i hub

@ Pretoria Station Square

orientation through architectural intervention

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Degree: Master in Architecture (Professional)

Research Field: Heritage and Cultural Landscapes

The Main Function of the Building: An Orientation and Information Facility

Proposed Project's Address: South East of the Historical Sunken Garden Square that forms the junction between Scheiding Street and the Southern axis of Paul Kruger Street, just North of the Historical Pretoria Station Building, found in Pretoria, Tshwane, Gauteng, South Africa.

Submitted in fulfillment of part of the requirements for the degree Master in Architecture (Professional), in the Faculty of Engineering, Built Environment and Information Technology, University of Pretoria.

November 2009

Summary Samevatting

Die voortel is vir die ontwerp van `n inligting en toeriste hulp sentrum in die omgewing an Pretoria Stasie. Die voorgestelde ontwerp will `n gebou daar stel wat rigtinggewend is vir die toeris of reisiger met aankoms aan die stad, of dit vir die eerste keer is of op n daaglikse basis is. Die gevoeglikheid hiervan is die skep van `n omgewing vir inligting, wag geriewe, ontspanning, kommunikasie, eet, rus, reis beplanning en so voorts. Dit is n sentrum van sosiale aktiwiteite wat `n positiewe wissel werking bied aan gebruikers en verbygangers met die daaglikse gebeure by Pretoria Stasie as die agtergrond.

The proposal is to design an information and orientation facility, in the vicinity of Pretoria Station. The proposed design will involve a building that seeks to orientate a tourist/commuter on entering the city, whether it is for the first time or on a daily basis. The resulting environment will provide facilities for informing, waiting, relaxing, communicating, eating, planning and other travel-related rituals. It is to be a hub of social activity that interacts positively with all users and passersby, serving as a backdrop for everyday activities that occur at Pretoria Station.

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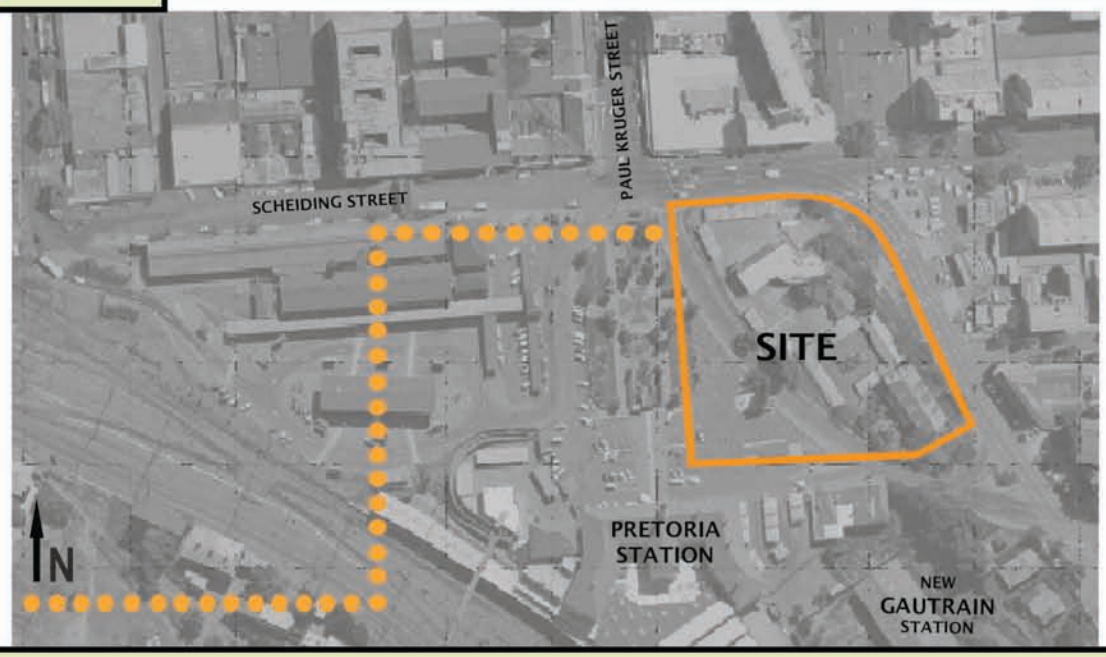
The Site



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List of Terms and Abbreviations

CBD: Central Business District

DPW: Department of Public Works

HIA: Heritage Impact Assessment

SADC: The thirteen countries, excluding South Africa, that belong to the Southern African Development Community (Statistics South Africa 2009)

SDF: Spatial Development Framework

TICP: Tshwane Inner City Project

UNISA: University of South Africa

UNWTO: United Nations World Tourism Organisation

ZAR: Zuid-Afrikaansche Republiek

Thank You

To my incredible family; Mom, Gran and Scotty. Thank you, not only for providing financially, but also for your continuous encourgagement and support, the late nights spent helping, the days spent running around and the never-ending supply of tea, coffee and chocolate.

To Gary White; for his amazing assistance throughout the year.

To Jacque Laubsher; for giving guidence and bringing focus to my studies this year.

To Lloyd; your belief in me and your interest and enthusiasium kept me going.

To MEG Architects; I am so grateful for your unwavering understanding and support throughout the year.

To Stacey, Nicky and Sarah; your friendship and overwhelming support this year, particularly near to 'crunch time' has astounded me. I am so blessed to have you all in my life.

To everyone who touched my life this year and brought me that much closer in the slightest of ways...thank you!!!

I've been walking in the same way as I did
Missing out the cracks in the pavement
And tutting my heel and strutting my feet
"Is there anything I can do for you dear?
Is there anyone I can call?"
"No and thank you, please madam.
I ain't lost, just wandering"

Round my hometown
Memories are fresh
Round my hometown
Ooh the people I've met
Are the wonders of my world

I like it in the city when the air is
thick and opaque
I love to see everybody in
short skirts, shorts and shades
I like it in the city when
two world's collide
You get people and
the government
Everybody taking different sides

Shows that we ain't
gonna take it
Shows that we are united

Are the wonders of my world

Adele's Hometown Glory Lyrics

CHAPTER 1 - INTRODUCTION

1.1 Background and Context

Urbanisation is a phenomenon that has increased rapidly over the last fifty years. Just over half of South Africa's population is currently living in urban conditions. This number continues to grow rapidly as more and more South Africans gravitate towards the city in search of job opportunities, educational resources, medical services and government amenities (Dewar and Uytenbogaart 1991:10).

Currently, South African cities are not able to sustain the large influx of people that occurs each and every day. Cities at present can simply not cater for each individual's physical, social, psychological and sensory needs (Dewar and Uytenbogaart 1991:17). This has led to a negative perception of the traditional city CBD. Previously, the CBD of a city was considered to the heart of all economic activity. However, cities began to fragment causing the decline of the Central Business District (CBD). The edges became undefined, and low density urban sprawl stretched radially from the city center. The city became not only physically separated, but separated socially, culturally and economically too. An increase in poverty and racial inequality occur as a direct result of such trends. These various separations have lead to the formation of the mono-functional CBD district that occurs today. The city functions as a vibrant, interactive environment during the day, but is empty and intimidating by night (monofunctional). This results in a continuous 'expansion' and 'contraction' of the city each day. The areas most affected by this are those that feed people into and out of the city; hence, the major public transportation nodes. These nodes serve people that can not afford to live closer to the city or own a private car with which to travel to and from their various destinations. It is for these people that public transport amenities are inefficient. It most often occurs also that the public spaces surrounding these heavily utilized nodes are of poor quality, ill-maintained and crime-ridden. These unkempt public spaces give the commuter a first impression of a city and are therefore responsible for the initial experience that a person has on entering.

It has been proposed that densification of the city center, by promoting a layered 'live-work-play' environment, full of diverse choices, will aid in alleviating much of the pressure that South African cities are feeling at present (Dewar and Uytenbogaart 1991:16). This proposal however, needs to occur in conjunction with smaller proposals that will act as slighter urban catalysts; building blocks creating pieces of the greater picture.

The proposed 'i-hub' development aims to act as an urban catalyst in regenerating the urban fabric of the Pretoria Station Precinct. The project will be outlined further in the chapters that to follow.

Fig 1.1 PAUL KRUGER STREET - A view north, towards Church Square. (photo by author)

Fig 1.2 PAUL KRUGER STREET - An intersecting street in close proximity to Church Square. (photo by author)

Fig 1.3 INFORMAL TRADE IN THE PRETORIA STATION PRECINCT. (photo by author)


Fig 1.1


Fig 1.2


Fig 1.3

1.2 Problem Definition

Arriving at Pretoria Station for the first time on the Southern fringe of Pretoria's CBD is a disorientating experience. The existing urban fabric is fragmented, particularly on the site of the Station itself. Various different transport and service amenities are housed haphazardly and in different directions on and around the site. Important information facilities and points of reference are vastly dispersed and inconspicuous. The lack of orientating information at this entry point leaves a potential tourist/commuter feeling overwhelmed and uncertain within their new surroundings. This occurs particularly with regard to first time visitors, and will more often be the case with the introduction of the new GAUTRAIN terminal at the station, which will beyond doubt, bring more visitors to Pretoria's city centre.

The facility that currently caters for tourist and first time visitors is housed in the Old Nederlandsche Bank building in Church Square (See Fig 1.4 to 1.1.7 adjacent). It is a challenge to find due to the lack of signage defining its location. Althought the staff are friendly and helpful, the facility is inadequate as not many visitors can be helped simultaneously. There are no amenities that cater for a person waiting to be helped, directed or collected by a shuttle bus. There are also no facilities such as tour booking offices or travel agents which could aid a tourist in planning their visit. The center is able to provide maps, answer questions regarding the city and then direct a tourist to the necessary centers where travel arrangements can be made. The image that the centre's out-dated facilities portrays, leads to a negative perception, not only of Pretoria's tourism sector, but of the city as a whole.

The South African tourism sector, although functioning well in totality, is able to contribute so much more to the county's economy. It has the vast potential to create jobs locally and improve the perception of the country internationally. The *i-hub* project seeks to address the short-comings of the current facility, as well as provide a transitional environment in which a person visiting the area is able to orientate themselves before moving on. Trans-progamming with facilities such as shops, communication hubs, conference venues, markets, restaurants and cafes, will ensure that the new facility contributes positively to the Station Precinct every hour of the day.


Fig 1.4

Fig 1.5

Fig 1.4 THE OLD NEDERLANDSCHE BANK BUILDING, located on the South-Western corner of Church Square, currently houses the Tourist Information Center for the Greater Tshwane Region. Although the building itself is prominent, its function can easily be overlooked by a new comer or passer-by. (photo by author)

Fig 1.5 SIGNAGE directing one to The OLD Nederlandsche Bank Building is inconspicuous and located in such a way that it only visible when entring Church Square from the South at Paul Kruger Street. (photo by author)


Fig 1.6

Fig 1.6 CHURCH SQUARE'S WESTERN EDGE. This image shows a view towards the North from the entrance of the Tourist Information Center. Church Square's Historically rich architecture is evident in the background. (photo by author)

Fig 1.7

Fig 1.7 THE HOP-OFF TOURIST BUS was introduced three months ago. Tshwane Tourism intends to use the period leading up to the 2010 FIFA World Cup to streamline this new service and add buses to their fleet. The buses take tourists around the city, stopping for brief periods of time at places of interest and relevance. (photo by author)


Fig 1.8

Fig. 1.8 CHURCH SQUARE. This image shows Church Square, towards the East, as seen when exiting the Tourist Information Center. The Statue of Paul Kruger can be seen in the middle distance. (photo by author)

1.3 Aims and Objectives

The 'i-hub' project will provide an engaging information and orientation facility for those visiting Pretoria. It will promote both the culture of Pretoria and South Africa as a whole and in so doing, contribute to the country's tourism sector. An information and orientation facility is the first place a visitor is bound to look for. It is therefore this particular place that will showcase the character of the city about to be explored. The 'i-hub' project should therefore:

- Honour and celebrate the rich layers of valuable heritage found in and around this area.
- Act as a catalyst in rejuvenating the existing urban fabric of the Pretoria Station precinct, in order to optimise the experience of it.
- Strengthen the spatial legibility of the Station site, by re-defining the historical garden edge, therefore improving public orientation.
- Establish a hierarchy of spaces of diverse character which stimulate an individual person's sensory responses.
- Create an environment that is rooted in the local context, but too caters for a variety of difference cultural needs and perceptions.

1.4 Research Questions

Considering the above aims and objectives, the following questions have been posed as a guide towards the final outcome:

a) How can an architectural intervention instil a coherent identity and aid in the efficient functioning of public transport nodes in and around the city?

b) What can be done to enhance the quality of public spaces surrounding these nodes, therefore rendering them safe and usable?

c) How would it be possible to ensure that the experience of entering a city is engaging, positive and rewarding?

d) In what way can the individual become part of the architecture, and therefore experience an environment on a personal level?

1.5 Research Methodology

The method used in collecting, investigating and drawing the conclusions found within this document is two-fold:

1.5.1) Quantitative Research
a) Data Collection and Analysis
This involved the collection and research of relevant writings, framework documents, historical papers and statistics.

b) Field Studies and Observation
This process involved spending time within the context of the proposed project, photographing, drawing and documenting what is seen, heard and experienced first hand.

1.5.1) Qualitative Research
a) Personal Interviews
Potential clients, current and future stake-holders, the municipality as well as a variety of existing users provided valuable information regarding the functioning of the area, as well as future aspirations for the Pretoria Station Precinct.

Collectively, the information gathered through an assortment of research methods provides a basis from which to make relevant design decisions. The research that has been collected, as well as the way in which it informs the design process is documented throughout this study.

1.6 Structure of the Study

This study begins by outlined the background and context of the project. The problem definition is then portrayed and the aims and objectives set. Research questions and methodologies are compiled in order to direct the study. Assumptions and Delimitations are mentioned at this stage.

The contextual relevance of the tourism industry, both globally and locally, is explored in order to orientate the proposed project within the current economic climate and substantiate the necessity for such a project. Particular places of interest within Pretoria and its direct surroundings are then illustrated.

The study goes on to investigate the city of Pretoria, specifically the Inner city. This is an important part of the research process as it provides much essential insight into the development and functioning of the city as a whole. The Pretoria Station Precinct is then is analysed in relation to its surroundings so as to fully grasp the way in which this very important southern gateway functions. A group Spatial Design Framework (SDF) for the precinct is then proposed.

Design influences and the theoretical premise are then outlined. This section consists of an explanation of the intended design philosophy, as well as principals that will be used as design generators. As the study progresses, it will become evident how these specific philosophies are to influence the development of the proposed project.

Precedent studies are then conducted. These studies have been divided into two categories; theoretical precedents and functional precedents. The selected precedents are then critically analysed and conclusions are drawn.

The client, user and programme are outlined at this stage. The proposed programme is outlined, and the accommodation schedule given. Following this, the specific site is investigated within the context of the Pretoria Station Precinct.

The process, from conceptualisation, to the project refinement is illustrated. The various different influences that impact the design decisions made are shown. The end product then becomes evident. Drawings and technical investigations are done in order to demonstrate the detailed design of the project's components. The application of various theoretical philosophies is also demonstrated here.

The study concludes with a financial report, as well as comments and insights regarding the final design.

1.7 Assumptions and Delimitations

Due to time constraints and the availability of information, the following aspects are either assumed or delimited:

a) It is assumed that the proposals put forward by the various development frameworks mentioned in the study are applicable.

b) An application for zoning, the consolidation of erven, as well as the demolition of existing structures (of no historical value) is assumed to have been successful.

CHAPTER 2 - CONTEXTUAL RELEVANCE

Tshwane Tourism

CHAPTER 2: Contextual Relevance

2.1 Introduction

The United Nations World Tourism Organisation (UNWTO) defines the following:

"**Visitor :** refers to any person traveling to a place other than his/her usual environment for less than 12 months and whose main purpose of the trip is other than the exercise of an activity remunerated from within the place visited.

Tourist: (overnight visitor) is a visitor who stays at least one night in collective or private accommodation in the place visited.

Tourism: comprises the activities of persons travelling to, and staying in places outside their usual environment, for not more than one consecutive year,for leisure, business and other purposes. The usual environment of a person consists of a certain area around his/her residence, plus other places he/she frequently visits" (Statistics South Africa 2008).

The above definitions set the stage for the contextual discussion that follows. It is clearly evident that as common as it is to be a foreign tourist, it is also possible to be a local one.

2.2 The Global Tourism Market

The world is currently facing an unprecedented economical crisis which has caused one of the harshest recessions ever experienced. The world's leading economies are officially in recession. While many of the emerging economies, who had initially proven more resilient, are now feeling the effects of this world-wide economiccrisis. Although the tourism industry has taken a knock, interestingly enough, it has not deteriorated at the rate of so many of the other economic sectors. World-wide, international tourist arrivals declined by 8% (see fig.), since the beginning of the economic crisis that began half way through 2008.

A number of sources confirm this figure:

- Air traffic has decreased by 9% world-wide, and
- Hotel occupancy rates are down by around 10%

Europe, South Asia and the Middle East have been hit the hardest. Growth in the tourism sector has however increased by 3-5% in North Africa, Sub-Saharan Africa, Central America and South America. UNWTO forecasts that global tourism will decline by a further 2% during 2009, but will level off (0% growth) by the end of the current year.

The **World Tourism Organisation** is currently focusing on three pillars that aim at maintaining and re-instating the tourism market as a leading economic sector globally.

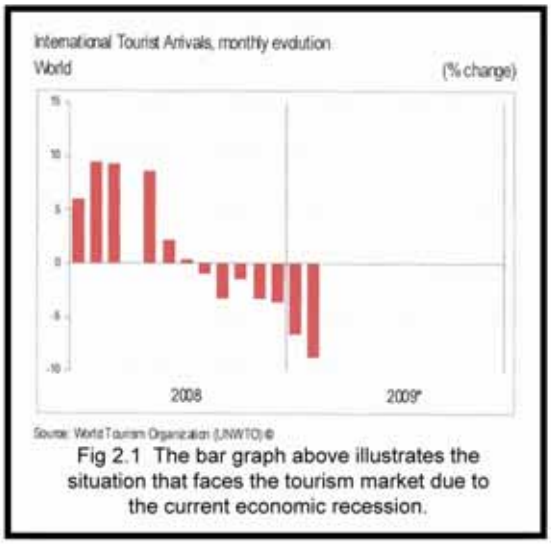


Fig 2.1 The bar graph above illustrates the situation that faces the tourism market due to the current economic recession.

Fig 2.2 The graph above reflects travel trends over the last 3 years. It is evident that the tourism sector has grown over the years despite fluctuations in the economy.

These include:

1. A committee has been established to strengthen the resilience of the market by conducting market related research.

2. National governments have be urged to use tourism as a stimulus in creating jobs and trade, encouraging consumer confidence and therefore promoting economic recovery.

3. The tourism industry is to be seen as a green economy through the use of carbon-clean operations, environmental management and sustainable building design.

Fig 2.3 The above figure demonstrates how the global tourism industry has fluctuated over the years.

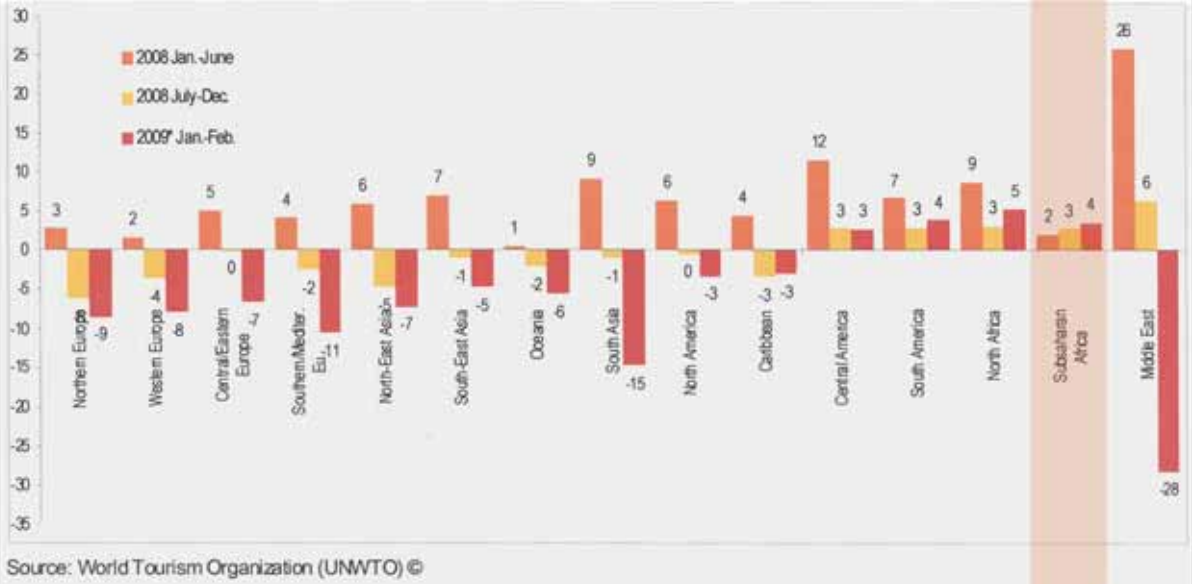


Fig 2.4 The table above shows the percentage of fluctuations with regards to tourism growth in the various different regions of the world. (www.gt.co.za)

South Africa falls under the region classified as 'Sub-Saharan' Africa. The figures indicated that although tourism in the region is not growing as rapidly as prior to the beginning of the economic crisis in 2008, it is however gradually rising. South Africa itself shows an increase of 6% in tourism since January 2009.

2.3 The South African Tourist Market

Since the end of apartheid in 1994, South Africa has seen a steady increase in tourism, each year bringing more visitors than the previous year. 2008 Tourism Minister Marthinus van Schalkwyk predicts that by 2010 South Africa will have reached the 10-million tourist arrivals mark (www.southafrica.info/business/economy/ sectors /tourism-overview.htm). The South African Tourism economy is one of the country's fastest growing sectors, as is evident by the steadily rising contribution that this sector makes to the Gross Domestic Product (GDP). The tourist market provides employment for around 7% of the country's employment. The tourism sector has been ear-marked by government for development of jobs and the enhancement of South Africa's diverse natural and cultural resources.

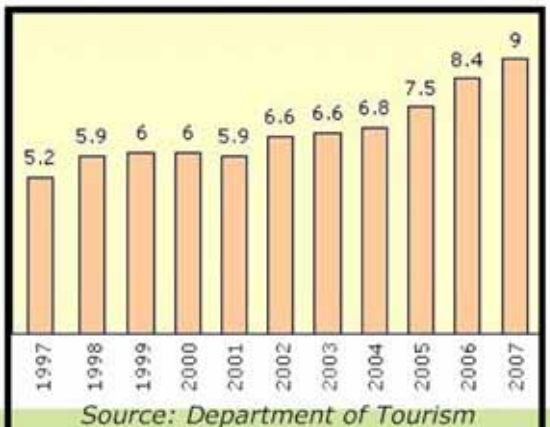
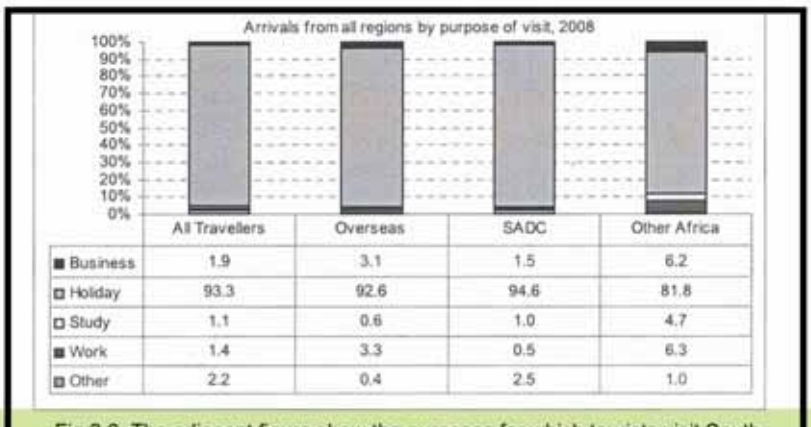


Fig 2.5 The figure above shows how South Africa's tourism industry has grown exponentially over the past year since 1994. (www.gt.co.za)



	All Travellers	Overseas	SADC	Other Africa
Business	1.9	3.1	1.5	6.2
Holiday	93.3	92.6	94.6	81.8
Study	1.1	0.6	1.0	4.7
Work	1.4	3.3	0.5	6.3
Other	2.2	0.4	2.5	1.0

Fig 2.6 The adjacent figure show the purposes for which tourists visit South Africa. It is evident that the large majority of people visit the country for leisure purposes. (www.gt.co.za)

South Africa's tourist market is divided by the Department of Environmental Affairs and Tourism, into different categories:

- ***Cultural tourism:*** South Africa is known for its cultural diversity. This is attributed to the many different ethic groups that have made their own mark throughout the country's history. Each ethnic group brings with it, its own arts and traditions, therefore giving rise to a great variety of cultural experiences. Many culturally significant areas have been deemed by UNESCO as World Heritage Sites. (Fig 2.7)

- ***Eco-tourism:*** South Africa also boasts a great diversity of natural landscapes. The country's wildlife is supported by this rich diversity and offers great exposure to nature. Many ecologically significant areas have also been deemed by UNESCO as World Heritage Sites. (Fig 2.8)

- ***Paleo-tourism :*** Some of the world's richest concentrations of hominid fossils are found at archaeologically significant sites throughout South Africa. These sites, particularly those within the 'Cradle of Humankind' are visited regularly by both tourists and researchers. Many of these sites are UNESCO World Heritage Sites. (Fig 2.9)

- ***Business tourism:*** Business visitors account for around 7% of foreign visits to the county. The South African tourism sector is currently targeting business visitors as they on average spend longer amounts of time in the country. They too are found to spend leisure time exploring the country either before or after conducting their necessary business. Business visitors are also more likely to return for leisure purposes in following years. (Fig 2.10)

- ***Adventure tourism:*** South Africa's vast and diverse topography, from coastline to mountain range, offers many opportunities to take advantage of the great outdoors. (Fig 2.11)

- ***Sports tourism:*** Over 10% of tourists visit South Africa to experience and participate in sporting events. 60-80% of this number is spectators. The South African sports culture is a huge attraction, and will becoming increasingly so with the hosting of the Confederations Cup in 2009 and the FIFA World Cup in 2010. (Fig 2.12)


Fig 2.7


Fig 2.8


Fig 2.9


Fig 2.10


Fig 2.11


Fig 2.12

South Africa's Tourism Categories

The improvement of travel facilitation, by removing obstacles that a tourist may be faced with when visiting, is one way of creating a stimulus that promotes recovery within the tourism sector. The World Tourism Organisation states that, "tourism means jobs, infrastructure, trade and development" (UNWTO 2009:5). This is particularly the case being experienced in South Africa currently, with the preparations for the Confederations Cup and FIFA World Cup well under way. These preparations include the development and upgrading of accommodation, stadiums, road networks and public transport facilities, of which the Gautrain development is prominent. These developments are so important, specifically with regard to road infrastructure. According to Statistics South Africa, travel to and from the country is dominated by road transport. 71.5% of tourists use roads, 26% air travel, only 0,02% use seaports and even less, 0.01%, railways (See Addendum for detail Statistics). South African has a well established and widespread rail network. It is clear to see from the percentages shown, that rail as a mode of transport needs to be promoted in South Africa as an alternative means of transport.

A skills audit performed by the Department of Environmental Affairs and Tourism, prior to 2010 FIFA World Cup preparations reflects that the local tourism industry needs and additional 80 000 employees, three years prior to, and for duration of the event, as well as following it. Currently around 650 000 foreigners visit South Africa monthly. It is expected that an additional 450 000 tourists will arrive in South Africa during the six weeks during which the FIFA World Cup is to take place. Grant Thornton (www.gt.co.za), a consulting company, estimates that the three million visitors to the country for the FIFA World Cup will bring roughly R21.3-billion into the South African economy. R12.7-billion is estimated to be as a result of direct spending and therefore responsible for generating around 159 000 new jobs. It is clear to see from these figures why the tourism industry possesses such incredible opportunities for human resource development. Pieter de Bruin, Head of FNB for Tourism 2007, states that ***"2010 is just 30 days, but tourism growth goes way beyond the event itself"*** (www.southafrica.info/business /economy/sectors/tourism-overview.htm). It is believed that in the years following the events, initial tourists will return to South Africa, therefore increasing its reputation as a world class destination within the market.

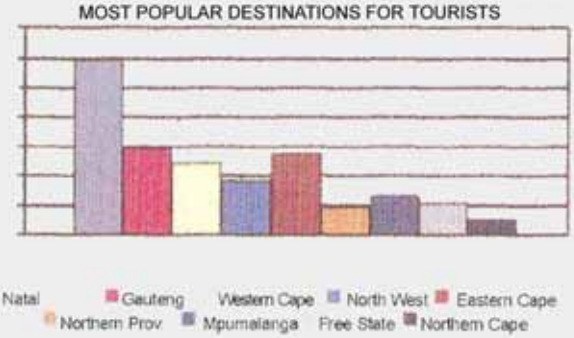


Fig 2.13 When studying the graph shown above, it is clear to see that Gauteng is on of the most popular tourist destinations in the country. (www.gt.co.za)

AVERAGE MONEY SPENT BY TOURIST WHEN VISITING SOUTH AFRICA

ITEM	GAUTENG	S.A.
Airline tickets	7400	7391
Prepaid Holiday expenses	5040	4443
Accommodation	2692	2567
Local Transport	749	696
Food & drink	1688	1788
Recreation	540	526
Shopping/ gifts/ curios	1855	1697
Other	1138	964
TOTAL	**21102**	**20072**

Fig 2.14 The above table clearly reflects that tourists spend more money in Gauteng than throughout the rest of the country. Pretoria, located within the Gauteng Province, should encourage tourists to contribute financially to its tourism sector. (www.gt.co.za)

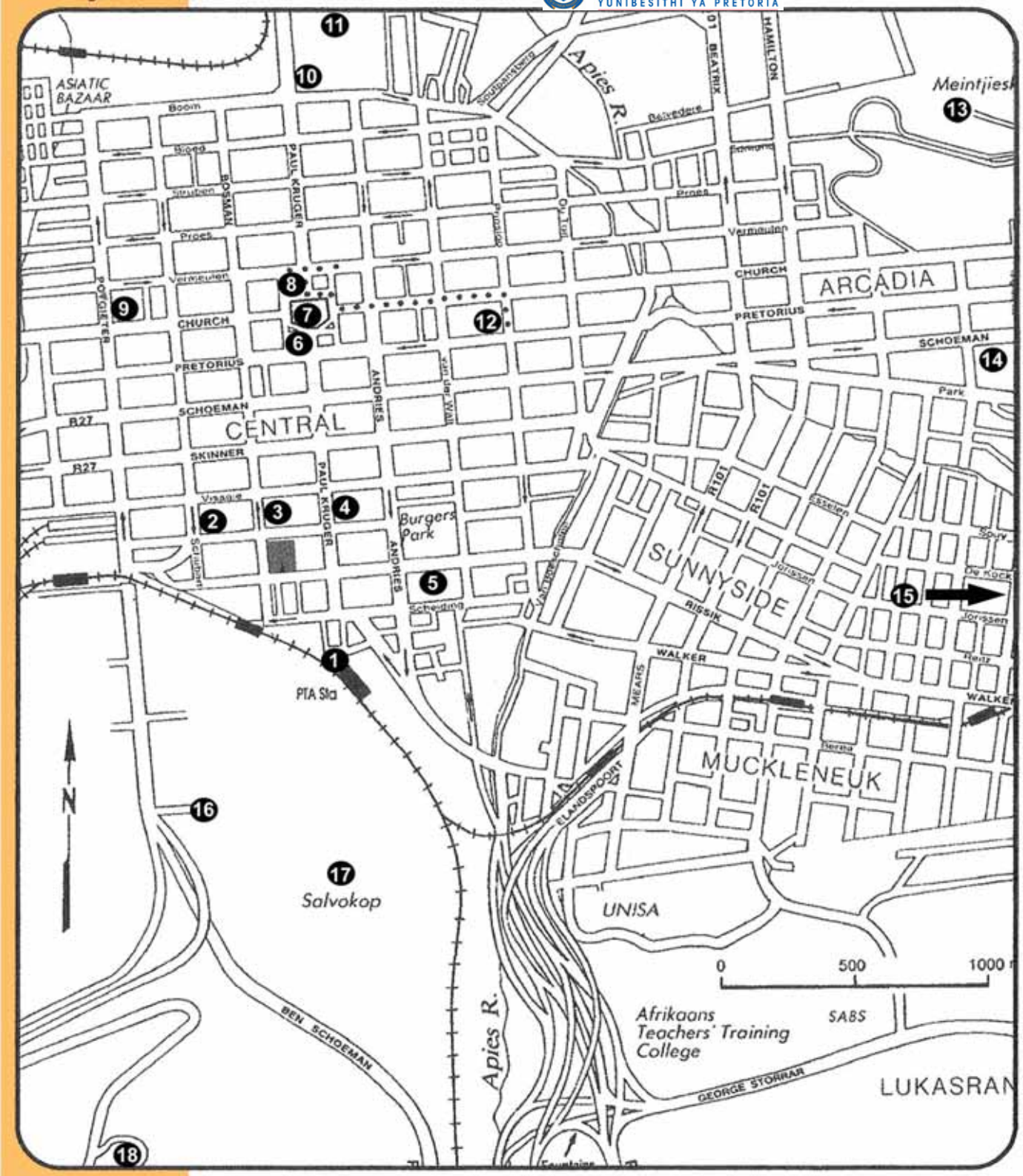
2.3 Tourism in Pretoria

Pretoria is a highly accessible city as it lies approximately 60km North of OR Tambo International Airport. It is geographically en route to popular destinations in Northern Gauteng, Northern Province, the North-West Province (Hartebeestpoort Dam and Sun City) and Mpumalanga (The Kruger National Park). Pretoria therefore forms a central gateway to the Northern part of South Africa as is very regularly frequented by visitors (see Fig 2.16 on the next page).

Fig. 2.15 A MAP OF THE MAJOR ROADS OF SOUTH AFRICA showing the ways in which tourists enter Gauteng, and therefore the City of Pretoria. (AA RSA 2001)

Fig. 2.16 above shows, diagramatically, the routes into, through and around Pretoria. It is these routes that transport tourists to the various destinations not far out of Pretoria. Tourists moving through Pretoria come from the OR Tambo International Airport, or by road from South Parts of the country. These tourists stop in Pretoria en route to destinations further North. Sun City to the North-West and The Kruger National Park to the North-East are the most popular destinations for which tourists head.

Fig 2.29 PRETORIA'S MAIN TOURIST ATTRACTIONS



Pretoria's Tourist Attractions

The proposed site is situated at the heart of these tourist attractions. The Pretoria Station and the proposed development serve as an arrival and departure point, a place at which to orientate oneself before exploring the city and its many attractions. From this point, many tourist attractions can be found in close proximity. These are illustrated graphically above (Fig 2.29), as each would be experienced when departing from Pretoria Station and travelling in a ring towards the North East and back towards the South West.

Pretoria's Scenic Attractions


Fig 2.17


Fig 2.18


Fig 2.19


Fig 2.20


Fig 2.21

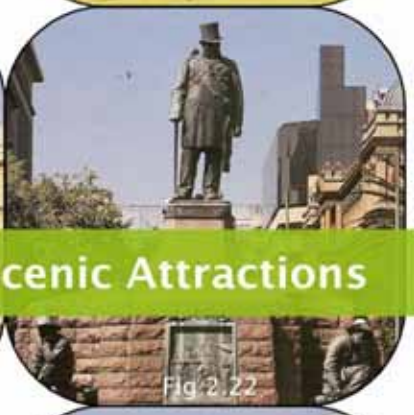


Fig 2.22


Fig 2.23


Fig 2.24

Fig 2.25


Fig 2.26

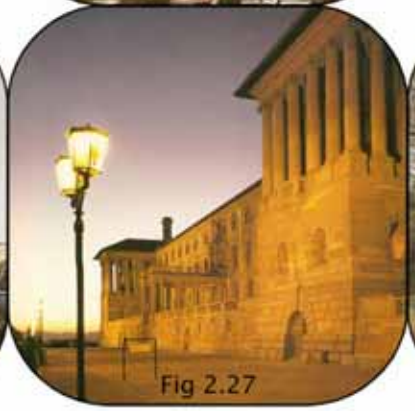


Fig 2.27


Fig 2.28

The images above (Fig 2.17 to Fig 2.28, Heydenrych, 1999), show a few of the many tourist attractions found in and around the City of Pretoria .

1. OLD STATION BUILDING: Designed by Sir Herbert Baker and built in 1914, serves as a reminder of Pretoria's colonial past. (Fig 2.17 Heydenrych, 1999)

2. NATIONAL CULTURAL HISTORY MUSEUM: Showcases the various different cultural identities, past and present, of the country. (Fig 2.18 Heydenrych 1999)

3. CITY HALL: Designed by J Lockwood, showcases Pretoria's architectural heritage.

4. TRANSVAAL MUSEUM: The museum consists of natural science, zoological and paleontology exhibits, all relevant to the history of South Africa, in particular, the old Transvaal.

5. MELROSE HOUSE MUSEUM & BURGERS PARK: This historic residence, built for an affluent Pretoria businessman, showcases the rich use of late Victorian/Edwardian architecture in the city at the turn of the century. (Fig 2.19 to 2.20 Heydenrych 1999)

6. OLD RAADSAAL: This legislative council chamber served as the parliament buildings of the old Transvaal Republic. It shows the various different international influences on Pretoria's architectural legacy.

7. CHURCH SQUARE: The historical center of Pretoria sits at the heart of the city. The Paul Kruger Statue is orientated at its centre. The square is surrounded by historical buildings. (Fig 2.22 Heydenrych 1999)

8. PALACE OF JUSTICE: Designed by Sytze Weirda, this building housed the supreme court of South Africa. (Fig 2.21 Heydenrych 1999)

9. KRUGER HOUSE MUSEUM: Former President Paul Kruger of the old Transvaal Republic resided here. Artifacts collected during his travels can be seen here. (Fig 2.23 Heydenrych 1999)

10. AQUARIUM AND REPTILE PARK: Showcases both local and international specimens.

11. NATIONAL ZOOLOGICAL GARDENS: A host of local and world-wide animal species reside at the zoo, including the well known 'big five'. (Fig 2.24 Heydenrych 1999)

12. THE STATE THEATRE: This complex houses 5 theatres that set the stage for some of the country's leading stage performances. (Fig 2.25 Heydenrych 1999)

13. THE UNION BUILDING AND GARDENS: Designed by Sir Herbert Baker, this building complex houses members of the National Government, including the President of South Africa. Its gardens are often the location of large public and governmental events. (Fig 2.27 Heydenrych 1999)

14. PRETORIA ART MUSEUM: Showcases the works of many historical as well as contemporary South African artists. The collection includes paintings, sculpture, tapestries and ceramics, amongst others. (Fig 2.26 Heydenrych 1999)

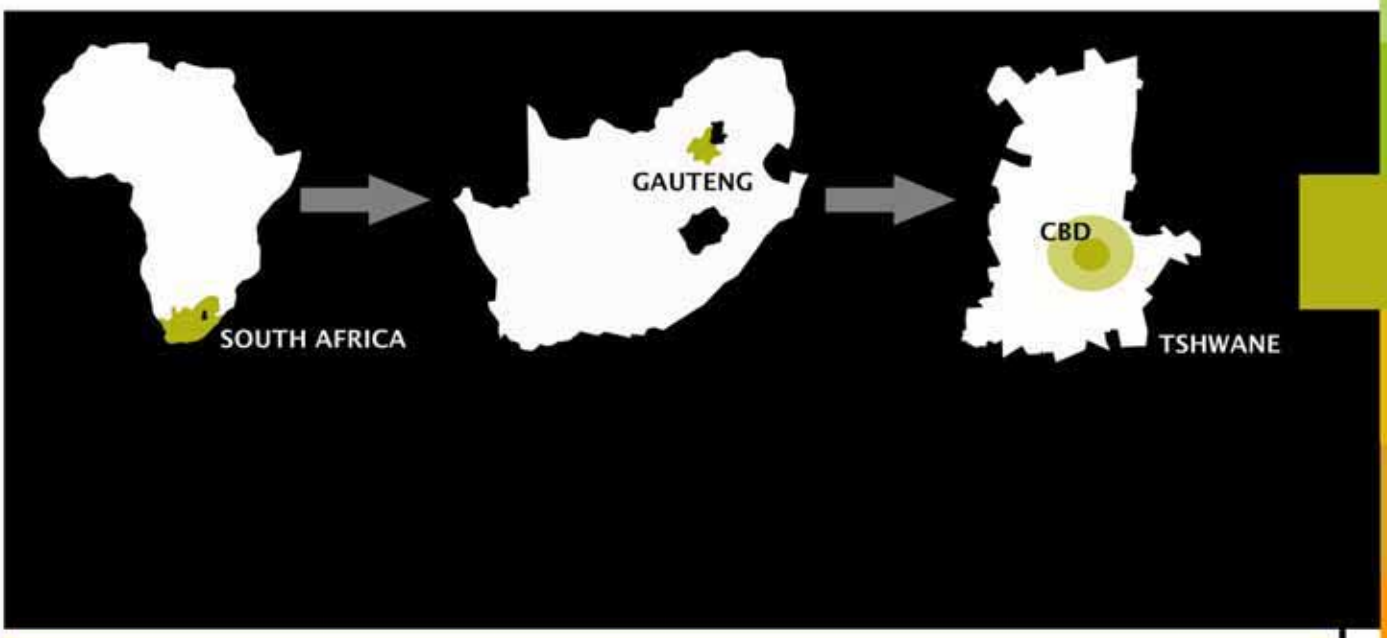
15. LOFTUS VERSVELD: This sports stadium hosts some of the country's top sporting events. It will be one of the stadiums used in the Confederations Cup in 2009 and the 2010 FIFA World Cup in 2010.

16. GROENKLOOF NATURE RESERVE: Offers a visitor the chance to walk amongst South African Wildlife and experience a bush setting just outside of the city.

17. FREEDOM PARK: Serves as a tribute to the progress made in Post-apartheid South Africa. There is talk that it may indeed become the burial place of the first democratic president of South Africa, Mr. Nelson Mandela.

18. THE VOORTREKKER MONUMENT: This monument forms an integral part of Pretoria's skyline when approaching the city from the South. It serves as a tribute to the Voortrekkers, who participated in the 'Great Trek'. (Fig 2.28 Heydenrych 1999)

CHAPTER 3 - CONTEXTUAL ANALYSIS



CHAPTER 3: Contextual Analysis

3.1 Introduction

The Tshwane Inner City Development and Regeneration Strategy of 2006 recognises Pretoria's Inner City as greatly important, both nationally and internationally. The goal of this strategy for Pretoria is, "to become the leading international African capital city of excellence that empowers the community to prosper in a safe and healthy environment" (TICP 2006:1). The Inner City, as recognized by the local municipality, is currently not functioning optimally, hence the reason a plan has been devised to enable the TCIP's goal to be reached.

3.2 The Development of Pretoria

Pretoria is located in Northern Gauteng, within the greater metropolitan area of Tshwane. It is one of the three capital cities of South Africa and is therefore considered to be a cultural and economical flagship (TICP 2006:2). It is located around 60 kilometres North of Johannesburg and the OR Tambo International Airport.

FACTS & FIGURES

Location: City centre (approximately)	25° 45' S by 28° 15' E
Altitude:	1370 m or 4494 feet
Founding date:	16 November 1855
Population (1992 census):	849 230
Municipal area:	632 square km or 244 square miles
Average annual rainfall:	700 mm or 27,5 inches
Average day temperature:	Summer – 15 to 28°C
	Winter – 6 to 23°C

Status: Administrative capital of the Republic of South Africa (Cape Town is the legislative capital)

Road distances

To Johannesburg International Airport:	48 km	or	30 miles
To Johannesburg:	58 km	or	36 miles
To Durban:	646 km	or	404 miles
To Cape Town:	1460 km	or	913 miles
To Bloemfontein:	456 km	or	285 miles
To Maseru (Lesotho):	488 km	or	305 miles
To Mbabane (Swaziland):	372 km	or	233 miles
To Windhoek (Namibia):	1858 km	or	1162 miles
To Gaborone (Botswana):	350 km	or	219 miles
To Maputo (Mozambique):	583 km	or	364 miles
To Kruger National Park (Numbi Gate):	385 km	or	241 miles

Fig 3.1 on the left. Table reflecting data relating to Pretoria.

Fig 3.2 on the right. Table reflecting distances from Pretoria to other locations around Southern Africa.

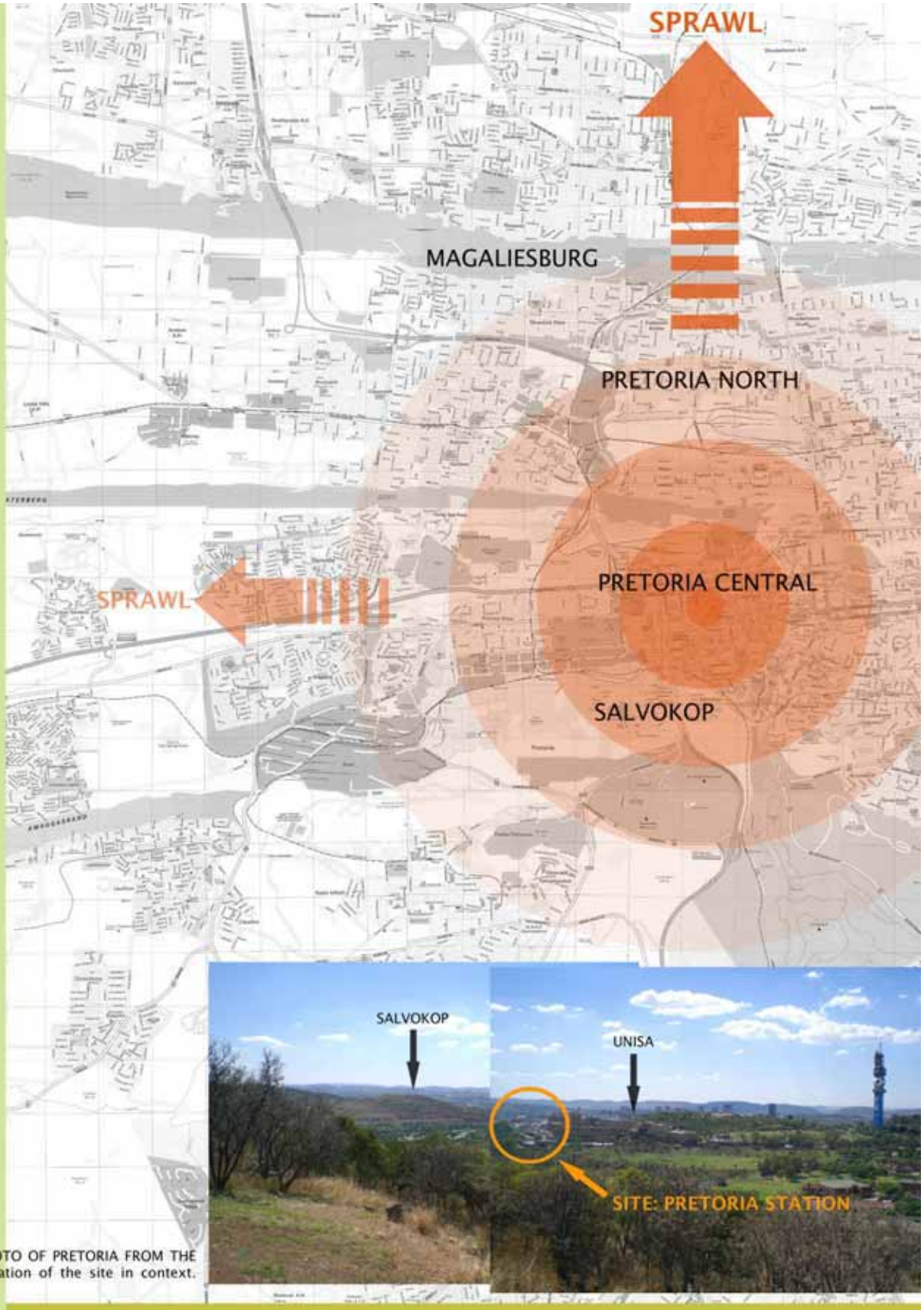
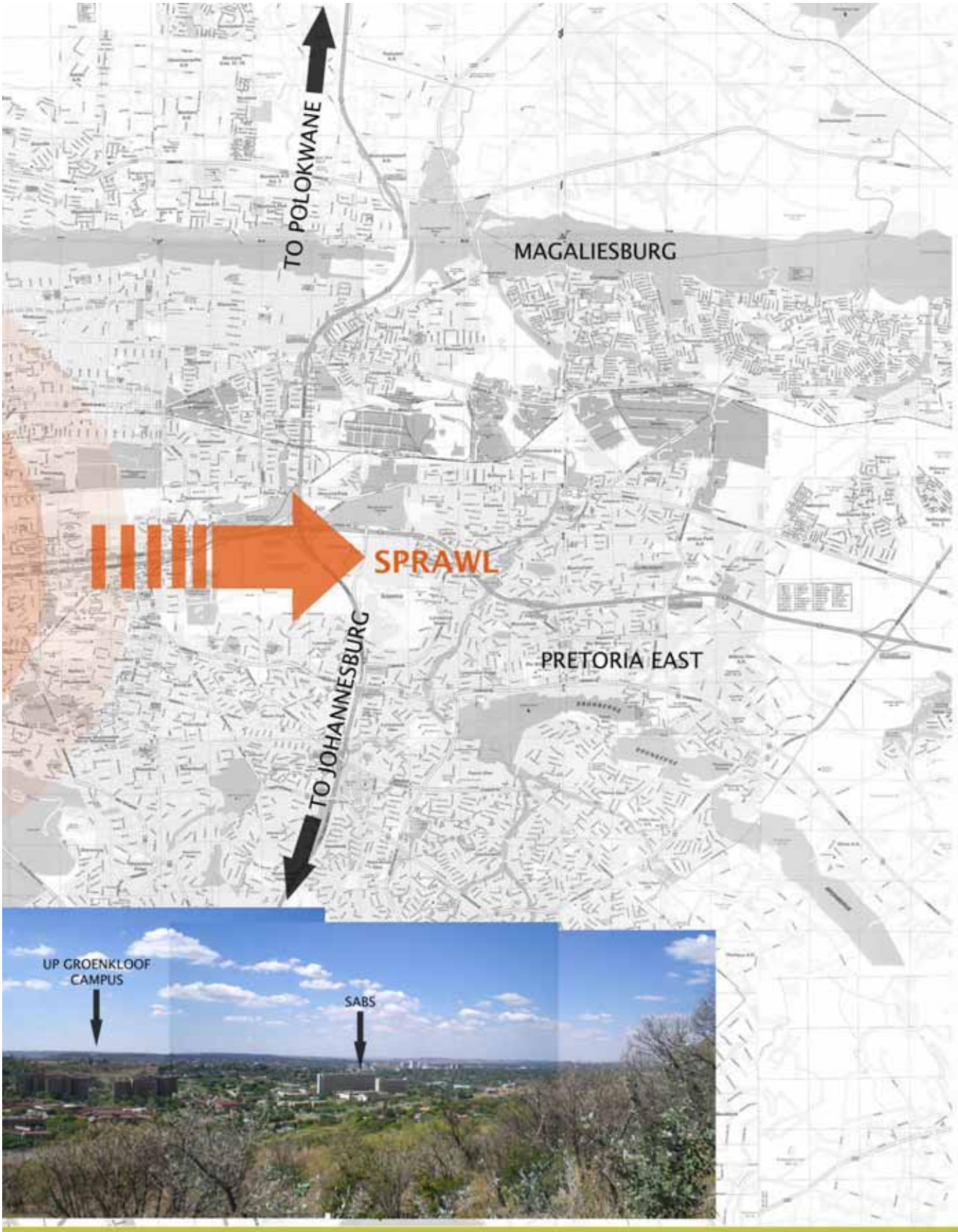


Fig 3.4 PANORAMIC PHOTO OF PRETORIA FROM THE SOUTH showing the location of the site in context. (photo by author)

Fig 3.3 Map of Pretoria

Pretoria was established on the 16th of November 1855 on the farm called Elandspoort (Heydenrych 1999:10). Church Square is the historical centre of Pretoria and forms the heart of the Inner City. It was from this point that the grid-iron pattern, still evident today, was set out. This was done by magistrate AF Du Toit in 1860 (Heydenrych 1999:12). The layout of Pretoria is based on the traditional Roman *cardio* (running North-South) and *decmanus* (running East-West) axes concept, with Church Square at the centre.



Topography

Natural topography traditionally formed the boundaries of the city which sits between two mountain ridges to the North and South and two rivers to the East and West. Due to the presence of the ridges, when Pretoria began to grow, the expansion occurred mainly in an East-West direction, giving rise to urban sprawl. This sprawl has also extended over the Northern ridge towards the Magaliesburg.

3.3 The Development of the Pretoria Station Precinct

1855
Pretoria is proclaimed capital of the Transvaal

1864
The first post coach begins.

1875
A need for more effective trading with the East becomes important. Fund-raising by President Burger for a railway to Delagoa Bay is unsuccessful.

1877
Pretoria is now controlled by the British.

1880
A system is established by JA Vogel to signal the arrival and delivery of mail from a hill north of Elandspoort.

THE FIRST ANGLO BOER WAR TAKE PLACE.

1883
President Paul Kruger obtains funds from the Netherlands and permission from Portugal to construct a railway to Delagoa Bay.

1886
NZASM is established.

1894
The station buildings are completed; including workshops, sheds, houses for white employees to the south of the station and a compound to the west for black workers.

1896
Printing store completed (formerly a national heritage site).

J Joffe's Hollandia Hotel is completed (now known as the Victoria Hotel).

The degradation of the urban fabric becomes evident when comparing historical maps, to the present-day figureground diagram.

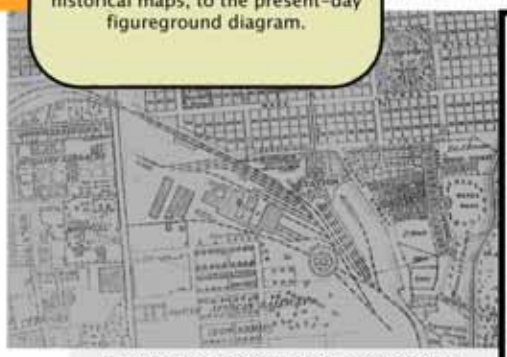


Fig 3.5 The Surveyor General's map of of the Station Precinct in 1911. (Bakker 2004)

Fig 3.6 The Surveyor General's map of of the Station Precinct in 1932. (Bakker 2004)

Fig 3.7 The Audit building, completed in 1928, still stands today, and is protected by Heritage Law. (Photo by author)

Fig 3.8 A photo showing the marshalling yards of the Station at their prime (Bakker 2004)

1902

NZASM, PPSM and the Free State Rail Network become the CSAR (Central South African Railways).

1910

CSAR, Cape and Natal railway organisations merge to form SAR & H (South African Railways and Harbours).

1914

Sir Herbert Baker's Station Building replaces NZASM station buildings.

1946

The Sunken Garden in front of the Station Building is constructed in preparation for the Royal visit in 1947.

1958

The old NZASM Head Office and Director's House are demolished to make way for the new SAR & H headquarters (named the NZASM Hof).

SALVOKOP continues to expand.

1980

The NZASM Hof is renovated.

1981

The administrative organisation of railways nation-wide become known as SATS (South African Transport Services).

1990

TRANSNET is established a public company and begins managing the railways, ports, roads and pipelines of the country.

Fig 3.9 1937 aerial photograph. (Bakker 2004)

Fig 3.10 1947 aerial photograph. The urban fabric begins to degrade. (Bakker 2004)

Fig 3.11 The Sunken Garden with the Statue of President Paul Kruger (now standing in Church Square) in the centre. (Bakker 2004)

Fig 3.12 The Old NZASM printing store is declared a national monument in 1981 and is therefore protected by Heritage Law. (Photo by author)

Fig 3.13 The Station Building, designed by Sir Herbert Baker, is completed in 1914. The photo above shows the building prior to the construction of the Sunken Garden completed in 1946. (Bakker 2004)

2004 - NOW

The Salvokop Development Spatial Framework is established.

Freedom Park reaches completion.

The Luxliner terminal is added to the station.

The GAUTRAIN project is making progress.

Fig 3.14 The New GAUTRAIN Station site durng consturction. The existing Merto Rail building can be seen in the background. (www.gautrain.co.za)

2002

The Station Building is rebuilt.

Salvokop is re-established as an urban precinct.

The development of Freedom Park is underway.

Fig 3.15 The cross-country Luxliner Terminal is located to the West of the Historical Sunken Garden Square. (Photo by author)

2001

The Paul Kruger Street Development Framework is established.

The Freedom Park Development Framework is drawn up.

The Station Building is burnt down by angry commuters.

Fig 3.16 The rebuilt Pretoria Station Building in context today, with the HIstorical Sunken Garden Square in the foreground. (Photo by author)

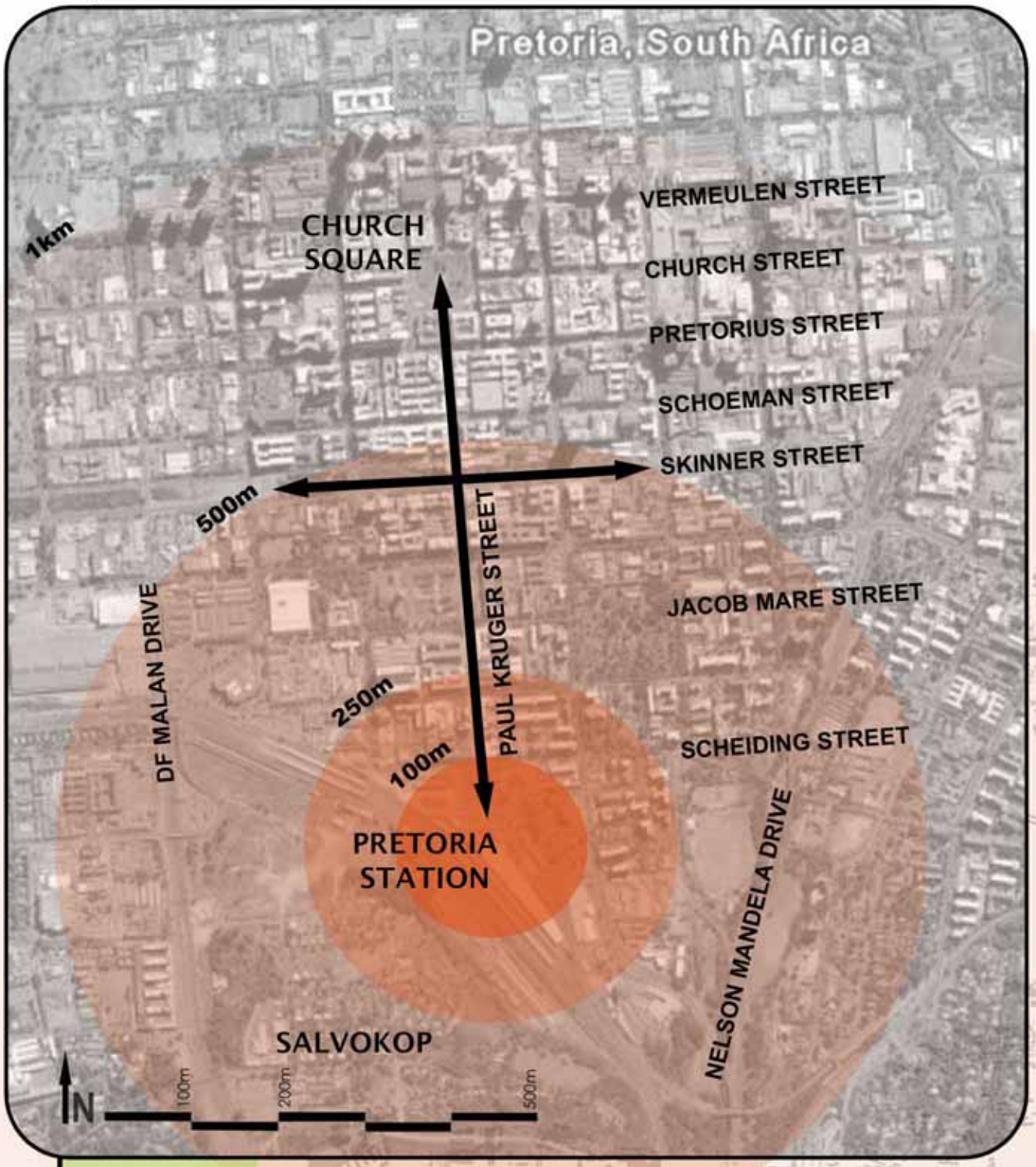
Considerations

The Pretoria Station Precinct in richly layered in history that dates back to the founding of the City of Pretoria. It is evident that the area not only possesses an abundance of architectural history, but also economic, social and political history.

These aspects should not be considered lightly when developing within this area. The context, both physical and metaphysical should be taken into consideration when designing.

Studying the history of the Pretoria Station Precinct will encourage a design solution that is richly layered and multi-faceted and therefore responsive to its surrounding context.

Fig 3.17 MESO-SCALE LOCATION PLAN



3.4 The Pretoria Station Precinct Today

Pretoria Station lies directly to the south of Church Square at the point where Paul Kruger Street culminates. This transport node functions as the southern gateway to the CBD. Paul Kruger Street forms both a physical and visual axis, acting as the primary spine from which secondary activities stem (Fig 3.17).

Fig 3.18 MACRO-SCALE LOCATION PLAN

3.5 Impact of the Gautrain Project

3.5.1 Background

The Gautrain project involves the creation of a rapid rail link between the OR Tambo International Airport, Johannesburg and Pretoria (Fig a). The aim of this first-class transportation system is to decrease the number of vehicles currently using the free-ways along the routes in question. Some 150,000 cars use these free-way routes each and every day as people travel between the various destinations (wwwgautrain.co.za 2009). Many of these commuters travel from Pretoria to Johannesburg and back everyday for work purposes. The Gautrain will be particularly beneficial for those that traveling long distances, as it will reduce traveling time, therefore improving the quality of life of these people.

The ***aim*** of the Gautrain initiative is to:

- Create a sense of place around each new station,
- To promote African culture through the use of archetypal images (such as the Acacia tree),
- To encourage craft and retail and
- To formulate themes for various areas of the province.

Fig 3.19 The diagram above outlines the intended route of the GAUTRAIN. (www.gautrain.co.za)

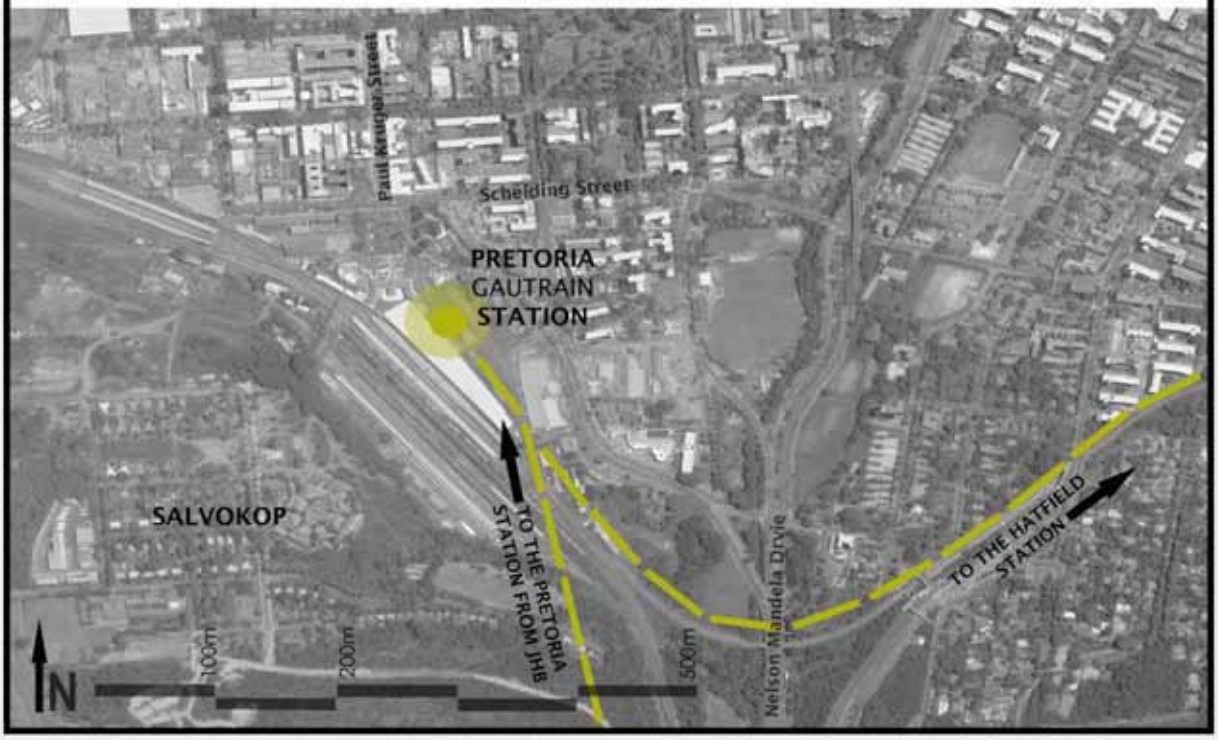
From the above objectives, it is clear to see that the introduction of Gautrain Stations to Gauteng cities, intends to create catalytic areas of extensive development in and around their vicinity. The Pretoria Station Precinct will be influence positively, as the land in this area will increase in value, buildings will be renovated and renewal of this 'gateway' into the CBD is bound to occur.

This node will therefore be emphasized as an area from which many pedestrians enter and leave the city. These pedestrians will be made up of daily commuters, occasional visitors and first-time tourist/commuters. Facilities therefore need to cater for the needs of the above users efficiently.

The GAUTRAIN - An Urban Catalyst

The new Gautrain Pretoria Station is seen as a catalyst that will promote urban rejuvenation throughout the Pretoria Station Precinct and beyond. It is predicted that the Station Precinct will become an important commercial and economical node on the edge of the city center. It will also form the point of departure from which tourists will be able to explore many attractions in and around the city.

Fig 3.20 The aerial photo below shows the location of the Pretoria GAUTRAIN Station, and its 'fish-tail' alignment to adjacent stations.



3.5.2 Location

The Gautrain Pretoria Station is located to the East of the existing Sir Herbert Baker Building, next to the existing metro-rail platforms and parallel to the Old Coach-Washing Shed (See Fig. 3.20 above). Below are a few images of how the Gautrain Pretoria Station is intended to function within the existing Pretoria Station Fabric.

Fig 3.21 VIEW OF THE GAUTRAIN STATION IN CONTEXT.
(www.gautrain.co.za)

Fig 3.22 VIEW OF THE GAUTRAIN STATION IN RELATION TO THE ADJACENT STRUCTURES.
(www.gautrain.co.za)

Fig 3.23 INTERIOR PERSPECTIVE OF THE NEW STATION BUILIDNG LEADING TO THE GAUTRAIN PLATFORMS.
(www.gautrain.co.za)

3.5.3 Physical Impacts

The Pretoria Gautrain Station will bring people who previously used their own vehicles or a number of different modes of transport successively in order to get to the CBD each day. It has been predicted that some 55, 000 people will be using the station on a daily basis. The already busy Pretoria Station will need to cater for a new transportation culture and will therefore have to adapt to be able to absorb the changes. An integration of existing transportation services will have to take place at the Pretoria Station for this node is to function optimally. A plan, which is part of the existing Inner City Development Framework, has already been put in place, aims to provide a shuttle service between the Gautrain Station and particular points throughout the city. A limited parking facility will be provided at the Gautrain Pretoria Station, as well as a drop-off area.

Other than a massive influx of people to the Station Precinct, the actual construction of the Gautrain Pretoria Station line will have a particular impact on the rich heritage of this area. A Heritage Impact Assessment (HIA) had been conducted. This assessment focused on heritage issues, both tangible and intangible. The HIA concluded that although the structural integrity of historical buildings would not be directly affected, the 'spirit of place', or 'genus loci', would be greatly disturbed, specifically in Salvokop, the area to the South of the existing railway lines.

3.6 Impact of the Bus Rapid Transport (BRT) System

The Bus Rapid Transport System is a system that aims to eradicate the legacy of the apartheid spatial planning system by providing fast and efficient bus transport to previously disadvantage communities, forced to live far from their places of work. People living on the fringes of the city, earning less than R1600 a month, spend an averagae of R186 a month (Vorster 2009), on public tranport. It also takes these people between 37 and 78 minutes to travel to work, in the inner city, via various transport means. According to Hilton Vorster, the municipal representative leading the Tshwane BRT project, 63% of previously disadvantaged households do not own a private motor vehicle. The majority of people needing to get to the inner city from the townships use minibus-taxi services. These services are expensive and often unsafe. Minibus-taxis do not cater for individuals with disabilities, who often find themselves isolated, unable to get into the city and therefore unable to find work.

The Tshwane BRT system will run from the East (Mamelodi) to Pretoria Station, from the North-West (Mabopane) to Belle Ombre Station and between the two Stations themselves (see Fig 3.24 adjacent). The vision for the BRT Pretoria Station Terminal is included below (Fig 3.25 and 3.26) and will be taken into consideration when proposing a Spatial Development Framework for the area.

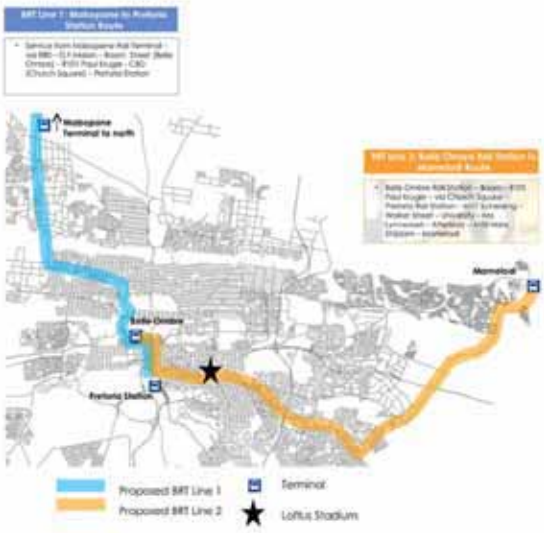


Fig 3.24THE PROPOSED TSHWANE BRT LINES. (Vorster 2009)

The BRT Vision

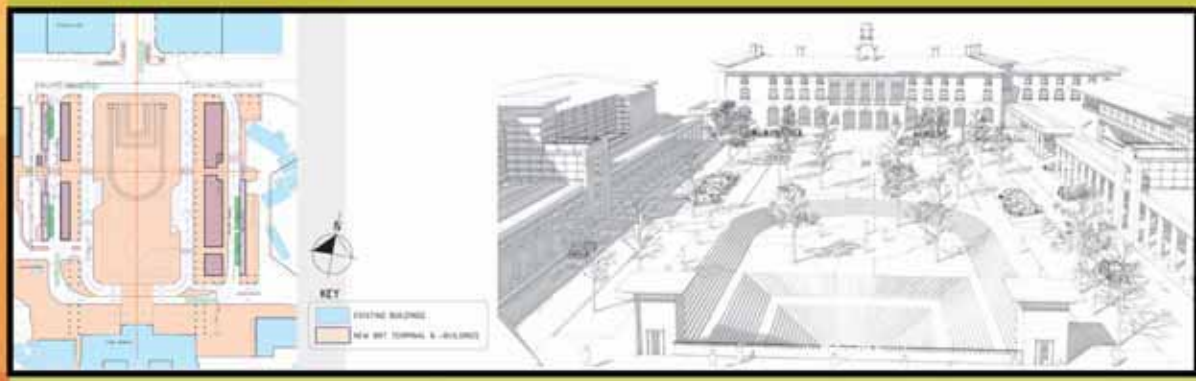


Fig 3.25 PRETORIA STATION PLAN. (Vorster 2009)

Fig 3.26 AN ARTISTS INTERPRETATION OF THE PROPOSED PRETORIA STATION BRT TERMINAL. (Vorster 2009)

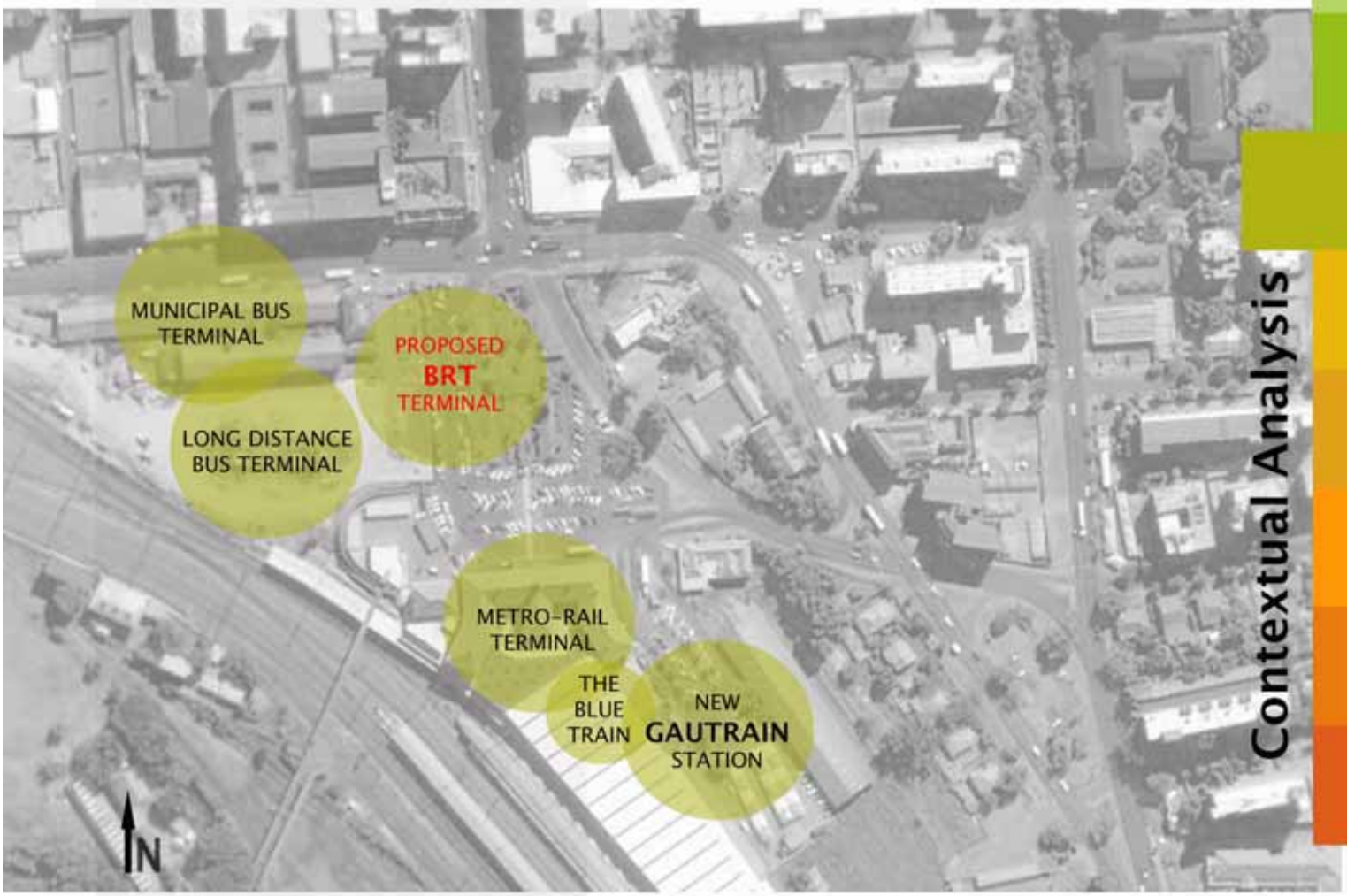


Fig 3.27 THE LOCATION OF THE VARIOUS DIFFERENT TRANSPORT MODES IN AND AROUND PRETORIA STATION.

3.6 Transport Palimpsest

All of the modes of transport and possible future development has been over laid in Fig 3.27 above.

It is clear to see from the image above that the Pretoria Station is an area where many different modes of transport converge. It is for this reason that the spatial planning, on an urban scale is so vital in ensuring the optimal functioning of the Pretoria Station.

Existing framework proposals have been considered and incorporated in the development of a Station Precinct Framework Proposal. These include:

3.7.1) The Tshwane Inner City Development and Regeneration Strategy (TSIP),
3.7.2) Re Kgabisa Tshwane Proposal,
3.7.3) Paul Kruger Street Framework and
3.7.4) The Salvokop Development Framework.

3.7 Influences & Considerations

Existing Framework 1

3.7.1 Tshwane Inner City Development and Regeneration Strategy

This Development Framework lays the foundation for the regeneration of Pretoria's Inner City. This strategy envisions the CBD as *"the functional and symbolic heart of the capital city"* (TISP 2006:2), as well as a place *"where all aspects of being [South] African can be celebrated"* (TISP 2006:2).

The challenges set aside by the TISP which are relevant to this scheme include:

- A clear Inner City identity needs to be established.
- High profile developments should be attracted.
- Provision for **tourism**, entertainment and recreational facilities must be made.
- A dedicated and efficient public transport system is to be put into operation.
- The Inner City Environment is to be made pedestrian friendly, with safety as a priority.

The approach to achieving these challenges is one of *"catalytic intervention"* (TISP 2006:3), meaning that specific and purposeful projects are proposed to address certain short-comings.

A number of building blocks were defined in order to divide what seems to be a huge task into smaller more manageable goals. The Pretoria Station Precinct falls under **Building Block 7: Movement**. This building block concentrates on the management and development of transportation nodes and system within the Inner City. It aims at making public transport as convenient as possible by creating links between major destinations.

3.7.2 Re Kgabisa Tshwane Proposal

This is a project driven by the Department of Public Works (DPW). The main objective of this initiative is to ensure a good standard of accommodation for private investors and governmental agencies throughout the city (www.rekgabisa tshwane.gov.za).

