

# u r b a n c o m p l e x i o n \_

## 3.1 introduction\_

In times to come the maximum efficiency of urban environments will be a prerequisite to the functioning of a city. The impact that man inflicts on the Earth, as well as social, environmental and economical consequences has been the topics of the last century. In dealing with the growing demands of man, change in planning practices and efficient allocation of resources are of utmost importance. For the purpose of this document the emphasis will be on the function of institutions and their relationship to the city and their surrounding neighbourhoods. This document will make an attempt to define the ecological, social and economical structures of these institutions within the urban fabric and where applicable methods of procurement.

The preamble of the research is the creation of integrated and well defined urban spaces, where the ecological, social and economical structures are of equal value and have total frugality.

“Balance can be defined as the happy co-existence of things such as the relationship between humans and nature.” (LYNCH, 1981: 108-112).



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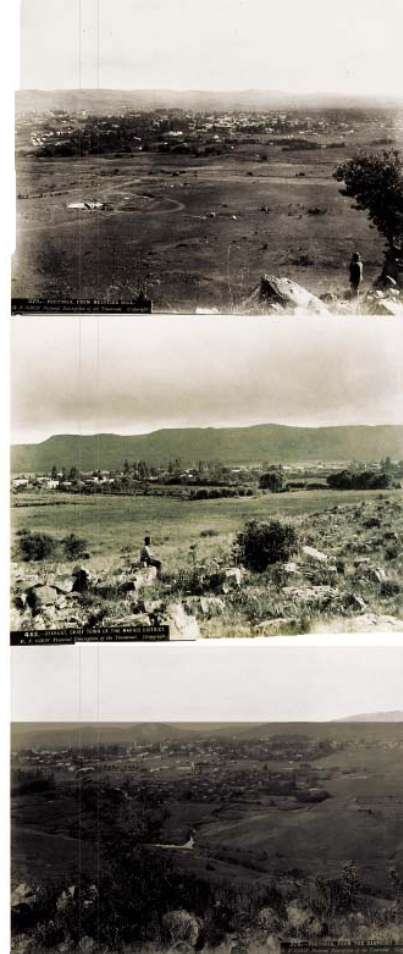


figure 3.1

2 0 0 8



figure 3.2

“The desire to maintain close contact with nature to maintain human dignity and morality is a common theme in western art and literature. Polite society has often appropriated rural ideals in the representation of its fascination with nature. The Neo-pastoral romance of the seventeenth and eighteenth centuries was frequently expressed through the medium of architecture. Implicit in this was a sense of the relationship between human well-being and the contact with nature.” (HAWKES & MCDONALD & STEEMERS 2002:15)

### 3.2 historical city\_

The African city was in historical times shaped by western philosophies during colonization. The idea of the city was driven mostly by optimisation of resources, or driven by political agendas. Pretoria as such is a political city and this can be seen in many of the elements that were used to define or design the city, for example the layout was based on the cardo and decumanus system used in ancient Rome. Furthermore the buffer zones that were created between cultural extremes were driven by political propagandas. The effect of these practices are still very visible in the contemporary city form which is characterized by cultural and political fragmentation, low density suburban sprawl and institutionalized service provision.

