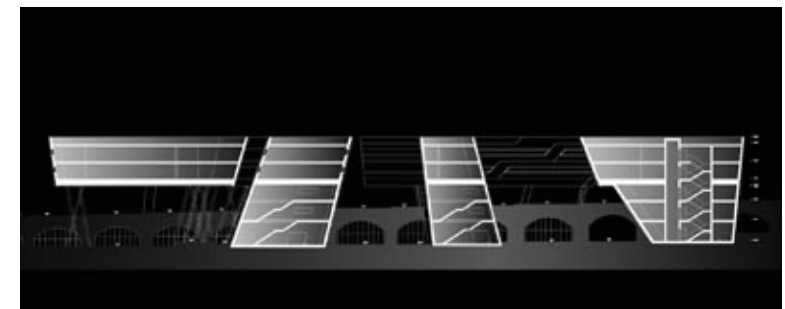
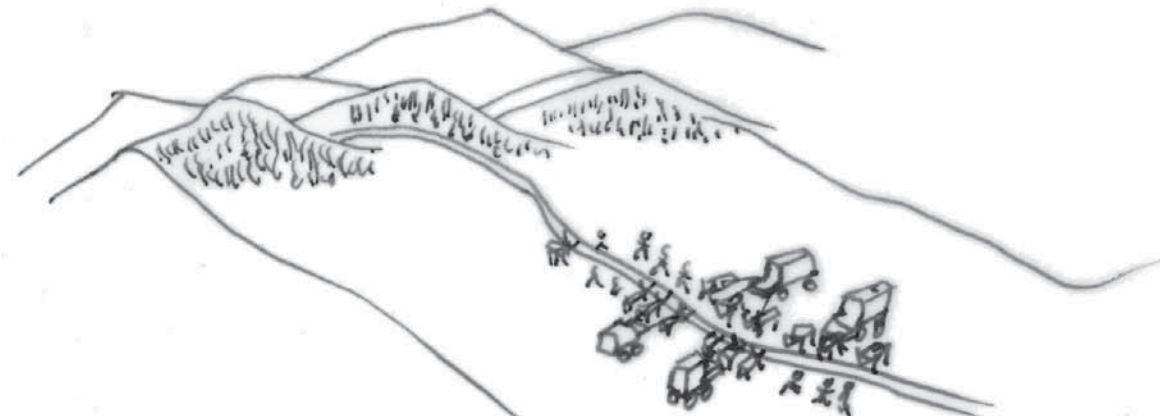


Figure 4.12.  
Cross-section (Hadid 2005)

Figure 4.13. (opposite left)  
Relationship between the old and new (Hadid 2005)

Figure 4.14 (below) : Elevation across the Danube Canal (Hadid 2005)

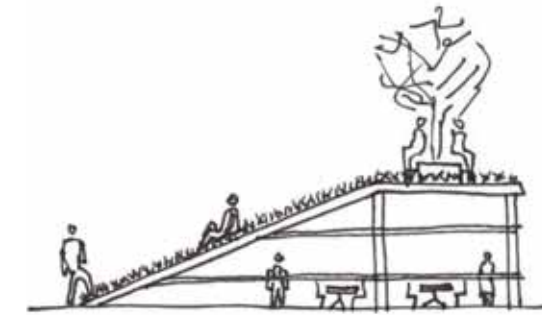




Natural Landscape



Manmade Natural Landscape



Manmade Built Landscape

## 2. Natural Landscapes | Manmade Natural Landscapes | Manmade Built Landscapes

The development of the city of Pretoria was the result of the Boers having trekked into a temporary uninhabited rural region of the Apies river valley and settling in that area. The first plans for what still had to become the city of Pretoria date back from the time the tiny rural frontier village was created as ZAR (Zuid-Afrikaansche Republiek) Capital. To accommodate the capital's needs, an orthogonal grid was designed ("cardo decumanus").

The width of streets forming the grid was determined by the length of the oxen wagons, used by the Boer farmers. The ox-wagons had to be able to make a U-turn in the streets. The building blocks within the orthogonal grid consisted of one storey buildings for residential use with large backyards or contained offices for regional services as well as shops for retail. In order to keep the orthogonal grid, building lines were strictly regulated even though the building blocks were mainly closed. Citizens were obliged to plant and maintain trees in front of their properties in order to provide shade in the streets. The Apies River fed gutters that ran along the streets and provided dwellings with fresh water. At the intersection of the central axes of the orthogonal grid there was a large open square where a church was built by the Boers. The Boers of that region would gather there for Sunday services and would put up tents for the duration of their stay in the capital. At this stage of Pretoria's

development, Pretoria was a rural town built within a natural landscape, the Apies river valley (Corten and van Dun 2009: 11).

This rural town would drastically change with the discovery of gold in the Witwatersrand in 1886. The once natural and rural community would be transformed to an urban society due to the large influx of people during the gold rush. The city expanded within the central grid that was bordered by the Apies River in the North, East and South and by the Steenhovenspruit in the West. Pretoria as a rural town built within a natural landscape would soon change and an urban environment would take its place. By the 1880's the city would expand outside of its central grid. The administrative use still expanded within the city centre but a new orthogonal grid was laid out to the South-East to accommodate residential dwellings. This new city district would be called Sunnyside.



Figure 4.15.  
The orthogonal grid of Pretoria, 1841  
(Corten and van Dun 2009)

The city further expanded to the east along one of its main axes, Church Street, still keeping the new expansion in connection with the original city grid. The city would not be able to expand to the North or South due to geographical reasons and to the West, a horse racing track prevented expansion. The horse racing track would be incorporated only halfway through the 20<sup>th</sup> century and the city would end up developing to the west as well (Corten and van Dun 2009: 12).

Pretoria had evolved from a rural village to an urban city. From a rural natural landscape that was inherently connected to its natural environment, Pretoria fast became a city that was ignoring the natural landscape it had originally been founded within. The natural landscape had been the dominant public realm in rural Pretoria. This did not remain as the city modernized and became urban. The need for man-built natural landscapes (parks) and man-built landscapes (squares, market places and thoroughfares) was needed in order for Pretoria to provide its citizens with an adequate public realm that would encourage social interaction and reshape the character of daily life from the rural to an urban way of living.

Yet, cities such as Pretoria reduce appropriations for park acquisition and development thereby increasing numbers of people into existing facilities. This creates a growing im-

balance between the supply of public open space and the demands made on it by a growing population (Garvin, Berens 1997: 2).



Figure 4.16.  
The orthogonal grid of Pretoria, ca. 1855  
(Corten and van Dun 2009)



Figure 4.17.  
The orthogonal grid of Pretoria, ca. 1880  
(Author 2010)





Figure 4.18.  
The beginnings of a rural town, ca. 1841.  
(UPSpace Archive, University of Pretoria 2010)



Figure 4.19.  
Looking down Paul Kruger Street from  
Church Square, ca. 1886.  
(UPSpace Archive, University of Pretoria 2010)



Figure 4.20.  
The development of Pretoria, ca. 1930.  
(UPSpace Archive, University of Pretoria 2010)



Figure 4.21.  
Church Square, 1931.  
(UPSpace Archive, University of Pretoria 2010)

Figure 4.22.  
Historical Layering of the urban grid of the city of Pretoria  
(Author, 2010)

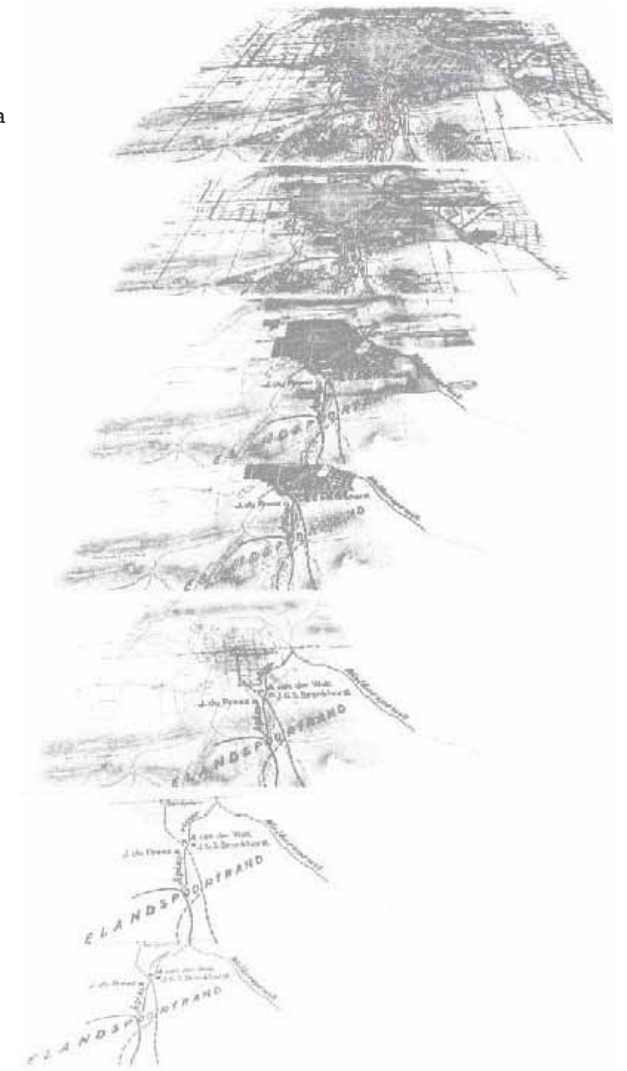
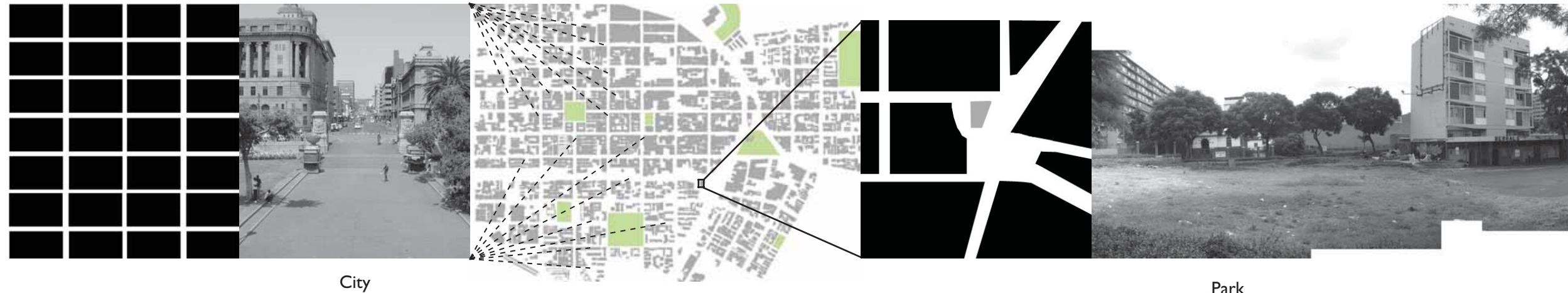


Figure 4.23.  
Urban grid of Pretoria expanding to the east and west.  
(UPSpace Archive, University of Pretoria 2010)







### 3. Park | City

Since the inception of the small rural village in the Apies river valley, the natural landscape was the public realm that would host the activities of rural life. This changed as an orthogonal grid was designed to accommodate the frontier-village's needs of growing from a rural village into the city of Pretoria. The width of the streets forming the grid was determined by whether an ox-wagon was able to make a U-turn. The streets that made up the orthogonal grid became the public realm for the citizens of Pretoria. Daily activities would now occur along the streets instead of the natural landscape.

The grid as an ordering device had the advantage of allowing for flexibility and expandability. It also had the limitation of contributing to the loss of spatial containment, especially when the lines of the grid became super highways and the spaces between became detached and contained factories and other centres (Trancik 1986 : 30).

Yet, this was not the case with Pretoria. When the grid was implemented as an ordering device, the regular patterns of the streets and blocks organised a three-dimensional system of continuous space, integrating buildings into the fabric of the city. The grid system of Pretoria city was being built up incrementally and was not a system of zoning functions (Functionalist approach). The grid allowed for a variety of uses close to one another (Trancik 1986: 33). The streets

which made up the grid became cohesive spaces that accommodated all aspects of life. The intersection of the main axes of the orthogonal grid was the centralised concept of public space that served as a focus for group meeting and interaction at Church Square. To a large extent the adoption of the grid has predetermined the type of exterior space in which citizens of Pretoria currently live in (Trancik 1986: 35).

Since the adoption of the orthogonal grid the city of Pretoria grew in population. The city evolved over time and new functions and uses of space had to be accommodated. The grid was able to accommodate these future developments and has become a sustainable historical feature of Pretoria. The urban fabric on the other hand, is far less sustainable. The urban fabric has been altered over time especially in terms of building heights and volume - yet, this change has always occurred within the urban grid. With the dominance of the vehicular transport in the 20th century, the movement of vehicles had become prioritised over that of pedestrian movement. The streets which had once accommodated the aspects of human life would primarily cater for the motor vehicle. As a result vehicular 'highways' would traverse along certain streets within the grid. More vehicles were to be accommodated for thus resulting in certain sections of the grid being destroyed i.e. Skinner Street being altered to accommodate a new,

yet never completed ring-road plan. The residual space left over by the destruction of the urban fabric along Skinner Street would become lost space.

From the analysis of Pretoria's inner city grid the following can be deduced:

- The grid of Pretoria is strong and rigid running in both a north-south and east-west direction.
- Pretoria's urban grid is one of its main historical features, turning out to be the most lasting and sustainable one (Corten and van Dun 2009: 13).
- The urban grid seems flexible enough to accommodate future developments and is expected to have a lasting future (Corten and van Dun 2009: 11).
- Where the grid breaks, it is typically a manmade built natural/urban landscape.
- The point at which the grid breaks its rhythm, lost space exists. This occurs where the rigid grid meets the natural course of the Apies river resulting in left over segments of land. These lost spaces have the opportunity to become man-made built urban landscapes that knit together physical and social space.

The city of Pretoria, as many other cities have been the victims of urban sprawl. Cities are competing with the suburbs in order to attract people back into the city in order to prevent the city from turning into a ghetto. In order to do so, cities must emphasize the unique advantages of social integration and pedestrian access to amenities. By knitting together physical and social space, parks and open space play a crucial role in defining and strengthening the advantages of city living. In terms of aesthetics and transportation, urban neighbourhoods with access to open space may be particularly suited to compete with the suburbs. Thus, there are solid economic reasons for increasing urban investment in parks and open space (Garvin, Berens 1997: 30).

As the orthogonal grid is the dominant organising element of the inner city, urban parks can become organising elements that become vital components of city redevelopment. An urban park can create a sense of place, a landmark and a community focal point which in turn can increase property value and create incentive for new development (Garvin, Berens 1997: 30).



## 05. A Site in Tension



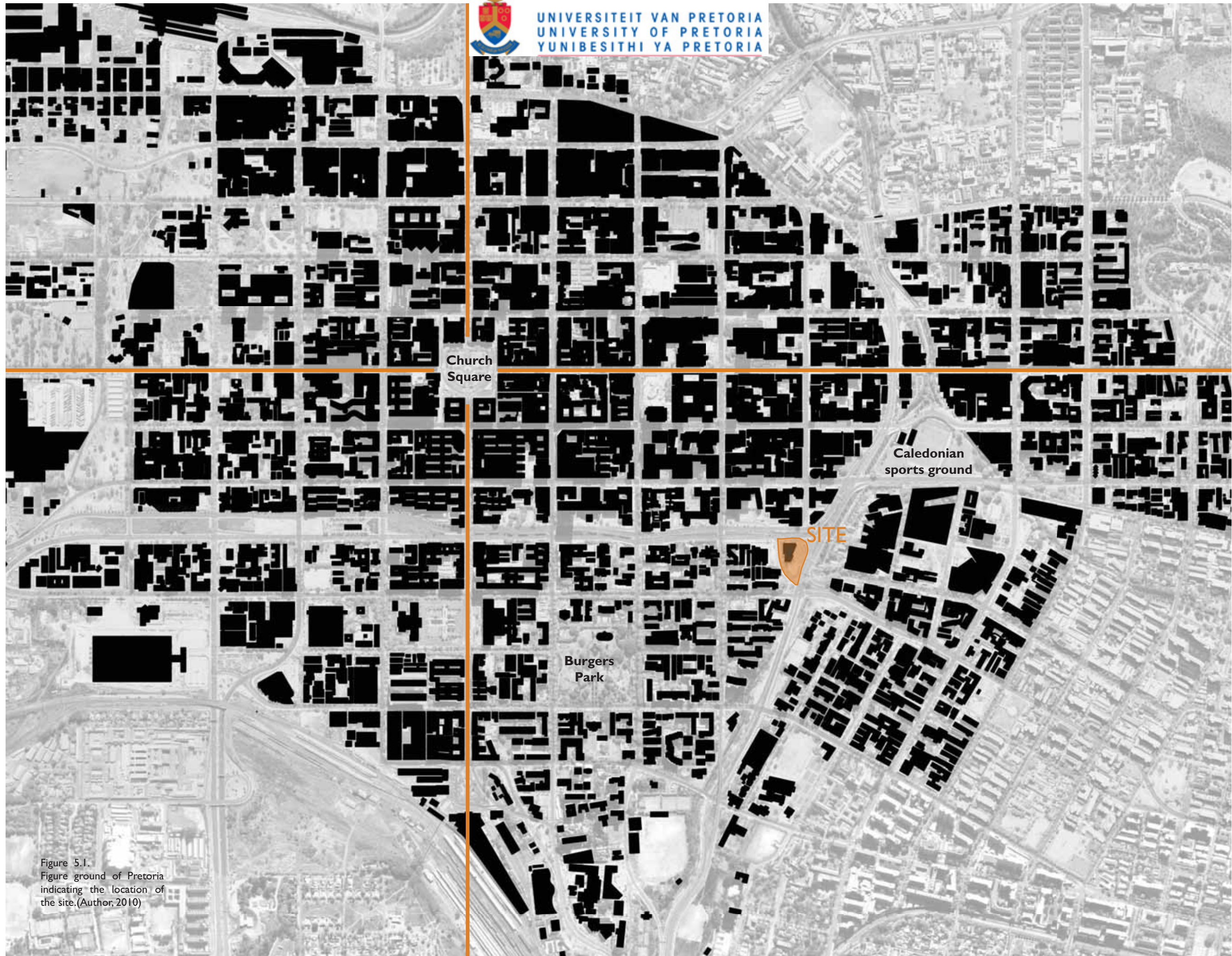


Figure 5.1.  
Figure ground of Pretoria  
indicating the location of  
the site. (Author, 2010)



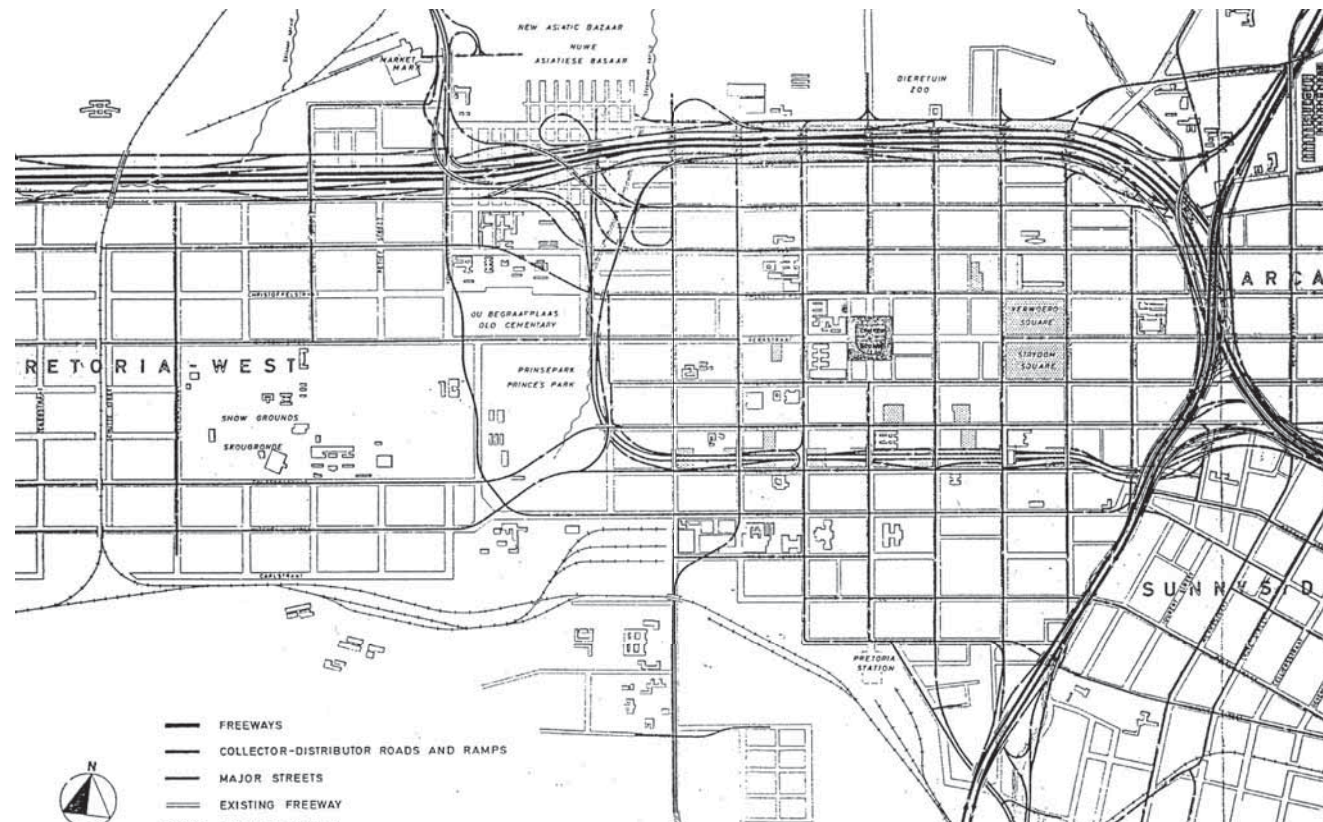


As a result of the social and economic tensions that exist within the city of Pretoria, visible spatial reactions are occurring. A site that best represents the tensions that are present within the city is the urban island at the intersection of Nelson Mandela and Skinner Street. The formation of the isolated urban island was the result of a decision to propose a ring-road freeway system around the inner city as to alleviate congestion within the city centre. This decision was politically based but practically motivated to provide the city's citizens easier access to and from the city to limit congestion. Construction of the ring-road had begun, but owing to insufficient funds (economic tension) it was not completed. Certain parts of the city have been affected by the proposed ring-road system which has led to the formation of isolated urban islands.



Figure 5.2 (below)  
Proposed ring-road around the city of Pretoria which created the formation of an urban island. (Architecture Archives, University of Pretoria, 2010)

Figure 5.2 (opposite)  
Aerial photo of the site (urban island) and the surrounding context (Geography department, University of Pretoria and overlay by Author, 2010)





Economic tension between the formal and informal is evident on the site. The site currently consists of the Berrals building which is a five storey apartment block. Against the wall of the Berrals building, homeless people have claimed the space as their sleeping area. There is a tension created between the formal resident being able to afford to rent an apartment within the Berrals and the informal homeless person, sleeping in lost space.

There is further tension created between that of corporate advertising and graffiti. The Berrals building has a billboard attached to its south facade and underneath this corporate billboard a citizen has expressed himself by 'tagging' the building in the form of graffiti. Both advertising and graffiti function on a phenomenological level as to awaken the viewer's curiosity. Advertising views the citizen as a consumer and tries to sell citizens a way of life. Advertising is based on the idea of that public visual space is a read only environment. Graffiti artists on the other hand make it their main mission to reclaim city space either as a reaction against consumerist advertising or the need to make a personal mark on their environment. Graffiti as with other forms of

public art draws attention to city spaces and makes the viewer re-examine city spaces. It challenges the ownership of space by councils and corporations (Manco 2004: 11)

The graffiti that is drawn on the Berrals building brings the viewers attention to its isolation on the urban island. The graffiti is an attempt to reclaim the lost space of the urban island. Even though the urban island sits within a major intersection within the grid of Pretoria (the point at which the grid of Pretoria shifts), the urban island has become anti-space, making no positive contribution to the surrounding areas and its users. The urban island's edges are ill-defined and it fails to connect elements in a coherent manner (Trancik 1986: 4).

Figure 5.3 (opposite)  
Photograph indicating the relationship between the formal + informal and the corporate + citizen (Author, 2010)

Figure 5.4 (below)  
The Berrals building - A 5 storey apartment block isolated on the urban island (Author, 2010)





The urban island is completely isolated from the vibrant activity and transition of people moving from Sunnyside (residential district) into the city centre (work) and vice versa. This activity occurs on the periphery of the isolated island. The site deals with the social tension of universality and identity as there are a multitude of publics (people of different races/religions/cultures etc.) that pass the periphery of the site on a daily basis and these multiple publics need to be accommodated.

The urban island (site) is situated within an intersection of different functional areas. Jane Jacobs refers to city diversity as itself permitting and stimulating more diversity (Jacobs 1961: 157). Yet, this is not the case with regards to the site in question. Esselen street which runs perpendicular to the urban island caters for the cities diversity and permits and stimulates a variety of functions along it by allowing for city enterprises of all degrees of size. A lively city scene (Esselen Street) is lively largely by virtue of its enormous collection of small elements of diversity: the spaza shops, hairdressers, mechanics & music stores etc. The variety of retail trade ends when Esselen Street terminates at Nelson Mandela Street (Jacobs 1961: 160).

Jacobs speaks of commercial diversity as being immensely important for cities, socially

as well as economically. A city district that contains an exuberant variety and plenty in its commerce contains other kinds of diversity as well, including variety of cultural opportunities, variety of scenes, and a great variety in its population and other users. The same physical and economic conditions that generate diverse commerce are intimately related to the production, or the presence, of other kinds of city variety. However this does not mean that cities automatically generate diversity just by existing. They generate it because of the various efficient economic pools of use that they form. Whenever cities fail to form such economic pools of use, the struggle to generate diversity is like that of a small settlement (Jacobs 1961: 160).

••••• Pedestrian movement



Figure 5.5 (opposite)  
Aerial photograph indicating functional areas and pedestrian movement (Geography department, University of Pretoria and overlay by Author, 2010)

Figure 5.6 (below)  
The urban island in isolation and failing to connect elements of the city together (Author, 2010)







Figure 5.7. (above) Corner of Nelson Mandela Drive & Skinner Street. (Author 2010)



Figure 5.8. (above) The urban island that runs in the middle of Nelson Mandela Drive that pedestrians use to travel into the city. (Author 2010)



A collection of panorama's showing the existing movement of people that travel from Sunnyside to the inner city and vice versa. The majority of movement traverses across Nelson Mandela and Skinner Street which are extensively car dominated streets.

Figure 5.11. (left) - Aerial of the Site. (Author 2010)

Figure 5.12. (below) - Corner of Nelson Mandela Drive and Kotze Street. (Author 2010)



Figure 5.9. (far right) - Movement along the urban island. (Author 2010)

Figure 5.10. (right & below) - Movement across Nelson Mandela Drive. (Author 2010)





Jacobs highlights four conditions that are indispensable in order to generate exuberant diversity in a city's streets and districts (Jacobs 1961: 162):

1. The district, and indeed as many of its internal parts as possible, must serve more than one primary function; preferably more than two. These must ensure the presence of people who go outdoors on different schedules and are able to use many facilities in common.
2. Most blocks must be short, that is streets and opportunities to turn corners must be frequent.
3. The district must mix buildings that vary in age and condition, including a good proportion of old buildings so that they vary in the economic yield. This variation of buildings must be fairly close-grained.
4. There must be a sufficiently dense concentration of people, for whatever purposes they may be there. This includes dense concentration in the case of people who are there because of residence.

The combination of these four conditions creates effective economic pools of use. The absence of any one of the four conditions frustrates a district's potential. The lack thereof of the relationship of commercial, retail and living in and around the urban island is evident. The surrounding context (district) has met conditions 2-4 but still needs to address the condition of having more than one function and becoming hybrid in nature addressing the needs of multiple publics. Since the site is at the intersection of different functional areas there is the opportunity for the site to become landmark.

The urban island is in isolation from the rest of the city as a result of the site becoming lost space. The site has no external connections with the existing surrounding fabric. The Berrals building remains as an isolated tower on a landscape that does not connect to the surrounding urban fabric. The only connection it has with the city is that it becomes an informal thoroughfare for people who live in Berea and want to get to the city. The dominant path from Sunnyside to the city that runs along the periphery of the urban island is not well-defined and clear. It does not have a well defined path destination and origin point.

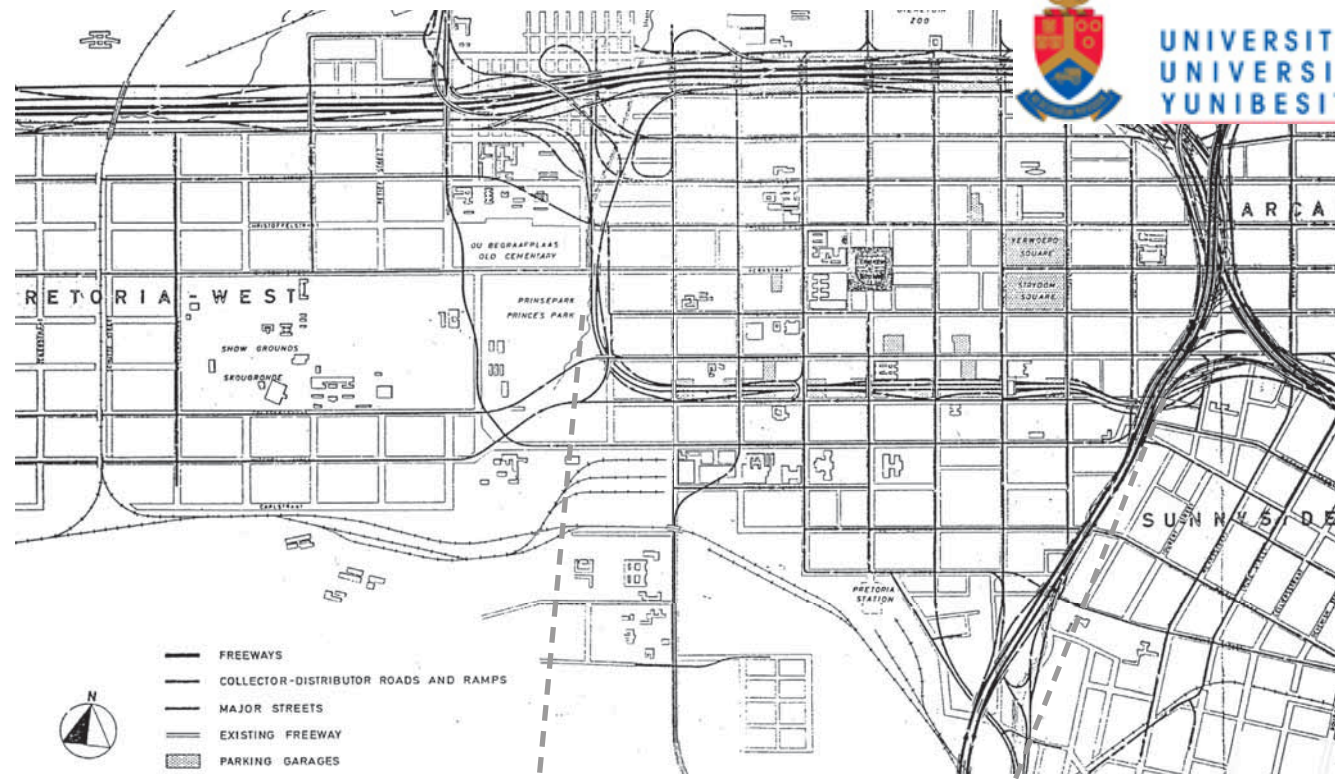
People tend to think of path destinations and origin points when they travel the city. People like to know where paths came from and where they lead. Paths that have clear and well-known origins and destinations have stronger identities and help tie the city together giving the observer a sense of bearing whenever he crosses them (Lynch 1960: 54). The major pedestrian routes along Esselen and Du Toit street that run past the urban island are not clear and are ill-defined.

Social, economical and programmatic tensions have been explored at a city scale and have informed the selection of an appropriate site. The urban island exists in isolation and is in tension with its surrounding context. Tensions exist between the urban island and the surrounding urban fabric. These tensions are to be investigated to act as a design generator for both program and architectural intervention.



Figure 5.13. Aerial photograph indicating the isolation of the urban island due to the dominance of vehicular movement over that of pedestrian movement (Geography department, University of Pretoria and overlay by Author 2010)





### Macro Scale

The effect the ring-road would have had on the city as a whole. The ring-road would have further fragmented the city creating barriers between different parts of the city.

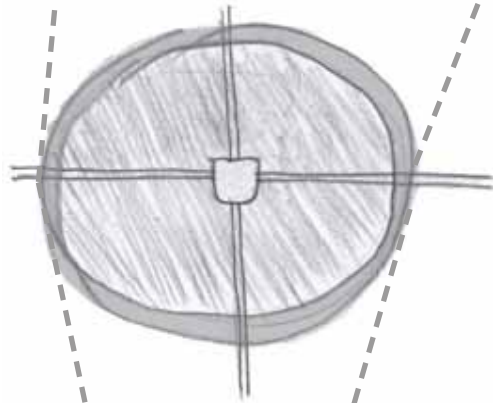
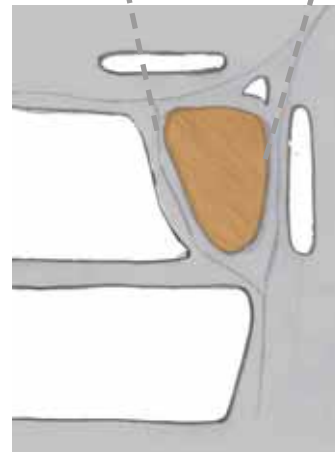


Figure 5.14. (top)  
Proposed ring-road around the city of Pretoria which created the formation of an urban island. (Architecture Archives, University of Pretoria, 2010)

Figure 5.15. (middle)  
Pretoria city in isolation. (Author 2010)

Figure 5.16. (right)  
Urban island in isolation. (Author 2010)



### Micro Scale

The isolated island is an example on a micro scale level of the effects the proposed ring-road would have had on the city and its urban fabric.



## Historical Tension

### Old | New

The site is in 'historical' tension due to the massive changes that occurred around it over time. It has been removed from the existing urban fabric and as a result been left as an urban island. Esselen Street originally culminated at the eastern edge of the site at a T-junction which linked to Du Toit Street which ran along the eastern edge of the site northwards. These sections of road have been removed due to the widening of Skinner and Nelson Mandela Street. The site now exists in isolation removed from its city block.

The Berrals building, built in 1958, is situated on the urban island and can be identified as being a place of historical and national significance. Its importance can be attributed to the designer, Wynand Smit of the architectural firm Smit and Viljoen, who contributed to the establishment of Pretoria Regionalism in the Transvaal (Gerneke 1998:216) and the fact that the building is one of the last few examples of Brazilian influenced Pretoria Regionalism.

Areas within the built environment that have cultural or significant value are being threatened, damaged or destroyed by urban development. This more than often leads to irreversible cultural, social and economic losses (Washington charter 1987). Heritage

and development are therefore inseparable entities that foreshadow the concept of 'sustainability' – preserving a cities heritage for the benefit of future generations. Culture is the bridge between the two, the vital ingredient for kneading a harmonious balance between past, present and future (UNESCO: 2002).

When approaching the design of a new building on or near a culturally significant site (such as the Berrals building), certain conservation principles (Burra Charter, Vienna Charter, and Washington Charter) need to be taken into account. This is done in order to ensure that appropriate decisions are made when going ahead with such a development. The conservation principles should help guide the design in such a way that the new building will be able to harmoniously adapt to its historical context as well as contemporary life. Existing culturally significant buildings allow the opportunity for a new development to gain richness and a new insight in the way in which its spaces and functions are to be arranged. The significant building can act as a design generator thereby influencing the design of the spaces within the new development and in turn extending the buildings history and life, giving it a new identity and existence.



Figure 5.17. Aerial photograph taken in 1948. No urban island exists. (Geography department, University of Pretoria, 2010)



Figure 5.18. < 1997 : Road layout before the construction of Nelson Mandela Drive & Skinner Street (Author, 2010)



Figure 5.19. Aerial photograph taken in 2005. The formation of the urban island is evident (Geography department, University of Pretoria, 2010)

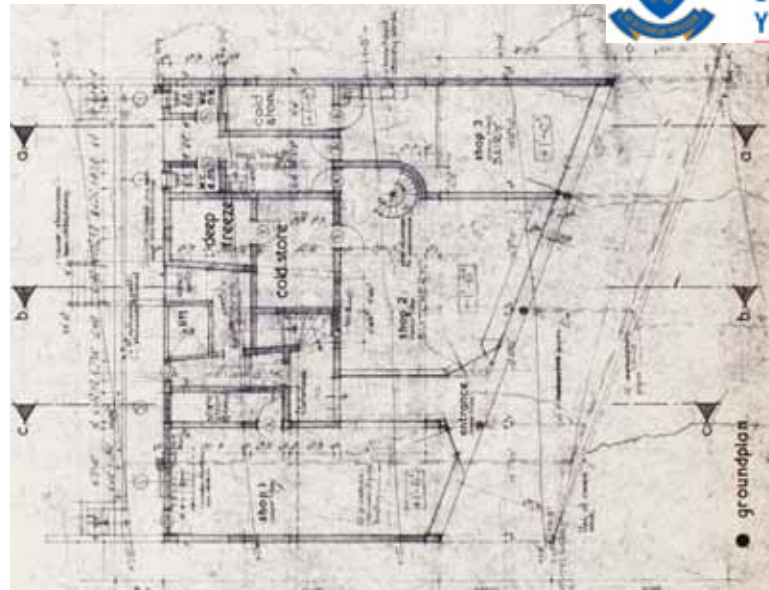


Figure 5.20. > 1997 : Road layout after the construction of Nelson Mandela Drive & Skinner Street (Author, 2010)

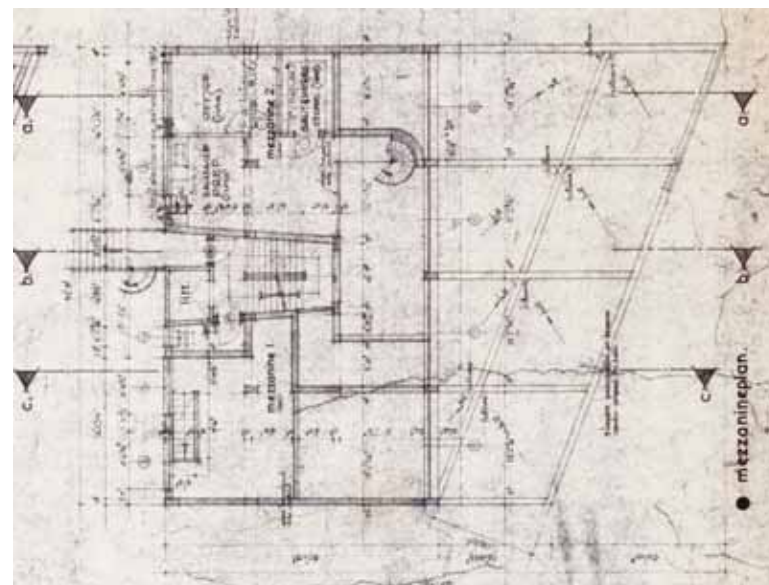




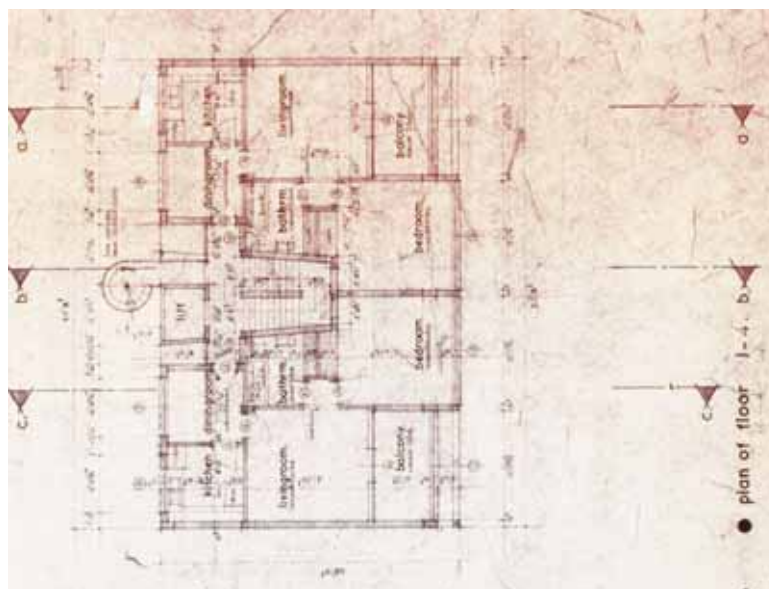
Ground floor plan :  
Shops such as a butchery  
and a dairy were located  
on ground floor.