In order to accomplish this, the Re Kgabisa Tshwane Project has set up a city-wide framework of structuring elements that has the following vision:

Existing Framework 2

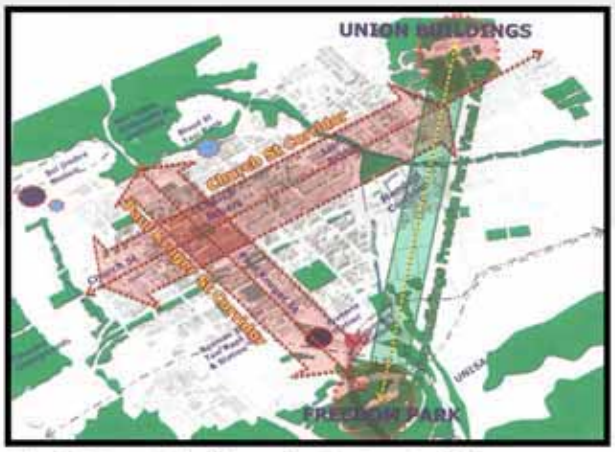


Fig 3.28 - 1. Linking the Union Buildings, Church Square and Freedom Park through the establishment of characteristic corridors. (www.rekgabisatshwane.gov.za)

Fig 3.29 - 2. Defining 7 precincts within the Inner City. Pretoria Station falls within the proposed Museum Park Precinct. (www.rekgabisatshwane.gov.za)

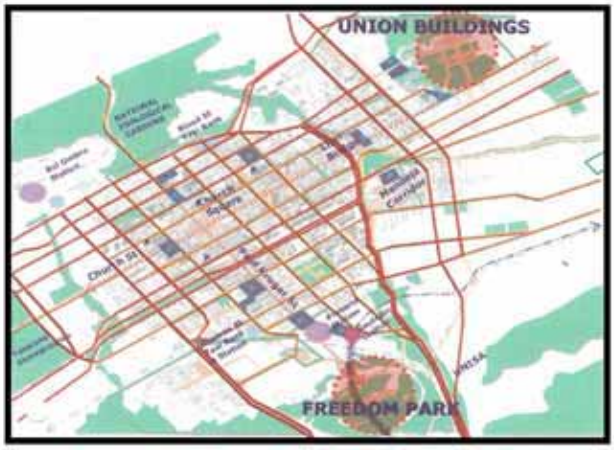


Fig 3.30 - 3. Improving public and private transport systems. (www.rekgabisatshwane.gov.za)

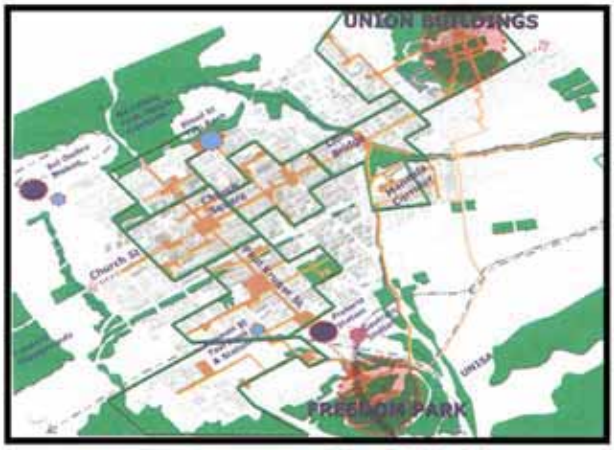
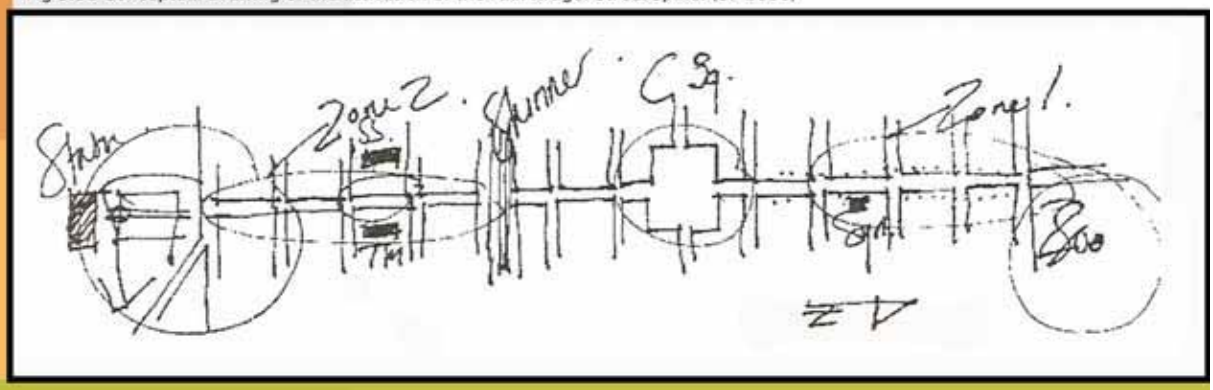


Fig 3.31 - 4. Creating a network of linked public spaces. (www.rekgabisatshwane.gov.za)

This project aims also at consolidating the image of the city as an African capital, by focusing on sustainability, accessibility and growth. The Re Kgabisa Tshwane Project hopes to draw young professionals into the city, therefore promoting gentrification.

Fig 3.32 Conceptual Drawing of the activation of the Paul Kruger Street Spine. (UP 2000)



Existing Framework 3

3.7.3 Paul Kruger Street Framework

This Spatial Development Framework (SDF) was compiled by the University of Pretoria by request from the City Council. Paul Kruger Street terminates in the South at the Pretoria Station.

These are outlined below:

1. The Paul Kruger Street Extension is to be closed. This road extension was built in 1967 and served, for a time, as an interim measure to link the Inner City to Fountains Circle, prior to the development of Nelson Mandela Drive in (then Edward Street) in 1997 (UP 2000). Today, the presence of Nelson Mandela Drive provides the necessary accessibility into the city's CBD, therefore eliminating the need for the Paul Kruger Street Extension to remain. This is justified by the drastic decrease in vehicles since Nelson Mandela Drive's construction (UP 2000).

2. Buildings of historical importance should be retained.

3. The historical sunken garden/public square is to be re-instated and then maintained.

4. The area is to be made pedestrian friendly, including the intersection between Paul Kruger Street, Scheiding Street and the Station Forecourt.

5. New buildings are to front onto the square with active facades that related to the character of the existing fabric.

6. Parking is to be removed from the Station's forecourt and provided at an unobtrusive location. A drop-off and pick-up facility is to be accommodated here instead.

This framework identifies the Pretoria Station area as one of the most important in the city, due to its location and historical significance (UP 2000). It is therefore necessary to study the guidelines that this framework puts forward with regard to the relevant area.

3.7.4 Salvokop Framework

This framework was developed in 2003 by GAPP Architects, in conjunction with mma architects. It focuses primarily on the re-integration of the Salvokop and Freedom Park area into the city's fabric, while optimizing land value for investors and respecting buildings of historical value. There are three concepts that guide development within this framework.

Existing Framework 4

These include:

1. Integrating the area into its surroundings by optimizing existing access points and creating new ones where necessary. This will aid in promoting movement and increasing legibility. These points will further be emphasised by the strategic positioning of 'gateways' into the site.

2. A series of 'special places' will be created. These places will have a heritage focus and so form a 'ceremonial route' between the Inner City, Salvokop and the Freedom Park Development.

3. Functions, that are able to capitalize from the existing railway works, will be integrated by land uses that complement both the environment and the heritage value of the site.

FIg 3.33 Diagram summarising the key concepts of the Salvokop Development Framework. (GAPP 2004)

An analysis of the study area will be conducted in the pages that follow. This analysis will aid in determining weak points within the Pretoria Station's urban fabric, and will help to identify possible opportunities for future development.

3.8 Group Framework Proposal - Study Area Analysis

Figuregound Study

Fig 3.34

STUDY AREA

The proposed group Spatial Development Framework seeks to re-establish the Pretoria Station Precinct as on of the major entrance and transport nodes of the edge of the Inner City. This being the ultimate goal, it is first necessary to conduct an analysis of the area so as to understand its present downfalls.

Observations

It is evident from the figure ground study that the city's existing urban fabric degrades towards the south of the CBD around the station. This is due to a decrease in density to the south of Scheiding Street, the presence of the railway line to the South-West and Nelson Mandela Drive to the East. The station site sits at the point where the city grid shifts substantially. The railway line forms a physical barrier between the developments of Salvokop, Freedom Park and the inner city. Due to this separation, much of the land adjacent to the railway line is classified as 'lost space' and is not being used optimally. Nelson Mandela Drive forms a barrier between the Pretoria Station Precinct and the educational facilities of UNISA just opposite. A similar situation occurs here, as the historical Bureau Sports Ground is currently under-utilised (Fig 3.34).

Land-use & Density

Fig 3.35

Observations

The land use in the station area is diverse. It is important to note however, the large amount of land that has been set aside for transportation functions. The current Bureau Sports Ground is currently zoned as educational. This area is however highly underutilised. It is also interesting to note the dramatic changes in mass and density on either side of Scheiding Street, as well as South of the railway line (Fig 3.35).

Circulation

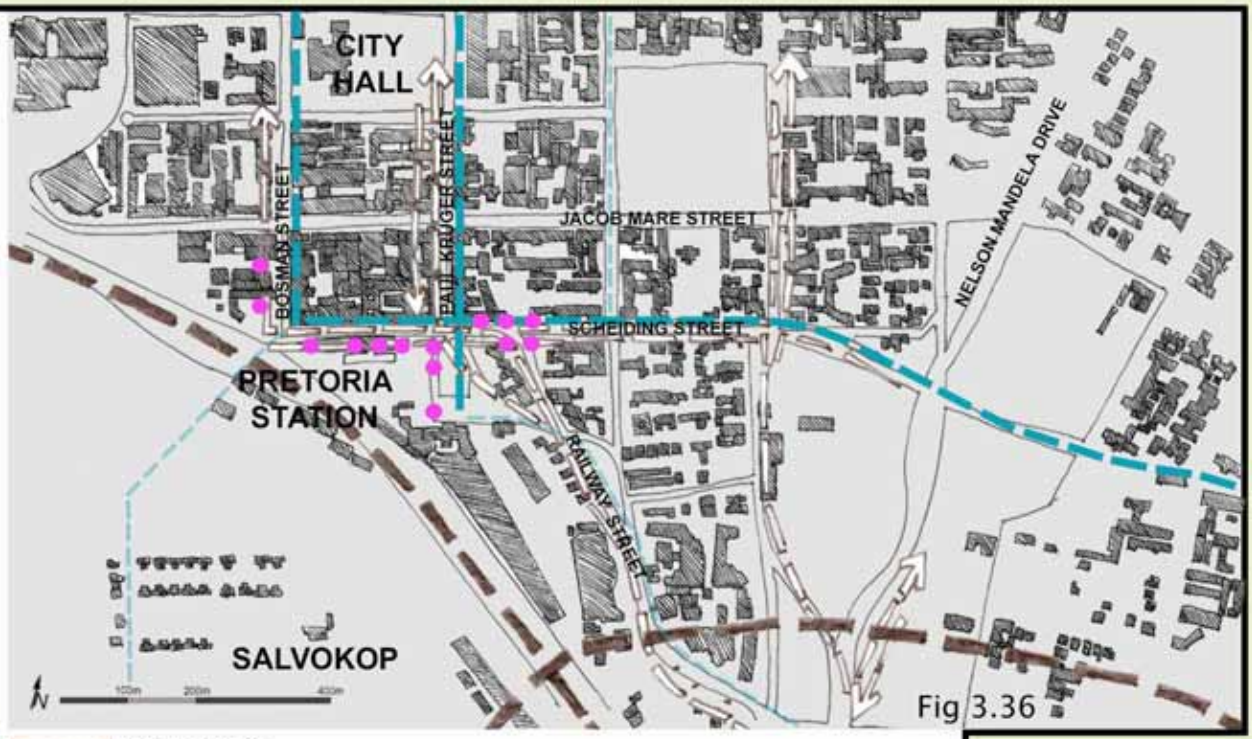


Fig 3.36

RAILROADS
VEHICULAR TRAFFIC
PRIMARY PEDESTRIAN ROUTES
SECONDARY PEDESTRAIN ROUTES
INFORMAL TRADING STALLS

Pedestrian safety should be carefully considered when designing in an area dominated by vehicular traffic.

Observations

It becomes evident from this diagram, the degree to which the railway line forms a physical barrier between the North and South. It is also clearly visible the pedestrian and vehicle circulation clashes resulting in a public safety concern. Also, most informal traders have located their stalls where there is a great amount of pedestrian movement (Fig 3.36).

Axes

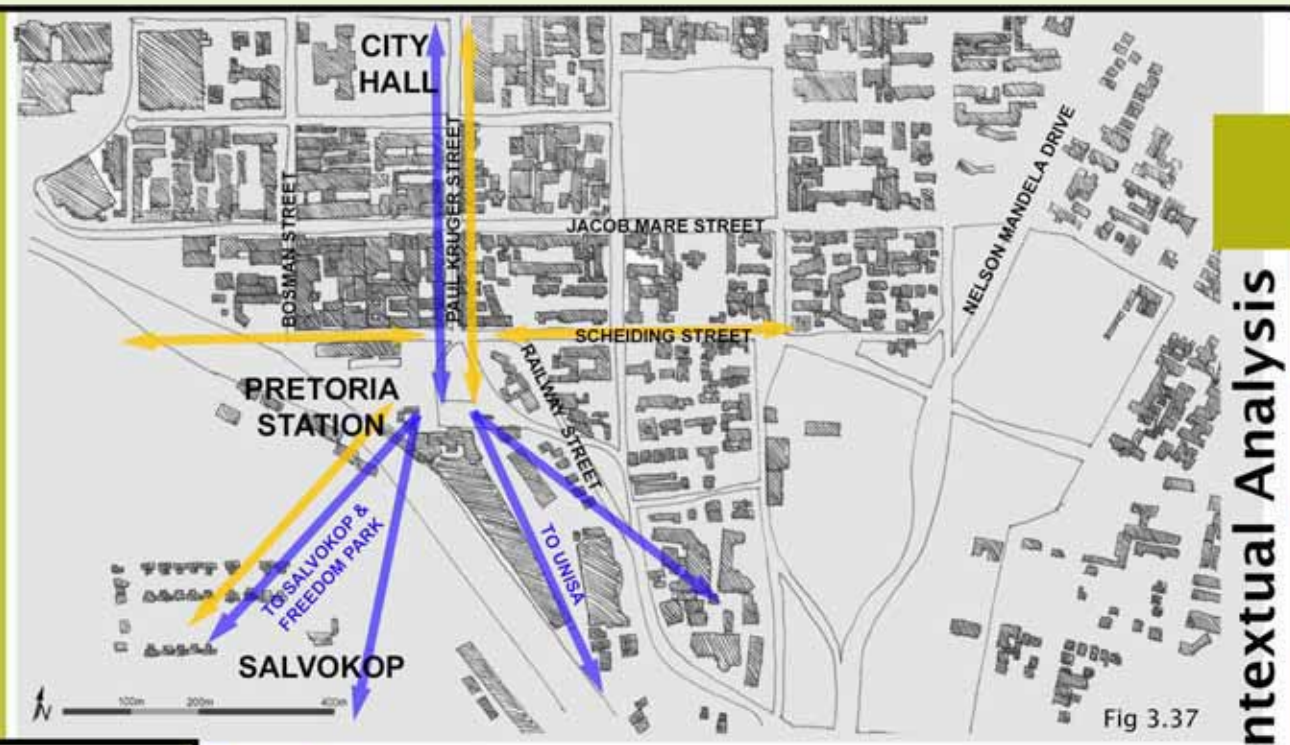


Fig 3.37

Observations

There are both strong physical and visual axes present:

The *physical axes* occur as a result of the grid layout. The Station area is linked directly from North to South by the Paul Kruger Street spine. The East-West link of Scheiding Street is however less defined. It terminates and becomes Bosman Street to the West. In the East the city grid shifts and there is no definitive link over Nelson Mandela Drive to the East.

The *visual axes* increase the character and legibility. Currently, they allow the user to orientate themselves within the urban fabric. Views from the Station include the main UNISA complex to the South East, Salvokop and Freedom Park to the South and South West, as well as Church Square up the North-South axis (Fig 3.37).

Open Space Network

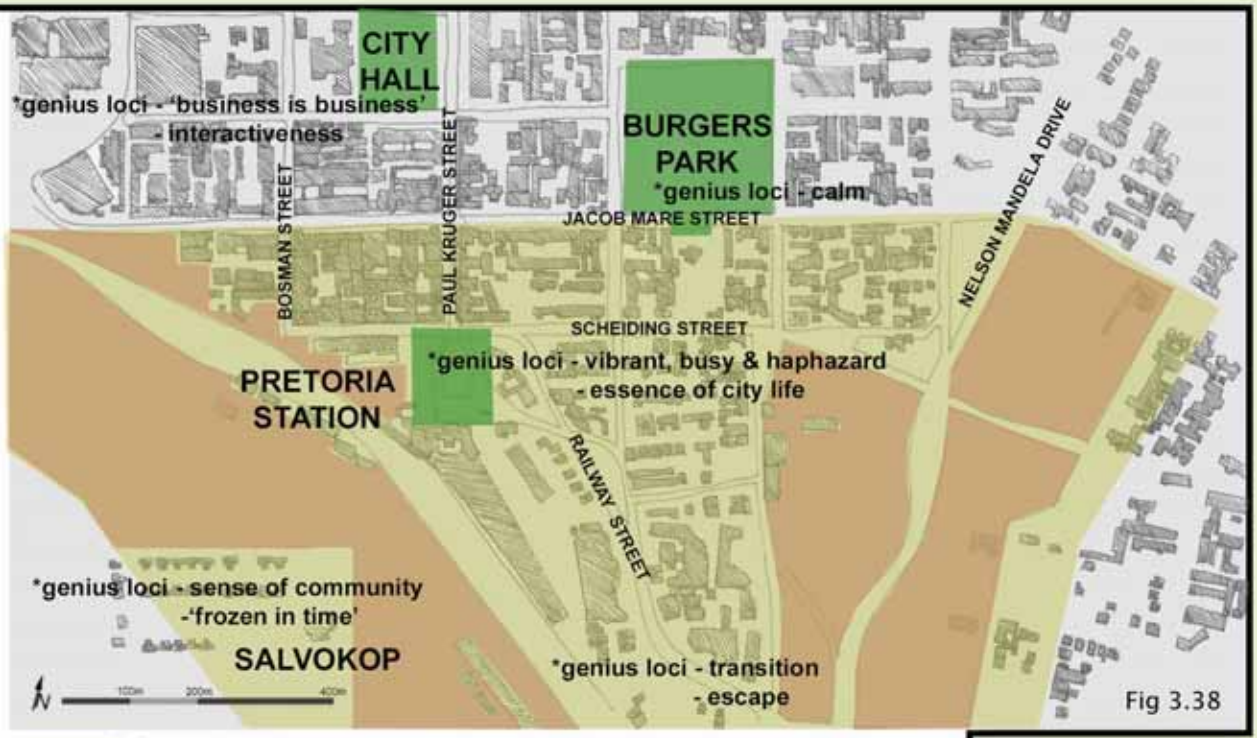


Fig 3.38

Describing Burger's Park, Heinie Heydenrych, author of *Discover Pretoria*, states that "this park, a few street locks from the city centre; a tranquil haven almost in the heart of the city...it is a beautiful park worth a visit." (Heydenrych 1999)

Observations

This diagram reflects the existing open green spaces, but shows also that these are not well linked to one another. Some of these existing open spaces, particularly the historical sunken garden at the Station's forecourt, are in a state of disrepair. Much open space around the Station is derelict and under-developed (Fig 3.38).

Also noted on the above diagram, is the 'genius loci' for each of the different areas making up the Pretoria Station Precinct being studied. It is clear to see that the study area offers a wide range of characteristics within the Pretoria Station context. This gives rise to interesting opportunities as a range of vastly varying experiences is possible within a relatively small area (Fig 3.38).

A number of problems are evident following this study:

- The Station environment is not legible and it is difficult to orientate oneself in and around the Station.
- There is complete congestion (vehicles overpowering pedestrian movement) in this area.
- Many amenities in the station's vicinity arose out of need (Bosman Street Taxi Rank) and were not planned so as to fit into the existing urban fabric of the city.
- The public garden serves more as a barrier, is not used optimally, and is poorly maintained and dangerous.
- Transportation amenities are found all over the site and do not form part of a 'coherent whole'.
- The railway line forms a conspicuous barrier between the North and South.
- The connection to the Salvokop residences & Freedom Park remains uncelebrated.
- There is currently no pedestrian link to the UNISA Sunnyside campus.

Palimpsest

Conclusions

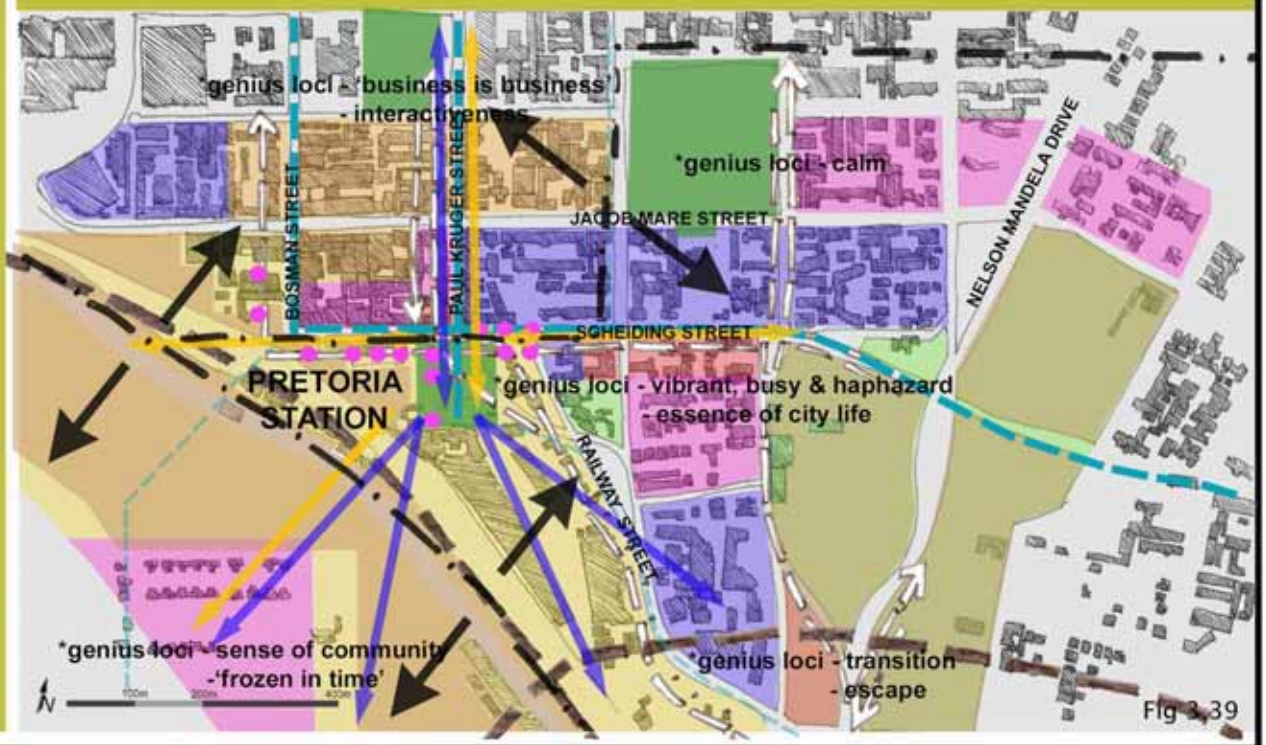


Fig 3.39

Fig 3.39 reflects the various different layers of the analysis that have been conducted. This layering exercise allows one to observe all of the aspects that have been studied in relation to one another. The problems that have been identified above form a point from which to start when proposing a Spatial Development Framework for the precinct.

3.9 Proposed Group Spatial Development Framework

3.9.1 Approach

This framework proposes to densify the area surrounding the station by developing new building masses, while respecting the identity of existing, prominent and historically relevant buildings. Due to the introduction of the GAUTRIAN Station, the land surrounding the Pretoria Station will become incredibly valuable and sought after by investors. It is for this reason that land usage needs to be optimised.

"Implode growth onto strategically structured vacant sites *within* the city"
(Dewar & Uitenboorgardt 1991)

SDF Concept 1

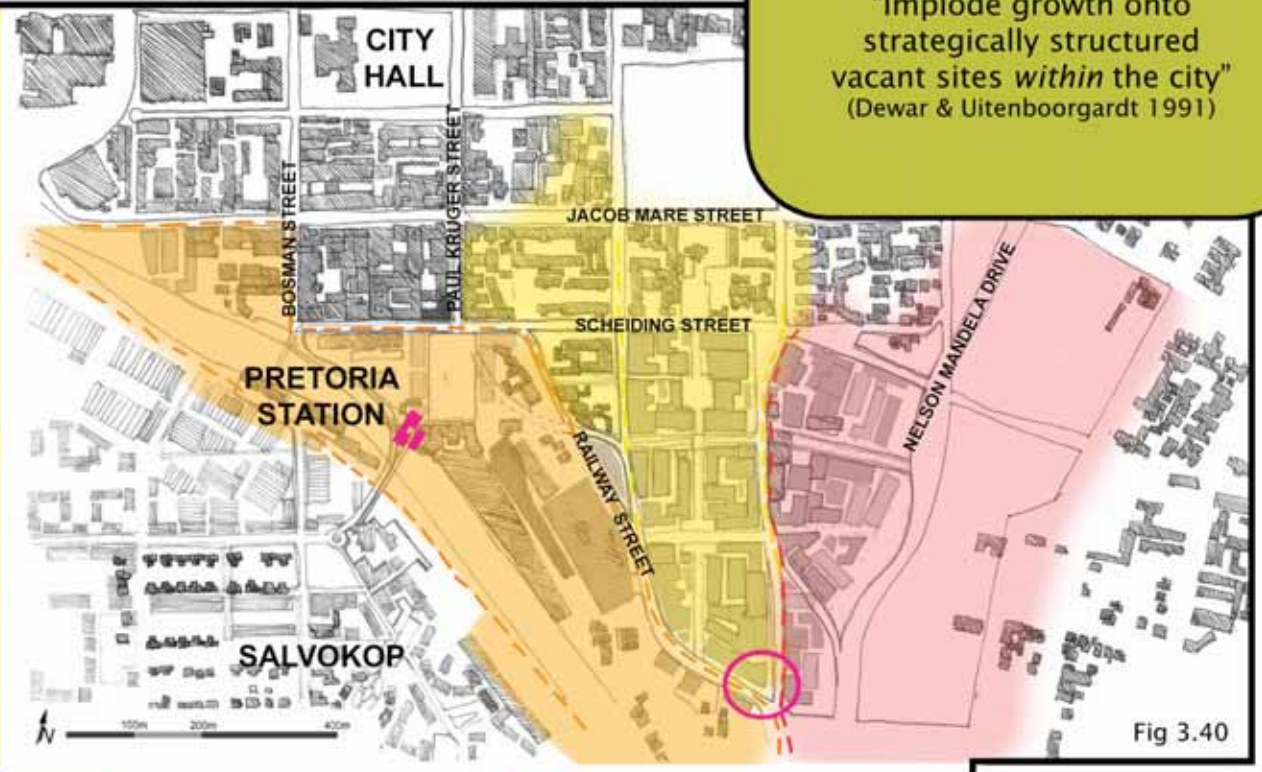


Fig 3.40

TRANSPORT BELT
RESIDENTIAL & HOTEL BELT
EDUCATIONAL BELT
'GATEWAY' BUILDING
'FOYER' BUILIDING

Proposal

a) The Continuation of the Urban Fabric
This concept involves the development of new structures around Station Square (re-instating its historical significance), between the currently under-utilized Bureau Sports Fields and the Apies River, as well as to the South where the car dealerships are currently located. (Fig 3.40)

b) Districts - Three Zoning Belts
The new built fabric has been zoned into areas that are to support transport functions (shown in orange), those that are to include hotel, residential and Offices functions, becoming primarily mixed-use developments (shown in yellow) and those that are to be geared towards educational services (shown in pink). (Fig 3.40)

c) A 'gateway' building is proposed at the Southern tip of the precinct. This is to be somewhat of an iconic structure, capturing the essence of the area's character. An urban 'foyer' building is proposed adjacent to the existing Sir Herbert Baker Building. This building will serves as an entry and departure for pedestrians, walking point to and from Salvokop and Freedom Park. Its objective will be to bridge the physical divide created by the railway line and celebrate the link From North to South. (Fig 3.40)

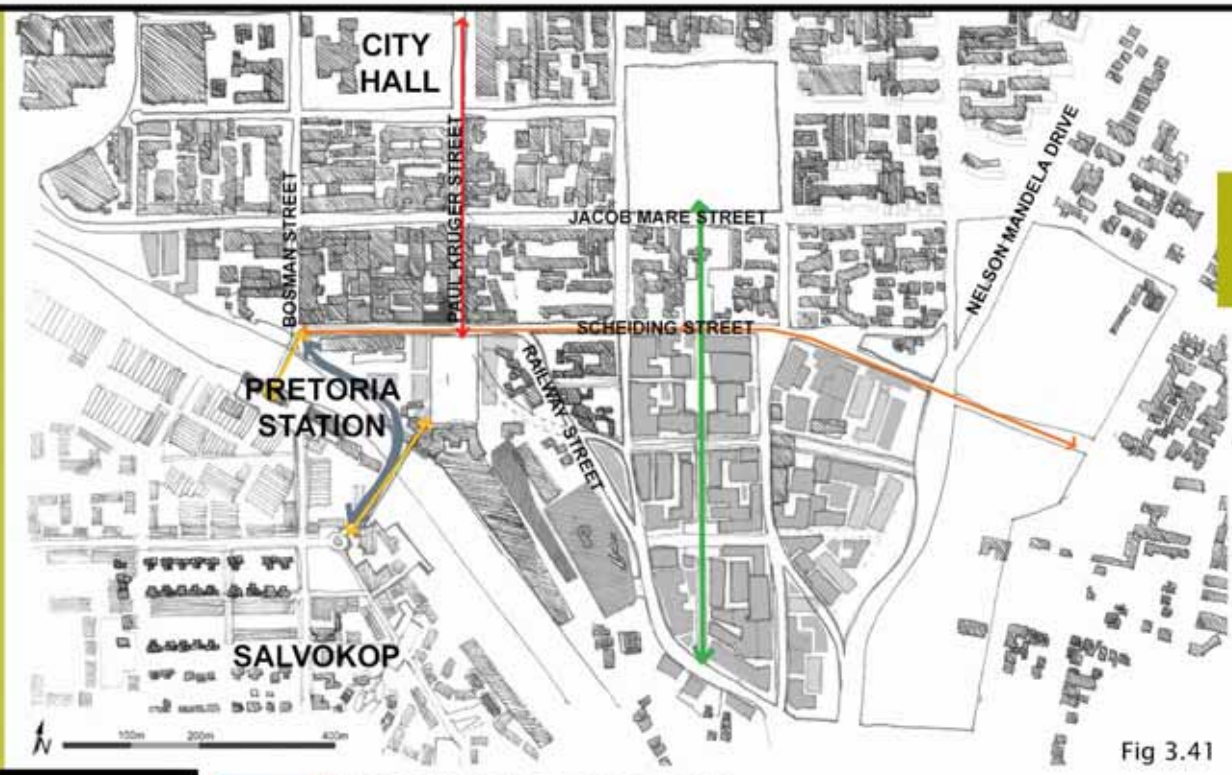


Fig 3.41

- N-S PAUL KRUGER STREET LINK
- E-W SCHEIDING STREET LINK TO UNISA
- N-S BURGERS PARK-HOTEL DISTRICT LINK
- PEDESTRIAN LINKS TO SALVOKOP
- NEW VEHICULAR LINK FROM SALVOKOP

Proposal

d) The Creation of Links with Other Precincts

The North-South link between Pretoria Station and Church Square is already prominent. This street however, needs to be developed into a pedestrian-friendly environment. The proposals for this link can be found in the Paul Kruger Street Framework, developed by the University of Pretoria in 2000. It is proposed that the East-West Scheiding Street link be pedestrianised and extended prominently over Nelson Mandela Drive so as to link the two sides of the educational district. A vehicle free boulevard is proposed from Burger's Park in the North to the 'gateway' building at the Southern tip of the precinct. This boulevard aims to create a vibrant café culture through the use of arcades and squares of different characters. The inclusion of this link will consolidate this part of the precinct and offer opportunities for social interaction. A new vehicle link and prominent pedestrian links are to provide access over the railway lines, each terminating in a public square or public service building. (Fig 3.41)

SDF Concept 3

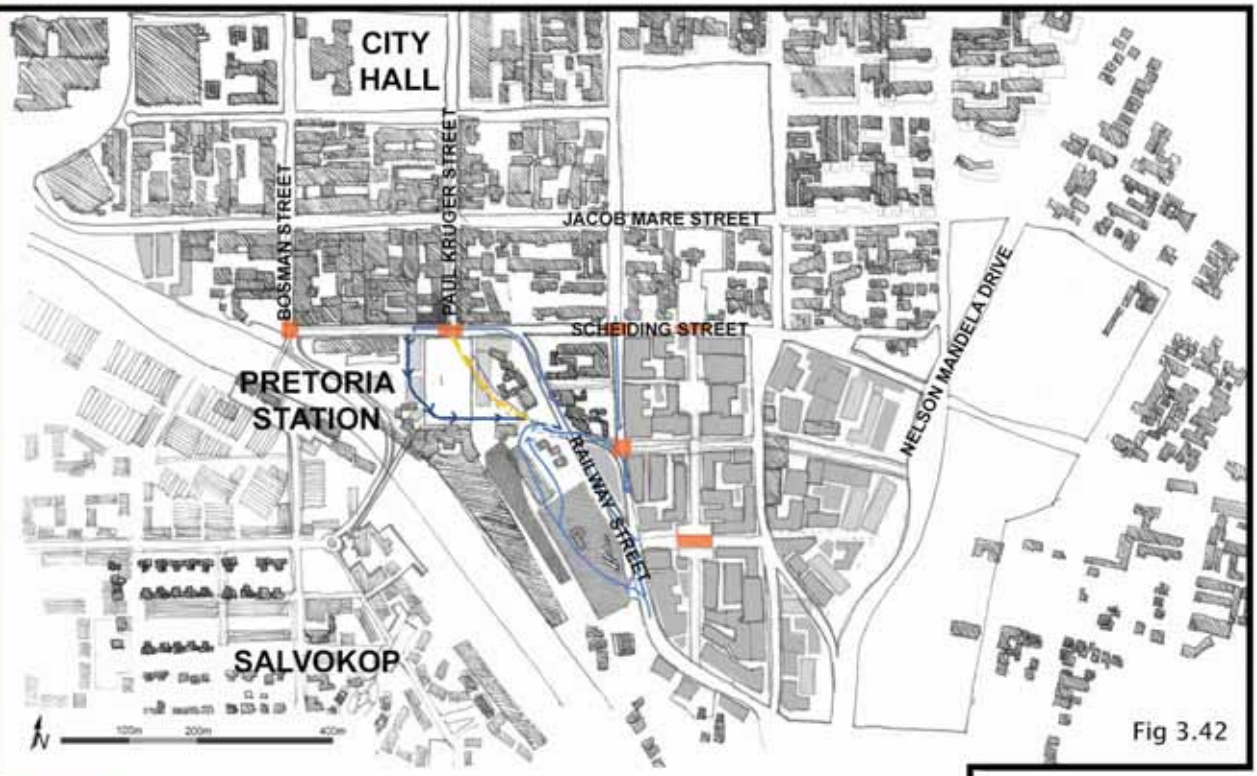


Fig 3.42

REMOVAL OF THE PAUL KRUGER STREET EXTENSION
STATION SQUARE RING ROAD
PRIMARY GAUTRAIN RING ROAD
TRAFFIC CALMING ZONES

To alleviate congestion, it is important that the pick-up and drop-off of commuters occurs quickly and efficently. Spaces must be provided that allow for this and promote a constant flow of traffic in and out of the Station at peak times.

Proposal

e) Circulation

A proposal has been made to close the Paul Kruger Street Extension so as to re-instate the historical Station site in its entirety. Parking has been moved away from the Station Forecourt (which will now be a 'drop-off' and 'pick-up' zone only). The circulation system now operates as a combination of ring roads. A primary ring road is formed when entering and exiting the new GAUTRAIN Station. The exit of this ring road is located just to the East of the old Audit building. Buses, taxis and other vehicles not wishing to park, will be entitled to make use of the secondary ring road that passes this way. Traffic calming is proposed at major intersections to ensure pedestrian safety. This will be done by means of raising the road surface and articulating the use of different surface materials. (Fig 3.42)

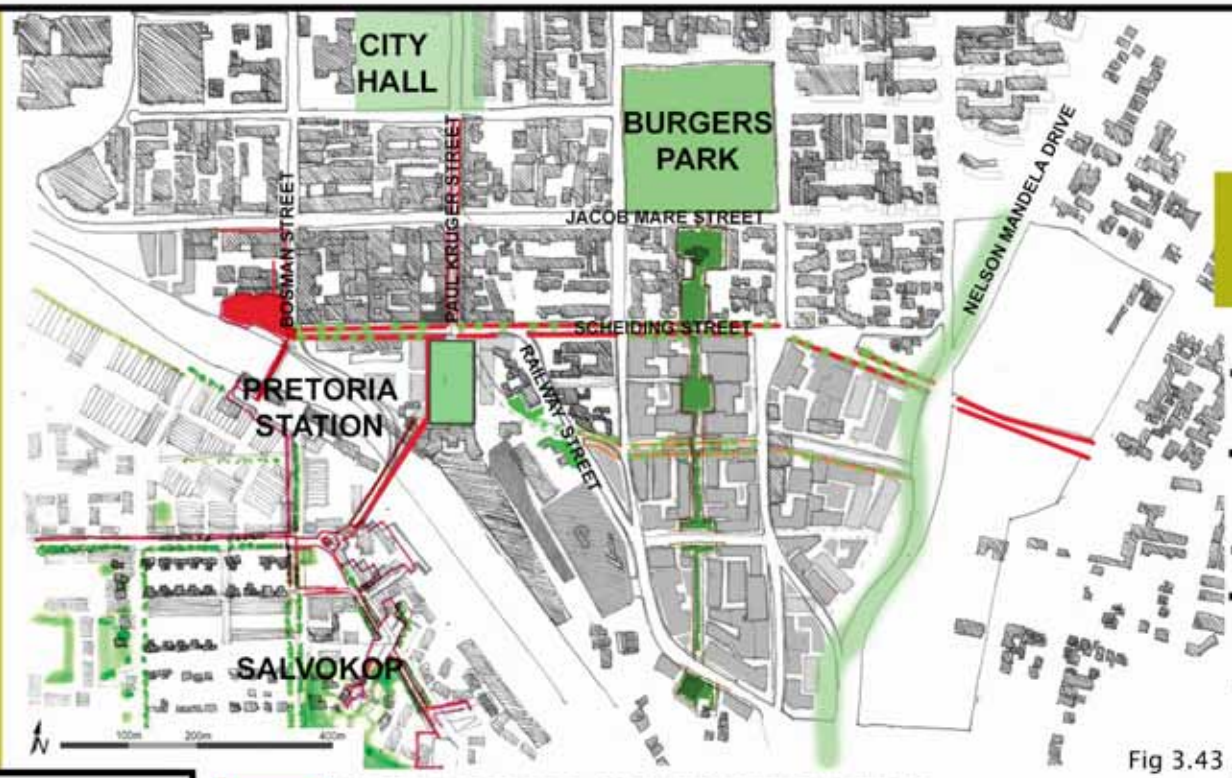


Fig 3.43

f) Inclusion of a Public Space Network

This network incorporated the already existing public open spaces. Although many of these are currently not optimised, it is believed that with good design, they can be. These existing spaces have been tied into the proposed space network of the Salvokop Development Framework compiled by GAPP and mma Architects in 2003. New spaces have been proposed in the area of the café culture boulevard and the green of East-West links, along pedestrian friendly streets in order to link major public spaces has been proposed. This network allows areas for people to move (along street spines) and areas for people to pause and rest (within a larger public space). (Fig 3.43)

Palimpsest

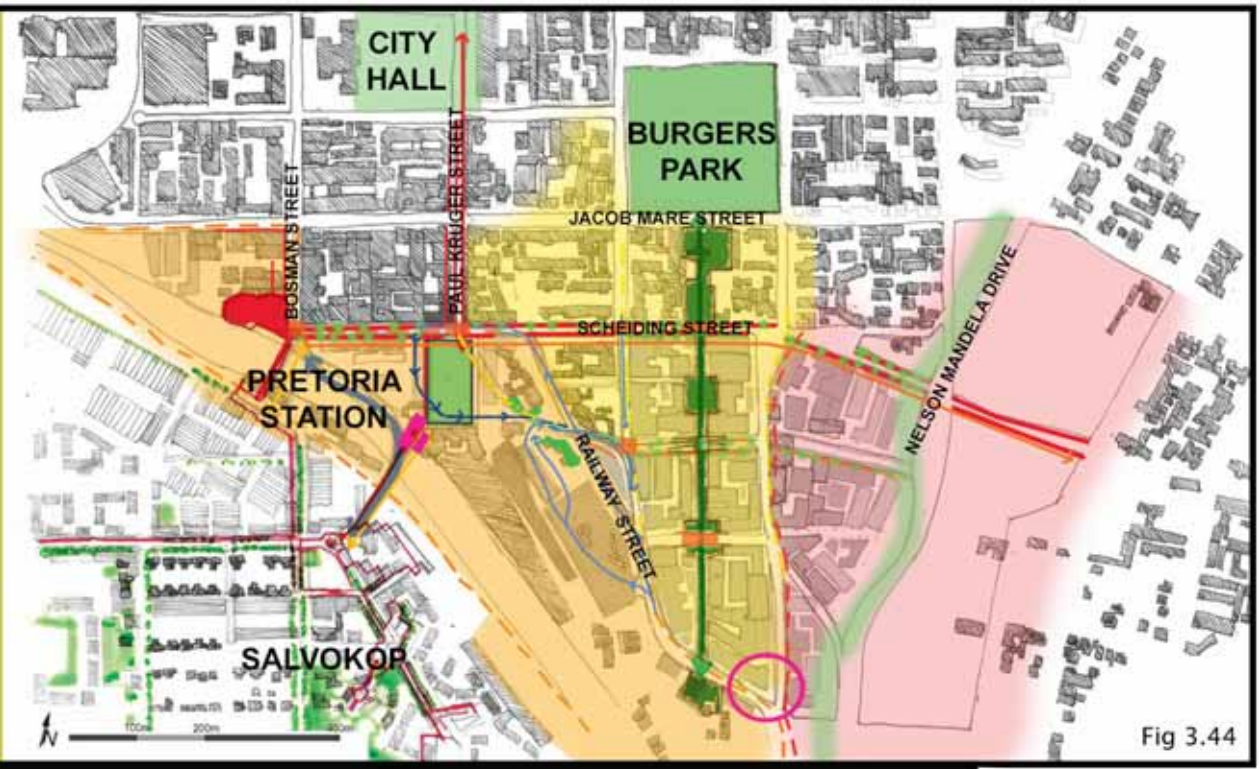


Fig 3.44

"Urban environments should promote the maximum positive freedom for individuals to act...the creation of urban structure should be so judged as to release the energies and talents of many people...it is the complexity of environment in turn which reflects and contributes to the richness of human experience" (Dewar and Uytenbogaart 1991:19).

Conclusion

As was done when the analysis was performed, the figure above shows the various separate proposals made on one diagram so as to understand the proposal in its totality (Fig 3.44).

It is believed that the application of this framework addresses the problems that were identified in the analysis and will promote the creation of a multi-layered, diverse environment that offers its users and visitors many different opportunities and exciting choices.

3.9.2 Framework Summary

The key points are summarised below:

- Continuation and densification of the urban fabric to the South of Scheiding Street.
- Defining of the historical square in front of the Old Station building, through the articulation of built fabric along its edges.
- The zoning of the precinct into 3 different belts (transport,residential-hotel-offices and educational).
- Pronouncing entry point through the use of iconic design.
- Removal of the Paul Kruger Street Extension.
- The creation of a more prominent link to the East over Nelson Mandela Drive
- Improvement of both vehicle and pedestrian links to Salvokop and Freedom Park.
- The inclusion of a North-South café boulevard in the residential-hotel-office belt.
- Developing ring road systems as a means of vehicular circulation through the area.
- Optimising and defining a public open space system.

The Way Forward

Having performed an analysis and compiled a Spatial Development Framework proposal for the Pretoria Station Area, a thorough understanding of the context in which the proposed building will be situated has been achieved. It is now possible to make decisions with regards to the programme of the building, as well as its location and orientation within the proposed Spatial Development Framework. The presence of a Spatial Development Framework proposal allows one to continually check whether the development of the design is on the correct path and contirbuting to the goals of the Pretoria Station Precinct.

CHAPTER 4 - THEORETICAL PREMISE

4.1 Approach

Theoretical study is a way and means of informing as well as substantiating one's design. Various theories that are believed to support the issues that this project proposal seeks to address, have been investigated.

4.2 Philosophy

4.2.1 Towards an Architecture of Experience

At present public architecture and urban design has allowed itself to get caught up in the 'rat race' that rules over society today. Buildings and public spaces emanate the fast pace of our daily lives, serving only as shells in which the user carries out his or her daily tasks. Public design no longer caters for the individual and it is on this level that everyone experiences life. In his book Art as Experience, John Dewey states that "if the gap between organism and environment is too wide, the creature dies" (Dewey 1934:14). This is indeed what is happening in our cities today.

"Art should not be explained; it must be experienced"
Steen Rasmussen (1989:9).

Architecture has long been seen as the 'functional art', but it is the art in architecture that affords its users a fantastic and inspiring experience.

In his book, Dewey brings to light that architecture "expresses the enduring values of the collective human life" and that it "represents the memories, hopes, fears, purposes and sacred values of those who build" (Dewey 1934:221), for a specific purpose.

"Architecture is produced by ordinary people, for ordinary people; therefore it should be easily comprehensible"
(Rasmussen 1989:14).

Inspiration can therefore be found in the ordinary. Dewey notices that as people "being alive, we seek to live, until we are cowed by fear or dulled by routine" (Dewey 1934: 169). Re-interpreting the ordinary "intensifies the emotional thrill and punctuates the interest that belongs to all breaks in everyday routine" (Dewey 1934:30). It is when ordinary experiences bring a depth of understanding into the public realm, that architecture and the way in which it influences its users, is capable of enticing them and affording them an experience that contributes positively to their perception of the world. Architecture is an art that people experience first hand. It is literally an art of the streets and therefore greatly influential. The user must therefore be capable of participating with the architecture of the city. Dewey states that "the career and destiny of a living being are bound up with its interchanges with its environment, not externally, but in the most intimate way" (Dewey 1934: 12). It is so necessary that urban architecture begins once again to interact with the people of the city, particularly for their benefit.

SIGHT

see perceive glimpse

The city is a place filled with interactions, contradictions and contrasts, which give rise to tension.

It is these areas in a city where past and present life overlaps and merges that intense urban energy is found. Opportunities for intervention are often present in these areas as architecture is capable of emphasizing the way in which the past strengthens the present and in turn shows how the future may indeed unfold. It is when the user is made aware of this layering that their individual consciousness awakens, their perceptions and personal memories are triggered, enriching the experience had by them. A successful work of architecture is re-invented each time it is experienced by a different individual because perceptions are completely authentic. Although rooted to a specific site, it is in this way that architecture becomes universal. It is in this way that cultural barriers and racial diversity are overcome.

Due to the nature of lifestyles today, experiences are so often distracted, dispersed and unfulfilled. In order for an architectural experience to be grasped fully, amidst the hustle and bustle of daily life, it needs to become a mediator and challenge the usual perceptions of people.

Dewey defines an experience as an entity in which the "flow is from something to something... *there are pauses, places of rest, they punctuate and define the quality of movement"* (Dewey 1934: 36).

This suggests that one undergoes an experience due to the unfolding of a continual interaction between a person and the environment. It is therefore clear that an experience has a definite pattern and structure due to the relationship that is set up between the user and the environment. An experience becomes somewhat of a narrative between the two, where "the plot...requires a stage, a space, wherein to develop and time in which to unfold" (Dewey 1934:42). Architecture thus transcends both space and time as there is an "energy of position as well as motion" (Dewey 1934"209).

All experience begins with expression. In architecture, the articulation of materials, to form a coherent whole, is an expressive means of communicating with people. Dewey states that

"communication is the process of creating participation...of making common what had been isolated and singular" (Dewey 1934:244).

Materials can therefore be used to represent certain nature of their own experience of the world: that it presents the world within a new experience which they undergo" (Dewey 1934:83).

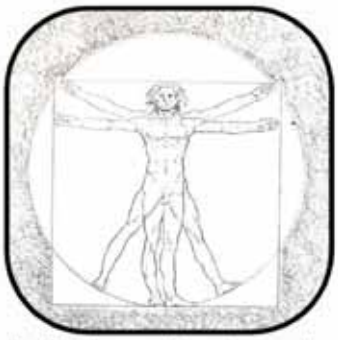


Fig 4.1 Human scale and proportion. (Ching 2007:276)

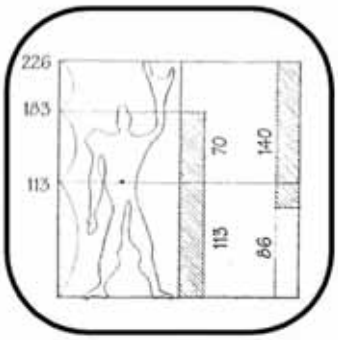
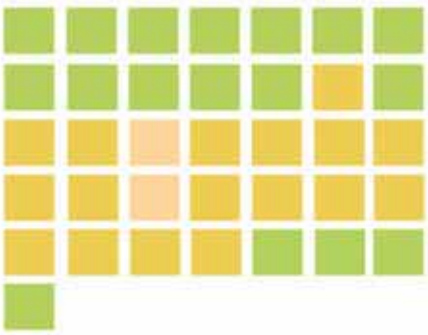


Fig 4.2 Le Corbusier's 'The Modular'. (Ching 2007:302)

Fig 4.3 The human body's range of motion. (Ching 2007:311)



scent fragrance aroma

Expression triggers one's senses and in turn an experience is created. A person's senses form the means to fully understanding their surroundings. However human senses do not operate in isolation, but in conjunction with one another. Dewey states that "it is not just the visual apparatus...the entire organism, with all its charge of the past and varied resources operates, but operates through a particular medium, that of the eye, as it interacts with the eye, ear and touch...while we see, we also hear, we feel pressures and heat or cold" (Dewey 1934:195). In this way, a dualism is created in which the physical senses speak to the realm which the mind controls.

It becomes evident that the creation of an experience is both physical and determined by one's past (i.e. cultural roots). These two factors are explored further:

4.2.2 The Physical Perception of Architecture

Juhani Pallasmaa observers that cities themselves confront the "human existential condition" (Pallasmaa 2005:11), with which we are faced today. People crave instant gratification through commodities, advertising and branding. The hierarchy of the senses has therefore changed over the years. The use of digital media, emphasising the visual sense, has lessened our ability to use the other senses simultaneously when experiencing the world that surrounds us. Le Corbusier is known to have stated that, "I exist in life only if I can see" (Pallasmaa 2005:29). In turn, it is concerning to witness the one-sidedness perception has taken with regards to current architecture. Pallasmaa attributes the "cancerous spread of superficial architectural imagery today, devoid of tectonic logic and a sense of materiality and empathy" (Pallasmaa 2005:24) to the creation of environment which promotes the dominance of one tactile sense over the other. If this occurs, the user begins to feel alienated and detached from their experience.

Pallasmaa suggests that,

"the way spaces feel, the sound and smell of these places, has equal weight to the way things look"
(Pallasmaa 2005:7),

The human body is the vessel through which all perceptions are possible. It is ones tactile senses (sight, hearing, touch, smell and taste), that unlock all human experiences. They are a person's means of orientating oneself within the world, a "locus of reference, memory, imagination and integration" (Pallasmaa 2005:10).

It is these senses, that contribute so richy to a person's experience of the world, that will now be studied in more detail.

SOUND

hear discern listen

a) Sense of Sight

Pallasmaa differentiates between two visual fields. The first of these visual fields is focused vision. This refers to the field of vision that is being observed directly. It is sharp and confrontational in character. It is within this field of vision that a user engages straightforwardly and consciously with their surroundings. The second field of vision is unfocussed vision. This field of vision is peripheral and therefore inclusive of the person's surroundings, much of which they are only subconsciously aware. The context which is subconsciously perceived is important in creating and enveloping effect and eliminating the feeling of alienation. However inclusive vision is, it is directional and still the sense that renders a person an observer in their own world. It is the other senses that unite a person with it.

b) Sense of Smell and Taste

Certain smells and tastes are memory triggering. According to Pallasmaa, "The nose makes the eyes remember" (Pallasmaa 2005: 54).

c) Sense of Hearing

Sound is omni-directional and therefore an all-incorporating sense.

"Most people would say that as architecture does not produce sound it cannot be heard. But neither does it radiate light, and yet it can be seen" (Rasmussen 1989:224).

One's ears receive and absorb everything that is happening around one, as opposed to omitting what is not wanted. Sound therefore gives the world a sense of continuity. A person's ears are capable of perceiving volumes depending on the amount and quality of sound within a space.

d) Sense of Touch

The skin is one's most tactile sense, as it is through this specialised membrane that the world is literally 'felt'. By touch, a person is quite literally connected to the earth. As the hands touch, they think and learning is stimulated.

Due to its incredible influence on a person's daily life, it is necessary for architecture to address all the senses simultaneously, therefore becoming a fully integrated communicative medium. By adopting this approach, a person's sense of being in the world is strengthened, and invigorated.

4.2.3 Conclusion

One should seek to

"re-sensualise architecture through the strengthened sense of materiality and hapticity, texture and weight, density of space and materialise light" (Pallasmaa 2005:31).

It is through environments like this, that one will begin to rediscover all the senses that have been neglected.

Fig 4.4 The average dimensions for a seated adult man. (Adler 2001:2-1)

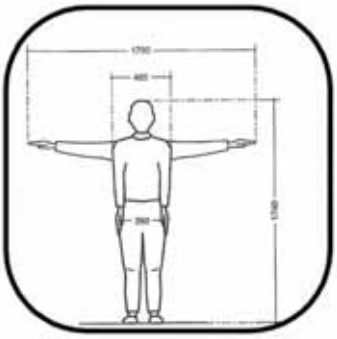


Fig 4.5 The average frontal dimensions for a standing adult man. (Adler 2001:2-1)

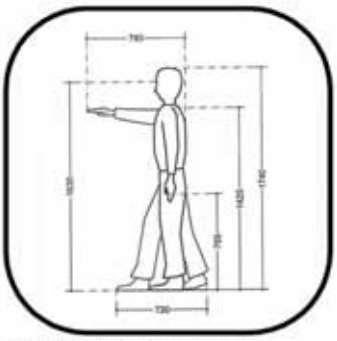
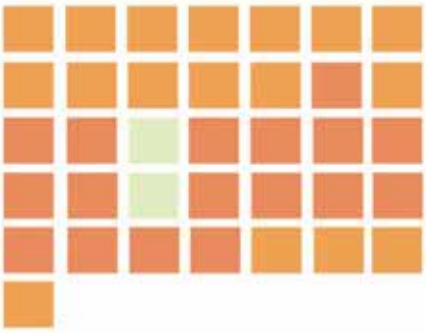


Fig 4.6 The average side-on dimensions for a standing adult man. (Adler 2001:2-1)



relish delight savour

4.3 Design Generators

4.3.1 Time and Materiality

Time can therefore become a visible, multi-faceted design element in the built environment. It becomes so multi-layered from portraying the passing of seconds, to days, to the passing of years. When communicated on all levels, architecture then "does not make time, but aspires to a more pleasant way of spending it" (Bourman 1993:18). This applies specifically to the context in which the proposed project is situated. The lives of those who use the station's facilities are governed by time, where people wait for transport or within minutes, miss a train, arrive early or late and thus their whole day is altered. What better environment in which to promote and area of transition; a place in which time is not perceived as wasted, but as a very necessary place to pause and orientate oneself from before beginning one's day.

> *"Architecture is an extension of nature into the man-made realm"*
> (Pallasmaa 2005:41),

and is therefore not isolated and self-sufficient. It measures the passing of time and acts as a witness to the changing trends of society. Architecture itself relates profoundly to the human experience as it too exists in space over a period of time (being one of the few things out of human control).

Buildings too, experience birth, life and death. Leatherbarrow confirms this by stating that

> *"architectural duration implies a past that is caught up in the present and anticipates the future"*
> (Leatherbarrow 1993:64).

In the past, natural materials have blatantly portrayed their origins and shown their character as time has passed. Weathering of materials over time is the "continuous metamorphosis of the building itself" (Leatherbarrow 1993:16). The user is aware of the building's impending death. Pallasmaa notes that "we have a mental need to grasp that we are rooted in the continuity of time" (Pallasmaa 2005:34), and the built environment is testament to this.

> *"Weathering brings the virtual future of a building into a dialogue with its actual present, as both are entangled in its past"*
> (Leatherbarrow 1993:113),

and therefore reveals the world's ever-changing circumstances. It is for this reason that people often find themselves drawn to timeless, classical works of architecture. They subconsciously feel a close link between their own human experience and the perceived architecture. Architecture has "lost something of primitive man's sensitive awareness of textural surfaces" (Rasmussen 1989:178).

TOUCH

feel | contact | handle

New materials and technologies used as tools in creating architecture today, no longer portray the passage of time. Today architecture seeks to deny time. It aspires to permanence and seems to challenge eternity itself. One should seek to,

"re-sensualise architecture through the strengthened sense of materiality and hapticity, texture and weight, density of space and materialised light"
(Pallasmaa 2005:31).

It is through environments like this, that one will begin to rediscover all the senses that have been neglected.

Time can therefore become a visible, multi-faceted design element in the built environment. It becomes so multi-layered from portraying the passing of seconds, to days, to the passing of years. When communicated on all levels, architecture then "does not make time, but aspires to a more pleasant way of spending it" (Bourman 1993: 18).

4.3.1 The Body at the Centre - Ergonomics

The call is therefore for an architectural centered on the individual human body, along with its muscular and tactile senses. Pallasmaa observes that

"with the loss of tactility, measures and details crafted for the human body - and particularly for the hand - architectural structures become repulsively flat, sharp-edged, immaterial and unreal"
(Pallasmaa 2005:31).

4.4 Conclusion

Architecture is set aside from other arts as it stimulates action and participation. It initiates, directs and organises movement. Every person experiences the world through their tactile, physical senses (sight, hearing, smell, taste and touch), as well as on an intangible, emotional level. It is by appealing to these senses that architecture will again begin to engage with its users and evoke positive responses from them. If it is believed that the aim of architecture is to provide a framework for people's lives, then buildings should be formed around the lives to be lived in them.

It is this connection that this project proposal seeks to explore and rekindle. It seeks to urge the user once again to connect with the built environment, circulate between its elements, move through them, run their hands along them, and within them truly experience the spaces that have been created.

Fig 4.7 The average dimensions for a seated adult woman. (Adler 2001:2-1)

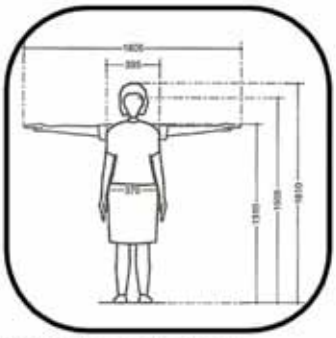


Fig 4.8 The average frontal dimensions for a standing adult woman. (Adler 2001:2-1)

Fig 4.9 The average side-on dimensions for a standing adult man. (Adler 2001:2-1)

"But the real question is this: is it not possible to conceive of an environment that not only calms, accelerates, accommodates or privatizes time, but which also makes 'public time' by explicitly taking the necessity of doing so as its point of departure? Is it possible to conceive of an architecture that does not separate by setting boundaries, but which unites people by telling stories relevant to these times? An architecture that synchronises? An Architecture that is not finished when the design has been translated into material form and handed over, but just begins at that point?" (Bourman 1993:18).

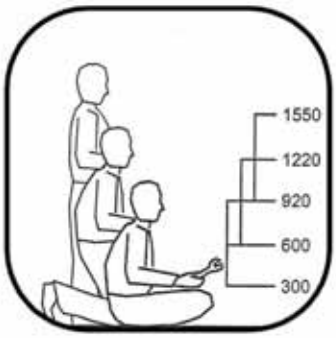


Fig 4.10 Body clearances 1 . (Adler 1999:2-7))

Fig 4.11 Body clearances 2. (Adler 1999:2-7)

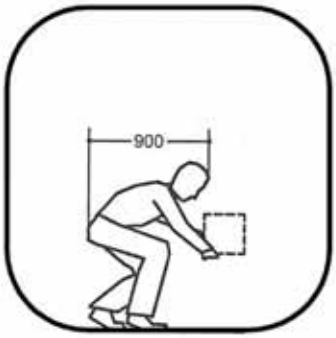
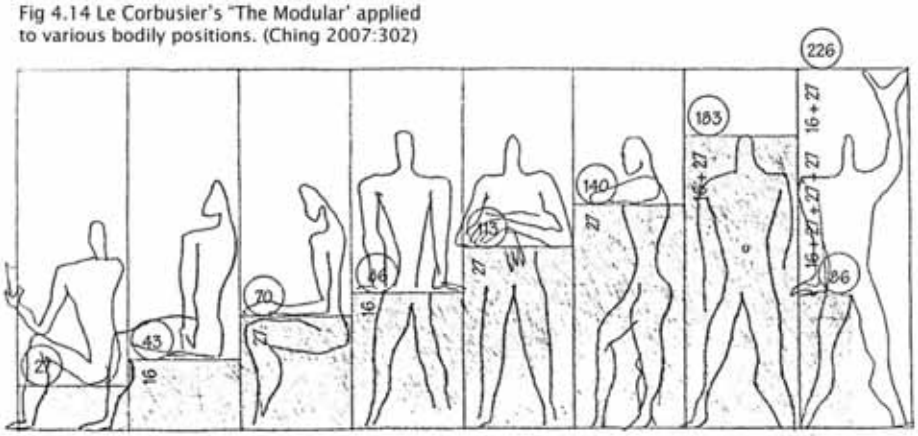


Fig 4.12 Body clearances 3. (Adler 1999:2-7)

Fig 4.13 Body clearances 4. (Adler 1999:2-7)

Fig 4.14 Le Corbusier's "The Modular' applied to various bodily positions. (Ching 2007:302)



"I confront the city with my body.
I experience myself in the city,
and the city exists through my embodied experience.
The city and my body supplement and define each other.
I dwell in the city and the city dwells in me"
(Pallasmaa 2005:31).

CHAPTER 5 - PRECEDENT STUDIES

CHAPTER 5: Precedent Studies

5.1 Introduction

The precedent studies have been divided into two categories; **theoretical precedents** and **functional precedents**.

Theoretical precedents aid in demonstrating the successful incorporation of an architectural philosophy into a design resolution. Functional precedents aid in resolving the spatial planning and technical aspects of the proposed project.

PROJECT The Constitutional Court of South Africa, Johannesburg, Gauteng, South Africa.

ARCHITECT OMM Design Workshop & Urban Solutions Architects and Urban Designers.

5.2.1 The Constitutional Court of South Africa

"Freedom, democracy, equal opportunity, diversity, responsibility, reconciliation and respect: these ideals form the foundation of the new South African Constitution and are the values that the new building of the Constitutional Court sets out to convey" (Deckler 2006:19).

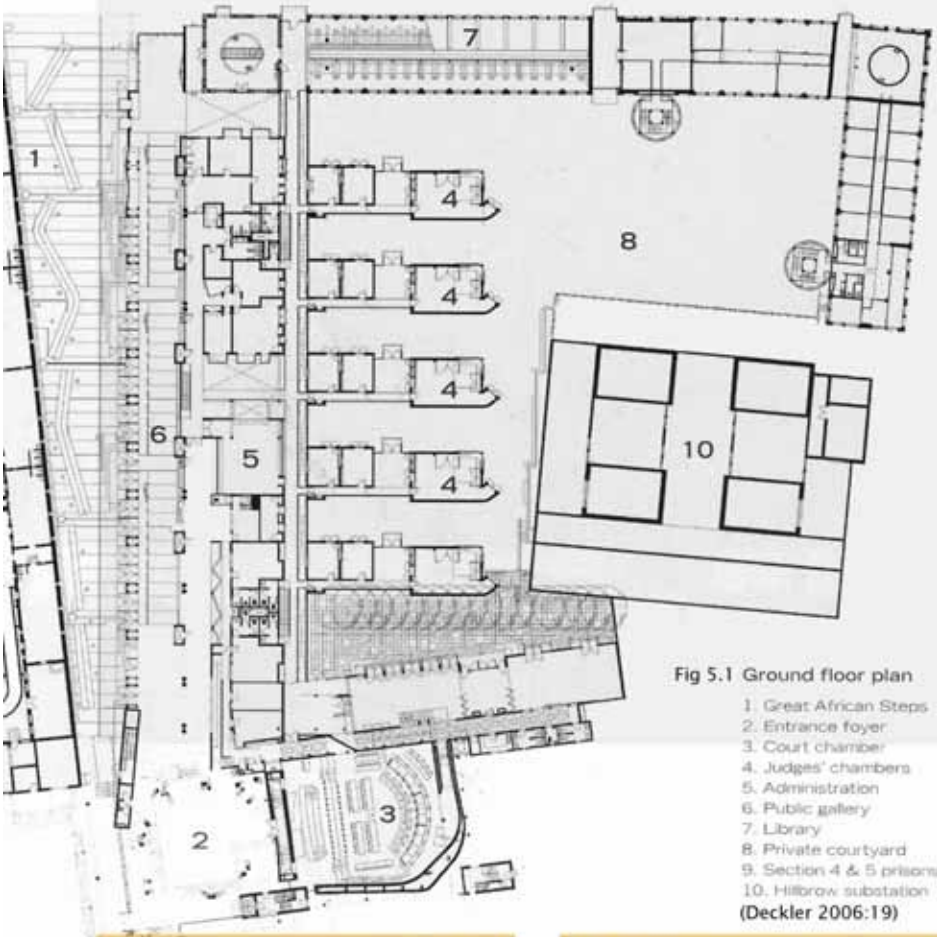


Fig 5.1 Ground floor plan

1. Great African Steps
2. Entrance foyer
3. Court chamber
4. Judges' chambers
5. Administration
6. Public gallery
7. Library
8. Private courtyard
9. Section 4 & 5 prisons
10. Hillbrow substation

(Deckler 2006:19)

The brief stipulated that the building was to be:

1. Socially responsive
2. Historically embedded
3. Culturally Sensitive
4. Responsive to climate and weathering
5. Technologically Innovative and
6. Labour resourceful

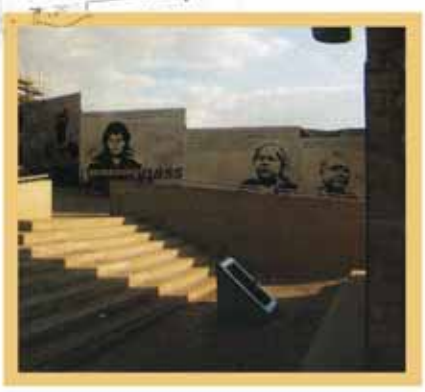


Fig 5.2 View showing a commemorative space, with artwork done by local artists and craftsmen. The dramatic lighting effects adds to its quality when moving through the space. (Deckler 2006:20)

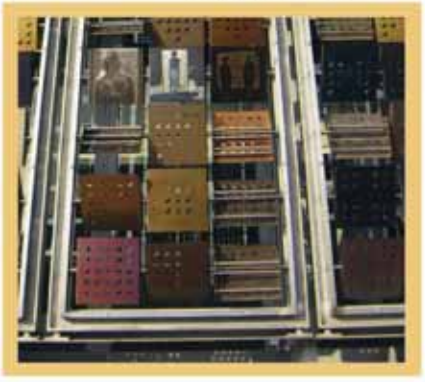


Fig 5.3 Innovative etched shading devices on the Western facade encourage the visitor to engage with the tactility of the building. (Deckler 2006:20)

Fig 5.4 The sunken floor of the entrance foyer creates a warm an intimate environment in which to wait, relax and admire the finer details of the architecture. (Deckler 2006:20)

LOCATION The Constitutional Court building is located in the heart of the Johannesburg CBD. Its surrounding context is the high-density, urban residential Hillbrow suburb. The site is the location of the Old Fort prison of central Johannesburg, a place rich with political symbolism. This is the highest point of the old Witwatersrand and is therefore very prominent.

The Building

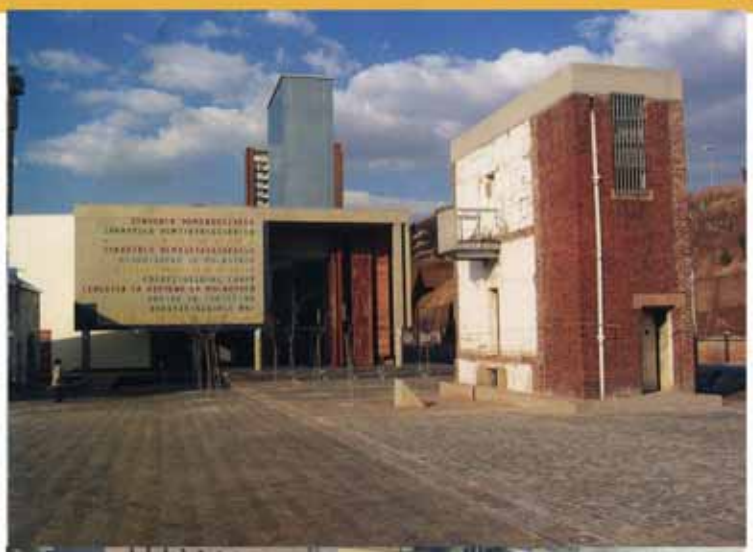


Fig 5.5 above. A glimpse of the roof construction shows how light is diffused through a series of transluscent boxes before it enters the foyer area inside. This results in soft, natural lighting effects internally. (Deckler 2006)

Fig 5.6 above, but below. A view of the entrance of the building showing both old and new elements.

The main aim of the Constitutional Court building is to re-establish part of the city's urban fabric and act as a catalyst in returning spatial order to the precinct. This concept has been made accessible through the creation of public building that is directly connected to its surrounding context. The other aim of the building is to "enhance the quality of life in the city and in the building, and to give pleasure" (Deckler 2006:19).

The building is recognisable on the Johannesburg skyline, particularly at night, by its characteristic 'lanterns' that serve as markers within the urban environment. It is linked to its surroundings through the effective use of landscape design. The Main Entrance fronts onto Constitutional Square to the South-West and is directly accessible from the top of 'The Great African Steps'. These steps run next to the building's Western façade.

Fig 5.7 Walkways open onto volumes that allow views of the floors below. (Deckler 2006)

Fig 5.8 Columns stand at interesting angles bringing a dynamic element into the space. (Deckler 2006)

Fig 5.9 The Court Chamber, lit from above, but linked inconspicuously to the outside by a ribbon window at external ground level. (Deckler 2006)

"The building embodies the victory of idealism and human rights over cruelty and despair, and reflected the openness and transparency called for in the Constitution."
(Deckler 2006:19)

The Interior

Their direct contact with the building's façade encourages one to engage with the innovative, artistic, steel-etched shading device that protects the building from the Western sun. At the top of the steps Constitutional Square is experienced as barren and uninviting. The self-contained historical blocks located around the periphery of the square, turn their backs and give the space a distinct boundary. From this finite space, the main entrance of the Constitutional Court building provides an open, inviting and contrasting escape.

The plan of the building centres around its two main public functions; the Entrance Foyer and the Court Chamber. Due to its public character, this Southern wing of the building allows great visibility and accessibility. The Entrance Foyer is directly accessible via the main entrance, announced boldly in the colourful letters of all eleven official languages. When entering the main Foyer, the volumous interior space and long stairway feel foreign at first. However, the incredible attention to detail, the high quality of workmanship within this space, the lightness embodied in the architecture invites one to relax and enjoy the new environment. The Entrance Foyer is representational of the old African custom of settling matters and disputes under the protection of an important tree. This concept gave rise to the interesting architectural treatment of this space, both internally and externally. Light is diffused through a series of shafts capped with glazed boxes set into the roof structure. Although aesthetically innovative, these glazed boxes serve also as passive solar control devices, protecting the interior from the sun's seasonal changes. This roof treatment gives the effect of light falling through a tree. The feeling of being seated beneath a tree is enhanced by the columns positioned at angles that appear to be haphazard.

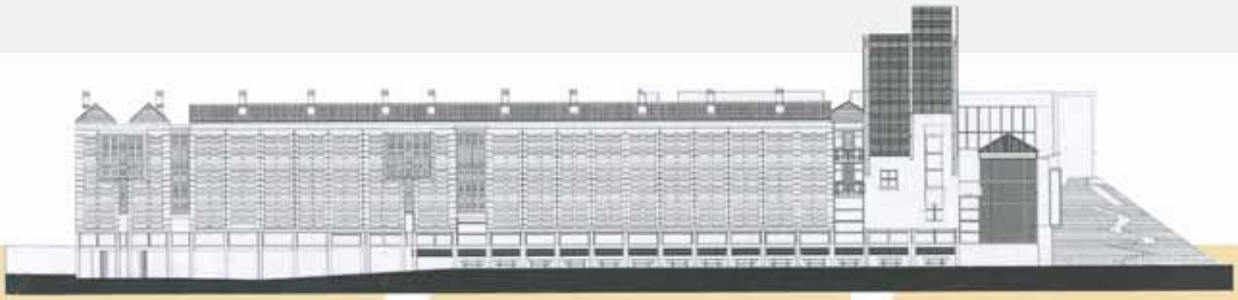


Fig 5.10 **NORTHERN ELEVATION** (Deckler 2006)

Fig 5.11 **WESTERN ELEVATION** (Deckler 2006)

Internally, circulation occurs via a flight of stairs that run parallel to 'The Great African Steps, running along the West of the building. These steps direct members of the public towards the law library, that forms the Northern wing of the building, as well as functioning as an exhibition space and art gallery. Light filters gently into this space through the ever-changing shading device of the Western façade. A hierarchy of spaces is explored by creating a gradient between public, semi-public and private space.

The Building

The private functions of the building (administration offices, the Judges' Chambers and their related amenities), are off-set to the East. This Eastern part of the building is made up of five North Facing blocks, each three storeys high. These blocks sit within a reflective pool and are accessed via a series of narrow walkways, therefore re-iterating the segregation between the public and private realm. The Eastern blocks have views of an Inner Courtyard and the existing substation beyond.

Parts of the existing historical buildings were retained due to their relevance. The contrast between old and new is achieved by leaving materials exposed and untreated. This concept allowed for the use of a range of materials including concrete, honed slate, galvanised steel, timber, plastered brickwork and glazed curtain walling.

The roughness of certain materials contrasts effectively with the elegance of others, heightening ones awareness of the building's textures. The materials used form a canvas on which local artists and craftsmen were employed to make their mark. The intricate level of detailing results in a human scale that covers urban design principles as well as intense technical resolution.

"It is a building to be physically experienced, not seen from a distance; a building carefully made, people-friendly, culturally respectful and responsive; a beacon on the hill serving as a marker in the urban landscape" (Deckler 2006:21).

Fig 5.12 above left. Light filters through the external shading devices, creating interesting effects internally. (Deckler 2006)

Fig 5.13 above right. This photo shows 'The Great African Steps'. (Deckler 2006)

PROJECT Apartheid Museum, Johannesburg, Gauteng, South Africa.

ARCHITECT GAPP Architects and Urban Designers, Mashebane Rose Architects, Britz Roodt Association, Linda Mvusi Architecture & Design.

5.2.2 Apartheid Museum

In Summary, this ***"linear museum, half-buried in the mining landscape South of Johannesburg, traces the origin, development, implementation and deconstruction of South Africa's notorious Apartheid system"*** (Deckler 2006:39).

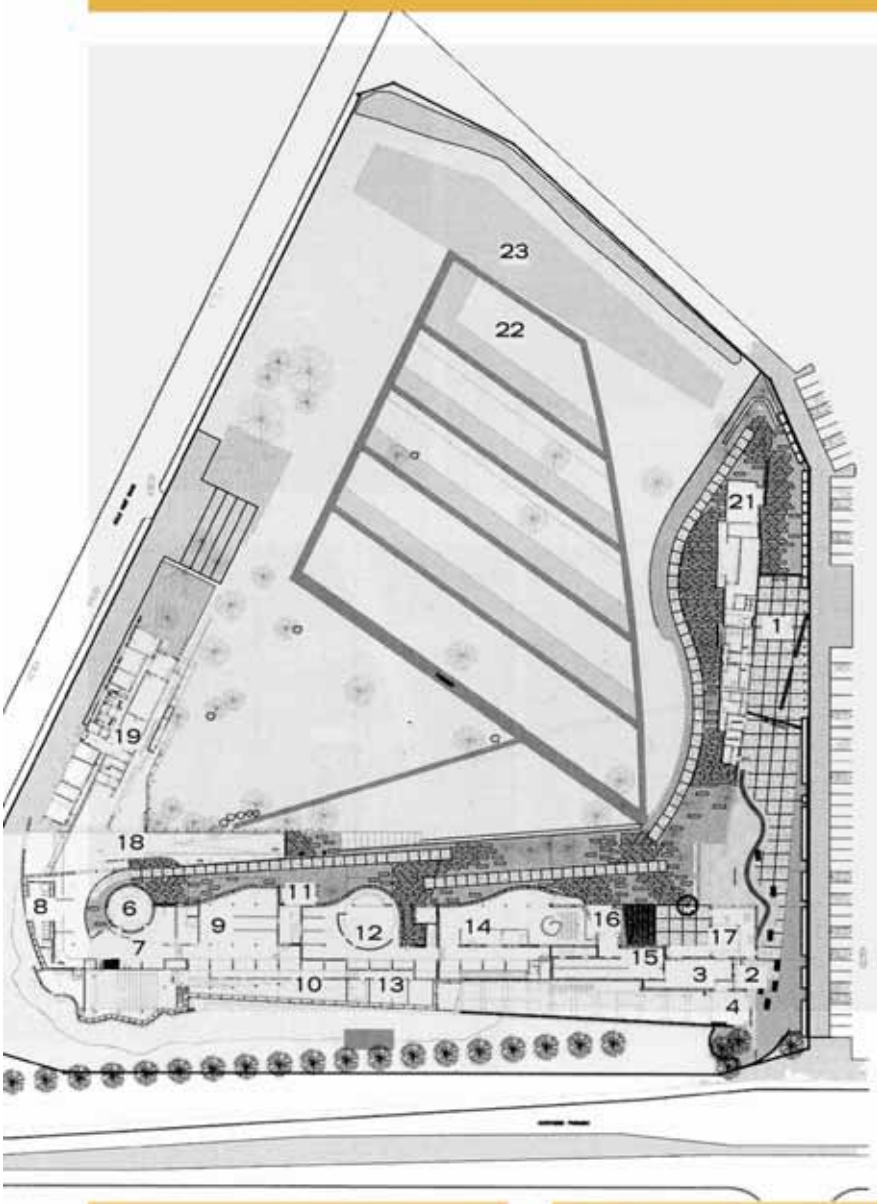


Fig 5.14
Main floor plan

1. Main entrance
2. Ramp
3. Hall of reception
4. Exterior ramp
5. Stairs from arrival ramp
6. Hall of congregation
7. Hall of gathering
8. Ablution
9. Hall of separation
10. Hall of resistance
11. Cellspace
12. Hall of resistance
13. Security control network
14. Hall of witness
15. Election hall
16. Ramp
17. Memorial
18. Hall of international struggle
19. Archives
20. Walkway
21. Shop
22. Landscaping
23. Pond
24. Main exit

(Deckler 2006:39)

Fig 5.15 View showing the entrance foyer when entering the interior museum space. (Deckler 2006:40)

Fig 5.16 Image showing one of the display spaces. (Deckler 2006:40)

Fig 5.17 Image showing a display space that pays tribute to those who lost their lives fighting against Apartheid. (Deckler 2006:40)

LOCATION The Apartheid Museum is located South of Johannesburg, adjacent to the Gold Reef City Casino Complex and Theme Park.