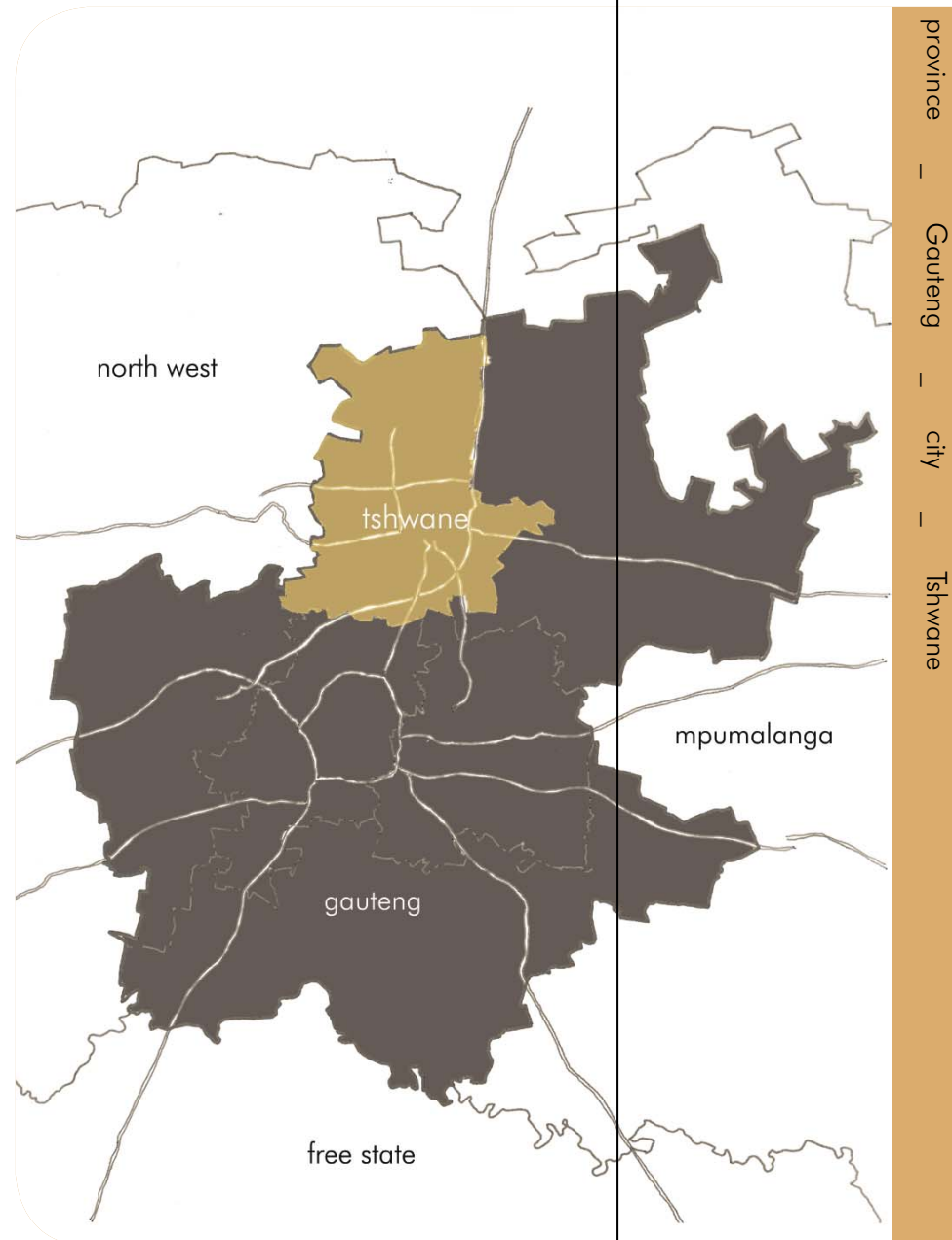


figure 3.3

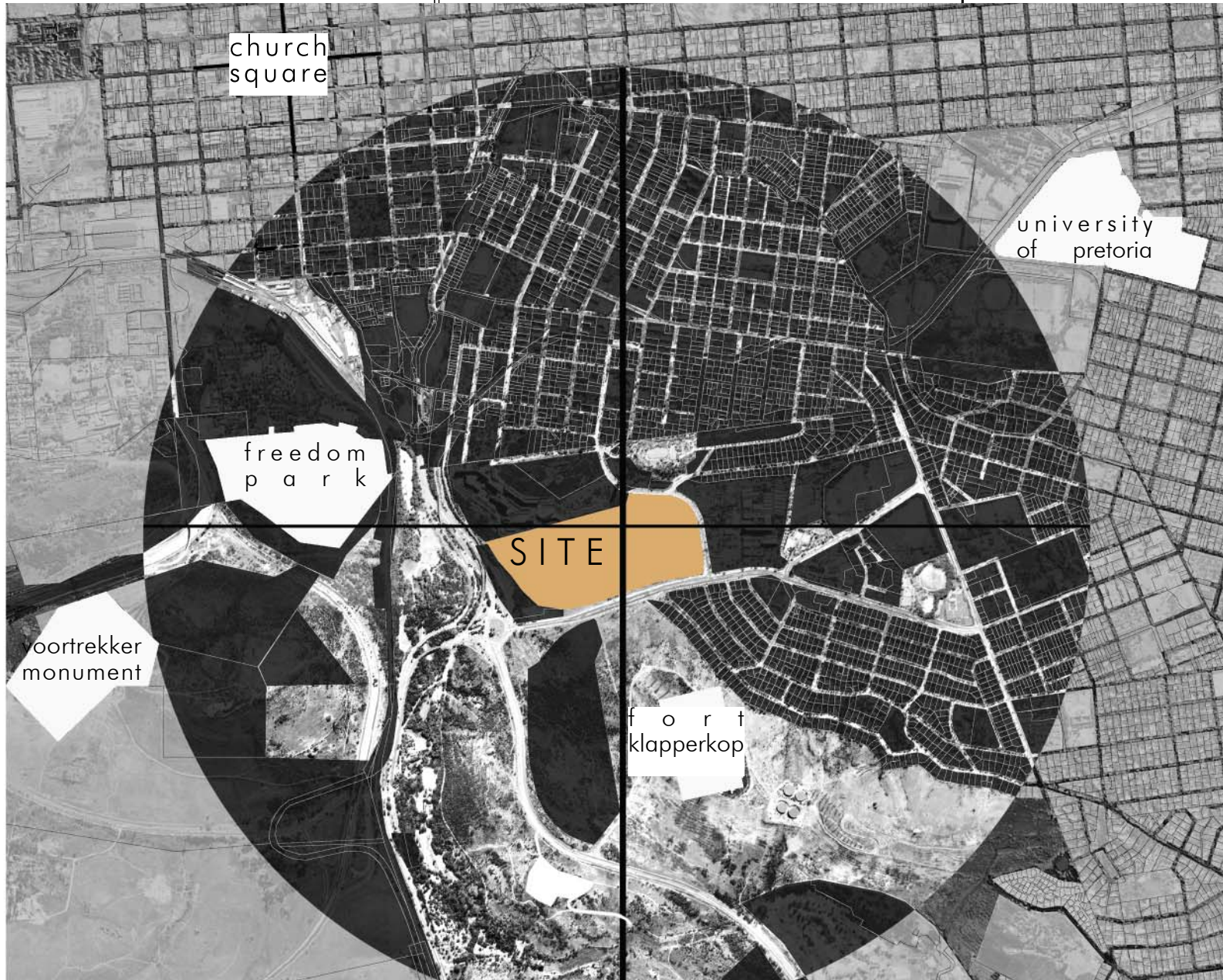


figure 3.4

### 3.3 regional urban structures\_

#### 3.1\_ ecological

“The highest level of balance in a city is between society and the cosmos. It creates a sense of wholeness, identity and uniqueness to the city. Secondly, the city and its participants should maintain contact with nature. Finally, a balance between participants of the city should be achieved to allow equity within the community of the city “ (DEWAR et al, 1991: 18-22).

#### 3.2\_ locality

The site is placed within the urban fabric as green pockets, in the form of squares and parks, which typically includes most of the hills due to their fragile compositions. The greater part of this ecological land mass consists of preserves which seize the corridors of the city.



#### 3.3\_ altitude

The altitude of Pretoria ranges between 1560m-1620m above sea level and is between 300m and 380m above the valley floor. For the purpose of this document the mean average of 1590m and 340m will be used according to the location of the site.

#### 3.4\_ geology

The site forms part of the greater Magaliesberg mountain range and its geological structure (figure 3.5). Ridges are composed of sedimentary layers which tilt upwards in a northerly direction from the northern Bushveld periphery. The upper layers of these ridges consist of Quartzite. These Quartzite layers are supported by a shale substrate. Quartzite is a hard sedimentary rock, more resistant to weathering. The shale sedimentary layers are largely exposed on the southern ridges. Being less resistant to weathering creates cliff like southern valleys. Shale is a bluish-grey colour which weathers to a reddish-brown clay which is typically used for brick making. The result is a landscape of mountains and ridges we are so familiar with.

The proposed site can further be geologically classified as part of the Timeball Hill quartzite.