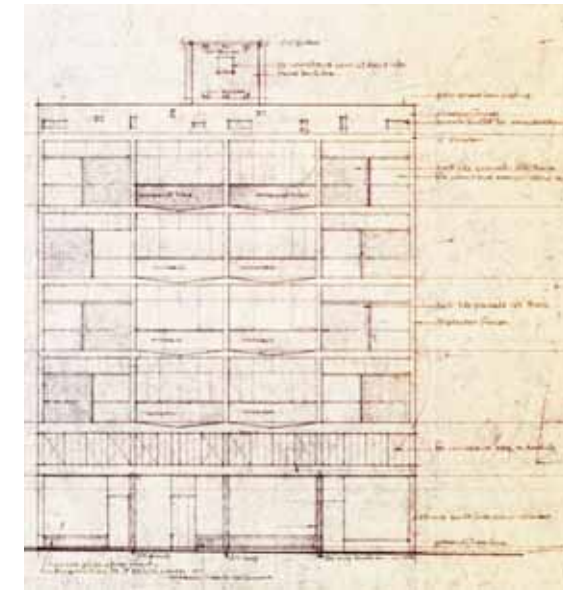
Mezzanine floor plan



1-4 floor plan :  
Residential Units



West Elevation



Section A-A

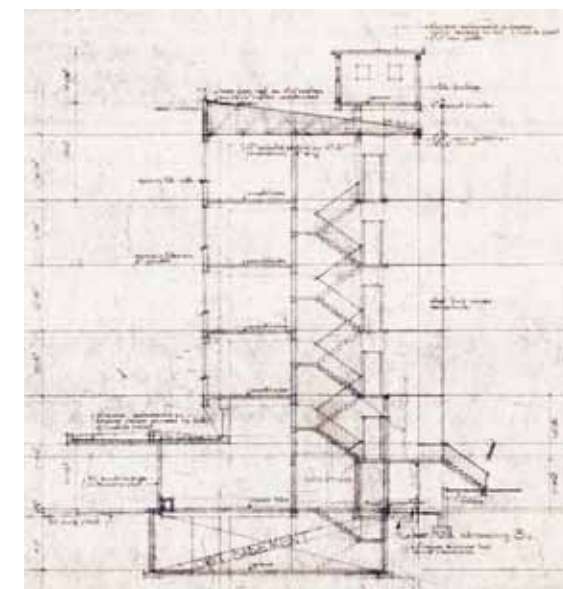
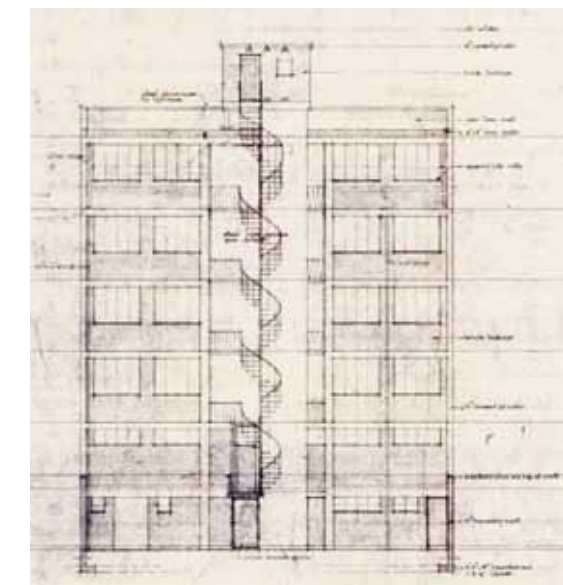


Figure 5.21.  
Original Drawings of the Berral's Building(Archive,  
Department of Architecture, University of Pretoria,  
2010)



> 1997



Figure 5.22.  
Du Toit street ran alongside the Berral's building and into the city. Pedestrian activity is evident along the pavements edge. The building was then part of the city fabric (Archive, Department of Architecture, University of Pretoria, 2010)



Figure 5.24.  
Vibrant activity along the street front of the Berral's building (Archive, Department of Architecture, University of Pretoria, 2010)

2010



Figure 5.23.  
The Berral's building in its current isolated state. As a result the ground floor shops have been removed and converted into residential apartments (Author, 2010)



Figure 5.25.  
The ground floor of the Berral's building consisted of shops such as a butchery and a dairy (Archive, Department of Architecture, University of Pretoria, 2010)



### Precedent: Pratt Institute Art School Extension

Location: Brooklyn, New York, USA (1997 - 2005)

Architect: Steven Holl Architects

Program: Public and educational amenities: lobby, gallery, studios, auditorium, workshops

Concept:

The Higgins Hall, which houses Pratt Institute's architecture programme, formerly consisted of three separate historic landmark buildings. In 1996, the central building was destroyed in a fire leaving the two remaining buildings isolated. The new building stitches the buildings back together. The difference in floor levels between the two historic buildings, which increases sequentially from a mere 12 mm at ground level to 2 m on the fourth floor roof, was the key factor in shaping the scheme. The new insertion pulls out existing floor levels from the two remaining buildings and the fault line where these floor levels meet is reconciled by a ramp that creates an extended promenade traversing between street front and garden back of the building (Lecuyer 2006: 54).

The building uses modern materials to sensitively stitch two historic buildings together while creating a new identity and landmark on the street. The new addition deals with creating a new public space on street level and the experimentation of different materials. The use of polycarbonate gives the front facade of the building a clean repetitive look that is in contrast to the historic buildings on either side of it. This contrast is respectful to the historic buildings while still being able to retain its own distinct identity. (Lecuyer 2006: 54-57)

#### DESIGN CONSIDERATION:

This precedent demonstrates a sensitive resolution in stitching the old with the new while still creating a landmark building with its own distinct identity. The distinction between the old and new is emphasised by the lightness of the new tectonic contrasted with the solidity of the old.

Figure 5.26.  
The stitching between new and old.  
(Holl, 2010)



Figure 5.27.  
Exterior view - The successful resolution between new and old.  
(Holl, 2010)



Figure 5.28.  
Interior view of the ramp promenade that connects the two historic buildings.  
(Holl, 2010)



Figure 5.29.  
Section showing the ramp that creates an extended promenade between street front and garden back.  
(Holl, 2010)

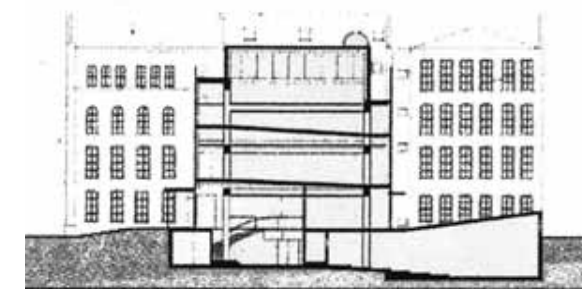
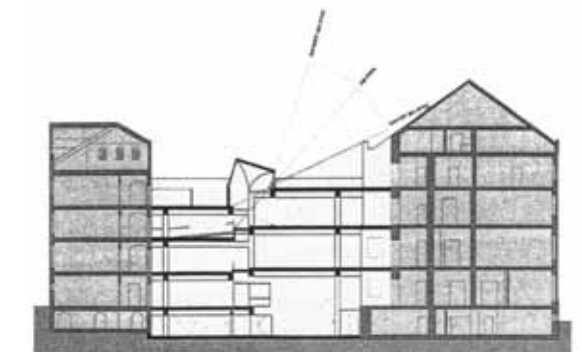


Figure 5.30.  
The resolution between the varying levels of the two historic buildings.  
(Holl, 2010)





## Physical Tensions

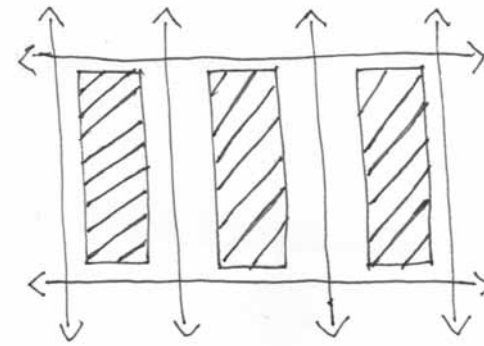
Passive | Active + Pedestrian | Vehicular



Passive | Active

The urban island has become a passive entity with the city functioning around it. There are high levels of pedestrian and vehicular movement all along the edges of the site. Esselen Street with its highly active mixed-use energy of different activities ends abruptly as it meets Nelson Mandela drive. Yet, some activity is carried through on the periphery of the site with appropriation of space by informal traders occurring along a small island that is currently used by pedestrians to cross Nelson Mandela drive. The urban island remains passive while the surrounding context is highly active.

Mobility, motion, and the automobile have become tools for isolation. Highway systems have created the need for a complex pattern of connector roads within the city. To disperse traffic from the major highways into the narrower network of streets, the street system of Pretoria was drastically altered as can be seen with the construction of Nelson Mandela drive and the widening of Skinner Street. These two main arteries along the north and east edges of the site are dominant structuring elements in the city. The widening of both Skinner and Nelson Mandela Streets has affected both pedestrian and vehicular movement in this area. These two main entry and exit routes for the city have structured a hierarchy of transport routes that vehicles and pedestrians use to move through the city. Vehicular



Pedestrian | Vehicular

movement in this instant has taking preference over that of pedestrian movement (Trancik 1986: 6 -7).

Du Toit Street which once ran alongside the Berrals building has been removed by the construction of these two main arteries thereby enforcing the notion that the street has lost its social meaning as a multi-purpose space. Districts around the urban island do not interact with it anymore. The urban island has become an isolated homogeneous enclave. The desire for order and mobility has undermined the need for diversity and richness of urban public life (Trancik 1986: 6 -7).

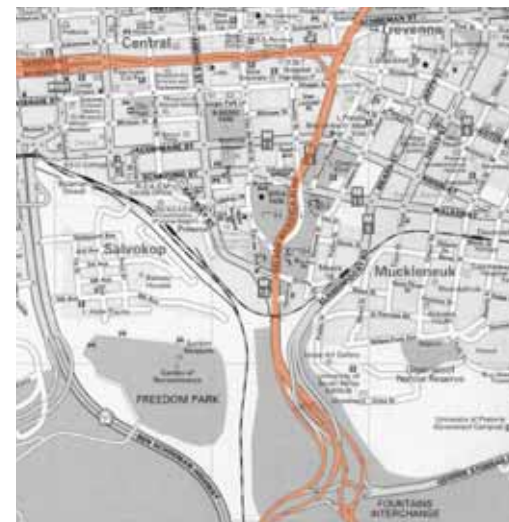


Figure 5.31. Arterial roads, Nelson Mandela drive and Skinner street, connecting the city to the highway system. (Map Studio and overlay by Author, 2010)



Figure 5.32. Aerial indicating the movement of pedestrians and vehicles. (Geography department, University of Pretoria and overlay by Author, 2010)



### Precedent: Olympic Sculpture Park

Location: Seattle, USA (1999-2007)

Architect: Weiss/Manfredi Architects

Program: A new model for an urban sculpture park: A pavilion, an urban park and large-scale art installations

Concept:

Weiss/Manfredi's design was envisioned as a new model for an urban sculpture park that incorporates architecture, landscape and urban infrastructure. The design was conceived as a continuous surface that unfolds as a landscape for art wandering from the city across highway and rail lines to reach water's edge. The site which was once a fuel storage and transfer facility remained unused and became lost space within the city. The site was built up of three parcels of land that were split up by a main arterial road and train tracks. The new design of the sculpture park unites these separated three parcels of land. This was done by designing a z-shaped pedestrian path that cuts through the new park bridging over the railway lines and the arterial road in order to connect urban core (the city) to the revitalized waterfront (Phaidon 2008: 627 and Weiss/Manfredi 2010).

#### DESIGN CONSIDERATION:

Creating a pedestrian path that bridges railway lines and an arterial road, the site is able to connect to both the city and its surrounding regions while accommodating for vehicular and pedestrian movement. The interstitial spaces between the paths and the edges of the site allow for a variety of spaces that have been created by the landscape that will elicit responses from artists that will create artwork for the park. The Olympic Sculpture Park therefore addresses ever-changing views of the role of a park in the city and art in the landscape.

Figure 5.33. Concept model and sketch (Detail, 2010)

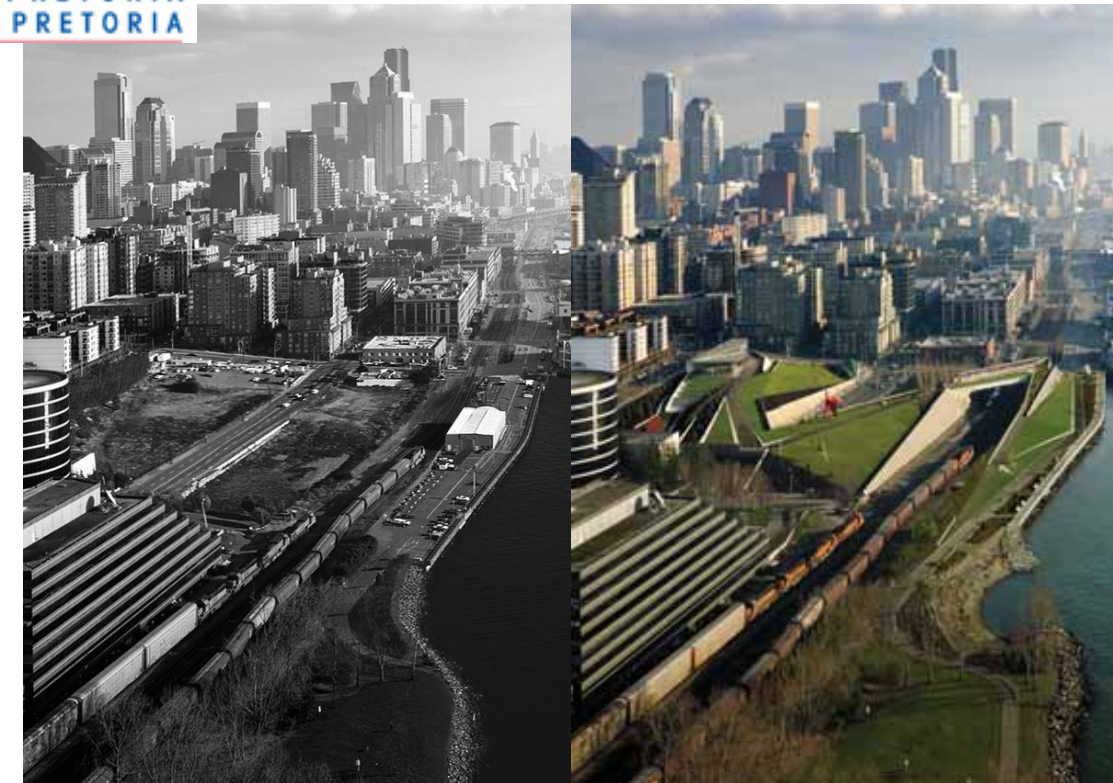
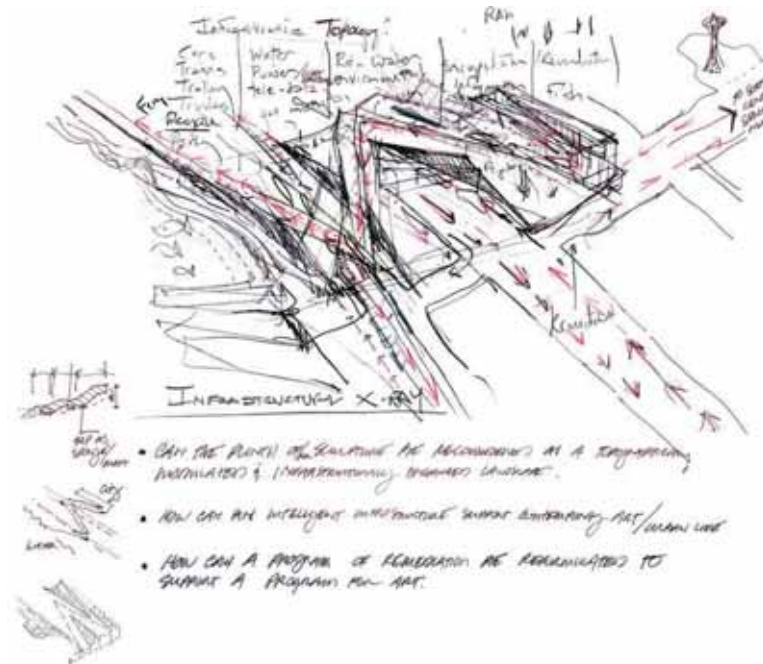
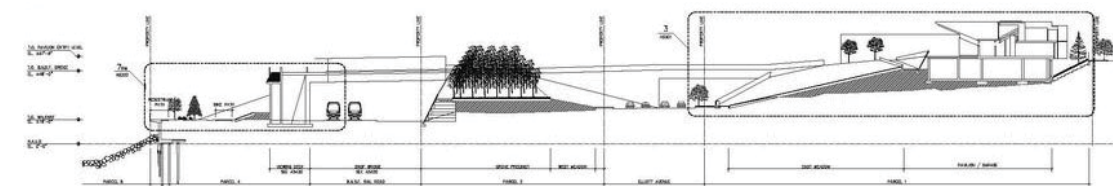


Figure 5.34. The site before and after the sculpture park was built. (Detail, 2010)



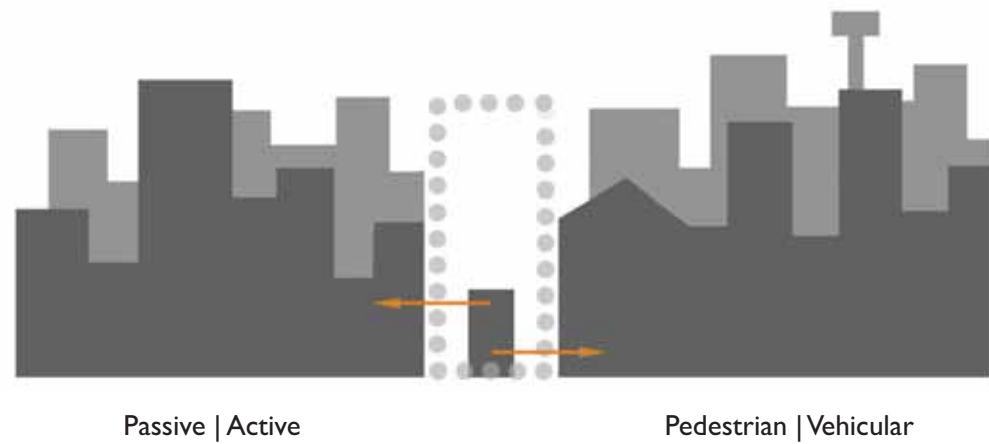
Figure 5.35. Pedestrians using the z-shaped path that traverses above vehicular traffic. (Detail, 2010)

Figure 5.36. Section through the urban park, railway line and arterial road. (Detail, 2010)





## Object | Subject



The placement of buildings affects the manner in which people interact with them. The Berral's building (object) left on the urban island has lost its responsiveness to the urban fabric. It is a free-standing building that does not respond to the greater urban fabric and is in tension with the surrounding context (subject). It related to the surrounding urban fabric when it was part of the city environment. Since then, the city has developed around the urban island leaving the existing building in isolation. The urban island and its contents have become lost space.

The continuity of landscape that should connect the city with surrounding regions is interrupted and the buildings do not form a coherent link into the city. Redefining the kind of space that gives structure to urban environments allows for environments in which connective space, instead of individual buildings, can knit together the city fabric (Trancik 1986: 23).

The city has singled out the urban island and as a result the Berral's building varies in scale to its surrounding context. Lynch describes the creation of a landmark as physical elements of the city that vary widely in scale. He further describes that a landmark will become more identifiable and more likely to be chosen as significant if they have a clear form; if they contrast with their background; and if there is some prominence of

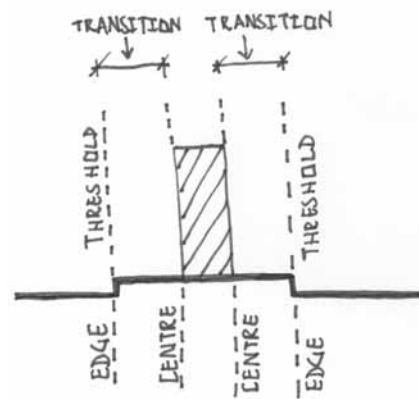
spatial location. The Berral's building satisfies all of Lynch's definitions of the creation of a significant landmark. The building has a clear form and is situated at the intersection of 2 major arterial roads. The building is set-back from the edge of the urban island and is in contrast to its surrounding context. It can be seen that the isolation of the Berral's building and the recognition it receives as a landmark is as much dependant on context as on the form of the object itself (Lynch 1960: 78 – 85).

Figure 5.37  
The Berrals building as a significant landmark.  
(Author, 2010)



## Spatial Tensions

### Centre | Edge



Edges in all senses represent places of tension, of intensification and often of conflict. Porter (2004: 66) states that edge conditions refer to the places where social territories meet. The existing urban island is situated at the intersection of four functional areas that contain their own unique social characteristics which require special attention as they mediate between very different social and physical conditions, generating complex and often competing priorities (Porter 2004: 66). The urban island has ill defined edges and fails to create boundaries that coherently connect different elements of the city together.

Porter describes gateways as defining the intersections of pathways and boundaries. A gateway marks boundaries and edges in order to create psychological transitions between 'conscious' and 'unconscious', 'past' and 'future' and physical transitions between 'inner' and 'outer', 'public' and 'private'. It also marks the difference between a sense of 'arriving' and a sense of 'arrival'. They form an integral part of boundaries, and interface between different kinds of activities. The urban island is situated in such a position that it can act as a gateway into the city yet the sense of transition that can be created by changes of topology, light and surface is not evident due to its detachment from the urban fabric.

Figure 5.38.  
Ill-defined edges around the urban island and along Nelson Mandela and Skinner Street (Housing Module Group, 2009)





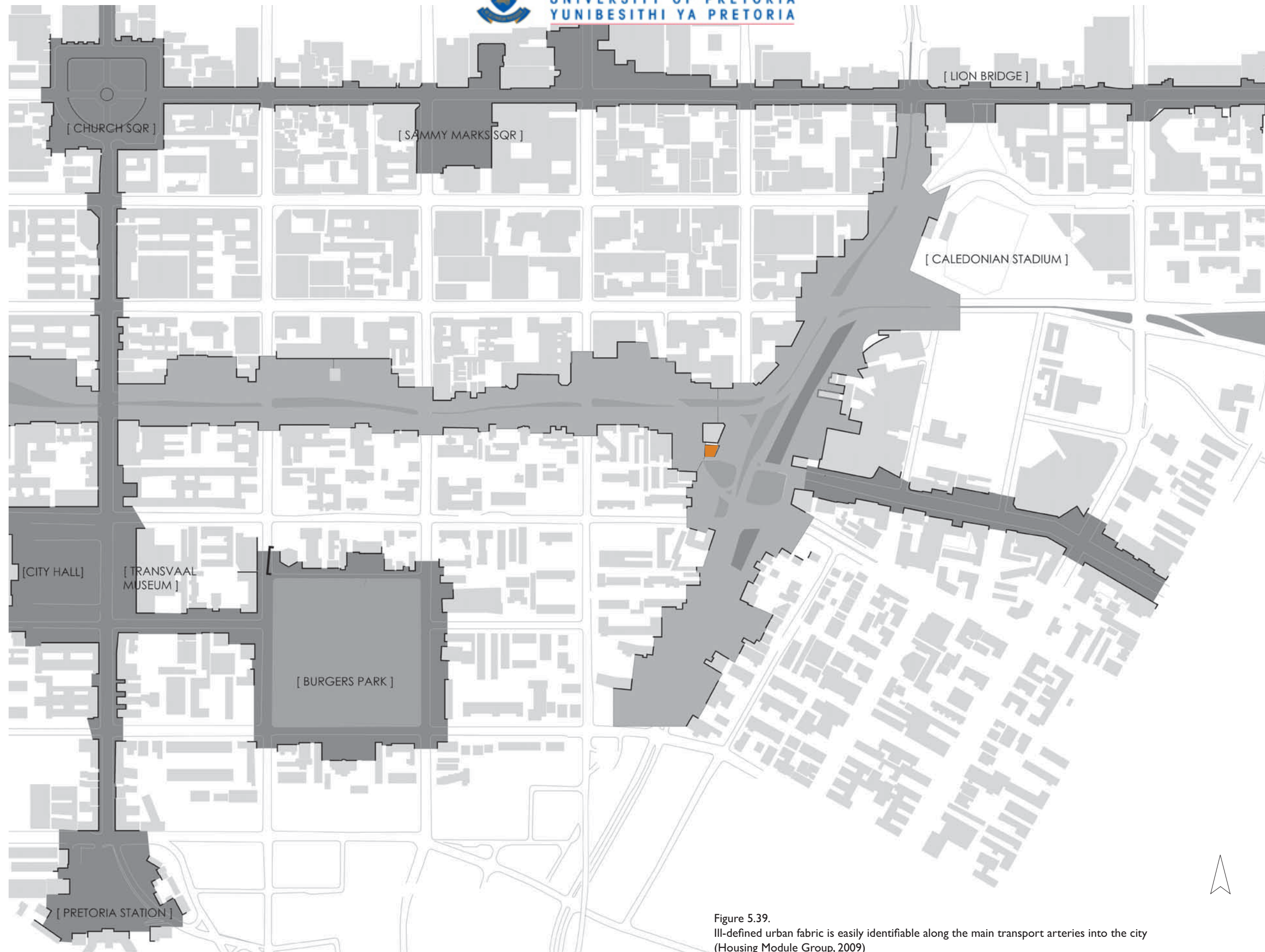
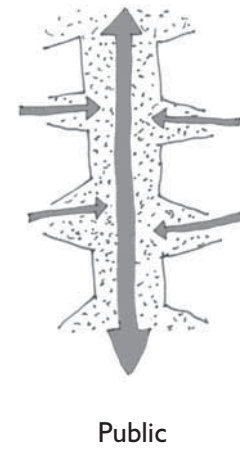
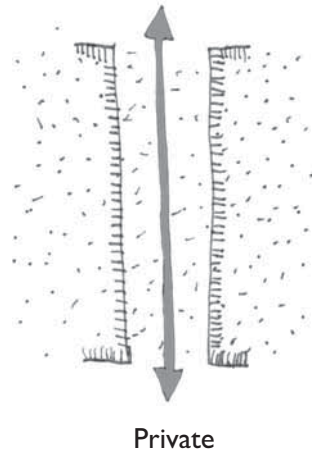


Figure 5.39.  
Ill-defined urban fabric is easily identifiable along the main transport arteries into the city  
(Housing Module Group, 2009)

Public | Private



Public spaces in the city can be inviting and easy accessible and thus encourages people and activities to move from the private to the public environment. Yet, public environments will either invite or repel subjects based on how the public environment is placed in relation to the private and how the border zone between the two areas is designed. Flexible boundaries in the form of transitional zones that are neither completely private nor completely public will often be able to function as connecting links, making it easier, both physically and psychologically, for people and activities to move back and forth between private and public spaces, between in and out (Gehl 2006 : 113).

The transitional space between that of the private residences of the Berral's building and the public environment is not defined. Physically and psychologically the transition between moving from the private to a public environment is disorientating. As a person moves out of the apartment block into the public environment they are left in no man's land and are disoriented. There is no transitional zone between the public and private.

Figure 5.40.  
The Berrals building isolated within "no man's land".  
(Author, 2010)





## Design Objectives

The tensions that have been identified have helped to formulate objectives for the program for the new architectural intervention.

These objectives are:

- Creating the African metropolis as a cosmopolitan entity, a place where all differences mix together, whether ethnic, racial or religious.
- Understanding the importance of flux, flow and connectivity. These elements have been and still are what make a city what it is.
- The design of democratic environments that are inclusive rather than exclusive.
- Returning the memory of how the urban island functioned before it was isolated.
- Establishing the importance of the urban island as an intersection of various functional areas.
- Establishing the urban island as a point of linkage and connectivity thereby maximising connectivity and legibility of the urban fabric.

The influence of a city does not depend on how strong its industries are, how extended its infrastructures are or how big its finances are. It is rather dependant on how ready the city is to transform its material power into cultural and symbolic capital. Three things make up the notion of a cultural and symbolic capital (Bremner 2004: 13):

- A series of formal institutions: museums, libraries, theatres, monuments etc.
- A set of public life infrastructure: parks, cafes, boulevards, restaurants, clubs – without which urban life is hardly possible.
- A series of cultural practices and a place to debate which offers the city a self representation of itself.

Everyday life is characterized by moving between various settings and experiencing different environments rather than being defined by a single building (Kaiji 2001: 83). The proposed site for the architectural intervention is located at the intersection of several functional areas. On the periphery of the urban island, transition occurs

whereby people move from Sunnyside (the place they live) to the city centre (the place they work). This is the quickest and safest route to move from Sunnyside to the city centre. As a result the passage along which people traverse along is always busy throughout the day and is a passage of transition from one area of the city to another. Can this passage of transition be redirected onto the urban island thereby establishing a new relationship with the existing urban fabric?

There is a clear distinction between where people live, work and play. Yet, as a result of new modes of transport and communication, the four urban functions of working, living, leisure and transport, which Le Corbusier deployed in his model of the city, can no longer be separate from one another either spatially or socially (Bouman, Mulder 2002 : 72 - 74). This lends itself to a program that is hybrid in nature. A mixed-use program that creates a new attractor for the district not detached from everyday life – a public intellectual playground for citizens. The new architectural intervention will be a hybrid conception of society and space.



Figure 5.41.  
A Hybrid of Relationships(Author, 2010).

### Client

The necessity for an architectural intervention that accommodates a diverse mixture of activities that is not detached from everyday life is evident. As a result of the hybrid nature of such a project, the client for the project will be the city of Pretoria and a number of different stakeholders. The stakeholders will have different levels and types of investment and interest in the new project while the city of Pretoria's interest will be that of investing into a project that could provide the city with better legibility and which would start revitalising the Nelson Mandela Corridor. The different stakeholders will be the general public.

**Precedent: Möbius House**

Location: Het Gooi, Netherlands (1993 -1996)

Architect: UNStudio

Program: Live, Work, Sleep, Play

Concept:

The organizational and formal structure of the Möbius house is based on a double-locked torus, the Möbius strip. The intertwining trajectory of the strip relates to the 24-hour living and working cycle of a family, where individual working spaces and bedrooms are aligned but collective areas are situated at the crossing points of the paths. In a similar manner these unfolding lines are materialized with glass and concrete, swapping the conventional use of these materials (UNstudio 2010).

The Möbius loop integrates programme, circulation and structure seamlessly. The house interweaves the various different activities – work, live, play - into one structure. Movement through the Möbius loop follows the pattern of an active day.

Figure 5.42. (right) Möbius strip (UNStudio, 2010)

Figure 5.43. (bottom) Exterior view (UNStudio, 2010).



**DESIGN CONSIDERATION**

This precedent illustrates the manner in which the hybrid nature of a home and the interaction of all its different functions/activities are represented both physically and spatially.



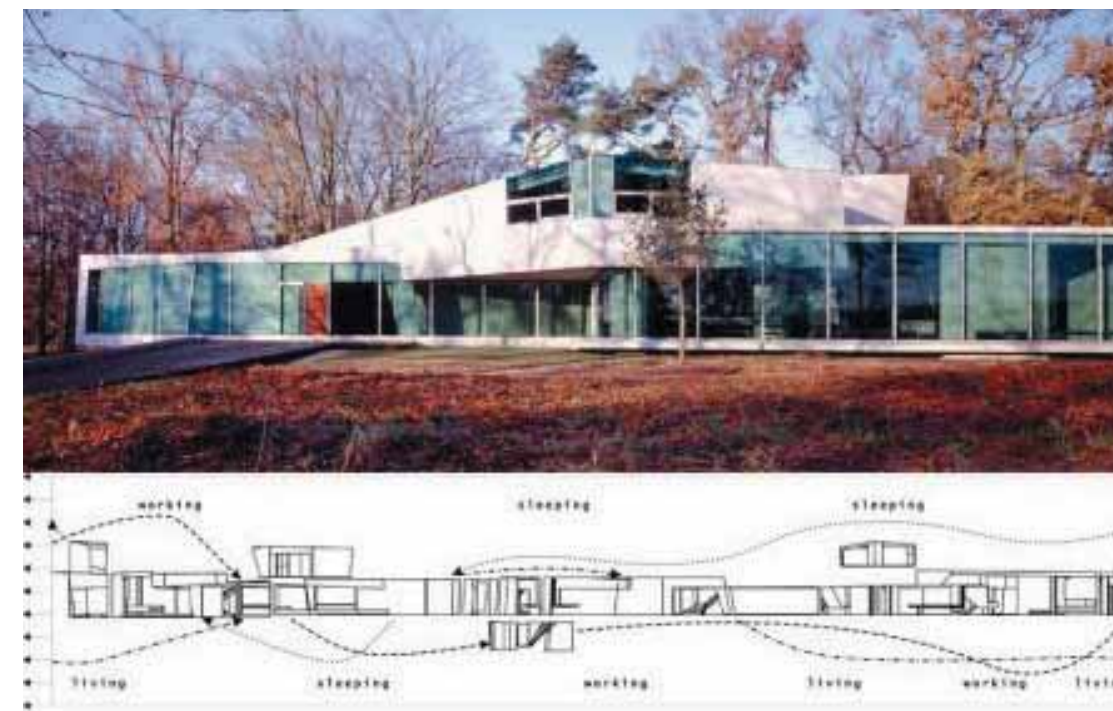
interaction of different spaces/activities by swapping the conventional use of materials (UNStudio, 2010).



Figure 5.45. Interaction of different spaces/activities by swapping the conventional use of materials (UNStudio, 2010).



Figure 5.46. (below) The interweaving trajectory of the Möbius strip relating to the 24-hour living and working cycle of a family (UNStudio, 2010).







### Precedent: Yokohama International Port Terminal

Location: Yokohama, Japan

Architect: Foreign Office Architects

Program: Transportation hub: Shops, restaurants, multiple traffic facilities.

Concept:

The Yokohama International Port Terminal is a new type of transportation space integrated with urban facilities. The building was conceived as an extension of the pier ground rather than the building being an object that would sit on the pier, detached from its context. The building accommodates the terminals, and creates a large urban park on the roof of the terminal. The building is designed as an extension of the urban ground.

To ensure maximum urban life throughout the terminal, the building is organised around a circulation system which challenges both the linear characteristic of piers and the direction of circulation. Rather than the conventional gateway flows of fixed orientation, the terminal uses a series of programmatically-specific interlocking circulation loops designed to produce an uninterrupted and multi-directional space linking the upper landscape with that of the lower decks. The tectonic system of the folded surface maximises the terminal's flexibility – both hybridising the circulation, program and structural system and exploiting their differences to produce spatial variety (FOA, 2010).

As the terminal maintains a low profile and is an extension of the ground behind it, the terminal does not become an isolated object on the water. It demonstrates the successful stitching of the urban park with that of the lower levels of the terminal and the existing pier.

Figure 5.47. (below)  
The terminal as an extension of the urban ground (FOA, 2010).

Figure 5.48. (bottom left)  
Interior view (FOA, 2010).

Figure 5.49. (bottom right)  
Exterior view (FOA, 2010).

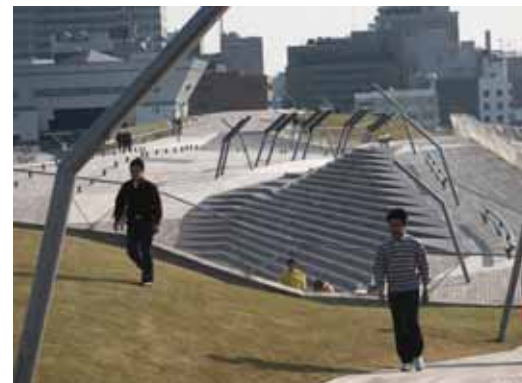


Figure 5.50.  
Exterior view (FOA, 2010).



Figure 5.51.  
The urban park on the roof of the terminal (FOA, 2010).



Figure 5.52.  
The folded surface maximising the terminal's flexibility (FOA, 2010).



## Proposal

From the analysis of the existing tensions that exist within the city of Pretoria, it can be deduced that cities, much like that of Pretoria, operate and evolve over time according to multiple, overlapping, simultaneous and often disproportionate logics that interact in unpredictable ways. The conflicting spatial practices ensure that city building always amounts to a provisional exercise, a permanently unsettled condition that Jane Jacobs (1961) identified as “organized complexity” (Murray 2008: 9).

Henri Lefebvre (1991: 14-18, 38-41) describes social space as not being an inert void within which social action takes place. It is rather a powerful and creative force in its own right. Viewing the city of Pretoria within this spatial perspective allows its urban landscape to be viewed as an evolving field of tensions and contradictions, in which the physical features of the cityscape are saturated with symbolism and meaning and where collective memories and imagined futures are inscribed in the built environment (Murray 2008: 6).

When dealing with the production of space within an urban landscape that is in constant field of evolving tensions, it must be acknowledged that the evolving urban form of cities always involves protracted struggles between contending forces, where the terrain for battle oscillates between mobile “wars of manoeuvre” and static “wars of position” (Murray 2008: 6). In terms of everyday life, the cityscape is a contested terrain of both social discipline and resistance. Ordinary residents who live and work in the city are not just passive recipients of grandiose municipal planning schemes but active agents in carving out places for themselves in the interstices of urban space. Cities function as administrative hubs from which order, control and hierarchy originate but also function as places where these stabilizing forces are challenged and disrupted (Solnit and Schwartzberg 2000: 18-19).

The realm of architecture is seen as being of apparent stability. The traditional role of architecture has been one of reassuring the public that things are under control. The unity and symmetry of monumental architecture refers symbolically to a harmonious and balanced universe, in which contending forces are reconciled. Instead, Lebbeus Woods (Woods 2009) describes architecture as being ‘in tension’, one of restrained force or of forces held in equilibrium. If architecture is thought of as being ‘at rest’ a position of stability and predictability is adopted.

A system of knowledge that privileges these qualities are constructed that underpins one's actions and dictates their goals (Woods 2009). This is the case with planning professionals who ignore the contested nature of the urban landscape. As a result the current trend of reducing architecture to scenography allows free-standing non-contextual objects to be built that create new boundaries, enclosures and mono-functional identities within Pretoria's urban landscape.

