

One example for a more direct connection is the way we read large-scale environments no matter whether it is real world like my hometown or a virtual one like an online world. We gradually form a cognitive map based on certain key features and navigate through the world based on this map. Architectural theorists like Alexander on Lynch have done extremely valuable work in precisely this area and a range of research projects has shown that the same ideas apply to virtual environments.

Jenkins; 2009



CHAPTER 2

context



Figure 2-1. Map of the world at night.
The map clearly indicated the concentrations of economic activities all around the world.
Gauteng forms a hub in the African context.

2 Physical Context

Where the context of people is concerned, the edges are hard to define. They are only limited by their means of transportation, a barrier that is becoming easier to breach with projects like the Gautrain and the Rapid Bus Transportation system.

The 21st century can be viewed as the century of the city (Landry 2000: xiii).

The centre point of civilization has always been cities. They offer the most productive centers in the economy.

Because of the number of people in cities they have become places where local and global cultures meet. Cities continue to grow because people are drawn to them for work, pleasure, politics and conquests.

African, particularly, South African cities face unique challenges, due to their history and layout. The cities are required to compete with global cities with regards to service delivery, but they are held back by problems of inadequate infrastructure, as well as economic and social problems, ie. unemployment and poverty [figure 2-1].

Children are at the heart of the problem. They cannot contribute enough to the economy of a city to be regarded as a resource. Neither do they benefit from the evolving economy around them.

“The urban site is not a stable place, but instead a transitory and multivalued space - an aggregation of ever shifting scales, programmes and actors, all set within a temporal framework that holds both prior traces and future modifications” (Kahn 1995:199). Cities need to adapt and change constantly to increase their efficiency, and to provide the people with the necessary resources to accomplish their individual goals.

“All cities are places of multiple intensities and layers. The intersection of intensities is not that of fixed objects and identities with clear boundaries. Rather, it is an intersection that ‘frees’ pieces of objects and identities from specific constructive enclosures to new layers and formations” (Simone 2005: 9)

Sites are located in urban contexts that should be analyzed on different scales:

- 2-1. **Global**
- 2-2. **Regional**
- 2-3. **Metropolitan**
- 2-4. **Local**
- 2-5. **Direct**

Africa _	Global
Gauteng _	Regional
Tshwane _	Metropolitan
Urban Framework _	Local
Site _	Direct





Figure 2-2. World - South Africa

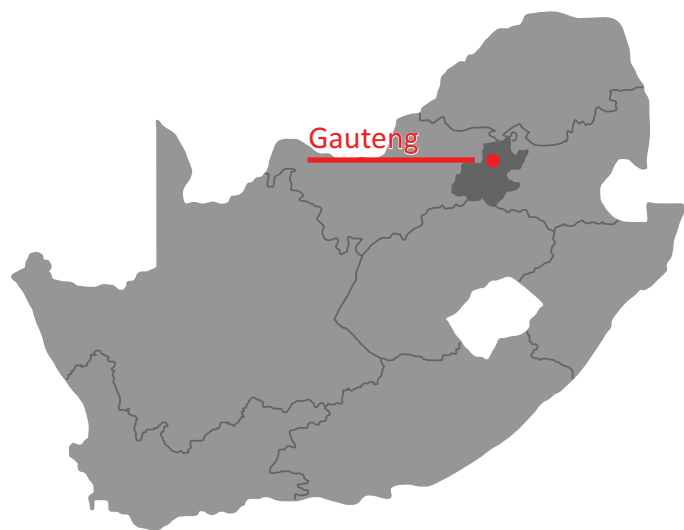


Figure 2-3. South Africa - Gauteng

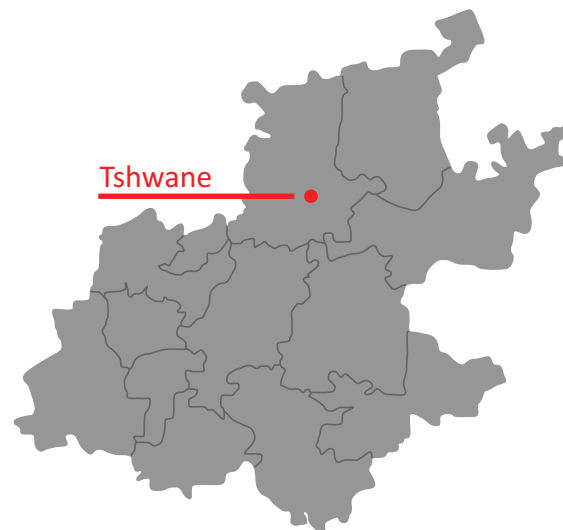


Figure 2-4. Gauteng - Tshwane

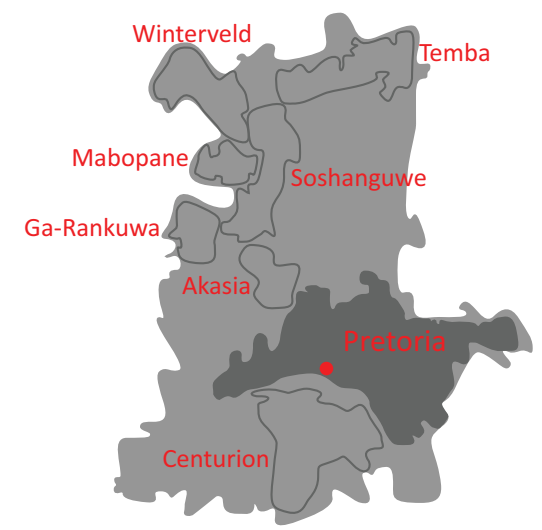


Figure 2-5. Tshwane - Pretoria

2-1 Global Scale

Africa in Context:

Africa is the world's second-largest continent. At an estimated 30.2 million km² it covers 6% of the Earth's total surface area and 20.4% of the total land area. The continent is surrounded by the Mediterranean Sea to the north, both the Suez Canal and the Red Sea along the northeast, the Indian Ocean to the southeast, and the Atlantic Ocean to the west.