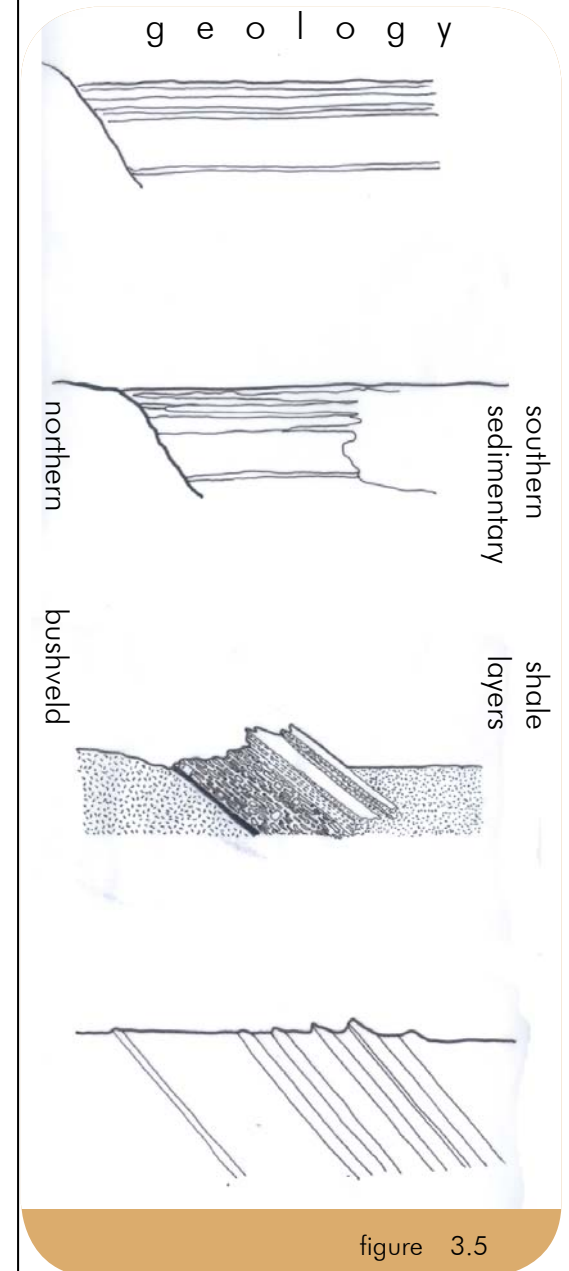


figure 3.5

### 3.5\_ environment

The Highveld is characterised by grassland and scattered trees in the wetter parts; and especially on the southern sides and in the kloofs of the ridges of the Magaliesburg (figure 3.6). Due to the topography and diverse microclimates the landscape accommodates various plant and animal species. More specifically the area used in the dissertation is part of the Bankenveld.

The proposed site is part of the Bankenveld, and is formed by the Magaliesberg Range.

### 3.6\_ climate

The area is characterised by warmer summers with fairly dry air, and thunderstorms and hail is not uncommon. Winter days are sunny with very dry air and very cold nights with frost.

6.1\_temperature: [mean average quarterly temperatures for Pretoria]

Jan. 27.8°

April. 24.4°

July.18.3°

Oct. 26.8°

6.2\_wind: [prevailing wind directions]

Summer mornings East to north-east

Summer afternoons North to north-east

Winter mornings South-east to north east

Winter afternoons North-west

\*Note that during winter evenings mountain breezes are very familiar when cold air sinks down and accumulates in depressions.

6.3\_Rainfall:

Average annual rainfall 681mm

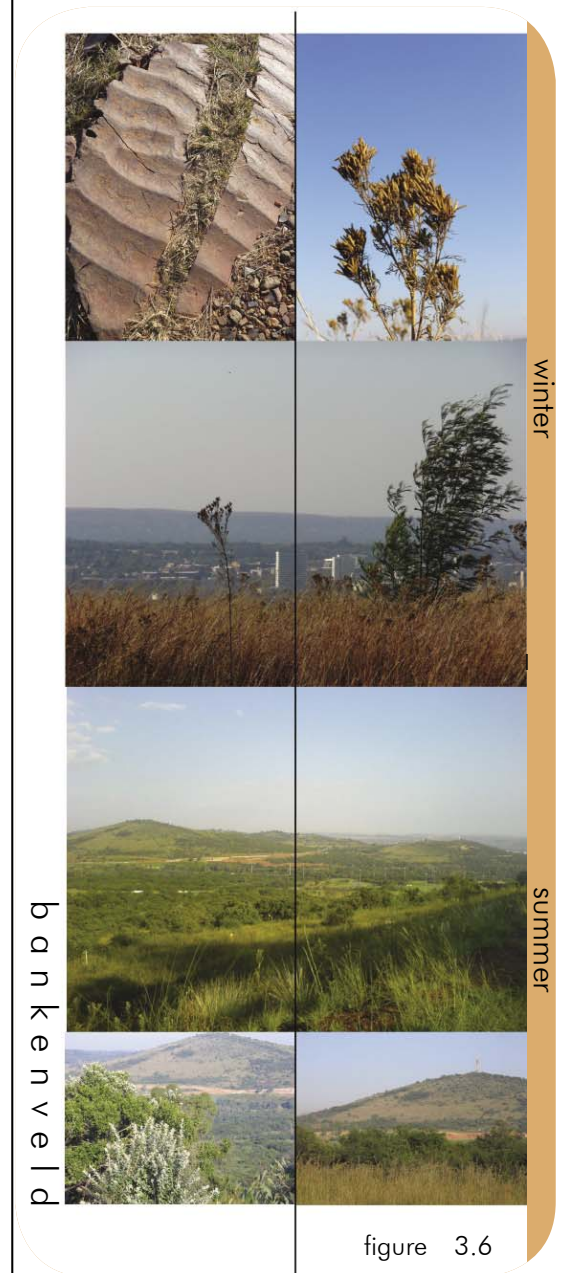


figure 3.6

\*Note that 80 - 84% of the annual rainfall falls between October and March. The rest of the year only counts for 16% of the rainfall.