Architecture in tension suggests a struggling architecture, and humanity with limited control of nature, and of itself. The forces in such architecture are activated, not pacified. Woods (Woods 2009) regards these forces as straining against the materials holding them. Change is inevitable, as the materials age or tire, or as they are affected by disturbances within or around them. The forces are, in effect, at war with the materials; they want to overcome them; they want to be free of materiality, to flow into the world's vast oceans of energy, from which they will be reborn again and again, in countless cycles of transformation. Understanding architecture in such a manner affects the outlook on architecture and leads to the construction of a knowledge-system based on concepts and processes of transformation (Woods 2009).

The idea of transformation within a spatial field of tension is to understand the inter-dependence of the elements in the field and more importantly their inter-connectedness. The city performs as a space for the contested urban landscape. The inter-connectedness of the city acting as a whole comes with a price as each person within this spatial field of tension will feel the increase in tension produced by others. Uncertainty of where the next pressure point will increase the tension in the system (Woods 2009). This notion that architecture and the city are in a permanently unsettled condition are strengthened by Jane Jacobs (1961) and her idea of the city being in a state of “organized complexity”.

As a result of the ever-changing nature of the city of Pretoria the last two decades have seen the closure of major upscale service oriented businesses and the decline of middle-class retail shopping and leisure venues. These changes have gone hand in hand with the changing nature of socio-economic activities in the inner city, the shifting social composition of urban residents, and a dramatic transformation in the functional uses to which



city buildings, open places, and streets are put. To a certain extent, the physical decay of the inner city has been brought about by the inability of the built environment to accommodate the changing functions and uses of city space (Murray 2008: 70).

### Objective

The aim of the architectural intervention is to try and understand the spatial and functional opportunities presented by city and its tensions. The built environment has failed to accommodate changing functions and new uses of city space as a result of the city centre not being able to adapt to the changing nature of the spatial field of tensions. The new architectural intervention will be informed by the analysis of the existing tensions within the city of Pretoria. Thereafter, the changing functions and new uses of space that exist within the city will be identified. Future trends will also be identified. Having such informants as the basis for the design of a mixed-use development will provide the necessary tools in being able to accommodate the diversity of functions and facilities in order to better serve an urban society in flux.

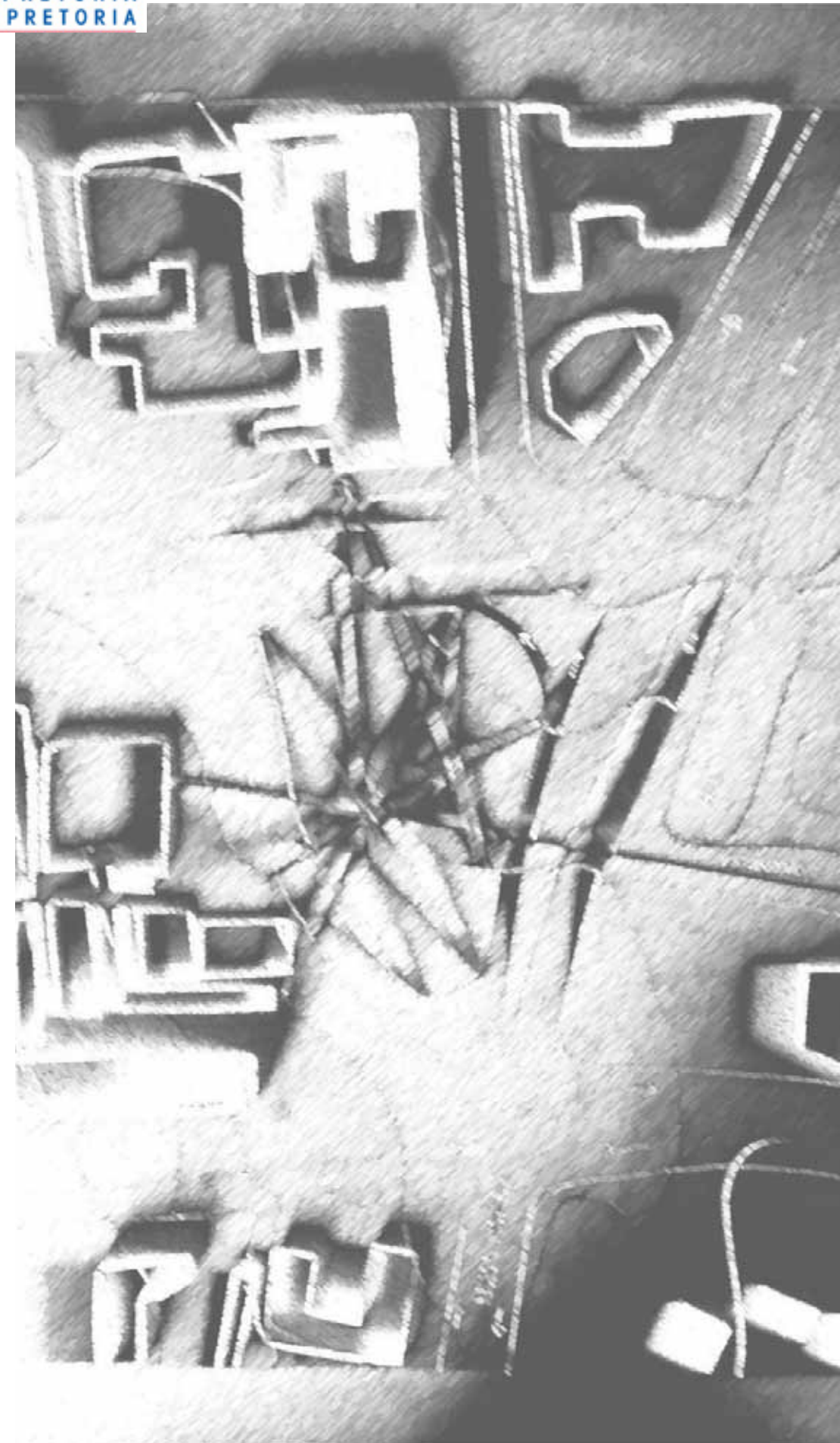


Figure 5.53.  
The urban island within a spatial field of tension  
(Author, 2010)



## 06. Design Development

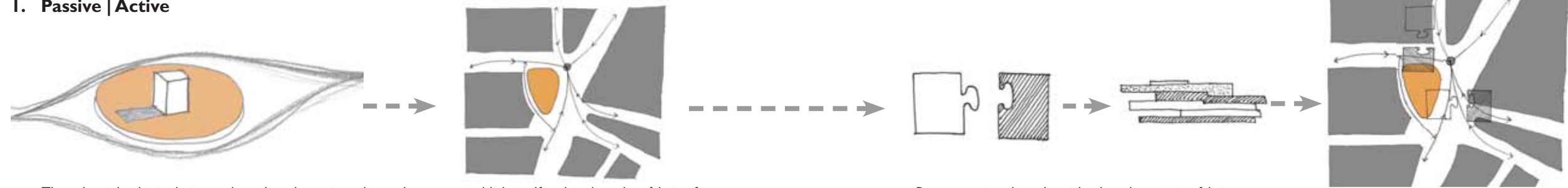


## A Spatial Field in Tension

From the analysis of the tensions that exist within the city, four were highlighted in hierarchical order. These tensions highlight pertinent aspects that need to be addressed in order for the new architectural intervention to be successful.

Figure 6.1  
Concept Collage (Author, 2010).

### 1. Passive | Active



- The urban island is isolation and needs to be activated in order to re-establish itself within the urban fabric of the city. By connecting to the existing fabric functionally, spatially and physically, the urban island will be able to accommodate a variety of different functions.

- Re-connecting the urban island to the existing fabric.

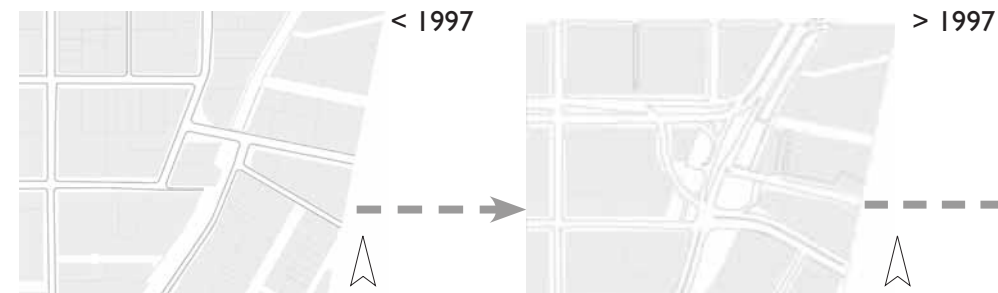
### 2. Park | City



- Creating an urban park that will provide public green space that is much needed within the city.

- The urban park will accommodate a variety of functions. This will prevent the urban park from becoming an isolated homogeneous entity within the city.

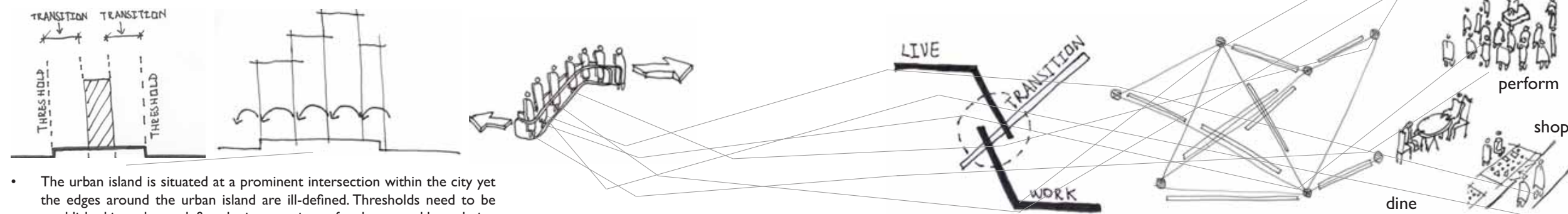
### 3. Old | New



- Establishing a new identity for the Berrals building by re-establishing its relationship to the existing fabric and establishing a new relationship with the new architectural intervention.



### 3. Centre | Edge



- The urban island is situated at a prominent intersection within the city yet the edges around the urban island are ill-defined. Thresholds need to be established in order to define the intersections of pathways and boundaries.



**Concept : A Hybrid of Relationships**

“While the countryside represented eternal sameness, the city was always the work of man and thus subject to the caprices of human nature. In this respect, any city is always in motion, a place of transition and in transition. The city is thus trans-urban.” (Bouman, Mulder 2002: 72 - 74).

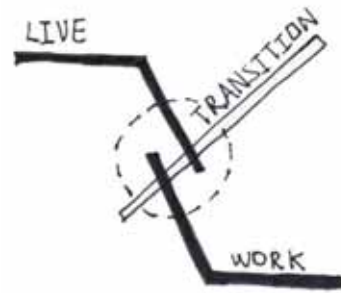


Figure 6.2.  
The idea of transition within a city (Author, 2010).

The idea of the city of Pretoria being trans-urban is evident along the periphery of the urban island. It is at this intersection that people move from their place of work - the city - to where they live - Sunnyside District. Along this path people are moving within a space of transition. In this space, moments of spontaneity occur. The space has allowed people to experiment with the city and to make it work in new ways. The city has constructed new definitions of place replacing the old, race-based seclusions with new boundaries, identities and enclosures. The city has become a interweaving of institutions, practices and value systems of different worlds that overlap onto one another in increasingly complex ways. This complex interweaving of different practices have resulted in hybrid conceptions of space and society that are evident within the city (Bremner 2004 : 24). Can the urban island replace the current space of transition and offer more opportunity for hybridity?

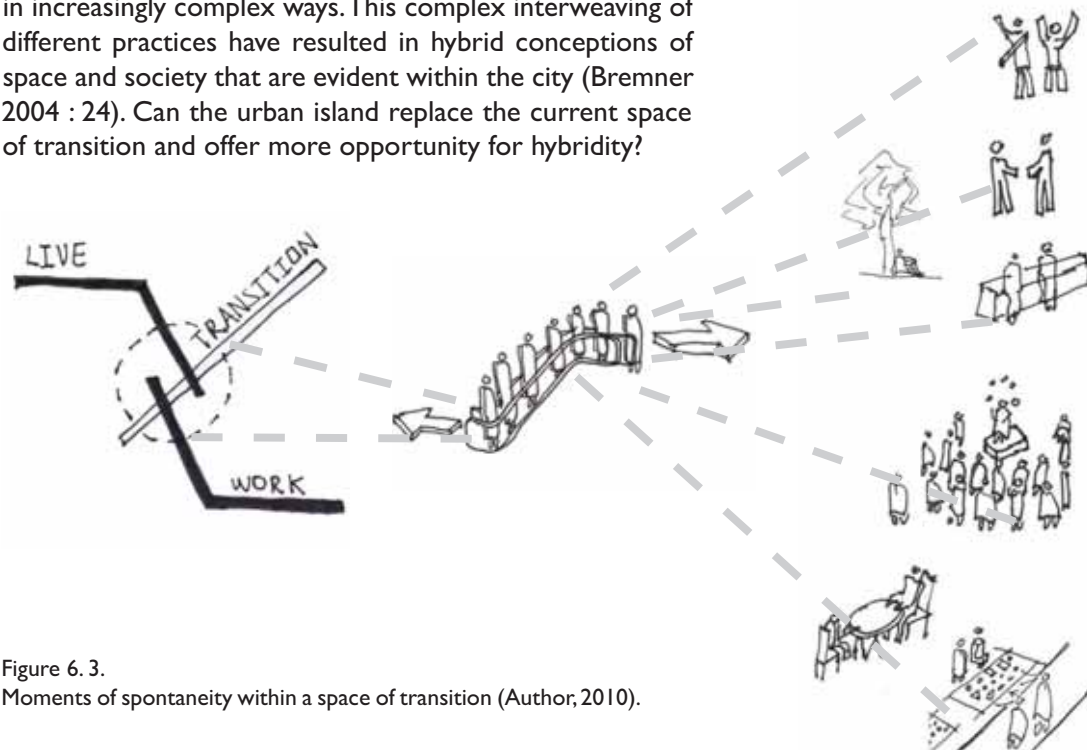


Figure 6.3.  
Moments of spontaneity within a space of transition (Author, 2010).



Figure 6.4. The intersection of Nelson Mandela and Skinner Street - A transitional zone between living and working within a trans-urban city (Author, 2010)



Figure 6.5 : Moments of spontaneity :Appropriation of space along the path of transition (Author, 2010)



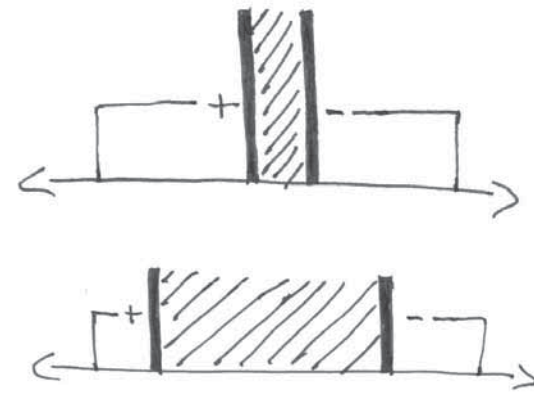


Figure 6.6. Tensions in conflict (Author, 2010)

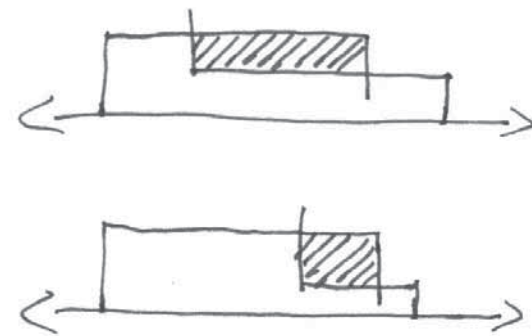


Figure 6.7. Tensions merging (Author, 2010)

Figures 6.6 & .6.7.

Tensions manifesting themselves as two sides of a sliding scale thereby creating opposing forces that are active and not passive (Author, 2010)

The tensions that exist within the context of the urban island are inter-connected to each other while still being inter-dependance (Woods 2009). They are not simply magnetic poles that sit in opposition to each other. Within the context of an individual project and its specific demands, tensions manifest themselves as two sides of a sliding scale. A calibrated judgement is made when dealing with a particular tension at hand. Opportunities and limitations emerge out of these judgements (Wolff 2009 : 178).

The city is in constant transition. It is tran-urban. Tensions exist within this hybrid conception of society and space. It is within this space that tensions merge together or further oppose each other thereby activating space either negatively or positively. The reconciling and conflicting of different tensions creates a hybrid of relationships that is in constant transition.

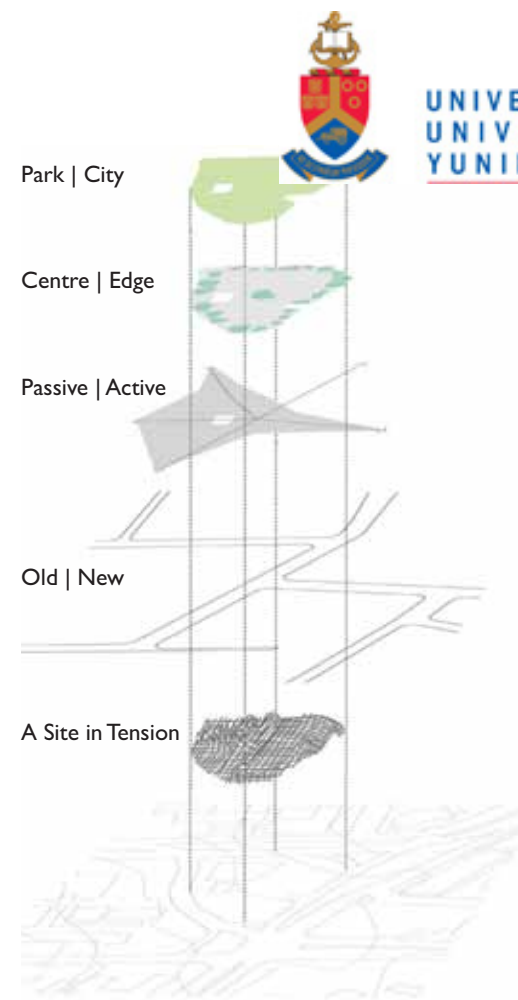


Figure 6.8.

Tensions inter-connected to each other while still being inter-dependent (Author, 2010)

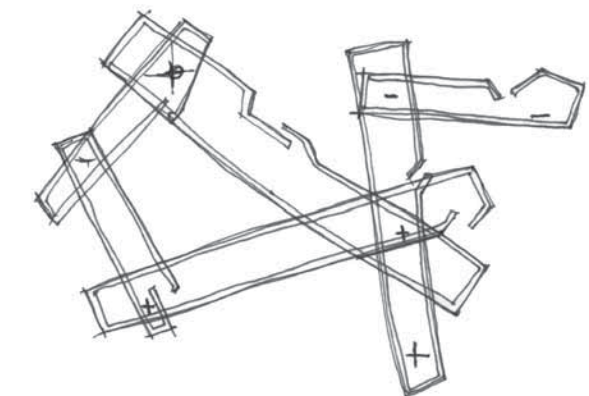


Figure 6.9.  
Inter-connected tensions (Author, 2010)

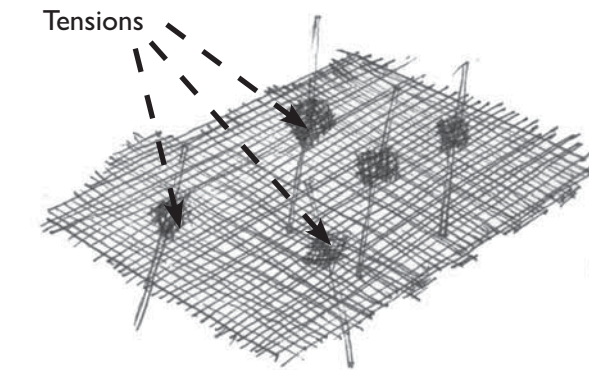


Figure 6.10.  
The city of Pretoria sketched as a piece of fabric. (Author, 2010)

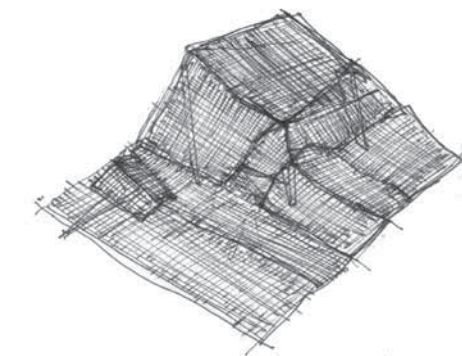


Figure 6.11.  
The affect of tensions on the 'fabric' of the city (Author, 2010)

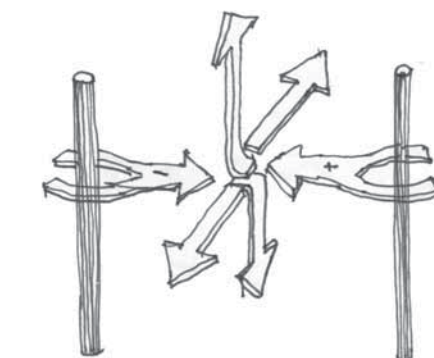


Figure 6.12.  
A hybrid of relationships (Author, 2010)



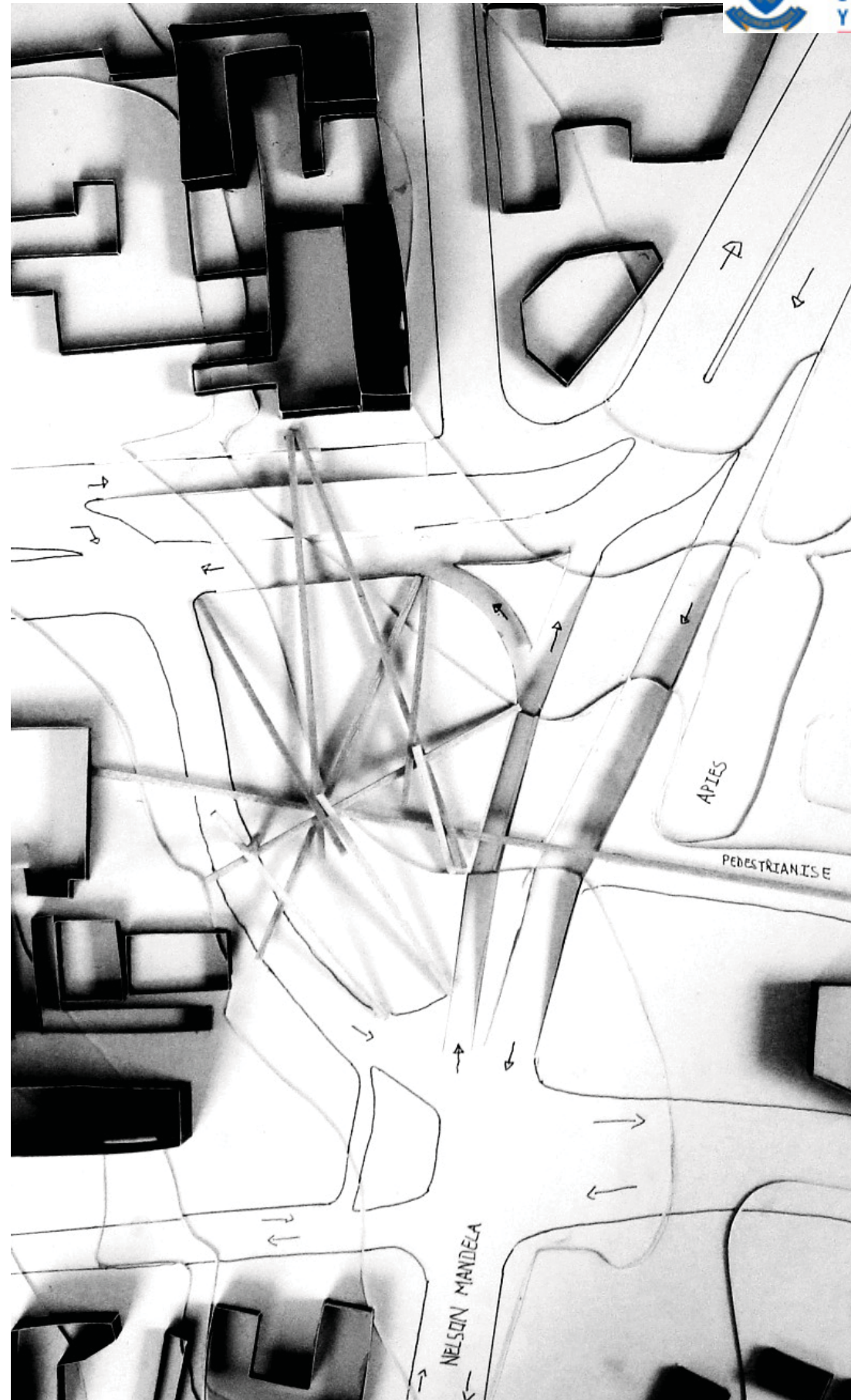


Figure 6.13. Concept Model (Author, 2010)

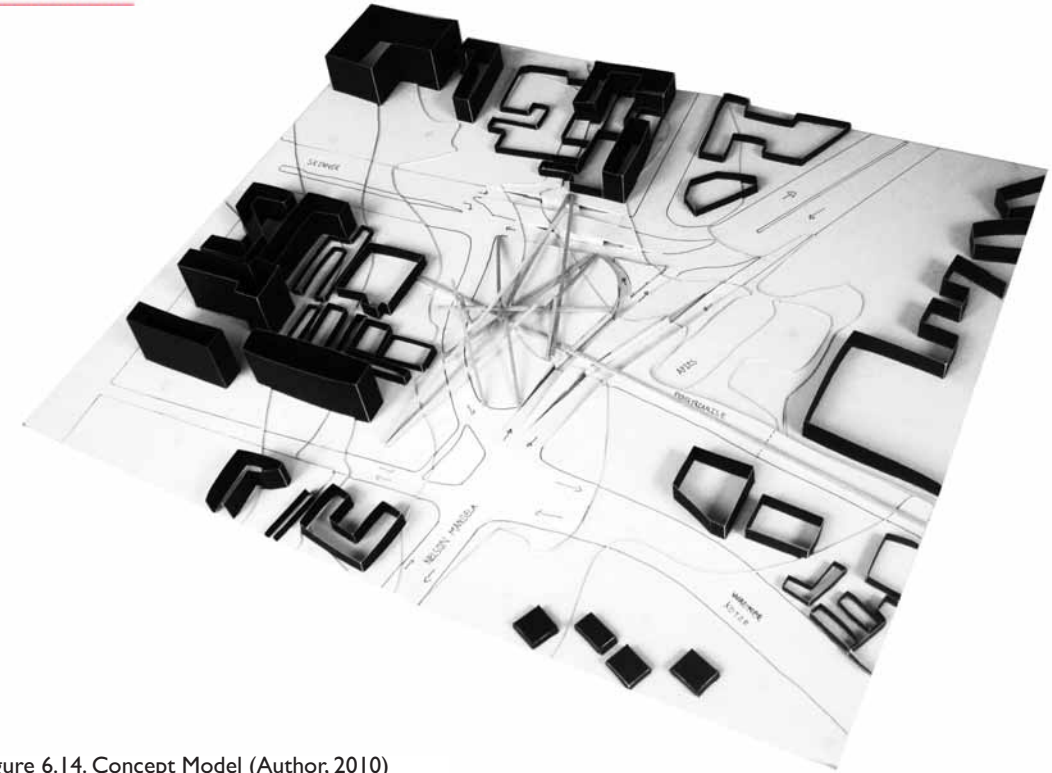


Figure 6.14. Concept Model (Author, 2010)

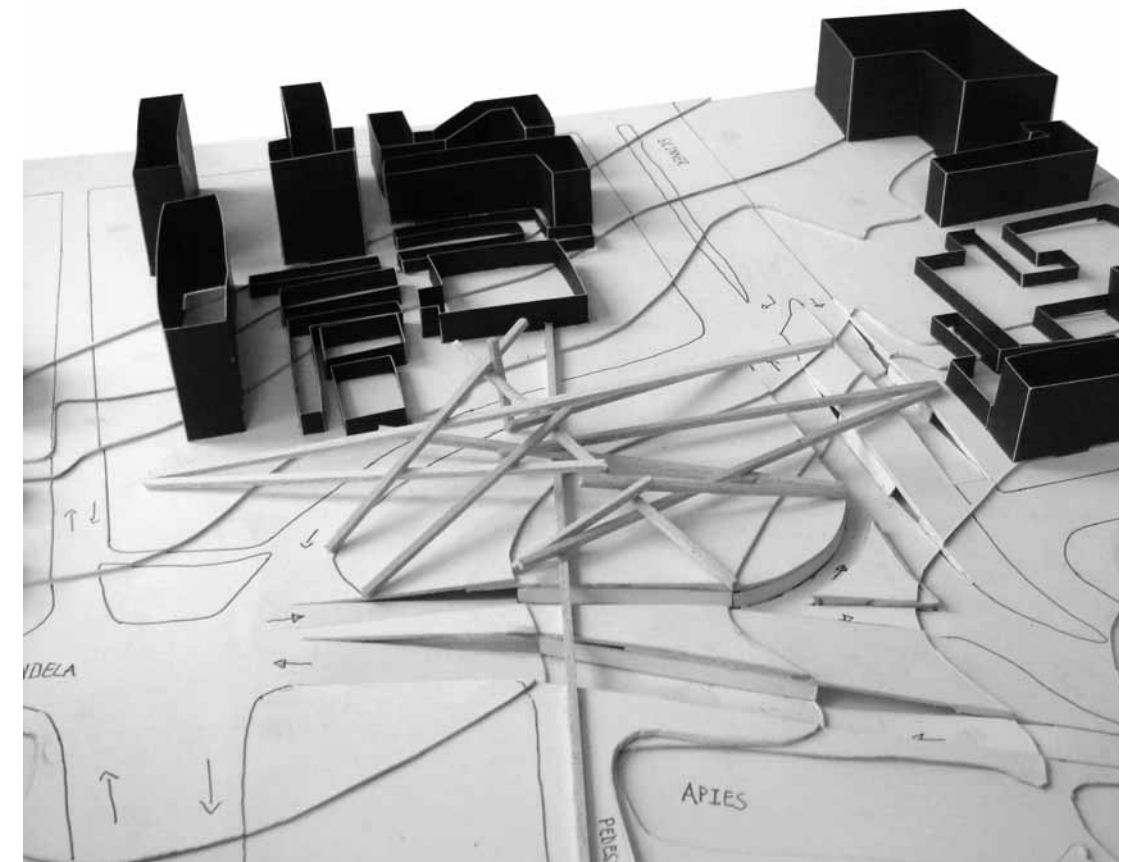


Figure 6.15. Concept Model (Author, 2010)



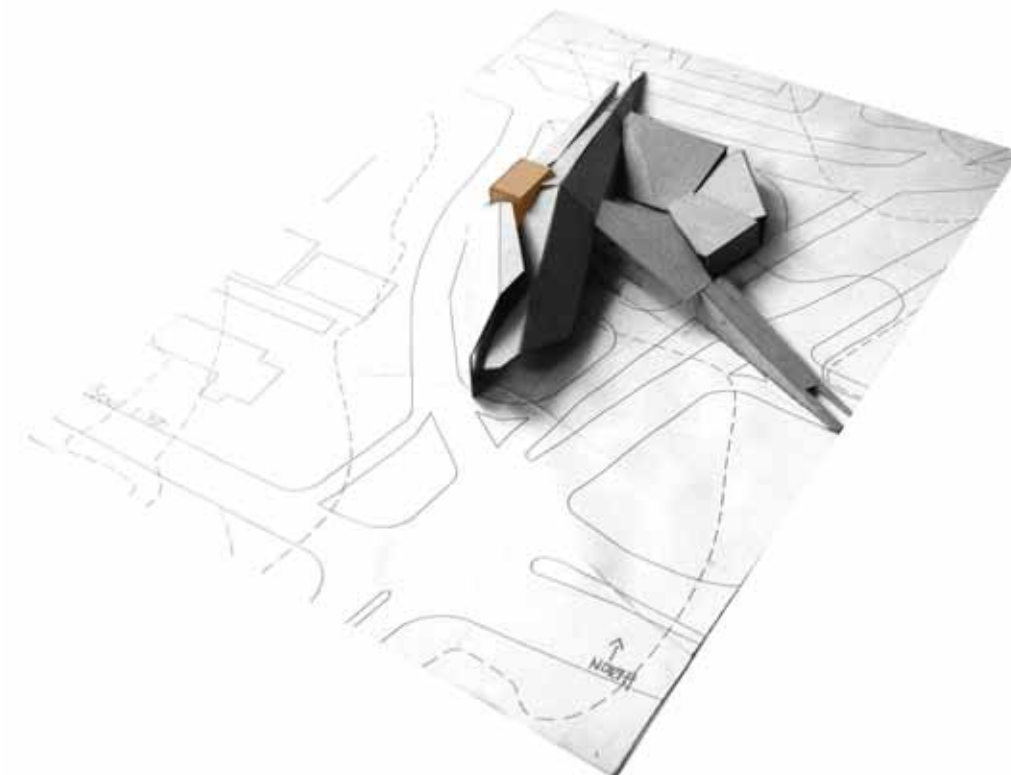
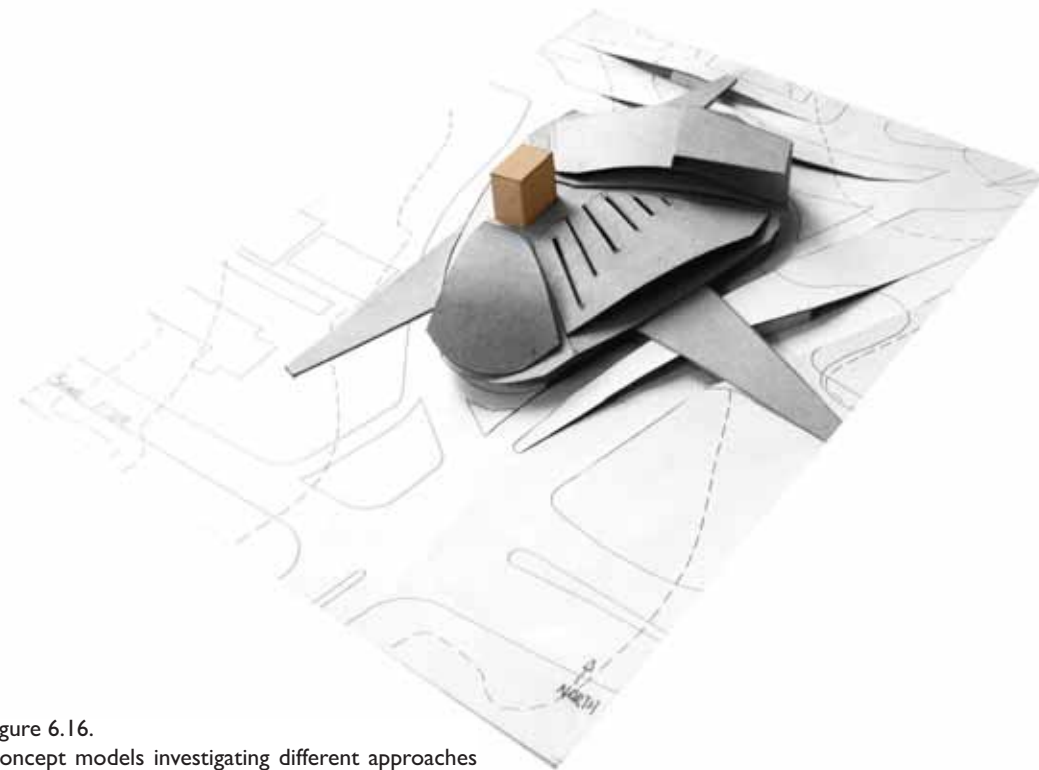
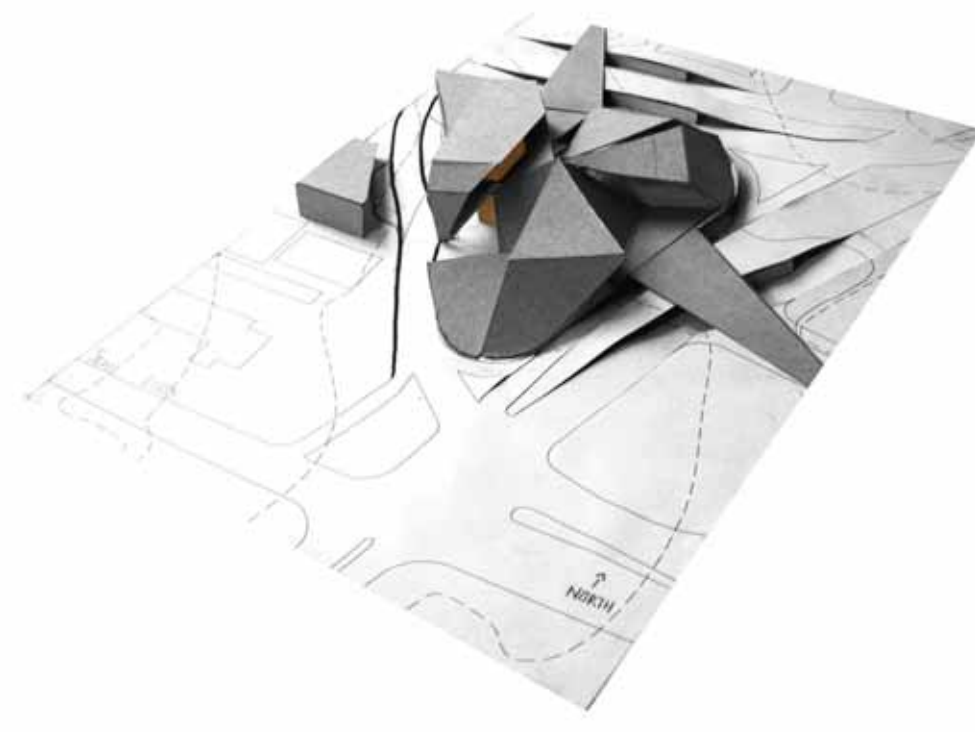
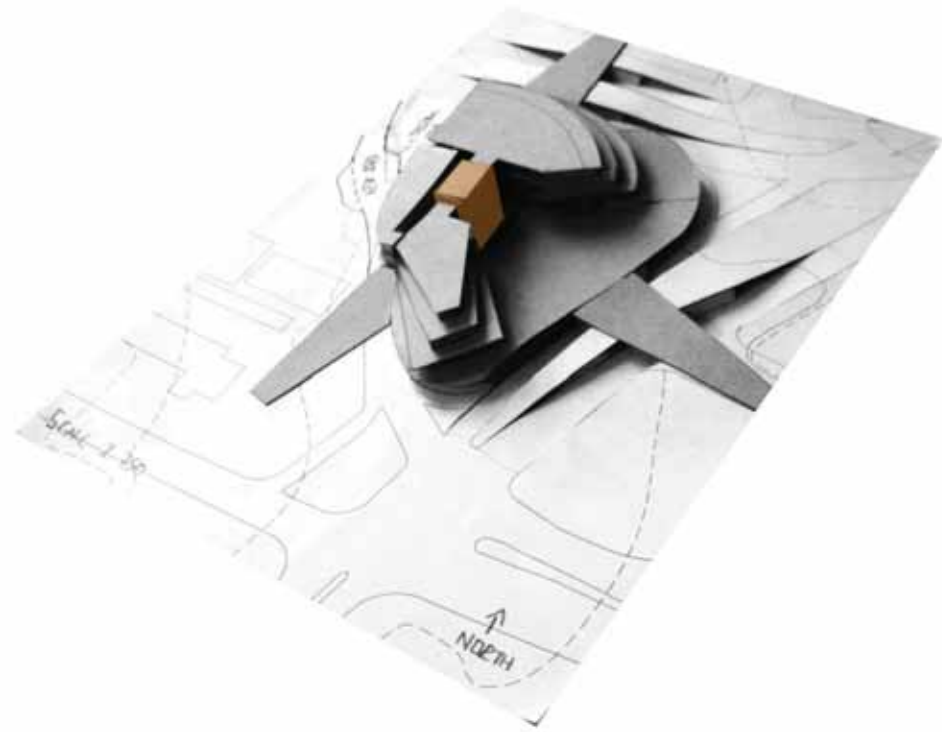


