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# Surfaces & Services

A Public Space for Communication,  
Information & Discussion

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*To Pai, Mommy, Christopher, Tony, Bella, Andre' & Matthew.*

*Thank you for believing.*



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## 2. Abstract

The contemporary urban condition is one that has experienced significant alterations in recent years. It manifests in cities where the flows of people, information, vehicles and goods have increased exponentially. These alterations have forced a re-evaluation of what is understood by city processes. As important as processes themselves may be, the focus shifts towards a transformation of the manner in which they take place.

Transformation is a common factor that can be identified in all cities. However, it is not universal and so it only allows a general understanding of the contemporary city to be formed. Particular reference is made to the African City as it is characterised by its inherited and distinctive cultural, social, political and economic circumstances.

Therefore, the question of what architecture and open space should be in the unique African urban context arises. The aim is to propose a possible solution, and to test the notion of a valid African Architecture, without excluding further possibilities.

The criteria for legitimate African spaces are extracted from Doreen Massey's<sup>1</sup> book *For Space* where the notions of space are not only challenged but alternatives are put forward. The first is to recognise space as the product of interrelations as constituted through interactions; secondly, that space is to be understood as a sphere of possibility of the existence of multiplicity and lastly the coexistence of heterogeneity (Massey, 2005:9). Space is seen as always under construction, never complete and never finished. In this model social exchange and temporal conditions supersede the physical, homogenous and static. Thus space is a dynamic phenomenon that challenges current practice and is a result of processes, attitudes, perceptions and transactions. It is a social space that is dominated by communication, exchange and experiences and its identity is characterised by temporal qualities.

Consequently, based on these notions of a valid space, the African urban condition is an indeterminate one in which the emphasis shifts from urban forms, to urban processes. It is capable of absorbing endless extensions and intensions; and in terms of the South African city, it should be able to absorb cultural, social and political differences as well.

This in turn leads to a new conceptualisation of the city, and the role architecture plays within it. Here, a city goes beyond architecture; where the architectural project is not dealt with in isolation. It is where architecture no longer sees itself as the sole contributor to shaping the city, but rather part of a multi-disciplinary activity. It is where architecture becomes a synthesis of building and landscape with the intention of becoming an urban surface, where its significance lies in what it does, as opposed to what it is.

This dissertation is a speculative work that proposes tactics, which incorporate multi-disciplinary strategies, intended to stimulate and redirect the urban landscape to more relevant and enabling urban environments. While suggestions are made, this dissertation shows that due to the complexity and intricacy of city procedures, this is only the beginning of a lengthy process.

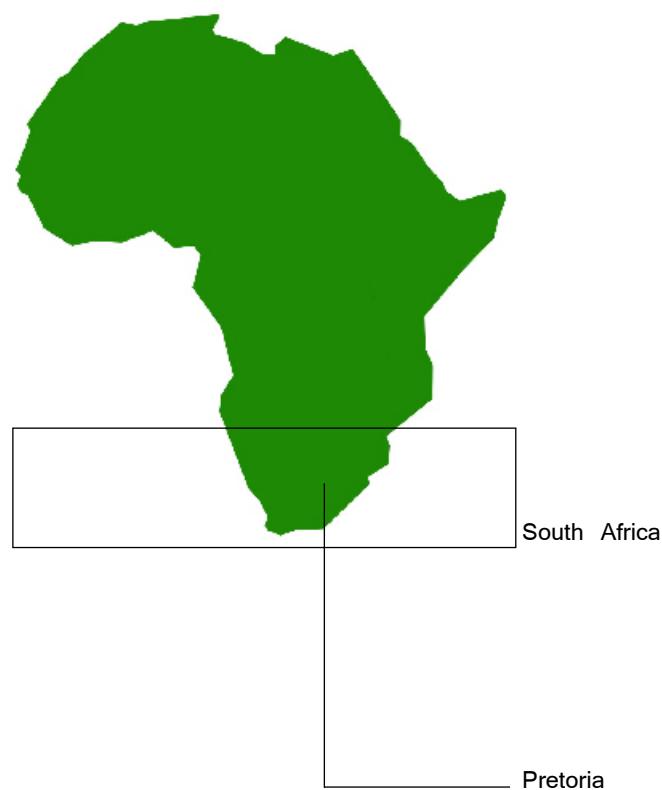
1. Doreen Massey (born 1944), is a contemporary British social scientist and a professor of geography



3. Objects of Study

3.1. Country: South Africa

3.2. City: Pretoria



3. Objects of Study  
3.3. Social & Cultural Cont



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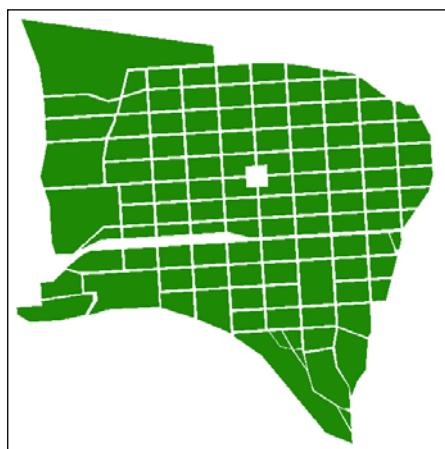


Fig. 1 A photo montage of a selection of photographs from the collections *Regards Sur L'Afrique du Sud* and *The Jo'burgers* by Patrick Mervelec. ([www.art.co.za](http://www.art.co.za), 2 May 2006)



3. Objects of Study

3.4. Suburb Inner-City

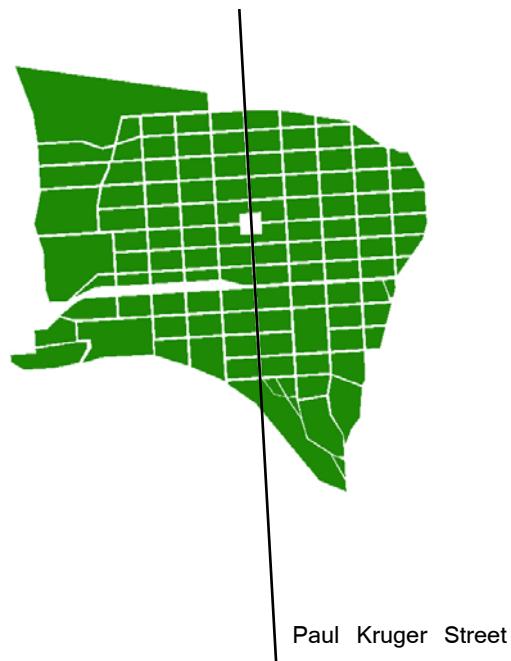


Pretoria Inner-City



### 3. Objects of Study

#### 3.5. Street: Paul Kruger Street



Originally called Markt (Market Street) but the name changed during the Voortrekker celebrations in 1938 to commemorate State President Stephanus Johannes Paulus Kruger who held office from 1883-1902 (Andrews, 1989: 21). Paul Kruger Street is an important street that runs through the centre of the CBD and links the Pretoria Station in the south and the National Zoological Gardens in the north. It is not only an important historical axis but a significant pedestrian route as well. It has many faces and its character changes as you move along it.

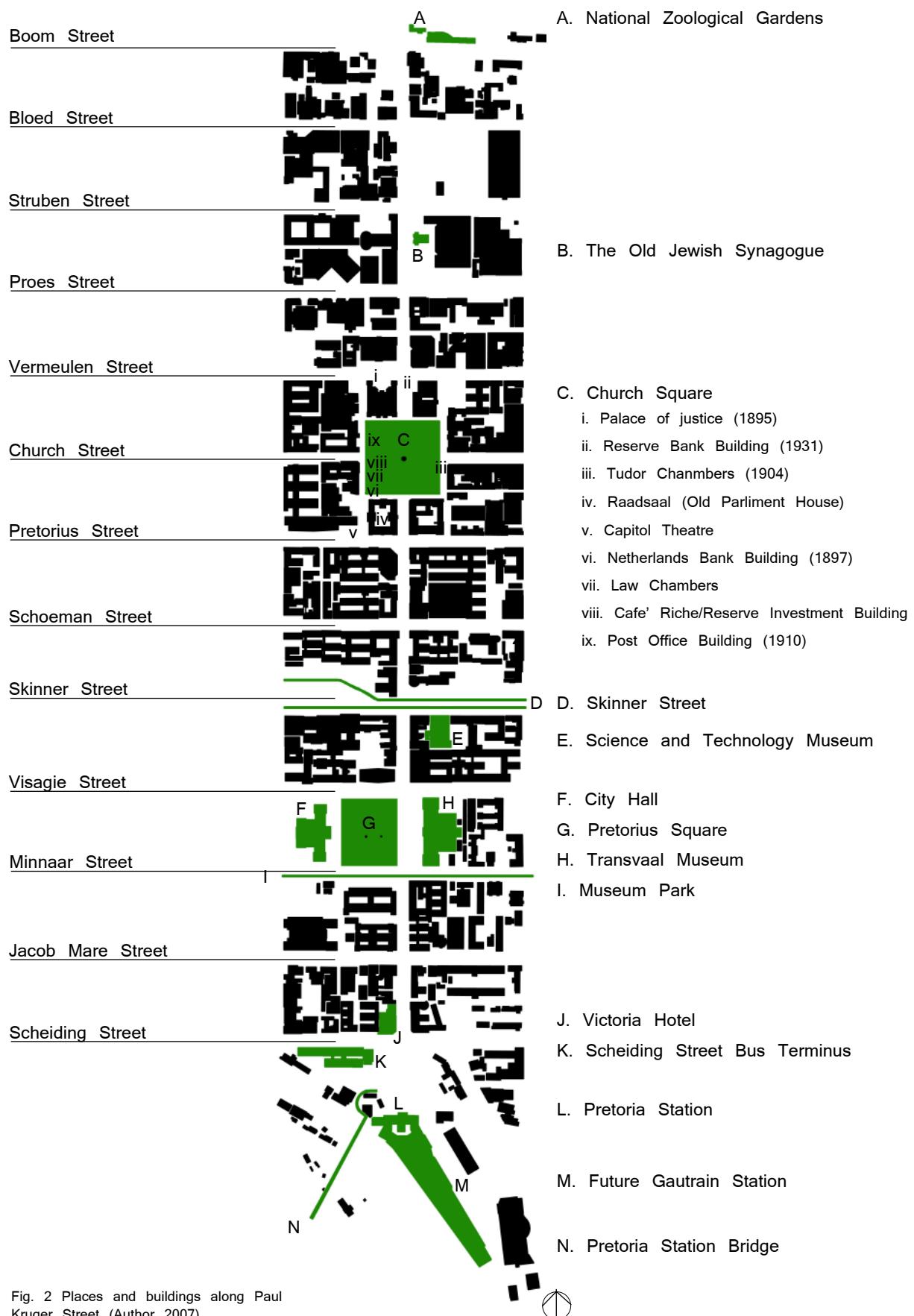


Fig. 2 Places and buildings along Paul Kruger Street (Author 2007).

### 3.5.1. Places and Buildings Along Paul Kruger Street

#### 3.5.1.1. National Zoological Gardens (A)

A 80-hectare zoo that is home to approximately 4300 animals. It is one of the city's main visitor attractions. Over recent years it has gone into a state of decline and is in need of repair and maintenance.

#### 3.5.1.2. The Old Jewish Synagogue (B)

This National Monument is an example of Byzantine Architecture, designed by the architects Ibler and Beardwood in 1895. The State acquired the building in 1958, and it became the venue for the treason trial of Nelson Mandela and his co-accused. Currently, it is an abandoned building that has been fenced off and is slowly deteriorating. The Department of Public Works have initiated various renewal projects for the building, of which none have materialised.

#### 3.5.1.3. Church Square (C)

It was originally the marketplace where farmers from the surrounding areas would observe "nagmaal" or Holy Communion (Punt, 1994:5). It was first known as Market Square, and its current name is derived from the fact that two churches once stood in the square. The first dating back from 1856, after which it burnt down in 1882, the second church was built between 1884 and 1885. As Pretoria prospered, after the discovery of gold in the Witwatersrand in 1886, new buildings were erected around the square. A statue of Paul Kruger, by Anton van Wouw, now stands in the centre of the square. Many would consider Church Square to be the heart of the city as it is where two important streets, Church and Paul Kruger Streets, intersect.

#### 3.5.1.4. Skinner Street (D)

In 1975, the Structure Plan for Pretoria, initiated a ring road, that would form part of a highway system along the CBD with the intention of Skinner street being an elevated, multi-lane highway. The present-day Nelson Mandela Road, that forms the eastern boundary of the CBD, was to also form part of the ring road. The plans that proposed these roads to become elevated highways did not materialise but they still became outsized roads that carry large amount of traffic and have now fragmented the city.

#### 3.5.1.5. The City Hall (F)

It was built to celebrate Pretoria's city status, attained in 1931. The commission of this Neo-classical building was part of a competition that was won by F. G. McIntosh in 1926, but he passed away before construction began, and so his assistant, John Lockwood-Hall (1873-1941), continued with the project. (van der Waal, 1995:18). It was built in 1935 and contains elements that portray both Art Deco and the Arts and Crafts Movement (Jansen, 2006). The buildings rear end is of plaster work and its front façade is built from granite. The two key elements within this façade are a clock tower and a pediment, designed by Anton van Wouw, depicting the history and development of Pretoria. It is now under the ownership of the Tshwane Metropolitan Council (Jansen, 2006). The building looks out onto a garden, formerly known as Pretorius Square.

#### 3.5.1.6. Pretorius Square (G)

It is a formal garden, populated with Jacaranda trees, that sits between the City Hall and the Transvaal Museum. Two statues depicting the Voortrekker leaders Marthinus Pretorius, who established Pretoria in 1855, and his father Andries Pretorius, stand in the square. Marthinus Pretorius established Pretoria in 1855, naming it in honour of his father (Tshwane Tourism Association, 2002). A third statue was erected in 2006, a bronze figure of Chief Tshwane.

### 3.5.1.7. The Transvaal Museum (H)

A natural science museum and scientific institution that focuses exclusively on natural history, in particular terrestrial zoology (Rautenbach 1995:3). It houses related research facilities and the Geoscience Museum. The sandstone neo-classical building with its turned sandstone columns was built from 1910-1912, the architect being J. S. Cleland. The original plans proposed two wings on the western and eastern faces of the building, which were never realised, until 1995 Holm Jordaan Architects, from Pretoria designed these addition replicate the original, but using clay masonry. Together with these additions, the architects proposed bio-domes to be constructed within the building, only the steel frames were erected. The building is now under the ownership of the Public Works Department, as stated by Anton Jansen (2006) the executive director of the Tshwane Building Heritage Association.

### 3.5.1.8. Museum Park (I)

Museum Park is a visual and structural grouping of museums, heritage sites, buildings and activities, all related to conservation and education and all within a close walking distance of each other (Jordaan, 1995:26). It is a focus of cultural resources in Pretoria. It includes Melrose House, Burgers Park, the Transvaal Museum, the Geoscience Museum, the City Hall, the National Cultural History Museum (African Window), the Inner-City Environment Centre, the Museum of Science and Technology and the Museum Park Discovery Centre (Tshwane Tourism Association, 2002)

### 3.5.1.9. Victoria Hotel (J)

It is the oldest hotel in Pretoria and was initially known as the *Hollandia Hotel* (Meiring, 1980:83) and designed by an unknown Dutch Architect in 1896. In 1900 it was renamed by Lord Roberts after the Queen of England (Le Roux 1993:27). Still serves its original purpose

### 3.5.1.10. Scheiding Street Bus Terminus (K)

In addition to being a bus terminus this building also accommodates a large amount of informal traders. Just like its surround buildings, it is in a state of decline.

### 3.5.1.11. Pretoria Station (L)

The station building is the focal point of Paul Kruger Street south and is one of the CBD's main transport nodes. The building designed by Sir Herbert Baker in 1908 has significant architectural and cultural value. This building was one of Baker's first official buildings in the Transvaal before his most famous work, the Union Buildings. (Le Roux 1992:26)

### 3.5.1.12. Future Gautrain Station (M)

A high-speed railway connection between Johannesburg and Pretoria, which is to form part of the infrastructural development for the Soccer World Cup in 2010. The Gautrain together with the Pretoria station and the large amounts of people they will bring into the CBD will have a positive impact on the city.

### 3.5.1.13. Pretoria Station Bridge (N)

An important link between the area south of the railway tracks, known as Salvokop, and Pretoria Station. Unfortunately it is place of high criminal activity.



### 3. Objects of Study

#### 3.6. Urban Conditions along Paul Kruger Street

##### 3.6.1. The National Zoological Gardens

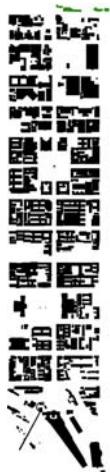


Fig. 3 Panoramic view of Boom Street west and the entrance to the National Zoological Gardens (Author, 2007)



Fig. 4 Informal trade at the entrance to the National Zoological Gardens, and Boom Street east (Author, 2007)

##### 3.6.2. The Street Condition North of Church Square

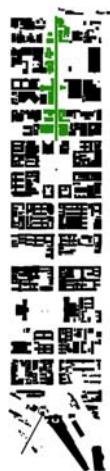


Fig. 5 A typical street edge condition of Paul Kruger Street north (Author, 2006)



Fig. 6 An abandoned site along Paul Kruger Street. (Author, 2006)



Fig. 7 Informal trade at the intersection of Paul Kruger Street and Bloed Street. (Author, 2006)



Fig. 8 The Old Jewish Synagogue (Author, 2006)



### 3.6.3. Church Square



Fig. 9 Panoramic view of Church Square east, south and west. (Author, 2007)



Fig. 10 Panoramic view of Church Square west and north. (Author, 2007)

### 3.6.4. The Street Condition South of Church Square



Fig. 11 The intersection of Paul Kruger Street and Minnaar Street, looking south. (Author, 2006)



Fig. 12 The intersection of Paul Kruger Street and Jacob Mare Street. (Author, 2006)



Fig. 13 The intersection of Paul Kruger Street and Schoeman Street. (Author, 2006)



Fig. 14 A typical street edge condition of Paul Kruger Street south (Author, 2006)



Fig. 15 Informal trade at the intersection of Scheiding and Paul Kruger Street. (Author, 2006)



Fig. 16 Bus stop on Paul Kruger Street. (Author, 2006)



### 3.6.5. Skinner Street



Fig. 17 The intersection of Paul Kruger Street and Skinner Street west. (Author, 2006)



Fig. 18 The intersection of Paul Kruger Street and Skinner Street east. (Author, 2006)



Fig. 19 A typical street edge condition of Skinner Street. (Author, 2006)

### 3.6.6. Pretorius Square



Fig. 20 A view over Pretorius Square from the City Hall. (Author, 2006)



Fig. 21 The sidewalk along Paul Kruger Street outside the Transvaal Museum. (Author, 2006)



Fig. 22 A large portion of Pretorius Square is used as a secure parking lot. (Author, 2006)



Fig. 23 A view of the Transvaal Museum and Paul Kruger Street from Pretorius Square. (Author, 2006)



Fig. 24 The sidewalk along Minnaar Street at Pretorius Square. (Author, 2006)



### 3.6.7. Pretoria Station and Pretoria Station Bridge

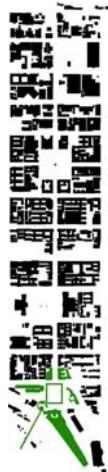


Fig. 25 Sir Herbert Baker's Pretoria Station that terminates Paul Kruger Street in the south (Author, 2006)



Fig. 26 Informal trade outside Pretoria Station. (Author, 2006)



Fig. 27 Pretoria Station Bridge to Salvokop from the station. (Author, 2006)



Fig. 28 Early morning pedestrian activity outside the station. (Author, 2006)



Fig. 29 Scheiding Street Bus Terminus. (Author, 2006)



## 4. Context Study

### 4.1. Site: Pretorius Square

Pretorius Square flanked by the City Hall and Transvaal museum on its eastern and western edges respectively, and intersected by Paul Kruger Street, form an important space along Paul Kruger Street. Together with Church Square, which can be found further north on Paul Kruger Street, are the only two open public spaces to be found along the street. Pretorius Square does not provide what one would usually expect from a square in that it is quite a large open space with poor spatial definition and hierarchy that has resulted in an unmodulated and bland space that functions more as a forecourt to the city hall than a public space.

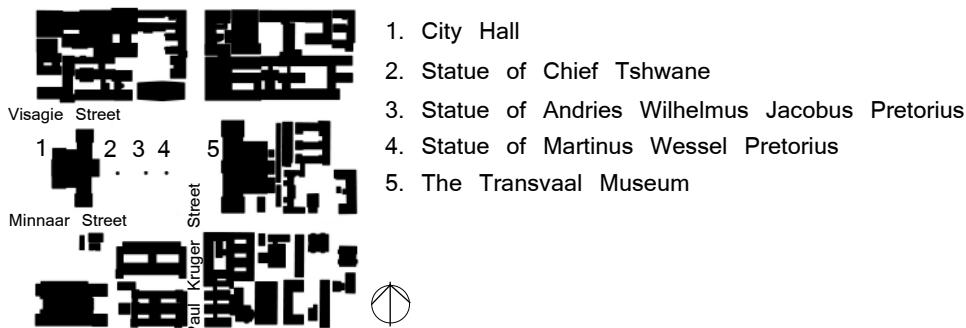


Fig. 30 Pretorius Square and its surrounding buildings. (Author 2007).



Fig. 31 View of the City Hall and Pretorius Square from the Transvaal Museum (Author, 2007).



Fig. 32 View of the City Hall and Pretorius Square parking from Minnaar Street (Author, 2007).



Fig. 33 The Transvaal Museum and Pretorius Square (Author, 2007).



Fig. 34 View of the Transvaal Museum and Pretorius Square from the City Hall (Author, 2007).



#### 4. Context Study

##### 4.2. Colonial Influence

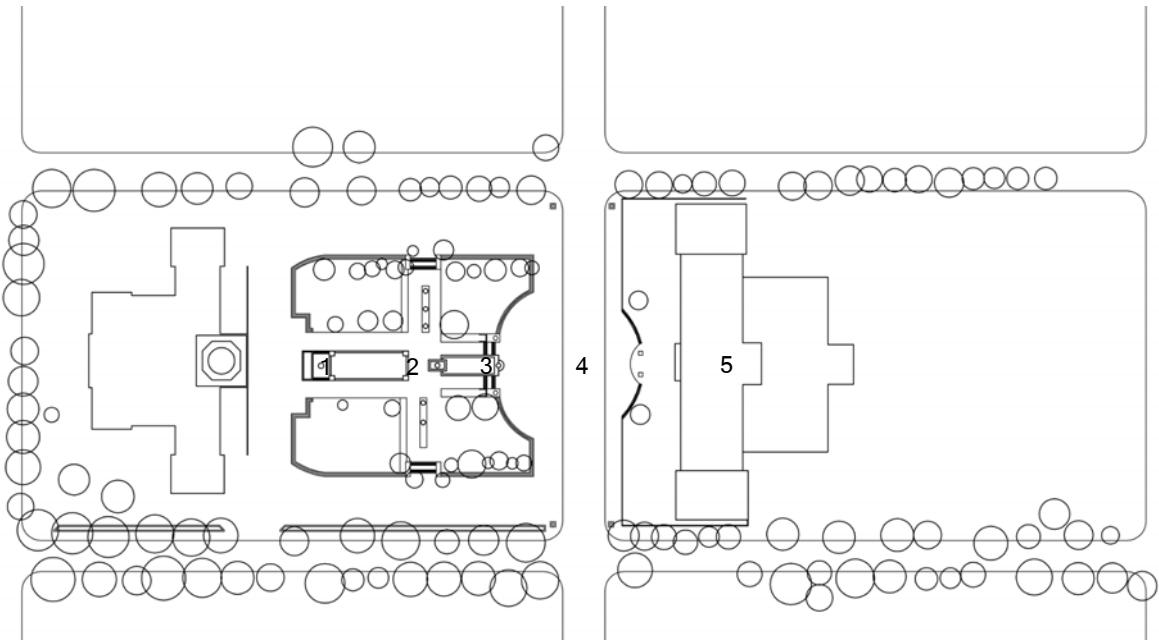


Fig. 34 Existing plan of Pretorius Square (Author 2007).



Fig. 35  
1. Pediment  
(Author 2006)



Fig. 36  
2. Chief Tshwane  
(Author 2006)



Fig. 37  
3. Andries Wilhelmus Jacobus Pretorius  
(Author 2006)



Fig. 38  
4. Martinus Wessel Pretorius  
(Author 2006)



Fig. 39  
5. Entrance to the Transvaal Museum  
(Author 2006)

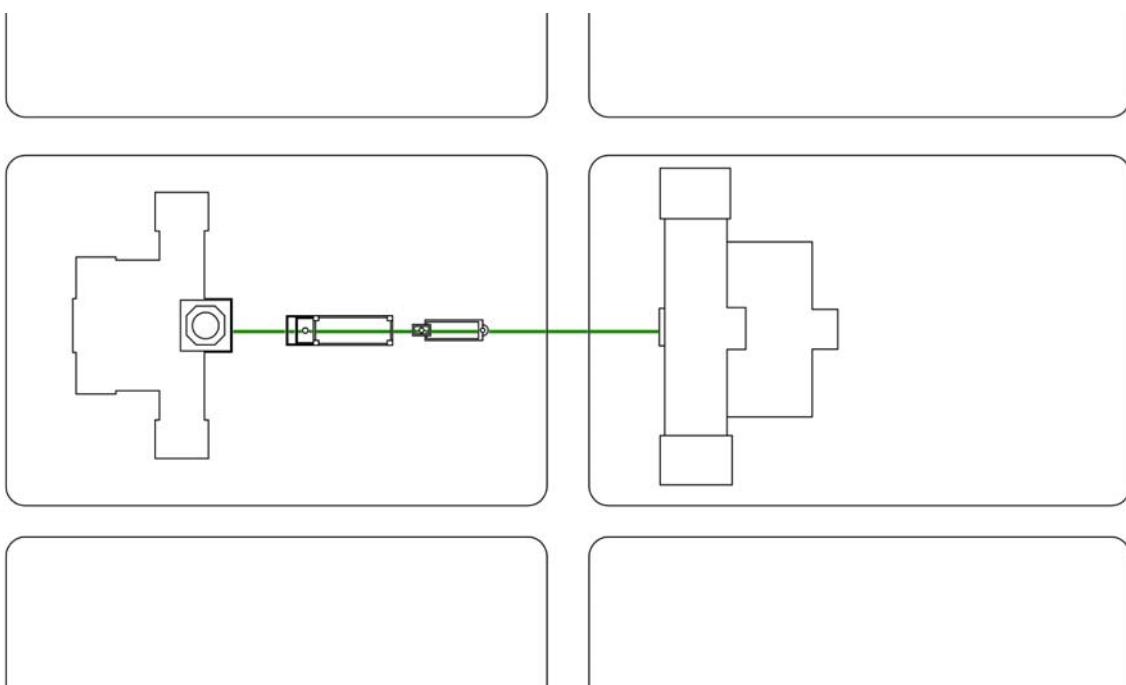


Fig. 40 The visual east-west axis on Pretorius Square (Author 2007).



## 4. Context Study

### 4.3. The City Hall

The city hall's architectural vocabulary incorporates a variety of architectural expressions which are evident in the Ionic columns topped with Corinthian capitals that carry a Corinthian entablature together with a pediment, combined they express notions of Neo-classical Architecture. In addition to that there are Art Deco fittings and chandeliers and hand crafted window and door frames that reveal an influence from the Arts and Crafts Movement together with a Neo-Cape Dutch Architecture (Jansen, 2006).

The sculptured pediment, another design by Anton van Wouw depicts the development of Pretoria from 1855-1935 from before the Voortrekkers settled, through to the time it gained its city status and right through to the time of industrialisation and the development of transport (Jansen, 2006).

The materials employed in the construction of the external load-bearing structure are not constant throughout, a variety of materials were used. To begin with, the east façade, looking over Pretorius Square, is made of grey granite. The rear walls were originally cast concrete blocks that were coated with a layer of finely crushed granite, to make it appear as though it was solid granite, but later the crushed granite coating was replaced with a regular plaster and paint finish. The same granite was used to craft the six solid columns and the hand-crafted capitals (Jansen, 2006).



Fig. 41 Eastern facade of the City Hall (Author 2006).



Fig. 42 Ionic columns with Corinthian capitols (Author 2006).



Fig. 43 Pediment by Anton van Wouw (Author 2006).



Fig. 44 Corinthian Capitol (Author 2006).



Fig. 45 Plaster and paint finish of western facade (Author 2006).



Fig. 46 Burmese Teak window frame (Author 2006).



Fig. 47 Art Deco chandelier hanging in the main hall (Author 2006).



Fig. 48 Burmese Teak door (Author 2006).

#### 4. Context Study

##### 4.4. The Role of the City Hall in its Present-Day Context

Originally the City Hall played a very important civic and social role in the city of Pretoria. It was a popular venue for civic gatherings, theatre productions and social functions. In the current urban context these functions either do not take place in the inner-city or they are accommodated elsewhere.

Presently, the City Hall is still a place of activity, but unfortunately on a very low level. The various halls within the City Hall are sometimes used as multi-purpose halls to accommodate a variety of functions, and on rare occasions it is used as venue to host weddings and other formal gatherings. Once a month pensioners would come to the City Hall to collect their monthly pension, and every Saturday a small group of people would have their church service in the Council's Chamber. When political protests take place on Pretorius Square the City Hall is illegally occupied as accommodation for the protestors.

One begins to question the role and appropriateness of a city hall in the contemporary African urban context, and simultaneously reject the original intentions of a city hall.



Fig. 49 Mining Works Union Protest on the 18 May 2006 (Author 2006).



Fig. 50 Protestors on Pretorius Square on the 18 May 2006 (Author 2006).



Fig. 51 Protestors outside the City Hall on the 18 May 2006 (Author 2006).



Fig. 52 Protestors using the garden behind the city hall to do laundry (Author 2006).



Fig. 53 Protestors using the City Hall to sleep in (Author 2006).



## 5. Theoretical Investigation

### 5.1. Introduction

#### 5.1.1. The African City

The African City is characterised by the notion of anonymity. It not only exists overshadowed by globalisation and Western thought processes, but it is also trying to free itself from its Colonial past. Colonialism is expressed as having framed and fixed Africa into a *tabula rasa* that needed to be filled with knowledge for the West to control. Within this historical context, African cities are struggling to find appropriate solutions that could assist in reclaiming their identities of a valid African urban expression (Ntuli, 2002:54).

Many African cities still strongly reflect colonial influences of power. In particular, some South African cities still embody the goals of Apartheid, where the ideologies of modernism were manipulated to display authority, oppression and control. These principles were then universally applied regardless of their appropriateness to local conditions. The result of this is described by architect and critic Rem Koolhaas as a "Generic City" in which its "sensations are weak and distended, emotions are few and far between and its inhabitants are mostly familiar with its superficial routine" (Koolhaas & Mau, 1995:1250). Its social and ethical standards are limited, so too are its choices and opportunities. This urban condition is one in which social richness barely exists, as it is dominated by notions of necessity. This city's identity is characterised predominantly by homogeneous spaces as stated by the architectural historian and urban commentator, Ian Borden in his book *The Unknown City*. These include the exchange of decisions and commodities over social relations and uses. This alienating environment is left without spontaneity and dynamism, in which the prospect of alternative spatialities is repressed, and the urban experience is reduced to what he refers to as organised walking (Borden, 2001:184).

These alienating urban environments are aggravated by the misconception that they could be enhanced by inserting isolated architectural measures that are grounded only in aesthetics; appealing to a society where vision has dominated all the other senses. However, it is not necessary to resort to over-symbolic, monumental forms to accommodate and celebrate a multi-cultural society. Rather create identity through activity-driven solutions as opposed to form-driven solutions. Activity-driven solutions involve exposing urban realities and reactivating the city, revealing the city's embedded potential. In view of these statements, the following questions arise: what role does architecture play in the South African City, and how does it validate the African urban condition? Is it the duty of architecture to give an identity to a South African city inhabited by a multi-cultural society? If so, how does one achieve this?

#### 5.1.2. Spatial Dichotomies and a Divided Population

The city and its urban form is a result of spatialities continuously adapting themselves, due to their sensitivity, to society's changing needs and socio-cultural energies (van den Burg, 2004:41). At present the socio-cultural energy prevalent in the modernising African city, is one which it is trying to meet the high demands of globalisation and feels the need to be on

par with Western societies and their ideologies. This has divided the urban population into two segments; one being the urban elite that have firm linkages with valuable resources, leaving behind the poorer masses who have little to survive on (Namica, 2000:13). In South Africa, urban forms and systems indicate a struggle to adjust and adapt themselves to meet the needs of a growing contemporary urban culture.

These patterns of adjustment are identified not only by spatial dichotomies; but also by social and economic dichotomies, where informal systems with their lower socio-economic classes, are desperately trying to survive in a system dominated by the formal and elite. Furthermore, these systems result in spatial relationships that are defined by inflexible boundaries, both physical and psychological. They draw up impermeable walls between the public and private realms and between the formal and informal spaces, allowing the elite the privilege to control obtainable space. Residual space, being the most apparent destructive product of this notion of territorial space, is characterised as abandoned or previously restricted spaces; here, the city's symptoms are played out. It is also here that the underprivileged are forced to survive by setting up their own informal infrastructural systems, resulting in a city that is perceived to be dominated by chance, crime and consumption (Koolhaas, Boeri, Kwinter, Tazi & Obrist, 2000:187).

#### 5.1.3. The City We Anticipate

The urban condition within a dynamic city is one in which a rich social and architectural fabric exists that provides an abundance of building types, social relations, times and spaces. As a result its inhabitants are presented with a wide variety of opportunities and choices offering them the freedom to insert their own meanings into the city. If a city consists of a rich and multifaceted urban fabric its inhabitants will have a direct engagement with the city that is more significant. To achieve this, choice and opportunity must be accessible to all urban dwellers, not only to those who have available resources. For that reason, physical and perceived boundaries should not exist or they risk enclosing vital opportunities. It is essential that urban dwellers experience the city by way of engaging in various forms of social exchange and share in its collective public life. In this realm, socio-spatial relationships supersede physical and material ones (Berrizbeitia, 1999:197). In order for this to occur, the social, spatial and temporal logic of capitalistic space must be confronted so as to redefine and reprogramme space to accept all socio-cultural energies so that it may become a city that can equate itself with a contemporary society (Borden, 2001:194).



## 5. Theoretical Investigation

### 5.2. Inflation of the Image

#### 5.2.1 Seductive Objects

Many of the architectural projects of the recent past that have been celebrated by the architectural profession, have been described by Juhani Pallasmaa, a Finnish architect and architectural theorist, as expressing both "narcissism", an excessive self-indulgence, and "nihilism". By further rejecting moral principles, they consequently detach architecture from the body and turn it into something that is meaningless and solely for visual satisfaction (Pallasmaa, 2005:22). Architecture as an aesthetic object, fabricated to be complete in itself, ignores social relations and has been suggested as having its roots in the ideologies established by Postmodern architecture. The desire to avoid boredom and the search for the "interesting" is expressed in the American architect Robert Venturi's unforgettable quote "less is a bore". Reacting to one of the architects of the Modern Movement, Mies van der Rohe's "less is more" and to modernism's "moral failure", it seems to be more of an aesthetic reaction as opposed to an ethical one (Harries, 1998:6-9).

Pallasmaa states that society is developing an increasing fixation with the power of the image, and from this ocular bias, contemporary architecture has become "easy". It has turned into a series of objects of vulgar utility and of shrewd seduction. Architects have created architectural imagery for use as instant persuasion, with forms that are lifeless and lack tectonic logic (Pallasmaa, 2005:17). The Guggenheim Museum in Bilbao, Spain by Frank Gehry, is used to clarify this notion of architectural image, in that it exists not for itself, but for the media. This is supported by the fact that it has been communicated extensively; nearly everyone has seen a picture of it, or heard of it. Pallasmaa adds that it is an architecture which has a fixation with appearance and has no sustaining power over time; it is purely an exterior experience (Pallasmaa, 2005:30).

These architectural solutions are intended to seduce, and are often identified by new forms that supposedly propose different solutions to those of traditional orthogonal building practice. They are further encouraged by new technologies that make this type of architecture easy. Subsequently, the French philosopher and social theorist, Henry Lefebvre (1901-91) concludes that architecture suffers in the belief that reality can be achieved merely through graphical

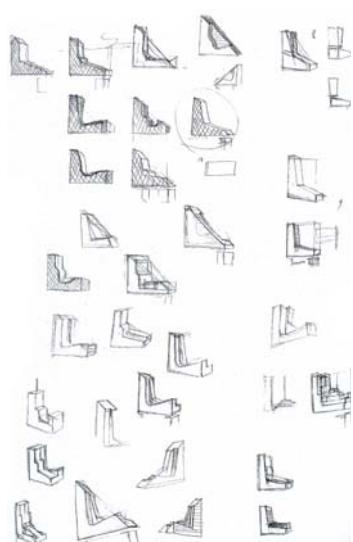


Fig. 54 A form-driven concept design for the Credit Lyonnais Tower, in Euralille by Christian de Portzamparc (Croise, 1996)



representation. Hence, architecture is evaluated and opinions are formed by what is seen on paper, based on the fallacy that if it makes a good picture, it will make good architecture (Lefebvre, 1997:144).

### 5.2.2. Aesthetic Objects Attempting to Save the City

This formalist and aesthetic approach to architecture has made its appearance in the urban context, with the attempt to restore the city; yet it is an inadequate attitude that degrades the urban space (Lefebvre, 1997:138). These interventions are introduced only to create spectacle and attempt replacing reality by disregarding their contextual constraints, demands and opportunities (Forty, 2000:274). Besides that, they are also ignorant of their cultural context, their intended programs, historical roots, their ethical and social obligations, and the end user experience resulting in an urban setting that reduces opportunities to actively participate in the urban context. It has developed into the city of the eye.

### 5.2.3. Illegitimate African Architecture

*Contemporary South African Architecture* by Murray describes these buildings as “images of Africaness that have been carefully and wittily crafted into building forms” (Murray, 2006:7). Can one really suggest that these buildings, and others that employ similar tactics, are a valid architectural expression for South Africa? Architecture that employs over-symbolic and monumental solutions assumes that the entire society of South Africa shares in the same worldviews, by wrongly imposing one’s own perceptions, understandings and allusions. Do these projects genuinely question and challenge problems that are specific to South Africa? It is understood that it is necessary to initiate the process of finding alternative and valid African expressions in built environments, but it is debatable whether or not these projects have initiated the process in the correct manner.



Fig. 55 & 56 Legislature for the Northern Cape provincial Government, Kimberley (Meyer, 2006)



Fig. 57 & 58. Legislature and Office Complex for the Mpumalanga Provincial Government (Meyer, 2006)

## 5. Theoretical Investigation

### 5.3. The Cultural Condition

#### 5.3.1. South Africa's Multi-Cultural Society

The concept of culture from an anthropological viewpoint, categorises the beliefs, practices, and systems of meaning of specific groups of people, and defines the core values, within a community, that make life possible and meaningful (van Staden, 1998:15-17).

In South Africa, the cultural context is characterised by conflicting aspects. Firstly, that foreign population groups interact with diverse indigenous population groups. Secondly, that it has been run by the white society of South Africa, whose values were falsely presented as universal values (Biko, 1998:29). The South African multi-cultural context is best described as one that is based on different lines of race, class, values and ethnicity. It is also a society in which different cultures have adapted their world-views to be based upon a combination of their own and foreign world-views (Ntuli 2002:64).

A dependency exists between the social and political identity of a society, where a balanced and sound community is one in which its political identity is a direct result of its social identity (Coetzee, 1998:138). Yet this poses a problem for the culturally diverse South African society, which has consistently been dominated by a single political identity. How can a firm relationship then exist between the social and political identity of different communities who do not share the same world-views?

Culture influences perceptions, which in turn are formed by our expectations, beliefs, and emotions, but also by our histories and social circumstances. It follows that an objective and universal perception of reality cannot be expected from different cultures, as they will perceive reality differently (Teffo & Roux, 1998:134). This strongly suggests that those differences whether, inherent or social constructs, need to be acknowledged by means of secured choice where all cultures and communities are granted equal status (Coetzee, 1998:352).

#### 5.3.2. Understanding the African Condition by Means of Contrasting African Philosophy with Western Philosophy

Western thought points to a world-view that is rooted in an individualistic and objective framework, which has led it to be understood by notions of division and control. The result is a value system that is governed by material gain, individual growth and power. In contrast, African knowledge systems are characterised by a world-view that encourages solidarity, communitarianism, traditionalism and participation (Teffo & Roux in Coetzee & Roux, 1998:148).

This contrast is clarified by the following comparison drawn up by (Broodryk, 2000:20).

African Philosophy	Western Philosophy
a. Together	a. Alone
b. Mind	b. Material
c. Whole	c. Pieces
d. Past	d. Future
e. Harmony	e. Control
f. Shame	f. Guilt
g. Share	g. Accumulate

Embedded in African thought, is *Ubuntu*, whose essence is articulated in the Xhosa proverb: *Ubuntu ungamuntu ngabanyeabantu*, suggesting that “people are people through other people” (Broodryk, 2000: 5:13). This humanist philosophy shows that a fundamental aspect of African society is the importance it attaches to human beings; it is a human-centred society. Furthermore, to recognise one’s own humanity, one needs to recognise the humanity of others, by establishing humane relations with them (Ramos, 2002:231).

The importance placed on humanity branches out into additional non-individualistic aspects essential to African society, which suggest communal spirit, inclusiveness and participation. The values attached to humanism are associated with the view of a person as a social being; not a mere number, but someone who belongs to a democratic society (Broodryk, 2000:13). The idea of a democratic society is clarified as being one in which all actions are community orientated instead of individualistic, which is the hallmark of a capitalist society. Social values are of paramount importance to the African milieu (Biko in Coetze & Roux, 1998:27).