6.4\_ Sunshine:

\*Note that for an average year there is only three days of no sunshine. And an average of 24 days of a month has more than 50% sunshine per day.

6.5\_Humidity:

Mean average                      30-50%

3.4 social\_

"The agglomeration of individuals, groups and communities generates a greater range of opportunities and facilities. Intensive activities and events needs to be exposed to inhabitants of many local areas which will generate support and participation of a wide range of people." (DEWAR et al, 1991: 18-22).

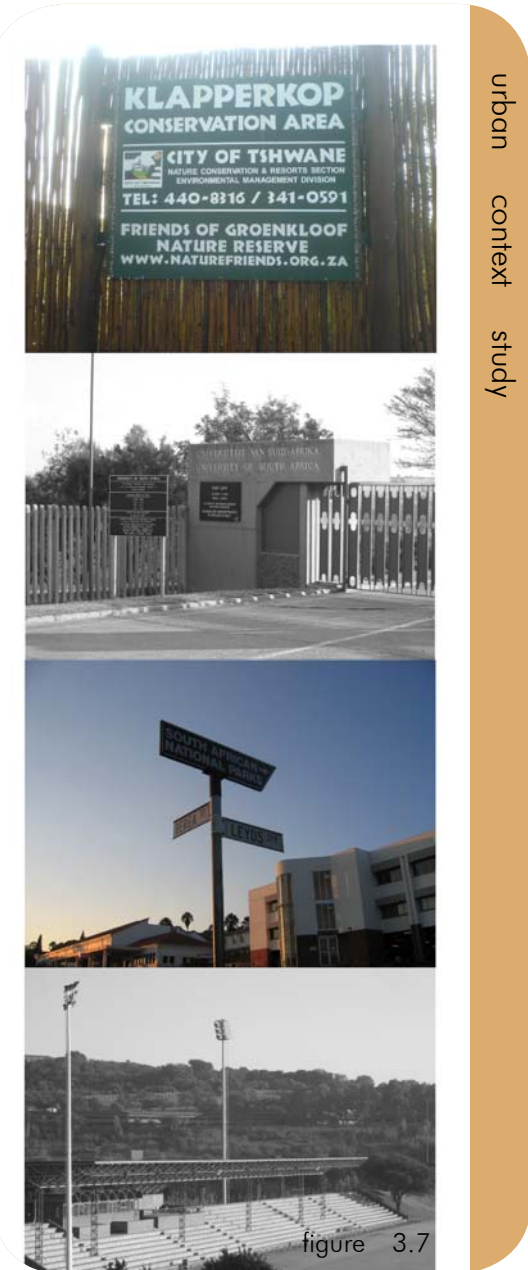
"Inclusive design should be obtained by allowing for various user types ranging from disabled to elderly. Parks and open spaces must be accessible for all." (LYNCH, 1981: 108-112).

4.1\_community

"The city should create a sense of identity and belonging for individuals in the city community. Places of interaction should be provided to create experiences that individual living cannot provide. Social ties are essential in urban life and that can be provided through human interaction. Social interaction is not only fundamental to human development, but an essential part of urban development. Communities in the city flourish when innovation, communication and interaction are efficient." (DEWAR et al, 1991: 18-22).

The city of Pretoria is shaped by strong educational and political functions. This creates vast and rich combinations of communities and cultures within the city. These communities range from temporary to permanent residents. Due to the cities changing and rich social framework a well structured urban framework is required to support the constant change. On a macro scale the more permanent residents of the city and neighbourhoods function as support network.

Institutional campuses are grouped within the urban framework and due to rapid expansions



urban context study

figure 3.7

they have been forced to develop a multitude of facilities on various small pockets of available land. Alternatively, Institutional campuses can be allotted large undeveloped parcels of land through town planning schemes, even if the institution does not have the financial ability to properly develop the land. This has caused certain campuses to be alienated and under developed.