The continent has 54 states, including Madagascar and various other island groups. As of 2009 the continent was home to a billion people. This accounts for about 14.72% of the World's total human population.

The climate of Africa varies widely. The northern half is primarily desert, while its central areas contain both savanna plains and very dense rainforest regions. The southern areas contain arid regions like the Namib Desert, as well as more tropical areas. (Wikipedia; 2010)

South Africa:

At the tip is the Republic of South Africa with 2,798 km of coastline.

Bordering countries include:

Namibia, Botswana, Zimbabwe, Mozambique, Swaziland and Lesotho.

South Africa is classified as semi-arid but the general climate is temperate, because it is situated in the milder southern hemisphere. The fact that the country is bordered by the Atlantic and Indian Oceans on three sides, also stabilize the climate. From the east the land quickly rises over a mountainous escarpment to a plateau known as the Highveld.

In the African context, South Africa is regarded as a capital State. South Africa has the biggest economy and forms a precedent for other African Nations to follow or aspire to. The heart of the South African Economy is located in Gauteng [fig 2-1].

2-2 Regional Scale

South African Provinces and Population:

Gauteng	10 451 713	Mpumalanga	3 643 435
Kwazulu-natal	10 259 230	North West	3 271 948
Eastern Cape	6 527 747	Free State	2 773 059
Western Cape	5 278 585	Northern Cape	1 058 060
Limpopo	5 238 286		(Wikipedia; 2010)

Gauteng in Context of South Africa:

Gauteng is by far the smallest province but houses the largest number of people. The Province forms the economic hub of the country with well established connections to the neighboring countries in the north through the Platinum Corridor. It also has major transport links with the harbours on the east coast, as well as the rest of the country to the south-west.

Predominantly the province consists of two Metropolitan cities: Johannesburg and Tshwane. Together with Ekurhuleni they form part of the Gauteng Conurbation (City of Tshwane 2007:10)

Surrounding them are several smaller council districts.

The phenomena of urbanization and sprawl, is most visible in Gauteng with an influx of people from the northern countries looking for employment.

A social upliftment project in this region would benefit a wider group of people.

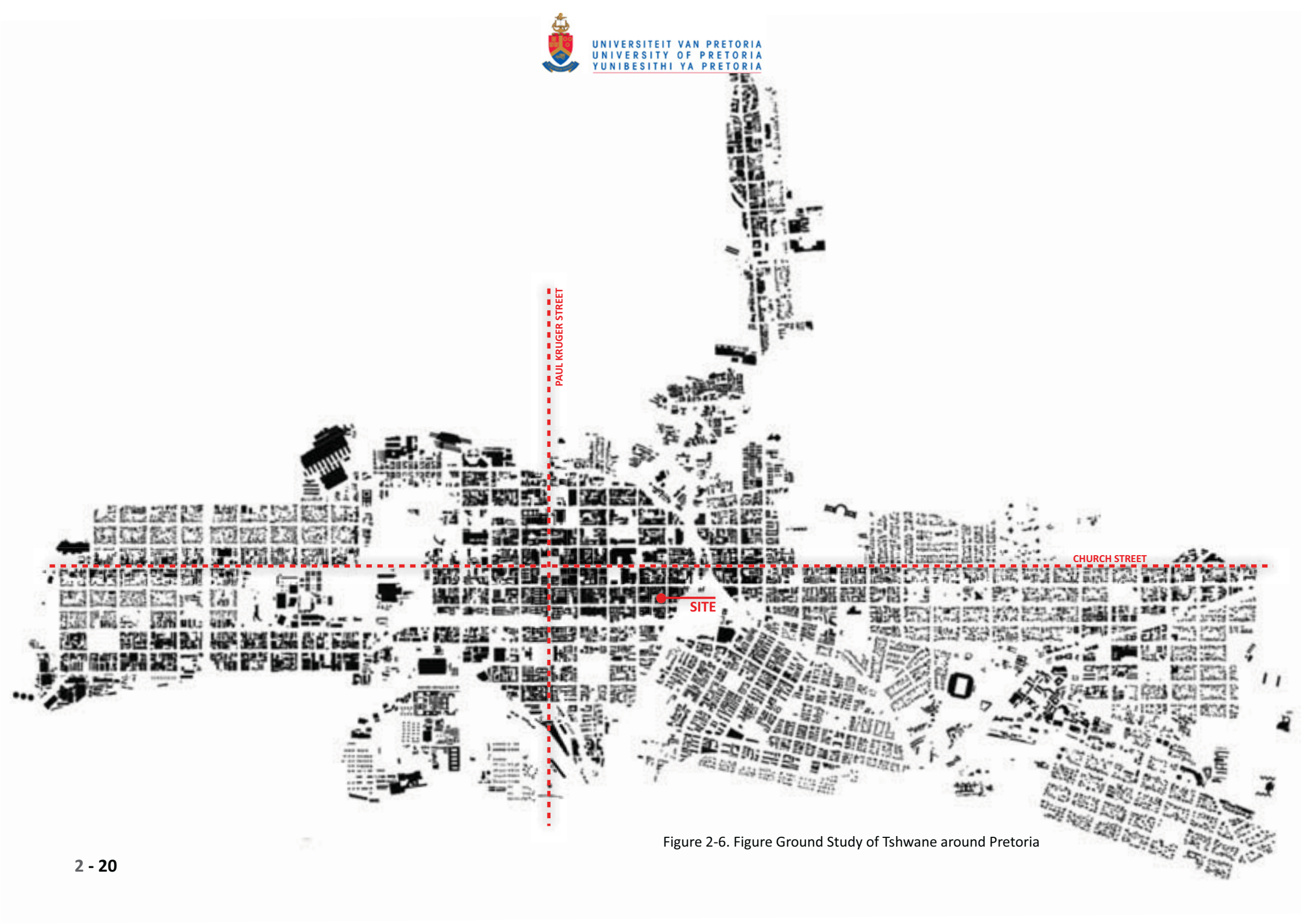


Figure 2-6. Figure Ground Study of Tshwane around Pretoria

2-3 Metropolitan Scale

The City of Tshwane Metropolitan Municipality was established on 5 December 2000 and is made up of 13 former city and town councils. The Municipality covers an area of 2,198 square kilometers and consists of the following areas:

- Akasia
- Atteridgeville
- Centurion
- Crocodile River
- Eersterust
- Ga-Rankuwa
- Hammanskraal
- Laudium
- Mabopane
- Mamelodi
- Pienaarsrivier
- **Pretoria**
- Soshanguve
- Temba
- Winterveld

There are around 2,200,000 people living within the borders of Tshwane; 72.65% black, 23.84% white, 1.99% coloured and 1.52% Indian or Asian. Tshwane has an average density of 1,000.9 people per square kilometer. (Wikipedia; 2010)

Originally the city consisted only of the area now known as Pretoria. The area between the Apies river and Steenhoven spruit was laid out according to an ancient Roman grid system. The city layout is characterized by an orthogonal street layout. There are two main axes namely; the *Cardo et Decumanus*. The axes normally cross in a geographical important place that became a spiritual centre. In Pretoria, Church Square is the centre point where Paul Kruger street, the North-South *Cardo*, crosses Church street, the East-West *Decumanus* (Pienaar 2009) [figure 2-6].

The urban development predominantly spread in an east and west direction. With 40% of the population living in the central urban areas. The majority of residents in the city live on the outskirts and relies on public transportation (Appelyard 1983:11).

Within this context the problems the city centre has are clear:

- The shortage of usable open land. Currently the open spaces are inaccessible.
- Parks and Green Spaces are spread out over the city with no coherent link.
- There is a definite lack of public facilities and amenities.
- Transport is dominated by streets designed for cars and not pedestrians.



Figure 2-7. Logo of City of Tshwane

2-3-1 Bus Routes

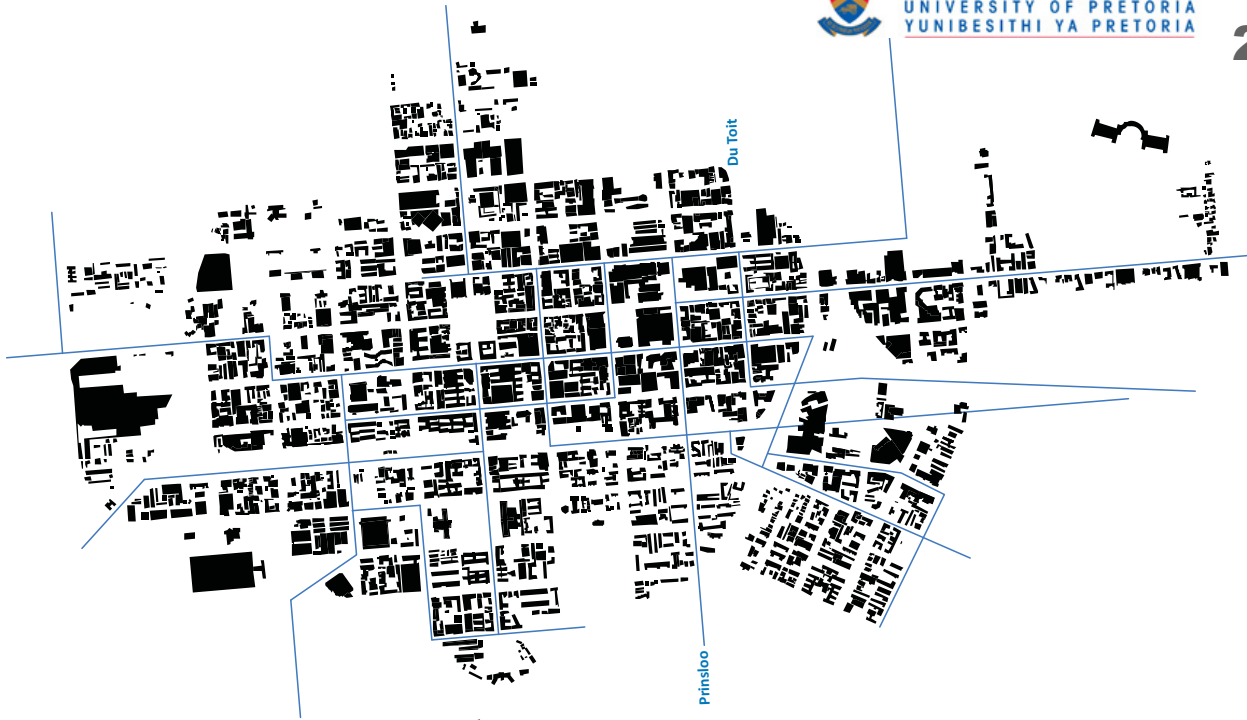


Figure 2-8. Figure ground study is of the CBD of Pretoria, Tshwane. Bus Routes

The figure shows the predominant bus routes through the CBD. The municipal bus system consist of several busses that start or end close to Church Square. The largest amount of busses that depart from Church Square leave in a eastern direction and then split north and south. Almost all the east and south bound busses move through Du Toit street and then Schoeman street. The same number of busses move through Prinsloo Street towards Church Square.

2-3-2 Pedestrian Movement



Figure 2-9. Figure ground study is of the CBD of Pretoria, Tshwane. Pedestrian Movement.

The figure shows the most predominant pedestrian movement through the Central Business District of Pretoria. Most movement is towards or away from Predominant public transportation nodes.

- Church Square is where the municipal bus routes begin and end.
- The Train Station towards the south of the CBD.
- The Taxi Rank in Boom Street.

The secondary movement is in the pedestrian portion of Church street and the commercial activity in Eselen street.

It is clear that the most pedestrian activity is taking place towards the South-eastern portion of the CBD, where the largest concentration of young people are.