It is understood that *Ubuntu* may only play an important role in portions of the South African population, which consists of groups that are not indigenous and have alternative value systems. But, given that social and human values are universally appropriate, and since they personified in *Ubuntu*, this seems an appropriate point of departure.

### 5.3.3. Imposing Western Philosophies

Despite the distinction between Western and African value systems, Africa continues to timidly prescribe to Western principles for one of two possible reasons. The first, Africa believes it is the only way to attain success and growth, based on European and North American criteria that are seen as absolute. The second being that this imposition of Western criteria has occurred over such a long period of time and has infiltrated into so many facets of African life, that African society blindly follow, as it has lost its sense of its fundamental purpose and destiny (Ntuli, 2002:57). This has lead to the notion that Europe and North America are advanced, and other parts of the world, particularly Africa, are some way behind. The view that Africa is just different and productive in itself, with a unique existence, struggling to acquire its own identity, is not taken.

### 5.3.4. Different Values therefore Different Solutions

Africa is neither Europe nor America, for that reason Africa’s problems are not European or American, so then Africa’s solutions to her problems have to develop in Africa (Ntuli, 2002: 53). If this is true, then Africa has to find its own indigenous framework to define, identify and address its challenges (Teffo & Roux, 1998:148). In order for Africa to become a self-sufficient, independent entity, it is necessary that it develop the confidence to embrace and employ its own values and a valid thought process without ignoring what already exists.

### 5.3.5. A Responsive Urban Expression

The revival of the African City is a symbiosis of existing conditions, philosophies, and thought processes with new inventive strategies, transforming it into a true African expression; one which supports the survival of its inhabitants. It is to free itself from unnecessary principles and to discard its desire for global competitiveness. The challenge lies in accepting that African resources are different and therefore require different solutions.

An appropriate South African urban expression begins with honouring the significance of its society's diverse perceptions and viewpoints. The need for a non-prescriptive space exists, where differences may be negotiated and where integration between multiple levels of identity, understandings and practices exist. This elastic entity should accommodate for the unpredictable.

Another point of departure includes resisting Western principles of consumerism and global capitalism. An independent and resilient African City cannot rely on resources that are readily available in Western cities. Rather, it identifies itself with the refusal of Western systems and spatialities, by not following universal regulations, but rather adopting its own regulatory system, consisting of 'guidelines' that are open to change and allow for daily variations. In view of this, care should be taken so as to prevent reducing it to idealistic notions of chaos characterised by total indeterminacy and flexibility (Shepard & Comaroff, 2002:138-9).

Western ideas are further opposed by testing the concept of boundaries. Blurring boundaries by externalising introverted spaces, erases the distinction between prohibited and permitted, and formal and informal. Spatial definition is expressed in other ways, where boundaries are replaced by flexible and elastic building edges. Koolhaas, explains that territoriality occurs temporarily, as the streets, and public and private spaces, are variable and adjustable, allowing public space to be continuously occupied in different ways. It abandons the premise of discontinuity or that space is meant to be divided up. In this scenario, an African City is a spatiality that is able to express genuine space that is barrier-less and open where the distinction between spaces is maintained through connections rather than disjunctions (Massey, 2005:66, 84). This self-organising system recognises the citizen's right to inhabit and work in a flexible and mutable city (Koolhaas, et al. 2001: 661, 674).

This new city should also take into account its existing urban patterns, and acknowledge that a new urbanity and a new urban citizen have emerged. As N'Da N'Guessan, an architect and town planner from Togo says, together they are to be understood as a condition and as a social landscape, which is dominated by the actions of its citizens. It is a city that survives on the human dimension (N'Da N'Guessan & Bachir, 2000:112).



## 5. Theoretical Investigation

### 5.4. An African City: Lagos

#### 5.4.1. Introduction

The West African City of Lagos, and the capital city of Nigeria, is en-route to modernisation, and it is a clear example of a city that represents the flexibility of space discussed previously. It demonstrates a legitimate African urban expression, achieved by inverting every essential characteristic of the so-called modern city, while still allowing for the survival of its millions of inhabitants. It is a city that is characterised by energy, intensity, spontaneity, incongruities, juxtapositions and shortcomings (Koolhaas, et al. 2001:652).

#### 5.4.2. Lagos and its Infrastructure

The contributing factor towards the indeterminacy of Lagos's urban condition is its flexible infrastructural system, which has been categorised into three main components. The first is known as parasitic infrastructure, due to its ability to modify and manipulate existing formal infrastructure in order to provide more services than the government is able to. The second is described as mobile infrastructure and relies on cars, trucks, buses, bicycles and mammy-wagons to take care of waste, power, transport, shopping, telephonic communication and factory production,. As a result, infrastructure in Lagos has become *unmappable*. The third and last category is nodal infrastructure, where services and goods are centralised and compacted into points, which then service a wide area (Shephard & Comaroff, 2002: 144, 145).



Fig. 59 Lagos's roads are not just lines between points but rather elastic and variable landscapes ([www.radiobridge.net](http://www.radiobridge.net). 14 April 2007).



Fig. 60 Lagos's streets and highways are almost unidentifiable, as it contains bus stops, mosques, markets and factories ([www.mit.edu](http://www.mit.edu). 14 April 2007).

## 5. Theoretical Investigation

### 5.5. Rethinking Architecture for the African Urban Condition

In order to legitimise the African urban condition, it is necessary to rethink architecture and the role it plays in the city. It has been suggested that one begins to view cities as extensive systems made up of interdependent and overlapping conditions; a product of human activity and interaction and not a product of architecture and planning. The urban context presents itself with opportunities for a multi-disciplinary approach to its design and management, allowing the city to become a multi-scalar landscape (Borden, et al. 2001:4).

Architecture needs to free itself from the static, aesthetic approach to design by shifting away from buildings as iconic objects, as a city's identity cannot be reduced to individual buildings, but rather is formed by the collective and the spaces around them. As proposed by James Corner, a professor of landscape architecture at the University of Pennsylvania, one needs to downplay the strictly formal and representational, opting for design that returns to the instrumental function, which is intimately bound into larger contexts and processes. Here, form and geometry are to be regarded only if they take into account and make sense of the issues that are meant to be addressed (Corner, 1999:4-16).

An architecture appropriate for the African condition has the ability to evolve and is capable of reproducing itself through use and everyday life; its obsession shifts from appearance and form to implementing social strategies that create conditions and surfaces for human activity (Lootsma, 1999:264). These strategies will ensure that the city is not reduced to a homogeneous state, alienating its users, paralysing the imagination and depriving sensory engagement. The contemporary African City should supplement the human body by encouraging heterogeneity, nearness and participation (Pallasmaa, 2005:40).

## 5. Theoretical Investigation

### 5.6. Rethinking Space

#### 5.6.1. Introduction

Lefebvre, in his comprehensive critique of space draws attention to the fact that we often use the word space, without being fully aware of what it means. Up until now, space has always been understood as a phenomenon that is fixed; both easy to define and represent. Space has rarely been equated with having dynamic qualities. This is owing to the fact that we have inherited an understanding of space that is so *fixed*, no one has ever felt the need to challenge it (Massey, 2005: 13, 17). However, it is indeed a lively phenomenon, and many and persistent strategies for taming it, have resulted.

There are three alternative propositions to the formulation of space. To start with, one needs to recognise space as the product of interrelations; from global to intimate interactions. Secondly, space is understood as a sphere that allows for the existence of multiplicity, expressed by heterogeneity. Lastly, space is acknowledged as always in a state of incompleteness and always in the process of being made. Never finished nor closed; this is its goal. These concepts of space are clearly demonstrated by Massey (2005:107) as the:

...sphere of a dynamic simultaneity, constantly disconnected by new arrivals, constantly waiting to be determined (and therefore always undetermined) by the construction of new relations.

In order for a more challenging and social landscape to emerge space needs to be liberated from the embedded and unquestioned notions of closure, stasis, science and representation. Instead they should transform space into an expression of openness, heterogeneity and liveliness (Massey, 2005: 9, 11, 13). When one favours a dynamic simultaneity and outward view over a static inwardness, the possibilities of a positive and truly social space begin to emerge. Once again this is demonstrated by Massey (2005:105) as:

...seeing the world beyond one's own turf, whether that be one's self, one's city, or the particular parts of the planet in which one lives and works"

#### 5.6.2. Space as a Temporal Condition

It is broadly assumed that space is of lesser importance than time, with less gravitas and magnificence. This is because the current thought pattern considers the material as being more significant and convincing than the abstract. Our existence is dominated by the notion that being is far more important than becoming. For that reason an additional condition for genuine spatiality emerges; to erase the assumption that space is simply the opposite of time. This does not suggest that space and time should be identical but rather interdependent equals. This is only possible when a multiplicity of things constantly associate and interact. If one does not allow for space to exist as a temporal condition, space is then reduced to a static state. Space as a temporal condition suggests that territory is not constituted through isolation and separation but rather through time. Space differs, because different things happen there during different times, while geographically it is still the same place (Massey, 2005: 29, 30, 188).

#### 5.6.3. Social Space is Not Physical Space

In the Western tradition of architecture, its misapprehension of the body has manifested in transparent and utilitarian architecture with rational motives. Architectural space has merely become physical space, rather than lived space. Buildings can no longer be seen as enclosures and physical objects, but rather as an all encompassing space; a social space (Lefebvre, 1991:33, 205). Adrian Forty, the architectural theoretician, expands on the notion of social space, by saying that it is perceived through the social relations of everyday life, conceived by thought, and lived as a bodily experience integrating the social actions of individuals (Forty, 2000:272). Social space is therefore not to be understood as a mere frame or a neutral container, behaving purely as a receptor; an item complete on its own.

Social space diverges from the physical to the non-physical, and which can be identified by differential space versus abstract space. Abstract space reflects notions of commodity and capitalism that erase social constructs and distinctions. In addition it appeals to the visual and the optical and due to its quantifiable formal nature; it isolates itself from the past and what it

could become in the future. It does so by making a *tabula rasa* of whatever stands in its way, making it incapable of redefining itself, and compromising its longevity (Lefebvre, 1991:57).

An alternative to abstract space is the concept of differential space, characterised by diversity and heterogeneity and accentuating the differences while restoring the unity that has been destroyed by abstract space (Lefebvre, 1991:52). It is where socio-spatial differences are valued and emphasised in order to restore the human body and reaffirm the social condition. However, architects are still the servants of abstract space (Forty, 2000:275).

## 5. Theoretical Investigation

### 5.7. A City Beyond Architecture

#### 5.7.1. Rethinking Urban Space

Urban and architectural practices are failing to adequately meet new sets of social and cultural needs, because they are based on a historical set of needs. Current urban interventions need to be critically reviewed since a new type of urbanisation has emerged necessitating new responses (Dewar, 2004:40). Architectural solutions that simply fill in gaps, increase densities, mix land uses and stitch the fragmented city, would only partly correct the problems. Often the problems are non-physical and cannot be solved by physical solutions (Cuff, 1989:343). Architects and planners need to consider that architecture and cities are far more than what they are currently perceived to be. Architecture is no longer the controlling factor within cities as it only contributes on a certain level towards the complexity of the city. It is not the job of the architect to create or impose values upon a city, but instead, to allow the city to evolve its own values. If the task of the architect were only to put identity, community and continuity back into city life, then a city would look like something it is not and it would undermine the conditions of contemporary urban culture (Forty, 1995:314).

Consequently, a new approach to resolving spatial problems needs to be identified. This could be achieved by thinking about the city beyond architecture, and to stop applying interventions that occur within boundaries (Attali, 2000:270). Urban architecture should not be an autonomous object or a volumetric envelope that displays an individual's aspirations or is merely a symbolic monument. It should rather encompass circumstances in which the life of the city is framed, expressed, structured, facilitated and given meaning (Koolhaas, et al. 2000:271). This alternative approach to architecture combines the perceived and the lived, within the micro and macro scales of the city's functions. From this, architecture will emerge as a spatial condition housing social activity and engagement (Borden, et al. 2001:20).

#### 5.7.2. The Social Role of Architecture

Spatial issues do not only concern the architectural profession; all disciplines have an effect on space. In view of this, architecture has no more right to space than any other discipline (Lefebvre, 1991:107). Architects and urban planners do not have the ultimate authority in issues relating to space and hence have no right to manipulate it. A strong link between built environment professions and larger social orders exists. In order for architecture to carry out a social and ethical function, it needs to broaden its intentions by resisting the tendency

to be a self-determining practice. Architecture's ethical and social function reflects the values of a society and its existence, in the hope of achieving an optimum situation (Harries, 1998:291). It is important however to remember that architecture is just one social practice among many, and should not be loaded by too many expectations. Most often the root of the problem lies in social issues and architecture's contribution to solving them is limited (Melvin, 2005:8). The Italian self-taught architect and writer Giancarlo de Carlo (1919-2005), argues that the idea that architecture is able to change society is out of date, however, it can provoke situations or create an atmosphere where it is used to produce an expression of society (de Carlo, 2005:23).

Architecture's ethical function is unavoidably a public one too, where its role is to create a place for the community; unattainable by simply producing elaborate works of architecture (Harries, 1998:287). One needs to consider, what function this architectural object has in the establishment of an urban community? Does the building type assume any role or serve a common ethos? Does it insert any meaning or does it reflect and renew the social order (Cuff, 1989:340)? It is important to note that meaning cannot be predetermined by one person, such as an architect, but it is rather a result of the people that one designs for.

Architecture, within the urban realm, needs to be reduced from a traditional notion of a building to a condition as clarified by de Carlo:

A building is not a building. A building, in the sense of walls, floors, empty spaces, rooms, materials, etc., it is only the outline of a potential: it is only made relevant by the group of people it is intended for." (de Carlo, 2005:22)

It is a social construction that allows for a variety of uses. It is an interface and an open system that connects with the city; the materialisation of a condition, program, concepts and strategies, and not the materialisation of form. The only role form plays is to reduce the abstract to its most modest and necessary architectonic forms, revealing the fundamental characteristics of the site irrespective of whether it is a natural landscape or the built-up fabric of a city (Frampton, 2002:305).

## 6. Site Analysis of Paul Kruger Street

### 6.1 Understanding the Urban Condition

#### 6.1.1 Introduction

Before one can propose what an African city should be, urban problems should be defined by re-evaluating current modes of analysing and understanding the urban condition. This shifts toward new methodologies that allow for the understanding of the new socio-spatial relationships in the city. These methods represent and interpret the urban condition, influencing future decisions. Therefore, in order to develop new solutions new ways of understanding are needed.

This document has highlighted particular aspects relating to the urban condition. The first being that the South African City is made up of unique socio-cultural conditions, resulting in its inhabitants evolving into a new type of urbanising agent and thereby creating new social and human landscapes (Kahn, 1995:200). The second that these conditions should involve rethinking what is considered as space. In view of these aspects, new strategies and tactics are required to interpret these conditions should the wish be to restore and reclaim the African City.

At present, analytical models usually involve holding the world still in order to analyse it as an outsider resulting in a systematic overestimation of what already exists, often taking into account the most mediocre aspects (Lootsma, 1999:266). These models have many implications, as they suggest that space is static, with no history, and that we are the "all-seeing eye". These methods of taming and ordering space are problematic, as they refuse to acknowledge the heterogeneous and temporal qualities of space, denying it of dynamic merits (Massey, 2005: 36,106).

One needs to challenge these blatantly obvious modes of analysis and rather dispute the internal coherence, in order to point to the blind spots within the objective of exposing the city. The aim is not to characterise space as complete, but rather leave possibilities for something new.

#### 6.1.2. Questioning the Validity of the Figure-Ground Study

To date, figure-ground studies have been relied upon greatly, being a prevalent and iconic tool in urban design. The validity of the figure-ground relation that formed the understanding of the urban fabric prior to the twentieth century, should be queried so that new tools, methodologies, and analysis techniques be created to intervene in the complex urban environments (Manau, Ortoneda & Solano, 2005:62). Giambattista Nolli's map of Rome from 1748 was an analytical method that was developed due to specific economic, social, cultural and political circumstances.

Nolli's methods and conventions of mapping the urban landscape can not adequately represent the spatialities and complexity of the twenty-first century city, let alone the African City. This is partly because what makes up the contemporary city has shifted from what was once visible; composition, material and form, to the invisible; processes, attitudes, perceptions and transactions. The figure-ground study is completely divorced from social landscapes in that



it stabilises the complexity of the time-space relationship (Massey, 2005:107,109). Figure-ground studies, imply a clear distinction between form and void, producing the by-product of controlled space which is residual space; an inherent problem in the South African city (Koolhaas, et al. 2000:193). This is not to say that figure-ground studies are void of value in urban design



Fig. 61 Giambattista Nolli (1748) Rome at the time of Benedict XIV: the Plan of Rome, Sector V including the Piazza Navona and the Pantheon. (Leupen, et al.1997:19)

processes as they contribute to the understanding of the spatial qualities of cities. However, this abstract and purely representational approach to understanding the city from an aerial point of view has reduced three-dimensional realities to two-dimensional, graphical imagery of urban spatialities.

#### 6.1.3. New Tools to Analyse the Contemporary City

A new method of understanding and intervening in the contemporary urban fabric involves shifting the way in which cities are viewed, from formal to dynamic systems, so as to understand new relationships that exist between architecture and cities, as well as the juxtapositions, interconnections and distribution of forces they produce (Wall, 1999:234). This also promotes the identification of voids, the unproductive, obsolete and undefined (Simeoforidis, 2000:416).

To propose a new method of analysing the urban condition, is to recognise that human behaviour, expressed through a set of social, political, and economic processes, is shaped by territory and its spatial surroundings. In this context of the socio-spatial dialect, territory is defined as a geographically-organised human activity, or a human landscape that is created by agents operating within a specific social structure (Wolch & Dear, 1989: 3,7). The objective is to diverge from the abstract, reduced method of comprehending the urban condition, to one where the organisation of space is a product of human behaviour and social practices. Space within an urban context cannot be understood as an isolated object, but rather as a social landscape undefined by physical boundaries. It is rather defined by human boundaries, outlining the possibilities and limitations of human behaviour.

Once a legitimate understanding of the city as a human and social landscape exists, then architecture will play a passive role in which it intervenes as a condition and a social negotiator (Koolhaas, et al. 2000:12). Furthermore, architecture, as a product complete in itself, does not play the key role within the urban realm. Although it is only one of many disciplines contributing to a city, architecture is not entirely irrelevant, but needs to be re-evaluated, redefined and reprogrammed, so that architecture becomes a condition holding a social and ethical function.

#### 6.1.4. New Tools to Analyse the African City

These new modes of analysis are particularly important within the African urban condition. Its dynamic qualities should not be pinned down and neither should urban devices and occurrences be seen as absolute and final. African space cannot be understood as a mere horizontality as this idea eliminates the prospect of chance and temporality, two vital aspects of Africa's social landscape. The supposed informality of the African society should be cautiously considered as it is often just a cover up for some form of rebellious reaction against the excessive rationalisation of the modern (Massey, 2005:112).

The criteria used to understand the African City based on a multidisciplinary perspective acknowledges the importance of time and spatial phenomena as a temporal condition. Space is understood as the product of social relations where human beings have some ability to alter space and participate in its continuing production (Massey, 2005:118).



#### 6.1.5. The Methodology

##### Interpret the Urban Condition of Paul Kruger Street

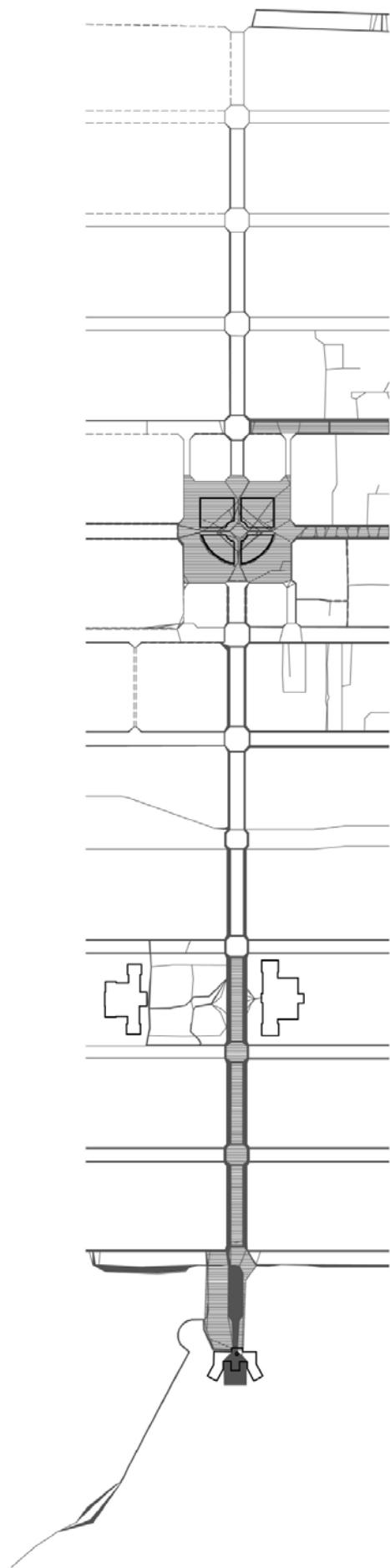
The analysis of Paul Kruger Street is informed by the focus of discussion which is the question that asks what a valid Africa urban expression is. From this and the previous theoretical investigation one can extract criteria that informs the methodology of analysis. Due to the focus on social space in an African context, and the aim for an urban condition whose identity is driven by activity and not by form, the analysis will focus on the temporal qualities of the city, in terms of its attitudes, perceptions and transactions, and the social landscape in which these urban processes take place. In other words, the most important outcome of this analysis is to determine what the spaces within Paul Kruger Street do as opposed to what they are.

In most cases the social and temporal qualities of any space, specifically within an urban condition, are very difficult to determine as an individual in a short period of time, due to the inconsistency and due to the fact that each individual may understand and perceive certain aspects differently. Therefore the method of analysis involves a process which begins with analysing aspects of Paul Kruger Street that is freely available and can be identified from available information, regular site visits, photographs and interviewing individuals that either use or live in the city.

Once all the known determinants are put together and understood as interdependent factors, one can then extract information from the results of the initial analysis in order to begin to understand the temporal and social condition of Paul Kruger Street. After these first two steps of analysis, one can acquire a clear understanding of the urban condition along the street, and more specifically it would then become clear that specific urban conditions, each with their own identity, problems and opportunities, occur along Paul Kruger Street.



6.1.6. Context Study of Paul Kruger Street  
6.1.6.1. Phase 1 - The Identifiable factors



BASE MAP A1: Daytime Pedestrian Activity

Analysis of Paul Kruger Street		
Phase of Analysis	Description	
●	A: Identifiable Factors	Pedestrian Movement & Intensity
	B: Results	
	C: Urban Conditions	
		Tues, 7:30am

Fig. 62 Analysis of pedestrian movement during the day along Paul Kruger Street (Author 2007).

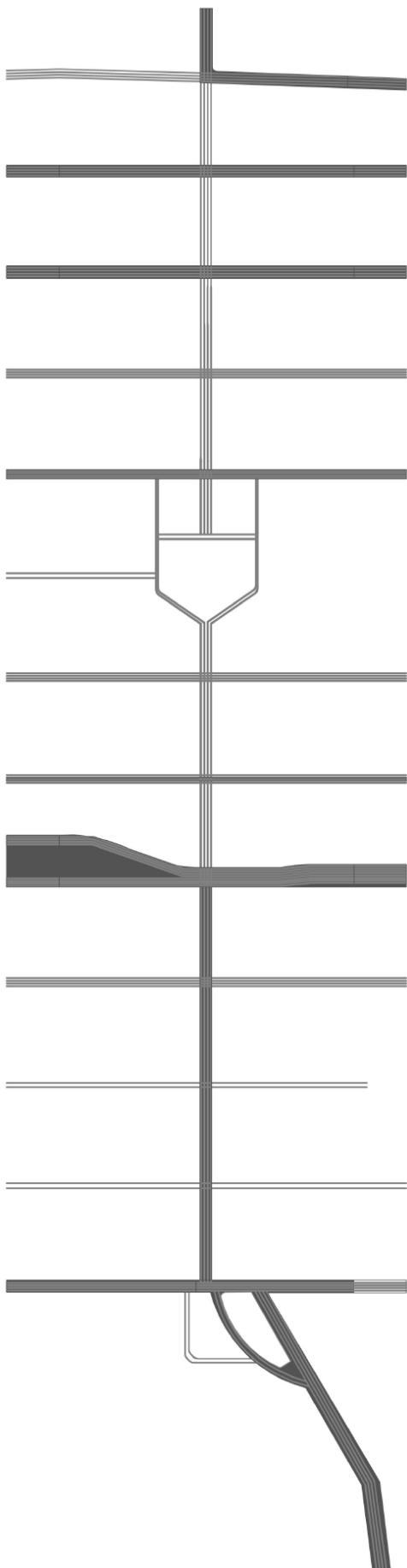


BASE MAP A2: Night-Time Pedestrian Activity

Analysis of Paul Kruger Street		
Phase of Analysis	Description	
●	A: Identifiable Factors	Pedestrian Movement & Intensity (night)  Fri. 9:00pm
	B: Results	
	C: Urban Conditions	

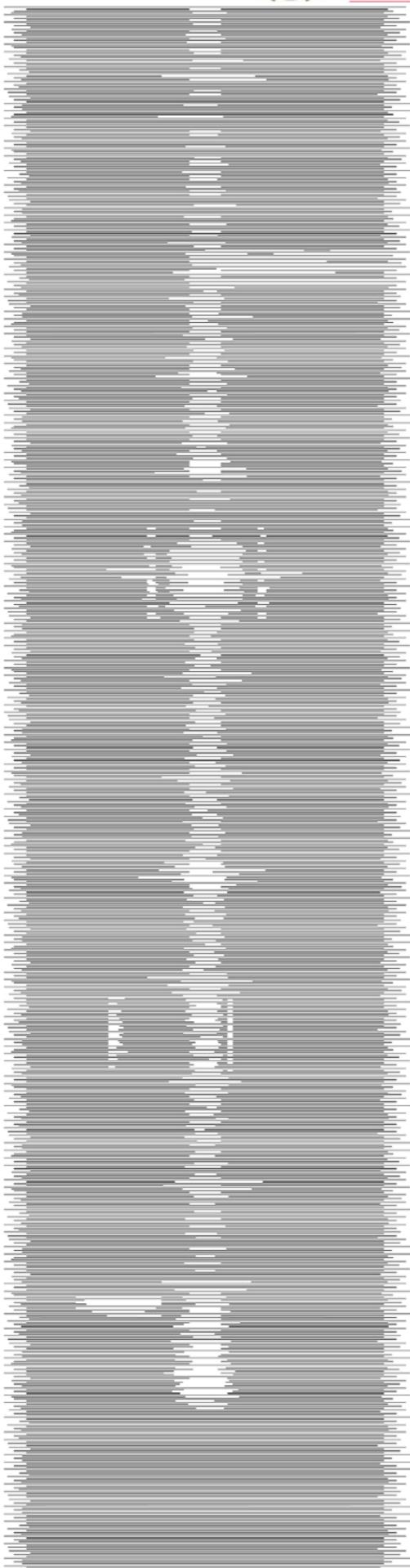


Fig. 63 Analysis of pedestrian movement during the evening along Paul Kruger Street (Author 2007).



Analysis of Paul Kruger Street		
Phase of Analysis	Description	Tues. 8:30am
A: Identifiable Factors	Vehicular Movement & Intensity	
B: Results		
C: Urban Conditions		

Fig. 64 Analysis of vehicular movement during the evening along Paul Kruger Street (Author 2007).



Moderately high levels of illumination  
due to street lights.

Very low levels of illumination.

Analysis of Paul Kruger Street

Phase of Analysis	Description	Fri. 9:00pm
A: Identifiable Factors	Lighting as a result of street lights, signage and the illumination of some buildings.	
B: Results		
C: Urban Conditions		

Fig. 65 Analysis of illumination on Paul Kruger Street  
(Author 2007).

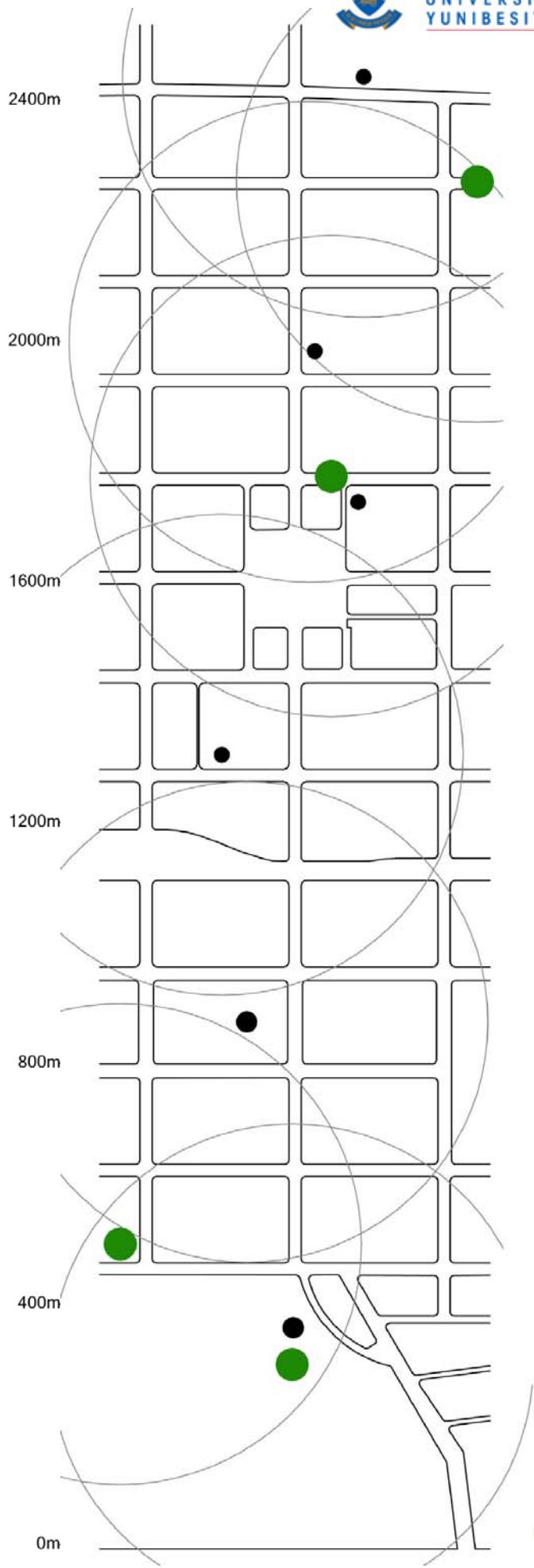
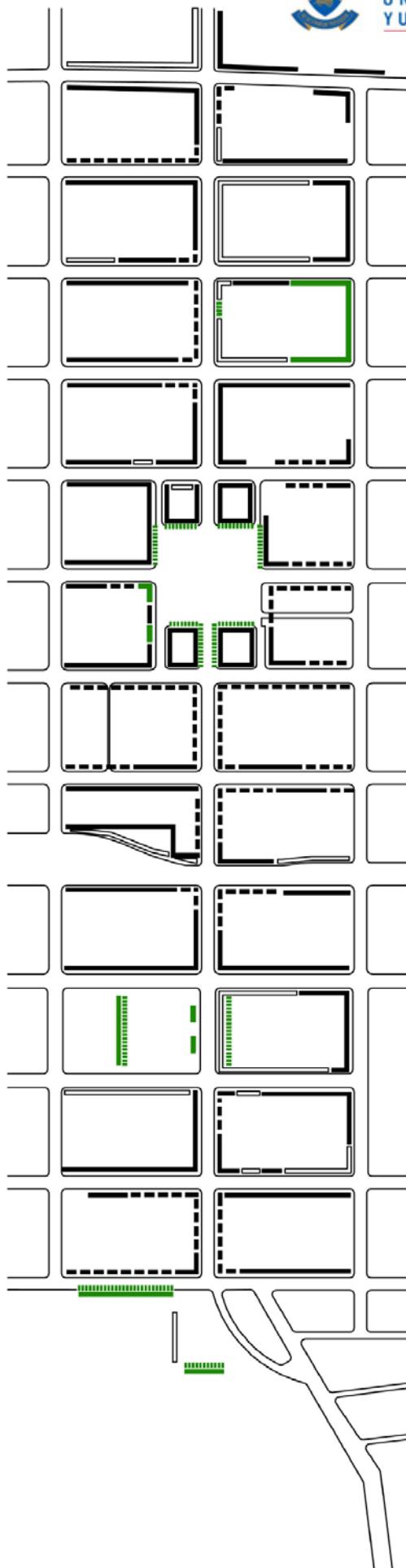


Fig. 66 Transport Nodes on Paul Kruger Street (Author 2007).

Analysis of Paul Kruger Street		
Phase of Analysis	Description	Tues. 7:30am
● A: Identifiable Factors	Transport facilities and the contribution they make to pedestrian activity and the energy they may result from that.	
● B: Results		
● C: Urban Conditions		



Analysis of Paul Kruger Street		
Phase of Analysis	Description	
●	A: Identifiable Factors	The street and building edge and whether or not it allows for pedestrians to interact with it.
	B: Results	
	C: Urban Conditions	
		Tues. 11:15am

Fig. 67 Analysis of street edge (Author 2007).

- Building facades with texture.
- Edges in which encounters between building & people occur.
- Solid & monotonous building edges allowing for minimal interaction.
- Edges that allow acces to buildings, usually where trade occurs.
- Edges that are controlled by means of fencing or security guards.

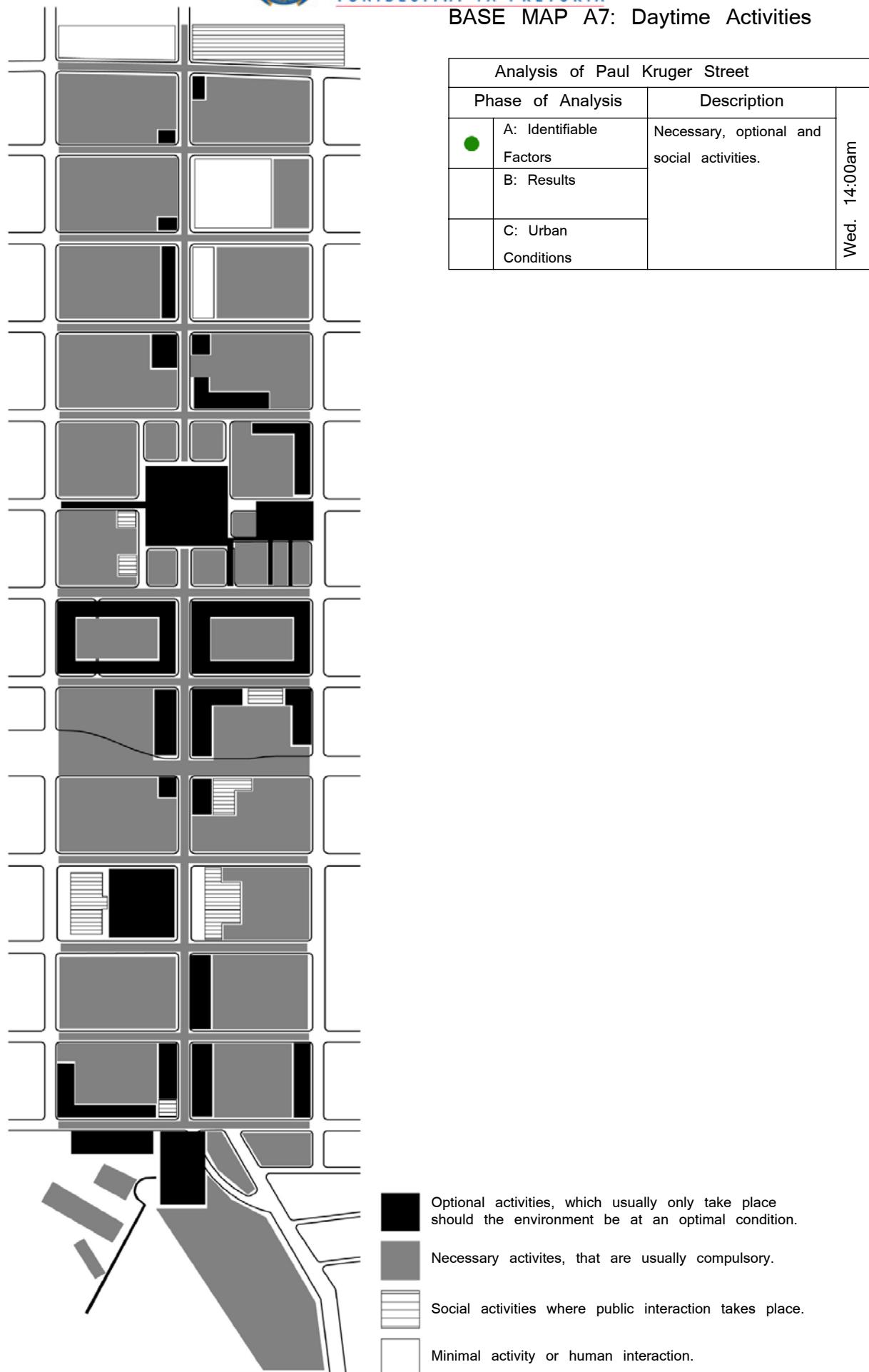


Fig. 68 The type of activities that occur along Paul Kruger Street during the day (Author 2007).



BASE MAP A8: Night-Time Activities

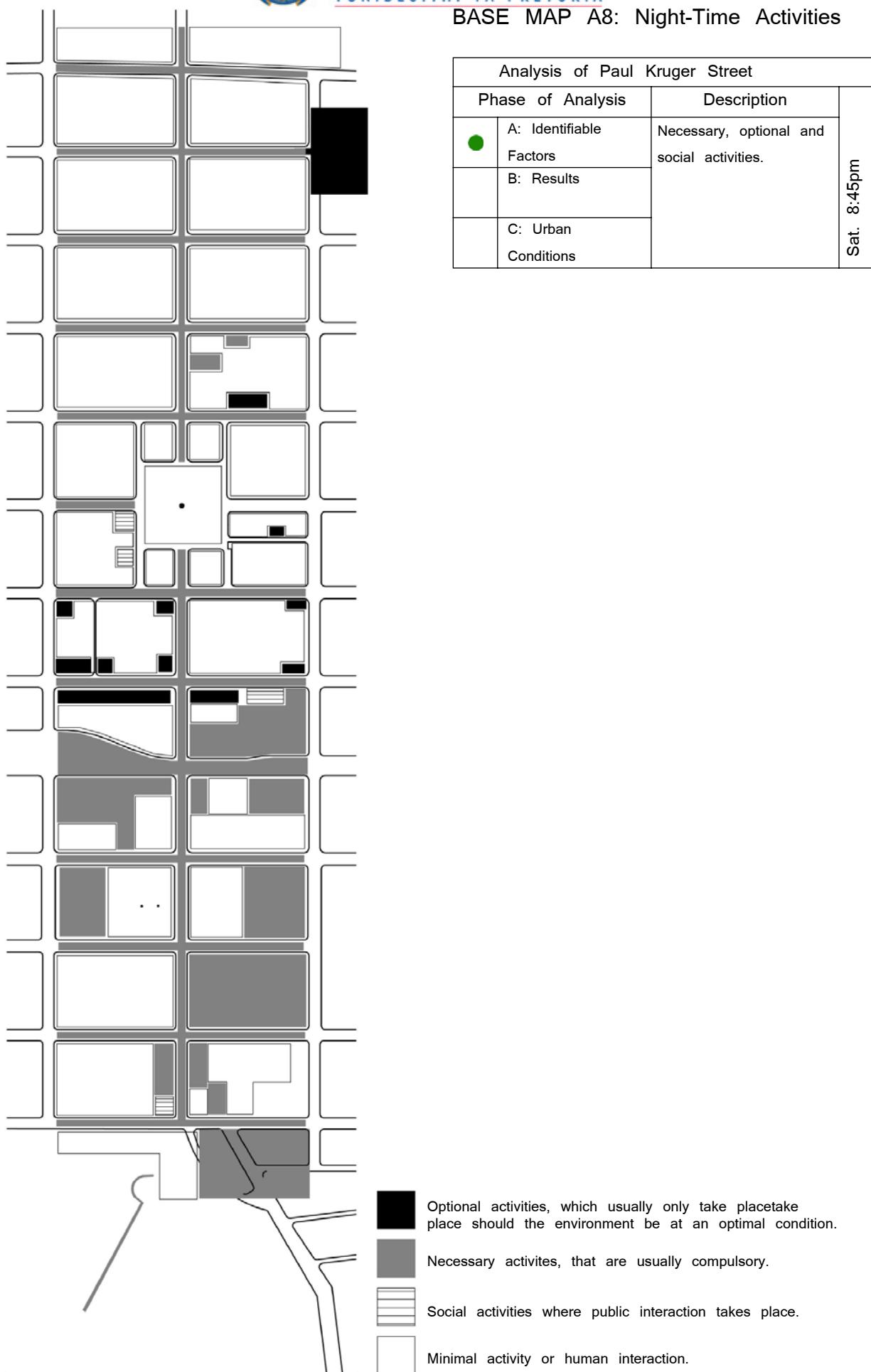
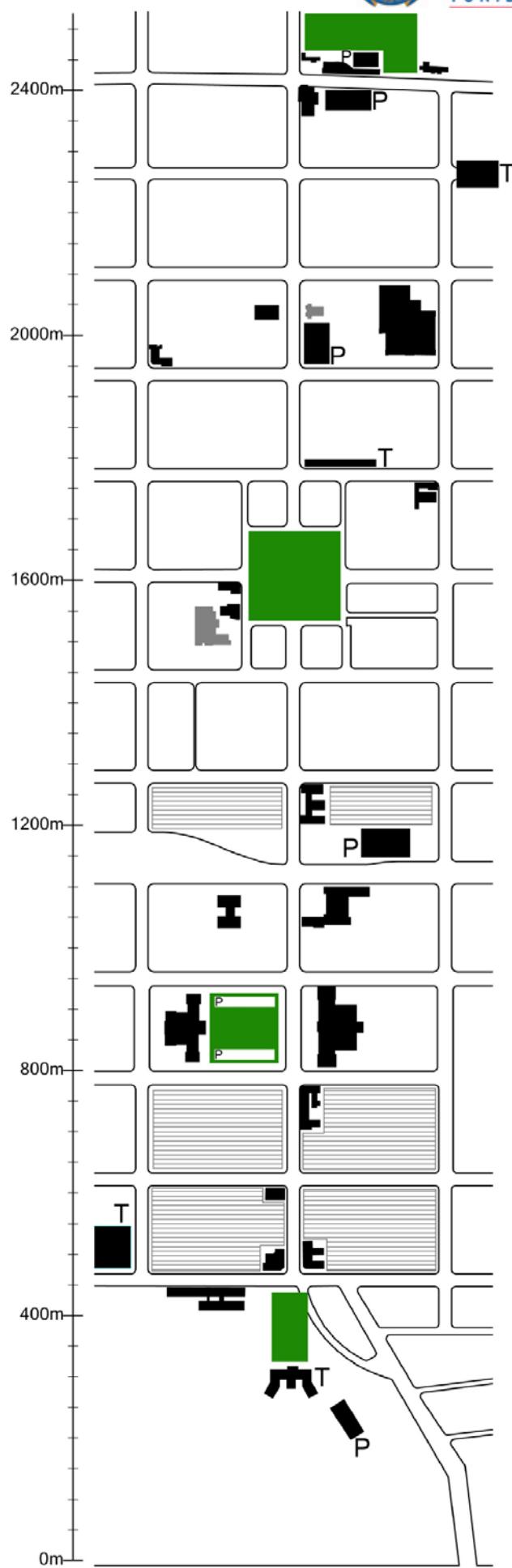


Fig. 69 The type of activities that occur along Paul Kruger Street during the evening (Author 2007).



