01_Introduction

01_Introduction

00 Preamble

More than 50% of the world's population now lives in cities (Anon, 2010). In South Africa that statistic is 61.7% (ibid). Cities represent a massive energy and material investment. The trends also suggest that this is unlikely to change in the foreseeable future. In many ways this is fortuitous. Urbanisation is happening fast and comes at a time when it is crucial that we move to more efficient models for living. Consolidation of the world's population into large, dense groups might well be one of the best ways to achieve this. City living minimises energy expenditure on travel and reduces the material and energy needed for service delivery. Cities also offer a variety of experience which is disproportionately greater than that which smaller communities can offer.

The UN's prediction is that by 2050 79.6% of South Africans will live in cities (Anon, 2010). Testing and implementing good urban practice at all scales of planning and construction is arguably the most important project for professionals in the building industry.

That said, this proposal does not seek to directly address issues of urban design. The intent is to explore what good urban practice means for architecture. While

Figure 01.01

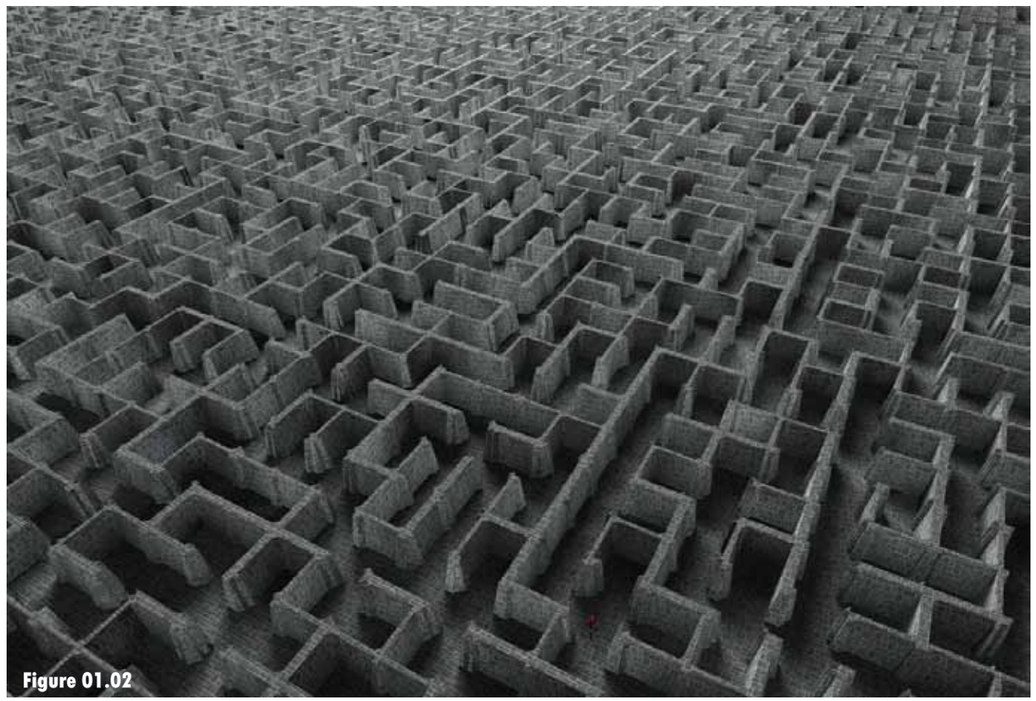


Figure 01.02

Figure 01.01
Markham Suburb, Ontario, USA
Figure 01.02
Relentless uniformity provides an urban experience which is not disimilar to being in a maze.

good urban practice must necessarily encompass issues of sustainability it cannot do so without simultaneously addressing the experience of the user. In order for urbanisation to be successful cities must be appealing places to live.

01 Identity and Mass production

In many ways Modernism and its project of efficiency has carried us far on the urban road. This shouldn't be particularly surprising as the Modernist movement was largely born of the Industrial Revolution. We see evidence of this in quotes such as Le Corbusier's "The house is a machine for living" (Le Corbusier et al, 2007:151). It is also clear in the factory aesthetic and modular plan of so many Modernist buildings.

The Industrial Revolution in turn was born of the discovery of the efficiency of mass production. It could therefore be said that most contemporary cities are a product of mass production, at least in spirit.

Unfortunately, while mass production is good at generating material wealth, it does not lend itself to the production of identity. One of the most negative by-products of modernism has been the creation of ubiquitous, monotonous space. This is one of the issues this thesis will seek to address.