Figure 6.16.  
Concept models investigating different approaches  
in dealing with tensions (Author, 2010)

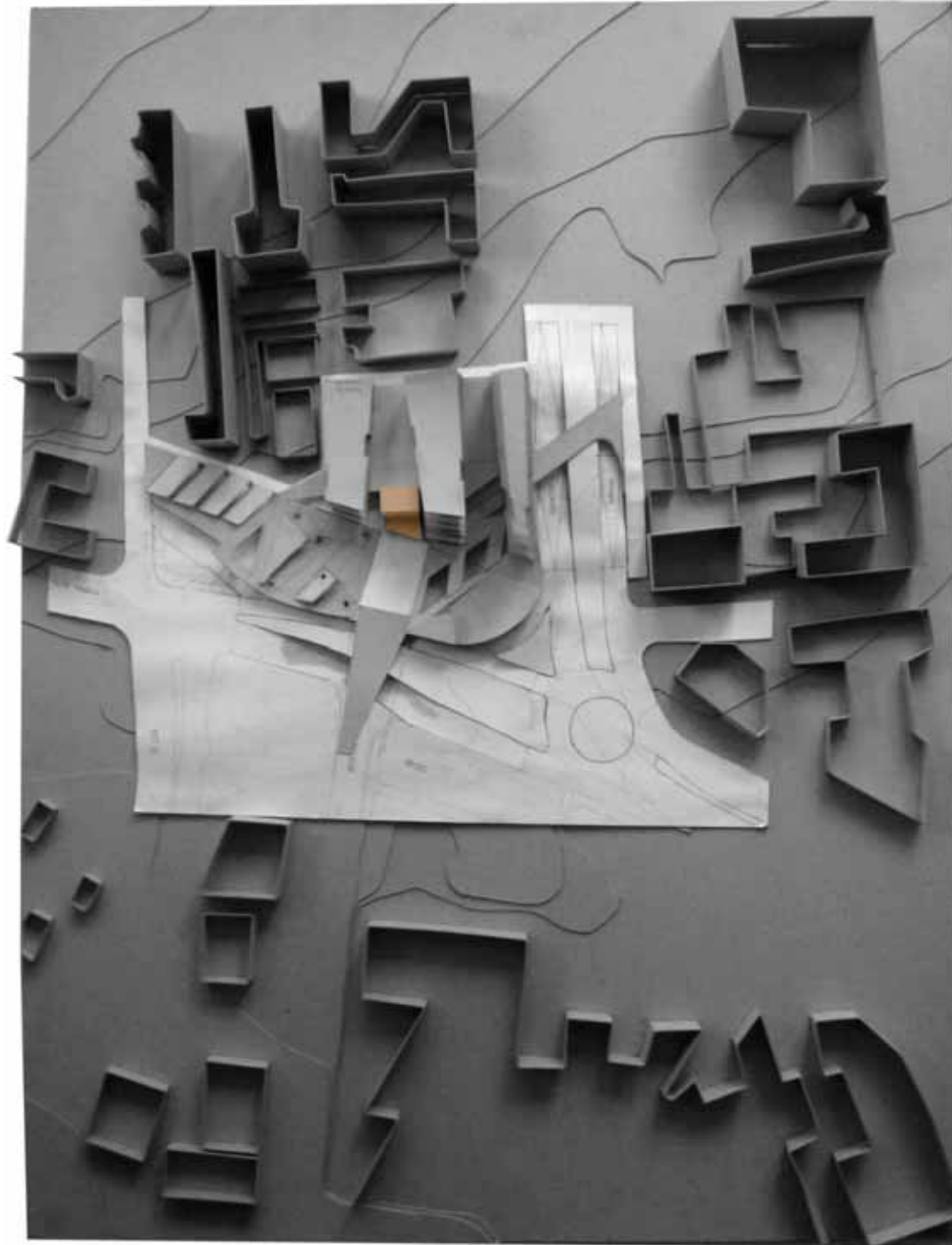


Figure 6.17. Concept model (Author, 2010)

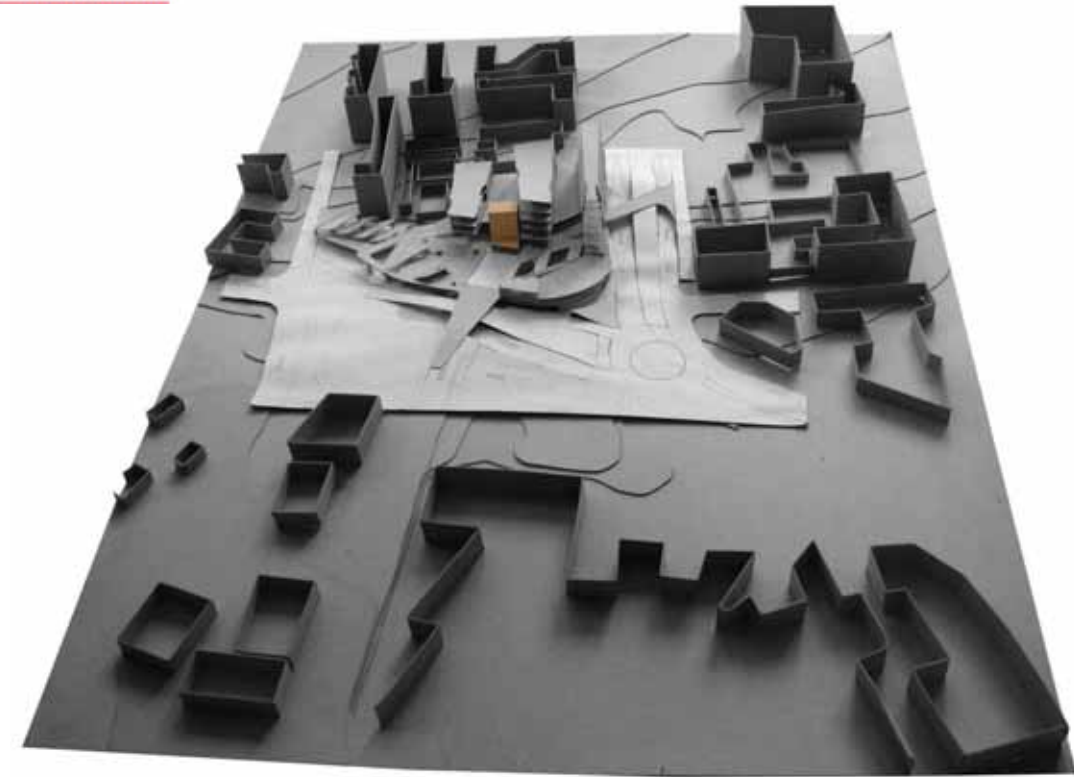


Figure 6.18. Concept Model (Author, 2010)



Figure 6.19. Concept Model (Author, 2010)



Passive | Active

Activating the urban block to connect it to the existing fabric physically, spatially and functionally.

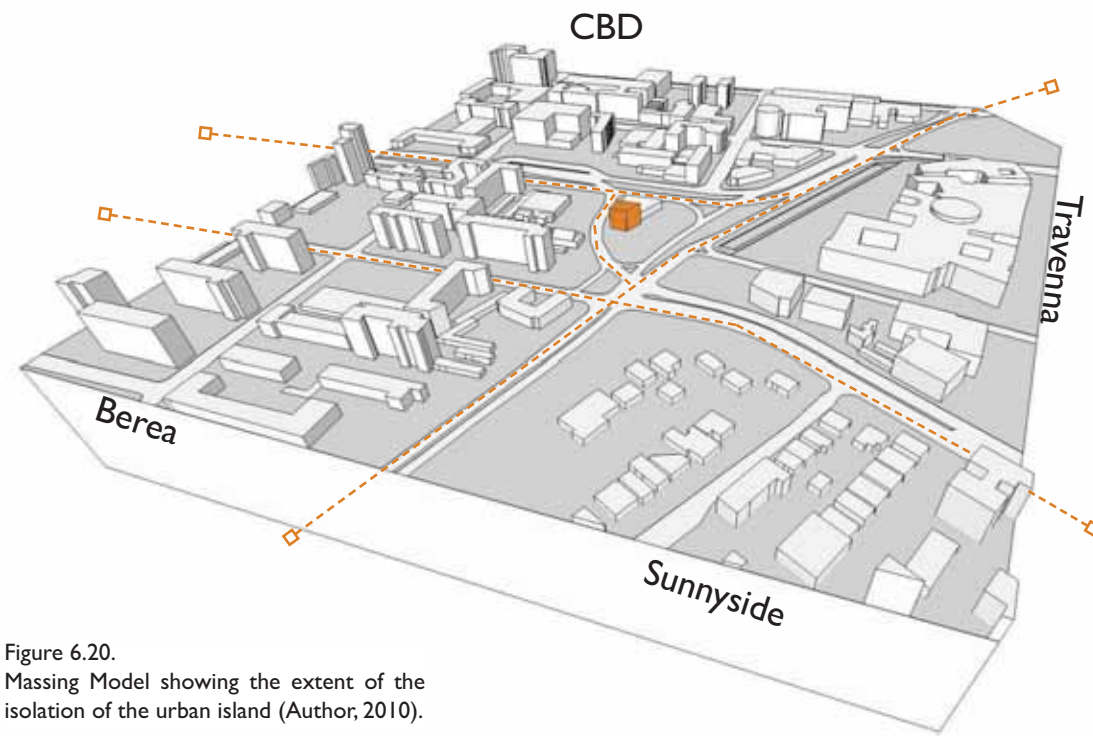


Figure 6.20. Massing Model showing the extent of the isolation of the urban island (Author, 2010).

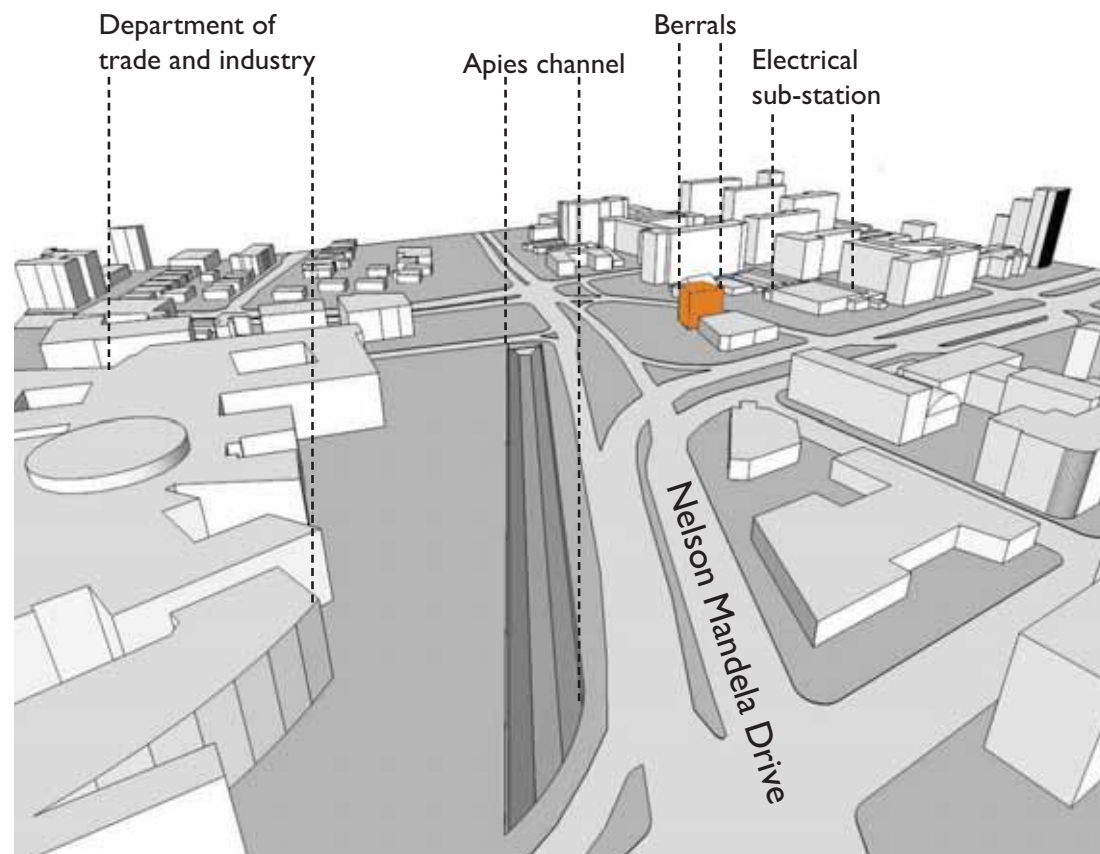


Figure 6.21. Massing Model showing the immediate context around the urban island (Author, 2010)

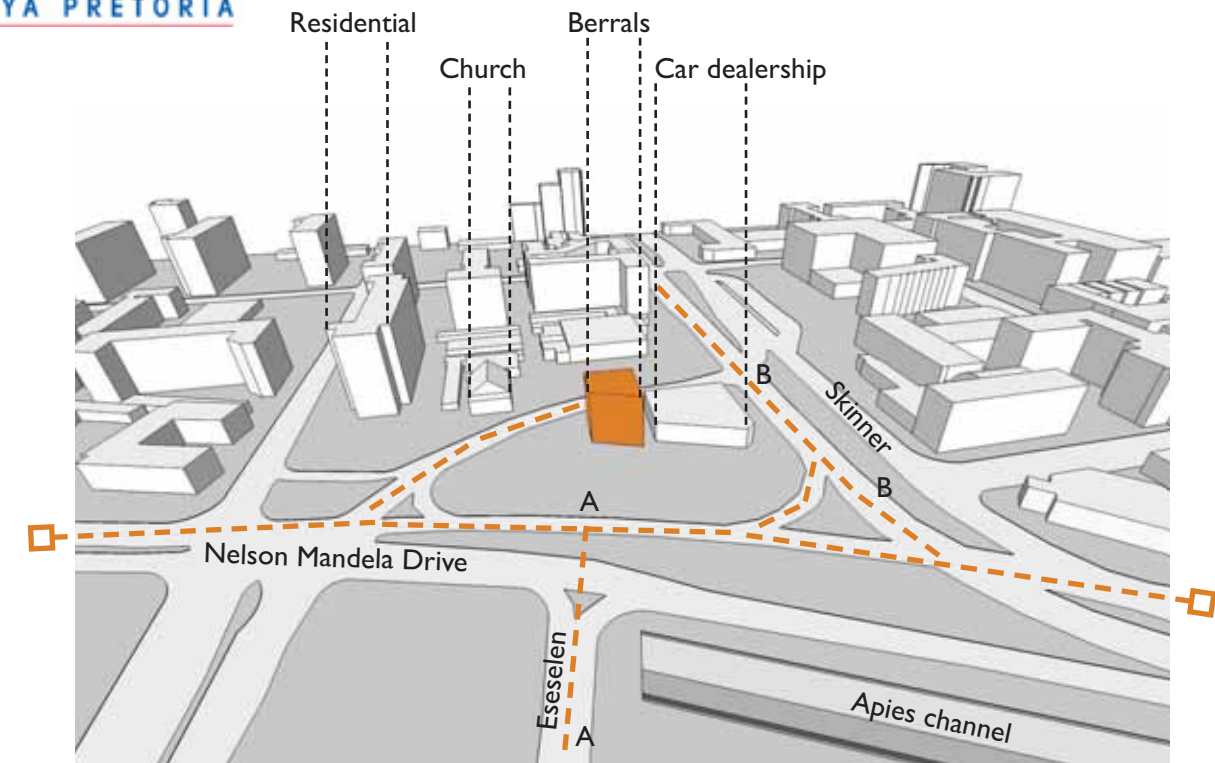
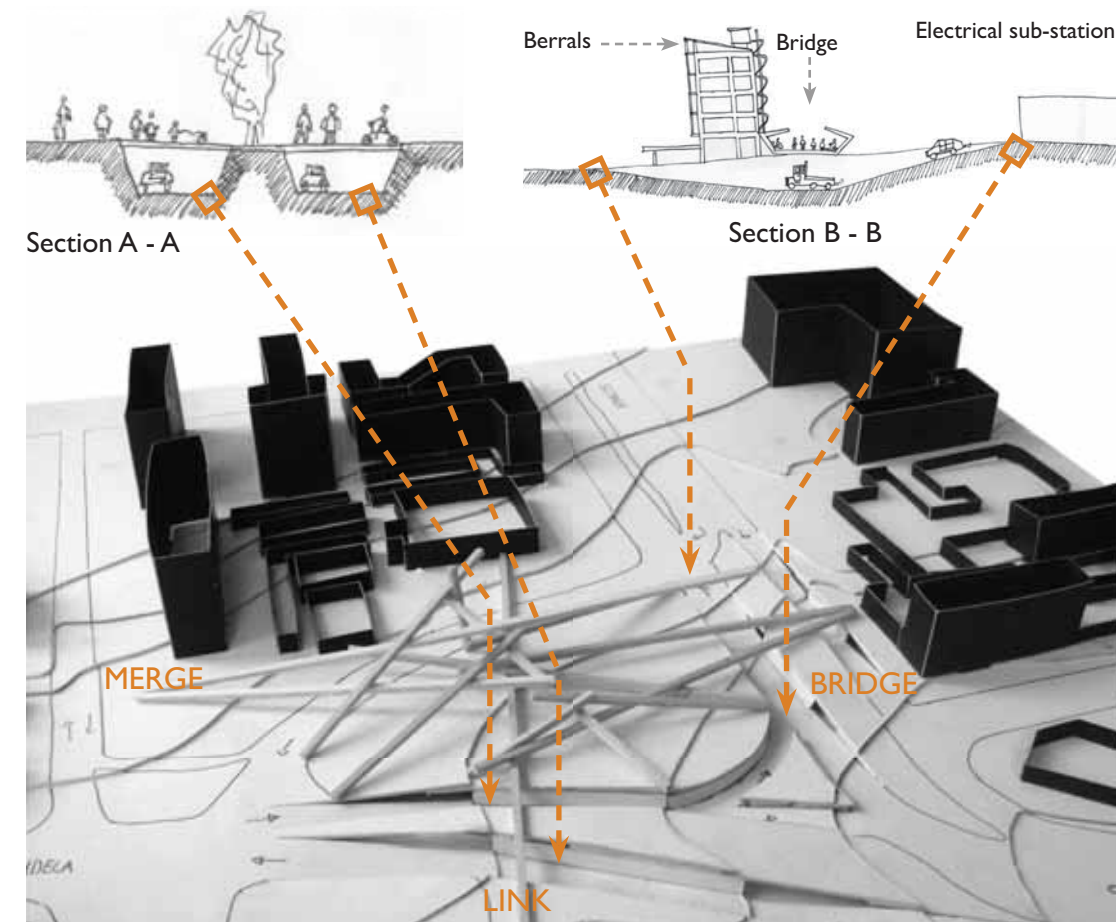


Figure 6.22. Massing Model showing the immediate context around the urban island (Author, 2010)



- Submerging the high volume of traffic along the edges of the urban island, allows for pedestrian pathways to bridge over both Skinner and Nelson Mandela Streets.

Figure 6.23. Concept model showing the submersion of vehicular traffic around the site (Author, 2010)



Traffic circle needed at the intersection of Nelson Mandela and Skinner street to allow for vehicles to turn left when driving down skinner street.

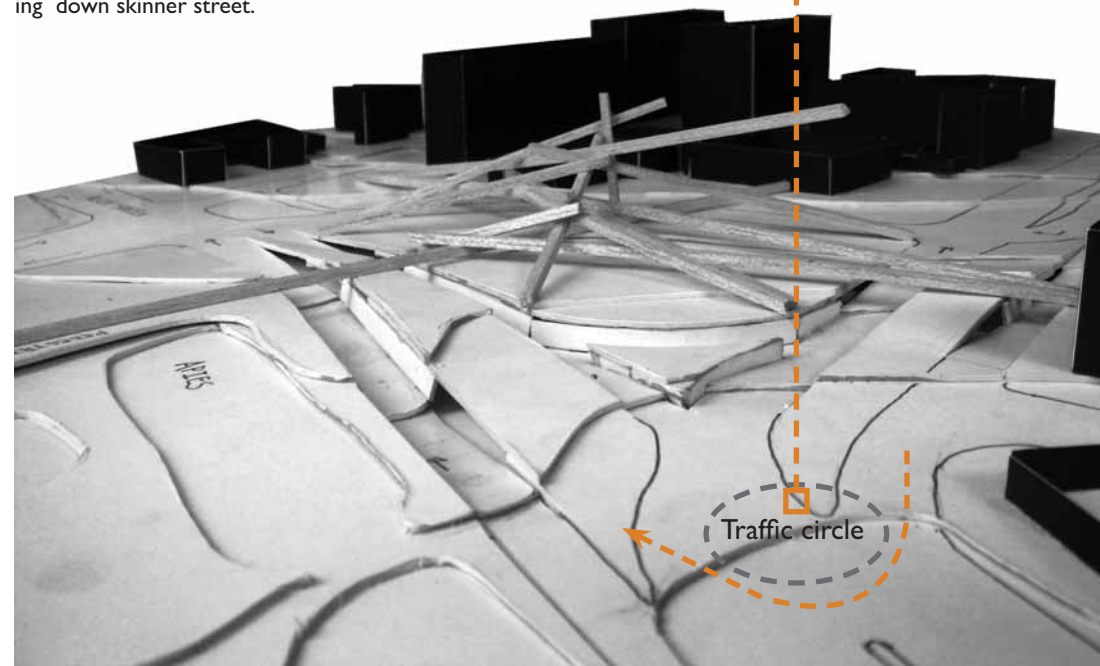


Figure 6.24. Concept model of the corner of Nelson Mandela and Skinner Street accommodating both vehicular and pedestrian movement (Author , 2010)

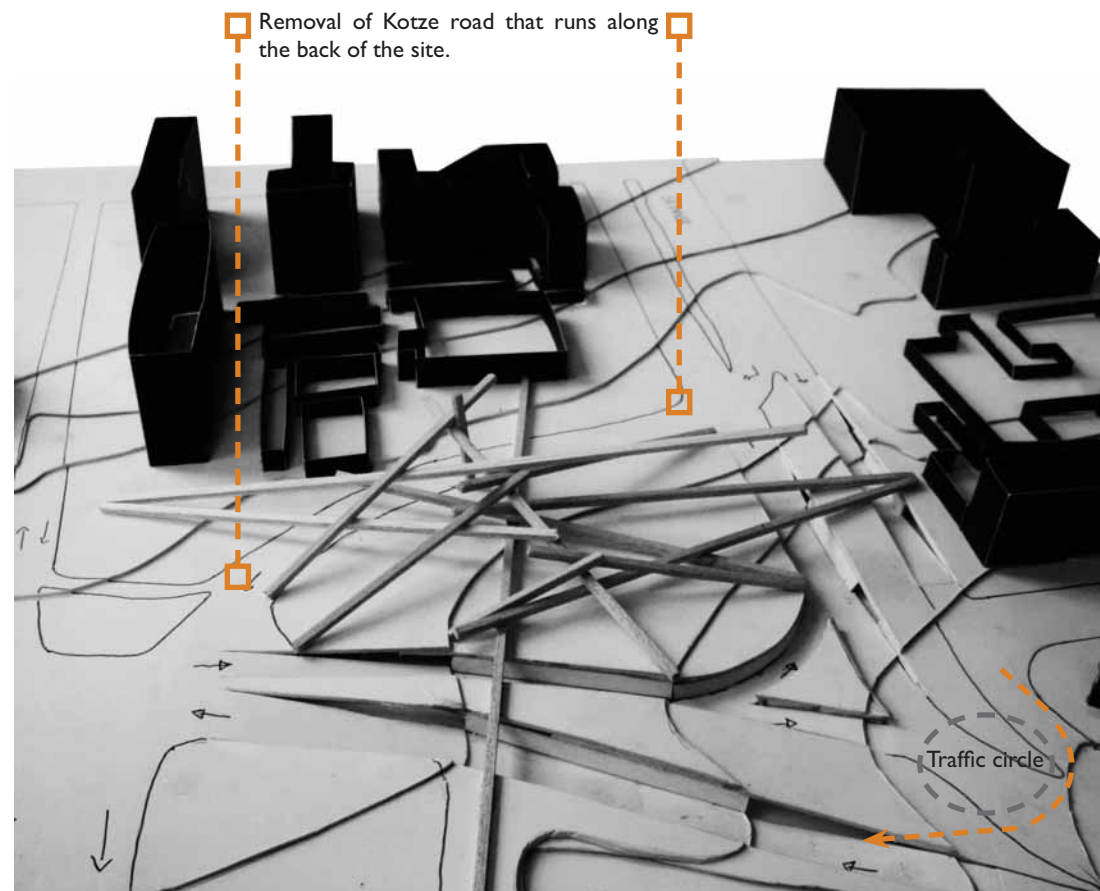


Figure 6.25. Concept model of the corner of Nelson Mandela and Skinner Street accommodating both vehicular and pedestrian movement (Author , 2010)

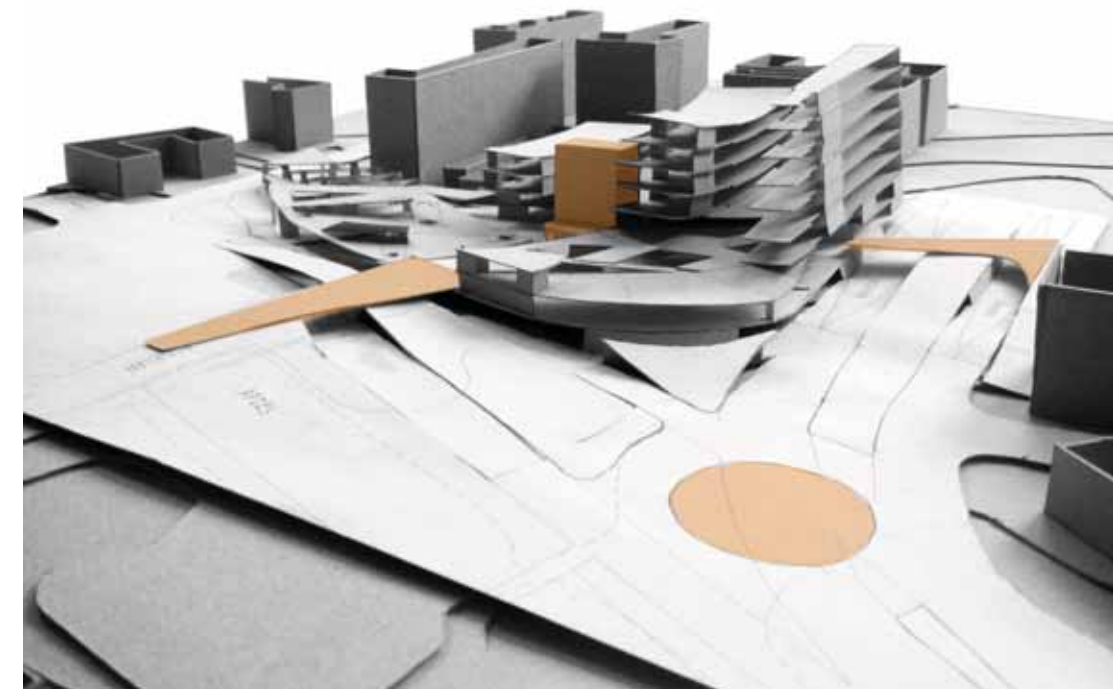
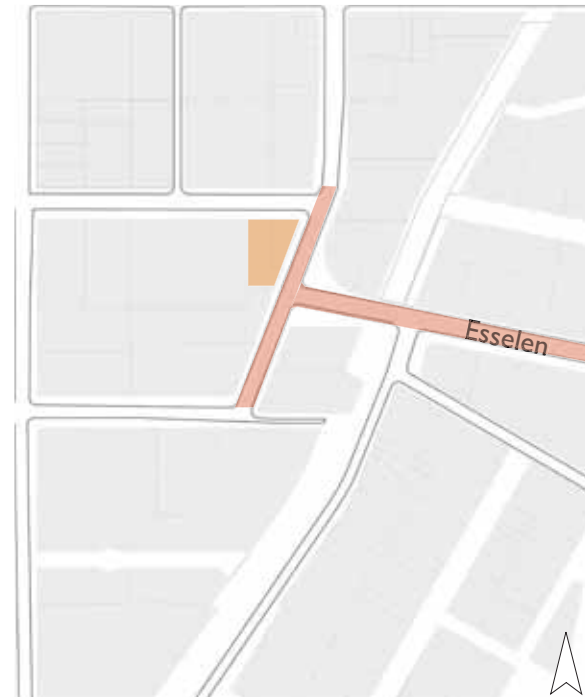


Figure 6.26. Concept model of the mixed-use development indicating how the new architectural intervention connects the urban island to the existing fabric spatially, physically and functionally (Author 2010)



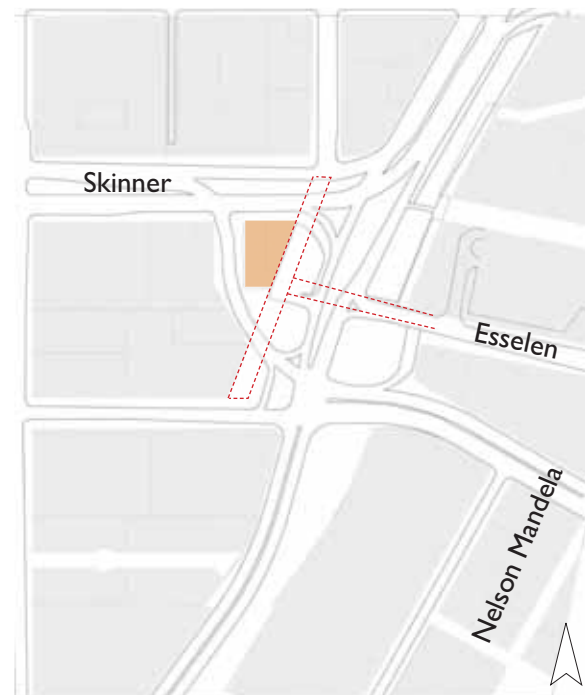
Figure 6.27. Concept model of the mixed-use development indicating how the new architectural intervention connects the urban island to the existing fabric spatially, physically and functionally (Author 2010)





The historical pathways that lead to or ran alongside the Berrals building are brought back. The original relationship the Berrals had to the road is re-established by the new pedestrian paths that link the urban island to the surrounding building fabric.

Figure 6.28.  
< 1997 : Road layout before the construction of Nelson Mandela Drive & Skinner Street (Author, 2010)



--- roads removed

Figure 6.29.  
> 1997 : Road layout after the construction of Nelson Mandela Drive & Skinner Street (Author, 2010)

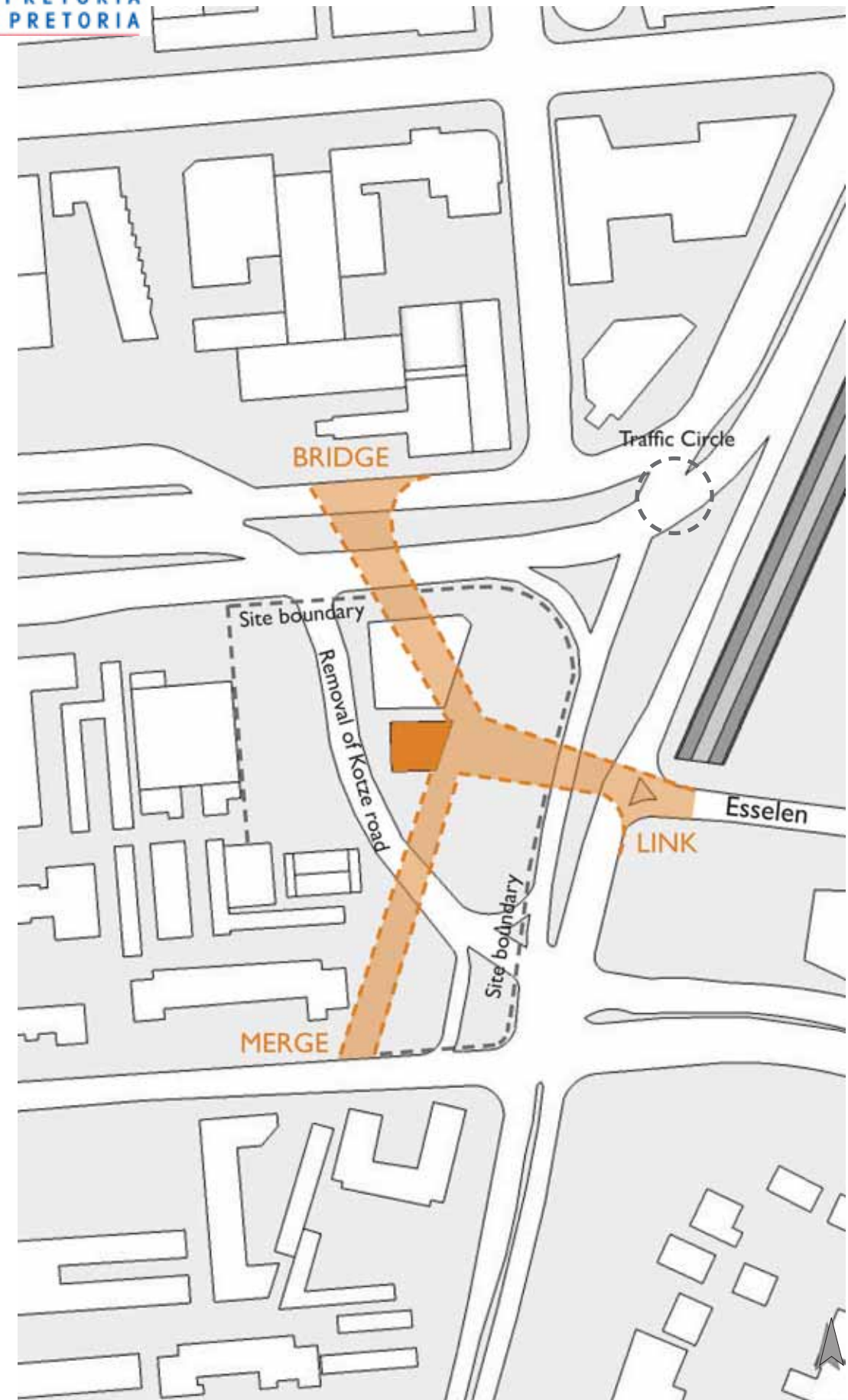


Figure 6.30. Plan showing the connections made to the existing fabric to allow pedestrian movement (Author, 2010)

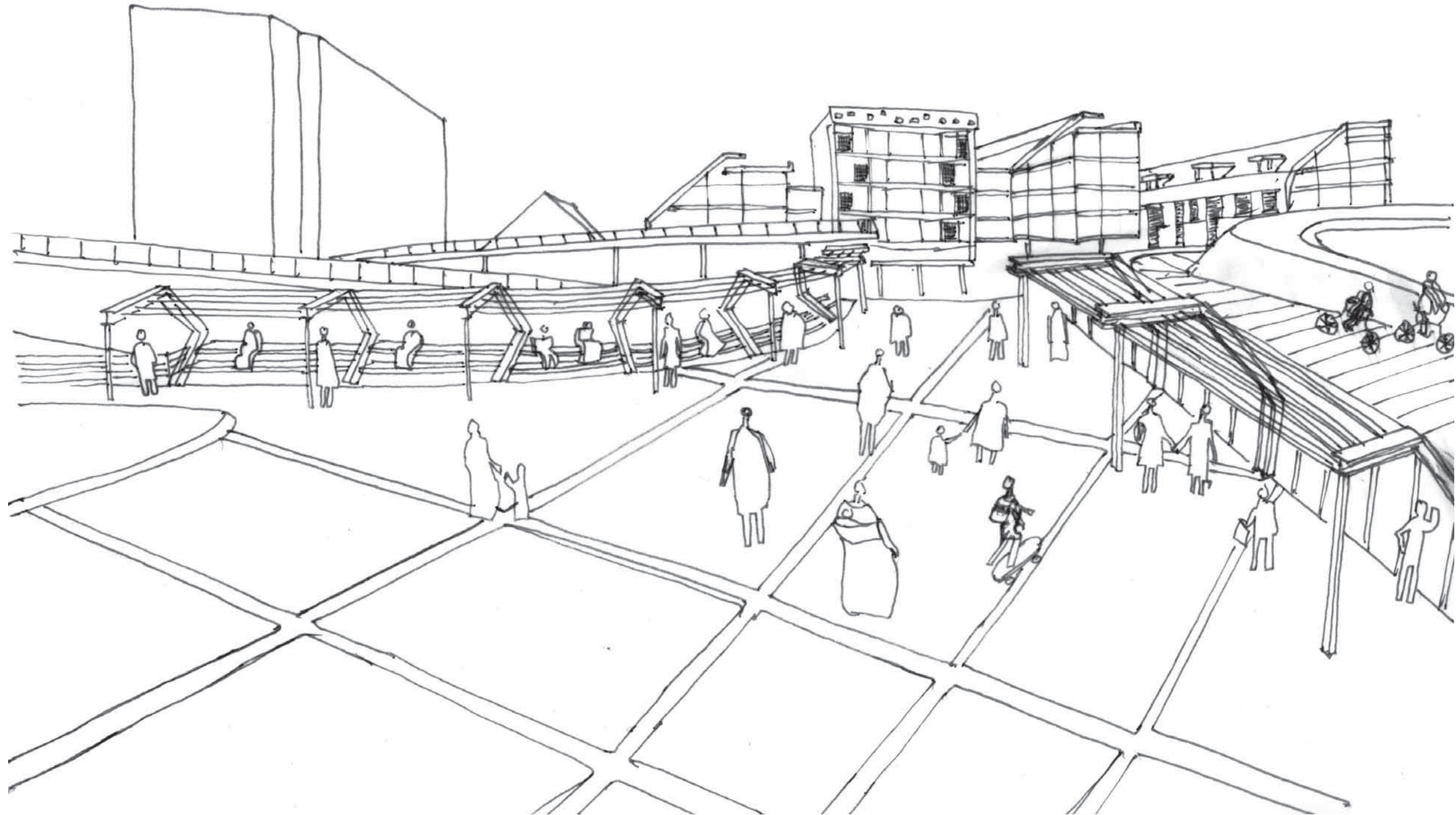


Figure 6.31. Approach from Esselen street - Bridging onto the urban island over Nelson Mandela Drive (Author, 2010)



