

3.0 CONTEXT ANALYSIS

3.1 INTRODUCTION

The context of the problem is also part of the solution to the problem. The process of analysing and interpreting the parts of the problem is prerequisite to reassembling the parts into a whole. While the process remains the same, the factors in each situation are variable and unique to each site.

With this in mind, the context study will look at context from regional scale and zoom in to the site scale to identify factors that could influence the design. Through a process of contextual analysis, the complexity of the site in the urban context is revealed. New problems identified by this analysis are addressed in a development framework.

3.2 LOCATION

The chosen site is situated in Mamelodi Township, Tshwane Metropolitan city, in the Gauteng Province of South Africa. Tshwane, as a built environment forms an integral part of the Southern Africa context. It is the administrative capital of South Africa as well as a major commercial, manufacturing, transport and cultural centre.

The city is a microcosm of culture and veritable window on Africa. It is a very strategic location within easy reach of Johannesburg International Airport and it is a gateway to many favourite tourist destinations.



Fig.16: Map of Mamelodi relative to the City of Tshwane (Tshwane City Council, 2006).

The Tshwane Metropolitan area is in excess of 900square kilometres with population over 2million. Tswane is geographically situated between the 25.8 degrees to 30.7 degrees east and 22.0 degrees to 25.9 degrees south.

3.3 HISTORICAL OVERVIEW.

Mamelodi was originally known as Vlakfontein farm, the Tshwane(Pretoria) City Council bought the farm in 1945 to provide accommodation for the city's black labourers . In 1962 the name changed to Mamelodi. It is situated 20 kilometres east of the Tswane City centre. Mamelodi is a dynamic community, set at the foot of majestic Magaliesberg Mountains, forming its northern and eastern borders. The Pretoria –Witbank highway, forming the southern border. Its closest neighbour, Eerterust, is on its western border (Tshwane City Council, 2006 :10).

Although a large area at 4158 hectares, most of it is not suitable for vast developments due to its geographic state. A tributary of the Apies river – Moretele divides Mamelodi west and east adding to Mamelodi pictorial attributes.



Fig.17: Pictorial view of partial Mamelodi Township-Tshwane City (Tshwane City Council 2006).

In the early, middle and late Stone Age, there were communities who occasionally inhabited an area right on the foot of Mamelodi by the so-called Magaliesberg. In this area, the Stone Age men produced their tools and weapons from quartzite rocks, found in the mentioned Magaliesberg.

In around 1200AD, the first black communities settled down in the Tshwane area; they grew crops, kept domesticated animals, made pottery items and smelted iron to make tools and weapons. The first known settlers, The Matebele tribe and the Bakwena tribe, settled

along the Magaliesberg. This was around 1825-1826 (Tshwane City Council, 2006 :17).

The first residents were black-Africans, subsequently removed from other black areas like Riverside, Eersterust, Eastwood and Lady Selbourne. Gradually, more people have been moving in the area, either forced by the authorities or in search for employment (from the rural areas, like for instance Limpopo, Mpumalanga, Mozambique or Zimbabwe). In 1953 saw the first housing units being built and Mamelodi was officially proclaimed a Township (Tshwane City Council 2006: 17).

During the 1980s Mamelodi Town Council commissioned private developers to develop land to the east of the original township. The areas towards the east develop rapidly especially as people such as civil servants could now obtain housing subsidies and were able to relocate to the newly developed areas (Tshwane City Council, 2006).

Mamelodi means 'mother of melodies' given to President Paul Kruger by the Africans because of his ability to whistle and imitate birds and true to this name is the heritage of an original and unique jazz style called Molombo Jazz, originating from mbaqanga, traditional Pedi and Ndebele drumming, Zionist – Baptist gospel music and the African jazz guitar (Tshwane City Council, 2006: 17).

Mamelodi boasts a truly multi-cultural community. Ethnic groups living in this peaceful suburb include Northern Sothos, Tswanas, South Sothos, Vendas, Zulus, Ndebeles, Xhosas, Swazis as well as many foreign groups (Tshwane City Council, 2006: 18).