The Building

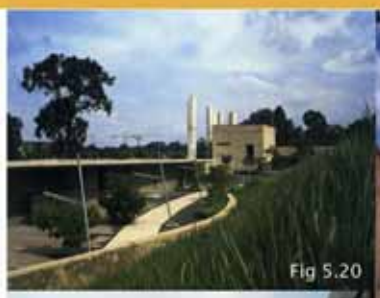


Fig 5.20

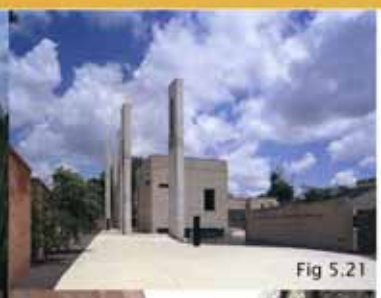


Fig 5.21


Fig 5.22


Fig 5.23

Fig 5.20 View of the Apartheid Museum within the landscape. (Deckler 2006:41)

Fig 5.21 View experienced from the main entrance of the complex. The path is both linear and directional. (photo by author)

Fig 5.22 A view down the external ramp as one is elevated within the site's walls. (photo by author)

Fig 5.23 At the top, the ramp narrows at its culmination 'forcing' one to follow its lead. (photo by author)

materiality & tactility


Fig 5.18


Fig 5.19

Fig 5.18 and Fig 5.19 show the material and texture of the surfaces. (photos by author)

The Apartheid Museum building sinks into the site, therefore embedding it into the landscape and its greater context. Due to this, the characteristic skyline of Johannesburg to the North becomes evident and often dominating. Views to the North are emphasised as one ventures through the museum complex. The layout of the building itself sets up a narrative ***"journey through space and time"*** (Deckler 2006:39) as one moves through it. When exploring the museum, one is constantly aware of the position of one's body is space. When ascending the series of ramps, stairs, tapering, naturally lit outdoor spaces and dark, resounding indoor spaces, one's senses of heightened. It is through this heightening of the visitor's senses that such a full experience is eventually achieved.

Fig 5.24 View on entering the main buiilding where the visitor first encounters the museum's content. (Deckler 2006:41)

Fig 5.25 A small exhibition niche along the exterior ramp echoes barrenly as one walks through it. (photo by author)

Fig 5.26 A rusting steel audio-visual viewing box set within a small external courtyard adds to the materiality of the building. (photo by author)

Fig 5.27 on the left. Photo showing the rear of the viewing platform at the top of the outside ramp. (photo by author)

Fig 5.28 on the right. Photo showing the staircase down from the viewing platform. (photo by author)

The Interior

When entering the building, one is forced into a confined area, confronted with the concept of Apartheid for the first time and then immediately guided outside again, to the base of a long ramp ascending through the landscape. When climbing the tapering ramp, one becomes aware of the echo of one's own footsteps on the concrete underfoot. At the top, the space becomes wide and elements of the building frame the skyline of Johannesburg to the North. It is from this point that the visitor enters the museum's "cavernous spaces, half-buried underground" (Deckler 2006:41).

The sequence of ever-changing spaces within the museum, leads the visitor on a chronological (although also emotional) journey through South Africa's political history. Places for viewing and reflection are strategically positioned so as to enhance the visitor's experience of each display space. Spaces vary from being constrictive and uncomfortable to dark and strangely comforting.

Both outside and inside the building, concrete is bare and cold, walls are cut away from one another and materials left exposed. The tactility of the building's surfaces adds to the sensory appeals of this environment. Although the building is said to echo "iconic industrial architecture" (Decker 2006:39) and contain a richness of Apartheid symbolism, it appears as a subtle, yet engaging backdrop for the displays that it houses. The museum's displays are primarily graphic, video and audio-visual, hardly reminiscent of traditional museum artifact displays. This contemporary take on exhibiting material, increases the relevance of what is being portrayed. Behind these displays, the interior architect itself, provides a "neutral canvas" (Deckler 2006:41) on which to tell a story.

Fig 5.29 **SECTION** (Deckler 2006:41)

"The design consciously avoids any literal reference to 'African' architecture, but prefers to rely on a suggestive and conceptual manipulation of form, colour and texture, to achieve its presence and identity" (Deckler 2006:41).

The Apartheid Museum, however controversial, is successful in that it accomplished what it has set out to do, elegantly and inconspicuously. When exiting the museum complex, having travelled through spaces of observation, reflection and interaction, one feels a sense of peace and hope, emotions are stirred and an imprint is left within.

Fig 5.30 The entrance to the exhibition spaces is marked by heavy red doors contrasting with the neutral palettte of the building itself. (photo by author)

Fig 5.31 View back towards the museum while exiting. The articulation of the building's neutral pallettebecomes evident. (photo by author)

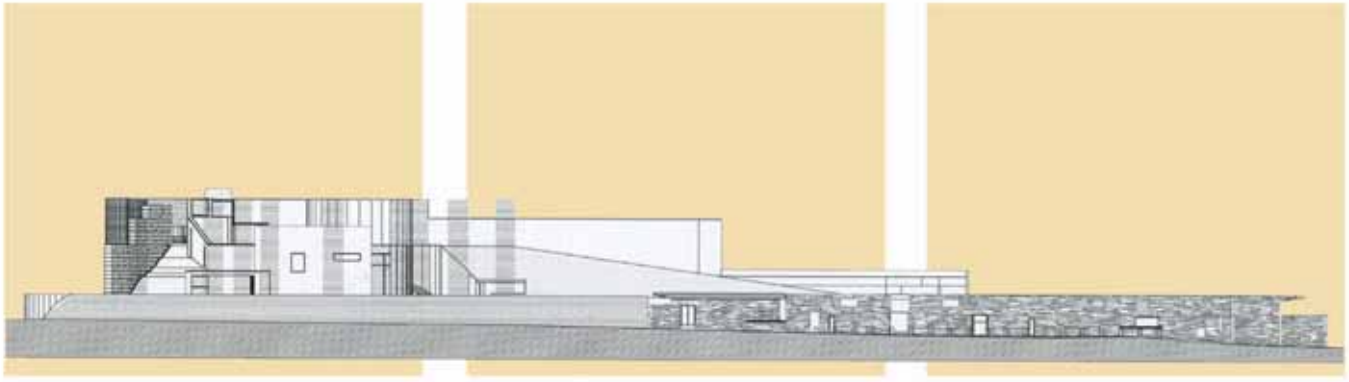


Fig 5.32 **EASTERN ELEVATION** (Deckler 2006:41)

PROJECT Bloemfontein Tourist Centre, Bloemfontein, Free State, South Africa.

ARCHITECT Pieter Malan and Jan Ras Architects.

5.3 Bloemfontein Tourist Centre

This local project has proven to be highly informative with regards to the development of the programme of the proposed new 'i-hub' project.

In summary, this precedent ***"comprised the design of a one-stop tourist facility where buses stop over, tourist information is made available and commercial or office space is rented to tourist related institutions and businesses"*** (Els 2000).

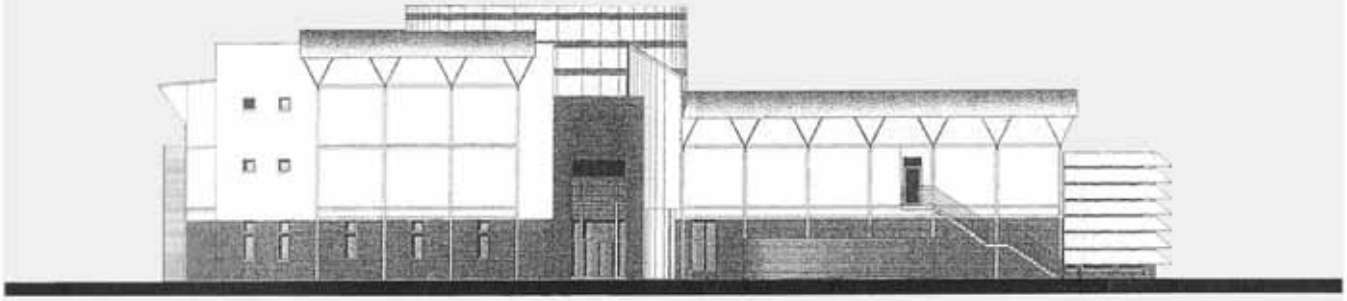


Fig 5.33 **NORTHERN ELEVATION** (Els 2000)

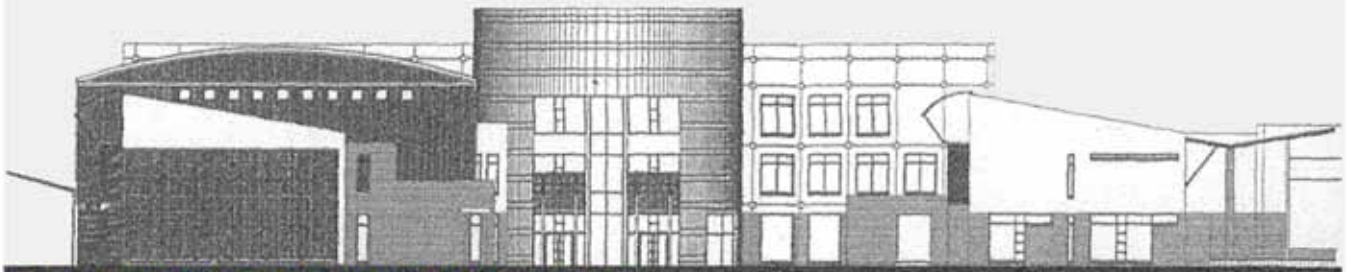


Fig 5.34 **SOUTHERN ELEVATION** (Els 2000)

Fig 5.35 The side entrance of the building when approaching the parking lot. (Els 2000)

Fig 5.36 A view of the side entrance as seen from the bus rank. (Els 2000)

Fig 5.37 The images above shows the main entrance of the Tourist Centre. (Els 2000)

LOCATION The building is located on a site of maximum accessibility. It is situated between two main traffic arteries that link Bloemfontein to the nearest major national freeway (N1). It is also positioned in close proximity to Bloemfontein's tourist attractions and accommodation facilities.

Fig 5.38 Passive solar design elements have been incorporated into the building. (Els, 2000)

Fig 5.39 Surface articulation (Els 2000)

The Building

The building is U-shaped in form, enclosing a central parking area. The main entrance to the building is clearly marked by a cylinder protruding from the Southern façade. This cylinder is not only where one enters, but also where vertical circulation to the floors above occurs. The user is therefore able to understand, immediately on entry, how access to the first, second and third floors is achieved. Movement up and down this staircase enhances the experience of the cylinder's internal space (Els 2000:43). From the staircase, the user is able to see glimpses of the interiors beyond. The building height tapers from three storeys at the central wings, to two storeys at the side wings. This insures that the building does not overpower the user, unfamiliar to the area, as a human scale is maintained throughout. Two other entrances provide access from the bus rank to the West of the building, and the parking lot to the East.

The way in which the various different textures of the rendered walls, exposed brickwork, natural stone, steel elements and glazing are articulated, gives rise to interesting, ever-changing surface effects. The passive design elements used here also contribute to the building's aesthetic appeal. Steel shading louvres and corrugated steel panels protect the building from the harsh Free State sun.

The building is primarily used as a pit-stop for tourists travelling through central South Africa, en-route elsewhere. The building is found to be functioning well. It has been noted, isolated by a "sea of parking" (Els 2000:43) on all sides, that the building does not contribute to the surrounding context in any way.

Fig 5.40 View down the central corridor along which various line shops run. (Els, 2000)

Fig. 5.41 Openings within the building create vistas of strong design elements. (Els, 2000)

Fig 5.42A light steel roof structure carries transluscent roof sheeting that allows diffuse light into the building's internal spaces. (Els, 2000)

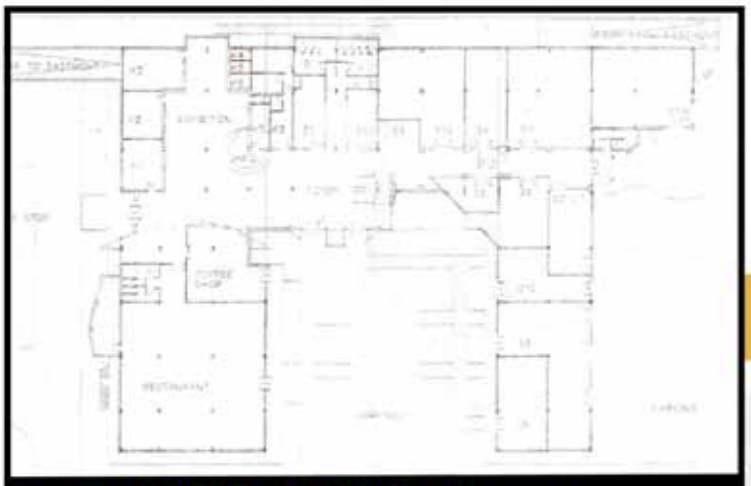


Fig 5.41 **GROUND FLOOR PLAN** (Els 2000)

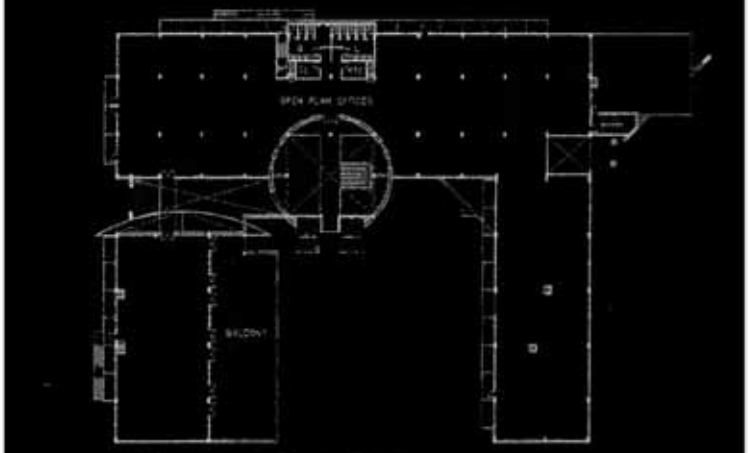


Fig 5.42 **FIRST FLOOR PLAN** (Els 2000)

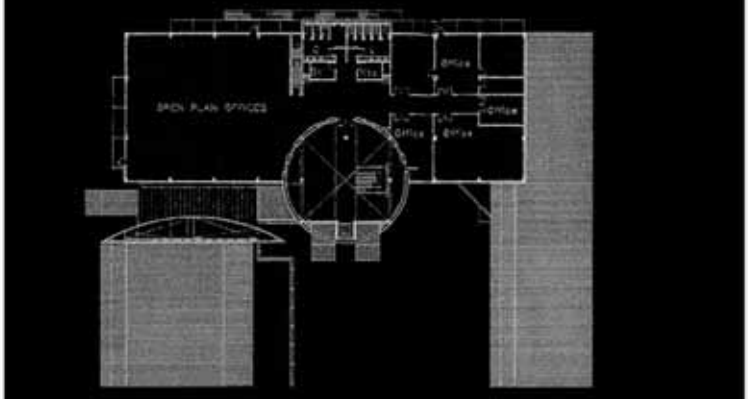


Fig 5.43 **SECOND FLOOR PLAN** (Els 2000)

Accomodation

1. An Information Counter and office
2. Long Distance Bus offices and waiting facilities
3. Drop-off and pick-up points for coaches and shuttles
4. Budget Car Rental office
5. Travel Agents
6. An array of shops catering for tourists
7. A restaurant
8. Various government departments such as, The Department of Environmental Affairs and Tourism
9. Sun International
10. Free State Tours

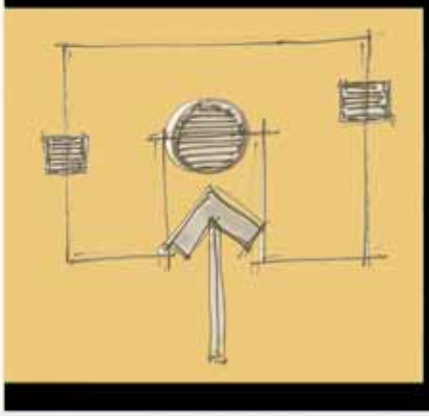


Fig 5.44 Analytical sketch showing the locatiion of the entrances.

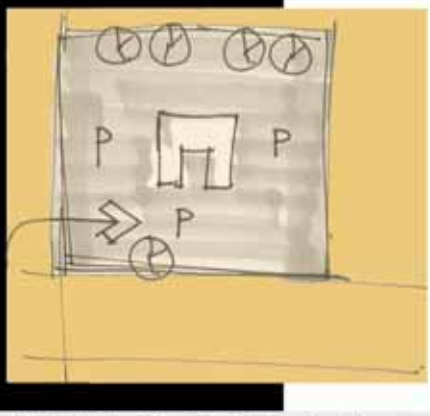


Fig 5.45 Analytical sketch showing "the sea of parking" (Els 2000:43) surrounding the building.

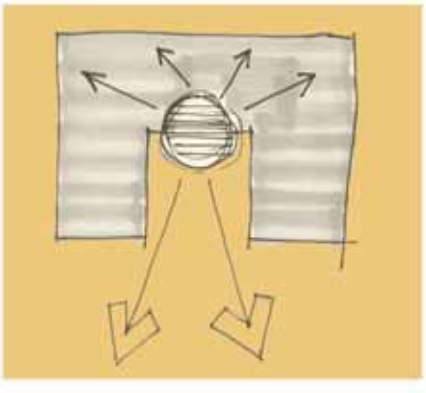


Fig 5.46 Analytical sketch showing the central position of the vertical circulation core and the vistas from it.

A number of different conclusions can be drawn from study of the three precedents shown on the previous pages. All of these precedents are buildings that interface with the public at various different levels. It is however, not only the functions housed by these buildings that are engaging, but also the volumes, views, materials and texures that are used. The buildings use design elements to guide users to and from points of importance. Users are drawn through a hierachy of spaces linked together by a design language that is tactile and carried throughout each building.

5.4 Conclusions

Important Considerations:

The site should be highly accessible.

The Centre should be located in an area of close proximity to tourist attractions and accommodation facilities.

Entrance points should be clearly indicated.

Circulation routes (both vertical & horizontal), into, around and within the building should be highly legible.

The programme of the building should overlap so as to cater of a variety of user's needs, as well as increase the feasibility of the building's functionality.

It is important to realise that a good understanding of the background and context of the proposed project is needed, before the design phase can begin. A thorough investigation of all the aspects that will inform the design has now be completed and development of the concept can now commence.

CHAPTER 6 - DESIGN DEVELOPMENT

CHAPTER 6: Design Development

6.1 Site Selection

The chosen site is located on the South Eastern corner of the Station's Historical Sunken Garden which forms the junction of Scheiding Street and the southern axis of Paul Kruger Street. The site is currently occupied by the Paul Kruger Street extension (which will be closed as has been proposed), the Metropolitan Police Services building (which will be demolished and replaced), the MetroRail Office (protected by heritage laws) and the Old NZASM building/Intersite Offices (also protected by heritage laws).

It is a significant site as it sits on an important North-South, as well as East-West physical and visual axis. It is also located in an area where much pedestrian movement occurs. The site is flanked by the historical square to the West, Scheiding Street to the North, Railway Street to the East and Sir Herbert Baker's Old Station Building to the South.

Due to the transitional value of the site, it has the potential to serve as a point of orientation and therefore give rise to a particularly electric urban energy.

Fig 6.1 LOCATION OF THE SITE. (www.tshwane.gov.za)

SITE SPECIFIC DATA

ERF: Portion R/170 and 364 of Pretoria Town and Townlands 351-JR

PROPERTY OWNERS: Intersite

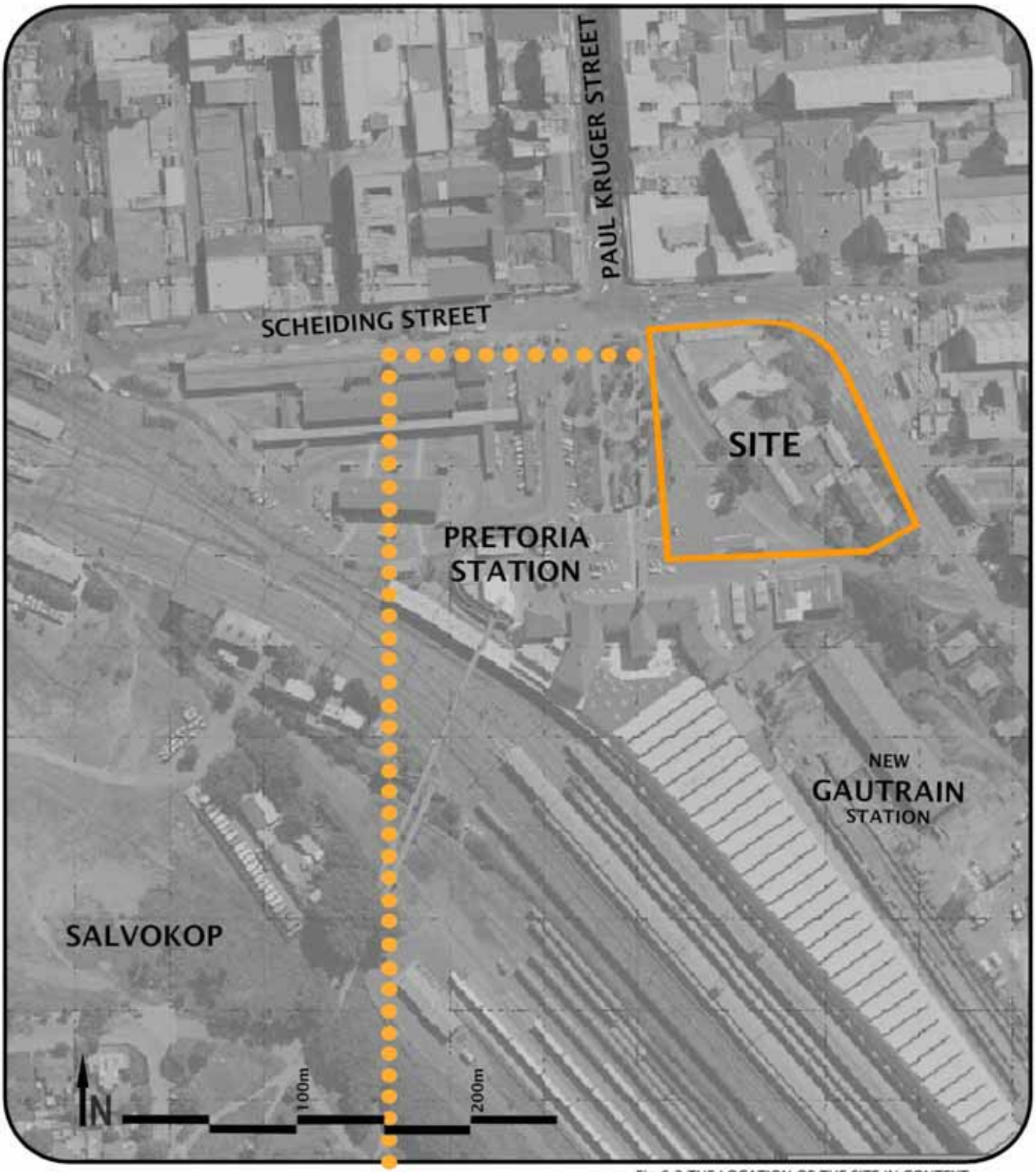


Fig 6.2 THE LOCATION OF THE SITE IN CONTEXT.

Reasons for the Site Selection:

1. It is located in directly adjacent to the city's Southern transport node and is therefore highly accessible.
2. It is in close proximity to the city's tourist attractions, important institutions and government departments.
3. By developing this site, the regeneration of the urban fabric of the Station Precinct will be activated.

6.2 Pretoria Station's Historical Context

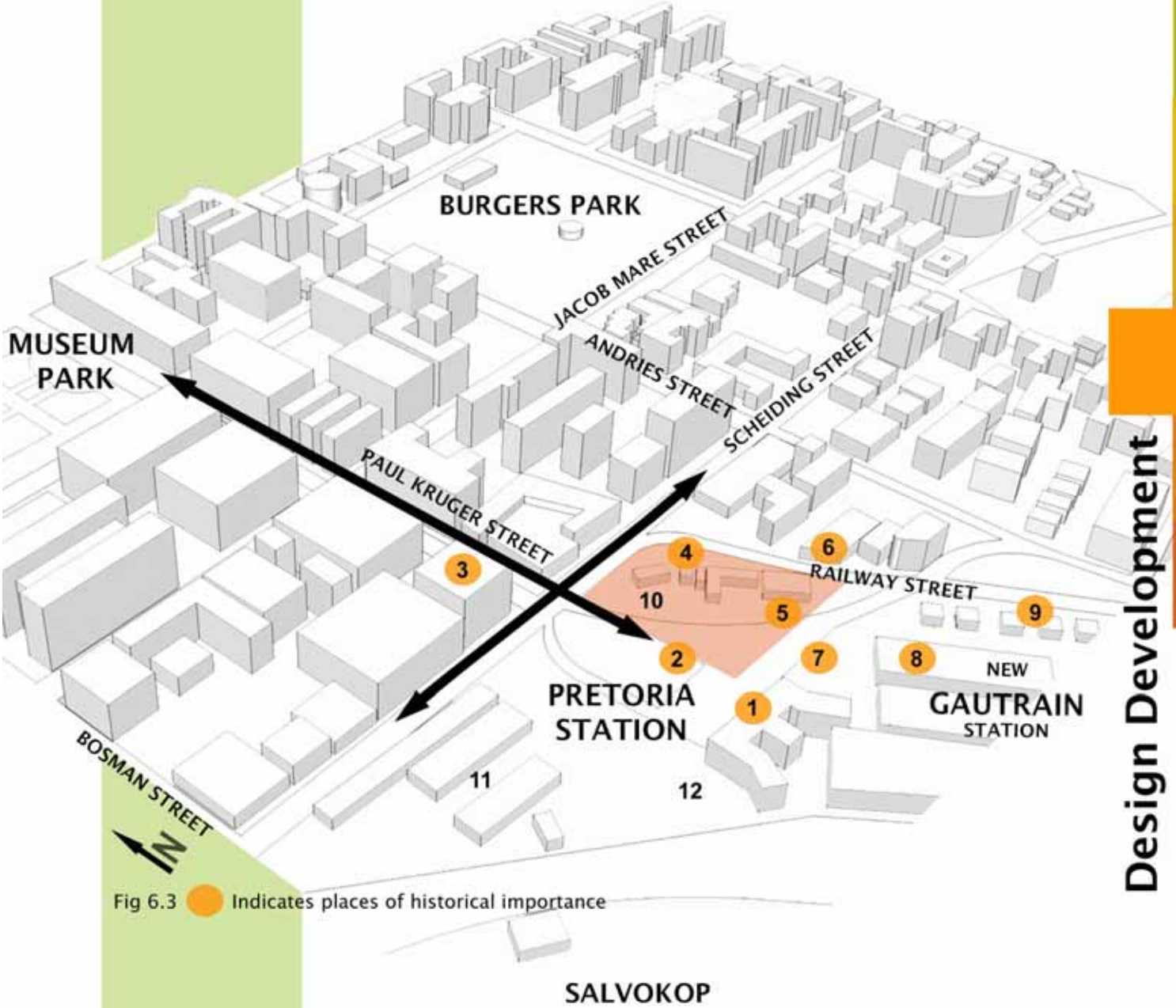


Fig 6.3 Indicates places of historical importance

1 Pretoria Station Building
2 Historical Sunken Garden
3 Victoria Hotel
4 Old Station Master's House
5 Old Printing Store
6 The Belgrave Hotel
7 1928 Audit Building
8 Old Coach Washing Shed
9 SAR Historical Houses
10 Metro Police
11 Luxliner Bu
12 The Shosho ffice

Pretoria Station Building

Sir Herbert Baker's Station Building was completed in 1910. In 2001 it was burnt down by disgruntled commuters. The Station Building was re-built in 2002. It currently serves as the Pretoria Metro Rail Station and is an instrumental point of arrival/departure for hundreds of communters daily. (Fig 6.4 - photo by author)


Fig 6.4

The Historical Sunken Garden

This garden was built in 1946 to commemorate the Royal visit in 1947. Today, although in disrepair and often the scene of petty crimes, it it well used by commuters who are waiting for trains, buses and taxis. (Fig 6.5 - photo by author)

The Victoria Hotel

Originally the 'Hollandia Hotel', owned by J Joffe, was completed in 1896. It subsequently became known as the Victoria Hotel. Today the majority of the building in inaccessible and vacant. The ground floor level of the builiding is occupied by shops and small local enterprises. The building is largely ill-maintained. (Fig 6.6 - photo by author)

Old Station Master's House

This old house is located next to the Old NZASM printing store. Historically, it was the residence of the Station Master. Today the small building houses Metro Rail Offices. It is currently in good condition, having been recently renovated. (Fig 6.7 - photo by author)


Fig 6.7

Old NZASM Printing Store

Completed in 1963, this building functioned as the SAR's regional headquaters. It now houses the offices of the railway company Intersite. The building's historical grandeur has been well maintained. the gardens are also exceptionally beautiful. (Fig 6.8 - photo by author)

The Belgrave Hotel

This Art Deco style builiding, was completed in 1929. Today, although ill-maintained, it houses an array of urban functions, including accomodation. (Fig 6.9 - photo by author)


Fig 6.9

Due to the area's rich historical references, a number of the buildings directly surrounding the site are protected by Heritage Laws and should therefore be respected and protected when developing in this area.

The 1928 Audit Building

This building has, throughout its history, housed functions related to the Station. Today however it is vacant. (Fig 6.10 - photo by author)


Fig 6.10

The Old Coach-Washing Shed

This open structure provided shelter for the washing of coaches in the past. After many years of being deserted, the Shed is now being re-used and incorporated into the infrastructure of the new Pretoria GAUTRAIN Station. (Fig 6.11 - photo by author)


Fig 6.11

SAR Historical Houses

In the Station's prime, these houses provided accomodation for those working for the SAR. Today, three of these historical buildings will be re-used and incorporated into the functioning of the Pretoria GAUTRAIN Station. (Fig 6.12 - photo by author)


Fig 6.12

The Metro Police Station

Relatively new, this building aids in keeping crime within the area at bay, it does not however contribute to the Station context. It appears isolated and inaccessible. (Fig 6.13 - photo by author). This building will be demolished and the functions house in a new building on the same site.


Fig 6.13

The Luxliner Bus Terminal

In 2006, the nation-wide bus terminal was comissioned. Although the pick-up and drop-off area is inadequate, the Terminal functions well. The old Tavern building next to the Luxliner Offices is currently vacant. (6.14 - photo by author)


Fig 6.14

The Shosholoza Meyl Ticket Office

An extention of the Station building itself, these office provide bus long distance bus transfers to neighbouring countries. The building itself, does not respond to the Station context and obstructs movement from Salvokop. (6.15 - photo by author)


Fig 6.15


Fig 6.16


Fig 6.17


Fig 6.18


Fig 6.19


Fig 6.20


Fig 6.21

Fig 6.22


Fig 6.23


Fig 6.24


Fig 6.25


Fig 6.26


Fig 6.27

6.3 Context Photos

Fig 6.16 to Fig 6.27 show the context in which the site located. Many of the buildings stand vacant or are in a terrible state of disrepair.

6.4 Appropriate Legislation

The Gauteng Transport Infrastructure Act 8 of 2001 outlines the following relevant information:

"In term of the GTIA, "Station" means a railway station or a railway passenger terminal and includes:

(a) The area within a station used or to be used for facilities necessary for the operation, maintenance and administration of a railway system or activities associated therewith or incidental thereto, including, but not limited to, workshops, storerooms, administrative offices, staff accommodation, fire station and ventilation shafts;

(b) The area within the station used or to be used in connection with the railway system for parking of vehicles, parking garages, drop-off and pick-up area, inter-modal transfer of passengers and public transport facilities including feeder and distribution services and facilities, and such commercially related land uses as are directly associated with commenter convenience, including advertising, selling of refreshments, newspapers and magazines, vending machines, public telephones and electronic banking facilities" (Gauteng Transport Infrastructure Act 8 of 2001).

6.5 Client Profile

Intersite currently owns the land on which Pretoria Station is located. They do however, realise that the site urgently needs to be upgraded and are in a position where they find themselves ready to enter into a partnership with the City Council and the Department of Public Works (DPW) (UP 2000). The proposed project will encourage a joint venture between Intersite, The Department of Environmental Affairs and Toursim and the Re Kgabisa Tshwane programme that is currently running many initiatives throughout the city. The position of the proposed project will be ideal for functions required by the Re Kgabisa Tshwane programme as it forms a cross-road between two vital development precincts outlined within their Spatial Development Framework (SDF). The existing Tourism Information Centre in Church Square will be relocated to the new facility and functions will be added to ensure that the building attracts different kinds of users. The new information hub, to be known as the ***'i-hub'*** will aid in achieving the following, as stipulated by the client.

Vision for the *'i-hub'* Scheme:

- ***'i-hub'*** will be a means of making the public aware of the Station's past by bridging the gap between historical and contemporary.
- ***'i-hub'*** is to act as a catalyst for the renovation, regeneration and development of the Pretoria Station and its surroundings, through the creation of a unique identity within its context.
- ***'i-hub'*** is will provide state of the art accommodation and facilities for the user (visitors and tenant's alike).
- ***'i-hub'*** is to contribute to the continual growth of Pretoria's tourism sector by creating public awareness and incorporating training programmes that work in partnership with educational institutions focusing on travel and tourism.
- ***'i-hub'*** will act as an activator with regards to job creation and social upliftment by providing opportunities for local artists, craftsmen and traders to promote and sell their merchandise.

It is now possible to propose a programme for the building in response to the site, as well as the client's vision.

6.6 User Profile

The ***'i-hub'*** building caters for two main kinds of user-groups. The proposed building will therefore consist largely of functions that cater for both user-group's needs, enhancing each individual user's experience by encouraging interaction between a diverse number of people.

• USER 1- The first time commuter/tourist

The ***'i-hub'*** facility will cater for the needs of a first time visitor (arriving by car, bus, metro-rail or the Gautrain), by aiding them in orientating themselves within their new environment, through the easy access to information.

• USER 2 - The daily commuter

The ***'i-hub'*** facility will too encompass community directed initiatives that cater for commuters using or passing by the building daily en route to or from the bus, metro-rail or Gautrain systems.

The two user groups can further be divided into an array of various different individual users. A few 'user scenarios' are outlined here.

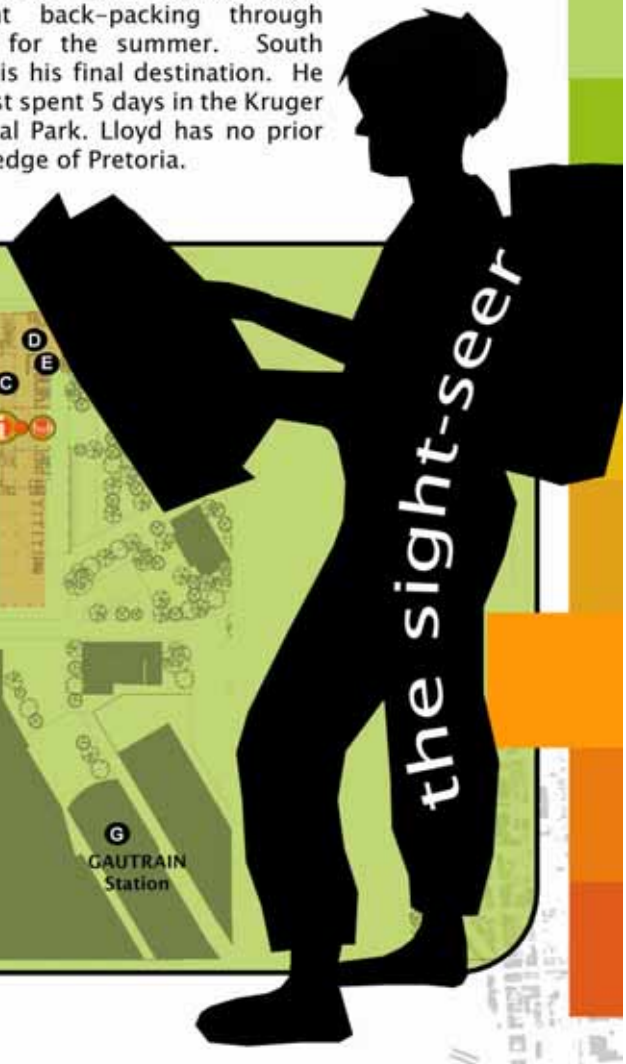
USER-GROUP 1 - User Scenario 1

- **A** Stacey arrives mid-morning, luggage in hand, with her tour group at the GAUTRAIN terminal.
- **B** Her tour guide has arranged with a staff member from the ***'i-hub'*** facility to meet them and escort them further.
- **C** The friendly local ***'i-hub'*** guide arranges for their luggage to be taken to a temporary storage facilty in the building.
- **D** The tour group are shown around the craft market. Stacey purchases a number of items to take home as gifts.
- **E** Stacey and her group proceed to the South African flavoured restaurant above. Here they enjoy a hearty lunch.
- **F** The group then attend an informative talk on Pretoria in the ***'i-hub'*** building's auditorium.
- **G** They depart on foot, with their ***'i-hub'*** guide to see the many tourist attractions within the city. The guide has organised for a shuttle service to fetch and carry Stacey and the group to and from certain attractions.
- **H** The tour group arrive back at ***'i-hub'*** in the late afternoon and enjoy a quick refreshment at the cafe.
- **I** They are ushered to the bus terminal, where their bus, loaded with luggage, is ready to depart for Sun City.

Stacey is a 27 year old tourist from the United States of America. She is part of a tour group of thirty traveling through South Africa over a 3 week period. It is the first time she has visited the country.

Lloyd is a 20 year old, Australian student back-packing through Africa for the summer. South Africa is his final destination. He has just spent 5 days in the Kruger National Park. Lloyd has no prior knowledge of Pretoria.

USER-GROUP 1 - User Scenario 2



A Lloyd arrives, early-morning, at the Pretoria Station Bus Terminal. He is hungry and hopes to find something to eat as this hour.

B He spots the ***'i-hub'*** across the square and sees that the cafe is already open.

C He enjoys a good breakfast and gets accustomed to his new surroundings.

The Station gets busier and Lloyd decides, before he begins exploring, to find some information and do some investigating in order to find a place to stay that night.

D He goes into the Book, Map & Travel Shop where he buys a map and a book about Pretoria.

E He then goes upstairs to the Information Counters, and speaks to a consultant who gives him more information, makes helpful suggestions.

One level up he makes a reservation at a local Bed & Breakfast.

F Everything he needs at hand, he heads off on foot, in the direction of Church Square

G He will be back at the Station in a few days to catch the GAUTRAIN to Johannesburg.

USER-GROUP 1 - User Scenario 3

A Sarah arrives, early-afternoon, at the GAUTRAIN terminal. Nicola will be collecting her in an hour.

B She walks over to the ***'i-hub'*** where she draws some money from the ATM.

C She buys a newspaper and a magazine from the Book, Map & Travel Shop.

D Sarah then settles down with her reading material and a chai tea at the ***'i-hub'***'s coffee shop. She admires the view of the outdoors from where she sits.

E Nicola calls her to let her know she is on her way. Sarah finishes her tea, pays the bill and rushes to freshen up in the bathroom.

F She then exits ***'i-hub'*** and crosses the landscape to the designated pick-up area where Nicola will be fetching her.

G Once Sarah has been collected, the friends enjoy and afternoon shopping at a nearby centre.

H After dinner, Sarah is dropped off outside the Gautrain Station. The friends say goodbye.

She boards the next train back to Johannesburg.

Sarah is a 35 year old teacher. She lives in Johannesburg and often comes to visit her friend Nicola, who lives in Pretoria. Sarah does not own a private car and uses the GAUTRAIN to get from Johannesburg to Pretoria.

Mapula is 24 years old and has recently received a Degree in Financial Management from the University of Johannesburg. She decided to take the job she was offered in Pretoria, despite having to travel from Alexandra on a daily basis.

A Mapula arrives, early-morning, at the Pretoria Metro-Rail Station.

B She walks along the square stopping to greet a friend who works at the ***'i-hub'*** cafe.

C She then walks along Paul Kruger Street towards her office in the CBD.

D After work, Mapula arrives back at the Paul Kruger Street Intersection. She crosses the road and enters the ***i-hub'*** Book, Map & Travel Shop, where she buys the newspaper for her father.

E Mapula walks towards the Pretoria Station Metro-Rail building, stopping along the way to buy snacks from the informal traders that populate the ground floor of the ***i-hub'*** building's Southern wing.

F She then enters the Pretoria Station Metro-Rail building and boards the next train to Johannesburg.

Mapula will be back at the Station in the morning.

USER-GROUP 2 - User Scenario 1

A Scott arrives, early-afternoon, at the Pretoria's GAUTRAIN Station. He has booked Conference Room 1 at the ***'i-hub'*** for two hours this afternoon. His client is one of international stature and Scott hope to make a good impression.

B He walks through the ***'i-hub'*** building, stopping at the South African Flavoured restaurant, to make reservations for an early dinner with his client.

C Scott then proceeds to the third floor of the ***'i-hub'*** building to check with administration, that everything is in order for his meeting in twenty minutes.

D He gains access to Conference Number 1 where refreshments are already waiting. He readies himself to greet his client and his team.

The meeting runs smoothly and in less than two hours. Scott informs the group that he has reserved a table for dinner at the restaurant next door.

E They then move to the restaurant where they enjoy an early dinner while they watch the sun go down in the West.

F Scott leaves via the GAUTRAIN after a successful afternoon and evening of business.

He will be back at the Station when business calls again.

USER-GROUP 2 - User Scenario 2

Scott is a 55 year old business man. He is the CEO of a top Sandton advertising agency. He frequently travels to Pretoria to meet with colleagues and clients alike. Scott is always in need of a central, accessible, state-of-the-art conference facility in which to conduct his meetings.

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Thabo has just finished Matric and has enrolled to do a degree through UNISA. His course requires him to frequent the UNISA Sunnyside campus three times a week. Thabo lives in Tembisa and must therefore travel by train to Pretoria.

USER-GROUP 2 - User Scenario 3

A Thabo arrives, early-morning, at the Pretoria Station Metro-Rail Station.

B He meets his friends under the renowned, ***'i-hub'*** auditorium.

C They walk together in an Easterly direction towards UNISA's Sunnyside Campus on Walker Street.

D That afternoon, Thabo and his friends return from class. He has and hour and a half to wait before his train arrives.

E He finds a space at a table at the ***'i-hub'*** intrnet communication facility and sends some e-mails to his friends abroad.

F Now running late, Thabo runs to the Metro-Rail Station Building where his train is ready and waiting.

He boards the train just in time. He will be back at the Station in a few days for his next class.

USER-GROUP 2 - User Scenario 4

A June and Sandra arrive, early-morning, at the GAUTRAIN Terminal.

B Together, they walk over to the pick-up area, where the shuttle that has been arranged by Sandra's school to transport the children traveling by the GAUTRAIN everyday, is already waiting.

C June kisses Sandra goodbye and checks her watch. She has time to get a take-away coffee before she walks to work. She heads over to the ***i-hub'*** coffee shop.

D Coffee in hand she walks up Paul Kruger Street, along with the other daily commuters, to work.

E After work she collects Sandra from the drop-off area.

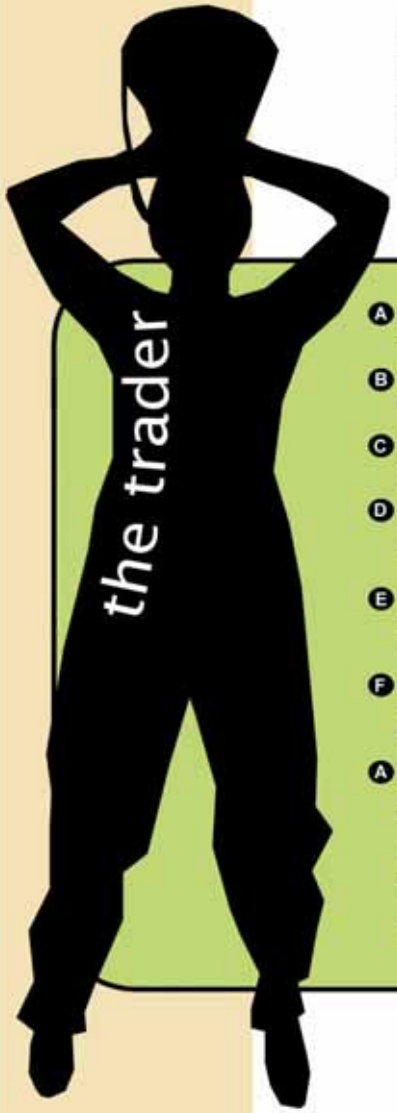
F Sandra has received good grades for her spelling test. June decides to treat Sandra to an ice-cream.

They head over the the ***'i-hub'*** cafe.

G Having finished their ice-cream, June and Sandra head back to the GAUTRAIN Station where they catch the next train.

They will be back at the Station tomorrow.

June is 31 years old and a single mother. She and Sandra, her 7 year old daughter, live in Midrand. June is environmentally conscious and detests the traffic on the N1. June works at a leading law firm in the CBD and Sandra attends a school in Hatfield. June and Sandra use the GAUTRAIN to get to and from Pretoria.



Joseph is 42 years old and is a local craftsman from Mamelodi. He occupies Stall 3 at the ***'i-hub'*** craft market. The money he earns here helps him to support his wife and their 3 children. He travels each day from Mamelodi by taxi.

USER-GROUP 2 - User Scenario 5

A Joseph arrives, early-morning, at the Bosman Street Taxi Rank.

B He walks East along Scheiding Street, greeting the traders at the bus terminal.

C Further along Scheiding Street, Joseph arrives at the ***'i-hub'*** building.

D He puts up a new advertisement in the Book, Map and Travel Shop and proceeds South to the ***'i-hub'*** craft market area.

E Joseph's stall is open just in time for the first bus load of tourists to arrive. He successfully sells a number of items.

F At lunch time, Joseph walks across to where the informal traders are located just opposite. He buys some bread and fruit to eat.

A Joseph manages to sell a few more items that day. In the evening, he locks his stall and heads back to the Bosman Street Taxi Rank.

He exchanges stories with friends before catching the taxi back to Mamelodi.

Joseph will be back at the Station in the morning.

6.6.1 Conclusion

It is clear to see that a diverse number of people, both local and foreign will benefit from the proposed 'i-hub' facility. It is also clear from this exploration that although the building caters for the needs of a 'tourist', in order for the building to be sustainable in the long-run, it must cater for the needs of local commuter on various levels, as they are the users that will benefit from its sevices and in turn, give back each day, day after day.

It is also evident that the 'i-hub' will be a place where a number of varying cultures, lifestyles, beliefs and values collide. It will therefore become a vibrant cosmopolitan place full of interesting interactions and exchanges. Perhaps this too will become a reason for people to visit the area.

When visiting a new place, it is most desirable for information regarding that place to be directly available. A visitor is likely therefore to seek out any information available before embarking on their journey. The proposed ***'i-hub'*** development seeks to ensure that a person, unfamiliar with Pretoria, has the benefit of being able to access:

Guidance, information and resources regarding the city, accommodation and travel,

World-wide communication facilities,

Refreshment and relaxation amenities, and

Authentic merchandise available for purchase.

The items mentioned above, form the basis of the ***'i-hub'*** building's programme. The ***'i-hub'*** development's architectural objectives should promote and aid in facilitating these functional goals.

6.7 Architectural Objectives

- Re-define the urban fabric of the Pretoria Station, while respecting structures of historical importance.
- Draw inspiration from the existing historical buildings on site, and through the proposed design intervention, emphasise important buildings (e.g. by creating strong vistas to and from them).
- The proposed intervention should contribute to the improvement of access, legibility and circulation around, into and through the Station.
- Surface articulation, the manipulation of natural elements (e.g. light and water), and passive design elements are to be used as design tools so as to increase the sensual experience of the proposed intervention and the site as a whole.

The most important objective of the proposed intervention is to convey the growth of Pretoria's tourism industry to the public and by so doing, leave a positive imprint on its users. It is to be a symbol by which to remember the beginning and end of a journey; a place to return to and orientate one's self once again.

CHAPTER 7 - CONCEPT DEVELOPMENT

CHAPTER 7: Concept Development

7.1 Introduction

This chapter seeks to portray the extensive design process that has been undertaken. It aims to explain and substantiate the various number of design decisions that were made during the process, as well as to provide insight into the final design proposal.

It involves the following sections:

7.2 Detailed Site Analysis

A site specific analysis will now be carried out. It involves the study of the site itself. Although it is necessary to look at the broader context first, it is also of prime importance that the building responds to the context directly around it. By conducting this analysis, problems and opportunities not seen on a larger scale become evident, and can be dealt with in the design of the 'i-hub' building itself.

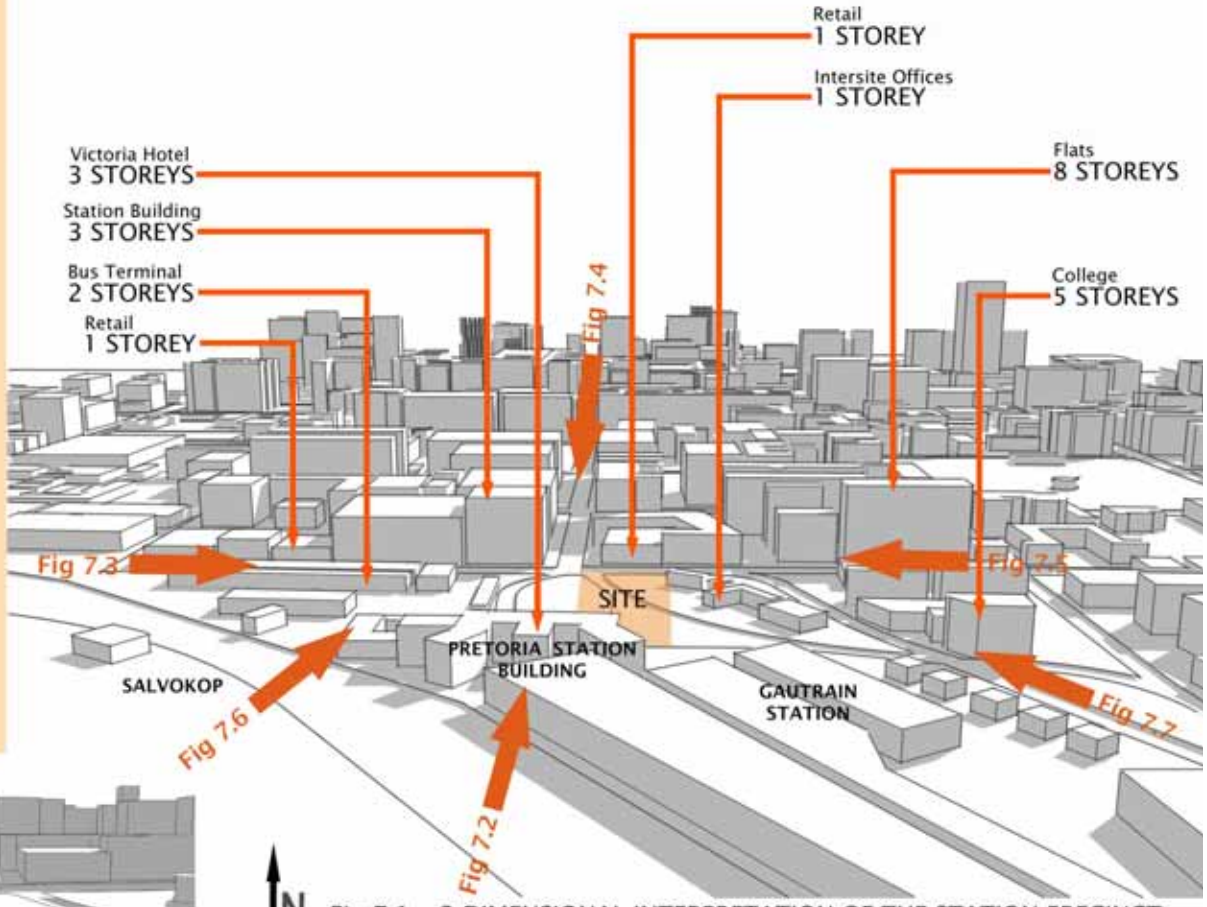


Fig 7.1 – 3 DIMENSIONAL INTERPRETATION OF THE STATION PRECINCT

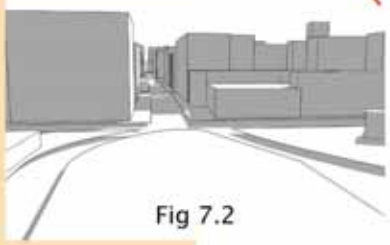


Fig 7.2

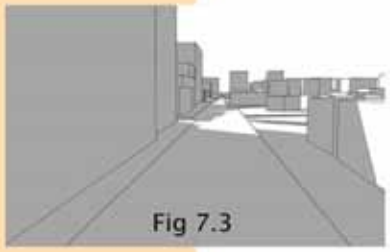


Fig 7.3

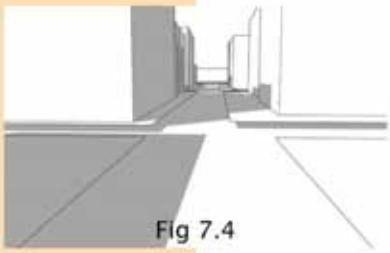


Fig 7.4

Fig 7.1 shows a view of the city from Salvokop towards the North. It is clear from this exploration that the urban fabric is less dense around the Pretoria Station area. Building heights become lower and open spaces flow into one another.

Fig 7.2 shows the space experienced when standing in the centre of the Historical Sunken Garden, facing North, looking up Paul Kruger Street. The Square is undefined, but the buildings along the street create a definate edge. A sense of direction and orientation is immediately apparent.

Fig 7.3 shows a view of Scheiding Street, looking East towards the Metro Police Station. The drop in scale between the inner city edge and the Pretoria Station site is evident. This street edge is less defined.

Fig 7.4 shows a view from the North, down Paul Kruger Street, towards the Station Building. Strong edge defintion and directionality is present.

Spatial Analysis

The Pretoria Station context varies greatly, not only in function, but in the diversity of spaces that are created by the height of the buildings that flank the Historical Sunken Garden Square, and the proposed site itself. Fig 7.1 to Fig 7.7 show the kind of spaces found presently on site.

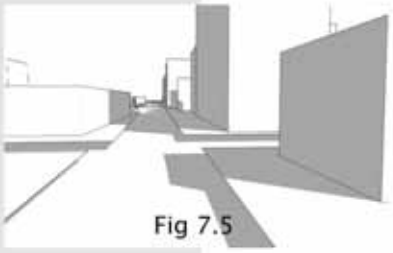


Fig 7.5

Fig 7.5 shows a view along Scheiding Street towards the West. The drop in scale between the flats to the North and the mixed-use buildings to the South is drastic.

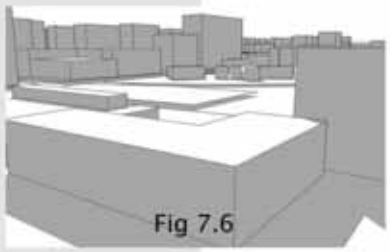


Fig 7.6

Fig 7.6 shows a view of the Historical Sunken Garden Square from the Salvokop pedestrian bridge. The increase in building scale from the Station Buildings to those of the inner city edge is apparent. This however, does afford a clear view of the city when entering it from the South.

Fig 7.7

Fig 7.7 shows a view towards the site from Railway Street in the South-East. A gradual decrease in building height is evident from this angle.

It is evident already, that a hierarchy of spaces is present, particulary with regards to spaces of movement and pause. These spaces however, lack edge definition and are not functioning as well as they could. The proposed 'i-hub' building should seek to address the edge definition of the Historical Sunken Garden Square and Scheiding Street to the North. It can aid too, in defining the corner of the Paul Kruger Street and Scheiding Street intersection.

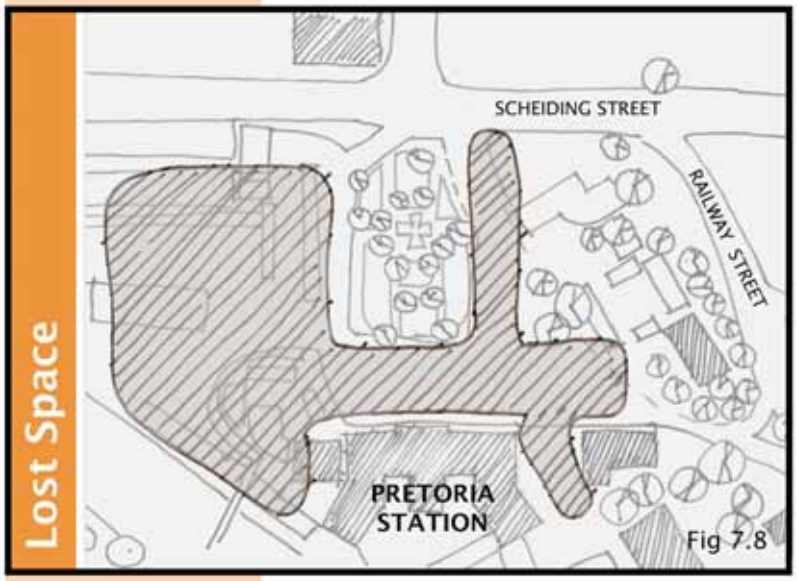


Fig 7.8 adjacent shows that much of the space on site is not used effectively. It is occupied by parked buses and a sea of vehicles that cause much congestion in front of the Station Building.

The removal of the Paul Kruger Street Extention results in a space that appears to segregate the site.

In order to optimise the use of space in this area and render it a pedestrain-friendly zone, much re-orginisation will be neccessary with regards to the modes of transport present on site.

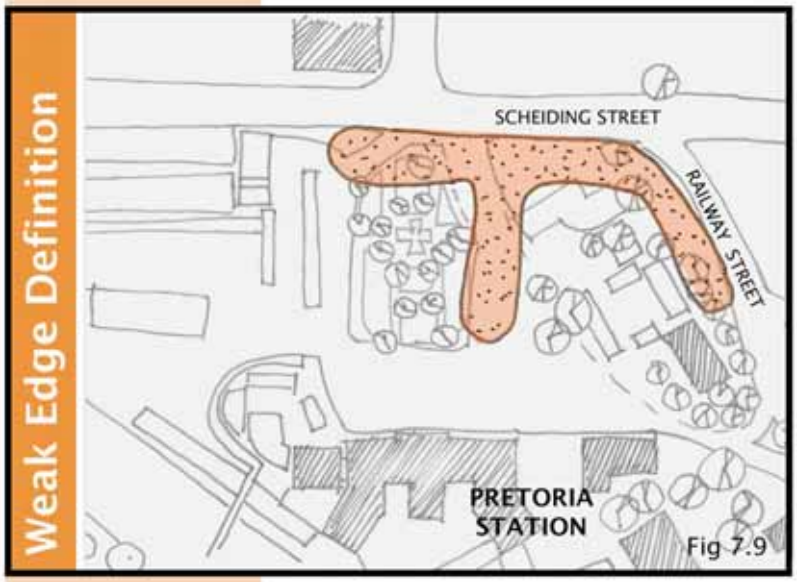


Fig 7.9 adjacent shows that the Historical Sunken Garden has become undefined. The Metro Police Building, along with its may carports is the cause of weak edge definition along Scheiding Street. This building causes the fragmentation of a space that could otherwise be beneficial to the Station site.

WIth regards to the Historical Sunken Garden itself, the Eastern edge of the garden lacks any definition, whereas the Western edge is defined in part by the informal trading stalls that have been established.

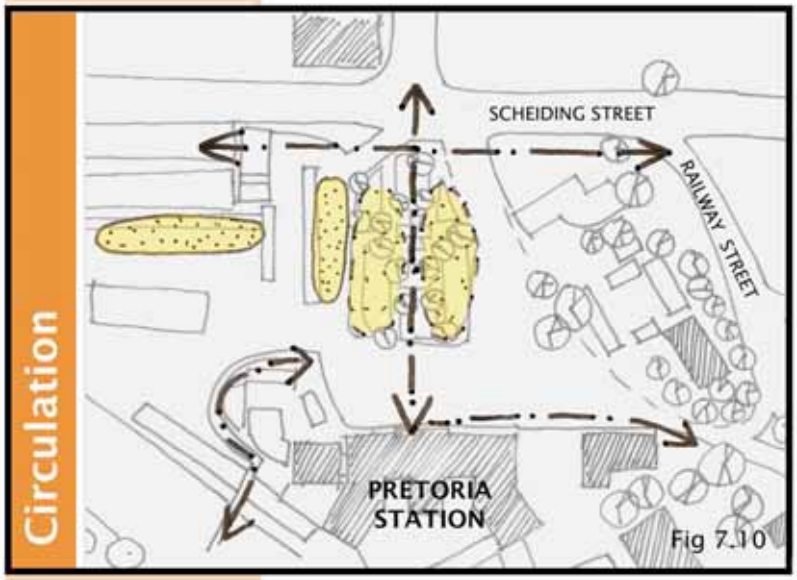


Fig 7.10 portrays the main cirulation routes occuring between the Station Building and the city, along the pedestrian bridge to and from Salvokop and along the Scheding Street Edge.

The main pause areas occur at the bus terminal to the West, where people are waiting to catch buses, at the informal trade stalls to the East of the Historical Sunken Garden and then within the Garden itself.

Movement is vast during peak hours. Pauses made by commuters are brief, as the environment is harsh and no ammenities are provided to make their waiting periods more pleasant.

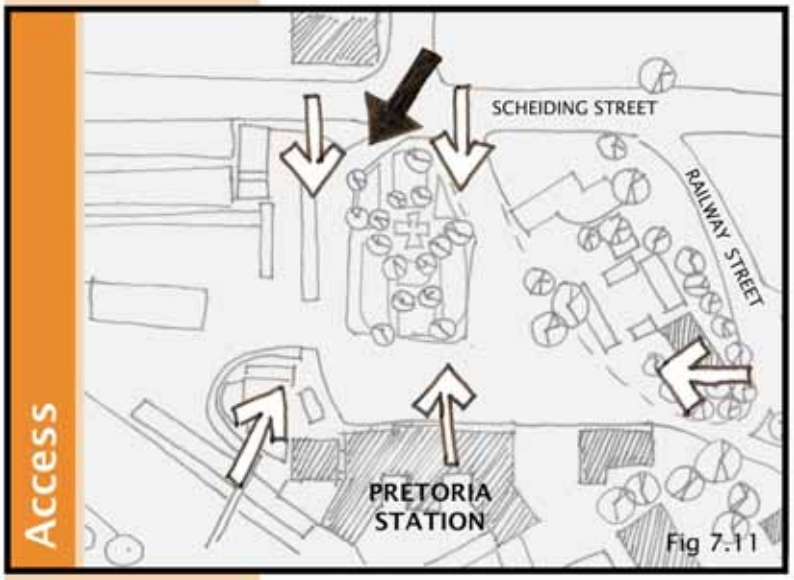


Fig 7.11 shows how vehicles may only enter the site from Scheiding Street. The Station area functions as a ring road with regards to vehicular movement. The exits are either North-East into Bosman Street (buses) or East into Railway Street (cars, taxis and buses). Pedestrains enter the site at various different points, but predominantly from the Station Building, the Salvokop Bridge and the City Centre.

VEHICULAR MOVEMENT

PEDESTRIAN MOVEMENT

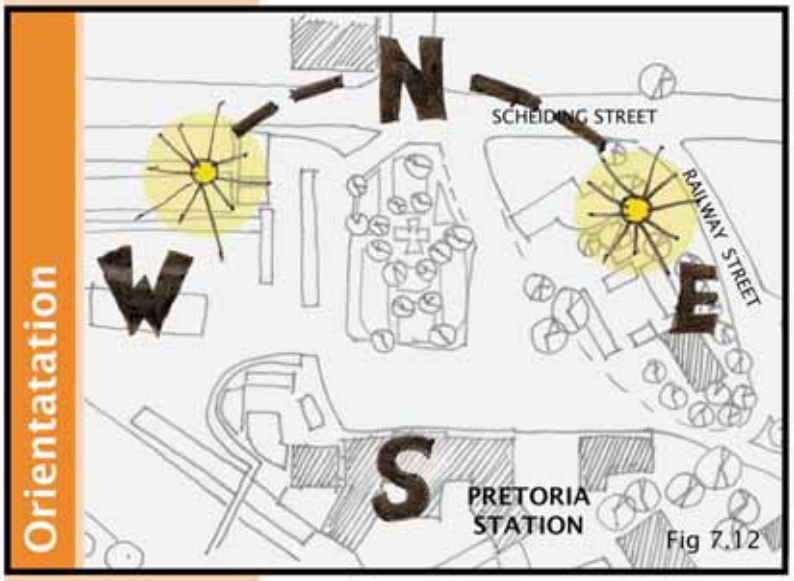


Fig 7.12 shows how the site is predominantly East-West facing, with a small portion exposed to the North.

Exposure to the Northern edge should be optimised. Any part of the building facing the East and West will need to be extensively protected from the harsh sun.

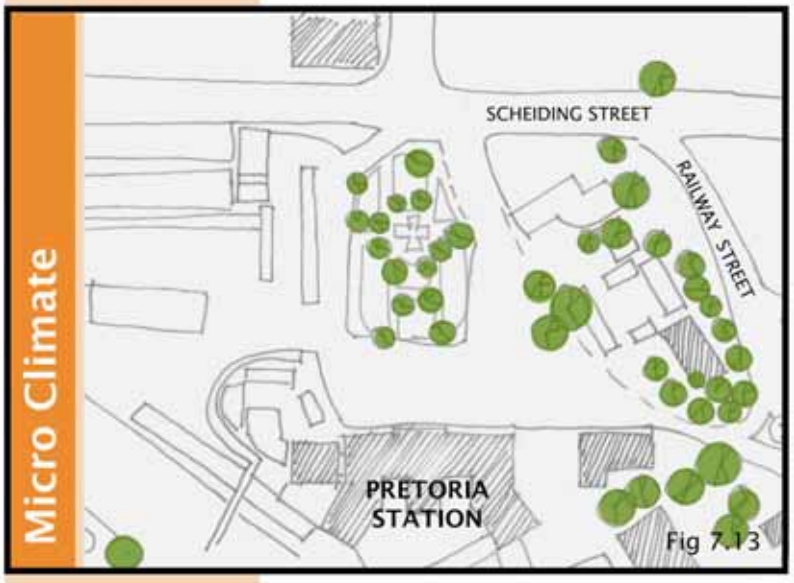


Fig 7.13 reflects the existing trees found on site. It is evident that only the Eastern and Central parts of the site are shaded. Hard surfaces that are not shaded cause an increase in temperature throughout the day.This results in a harsh and uncomfortable micro climate. Commuters seek out shady spots in which to rest. These however are in adequate and potential users do not linger in this area when in transit.

7.3 Building Form Options
Building Form Option 1

Concept

Positives

Direct lines of sight are created between important points and, due to this, the historical fabric is linked. Open spaces in front of historical buildings enhance their importance. The building form that is generated as a result, makes the most of the Northern boundary of a site thats orientation is unfavourably East-West.

Fig 7.14


Fig 7.15

Negatives

The proposed building competes with the existing Station Building and does not communicate with the intersection. Movement into the city from the GAUTRAIN is not apparent, as the legible city grid is disrupted by the building's form. The Historical Sunken Garden space 'leaks' into the Secondary spaces to the East. The Eastern Secondary space is segregated. A lack of edge definition is therefore present and the activation of the square edges may fail to occur.


Fig 7.16

Building Form Option 2

Concept

Fig 7.17


Fig 7.18


Fig 7.19

Positives

The proposed building does not compete with the existing Station Building, but instead, communicates with the intersection. Direct lines of sight are created between important points and due to this, the historical fabric is linked. Open spaces in front of historical buildings enhance their importance. The Eastern Secondary space is now consolidated. Although the building form that is generated is largely orientated unfavourably towards the East and West, the Northern facade of the building makes the most of the Northern edge of the site. Movement into the city from the GAUTRAIN becomes apparent, as the legible city grid is visible due to the slight rotation of building's form.

Negatives

The Historical Sunken Garden space 'leaks' into the Secondary spaces to the East. A lack of edge definition is therefore present and the activation of the square edges may fail to occur. The area between these two spaces may as a result, be underutilised.

Building Form Option 3

Concept

Positives

The proposed building does not compete with the existing Station Building, but instead, communicates with the intersection. Direct lines of sight are created between important points and due to this, the historical fabric is linked. Open spaces in front of historical buildings enhance their importance. The Eastern Secondary space is now consolidated. Although the building form that is generated is largely orientated unfavourably towards the East and West, the Northern facade of the building makes the most of the Northern edge of the site. Movement into the city from the GAUTRAIN becomes apparent, as the legible city grid is visible eventhough there is no rotation of the actual builiding itself. The straight, rectangular building form ensures the continuation of the city grid and the edge of the square now becomes more defined.

Negatives

The Historical Sunken Garden space still 'leaks' into the Secondary spaces to the East. A lack of edge definition, although more pronounced, is still present and the activation of the square edges may fail to occur. The area between these two spaces, although smaller and more defined, may still fail to be utilised as a result.

Fig 7.20


Fig 7.21


Fig 7.22

Building Form Option 4

Concept

Fig 7.23


Fig 7.24


Fig 7.25

Positives

A combination of Options 2 and 3 – the proposed building does not compete with the existing Station Building, but instead, communicates with the intersection. Direct lines of sight are created between important points and due to this, the historical fabric is linked. Open spaces in front of historical buildings enhance their importance. Although the building form that is generated is still largely orientated unfavourably towards the East and West, the Northern facade of the building makes the most of the Northern edge of the site. Movement into the city from the GAUTRAIN becomes apparent, as the legible city grid is visible eventhough there is a slight rotation of the lower levels of the buiilding.

Negatives

The Historical Sunken Garden space still 'leaks' into the Secondary spaces to the East. A lack of edge definition, although more pronounced, is still present and the activation of the Square edges may fail to occur. The Eastern Secondary space is once again segregated. The area between these two spaces, is now less defined and may fail to be utilised.

Building Form Option 5

Concept

Positives

Possibly the most effective concept yet, the proposed elongated, rectangular building form, communicates with the intersection and links it to the Station Building without competing with it. An activation of the Square's edges is bound to occur. Although the building form generated is still largely orientated unfavourably towards the East and West, the Northern facade of the building makes the most of the Northern edge of the site. Direct lines of sight are created between important points and due to this, the historical fabric is linked. Open spaces in front of historical buildings enhance their importance. Clear edge definition ensures that the two squares are themselves, clearly defined themselves.

The Eastern Secondary space is thereby consolidated again and offers an opportunity to create a character different to that of the main Historical Sunken Garden Space. The area between these two spaces, is now defined by the higher levels of the buliding. The space below the building's higher levles becomes an area of transition and a possible gathering or meeting point. Movement into the city from the GAUTRAIN becomes apparent and takes places under and through the building. The legible city grid is visible and continuous due to the footprint of the building.

Fig 7.26


Fig 7.27

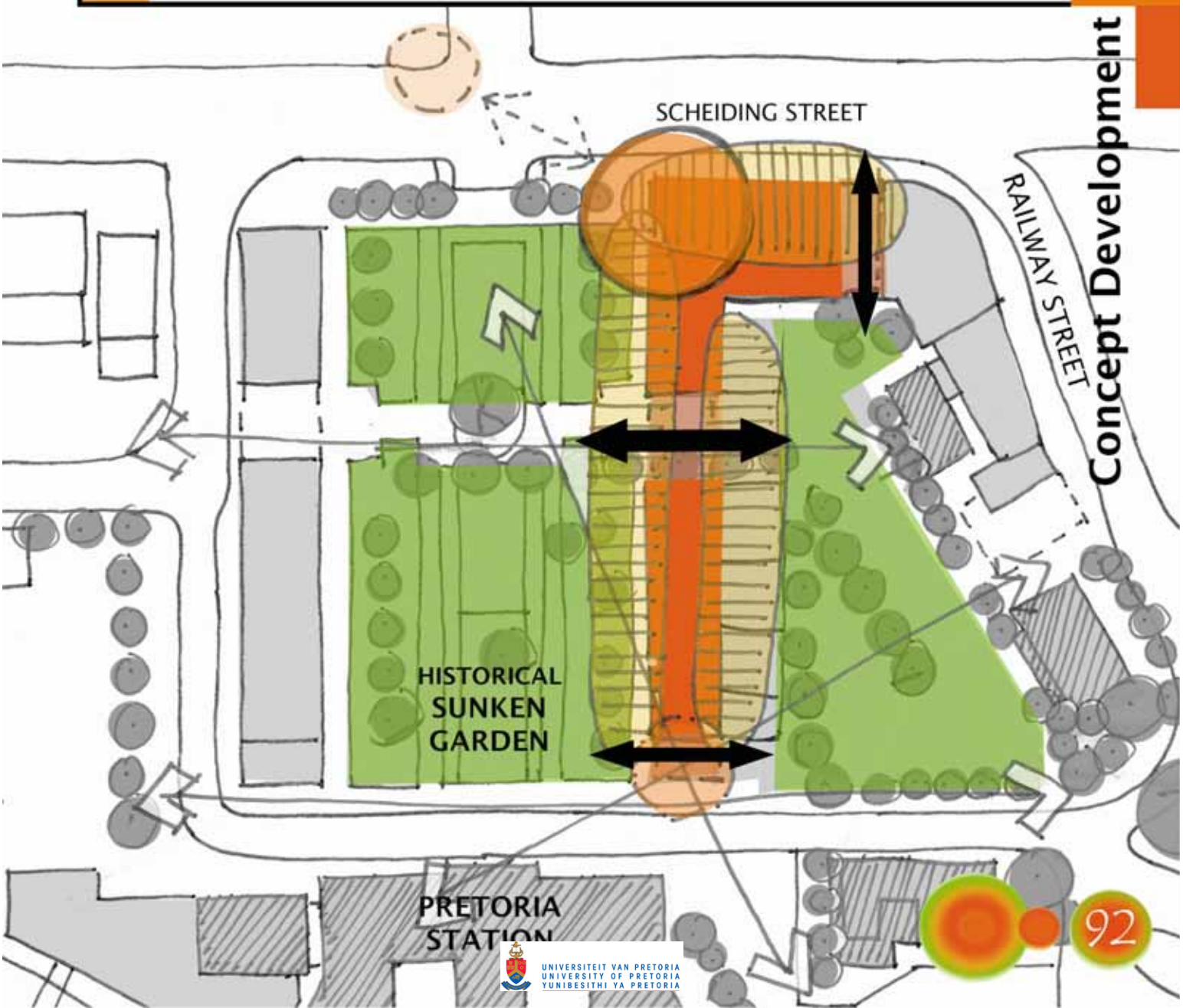

Fig 7.28

Conclusions

This building form below has been rendered the most effective. Two open public spaces have been well defined as a result of the placement of the proposed building. These spaces both have strong edge definition. The edges of the spaces and of the building are thereby activated and are deemed to become areas of heightened activity. The building edges will support activities occuring in the public spaces and visa versa. Movement is directly effective through and around the building so that the user is able to easily orientate themselves within their context. The opportunity has been identified to create strong definition at the corner of the building exposed to the intersection. This definition is to echo that created by the existing Victoria Hotel building opposite. A strong contrast between historical and contemporary is possible at this point. The Southern end of the proposed building becomes a transitional node so as not to compete with the grandeur of the main Station Building. The transitional character of this node acts to gradually introduce the GAUTRAIN commuter to the site and the city beyond.

Two main challenges have been identified:

1. The East-West orientation of the building is not favourable, and
2. All the edges of the building interface with the public. There is no clear location for 'back-of-house' functions and services.



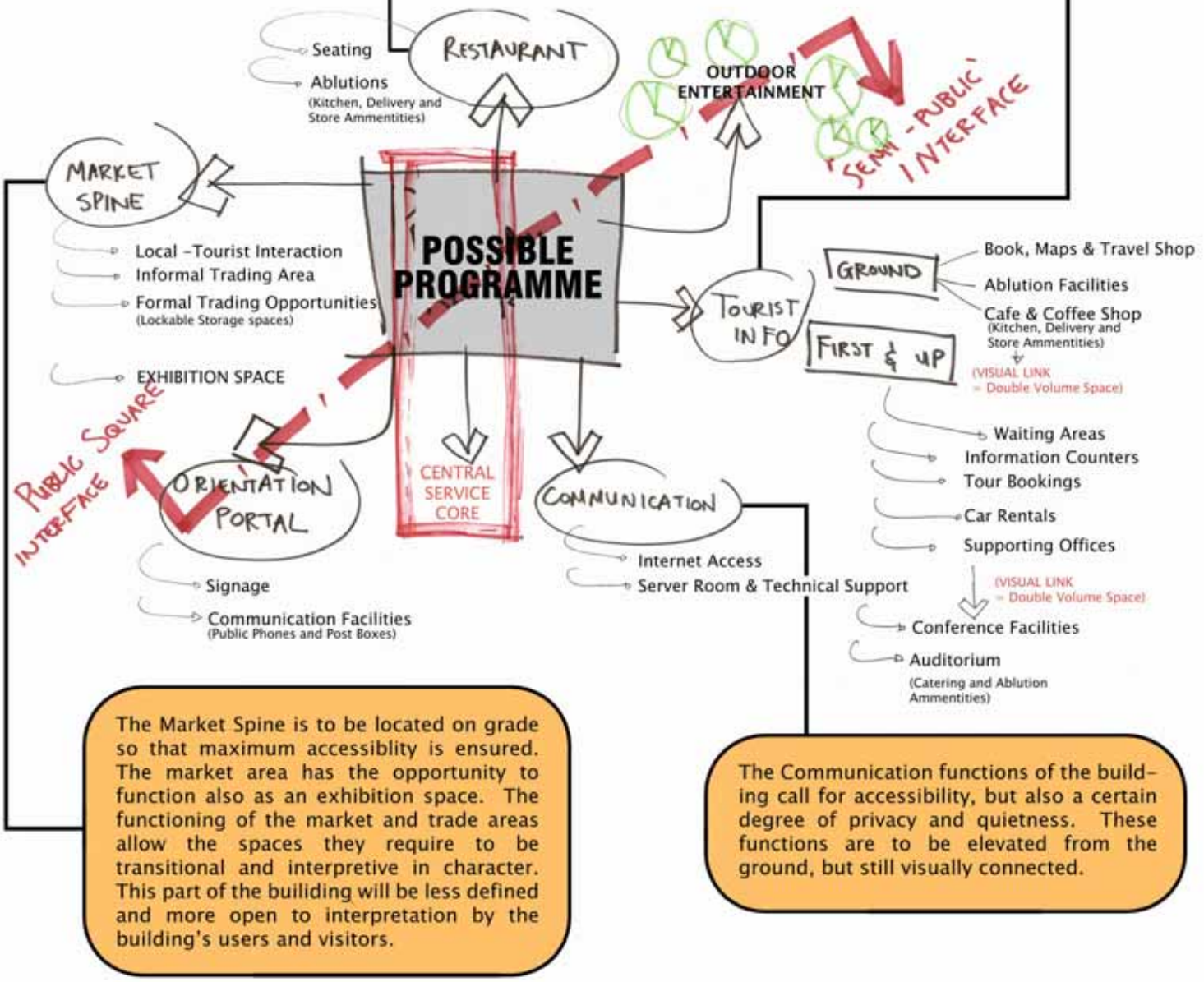
Concept Development

7.4 Programme and Planning Development

Fig 7.29 PROGRAMME DEVELOPMENT

The restaurant will be seen as a destination for both tourists and locals alike, as it will be of specific South African flavour. With regards to its spatial planning, the restaurant is to offer views of the historical fabric and both Eatern and Western outdoor spaces, so that patrons can witness the comings and goings of the vibrant Station environment. It should also function as an extension of the Exhibition Spaces included within the proposed programme.