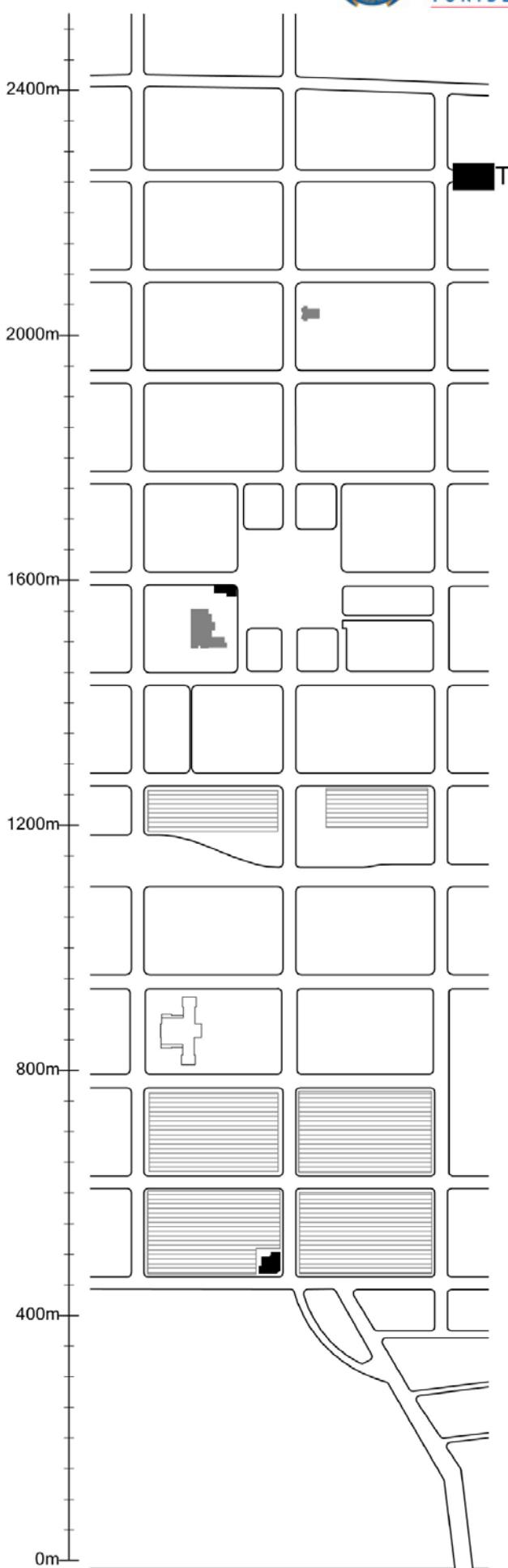
BASE MAP A9: Daytime Services & Equipment



Analysis of Paul Kruger Street		
Phase of Analysis	Description	
● A: Identifiable Factors	Choice and opportunities based on the 'services and equipment' that are embedded within the urban surface.	Wed. 14:00am
■ B: Results		
□ C: Urban Conditions		

Fig. 70 The services and equipment available on Paul Kruger Street during the day. (Author 2007).

## BASE MAP A10: Night-Time Services & Equipment

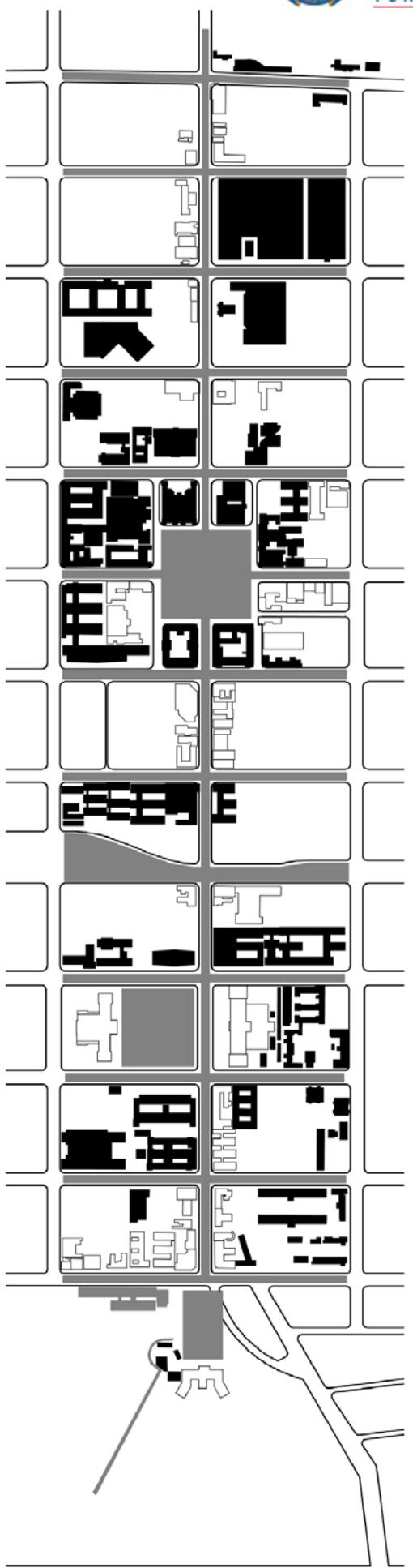


Analysis of Paul Kruger Street		
Phase of Analysis	Description	
A: Identifiable Factors	Choice and opportunities based on the 'services and equipment' that are embedded within the urban surface.	
B: Results		
C: Urban Conditions		

Sat. 8:45pm

- [Solid black square] Facilities that provide recreation, entertainment, education and multi-purpose facilities. i.e. museums, restaurants, hotels, schools, libraries, halls and places of worship.
- [Black square with white 'T'] Public transport facilities.
- [Black square with white 'P'] Parking facilities.
- [Green square] Open public spaces, squares or gardens.
- [Grey square] Abandoned facilities that are no longer in use.
- [Hatched square] Areas in which housing facilities i.e. apartment blocks can be found.

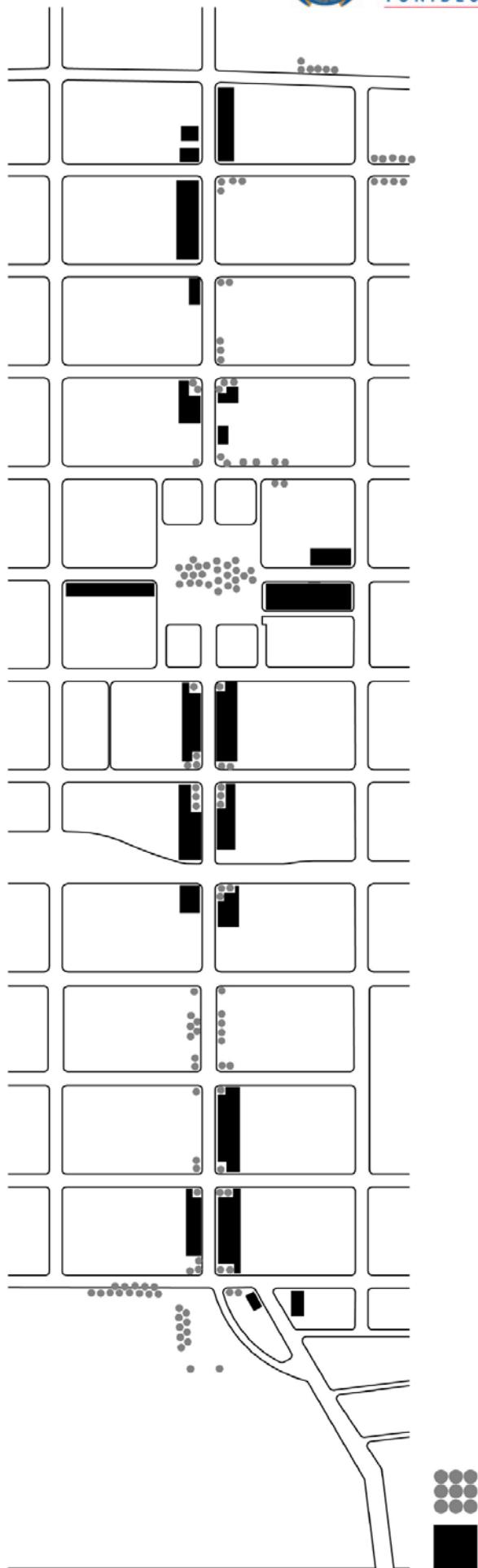
Fig. 71 The services and equipment available on Paul Kruger Street during the evening. (Author 2007).



Analysis of Paul Kruger Street		
Phase of Analysis	Description	Wed. 14:00am
● A: Identifiable Factors	Private, semi-public and public space.	
B: Results		
C: Urban Conditions		

Fig. 72 The analysis of the accessibility to the spaces along Paul Kruger Street (Author 2007)

### BASE MAP A12: Formal vs. Informal

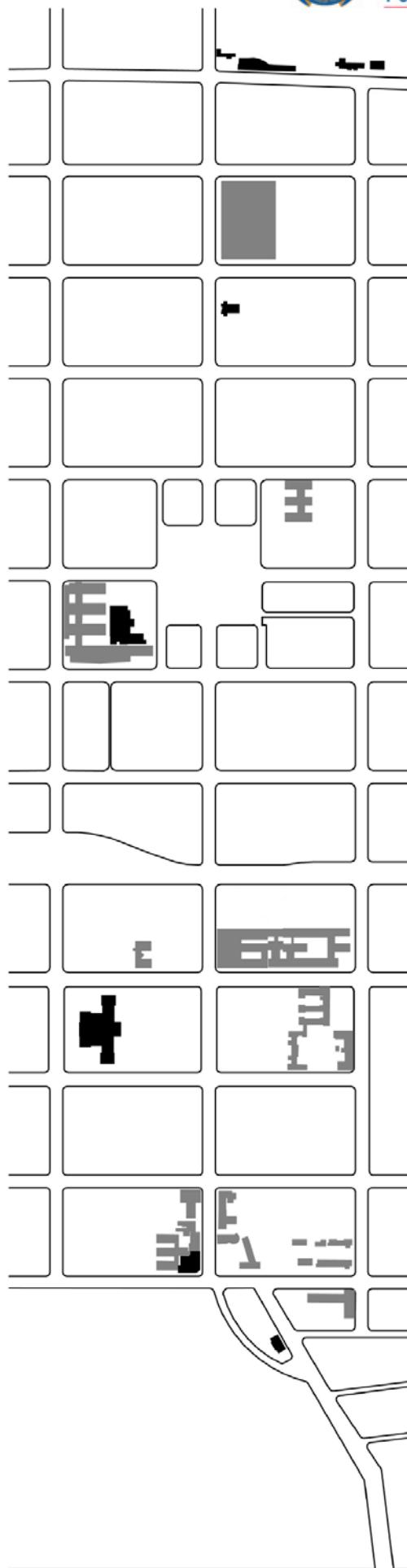


Analysis of Paul Kruger Street		
Phase of Analysis	Description	
● A: Identifiable Factors	Informal commercial activity versus formal commercial activity.	Tues. 10:00am
B: Results		
C: Urban Conditions		

Fig. 73 The analysis of the commercial activity along Paul Kruger Street (Author 2007).



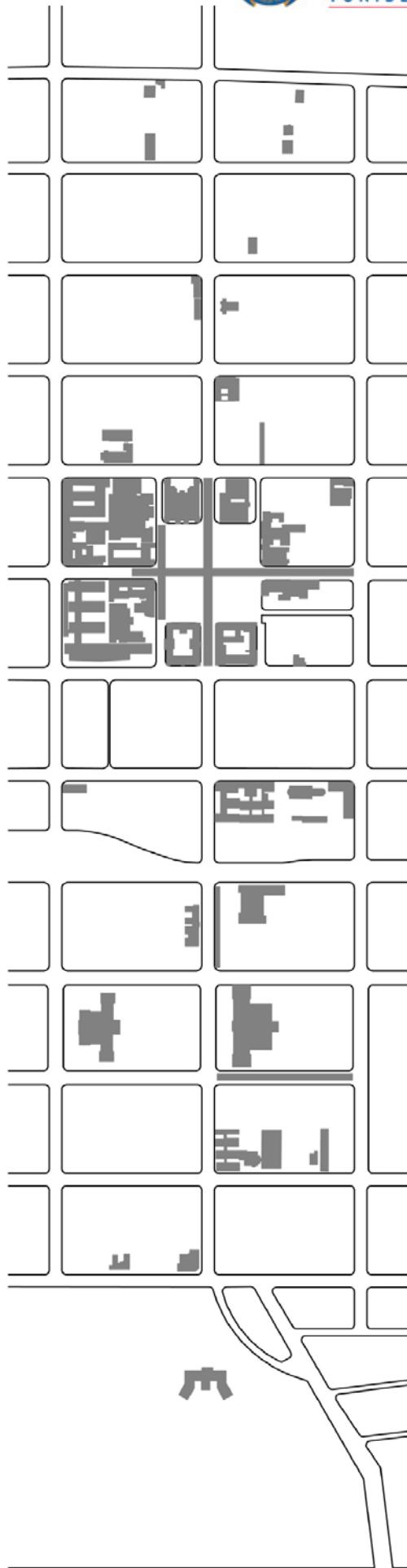
BASE MAP A13: Declining Services



Analysis of Paul Kruger Street

Phase of Analysis		Description
●	A: Identifiable Factors	Facilities and services that are in a state of decline.
	B: Results	
	C: Urban Conditions	

Fig. 74 Facilities along Paul Kruger Street that are in a state of decline (Author 2007).

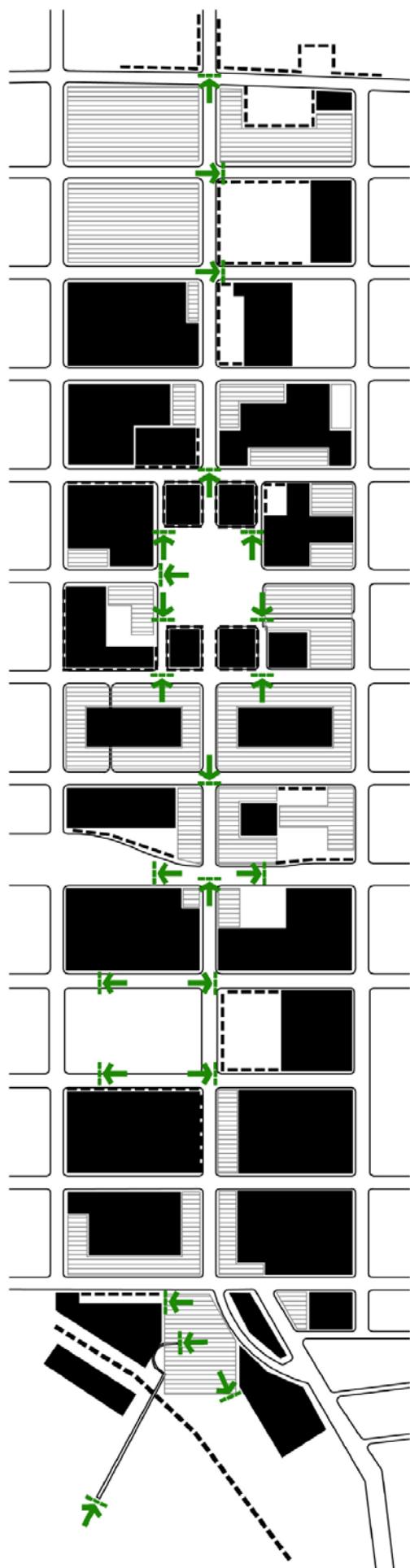


Analysis of Paul Kruger Street		
Phase of Analysis	Description	
● A: Identifiable Factors	Buildings and spaces of heritage value.	
B: Results		
C: Urban Conditions		

Fig. 75 Buildings of heritage value along Paul Kruger Street (Author 2007).

### 6.1.6. Context Study of Paul

#### 6.1.6.2. Phase 2 - The Resulting Factors



BASE MAP B1: Territory

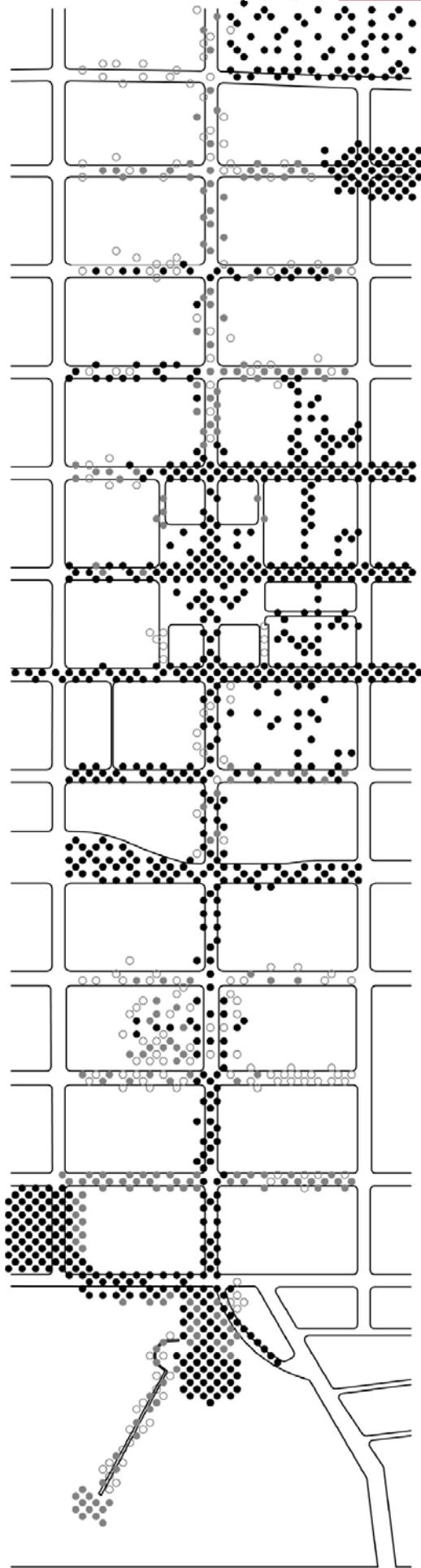
Analysis of Paul Kruger Street	
Phase of Analysis	Description
A: Identifiable Factors	Controlled space and residual space as a result of both physical and psychological boundaries.
B: Results	
C: Urban Conditions	

Contributing Identifiable Factors	Base Maps - Phase 1
	A1. Daytime Pedestrian Activity A2. Night-Time Pedestrian Activity A3. Vehicular Activity A4. Illumination A5. Transport Nodes A6. Edge Condition A7. Daytime Activities A8. Night-Time Activities A9. Daytime Services & Equipment A10. Night-Time Services & Equipment A11. Accessibility A12. Formal vs. Informal A13. Declining Services A14. Heritage

- Private sector to which only certain individuals have access.
- ▨ Accessible to the public.
- - - Physical boundary.
- ↑ Psychological boundary, therefore 'blocking' areas.



BASE MAP B2: Human Density

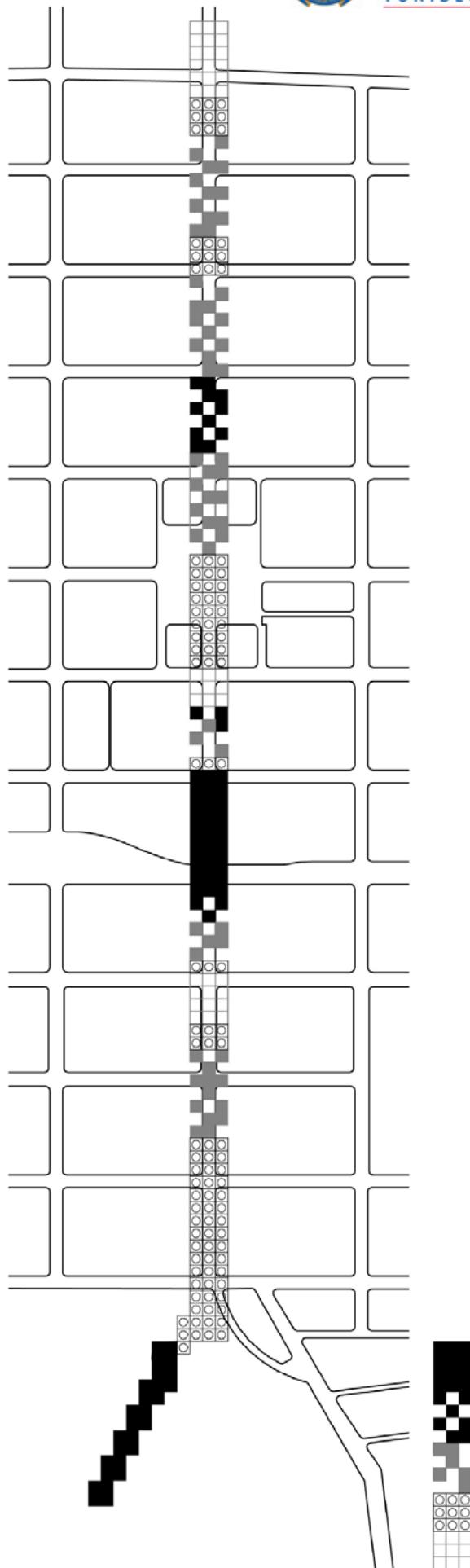


Analysis of Paul Kruger Street

Phase of Analysis		Description
A: Identifiable Factors		The areas that generally attract more people, and as result are perceived to have more energy and experiential quality.
B: Results		
C: Urban Conditions		

Contributing Identifiable Factors	Base Maps - Phase 1
	A1. Daytime Pedestrian Activity
	A2. Night-Time Pedestrian Activity
	A3. Vehicular Activity
	A4. Illumination
	A5. Transport Nodes
	A6. Edge Condition
	A7. Daytime Activities
	A8. Night-Time Activities
	A9. Daytime Services & Equipment
	A10. Night-Time Services & Equipment
	A11. Accessibility
	A12. Formal vs. Informal
	A13. Declining Services
	A14. Heritage

Fig. 77 The analysis of the areas that generally attract more people (Author 2007).

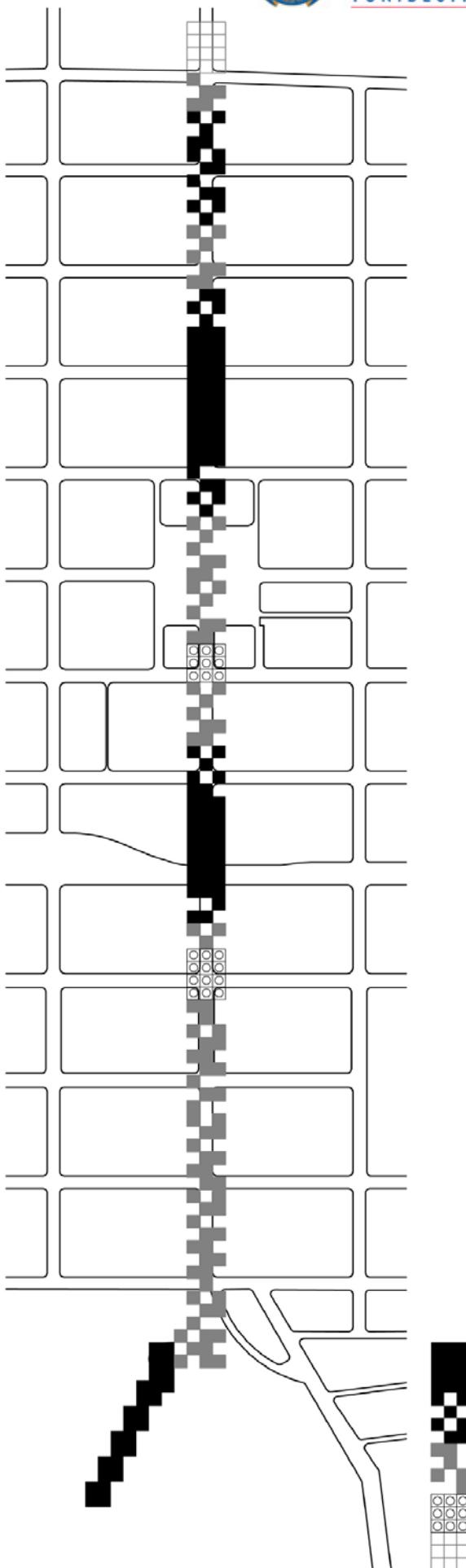


Analysis of Paul Kruger Street		
Phase of Analysis	Description	
A: Identifiable Factors		This is an indication of actual crime and perceived crime along the street.
B: Results		This information is based on information extracted from statistics and research conducted for the <i>Paul Kruger Street Spine Urban Design Framework for the Improvement of Environmental Conditions on Paul Kruger Street</i> by (Schoonraad, Steenkamp, Young, Roodt and Velaytham, 2000:37).
C: Urban Conditions		

Contributing Identifiable Factors	Base Maps - Phase 1
	<ul style="list-style-type: none"> <li>● A1. Daytime Pedestrian Activity</li> <li>● A2. Night-Time Pedestrian Activity</li> <li>● A3. Vehicular Activity</li> <li>● A4. Illumination</li> <li>● A5. Transport Nodes</li> <li>● A6. Edge Condition</li> <li>● A7. Daytime Activities</li> <li>● A8. Night-Time Activities</li> <li>● A9. Daytime Services &amp; Equipment</li> <li>● A10. Night-Time Services &amp; Equipment</li> <li>● A11. Accessibility</li> <li>● A12. Formal vs. Informal</li> <li>● A13. Declining Services</li> <li>● A14. Heritage</li> </ul>

Fig. 78 The analysis of perceived and actual criminal activity along Paul Kruger Street during the day (Author 2007).

## BASE MAP B4: Night-Time Crime Indicator



Analysis of Paul Kruger Street	
Phase of Analysis	Description
A: Identifiable Factors	This is an indication of actual crime and perceived crime along the street. This information is based on information extracted from statistics and research conducted for the <i>Paul Kruger Street Spine Urban Design Framework for the Improvement of Environmental Conditions on Paul Kruger Street</i> by (Schoonraad, et al. 2000:37).
B: Results	
C: Urban Conditions	

Contributing Identifiable Factors	Base Maps - Phase 1
<ul style="list-style-type: none"> <li>● A1. Daytime Pedestrian Activity</li> <li>● A2. Night-Time Pedestrian Activity</li> <li>● A3. Vehicular Activity</li> <li>● A4. Illumination</li> <li>● A5. Transport Nodes</li> <li>● A6. Edge Condition</li> <li>● A7. Daytime Activities</li> <li>● A8. Night-Time Activities</li> <li>● A9. Daytime Services &amp; Equipment</li> <li>● A10. Night-Time Services &amp; Equipment</li> <li>● A11. Accessibility</li> <li>● A12. Formal vs. Informal</li> <li>● A13. Declining Services</li> <li>● A14. Heritage</li> </ul>	

Very high.

Above average.

Average.

Below average.

Very low.

Fig. 79 The analysis of perceived and actual criminal activity along Paul Kruger Street during the evening (Author 2007).

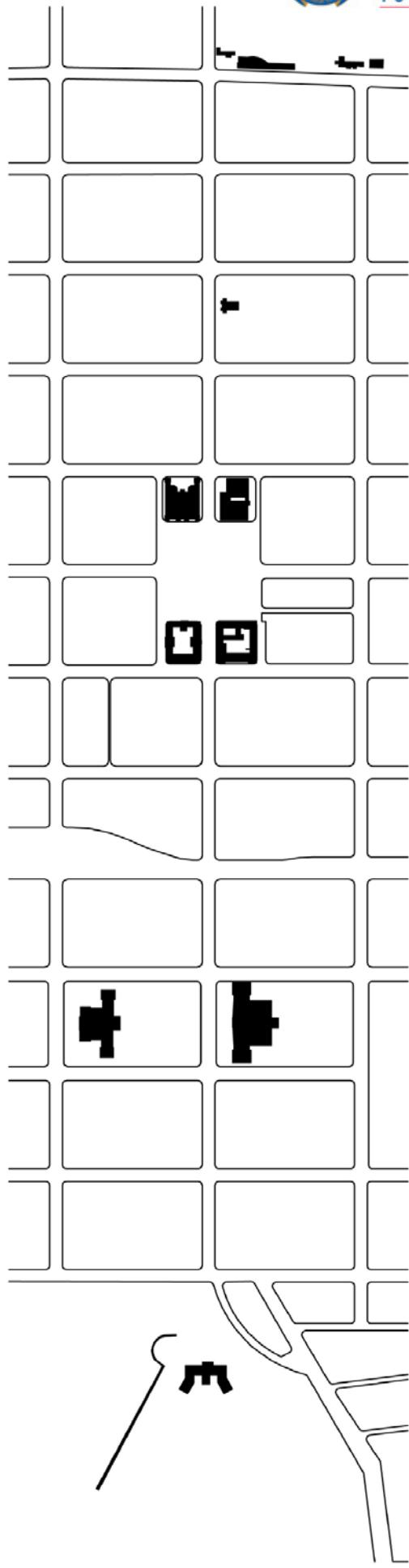


Fig. 80 Key building and structures along Paul Kruger Street (Author 2007).

60

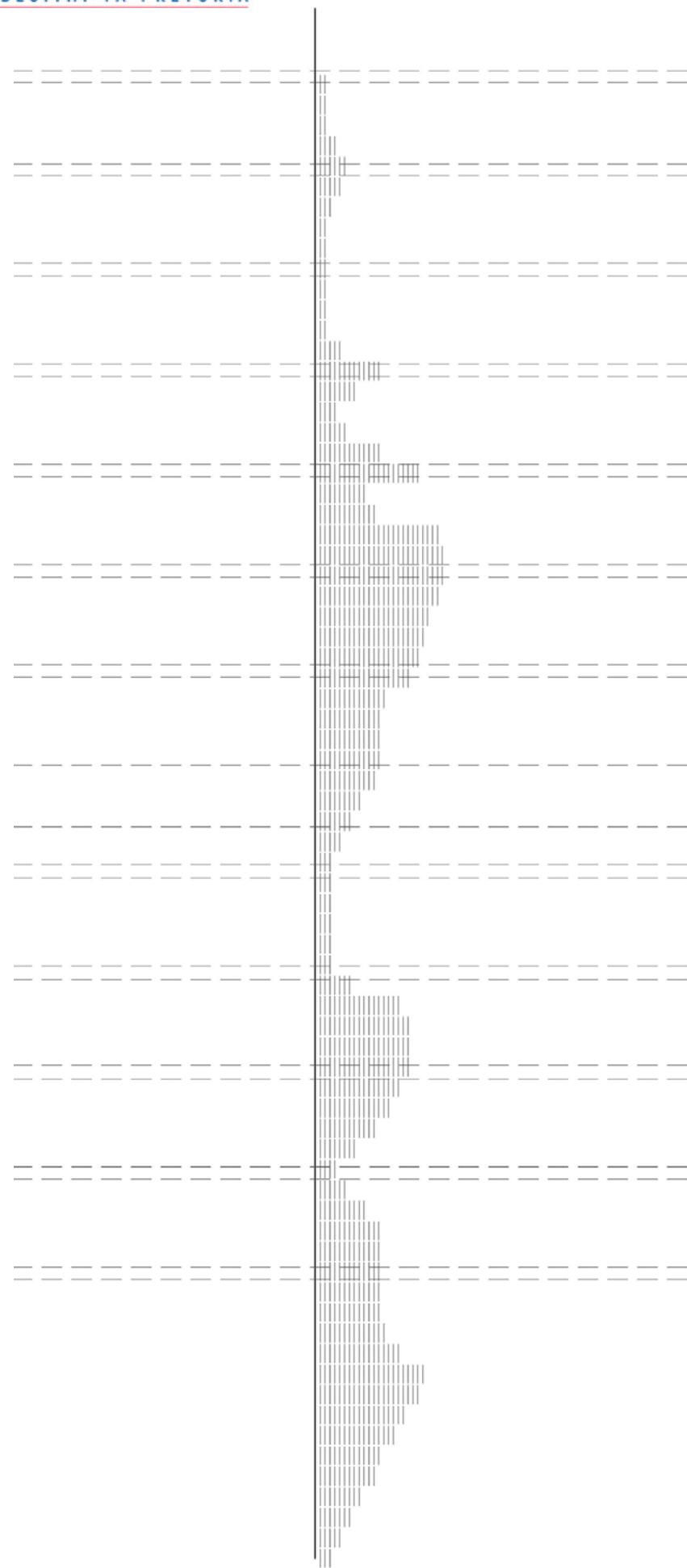


Fig. 81 A graph indicating emotions and sensations that one may experience during the day along Paul Kruger Street (Author 2007).



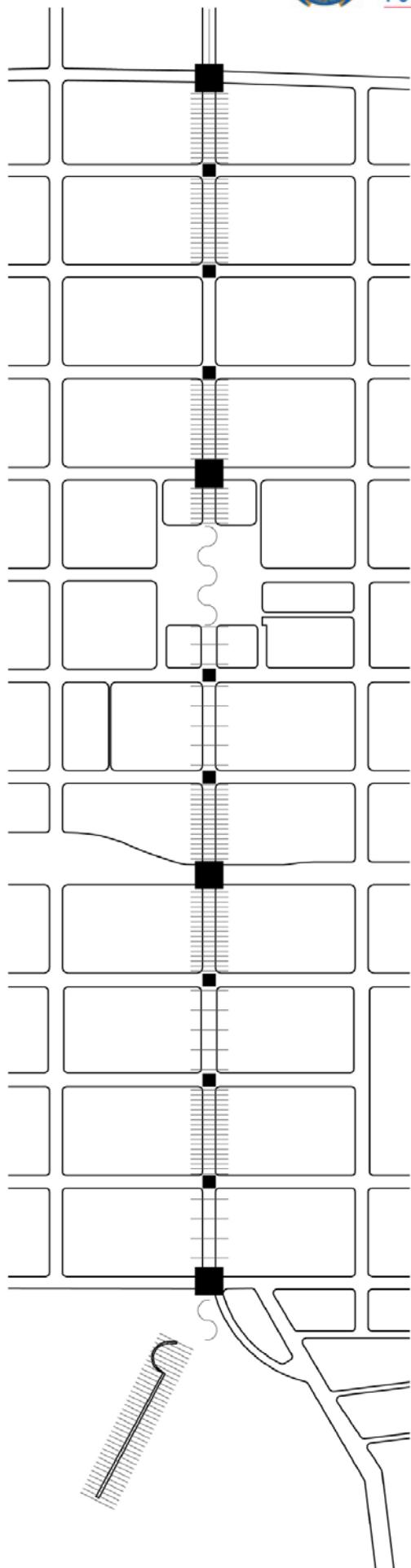
## BASE MAP B5: Emotions & Sensations

Analysis of Paul Kruger Street		
Phase of Analysis		Description
	A: Identifiable Factors	A comparison of the experiential quality along the street during the day and at night. It is based on energy, activity, processes and transactions.
●	B: Results	
	C: Urban Conditions	

Contributing Identifiable Factors	Base Maps - Phase 1
<ul style="list-style-type: none"> <li>● A1. Daytime Pedestrian Activity</li> <li>● A2. Night-Time Pedestrian Activity</li> <li>● A3. Vehicular Activity</li> <li>● A4. Illumination</li> <li>● A5. Transport Nodes</li> <li>● A6. Edge Condition</li> <li>● A7. Daytime Activities</li> <li>● A8. Night-Time Activities</li> <li>● A9. Daytime Services &amp; Equipment</li> <li>● A10. Night-Time Services &amp; Equipment</li> <li>● A11. Accessibility</li> <li>● A12. Formal vs. Informal</li> <li>● A13. Declining Services</li> <li>● A14. Heritage</li> </ul>	

Fig. 81 A graph indicating emotions and sensations that one may experience during the evening along Paul Kruger Street (Author 2007).

## BASE MAP B6: Pace of Pedestrian Movement



Analysis of Paul Kruger Street	
Phase of Analysis	Description
A: Identifiable Factors	The rate at which pedestrians walk along the street.
B: Results	
C: Urban Conditions	

Contributing Identifiable Factors	Base Maps - Phase 1
<ul style="list-style-type: none"> <li>● A1. Daytime Pedestrian Activity</li> <li>● A2. Night-Time Pedestrian Activity</li> <li>● A3. Vehicular Activity</li> <li>● A4. Illumination</li> <li>● A5. Transport Nodes</li> <li>● A6. Edge Condition</li> <li>● A7. Daytime Activities</li> <li>● A8. Night-Time Activities</li> <li>● A9. Daytime Services &amp; Equipment</li> <li>● A10. Night-Time Services &amp; Equipment</li> <li>● A11. Accessibility</li> <li>● A12. Formal vs. Informal</li> <li>● A13. Declining Services</li> <li>● A14. Heritage</li> </ul>	

- Interruption to pedestrian movement due to a traffic intersection with high levels of vehicular activity.
- Interruption to pedestrian movement due to a traffic intersection with moderate levels of vehicular activity.
- ||| Walking at a fast pace.
- || Walking a moderate pace.
- S Leisurely walk.

Fig. 82 The rate at which pedestrians move along Paul Kruger Street Street (Author 2007).