3.4 REGIONAL ANALYSIS

The rail track and different roads leading to Mamelodi from Tshwane Commercial Business District (CBD) are probably the most significant form-giving elements within the landscape. Commuters are dependent daily on the means of transport to provide access to job opportunities in the Tshwane CBD and surrounding areas.

The edges between developed and developing areas are sharply defined by these paths. The various formal and informal commercial centres create landmarks within landscapes. The bus station and University of Pretoria – Mamelodi campus are important landmarks and transport nodes. As almost all of South African Cities and Towns, Tshwane is set out on a grid system and introduces a specific man-made order into the landscape.



Fig.18: Access to site regionally (Tshwane City Council 2006)

3.5 THE SITE IN URBAN CONTEXT

The site is situated in Mamelodi district (Township) of the City of Tshwane. Kelvin Lynch defines a district as an area of a city with the same physical qualities in terms of its inhabitants, texture, typology, form, activities and building types (Lynch, 1986:66). As we have already described in the background of Mamelodi and the next chapters in the book, it will be found that indeed Mamelodi is a district.



Fig.19: City of Tshwane showing Mamelodi and surrounding districts (Tshwane City Council, 2006)

According to Kelvin Lynch (1960:46) the image of the city can be analyzed into five urban elements: paths, nodes, edges and landmarks. Through analysis of the chosen site and its surroundings, it will identify some of these elements and their influence on the design.

PATHS

Paths, according to Kelvin Lynch (1986:48) are the most prominent urban elements. Its importance is more than just to connect nodes. Movements are the most important way of experiencing the city. Paths can be railways, main roads, streets side-walks, short cuts over open sites or anything that functions as movement elements. The following routes of importance were identified in the vicinity of the chosen site:

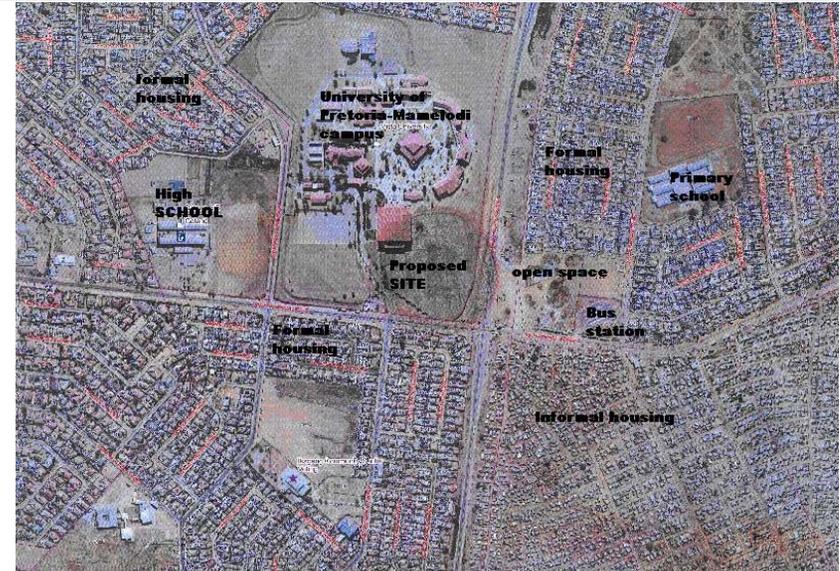


Fig.20: Aerial photograph of site surroundings (Tshwane City Council 2006)

HANS STRIJDOM DRIVE: It is the most direct main road to Mamelodi from Tshwane CPD. It is a two a lane road passing along the proposed site of the Construction Centre.



Fig.21 View from Hans Strijdom Drive with Mamelodi campus on the left and proposed site in concreted strip fence (author).

HINTERLAND DRIVE: It is the road coming from the inner part of the Mamelodi with commercial, residential and entertainment facilities along the road. The Hinterland Drive ends on Hans Strijdom Drive. This is where there is transport traffic nodes to town, Hans Strijdom Drive and extension 6 through Mohwelere Street.

This Four way junction is the most important transport node for buses and taxis drop-off, conveniently situated opposite the site.



Fig.22: View from Hinterland Drive (author).