2-3-3 Vehicular Movement

Figure 2-10. Figure ground study is of the CBD of Pretoria, Tshwane. Vehicular Movement

The figure shows the Vehicular movement routes through the CBD. The main East - West movement happens along Skinner street and portions of Church street. Schoeman street only handles east bound traffic, and Pretorius street handles west bound traffic.

North and South bound traffic is accommodated by Nelson Mandela Drive, Prinsloo Street and Paul Kruger street.



2-3-4 Prominent Landmarks

Figure 2-11. Figure ground study is of the CBD of Pretoria, Tshwane. Prominent Landmarks

The figure shows links between the most predominant landmarks building in Pretoria namely the Union Buildings, the Train Station, City Hall and the Zoo.

The figure also indicates the position of Green open space in relation to one another in the south eastern portion of the CBD.



2-4 Local Scale

2-4-1 Site Choice

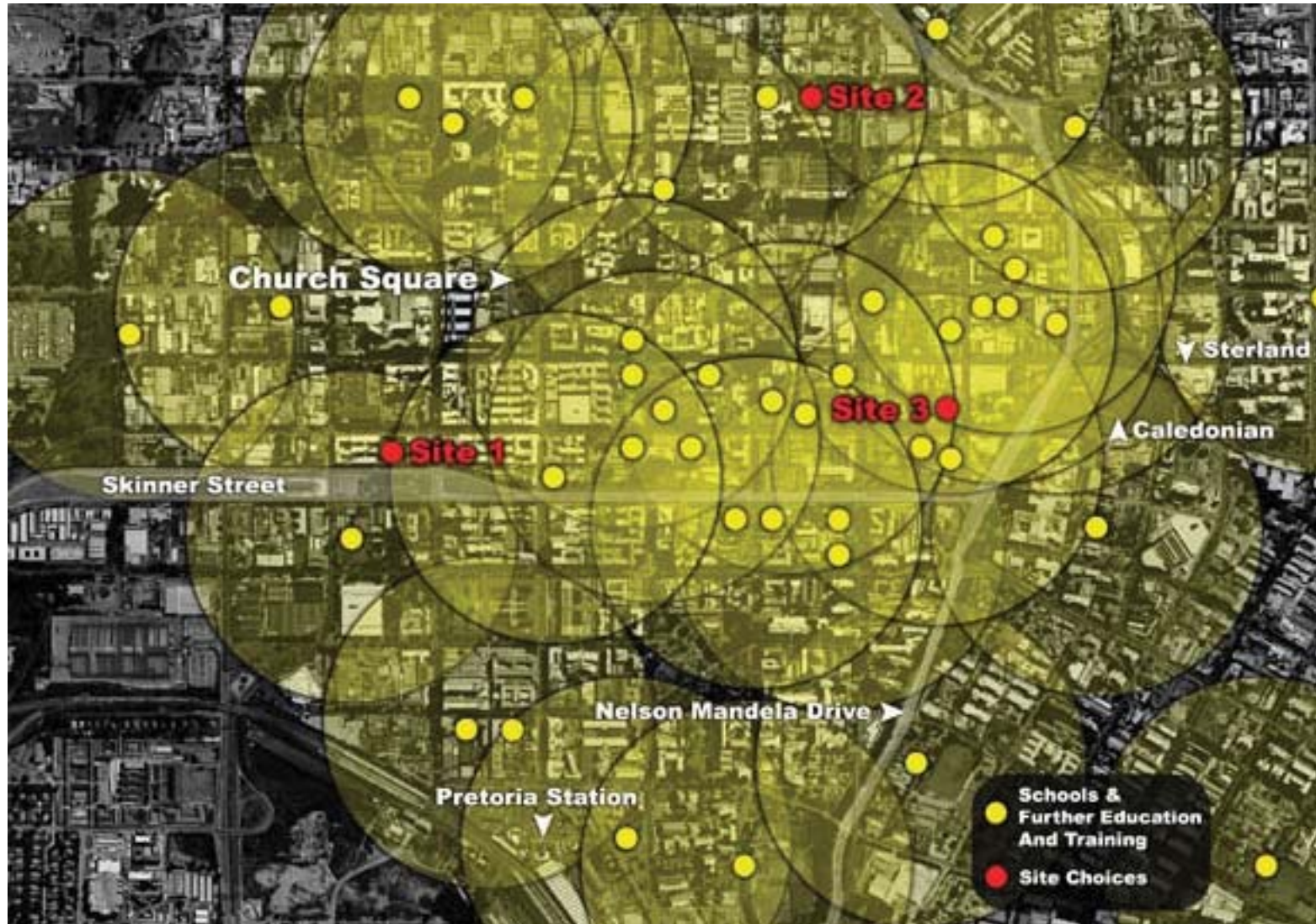


Figure 2-12. Aerial photo showing possible site locations in relation to Schools and FET's in the Pretoria CBD

Site 1

Located on Struben Street between Bosman and Schubart street.

- Strengths

The site connects Schoeman street to Skinner street.

The site is located close to an existing taxi rank on the Skinner street traffic island.

There is reasonable pedestrian traffic in the area.

- Weaknesses

The current building on the site is very dilapidated and needs to be demolished.

There is little commercial activity in the area.

- Opportunities

Currently the site is used for parking. This can serve as income if the programme is formally structured.

A formal link to the taxi rank over Skinner street could be used for commercial purposes.

- Threats

There is not enough young people in the area to facilitate the critical mass to make the program viable.

Site 2

Located on Schoeman Street between Prinsloo and Van der Walt street.

- Strengths

The site has already been cleared for a discontinued governmental project.

The site is located next to a school that has plans for future expansion.

- Weaknesses

The site is located too far away from green open spaces

The area has very little commercial enterprises. They are not economically viable

- Opportunities

The proposed government taxi rank could serve as general income to fund the building.

- Threats

There is not enough young people in the area to facilitate the critical mass to make the program viable.



Figure 2-13. Aerial photo of site option 1.



Figure 2-14. Aerial photo of site option 2.

Site 3

Located on the corner of Schoeman street and Du Toit street

- Strengths

The site is located near most of the schools and Further education and training facilities.