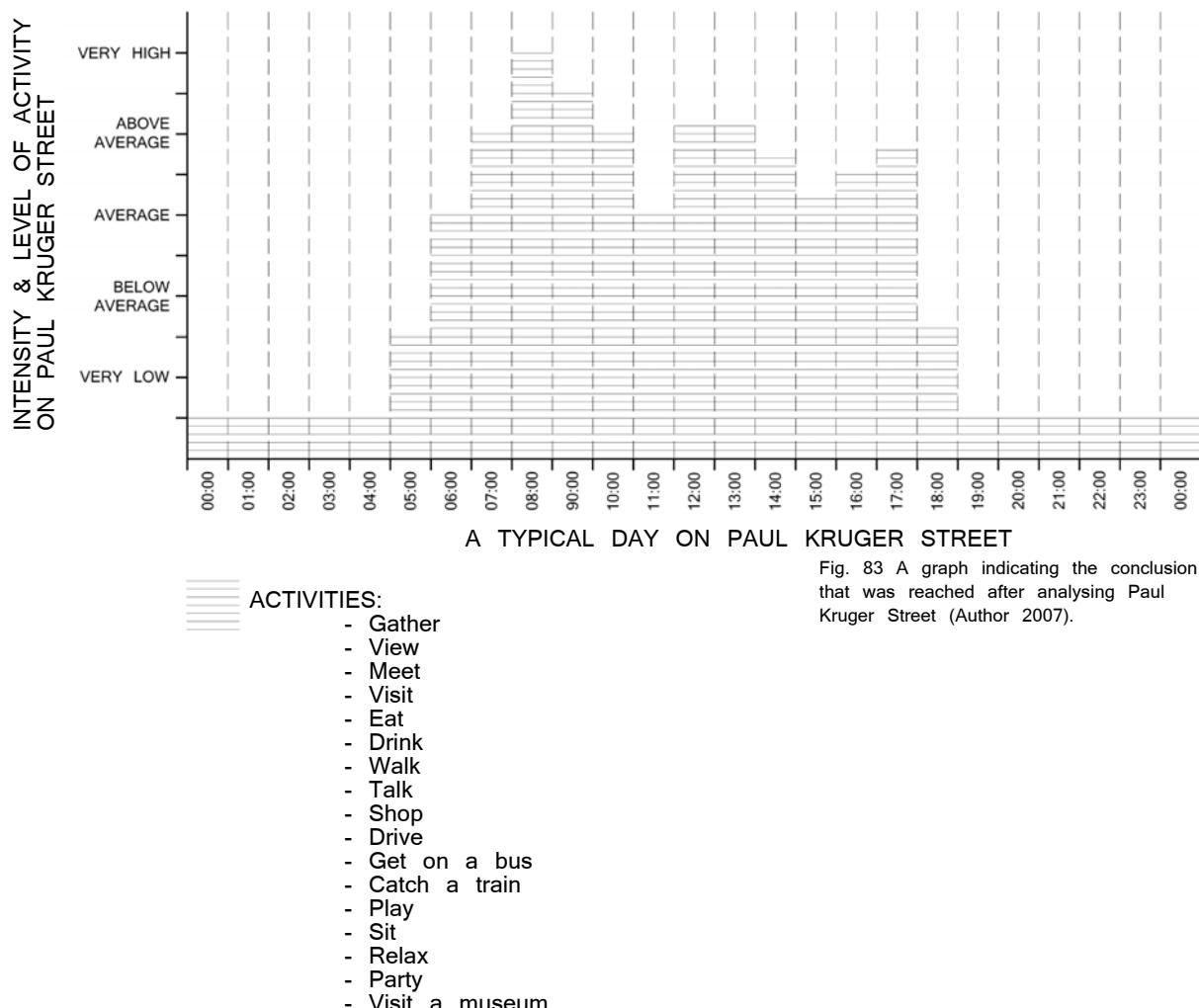
#### 6.1.6. Context Study

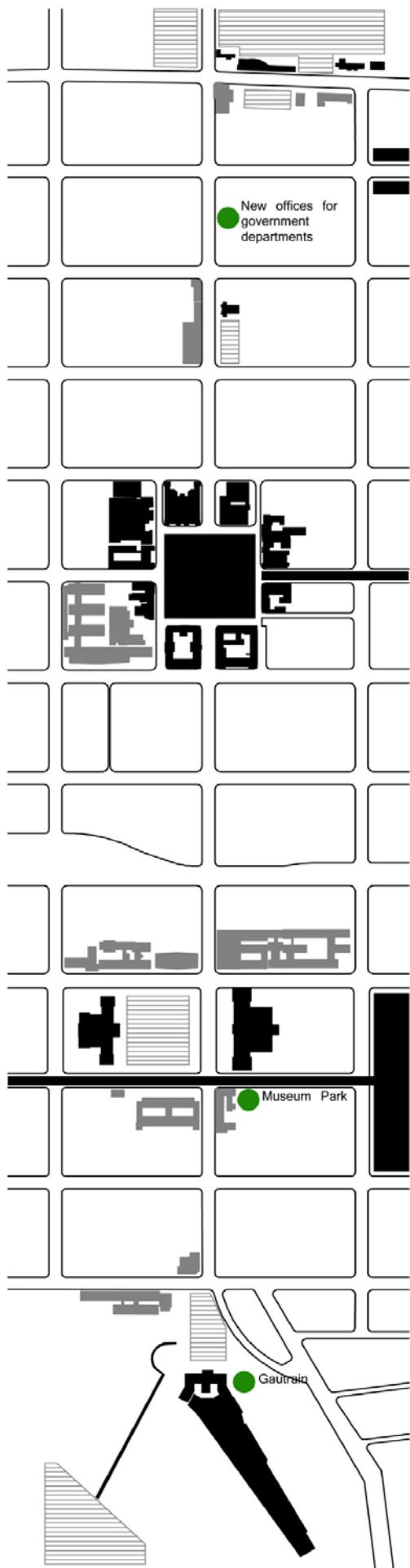
##### 6.1.6.3. Conclusion to the Analysis of Paul Kruger Street

This analysis clearly illustrates that Paul Kruger Street is characterised by the domination of *physical space* over the *social space*. It lacks both a temporal condition and overlapping conditions, therefore allowing a limited number of programmes to occur over a short period of time, for that reason it is a street that can only provide an insignificant amount of choice and opportunity. Unfortunately it is a street that is only able to identify itself with routine and a limited number of processes and transactions and not with more desirable characteristics such as spontaneity, surprise and sensation.

It is also clear that Paul Kruger Street lacks a social landscape that is able to support social exchange and relations; therefore it is a closed system in which it becomes a place of necessity and does not open itself to the possibilities of new and indeterminate outcomes.

As a final point, it is defined by a fixed territory with non-elastic edges resulting in controlled space and residual space, the latter being where the symptoms of the city are played out. The entire street is a space in which one can easily identify a clear distinction between street, sidewalk and building and where the boundaries are never blurred.





BASE MAP C1: Assets

Analysis of Paul Kruger Street		
Phase of Analysis	Description	
A: Identifiable Factors	Buildings, structures and open spaces considered to be assets based on historical, cultural, social, economic and recreational value.	
B: Results		
C: Urban Conditions		

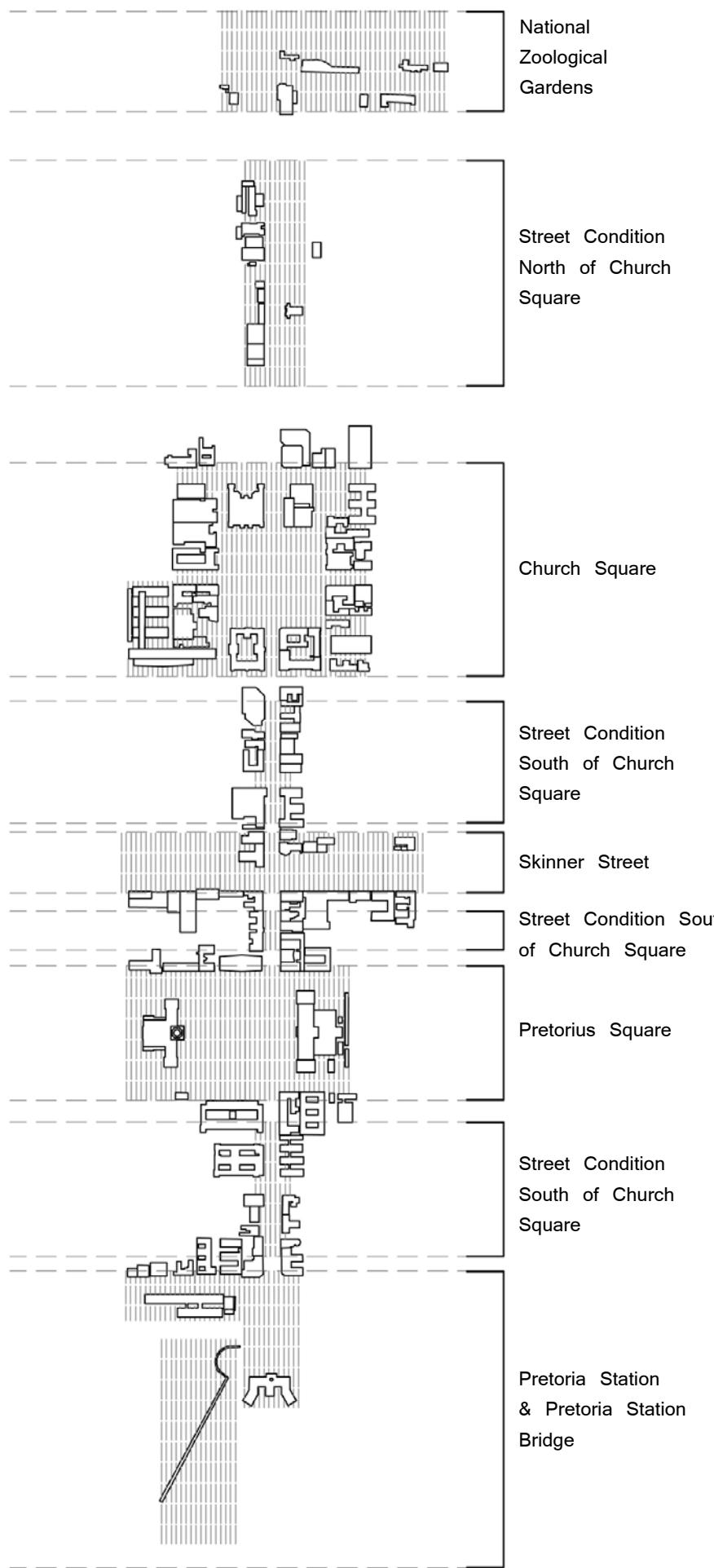


Fig. 85 Significant urban conditions along Paul Kruger Street (Author 2007).



Phase of Analysis		Description
	A: Identifiable Factors	Three-dimensional representation of the built-form along Paul Kruger Street.
	B: Results	
	C: Urban Conditions	

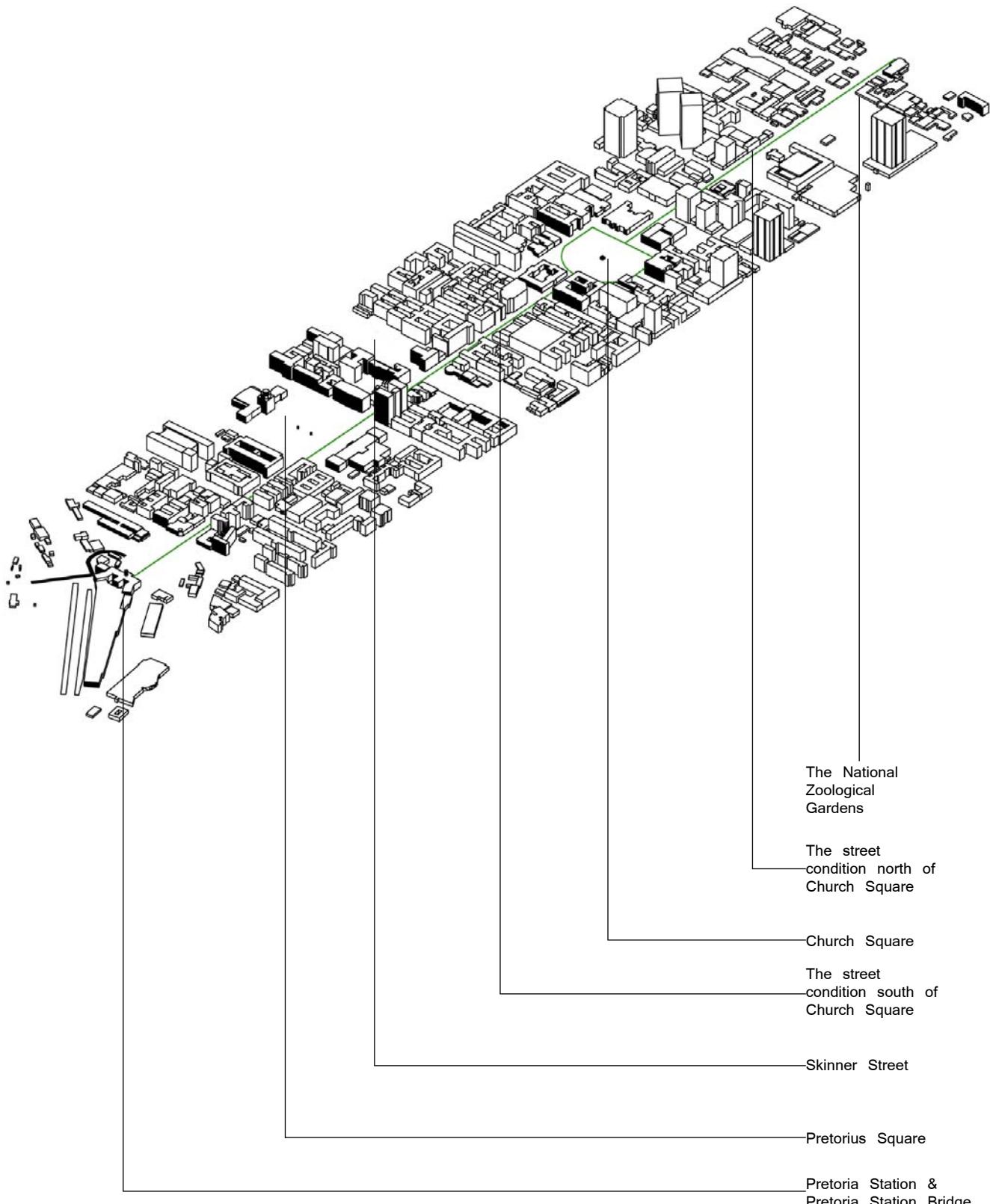


Fig. 86 A three-dimensional representation of Paul Kruger Street (Author 2007).

## 7. Proposed Strategy for Paul Kruger Street

### 7.1. Indeterminacy

#### 7.1.1. Cross-programming and Event

The contemporary South African urban condition and its diverse cultural identity demands strategies capable of tolerating contradictory impulses to capture a layered society with all its perceptions, patterns and structures (Caples & Jefferson, 2005:6). It accepts that different people in the city have different resources to draw upon, therefore it should allow for interpretation and invention. Subsequently, how is it possible to achieve this without resorting to theme-park visions and pastiche, crossing contemporary needs with heritage?

It is possible by executing a strategy derived from a concept, which is frequently investigated by Bernard Tschumi, author of *Events Cities*, and the former dean of the Columbia Graduate School of Architecture (1988-2003) and Rem Koolhaas, where program is deconstructed. This "allows for the most dynamic coexistence of activities x, y, and z generating through their mutual interference a chain reaction of new unprecedented events" wherein differences are comfortably negotiated permitting maximum flexibility in program (Wall, 1983:26). This strategy encourages opportunities as opposed to determined outcomes, allowing for spontaneity and freedom of choice that is often risked when a design is too defined. Following from this, to insist on use and function, in order to fulfil a set programme, while use and functions come and go according to changing social practices, the full opportunities inherent in the design would never materialise (van den Burg, 2004:41).

Cross-programming does not specify individual programmes, but rather allows for the existence of multiple programmes resulting in an event of an "indeterminate set of unexpected outcomes". This contrasts with the idea of program described as a "determinate set of expected occurrences, a list of required utilities." Not specifying programme, promotes ideas and strategies taking precedence over the formal and the visual where there is no fixed relationship between architectural form and the events within (Tschumi, 2000:11, 13). This allows for the transformation and adjustment of neutral spaces according to specific programmatic needs; a tactic that provides urban conditions giving urban dwellers the capability to create, adapt and imagine.

Another derivative in the investigation of cross-programming and un-programmed space is the superimposition of strategies and devices, and not the constructing of places, in which something should happen. A project is to be seen as a tactical proposal and not simply as a design (Wall, 1983:27).

#### 7.1.2. Precedent Study: Parc de la Villette, Paris, France

The scheme was initiated by a competition organised by the French Government in 1982, as part of the *Grand Projects*, the brief called for the design of an "Urban Park for the 21<sup>st</sup> Century" (Tschumi, 2000: 53). The park is on a 125 acre site, on the north-eastern corner of Paris in a semi-industrial area, and was previously occupied by the central slaughter house. The initial ideas of the competition occurred in the 1970's, a period in which the idea of the city as a formal constitution was renewed and attention was paid to typologies and

morphologies. Very little consideration was given to programme and activities that should take place in the city, for this reason the architectural profession focused on forms and styles as opposed to events. (Tschumi, 2000: 55). But Bernard Tschumi chose to shift the *spatio-temporal* logic of the city by addressing new concepts of space and time in which he forged a “new architecture of the landscape”, a strategy that allowed for a variety of programmes and architectural circumstances. (Corner, 1999:17).



Fig. 87 The Canal de l'Ourcq that runs through Parc de la Villette. (Author, 2005).

The proposal of a “simple structural solution” that involves the regular distribution of points of programmatic intensity results in a park that can be conceived as “one of the largest buildings ever constructed.” (Wall, 1983:27)



Fig. 88 Folly F6 - Greenhouse and Discovery Garden (Author, 2005).

The folly is an object with the intention to activate space due to its status of a “programme condenser”. The notion of distributing the programme through the use of follies, is deconstructing the programme into “intense areas of activity placed according to existing site characteristics and use” therefore allowing for movement to occur throughout the site hence, presenting the visitor with new opportunities for discovery and surprise.(Tschumi, 2000: 53,69)



Fig. 89 Folly C8 - Administration (Author, 2005).

Two large structures already existed on the site, therefore the idea of introducing another mass was rejected, and instead programme was introduced by means of evenly distributing it by means of the follies (Tschumi, 2000: 53,69).

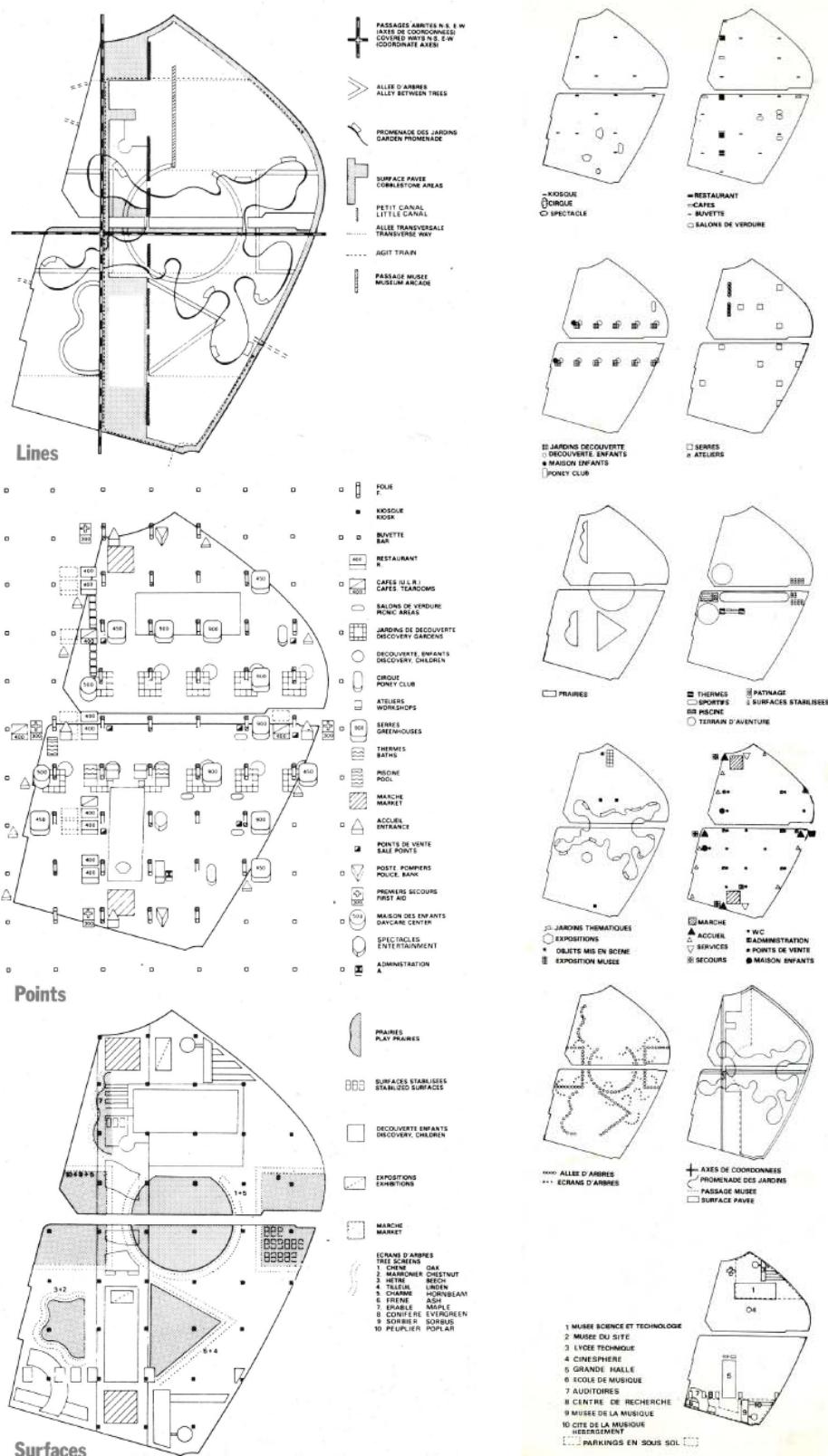


Fig. 90 & 91 Plans illustrating maximum programmatic flexibility and invention through the superimposition of three separate structures - a point system, a line system and a surface (Wall, 1983:29). The superimposing of these structures led to the questioning of the status of these structures as ordering devices, as the superimposition of three coherent structures can never result in one coherent megastructure. The element of chance is a result of the co-existence of structures which are by no means chaotic, but rather by the "multiplicity" as a result of the superimposition of strategies (Massey, 2005:113)

## 7.2. The Objective

How does the South African City reclaim its identity, when its current population is made up of different social groups, who negotiate diverse socio-cultural values and perceptions on a daily basis? Furthermore, how would the African world-view of community, democracy, participation, transparency and humanism be reflected? How are urban spaces going to accommodate man as a social being who belongs to a self-organising and multi-faceted society?

The objective is to reclaim African urban space with strategies that offer not only physical, but also social and cultural transformations (Wall, 1999:244). These strategies incorporate processes of rebuilding, incorporating, connecting and intensifying what already exists. The processes in turn, acknowledge that the city is made up of layers, some of which have been influenced by the past, and are not indigenous, and others, which are not to be abandoned but rather improved upon by adding new layers that open it up to an unknown future. As Massey demonstrates:

...for instituting democratic public spaces, necessitates operating with a concept of spatiality which keeps always under scrutiny the play of the social relations which construct them. 'Instead of trying to erase the traces of power and exclusion, democratic politics requires that they be brought to the fore, making them visible so that they can enter the terrain of contestation (Massey, 2005:153).

It is important to create an open system founded on a social and collective space where a heterogeneous society is able to express itself. This shared space should be impermanent, capable of readily accommodating the unintended and spontaneous and resisting prescriptive appropriation. This will allow for immense programmatic potential.

Furthermore, it is to be an extroverted space, in which all formal boundaries are ripped, making it almost impossible to define a boundary as a linear element. Boundaries become elastic allowing for free expansion of all spaces, where space becomes a variable landscape. It is to be a city in which its patterns and rhythms are increased and its sensations are intense, due to simultaneous activities and overlapping conditions. It focuses on the public realm enriched by experiential moments.

The strategy is based on a theoretical argument that treats the city as a whole, as opposed to a collection of localised zones. For that reason the city is understood as one continuous surface which for the purposes of this document is called urban surface, becoming an "inclusive ground-plane of the city." (Wall, 1999:233).

The intention of this urban surface is to create a robust urban condition, while maintaining its flexible and multifunctional nature that can withstand unpredictable political and economic pressures and also accommodate any number of changing demands and programs that architects do not have any control over. (Wall, 1999:238) This is achieved by allowing enough scope for different functions, appearances and roles to occur.

These surfaces are extremely simple and sparse; able to accommodate uncertain futures due to the fact that they are equipped with ranging services and facilities that articulate and programme the urban landscape (Wall, 1999:242).

Superimposing the phases of this strategy produces a result that contributes to this urban surface and the social landscape of the city. With each phase in the strategy a new layer is added therefore thickening this urban surface and establishes it as a territory which becomes undistinguishable from the city. As a result the city is equipped with an exceptionally resilient social condition and structural tissue in which architecture can position itself in such a way that it is not bound to wait until a brief is presented, but rather that it can produce a brief on its own. Architecture would then be able to act as an interface within the urban realm (Berrizbeitia, 1999:199). This is when the significance normally attached to buildings is reversed and directed towards the spaces in between.

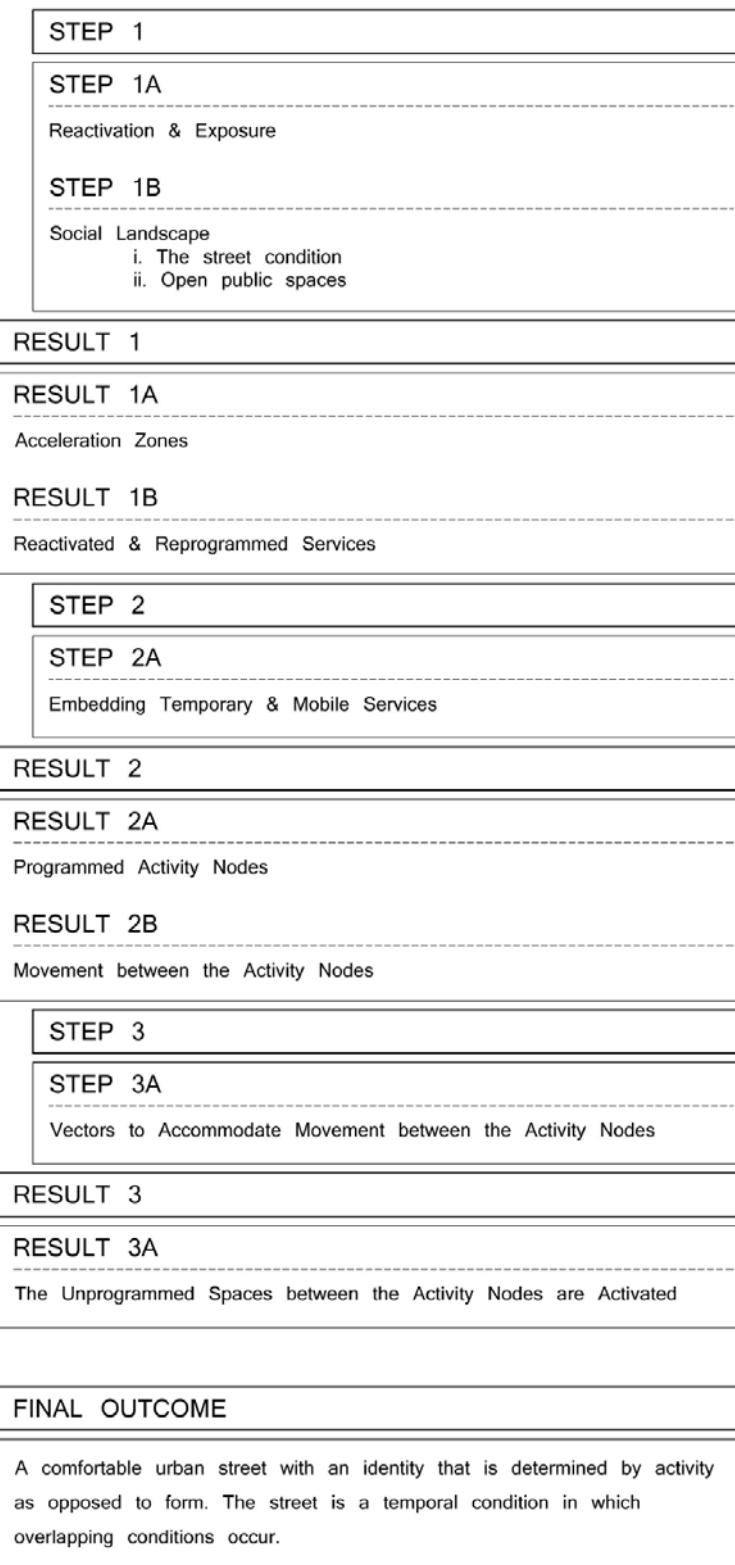
This surface is understood not as a noun but rather as a verb, in other words, a dynamic social instrument with a great opportunity to engage with the urban condition. Its physical and meta-physical characteristics are neither fixed nor universal. They do not manifest in the same way across different cultures or times and therefore can accommodate evolving forms of social life (Corner, 1999:4). For these reasons, the relevance of this strategy lies in accommodating the needs of the African urban condition to support a self-organising and dynamic society.

### 7.3. Superimposition of Devices: A Solution on an Urban Scale

The abovementioned criteria are to be achieved by implementing cross-programming which involves the superimposition of strategic layers, to create a multi-layered surface that is capable of transforming itself over time, as a result of demands placed on it (Wall, 1999:237). The intention of this urban device is to provide the city with a framework with the ability to mutate itself and which reverses the significance normally attached to buildings by directing it to the spaces between them (Wall, 1999:237). It is important that each superimposed individual layer, not be a flat element but rather a temporal state so as to produce an urban condition in which lived space supersedes physical space.



#### 7.4. Summary of the Proposed Strategy for Paul Kruger Street



## 7.5. Step 1: Inner-City Reactivation & Exposure

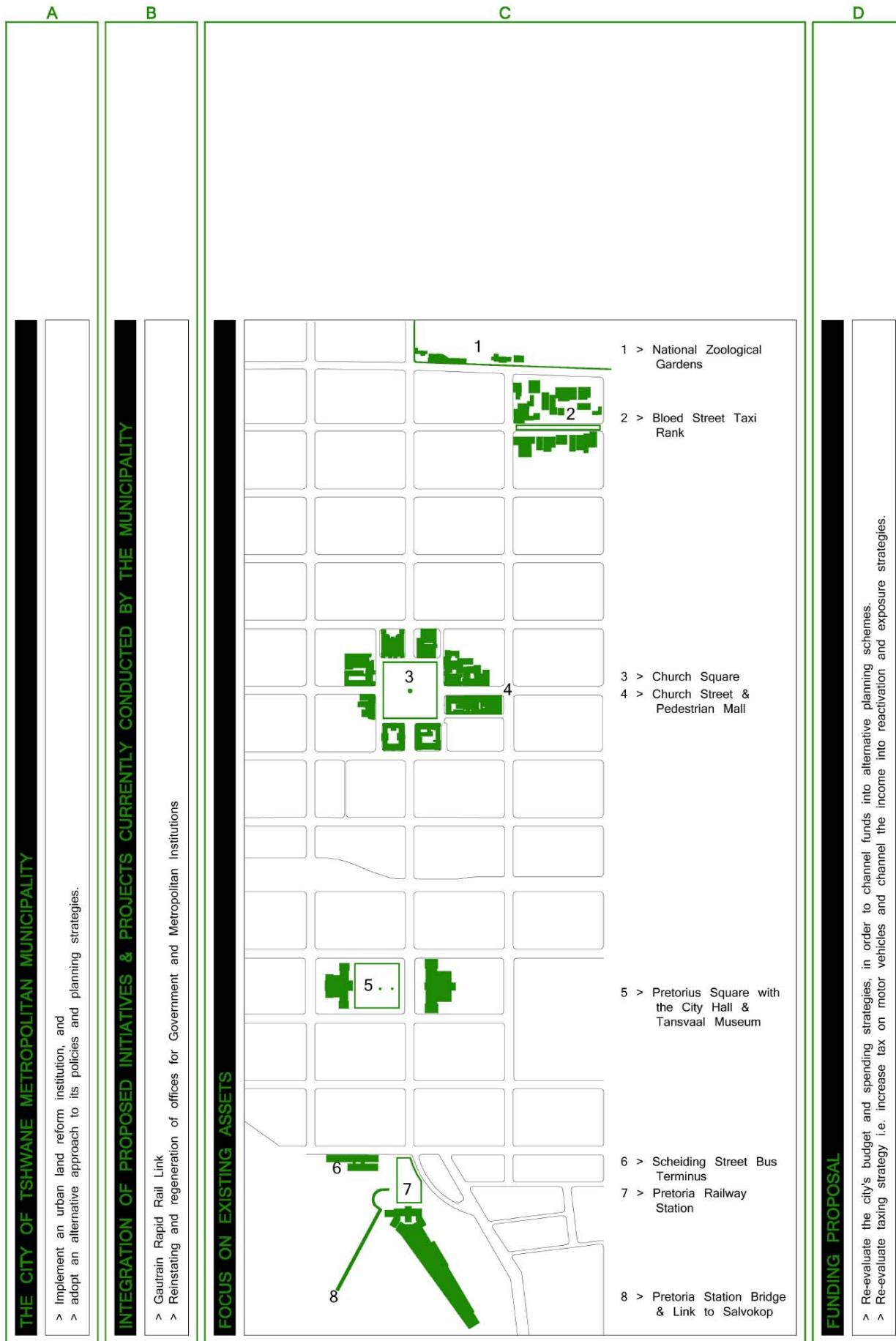
### 7.5.1. Introduction

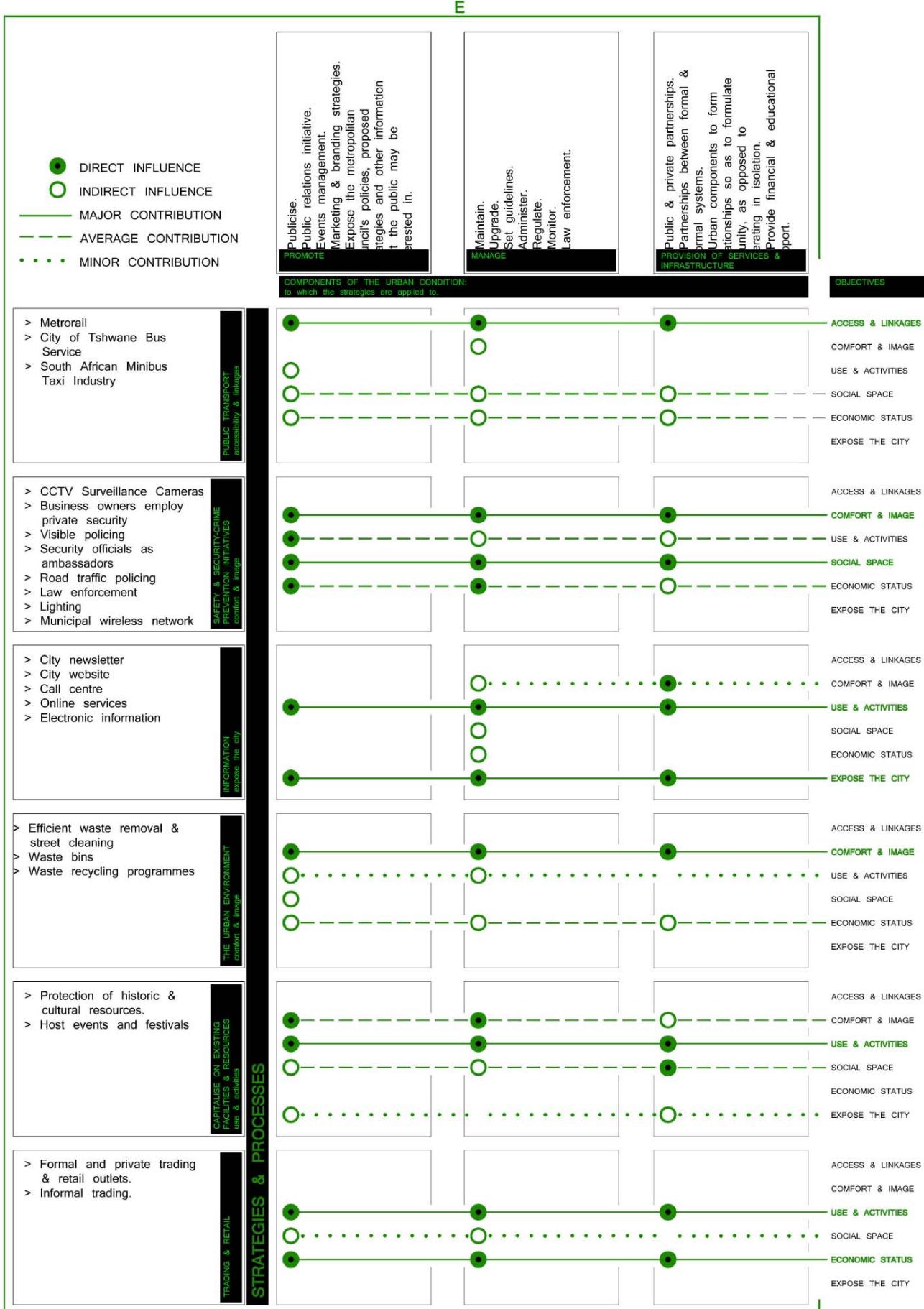
Subsequent to a thorough investigation, it is evident that the city accommodates a substantial amount of service infrastructure and facilities that are able to accommodate a variety of uses and activities ranging from housing, retail, offices, educational facilities, transport networks, outdoor spaces and facilities for leisure. Unfortunately, a large number of these facilities are in a state of decline, both in terms of their physical condition and their ability to meet a contemporary set of technological and social demands. This state of decline owes itself to a combination of reasons that begin with an inner-city failing to adjust to changing demands set by indeterminate users. The random way in which city development and service delivery evolves, is further aggravated by a lack of interest from the public sector. Its citizens therefore develop negative perceptions of the inner-city, finally resulting in a loss of confidence.

Urban regeneration begins by staying away from architectural solutions as the real issues lie elsewhere, and cannot always be solved by architecture (Ruby & Ruby, 2005:4.) Instead, advantage should be taken of the considerable potential already embedded in the inner-city due to existing facilities and services. If one implements strategies that expose and promote the inner-city facilities by adapting them to meet a large portion of user needs through public and social infrastructure, the city's inhabitants may re-engage with the city. Furthermore, by developing a temporal condition whose identity is characterised by the ability to host various activities and programmes over different time periods promotes an environment where overlapping urban conditions occur. The ultimate purpose of this activity-driven strategy is to set the tone to that of a social setting, which forms the basis for the continued regeneration of the city.



#### 7.5.2. Step 1A: Reactivation & Exposure Strategy for Pretoria Inner-City





7.5.3. Precedent Study: Bogotá, Columbia

CITY:  Bogotá, Colombia	MAYOR  Enrique Peñalosa (1998-2001)	POPULATION:  6,5 million inhabitants.
URBAN REFORM:  Developed a model for urban improvement based on equal rights for all people.	URBAN REFORM GOAL:  Social Integration	DEMOCRACY:  ...making public good over the private interests the primary principles.
A GOAL SET BY THE MAYOR:  "In fifteen years approximately 90% of the population will be living within 500m from a transit stop." (Peñalosa).	THE MAYOR BELIEVES:  ...that public spaces are the only environments in which all citizens, regardless of income, can meet as equals	THE MAYOR STATES:  "Over the past fifty years we have been building cities for cars much more than for people."
TRAIN:  No sub-way system.	BUS:  Increased taxes on fuel and used half of the revenue to fund a bus system that serves 500 000 residents.	PRIVATE VEHICLE:  An annual car-free day to promote public transport and bicycles.
BICYCLE:  Built more than 300km of bicycles paths, pedestrian streets & greenways.	PEDESTRIANS:  "High quality public pedestrian space is evidence of a true democracy at work" (Peñalosa).	STREETS:  Bogotá has the world's longest pedestrian street.
HOUSING:  Built housing for the poor.	CHILDREN:  Built 100 nurseries for children under the age of five years.	SCHOOLS:  Renovated 150 schools.
INFRASTRUCTURE:  Building public infrastructure as a priority.	PARKS:  Built and reconstructed 1200 parks.	CRIME:  Since Peñalosa has been in office crime rates have been reduced by two thirds.
CRIME:  Since Peñalosa has been in office crime rates have been reduced by two thirds.	PUBLIC SPACE:  Equal access to all people to all public spaces.	"I like cities where life is intense" (Peñalosa)

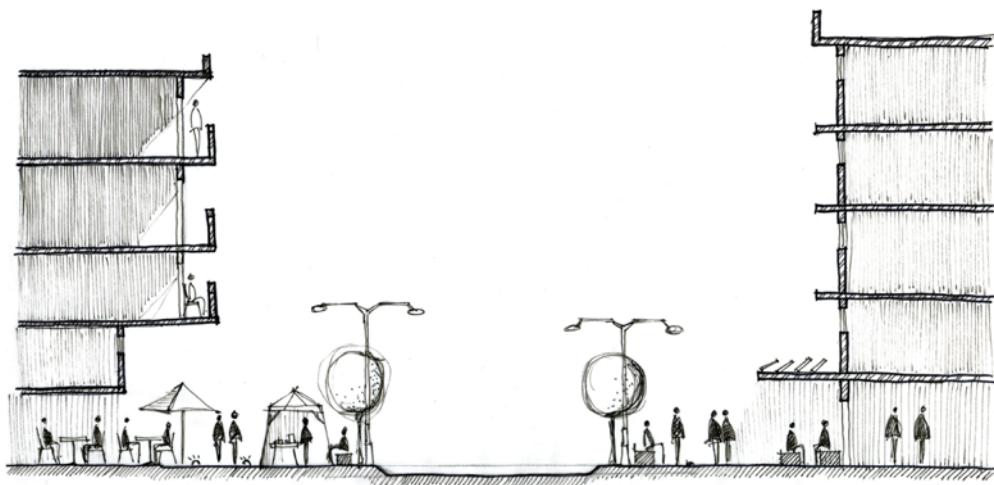
Fig. 92 Information on the city of Bogotá and the strategies it has implemented towards urban reform based on social integration and equality ([www.pps.org/info/placemakingtools/placemakers/epeñalosa](http://www.pps.org/info/placemakingtools/placemakers/epeñalosa) 7 May 2007).



### 7.6.1. Introduction

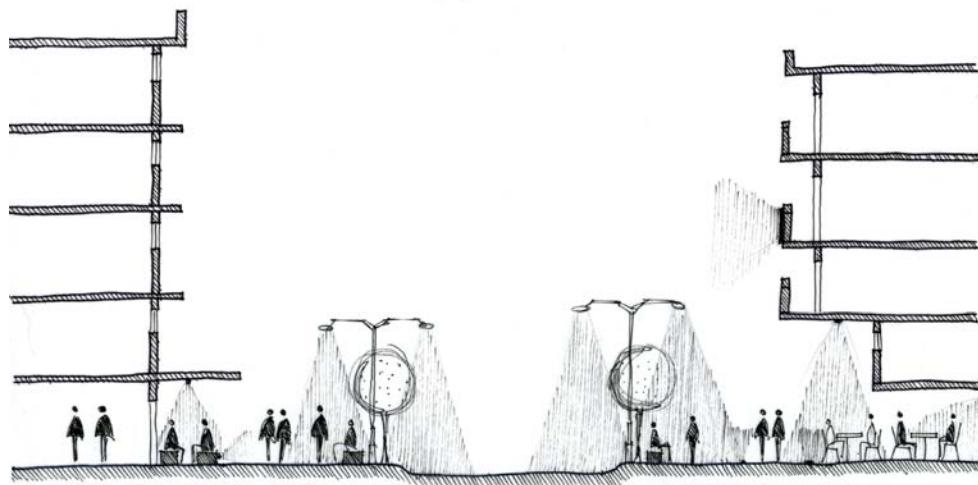
The second aspect of an activity-driven solution is public space and how it influences the activities that take place in the city. Activities in public spaces have been divided into three categories, each of which place very different demands on the physical urban environment (Gehl, 1987:11). The first consists of necessary activities that are primarily compulsory and only slightly influence physical conditions. The second, optional activities often include outdoors activities and only take place when the outdoor environment is at an optimal condition. The third being social activities, which depend on public interaction and usually, evolve from the first two types. In streets and city spaces of poor quality, minimal activity takes place. Therefore it becomes imperative to make urban spaces more comfortable so that the city's existing activities occurring purely out of necessity are translated into stimulating activities of interaction and recreation.