MOHWELERE STREET: This is the main Street from most of the informal settlement on the right and formal housing on the left. On both sides of the road is a line of informal trading stalls.



Fig.23: View from Mohwelere Street with the proposed site on the left and shack housing on the right. Streets lined with informal trade (author).

RAIL TRACK; this is the only rail transport from Tshwane CBD to Mamelodi. It is the cheapest means of transport for the community.

NODES AND LANDMARKS

A node is the focal point where important paths cross or where concentration of activities occurs. Nodes are important in urban fibre as orientation points, forming part of the framework of reference. According to Lynch (1986:73), nodes are usually the core of the district. In the immediate vicinity, University of Pretoria-Mamelodi Campus and the newly built municipal bus station are identified as nodes. University of Pretoria – Mamelodi campus is situated on the corner of Hinterland Drive and Hans Strijdom Drive located to the North-West of the proposed site. The campus is enclosed by bricks and a concrete panel fence. The fence, therefore completely separates the campus from the neighbourhood environment.



Fig.24: Fence around the campus along the Hinterland Drive on left and Hans Strijdom Drive on the right (author).

The municipal bus station is situated along the Mohwelere Street. It is newly built. It is only used on specific times during the day by the municipal buses. There is a public toilet at the bus station though not

operational. The entrance is on Mohwelere Street and the exit is on the Moretlwa Street.



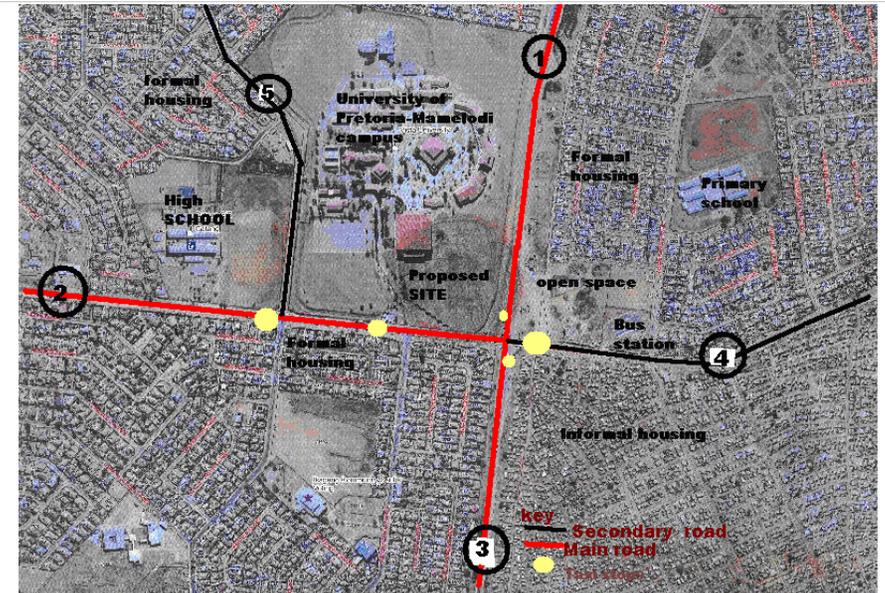
Fig.25: Entrance to Bus station on Mohwelere street (author).



Fig.26: Exit from Bus station on Moretlwa street (author).

EDGES

Edges occur where districts connect or where there is a break in the continuity of the urban fabric. The site is defined by Hans Strijdom Drive which runs from the south to the north forming the edge on the east side of the site and it is the sites major traffic artery. The southern edge is formed by Hinterland Drive. The northern edge is partly formed by Campus multi –purpose hall and classrooms. Both Hans Strijdom and Hinterland Drives carry pedestrian and vehicular traffic, rendering the site accessible.



(1) To Witbank (2) To Mamelodi Town centre and CBD (3) To Pretoria CBD (4) and (5) Main secondary distribution road.

Fig.27: vehicular access and physical edges of the site created by the various roads.