The Tourist Info Functions form the 'formal' part of the building. Due to their office-like nature, these function will be housed closest to the organised fabric of the city. It is also important, from a practical point of view, that these office functions are placed in the Northern wing of the building to ensure the best user comfort for those spending their days working within the building, and not passing briefly through.



The Market Spine is to be located on grade so that maximum accessiblity is ensured. The market area has the opportunity to function also as an exhibition space. The functioning of the market and trade areas allow the spaces they require to be transitional and interpretive in character. This part of the builiding will be less defined and more open to interpretation by the building's users and visitors.

The Communication functions of the building call for accessibility, but also a certain degree of privacy and quietness. These functions are to be elevated from the ground, but still visually connected.

In order to conceptualise the spatial arrangement of the builidng, it is neccessary to define the functions that will be accommodated within, and to consider how these functions are to interact with the edges of the outdoor spaces adjacent, as well as with each other.

Fig 7.29 above shows a diagramatic representation of the proposed functions to be housed within the building.

Spatial Planning Concept

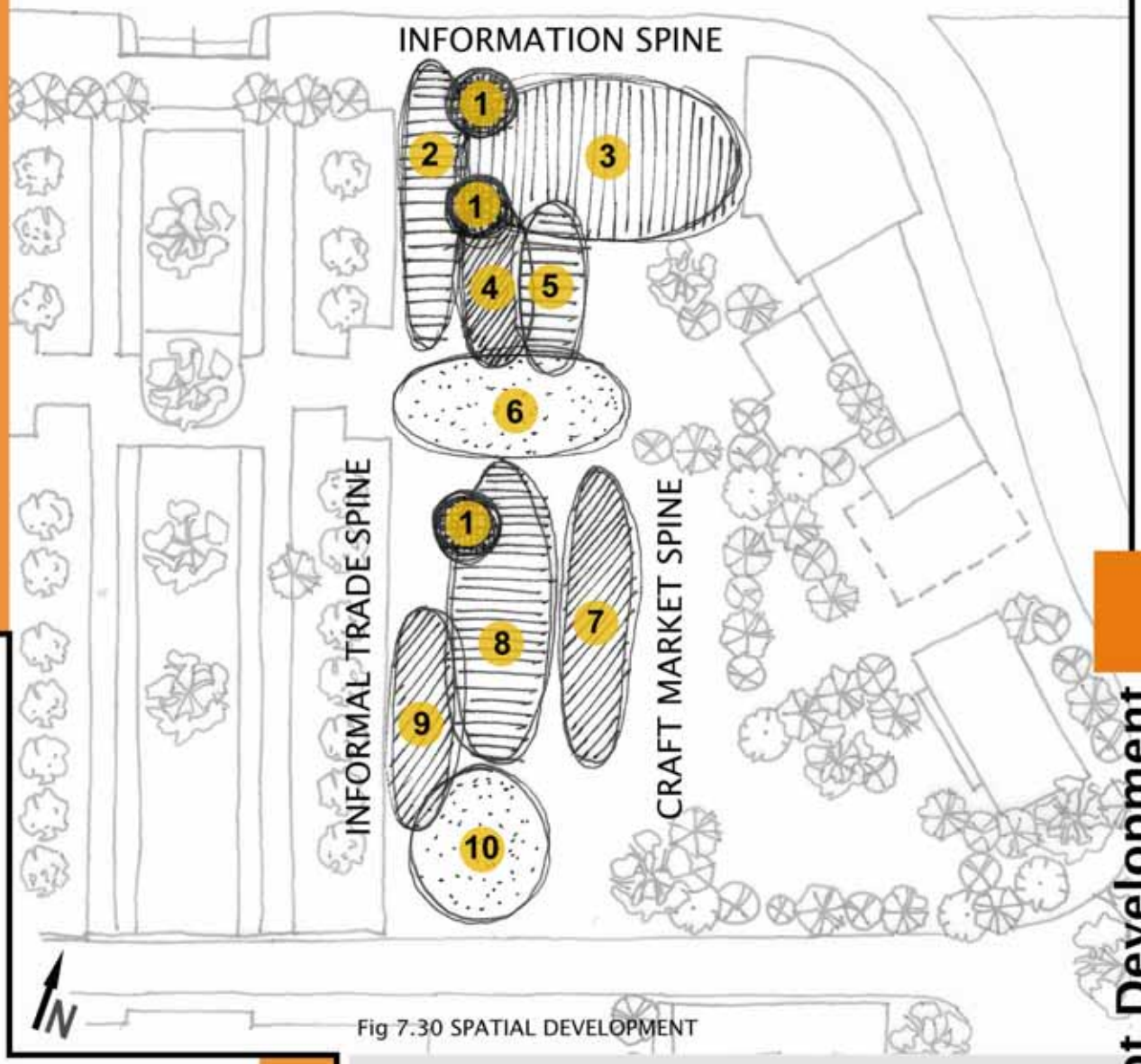


Fig 7.30 SPATIAL DEVELOPMENT

Fig 7.31 Showing a preliminary section through the Historical Sunken Garden

Fig 7.32 Showing a preliminary section through Scheiding Street

Legend

1 Vertical Circulation Cores.

2 Cafe overlooking the intersection (with views ofthe Victoria Hotel) and the Historical SunkenGarden.

3 Information wing housing the Book, Map and Travel Shop, smaller coffee shop, Information Counters and supporting office facilities. This Northern wing responds to the Scheiding Street city edge.

4 Communication and Conference Facilities, with buffer zones on each side.

5 Service core (Ablutions, Kitchens and Service Ducts)

6 The Auditorium forms a link between the North and South of the building and allows pedestrian movement on the ground.

7 The Formal Craft Market brings vibrancy to the Secondary Square.

8 The Restaurant Area interfaces on both sides.

9 The Informal Trading Spine fronts onto the Historical Sunken Garden where the bulk of commuters pass by.

10 The transitional Gathering Space introduces the fabric of the building and serves as an entrance to the Craft Market from the South.

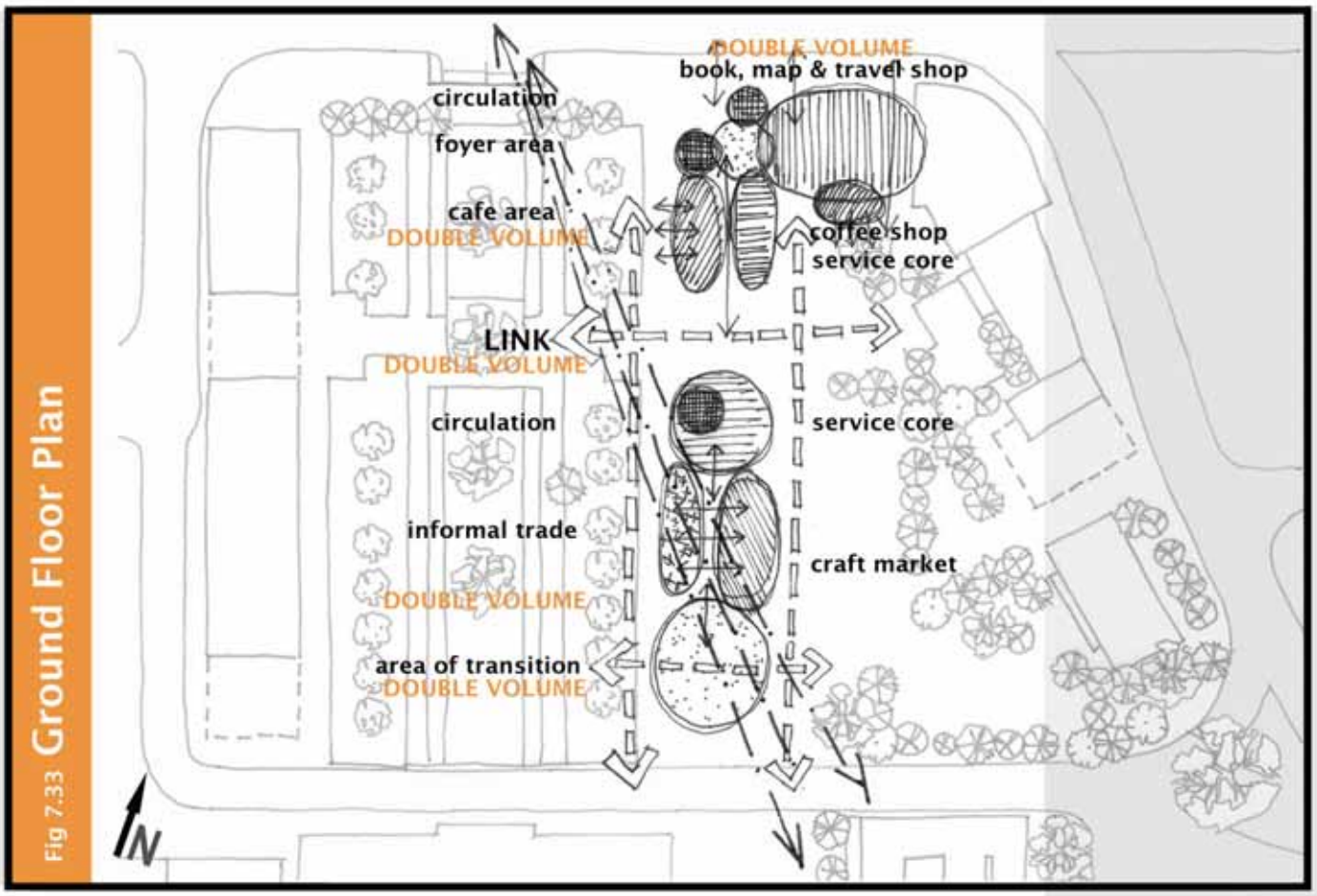


Fig 7.33 Ground Floor Plan

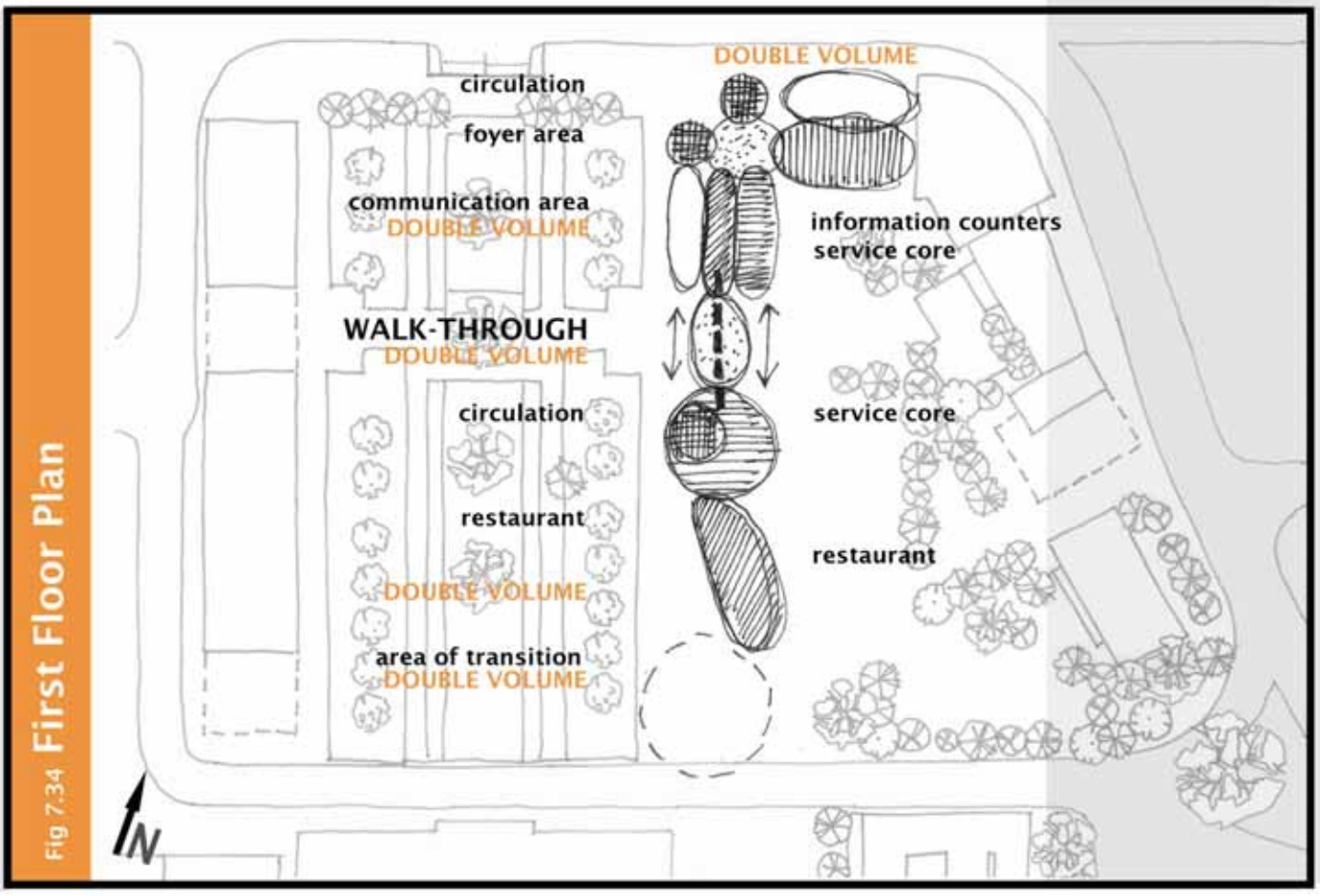


Fig 7.34 First Floor Plan

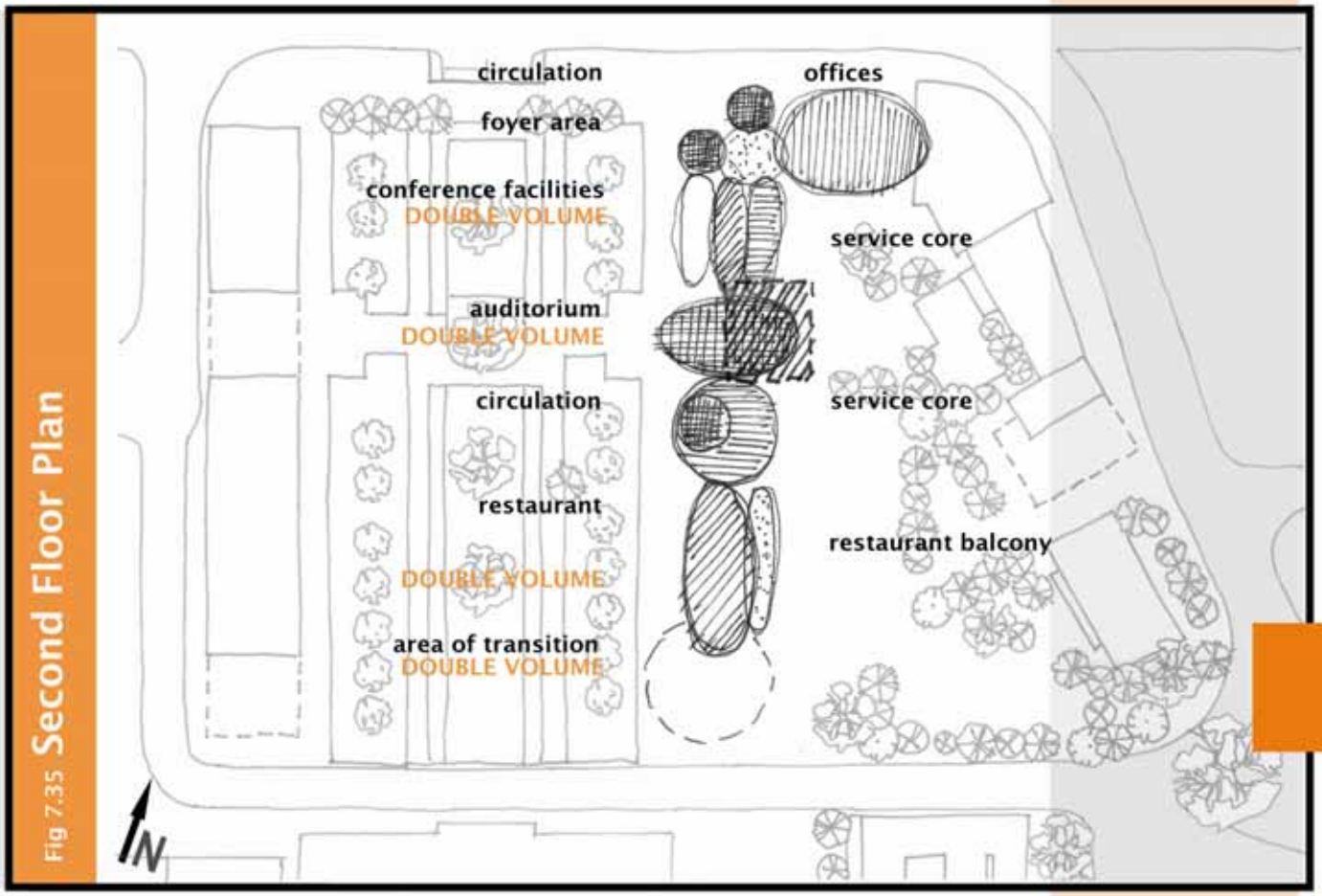


Fig 7.35 Second Floor Plan

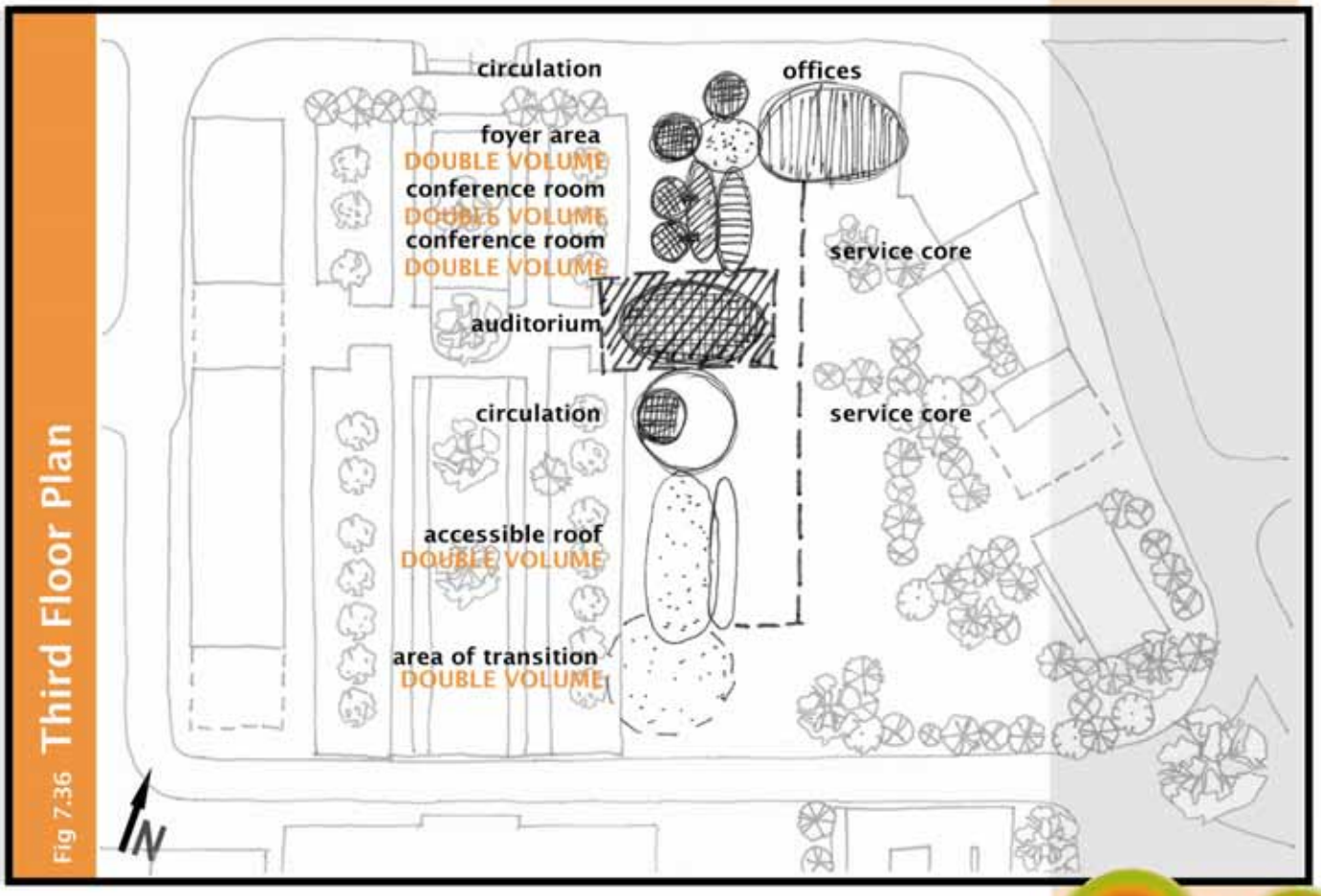


Fig 7.36 Third Floor Plan

BASEMENT LEVEL

NORTHERN SECTION			
STORES	Luggage Store		22m2
	Coffee Shop Dry Store		12.4m2
	Book Shop Store		10.8m2
	Cafe Dry Store		18m2
	Lift Lobby		12.4m2
		TOTAL:	75.6m2
ADMINISTRATION	Parking & Security		22m2
DELIVERIES	Yard		62m2
PLANT ROOMS	Telkom Room		9m2
	Electrical Room		9m2
	Transformer		36m2
	LV/DB Room		12m2
	Standby Generator		17.5m2
		TOTAL:	83.5m2
SOUTHERN SECTION			
FOYER AREA	Central Space		82m2
	Lift Lobby		4.5m2
		TOTAL:	86.5m2
STAFF ABLUTION FACILTIES	Female Ablutions		22m2
	Male Ablutions		22m2
	Passages		27m2
		TOTAL:	71m2
ADMINISTRATION	Security		4.5m2
SECURITY	Cubicle		4.6m2
WATER COLLECTION TANKS	Floor Area		30m2
		GRAND TOTAL:	439.7m2

GROUND FLOOR LEVEL

NORTHERN SECTION - 'CAFE/SHOP SPINE'			
COFFEE SHOP	Store Area		5.6m2
	Service & Display Area		22.6m2
	Indoor Seating Space		45.8m2
	Outdoor Seating Space		41m2
		TOTAL:	115m2
BOOK & MAP SHOP	Floor Area		302m2
	Lift Lobby		5.3m2
		TOTAL:	307.3m2
FOYER AREA & EXHIBITION SPACE	Central Space	TOTAL:	200m2
CAFE	Cold Store		5m2
	Kitchen		26.7m2
	Ammenities		13.8m2
	Circulation Space		118.7m2
	Indoor Seating Space		126m2
	Outdoor Seating Space		61.5m2
		TOTAL:	351.7m2
ABLUTION FACILTIES	Female Ablutions		17m2
	Male Ablutions		17m2
	Disabled Facility		5.7m2
		TOTAL:	39.7m2
SOUTHERN SECTION - CRAFT MARKET HUB			
FOYER AREA	Central Space		158m2
	Lift Lobby		4.5m2
		TOTAL:	162.5m2
ABLUTION FACILTIES	Female Ablutions		10m2
	Male Ablutions		10.5m2
	Disabled Facility		5.8m2
		TOTAL:	26.3m2
BANKING FACILITY	ATM	TOTAL:	4.5m2
SECURITY	Cubicle	TOTAL:	4.6m2
INFORMAL TRADE & PERFORMANCE SPACE	Interpretive Space		200m2
	Circulation Space		170m2
		TOTAL:	370m2
FORMAL CRAFT MARKET	Stall 1		19m2
	Stall 2		18.3m2
	Stall 3		17.7m2
	Stall 4		17m2
	Stall 5		16.2m2
	Stall 6		15.4m2
	Stall 7		7.4m2
		TOTAL:	111m2
GATHERING SPACE	Interpretive	TOTAL:	205m2
		GRAND TOTAL:	

FIRST FLOOR LEVEL

NORTHERN SECTION - COMMUNICATION & INFORMATION HUB			
VISITOR INFORMATION	Counters		186m2
	Reading/Discussion Area		41m2
	Balcony		19m2
	Small Kitchen		12.4m2
		TOTAL:	258.4m2
FOYER AREA & EXHIBITION SPACE	Central Space		170m2
	Waiting Area		15m2
	Lift Lobby		5.3m2
		TOTAL:	190.3m2
INTERNET & COMMUNICATION FACILITIES	Floor Space		175m2
	Mezzanine Level		35.3m2
	Techincal Support		19.8m2
	Server Room		3.6m2
	Kitchen/Coffee Station		10.5m2
		TOTAL:	244.2m2
ABLUTION FACILTIES	Female Ablutions		12.3m2
	Male Ablutions		11.7m2
		TOTAL:	24m2
WALK-THROUGH BETWEEN HUBS		TOTAL:	107m2
SOUTHERN SECTION - RESTAURANT HUB			
FOYER AREA	Central Space		82m2
	Lift Lobby		4.5m2
		TOTAL:	86.5m2
RESTAURANT	Bar Area 1		36.6m2
	Balcony		33m2
	Kitchen Stores		7.9m2
	Kitchen		55.6m2
	Waiter's Ammenities		19.4m2
	Cleaner's Store		4.6m2
	Floor Area		190m2
	Performance Space		61.3m2
		TOTAL:	237.4m2
		GRAND TOTAL:	1147.8m2

Fig 7.37

Accomodation Schedule

The building's proposed programme centres around:
A Craft Market spine,
Communication and Conference facilities,
Relaxation ammenities, as well as an
Information and Service interface.

The Craft Market spine includes spaces that accommodate craftsman and informal traders, as well as an exhibition space for local talent and relevant exhibitions that help to inform the public.

The Communication and Conference facilities house functions such as public telephones, post boxes, meeting rooms and an internet café.

The Relaxation ammenities consist of a restaurant, of South African flavour, a cafe and a coffee shop that are all positioned so as to provide opportunities to observe and engage in outdoor activities.

The Information and Service Interface offers the tourist the opportunity to source information, book tickets, tours and accommodation, as well as orientate themselves before continuing on their journey.

SECOND FLOOR LEVEL

NORTHERN SECTION - CONFERENCE FACILITIES & OFFICE HUB

OFFICES	Office Space	240m2
	Walkways	86.3m2
	Balcony	30.8m2
	Reception Area	15m2
	Waiting Area	13.2m2
	Boardroom	38.7m2
	Balcony 1	13m2
	Meeting Room	27.8m2
	Balcony 2	8m2
	Small Kitchen	12.4m2
	TOTAL:	472.8m2
FOYER AREA & EXHIBITION SPACE	Central Space	170m2
	Waiting Area	15m2
	Lift Lobby	5.3m2
	TOTAL:	190.3m2
CONFERENCE FACILITIES	Floor Space	175m2
	Mezzanine Level	35.3m2
	Administration	19.8m2
	Auditorium Entrance	10m2
	TOTAL:	240.1m2
ABLUTION FACILTIES	Female Ablutions	17m2
	Male Ablutions	13m2
	TOTAL:	30m2
LINK – AUDITORIUM	Entrance Bridges	10.2m2
	Speaker's Domain	40m2
	Projection Room	7.6m2
	Store	2.1m2
	TOTAL:	59.9m2

SOUTHERN SECTION - RESTAURANT HUB

FOYER AREA	Central Space	106m2
	Auditorium Entrance	13.7m2
	Balcony 2	6.8m2
	Lift Lobby	4.5m2
	TOTAL:	131m2
ABLUTION FACILTIES	Female Ablutions	17.2m2
	Male Ablutions	15.6m2
	TOTAL:	32.8m2
RESTAURANT	Bar Area 2	21m2
	Balcony 1	15.2m2
	Waiter's Ammenities	20.3m2
	Cleaner's Store	4.6m2
	Floor Area	372m2
	Balcony 3	60m2
	Terrace	60.7m2
	Lounge Area 1	27.4m2
	TOTAL:	581.2m2
	GRAND TOTAL:	1738.1m2

THIRD FLOOR LEVEL

NORTHERN SECTION - CONFERENCE FACILITIES & OFFICE HUB

OFFICES	Office Space	240m2
	Walkways	86.3m2
	Balcony	30.8m2
	Reception Area	15m2
	Waiting Area	13.2m2
	Meeting Room	38.7m2
	Balcony 1	13m2
	Boardroom	27.8m2
	Balcony 2	8m2
	Small Kitchen	12.4m2
	TOTAL:	472.8m2
FOYER AREA & EXHIBITION SPACE	Central Space	170m2
	Waiting Area	15m2
	Lift Lobby	5.3m2
	TOTAL:	190.3m2
CONFERENCE FACILITIES	Floor Space	175m2
	Administration	19.8m2
	Conference Room 1	26.2m2
	Conference Room 2	26.2m2
	Kitchen	10m2
	Auditorium Entrance	10.4m2
	TOTAL:	109.6m2
ABLUTION FACILTIES	Female Ablutions	17m2
	Male Ablutions	13m2
	TOTAL:	30m2
LINK – AUDITORIUM	Seating & Movement	155m2
	Entrance Bridges	10.2m2
	Dicussion Room 1	23.3m2
	Dicussion Room 2	23.3m2
	TOTAL:	211.8m2

SOUTHERN SECTION - RESTAURANT HUB & ACCESSIBLE ROOF

FOYER AREA	Central Space	106m2
	Auditorium Entrance	15.6m2
	Lift Lobby	4.5m2
	TOTAL:	126.1m2
RESTAURANT	Balcony	22.3m2
	Lounge Area 2	22m2
	Waiter's Ammenities	7.3m2
	Store	12.2m2
	Cleaner's Store	4.6m2
	TOTAL:	190m2
ABLUTION FACILTIES	Female Ablutions	17m2
	Male Ablutions	16.2m2
	TOTAL:	33.2m2
ACCESSIBLE ROOF AREA	TOTAL:	390m2
	GRAND TOTAL:	1753.8m2

These four interfaces, bearing testimony to the art and culture of the Pretoria, come together in the building's public atrium spaces. The programme of the building is aimed primarily at the tourist, but the functions also cater for the daily commuter, making the building more sustainable and encouraging interaction between locals and foreigners.

According to the SABS 0400-1990, Table 1 - Occupancy or Building Classification (pp. 34), the various different occupancy classes are defined as follows:

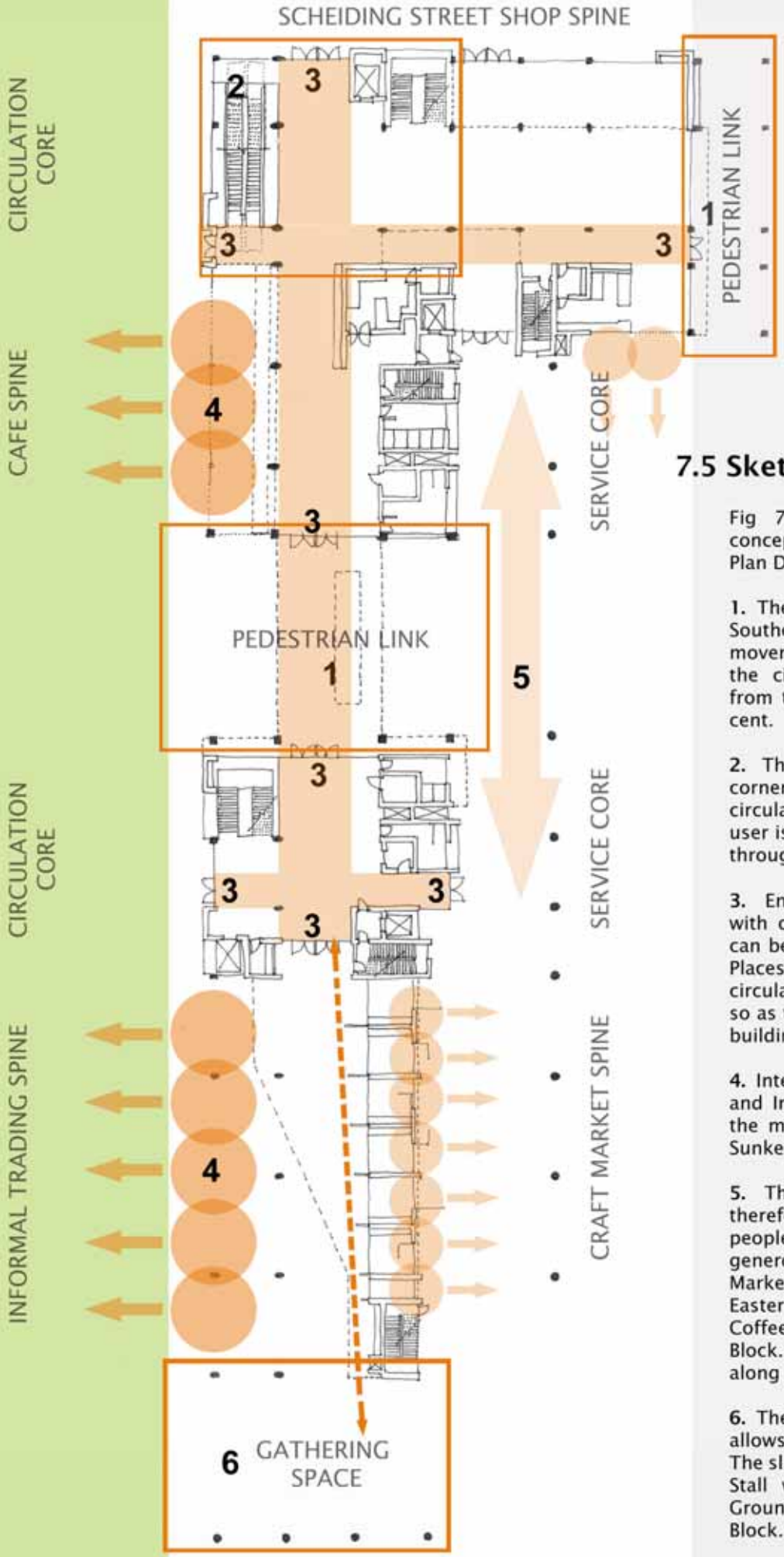
A1 ENTERTAINMENT AND PUBLIC ASSEMBLY
A2 THEATRICAL AND INDOOR SPORT
C1 EXHIBITION HALL
D4 PLANT ROOM
F2 SMALL SHOP
G1 OFFICES
J3 LOW RISK STORAGE
J4: PARKING GARAGE

These occupancy classes serve as a guide when calculating the design population for which adequate ablution facilities and parking bays are to be provided so as to ensure an urban environment that caters for the direct needs of its users. These calculations are important to incorporate in the development of the building design as the requirements directly influence the spatial planning of the building.

Following this, according to table 2 - Design Population (SABS 0400-1990 pp 35), the below figures should be applied:

A1 & A2: A population of the number of fixed seats or 1 person per m^2 if there are no fixed seats.
C1 & F2: 1 person per $10m^2$
G1: 1 person per $15m^2$
J3 & J4: 1 person per $50m^2$

The number of sanitary fixtures needed in the building is calculated in accordance with SABS 0400-1990 Part OO, Table 6.



7.5 Sketch Plan Development

Fig 7.38 adjacent shows important concepts relating to the Ground Floor Plan Development. These include:

1. The building is cut into Northern and Southern blocks to allow free pedestrian movement through the site. A link to the city divides the 'i-hub' building from the proposed new building adjacent.

2. The highly visible North-Western corner of the building is defined by circulation elements ensuring that the user is able to understand how to move through the building before entering.

3. Entrances form perpendicular axes with one another so that the building can be transversed easily in its entirity. Places of entry are also defined by circulation shafts, mechanics exposed, so as to allow the onlooker views of the building's moving parts.

4. Interactive functions such as the Cafe and Informal Trading Spine front onto the more prominent, busier, Historical Sunken Garden Square.

5. The Eastern facade of the building therefore becomes directive, guiding people North towards the city, via a generous covered walkway.. The Craft Market Spine to the South, activates the Eastern Secondary Square, as does the Coffee Shop in the 'i-hub's Northern Block. Service Cores are thus located along this facade.

6. The Southern point of the building allows for transition and interpretation. The slight diagonal of the Craft Market's Stall walls guides the user into the Ground Floor Foyer of the Southern Block.

SKETCH PLAN DEVELOPMENT

GROUND FLOOR PLAN

Scale 1:500

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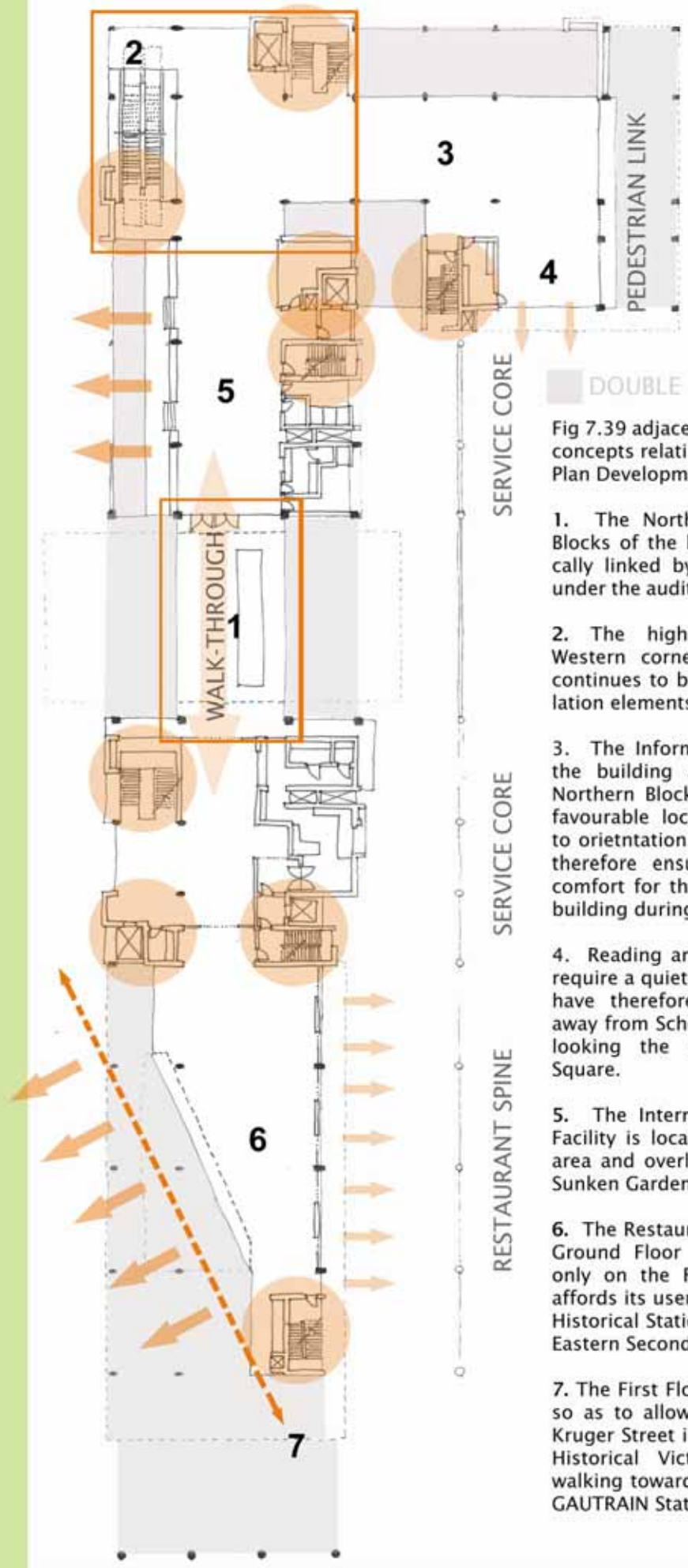

Fig 7.39 adjacent shows important concepts relating to the First Floor Plan Development. These include:

1. The Northern and Southern Blocks of the building are physically linked by a bridge passing under the auditorium on this level.

2. The highly visible North-Western corner of the building continues to be defined by circulation elements.

3. The Information functions of the building are placed in the Northern Block as it is the most favourable location with regards to orietntation. This position will therefore ensure the best user comfort for those working in the building during the day.

4. Reading and discussion areas require a quieter environment and have therefore been positioned away from Scheiding Street, overlooking the Eastern Secondary Square.

5. The Internet Communication Facility is located above the cafe area and overlooks the Historical Sunken Garden Square.

6. The Restaurant is raised above Ground Floor Level, and begins only on the First Floor, as this affords its users views of both the Historical Station Building and the Eastern Secondary Square.

7. The First Floor Slab is cut away so as to allow views of the Paul Kruger Street intersection and the Historical Victoria Hotel, when walking towards the city from the GAUTRAIN Station.

Concept Development

SKETCH PLAN DEVELOPMENT

FIRST FLOOR PLAN

Scale 1:500

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UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

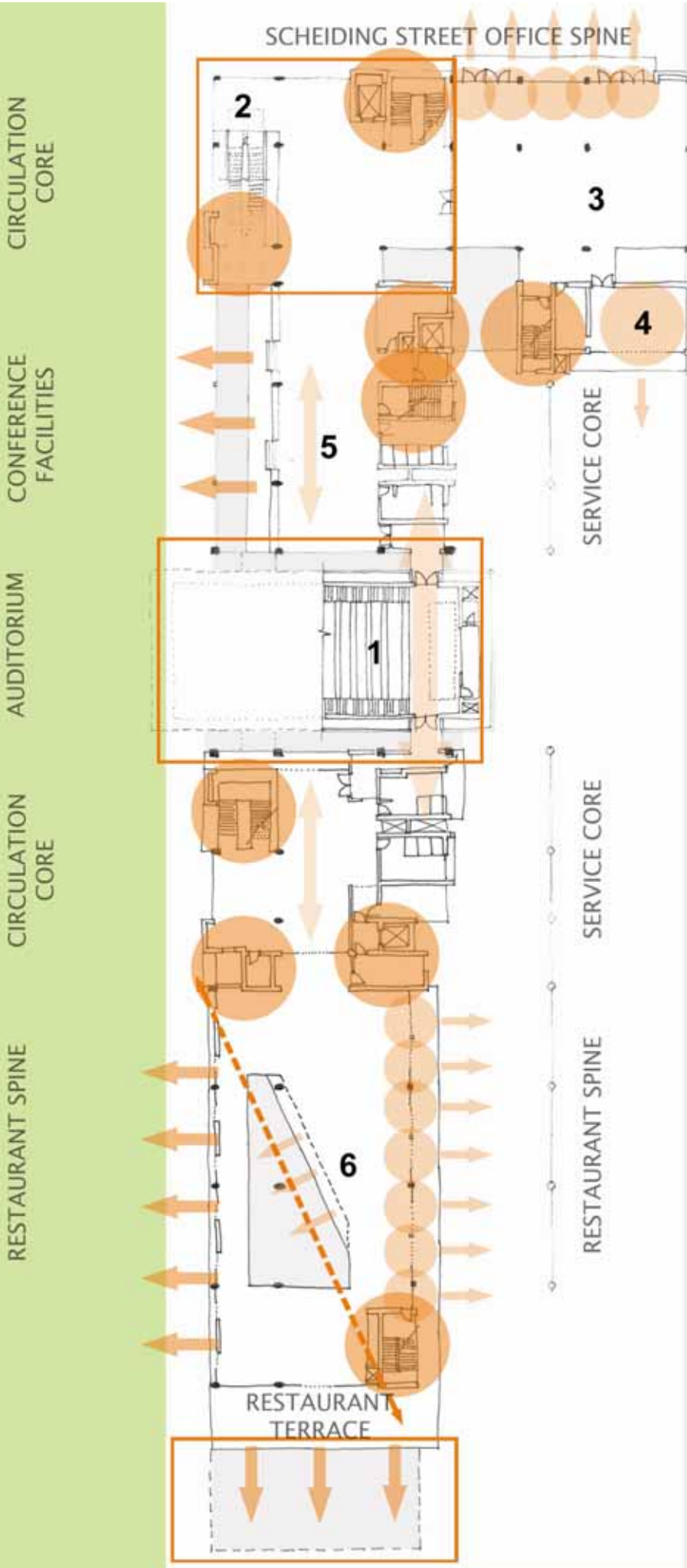

Fig 7.40 adjacent shows important concepts relating to the Second Floor Plan Development. These include:

1. The hovering auditorium forms a physical link between the 'i-hub's Northern and Southern blocks.

2. The vertical circulation elements of the North-Western Corner continue to define the street interchange and add to its character. The diagonal movement of the escalators becomes more evident with height.

3. The Office functions of the building are located in the Northern block for the same reason mentioned previously. These functions also serve to introduce the building into the city fabric on the opposite side of Scheiding Street.

4. The Boardroom and Meeting Room on this level are located above the Reading and Discussion Area below, for the very same reasons. Balconies allow these rooms to be extended into the outside spaces, forming a connection between the building's interior and the Eastern Secondary Square.

5. The Conference Facilities are located above the Internet Communication Facilites on the First Floor Level. This allows views of the space below as well as being in close proximity to the Auditorium Entrance. This space is visually linked to the auditorium along the North-South axis of the building.

6. The Restaurant's Second Level also affords views to the East and West. The double volume cut diagonally through the centre, echoes the diagonal of the first floor slab, and visually connects the restaurant to the floors below. balcony and terrace spaces stretch out toward the surrounding context. The restaurant foyer is visually linked to the auditorium along the North-South axis of the building.

SKETCH PLAN DEVELOPMENT

DOUBLE VOLUMES

SECOND FLOOR PLAN

Scale 1:500

IN

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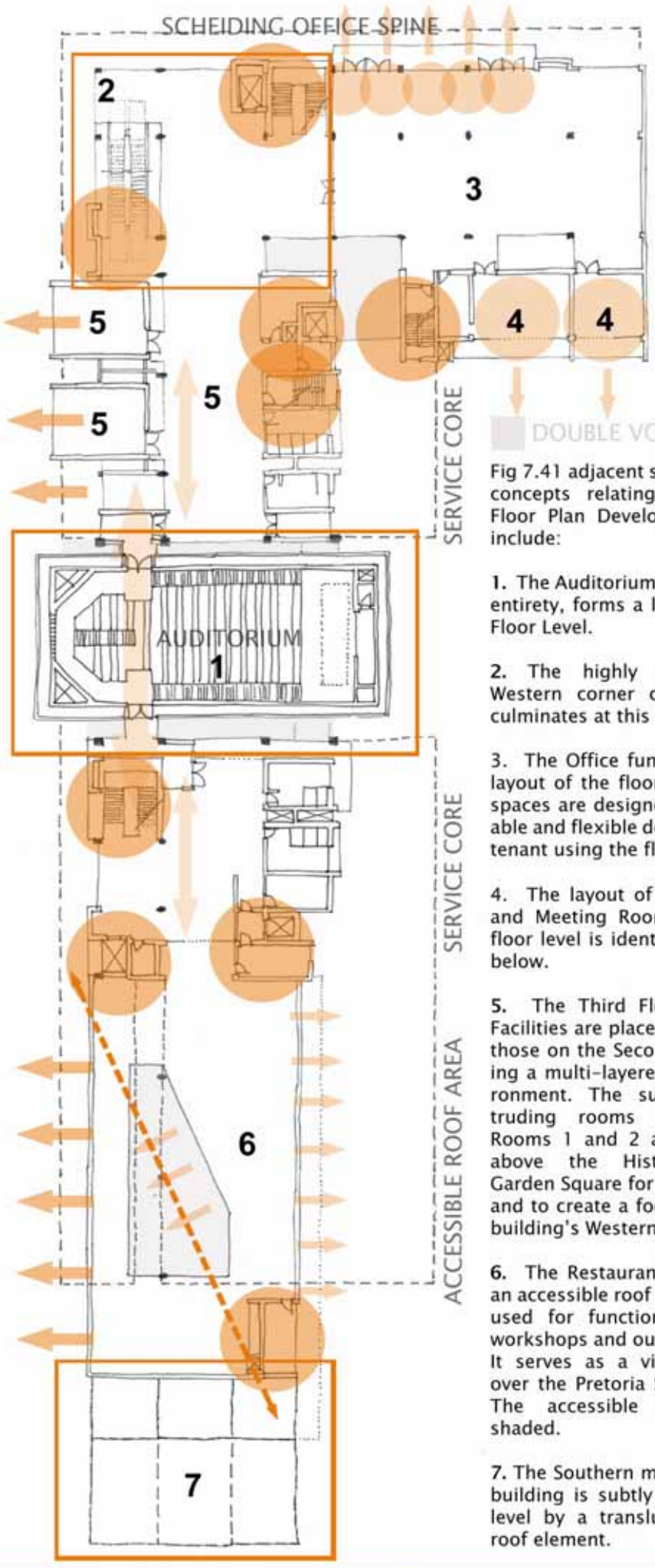


CIRCULATION CORE

CONFERENCE FACILITIES

CIRCULATION CORE

ACCESSIBLE ROOF AREA

Fig 7.41 adjacent shows important concepts relating to the Third Floor Plan Development. These include:

1. The Auditorium, now seen in its entirety, forms a linkon the Third Floor Level.

2. The highly visible North-Western corner of the building culminates at this level.

3. The Office functions echo the layout of the floor below. These spaces are designed to be adaptable and flexible depending on the tenant using the floor area.

4. The layout of the Boardroom and Meeting Room on the third floor level is identical to the floor below.

5. The Third Floor Conference Facilities are placed directly above those on the Second Floor, creating a multi-layered internal environment. The suspended, protruding rooms of Conference Rooms 1 and 2 are placed high above the Historical Sunken Garden Square for noise reduction and to create a focal point on the building's Western Facade.

6. The Restaurant roof becomes an accessible roof area that can be used for functions, exhibitions, workshops and outdoor meetings. It serves as a viewing platform over the Pretoria Station context. The accessible roof area is shaded.

7. The Southern most point of the building is subtly defined at this level by a transluscent, glowing roof element.

SKETCH PLAN DEVELOPMENT

THIRD FLOOR PLAN

Scale 1:500

7.6 DEVELOPMENT OF THE SECTION - Northern Block

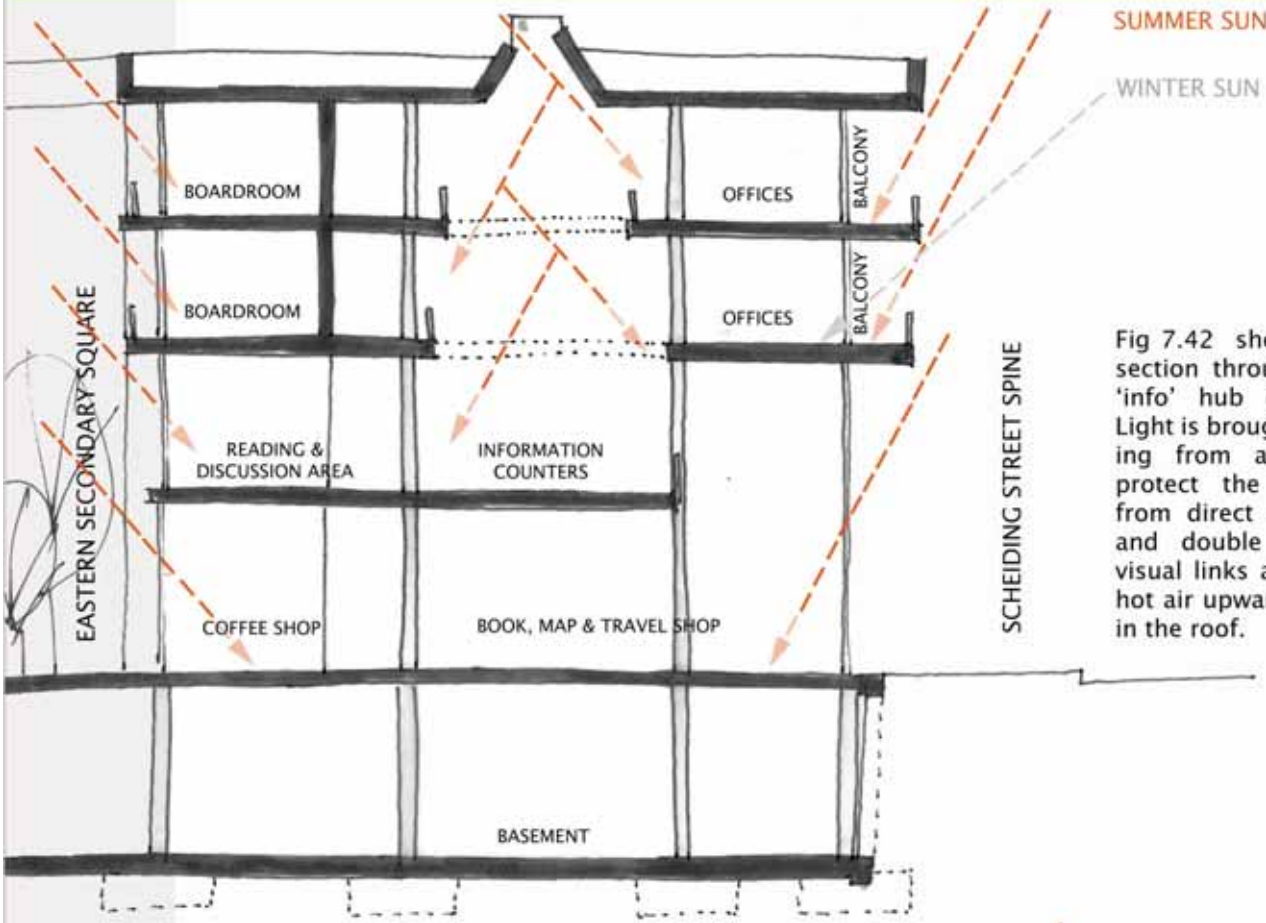


Fig 7.42 PRELIMINARY SECTION
Scale 1:250

MOVEMENT OF LIGHT INTO THE BUILDING

Fig 7.42 shows a preliminary section through the Northern 'info' hub of the building. Light is brought into the building from above, overhangs protect the internal spaces from direct summer sunlight and double volumes create visual links and well as direct hot air upwards towards vents in the roof.

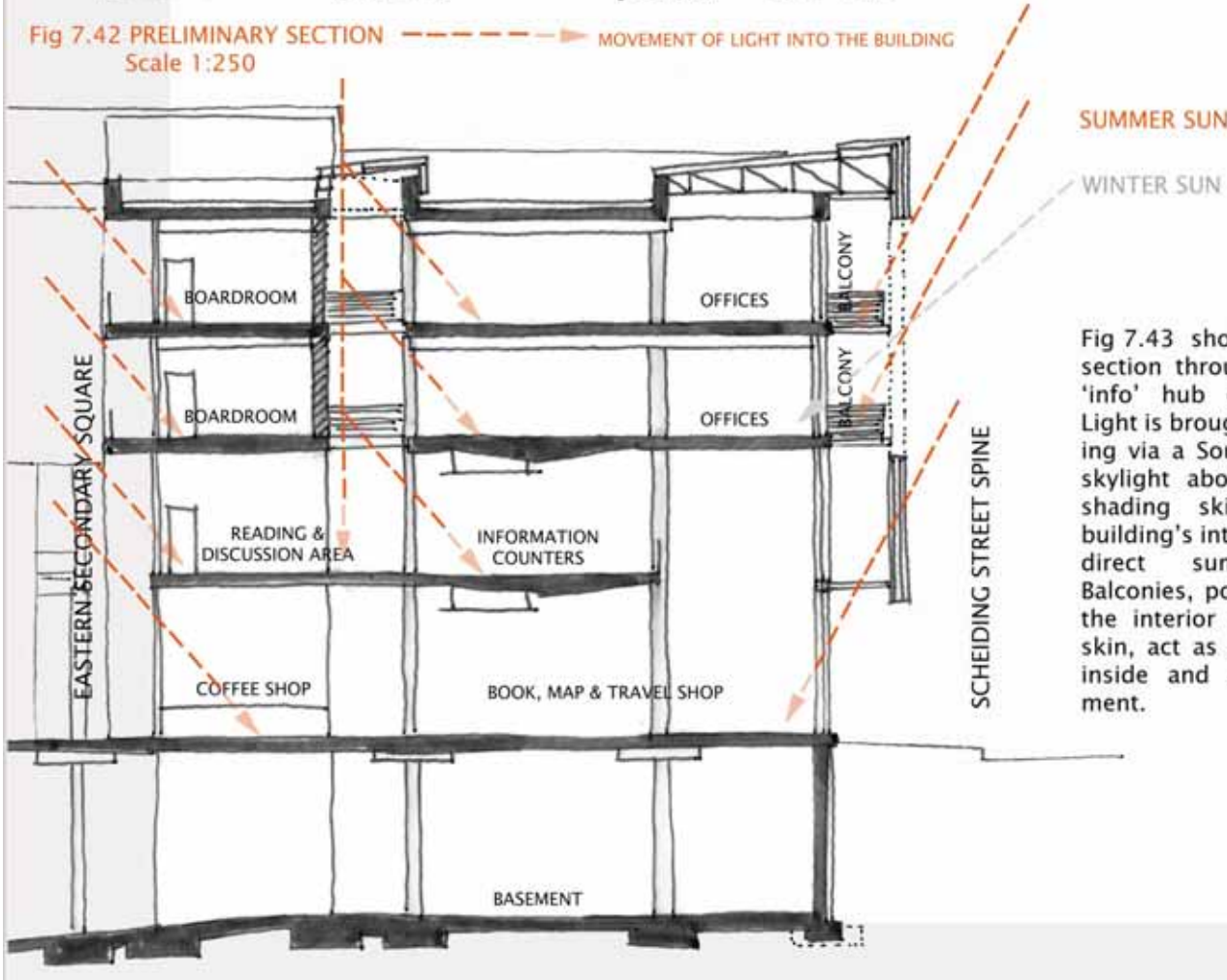


Fig 7.43 DEVELOPED SECTION
Scale 1:250

MOVEMENT OF LIGHT INTO THE BUILDING

Fig 7.43 shows the developed section through the Northern 'info' hub of the building. Light is brought into the building via a South-facing ribbon skylight above. The external shading skin protects the building's internal spaces from direct summer sunlight. Balconies, positioned between the interior and the shading skin, act as a buffer between inside and outside environment.

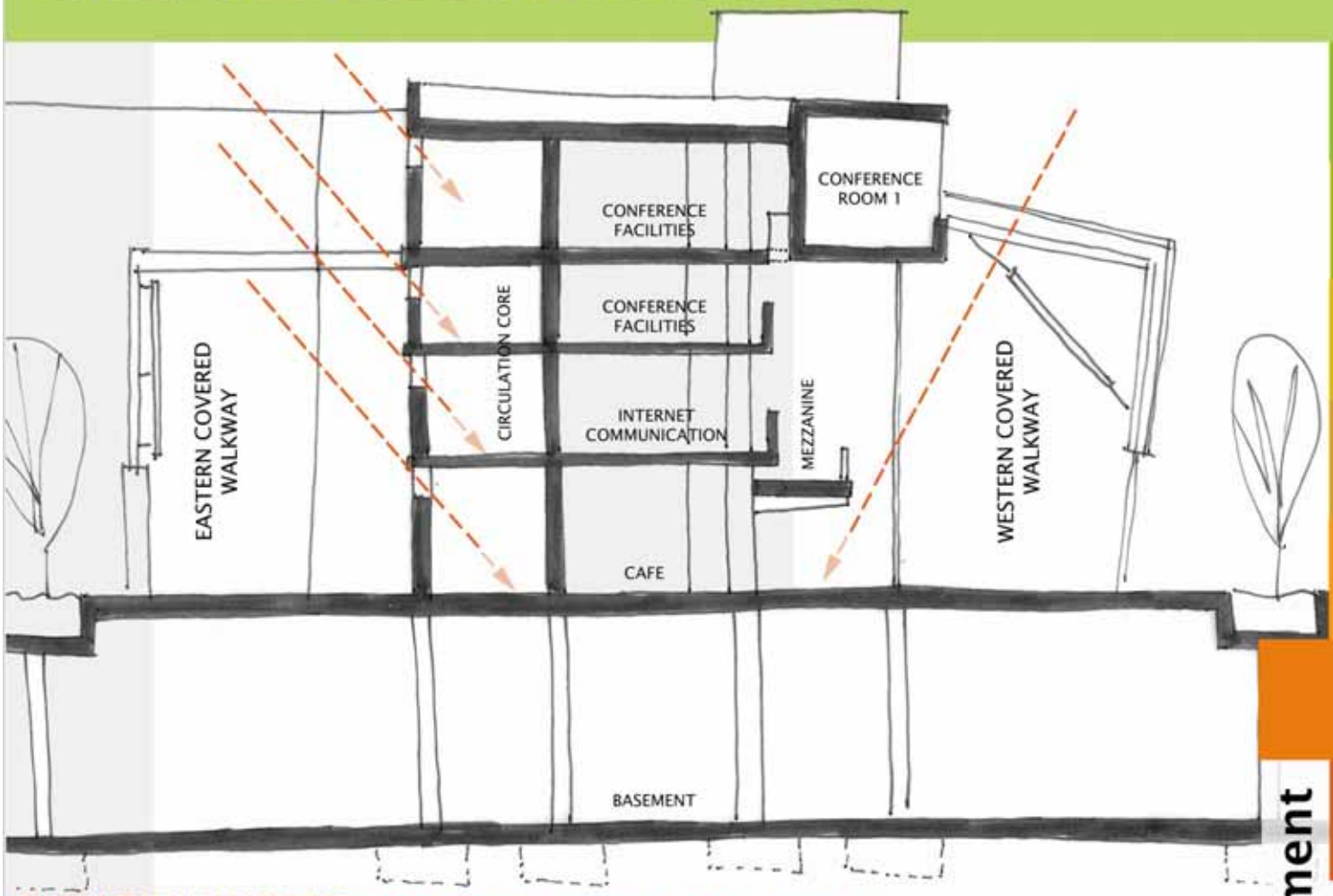


Fig 7.44 PRELIMINARY SECTION
Scale 1:250

MOVEMENT OF LIGHT INTO THE BUILDING

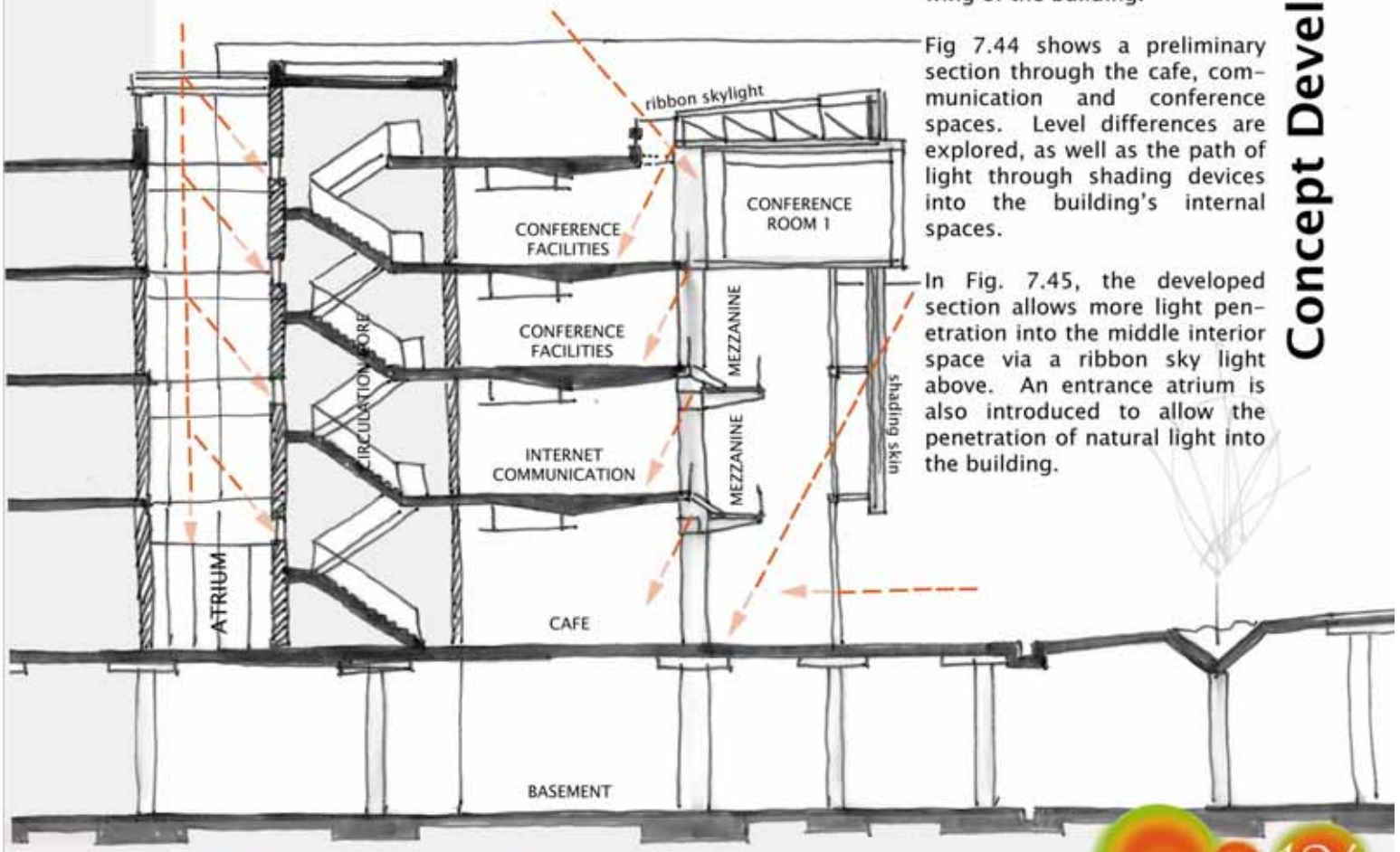


Fig 7.45 DEVELOPED SECTION
Scale 1:250

MOVEMENT OF LIGHT INTO THE BUILDING

Fig 7.44 and 7.45 show sections through the North-Western wing of the building.

Fig 7.44 shows a preliminary section through the cafe, communication and conference spaces. Level differences are explored, as well as the path of light through shading devices into the building's internal spaces.

In Fig. 7.45, the developed section allows more light penetration into the middle interior space via a ribbon sky light above. An entrance atrium is also introduced to allow the penetration of natural light into the building.

DEVELOPMENT OF THE SECTION - Auditorium Link

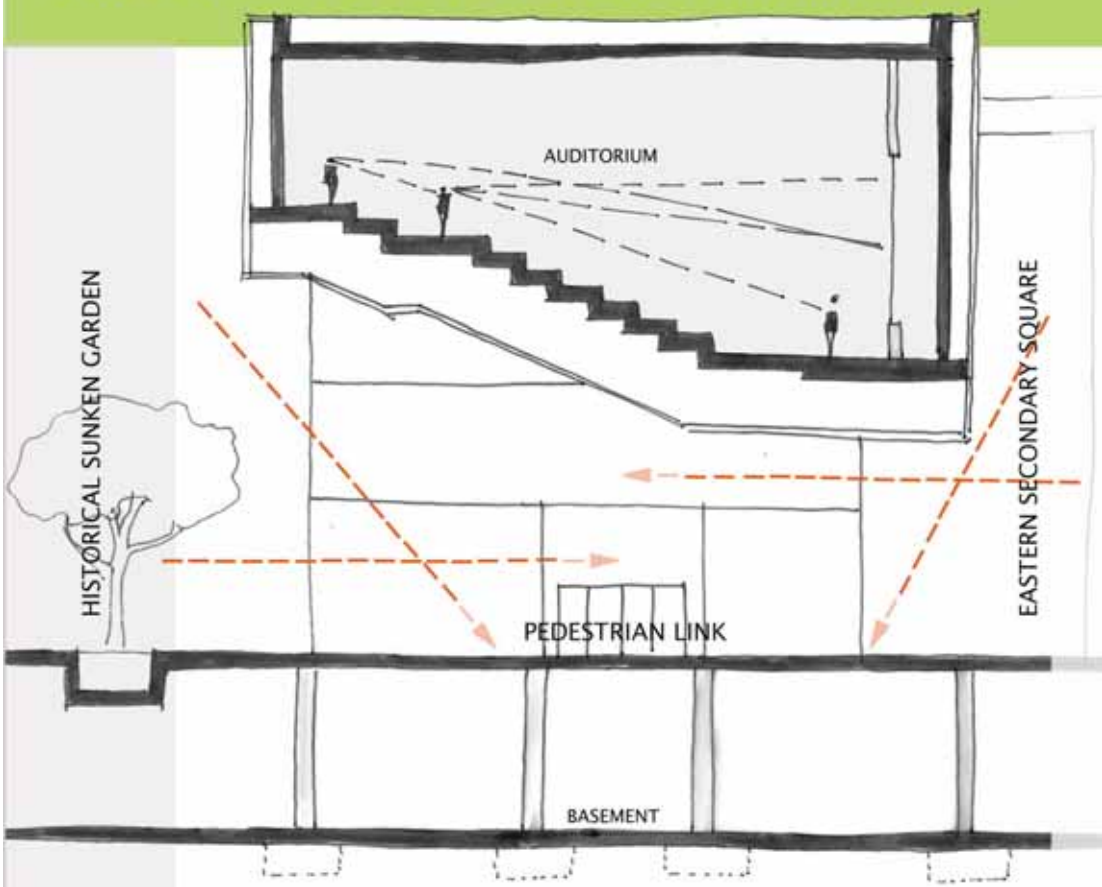


Fig 7.46 PRELIMINARY SECTION
Scale 1:250

MOVEMENT OF LIGHT INTO THE BUILDING

Fig 7.46 and 7.47 show a section through the auditorium that creates a link between the building's Northern and Southern blocks by 'hovering' between them.

Fig 7.46 shows the early development of the auditorium. It consists of an inner structural core and an outer translucent skin. The structure only links the second and third floors of the building, and the scale of the space below it appears to dominate.

Fig 7.47 shows a further developed section. Lines of sight within the auditorium have been defined. Provision has been made for a mechanical ventilation system and the structure has been made lighter to give the illusion of a 'hovering' element. A link at first floor level has been included, not only for practical reasons, but to create a scale that the pedestrian is able to relate to when walking beneath the suspended structure. The auditorium structure itself, will be discussed in depth in the next chapter.

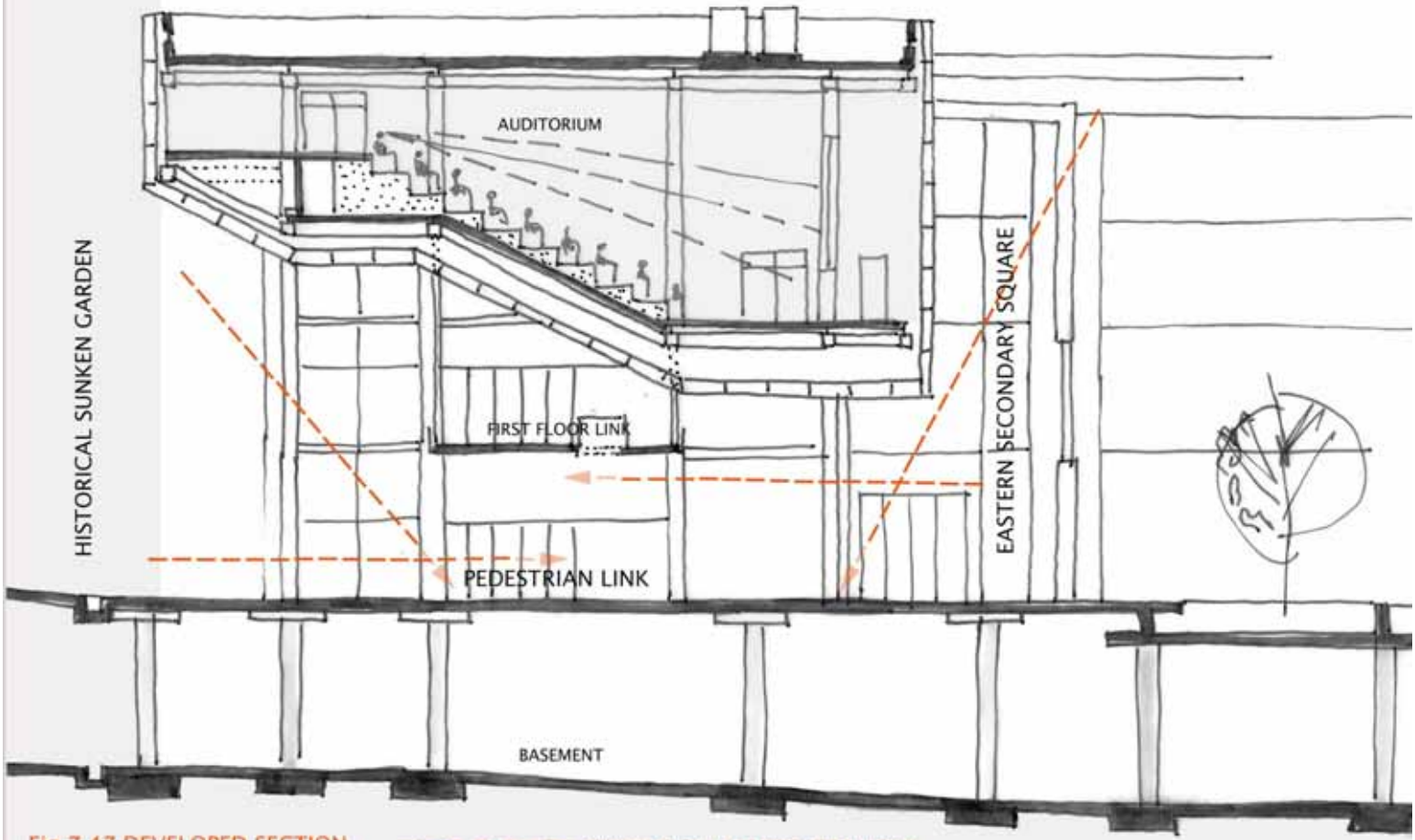


Fig 7.47 DEVELOPED SECTION
Scale 1:250

MOVEMENT OF LIGHT INTO THE BUILDING

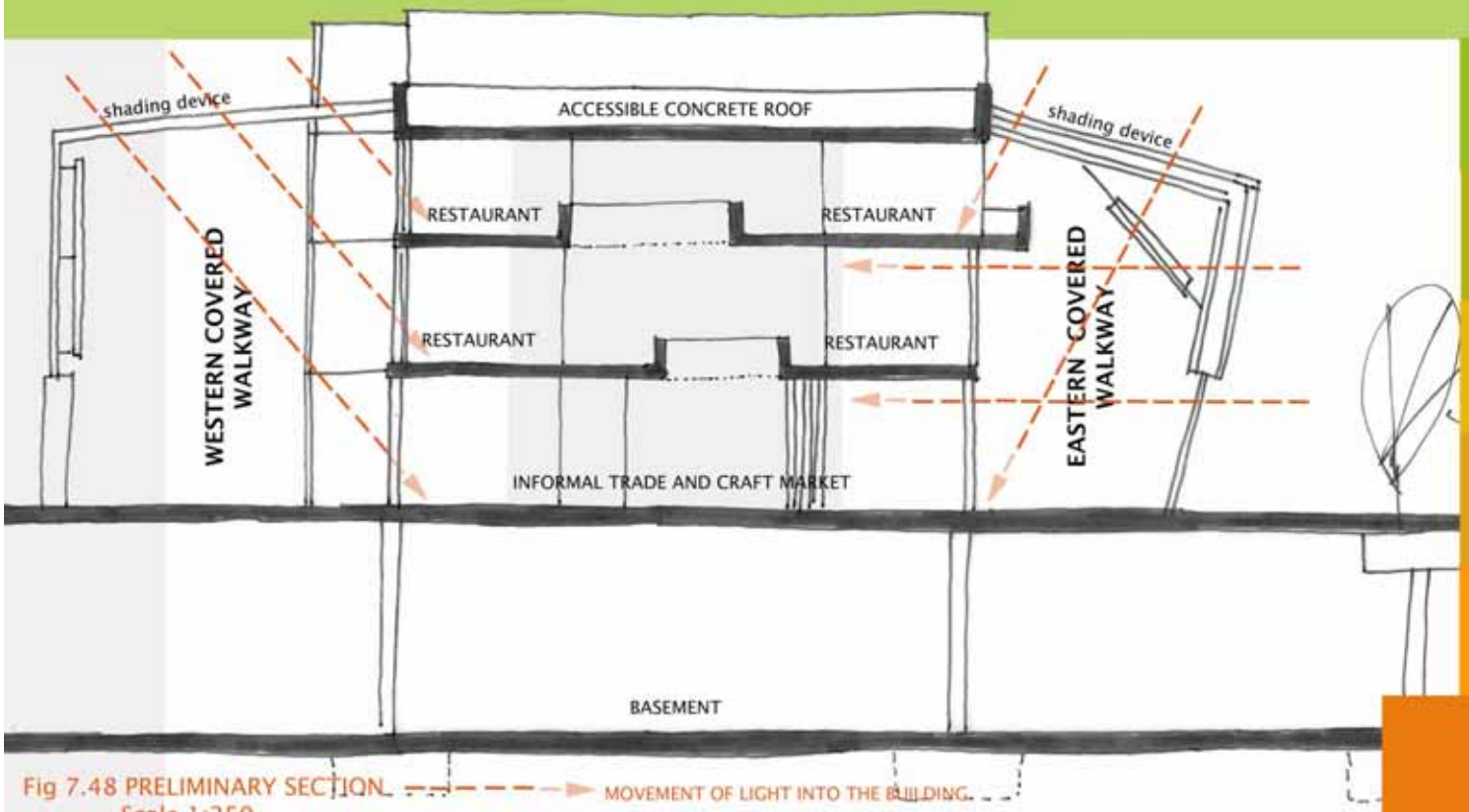


Fig 7.48 PRELIMINARY SECTION
Scale 1:250

MOVEMENT OF LIGHT INTO THE BUILDING

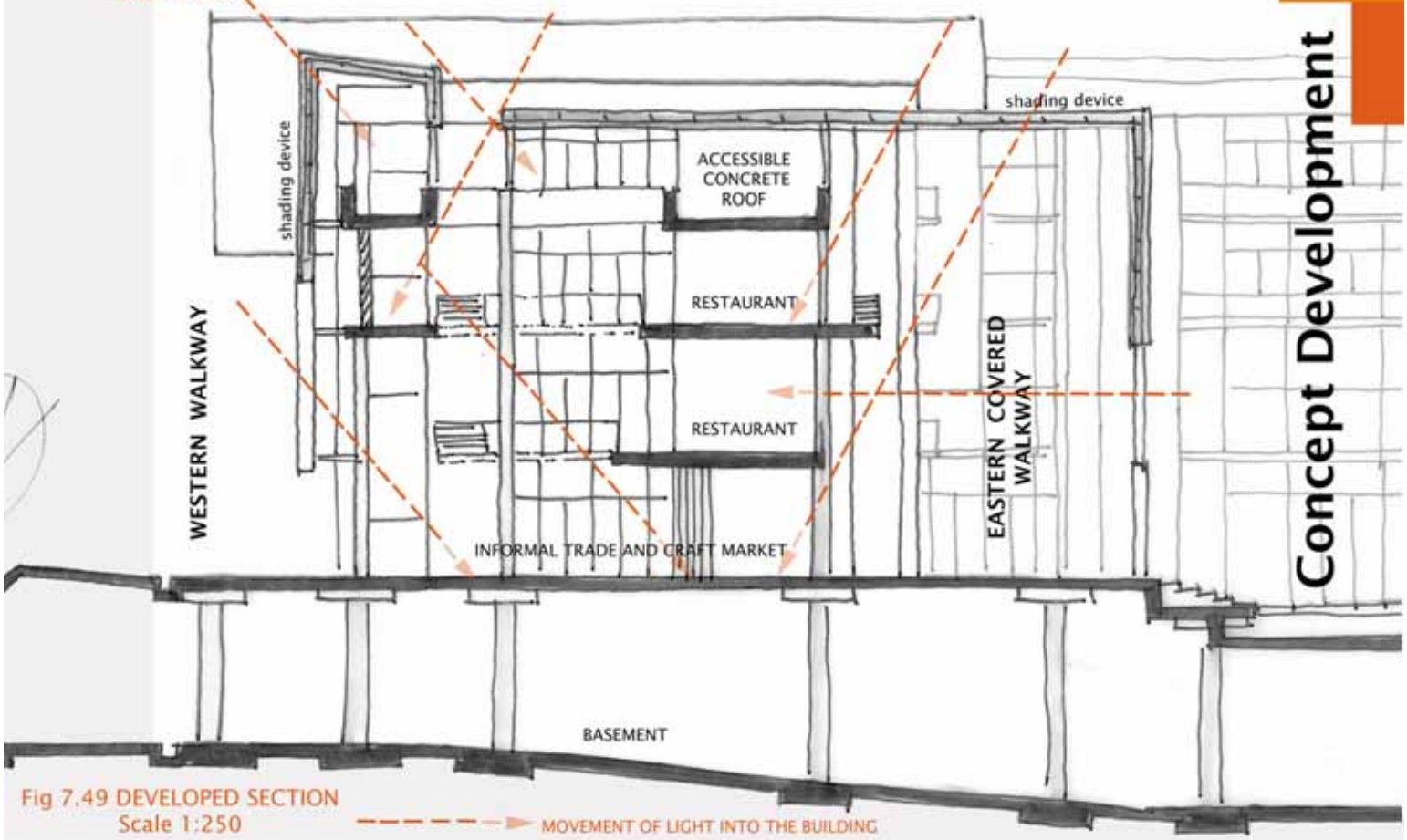


Fig 7.49 DEVELOPED SECTION
Scale 1:250

MOVEMENT OF LIGHT INTO THE BUILDING

Concept Development

Fig 7.48 and 7.49 show the development of the section through the craftmarket and restaurant area of the building. Fig 7.48 is an early section through the buiding. The accessible roof restricts natural light from entering the floors below. The walkways on either side of the building possess different characteristics, but function with regards to sun control. Although there are internal volumes present, the structure appears heavy. In Fig 7.49, a developed section through the same area is shown. The accessible roof is now open, allowing natural light to spill into the restaurant and craft market areas below. This opening also connects the volumes within the building, vertically , both physically and visually. The walkways on either side of the building now read as a unified element, 'wrapping' the structure within. The shading skin concept develops into a naturally ventilated, double-layered, perforated system that will be discussed in further detail in the pages to come.