Program - Mixed-use development

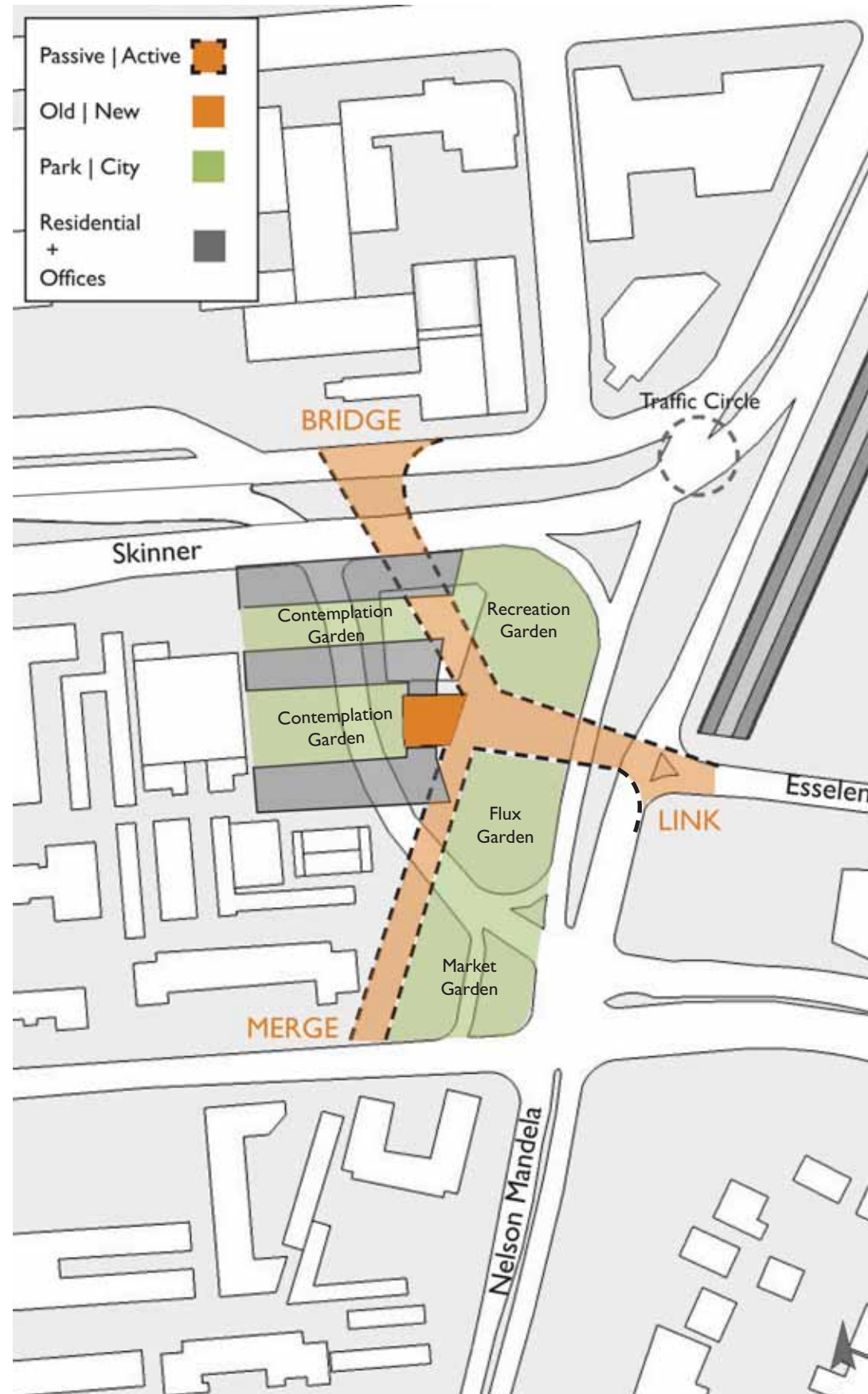
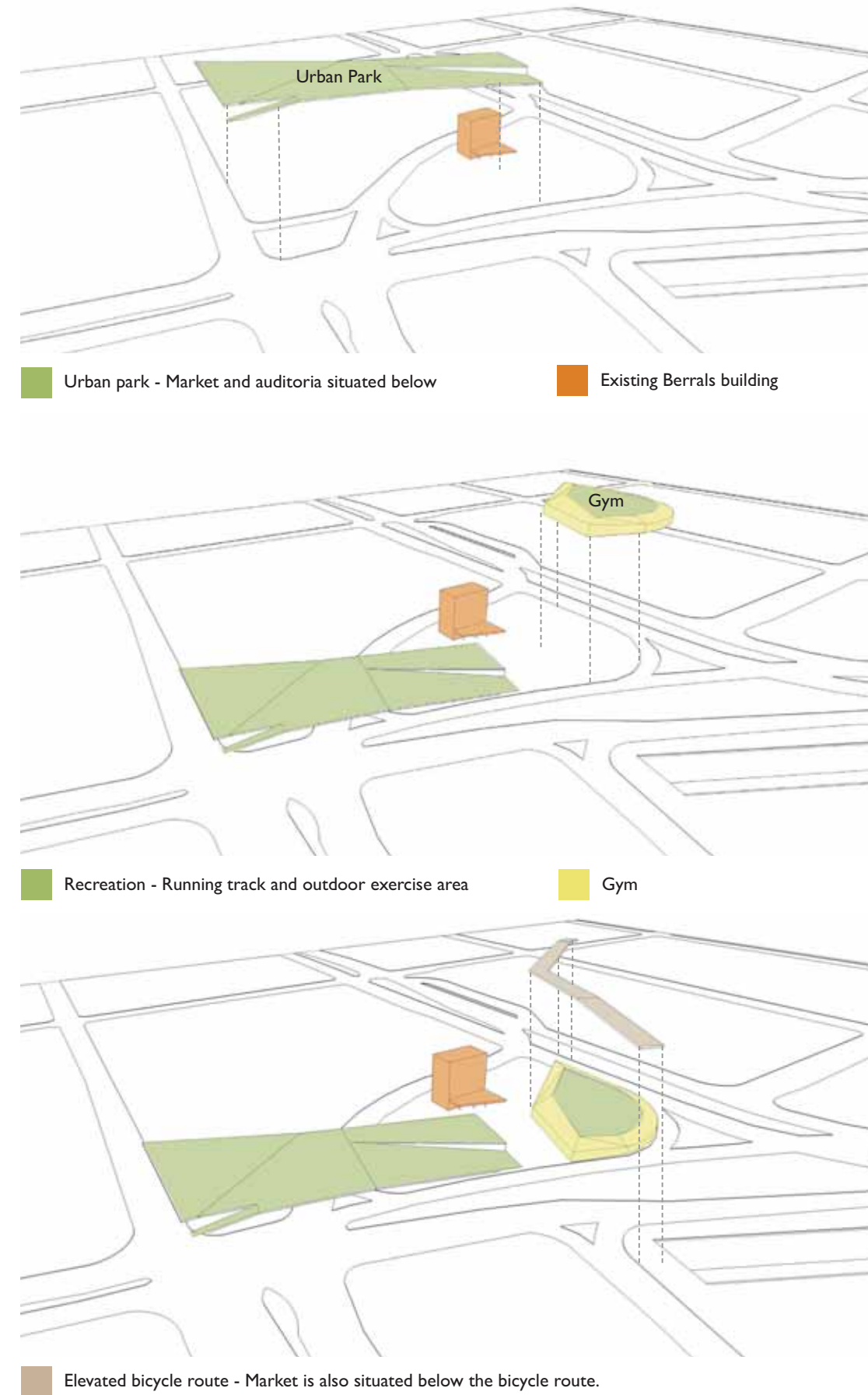
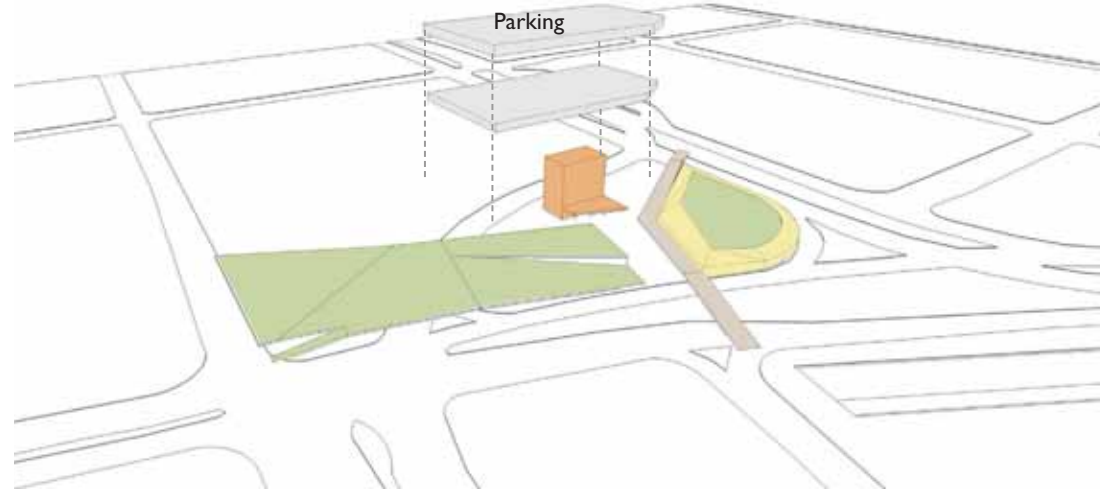
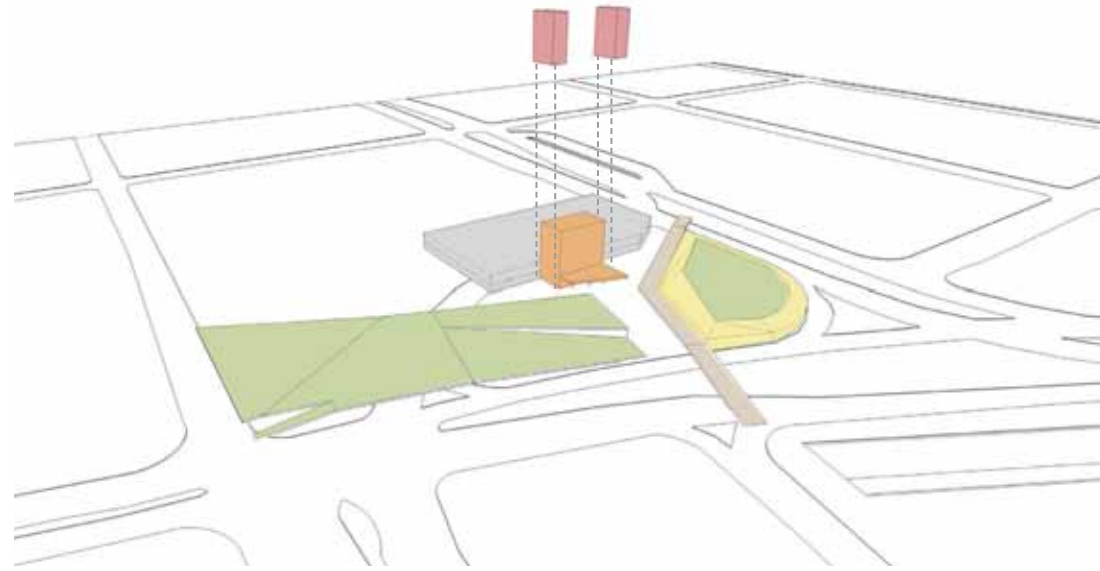


Figure 6.32. Program generated by tensions. (Author, 2010)

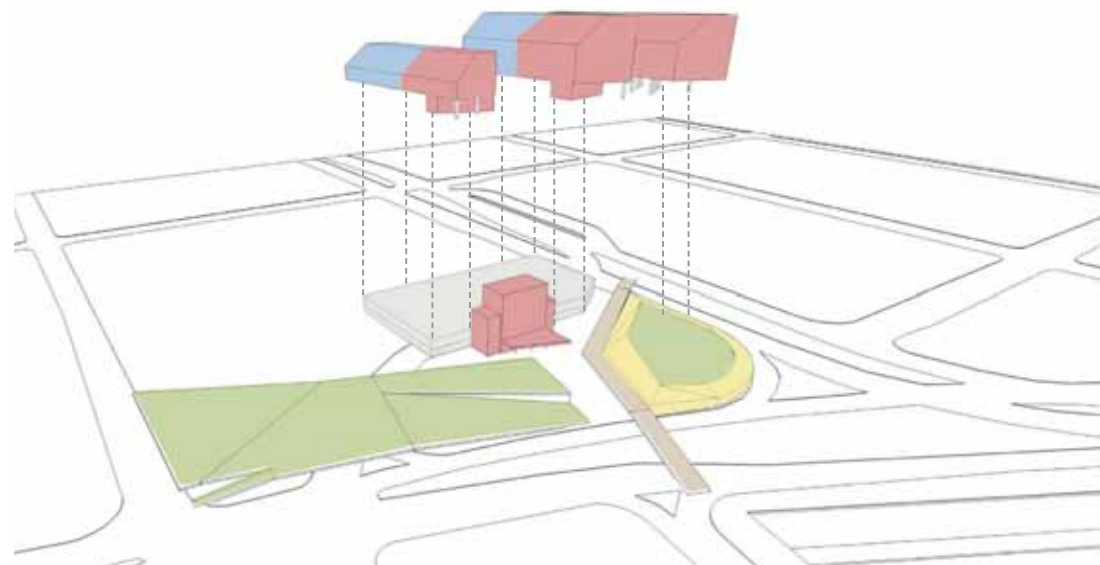




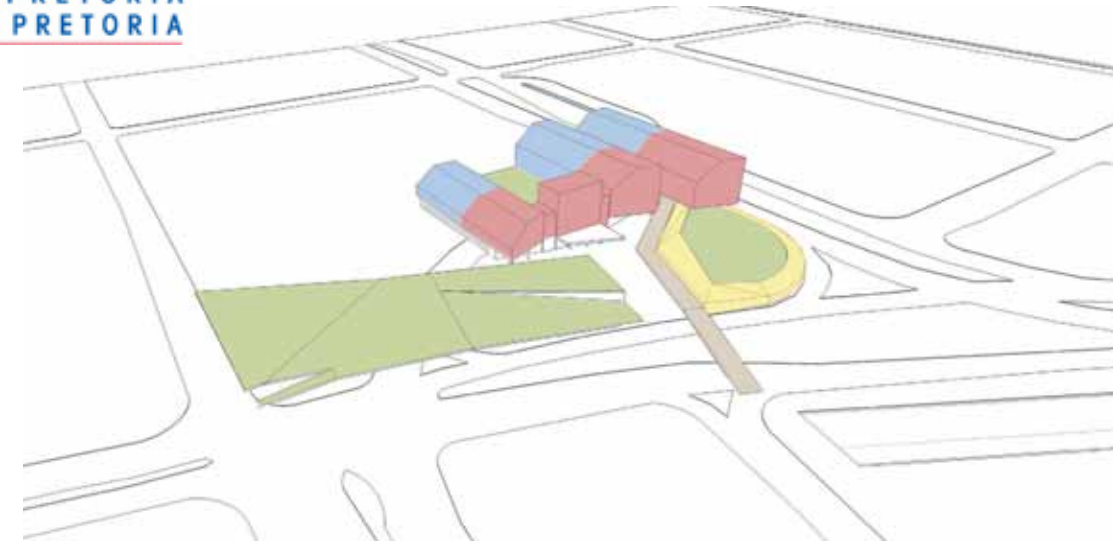
Parking situated behind the Berrals building



Offices



Residential



- Park with other functions situated below it i.e market, retail, auditoria and restaurant.
- Gym
- Bicycle route
- Parking
- Offices
- Residential

Figure 6.33. Layering of program (Author, 2010)

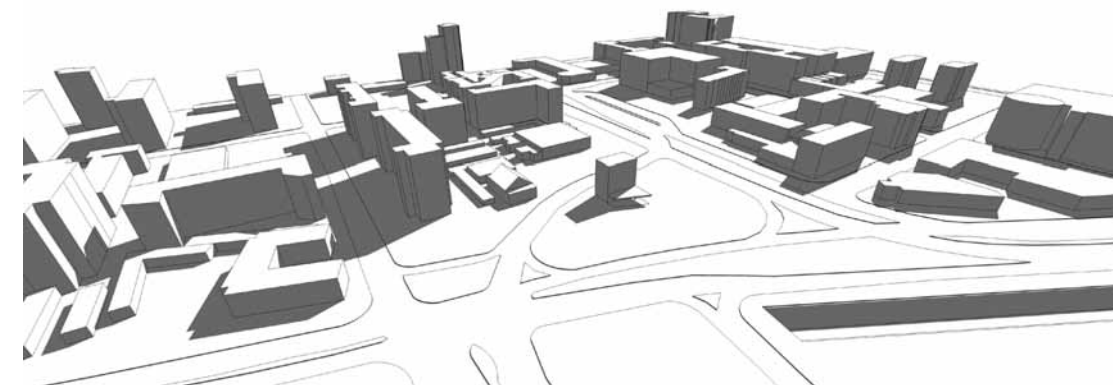


Figure 6.34. Before: The Berrals building in isolation (Author, 2010)

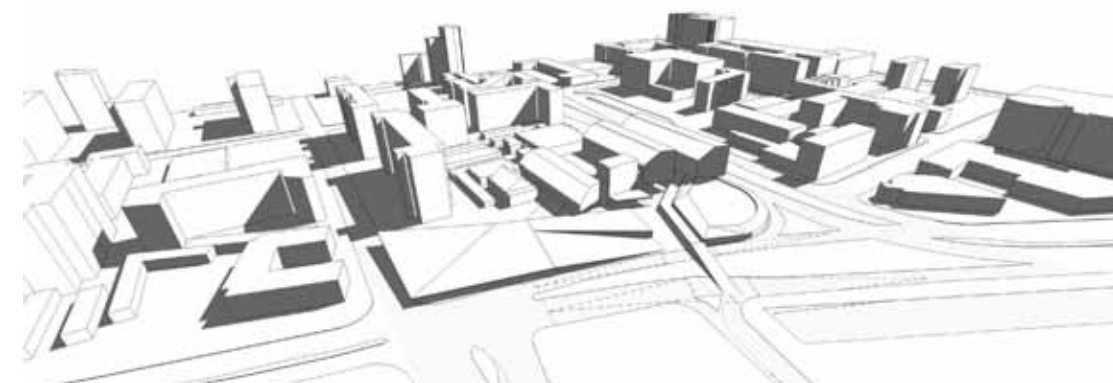


Figure 6.34.I. After: Mixed-use development in context (Author, 2010)



## Park | City

The city of Pretoria, as many other cities have been the victims of urban sprawl. Cities are competing with the suburbs in order to attract people back into the city in order to prevent the city from turning into a ghetto. In order to do so, cities must emphasize the unique advantages of social integration and pedestrian access to amenities. By knitting together physical and social space, parks and open space play a crucial role in defining and strengthening the advantages of city living. Urban neighbourhoods with access to open space may be particularly suited to compete with the suburbs. Thus, there are solid economic reasons for increasing urban investment in parks and open space (Garvin, Berens 1997: 30).

From the analysis of the relationships between park and city, it can be concluded that the urban grid of Pretoria seems flexible enough to accommodate future developments and is expected to have a lasting future (Corten and van Dun 2009: 11). The point at which the orthogonal grid breaks its rhythm, lost space exists. This occurs where the rigid grid meets the natural course of the Apies river resulting in left over segments of land. These lost spaces have the opportunity to become manmade built urban landscapes that knit together physical and social space. An urban park can create a sense of place, a landmark and a community focal point which in turn can create incentive for new development.



Figure 6.35. Stitching back the urban grid (Author 2010)

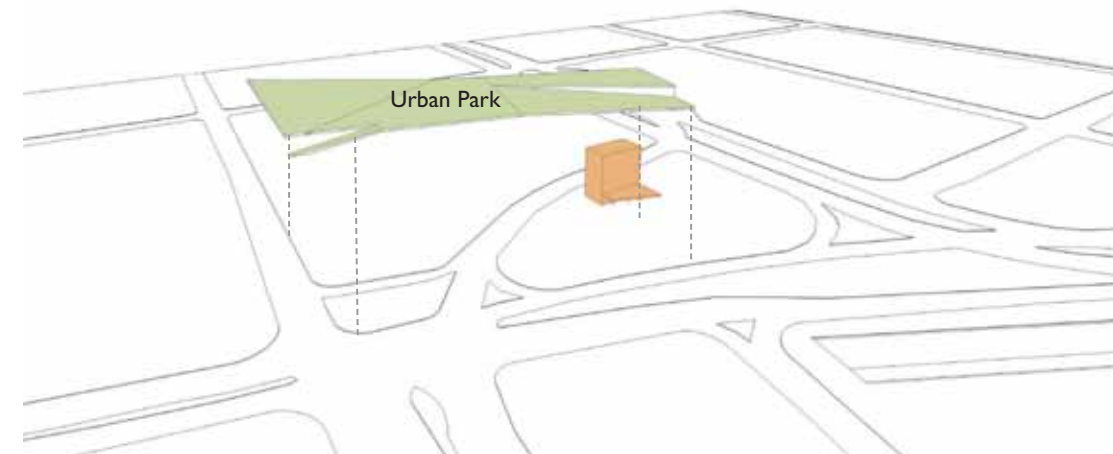


Figure 6.35. Multi- functional urban park (Author 2010)

The traditional idea of a park is that it homogenous in function. If a urban park is to remain in use and become a viable entity within the physical and social space of the urban fabric it must provide the trans-urban city with a diversity of functions. Therefore the urban park includes a market, retail, restaurant and auditoria under its roof(park).

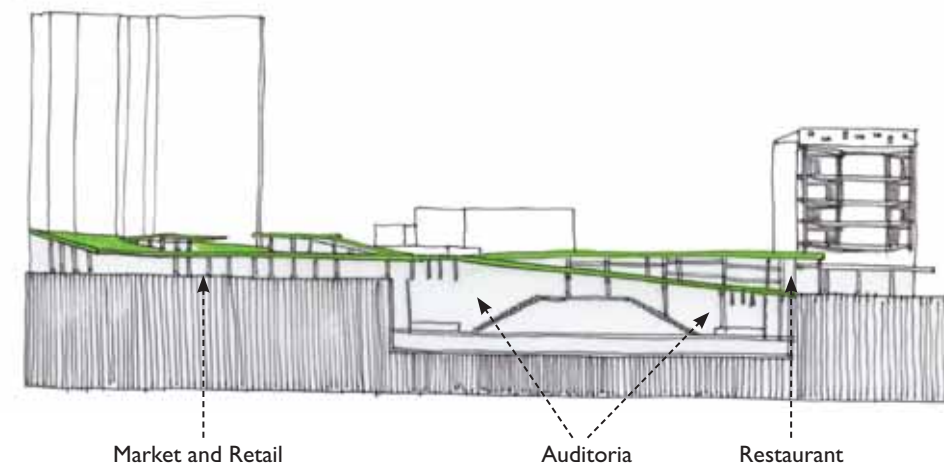


Figure 6.36. Section through the urban park (Author 2010)



Figure 6.37. Perspective sketch of the approach towards the urban park (Author 2010)



## Old | New

The Berrals building designed by Wynand smit is one of the last few remaining examples of Brazilian influenced Pretoria Regionalism. The eastern facade of the building consists of a 'brise soleil' screen that is constructed from hollow clay bricks that are placed in a concrete frame. This screen is a clear indication of the Brazilian influence on Pretoria Regionalism, however the screen is only applied for effect and has no real climatic influence.

The isolation of the Berrals building and its location at a major intersection within the city, has lead to the Berrals building in becoming a landmark. The eastern facade with the 'brise soleil' screen has become the dominant facade. This facade of the Berrals building is the only one that has been articulated as it was meant to be the only visible facade when the building was constructed. This has changed, since all four facades of the building are now exposed.

The public not only identify with the Berrals building as a result of its isolation but also because of its unique facade treatment. Therefore the Berrals building especially its eastern facade need to be treated with sensitivity as new buildings attach to it giving it new functions. The northern and southern facades are blank facades and allow for outward expansion. The addition of these new layers to the Berrals building will extend the history and life of the building, giving it a new identity and existence.

Figure 6.38. (below)  
The Berrals building - Eastern facade with the brise soleil screen (Author, 2010)



Figure 6.39  
South eastern perspective - The Berrals building has become a landmark (Author, 2010)



Figure 6.40.  
The Berrals building - Western facade (Author, 2010)



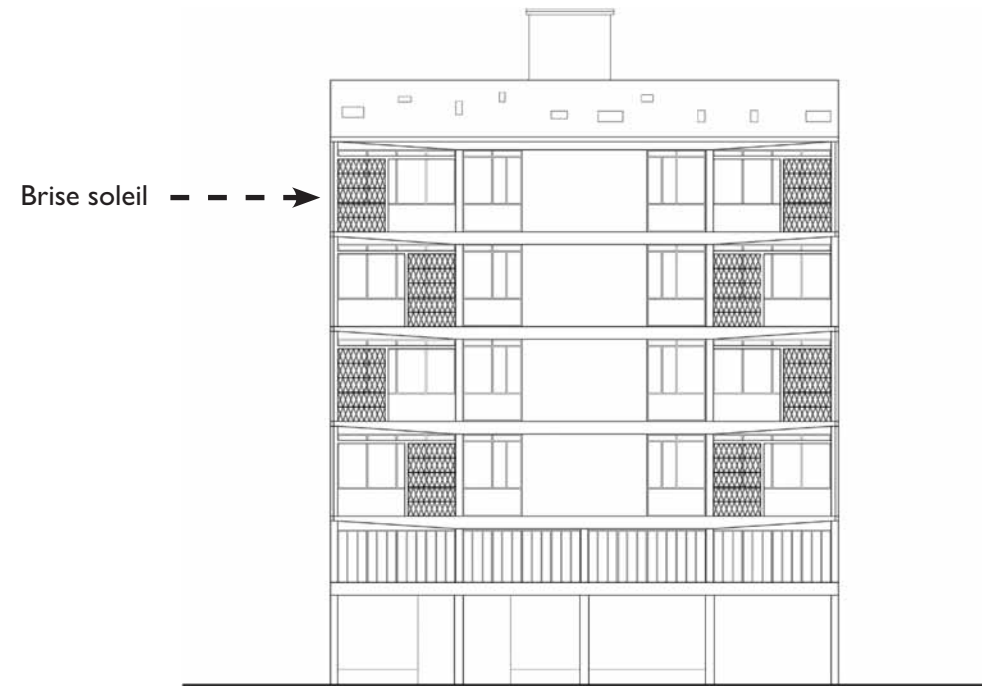


Figure 6.41. The Berrals Building - Eastern elevation (Author, 2010).

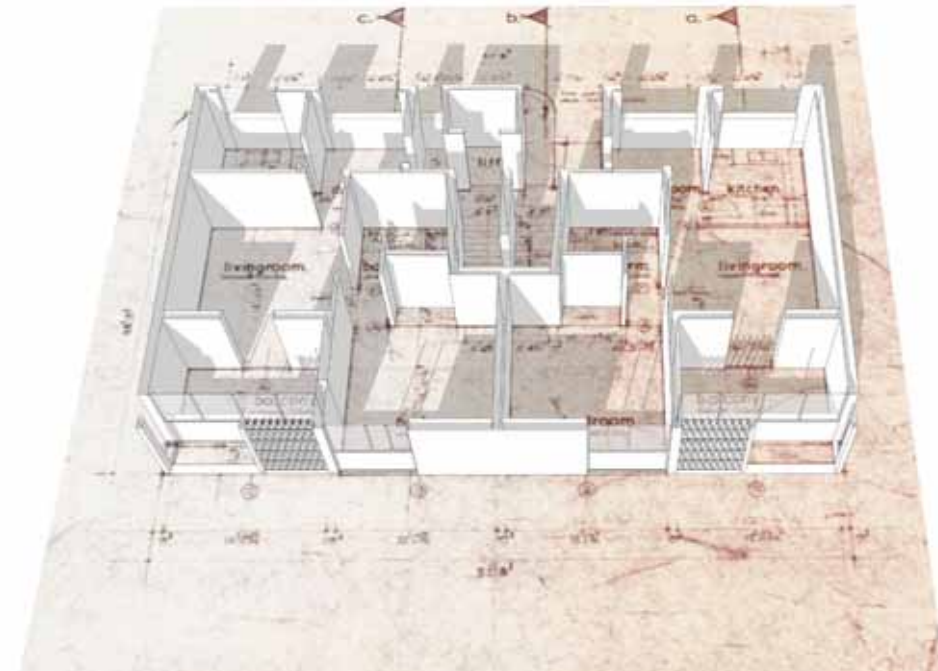


Figure 6.43. Existing plan layout for floors 1 - 4 (Author, 2010).



Figure 6.42. Existing ground floor plan (Author, 2010).

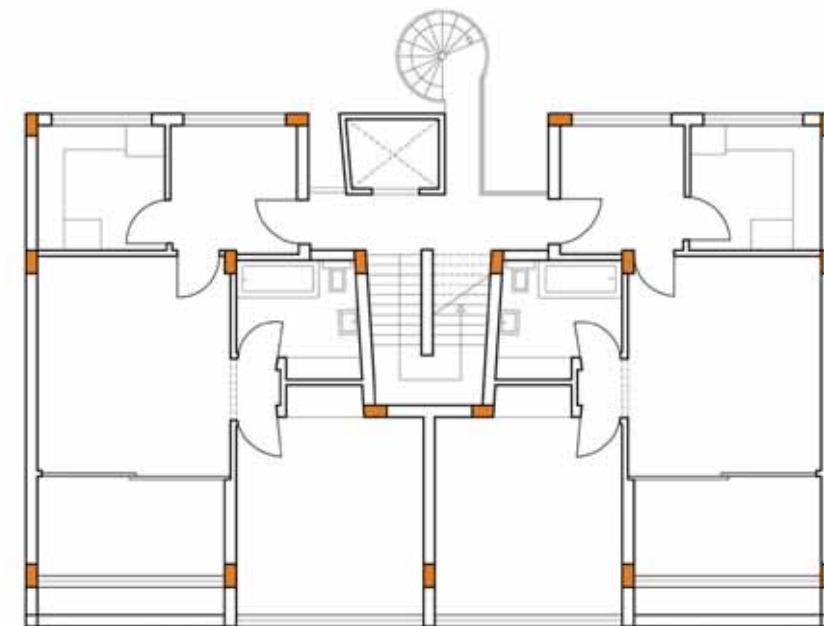


Figure 6.44. Existing first floor plan indicating the structural column system (Author, 2010).

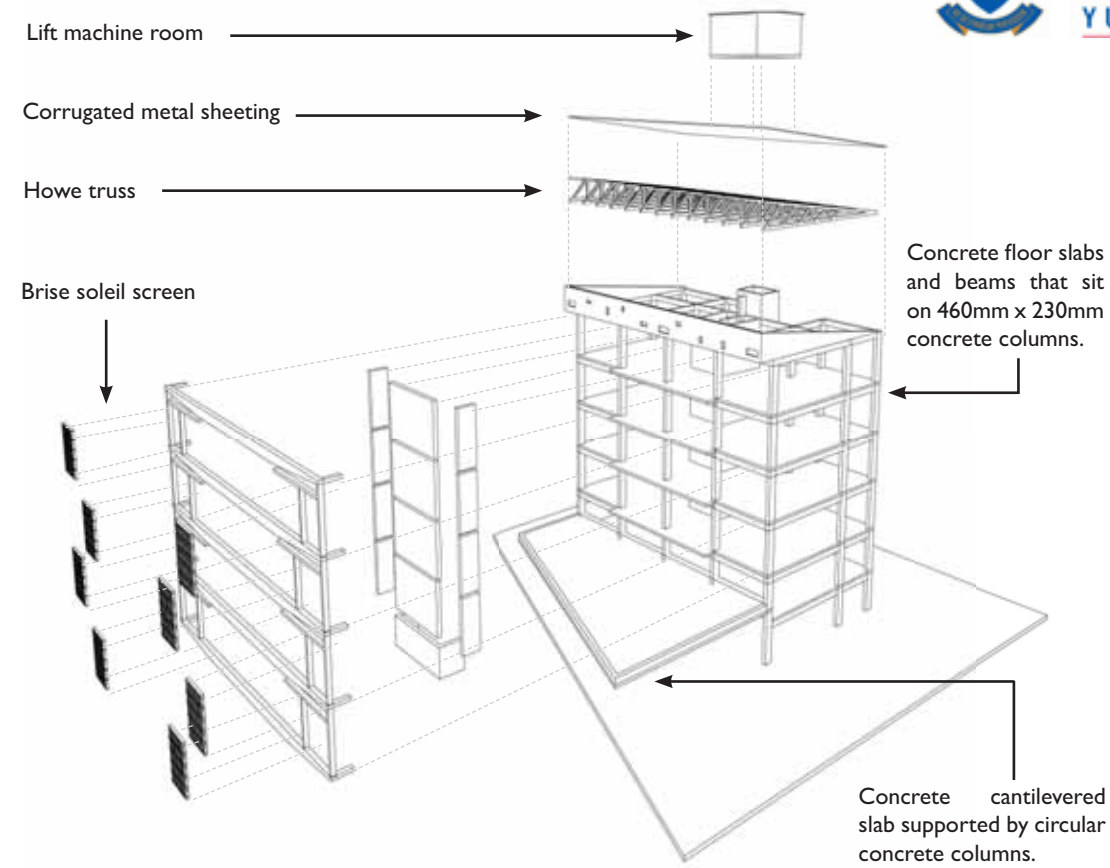


Figure 6.45. Exploded axonometric of the Berrals building indicating the primary components of the building (Author, 2010).

The Berrals building is built on a structural grid system, of 230mm x 460mm concrete columns. This structure constitutes as the load-bearing structure, therefore most of the interior walls can be removed as long as the load-bearing skeleton remains intact. This allows the opportunity for freeing the interior space and also facilitates outward expansion on the northern and southern facades.

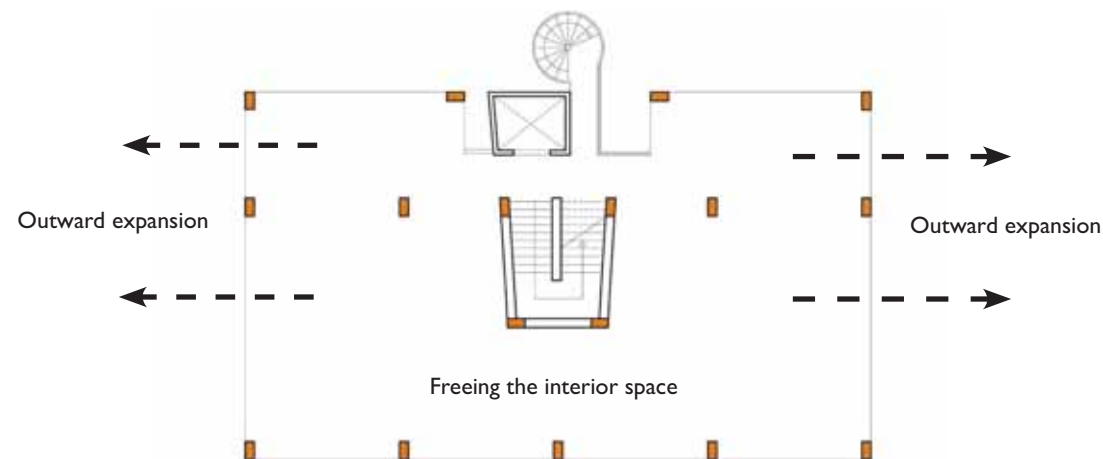


Figure 6.46. The interior space of the Berrals building can be opened up by the removal the interior walls. The exterior walls can be removed as well to provide outward expansion (Author, 2010).

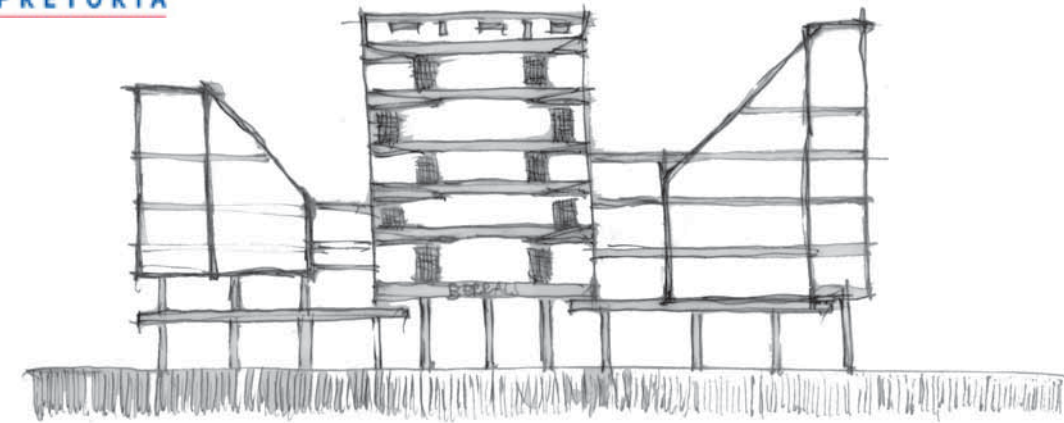


Figure 6.47. East elevation (front facade of Berrals) - The new intervention plugging into the Berrals building on the northern and southern facades (Author, 2010).

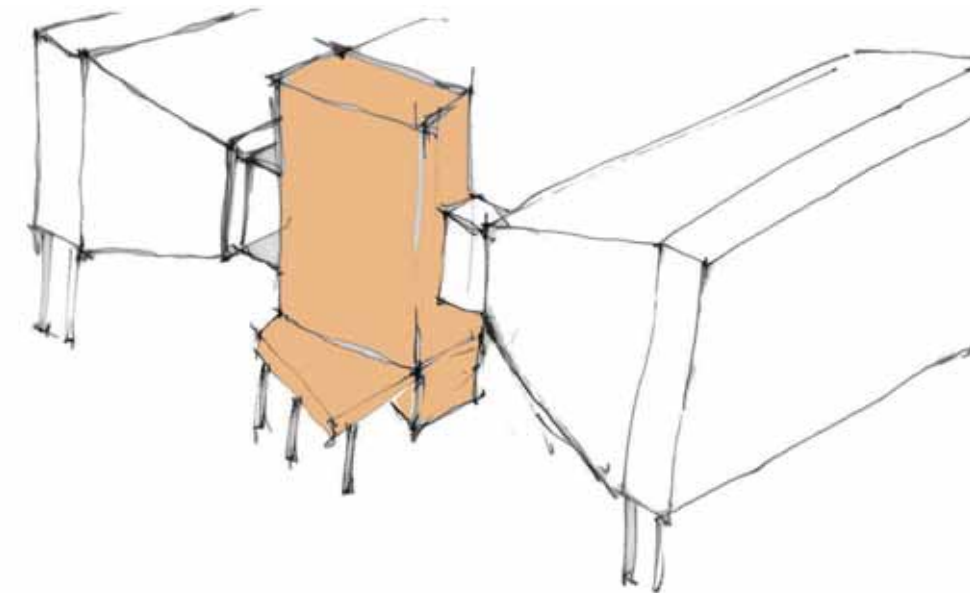


Figure 6.48. A sketch of the new connecting to the old (Author, 2010).

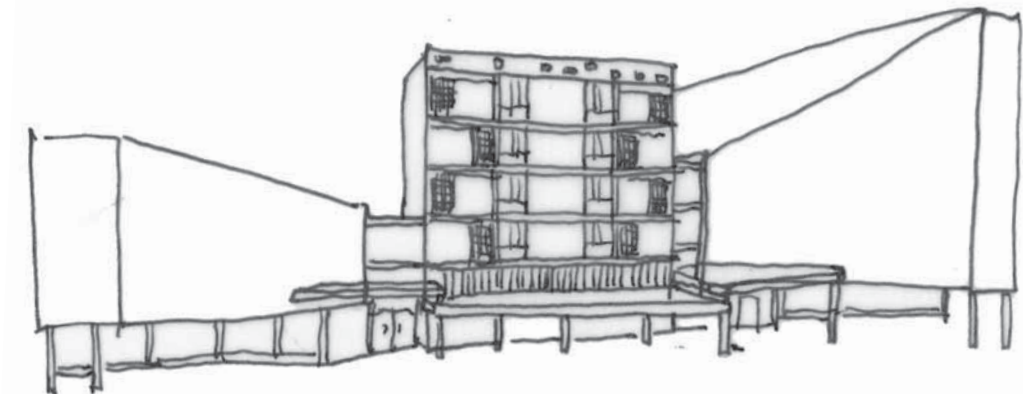


Figure 6.49. The form of the new interventions slant away from the Berrals as to not overpower the existing building so that the Berrals retains its importance as a landmark building (Author, 2010).