ANALYSIS OF PROPOSED SITE

The site selected for this study is situated in the eastern part of Mamelodi, on the corner of Hans Strijdom Drive the main direct road from Tswane CPD to the site and Hinterland Drive. The site is currently used as an open play ground within the campus. The most important landmark in the area is the University of Pretoria –Mamelodi campus. The campus has educational institutional scale with predominately

brick and painted steel sheets and concrete and brick fence surrounding the campus. Another important land mark in the area is the municipal bus station bound in steel fence.



Fig.28: The accessibility of the site via vehicle, rail and foot as well as the surrounding socio-economic context makes it suitable for the proposed Centre (author).



Fig.29: bus station fence with Mamelodi campus in the background and football ground next to a bus station (author).

The area to the east of the site is characterized by informal commercial trading along the main routes- Hans Strijdom Drive, Hinterland Drive, and Mowloere street.



Fig.30: Shack panels made of steel sheets and timber assembled and made of site (author).



Fig.31: Informal trading stalls on the intersection (author).



Fig.33: Informal trading stalls along Mohwelere street (author).

HOUSING

The site is surrounded by mixture of classes and cultures. There are formal housing units, shacks and institutional housing.



Fig.34: Aerial map of the site showing surrounding residential (both informal and formal housing), main roads and institution buildings (author).

VISUAL SITE ANALYSIS



Fig.35: site pictures (author).

3.6 CLIMATIC DATA

In the design, solar architecture is proposed. Solar architecture involves designing with climate: for wind, shelter and outdoor space; light and daylight; heat and warmth; cooling and ventilation. People built structures for thousand years, and when the majority of architects realize the importance of working with and not against the climate, the term will change, by itself, to Architecture:

TEMPERATURE

Tshwane (Pretoria) enjoys a warm, pleasant climate with an average of nine hours sunshine per day for 300 days a year, making the use of sun control an integral part of the design. Summers are hot, with temperature ranging between 18 and 32 degrees Celsius, with an average of 29 degrees Celsius. Winters are dry and cool to mild with an average temperature ranging between 6 and 23 degrees Celsius.

Pretoria's temperature allows outdoor activities almost all-year round. It is recommended that summer sun be screened and winter sun be allowed to penetrate. External spaces should provide shade in summer for outdoor activities. Lightweight insulated roofs are feasible in this region, provided that walls and floors supply thermal mass.

RAINFALL

Tshwane (Pretoria) is situated in the summer rainfall region of southern Africa. The average annual rainfall is 763mm of which 88% falls during the summer months. Rain is usually in the form of thunderstorms which is sometimes associated with hail or lightning and large amounts of water falling in short periods of time.

This should be kept in mind during the design process, as provision should be made for the rapid drainage of large amounts of water away from the building. The possibility of flooding and collection of rain water may cause problems if not attended to. Therefore an inventive solution for collection of rainwater must be found. The re-use of the contained water will be considered.

WIND

Tshwane city is located between parallel mountain ranges running in the east –west direction that forms the natural boundaries to the north and the south. These ranges directly influence the air movement patterns. In summer 41% of the days are breezy and winds are predominately east – north easterly to east – south –easterly. During the winter 60% of the days are breezy and winds are predominately south – westerly with a fair amount originating from the north –east (De Lange, 1999:45).

SUNLIGHT

Sunshine in Tshwane (Pretoria) varies between 60% during winter and 80% during summer.

With the above information in mind a relevant solar architecture needs to be found within the context. Solar architecture requires an architect to refocus on quality of design at all levels.

With solar qualities in mind, we are presented with a challenge to design in the name of architecture, a climatically – aware response to the need of the shelter. This requires technical discipline in planning and especially giving attention to detail in designing openings, shuttles, shading and the envelope.

The selection of materials will thus not be made on visual criteria alone. Materials have varying thermal properties. These varying performances implicate careful choice and careful design. Responding to the bioclimatic challenge will permit spaces which respond to peoples basic needs for natural day lit, harmonious comfort in their built environment /surroundings (De Lange, 1999:46).

CONCLUSION

The site analysis and investigation has revealed the following design generators:

- Movement/route /linkage of pedestrian and vehicles
- Collection/gathering /meeting of people and vehicles.

- Climatic conditions of the site
- The need for a special place (landmark).