### 7.6.2. The Street Condition



A TYPICAL SECTION OF PAUL KRUGER STREET DURING THE DAY

Fig. 93 Elements such as street furniture, trees, benches, waste bins, shading devices and facilities for informal traders contribute to the improvement of the street condition and hence the social landscape of Paul Kruger Street (Author 2007).



A TYPICAL SECTION OF PAUL KRUGER STREET AT NIGHT.

Fig. 94 Lighting plays an important role in the contribution to the street condition during the evening. It not only allows for activity to occur at night but it also contributes to the safety and security of the street environment (Author 2007).

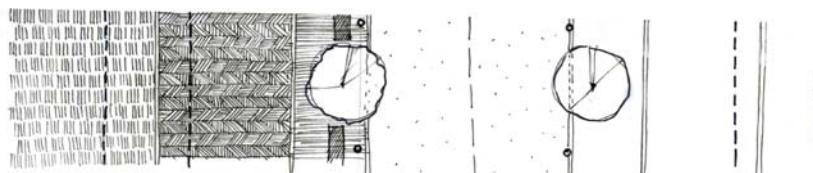


Fig. 95 A plan indicating different surface conditions as a result of the articulation of different floor materials (Author 2007)..



### 7.6.3. Open Public Spaces

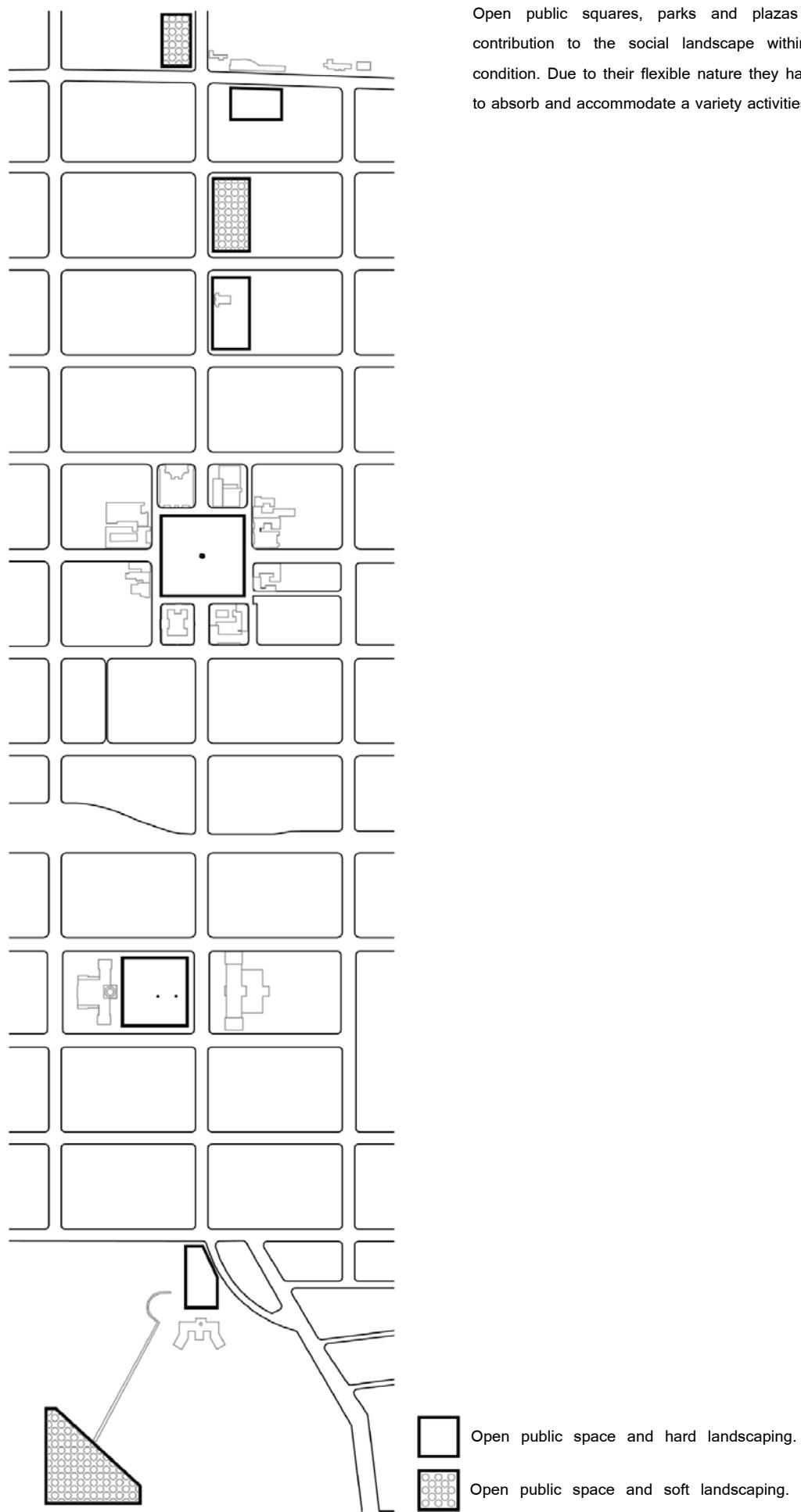


Fig. 96 A proposed strategy for open public spaces along Paul Kruger Street (Author 2007).

#### 7.7. Result 1A: Acceleration Zones

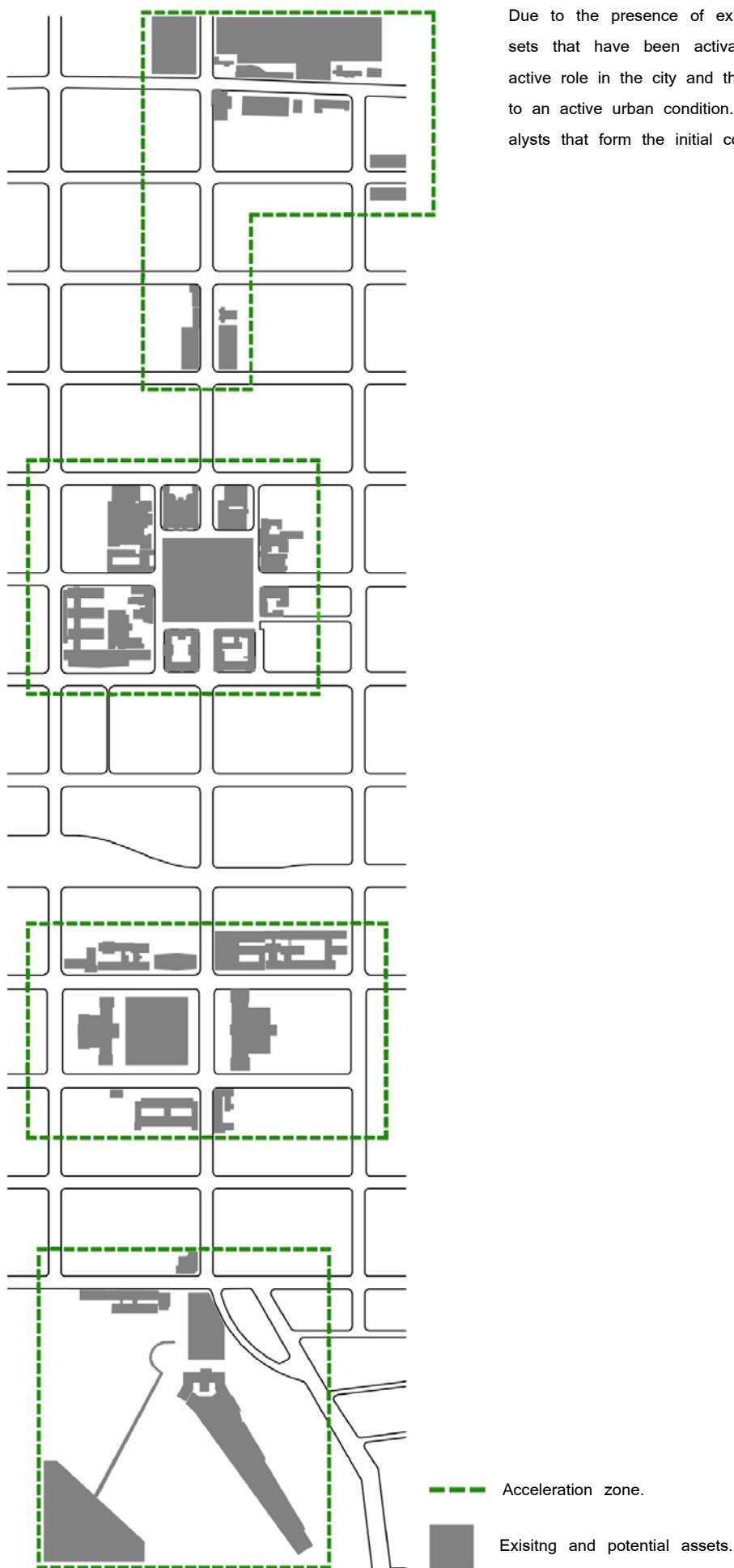
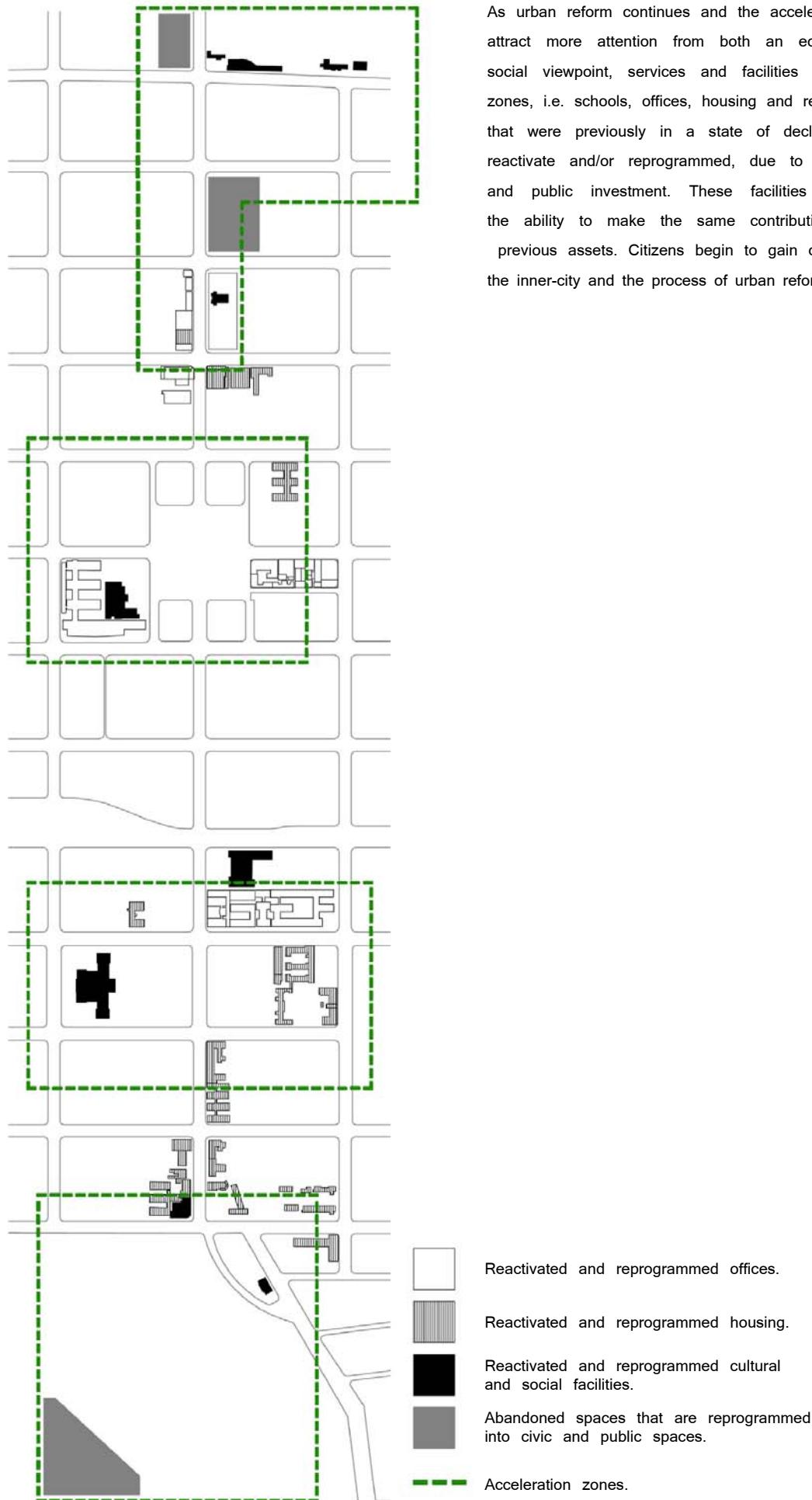


Fig. 97 Proposed catalysts along Paul Kruger Street (Author 2007).

Due to the presence of existing assets and new assets that have been activated are able to play an active role in the city and therefore positively contribute to an active urban condition. These zones become catalysts that form the initial contribution to urban reform.



7.8. Result 1B: Reactivated &



As urban reform continues and the acceleration zones attract more attention from both an economic and social viewpoint, services and facilities within these zones, i.e. schools, offices, housing and retail facilities, that were previously in a state of decline, become reactivate and/or reprogrammed, due to new private and public investment. These facilities then have the ability to make the same contributions as the previous assets. Citizens begin to gain confidence in the inner-city and the process of urban reform continues.

## 7.9. Step 2A: Temporary & Mobile Services to Form Linked Programmed Nodes

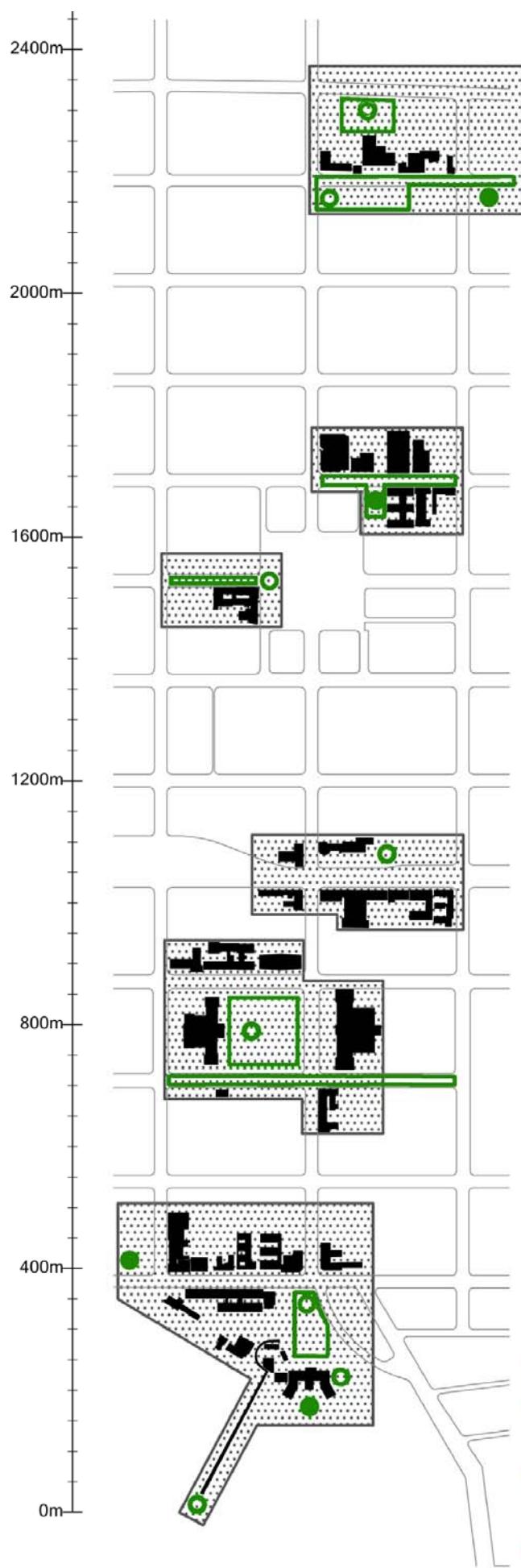
### 7.9.1. Introduction

The previous stages of the strategy involve overlaying the city with a surface that is made up of an adequate social landscape, allowing for the next phase of the strategy to take place. This includes embedding temporary and mobile equipment and services to create public activity nodes for collecting, distributing, and connecting a great range of uses and functions so that the density of movement becomes intensified. Initially, these actions require minimal resources, to test whether these actions produce the desired outcomes. It can be a process of trial and error, due to the minimal economic resources needed for these temporary and mobile actions. They can be accommodated in existing and newly reactivated services and facilities thereby further reducing the financial impact.

These nodes of exchange and appropriation, if implemented with integrity and appropriate environmental responses, will not only support public activities, but also produce an image of public space (Wall, 1999:240). These concentrated nodes are such that they have the ability to spread out and positively influence their surrounding spaces, once again adding another surface to the city.



#### 7.9.2. Temporary & Mobile Services



The position of these new mobile and temporary services is determined by existing transport facilities, assets, acceleration zones and existing buildings and structures that are able to accommodate these services. The result being intense areas of activity that occur along the street and eventually generate movement between these activity nodes. These temporary and mobile services include the following:

- water & electricity for informal traders
- storage
- info kiosks
- refreshment kiosks
- mobile medical clinics
- shading devices for informal traders
- police surveillance
- day care centres
- outdoor toys & playgrounds
- big screen televisions
- internet hotspots
- game centres
- bandstands for outdoor performances
- picnic and braai facilities
- bus stops

#### 7.10. Step 3A: Vectors

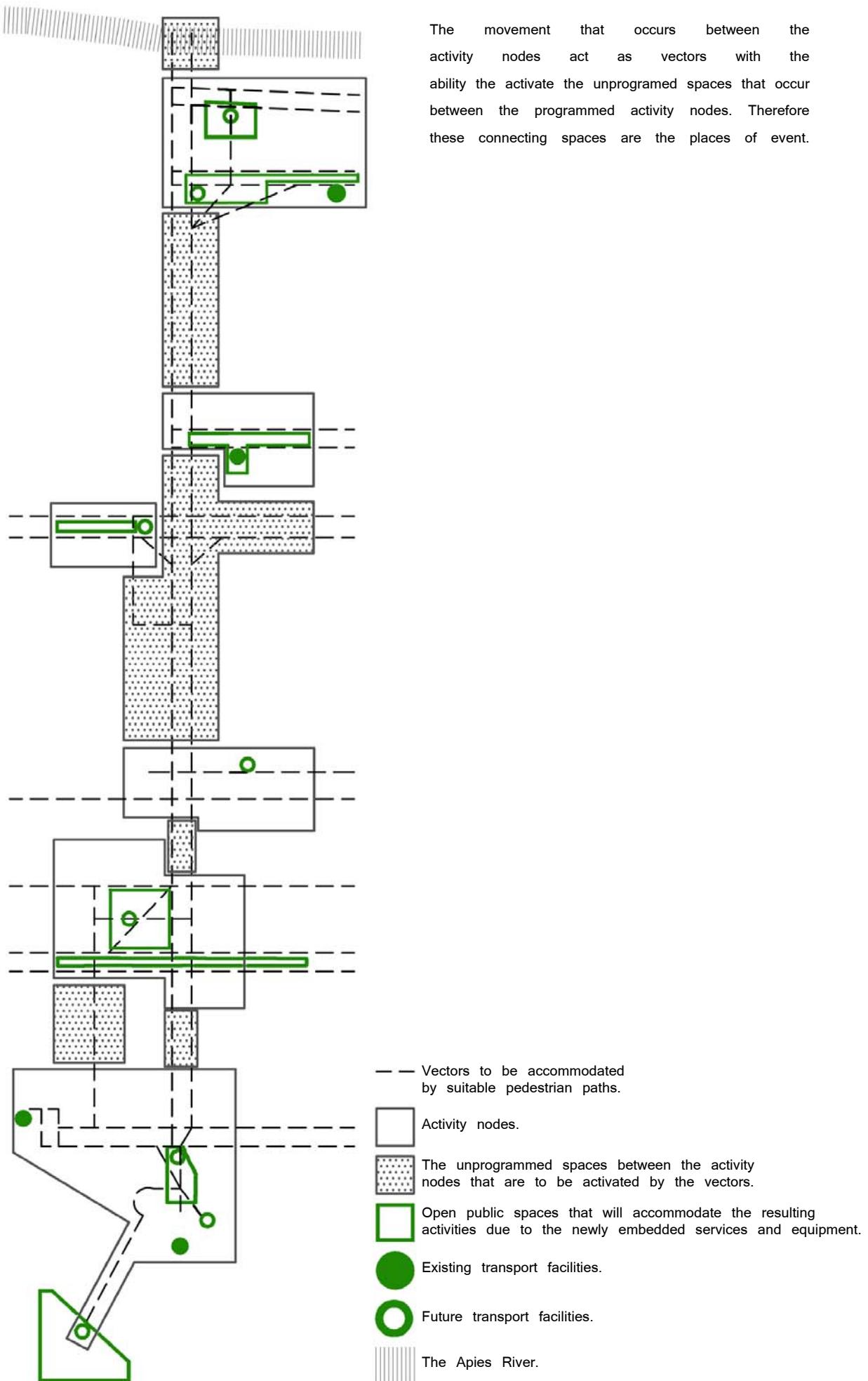


Fig. 100 A proposed strategy for vectors that connect the activity nodes along Paul Kruger Street (Author 2007).

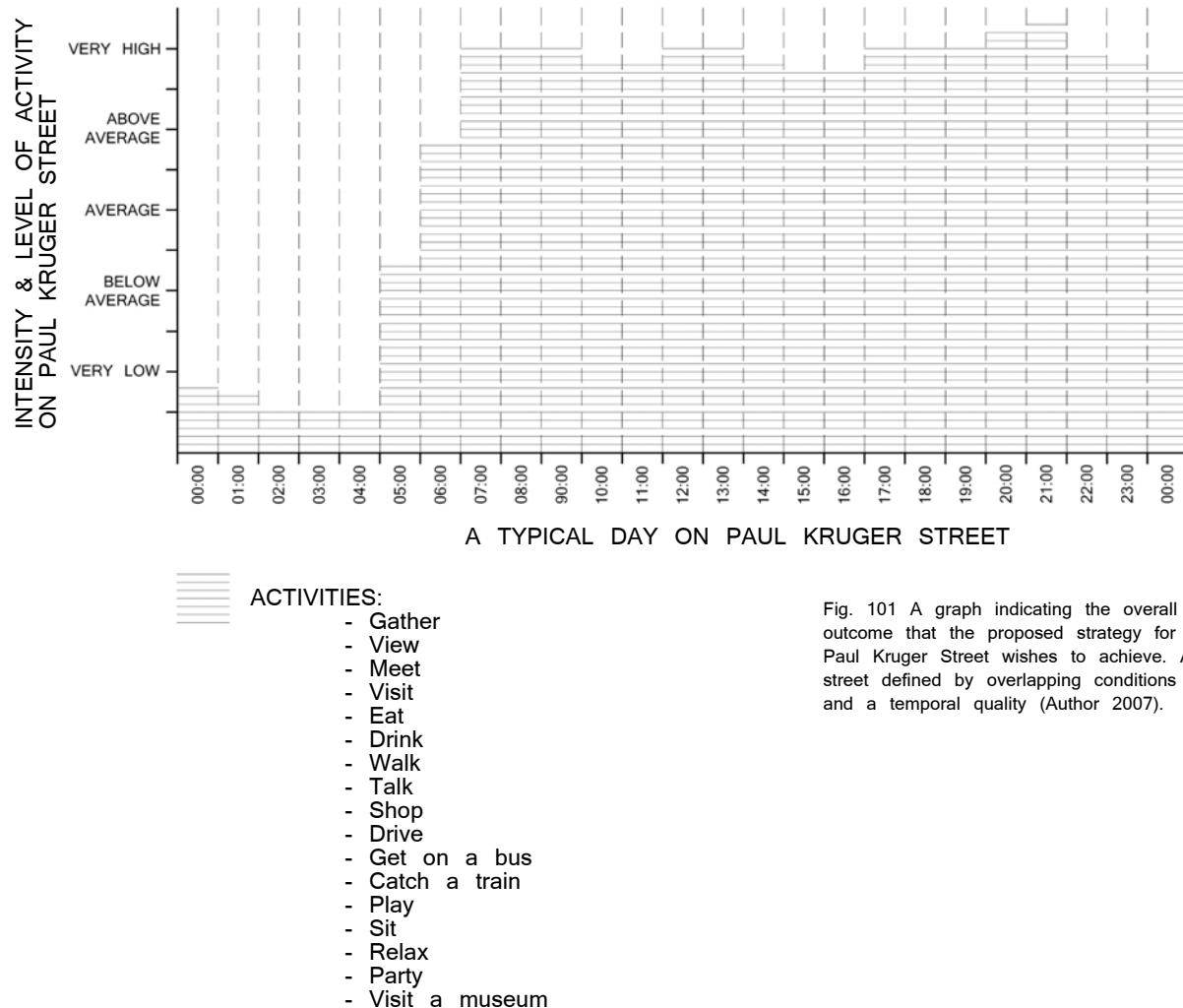


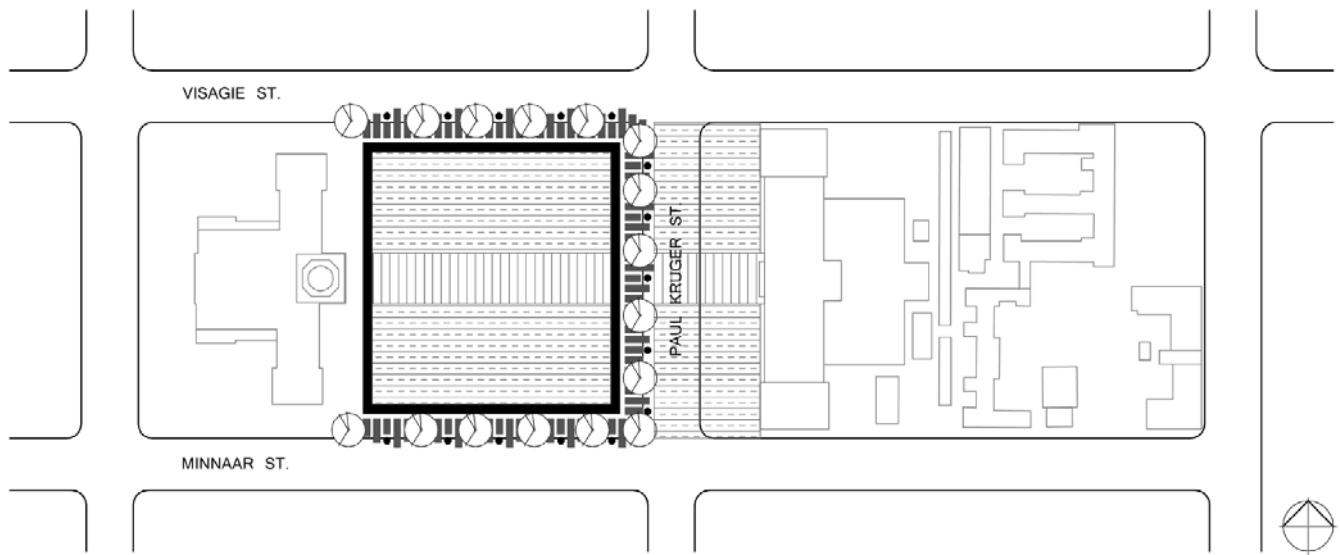
Fig. 101 A graph indicating the overall outcome that the proposed strategy for Paul Kruger Street wishes to achieve. A street defined by overlapping conditions and a temporal quality (Author 2007).

## 8. Design Development

### 8.1. Pretorius Square as a Condition Along Paul Kruger Street

#### 8.1.1. The Social Landscape

The proposed strategy for Paul Kruger Street was subdivided into various stages. Each stage having a specific outcome and each adding another layer to the urban condition that eventually resulted in a social structure made up of various conditions that occur along the street, and each with a unique characteristic. The following diagrams give an indication of the urban condition on Pretorius Square. This specific urban condition is made up of a variety of activities, events and temporal conditions that are to be accommodated in the proposed scheme.



 An interactive edge condition that allows for human encounters with the street edge. This edge includes street furniture, benches, and facilities for informal traders.

 An open public square comprising mainly of hard landscaping.

 Paving design is to reflect the classical elements that were once on the site. The paving is to continue over Paul Kruger Street to the Transvaal Museum.

 Trees along the street edge. These include existing trees and new trees.

 Street lighting.

Fig. 102 Plan indicating the proposed social landscape for Pretorius Square (Author 2007).

## 8.1. Pretorius Square as a Condition Along Paul Kruger Street

### 8.1.2. Existing Services Surrounding Pretorius Square

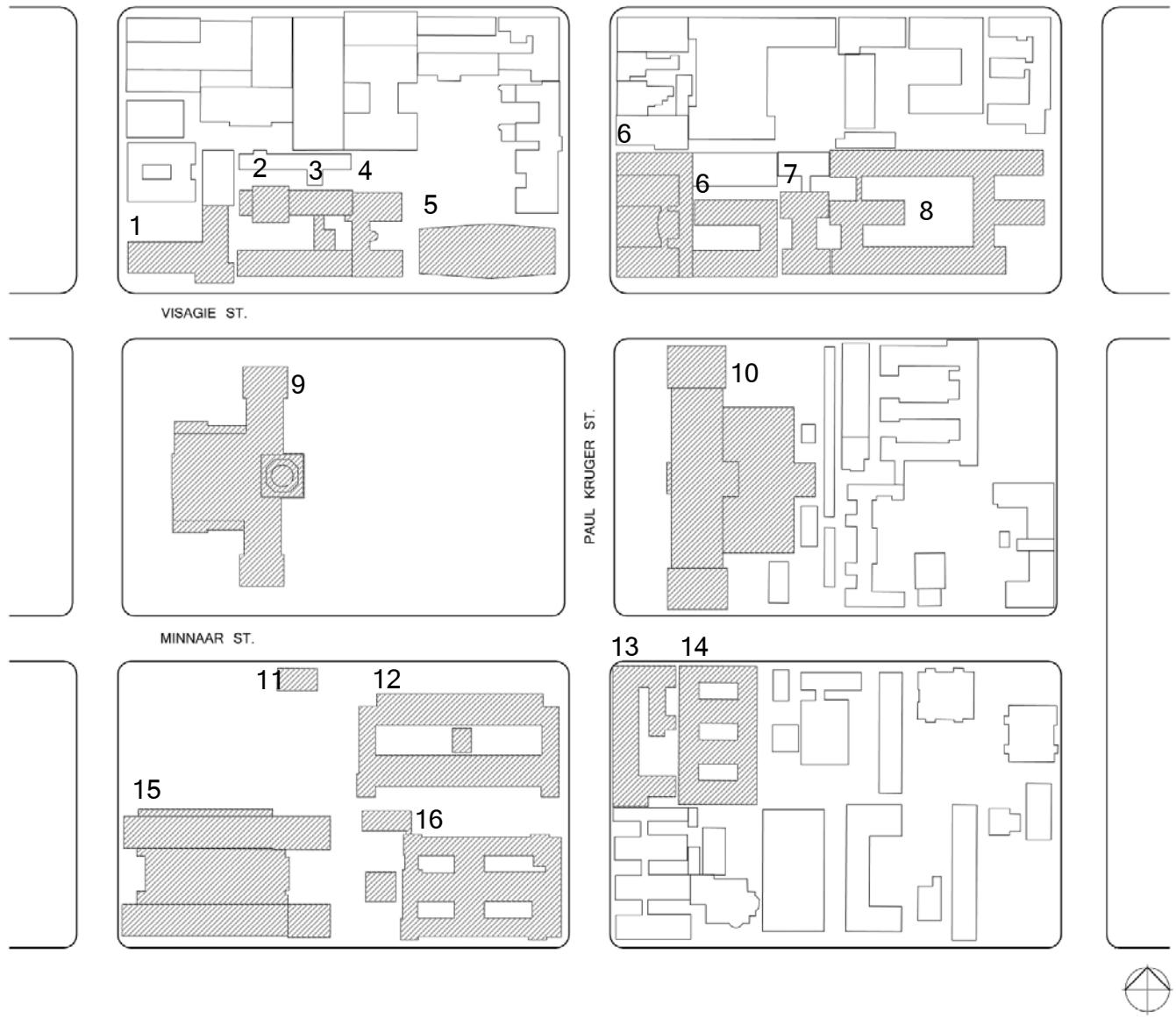
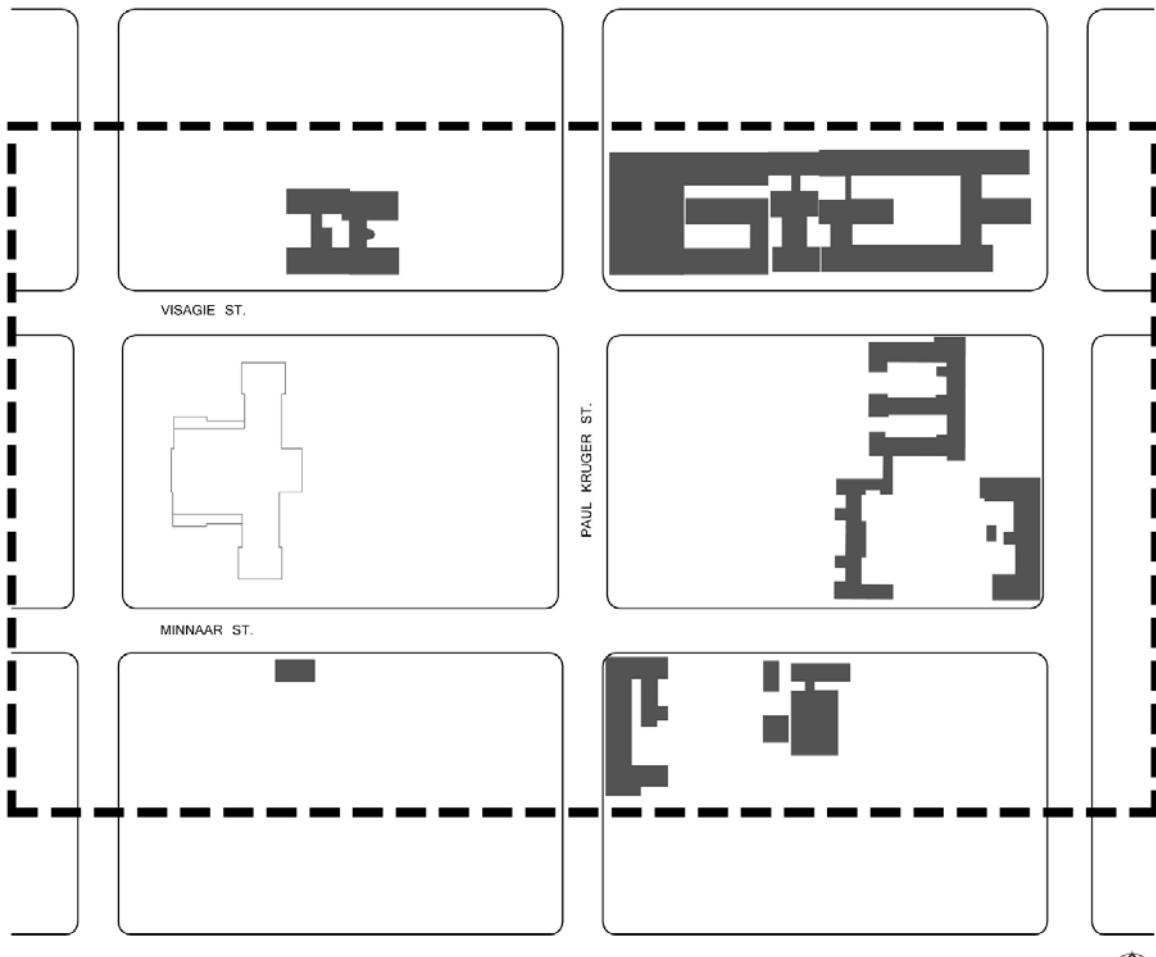


Fig. 103 Plan indicating buildings surrounding Pretorius Square (Author 2007).

1. The Continental National Department of Public Works
2. SATU: Tshwane Metropolitan Police Department
3. Rondalia Building (housing)
4. Lisa's Place (housing)
5. The Land Bank
6. The Bank of Lisbon and the South African National Defense Force
6. General Piet Joubert Building (offices)
8. George Building: SAS Immortelle Navy Office
9. The City Hall
10. The Transvaal Museum
11. An old railway building (vacant)
12. ZASM Building (Spoornet)
13. Paulhof (retail & housing)
14. New block of flats under construction.
15. The Department of Home Affairs
16. The Department of Land Affairs.

8.1. Pretorius Square as a Condition Along Paul Kruger Street

8.1.3. Reactivated & Reprogrammed Services Surrounding Pretorius Square



Due to the proposed strategy for Paul Kruger Street these services that are currently semi-vacant or in a state of decline become reactivated and possibly reprogrammed and are then capable of contributing to the activity and the temporal condition of Pretorius Square. Pretorius Square will act as a supporting open public space for these services.



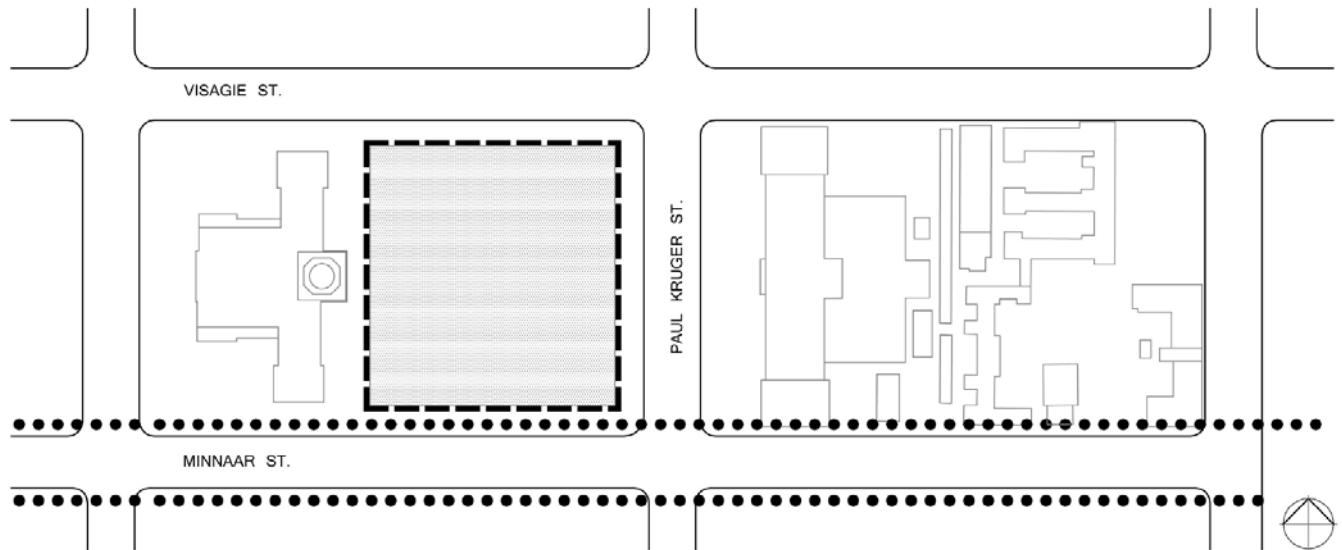
— Acceleration zone (catalyst)



Fig. 104 Plan indicating reactivated services and buildings surrounding Pretorius Square (Author 2007).

## 8.1. Pretorius Square as a Condition Along Paul Kruger Street

### 8.1.4. Strategies Proposed by the City of Tshwane



 A three-level underground parking garage proposed by ReKgabisa Tshwane Inner City Spatial Development Framework. Tests were conducted by the city to determine that the geological conditions would allow for such a structure. (The Department of Public Works and The Department of Public Service and Administration, 2006)

- ● ● ● Minnaar Street was upgraded in 1999 to become an important pedestrian route through the Museum Park Precinct.

Fig. 105 Plan indicating strategies proposed by the City of Tshwane (Author 2007).