02 Sustainability

The second point of departure for this project relates more directly to the issue of sustainability as it is commonly discussed. According to the United States Department of Energy 2009 Buildings Energy Data Book (p. 3-12), the average lifespan of an office building in the US is 73 years (unfortunately there seems to be no equivalently comprehensive study for South Africa). This short time, coupled with the awareness of limited resources, has resulted in a massive drive towards the development of materials and processes which have a low nonrenewable resource cost. This is certainly a valid avenue of enquiry, but there is an alternative.

Another approach would be to design buildings to survive changes in fashion and function. Put very simply, a 25% increase in a building's lifespan can be seen as a 25% reduction in resource cost. This is obviously not technically accurate, but serves to illustrate the point.

There are a number of challenges associated with evaluating life cycle energy


Figure 01.03


Figure 01.04


Figure 01.05


Figure 01.06

cost rather than embodied energy. The primary one being that the projected lifespan of a building is conjecture. .

The other implication of this stance is that, although some buildings are so problematic that there is no alternative, the first course of action should always be towards adaptation rather than demolition.

03 Site Selection Criterion

The selected site attempts to address these two perspectives and had to:

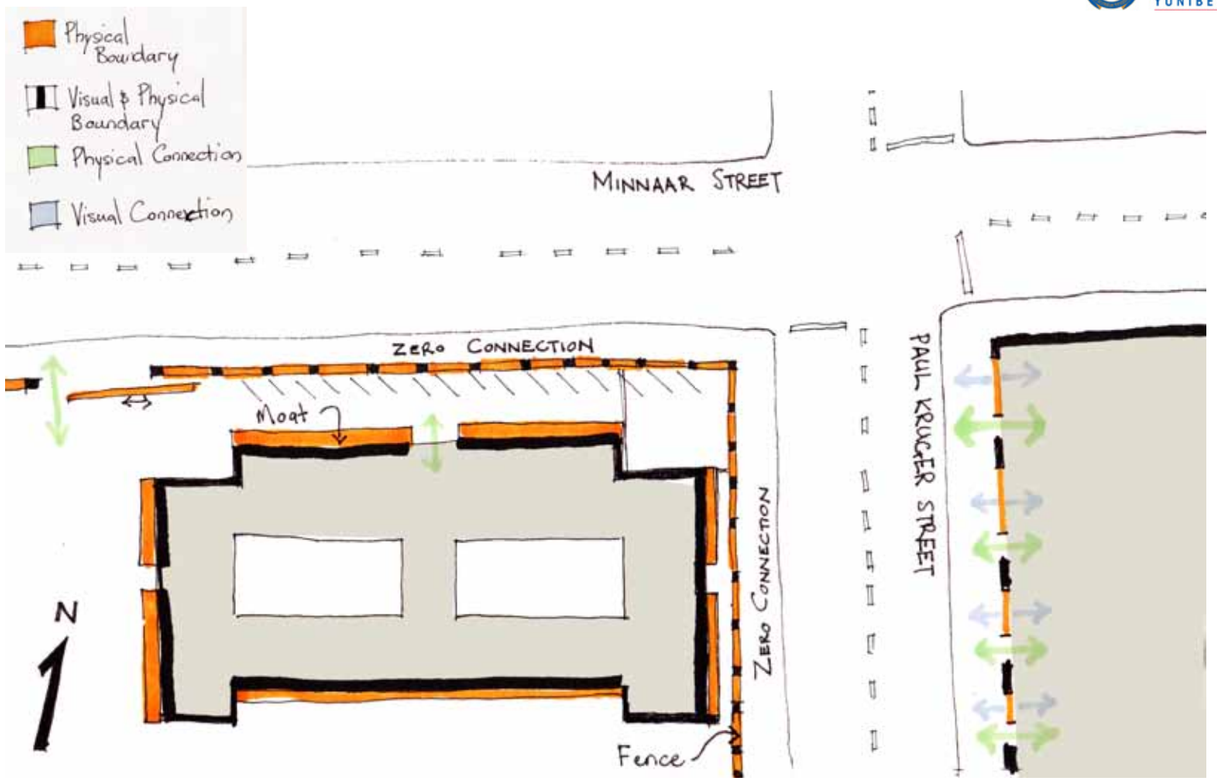
- be an existing building in the Pretoria inner-city.
- be problematic in terms of the treatment of the urban fabric.
- have the potential to change.
- be located in an area that would benefit a significantly from its improvement.

04 Site Choice

There are many buildings in the city that could potentially fulfil these criteria. Examples if these include Figures 01.04 and 01.05 which show the SARS building and Department of Education, both of which are on Schoeman Street. Both buildings appear inert and neither attempts to have any kind of relationship with the street on the northern facade. However, the site chosen for this study is the NZASM Building on the corner of Paul Kruger and Minnaar Streets (Figure 01.06). The building is currently owned by Transnet. At the time that this thesis was written, occupation of the building was between 60 and 70%.