Higher density developments are used to sustain the living demand in close proximity of the campuses. These developments are based upon individual living and in most cases lack the necessary social spaces to sustain these living conditions. Most of the lower density old neighbourhoods consist of residential, commercial and even political practices such as embassies. Sustaining a richer urban environment but still limiting the social spaces to individual properties.

#### 4.2\_freedom

“Cities must promote maximum positive environments. Complex and positive environments creates a rich experience for city participants. Freedom and equity of choices can only be achieved through appropriate constraints that are provided by government and policy.” (DEWAR et al, 1991: 18-22).



figure 3.8a

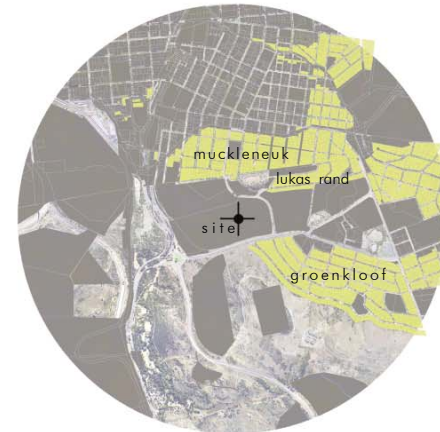
Security problems within the city have created a buffer towards the freedom of the user. Public spaces have been reduced to semi-public spaces as a result. Large green spaces can be found in the form of recreational and conservation areas with historical value. These areas mostly occur on the edges of the city, or as spines cutting through the city, and bare no relation to the city. Large fences provide security for the infrequent users, creating segregated networks of commercial and green spaces.

All these elements create negative and closed off spaces which limits the user. The result is fragmented social networks with limit freedom.

#### 4.3\_interdependence and integration

“The city must consist of complex structures and interdependency of different activities and public, semi-public and private spaces must be directly related.” (LYNCH, 1981: 108-112).

One of the prominent problems associated with city is the way various structures function independently. No relation exists within the urban network creating undefined spaces. Within the given context large parcels of land are dedicated to exclusive private land use. Open spaces exists inside and outside these institutional property but have confined functions and users.



low density  
residential



high density  
residential

figure 3.8b



### 3.5 economical\_

#### 5.1\_efficiency

“Intensity, diversity and necessary complexity of activities should be integral to the urban framework. This will result in intense interaction and high levels of population support. The city should feature diverse activities over relative small distances in high stimulus environments which will promote the learning experience. There should also be a balance between the intensity of privacy and urbanity.” (DEWAR et al, 1991: 18-22).

Higher densities within the urban framework has allowed for more efficient land use. Efficiency not only depends on density but also the way in which the property could be utilised by having more than one function. Campuses have evolved from being only institutions to commercial entities which means they now generate an income not only from students. This can only be beneficial if the student community and the public community benefit from this.

#### 5.2\_maintenance

“Proper management and access to public services will lead to healthy and safe environments in the city. Positive spaces encourage positive people.” (LYNCH, 1981: 108-112).

The problem with the majority of institutions is the fact that they are in-accessible to the general public. Public and private investments have been attempted and have succeeded, and easier management and growth were noticed in the results. However the new functions required more facilities and the result was that the existing infra-structure could not sustain this demand. The second problem was that multiple users excluded the student who was supposed to benefit from this.

### 3.6 conclusion\_

A philosophy of imperialism evolved around the sensual and physical experience of individuals within an urban environment. The two pillars of successful urban environments are the human factor and the conservation aspect according to Uytendogaard (DEWAR et al, 1991: 19). This approach of imperialism stands in stark contrast to the philosophy of a new rationalism which formed part of the modernist town planning paradigm. The town planning in South-Africa as it is based on these methodologies has left the city with spatial segregation. These segregated “planned” environments do not sustain a positive environment. And according to Christopher Alexander human beings will always have the need to interact and depart into space close to nature. As mentioned by Alexander these feeling spaces within African cities have been limited



figure 3.9

to ill defined urban parks and poorly defined green belts, consisting out of scattered trees and paved surfaces. Acknowledging the existing concerns already associated with the protection of designated urban green spaces.

“according to their second pillar of planning consciousness relates to the natural condition which provides the setting upon which, and the basic resources with which, human life is played out.” (DEWAR et al, 1991: 19)

“the three central concepts is the dynamic balance – between man’s activities and the resource base upon which those activities take place. In any human action on the land, there are ecological considerations which must be respected.” (DEWAR et al, 1991: 20)

This creates an exciting opportunity to allow new urban interventions to connect not only to the built fabric but also to physically connect the green/urban environments. The proposed philosophy of imperialism strongly complements the spatial linking of spaces as experiences rather than just through routes.