The site is located central to several green open spaces.

The Caledonian sports grounds, Burgers park and Church square.

The buildings on site have little historical significance.

The municipal bus route pass by the site.

- Weaknesses

Schoeman street is busy and makes access to the site difficult.

The sidewalks are narrow.

Far away from any taxi rank.

- Opportunities

There is an open corridor behind the Louis Pasteur hospital that can be transformed into an east-west pedestrian corridor.

- Threats



Figure 2- 15. Site location in context.



Figure 2-16. Aerial photo of site option 3

2-4-2 Urban Framework



Figure 2- 17. Aerial photo showing framework boundaries.



Figure 2-18. Typical street section of Graduation City Urban framework proposal.

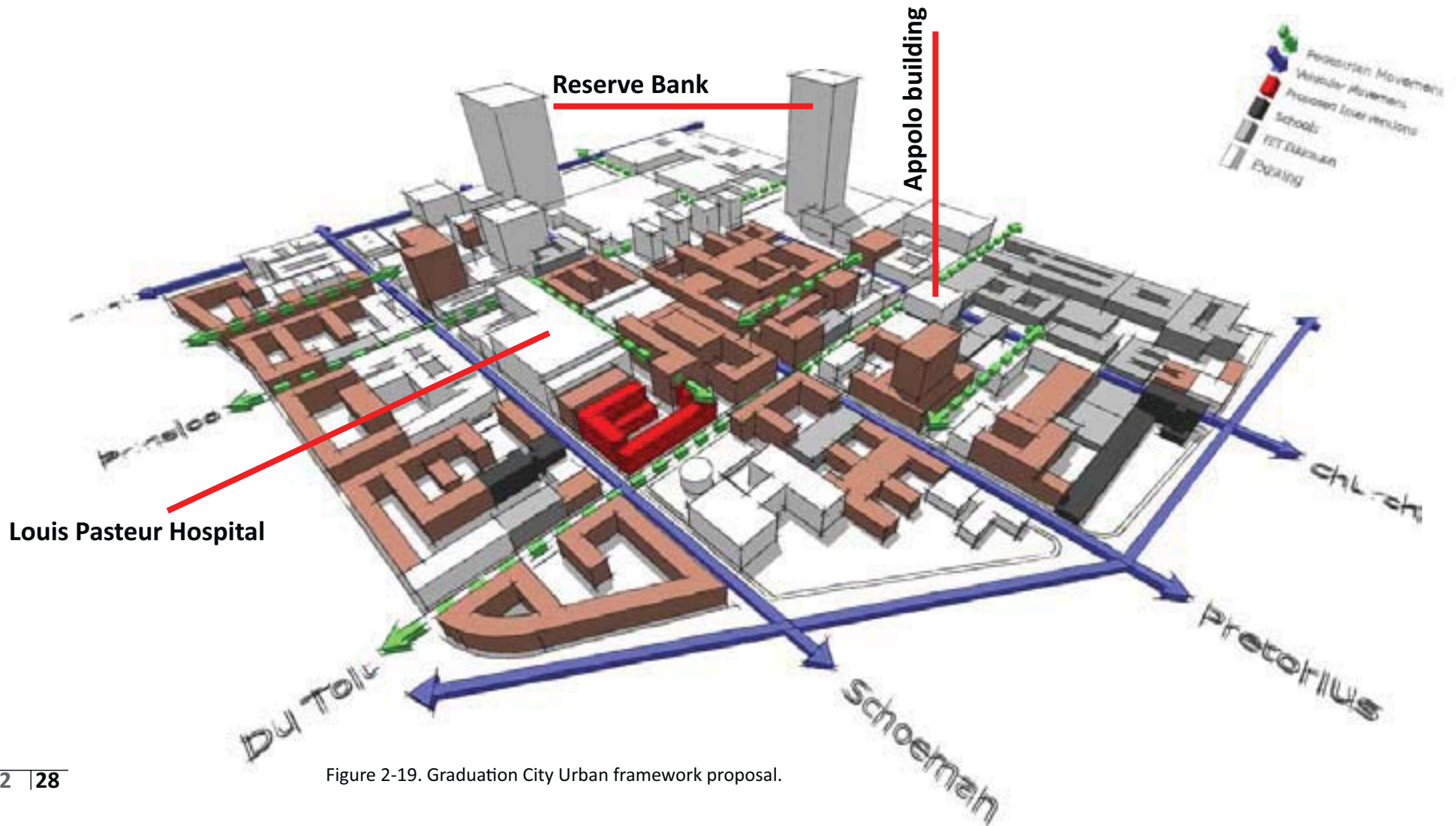


Figure 2-19. Graduation City Urban framework proposal.

Graduation City

Graduation City as an Urban Framework proposal is based around the existing education institutions in and around the CBD of Pretoria.

The framework is based on the principal that educational institutions share infrastructures and facilities in order to provide a higher level of education, but reducing the cost.

The framework is focusing on the area between Van der Walt Street; Nelson Mandela Drive; Skinner Street and Vermeulen Street, the eastern portion of the CBD. This region currently has the highest number of educational institutions.

The framework relies on the existing institutions to remain in the precinct. New institutions are encouraged to locate themselves in this region. Additional infrastructures catering for a younger demographic are also encouraged to locate themselves in this region.

Currently the area consists of a large number of low density industrial style buildings. These buildings typology is to be replaced by mixed use buildings of a higher density. All new developments should respond to, or try to enhance the existing buildings.

Movement:

The main North/South vehicular movement should happen along Nelson Mandela drive on the eastern edge of the precinct and along Van der Walt Street on the western edge.

East/West movement is already articulated by Pretorius and Schoeman streets. This is to remain the predominant movement routes.

Pedestrian Movement through the precinct is encouraged. The main routes currently consist of Du Toit and Prinsloo Streets. These movement corridors are to be upgraded with better street crossings and sidewalks, but pedestrian arcades through city blocks should be introduced where possible.

Pedestrian crossings are to be upgraded. Pedestrian movement should be enhanced by regulating traffic flow at the new arcade and street intersections.