## 8.1. Pretorius Square as a Condition Along Paul Kruger Street

### 8.1.5. An Activity Node: The Accommodation of Temporary & Mobile Services

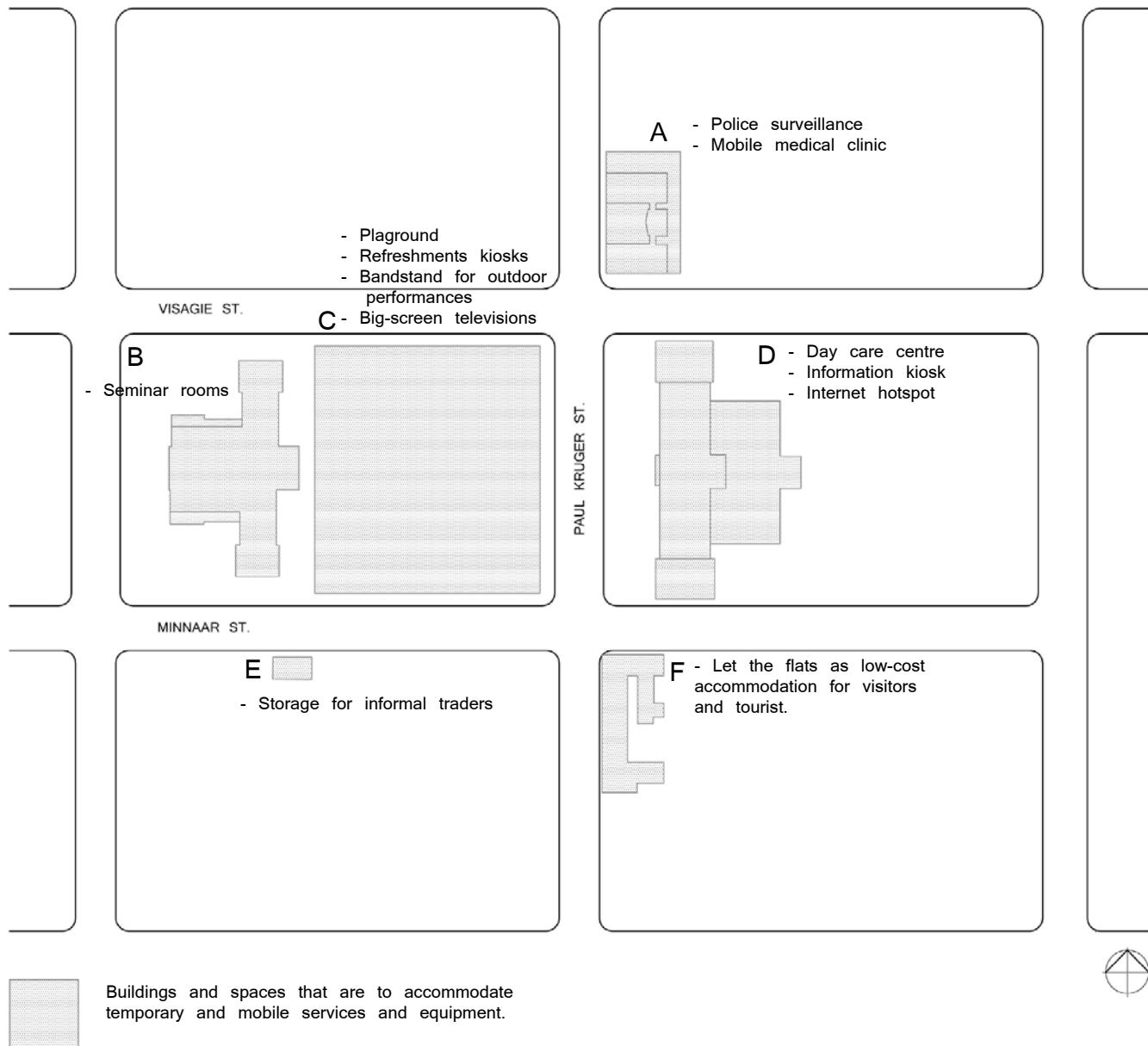
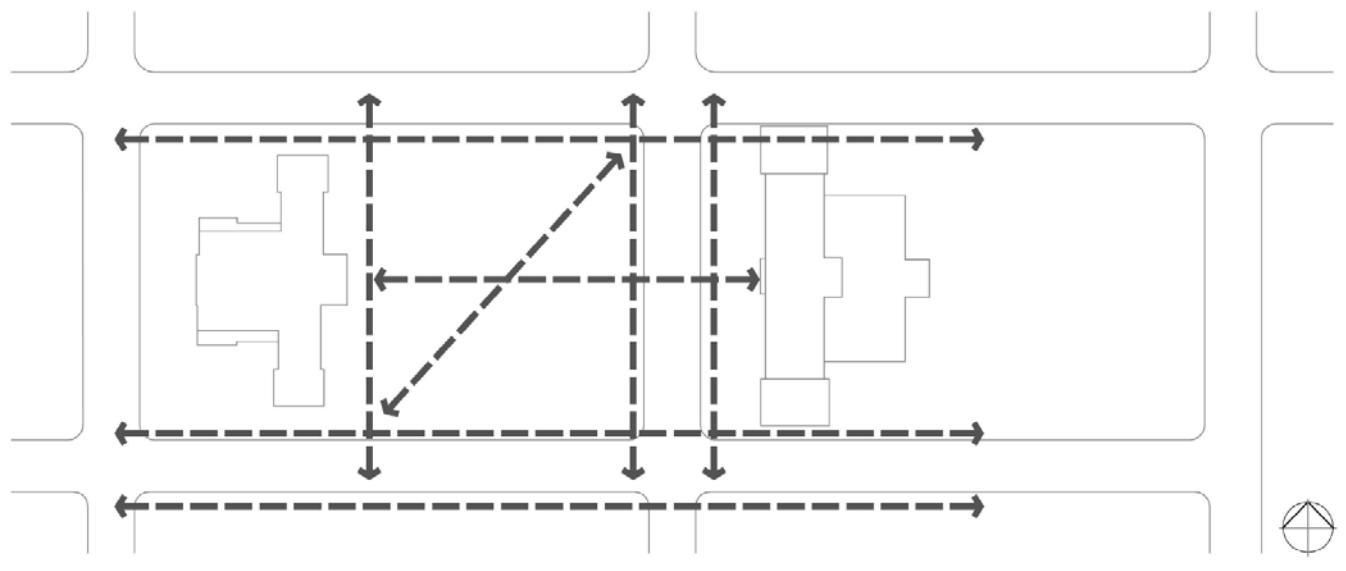


Fig. 106 Plan indicating proposed services to be accommodated in existing buildings (Author 2007).



## 8.1. Pretorius Square as a Condition Along Paul Kruger Street

### 8.1.6. Movement Vectors Activating Pretorius Square



Movement vectors as result of the overall proposed strategy for Paul Kruger Street.  
These will activate the space.

Fig. 107 Plan indicating movement patterns on Pretorius Square (Author 2007).

## 8. Design Development

### 8.2. A Valid African Public Space

#### 8.2.1. Design Influence: Maputo, Mozambique

Two public spaces in Maputo will be used to illustrate the notions of a valid African public space. The first being *Bem Vindo* the market in the centre of Maputo and the other being the beachfront on the edge of the city centre. They both may have two different locations, but they share similarities in terms of the contribution they make to the social life of the city. They are both good examples of public infrastructure.

A significant trait that they both share is that they are both outdoor open spaces that are supported by an informal infrastructure system. In the case of the market, it is merely an open space that is protected by a large yet simple steel roof structure. Services, such as water and electricity are available, allowing traders to occupy the space and bring their goods to sell. On weekends and holidays when all the covered space is occupied the activities spill out onto the surrounding streets and in turn the sidewalk becomes an informal market as well. It does not require large financial resources to keep it running and suitably maintained.

The beachfront is similar to the market in that it is also an open space which has been embedded with informal infrastructure that allows for the inhabitants of the city to occupy the space without restriction. A strip of retail facilities with verandas border the beach front therefore the activity that this commercial strip generates also spills out onto the beach front. Along the beach front is a continuous row of trees and a low wall that runs the entire distance of the main road, these together with the rocks, along the edge of the water, allow for informal gatherings and often parties on weekends. Due to the large crowds of people the place has also attracted a large number of informal traders to the area. It has become an important meeting place for the people of Maputo.

Both of these open spaces not only prove that a public space does not require formal and costly infrastructure systems, but also that an open space with no predetermined function does play an important role in the city. The key to making a valid public space in the African urban condition is one that has maximum result due to minimum contribution.



Fig. 108 Bem Vindo Market in Maputo (Author 2006).



Fig. 109 Bem Vindo Market in Maputo (Author 2006).



Fig. 110 The sidewalks outside the market (Author 2006)



Fig. 111 Maputo's beachfront (Author 2006).

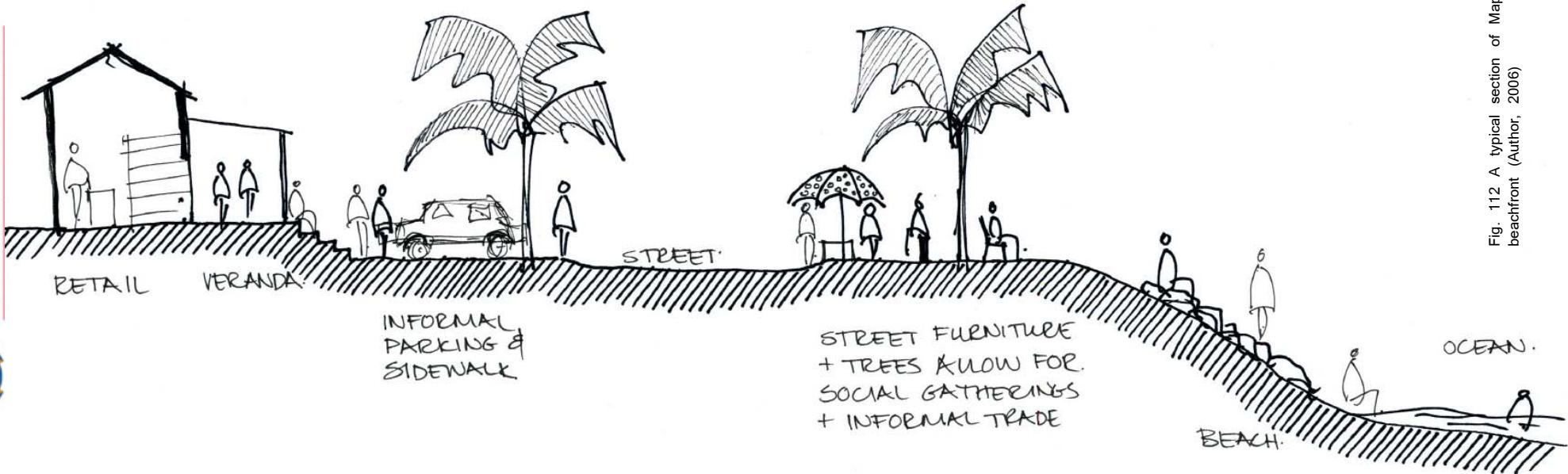


Fig. 112 A typical section of Maputo's beachfront (Author, 2006)

## 8. Design Development

### 8.3. The Intention for Pretorius Square

The proposal for Pretorius Square is to contribute to the urban dynamic of Paul Kruger Street by means of reflecting the intentions of the proposed strategies for the entire street that were dealt with previously. This proposal is to serve as a platform in order to illustrate what can be done along the rest of the street in order to achieve the previously proposed conceptual strategies for Paul Kruger Street.

The objective is to design a *building*, on Pretorius Square, that serves as a condition that is to be a social and collective space. The challenge begins with questioning what open space and architecture should be within the African City and then aims to connect Pretorius Square as a public space to the rest of the city as Berrizbeitia (1999:189) would describe "as just another of the city's multiple productive operations."

This proposed social construct is to be an engaging and interactive space that makes allowances for a variety of uses therefore creating an identity that is determined by a temporal quality. It is not so much about what the place *is*, but more about what the place *does*.

At present Pretorius Square is defined by its expansivity and its lack of modulated spaces. Therefore on an urban scale the design aims to define the space more and create a hierarchy of spaces in which more intimate spaces are present. The intention is not only to magnify the City Hall's presence in the city, by transforming it into a social magnet, but in addition to that expand the City Hall into a public space.

At present the identity of site is primarily formed by the colonial past, and reflects notions of rationality and power. For that reason the intention is to add another layer to the site that deconstructs programme in order to comment on the colonial layer. The aim of this new layer, in the form of a programmed landscape, is not to challenge the architectural powers of the older structures but rather construct a new symbol or image of contemporary governance, that of visibility and accessibility, which does not encourage nor permit social exclusivity.

In order to *reconceptualise* space that opens itself to future possibilities, the idea of deconstruction is not to be understood as the "dislocation of structures", that has so frequently been associated with deconstruction, but rather the "dislocation of space and time" (Massey, 2005:54).

Therefore the notion of deconstruction will be used merely as a conceptual tool, in which programme will be deconstructed in order to create programmatic indeterminacy in which differences may be comfortably negotiated. This public space is to be a neutral one that can be transformed according to specific programmatic needs and allows for the cohabitation of a vast number of human activities (Tschumi, 2000: 34, 57).

The aim of this, is to reject the idea of introducing another mass or container onto the site, and rather provide a context that will still be able to create a dialogue between the City Hall and The Transvaal Museum. This social construct will be in the form of a programmed landscape in which a new synthesis of building and landscape is generated. The new spaces and their activities are not to rely on the existing buildings, but rather support them.

This newly embedded urban surface with its services and equipment and ability to modify itself in order to accommodate changing circumstances is now capable of igniting the City Hall and the open spaces surrounding it, therefore not only reactivating but possibly reprogramming it to accommodate both contemporary and future civic needs.

## 8. Design Development

### 8.4. Architectural Strategies

#### 8.4.1. Movement Vectors Connecting Voids & Solids

There are various methods that employ the concept of cross-programming, on an architectural scale. One of these being voids and solids, which involves cutting out of solids so as to define voids that serve as public spaces, and it is where the void becomes the potential place of events (Tschumi, 2000:12).

The unprogrammed void is a space for appropriation, an in-between place that is defined by the edges of the programmatic solid. The unprogrammed voids are activated by movement vectors along which people move between the solids, hence resulting in the activation of the void which in turn are open to all possibilities. These vectors go through the voids and link the programmed solids in order to intensify the density of movement. The solids should accommodate more public activities and the vector links the solids resulting in it becoming an organising device as well (Tschumi, 2000:12).

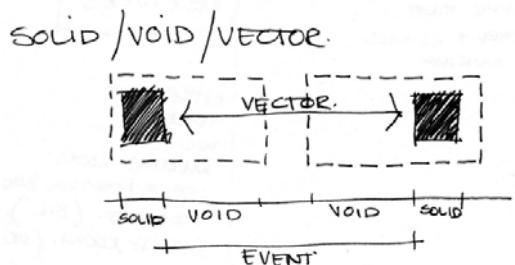


Fig. 113 A Diagram illustrating the concept of solids, voids and activating movement vectors (Author, 2007)

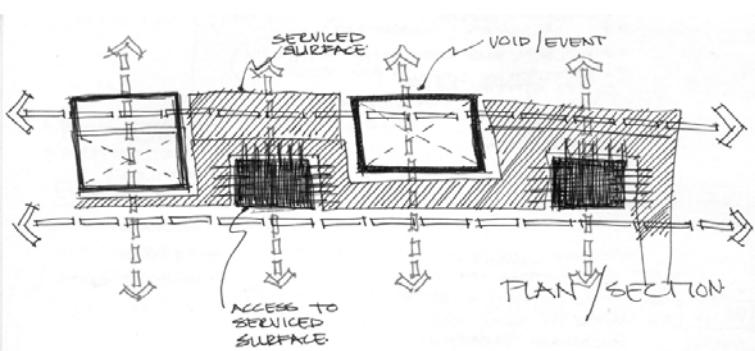


Fig. 114 A Diagram illustrating the concept of solids, voids and activating movement vectors (Author, 2007)

#### 8.4.2. Building as a Landscape

An architectural expression that initiates a social and collective space by means of the materialisation of a condition opposing the materialisation of form is well suited in the African urban condition (Tschumi, 2000:11). The scheme therefore investigates the possibility of taking programmed solids and unprogrammed voids, with linking movement vectors, and allowing them to manifest themselves within a programmed landscape, that is a manipulation of a large urban surface (Wall, 1999:233, 244). This landscape is not informed by the sole purpose of creating the visual and the formal but rather creating a place for the human condition to evolve within the urban condition. Its intention is to tolerate the city as an open and self-organising system, enforcing the notion of temporality.

This form of architectural expression is characterised by the rejection of the assumption that a building ought to be an enclosed object. It is embodied as a discontinuous building and an unbounded landscape rather than an over-coded, delimited place. This proposed architectural expression will stimulate unbounded activity and movement that will permeate throughout the city.



Fig. 115 & 116. Yokohama International Port Terminal ([www.foa.net](http://www.foa.net) 16 July 2007).

##### 8.4.2.1. Design Influence: The Yokohama International Port Terminal, Yokohama, Japan

The Yokohama International Port Terminal, in Yokohama Japan, designed by Foreign Office Architects, is a clear example of an attempt to shift the architectural landscape, by way of utilising a programmed landscape to suggest what a contemporary public space could be.

The role it plays in the city is not only of a transport interchange but that of a civic space as well. The architects describe it as "a civic space, a town square or a park thrown across the water, an artificial beach where people can promenade, sunbathe, canoodle, picnic, attend festivals and watch fireworks" (Moore, 2002:74). It is a non-orientated space that is



One could place this scheme into the same category as that of Frank Gehry's Guggenheim in Bilbao, the reason being for its transformative effect on the image of the city. But it is too simple to label Foreign Office Architects' scheme as yet another icon as it resists the temptation to become a mere postcard view. It is a building in which one would only truly experience and discover all its qualities by penetrating it, unlike that of the Guggenheim Bilbao, that is merely there to seduce and please the eye.

The scheme can be best described as "both infrastructure and prestige project, and neither. It's a monument, and not. While it has a monument's distinctiveness, it is experienced as a network of sequences rather than a single iconic icon." (Moore, 2002:74)

Fig. 117-119 Yokohama International Port Terminal ([www.foa.net](http://www.foa.net) 16 July 2007).



## 8. Design Development

### 8.5. Indeterminate Programme

#### A:The Social Condition on Pretorius Square to be Accommodated

- Information
- Communication
- Discussion
- Debate
- Expression

#### B:Enabling Infrastructure

- Underground parking garage

#### C:Scenarios

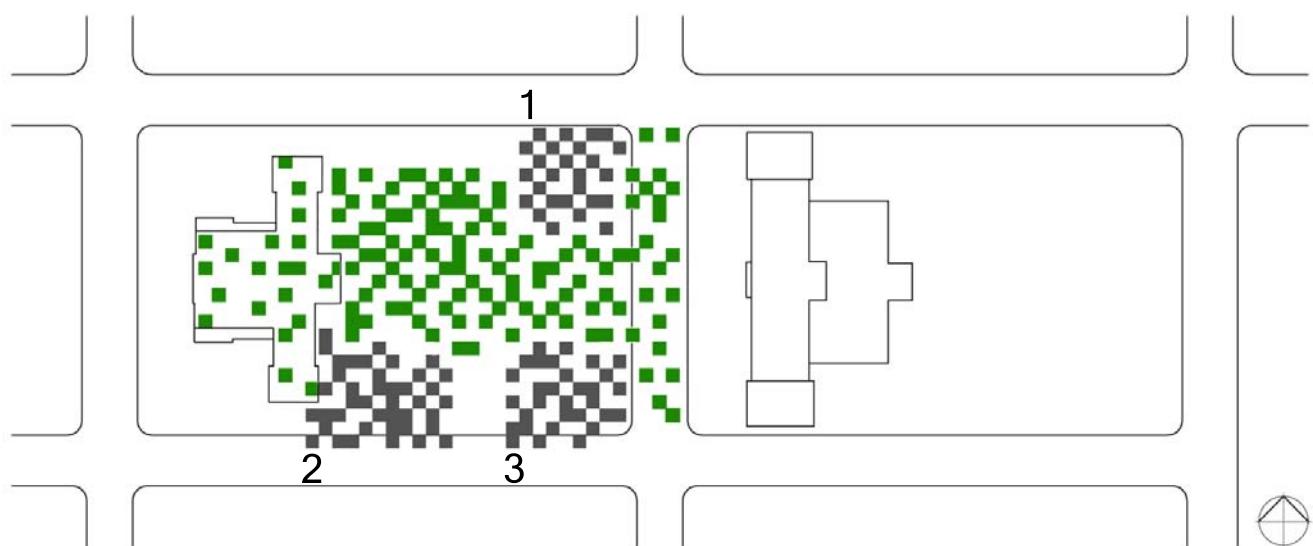


Fig. 120 Events on Pretorius Square as a result of cross-programming (Author 2007).



Mixing

1



Exhibition

2



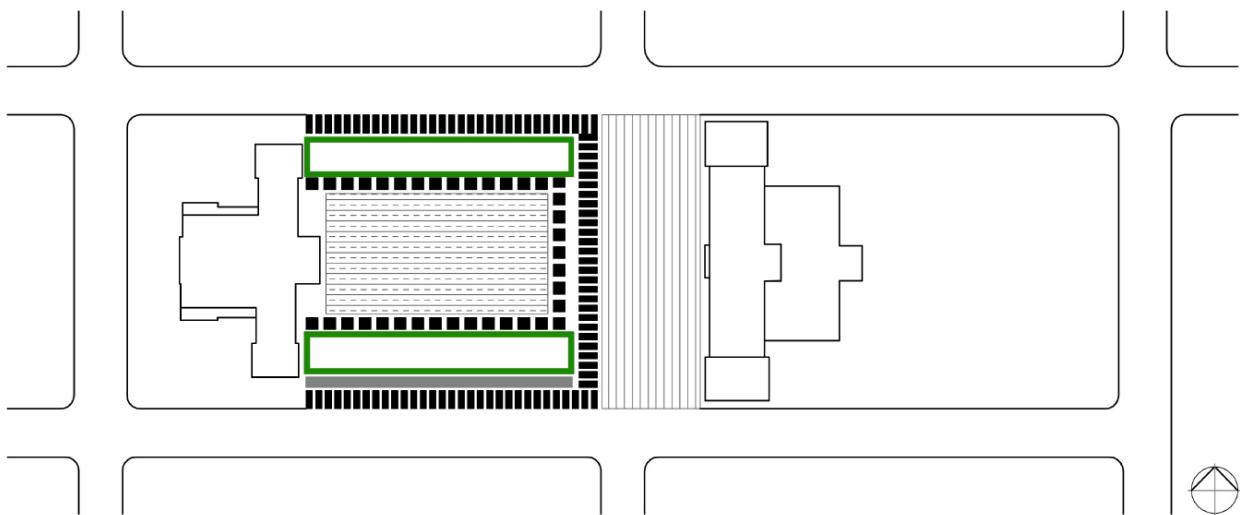
Orientation

3



Expression

D:The Urban Surface



Scenarios:

- Mixing
- Exhibition
- Orientation



An interactive and comfortable street edge:

- Street furniture
- Street trees
- Seating / Stairs



Informal traders access to water and electricity.



An interactive and conformable edge to the public square:

- Mobile planters
- Benches



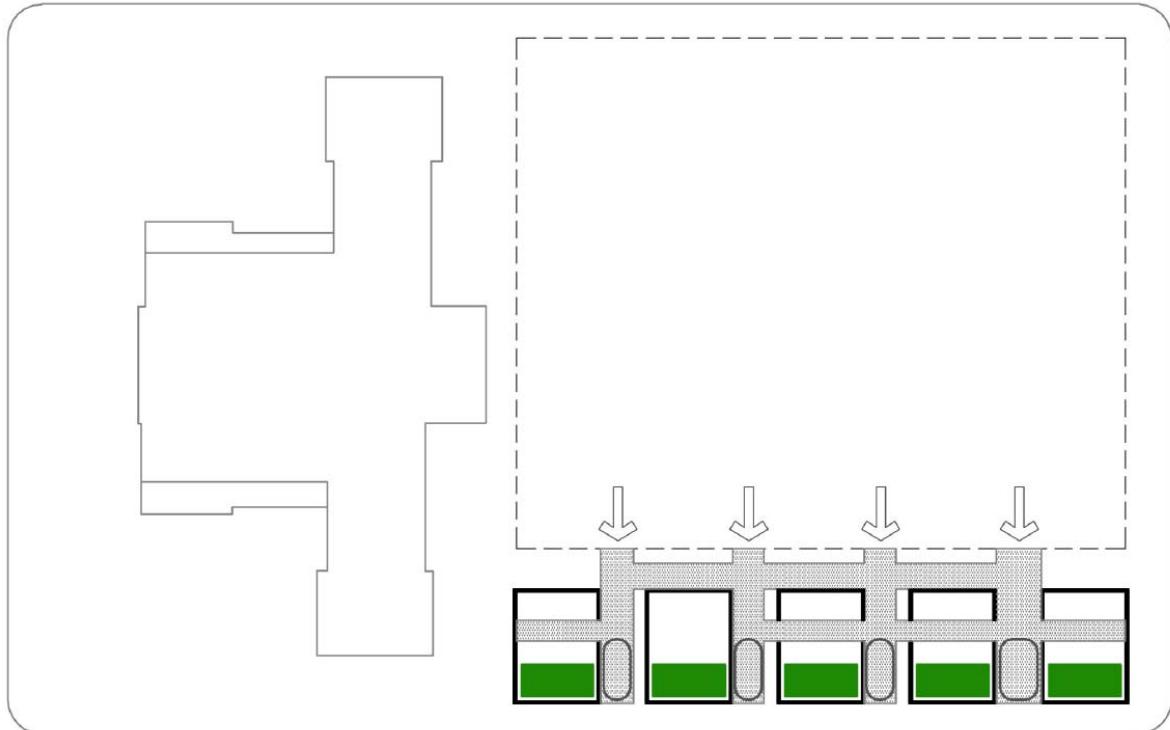
A raised floor to accommodates services:

- Water
- Electricity
- Stormwater drainage



A connecting surface.

Fig. 121 Diagram indicating a concept of the proposed landscape design for Pretorius Square (Author 2007).



Solid / Services

Void / Unprogrammed space

Circulation route as the movement vector.

Foyer space

Underground parking garage

Access from underground parking which initiates the movement vector.

Fig. 122 A diagram indicating the proposed solids as a serviced surface, each with a void that is activated by the connecting circulation route (Author 2007).



## F: Programmed Solids Servicing the Unprogrammed Voids

- Solid & Void 1: Organisation / Office

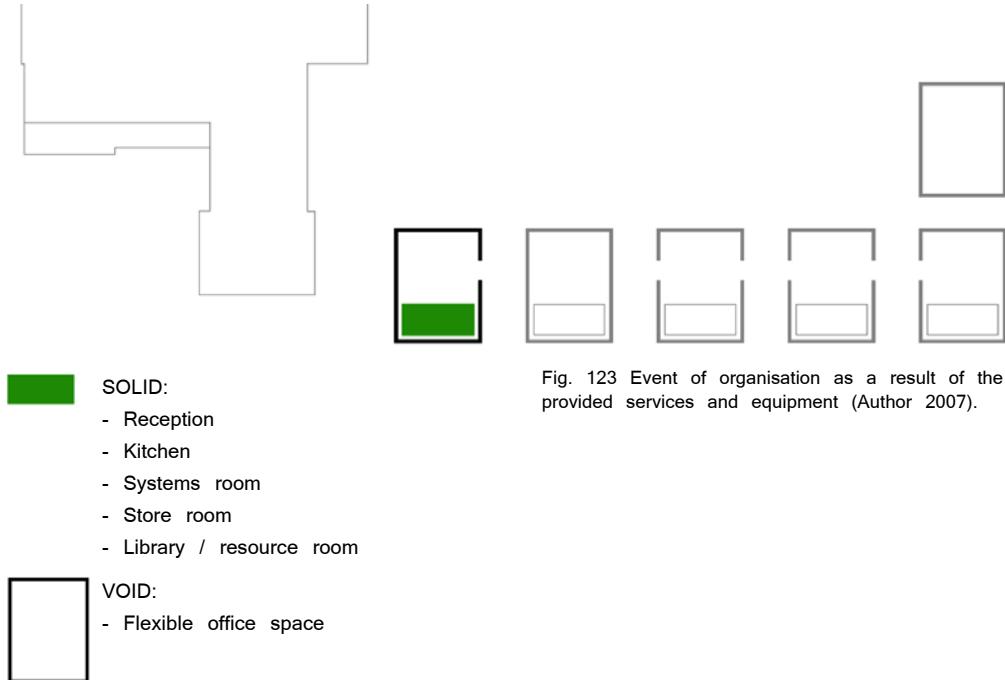


Fig. 123 Event of organisation as a result of the provided services and equipment (Author 2007).

- Solid & Void 2: Communication

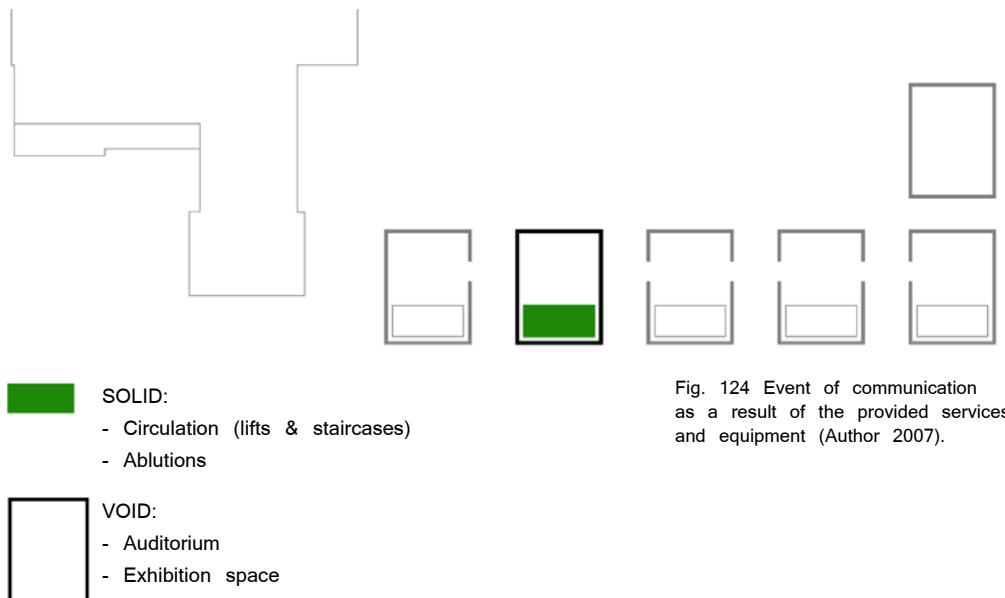
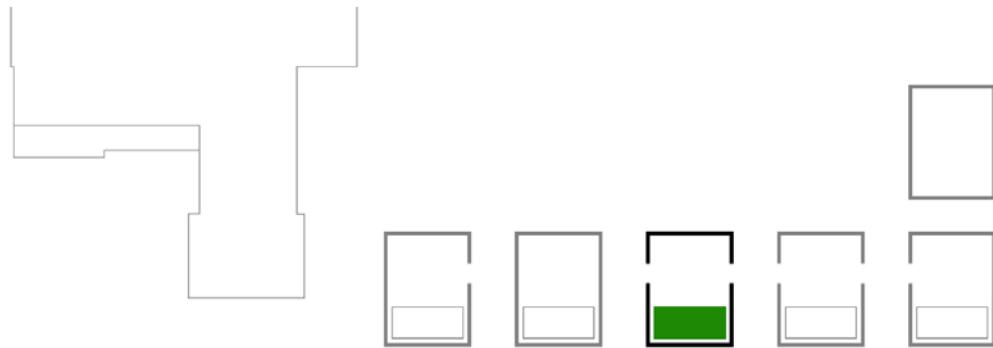


Fig. 124 Event of communication as a result of the provided services and equipment (Author 2007).

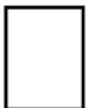


- Solid & Void 3: Exhibition



 SOLID:

- Kitchen
- Bar & food kiosk
- Service lift & staircase
- Refuse removal
- Furniture storage
- Store room
- Office
- Archive
- Workshop
- Studio
- Ablutions

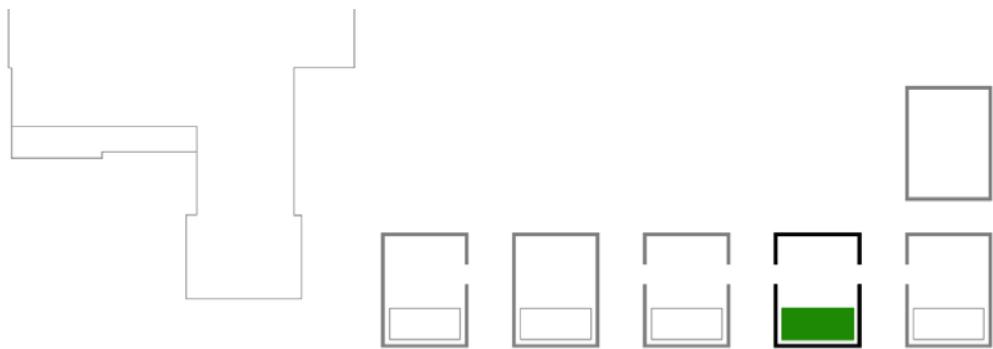


VOID:

- Exhibition space
- Seminar rooms
- Multi-purpose halls

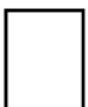
Fig. 125 Event of exhibition as a result of the provided services and equipment (Author 2007).

- Solid & Void 4: Information



 SOLID:

- Offices
- Store room
- Board room
- Strong room
- Kitchen
- Common area



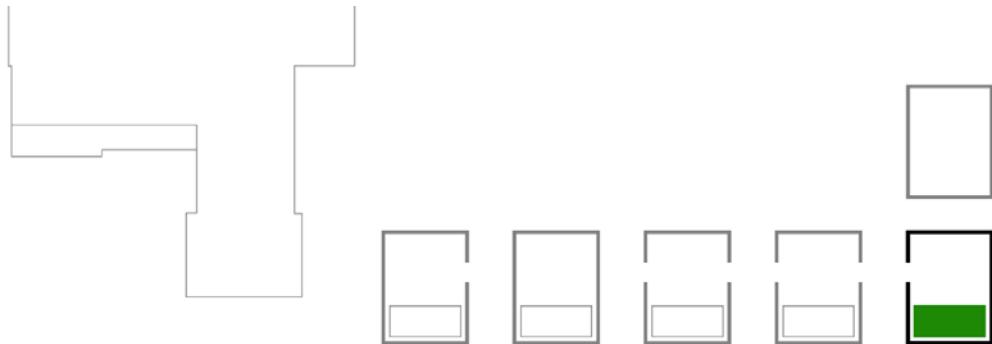
VOID:

- Information & advisory centre

Fig. 126 Event of information as a result of the provided services and equipment (Author 2007).



- Solid & Void 5: Orientation



**SOLID:**

- Circulation (lifts & staircase)
- Stairs to street level (seating & circulation)
- Refuse store
- Plant room
- Kitchen & bar

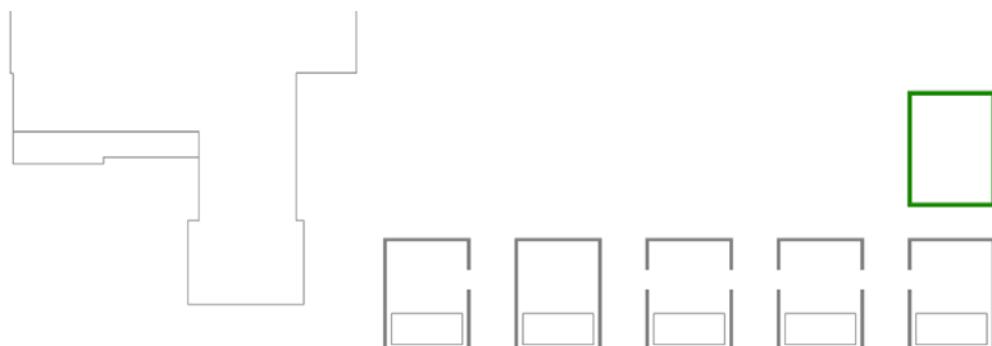


**VOID:**

- Foyer
- Concourse

Fig. 127 Event of orientation as a result of the provided services and equipment (Author 2007).

- Service: Public Ablutions



**SERVICE:**

- Public wc's
- Family wc's
- Laundry facilities
- Public washrooms
- Locker rooms

Fig. 128 Public ablutions, wash-rooms, laundry facilities and locker rooms to service the entire complex (Author 2007).



## 8. Design Development

### 8.6. An Underground Public Space

#### 8.6.1. Design Influence: The Apple Store, Manhattan, New York, USA

The Apple Store on 5<sup>th</sup> Avenue in Manhattan, designed by Bohlin Cywinski Jackson, is a retail space that occupies the underground concourse of the General Motors Building, with entry from the plaza level above (Gendall, 2006:88).

This retail space is admired not only for its aesthetic achievements but also for its contribution to the urbanity of Manhattan, as it is considered to be a positive public space that has contributed to the civic life of the city. By submerging the store under the plaza, the architects were able to crown it with glass cube that occupies only 8 percent of the plaza and leaves the rest for public use. This glass pavilion has transformed an underused, sunken plaza into a vibrant space, and is said to be "plaza beneath a plaza" (Gendall, 2006:88).

The transparent cube not only serves as an initiation to customers, but allows for natural light to penetrate into this underground public space. The scheme proves that if one implements suitable methods of introducing natural light and ventilation it is possible to have a public space that has been submerged underground and still be a positive contribution to the civic and social life of the city. Moreover this scheme clearly illustrates that the solution to having an underground public space is not only making the public aware of its presence but also being able to draw them in.



Fig. 129-132 The Apple Store on 5th Avenue,  
New York (Gendall, 2006).



## 8. Design Development

### 8.6 An Underground Public Space

#### 8.6.2. Conceptual Design

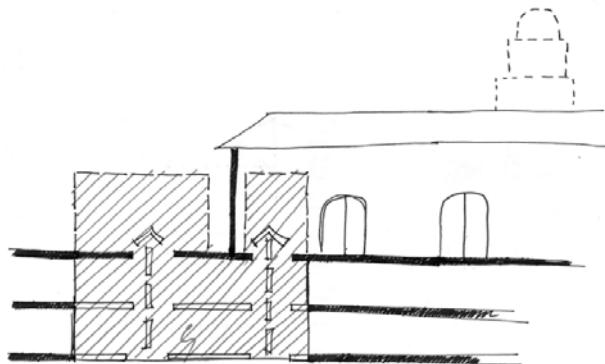


Fig. 133 Concept sketch illustrating an underground public building as part of an underground parking garage (Author, 2007)

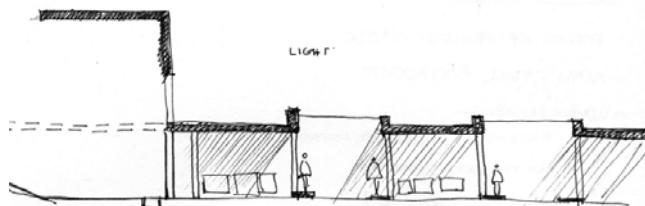


Fig. 134 Concept sketch illustrating the importance of introducing natural light into building (Author, 2007)

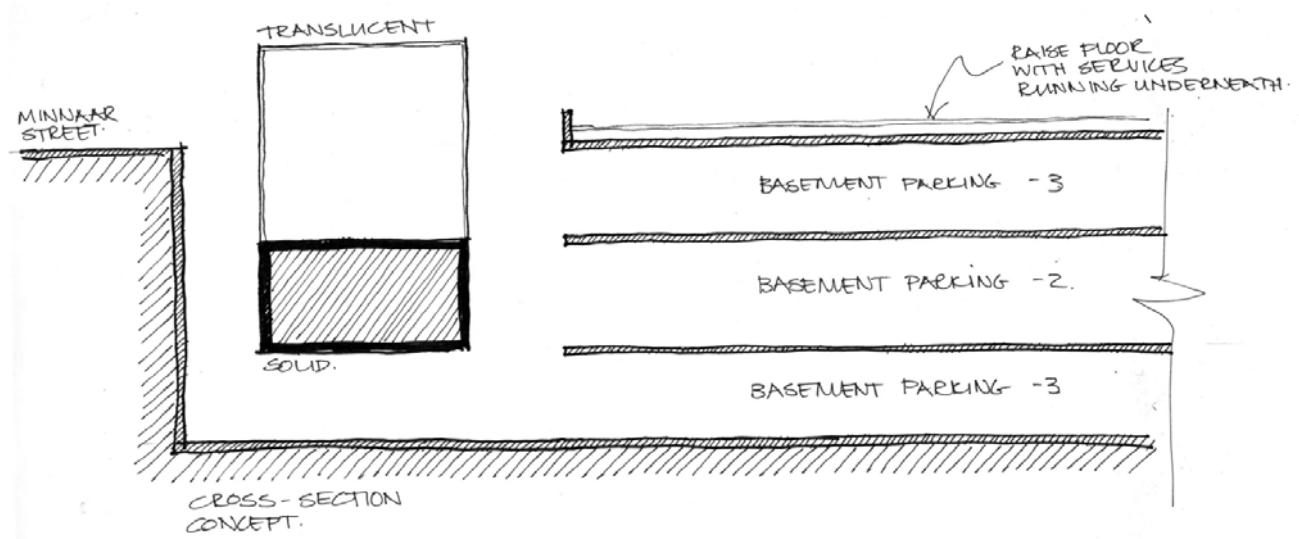


Fig. 135 Conceptual section illustrating the position of building in relation to the underground parking garage as a separate component to facilitate natural ventilation and lighting (Author, 2007).