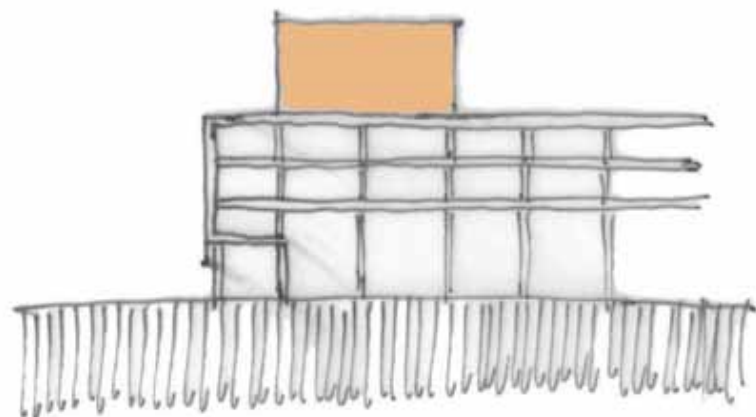
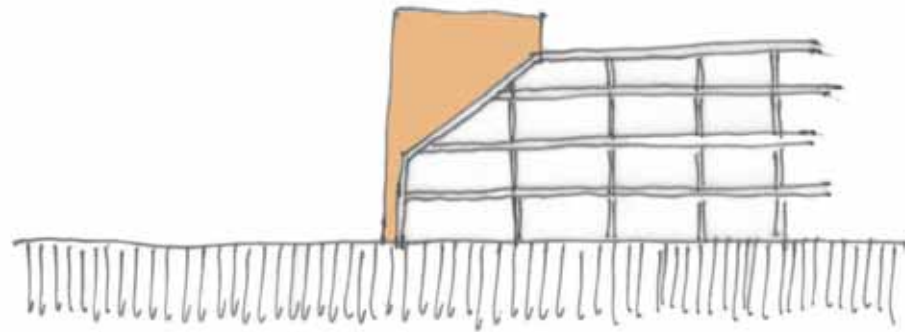
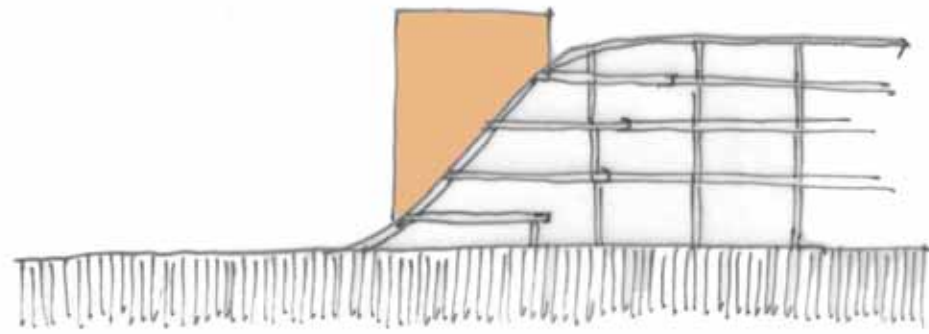


Figure 6.50. Sketches demonstrating the different ways in which the new building's eastern edge can terminate (Author, 2010).

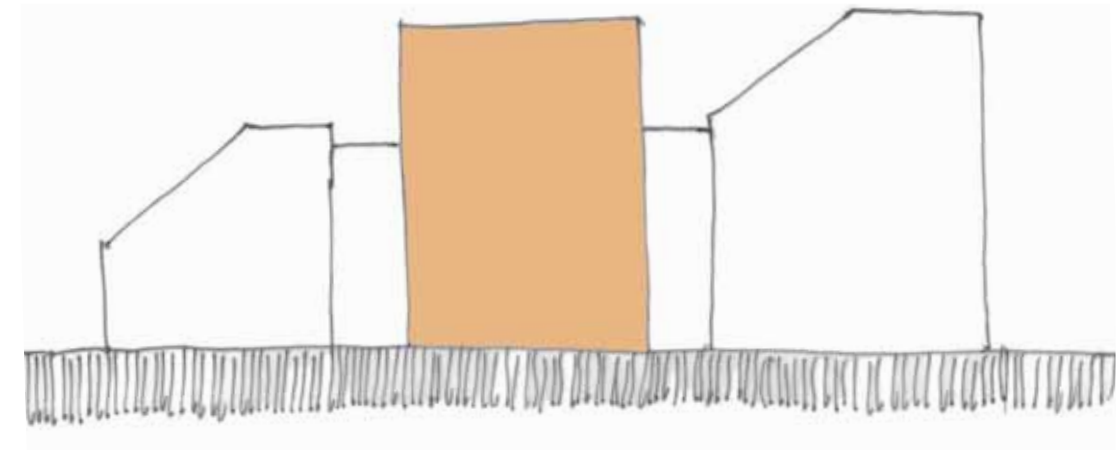
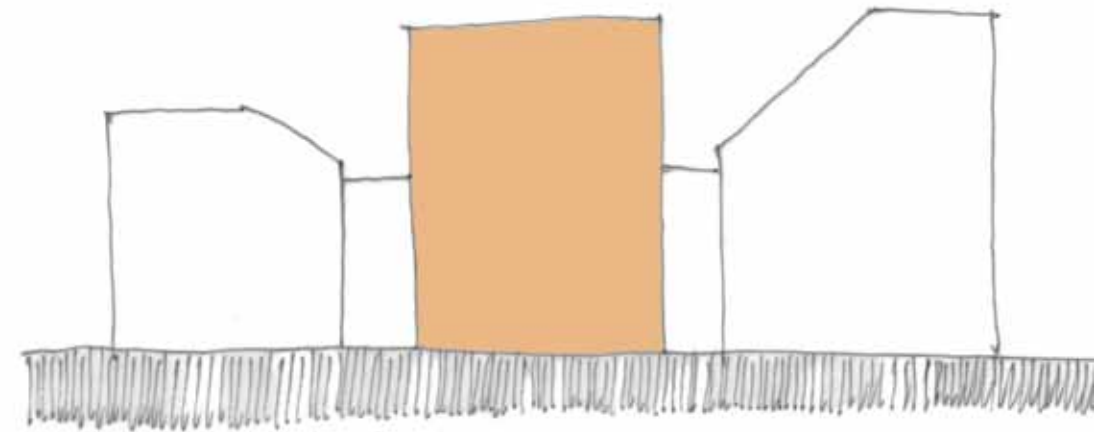


Figure 6.51. The new intervention plugging into the Berrals building. (Author, 2010).

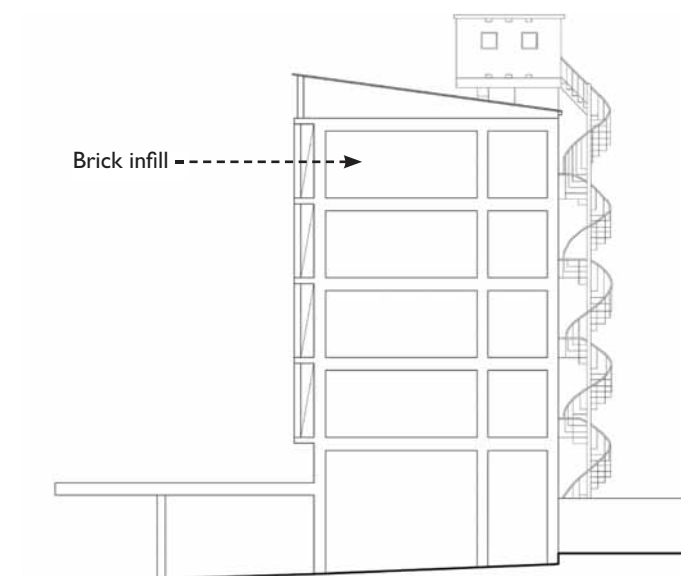


Figure 6.52. Northern elevation of the Berrals building. Brick infill between the column grid can be removed to allow for outward expansion on the northern and southern facades (Author, 2010).

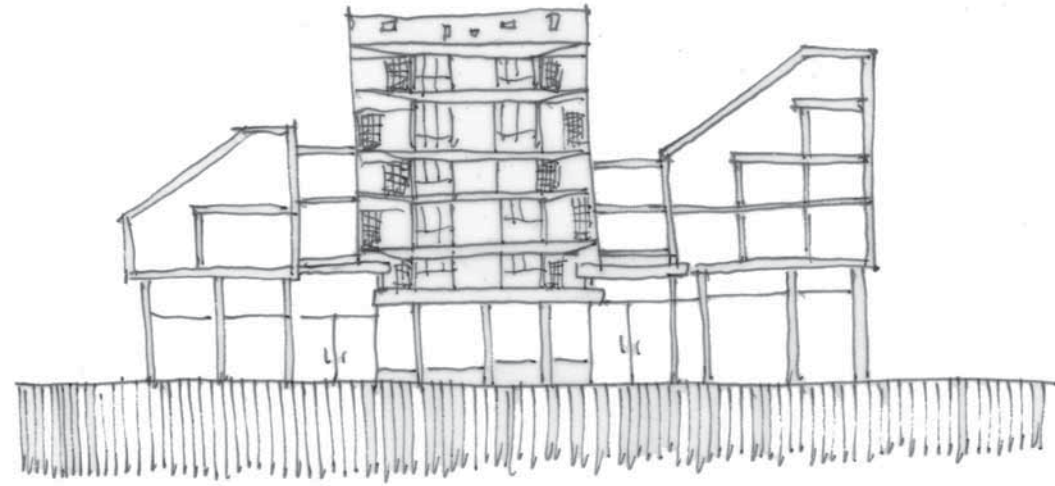


Figure 6.53.  
East elevation (front facade of Berrals) - The new intervention plugging into the Berrals building on the northern and southern facades (Author, 2010)



Figure 6.54.  
A massing model demonstrating the new relationship that is formed between the new buildings and the existing Berrals building ( Author, 2010)

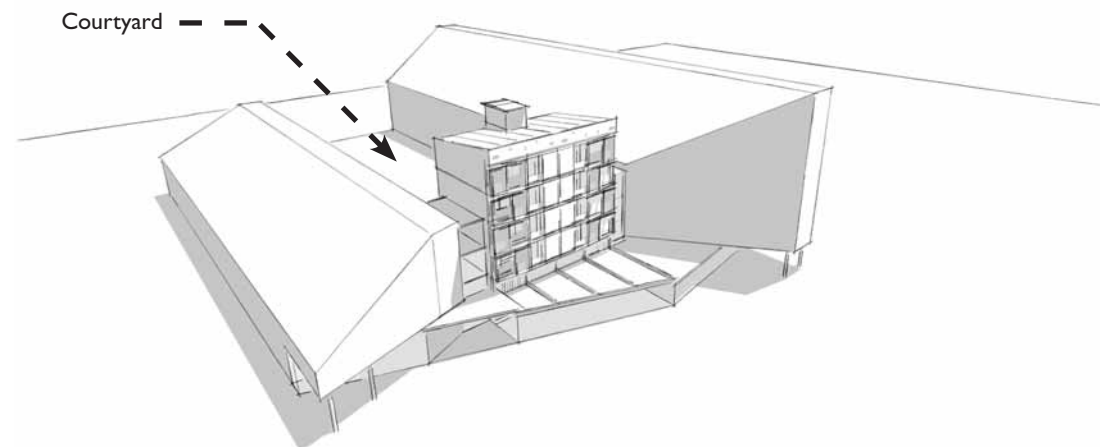


Figure 6.55.  
A massing model indicating the creation of a courtyard space due to the Berrals building being framed by two new buildings (Author, 2010)

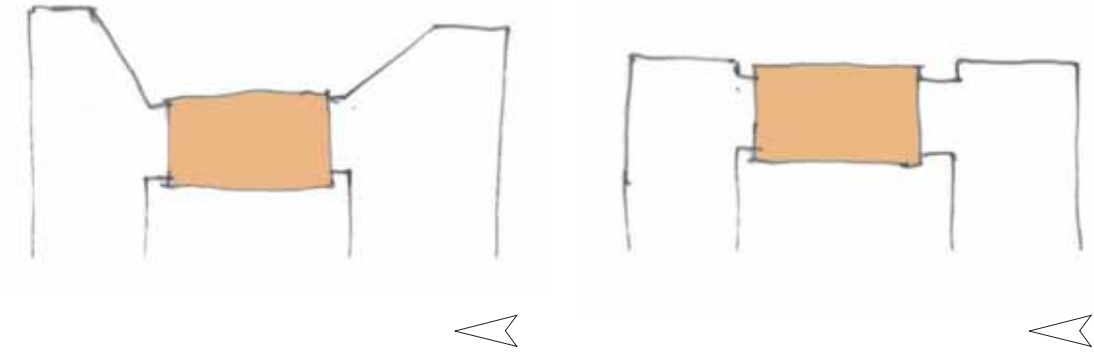


Figure 6.56.  
Sketch plans indicating the different approaches in which the new intervention can frame the existing Berrals building (Author, 2010)

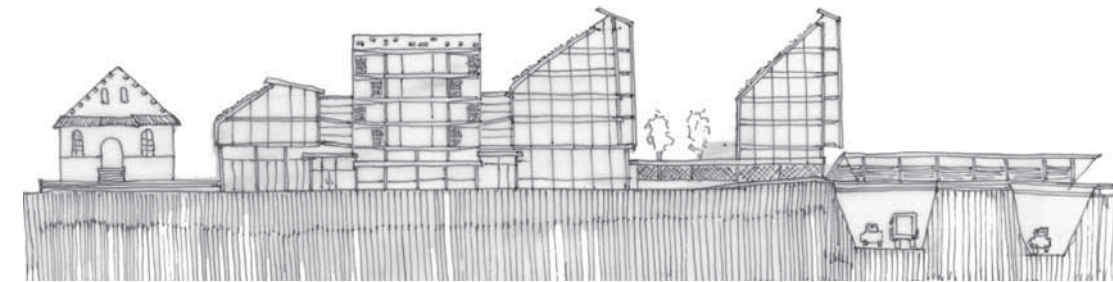


Figure 6.57.  
A sketch of the new connecting to the old (Author, 2010)

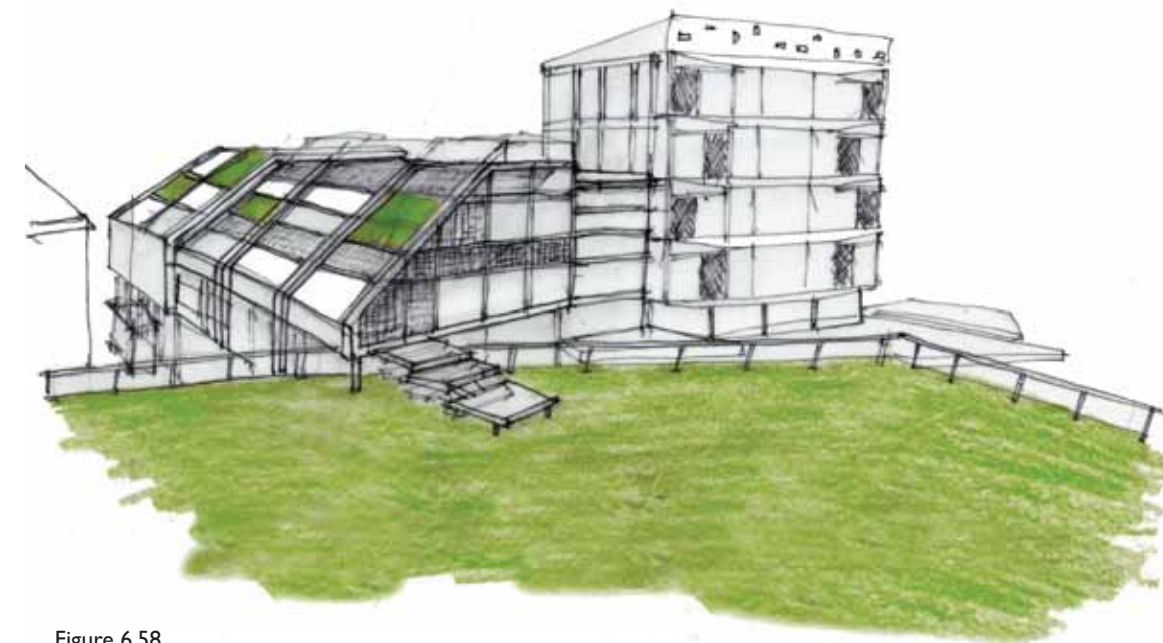


Figure 6.58.  
Perspective sketch (Author, 2010)





## 07. Technical Development

## Technology Concept

The technology concept is defined by the same four tensions that informed the design concept.

### 1. Passive | Active

In order for the building envelope to function in a sustainable manner, it has to be able to respond to its local context and work with external and internal conditions to achieve optimum environments within and around the building. In order to achieve optimum conditions on an on going basis, the building envelope is dynamic and adapts to changing conditions.

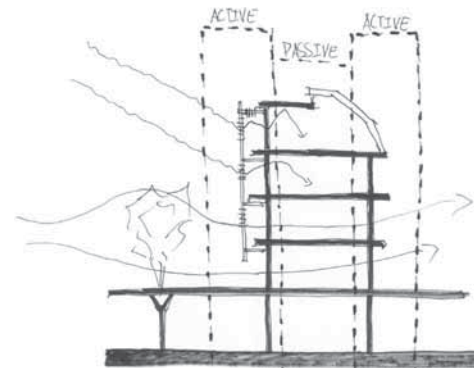


Figure 7.1. The active building envelope and the passive load-bearing structure (Author, 2010)

### 2. Park | City

Green roofs provide a solution to the conflict between the built and natural environments. Resolving this conflict requires the construction of buildings that enhance rather than deplete the natural environment. The primary objective of creating a green roof is to create a living habitat in an otherwise barren environment.

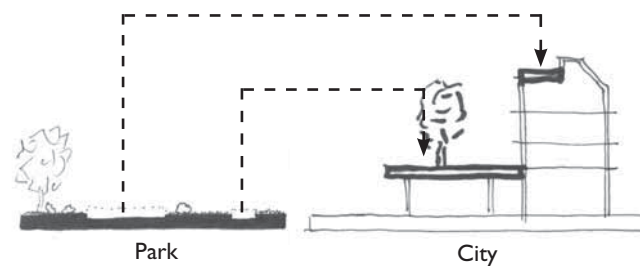


Figure 7.2. Green roofs replacing barren space (Author, 2010)

### 3. Old | New

The existing old Berrals building provides a stage for the new intervention and allows for the re-interpretation of the tectonic. To establish a new identity for the Berrals building the new intervention emphasises the difference between the new and the existing. This is achieved through the tectonic of the new intervention, and the manner in which it links to the Berrals building.

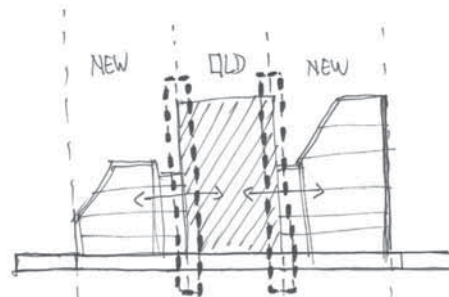


Figure 7.3. The tectonic emphasising the difference between new and old (Author, 2010)

### 3. Centre | Edge

The urban island is situated at a prominent intersection within the city yet the edges around the urban island are ill-defined. Thresholds need to be established in order to define the intersections of pathways and boundaries. To create such transitions changes in topology, light and surface occur along transition points.

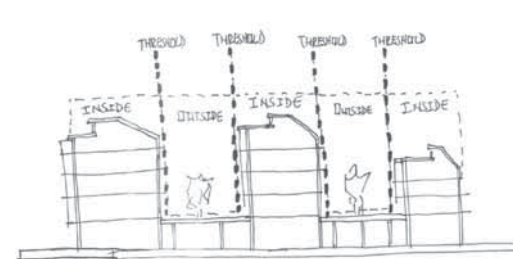


Figure 7.4. Thresholds between outside and inside (Author, 2010)

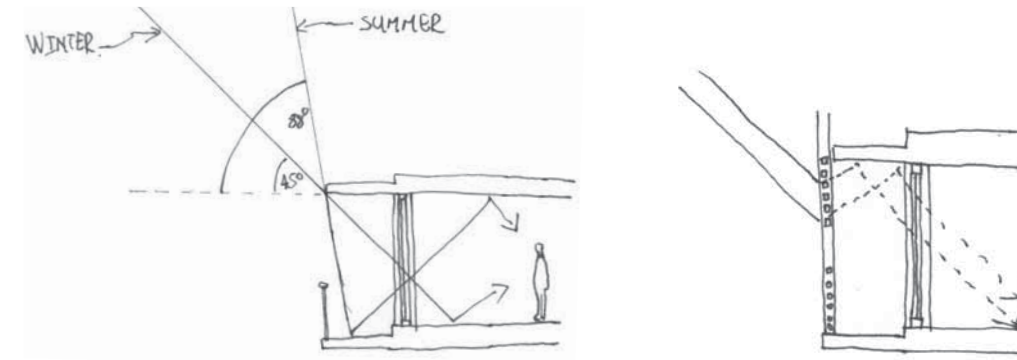


Figure 7.5. An active building envelope (Author, 2010)

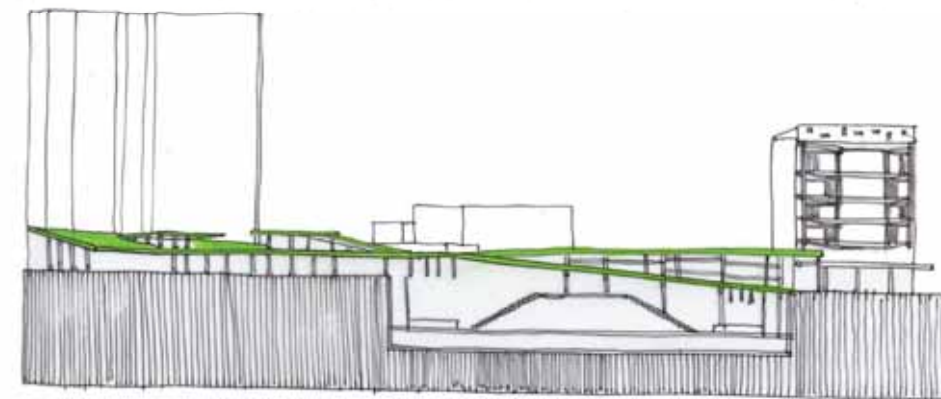


Figure 7.6. Roof as an urban park (Author, 2010)



Figure 7.7. Lightness of the new contrasted with the solidity of the old (Author, 2010)

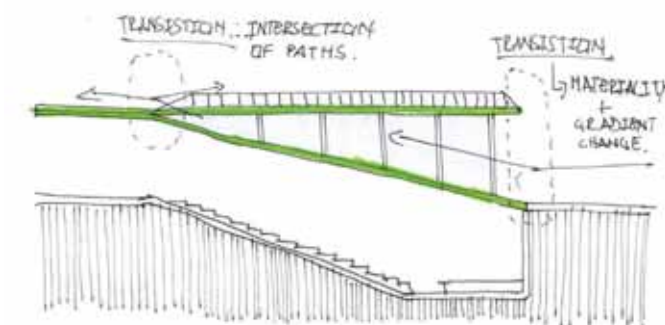


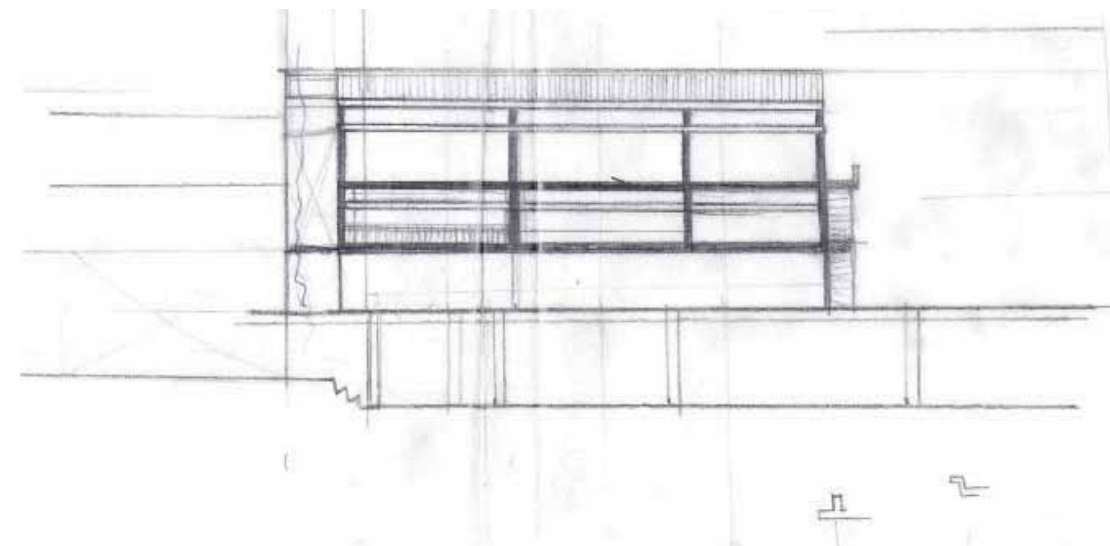
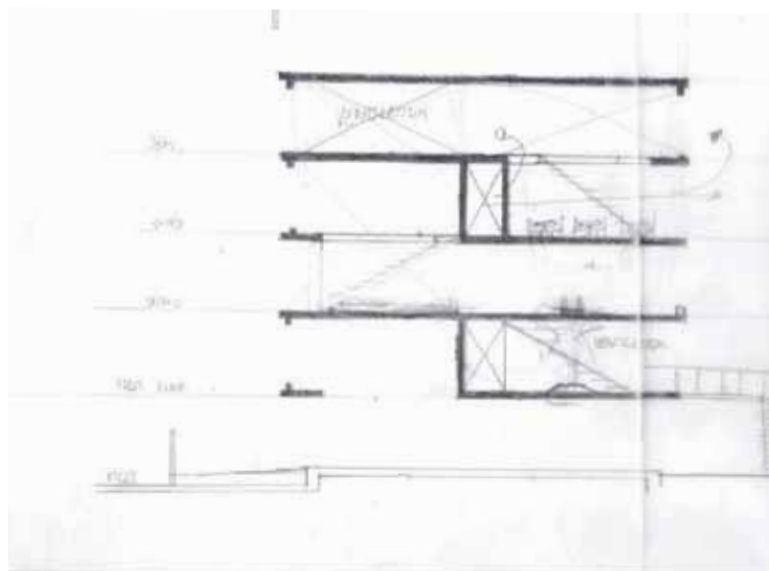
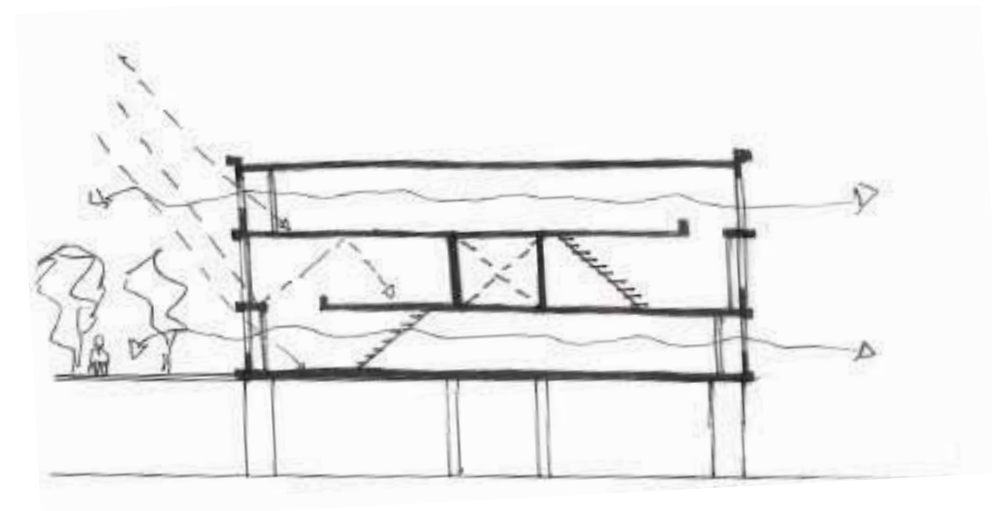
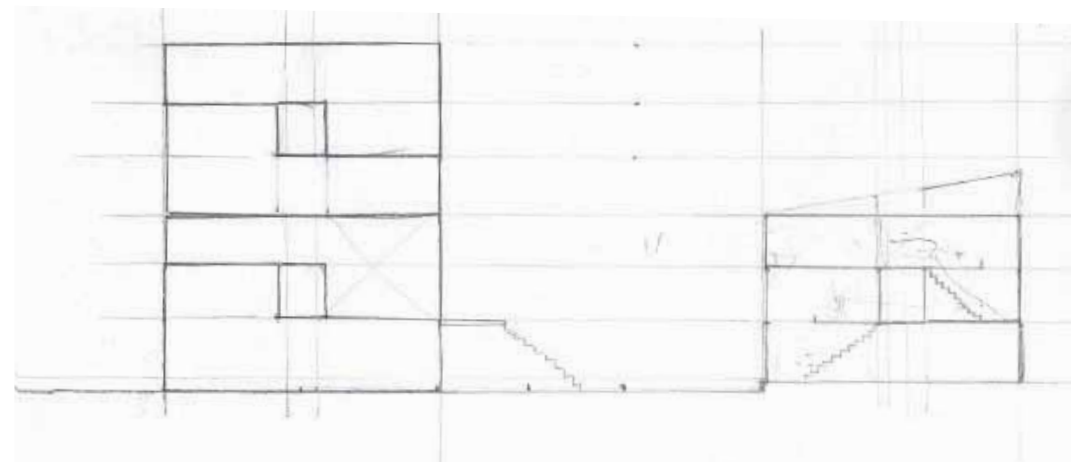
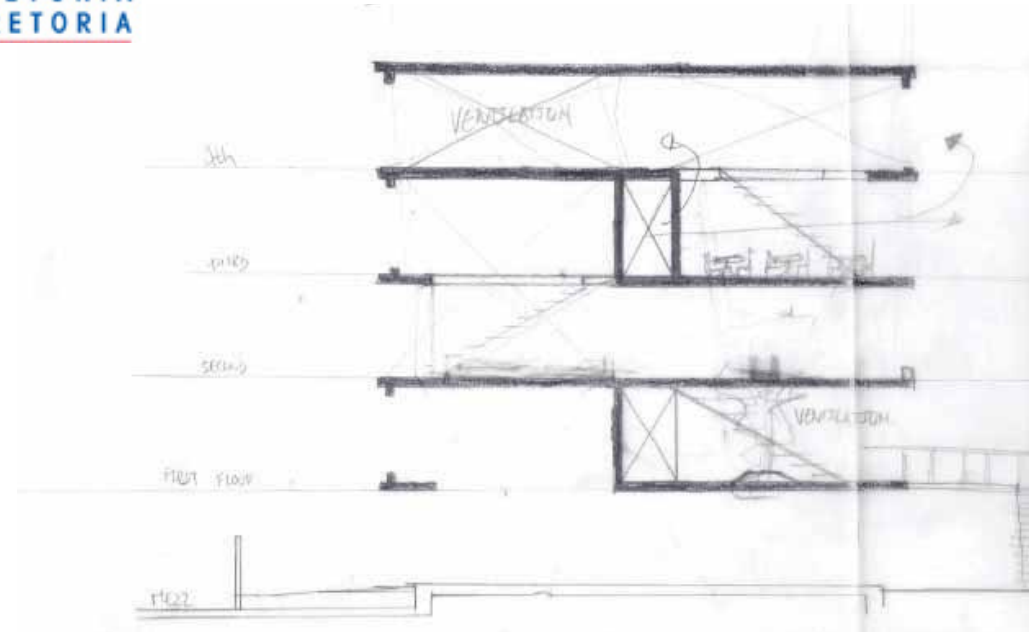
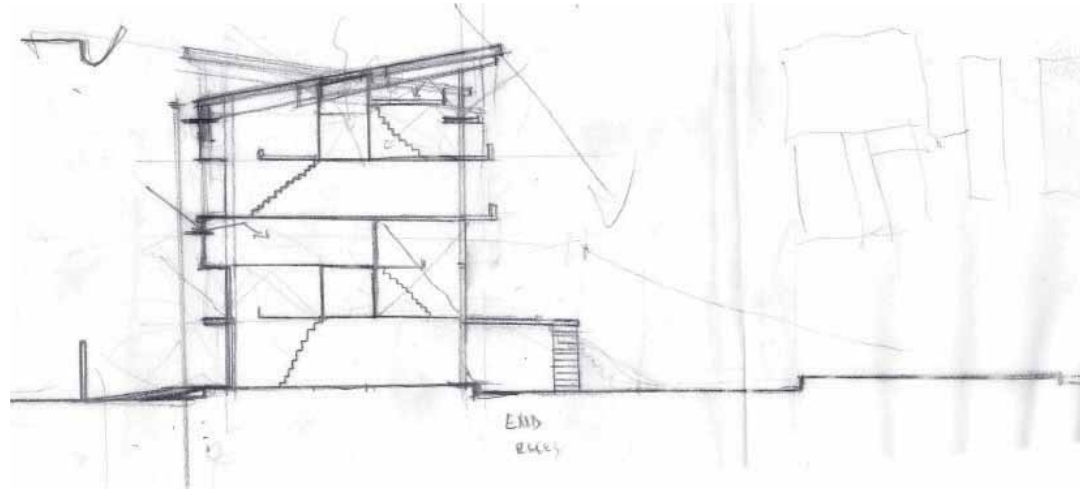
Figure 7.8. Thresholds along paths (Author, 2010)

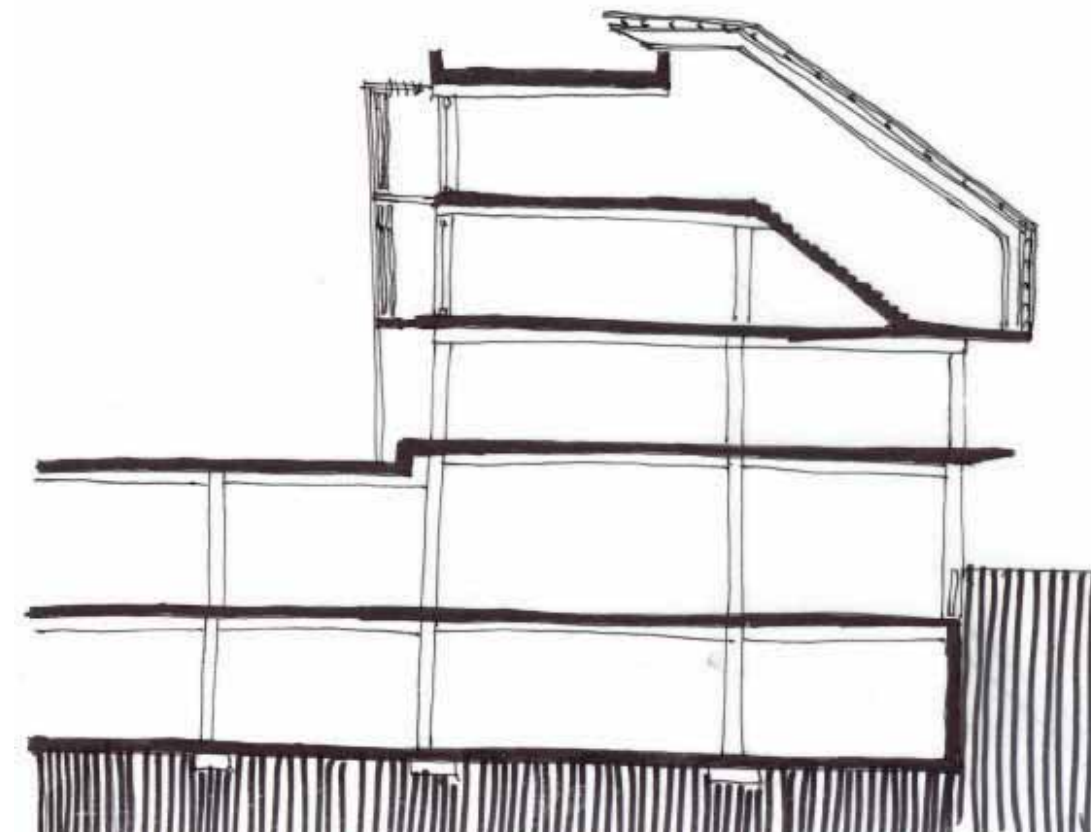
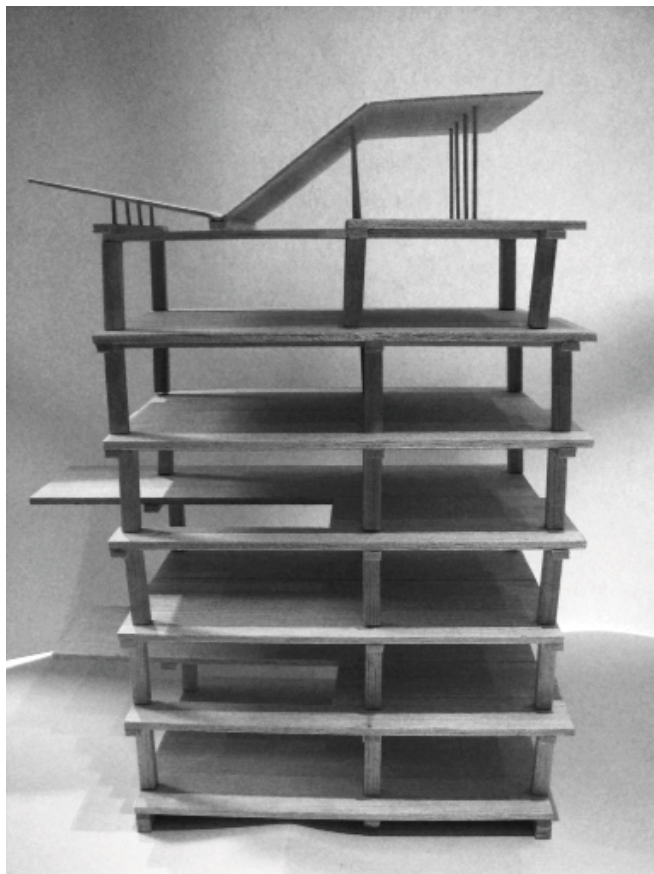
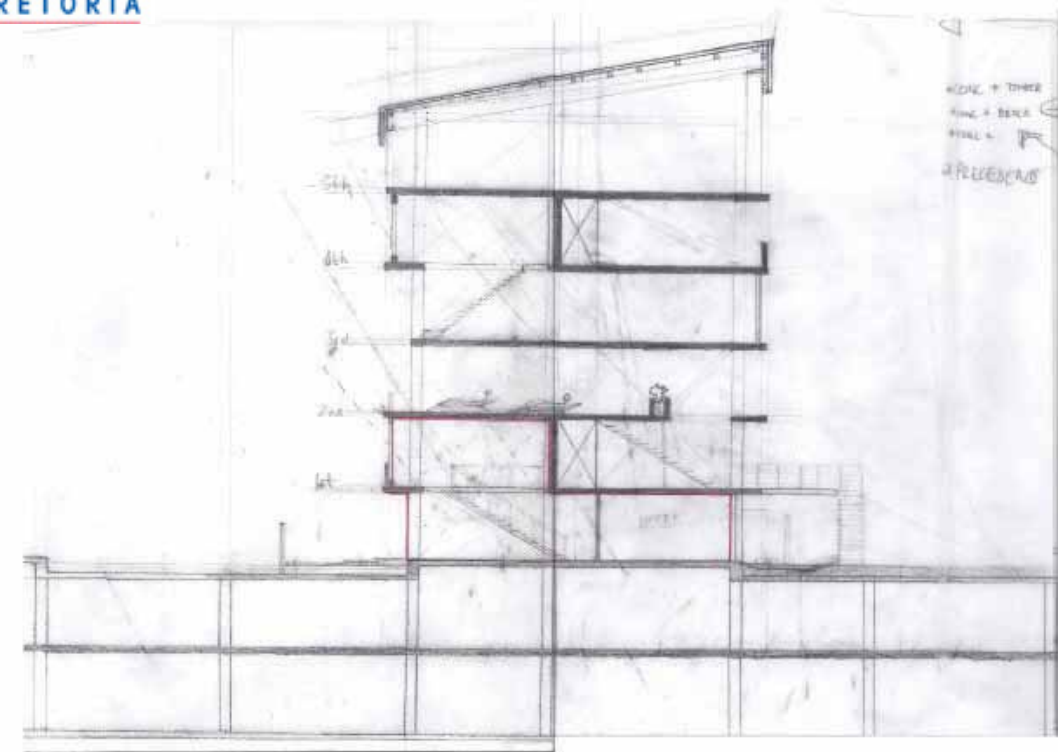