7.7 3Dimensional Concept Development

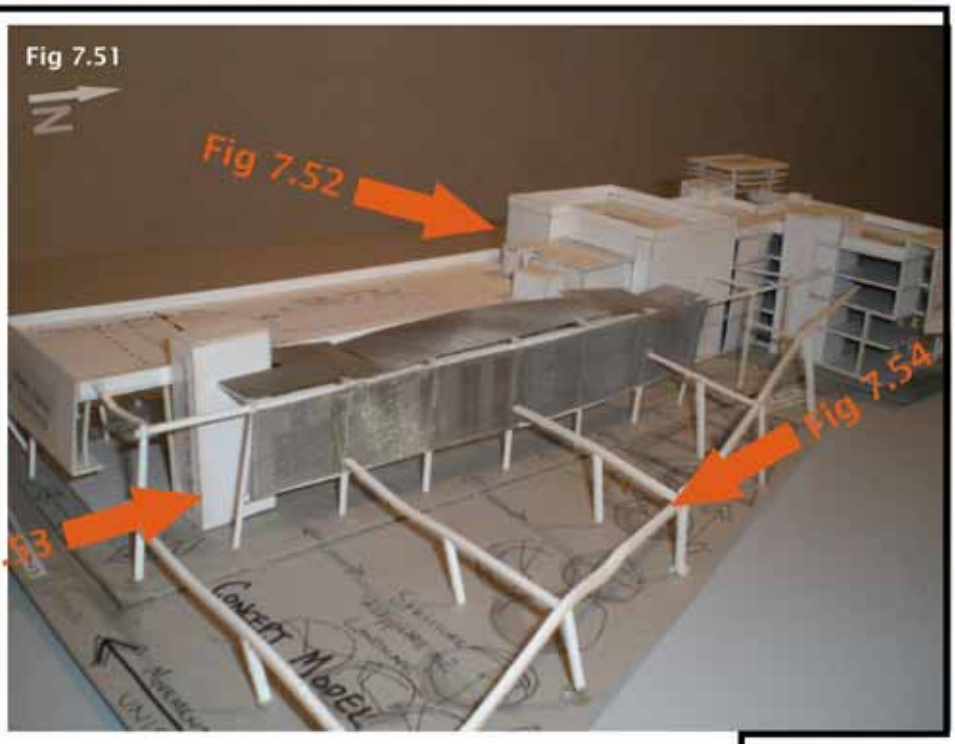


Fig 7.50 shows a view down the building from the North-Western corner to the Southern point. The North-Western corner dominates the Paul Kruger and Scheiding Street Intersection. Although cut away at ground level to allow movement, it seems isolated from the rest of the building's form. The Western walkway provides the neccessary sun protection, and portrays movement, but reads as an 'add-on' and not as part of the facade. (photo by author)

Fig 7.51 shows a view of the Secondary Eastern Square from the Southern point of the site. The treatment of the Eastern facade of the builing and circulation along the building edge is more successful as it is not fragmented. The desired effect of the building extending into the landscape could perhaps be better achieved through the use of natural elements such as effective landscape design. (photo by author)


Fig 7.52

Fig 7.52 shows the link between the Historical Sunken Garden and the Secondary Eastern Square. This link occurs on ground level. The pedestrian is able to walk under the auditorium of the building and experience the scale of the urban environment that surrounds them. Here, however, the covered walkway infront of the link distracts both from this links' legibilty and accessibility. (photo by author)


Fig 7.53

Fig 7.53 shows the view that a commuter is confronted with when walking North from the Pretoria GAUTRAIN Station. Although the Eastern movement spine is well defined, and the Secondary Eastern Square appears inviting, there is no visual link through the building to the Historical Sunken Garden and the city beyond. This decreases the legibility of the site and may result in the disorientation of the commuter. (photo by author)


Fig 7.54

Fig 7.54 shows the pedestrian link between the Scheiding Street edge and the Secondary Eastern Square. This link passes between the 'i-hub' building and the building directly adjacent. It serves as a vital visual and physical link for those using the Secondary Eastern Square. For those using the Secondary Eastern Square, its presence creates an awareness of the city beyond, and shows a means of exiting the space if need be. At this stage the link is perhaps too narrow and the scale slightly inhumane. (photo by author)

Concept Model 1

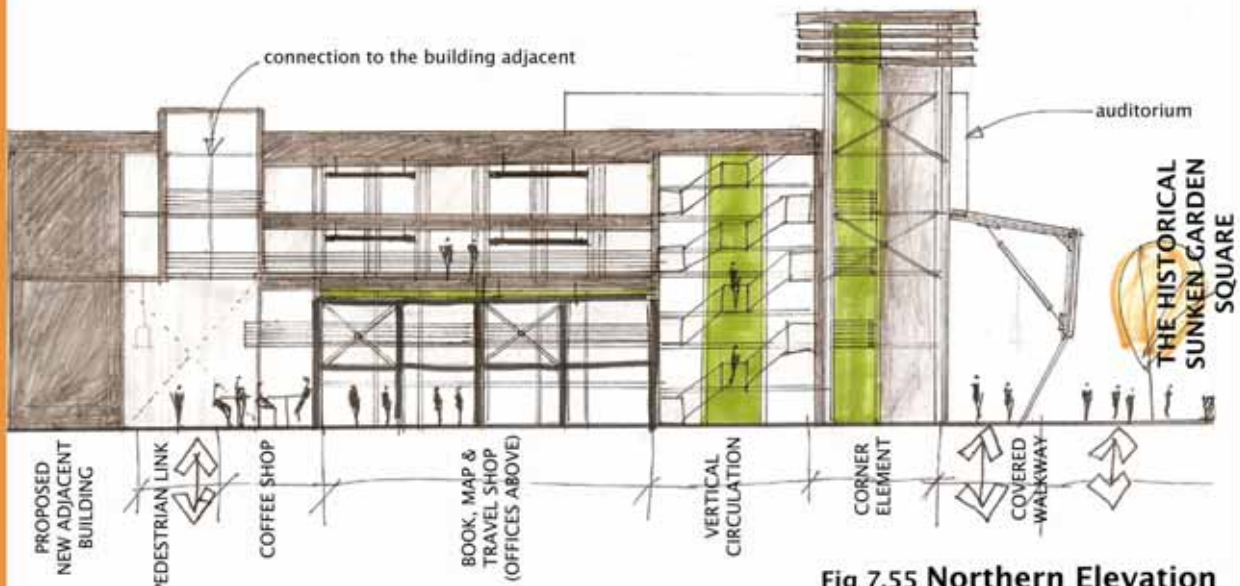


Fig 7.55 Northern Elevation
Scale 1:500

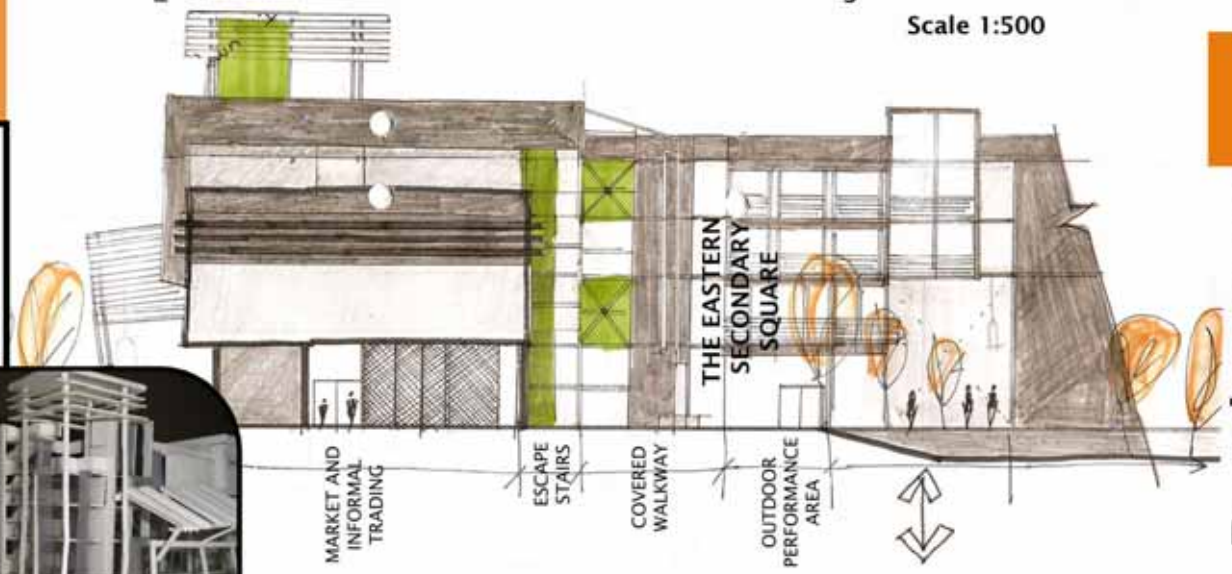


Fig 7.56 Southern Elevation
Scale 1:500


Fig 7.57


Fig 7.58


Fig 7.59

Fig 7.57 shows the corner of the building that defines the South-Eastern corner of the Paul Kruger and Scheiding Street interchange. (photo by author)

Fig 7.58 shows another view of the Western walkway from the South. This walkway directs movement along the Eastern side of the Historical Sunken Garden Square. (photo by author)

Fig 7.59 once again shows a view of the building's North-Western corner. The vertical supporting elements appear slender and flimsy. (photo by author)

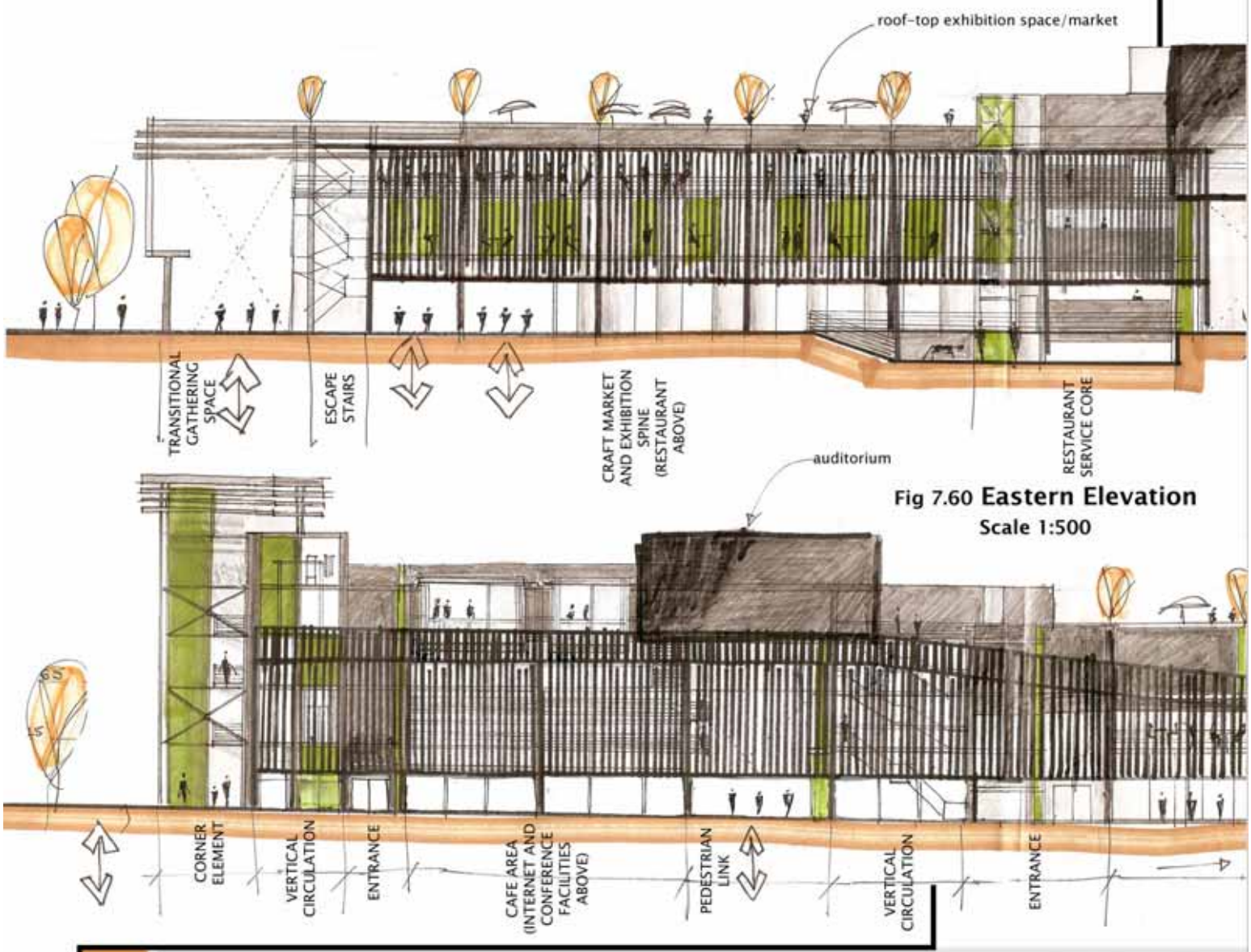


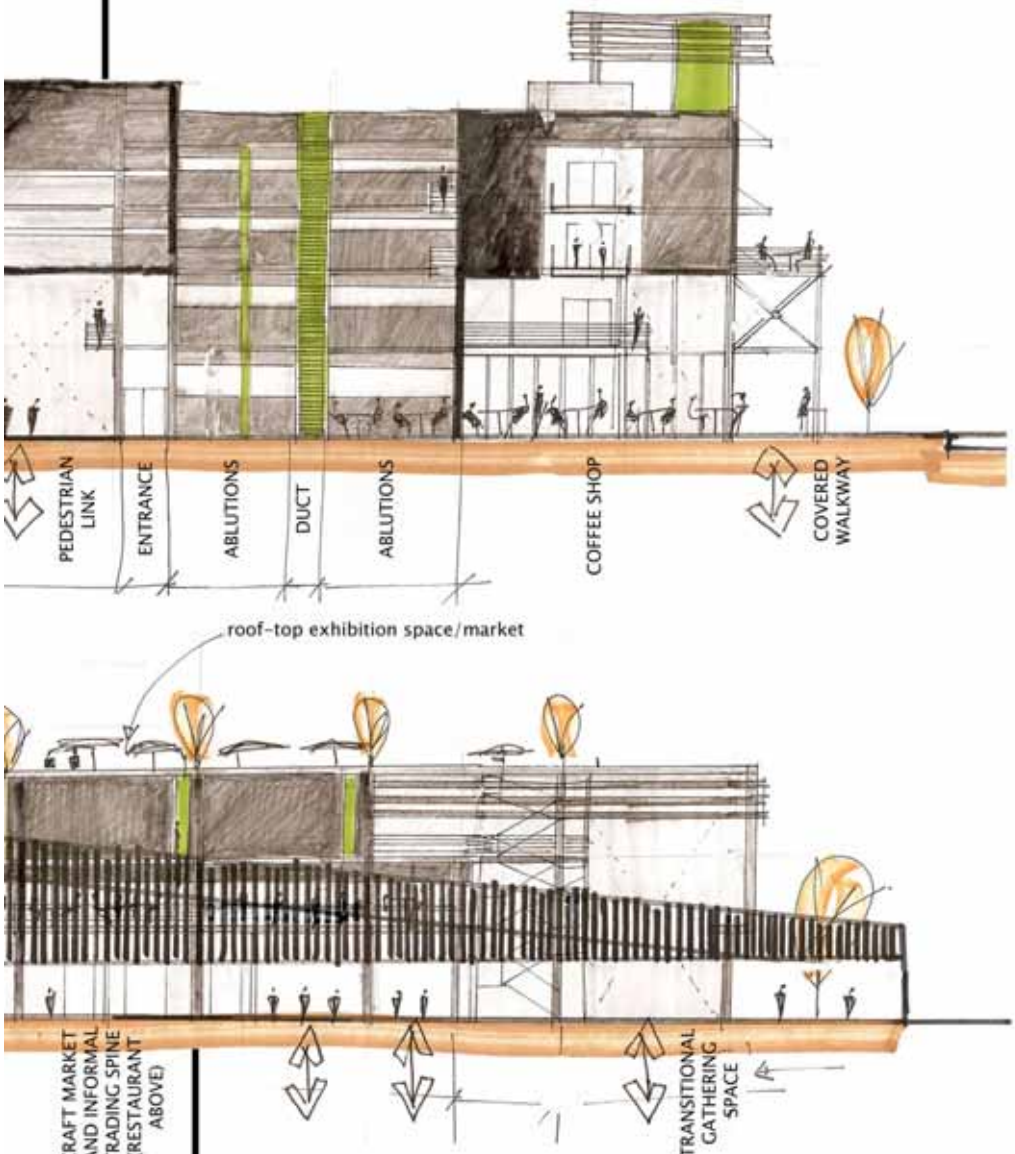
Fig 7.60 **Eastern Elevation**
Scale 1:500

Fig 7.61 **Western Elevation**
Scale 1:500

Eastern Elevation

Fig 7.60 shows the Eastern facade of the building. Ablutions and services have been located on this side of the building as the Western edge of the building is exposed to the most pedestrian activity. The Eastern Secondary Square is a space with a different, slower and quieter character.

The horizontal concrete slabs are expressed in elevation. These are transversed by the vertical duct elements, which instead of being concealed, have been made into strong vibrant design elements. These shafts are read, by the on-looker, as shafts of light and colour that pierce the building, adding a lightness to the heavy solid form of the service cores.



Western Elevation

Fig 7.61 shows the character of the Western facade. The facade is much lighter so as to encourage interaction with the passerby. Due to the extensive amount of glazing that is used to create this effect, a shading device, functioning too as a walkway, has been included. It is this shading system that dominates the aesthetic of the Western facade.

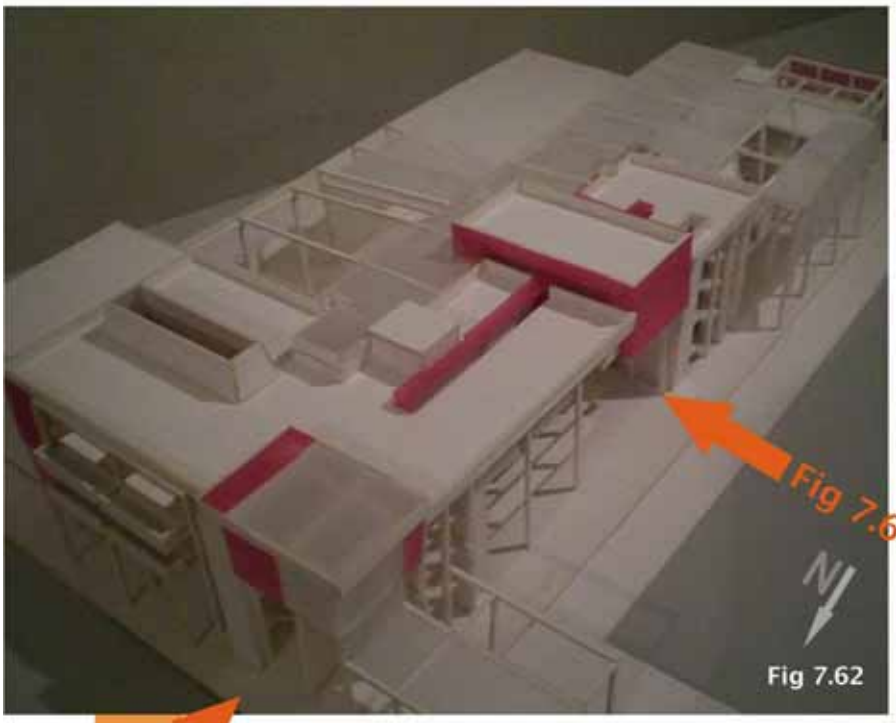


Fig 7.66

Fig 7.65

Fig 7.62 shows a view from the North-Western corner of the buildng, towards the South-East. The North-Western corner is better incorporated into the design aesthetic. The auditorium had been 'cut away' from the rest of the building and appears to hover in mid-air. This gives the building the quality of lightness, so important in its historically sensitive surroundings. A ribbon skylight has been added to introduce natural light into the building's internal spaces. The Western facade is now exposed and an alternative method of sun protection will need to be investigated. (photo by author)

Fig 7.63 shows a view from the South. The concept of wrapping the building in a sun protection screen, begins to develop here. This shading 'skin', although primarily functional, has the potential to become a strong element within the design. (photo by author)


Fig 7.64

Fig 7.64 once again shows the link between the Historical Sunken Garden and the Secondary Eastern Square. The scale of the buildng's auditorium becomes more evident as the covered walkway, that previously distracted from the links legibilty and accessibility, has been removed. The sloping floor of the auditorium is expressed acting as a guide when transitioning from one space to another and increasing the interest and quality of the space below. (photo by author)


Fig 7.65

Fig 7.65 again shows the view that a commuter is confronted with when walking North from the Pretoria GAUTRAIN Station. The covered walkway along the building's Eastern edge remains well defined. The restaurant balcony begins to protrude further into this space so as to bring a human scale to the walkway. The Southern point of the building is becoming more transitional, allowing views of the city beyond, and therefore connecting the commuter both physically and visually on arrival. (photo by author)


Fig 7.66

Fig 7.66 shows an internal view down the building's North-South axis from the Northern corner. The user is able to see the Historical Sunken Garden all the way along this axis, as well as the Historical Station Building. The Sloping floor of the auditorium is also evident from within, making it a distinctive point of orientation. The diagonal line of the floor echoes in section, the language portrayed in elevation to the West. (photo by author)

Concept Model 2


Fig 7.67


Fig 7.68

Fig 7.67 shows a view of the covered protrusion of the building at the cafe area. This arrangement however detracts from the definition of the Historical Sunken Garden Square. (photo by author)

Fig 7.68 shows the interpretive space of the informal trading area and how the first floor slab of the restaurant has been cut away to allow for views into the city from this space. The design of the shading device in this image, adds a dynamism to this part of the Western facade. (photo by author)


Fig 7.69


Fig 7.70


Fig 7.71

Concept Model 2

Fig 7.69 shows the treatment of the Western facade of the building. (photo by author)

Fig 7.70 shows another view of the corner exposed to the Paul Kruger and Scheiding Street intersection. (photo by author)

Fig 7.71 shows a view of the roof elements, the means by which natural light enters the building. (photo by author)

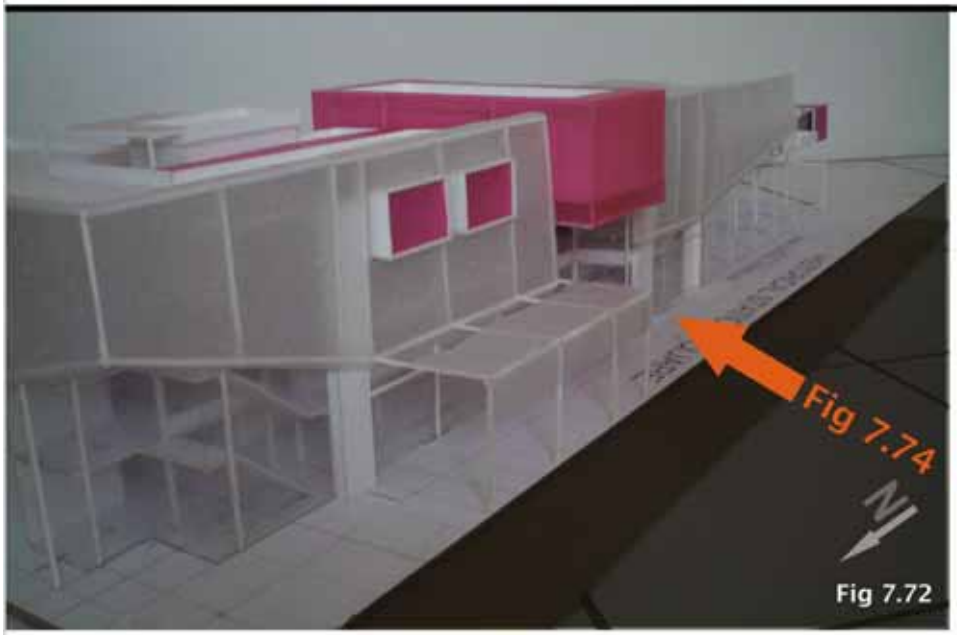


Fig 7.72 again shows a view from the North-Western Corner of the buildidng, towards the South-East. The buildidng is now wrapped in a 'skin' that serves not only to protect it from the harsh sun, but also to unify the different functions expressed in the facade. This shading 'skin' is perforated, allowing diffused light to penetrate the building. Combined with the hovering auditorium, it adds to the building's quality of lightness. The North-Western Corner is subtly defined by the meeting of this shading 'skin's diagonal lines. The protrusion of the conference through the 'skin' breaks the surface and creates a focal point of the Western facade. (photo by author)

Fig 7.73 shows a view from the South. The transitional quality of the Southern point of the building is more pronounced. The scale of the link into Scheiding has been manipulated with the addition of a balcony that protrudes into the space. (photo by author)

Final Concept Model - by day

Fig 7.74 again shows the link between the Historical Sunken Garden and the Secondary Eastern Square. A link has now also been provided on first floor level between the Northern and Southern blocks of the building. This renders the scale of the space under a auditorium less overwhelming. Movement through this space will now occur at a number of levels along the two axes, giving rise to a richly layered, intriguing space. (photo by author)

Fig 7.75 shows a view from the opposite side of the auditorim looking West towards the Historical Sunken Garden. It shows how the height difference of the ground auditorium floor gives rise to a differently experienced space. Balconies of the restaurant's bar and lounge areas protrude out into the space defined by the Eastern covered walkway. These protrusions result in interesting surface articulation and allow the building's users to interact with the transitional walkway space from above. (photo by author)

Fig 7.76 portrays the experience of the market area when entering it from the Southern point of the building. The first floor is cut away diagonally to increase vistas to the Victoria Hotel, Paul Kruger and Scheiding Street intersection and the city beyond. The gradual narrowing of the inner walkway entices the user towards the Southern entrance of the building. Due to the narrowing of this space, the views towards the Eastern Secondary Square are ever-changing. (photo by author)

Fig 7.77

Fig 7.78

Fig 7.79

Fig 7.77 shows the North-Western corner treatment. The diagonals of the shading 'skin' lead the eye up towards the sky. The light colour of the 'skin' gives the impression of the building disappearing into the sky, making the structure appear light within its context. (photo by author)

Fig 7.78 shows the treatment of the Northern facade of the building. The shading 'skin' is cut away to allow clear views from the office balconies, as well as to allow natural light to penetrate into the spaces within. (photo by author)

Fig 7.79 shows the building's Southern Elevation. The character of this elevation contrasts with the building's other 'solid' facades. The Southern most point of the building portrays transition and direction. (photo by author)

Final Concept Model - by day

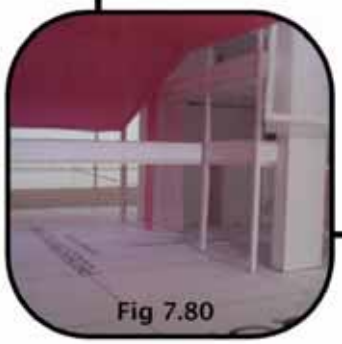


Fig 7.80

Fig 7.81

Fig 7.82

Fig 7.80 shows the space below the 'hovering' auditorium. The introduction of the pedestrian link on first floor level renders the volume beneath the auditorium comfortable and inviting. (photo by author)

Fig 7.81 shows the directional quality of the building's Eastern covered walkway. This walkway defines the edge of the Eastern Secondary Square, as well as guiding the user towards the building's entrance, directly to the North. (photo by author)

Fig 7.82 shows a view further up the Eastern covered walkway. The articulation of the building's Eastern facade becomes evident as columns and balconies protrude into the voluminous space of the walkway. (photo by author)

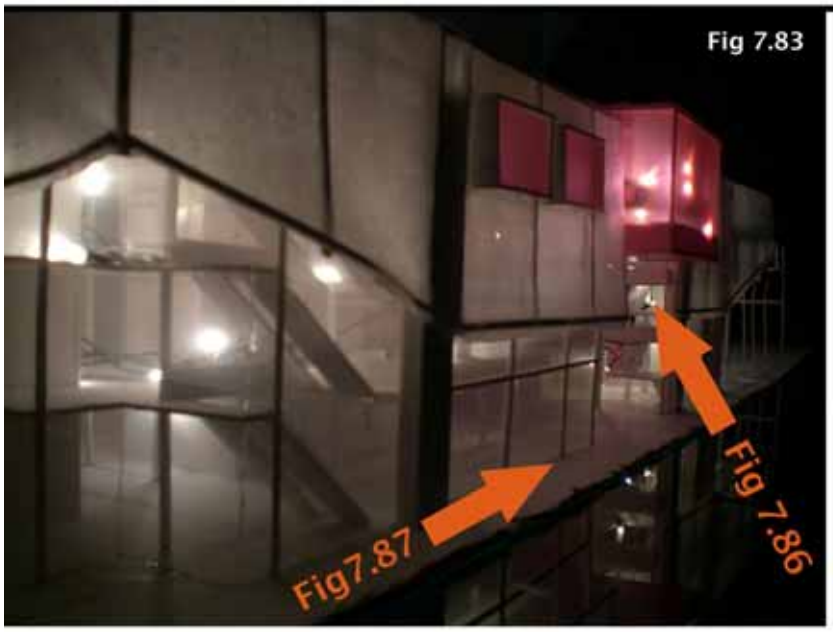


Fig 7.83 offers a view down the building to the Southern point. The facade is now unified, broken only by glowing focal points. At night the corner of the building exposed to the intersection becomes a prominent feature. The main Northern cirulation core (lifts and escalators) are located at this corner. From within, the user is confronted with views of the intersection and from the outside of the building, the onlooker is able to see the movement of the building's mechanical elements transporting people up and down from floor to floor. The interaction between the inside and outside of the building at this point is maximised by the diagonal design of the shading 'skin' defining the corner at third floor level. (photo by author)

Fig 7.84 shows, once again a view of the Eastern covered walkway. Interesting shadows are cast through the Eastern facade onto the ground of the walkway at night. The solidity of the escape stair at the Southern most point becomes more evident at night, and serves as a contrast between the lightness of the shading skin which wraps the building. The Southern facade becomes a steel portal frame, stripped down to its essence. This treatment however, seems to detract from the design and results in a space that lacks definition. (photo by author)

Final Concept Model - by night

Fig 7.85 shows the translucent box concept of the auditorium structure from above. Lit up at night, this design element dominates, creating an indentifiable feature within the Station context. Also evident in this photo is the ribbon skylight that cuts longitudinally through the building. At night these elements allow shafts of light to escape from the building. (photo by author)

Fig 7.86 shows a view of the building when aproaching it from the South-West. The shape of the auditorium is more evident by night. Beyond the hovering box, the mezzanine floors of the building's Northern block can be seen. It can also be seen here how the diagonal of the shading screen guides the eye up to the Paul Kruger Street skyline. The protruding conference rooms glow from within. (photo by author)

Fig 7.87 shows the South-Western facade of the building at night. Below the perforated screen, the structure of the building is seen. Strong vertical elements incorporated into the facade, break the horizontality of the 'skin' in front, creating visual diversity. An onlooker witnesses movement taking place behind the screen as surreal shadows, therefore adding to the intrigue that the building offers at night. (photo by author)

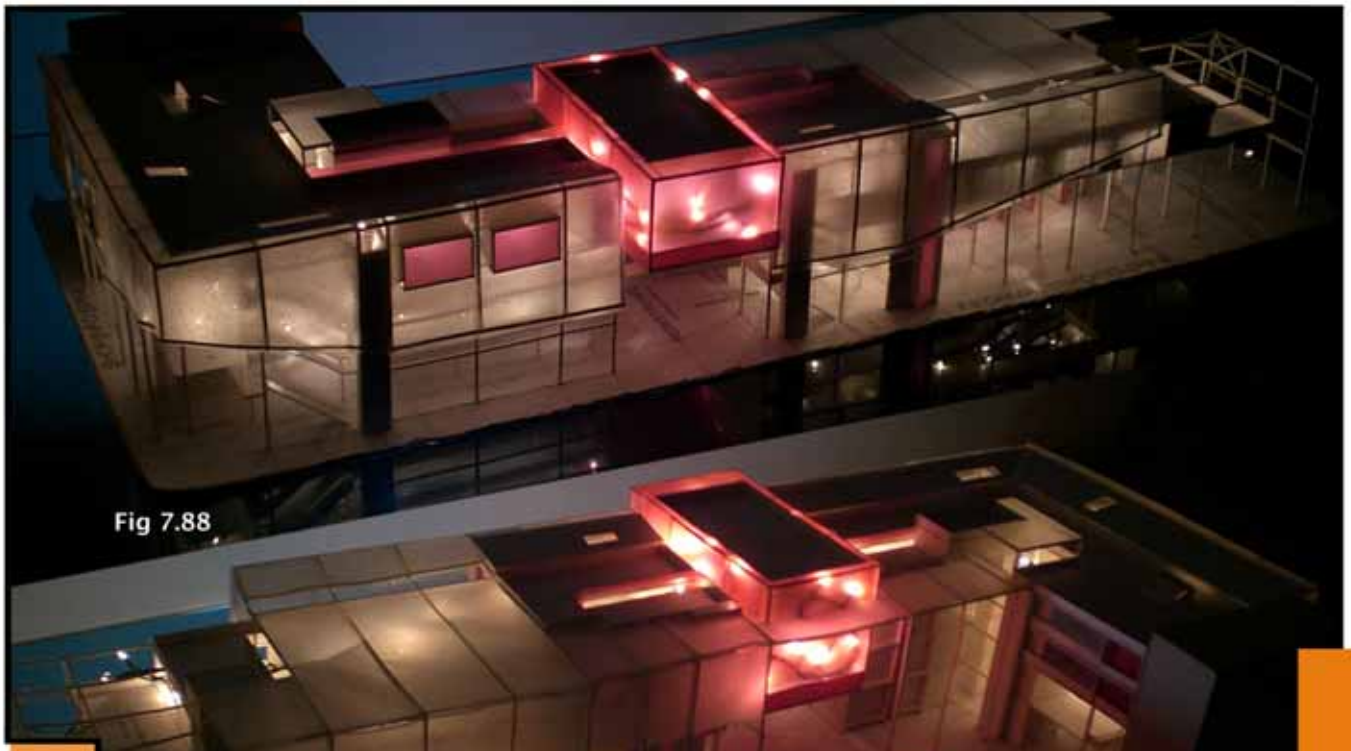


Fig 7.88

Fig 7.89

Final Concept Model – by night

Fig 7.88 shows an elevated view of the building's Western facade by night. (photo by author)

Fig 7.89 shows an elevated view of the building's Eastern facade by night. (photo by author)

Fig 7.90 shows the building's Western Elevation, fronting onto the Historical Sunken Garden Square, by night. (photo by author)

Fig 7.90

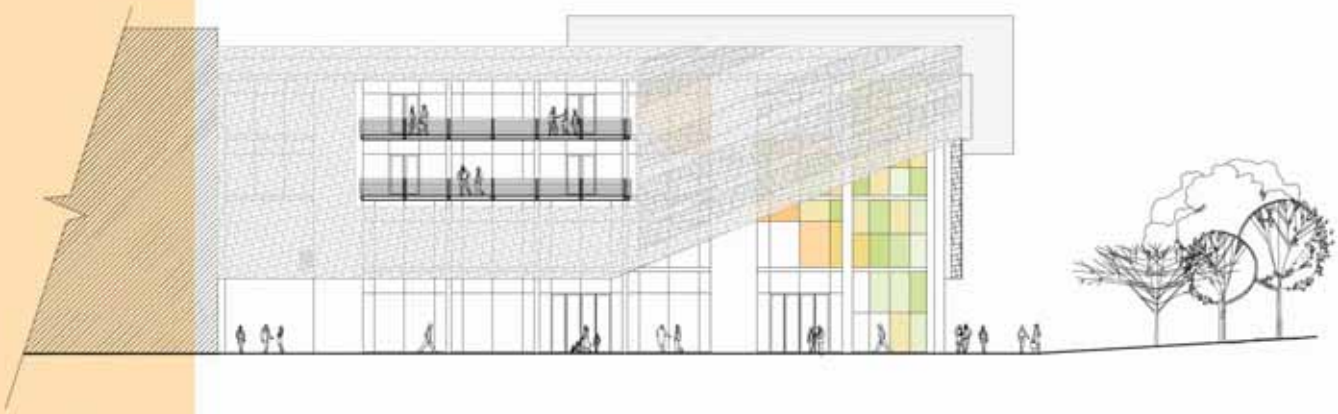


Fig 7.91 **Northern Elevation**
Scale 1:500

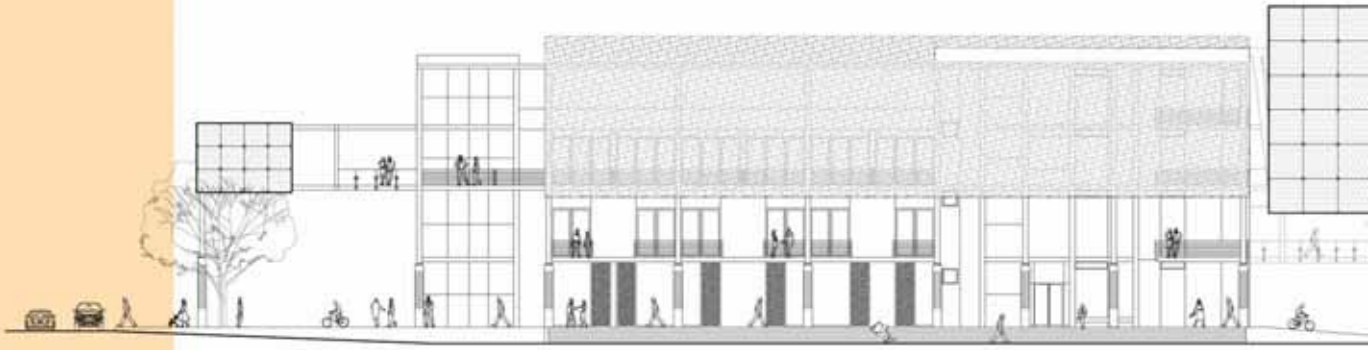


Fig 7.92 **Eastern Elevation**
Scale 1:500

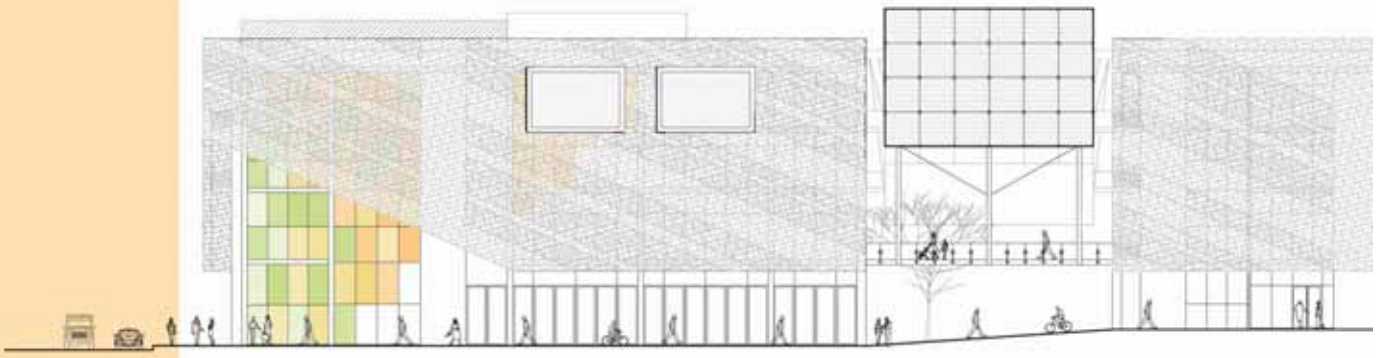
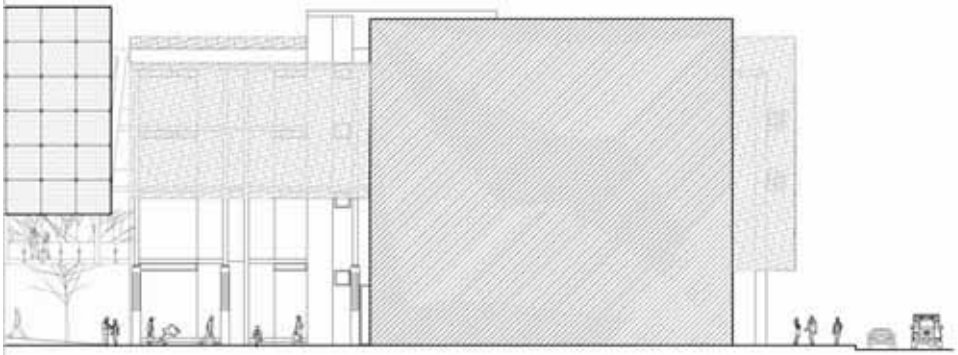


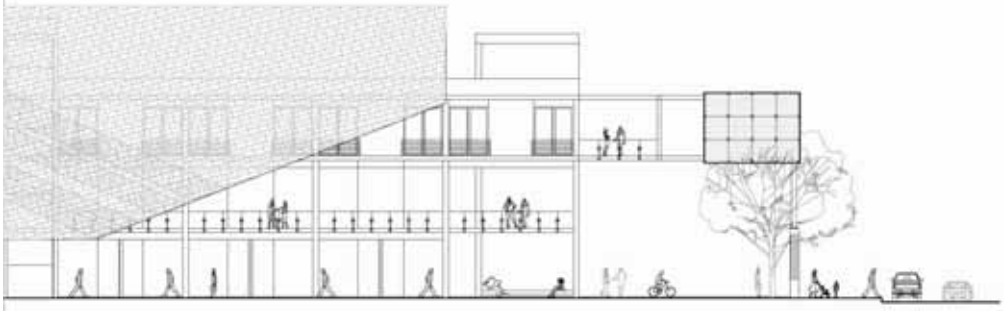
Fig 7.93 **Western Elevation**
Scale 1:500

7.8 The Final Design

Fig 7.91 to Fig 7.94 show the elevations of the 'i-hub' building. The perforated shading 'skin' acts as a unifying element, while smaller focal points protrude through it, and are cut away from it, the building is still read as a whole. The glazing of the North-Western corner creates a playful succession of colour, as if to draw the vibrant colour pallette of the city into the Pretoria Station site.

Fig 7.94 **Southern Elevation**
Scale 1:500





The Southern point of the building appears to touch the ground only slightly. It serves to gradually introduce the user to the built environment when approaching from the South. The effect of the perforated shading 'skin' disappearing into the sky is also evident from the above elevations.

The functions housed within the building, as well as the spatial planning of the 'i-hub' will now be discussed in more detail.

Fig 7.95

BASEMENT PLAN

Scale 1:500

- Service & Plant Rooms
- Stores
- Parking Office & Security
- Staff Locker Rooms
- Vertical Circulation
- Foyer Areas
- Water Storage
- Raised Kerbs
- Parkings
- Ducts

See pg. 121 for detailed layout of the Basement's Northern block.

See pg. 122 for detailed layout of the Basement's Southern block.

The 'i-hub' Basement

A basement has been incorporated into the design of the 'i-hub' building so as to alleviate the vehicular congestion that defines Pretoria Station currently. The basement will not only be built under the 'i-hub' building, but also under the Historical Sunken Garden Square and the Eastern Secondary Square. The Historical Sunken Garden will be re-instated after construction (the design of which does not form part of this project proposal). The treatment of the basement will be discussed in the chapter that follows.

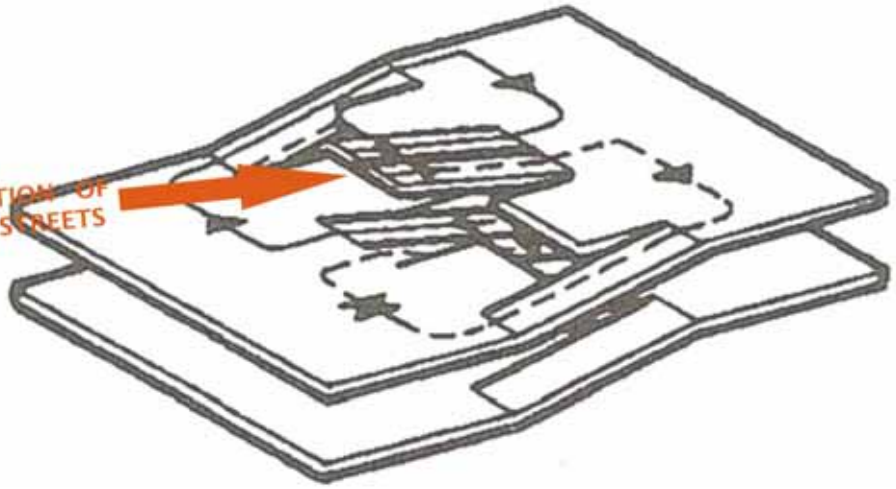


Fig 7.96 shows a basement similar to the one under the 'i-hub' building and the Historical Sunken Garden Square. Although, not identical, this image shows how the basement will be accessed at the centre, from the street. (Adler 1999:4-18)

The basement is designed to cater for vehicular traffic. It is for this reason that the dimensions of different transport modes have been studied, some of which are reflected in the diagrams below.

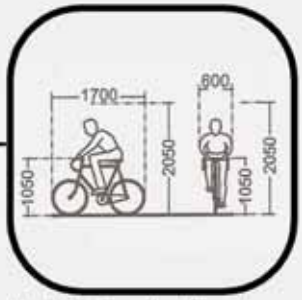


Fig 7.97 shows the dimensions of a bicycle. (Adler 1999:4-1)

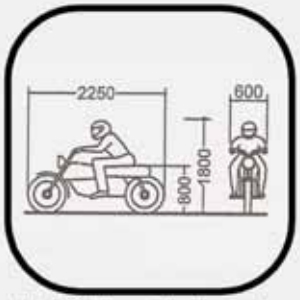


Fig 7.98 shows the dimensions of a motorcycle. (Adler 1999: 4-1)

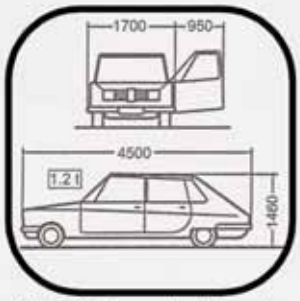


Fig 7.99 shows the dimensions of the average car. (Adler 1999: 4-1)

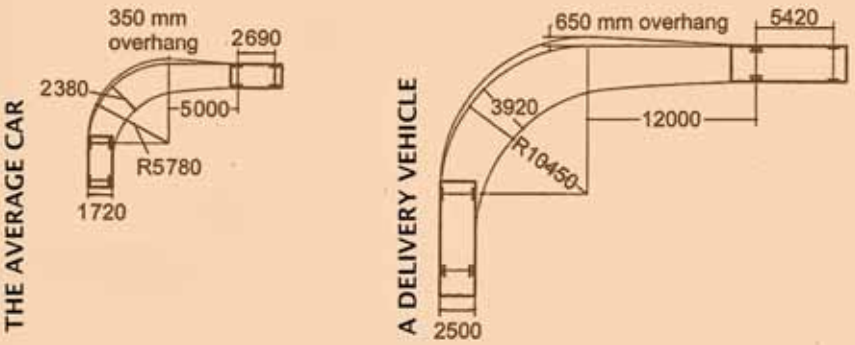


Fig 7.100 and Fig 7.101 show the investigation done regards to the turning circles required for different vehicles. (Adler 1999:4-5)

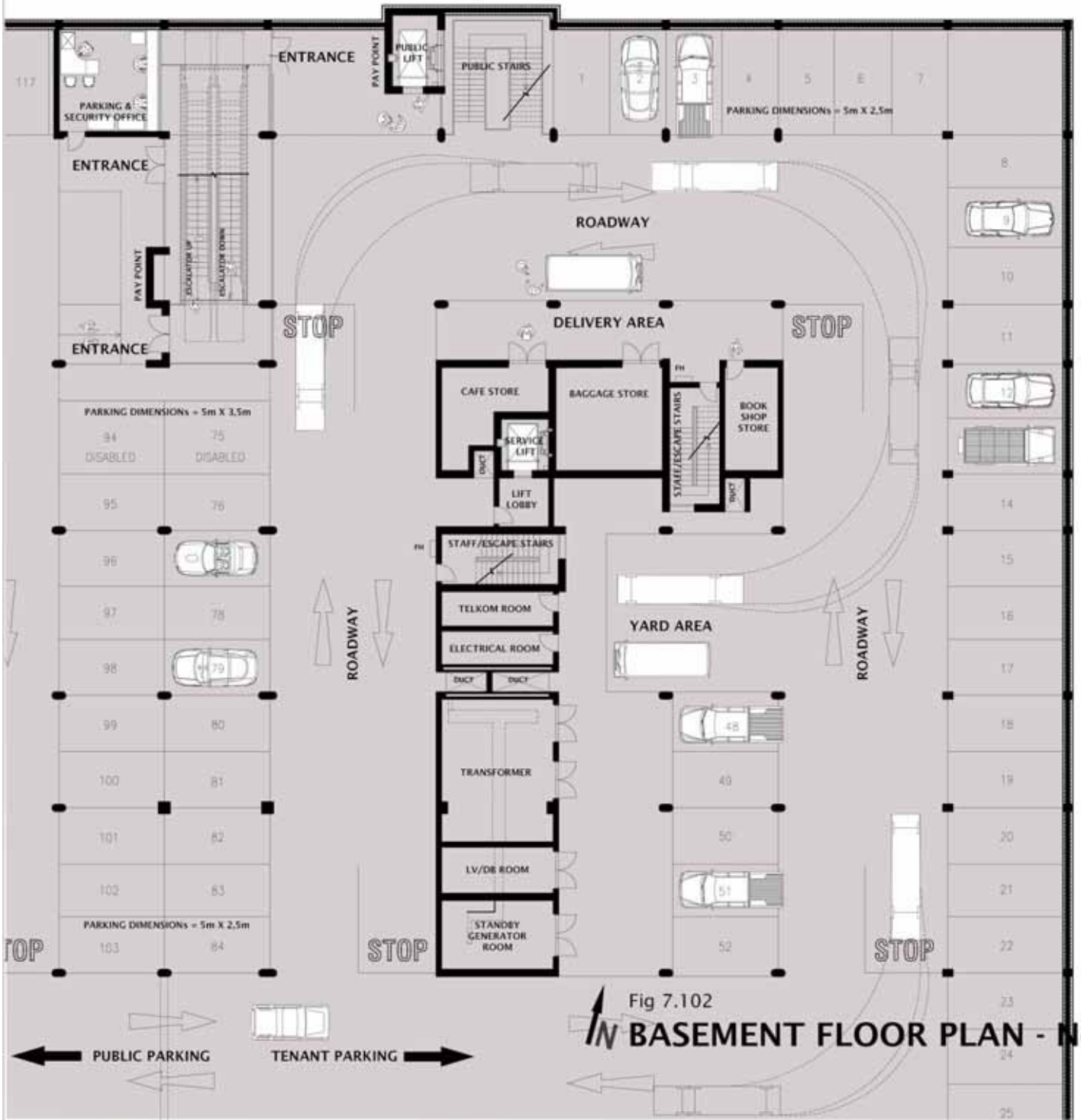
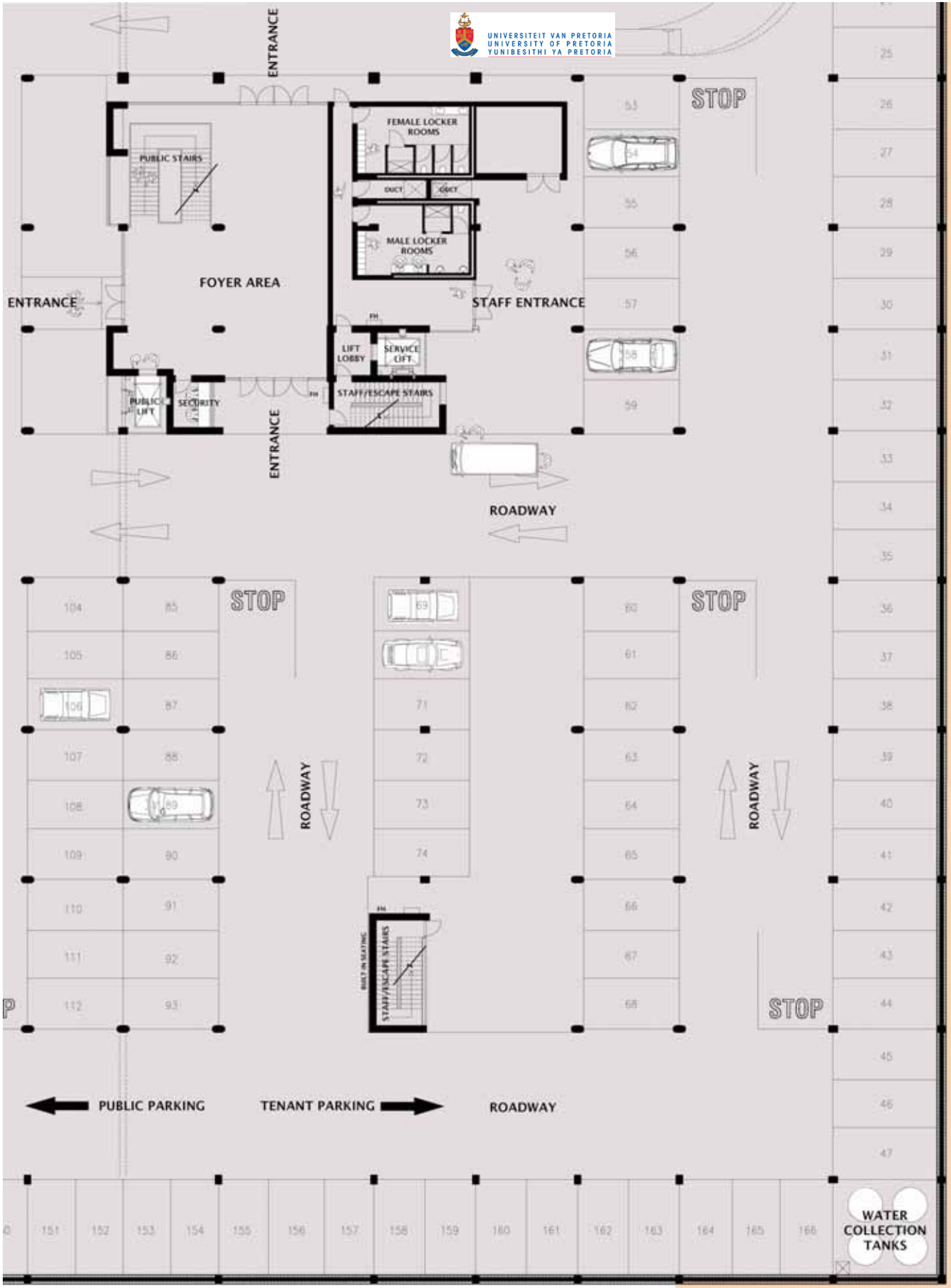


Fig 7.102
BASEMENT FLOOR PLAN - North



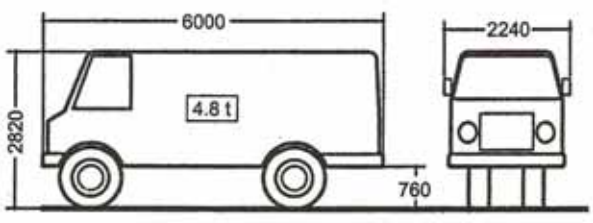


Fig 7.103 shows the dimensions of the average delivery vehicle. (Adler 1999:4-2)

Fig 7.104
N BASEMENT PLAN - South

Concept Development

Fig 7.105

GROUND FLOOR PLAN

Scale 1:500

- Book, Map & Travel Shop
- Coffee Shop
- Foyer & Exhibition Space
- Cafe Seating & Ammenities
- Circulation Space
- Ablutions
- Vertical Circulation
- Informal Trading Area
- Craft Market
- Gathering Space
- Pedestrian Links & Covered Walkways
- Ducts

See pg. 125 for detailed layout of the Ground Floor's Northern block.

See pg. 126 for detailed layout of the Ground Floor's Southern block.

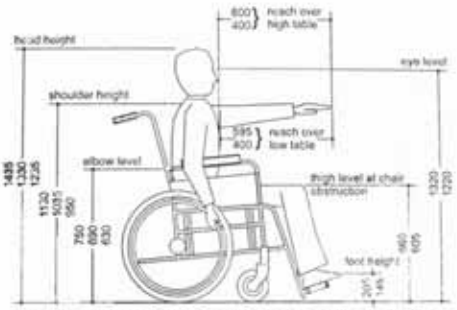


Fig 7.106 Dimensions for those in wheelchairs. (Adler 1999:2-9)

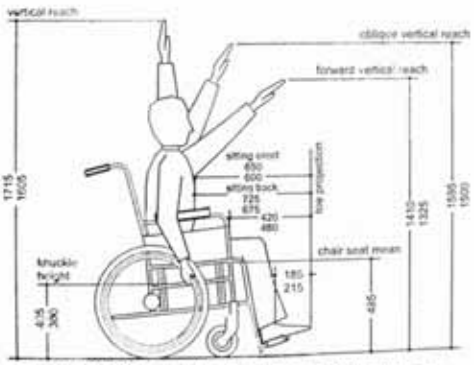


Fig 7.107 Dimensions for those in wheelchairs. (Adler 1999:2-9)

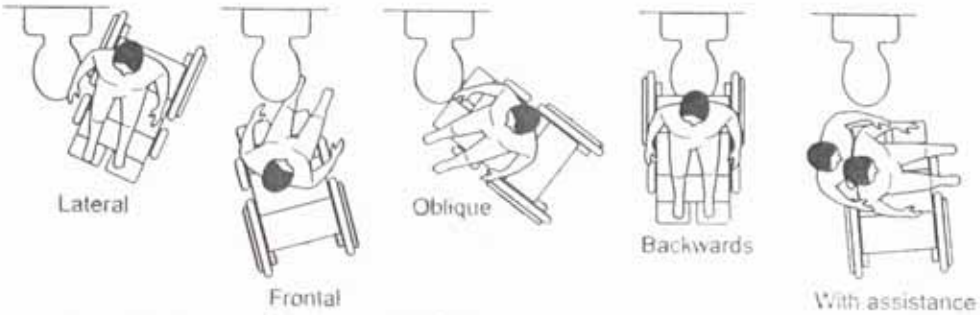


Fig 7.108 Dimensions for those in wheelchairs, when using ablution facilities. (Adler 1999:3-10)

Disabled Facilities

The building is designed to be, not only accessible for the disabled, but to be comfortable too. Ramps provide a means of transversing small level differences, while lifts transport the disabled from floor to floor. There is also a disabled toilet facility on the ground floor of both the Northern and Southern blocks of the 'i-hub' building.

See Fig. 7.107 to Fig 7.112 for the method's and dimensions used in ensuring that the 'i-hub' building is able to accomodate those who are disabled.

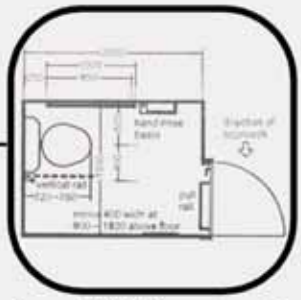


Fig 7.109 Dimensions for disabled ablution facilities. (Adler 1999:3-10)

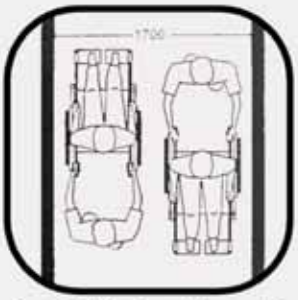


Fig 7.110 Passing distances for wheelchairs. (Adler 1999:3-10)

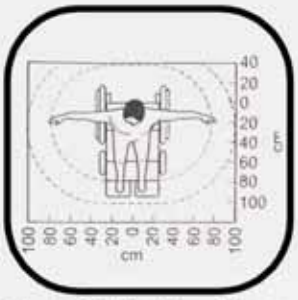


Fig 7.111 Reaching distances for those in wheelchairs. (Adler 1999:3-10)

POSSIBLE TENANTS

EXCLUSIVE BOOKS

SEATTLE COFFEE COMPANY

AA

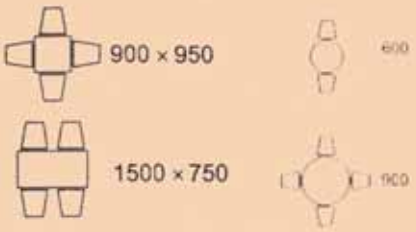


Fig 7.112 Table Dimensions. (Adler 1999:18-7)

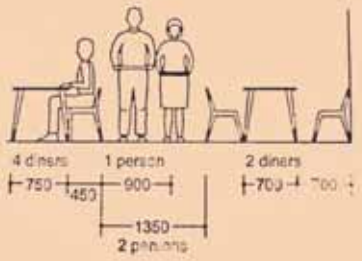


Fig 7.113 Table dimensions for comfortable circulation. (Adler 1999:18-7)

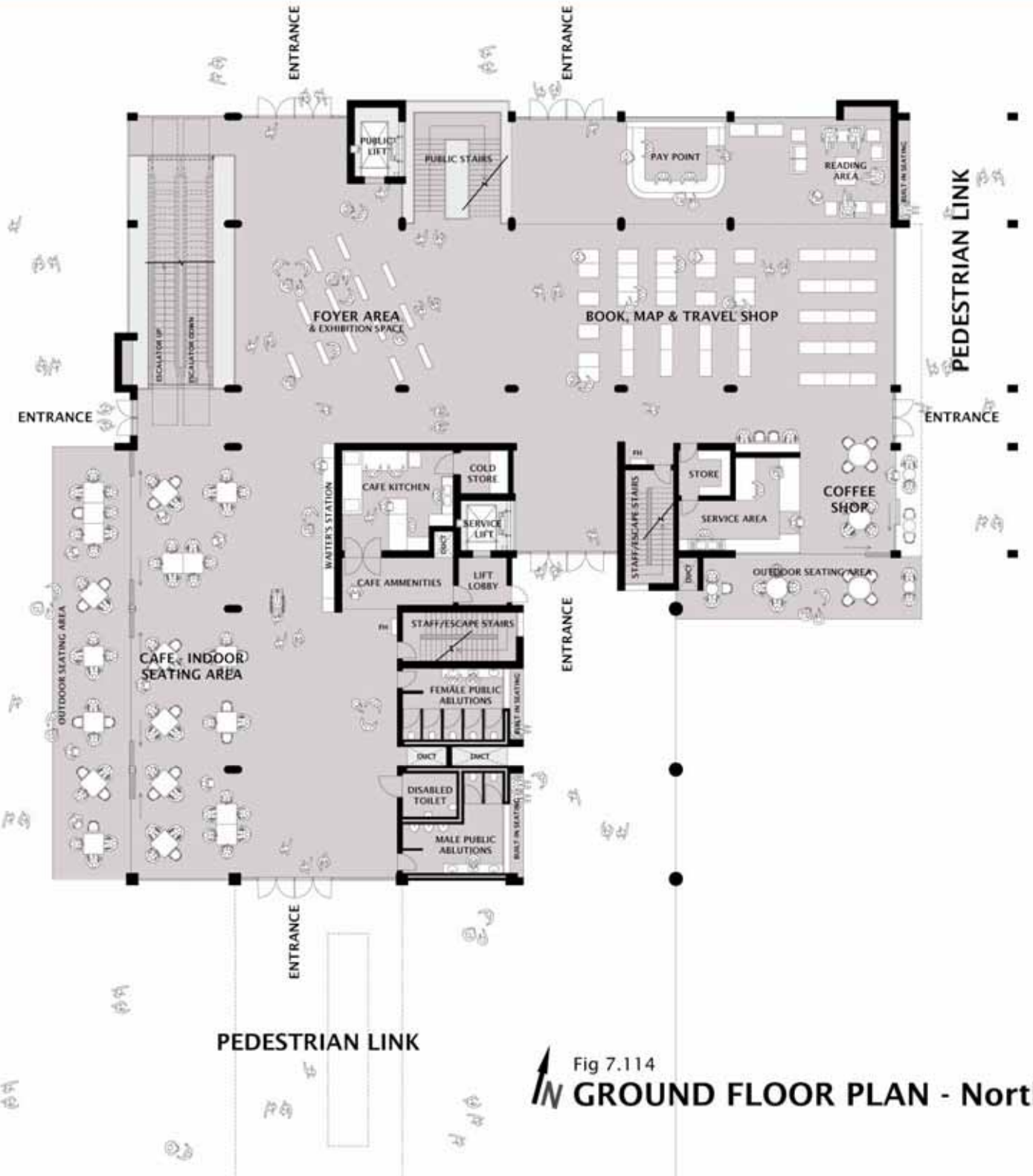


Fig 7.114
N GROUND FLOOR PLAN - North

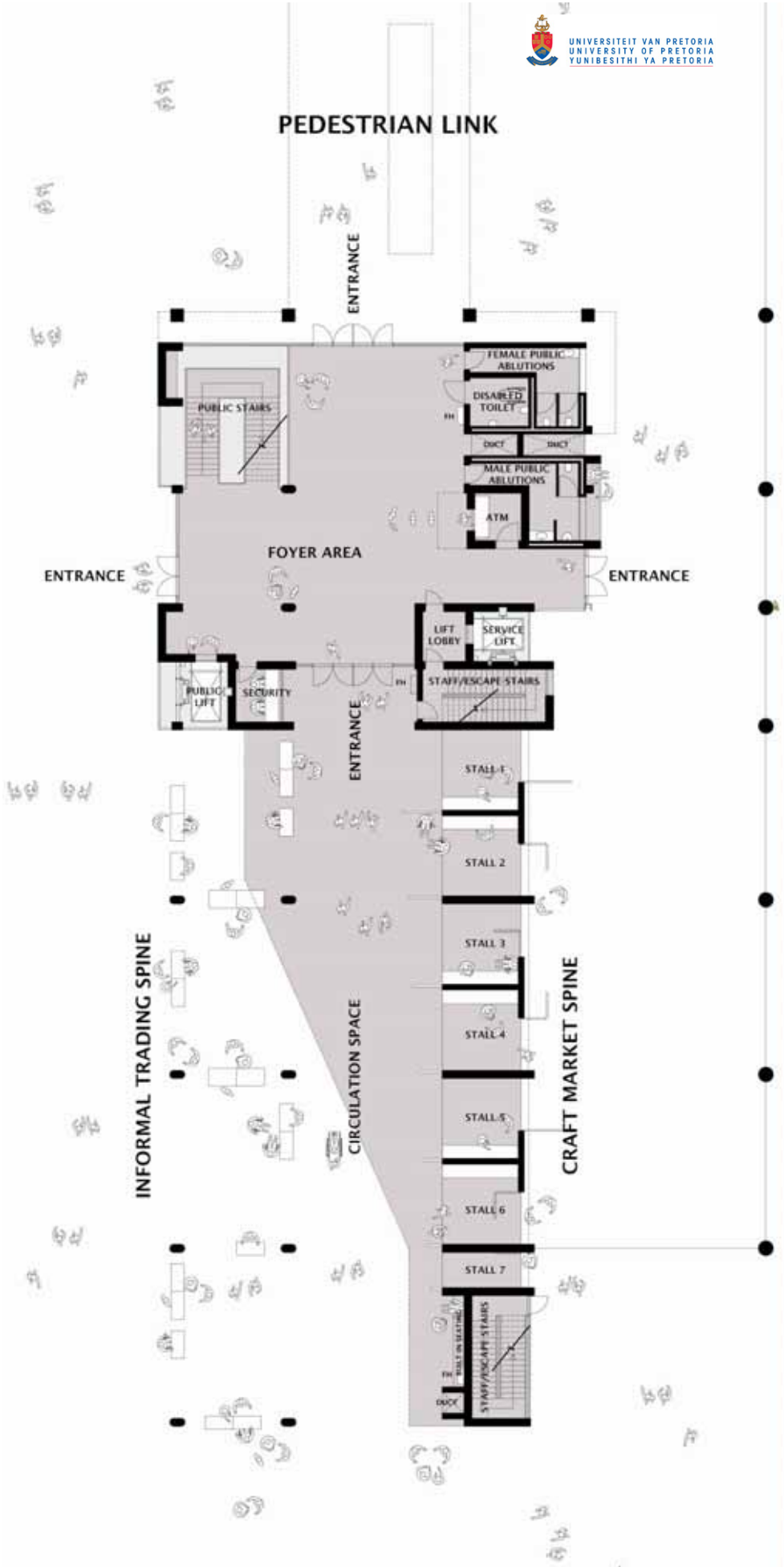


Fig 7.119
N GROUND FLOOR PLAN - South

Fig 7.115 Informal trade at Pretoria Station. (photo by author)

Fig 7.116 Informal trade at Pretoria Station. (photo by author)

Fig 7.117 Informal trade at Pretoria Station. (photo by author)

Fig 7.118 Informal trade at Pretoria Station. (photo by author)

Fig 7.120

FIRST FLOOR PLAN

Scale 1:500

- Information Counter Area
- Foyer & Exhibition Space
- Mezzanine Level
- Internet Communication Facilities
- Ablutions
- Vertical Circulation
- Restaurant & Ammenities
- Pedestrian Links & Covered Walkways
- Double Volumes
- Ducts

See pg. 129 for detailed layout of the First Floor's Northern block.

See pg. 130 for detailed layout of the First Floor's Southern block.

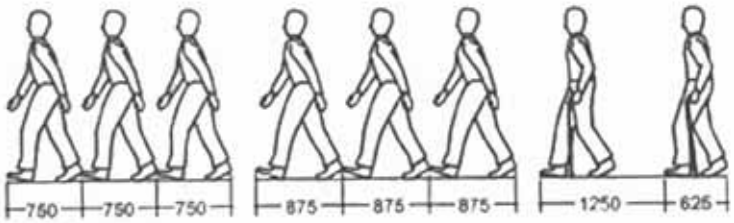


Fig 7.121 shows the space required for people on the move. (Adler 1999:2-9)

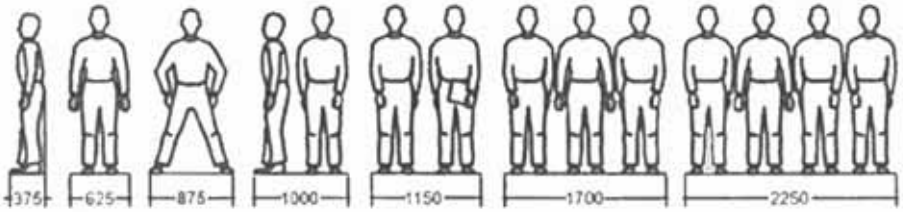


Fig 7.122 shows the space required for people when standing. (Adler 1999:2-9)

Due to the extensive amount of circulation occuring, particularly on the ground and first floor levels of the 'i-hub' building, the above diagrams aided in designing an environment in which people could move, stand, wait and sit, with ease.

Internet Connectivity

The 'i-hub's internet communication facility will provide computer points equipped with a fast and efficient ADSL internet connection, as well as a wireless hot-spot for users with their own laptops.

A small coffee shop and vending ammenties are provided for those in need of a quick refreshment.

Fig 7.123 Internet Hotspot example. (www.cafesuite.com)

Fig 7.124 Internet Hotspot example. (www.travelwebshots.com)

Fig 7.125 Vending point example. (www.gamespot.com)

Fig 7.126 Circulation space required in offices. (Neufert 1970)

Fig 7.127 Circulation space required in offices. (Neufert 1970)

Fig 7.128 Circulation space required in offices. (Neufert 1970)

Information Counters

The Tourism Information Centre will be housed in this part of the building. Tourist will now however, be able to source information, do bookings and plan excursions from this point. They will also benefit from a tranquil environment in which to relax while making decisions and planning their journey further.

CITY OF TSHWANE

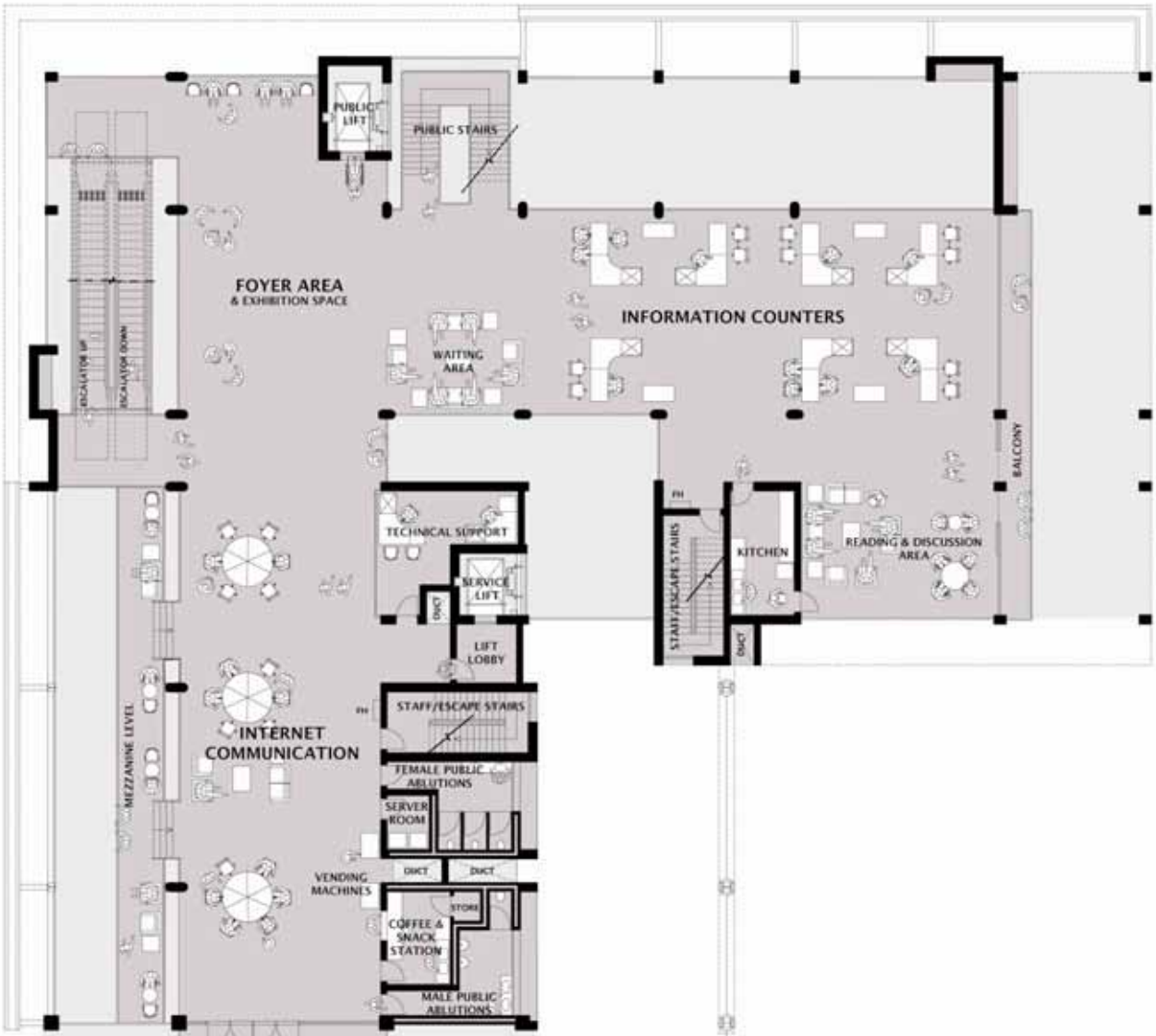


Fig 7.129

N FIRST FLOOR PLAN - North

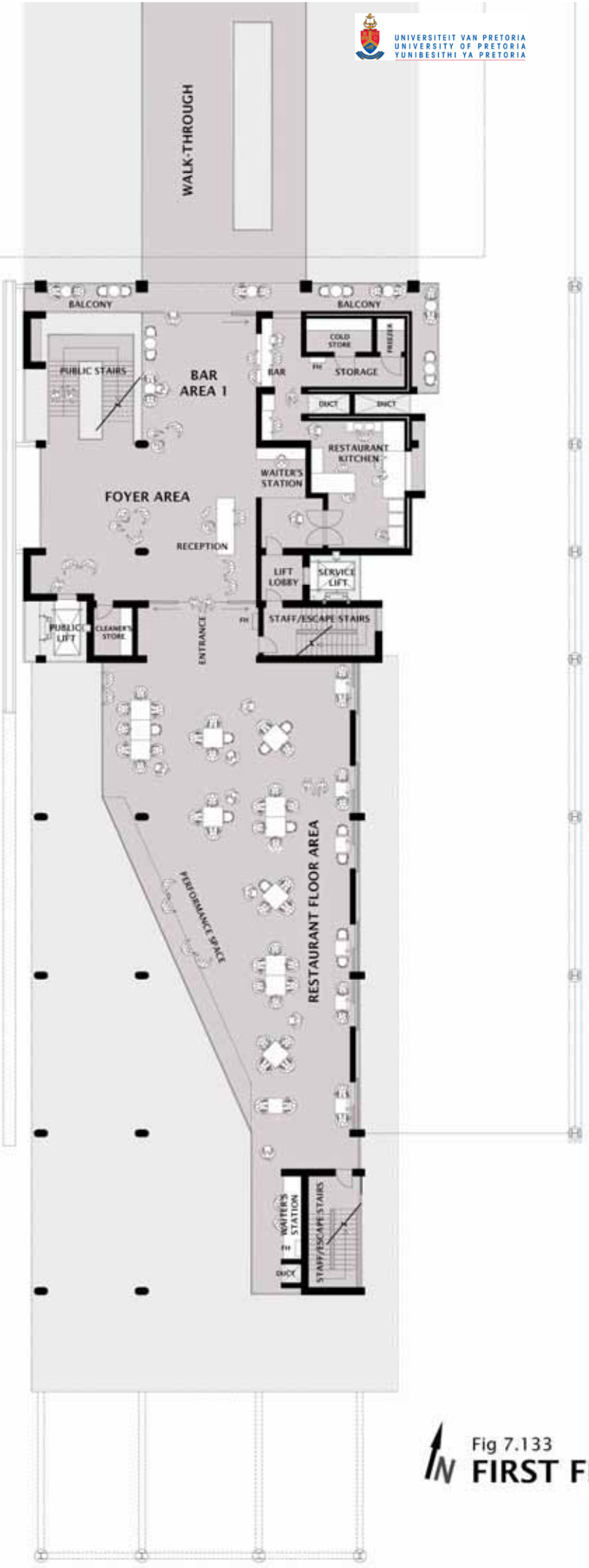


Fig 7.133
FIRST FLOOR PLAN - South

The 'i-hub' Restaurant

A possible tenant for the restaurant space is the *MOYO* franchise, currently found around the country. This distinctly South African restaurant is looking to take up residence in Pretoria. It serves as a destination restaurant and would greatly contribute the the environment that the 'i-hub' is striving to create.