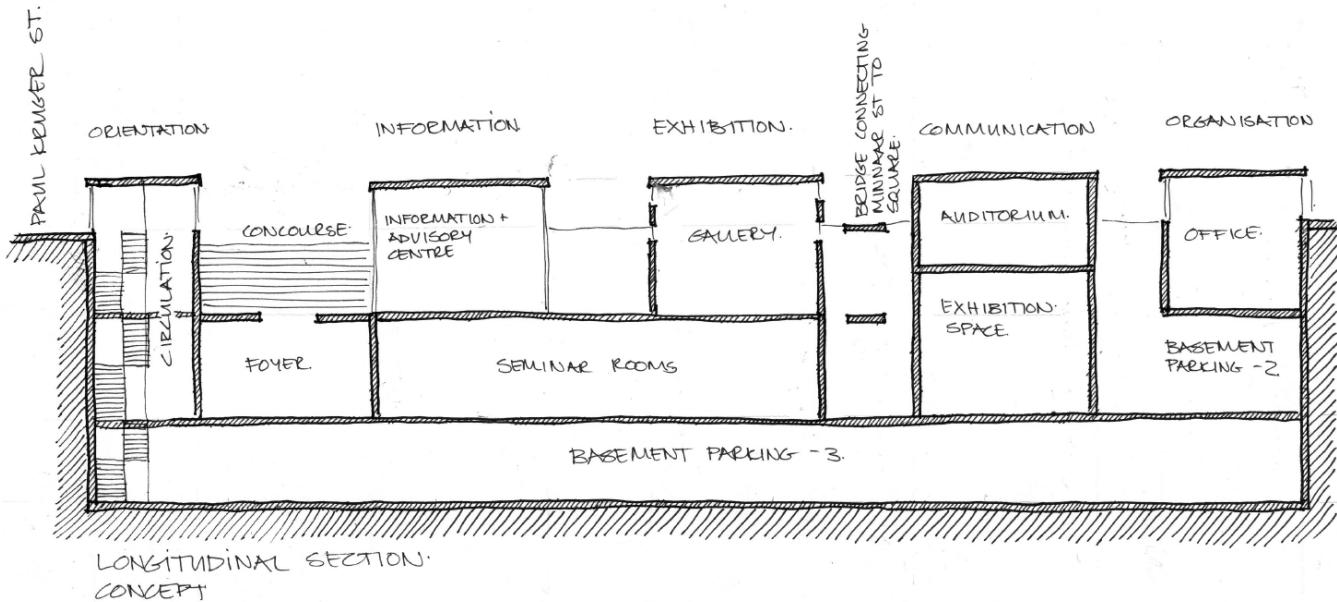


Fig. 136 Conceptual section illustrating the sub-division of the building into five containers each connected by outdoor public spaces. The intention of this sub-division is to assist in bringing in natural light to this underground public space (Author, 2007)

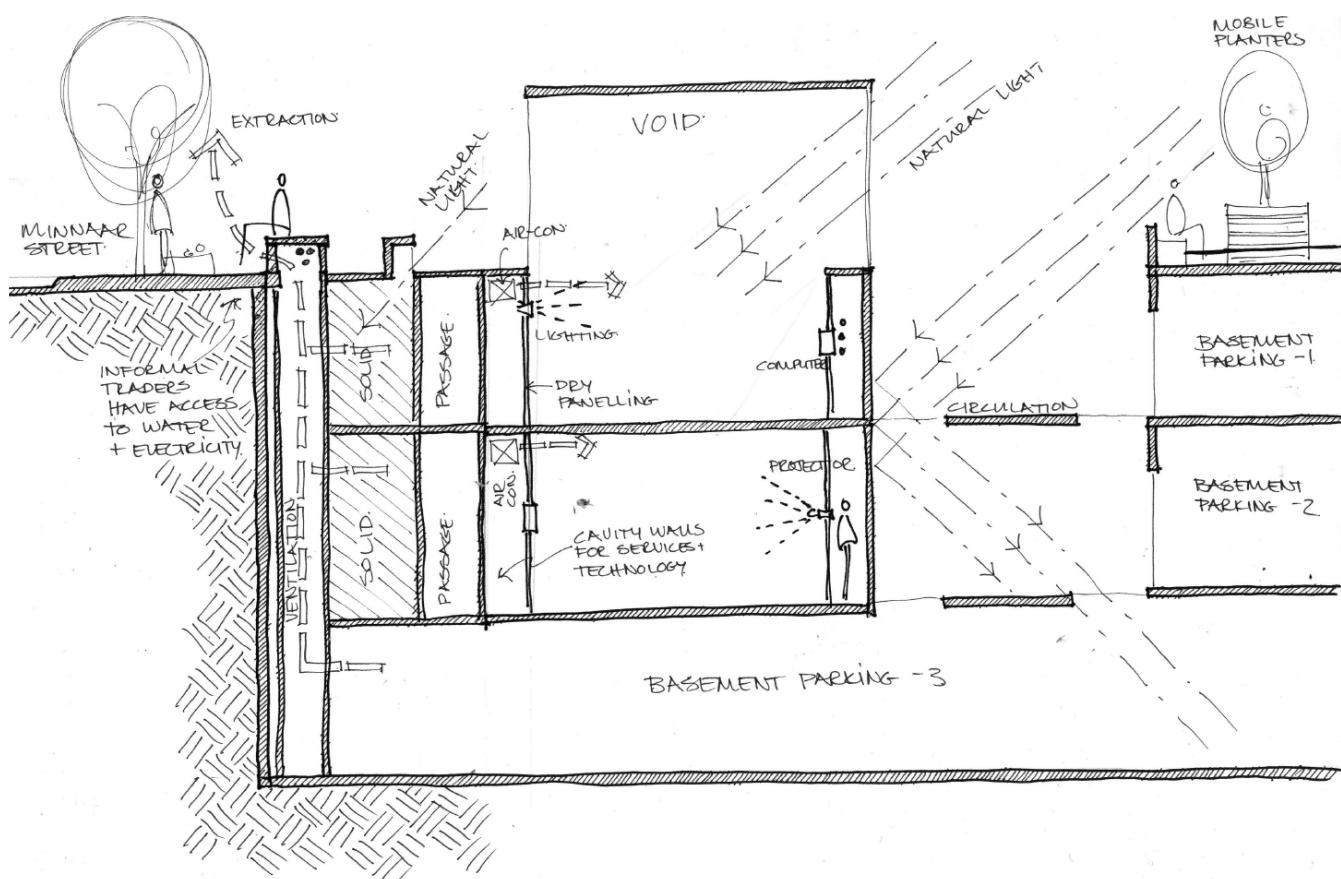


Fig. 137 Conceptual section illustrating ways in which the separate 'containers or boxes' can be serviced, lit and ventilated. It is important that natural light is also introduced into the parking garage (Author, 2007).

## 9. Conclusion

Given that we can barely begin to understand the present urban realities in the African context, it would be even more problematical to begin to comprehend how the city would operate in the future, therefore we can only begin to predict or begin to affect the way the future African city might be; and such a process would begin with redefining and re-conceptualising the urban condition, that encompasses democracy and sociability. Perhaps an African City, in accordance with (Koolhaas, et al. 2000:653) is one where public space is continuously been occupied in different ways, and interior spaces are dynamic and flexible constantly regenerating themselves; where boundaries are flexible and elastic, allowing for variable and impermanent patterns to occur.

The dissertation is an investigation of the role of architecture and open space in the African urban condition. The author is of the opinion that architecture cannot be the sole contributor to urban reform and that architects should begin to implement a multi-disciplinary approach that begins to understand and work within the context that is unique to South African cities. It is important that the city should rather be understood as a social structure in which the temporal condition supersedes the physical condition, in order for the public to actively engage with each other and the urban condition. This is to be achieved by implementing multi-disciplinary strategies, which go beyond mere architectural solutions, but rather strategies that have the ability to strengthen the social tissue. It is in this social condition that urban processes begin to emerge.

## 10. Technical Investigation

### 10.1. Ventilation

#### 10.1.1. Mechanical Ventilation of the Underground Parking Garage.

In any underground parking garage, ventilation is an important issue to consider due to the carbon monoxide build up as a result of the combustion of fuels. The design of the basement parking, which has been proposed for Pretorius Square, is not a completely enclosed structure, as it has openings on the south side where it meets the proposed building and on the north side where the vehicular entrance is situated. As a result of this the most efficient method of ventilation would be to mechanically extract the contaminated air and not use a mechanical method to introduce clean air, but rather use the openings that are part of the structure and the openings as a result of the ramp that connects all three levels of the basement, as inlets points for the introduction of fresh air (Mahmood, 2007). This method of ventilation that involves the creation of pressure differentials by exhaust fans and air return inlets is known as *space air distribution* (McQuiston & Parker, 1994:107).

This method of ventilation will be achieved by having an exhaust fan on each basement level, each one of them to be in a plant room and connected to a shaft that has an outlet on the roof, in this case the ground floor, that will allow for the extracted air to escape. It is important that openings in the basement structure are sufficient enough to ensure that there is always a balance between the amount of air mass entering and the amount leaving the space (McQuiston & Parker, 1994:107).

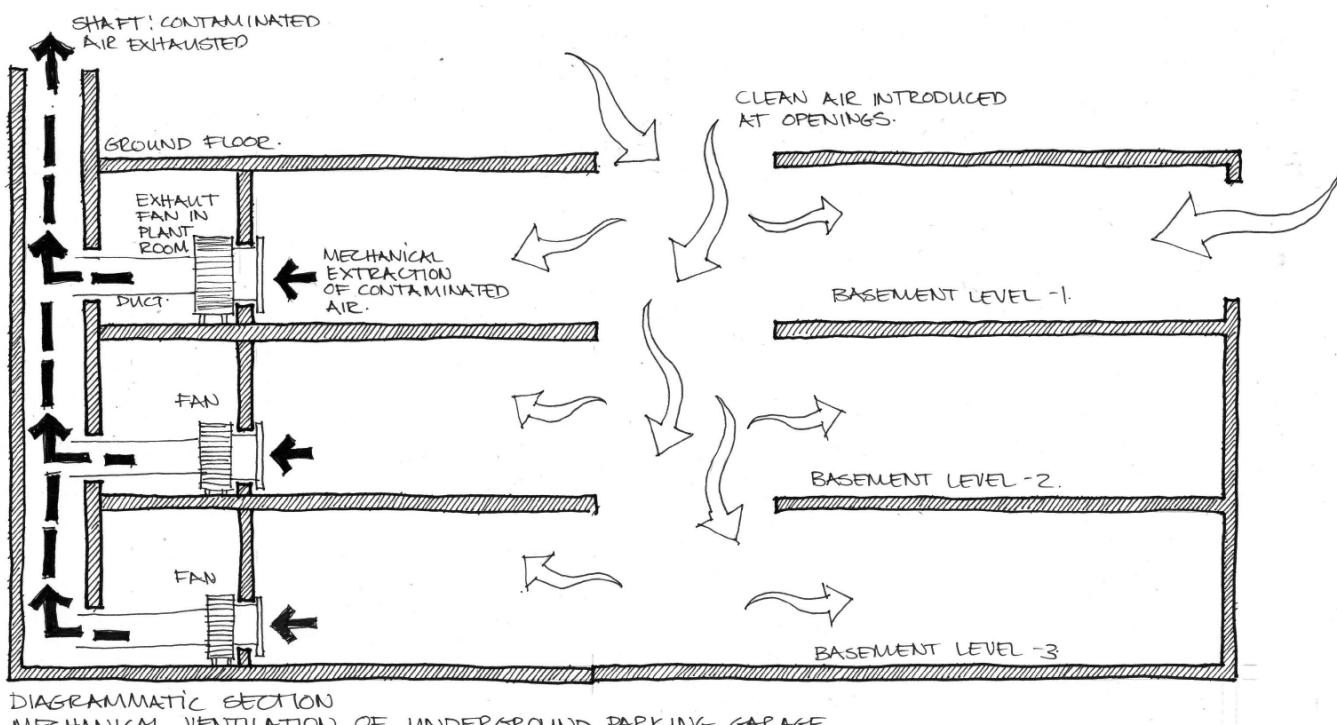


Fig. 138 Space air distribution, the mechanical extraction of contaminated air (Author, 2007).



A centrifugal fan will be used as the exhaust fan, as it not only makes the least amount of noise, but it can efficiently move large volumes of air over a wide range of pressures therefore creating a high flow rate which is essential in this type of ventilation (Mahmood, 2007). The factors that influence the type, size and power of the fan is determined by the noise level and the required flow rate. The following calculation was used to determine the size and power of the centrifugal fan, and hence the space required for the plant room to house the fan. The following factors were worked into the calculation, as they contributed to the overall loss of pressure which has a direct influence on the flow rate:

- The maximum number of cars the parking garage can accommodate
- Size and length of the duct
- Number and size of columns
- Filters in ducts to prevent the entry of dust

An underground parking garage will not always require the same level of ventilation as the amount of cars within it will always differ; therefore it will be uneconomical to have the fans requiring the same amount of energy whether or not the garage is completely occupied or empty. Therefore the installation of carbon monoxide sensors will be able to determine the level of mechanical extraction that is necessary, therefore ventilation is activated only when needed. As a result the energy requirement, maintenance needed and noise levels are reduced. A carbon monoxide sensor is a small device that is box shaped and is fitted to top of a column. A sensor is only able to detect the amount of carbon monoxide within a 15,2m radius (Mahmood, 2007).



## 10. Technical Investigation

### 10.1. Ventilation

#### 10.1.2. Calculations to Determine the Horsepower and Dimensions of the Exhaust Fan

$$A_{flow} = \frac{(2.8m \times 135m)}{28} - 28 \\ = 350 \text{ m}^2.$$

No. of cars = 1215

$$A = \text{AREA OF DUCT. (Aduct)} \\ = 1 \text{ m}^2$$

$$A_{beam} = 28m$$

$$A_{duct} = 0.8 \cdot \text{HYDROSTATIC DIAMETER} \left( \frac{\pi}{4} \right) \times \text{AREA OF (1)} \\ = 0.8$$

$$\Delta P = \text{CHANGE IN PRESSURE}$$

$$= 87000 \text{ kPa (PRESSURE OUTSIDE)} - 84000 \text{ kPa (PRESSURE IN BASEMENT)}.$$

$$\rho_{air} = \frac{3000 \text{ kPa}}{1.2}$$

$$\rho_{water} = \text{DENSITY OF WATER}$$

$$= 999.$$

$$g = \text{GRAVITATIONAL CONSTANT} \\ = 9.81.$$

$H_{losses}$  = LOSS IN PRESSURE BASED ON SRE OF DUCT, NO OF BENDS IN DUCT, LENGTH OF DUCT, NO OF CARS (IN PARKING + COLUMNS + SCREENS IN DUCT TO PREV THE ENTRY OF DUST  
= 5m.

$$Q = \text{AIRFLOW FLAT (m}^3\text{/SECOND)}$$

$$= V \times A_{flow}$$

$$= (0.1) 3500$$

$$= 35 \text{ m}^3/\text{s}$$

$$* V = \text{VELOCITY OF AIRFLOW} \\ = 0.1 \text{ m/s}$$

$$\frac{\Delta W}{g} = \frac{\Delta P}{\rho g} + H_{losses} + \left( \frac{Q^2}{A_{duct}^2} \right) \left( \frac{1}{2g} \right)$$

$$\frac{\Delta W}{g} = \frac{3000}{(999)(9.81)} + \frac{5}{1} + \left( \frac{35^2}{0.8^2} \right) \left( \frac{1}{2(9.81)} \right)$$

$$= \frac{3000}{9800.19} + \frac{5}{1} + \left( \frac{1225}{0.64} \right) \left( \frac{1}{19.62} \right)$$

$$= 0.306 + 5 + (1914.06)(0.051)$$

$$= 5.306 + 97.62$$

$$= 102.92 \approx 103.3$$

$$103.3 = \frac{\Delta W}{9.81}$$

$$\therefore \Delta W = 1013$$

$$\Delta W = 43 \text{ kW. (POWER OF FAN)}$$

$\approx 58$  HORSE POWER

$m$  = mass flow.

$$= \rho_{air} \times Q$$

$$= 1.2 \times 35$$

$$= 42.$$

Fig. 139 A calculation to determine the horsepower of the fan required to mechanically extract contaminated air from the underground parking garage. (Author & Mahmood, 2007)



POWER = 431

AIR FLOW RATE =  $35 \text{ m}^3/\text{second}$   
 $= 126,000 \text{ m}^3/\text{hr.}$

CENTRIFUGAL.

NEW YORK BLOW COMPANY.

↳ centrifugl.

↳ air fall.

↳ airflow =  $36 - 72 \text{ m}^3/\text{s}$

AIR FLOW

=  $35 \text{ m}^3/\text{s.}$

=  $126,000 \text{ m}^3/\text{hr.}$

\*  $\text{m}^3/\text{hr.} \div 1,702,1277$   
= cfm. (cubic  
feet per  
minute)

= 74,024,998

≈ 74,025 cfm.

NEW YORK BLOWER.

MODEL 665

wheel  $\phi = 66'' = 1,676,4 \text{ mm.}$

outlet area =  $27.7 \text{ sq. ft.}$   
=  $2,57 \text{ m}^2$ .

Fig. 140 The size and type of centrifugal fan required based on the horsepower that is needed for sufficient mechanical extraction. (Author & Mahmood, 2007)

## 10. Technical Investigation

### 10.2. Ventilation & Cooling of the Building

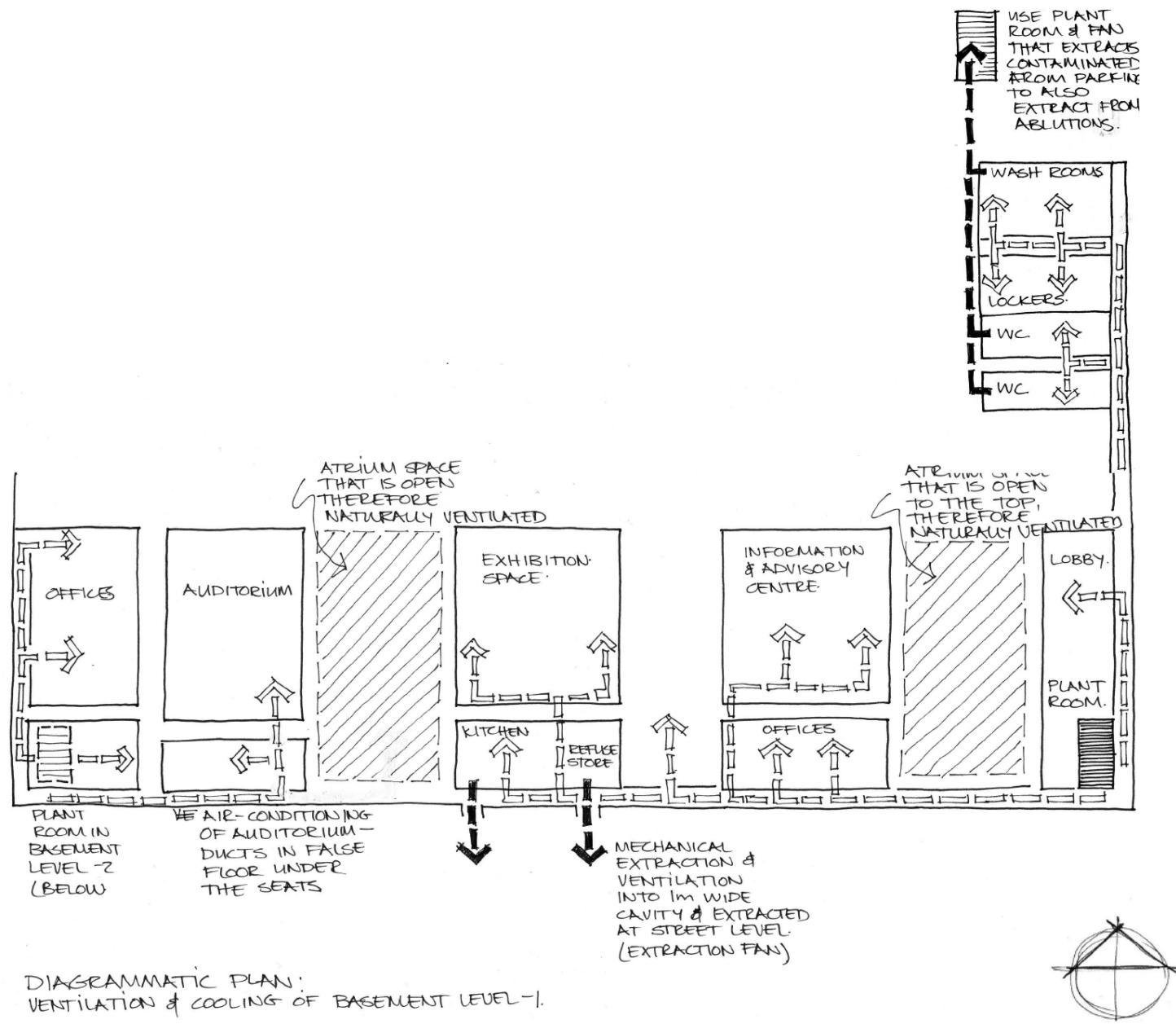
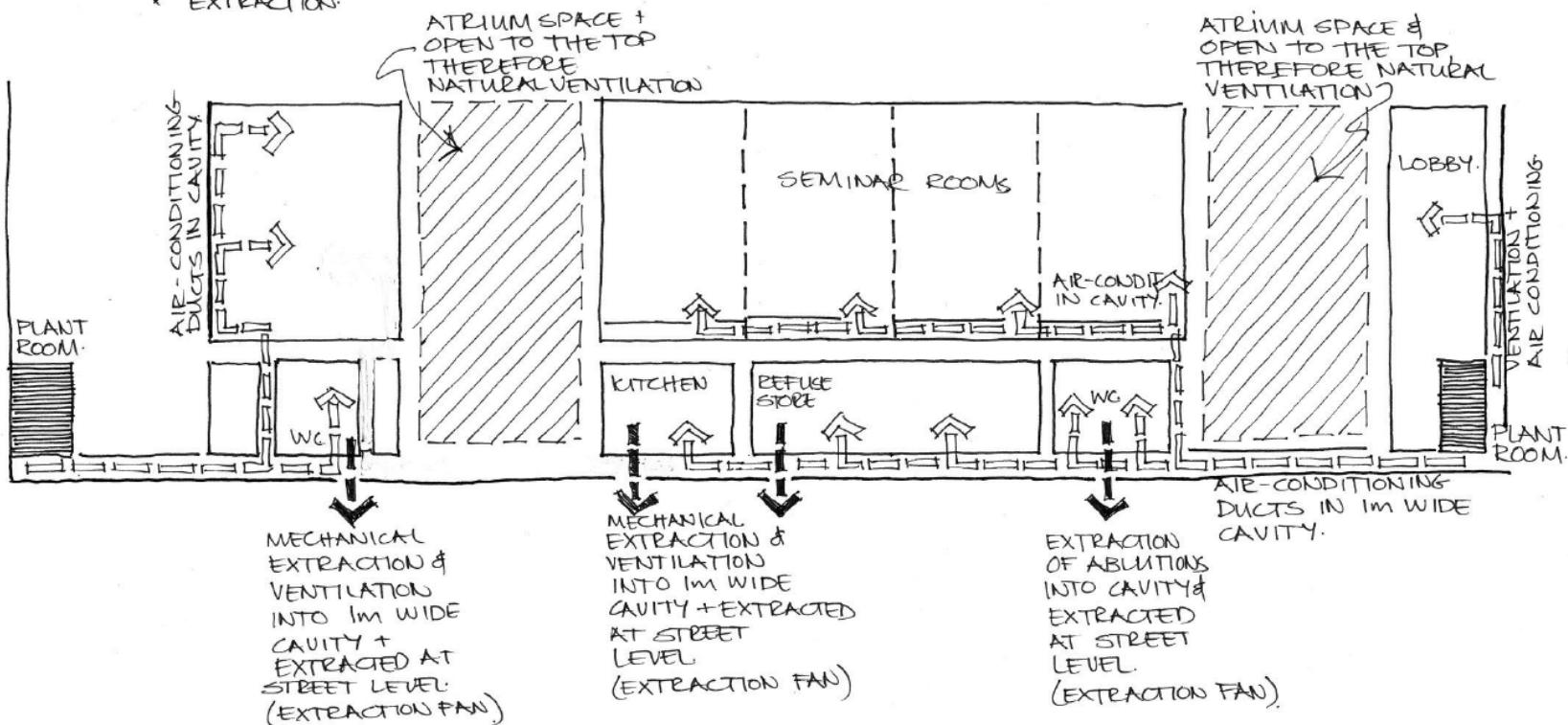


Fig. 141 Investigation of the the ventilation and cooling of basement level -1 (Author, 2007)

KEY:

-  PLANT ROOM.
-  AIR-CONDITIONING
-  MECHANICAL EXTRACTION.



DIAGRAMMATIC PLAN:  
VENTILATION & COOLING OF BASEMENT LEVEL -2.

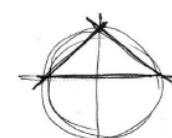


Fig. 142 Investigation of the the ventilation and cooling of basement level -2 (Author, 2007)

## 10. Technical Investigation

### 10.3. Services

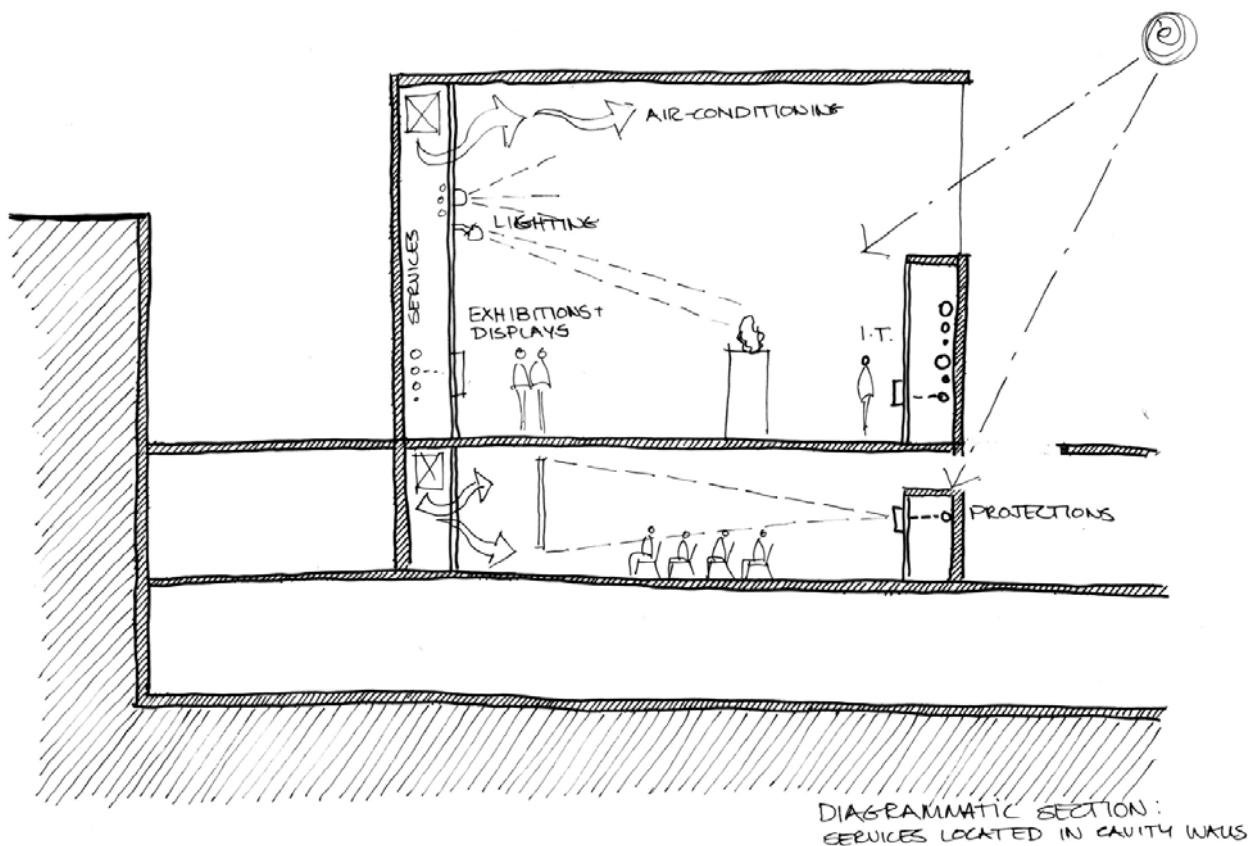


Fig. 143 Investigation of the incorporation of services into cavity walls. These services are aimed at providing digital information and to facilitate exhibitions (Author, 2007).

## 10. Technical Investigation

### 10.4. Stormwater Management

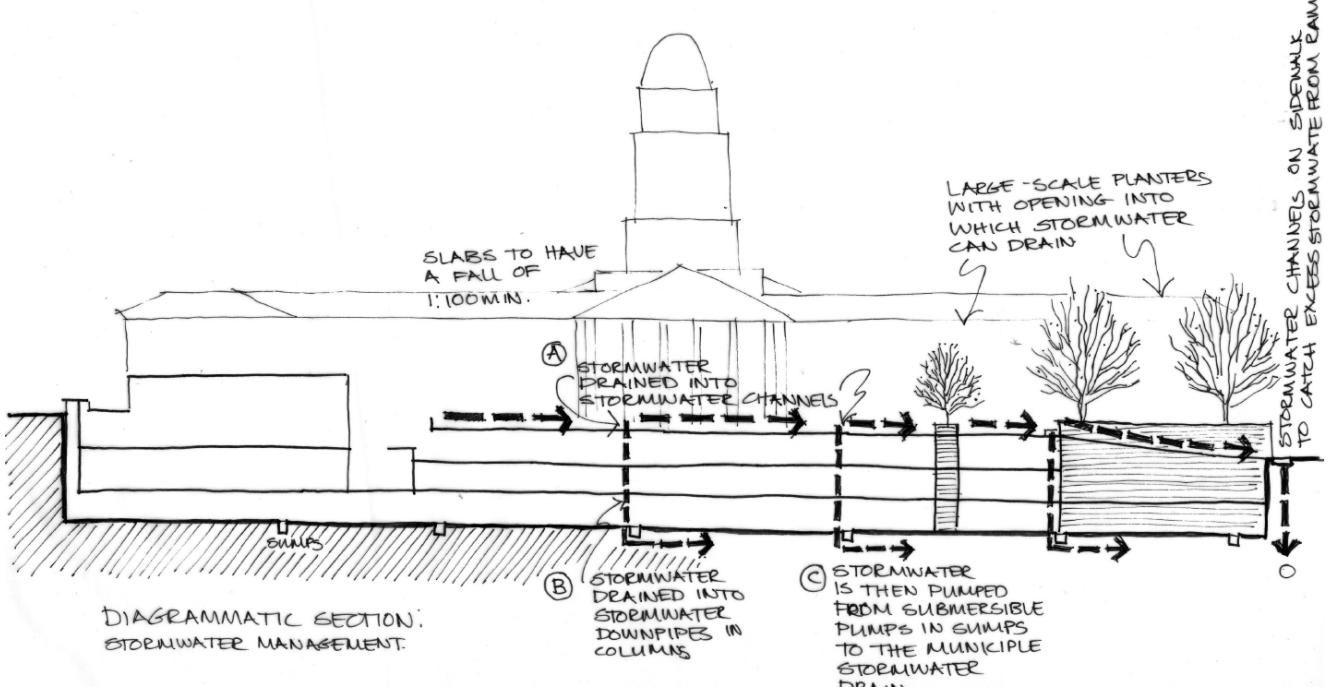


Fig. 144 Investigation of the management of stormwater (Author, 2007).

## 11. Design

### 11.1. Photo Montage

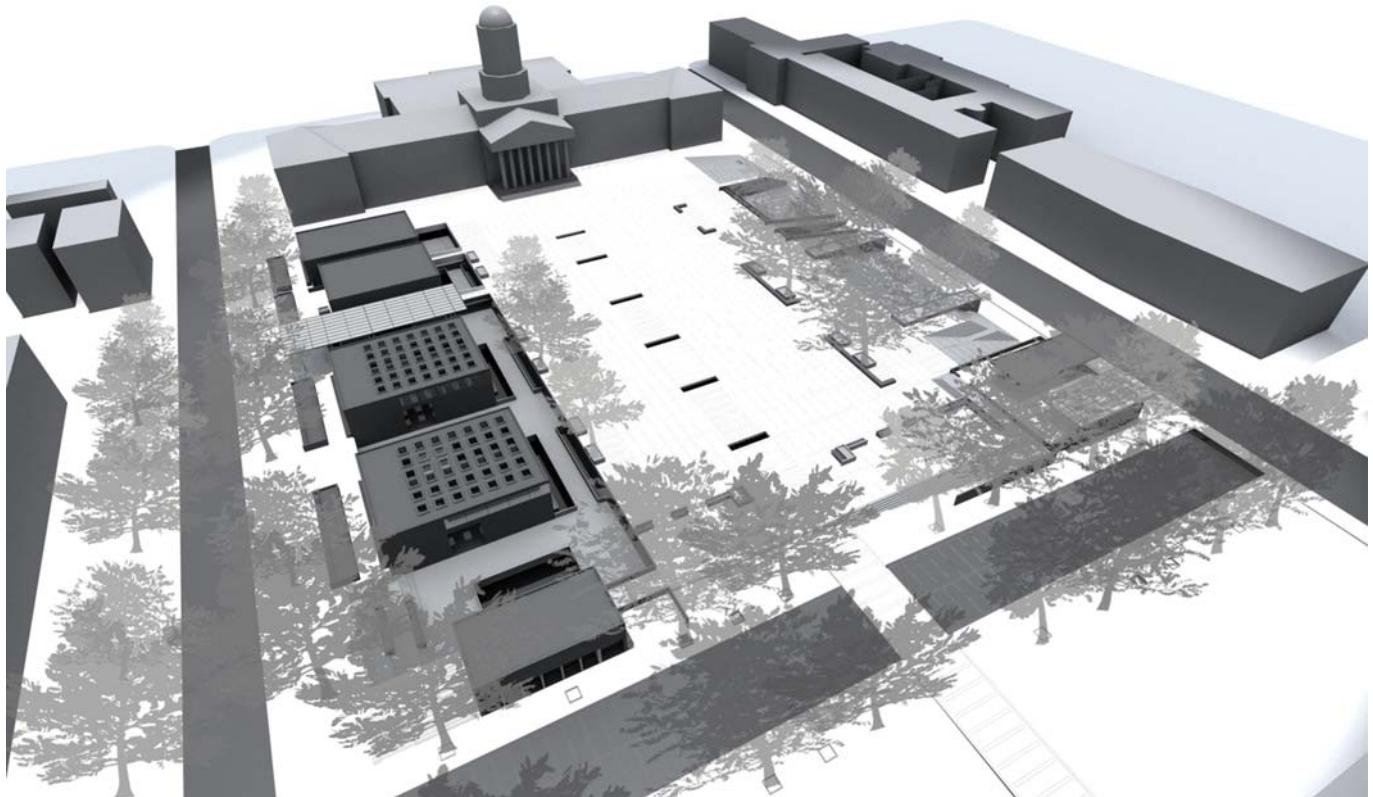


Fig. 145 An aerial view of the square (Author & Sackett, 2007).

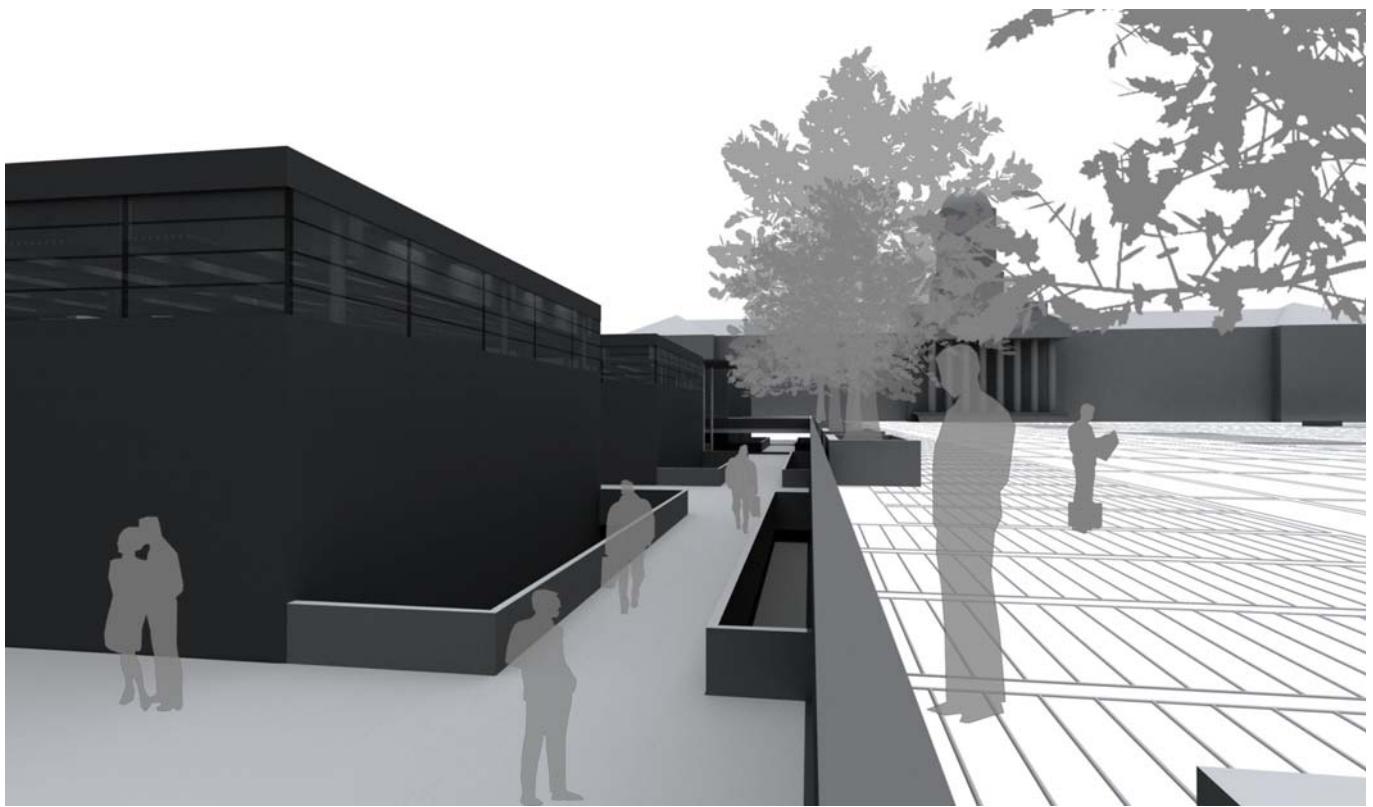


Fig. 146 A view from the Orientation Box (Author & Sackett, 2007).



Fig. 147 A view of the orientation and Information Boxes from the corner of Paul Kruger Street and Minnaar Street (Author & Sackett, 2007).

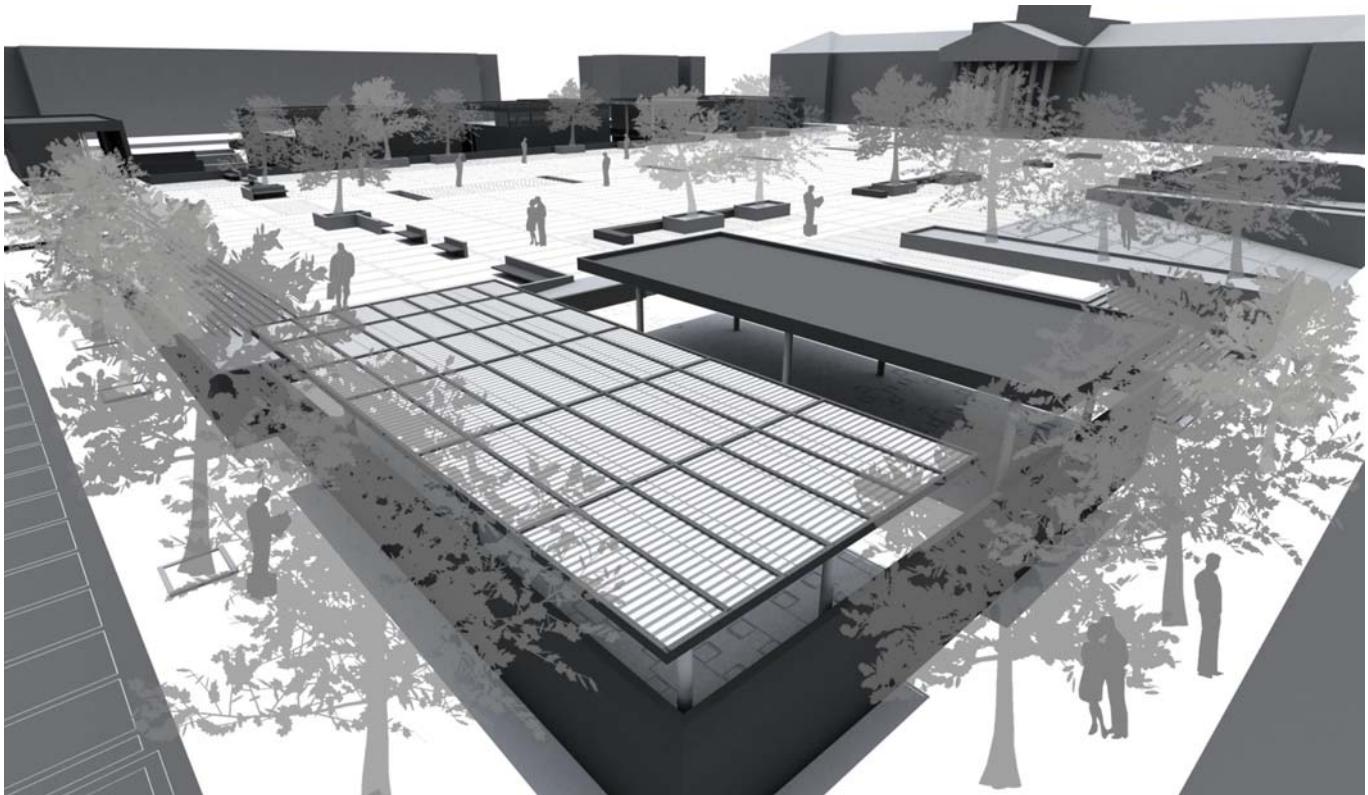


Fig. 148 A view of the Mixing Box (restaurant) from the corner of Paul Kruger Street and Visagie Street (Author & Sackett, 2007).



Fig. 149 A view of the entrance to the underground parking garage on Visagie Street (Author & Sackett, 2007).