The rationale for choosing this building is explored more fully in Chapter 3, but the overwhelming reason for doing so is the building's negative treatment of the street and the prominence of its location.

Figure 01.03
Residents of this group of semi-detached houses in the UK try to impose a sense of identity by adding colour to the treatment around windows and doors.
Figure 01.04
SARS building on Schoeman Street.
Figure 01.05
Department of Education on Schoeman Street.
Figure 01.06
NZASM Building, Paul Kruger Street facade.



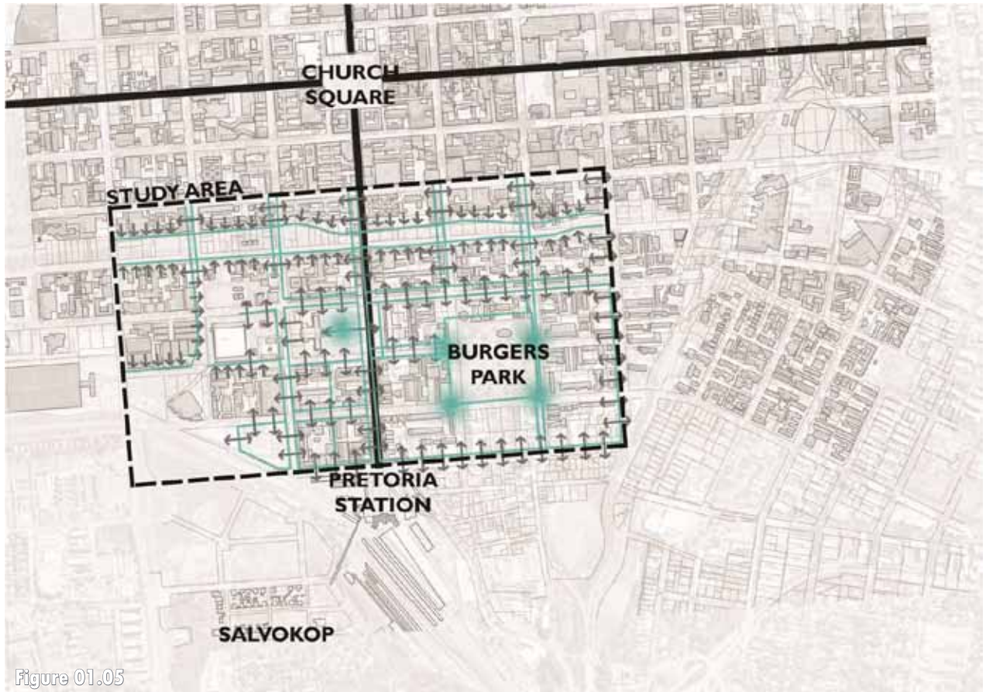


Figure 01.05

04 The NZASM Building

On both street-facing facades the building is set back from the perimeter. The only access is via the Minnaar Street vehicle entrance; the rest of the perimeter is cut off by a wrought-iron and brick fence. There is a "moat" around the building which serves to provide light and natural ventilation to the underground parking, but also emphasises the separation of the building from its context. The main building entrance, set in the middle of the facade, bears no relationship to the property entrance. The ground floor facade has slightly more generous floor to ceiling dimension, but is otherwise indistinguishable from the floors above.

The contemporary city can simply not afford buildings which treat the street so dismissively; especially not when the building is located on a major route, at a significant intersection and on the edge of a public open space.

04 Client

The client for this project will be a coalition of non-government organisations (NGOs). The program is for a shared office facility which also acts as an interface for the public. This program will be referred to as the NGO Hub.

These organisations will use the facility to share basic infrastructure and technological resources as well collaborating and taking advantage of each others individual areas of expertise.

From the perspective of the public, the NGO Hub will be a centralised location to gain access to the information, resources and assistance that the NGOs have to offer. The precise reasons for choosing this program and its appropriateness are discussed in Chapter 02.

05 Aims

The ultimate objective of the scheme is to alter the NZASM building so that it becomes a contributing component of the city, rather than an isolated object. It will also be changed in such a way that it can more easily adapt in future.

Figure 01.07
Diagram of the site highlighting barriers between the NZASM Building and the street.

Figure 01.08
Framework diagram displaying the areas in which it is especially important to create active edges. This not only improves the user's experience of the city, but also helps to make the city safer.