Fig 7.130 U-Shaka's Moyo in Durban. (www.moyo.co.za)

Fig 7.131 An interior view of the Moyo in Melrose Arch, Johannesburg. (www.moyo.co.za)

Fig 7.132 An interior view of the Moyo in Melrose Arch, Johannesburg. (www.moyo.co.za)

Fig 7.134

SECOND FLOOR PLAN

Scale 1:500

- Office Space & Ammenities
- Foyer & Exhibition Space
- Conference Facilities
- Mezzanine Level
- Auditorium
- Ablutions
- Vertical Circulation
- Restaurant Foyer
- Restaurant & Ammenities
- Double Volume Space
- Ducts

See pg. 133 for detailed layout of the Second Floor's Northern block.

See pg. 134 for detailed layout of the Second Floor's Southern block.

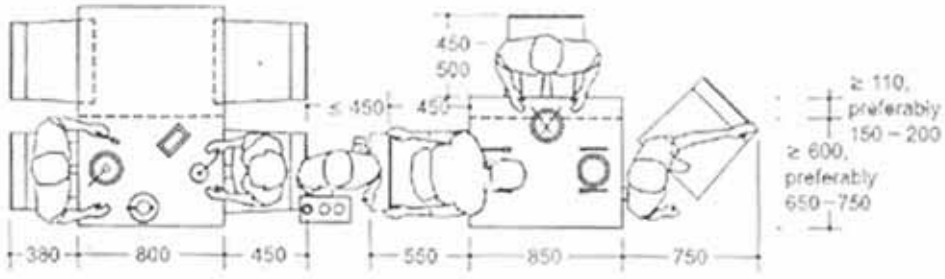


Fig 7.135 shows comfortable passing spaces (plan view) in a restaurant. (Adler 1999:18-5)

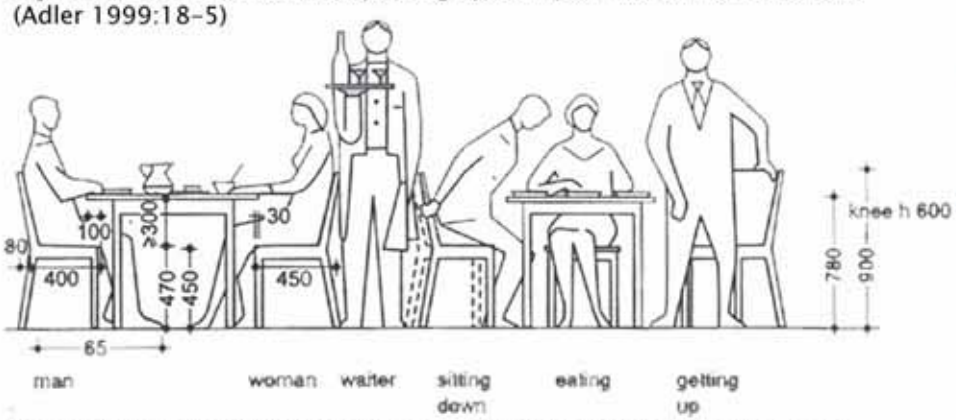


Fig 7.136 shows comfortable passing spaces (side view) in a restaurant. (Adler 1999:18-5)

Designing the spaces required for a large, up-market restaurant was aided by site visits, along with the diagrams (Fig 7.135 and Fig 7.136) above. These diagrams indicate the amount of space needed for efficient circulation within a restaurant, so as to ensure user comfort at all times.

Fig 7.137 to Fig 7.139 below show the heights at which shelves and counters are to be postioned, particularly in store, bar, service and kitchen areas.

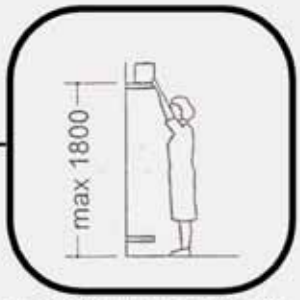


Fig 7.137 shows the maximum reach possible for the average woman. (Adler 1999:18-9)

Fig 7.138 shows the position of a shelf on eye level. (Adler 1999:18-9)

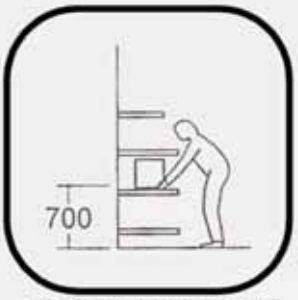


Fig 7.139 shows the postion of a shelf when required to bend. (Adler 1999:18-9)

POSSIBLE TENANTS

FLIGHT CENTRE

STA TRAVEL

vodacom

Fig 7.140 (www.bris.co.uk)

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UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Fig 7.141 (www.eco.co.uk)

Conference Facilities

The 'i-hub' provides generous spaces in which to hold events and conferences. Circulation spaces leading to the building's main auditorium can be made into areas for reception and entertaining before or after using the auditorium. The presence of these facilities renders the building, not only useful to its daily inhabitants, but also to many outside organisations wishing to make the most of its facilities.

Fig 7.142
SECOND FLOOR PLAN - North

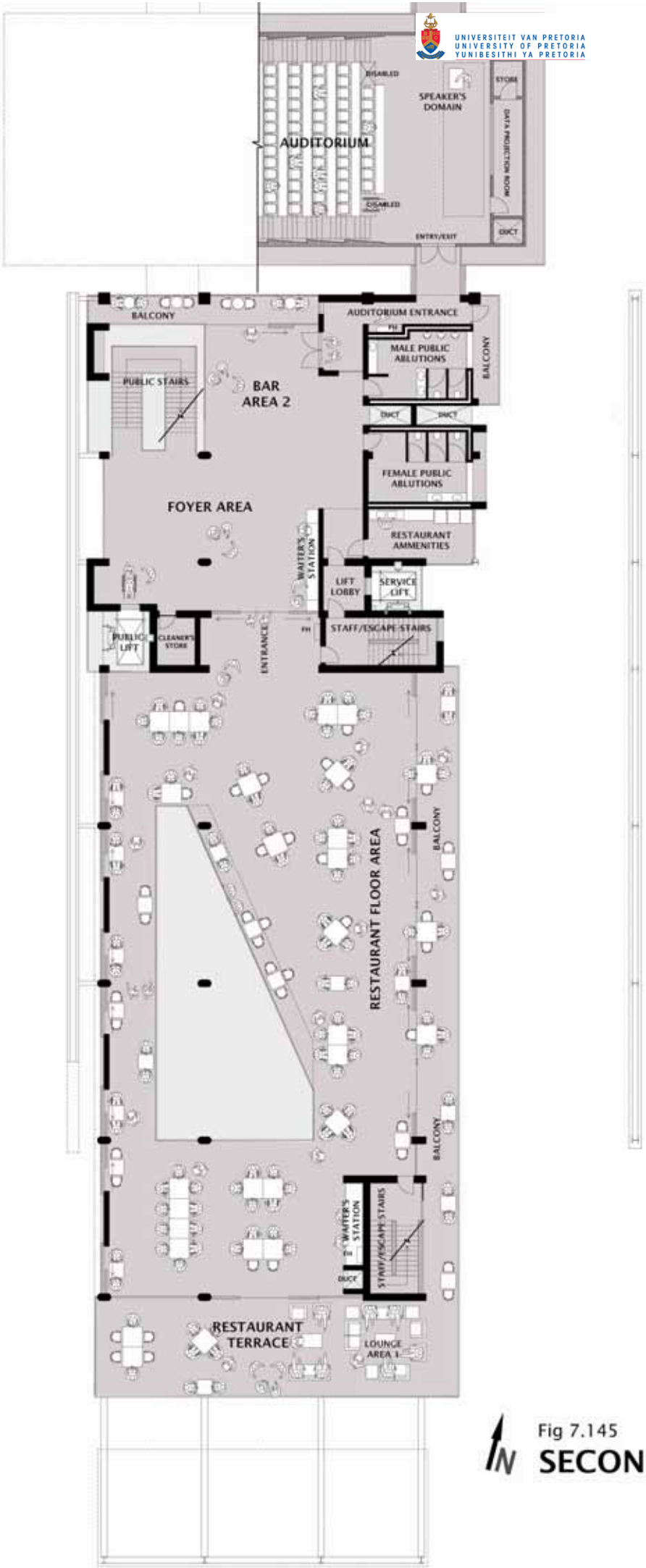

Fig 7.145
N SECOND FLOOR PLAN - South

The diagrams below indicate the size of spaces found in the restaurant's kitchen and other 'back-of-house' ammenities. It is important that the use of limited space is optimised by practical and efficeint planning.

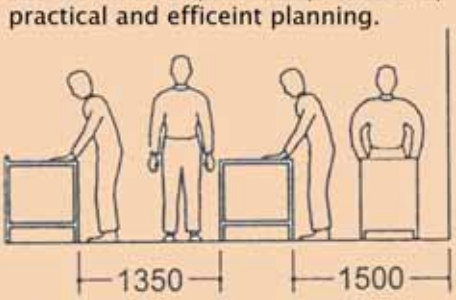

Fig 7.143 Circulation spaces in the kitchen. (Adler 1999:18-9)

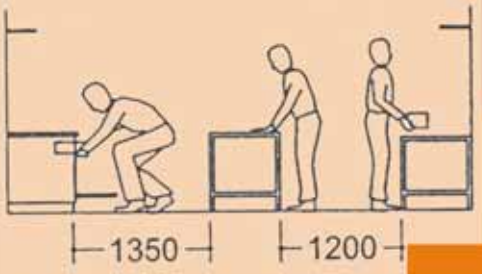

Fig 7.144 Circulation spaces in the kitchen. (Adler 1999:18-9)

Concept Development

Fig 7.146

THIRD FLOOR PLAN

Scale 1:500

- Office Space & Ammenities
- Foyer & Exhibition Space
- Conference Facilities
- Mezzanine Level
- Auditorium
- Ablutions
- Vertical Circulation
- Restaurant Foyer
- Restaurant & Ammenities
- Accessible Roof
- Double Volume Space
- Ducts

See pg. 137 for detailed layout of theGround Floor's Northern block.

See pg. 138 for detailed layout of the Ground Floor's Southern block.

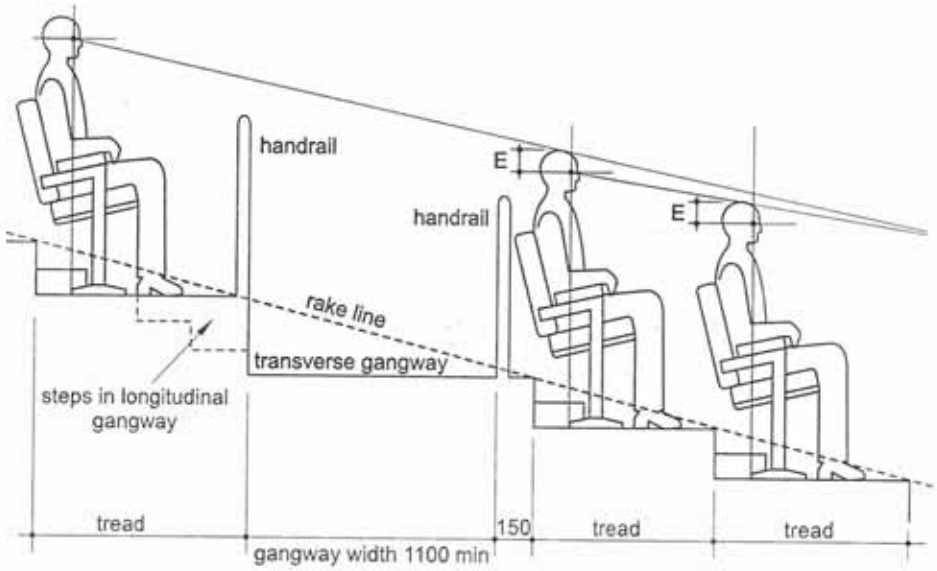

Fig 7.147 shows the sightlines and rakeline of the auditorium. (Adler 1999:20-8)

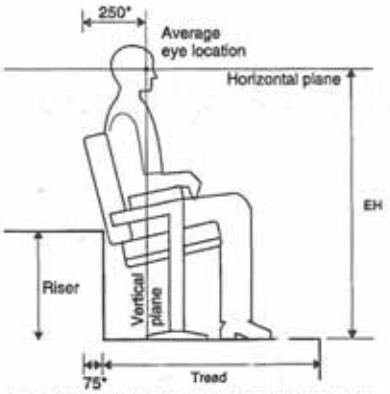

Fig 7.148 shows the relationship between vertical and horizontal planes within the auditorium. (Adler 1999:20-8)

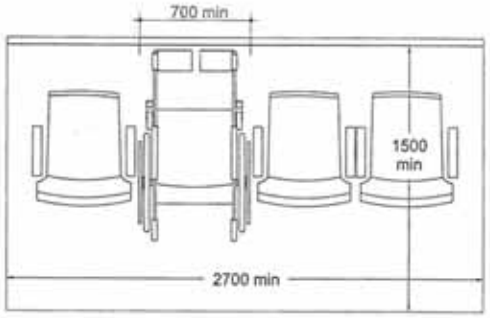

Fig 7.149 shows the space to be provided for wheelchair users. (Adler 1999:20-8)

The 'i-hub' Auditorium

The auditorium space is specifically designed with comfort, clear sight lines and good audibility in mind. The space has 103 fixed seats and caters for 2 wheelchair users.

The auditorium can be used for giving informative talks to tourist groups, as a lecture hall for local educational institutions, as well as a venue that can be hired out to outside organisations. Ablutions cater for the auditorium when at capacity, ensuring that there are sufficient facilities for those using the auditorium space and conference facilities attatched.

Fig 7.147 to Fig 7.153 show the images that guided the design of the 'i-hub' auditorium.

DIMENSIONS OF AUDITORIUM SEATS

Dimension	Description	Minimum	Maximum	Drawn as
A	Overall seat depth	600 mm	720 mm	650 mm
B	Tipped seat depth (same as length of arm)	425	500	450
C	Seatway (unobstructed vertical space between rows)	305		400
D	Back-to-back seat spacing	760		850
E	Seat width for seats with arms	500	750	525
	Seat width for seats without arms	450		
F	Armrest width	50		50
G	Seat height	430	450	440
H	Armrest height	600		600
I	Seatback height	800	850	800
J	Seat inclination from horizontal	7°	9°	7°
K	Back inclination from vertical	15°	20°	15°

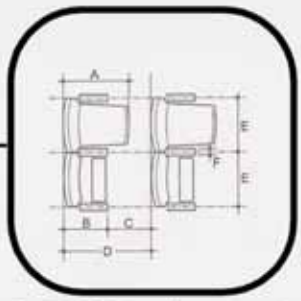

Fig 7.150 Seat dimensions in plan - refer to Table 1. (Adler 1999:20-8)

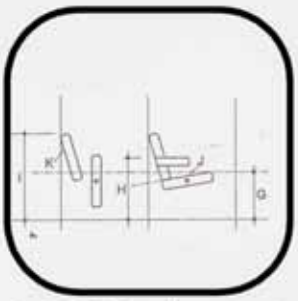

Fig 7.151 Seat dimensions in elevation - refer to Table 1. (Adler 1999:20-8)

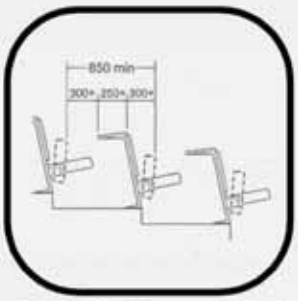

Fig 7.152 Seats and desk dimensions in elevation - refer to Table 1. (Adler 1999:20-8)

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POSSIBLE TENANTS

CITY OF TSHWANE

Fig 7.153 Typical office furniture. (BFS Africa Catalogue)

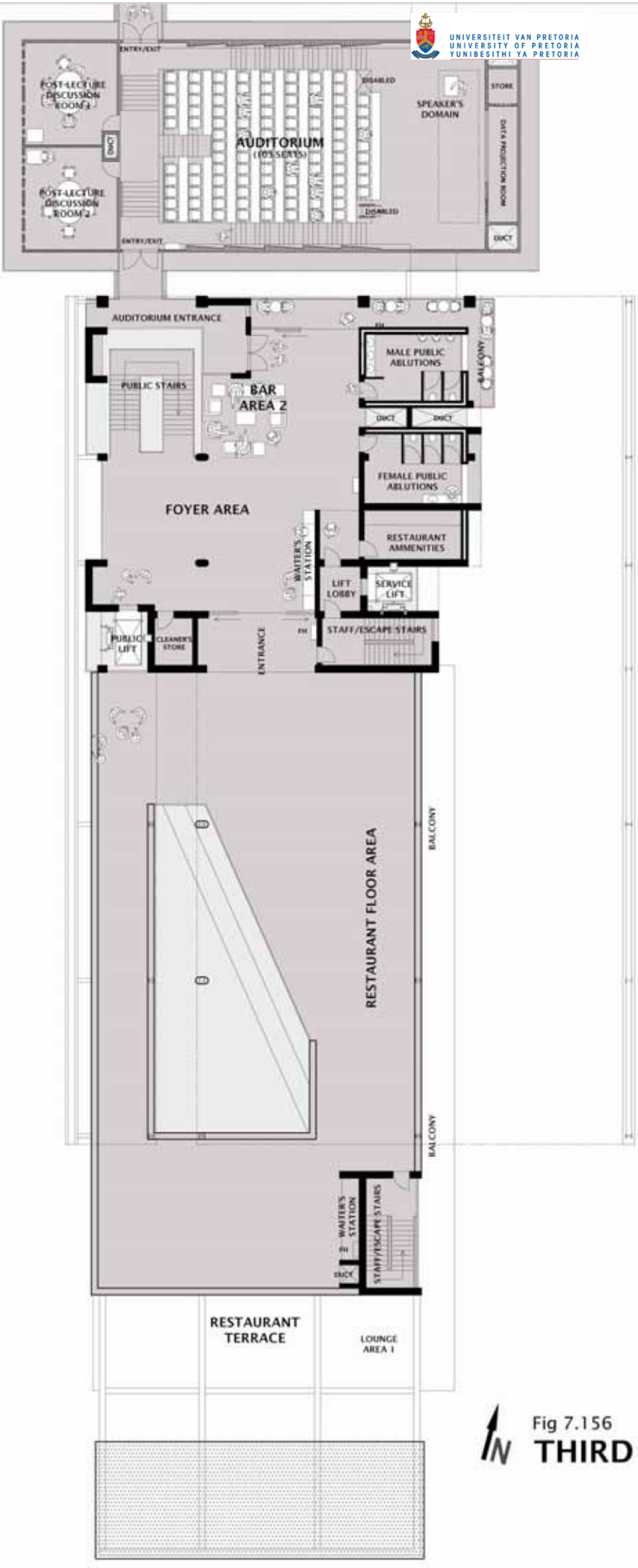
Fig 7.154 Typical meeting room furniture. (BFS Africa Catalogue)

Office Areas

The 'i-hub' office spaces are designed to maximise adaptability and flexibilty over time. Partition walls are used to divide the spaces, therefore as time passes and tenants change, so the spaces change too.

Both office floors have a small kitchen to serve the staff, as well as boardroom and meeting room facilities, that are shared by the tenants on each floor. The office spaces open up to the outdoors via balconies on both the Northern and the Southern facades.

Fig 1.55
THIRD FLOOR PLAN - North



Accessible Roof Area

The flat concrete roof above the restaurant, is not just a vantage point from which to view the Pretoria Stations context. It also acts as a place into which the functions of the building are able to expand. The restaurant can use the outdoor space for functions, it can be used as venue for outdoor community meetings, as well as craft-related workshops. The roof top can house a marketon certain intervals throughout the month. It is a versatile space that is able to cater for a variety of different needs.

Fig 7.156
THIRD FLOOR PLAN - South

Fig 7.157

N

ROOF PLAN
Scale 1:500

Shaded Accessible Roof Area
Natural Light Penetration

See the adjacent page for notes on the roof plan.

The roof of the 'i-hub' building consists of a flat concrete slab, as well as a light steel structure. These elements will be discussed in detail in the chapter that follows.

The flat concrete roof holds much of the building's service equipment:
1. Solar panels for the air-conditioning system,
2. Solar panels for the water heating system, as well as
3. Roof pack air-conditioning units for the split air-conditioning systems of the offices and auditorium.

Skylights are also incorporated into the roof structure to allow the penetration of natural light into the building. These are evident on Fig 7.157 adjacent.

Fig 7.158 An example of a skylight. (wwwlrooflite.com)

Fig 7.159 An example of a skylight. (www.inhabitat.com)

Fig 7.160 An example of an air-conditioning roof pack unit. (www.daikin.com)

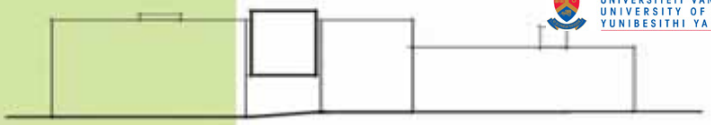


Fig 7.161 massing

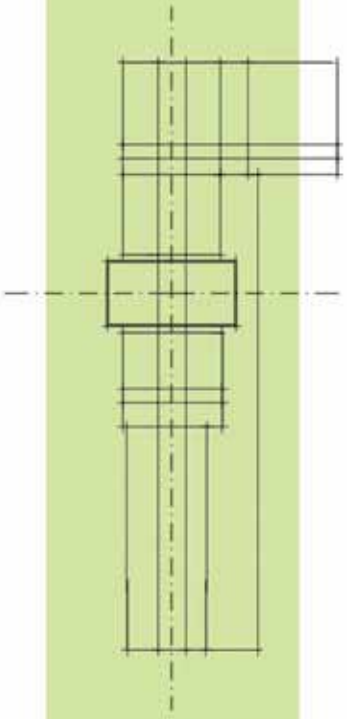


Fig 7.162 parti

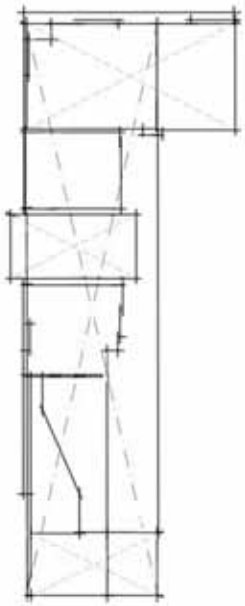


Fig 7.163 geometry

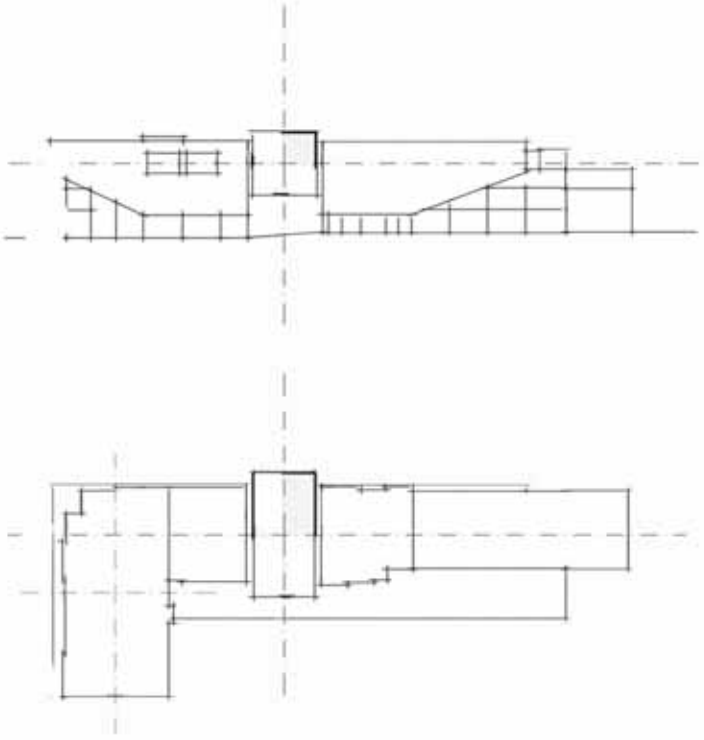


Fig 7.164 symmetry & balance

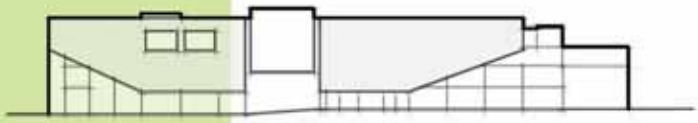


Fig 7.165 expressed in elevation

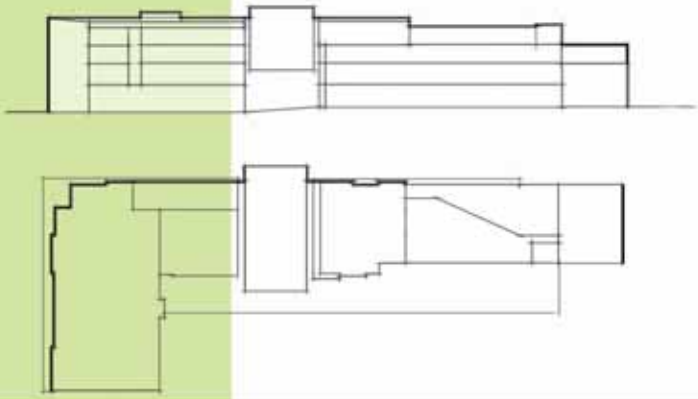
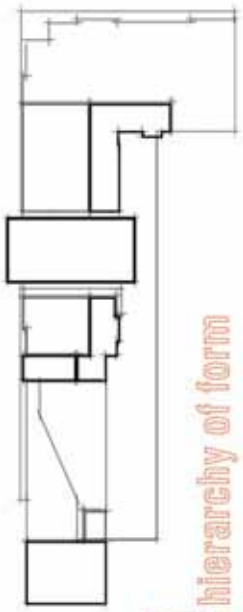


Fig 7.166 plan to section



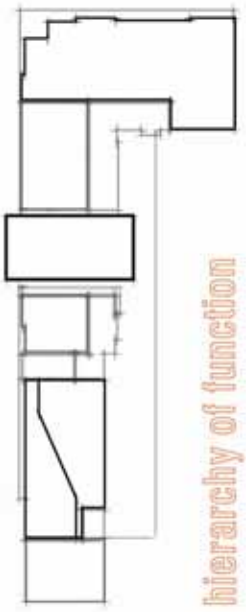
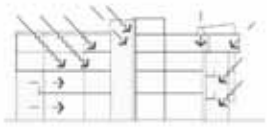


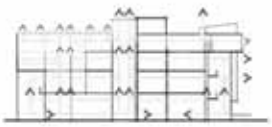
Fig 7.167 hierarchy of form / hierarchy of function

7.9 Diagrammatic Analysis

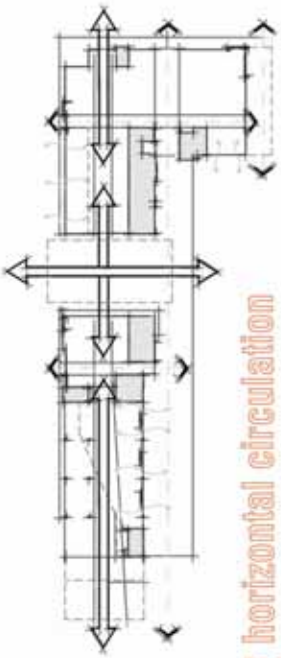
An analysis of the design has been performed in order to demonstrate the essence of the key concepts that make up the design. This analysis has been conducted in line with those done by Roger H Clark and Michael Pause in the book "Precedents in Architecture" (1985). This analysis aids in identifying both strong and weak points in the design concept and allowing space for adaptation and refinement of the design accordingly. This diagrammatic exploration has proven essential with regards to testing the final design proposal, before beginning technically refining the project.



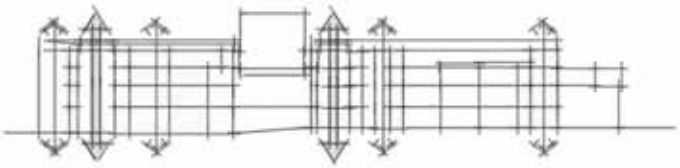
natural light
Fig 7.168



natural ventilation
Fig 7.169

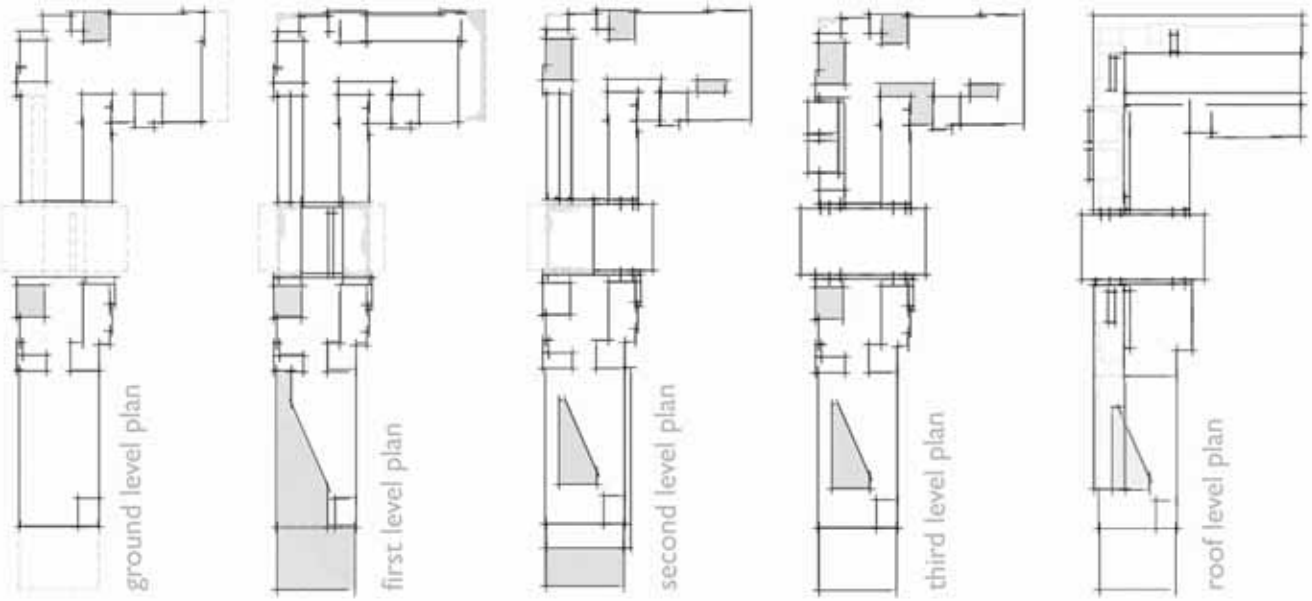


horizontal circulation
Fig 7.171



vertical circulation
Fig 7.170

Fig 7.172 structure



solids & voids
Fig 7.173

7.10 Conclusion

The 'i-hub' building's aesthetic and functional qualities have now been comprehensively explained. The design is now developed and the technical resolution of many of its aspects can now take place.

CHAPTER 8 - TECHNICAL RESOLUTION

CHAPTER 8: Technical Resolution

8.1 Introduction

This chapter serves as an introduction to the technical documentation of the 'i-hub' building. The following pages will provide insight into the detailed design and technical assembly of the building itself. Developing the design to a detailed level, will aid in formulating an idea of what the appearance of the building will be on completion, as well as how the various technical elements of the building work and therefore contribute to the ultimate successful functioning of the building on a daily basis.

The technical resolution of this building will be demonstated in the following six sections. These include:

8.2) Material Selection

8.3) Conceptual Landscape Design

8.4) Construction Methods and Assembly Techniques

8.5) Servicing Systems

8.6) Environmental Design and Sustainability

8.7) Drawings and Details

8.2 Material Selection

The material selection for the 'i-hub' is influenced by the function of the builidng and the experience that it aims to generate for those using its facilities. The contemporary, state-of-the-art materials have been selected in contrast with the materials used in the construction of the historical buildings found on site. By doing so, the historical buildings of Pretoria Station, will be emphasised.

Materials have also been selected for their tactility and sensual qualities, capable of enticing emotions and responses in the building's users.

8.2.1 Steel


Fig 8.1


Fig 8.2

The use of steel in the construction of the 'i-hub' building, is motivated by:

1) The material's great versatility and workability.
2) Its incredible durability when protected by a galvanic coating or a layer of paint.
3) Its 'weightless' quality will bring a lightness to the design.
4) Its practicality with regards to standard prefabrication, on-site installation and ease of connection.

INSPIRATION


Fig 8.3.1


Fig 8.3.2

Fig 8.1 to Fig 8.3.2 adjacent show precedents that were studied while conceptualising the design of the 'i-hub's shading skin.

Fig 8.1 shows the Airspace Tokyo building by Beige Architecture. Light is diffused through the layers of the facade and into the building beyond. (www.coolboom.net)

Fig 8.2 shows the same building at night. (www.coolboom.net)

Fig 8.3.1 shows an exhibition pavilion in Santiago, by Assadi and Pulido Architects. This precedent is of particular interest as it too contrasts with the historical building adjacent. (www.notcot.org)

Fig 8.3.2 shows a view of the same pavilion at night. (www.notcot.org)

The Use of Steel in the Design

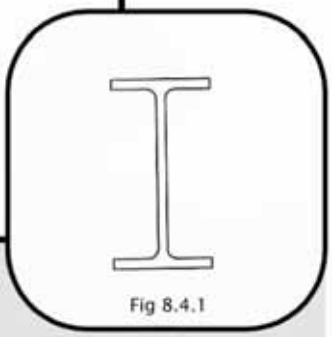


Fig 8.4.1


Fig 8.4.2

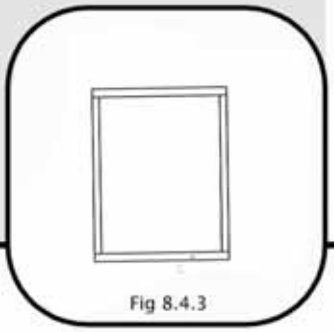


Fig 8.4.3

Fig 8.4.1 shows typical I-section to be used in the steel construction of the building. (SAISC 2008)

Fig 8.4.2 shows a typical H-section to be used in the steel construction of the building. (SAISC 2008)

Fig 8.4.3 shows a typical welded steel hollow section to be used in the construction of the rigid auditorium frame. (SAISC 2008)

The actual steel construction, as well as connection methods and components will become evident in the pages that follow.

8.2.2 Concrete


Fig 8.5


Fig 8.6

The building's structural frame is made primarily of 'cast-in-situ' concrete. The concrete will be left exposed so as to demonstrate the materiality of it and increase the tactility of the building's concrete surfaces. Exposed concrete surfaces and polished concrete floors will increase the thermal mass of the building resulting, in cooler, more comfortable interior spaces. The contrast between the concrete and the steel work creates interesting an appealing textural effects.


Fig 8.7


Fig 8.8


Fig 8.9

The Use of Concrete in the Design

Fig 8.5 shows the off-shutter concrete of the UP Centenary Building by Earthworld Architects. (photo by author)

Fig 8.6 shows how users are able to interact directly with the UP Law Building's facades. (photo by author)

Fig 8.7 shows the treatment of the concrete floors in the UP Centenary Building by Earthworld Architects. (photo by author

Fig 8.8 shows how vertical concrete elements become features within the facade of the UP Law Building. (photo by author)

Fig 8.9 shows the reccesses and protrusions of the concrete floor slabs and columns of the UP Law Building. (photo by author)

8.2.3 Glazing

Fig 8.10

Fig 8.11

Fig 8.12

INSPIRATION

Fig 8.10 Exterior view of an office building by Murtinhoys Associdos Arquitectos. (www.archdaily.com)

Fig 8.11 Interior fixing detail. (www.archdaily.com)

Fig 8.12 View from within. (www.archdaily.com)

Fig 8.13 shows the solar protection qualities of CoolVue glass. (SmartGlass Product Brochure)

Fig 8.14 shows the various different protective layers that make up the glass. (SmartGlass Product Brochure)

Fig 8.15 shows a picture of the Siemens building in Midrand by Louw Apostelellis Bergenthuin. This building has a dark tint of ColourVue protecting its interiors from the sun. (SmaertGlass Product Brochure)

Fig 8.16 shows the KSDP Pentagraph Offices in Johannesburg, by KSDP Pentagraph. (SmartGlass Product Brochure)

Fig 8.17 shows the different characteristics of the product. (SmartGlass Product Brochure)

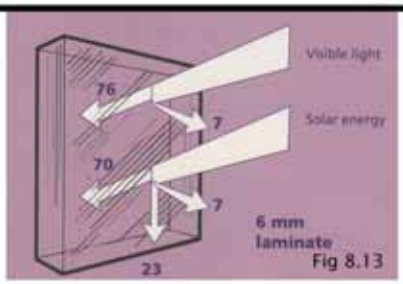


Fig 8.13

Fig 8.14

Fig 8.15

Fig 8.16

Fig 8.17

Technical Specifications

Glazing Type 1 - SmartGlass COLOURVUE

COLOURVUE is a laminated safety glass 'which introduces the joy of colour ' (SmartGlass Brochure), into a design and combines aesthetic appeal with safety, security, solar and UV protection.

The glass in manufactured locally by PFG Building Glass (located in Springs, Gauteng). two layers of clear glass (or body tinted float glass) are pressure and heat bonded together, with one or more layers of PVB (Polyvinyl Butyral). The less layers, the lighter the tint. The more layers the darker the tint, and therefore the less radiant solar energy enters the building.

A wide range of colours are avaliable and one is able to customise the colour of the glass to a certain extent.

Standard Sizes of the 6.38mm thick glass: 2400x2000

WHERE? This glass will be used in the curtain walling of the North-Western corner of the building, the most exposed to harsh afternoon sun.

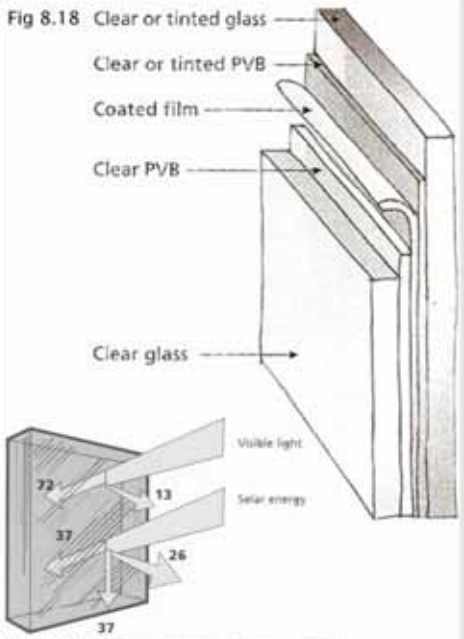


Fig 8.18

Fig 8.19

Glazing Type 2 - SmartGlass COOLVUE

COOLVUE is a clear or tinted glazing option that allows for natural daylighting requirements while reducing the heat gain that is associated with ordinary clear glass. COOLVUE allows more than 70% natural light transmission, while reducing solar heat gain by up to 50%, as well as cutting out 99.5% of damaging short-wave UV radiation (see Fig. 8.19 - SmartGlass Brochure).

COOLVUE is manufactured by 'sandwiching a wavelength-selective heat rejecting coating between two layers of polyvinyl butyral (PVB) and glass (see Fig. 8.18 - SmartGlass Brochure). This layered combination of heat-reducing materials ensures that the glazed facades of the 'i-hub' do not effect the energy efficiency of the building negatively.

COOLVUE also has the added benefit of sound transmission reduction. This characteristic is beneficial to the 'i-hub' application due to the business and therefore high noise levels of its location.

GLAZING SELECTED - Clear (maximum transparency required)
PVB SELECTED - Clear (maximum tranparency required)
NOMINAL THICKNESS - 6.76mm
MAXIMUM SIZE - 2440x2000mm

WHERE? COOLVUE Clear will be used in all the 'i-hub's clear glazing applications. After consultation with a professional, double-glazing was decided against due to the presence of the zincalume shading skin that eliminates most of the direct solar heat from entering the building.

Fig 8.20 Table showing the characteristics of the COOLVUE product (SmartGlass Brochure)

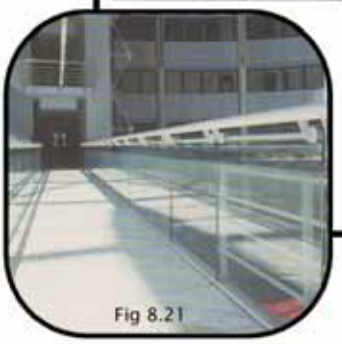


Fig 8.21

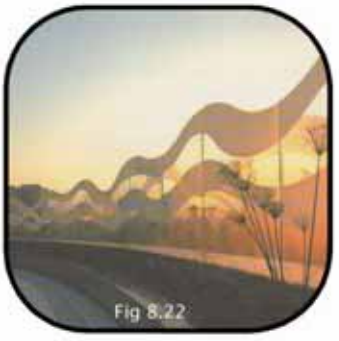


Fig 8.22

Glazing Type 3 - SmartGlass ARMOURSCREEN

ARMOURSCREEN is a silk-screened, coloured, toughened safety glass, five times stronger than ordinary float glass. This integral strength makes ARMOURSCREEN highly resistant to external impacts. Its toughness allows it to be used in interior and exterior applications where structural strength is a requirement.

The silk-screening can be done in a variety of custom designs and colours. It is also beneficial in that it reduces direct light transmission into spaces beyond, therefore reducing glare and radiant solar heat gain.

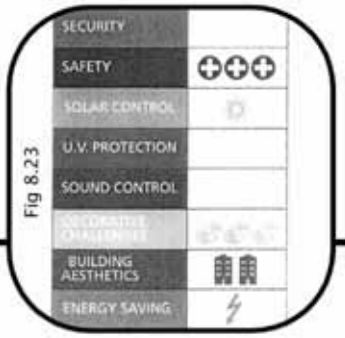
ARMOURSCREEN is incredibly durable as it is UV-stabilised, weather-proof, resistant to corrosion and easy to clean. It can however, not be cut or worked after it has been toughened. Any drilling or cutting must be done before the toughening process takes place. It is therefore important to be proactive when designing using this product. Constant correspondence between the architect and the glass manufacturer is therefore required.

NOMINAL THICKNESS - 6mm
MAXIMUM SIZE - 2000x1500mm
APP. kg/m^2 - 15

WHERE? ARMOURSCREEN will be used in the 'i-hub's balustrading (interior and exterior), public lift finishing and glazed office partitions.

Fig 8.21 Gencor balustrading, Johannesburg by TC Design. (SmartGlass Brochure)
Fig 8.22 Balustrades at the Hilton Hotel in Durban by FGG Architects. (SmartGlass Brochure)
Fig 8.23 Table showing the characteristics of the ARMOURSCREEN product. (SmartGlass Brochure)

Fig 8.23



8.2.4 Zincalume

Zincalume® Made Only By BlueScope Steel — BLUESCOPE STEEL

Fig. 8.24 The above images show various application in which zincalume steel has been used. (Bluescope Steel Brochure)

Zincalume is an improved steel product that has a lifespan of up to 4 times longer than ordinary galvanised steel. This is due to the double coating protection of a zinc and aluminium coat given to the base steel. The coating consists of 55% aluinium, 43.5% zinc and 1.5% silicon (see Fig 8.2.25 below). The aluminium provides a corrosion resistant physical barrier between the enviornment and the base steel, while the zinc protects the edges of the steel when being cut and worked. The galvanic action of the zinc results in this product being able to 'heal itself' over time. This characteristic allows for the product to be laser cut, as will be done prior to installation, in the design of the 'i-hub's shading skin. Zincalume contributes to lowering heat gain as it reflects heat and sunlight effectively, therefore lowering the temperature of the building's interior. This will be particularly beneficial on the exposed Western side of the'i-hub' building where much glazing is present.

It is light-weight and therefore easy to handle and install. It can be fastened to a galvanised steel frame by using galvanised steel fasteners. As with all metals, the zincalume sheeting should not be exposed to other metals such as copper or brass due to the chemical effects that these metals have on one another.

It is avaliable in flat sheet form, from Bluescope Steel in Cape Town. The flat sheets can then be cut, profiled and worked as desired. Flat sheets will be used in the 'i-hub's shading skin design. Zincalume can also be painted with a water-based acrylic paint, without using a primer, therefore decreasing costs. The zincalume shading 'skin' of the 'i-hub' will be painted so as to reduce glare in an environment that calls for high visibility and minimal discomfort. Zincalume is also non-combustible ensuring that it will not contribute to the spread of flames in the event of a fire.

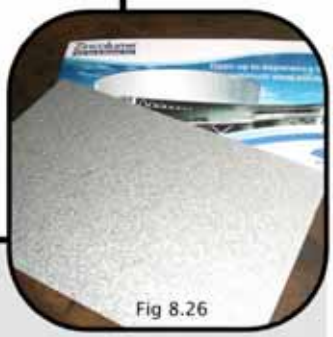
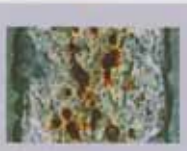


Fig 8.26

Fig 8.25 below shows a table comparing the performance of Zincalume steel with that of ordinary galvanised steel. It is clear to see from this comparison that the Zincalume steel is the preferable product for this application (Bluescope Steel Brochure).

Performance Comparison

	ZINCALUME® steel	Galvanised steel (G.I.)
Coating Elements	 Double protection of zinc and aluminium coating	 Single protection
After 240 Hours of Salt Spray Testing (Conducted in accordance to the ASTM test method B117 and AS1580)	 No sign of red rust	 Significant signs of red rust
After 20 Years of Atmospheric Exposure	 No sign of red rust	 Shows significant red rust

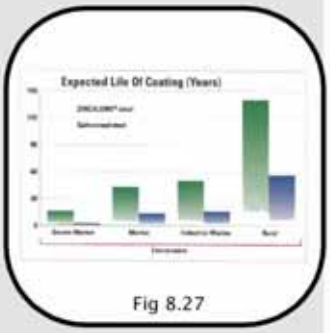


Fig 8.27

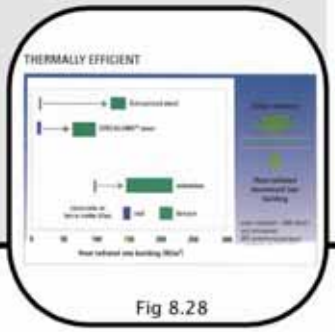


Fig 8.28

Fig 8.25 shows the raw zincalume product in flat sheet form. (Bluescope Steel Brochure)
Fig 8.27 compares the coating life expectancy of Zincalume Steel (shown in green) with that of normal galvanised steel (shown in blue). (Bluescope Steel Brochure)
Fig 8.28 demonstrates the zincalume steel is thermally more efficient than a number of other products previously used. (Bluescope Steel Brochure)

8.2.5 GKD Architectural Mesh

GKD Architectural Mesh is a lightweight, transluscent, woven, metallic, stainless steel fabric that is iridecent in character. **"In the interplay of weather conditions - light and shadow, clouds, sun and rain, the mesh seems to come alive and to breathe, to vibrate'** (GKD Design Guide Edition 3/99).

Due to the way in which the mesh is woven, and its own structural integrity, it can be tensioned in one direction while retaining stablility in the other. Coupled with the appropriate framing system, GKD Architectural Mesh can be used in a number of applications ranging from sunscreens to balustrading, ceilings, 'doors' and 'walls'.

Due to the stainless steel's high resistance to vitually all weather and environmental conditions, the material requires practically no maintenence. It does not discolour over time and can be cleaned with brushes and non-abrasive, alkaloid cleaning agents.

The mesh is avaliable in a number of different patterns that vary in opaqueness depending on the level of transparency that is desired.

WHERE? This product will be used in the ceiling treatment of the 'i-hub'building to partially conceal services. It will also be used for the balustrading of the stairways as well as in roller-shutter doors for the Craftmarket and sun protection shutters on the West of the Restaurant's Second Level.


Fig 8.29


Fig 8.30


Fig 8.31


Fig 8.32


Fig 8.33


Fig 8.34

Material Samples

Technical Resolution

Fig 8.29 to Fig 8.31 show a number of different ceiling applications in which GKD Architectural Mesh has been used, with varying effects. It is intended to create a similar effect in the treatment of the 'i-hub's ceiling (GKD Design Guide Edition 3/99)

Fig 8.32 shows the fixing and detailing of a vertical GKD Architectural Mesh sunscreen. (GKD Design Guide Edition 3/99)

Fig 8.33 shows an image of how GKD Architectural Mesh can be used both vertically and horizontally in combination. (GKD Design Guide Edition 3/99)

Fig 8.34 shows how GKD Architectural Mesh can be used in roller-shutter door applications. This treatment will be applied to the roller-shutter doors enclosing the Stalls of the Craft Market in the 'i-hub' building. (GKD Design Guide Edition 3/99)


Fig 8.35 shows the Sambesi Type Mesh that will be used in the 'i-hub's stairway balustrades, roller-shutter doors and sun protection shutters.


Fig 8.36 shows the Lago Type Mesh, which is slightly denser and will therefore be used in the ceiling treatment.

Auditorium

Offices and Conference Rooms

Ceiling Type 1 - Gyptone Bend Line 7

TECHNICAL DATA:
Board Size: 900 x 2400mm
Hole Size: 6mm x 8mm
Perforation Area: 14%
Light Refelection: 70% (white)
Relative Humidity: 70%
Thickness: 6.5mm
Weight: 5kg/m^2
Suspension Grid: T37K

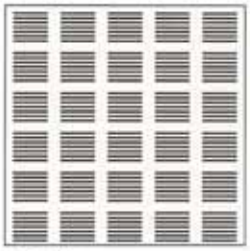


Fig 8.37

Gyptone Bend Line 7 (see Fig 8.37 for plan view), is a suspended ceiling board system that allows for curves and arched shapes. It is also possible to create large uniform surfaces devoid of visible joins and grids. The effect is therefore clean and elegant, suited for use in spaces that are acoustically sensitive such as the 'i-hub's hovering auditorium (see Fig 8.38). The ceiling is used in combination with a mineral wool backing (such as Isover's Aerolite Glasswool product seen in Fig 8.40, Isover Insulation Solutions Product Brochure), in order to reduce sound penetration and increase sound absorption where necessary.

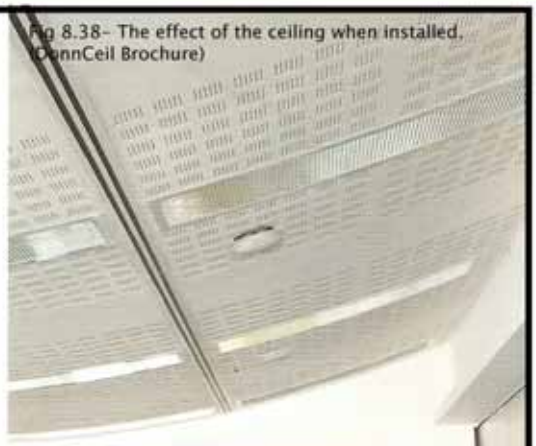


Fig 8.38- The effect of the ceiling when installed. (DonnCeil Brochure)

Fig 8.39 The effect of the product on internal spaces below (DonnCeil Brochure)

Ceiling Type 2 - Gyptone Bend Line 6

TECHNICAL DATA: (as above)
Board Size: 1200 x 2400mm
Perforation Area: 13%
Light Refelection: 70% (white)
Thickness: 12.5mm
Weight: 7.8kg/m

Fig 8.40

Installation

The Gyptone Bend Line 6 product is designed specifically for offices and areas where acoustic ambience is important (see Fig 8.39). This suspended system, when used in the 'i-hub' application, does not need to be insulated further as the insulated concrete slab above the ceiling reduces sound penetration substantially (Fig 8.41, DonnCeil Brochure).

Both types of ceiling boards are supplied unpainted. The boards should be painted with a white emulsion paint in order to increase light reflectivity.

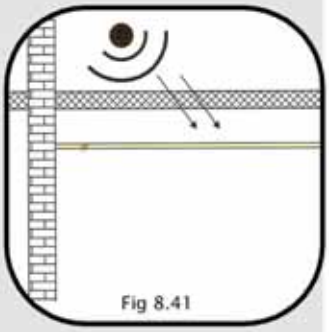


Fig 8.41

Fig 8.42 shows the concept of a suspended ceiling system. It is evident from this image how easily the panels can be removed when maintenance needs to be done. (DonnCeil Brochure)

Fig 8.43 shows the T37K grid system that is used in fixing both the 'i-hub's Auditorium ceilings, as well as the Office and Conference Room ceilings in place. A flush plastered finish is used in both cases. DonnCeil Brochure)

Fig 8.42

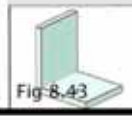


Fig 8.43

25mm x 25mm galvanized steel angle used as a hanger

T37 main Tee: is the primary beam of a mechanical ceiling suspension system.

Fig 8.44

GypWall Silent 52

Internal partition walls will be used in the Office areas, as well as the Auditorium walls of the 'i-hub' building. They will be used in conjunction with the suspended ceiling systems that have already been described.

The use of dry-walling systems, particularly in the case of the 'i-hub' office areas, allows for the space to be adaptable depending on the tenants requirements and flexible with regards to alterations that are often made when new tenants move into existing spaces.

The **GypWall Silent 52** dry walling system offers excellent sound reduction, particularly beneficial for the boardroom and auditorium spaces, as well as a two hour fire rating, ensuring the safety of the 'i-hub's users in the event of a fire.

The dry-walling system is non-load bearing and made up of two layers of 12,5mm Rhino-Firestop board on each side of a metal support stud. The cavity between is filled with a wire mesh surfaced mineral blanket (such as Isover's Cavitybatt Glasswool product seen in Fig 8.45, Isover Insulation Solutions Product Brochure), to improve sound reduction. This insulation not only improves the acoustical qualities of the space it encloses, but is also self-supporting and will therefore not sag over time. When installed, the wall measures approximately 114mm in thickness and has a mass of around 50kg/m^2. (See Fig 8.49 below)

Fig 8.45

Fig 8.46

Fig 8.47

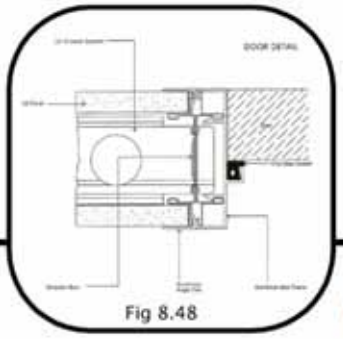


Fig 8.48

Technical Specifications

Fig 8.44 shows the metal sub-structure of a dry wall partition system. (GypWall System Solutions Product Brochure)

Fig 8.45 Isover's CavityBatt Glasswool insulation. (Isover Insulation Solutions Product Brochure)

Fig 8.46 Typical detail showing the connection between a dry wall partition and a concrete column. (GypWall System Solutions Product Brochure)

Fig 8.47 Typical detail showing a corner connection. (GypWall System Solutions Product Brochure)

Fig 8.48 Typical door detail. (GypWall System Solutions Product Brochure)

Fig 8.49 shows the various components and the construction of the GypWall Silent 52 system. (GypWall System Solutions Product Brochure)

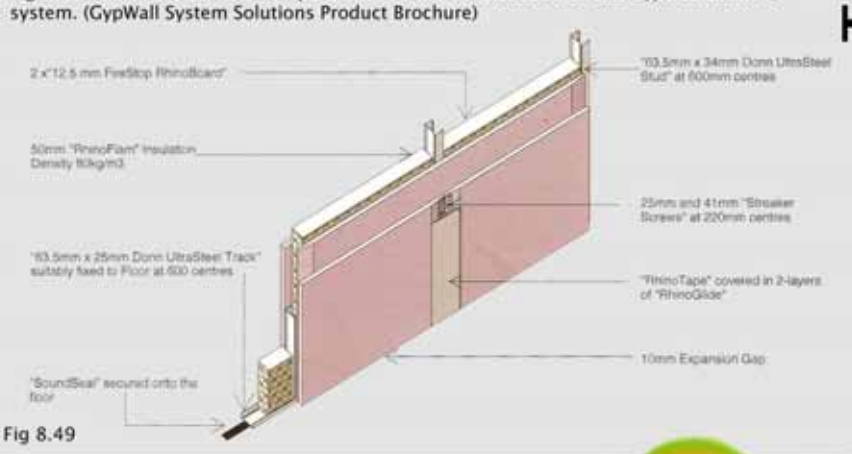


Fig 8.49

Technical Resolution

8.2.8 Plexiglas


Fig 8.50


Fig 8.51


Fig 8.52

INSPIRATION

Plexiglas is an acrylic product manufactured by Degussa, and is similar to Perspex. It is avaliable locally from Maizey's Plastics situated throughout the country. The Plexiglas product range includes solid, multi-skin and corrugated sheets, as well as tubes, rods films and foams. In the case of the 'i-hub' Plexiglas sheets will be used. The SATINICE range of colours and finishes has been explored as it offers the degree of translucence and the quality of finish that is required by the design (see Fig 8.53 and 8.54 below). The acrylic sheets are cast (in which case they have one satin surface and can not be molded), or extruded (in which case they have two satin surfaces and can be worked into exciting shapes). This application calls for cast sheets as only one surface will be exposed. The sheets will not be molded or worked for the 'i-hub' application. Plexiglas can be used for interior and exterior applications as it is corrosion resistant, scratch resistant, thermally resistant and durable. It does not contribute to the spread of flame in the event of fire, but it becomes unstable above 140 degrees Celsius and when it is structurally altered due to the application of heat, there is no way of regaining its original properties.

Plexiglas SATINICE is avaliable in a wide range of colours and customisation is also possible on request. The sheets are homogenously coloured and can therefore be bonded effectively. The colour that has been chosen is Ice Green 6C03 DC , as it is neutral and subtle, possessing a slightly green undertone that will compliment the zincalume shading 'skin' and contrast with the coloured glass of the North-Western facade. The main reason for the selection of this material is the excellent light diffusion properties that it possesses. The material consists of tiny diffuser beads that continually change the propagation of light giving rise to interesting and intriguing effects (see Fig 8.2 and 8.2 below).

Ice Green 6C03 DC sheets are avaliable in thicknesses of up to 40mm with a standard maximum sheet size od 4000x2000mm. Sheets are delivered to site already cut to size on request.

WHERE? The hovering 'i-hub' auditorium and the transitional structure at the building's most Southern point.


Fig 8.53

Samples and Studies

Fig 8.50 An image of the Marble Lofts Residence in Atlanta by Rufledge Alock Architects. This design incorporates the use of 3Form transluscent products. (www.3form.eu)

Fig 8.51 shows Dan Gottlieb and Penny Herscovitch's 'Flexicomb' design. This luminaire possess a beautifully layered, tactile quality. (www.scophy.files.workpress.com)

Fig 8.52 shows a detail similar that which will be used in the fixing of the Plexiglass SATINICE sheets to the 'i-hub' structure. This image shows the vibrant lighting effects that are possible when using transluscent materials. (www.arcspace.com)

Fig 8.53 shows a number of different Plexiglas products that are avaliable. (Degussa Product Brochure)

Fig 8.54 shows a number of different samples and colours that were investigated when developing the design of the 'i-hub's transluscent elements. (photo by author)

Fig 8.55 shows the experimentation that was done with regards to the diffusion of light through the Plexiglas SATINICE sheets and the effects that are created as a result. (photo by author)

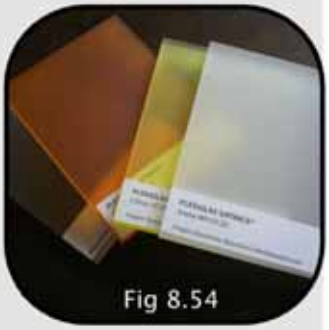


Fig 8.54


Fig 8.55

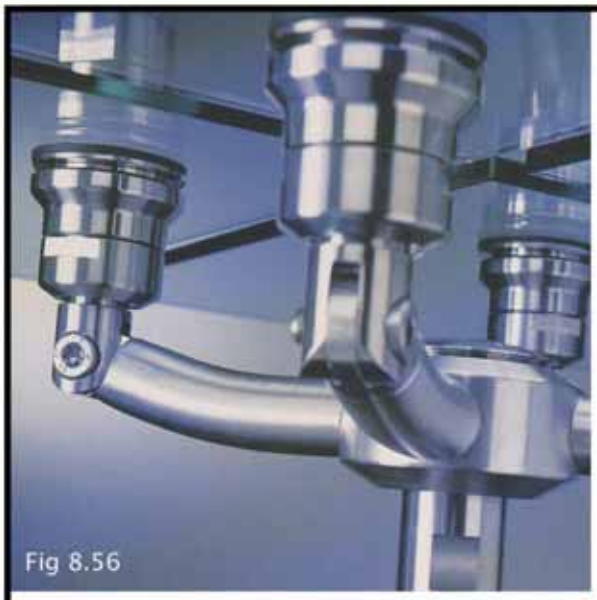


Fig 8.56

Various different fixing systems were investigated with regards to the fixing of the Plexiglas auditorium cladding, the Plexiglas to be used in the transitional structure of the building's Southern most point, as well as various glazed balustrades throughout the building. Fig 8.56 to Fig 8.60 show the range of products avaliable on the market.

The method specific to the 'i-hub' application, is seen in Fig 8.56 (DOORMA Product Borchure). The 'front' view of this spider clamp system is seen in Fig 8.58 (DOORMA Product Borchure). This clamp system will be supported by a steel sub-frame, fixed to the main structural frame of the building.

This type of fixing system allows panels to be replaced easily in the event of any damage occuring. Joints between the panels will be sealed with a clear silicon so that expansion and contraction of the material can happen without complications.

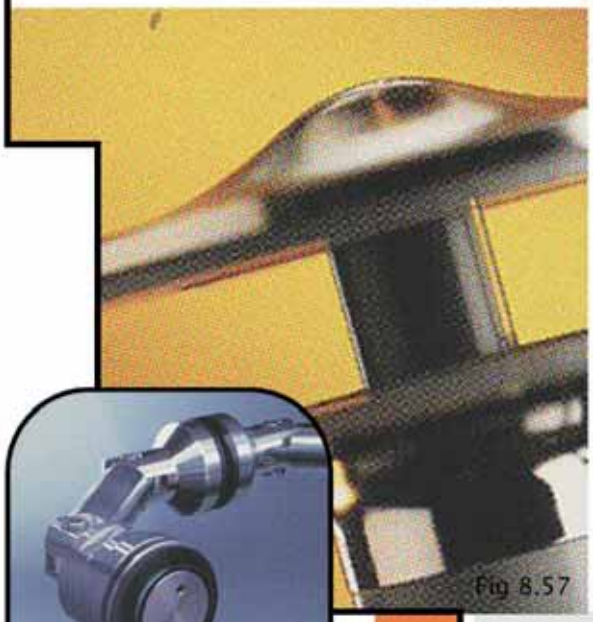


Fig 8.57

Fig 8.58


Fig 8.59

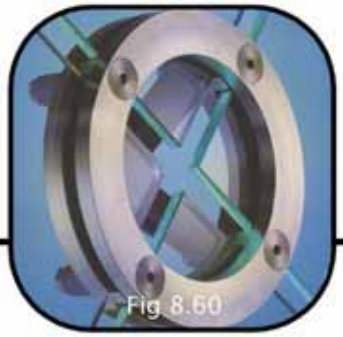


Fig 8.60

Fig 8.57 shows a Rodan end clamp. (DOORMA Product Brochure)

Fig 8.58 Manet construct system with two single point fixings. (DOORMA Product Brochure)

Fig 8.59 Rodan tensile tie system. (DOORMA Product Brochure)

Fig 8.60 Loop system. (DOORMA Product Brochure)

8.2.10 Colour Pallette

A neutral colour pallette has been chosen to ensure that the building forms a backdrop for Station activities, as opposed to the other way around. The neutral colour pallette will contrast with the rich textures of the historical buildings, and their importance will then be emphasised.

Fig 8.61 COLOUR PALLETTE FOR THE 'i-hub'. (Dulux Range)

Fig 8.62 COLOUR PALLETTE FOR THE 'i-hub'. (Plascon)

Technical Resolution

Conclusions

The selection of various materials has been governed not only by their practical application capabilities, but also by the tactile and sensual qualities they possess. The materials selected are to reveal the construction of the building to its users, enticing them to touch, feel and explore all of its spaces further. The materials used will make the building 'come to life', particularly at night, and create and environment, neutral in colour, but rich in sensual appeal.

8.3 Landscape Design Concept

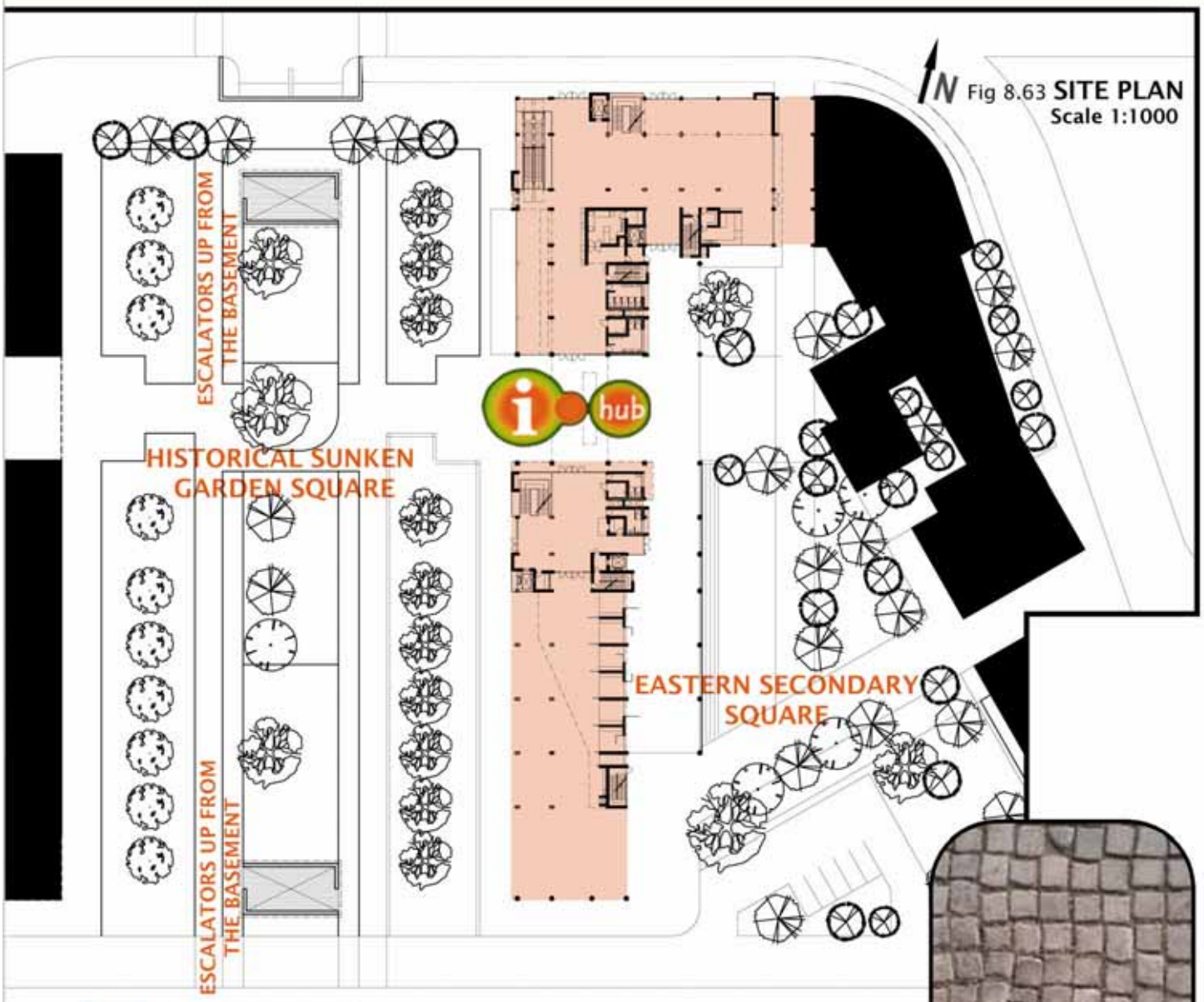


Fig 8.63 SITE PLAN
Scale 1:1000

The Landscape

The landscape plan above (Fig 8.63) briefly reflects the concept behind the design of the 'i-hub's surrounding landscape. The building, with its neutral pallette creates a backdrop around which everyday Station activities occur. It is therefore in the lanscape where contrasts are created and rich, textural effects echo a traditional African landscape.
The Historical Sunken Garden will be re-instated once the basement construction is complete. The majority of this square is hard landscaping as most movement occurs here. The Eastern Secondary Square is mostly soft landscaping and encourages slower movement and lingering. The landscape design concept ties the whole site together and links the public squares to one another.

The textural effects, particulary present in the paving techniques used, are continuous throughout the ground floor of the building. This creates the effect of the building being anchored to the landscape and therefore forming an integral part of it.

The tree species that have been selected, while functional and practical, add to the welcoming and inviting environment that is being created in a previously harsh environment. The tree species themselves encourage different responses and stimulate various experiences in the users of this landscape.

Fig 8.64


Fig 8.65

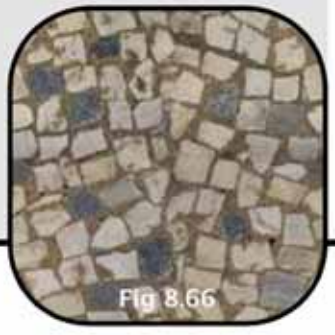


Fig 8.66

Tree Species

A - Albizia Adiantifolia

Commonly known as the Piernief tree, it offers mottled shade by forming a flat canopy above the ground. The space created under this tree's canopy suggests movement and protection and will therefore be used along the busy Western facade of the building.

B - Caesalpinea Ferrea

Commonly knows as the Leopard tree, this fast growing species has thick foliage, characteristic bark and prominent yellow flowers. Due to these strong characteritics, It is truly an excellent feature tree. It suggests lingering and encourages users to draw close, to touch it's bark and to rest under it. The Leopard tree will be used within the landscaping of each of the public squares adjacent to the building.

C - Celtis Africana

Commonly knows as the White Stinkwood tree, this species, with its light bark and dense canopy also encourages one to linger and sit beneath it. For this reason, it too will be used in the landscape design of both public squares flanking the building, placed strategically to encourage gathering.

Textures

Fig 8.64 to Fig 8.66 and Fig 8.79 to 8.81 show various different textures that will be used throughout the lansdcape and the ground floor of the building (www.amazingtextures.com).

The paving techniques will continue into the building, as if the 'i-hub' were part of the landscape itself. Smoother textures that create safe surfaces for quick movement, will be used in areas where large groups of people move at a fast pace. These areas included the Eastern and Western walkways as well as the interior of the building on ground level. Mottled and uneven surfaces will be used in areas where slow meandering or gathering is encouraged. These areas typically include the spaces within the public squares themselves, beneath the trees and along the edges of walkways.

8.4 Construction Methods and Assembly Techniques

8.4.1 Structural Grid

The building is designed from the basement up. The standard size of parking bay (5m x 2,5m as stipulated by the municipality) and th standard backing spaces (7.5m as stipulated by the municipality) for vehicles had to be taken into consideration with regards to the successful functioning of the basement parking space. The column grid is calculated according to the standards mentioned above and their spacing allows for the clearance of these critical dimensions.

The structural grid is therefore laid out from centre to centre as shown in Fig 8.82 adjacent. Fig 8.83 shows the structural grid imposed on the building's super-structure.

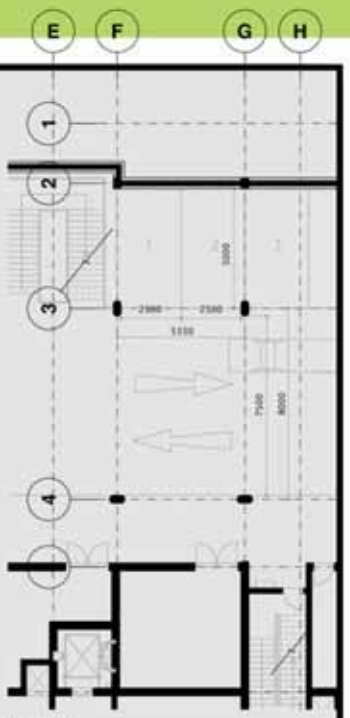


Fig 8.82
STRUCTUAL GRID DIMENSIONS

8.4.2 Basement Construction

The area of the site falls on a quartzite and shale soil formation. It is therefore best that the load transmitted by the columns is spread as evenly as possible over the entire area of the site. A raft foundation system is ideal for this application, in these soil conditions, as it forms one continuous structure throughout (Fig 8.84 to 8.85).

However, due to the extensive landscaping that will occur on top of the basement slab, it is neccessary to collect as much water as possible in order to irrigate it. For this reason the retaining wall system needs to be an open one that allows water to seep through from the outside. This occurs through a system of *no fines concrete blocks* that absorb water from the surrounding soil and allow it to seep through weep holes in the basement retaining wall, down towards the basement floor slab. The no fines concrete layer absorbs this water and guides it to secondary channels. The water is gathered in one main channel and pumped into the storage tanks in the corner of the basement. Excess water that is not absobed by the no fines concrete blocks flows downward to the coarse aggregate just above the raft foundation and enters the geopipe that guides the water to the closest municipal stormwater channel (Fig 8.86 below).

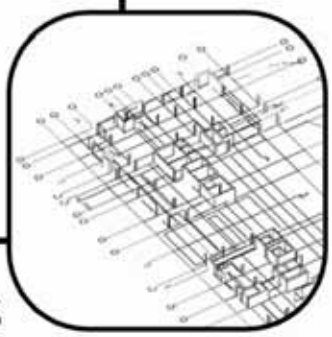


Fig 8.83
STRUCTUAL GRID

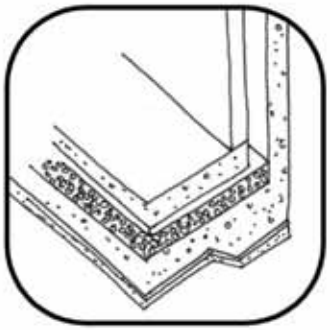


Fig 8.84
RAFT FOUNDATION
& RETAINING WALL

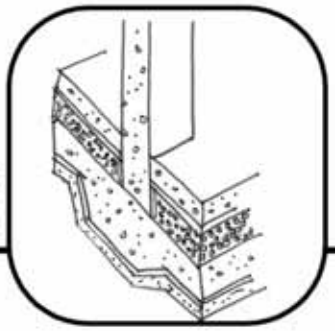


Fig 8.85
RAFT FOUNDATION &
RC COLUMN

Concept Drawings

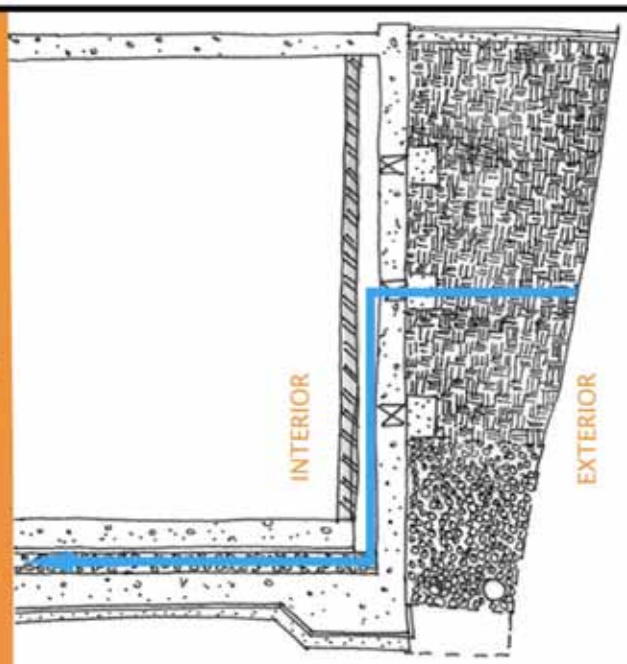


Fig 8.86 TYPICAL BASEMENT CONSTRUCTION
showing the flow of water into the system

8.4.3 Concrete Column and Slab Construction

a) Concrete Columns
Three different type of re-inforced concrete columns are used in the 'i-hub's structure:

1. Rectangular 330x460 RC columns: primarily used in the basement and where the columns is concealed in a cavity wall.
2. Elliptical 330x460 RC columns: primarily used in the areas of the basement directly under the 'i-hub' building and in the building itself where the columns are exposed. The slight curve of an elliptical column gives the concrete a softer, plastic quality that is so desired in this design.
3. Elliptical 330x840 RC columns are located along gridline C, North Block. These columns support the composite structure of the Mezzanine Levels. The size renders them a prominent structural element and therefore a strong feature in the design.

b) Concrete Slabs
255mm (3 brick courses), *cast-in-situ* reinforced concrete slabs, with two-way spans, are used throughout the design. They are supported at 5330mm and 8000mm centres by the columns described above. This type of slab construction was chosen, as much of the concrete structure will be off-shutter concrete and therefore exposed. The quality of the concrete needs to be high and work can be controlled and monitored carefully with this method as the project progresses.

Fig 8.89 to Fig 8.91 show the progression of the 'i-hub's column and slab construction three dimensionally.