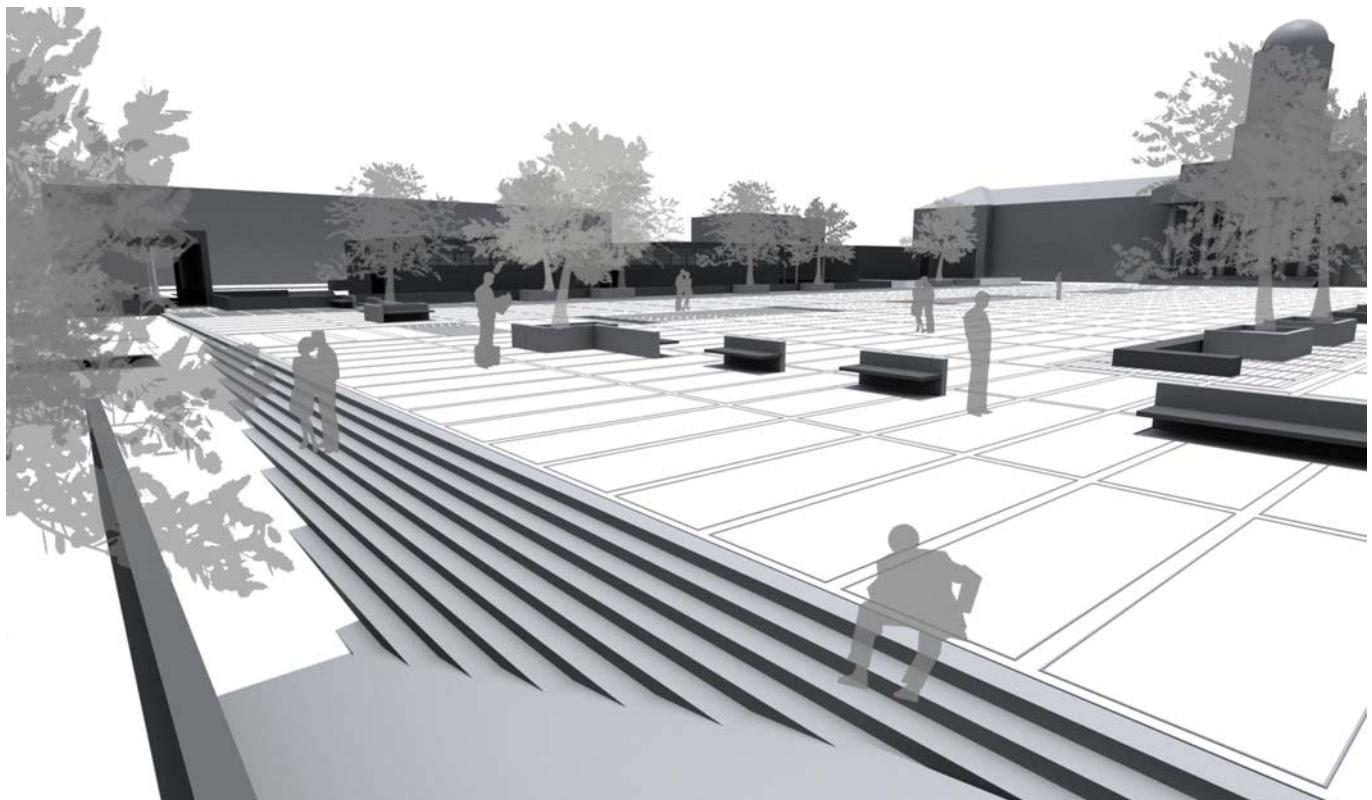


Fig. 150 A view of the stamp and the square from Paul Kruger Street (Author & Sackett, 2007).

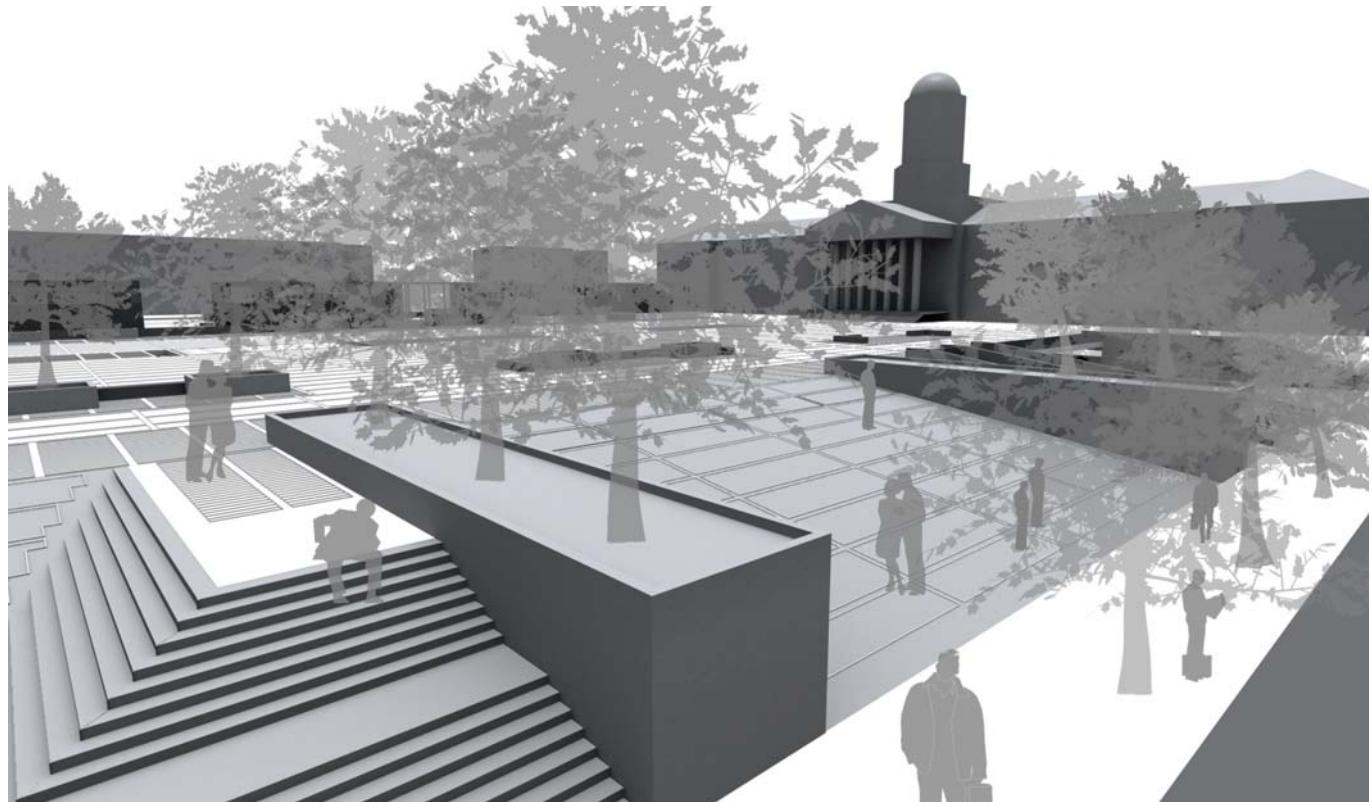


Fig. 151 A view of the square along Visagie Street (Author & Sackett, 2007).

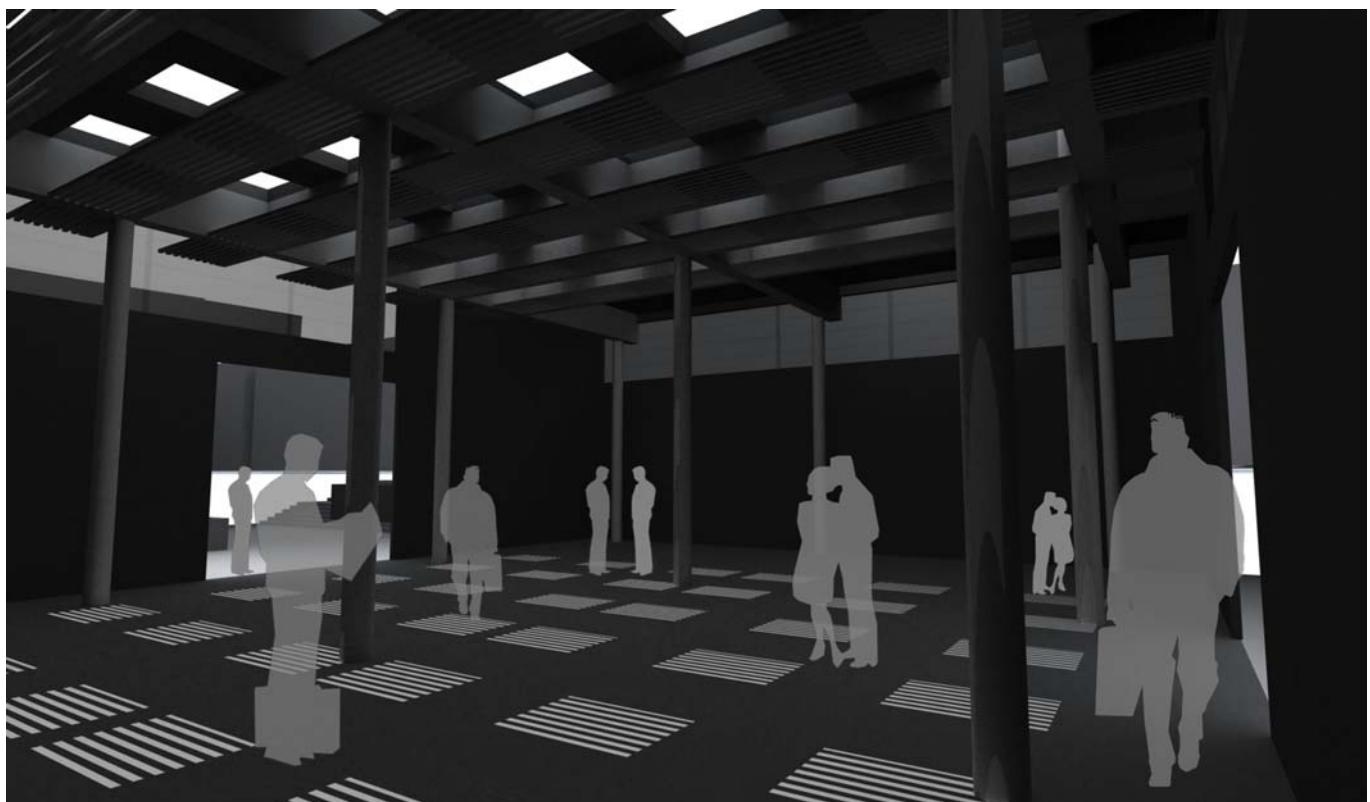
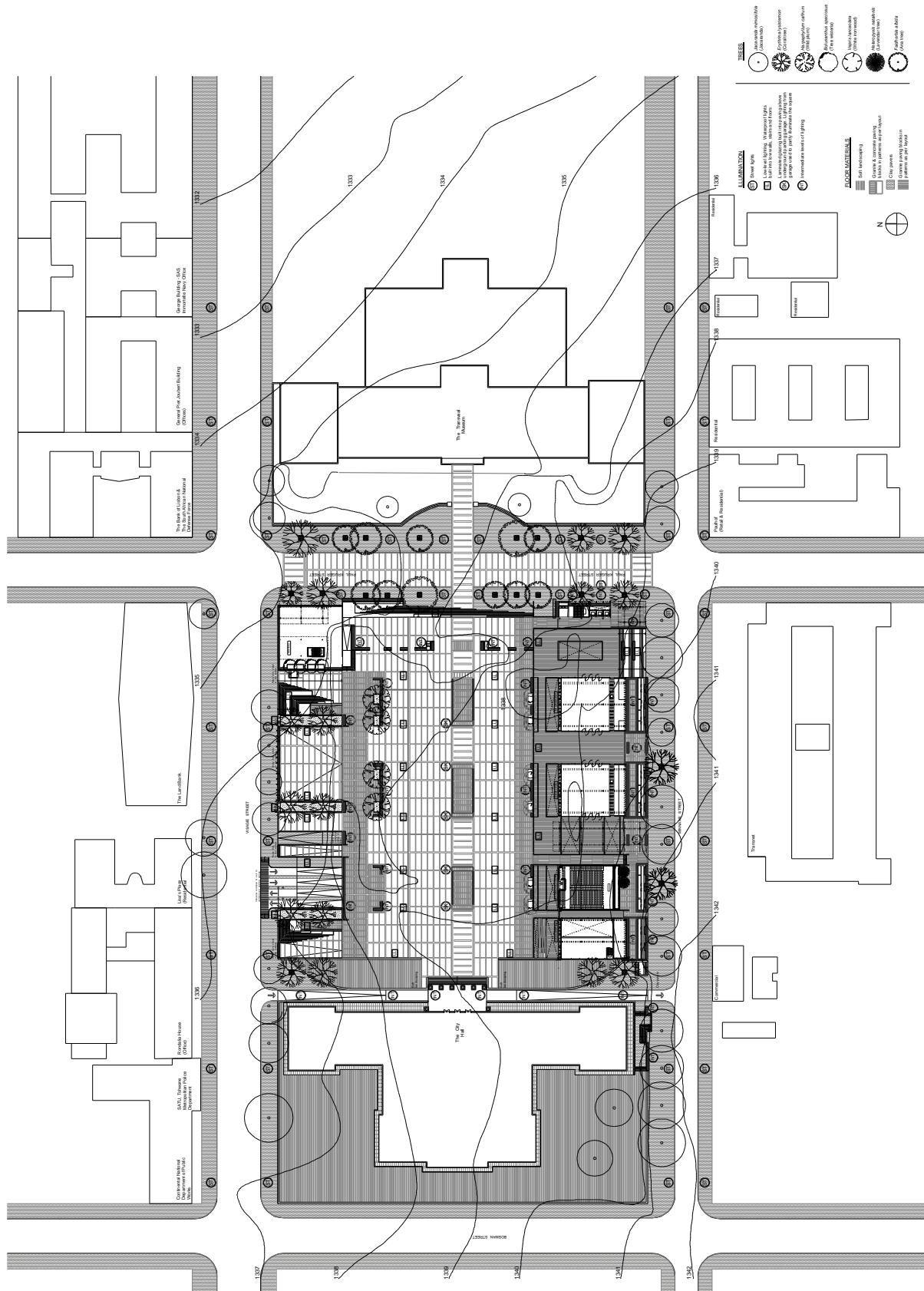
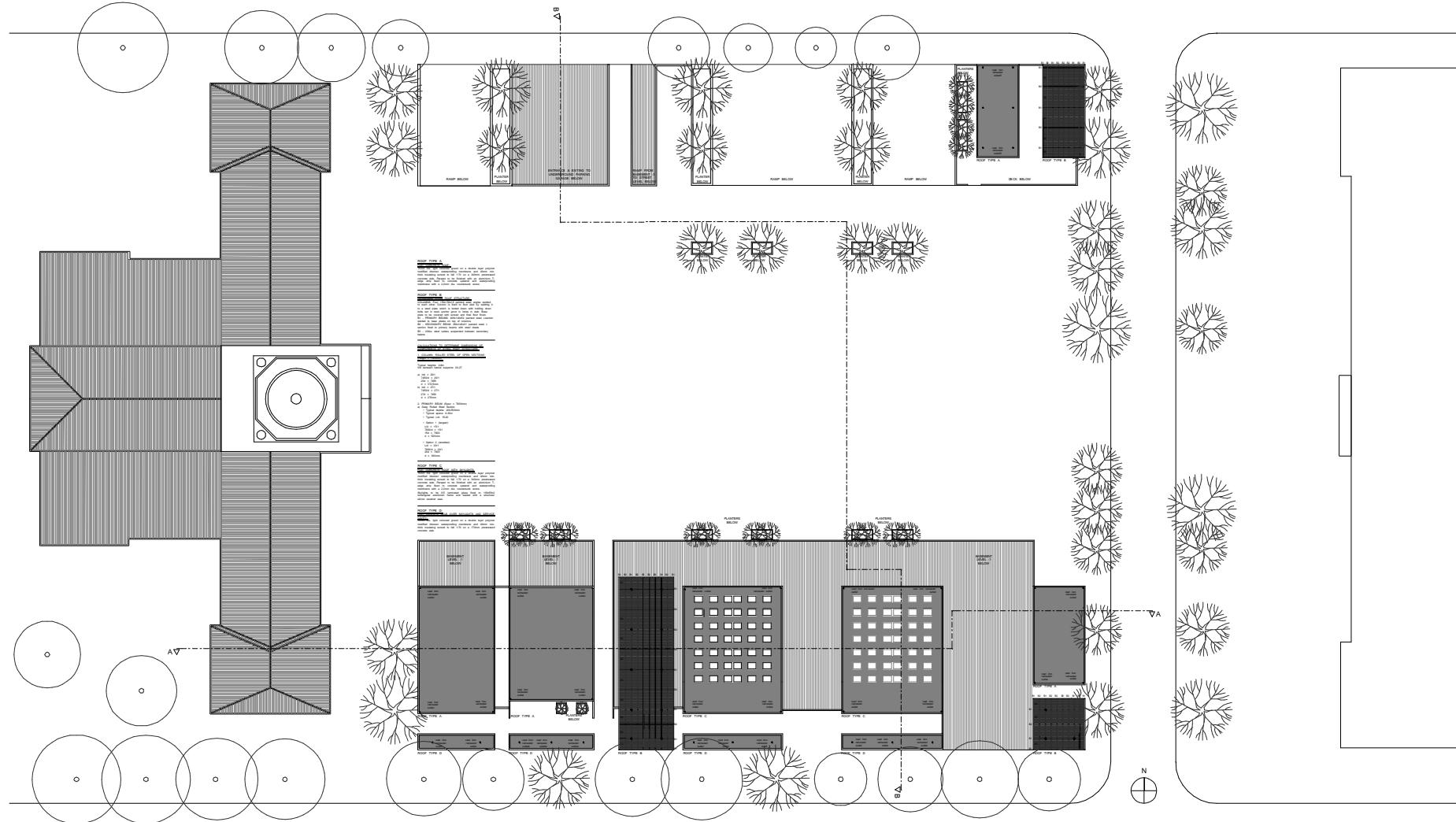


Fig. 152 An interior view of the skylights and timber screens in the Information and Exhibition Boxes (Author & Sackett, 2007).



Fig. 153 A view of the skylights on the square (Author & Sackett, 2007).

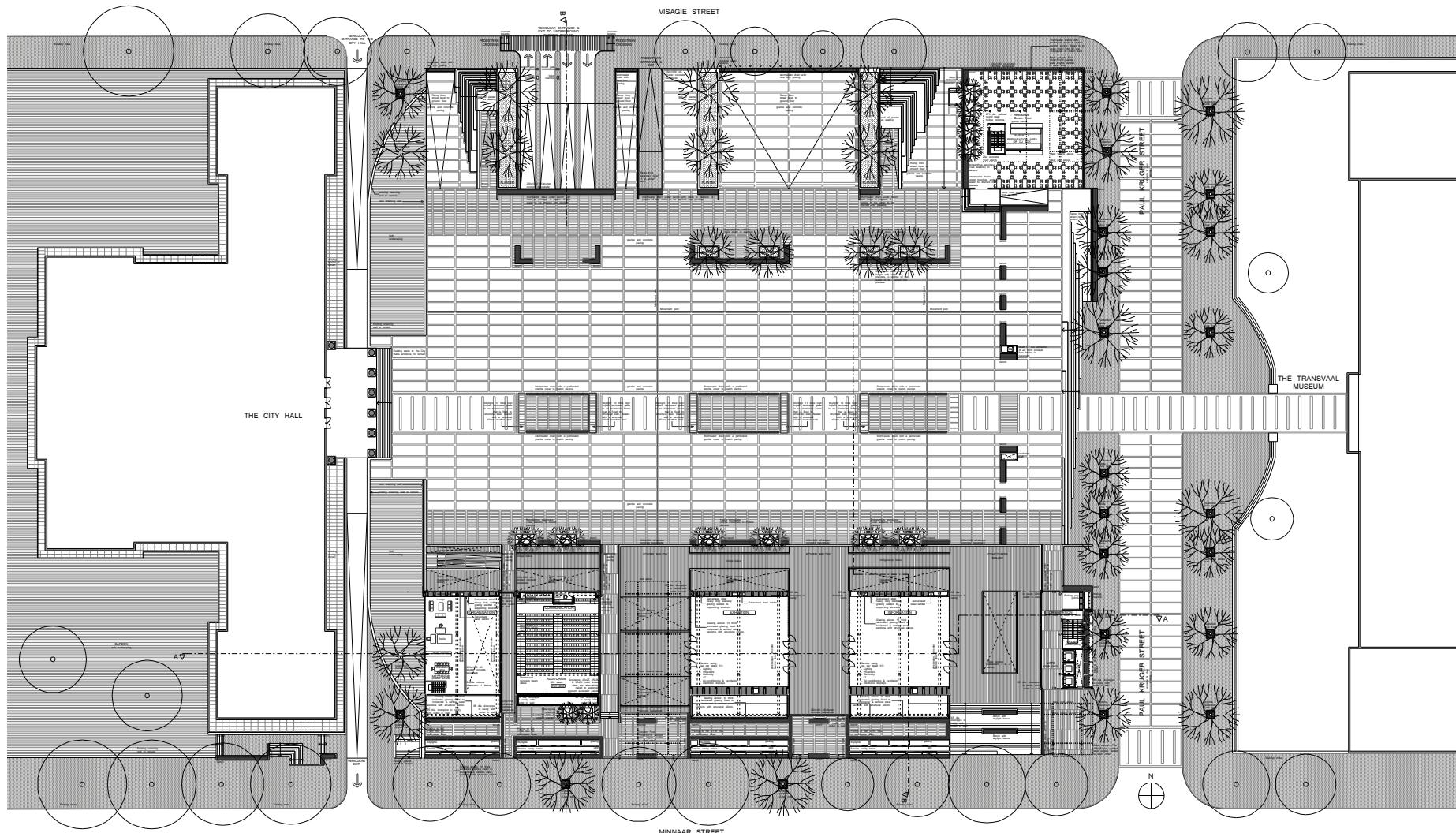




ROOF PLAN 1:500



UNIVERSITEIT VAN PRETORIA  
UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA



GROUND FLOOR PLAN 1:500



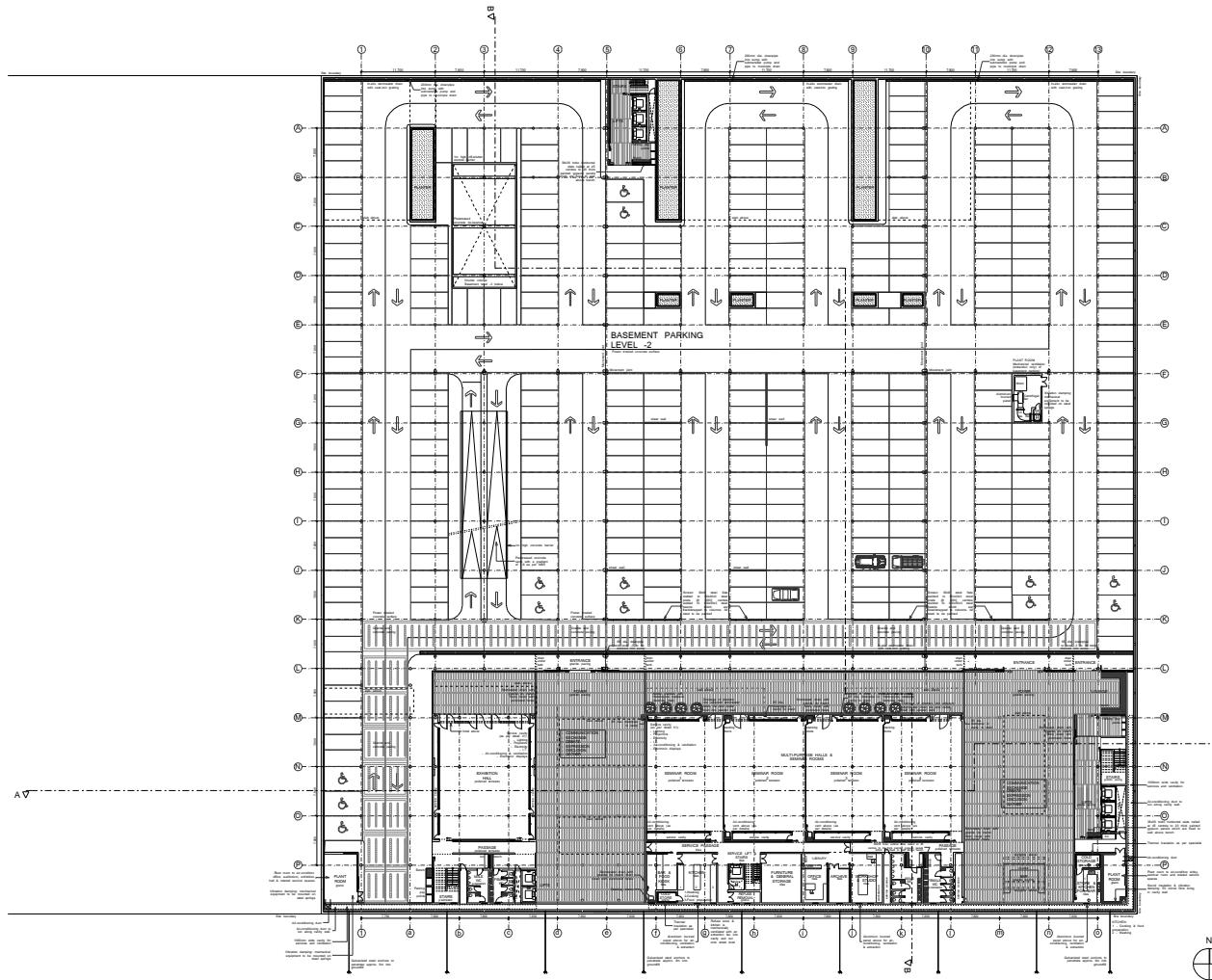
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UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA



BASEMENT -1 FLOOR PLAN 1:500



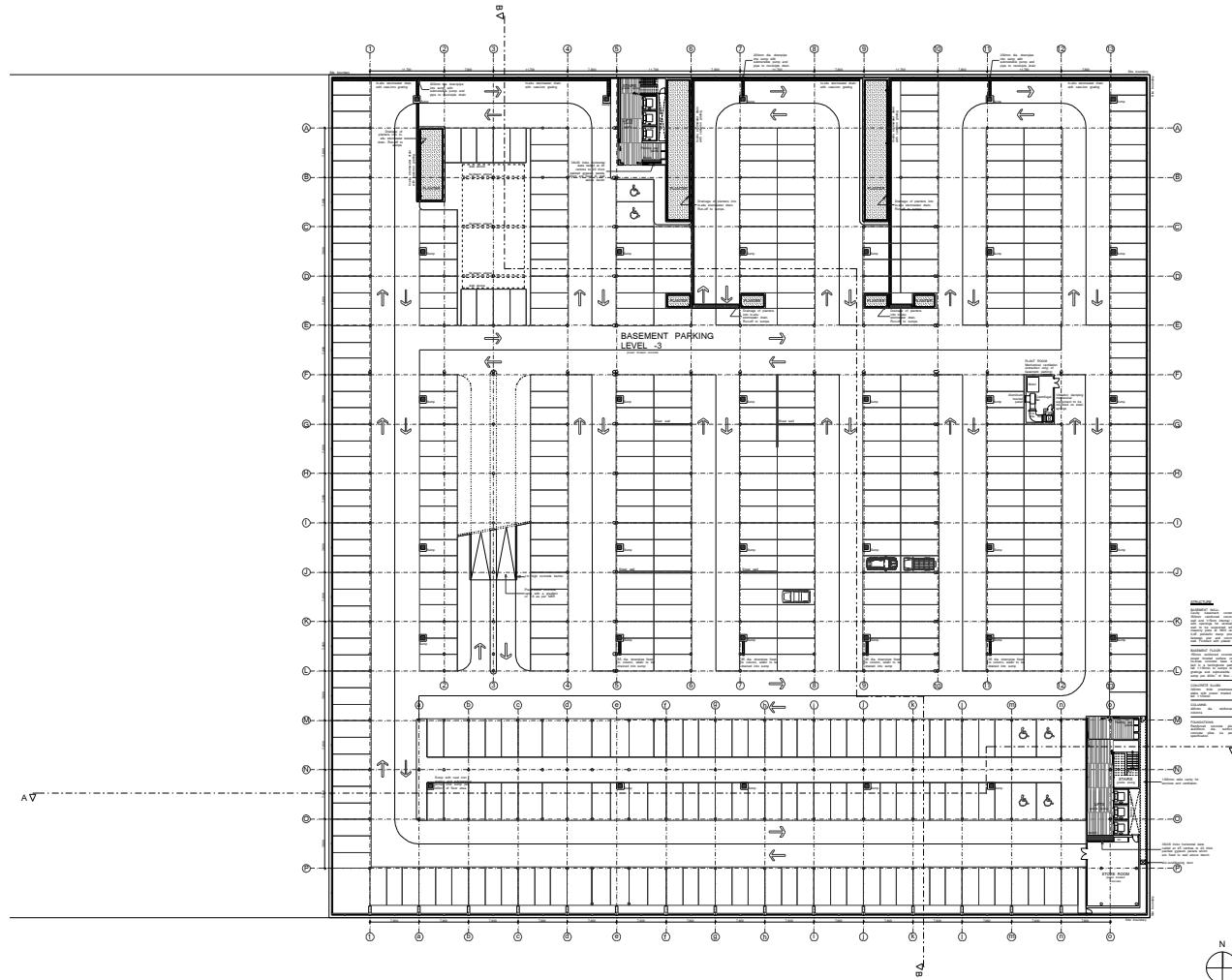
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UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA



BASEMENT -2 FLOOR PLAN 1:500



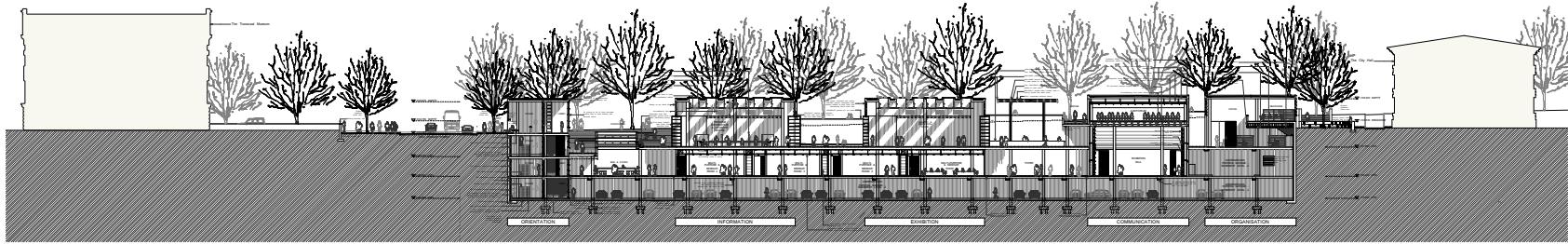
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UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA



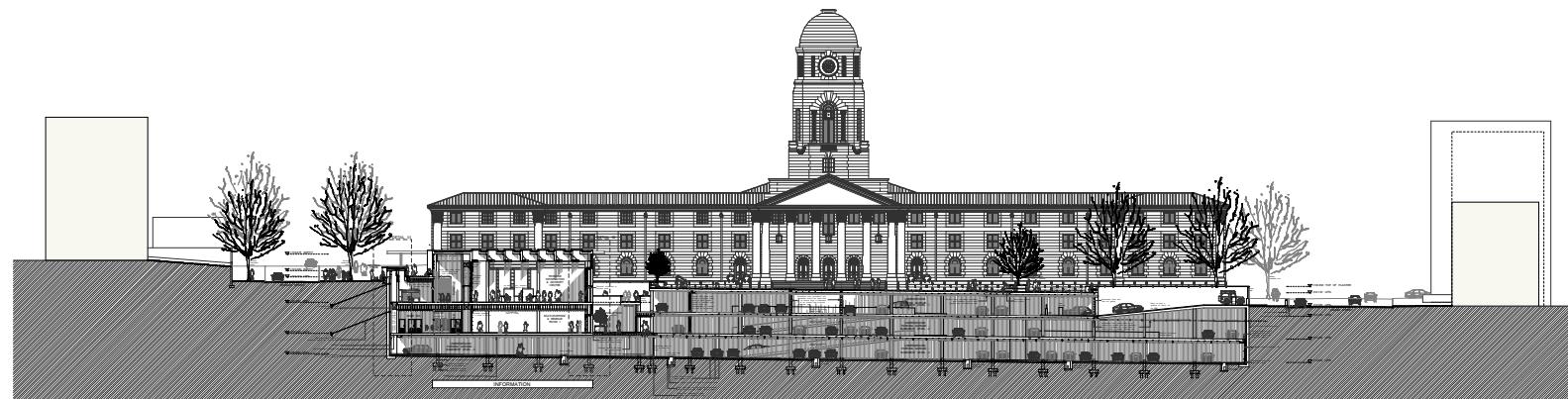
BASEMENT -3 FLOOR PLAN 1:500



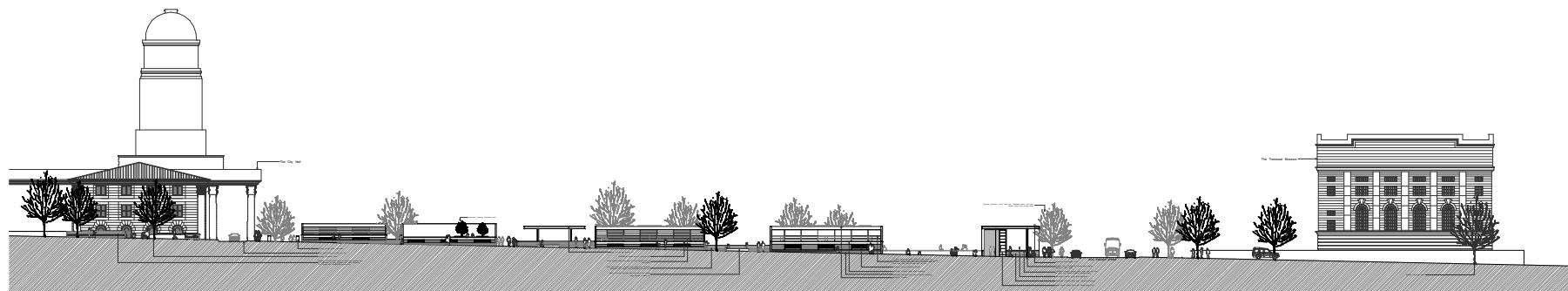
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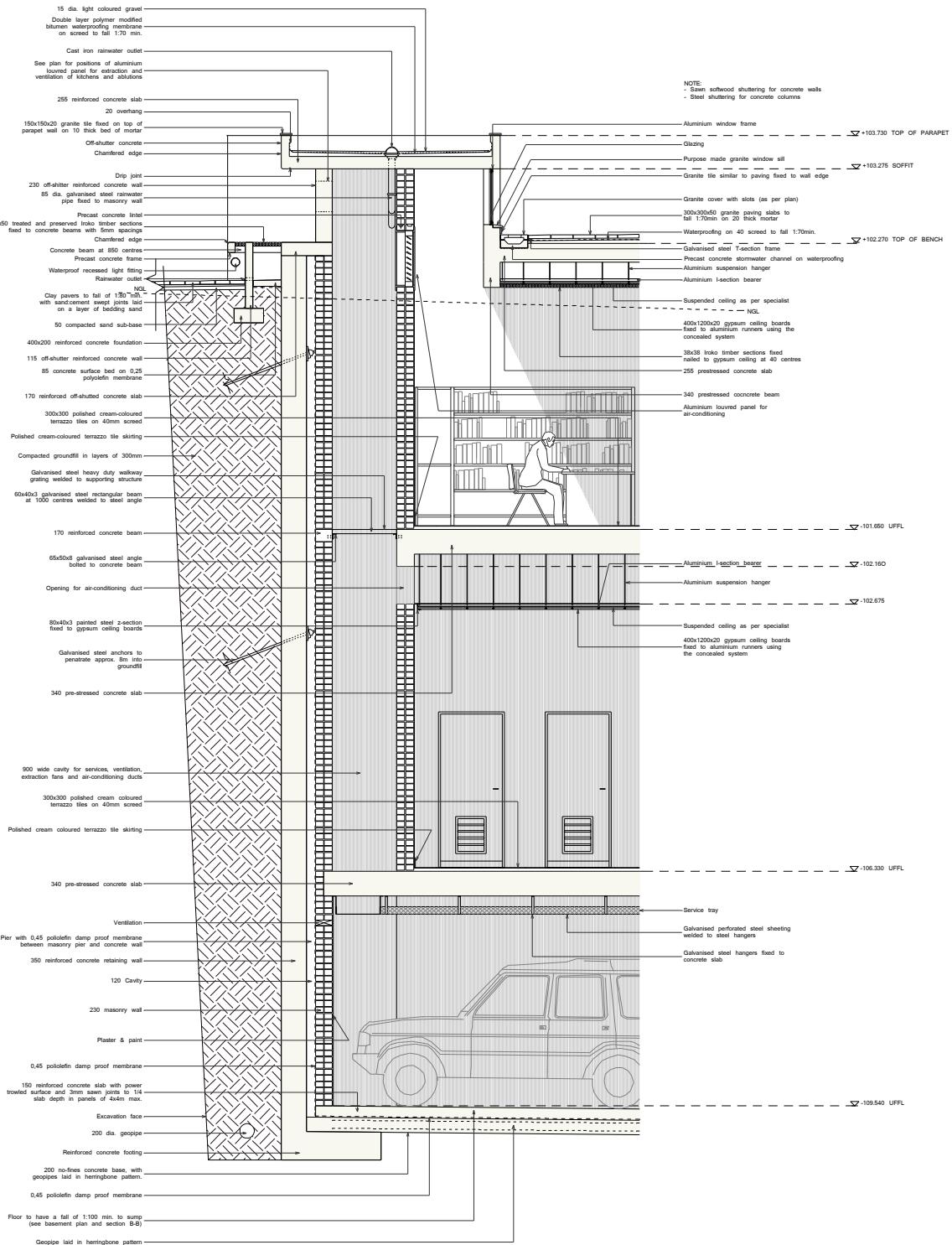
SECTION A-A 1:500



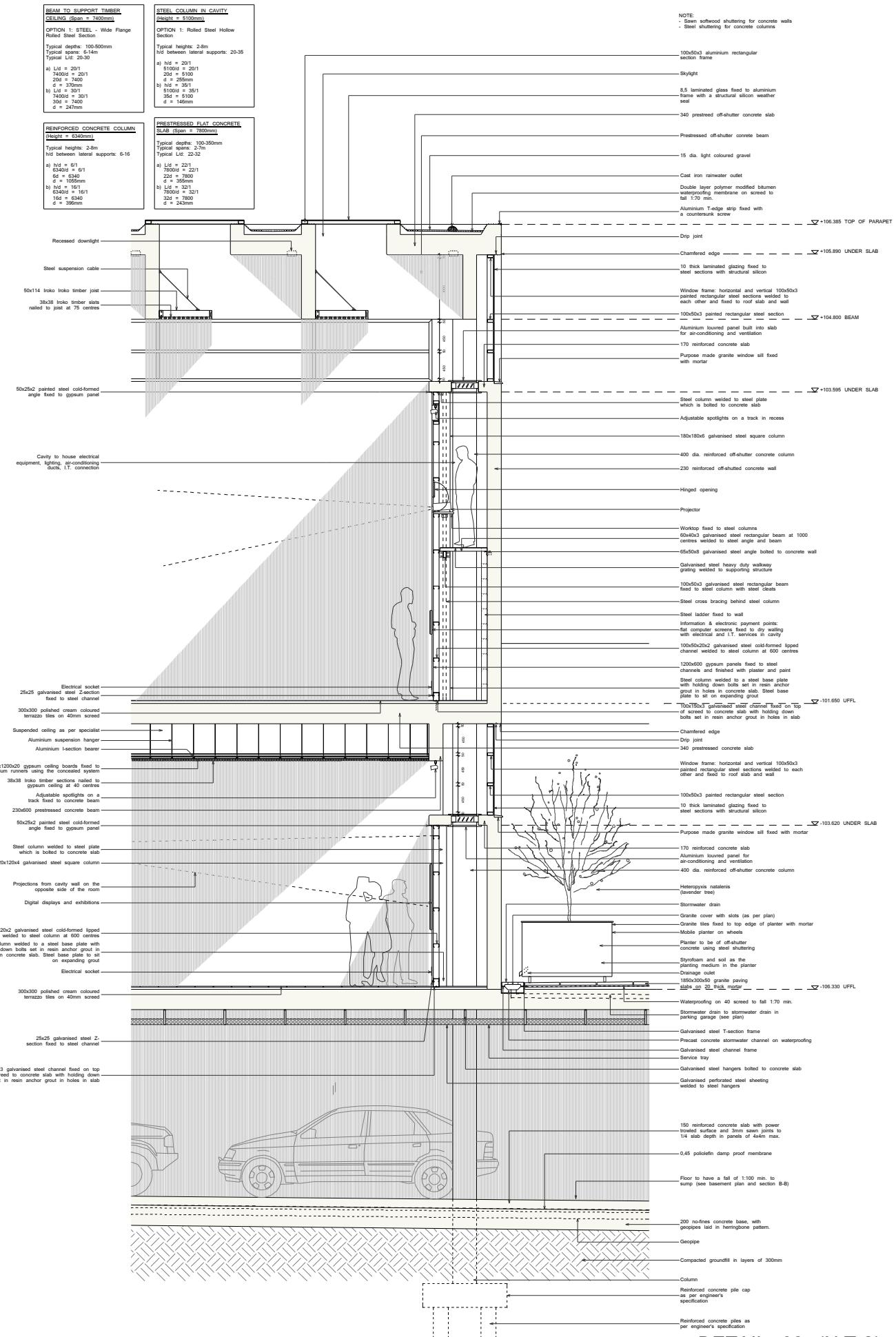
SECTION B-B 1:500



SOUTH ELEVATION 1:500



DETAIL 01 (N.T.S)



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