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02_Normative Position

02_Normative Position

00 Introduction

As stated in the previous chapter, urban identity is a complex issue. Identity as expressed in built form can start at a macro-cultural level (e.g. The Western World) and end at the choice of decoration on a child's bedroom wall. In a society as culturally diverse as that of South Africa, the issue is even more complex. Given the circumstances then, creating an architecture of identity in public buildings seems to be an impossible task.

Yet a developing school of thought suggests that we may not have a choice.

"As people, capital and companies have become more footloose, it is vital for places, in all scales, to provide in all these areas an environment capable not only to attract new activity and place-users but also, and perhaps more importantly, to keep existing ones satisfied with their place." (Mihalis 2005;)

01 Branding

Destination branding was born of the realisation that cities which are dependent on tourism need to market themselves. What Mihalis is referring to is the natural next step; urban branding. It is true that cities which rely heavily on tourism for income have been marketing themselves for a long time, but it is likely to become far more common in the future. The agency responsible for this is globalisation. In the past, if you were unhappy with your home and your resources allowed it, you would move. Typically between streets and districts in the same city. A small minority of people might move to another city and an even smaller percentage might emigrate. This is no longer the case.

One survey in 2005 of 4784 post-graduate and final year undergraduate students and found that 28% wanted to immigrate for two years or more; 21% said that it was

Figure 02.01
A small sampling of the diversity of South African Society found on University of Pretoria property.


Figure 02.02


Figure 02.03


Figure 02.04


Figure 02.05


Figure 02.06

very likely that they would do so (Mattes and Mniki, 2007; p29).

It is easier for students and there are financial implications, but many of us will change countries as easily as we do cities. The same can be said of companies. Previously companies have had to locate themselves near their clients. Global telecommunication and the internet have largely ended that. It is now common practice for companies in the USA to outsource their call centres to India. Not even the scale of the business has any bearing on the issue. With five minutes spent on the internet it is possible for a South African to purchase a kitchen knife from a master crafter in Tennessee and have it delivered in a matter of weeks if not days. Location is now primarily based on preference.

That branding and marketing is the future of all cities seems inevitable. However, significant problems can arise if this process is not addressed critically.

"The New Labour government of Tony Blair... offered a more ambitious form of 'designer' Thatcherism... and played on a nation's desire to get rich quick with the Lottery. It offered its own versions of the Colosseum (the Dome), and the theatres and circuses of Ancient Rome... It did this with one hand, while the other continued to strip London's public sector of any pride and independence it might once have had with dogmatic free-market policies that saw privatisation move silently and stealthily through the city like the sleekest sewer rat." (Glancey, 2001; p5)

In his book, *London: Bread and Circus*, Glancey accuses Tony Blair's government of using large scale architectural and entertainment projects to draw the attention of the public of London from their real needs. A practice which is very similar to the way in which those in power placated the general population of Ancient Rome. The end result is that while visitors and the general population of London enjoy these frivolities, services such as public transport and hospitals are in rapid decline.

An alternative explanation for the millennium projects in London is that they're part of an attempt to maintain London's image as a cutting edge international city. Regardless of the reason, it is unconscionable to prioritise the image of a city over the needs of its inhabitants.

It is difficult not to compare this with the preparations for the FIFA 2010 World Cup.

02 Branding gone wrong

"Never before have we seen the state as efficient as when meeting FIFA deadlines, while on the other hand, carelessness, scapegoat-hunting and sheer laziness are the order of the day in providing basic services." Mbulelo Mandlana (2010)

This was precisely Glancey's concern; that service would be sacrificed for a superficial brand.

Figure 02.02
The Millenium Dome in London is striking, but only sporadically utilised. The edge of this massive project is also inactive and has a detrimental effect on the surrounding urban fabric.
Figure 02.03
Greenpoint Stadium, Cape Town
Figure 02.04
Nelson Mandela Stadium, Port Elizabeth
Figure 02.05
Soccer City, Johannesburg
Figure 02.06
Moses Mabhida Stadium, Durban

Figure 02.07

Figure 02.08

Figure 02.09

In the South African governments defence, it seems as if the sporting event is paying dividents. According to estimates, R93bn has entered SA's economy as a result of the competition. The World Cup may also have contributed an additional 1% to the country's GDP (I-Net Bridge, 2010). Balanced against the R40bn investment of public funds in preparation for the competition there certainly seems to be a net gain (Sapa, 2010). The government has also partially addressed Mandlana's concerns by pledging to spend R846bn in the three year period following the World Cup. It simply remains to be seen how well that money is spent.

There is also further danger in taking on an inappropriate brand. The town of Flint, Michigan in the US tried to offset the loss of their General Motors factory by turning to tourism. Most of the resulting projects failed within a year because the city's location didn't support the new program (Hannigan, 2004; 14).