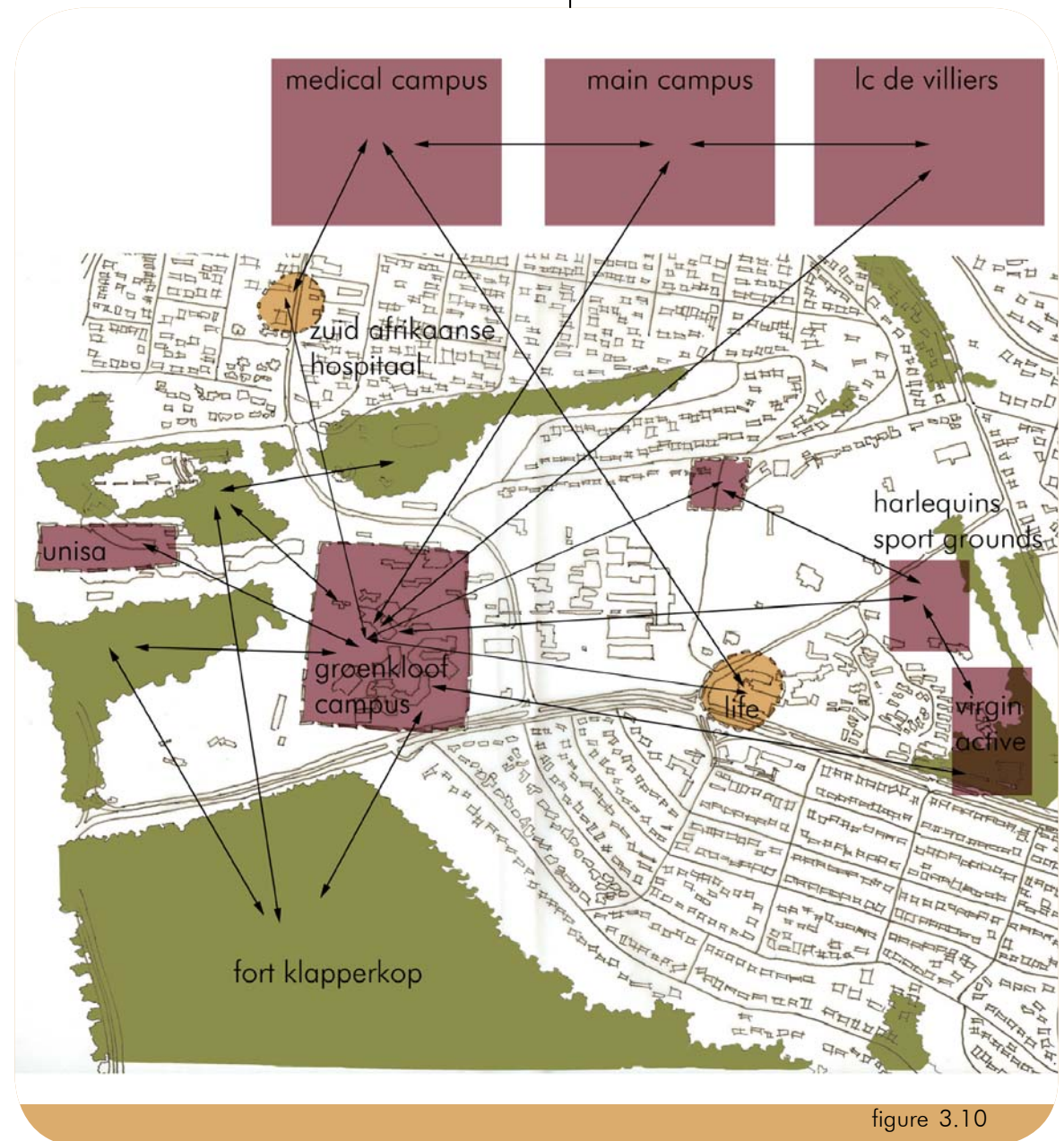


figure 3.10

multiple interlocking and linear systems

“Scientific investigations into man’s interaction with the environment have shown that there are upper and lower limits to the rate of input of environmental stimuli for the healthy functioning of the human organism.”  
(NITSCKE, 1993: 45)

This can be achieved by integrating public and private functions within the urban framework. Institutions located on large land parcels currently under utilized due to economical constraints and causing a breakdown of the urban fabric, can be redeveloped to gain and expand the institutions functions within the urban network.