Street edges and sidewalks:

The existing system of parallel and perpendicular parking on street edges are to remain, but off-street parking is to be provided in new developments where possible.

All sidewalks in the precinct are to be upgraded using inclusive design principals, where there are no steps or bumps.

All sidewalks are to be a minimum of 3m wide. Green Structure including trees and planters should be introduced along the pedestrian circulation routes, existing and new.

Street furniture including dust bins, benches and lighting are to be provided along pedestrian routes. The street lighting to be provided should be on a pedestrian scale where possible.

Sidewalks should be covered by canopies protruding a minimum of 1,5m out of the adjacent buildings.

Different textures can be introduced to define spaces on the sidewalks.

Excessive signage along pedestrian routes for information and orientation should be introduced.

Buildings:

The Ground Floor of buildings should be designed for Commercial purposes that respond to the pedestrians on the sidewalk. The floors above may be used for offices or residential.

Buildings placed adjacent to one another should form continuous street facades, but the corners at traffic intersections should step back to provide a better visual line and create spaces for vendors, and pedestrians to wait.

All buildings are to be a minimum height of 3 stories. Buildings lower than 6 stories may have a flush façade. Buildings higher than 6 stories should incorporate a step back of 1,5m minimum from the 4th floor upward.

In General a courtyard typology is encouraged.

An Upgrade of the Caledonian Sports grounds is proposed. The facility should be semi-public in order to allow the educational institutions to gain access.

East

Figure 2-20. Panoramic of south eastern portion of CBD as taken from the roof of the Appolo Building.

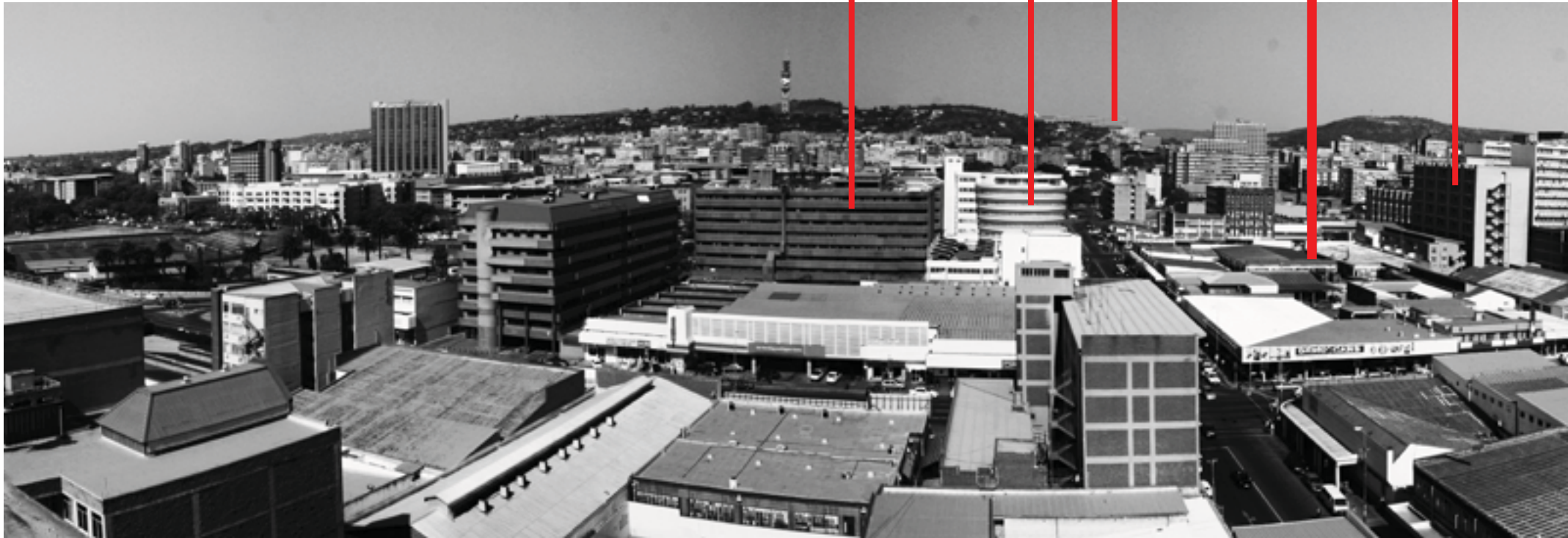
Mediform Hospital

Colosseum Hotel

Unisa

Site

Louis Pasteur Hospital





2-5 Direct Scale

Latitude: 22° 44' 50.3" South
Longitude: 28° 11' 53.3" East
Height Above Sea Level: 1335m
(Handheld Global Positioning System Device)

The proposed site for the Youth Centre is located on the corner of Schoeman Street and Du Toit Street. The site is to the east of the Pretoria CBD near the Apies River channel.

Currently the site is built up with low scale single story industrial type buildings. The surrounding buildings include the Louis Pasteur Hospital at 10 floors and the Tshwane Municipal Department of Finance at 8 floors. Across the road the Colosseum Hotel and the Mediforum Hospital frames the site again with a height of 8 floors.

The low scale of the site forms a hole in the skyline of the city.

Existing infrastructure

The existing Municipal Bus routes use Du Toit Street and Schoeman Street to move through the precinct.

Currently the North South Pedestrian movement happens along Prinsloo and Du Toit Street [figure 2-19], with a noteworthy amount of pedestrians at Church Street and at the crossing of Skinner Street and Nelson Mandela Drive.

There are 16 educational institutions within a five minute walk of the site [figure 2-12].

Implications of Urban Framework

There is a pedestrian arcade running through the site in an east-west direction behind the Louis Pasteur hospital [figure 2-19]. The sidewalk on the street need to be upgraded since it forms a major pedestrian route.

The buildings on the northern and eastern side are to be built up as well. **2|31**

2-5-1 Site Context



Figure 2-21. Aerial view of site and context.