These points seems to suggest that branding and serving the needs of the inhabitants of a city are mutually exclusive. That is not necessarily the case; especially if the brand is based on the provision of high quality service. Tshwane is already gearing itself toward this stance as is clear in the municipality mission statement:

"The city`s vision is to become the leading international African capital city of excellence that empowers the community to prosper in a safe and healthy environment," Mankgadi Nkadimeng (CIO for City of Tshwane Metropolitan Municipality)

03 Applying Brand

The implication for architecture and this thesis is this: Good urban practice and design within the city can only become more important in time. The responsibility of architects and all designers of the built environment is to synthesise good urban practice and the city as a brand.

04 Urban Theory

As urban design plays a significant role in the development of this scheme, I went in search of appropriate urban theory to inform the design. The primary text that informed this study is Jane Jacob's *The Death and Life of Great American Cities* (1961). The reasons for doing so are twofold. While Jacobs does discuss other aspects of urban design, such as large scale planning, her primary concern is architecture's treatment of the street.

As the most significant problem offered by the chosen site is its relationship to the street, this seems appropriate.
The second reason is that, 40 years prior to Glancey's book, Jacobs had this to say about the choice of appearance over substance:

"To seek for the look of things as a primary purpose or as the main drama is apt to make nothing but trouble" (Jacobs, 1961:14)

The echoes between these texts are impossible to miss. For a more extensive

Figure 02.07 to 02.09
Spending public funds on developing an inappropriate brand in Flint, Michigan only served to further contribute to the urban decay once those projects failed.

Figure 02.10

comparison between these two works, please see Addendum A.

05 Dynamic City

The theories discussed so far all have one central ideological implication. As a building serves its users, it must also serve the city. They imply that any building in the city must be socially, economically and environmentally appropriate. The only dimension which they don't address directly is time. It is deeply problematic that buildings are allowed to become slowly obsolete. Change at the urban scale is as obvious as it is continuous. People come and go, districts become popular or fall out of favour. Economies experience positive and negative growth. The city is every bit as dynamic as anything nature has to offer.

Yet buildings are, more often than not, designed to be perfect, static solutions. And they may even be perfect solutions at the time of their construction, but how long does this state last in a dynamic environment? This means that in its lifetime a programmatically and technologically rigid building will become progressively more obsolete as its environment changes. We now know that many of these changes that occur are cyclic. At best a static building can hope to become partially appropriate again at some point in the future. At worst it will simply be demolished.

06 Adaptation and Evolution

How Buildings Learn by Stewart Brand (1994) offers a solution. Design buildings which encourage change. Brand suggests that the way to do this is by separating the construction of a building into six layers. Site, structure, skin, services, space plan and stuff (Brand, 1994; 13). Each layer is then designed to be as adaptable as demand requires. This means that, for example, a building is not demolished simply because the facade is no longer fashionable. Something which might certainly happen if, as is often the case, the facade and structure are integrated. Furthermore, architects frequently speak of a building being in a dialogue with its context, but dialogue implies an exchange. If the building in question is static then the relationship between architecture and context more closely resembles a sermon.

Figure 02.10
Wherever possible demolition should be avoided because it is exceedingly wasteful.

07 Elaborating on Death and Life

In her book, Jane Jacobs has a number of specific recommendations for the design of urban buildings to address some of the problems associated with modern cities.

The greatest problem being that of public safety. In a very real sense, the *The Death and Life of Great American Cities* starts with the premise that the city needs safe sidewalks and proceeds to outline a course of action for making that a reality. The three aspects for safe sidewalks are a) a clear delineation of public and private b) there must people who can view the street at all times and c) there should be a fairly constant stream of pedestrians (Jacobs, 1961; 37).

The last point really exists to support the second in that there are more people viewing the street at a given time and that the activity induces people in the buildings to watch the street. A very similar logic is applied to urban parks and city neighbourhoods as a whole.

It is core to Jacob's theory that if people are being watched they are less likely to commit a crime. This seems to be common sense and we can certainly verify it from our own experience. Places which are notorious as being dangerous in cities are parks after hours, when most people are indoors, and pedestrian tunnels under railways; the latter usually provides criminals a screen for there activities and two escape routes. The most definitive example however is the inner-city after dark. Restaurants, clubs and bars represent oases of light, noise and activity in an otherwise deserted environment. It is often difficult not to walk faster when moving from one oasis to another unless you are part of a large group. This is especially true in South Africa.

Some of Jacobs' answers to this problem are as follows:

Diversity of people and programs - different people keep different schedules and different programs also mean that the area is active for a larger portion of the day (Jacobs, 1961; p143).