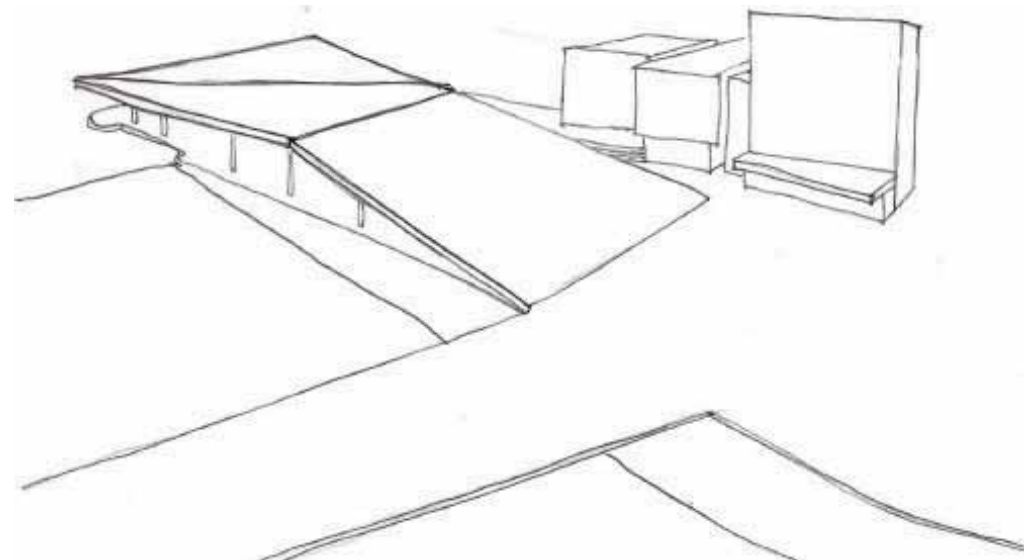
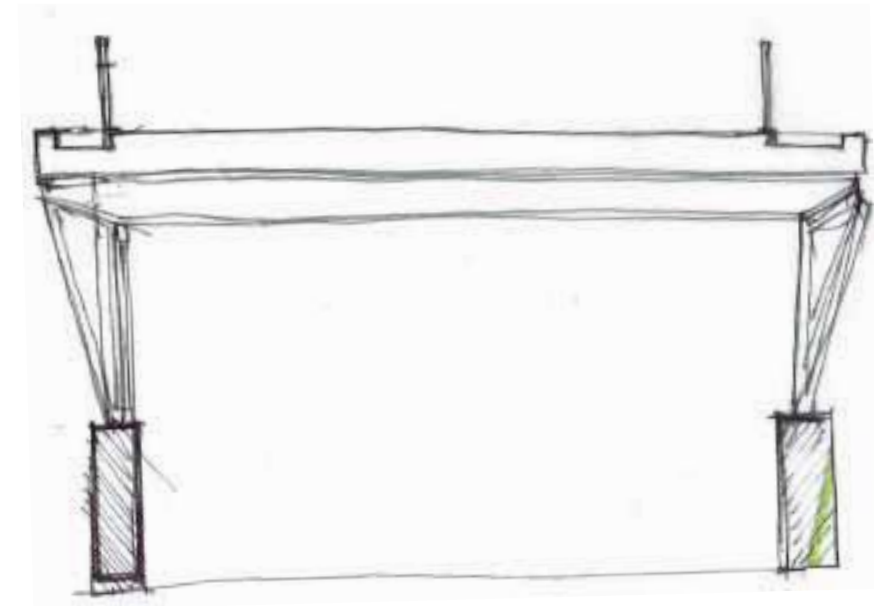
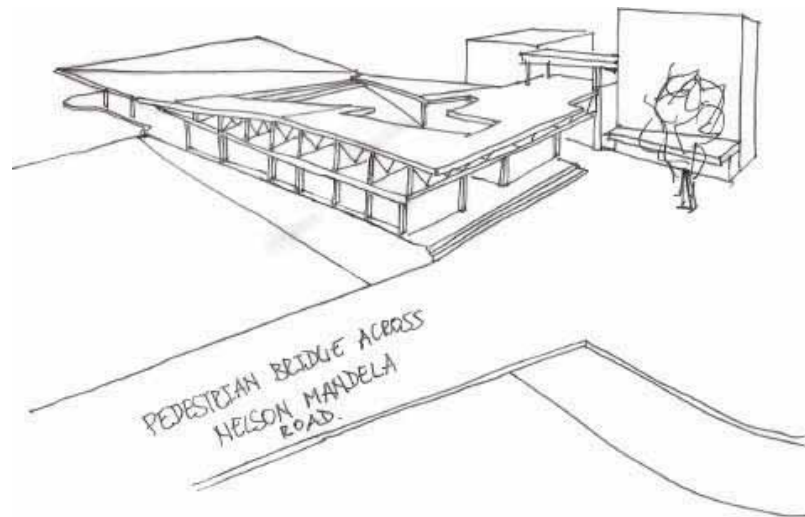
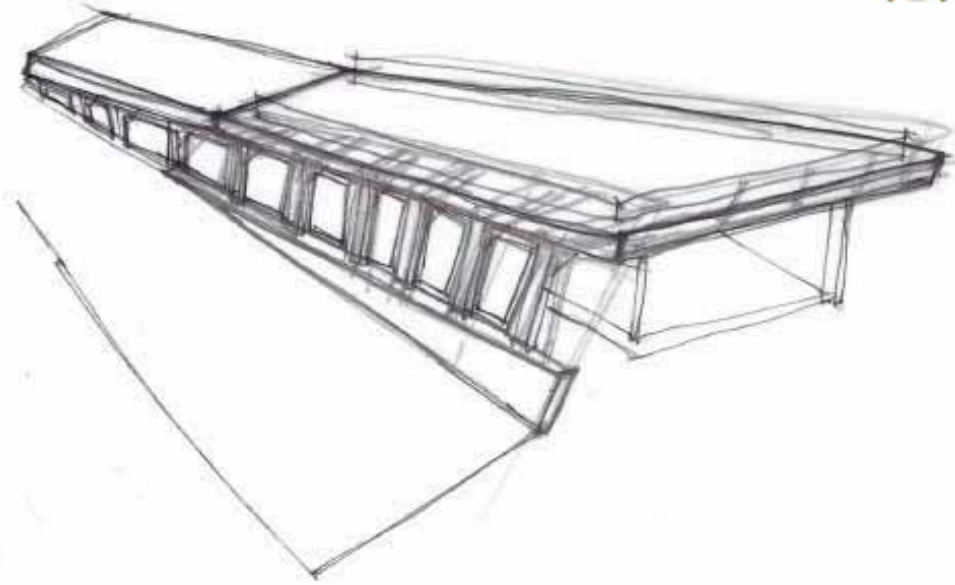
### Technical Development

Fig. 7.8 - 9.4. Sketches demonstrating technical investigation (Author, 2010)



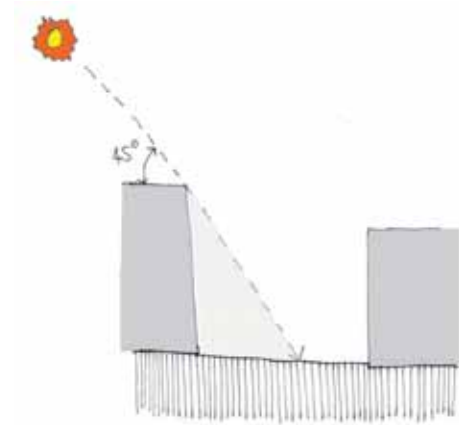




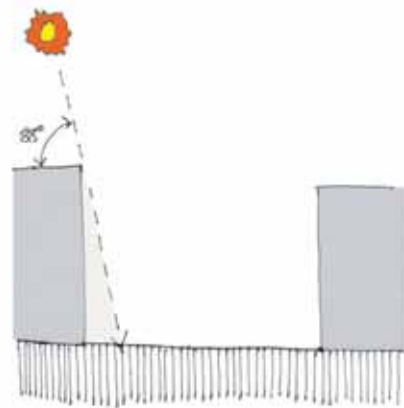


## Shadow Study

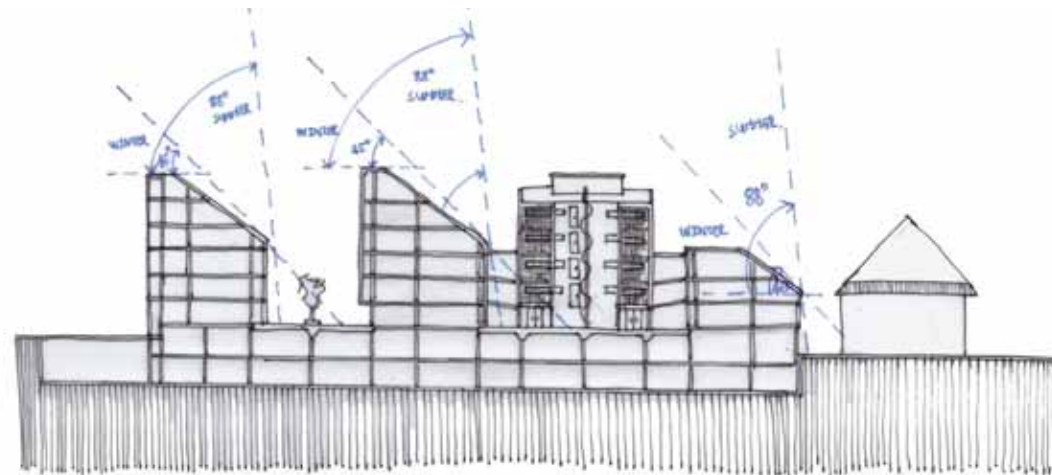
A shadow study was performed to determine whether the 3 blocks of residential and office units will receive enough northern sunlight in the winter and whether the courtyard spaces in between these block forms will receive enough sunlight to become a space that provides refuge from the bustling city for the residents of the new development. The altitude at which the sun moves from the winter to the summer months ranges from 45 degrees in winter to 88 degrees in summer. Solar simulation diagrams have been used to illustrate the amount of direct sunlight the courtyards and northern facades receive.



Solar angle diagram - Winter (Author 2010)



Solar angle diagram - Winter (Author 2010)



Sketch showing solar angles (Author 2010).



21 June - Winter Solstice : 10h00 (Author 2010)

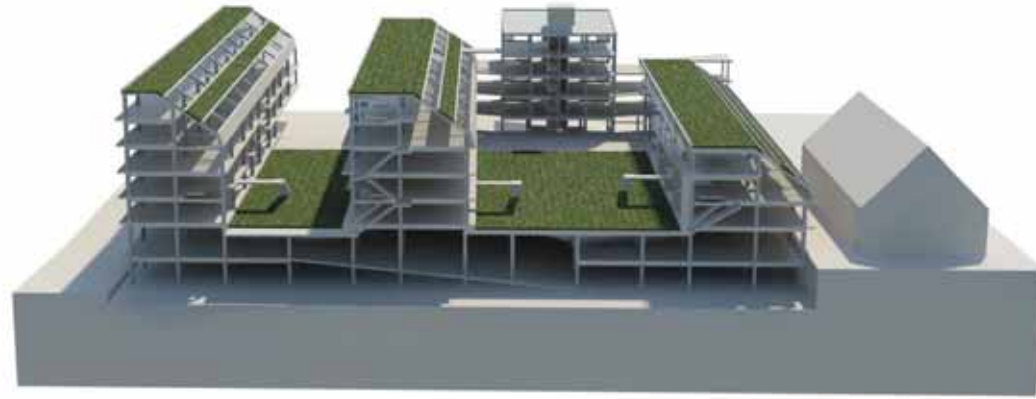


21 June - Winter Solstice : 13h00 (Author 2010)



21 June - Winter Solstice : 16h00 (Author 2010)





21 December - Summer Solstice : 10h00 (Author 2010)



21 September - Equinox : 10h00 (Author 2010)



21 December - Summer Solstice : 13h00 (Author 2010)



21 September - Equinox : 13h00 (Author 2010)



21 December - Summer Solstice : 16h00 (Author 2010)

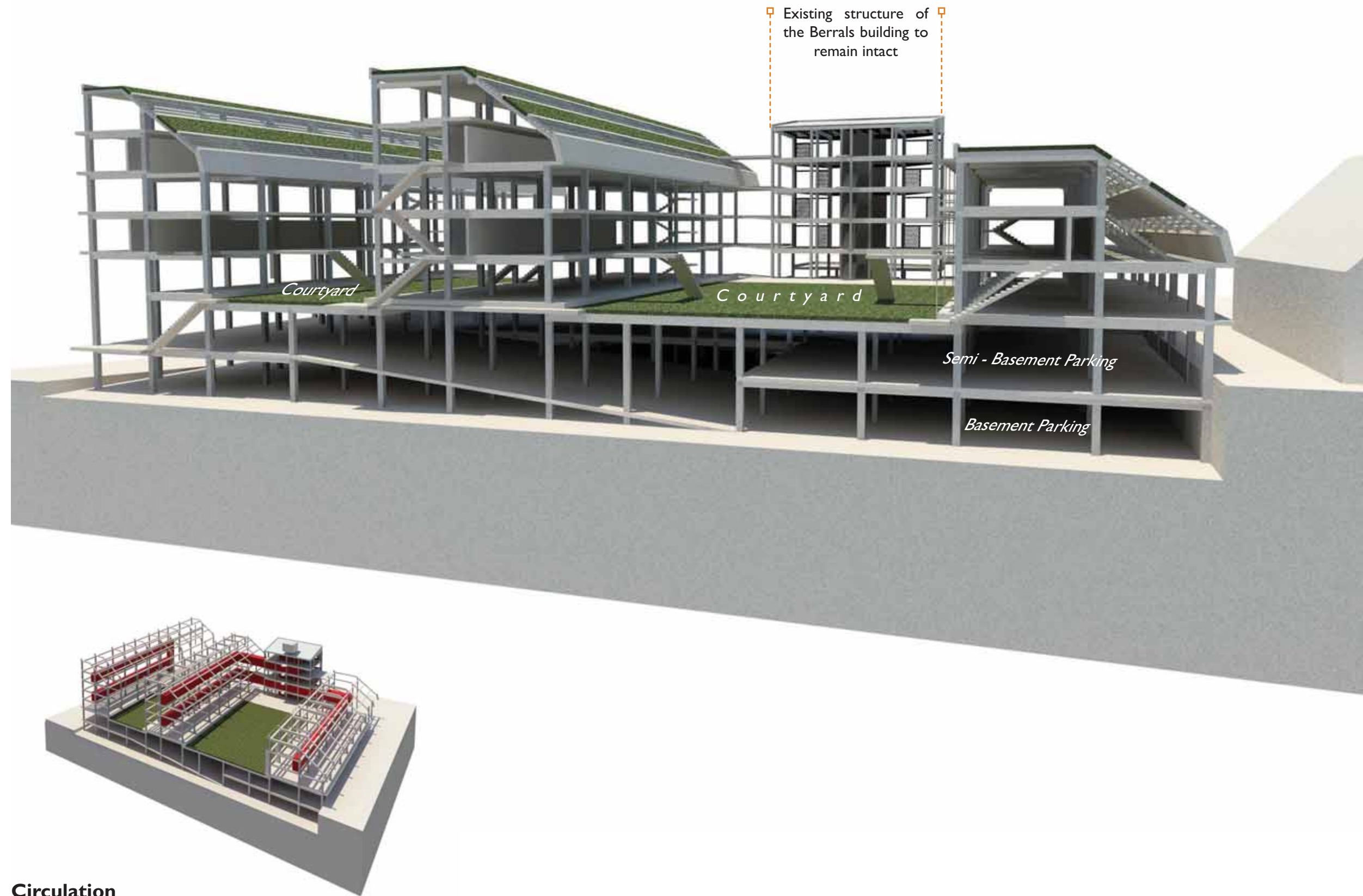


21 September - Equinox : 16h00 (Author 2010)



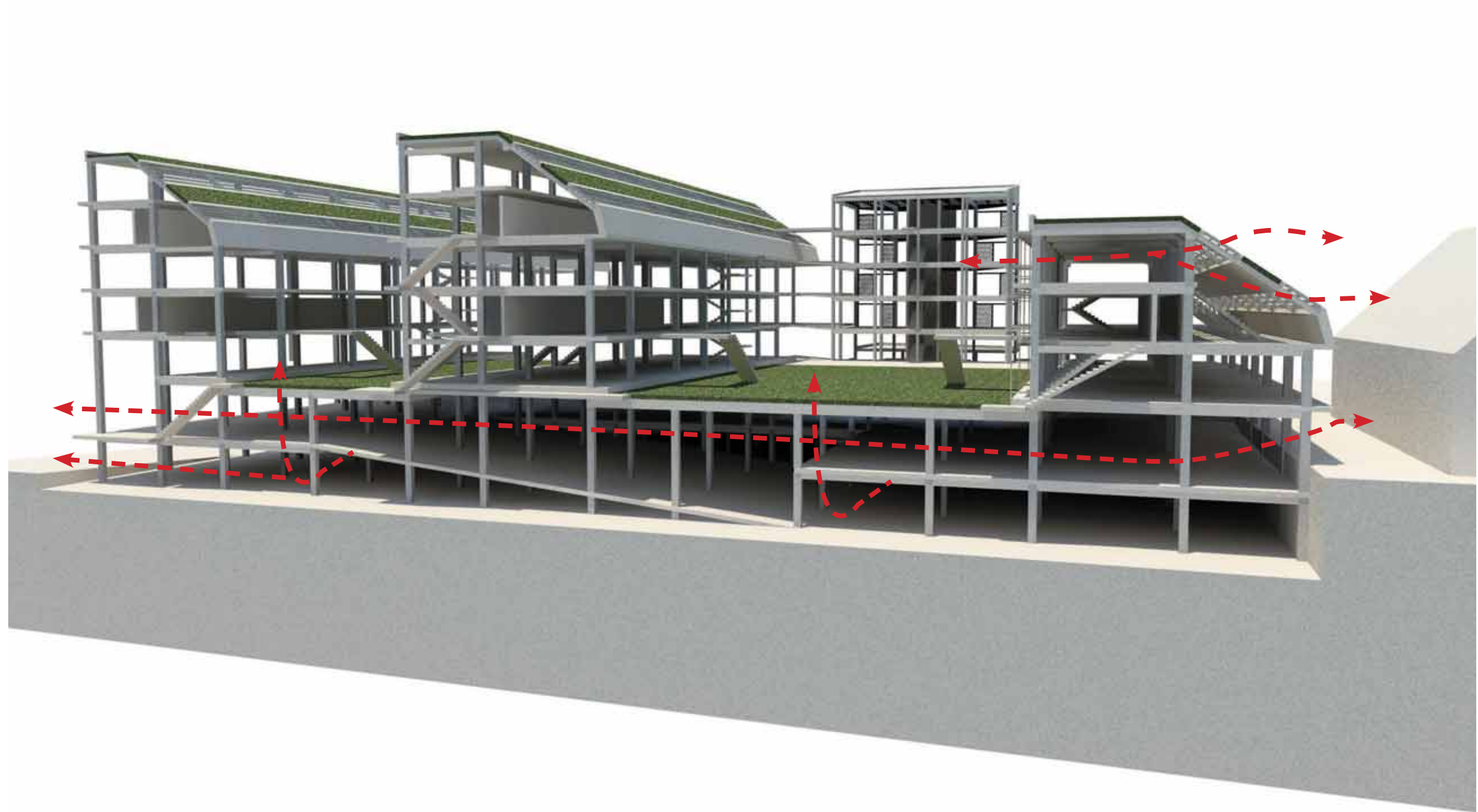
## Structure

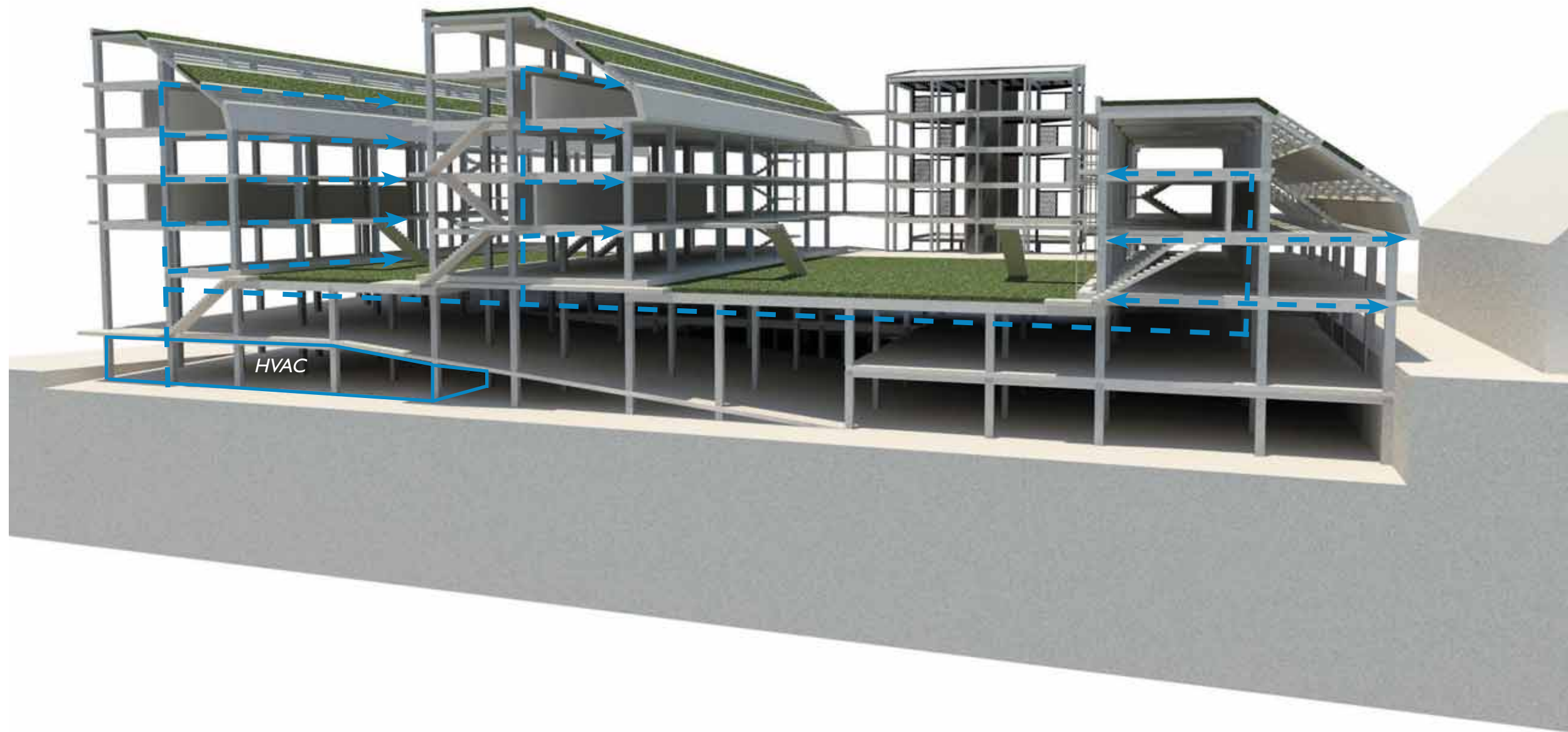
The primary structure of the 3 residential/office blocks consists of concrete floor slabs and beams that sit on concrete columns.



## Circulation

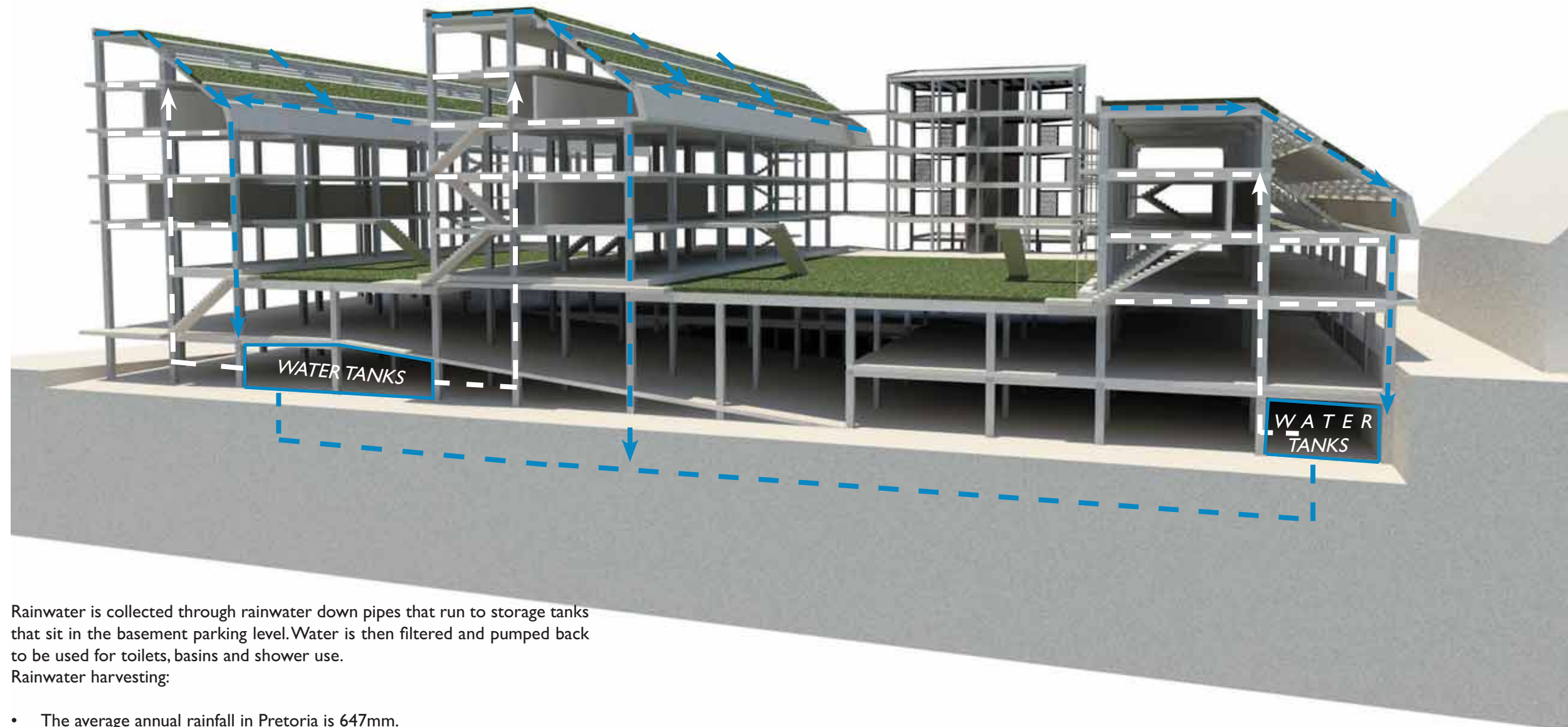








## Rainwater Harvesting



Rainwater is collected through rainwater down pipes that run to storage tanks that sit in the basement parking level. Water is then filtered and pumped back to be used for toilets, basins and shower use.

Rainwater harvesting:

- The average annual rainfall in Pretoria is 647mm.
  - Total roof area : 2530 sqm
- $2530 \text{ sqm} \times 0.647 = 1637 \text{ KI}$  is the amount of water available for harvesting. Only 73 % of this water will be harvested owing to evaporation.

Size of rainwater tank size is based on the amount of water consumed per day.

Average water consumption:

- Hand basin : 5 litres
- Kitchen sink (per wash-up) : 6 litres
- Dishwasher : 14 litres
- 1 person + household : 120 litres
- Toilet: 8 litres per flush
- Showers: 36 litres per person

$$\begin{aligned} \text{Estimated water consumption} &= 2 \times 120 \text{ litres (2 people + household)} \times 48 \text{ apartments} \\ &= 11520 \text{ litres} \end{aligned}$$

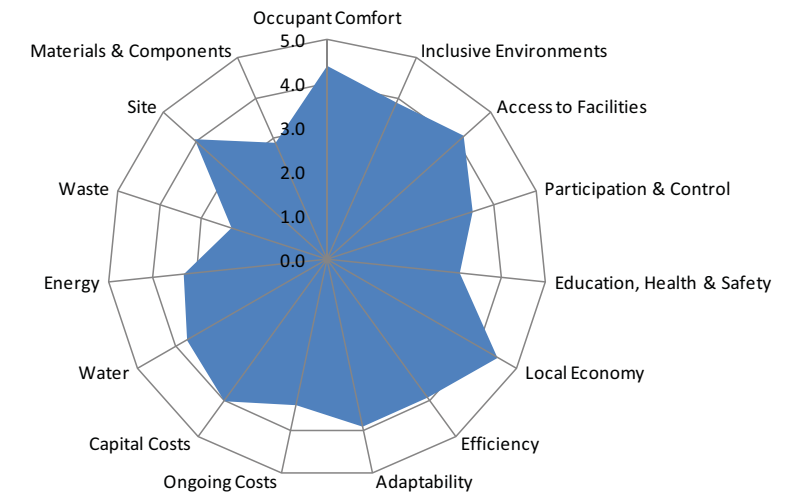
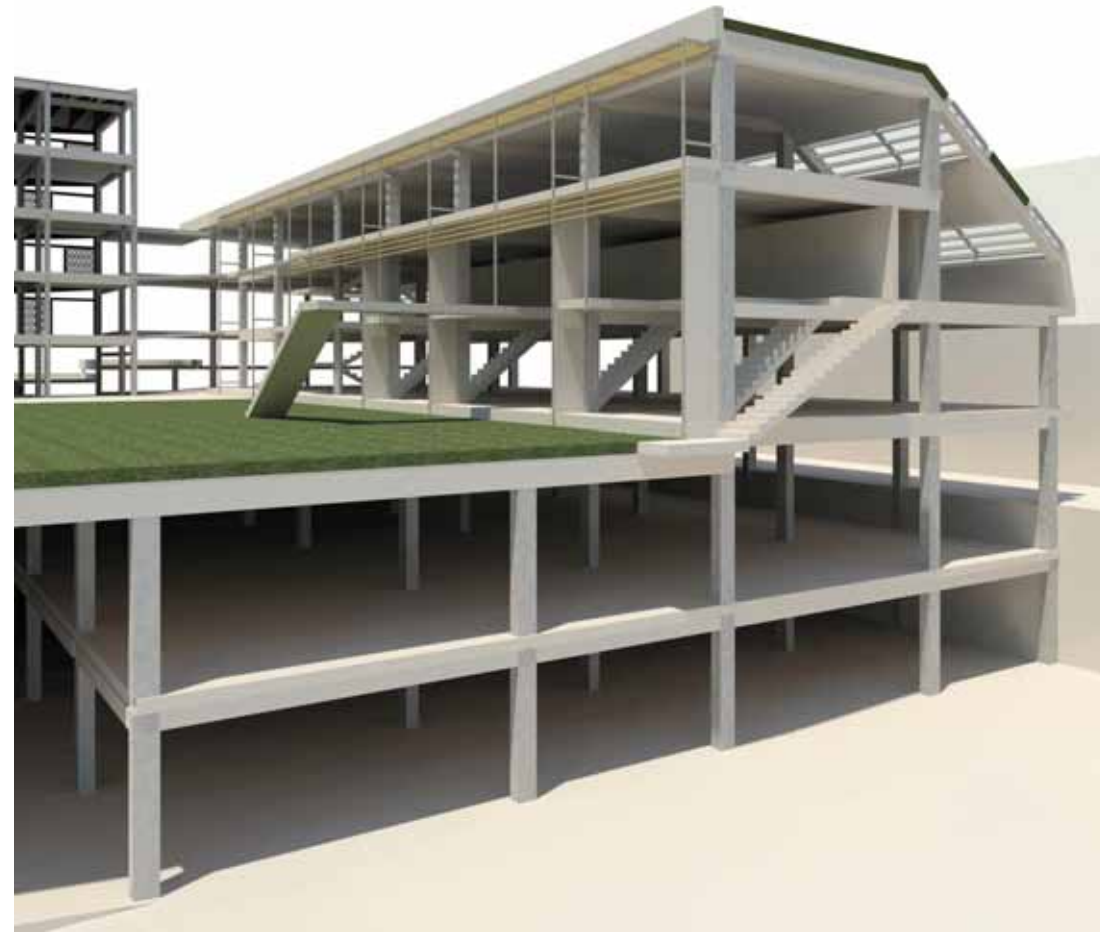
Sizing of rainwater harvesting system : Total consumption (L) x number of months with low or no rainfall. There are four months where there is little or no rain in Pretoria.

$11520 \text{ (L)} \times 4 = 46080 \text{ litres}$  is the capacity that the storage tanks need to accommodate. So three 15 000 litre rain water tanks are sufficient to store the necessary daily amount of water that will be used. Enough water will be stored in the water tanks to last through the winter months where there is little rainfall. This is due to the large roof span that allows for a large amount of water to be harvested.

## Tectonics



The Sustainable Building Assessment Tool provides an indication of the performance of the design of a building in terms of its sustainability. Three aspects of sustainability are assessed: Social, Economic and Environmental.



Overall 3.7

Classification	0-1	1-2	2-3	3-4	4-5
	Very Poor	Poor	Average	Good	Excellent

The northern facades of the office/residential blocks are exposed to direct northern sunlight the entire day and therefore solar gain will occur within the residential apartments and offices. Solar protection is needed in the form of louvres in order to diffuse the direct solar energy. The louvres will provide not only sun protection but will provide privacy screens for the residents and it will create a dynamic facade that is not monotonous.