2-5-2 Climate of Site

Tshwane is located in north eastern portion of South Africa in the transitional area between the Highveld and the Bushveld.

The entire CBD of Pretoria is located between 2 ridges; the Magaliesberg to the north and Muckleneuk/Salvo kop to the south. The ridges protect the City from extreme temperatures and excessive winds.

Daylighting:

During January and December the sun rises at around 5:00 am and sets at around 6:00 pm.

During March and August sunrise happens at around 6:00 am and sets at around 5:00pm.

May to August the sun rises at around 6:30 am and sets at around 4:30 pm.

Temperatures:

Winter minimum:	4 C°
Winter maximum	22 C°
Summer maximum	32 C°
Summer minimum	18 C°

Humidity:

Winter minimum:	29% (Midday)
Winter maximum :	57% (Morning)
Summer minimum:	48% (Midday)
Summer average:	75% (Morning)

Rainfall:

Between 494mm per year and 1069mm per year. With an average of 686 per year consisting mostly of summer thunder storms. Hail storms are possible.

Cloud Cover:

Range from 13% in July to 54% in December
Average of 33%

Wind:

The prevailing wind is calm and blows mostly in an east- west direction because of the ridges framing the city.

Cold winter winds are from the south.

Radiation:

89 giga watt solar radiation per year

Sun Angles:

Winter Solstice:	40°
Summer Solstice:	88°
Equinox:	65°

(Napier A 2000:9 & SA Weather Service 2010)

Month	Rainfall		Temperatures	
	Average Monthly (mm)	Average number of days >= 1mm	Average daily maximum	Average daily minimum
January	136	14	29	18
February	75	11	28	17
March	82	10	27	16
April	51	7	24	12
May	13	3	22	8
June	7	1	19	5
July	3	1	20	5
August	6	2	22	8
September	22	3	26	12
October	71	9	27	14
November	98	12	27	16
December	110	15	28	17
Year	674	88	25	12

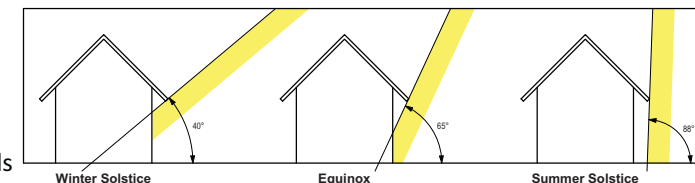
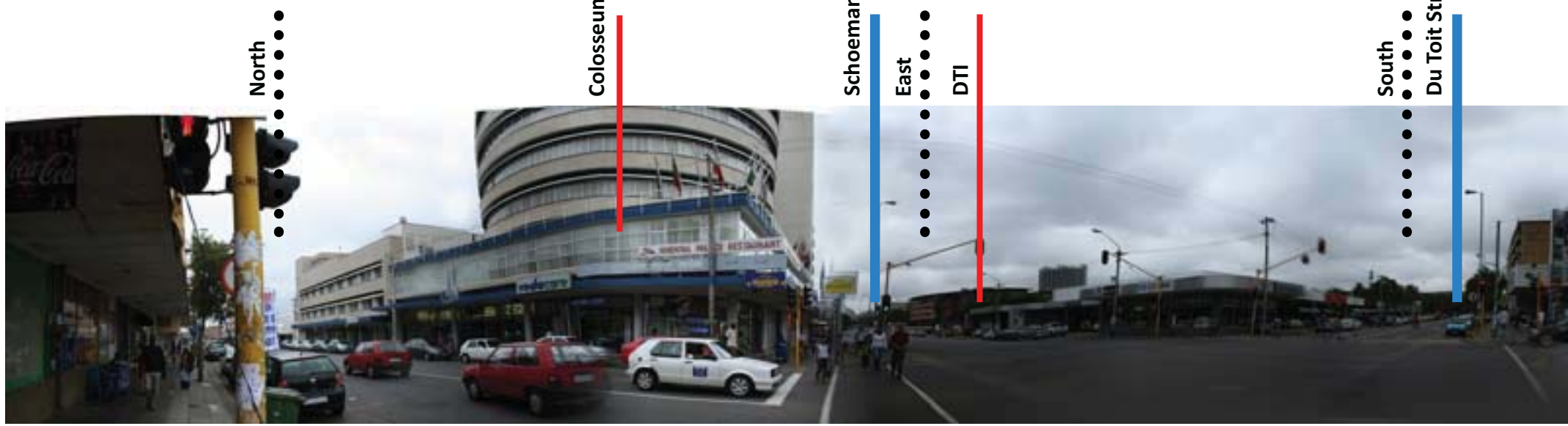