Ground floor activities along the edge of a building - give people a reason to be there (Jacobs, 1961; p257).

Minimising the use of cars - excessively wide roads create obstacles for pedestrians and mean that a sidewalk can only be monitored by the buildings on the same side of the street (Jacobs, 1961; p338). Skinner Street in Pretoria is an example of this.

Although there are more points and the book as a whole serves to inform this scheme, these three points are the most pertinent and will have the greatest impact on the project design.

08 Elaborating on Learning Buildings

Stewart Brands takes a firm stance against what he calls "magazine architecture" (Brand, 1994; p52). He would likely agree with Jane Jacobs that any building which is an aesthetic object first and a functional building second is bound to fail.

It could well be argued that this is dependant on the program. The Eiffel Tower and Daniel Liebeskind's Jewish Museum in Berlin serve as exceptions to prove the rule. The Eiffel Tower was built to exhibit the limits of modern construction techniques of the time and the Jewish Museum's primary function is to have an emotional and experiential impact on the user. However, in the majority of building typologies, aesthetics need to follow function rather than the other way around.

Brand's objection to "magazine architecture" stems from three interdependent sources; the associated technology, the building's resistance to change and ultimately the experience of the user. Simply put, complex forms and technologies make alteration costly and difficult. And the need for alteration is a near certainty. Changes in fashion may mean that the facade falls out of favour. In commercial buildings, success on the part of the occupants might necessitate that the building expands. Failure may mean that it needs to be subdivided and portions sold. The growing concern with the energy crisis and sustainability mean that many power hungry buildings are coming ti be considered liabilities. Information technology is changing so rapidly that information infrastructure needs to be overhauled frequently. The list goes on.

And the only solution to a building which has become obsolete and is incapable of change is demolition, which is immensely wasteful.

Brand's six categories of building elements are ordered from most to least permanent. Of these site, structure and services are fairly self explanatory. Skin refers to the facade, space plan to the internal layout and stuff to the contents of the building such as furniture (Brand, 1994; p12). The hierarchy implies that while changes in structure may affect the services, the reverse should not be true. This method will form the basis for the approach to technology in this thesis.

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03_Context

03_Context

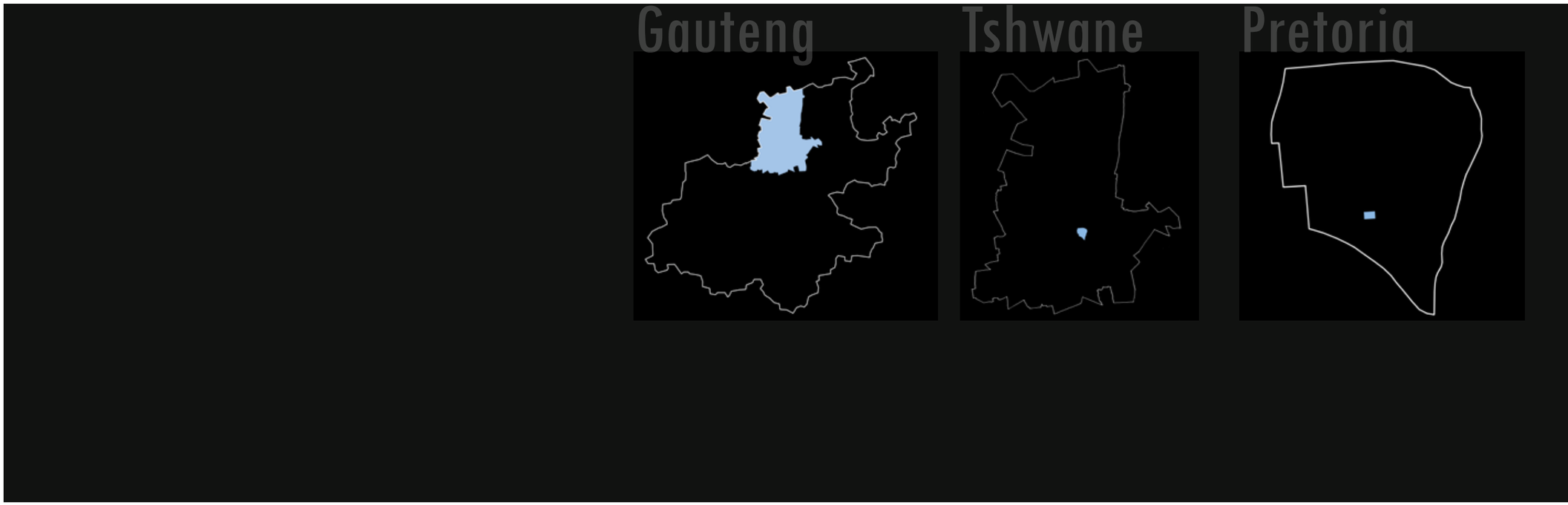
00 Introduction

When considering context, it is not enough to simply look at the physical environment around the site. In this project the proposed brand for Pretoria - and consequently the building - responds directly to its role as the administrative capital of South Africa. This role has not only served to inform the design approach, but also the program as will be shown in Chapter 6.