Fig 8.87 DIFFERENT COLUMN TYPES

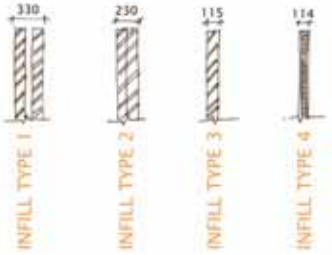


Fig 8.88 DIFFERENT INFILL WALL TYPES

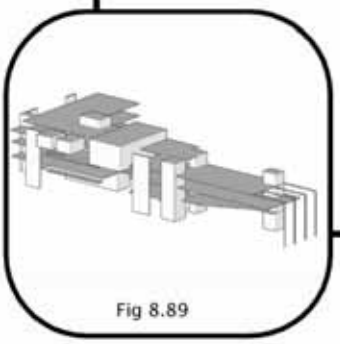


Fig 8.89

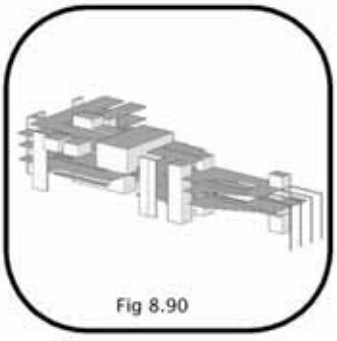


Fig 8.90

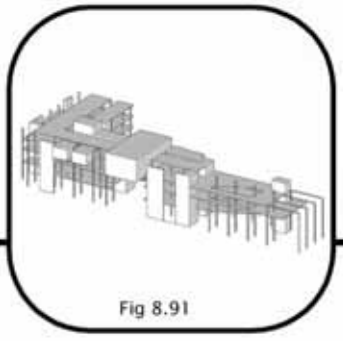


Fig 8.91

Concept Drawings

The infill material used is non-load-bearing brickwork with a small percentage of dry-wall partitioning:

1. 330mm brick cavity walls: primarily used around the service cores and to conceal the rectangular 330x460 RC columns.
2. 230mm brick walls are used internally, around lift shaft and fire escape stairs (forming a fire barrier), as well as in the construction the the Craft Market and Restaurant facades.
3. 115mm brick walls are used in the ablution facilities.
4. 114mm dry wall partition systmes are used in the Office areas and Auditorium Wall Construction.

Most of the building's interior and exterior walls are plastered and painted. It is for this reason that standard stock bricks can be used. It is only in the Craft Market Area where facebrick (FBX) is used. Although the use of plastered walls results in higher maintenance, the building's context calls for an exterior that has a neutral an unimposing pallette that sets a backdrop for everyday activities and the play between historical and contemporary architecture.

8.4.4 Roof Construction

The construction of the 'i-hub's roof is two fold:

a) Flat Concrete Roof
The flat concrete roof is a *cast-in-situ* structure that provides thermal mass thus reducing heat gain within the building. It also aids in the harvesting of water that is collected in the basement and used to irrigate the lanscape. It is also on this structure that the air conditioning units and solar heating units are placed. Concrete roof construction is ideal for this as it provides a flat surface, on which to construct a plinth to mount these systems, as well as providing a noise barrier when they are operational. The slab is 255mm (3 brick courses) thick and spans from column centre to column centre. The top of the slab has a insulative screed to a minimum fall of 1:60 to 45 degree fullbore outlets. These outlets allow water to enter the 100mm diameter downpipes that are cast into the reinforced concrete columns.

b) Light Steel and Shading 'Skin' Structure
The light steel stucture comprised of a steel truss structure bolted to the upstand of the flat concrete roof on one side and supported by a 254x254x73 H-beam on the other. The trusses are spaced at 1300mm centres. 125x75x8 galvanised steel angle irons are welded to the truss. Bolted to these are 125x65x20x2 galvanised steel lipped channels, which carry the Kliplok 700 Chromadeck roof sheets. The roof is insulated by 25mm thick Isoboard fixed between the galvanised steel lipped channels. The 5 pitch ensures that rainwater is transfreed effectively to the flat concrete slab for collection.

The zincalume shading skin is then attatched to the steel structure by means of a galvanised steel frame system that is incorporated into the truss structure at roof level.

The roof structure also incorporates ribbon skylighting that is set between the upstands of the flat concrete slab, or between the flat concrete slab upstand and the light steel structure. The construction of the skylights optimises the entry of natural light into the building from above.

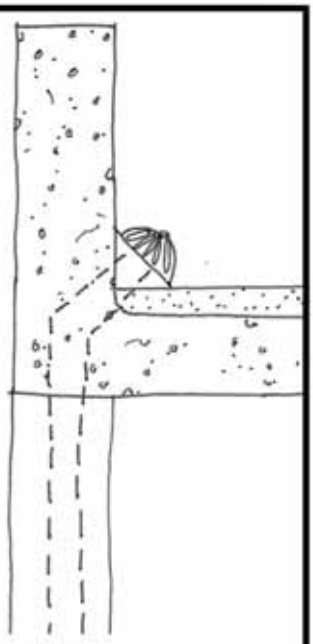


Fig 8.92
DISPOSAL OF RAINWATER FROM THE FLAT CONCRETE ROOF

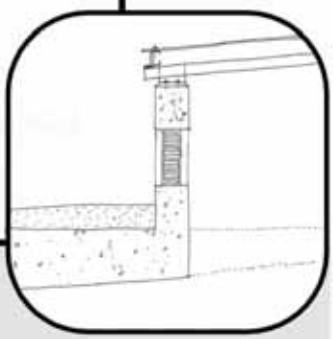


Fig 8.93
DETAIL A

Fig 8.94
DETAIL B

Fig 8.95
DETAIL C

Concept Drawings

Fig 8.96 SECTION THROUGH THE NORTH-WESTERN BLOCK showing the transition from shading skin to light steel structure to the flat concrete roof.

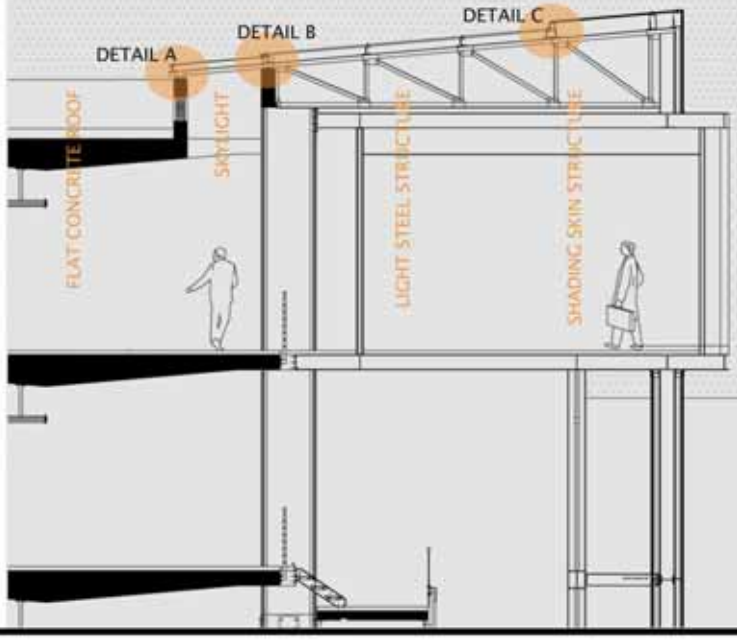


Fig 8.97 UP campus building by Braam Le Roux. (photo by author)

Fig 8.98 UP campus building by Braam Le Roux. (photo by author)

8.4.5 Auditorium Construction

The 'i-hub' Auditorium structure is made up of two layers:

1. Inner Structural Frame
This frame is made up of 20mm galvanised steel plates, custom welded to form 500x500 hollow tubes. These tubes are welded together to form the sub-structure (seen in Fig 8.99). This rigid steel frame is supported, via bearing pads, on 540x540 RC columns (Fig 8.100). Tensile forces are transferred by the diagonal members that tie the top and bottom beams together. The rigid frame allows the auditorium to move as an entire unit and gives rise to the perception of 'hovering' or 'hanging'. A composite steel deck and stepped structure is secured to the rigid inner structural frame by means of I-beams that span across it (see Fig 8.102). This forms the base of the auditorium. The roof of the auditorium is also a composite slab with upstands that allow for ventilation of the cavity. Air conditioning units are housed on the roof slab as the auditorium is mechanically ventilated.

Acoustically treated, dry-wall partitioning forms the outer walls of the Auditorium Structure.

2. Outer Plexiglas Frame
The outer frame is made of Plexiglas (Ice Green) panels that are secured in place with spider clamps attatched to the inner structural frame by means of their own framing system (Fig 8.103). The gaps between the panels are sealed with clear silicon.

Although the use of an acoustically designed inner skin, renders the auditorium's internal noise levels acceptable, the outer skin enhances the quality of quietness within the space.

The outer frame is lit from within at night, making the whole structure glow while 'hovering', suspended in mid-air. The detailing of this structure allows for it to be light enough to achieve the desired effect, while still being functional.

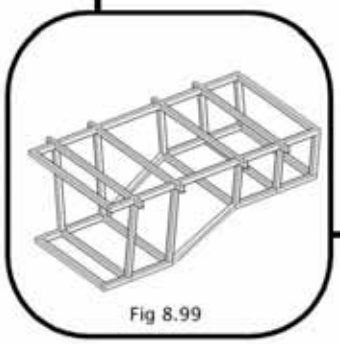


Fig 8.99

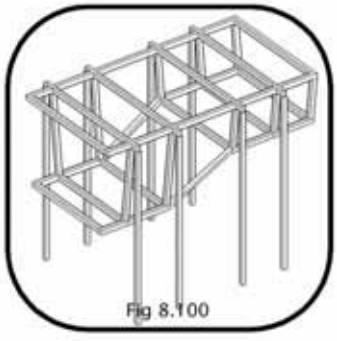


Fig 8.100

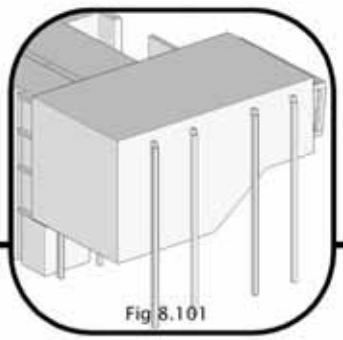


Fig 8.101

Concept Drawings

Fig 8.102 CROSS-SECTION THROUGH THE AUDITORIUM showing the importance of sight lines.

Fig 8.103 DETAIL A. (DOORMA BROCHURE)

Technical Resolution

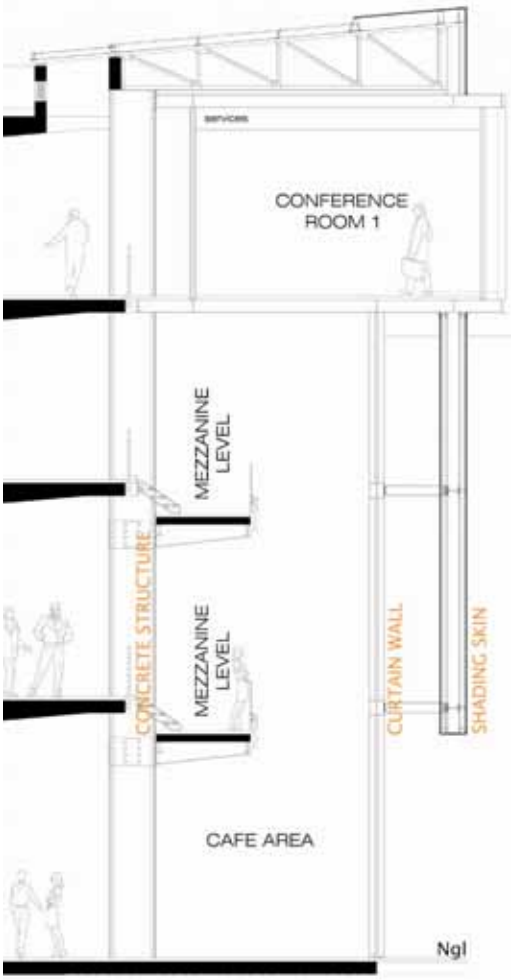


Fig 8.104 SECTION THROUGH THE NORTH-WESTERN CURTAIN WALL showing various different connection methods.

8.4.6 Curtain Walling and Connections

The ColourVue and CoolVue panels that have been specified for use in the 'i-hub' building are held in place by exposed steel members. The glazing itself is effective in creating user interaction with the building's edges. It is however, the way in which the steel framing these panels is connected, that adds a raw, tactile quality to the building's detailing.

Curtain walls prevail on the Northern and North-Western facades of the 'i-hub'. The zincalume shading skin, along with its frame, connect to these curtain walls, shielding them from direct solar radiation.

The steel that supports the shading skin as well as that which supports the glass, in fixed by various means explored in Fig 8.105 to Fig 8.108 (SAISC 2008). Once assembled, all steel components are to receive a coat of protective, light-coloured paint.

Fig 8.105 STEEL CONNECTION welded end plate to column flange (SAISC 2008:15.4)

Fig 8.109 LAW BUILDING FACADE University of Pretoria Campus by Kruger Roos Architects. (photo by author)

Fig 8.110LAW BUILDING WALKWAY CONNECTION University of Pretoria Campus by Kruger Roos Architects. (photo by author)

Fig 8.111 UP Campus Building by Braam Le Roux. (photo by author)

Fig 8.112 COLUMN AND WALKWAY CONNECTION University of Pretoria Campus by Kruger Roos Architects. (photo by author)

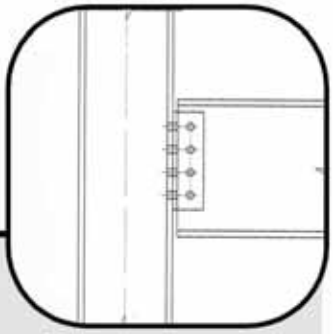


Fig 8.106 STEEL CONNECTION welded end plate to column flange (SAISC 2008:15.4)

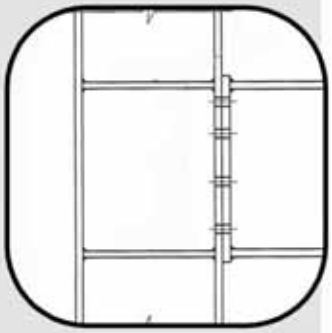


Fig 8.107 STEEL CONNECTION column with web stiffeners and welded flush end plate. (SAISC 2008:15.4)

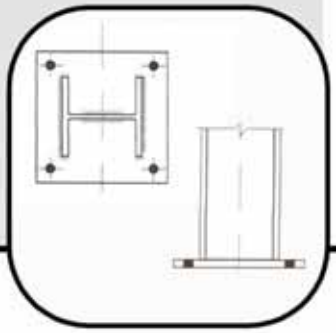


Fig 8.108 STEEL CONNECTION large welded base plate with M16 bolts. (SAISC 2008:15.11)

Precedents


Fig 8.109


Fig 8.110


Fig 8.111


Fig 8.112

8.5 Servicing Systems

The services and systems that are incorporated into the design of a building are integral to its everyday functioning. It is the integration of these systems that render the environment of the building comfortable of not. They are also responsible for the majority of the energy consumed by the building when operational. For this reason, it is important to consider alternative methods of providing fresh air, heat and disposing of waste products. It is also important to be forward-thinking while at the same time, sensitive to methods that are currently used in practice. This will ensure that the building is a model for the latest systems, but also that these systems can be properly maintained by knowledgeable professionals familar with the industry.

8.5.1 Waste Water Disposal

All sanitary fixtures within the building are optimised to reduce the waste of water. These include low-flow shower heads, dual flushing toilets and waterless, odourless urinals.

A two-pipe plumbing system, located in the ducts linked to the ablution facilities, as grey water is collected from the wash hand basins and showers and channelled to be store in a grey water collection tank in the basement (Fig 8.114 below). The grey water collection stack will be ventilated at roof level. The water will be used to irrigate the landscape from below the soil (as opposed to spraying which can cause problems due to the presence of chemicals within the water). In this way the grey water is mixed with the stormwater collected from the building's roof and diluted. Due to the public nature of the building and the broad range of functions that the building contains, for quality control purposes, it has been decided that water from the building's kitchens will not be incorporated into the grey water system of collection.

The waste water from the kitchen facilities will feed into the soil water system and enter the municipal sewer system. The soil water stack will be ventilated at roof level (Fig 8.113 adjacent).

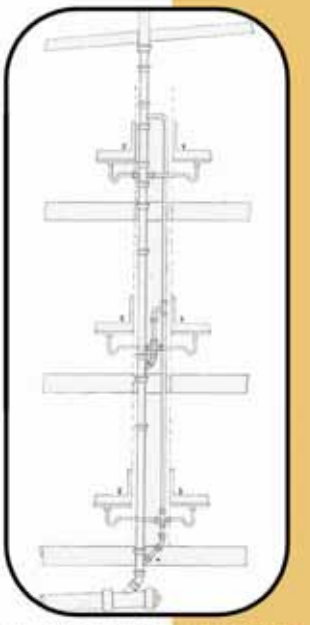


Fig 8.113 SOIL WATER PLIMBING SYSTEM connecting to the municipal sewer system. (www.chestofbooks.com/plumbing)

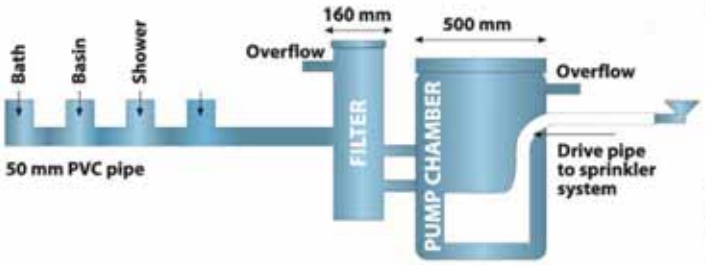


Fig 8.114 DIAGRAM SHOWING THE FUNCTIONING OF A GREY WATER COLLECTION SYSTEM. (www.greenearthconsulting.co.za)

8.5.2 Water Heating Systems

Pretoria is located optimally with regards to receiving a high percentage of solar radiation year round. Although the initial costs of implementing solar technolgies are higher, the long-term cost saving far out-weigh the initial captital invested. Solar energy is clean and free. It is for the above mentioned reasons that this technology is being applied as part of the water heating system of the 'i-hub' building.

Due to the capacity, as well as the mixed-use nature of the building, the system of heating water is two fold:

Fig 8.115 SOLAR GEYSER -K250d. (www.solargeysers-sa.co.za)

a) Solar Geysers

Solar geysers are used to heat water for the ablution facilites, as well as for the smaller kitchen spaces. The SolarTech Direct Water Heating K-250d is a theromosyphon - close coupled system that operates by using two flat plate solar collectors of 2m each.The storage tank has a capacity of 250 litres and weighs 75kg's (see Fig 8.115 above). Ten K-250d units will be located in strategic places on plinths on the 'i-hub's flat concrete roof.

Fig 8.116 ELECTIRAL GEYSER - Duratherm Kompakt D250L 400Kpa (www.sustainable.co.za)

b) Electic Geysers

The water provided by the solar geysers is supplemented by water heated by electic geysers, particularly in the large, restaurant and cafe kitchen spaces.

Duratherm Kompakt D250L 400Kpa electical geysers will be installed (Fig 8.116 adjacent). This electrical geyser is manufactured by using a combination of steel and plastic (PEX coating), rendering it corrosion resistant and virtually maintenance-free.

In order to optimise electic geyser efficiency, a gyeser blanket is to be installed to insulate the main tank. The geyser pipes too, should be insulted to prevent unnecessary heat losses. The geyser should also be installed vertically as apposed to horizontally to increase energy efficiency (www.sustainable.co.za/energy-efficeincy/geyser-eficency.html). All electical geyses that are installed are to have a timer that controls the geyser's operating hours, thus reducing electrical costs. For optimal geyser efficiency, the theromstat is to be set to 60 degrees Celsius (www.sustainable.co.za/energy-efficeincy/geyser-eficency.html).

The use of solar geysers, coupled with electic geysers where needed, will greatly reduce the energy usage of the builidng and electrical costs will drop.

8.6.3 Energy Efficent Lighting

The building is designed specifically to be lit naturally via strategically placed windows and skylights. Artificial lighting is required specifically in the Service Cores of the building, the Conference Rooms, the Auditorium, as well as the Basement.

Energy saving fixtures will be applied. LED (Light Emitting Diodes technology will be mainly used in the down-lighting of public spaces. Compact flourescents (CFL's) will be used in office, meeting and auditorium spaces where a higher, task-specific level of lighting is required. All light fittings are to be linked to a timer system that will ensure that lights are only operational when they are needed. The application of this technology will require a larger capital output. Any money spent initially will be re-imbursed through the savings that will be made with regards to electrical costs in the long run.

8.5.4 Fire Alarm System

According to SABS 0400 Part TT31, the building will be equipped with a fire detection system and a manually activated alarm system that can be activated in the event of an emergency.

According to SABS 0400 part TT36, the building does not need to be fitted with a sprinkler system. Smoke ventilation happens naturally, through openable windows and louvres at roof level, in accordance with SABS 0400 Part TT 42.

8.5.5 Air Conditioning Systems

Kam Sing Wong of Ronald Lu & Partners, Hong Kong, stated at the Green Building Conference 2009, that "Solar thermal energy has perhaps the greatest potential of all solutions to transform global energy issues, as it is a highly efficient way of both heating and cooling...it is an interesting paradox of South Africa's sunny climate, that the very source of heat, which necessitates cooling, can be used to cool buildings", (www.greenbuilding.co.za).

The i'-hub' building uses a number of systems to promote a comfortable environment with regards to air temperature and ventilation. The air-conditioning system is two-fold:

a) Solar Powered Air-Conditioning

Although many of the 'i-hub' building's public spaces are volumous and open up to the outside environment, and are therefore naturally ventilated using the stack effect, a solar powered system is used if the indoor environment become anything but optimal. This system of ventilating is relatively new on the South African market. It is currently being tested by the South African supplier, Voltas Technologies, and is proving to be highly successful (www.greenbuilding.co.za/ndex.php/Notice-Board).

The system involves the use of solar-assisted absoption chillers suitable for the South African climate, that have a heating/cooling capacity of between 1700 and 2000KW.

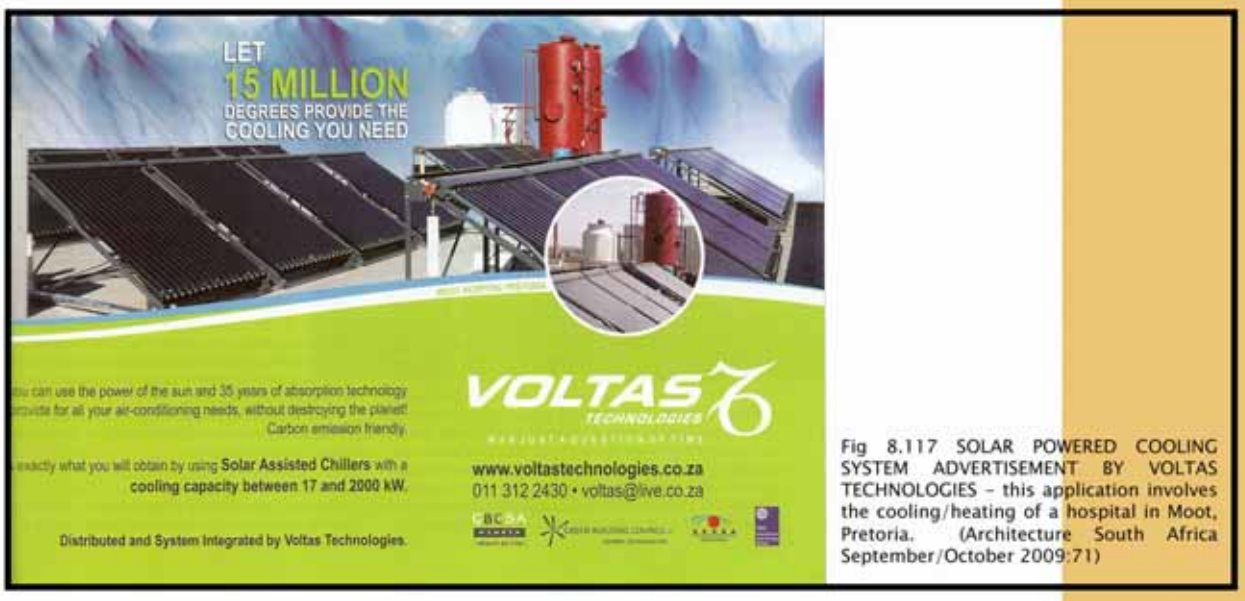


Fig 8.117 SOLAR POWERED COOLING SYSTEM ADVERTISEMENT BY VOLTAS TECHNOLOGIES - this application involves the cooling/heating of a hospital in Moot, Pretoria. (Architecture South Africa September/October 2009:71)

This system will be used to provide fresh, cool air to the public spaces of the building's North-Western Block, as well as the restaurant to the South. Ducting will direct air through the suspended ceiling cavity where outlets in the floor slab above will allow air to filter from the floor slab up. Cooling the lower level of each floor, where movement through the building occurs, results in only the necessary air being cooled. As the air near the floor heats up, it will rise through the building's internal volumes and be expelled through louvres at roof level.

Fig 8.118 A ROOF PACK WITH THE ACCESS PANEL REMOVED. (www.daikin.co.za)

Fig 8.119 AIR OUTLET FAN. (www.daikin.co.za)

b) Split Air-Conditioning System

The LG MULTI V system (Fig 8.22) of air-conditioning consists of a system made of of a:

1. An external roof-top package unit housing the refridgerant cycle and coil unit (Fig 8.20),
2. Air ducts, and
3. Concealed ceiling air terminals (Fig 8.21 adjacent).

This system has been chosen as it eliminate the necessity of a plant room, as it can be accommodated on the flat concrete roof of the 'i-hub' building. Also, it requires only minimal duct space. This system will be used to ventilate the Service Cores, Offices, Boardrooms, Conference Rooms, as well as the main Auditorium Space.

This system can provide either heating and cooling. It is also possible to control each space seperately, therefore optimising user comfort.

Fig 8.120 CONCEPT OF SPLIT AIR-CONDITIONING. (Architecture South Africa September/October 2009:21)

8.5.6 Diagramatic Representation

The floor plan adjacent (Fig 8.25) shows, schematically, a typical layout for the 'i-hub' building's service systems. It is clear to see from this diagram how the service interact with one another, forming an integral part of the functioning of the building.

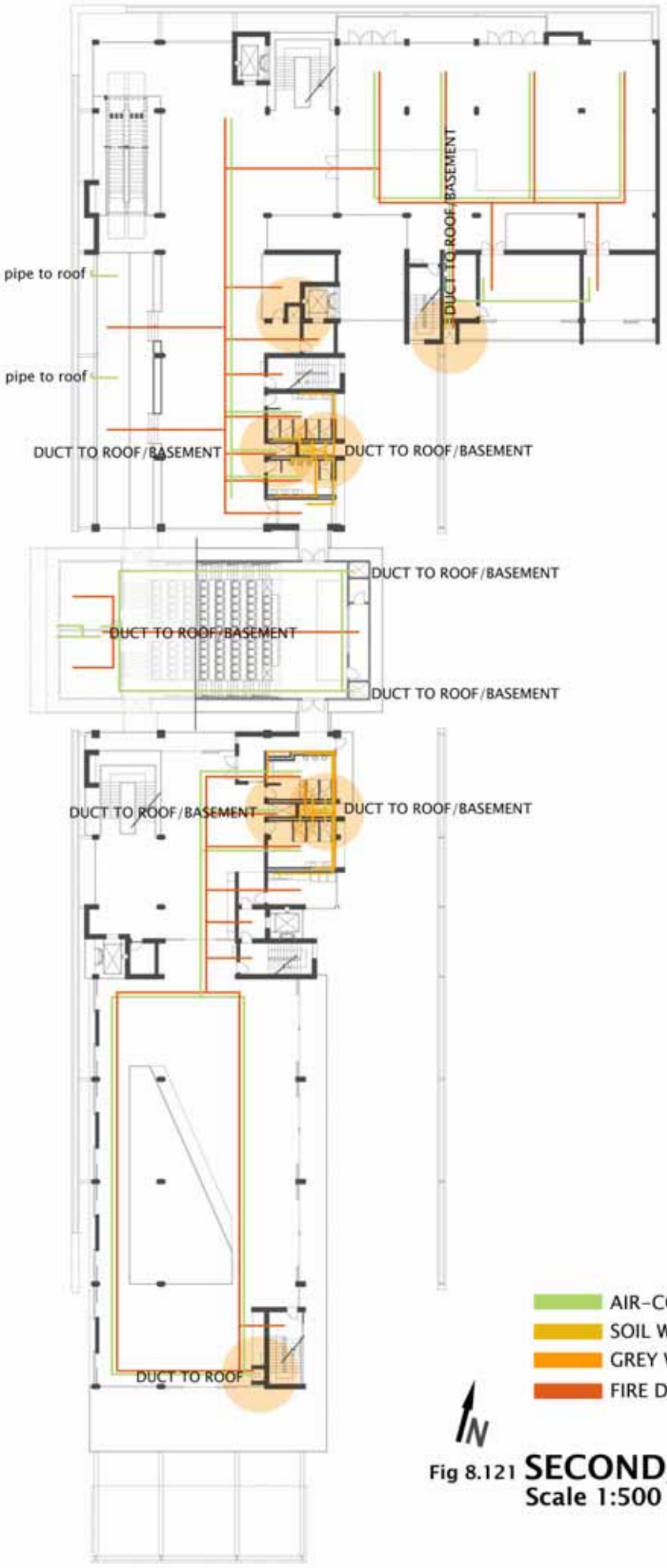


Fig 8.121 **SECOND/THIRD FLOOR SERVICES**
Scale 1:500

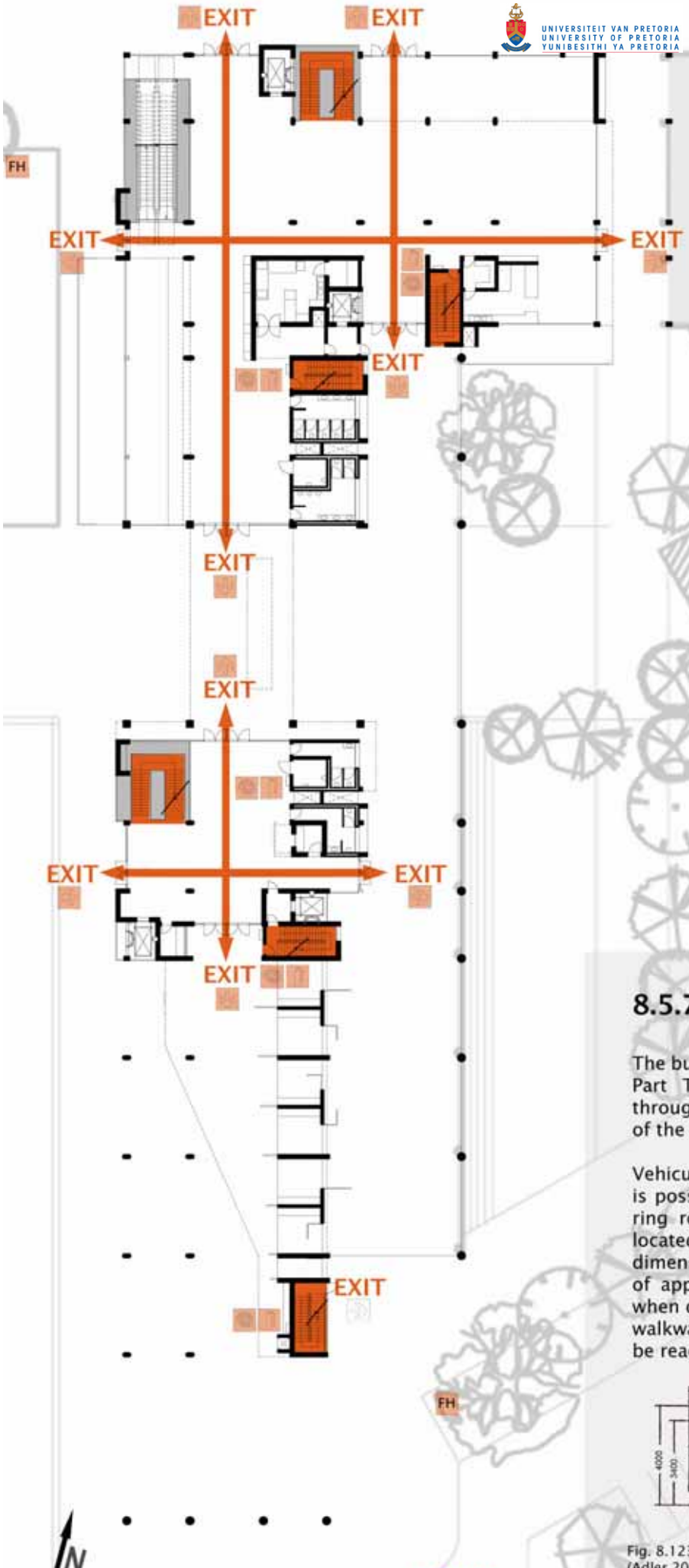


Fig 8. 122 GROUND FLOOR FIRE PLAN

8.5.7 Fire Fighting Provision

The building is designed, according to SABS 0400 (1990) Part T, to have a number of fire fighting points throughout the building, that are able to reach every part of the structure and beyond, in the event of a fire.

Vehicular access to the site, in the case of an emergency, is possible from Scheiding Street to the North, and the ring road to the South, where fire hydrants (FH) are located to supply water for any fire fighting effort. The dimensions of a fire vehicle, with a turning circle radius of approximately eight metres, have been considered when designing the surrounding landscape and outdoor walkways so as to ensure all points of the building can be reached. (Fig 8.127 below)

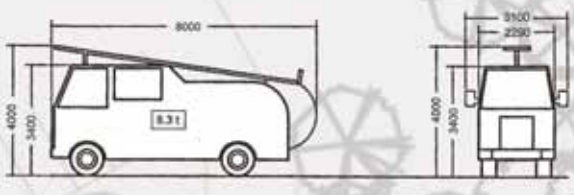


Fig. 8.123 above show a medium sized fire fighting vehicle's dimensions (Adler 2001:4-2)

FIRE EQUIPMENT - LEGEND

2x9kg dcp

One 9kg Dry Chemical Powder (DCP) is provided as per SABS 0400 (1990) Part TT37, for every 200m of floor area. The DCP's are located in pairs and found in the vacinity of the Fire Hose Reels.

FHR

One fire hose reel (FHR) is provided as per SABS 0400 (1990) Part TT34, for every 500m or floor area. The FHR's are located at the exits leading to the fire escape stairs.

Signage is provided throughout the building to guide users to fire exits in the event of a fire. The signage system is to be applied according to SABS 0400 (1990) Part TT29.

Distances to escape routes are no more than 45m as stipulated by the SASA 0400 (1990) Part TT16. Width of feeder and escape routes, as well as the directional swing of fire escape doors are in accordance with regulation.

N

Fig 8.124 **SECOND FLOOR FIRE PLAN**
Scale 1:500

8.6 Environmental Design and Sustainability

8.6.1 Introduction

It is becoming increasingly important as a designer, to minimise the negative effects that buildings have on the environment. The earth's non-renewable resources are quickly being consumed. Alternative ways of providing services to buildings needs to be investigated with rigor. The following chapter seeks to explore various passive design principles that aid in lessening the energy consumption of the 'i-hub' building.

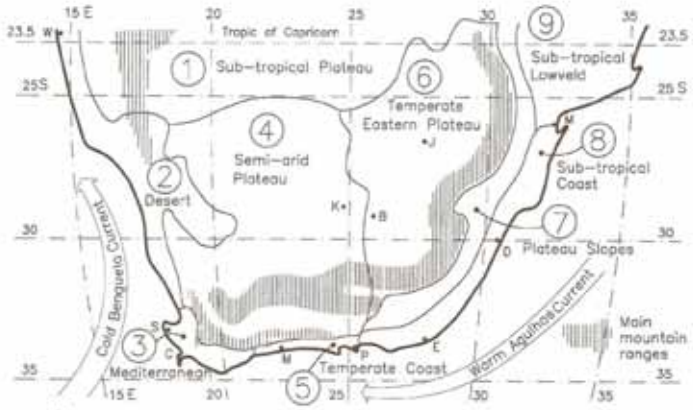


Fig 8.125 shows the climatic zones of South Africa. (Napier 2000)

6 TEMPERATE EASTERN PLATEAU

SUMMER RAINFALL mm	125 to 375
WINTER RAINFALL mm	62 to 250
JANUARY TEMPERATURES °C	20 to 25
JULY TEMPERATURES °C	10 to 15
PREVAILING WINDS	N-E in summer & N-E to N-W in winter
RELATIVE HUMIDITY (%)	30 to 50 in E
HOURS SUNSHINE (%)	60 to 80 in W

Fig 8.126 shows the characteristics of zone 6, where Pretoria is located. This information aids in making decisions related to passive design elements within the building. (Napier 2000)

JOHANNESBURG & PRETORIA Latitude (nearest) 26° South
Both cities taken as longitude 25.5°E (Add 4.5° or 18 minutes to solar time)

Solar times		*06.00*	*08.00*	*10.00*	*12.00*	*14.00*	*16.00*	*18.00*
Clock times		06.18	08.18	10.18	12.18	14.18	16.18	18.18
Azimuth	21/12	112E	101E	91E	0	91W	101W	112W
Altitude	21/12	10	35	63	88	63	35	10
Azimuth	21/3 & 9	90E	76E	53E	0	53W	76W	90W
Altitude	21/3 & 9	0	26	51	65	51	26	0
Azimuth	21/6	-	55E	34E	0	34W	55W	-
Altitude	21/6	-	14	32	40	32	14	-

Fig 8.127 Solar angles for the city of Pretoria. (Napier 2000)

Climate Conscious Design

To lower energy demand, the following design prinicples are considered in the 'i-hub's design:

8.6.2) Orientation and Solar Control
8.6.3) Thermal Mass Insolation
8.6.4) Natural Ventilation
8.6.5) Rain Water Collection
8.6.6) Stormwater Disposal
8.6.7) SBAT Analysis

8.6.2 Orientation and Solar Control

Although the preferable orientation for the South African situation is North-South, the proposed site and the Spatial Development Framework that was established, calls for a building form that is predominantly East-West facing. The Northern edge of the site is optimised, however, the Eastern and Western facades of the builiding are exposed to harsh solar raditation throughout the day, giving rise to uncomfortable internal building conditions. It is neccessary to shade the building, particularly on the Eastern and Western facades.

A number of different shading systems were investigated (evident in Fig 8.128 to Fig 8.131) in order to make a decision regarding the system to be used to shade the 'i-hub' building. Vertical shading devices are the most effective for the Eastern and Western facades of a building. Horizontal shading devices are most effective when used on the Northern facade. It it for these reasons that the i'hub's Eastern and Western facades are wrapped in a lightly coloured, continuous perforated zincalume 'skin' that allows difused natural light to penetrate, but prevents harsh direct solar raditation from entering the building (the development of this concept is outlined below). This shading device becomes an integral part of the design language of the building, contributing not only to the practical functioning of the building, but its aesthetic appeal too. The Northern facade is also wrapped in the perforated zincalume 'skin', although a lot less dense, it protects the predominantly glazed facade from heating up and radiating this heat inwards. The balconies on the second and third levels protude out from the building's fabric, but are recessed behind the perforated shading skin. The balconies therefore function as horizontal overhangs, protecting the offices from direct solar radiation (see Fig 8.132 below). The Southern facades of the building are largely glazed and open in nature, to allow maximum penetration of indirect sunlight and to facilitate a contrast between the continual shading protection present on the other facades of the building.

The ColourVue and CoolVue glass that is used in the facade design reduces solar heat gain due to polyvinyl butyral (PVB) interlayers. The multi-layered glazed units remain cooler and therefore transmit less heat into the interior of the building.


Fig 8.128
(www.archipelagoes.com)


Fig 8.129
(www.pvresources.com)


Fig 8.130
(www.aeonline.ae)


Fig 8.136
(www.aeonline.ae)

Fig 8.132 shows the progressive development of the perforated zincalume shading device. The development is as follows:

A - It is clear to see that without any form of protection from Eastern and Western sun exposure, much solar radiation enters the building.

B - A single layer of perforated zincalume sheeting is suspended in front of the glazed facade to protect it from direct solar radiation. The single layer of protection allows a small amount of direct sunlight to reach the glazing and radiate into the building's interior. Although the lightly coloured zincalume sheeting reflects much heat and light, it too becomes warm and radiates this heat towards the building.

C - The perforated shading skin now becomes a double system made up of two layers with a naturally ventilated cavity between. This system is effective as direct sunlight penetration is minimised, diffused natural light is allowed to enter the building, and although the outer skin becomes warm, the inner skin prevents the heat from radiating inwards. The presence of an inner skin results in the creation of a buffer zone between the heat of the exterior and the cooler interior.

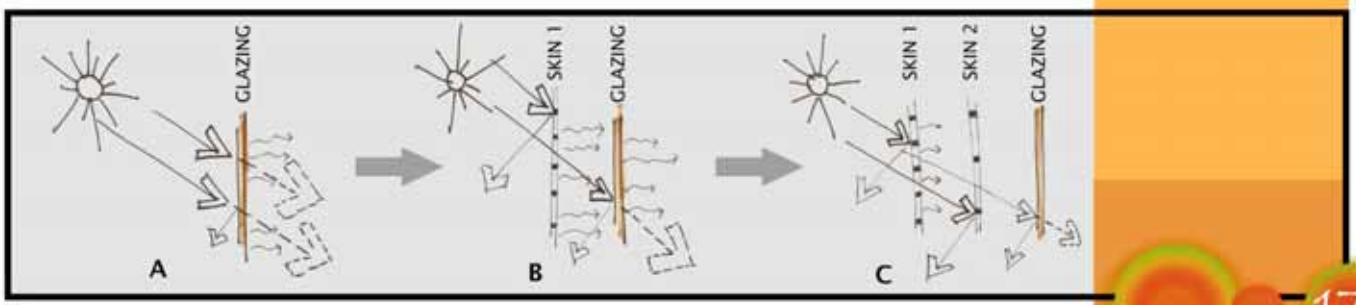


Fig 8.132 Zincalume shading skin development.

8.6.3 Thermal Mass Insolation

Due to the nature of the site, the Western facade calls for large amounts of glazing that promote interaction on the busiest side of the building. The Eastern side of the building uses the principle of thermal mass insulation. The 'i-hub's service cores are enclosed with cavity walls that reduce heat transmission into the building, as well as to the spaces beyond (Fig 8. 138 adjacent). Addiitional insulation within the cavity wall was decided against as these walls do receive a substantial amount of shading from the covered walkway running parallel, and are not exposed to extreme heat conditions.

Solid brick walls are used internally, particularly in the cases of kitchen and service area where much heat is generated internally. The solid brick walls prevent heat that is produced inside the building from being transmitted into the spaces adjacent (Fig 8.139 adjacent)

Concrete slabs are left exposed as far as possible (Fig 8.140), except where minimal suspended ceilings are required in which to run services. The exposure of the cool surfaces of the thick concrete slabs cause a reduction in the temperature of the air that comes into contact with them. The flat roof slab is insluated with a layer of EPS: Lightweight Insulating Mortar (Politerm Blu by Isover, Isover Insulation Solutions Brochure). It is non-falammable and substantially reduces the transmission of heat through the roof of the builidng, the part exposed to the most harsh sunlight.

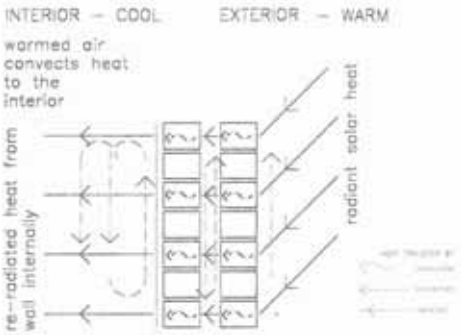


Fig 8.133 The transmisiion of heat during the day, through a CAVITY BRICK WALL – plastered internally, reduces the transmission of heat due to the presence of a cavity. (Napier 2000:4.1.5)

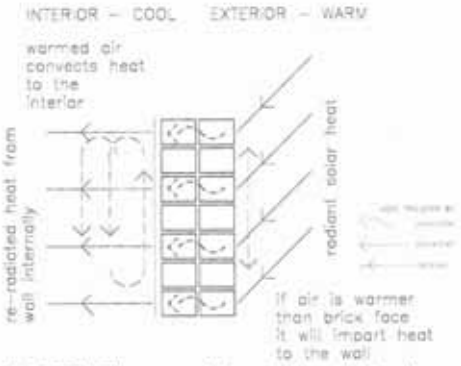


Fig 8.134 The transmission of heat during the day, through a SOLID BRICK WALL – plastered internally. (Napier 2000:4.1.3)

Fig 8.135 The exposed concrete slab of a UP Centenary Building by Earthworld Architects. (photo by author)

8.6.4 Natural Ventilation

Pretoria's prevailing winds occur from the South to South-East in summer and the West to North-West in Winter. Due to the location and orientation of the building, these wind conditions can be harnessed and used to naturally ventilate the environment.

Although mechanical ventilation is provided in many of the spaces throughout the building, natural ventilation is promoted therefore minimising the use of mechanical systems and thus reducing energy costs. The building is naturally ventilated using cross-ventilation and the Stack Ventilation Principle.

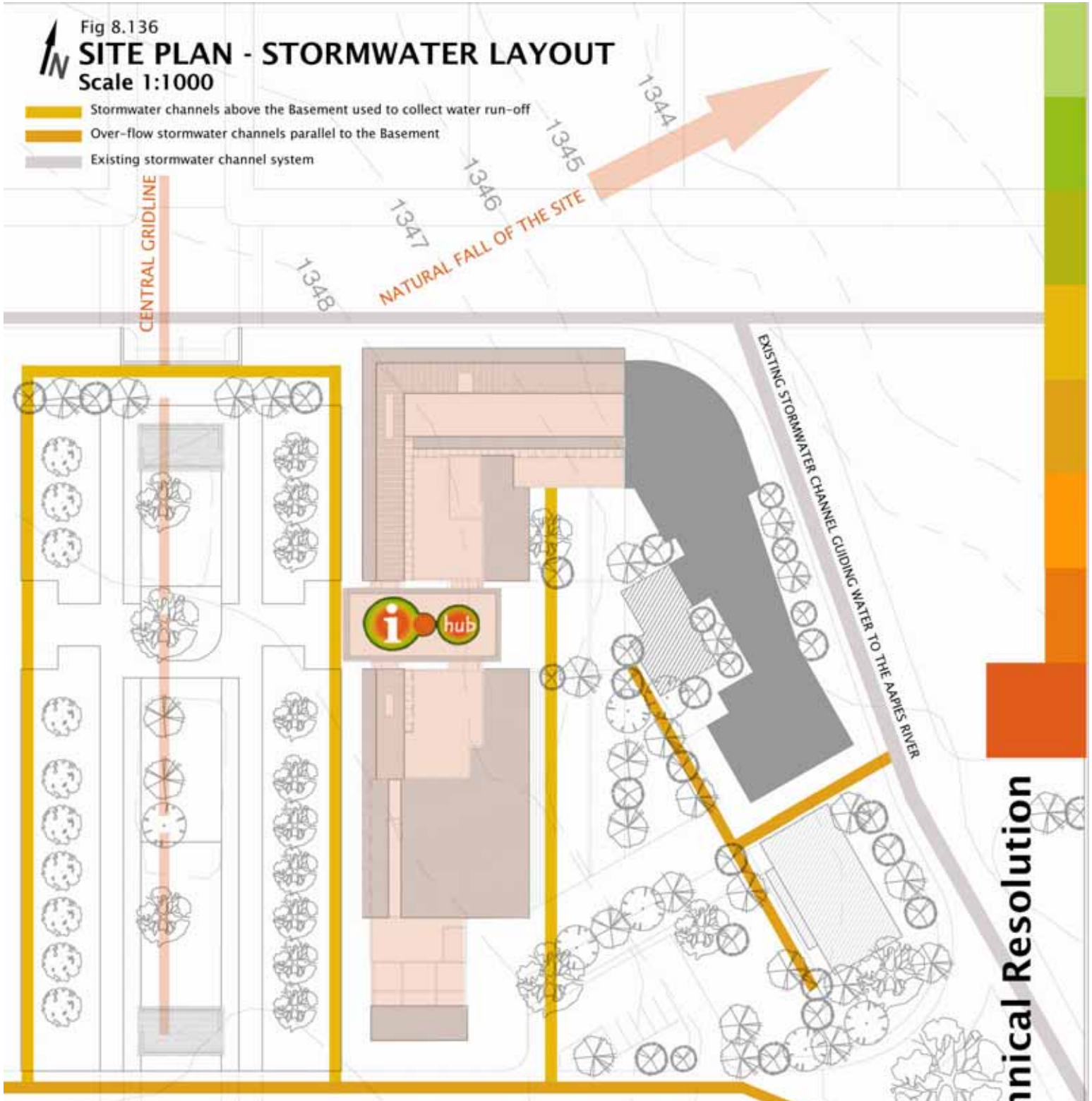
The Stack Principle

"...warm air rises and cool air falls. This movement is enhanced firstly if the temperature differential between warm and cool is greater and secondly, if there is a greater height in the space in which the air moves..." (Napier 2000:5.2)

Fig 8.136

SITE PLAN - STORMWATER LAYOUT

Scale 1:1000



8.6.5 Rain Water Collection

The building itself is designed to collect and channel water into collection tanks located in the Basement. This happens via the rain water downpipes that are cast into the buildidng's columns. All water falling within the parameters of the Basement slab is channelled to the collection tanks. The water collection tanks are fitted with an overflow outlet in case of excess water that exceeds their carrying capacity. The Basement slab is designed with a gradient that divides the Historial Sunken Garden Square in half (see the central gridline indicated on the plan site plan adjacent for the location of this divide), giving rise to two water collection points on either side The water that is collected in this way is used to irrigate the landscape on top on the Basement slab and thus the system becomes self-sustaining.

8.6.6 Stormwater Disposal

There are also stormwater channels located parallel to the Basement system that channel water that falls outside of its parameters (See Fig 8.4.4.4 above). These channels also cater for the overflow of excess water in extreme rainfall scenarios. This system connects all the stormwater channels to the existing municipal storm water system that runs South-West towards the Aapies River channel (See Fig 8.136 - Site Plan adjacent). According to the SABS 0400 (1990) Part R, access points are located at no more than 40m intervals alond the length of the stormwater drains to ensure ease of inspection and maintenance.

8.6.7 Natural Lighting

The 'i-hub' building is flooded with natural light. This light does not only enter via the building's facades, but by means of skylights in the roof structure. Light diffused from above and reflected off surfaces on its way into the building causes softer and more interesting lighting effects.

Some of the precedents studied are shown in Fig 8.137 to Fig 8.140 adjacent.

Fig 8.137
(www.hermann-vwe.de)

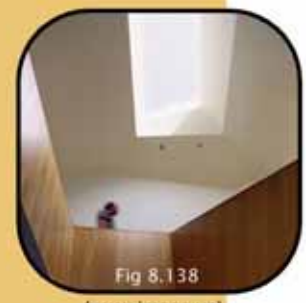


Fig 8.138
(www.image.vn)

Fig 8.139
(www.rooflite.com)

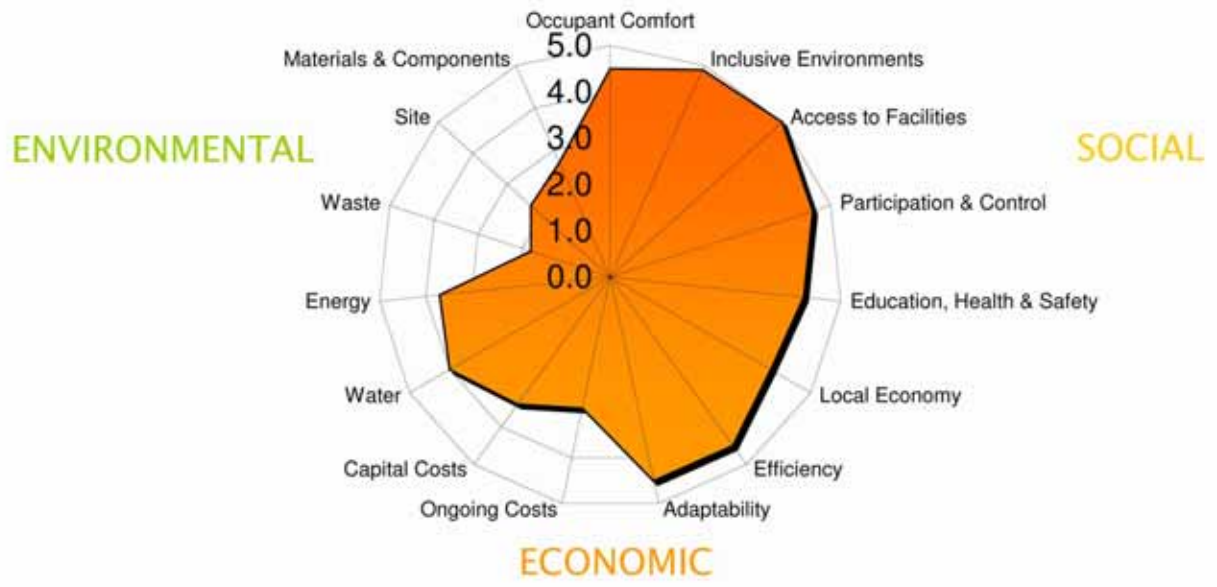
Fig 8.140
(www.inhabitat.com)

8.6.8 SBAT Analysis

The Sustainable Building Assessment Tool (SBAT) was developed by the Council for Scientific and Industrial Research (CSIR) in 1999. It is therefore relevant to the South African Context and can be used as a tool in planning sustainable environments, supporting design decisions with regards to sustainability issues and ensuring that exisitng buildings fulfill the criteria established by government and other organisations regarding sustainability policies. This assessment tool not only takes the design and construction of the builidng into consideration, but also the operation and refurbishment/demolition.

SUSTAINABLE BUILDING ASSESSMENT TOOL (SBAT- P) V1

PROJECT | ASSESSMENT



Social	4.6	Economic	3.9	Environmental	2.9
Overall	3.8	Classification:	Good		

Fig 8.141 Shows the results of the SBAT Assessment for the 'i-hub' @ Pretoria Station Square. It is clear to see from the chart that the building performs well socially and economically, but falls short with regards to environmental aspects. (Gibberd)

The SBAT Tools centres around the concept of a 'triple-bottom line consideration' (Gibberd). These include:

Social Sustainability: To ensure that the building contributes to the surrounding community, it should respond socially with regards to occupant comfort, inclusivity, accessibility, user participation (throughout the building's life-cycle), as well as educational health and safety of its users.

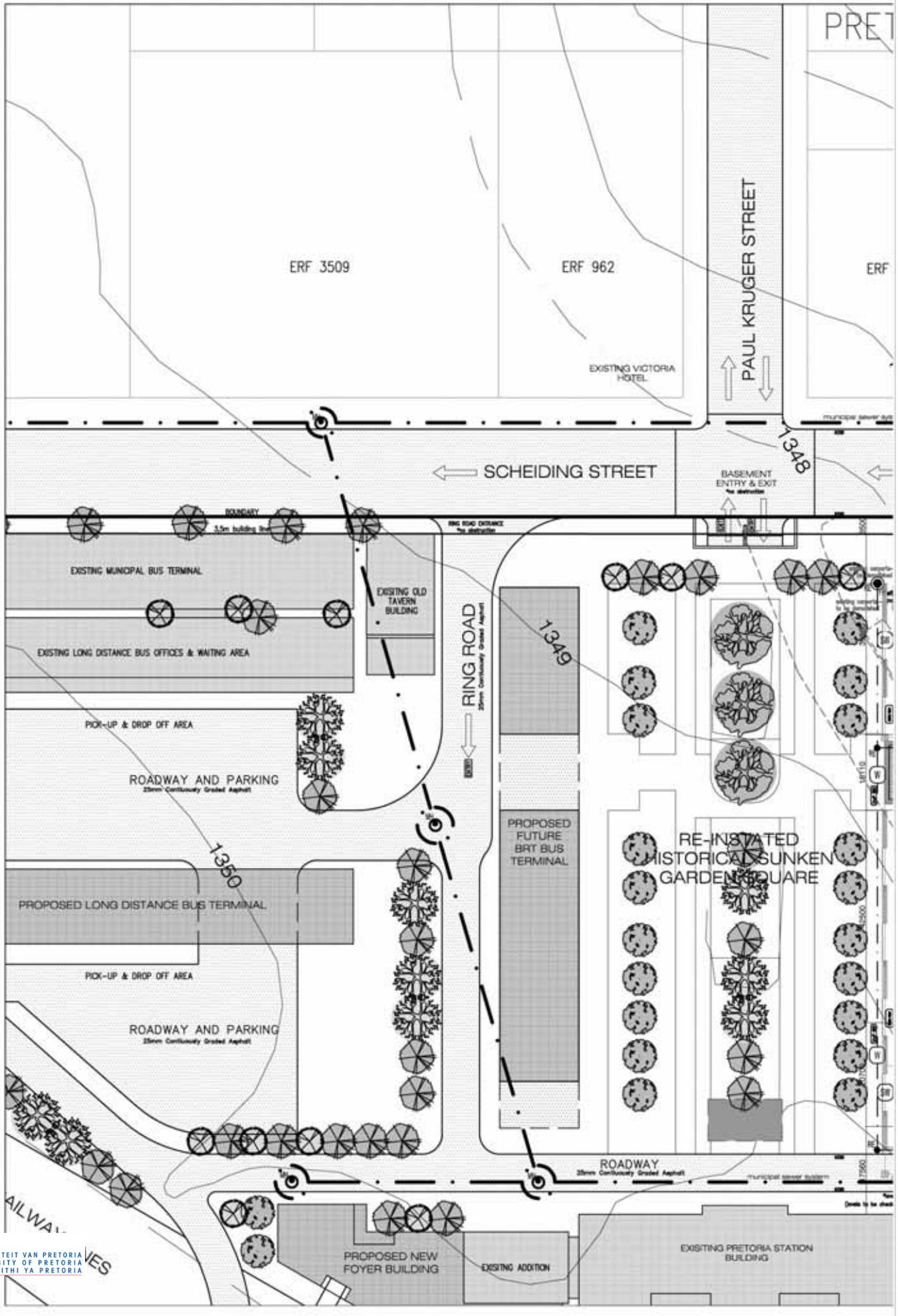
Economic Sustainability: In order for the building to perform well in this area, it should contribute to the local economy, be efficient during occupation, be both adaptable and flexible, have minimal cost output when in use (these can be minimised by recycling, metering and continual maintenance), as well as contributing financially to the community's needs and the research of innovative sustainable strategies.

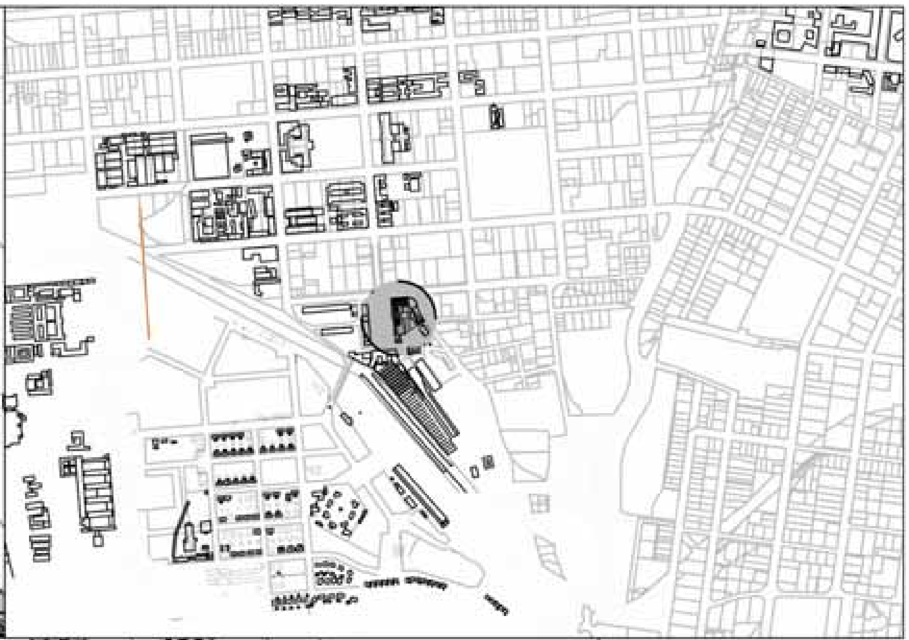
Environmental Sustainability: To ensure that the building performs well in this regards, it should incorporate efficient water management strategies, energy efficient systems (through the use of non-renewable resources), waste management systems, a holistic treatment of the buidling and the environment around it, as well as materials and components that do not contribute to the depletion of the earth's ozone layer.

Drawing 000	Location Plan
Drawing 001	Site Plan
Drawing 002	Basement Plan
Drawing 003	Ground Floor Plan
Drawing 004	First Floor Plan
Drawing 005	Second Floor Plan
Drawing 006	Third Floor Plan
Drawing 007	Roof Plan
Drawing 008	Northern Elevation
Drawing 009	Eastern Elevation
Drawing 110	Southern Elevation
Drawing 111	Western Elevation
Drawing 112	Section A-A
Drawing 113	Section B-B
Drawing 114	Section C-C
Drawing 115	Details 1 - 4
Drawing 116	Details 5 - 8
Drawing 117	Details 9 - 11
	Final 3D Renderings
	Final Model: Photographs

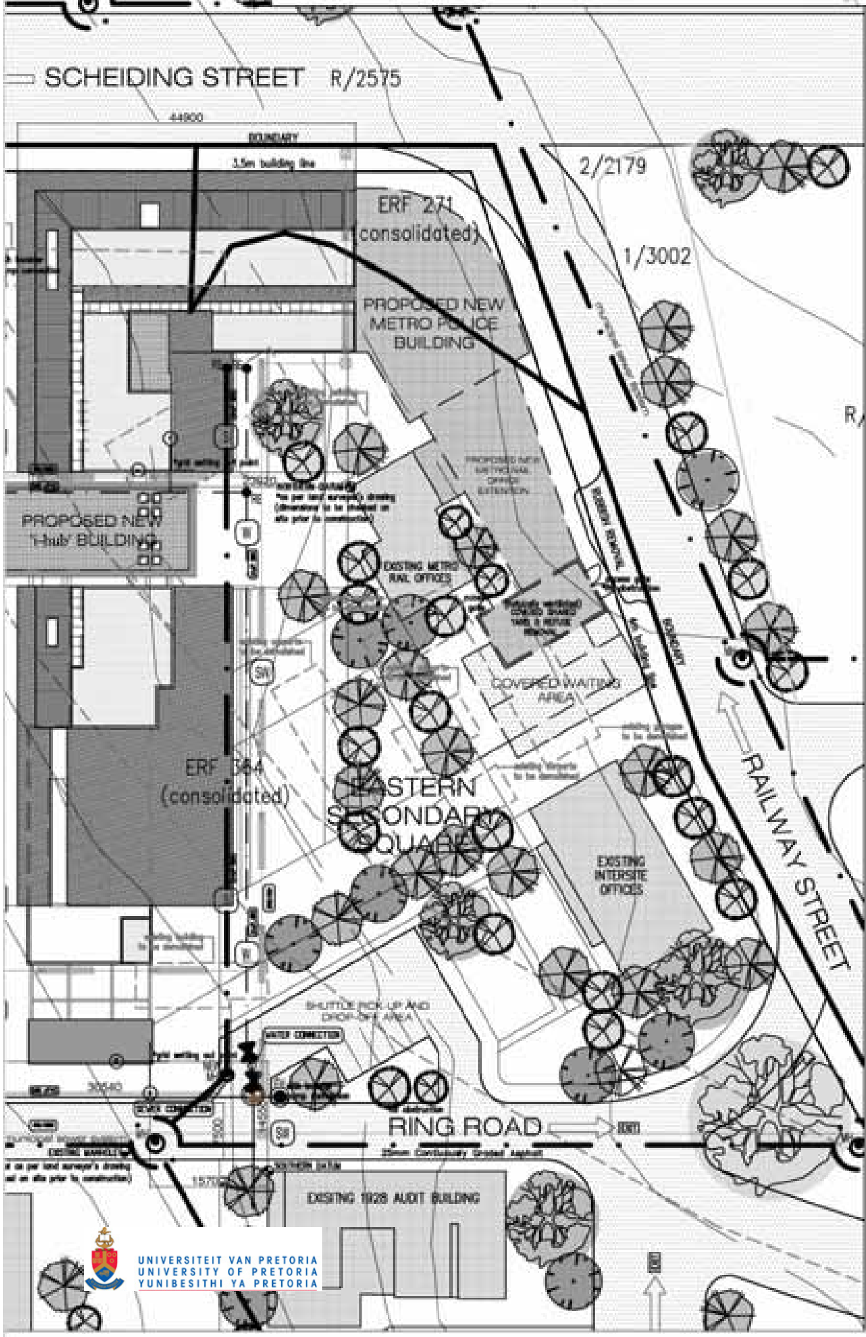
8.7 Drawings and Details

This section explores the technical aspects of the design in more depth. Above is a list of drawings to be found on the pages that follow.





LOCATION PLAN
Scale 1:20 000



SITE PLAN
Scale 1:1000

LEGEND:	
ROADS & STORMWATER	
	25mm Continiously Graded Asphalt
	Diameter & Class Pipe
	Grid inlet
	Junction Box
SEWERAGE	
110 uPVC	uPVC sewerline (Diameter)
MH	Manhole number
	Flow direction
WATER	
110 uPVC	uPVC water main (Diameter/class)
	Fire hydrant
	Isolating valve
	Bulk Meter

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PROJECT TITLE	NEW INFORMATION AND ORIENTATION FACILITY FOR THE DEPARTMENT OF ENVIRONMENTAL AFFAIRS & TOURISM ON PORTION R/170 & 364 OF PRETORIA TOWN & TOWNLANDS 351-JR
DRAWING TITLE	LOCATION & SITE PLAN
SCALE	AS SHOWN
DRAWN	A Seabrook
FILE NAME	UP MArch(Prof)
DATE DRAWN	12-11-2009
DATE PRINTED	25-11-2009
	09/01/000

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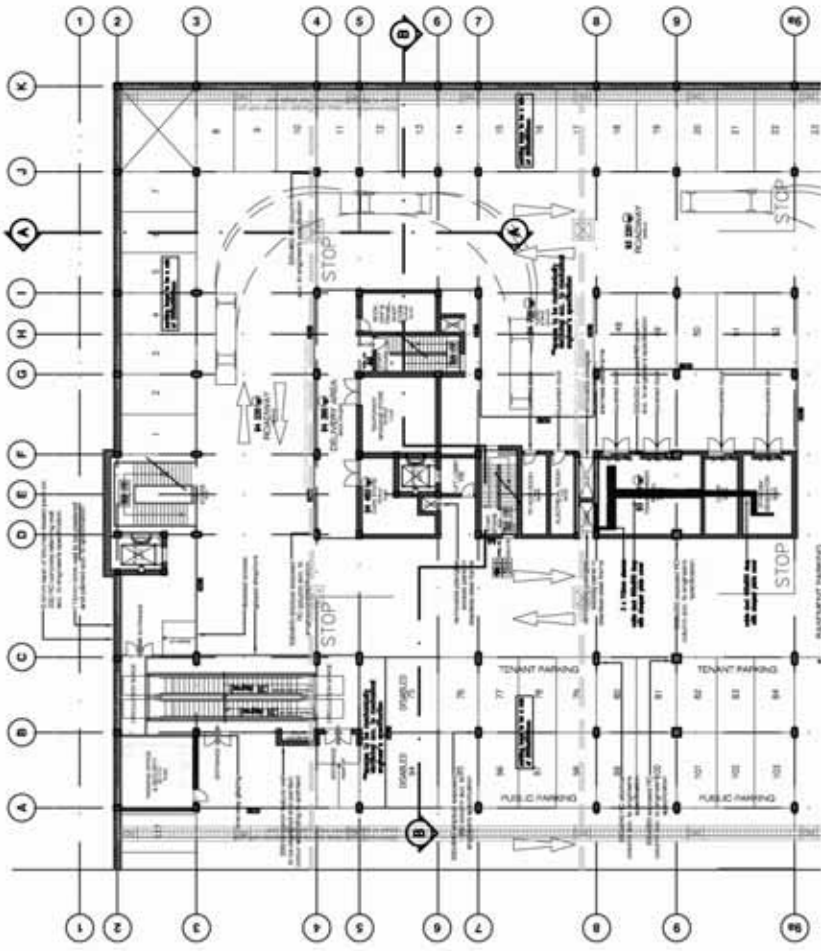
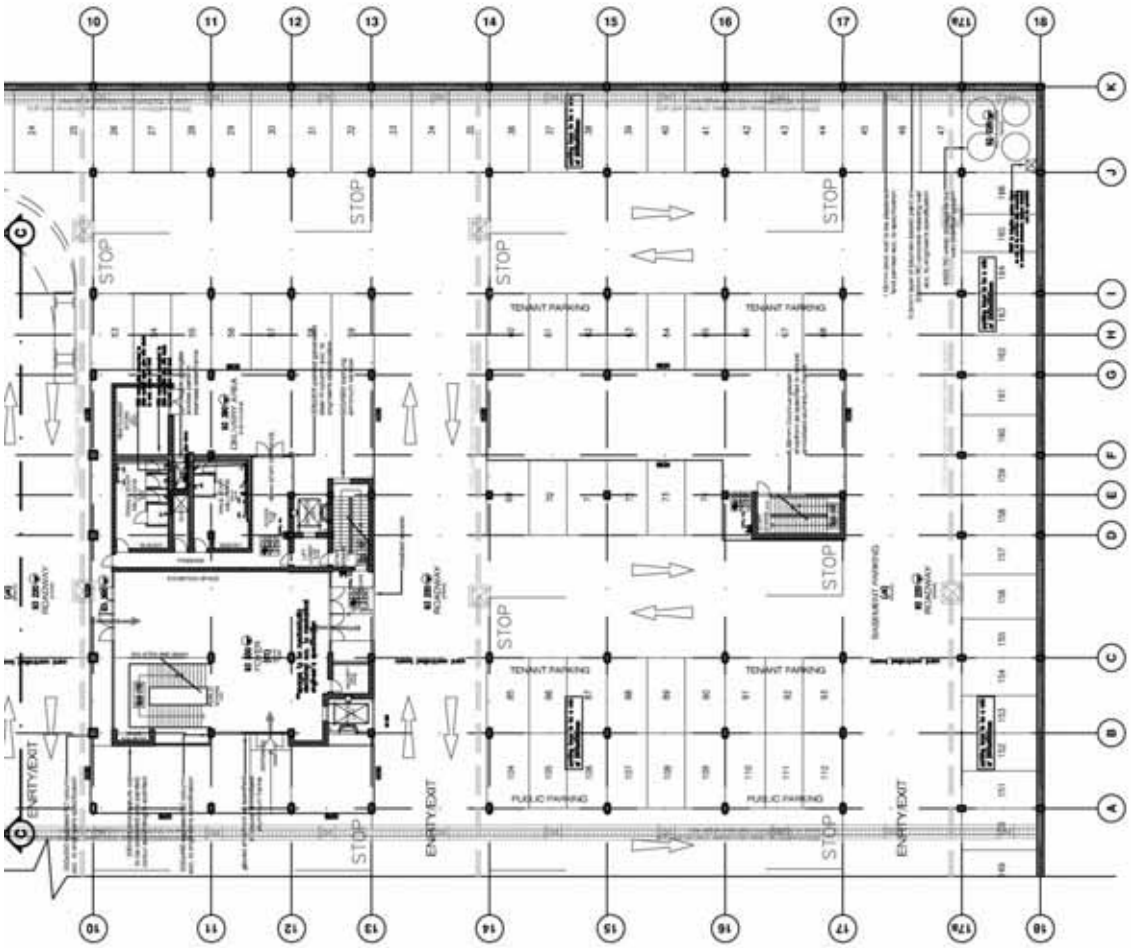


BASEMENT PLAN
Scale 1:500



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3. Alle werk moet streng volgens die regulasies van die plaaslike owerheid uitgevoer word.

A : Detail/Section No.
B : Location Drawing No.

A : Detail/Tek nommer
B : Nommer van tekening waarop detail verskyn.

NO. NO.	DATE DATUM	DESCRIPTION OF REVISION BESKRYWING VAN WYSIGING :	DRAWN GETEK

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BASEMENT PLAN

SCALE : SKAAL :	1:500
DRAWN : GETEKEN :	A Seabrook
FILE NAME : LÊER NAAM :	UP MArch(Prof)
DATE DRAWN : DATUM GETEKEN :	12-11-2009
DATE PRINTED : DATUM UITGEDRUK :	25-11-2009

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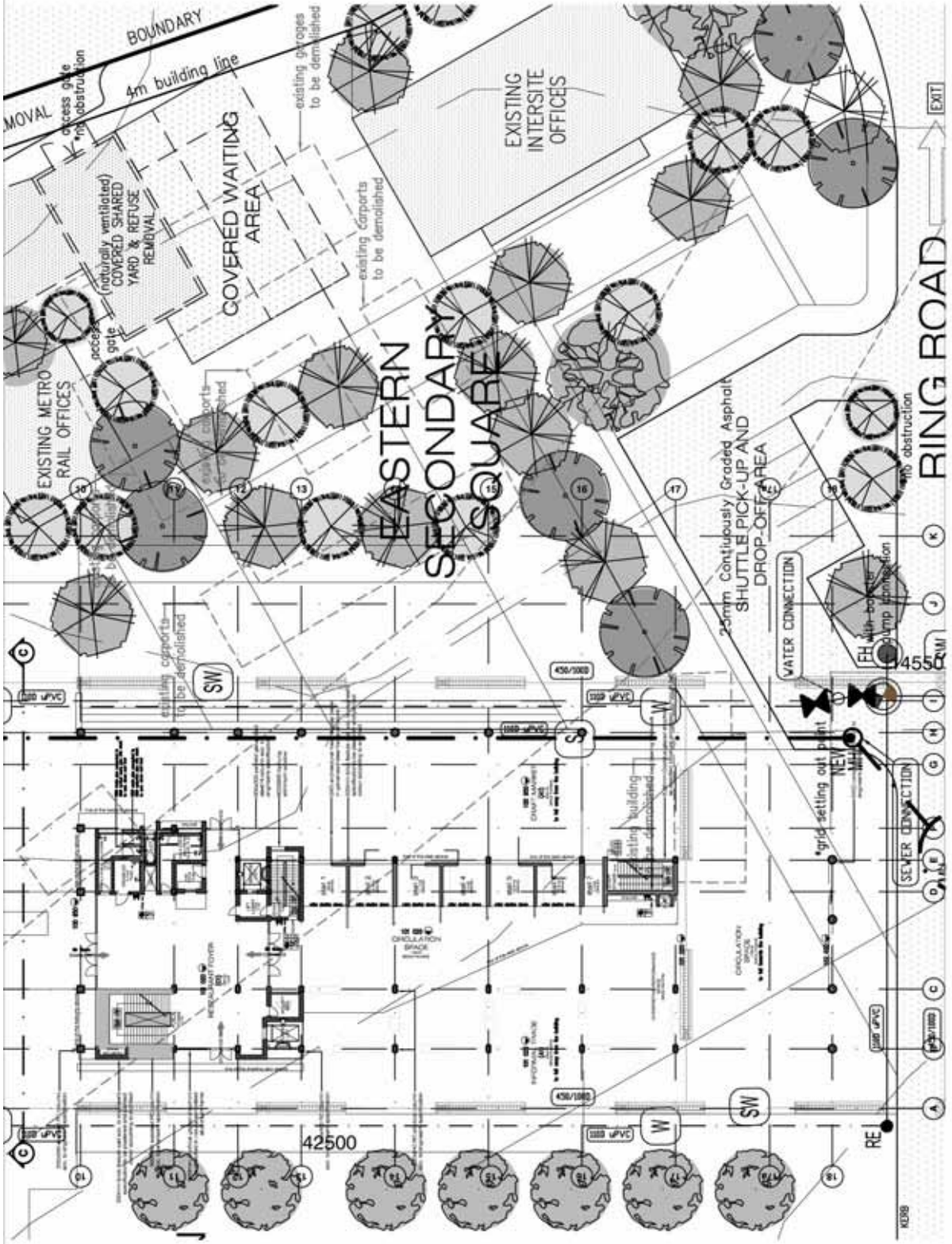

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DRAWING TITLE TEKENING TITEL	GROUND FLOOR PLAN
SCALE SKAAL	1:500
DRAWN GETEKEN	A Seabrook
FILE NAME LÊER NAAM	UP MArch(Prof)
DATE DRAWN DATUM GETEKEN	12-11-2009
DATE PRINTED DATUM UITGEDRUK	25-11-2009
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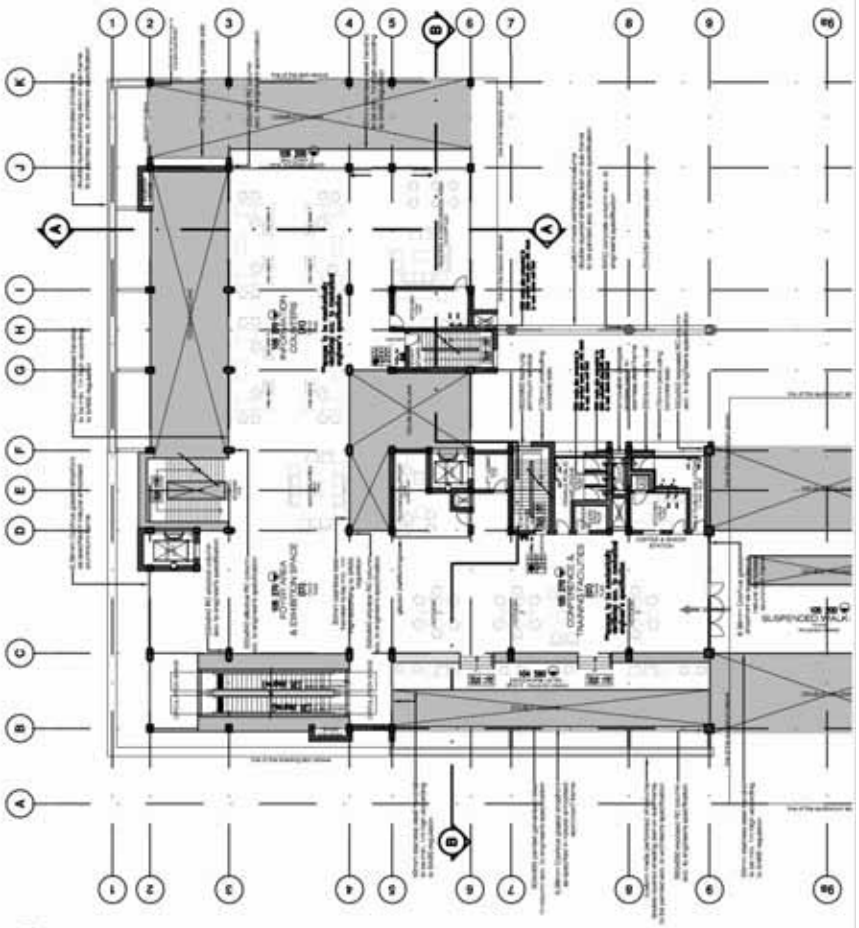
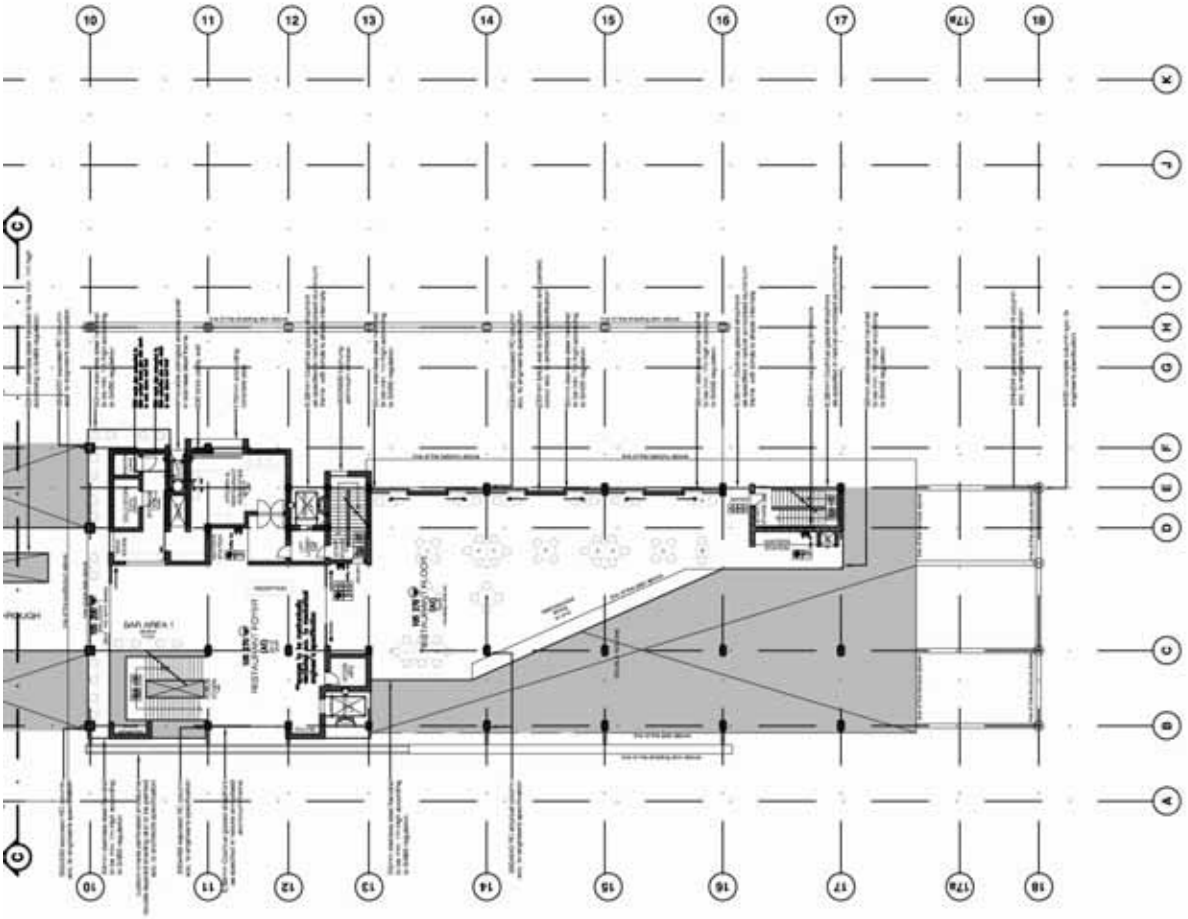


FIRST FLOOR PLAN
Scale 1:500



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3. Alle werk moet streng volgens die regulasies van die plaaslike owerheid uitgevoer word.