Also reserving land parcels and redefining the edge of urban developments. Establishing more defined urban and rural relationship, where the character of the landscape is retained. Allowing more diverse functions with multiple stake holders and shared management of the urban fabric. Effective management strategies are vitally important for optimum performance. This will ensure increased life span of the built environment. An increased life span contributes to a positive sense of place.

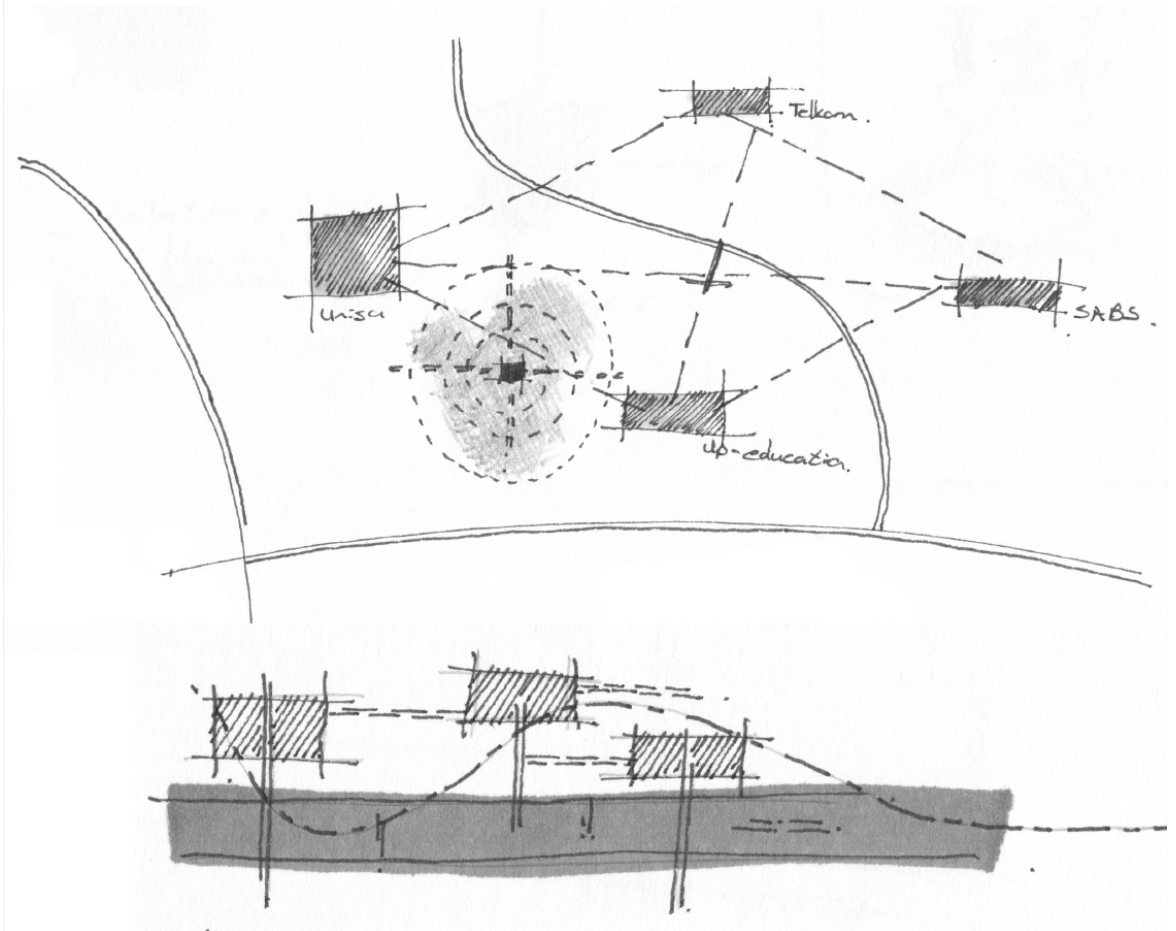


figure 3.11

Stronger networks with multiple interlocking and linear systems will help create more positive spaces. These networks in return will accommodate a large mix of economic, ecological and social activities and facilities. This will extend the life cycle of existing functions and create a more sustainable urban framework.

“the second is regionalism and the recognition of the inextricable interdependence between the characteristics of a place, people’s activities in that place and the emergence of cultural expressions and form.” (DEWAR et al, 1991: 19)

“the third concept of resource sensitivity is the recognition of the importance of all resources and the need to utilize these wisely.” (DEWAR et al, 1991: 19)



figure 3.12



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figure 3.13