01 Geography

As shown in Figure 03.01, the project site is located in one positive aspect of the area surrounding the site (Which will be referred to as the Southern Precinct) is the proximity to public transport. Besides ease of access to Pretoria Station and the associated taxi ranks, the soon to be implemented Bus Rapid Transit system is planned to use Paul Kruger Street as the primary route through the city.

There are, however, some issues which need to be addressed. Qualitatively speaking, like any South African city, the Pretoria inner-city does not feel safe after hours. This is largely because of the after-hours urban desertion phenomenon. The Southern District is the least prone to this because of the high residential component, but one still feels far from safe.



02 Open Spaces

The use of public/unbuilt space also needs to be addressed. While Burgers Park is very well utilised, the same cannot be said for the rest. Paul Kruger Street caters for vehicles to excess and does not make allowance for the significant volume of foot traffic to and from Pretoria Station. Pretorius Square, which has great potential, is severely underutilised. The square is isolated by parking, fragmented by design and has not one active edge. While it does provide the city with some greening, nearby Burger's Park fulfils that role far better. The original intent of the square was to provide a vista for the Pretoria Town Hall on the western side. The presence of the Transvaal Museum along the eastern edge does create a strong relationship perpendicular to Paul Kruger Street through this space. But to have such a large space dedicated to one function when it could easily accommodate more without negating its original purpose is a waste.

The Southern District of the Pretoria Inner City has the potential to be a truly multifaceted, multifunctional, vibrant urban precinct which can act as a catalyst for the rest of the city. Pretoria's answer to

Figure 03.01
Zooming in from national to urban scale.
Figure 03.02
Burger's Park is an actively used, well maintained green space within the city.


Figure 03.02

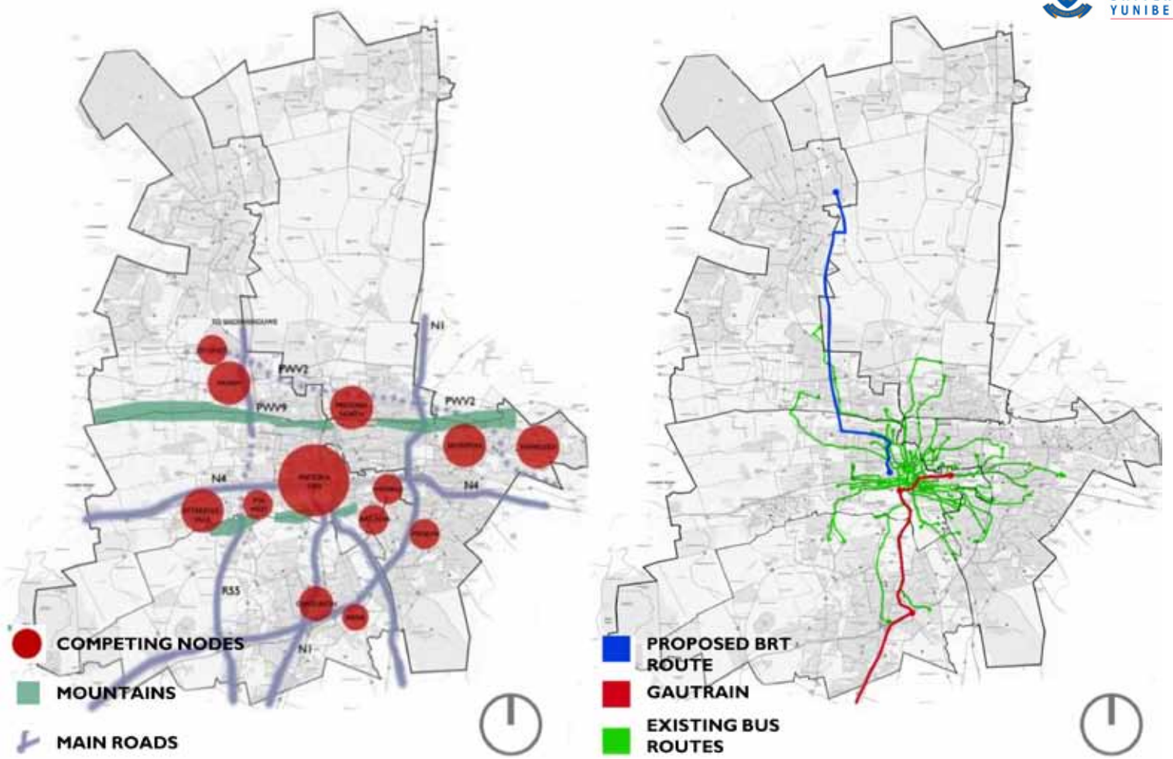


Figure 03.03

Soho in London, UK. Any construction project in the area should be designed with this goal in mind.