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B : Location Drawing No.

A : Detail/Skett nommer
B : Nommer van tekening waarop detail verskyn

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GROUND FLOOR PLAN

SCALE	1:500
DRAWN	A Seabrook
FILE NAME	UP MArch(Prof)
DATE DRAWN	12-11-2009
DATE PRINTED	25-11-2009
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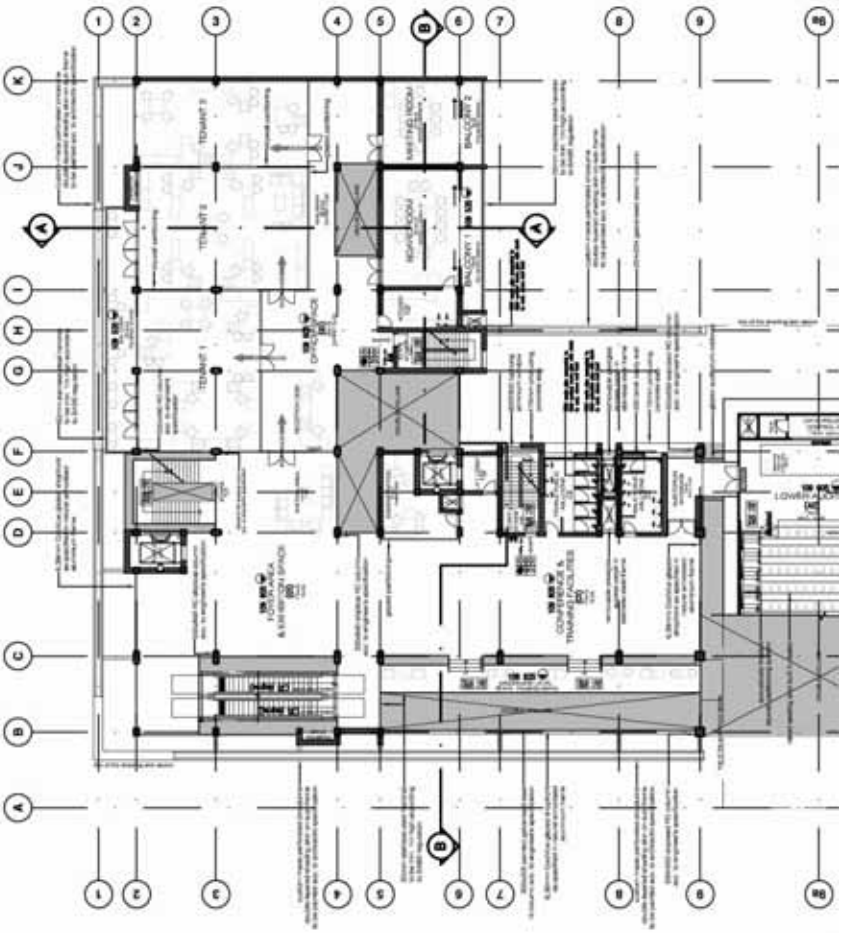
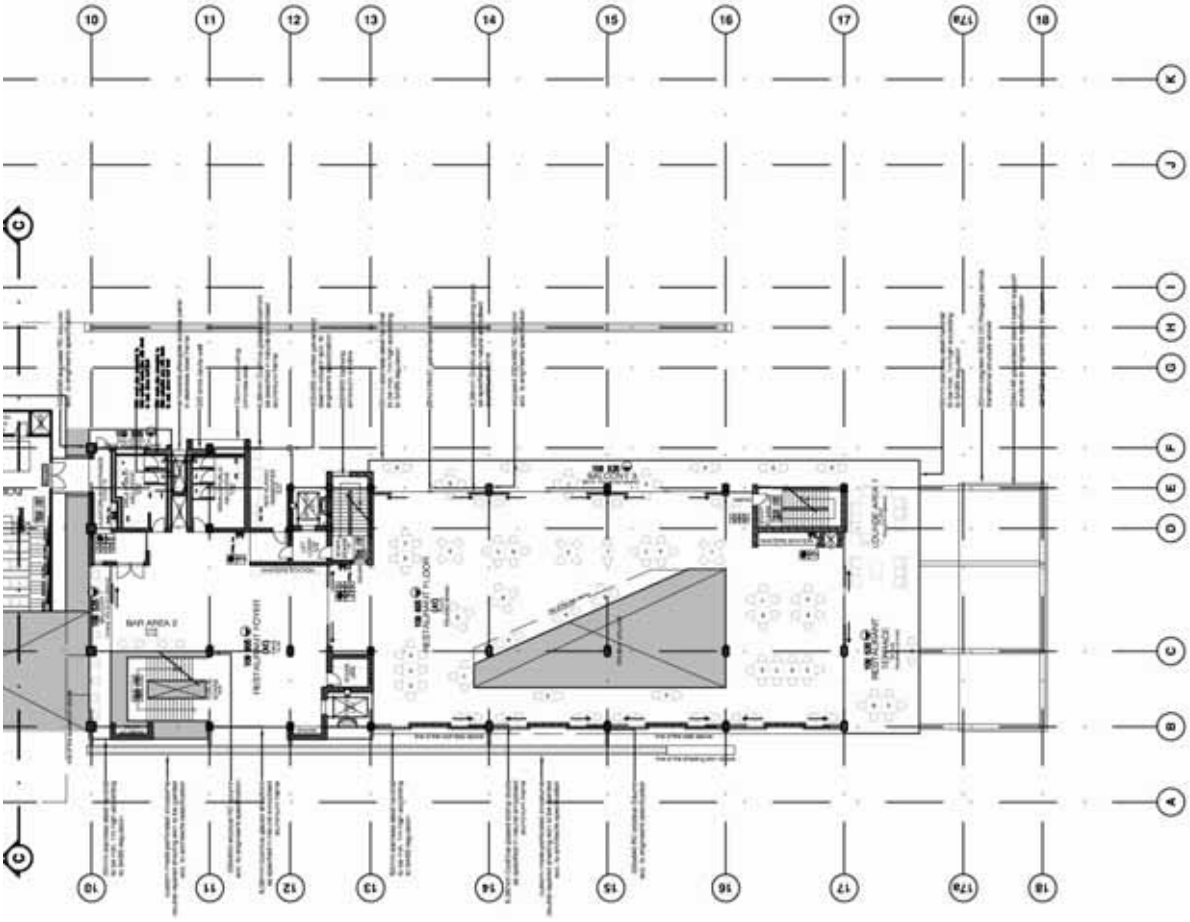


SECOND FLOOR PLAN
Scale 1:500



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A : Detail/Sink nommer
B : Nommer van tekening waarop detail verskyn.

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SECOND FLOOR PLAN

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REVISION	09/01/005

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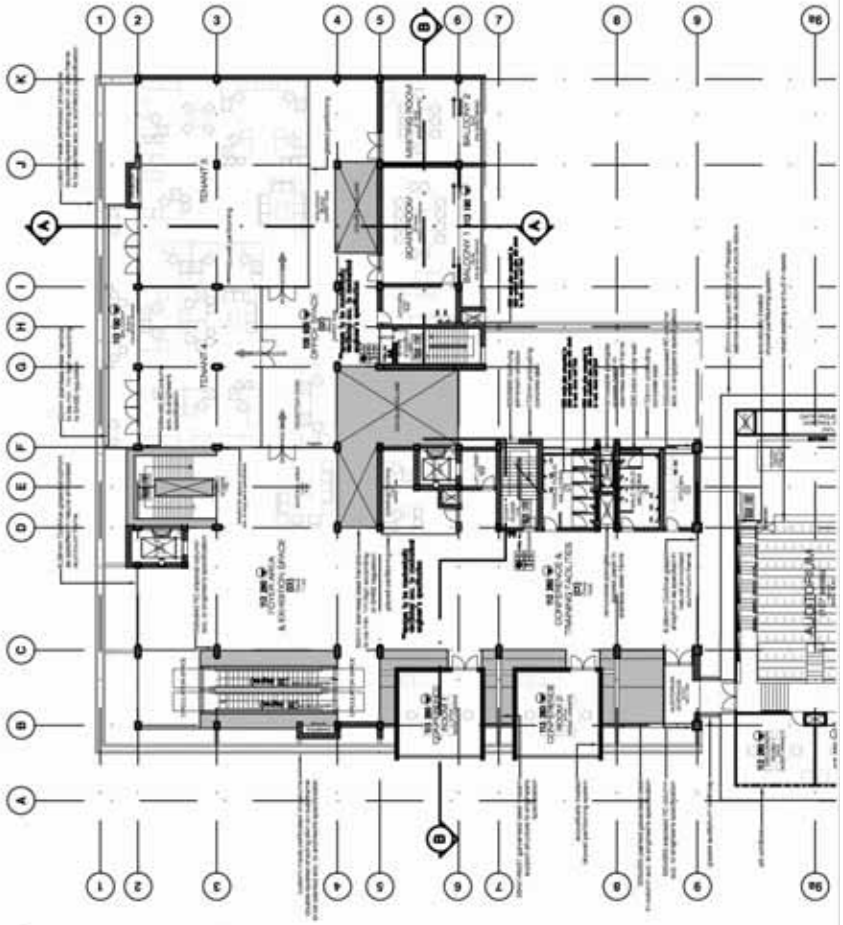
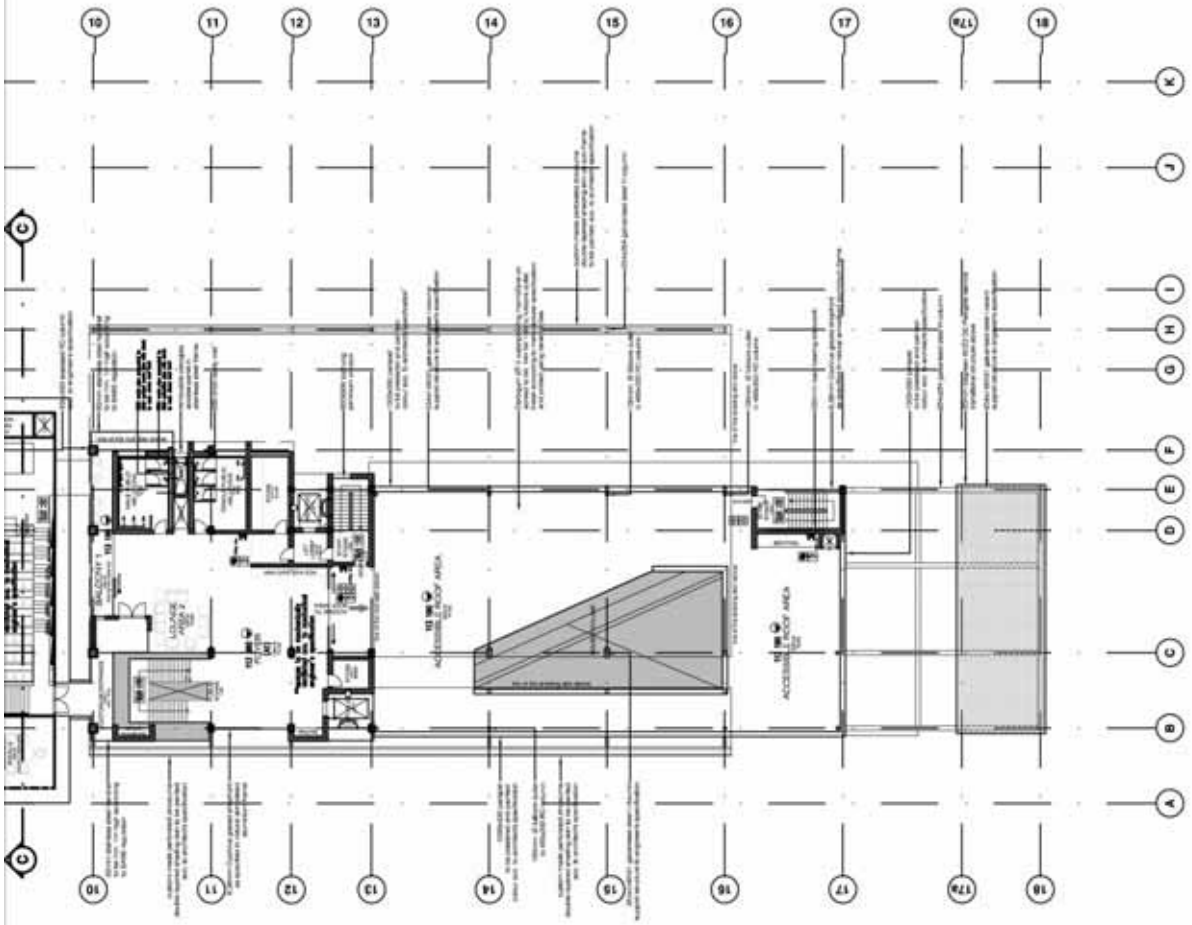


THIRD FLOOR PLAN
Scale 1:500



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3. Alle werk moet streng volgens die regulasies van die plaaslike owerheid uitgevoer word.

A : Detail/Section No.
B : Location Drawing No.

A : Detail/Sint nommer
B : Nommer wat tekening waarop detail verskyn.

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THIRD FLOOR PLAN

SCALE / SKAAL	1:500	REVISION / WYSIGING
DRAWN / GETEKEN	A Seabrook	-
FILE NAME / LêER NAAM	UP MArch(Prof)	SET UP
DATE DRAWN / DATUM GETEKEN	12-11-2009	
DATE PRINTED / DATUM GEDRUK	25-11-2009	09/01/006

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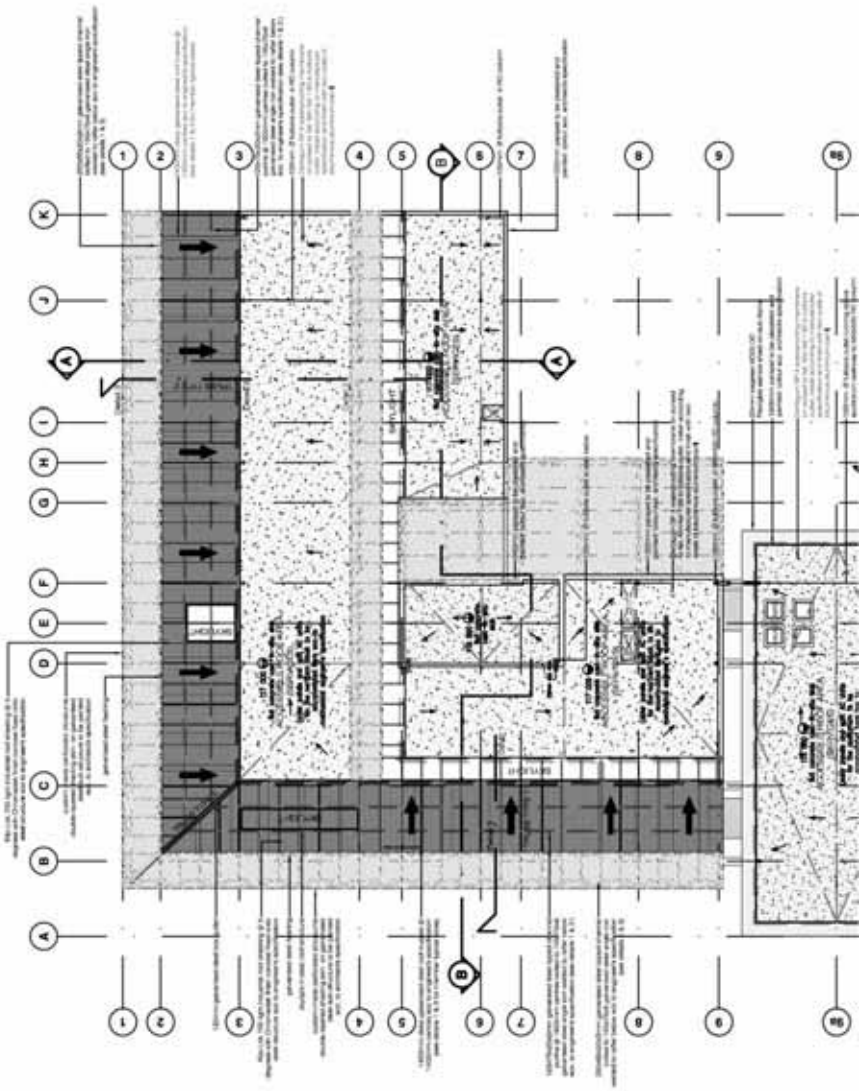
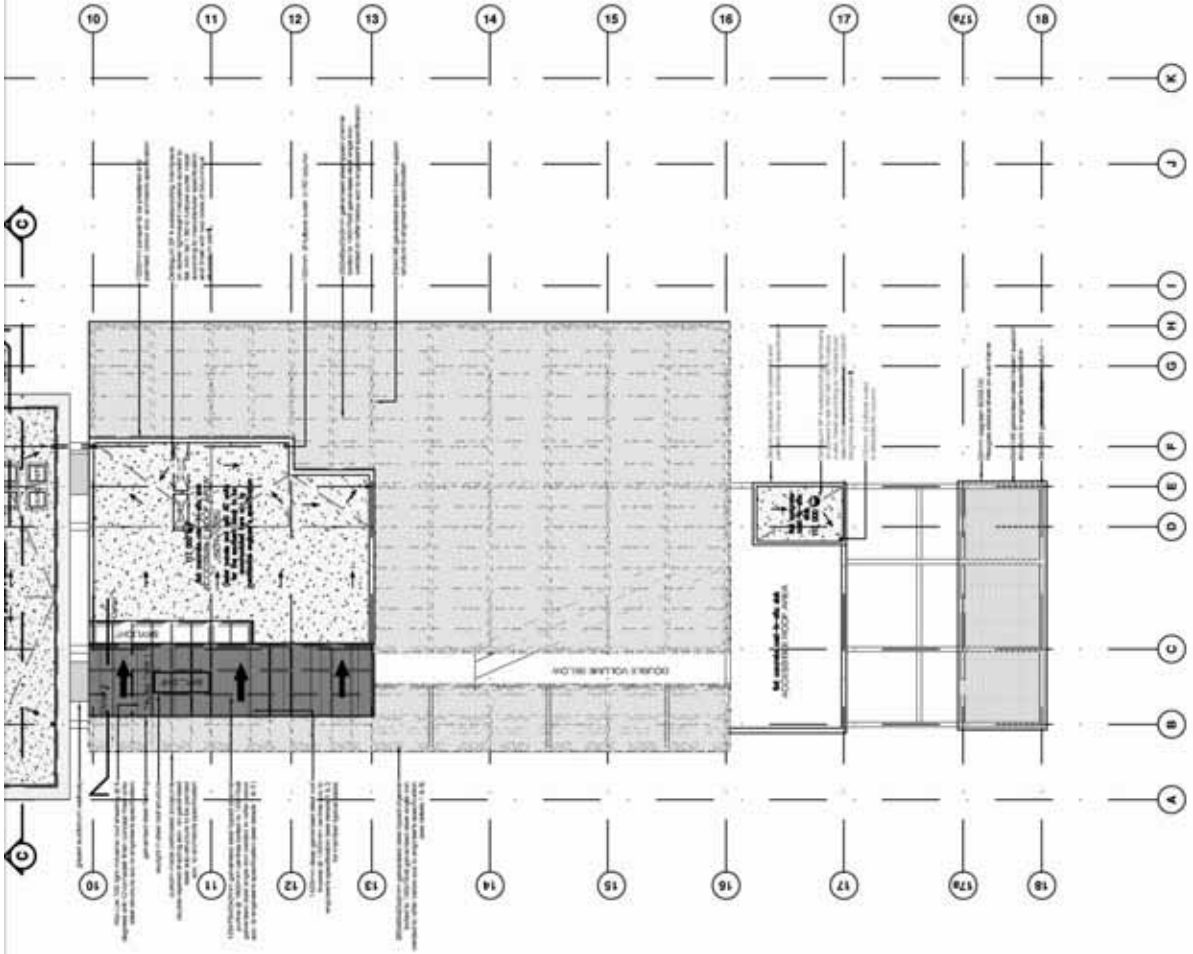


ROOF PLAN
Scale 1:500



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3. Alle werk moet streng volgens die regulasies van die plaaslike overheid uitgevoer word.

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B : Location Drawing No.

A : Detail/Snit nommer
B : Nommer van tekening waarop detail verskyn

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ROOF PLAN

SCALE / SKAAL	1:500
DRAWN / GETEKEN	A Seabrook
FILE NAME / LêêrNaam	UP MArch(Prof)
DATE DRAWN / DATUM GETEKEN	12-11-2009
DATE PRINTED / DATUM UITGEDRUK	25-11-2009

09/01/007

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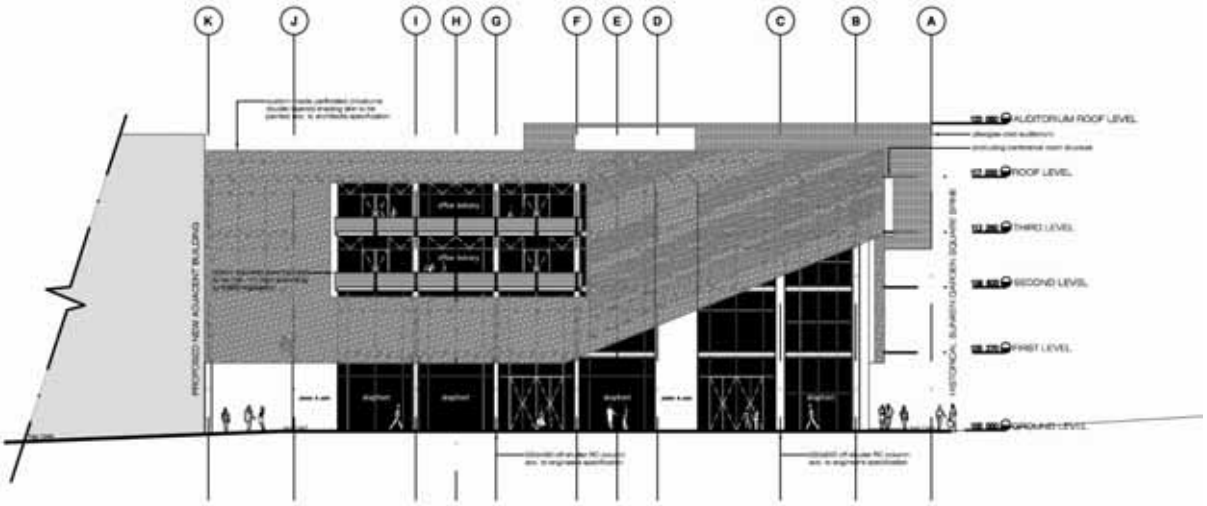

NORTHERN ELEVATION
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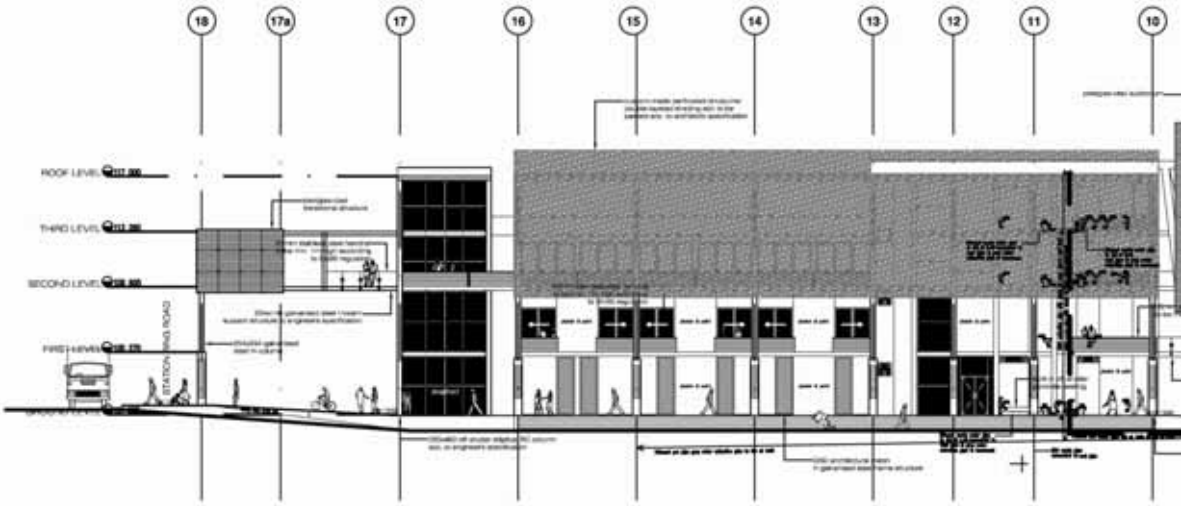
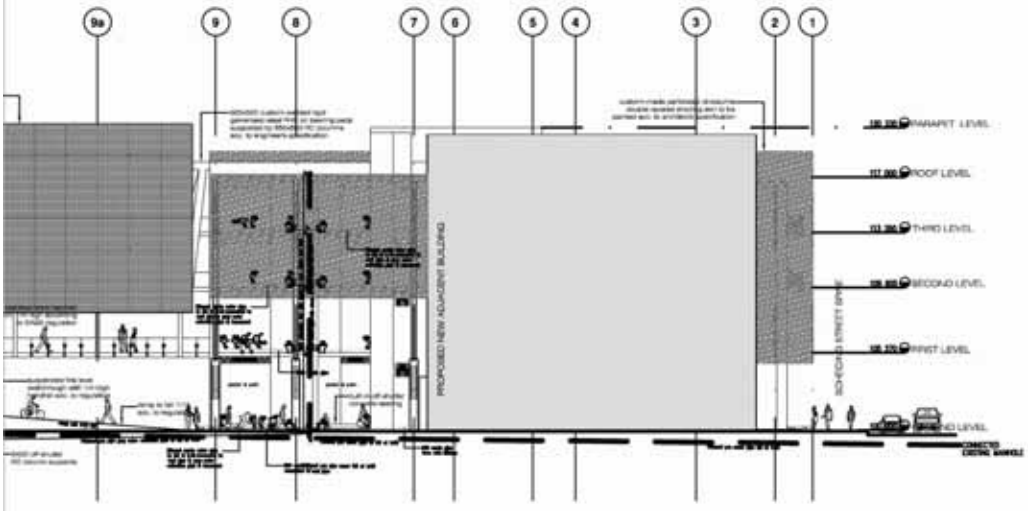


EASTERN ELEVATION
Scale 1:500



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3. Alle werk moet ervarg volgens die regulasies van die plaaslike owerheid uitgevoer word.

A : Detail Section No.
B : Location Drawing No.

A : Detail Sheet number
B : Nommer van tekening waarop detail verskyn

NO.	DATE	DESCRIPTION OF REVISION	Initials

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NORTHERN ELEVATION
EASTERN ELEVATION

SCALE	1:500	REVISION
DRAWN	A Seabrook	.
FILE NAME	UP MArch(Prof)	SET-UP
DATE DRAWN	12-11-2009	
DATE PRINTED	25-11-2009	09/01/008

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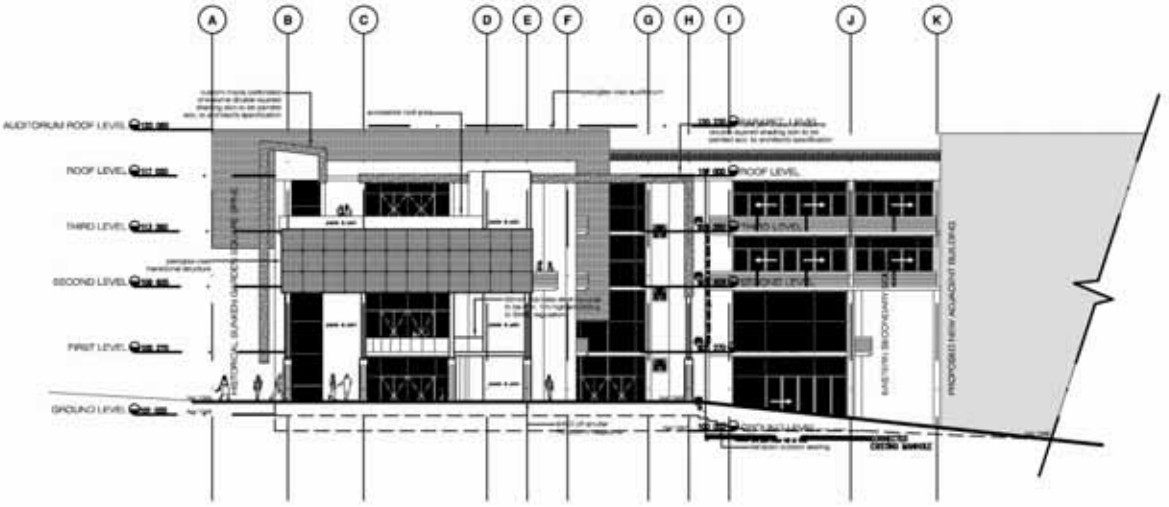
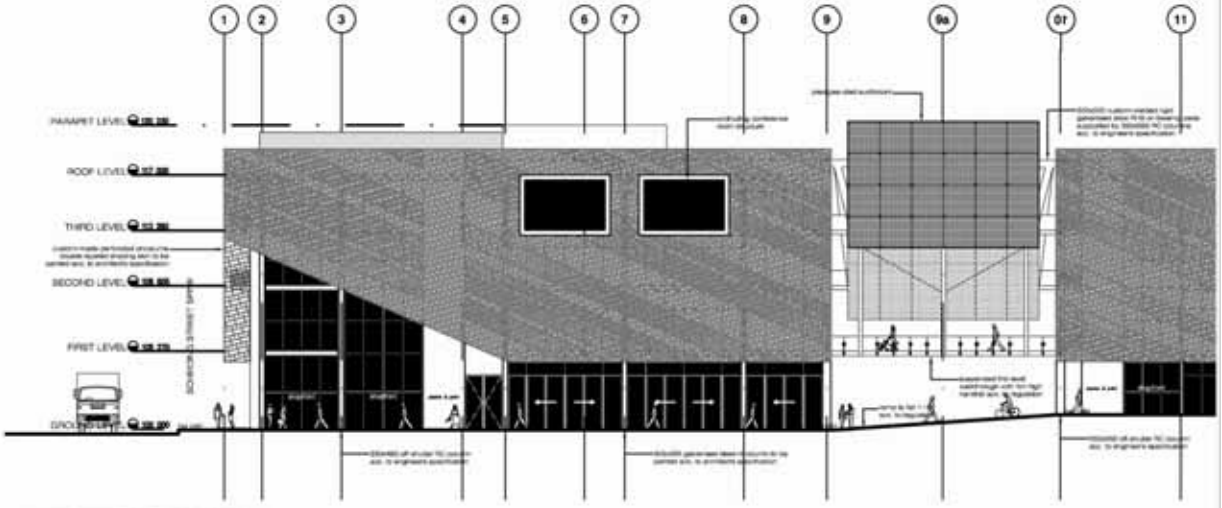


SOUTHERN ELEVATION
Scale 1:500



WESTERN ELEVATION
Scale 1:500

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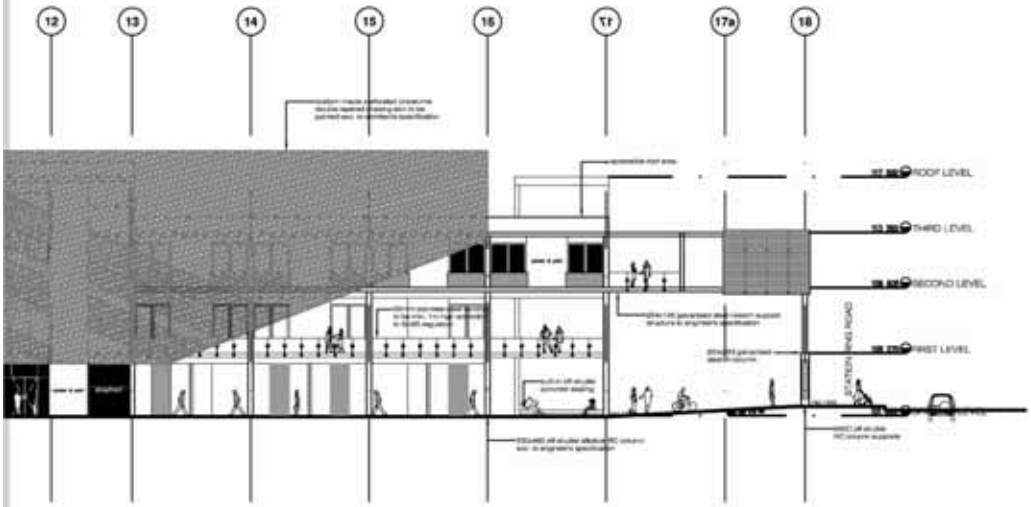
3. Alle werk moet streng volgens die regulasies van die plaaslike owerheid uitgevoer word.

A : Detail/Section No.
B : Location Drawing No.

A : Detail/Sink nommer
B : Nommer van tekening waarop detail verskyn.

NO.	DATE	DESCRIPTION OF REVISION / BESKRYWING VAN WYSIGING	DRAWN
NO.	DATUM		GETEK



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DRAWING TITLE / TEKENING TITEL:	SOUTHERN ELEVATION WESTERN ELEVATION
SCALE / SKAAL:	1:500
DRAWN / GETEKEN:	A Seabrook
FILE NAME / LÊER NAAM:	UP MArch(Prof)
DATE DRAWN / DATUM GETEKEN:	12-11-2009
DATE PRINTED / DATUM GEDRUK:	25-11-2009
REVISION / WYSIGING:	09/01/110

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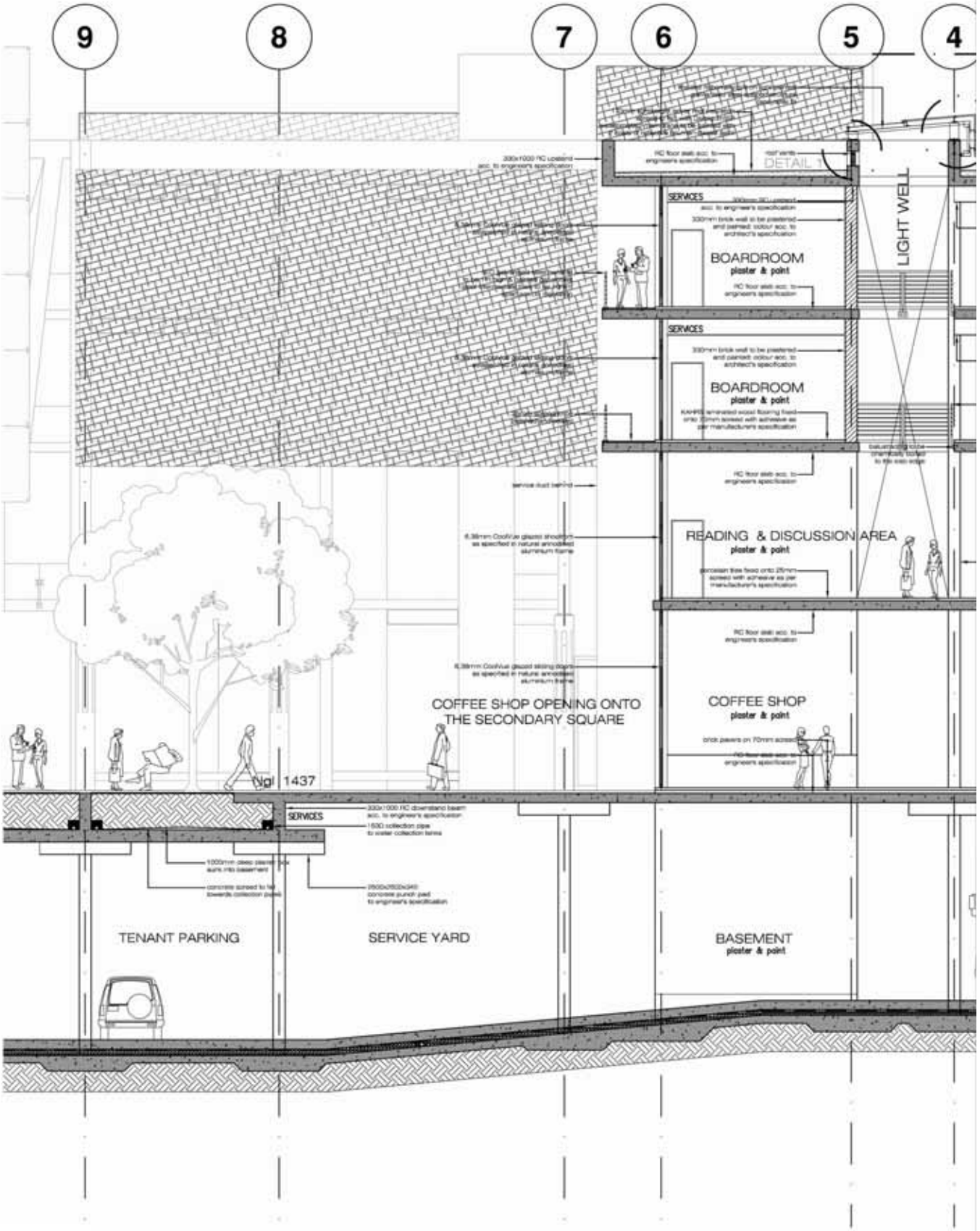
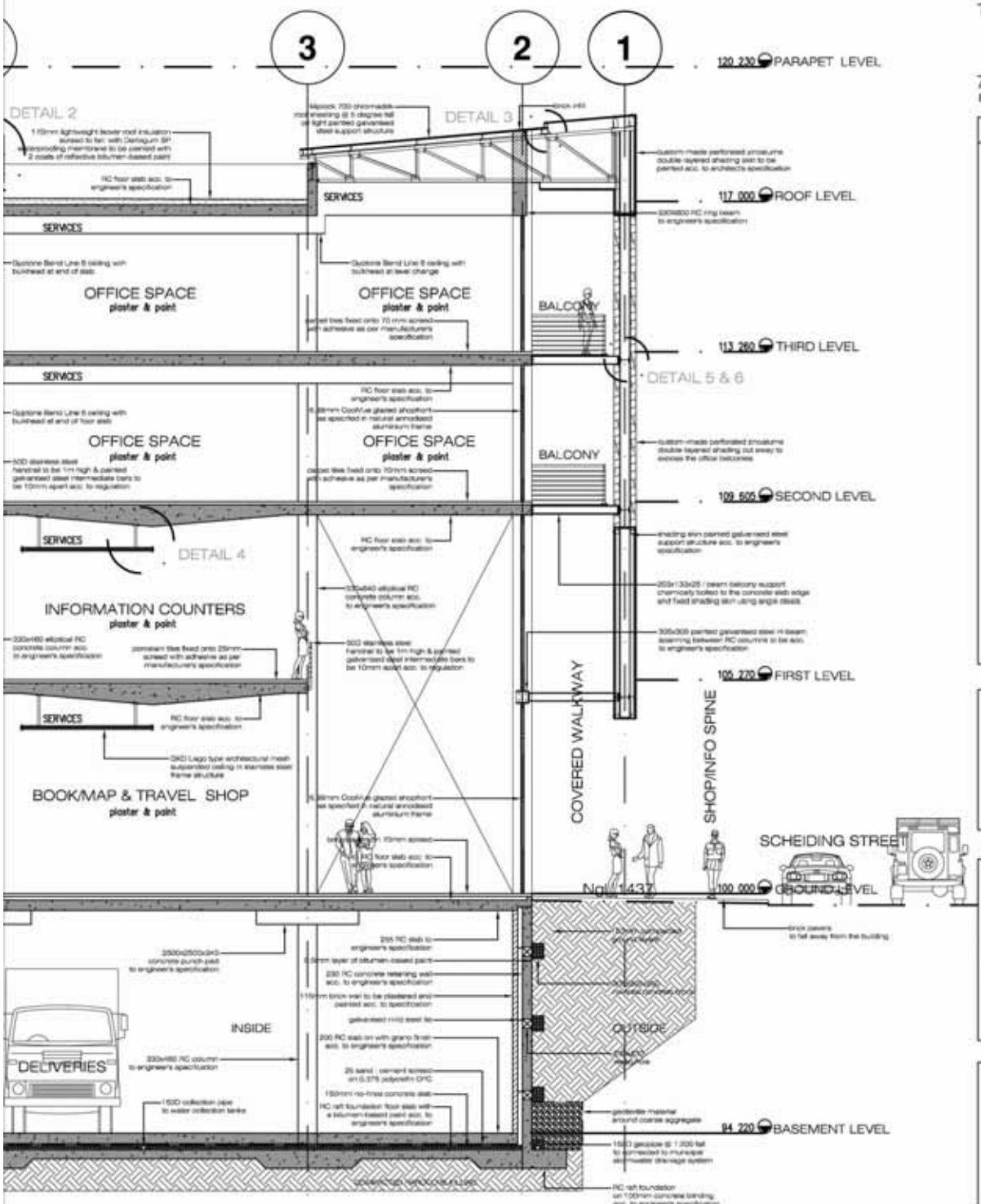

9
8
7
6
5
4
LIGHT WELL
SERVICES
BOARDROOM
plaster & paint
SERVICES
BOARDROOM
plaster & paint
READING & DISCUSSION AREA
plaster & paint
COFFEE SHOP OPENING ONTO
THE SECONDARY SQUARE
COFFEE SHOP
plaster & paint
Ngl 1437
SERVICES
TENANT PARKING
SERVICE YARD
BASEMENT
plaster & paint



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3. Alle werk moet ooreenkomstig die regulasies van die plaaslike owerheid uitgevoer word.

A : Detail/Section No.
B : Location Drawing No.

A : Detail/Sirkel nommer
B : Klasnommer van tekening waarop detail verskyn.

NO.	DATE	DESCRIPTION OF REVISION : BESKRYWING VAN WYSIGING :	DRAWN GETEK.

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ON PORTION R/170 & 364 OF PRETORIA TOWN & TOWNLANDS 351-JR

SECTION A–A

SCALE	1:150
DRAWN	A Seabrook
FILE NAME	UP MArch(Prof)
DATE DRAWN	12–11–2009
DATE PRINTED	25–11–2009
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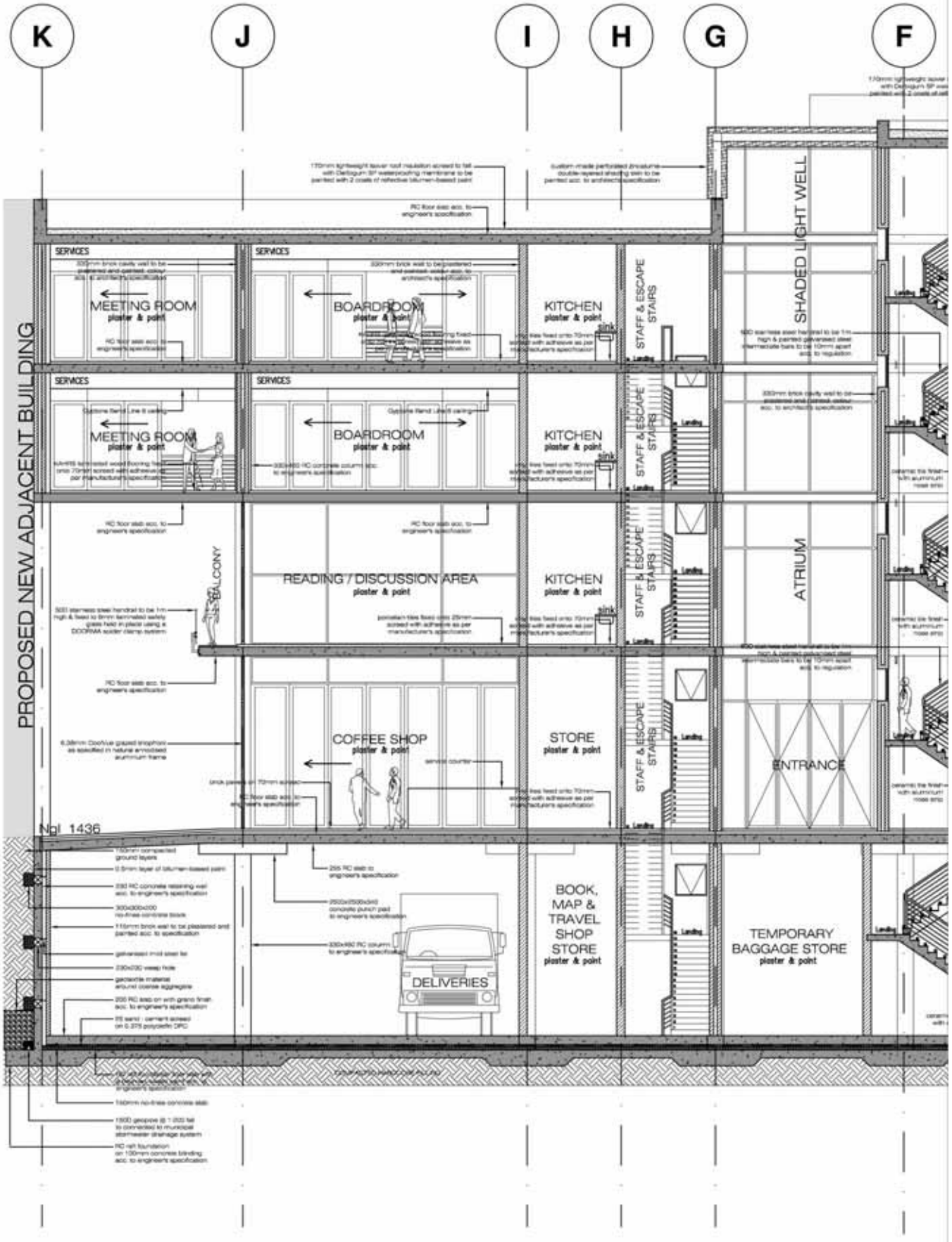
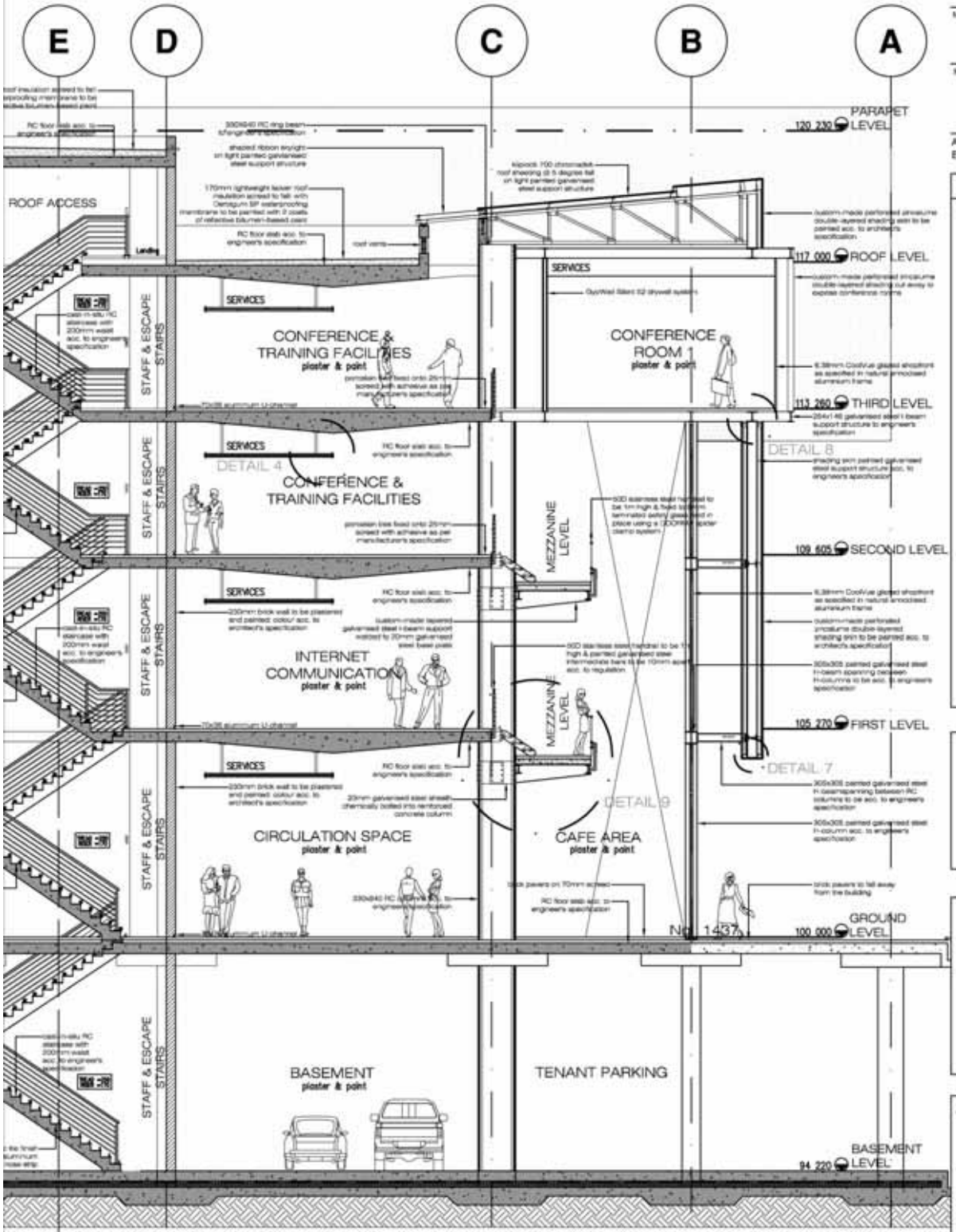

K
J
I
H
G
F
PROPOSED NEW ADJACENT BUILDING
SERVICES
MEETING ROOM
plaster & paint
BOARDROOM
plaster & paint
KITCHEN
plaster & paint
STAFF & ESCAPE STAIRS
SHADED LIGHT WELL
READING / DISCUSSION AREA
plaster & paint
ATRIUM
COFFEE SHOP
plaster & paint
STORE
plaster & paint
ENTRANCE
BOOK, MAP & TRAVEL SHOP STORE
plaster & paint
TEMPORARY BAGGAGE STORE
plaster & paint
DELIVERIES
Ngl 1436



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A : Detail/Section No.
B : Location Drawing No.

A : Detail/Snit nommer
B : Hommer van tekening waarop detail verskyn.

NO.	DATE DATUM	DESCRIPTION OF REVISION BESKRYWING VAN WYSIGING	DRAWN GETEK

i-hub @ Pretoria Station Square

NEW INFORMATION AND ORIENTATION FACILITY FOR THE DEPARTMENT OF ENVIRONMENTAL AFFAIRS & TOURISM

ON PORTION R/170 & 364 OF PRETORIA TOWN & TOWNLANDS 351-JR

SECTION B–B

SCALE:	1:150
DRAWN:	A Seabrook
FILE NAME:	UP MArch(Prof)
DATE DRAWN:	12–11–2009
DATE PRINTED:	25–11–2009
	09/01/113

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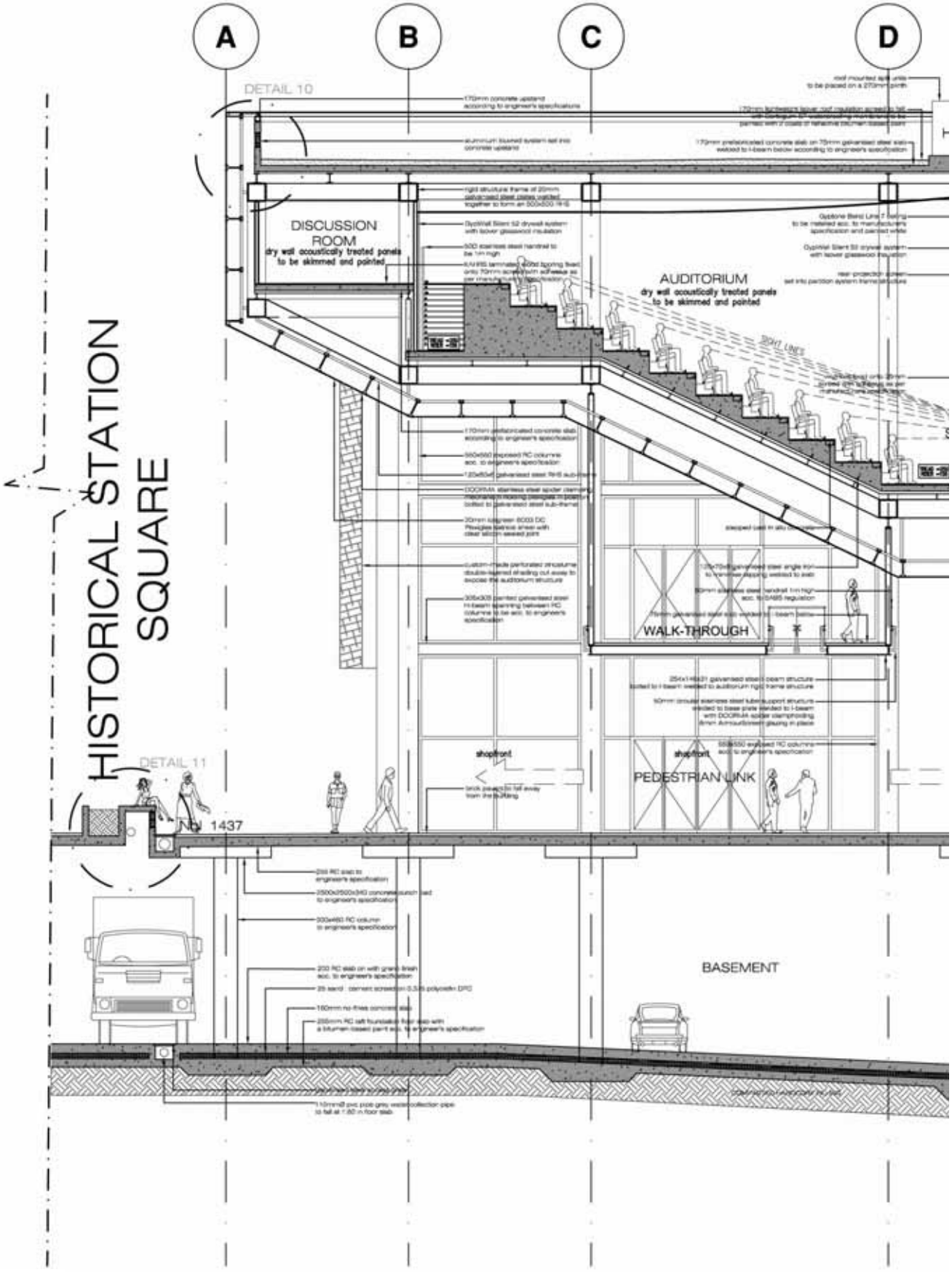
Lynnoor Street, Hatfield, 0083
e-mail: an_seabrook@yahoo.com
TEL: (012) 3421227
CELL: 082 566 3902



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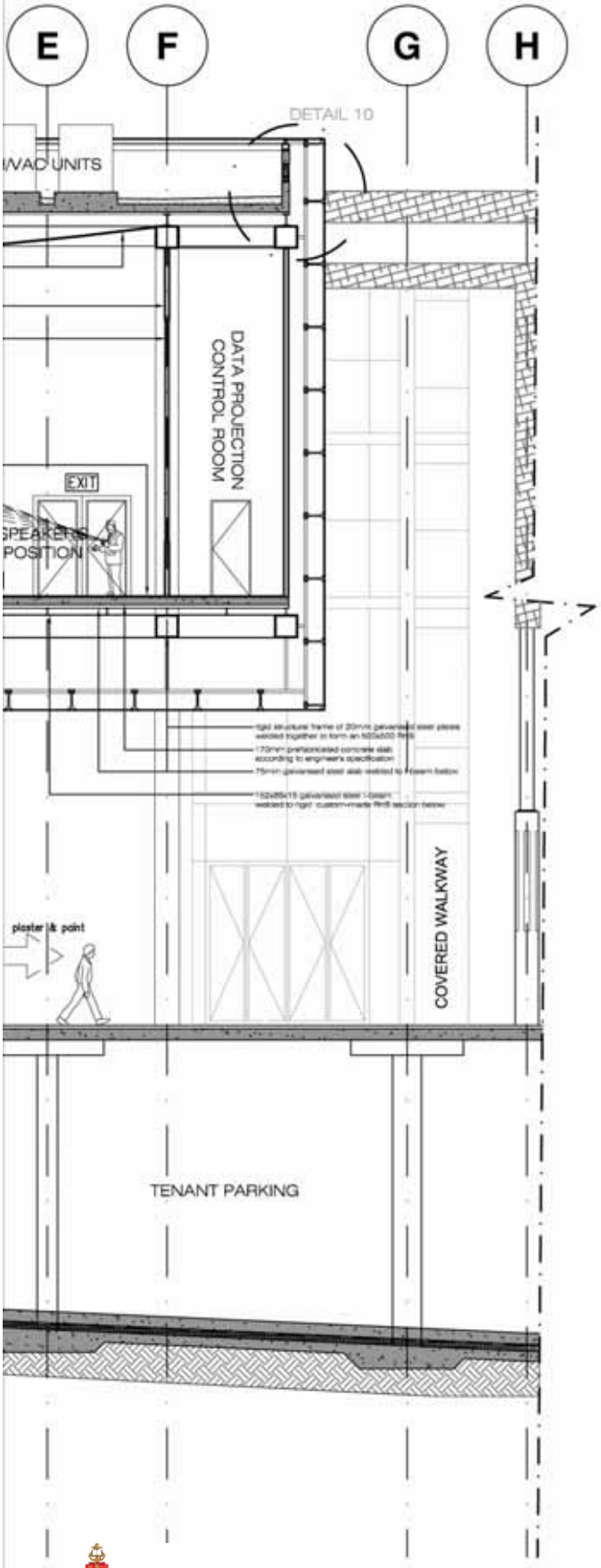
CTION C-C
1:150



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A : Detail/Sector No.
B : Location Drawing No.

A : Detail/Sink nommer
B : Nommer van tekening waarop detail verskyn.

NO. NO.	DATE DATUM	DESCRIPTION OF REVISION / BESKRYWING VAN WYSIGING	DRAWN GETEK

NEW INFORMATION AND ORIENTATION FACILITY FOR THE DEPARTMENT OF ENVIRONMENTAL AFFAIRS & TOURISM

ON PORTION R/170 & 364 OF PRETORIA TOWN & TOWNLANDS 351-JR

SECTION C-C

SCALE:	1:150
DRAWN:	A Seabrook
FILE NAME:	UP MArch(Prof)
DATE DRAWN:	12-11-2009
DATE PRINTED:	25-11-2009
	09/01/114

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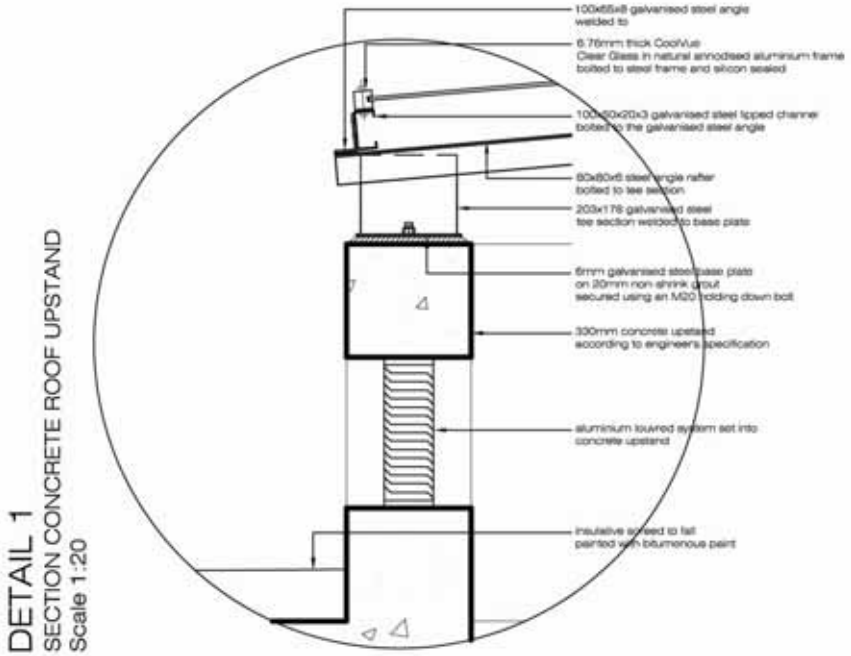
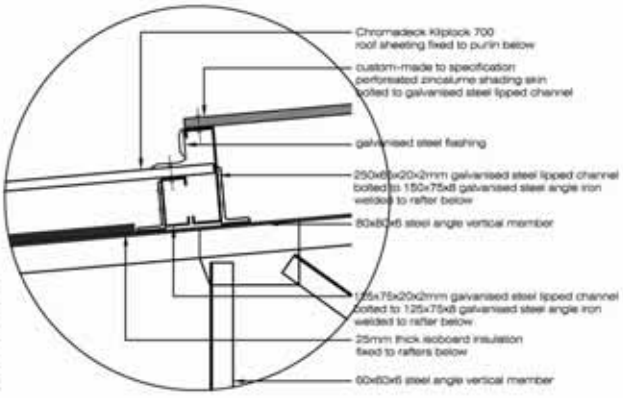
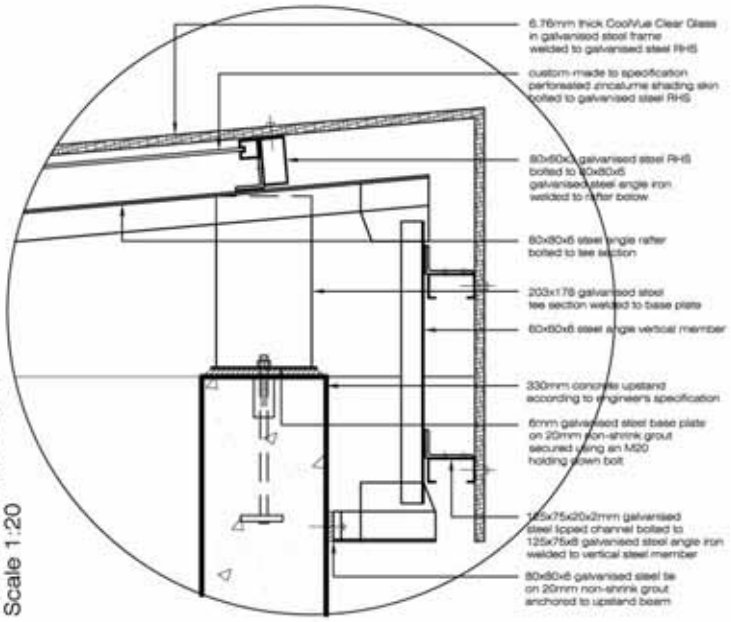


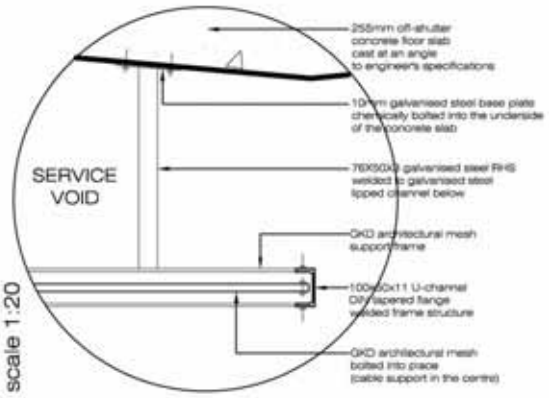
DETAIL 1
SECTION CONCRETE ROOF UPSTAND
Scale 1:20



DETAIL 3
SECTION THROUGH ROOF STRUCTURE
Scale 1:20



DETAIL 2
SECTION THROUGH THE NORTHERN SKYLIGHT
Scale 1:20



DETAIL 4
SECTION THROUGH GKD MESH SUSPENDED CEILING
scale 1:20

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A : Detail/Section No.
B : Location Drawing No.

A : Detail/Snit nommer
B : Nommer van tekening waarop detail verskyn

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DRAWING TITLE TEKENING TITEL	DETAILS 1 TO 4
SCALE SKAAL	1:20
DRAWN GETEKEN	A Seabrook
FILE NAME LêêR naam	UP MArch(Prof)
DATE DRAWN DATUM GETEKEN	12-11-2009
DATE PRINTED DATUM GEDRUK	25-11-2009
	09/01/115

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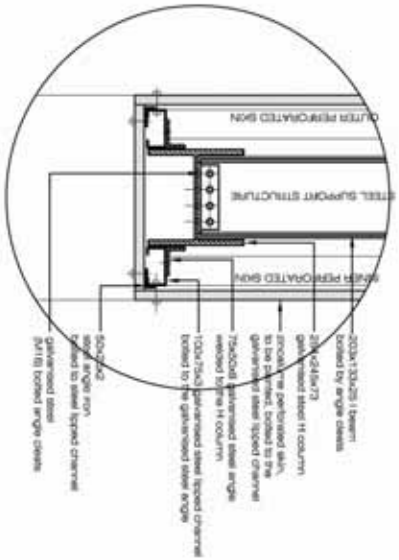
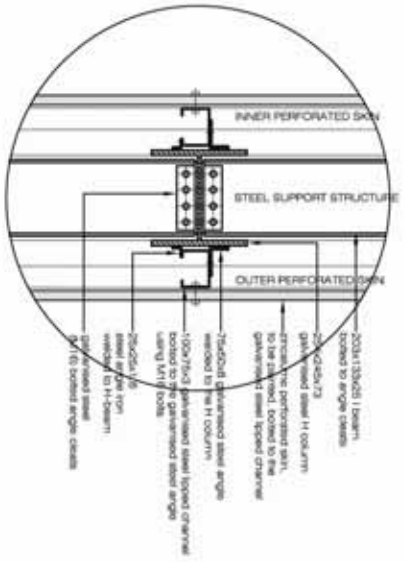
DETAIL 7

SECTION THROUGH THE END OF PERFORATED SKIN STRUCTURE
Scale 1:20

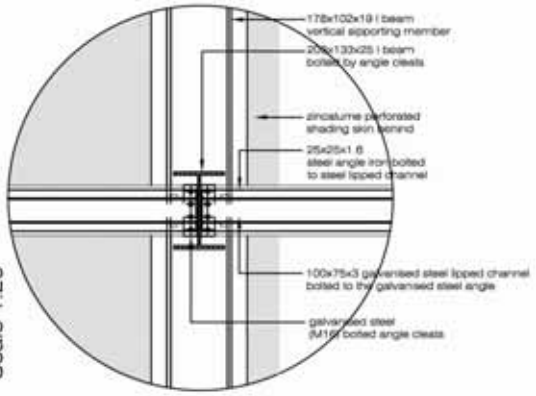


DETAIL 5

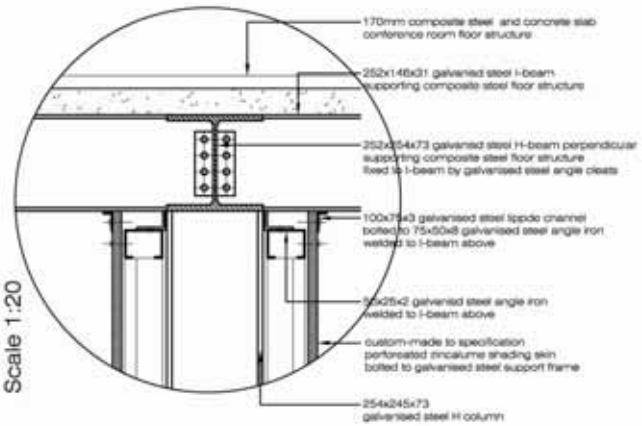
SECTIONAL PLAN PERFORATED SKIN STRUCTURE
Scale 1:20



DETAIL 6
SECTION THROUGH PERFORATED SKIN SUPPORT STRUCTURE
Scale 1:20



DETAIL 8
SECTION THROUGH CONFERENCE SUPPORT STRUCTURE
Scale 1:20



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A : Detail Section No.
B : Location Drawing No.

A : Detail/Unit number
B : Nommer van tekening waarop detail verskyn

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DRAWING TITLE TEKENING TITEL	**DETAILS 5 TO 8**
SCALE SKAAL	1:20
DRAWN GETEKEN	A Seabrook
FILE NAME / BOK NAAM	UP MArch(Prof)
DATE DRAWN DATUM GETEKEN	12-11-2009
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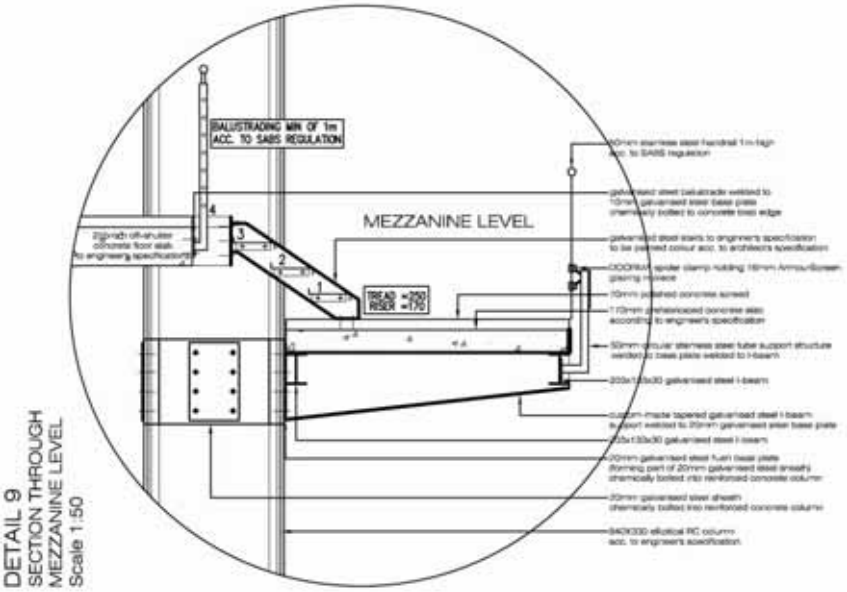
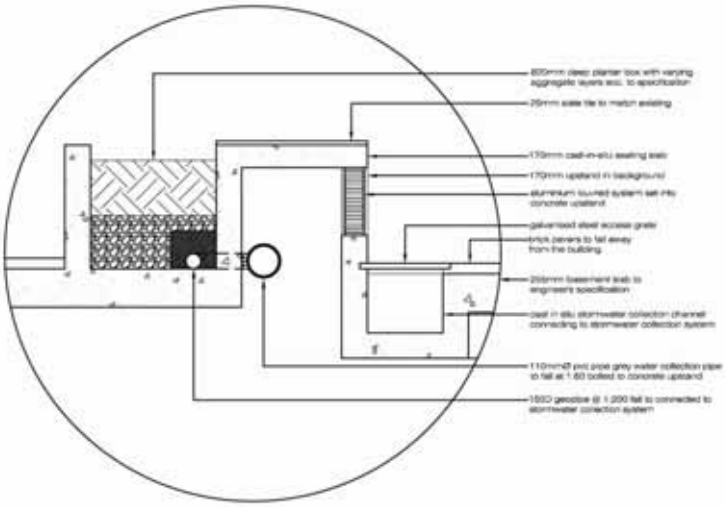
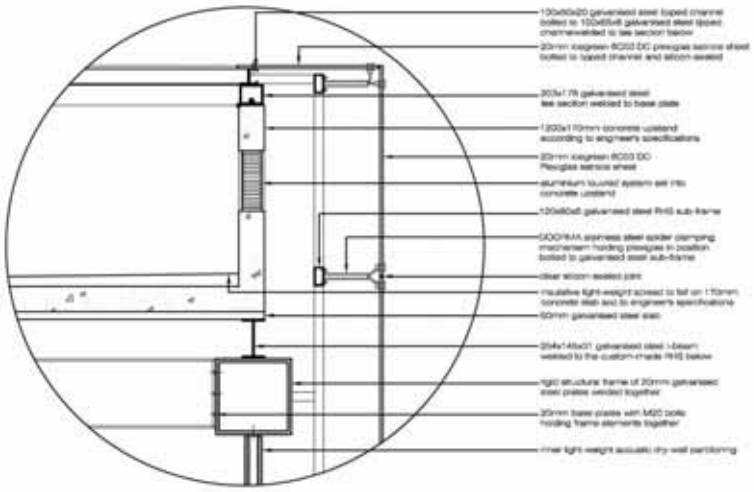


DETAIL 9
SECTION THROUGH
MEZZANINE LEVEL
Scale 1:50



DETAIL 11
SECTION THROUGH BASEMENT VENT
Scale 1:50



DETAIL 10
SECTION THROUGH AUDITORIUM ROOF
scale 1:50

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A : Detail/Section No.
B : Location Drawing No.

A : Detail/Sirkel nommer
B : Watcher van tekening waarop detail verskyn

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DRAWING TITLE TEKENING TITEL	DETAILS 9 TO 11
SCALE SKAAL	1:50
DRAWN GETEKEN	A Seabrook
FILE NAME LêER NAAM	UP MArch(Prof)
DATE DRAWN DATUM GETEKEN	12-11-2009
DATE PRINTED DATUM GEDRUK	25-11-2009
REVISION WYSIGING	+
SET-UP	
	09/01/117

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View of the 'i-hub's north-western corner from the Paul Kruger Street intersection

PERSPECTIVES

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View of the informal trade and craft market areas from the south-west

View of the pedestrian link under the 'i-hub' auditorium towards the east

View of the northern facade of the building showing the pedestrian link to the east

View of the western covered walkway and the eastern secondary square from the south-east

View from the eastern pedestrian link towards the south

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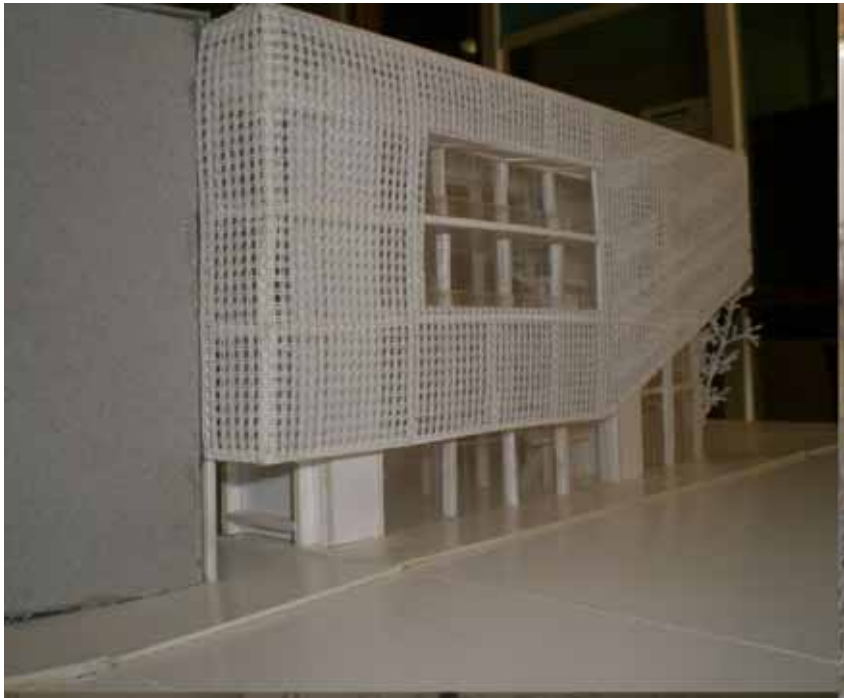
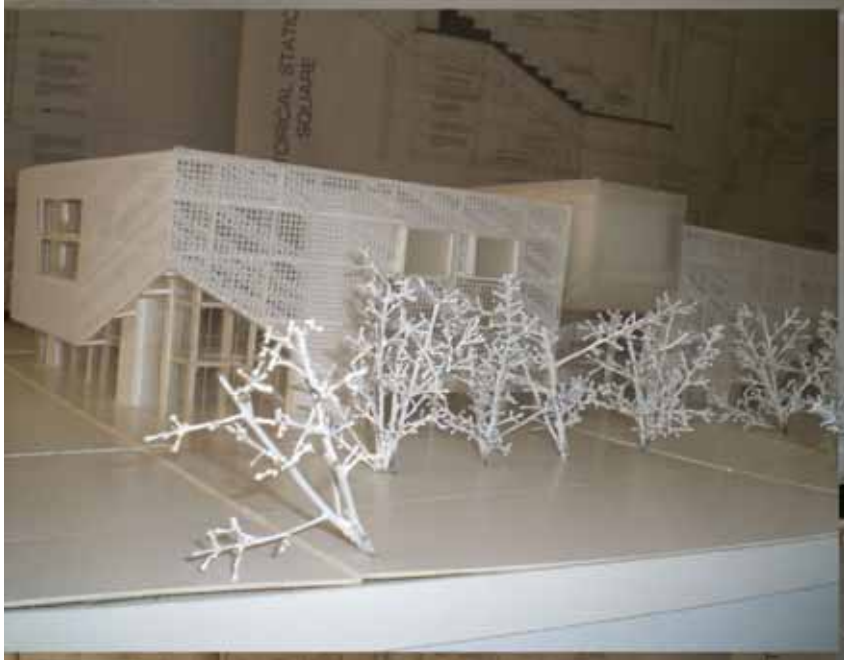
FINAL MODEL ON EXHIBITION





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