Figure 2-22. Sun Angles

2-5-3 Visual Context



North

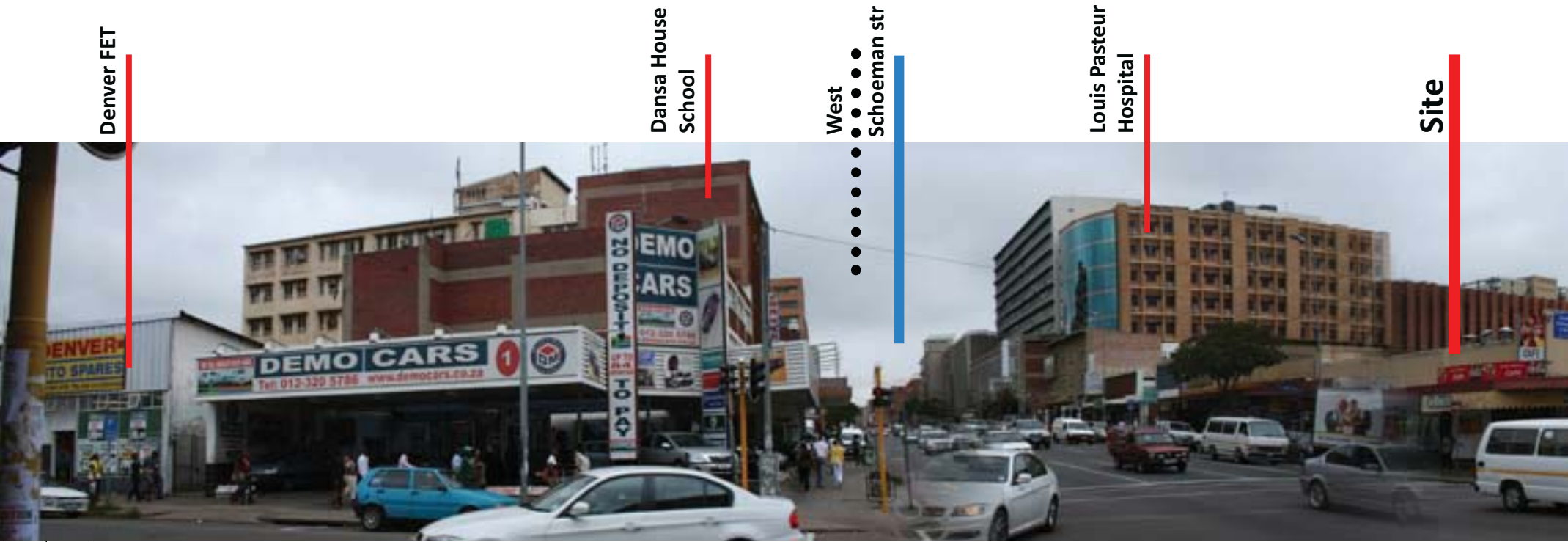
Colosseum Hotel

Schoeman str

East

DTI

South
Du Toit Str



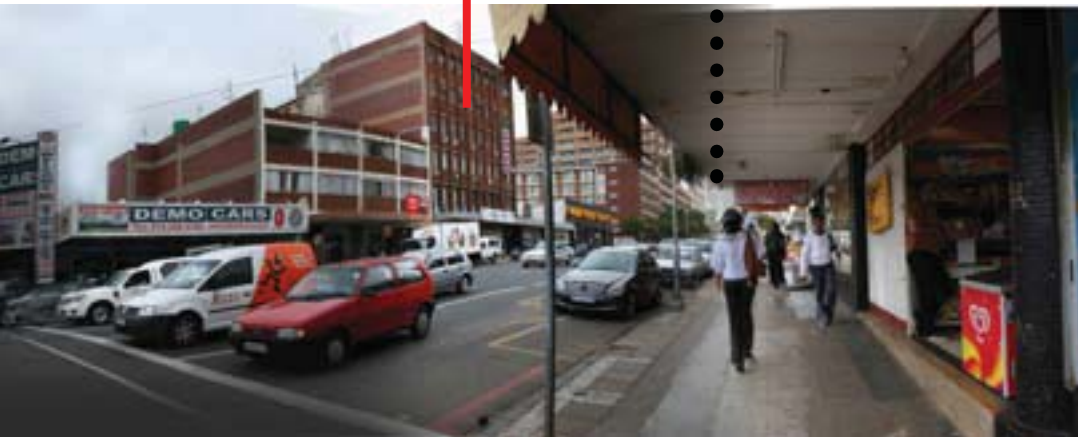
Denver FET

Dansa House
School

West
Schoeman str

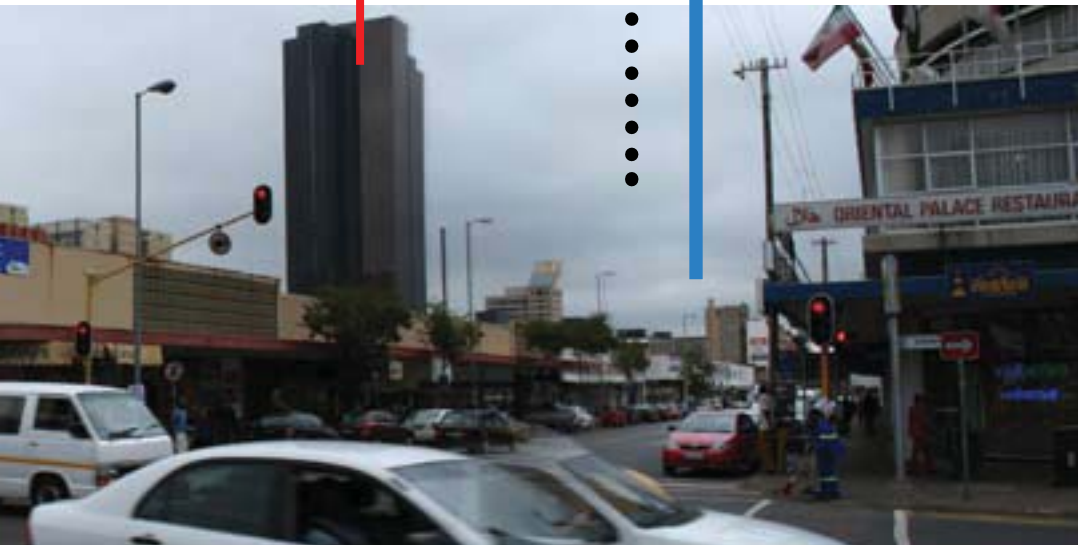
Louis Pasteur
Hospital

Site



Dansa House School

West



Reserve Bank

North
Du Toit str

Figure 2-23. Panoramic photo away from the site on the corner of Du Toit street and Schoeman street. Photo is taken through 270 degrees from North to West.

Figure 2-24. Panoramic photo towards the site on the corner of Du Toit street and Schoeman street. Photo is taken through 120 degrees from South-West to North-East.



North



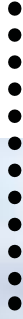
Single story industrial building



Colosseum Conference Centre



East



Residential Building



Dansa House School



Single story industrial building



Colosseum Hotel



South

Residential Building



West

Figure 2-25. Panoramic photo away from the site. Taken from the centre of the block in Du Toit street. Photo is taken through 180 degrees from North to South.

Figure 2-26. Panoramic photo away from the site. Taken from the centre of the block in Schoeman street. Photo is taken through 180 degrees from East to West.