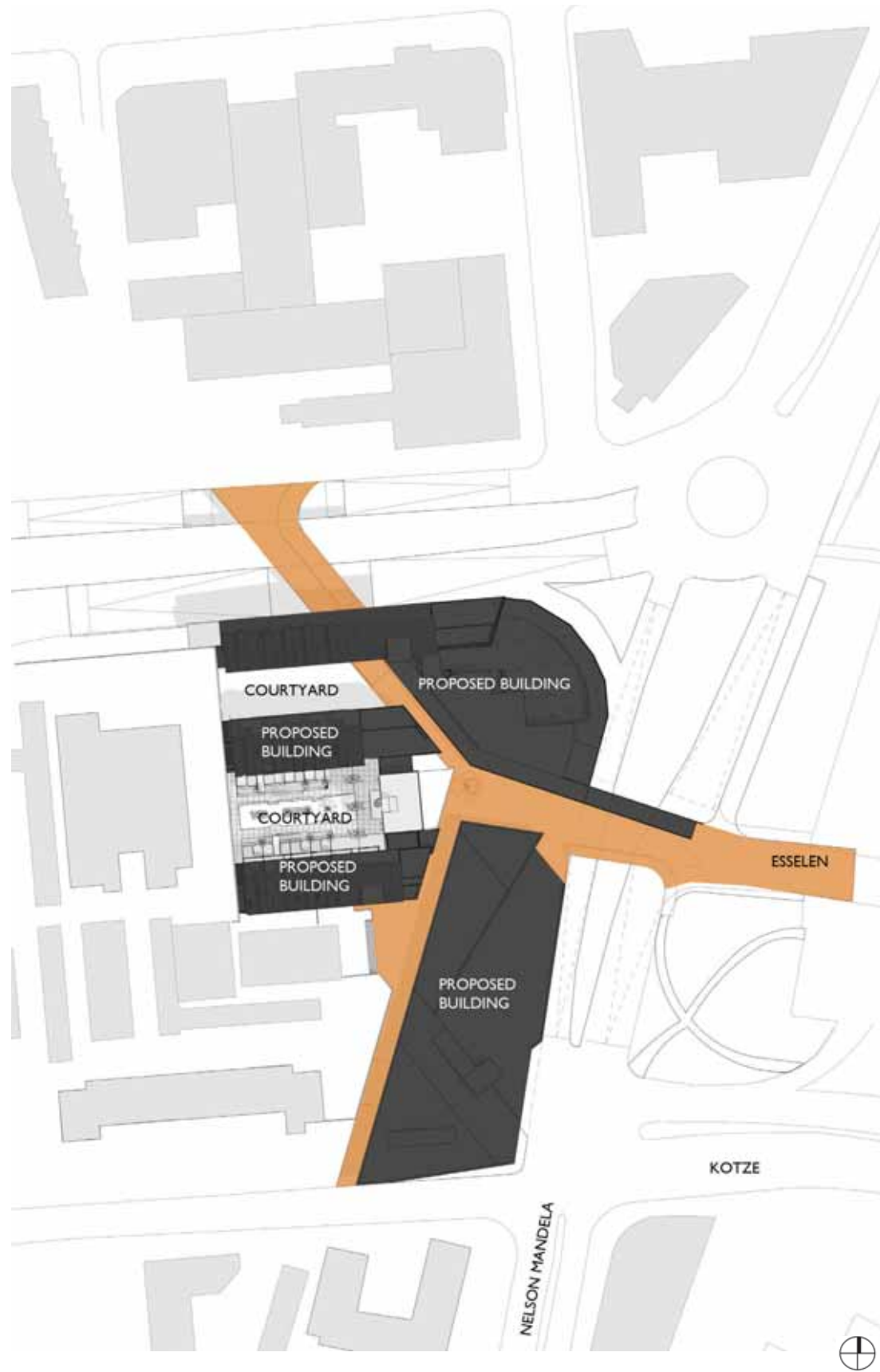
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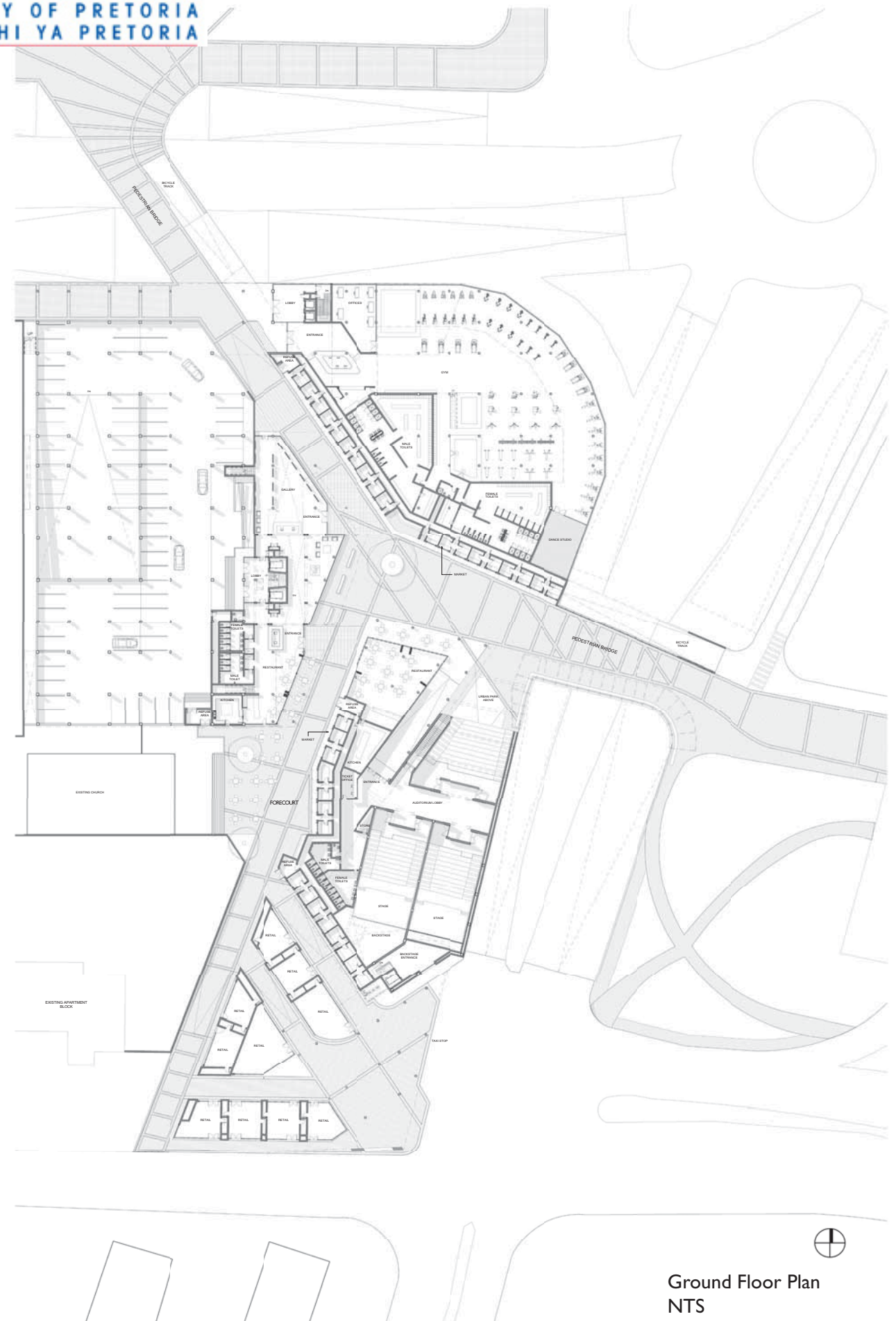




## 09. Addendum



Site Plan  
NTS

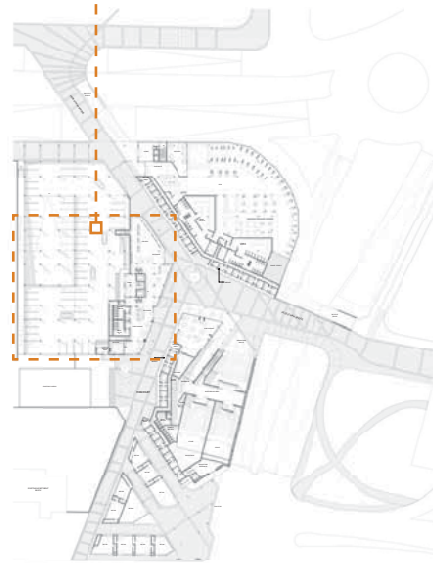


Ground Floor Plan  
NTS

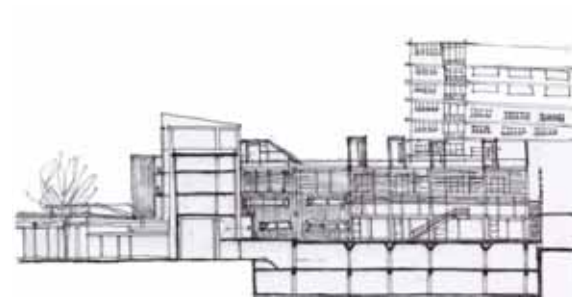




Mezzanine Floor Plan  
NTS



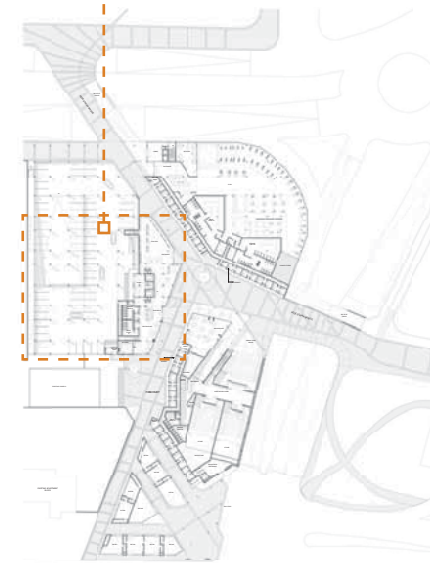
Key Plan



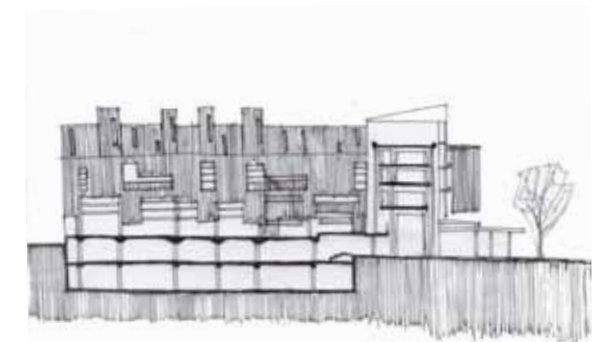
Sketch - Northern elevation



First Floor Plan  
NTS



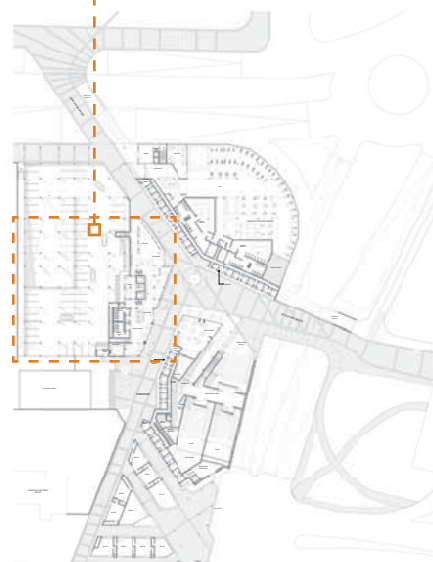
Key Plan



Sketch - Southern elevation



Second Floor Plan  
NTS



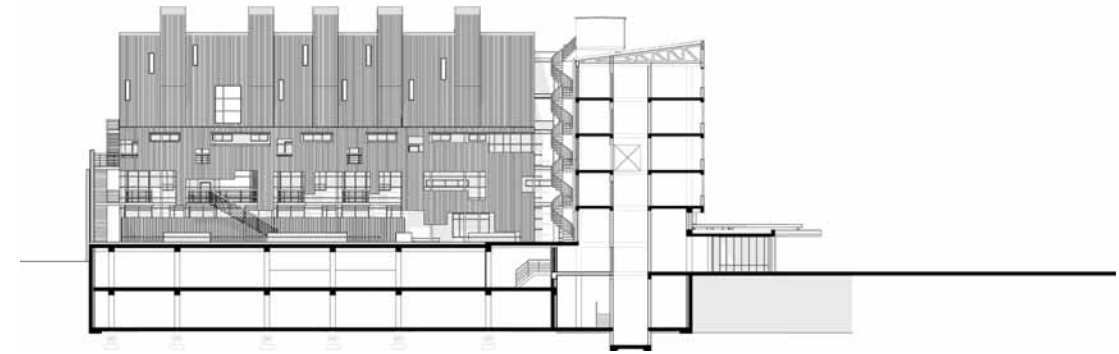
Key Plan



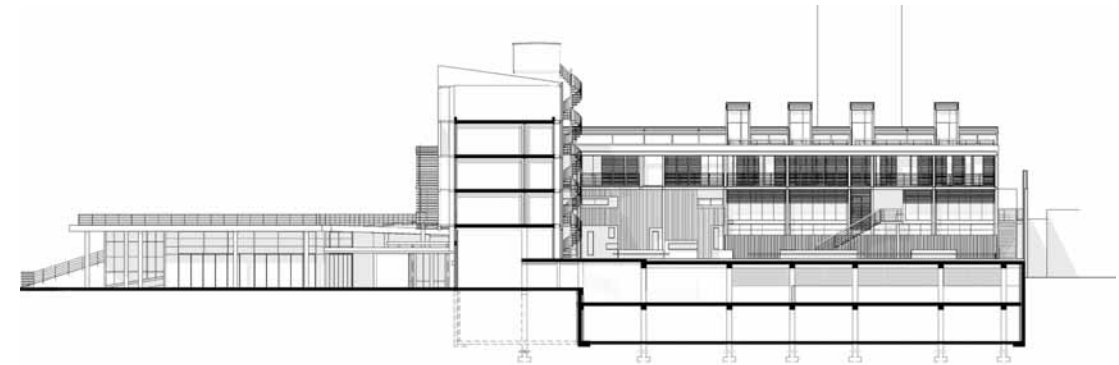
Sketch - Northern elevation



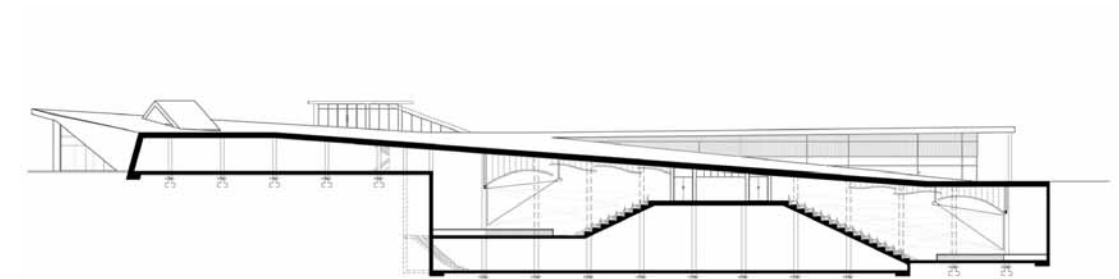
Eastern Elevation  
NTS



Southern Elevation  
NTS



Northern Elevation  
NTS



Section through Urban Park  
NTS







Approach across the pedestrian bridge which extends from Esselen Street



Courtyard perspective with the Berrals building in the background



Approach along the bicycle track from Esselen Street



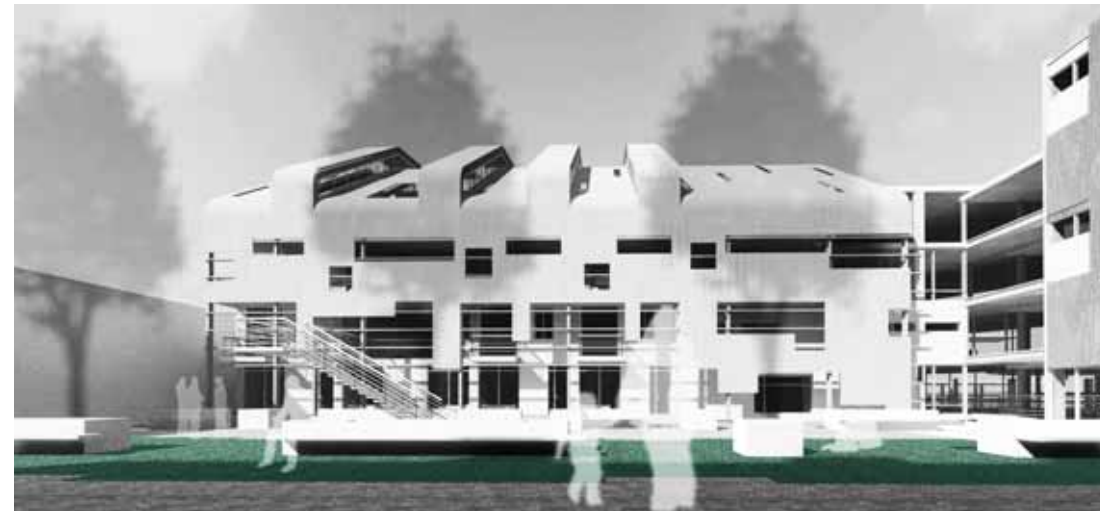
Courtyard perspective



Courtyard Perspective



Courtyard Perspective showing materiality



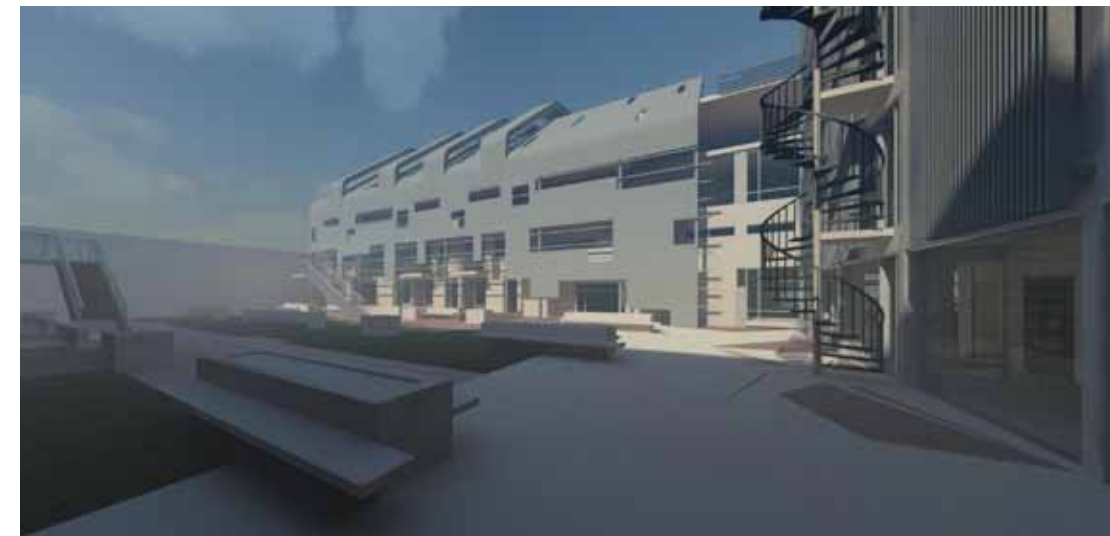
South Elevation



South Elevation showing materiality

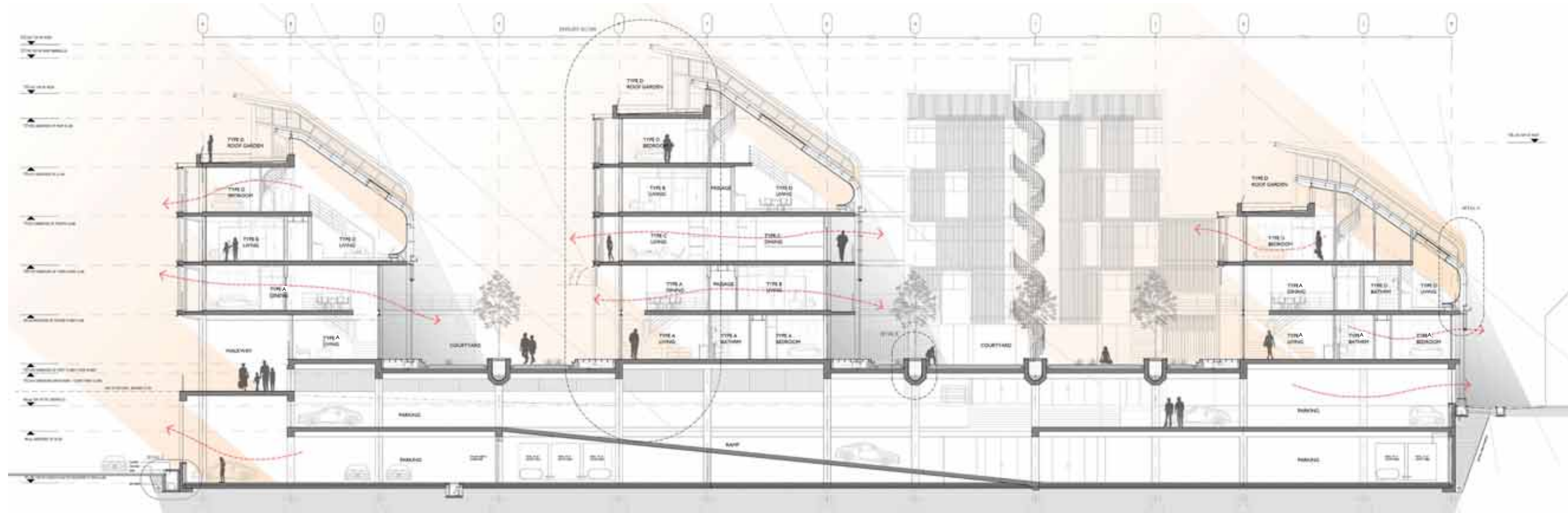


North Elevation

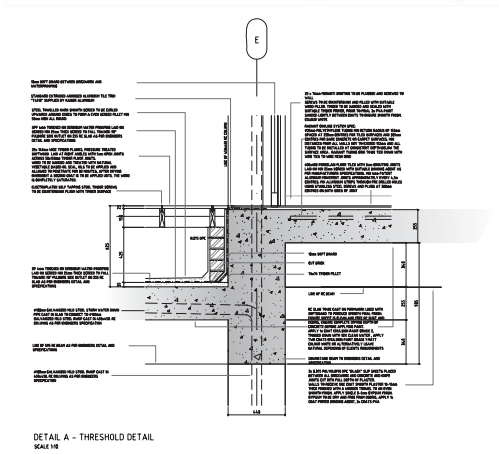


Courtyard perspective showing materiality

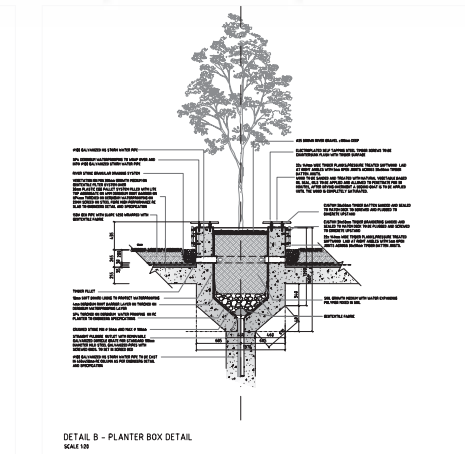




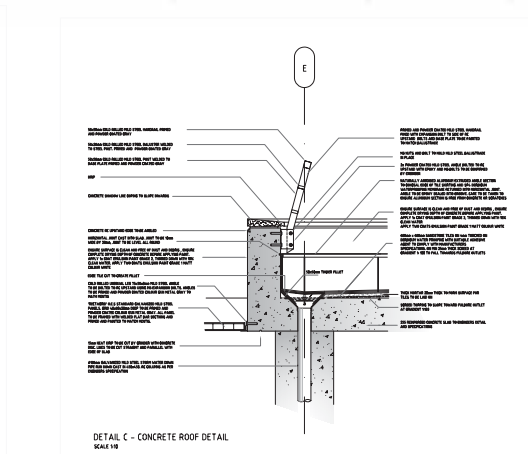
SECTION A-A  
SCALE 1:50



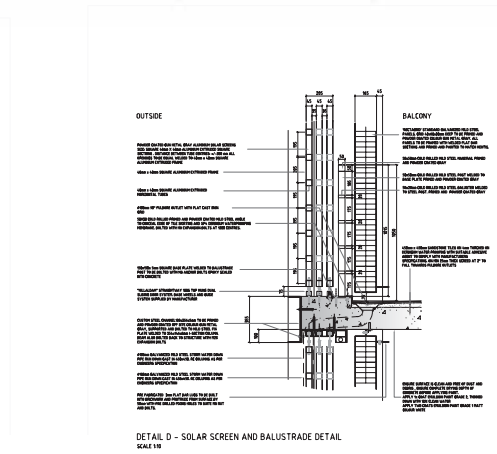
DETAIL A - THRESHOLD DETAIL  
SCALE 1:10



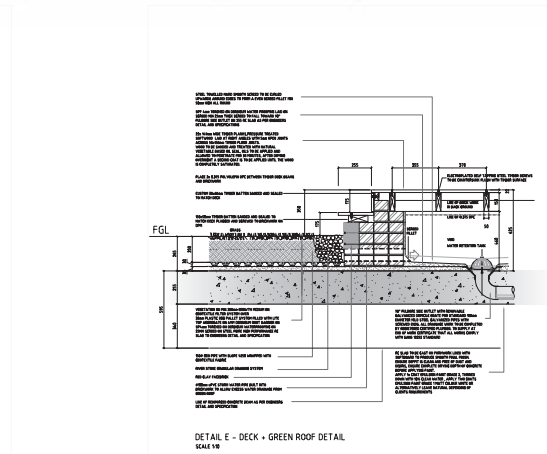
DETAIL B - PLANTER BOX DETAIL  
SCALE 1:10



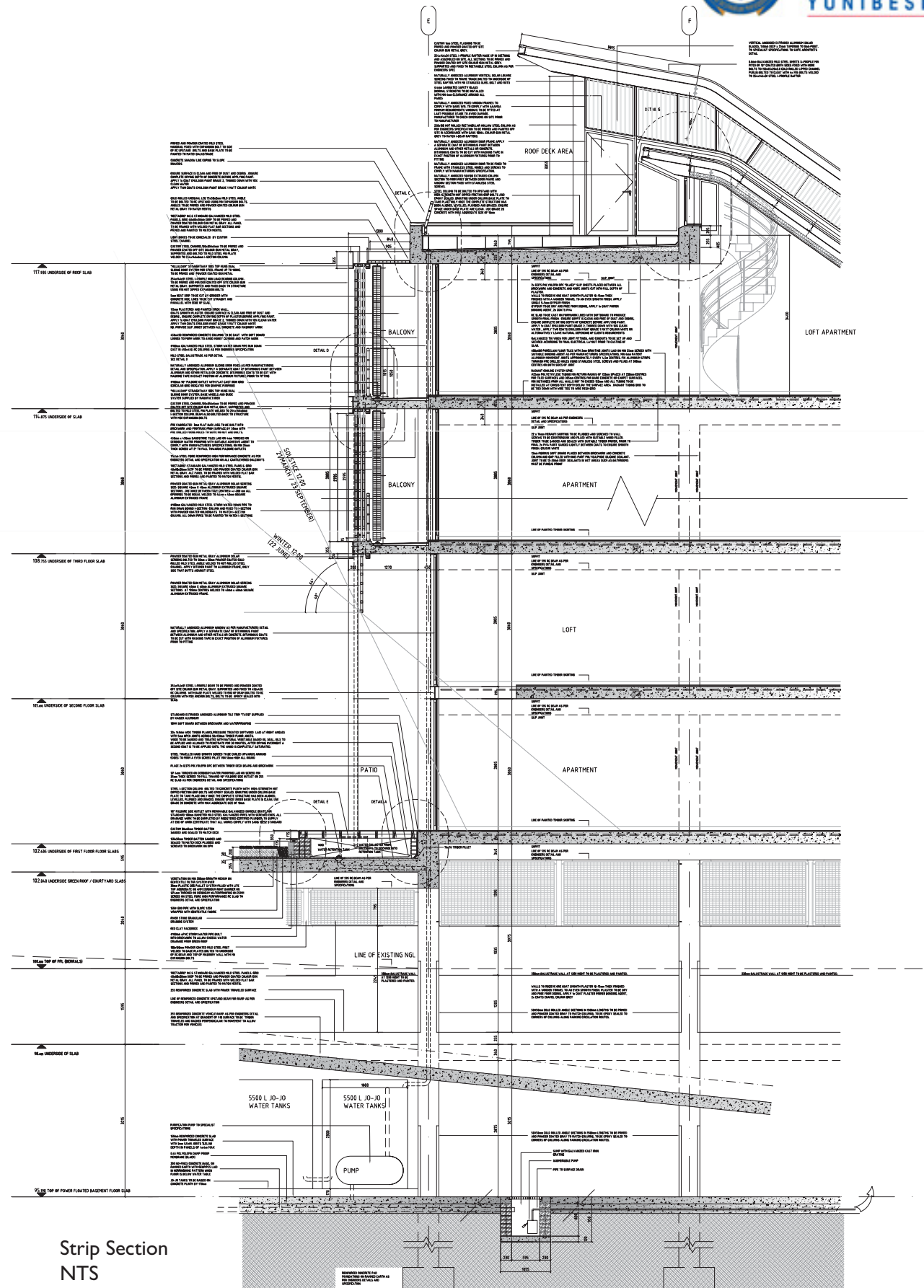
DETAIL C - CONCRETE ROOF DETAIL  
SCALE 1:10



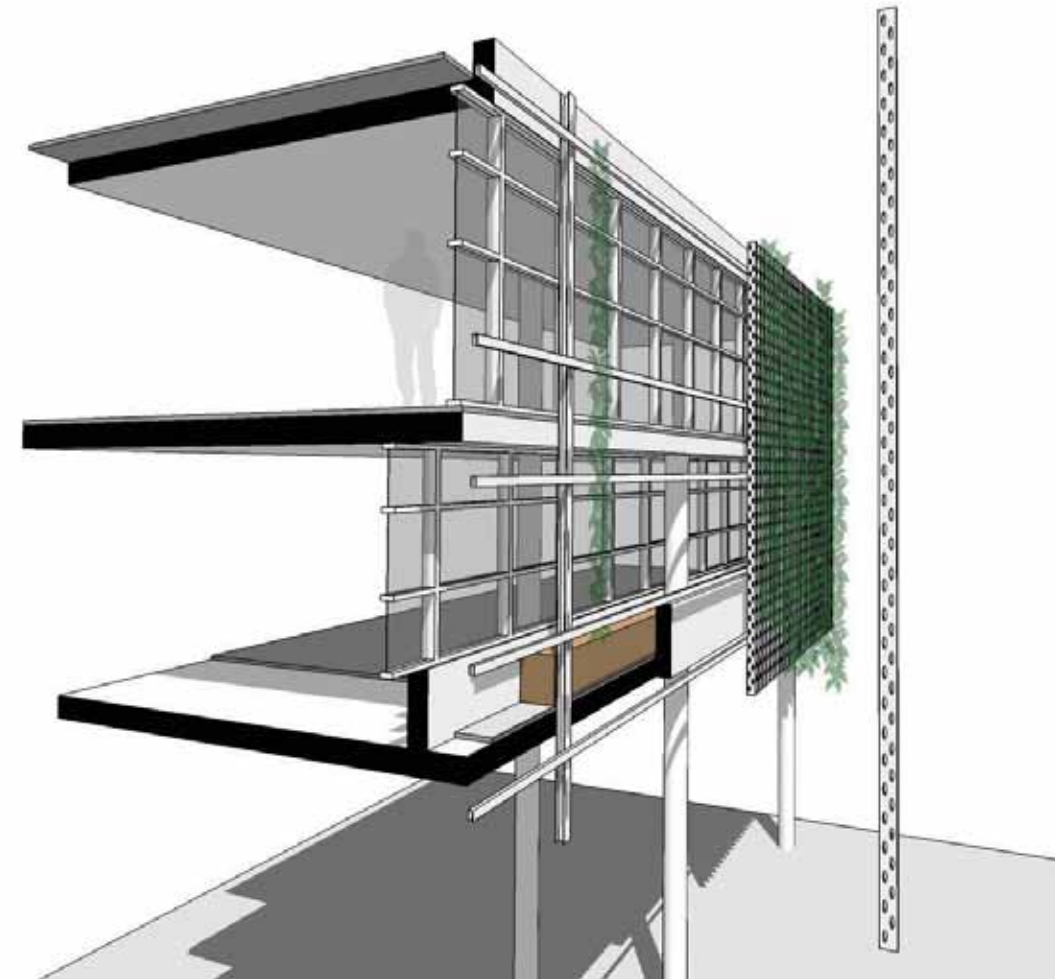
DETAIL D - SOLAR SCREEN AND BALUSTRADE DETAIL  
SCALE 1:10



DETAIL E - DECK + GREEN ROOF DETAIL  
SCALE 1:10



Strip Section  
NTS

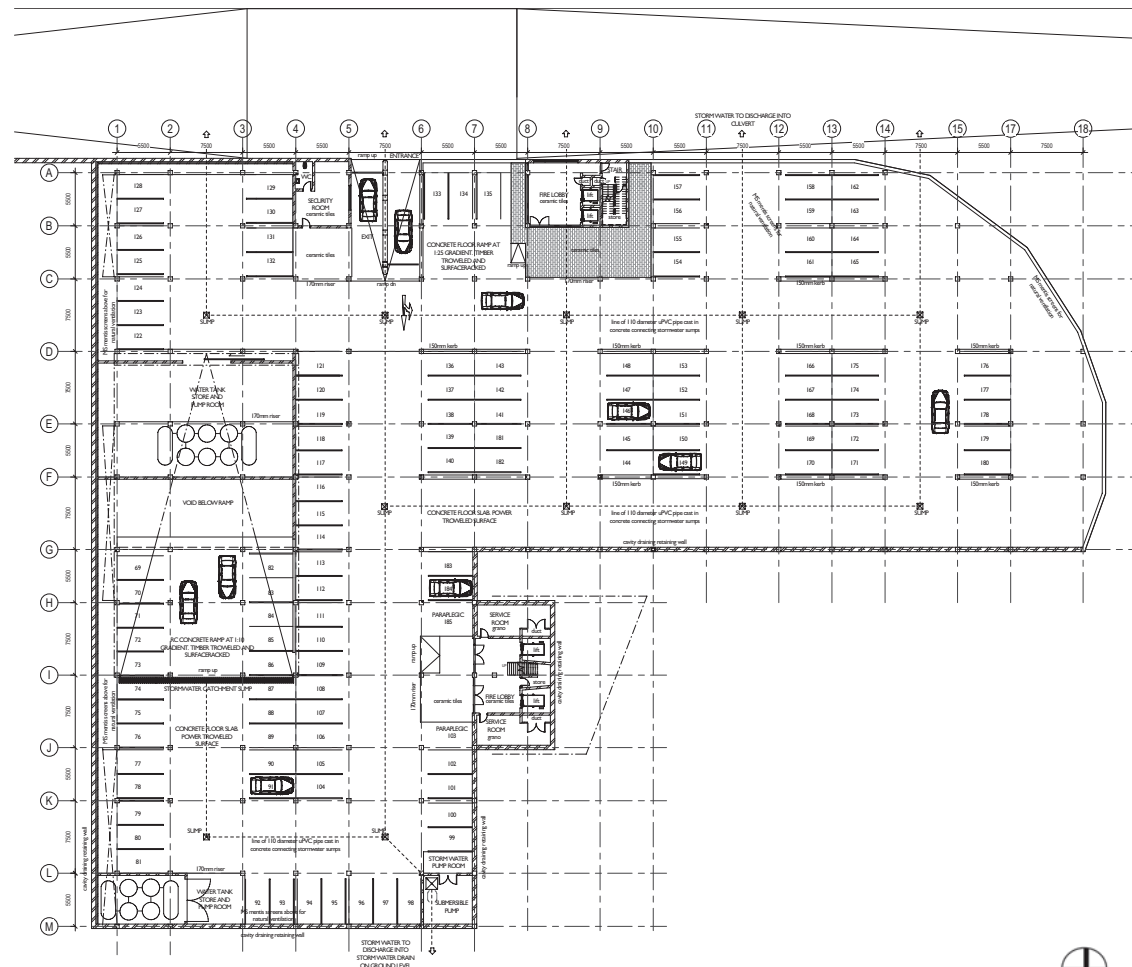


Eastern Facade Section

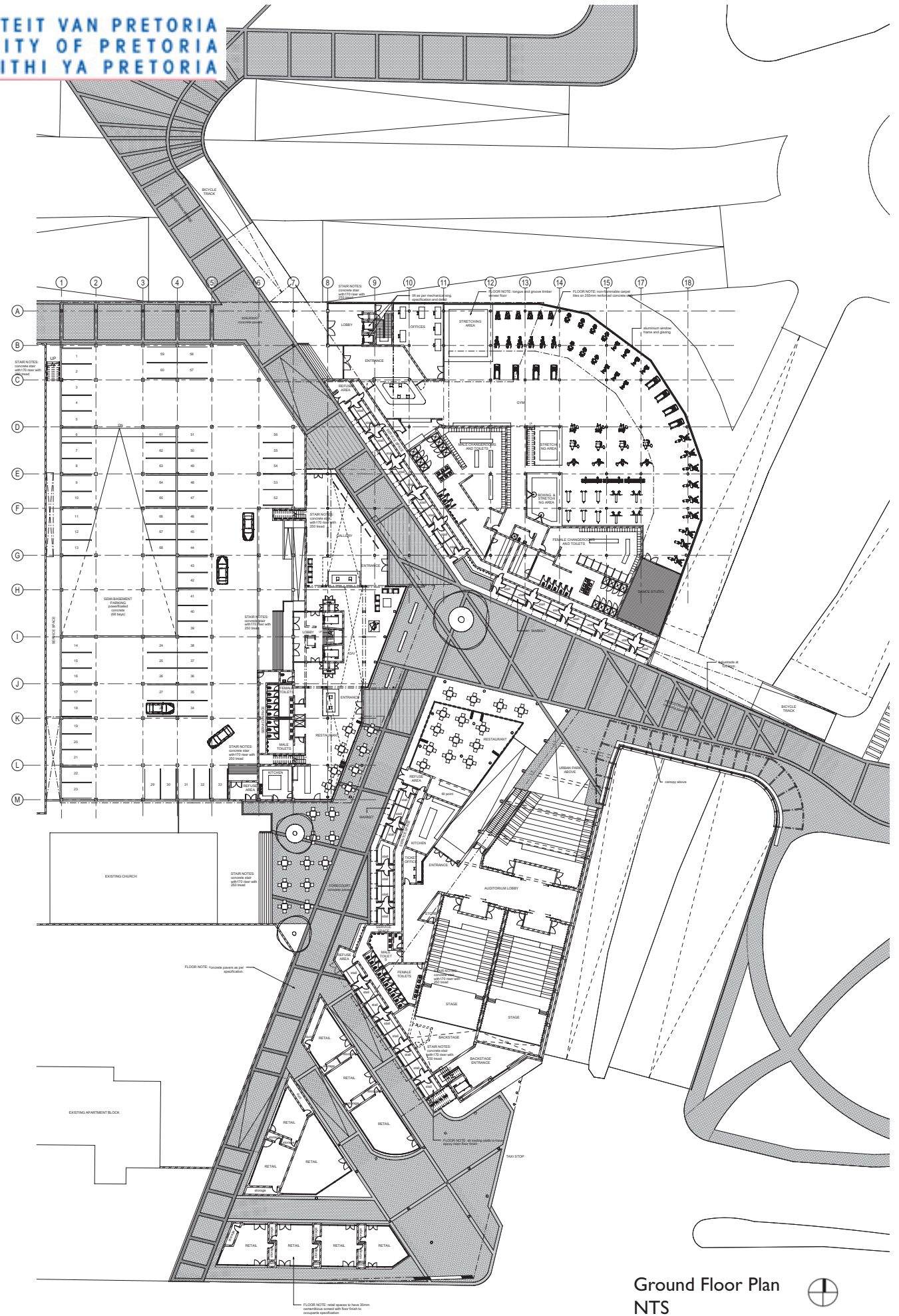


Market Stall Perspective





Basement Floor Plan  
NTS

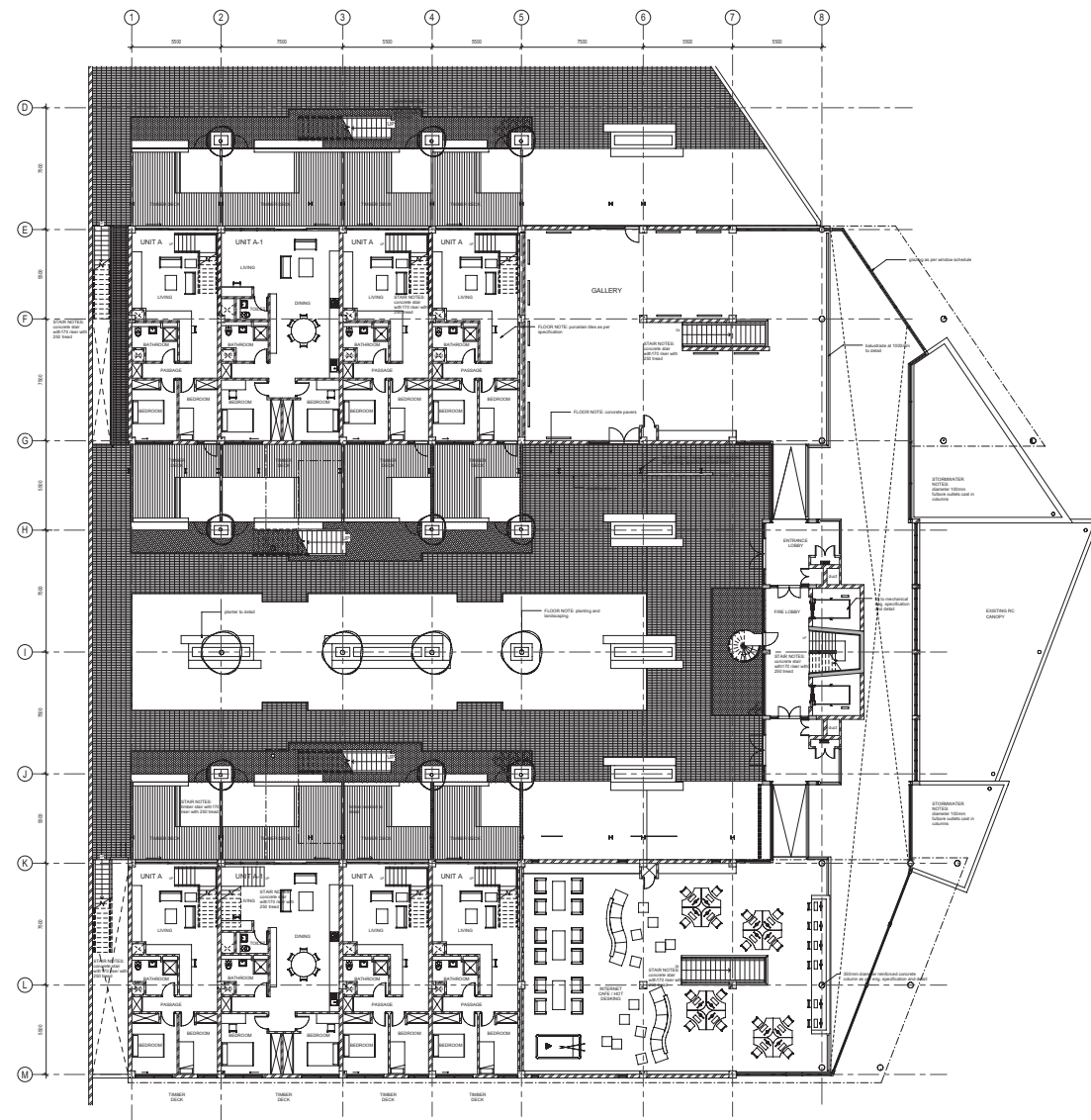


Ground Floor Plan  
NTS





Model



First Floor Plan  
NTS