Figure 03.03
These images show that Pretoria acts as a hub for Tshwane.

Figure 03.04

Figure 03.04
Figure ground study of the city of Pretoria. The Pretoria Inner-City is highlighted in white, the Southern Precinct in blue and the NZASM Building in yellow.

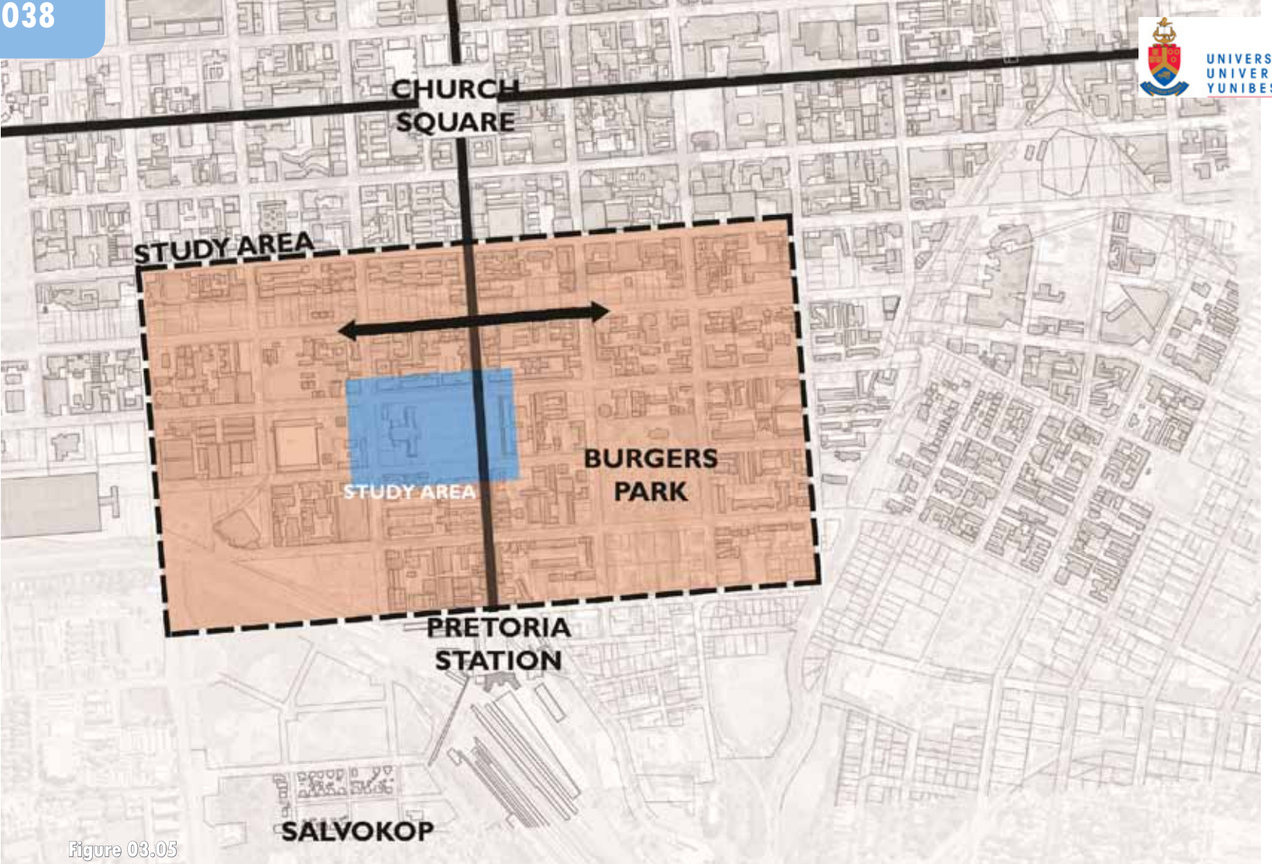


Figure 03.05
Diagram showing the study area in the southern portion of the inner-city (referred to in the document as the Southern Precinct. The area marked in blue is Pretorius Square.

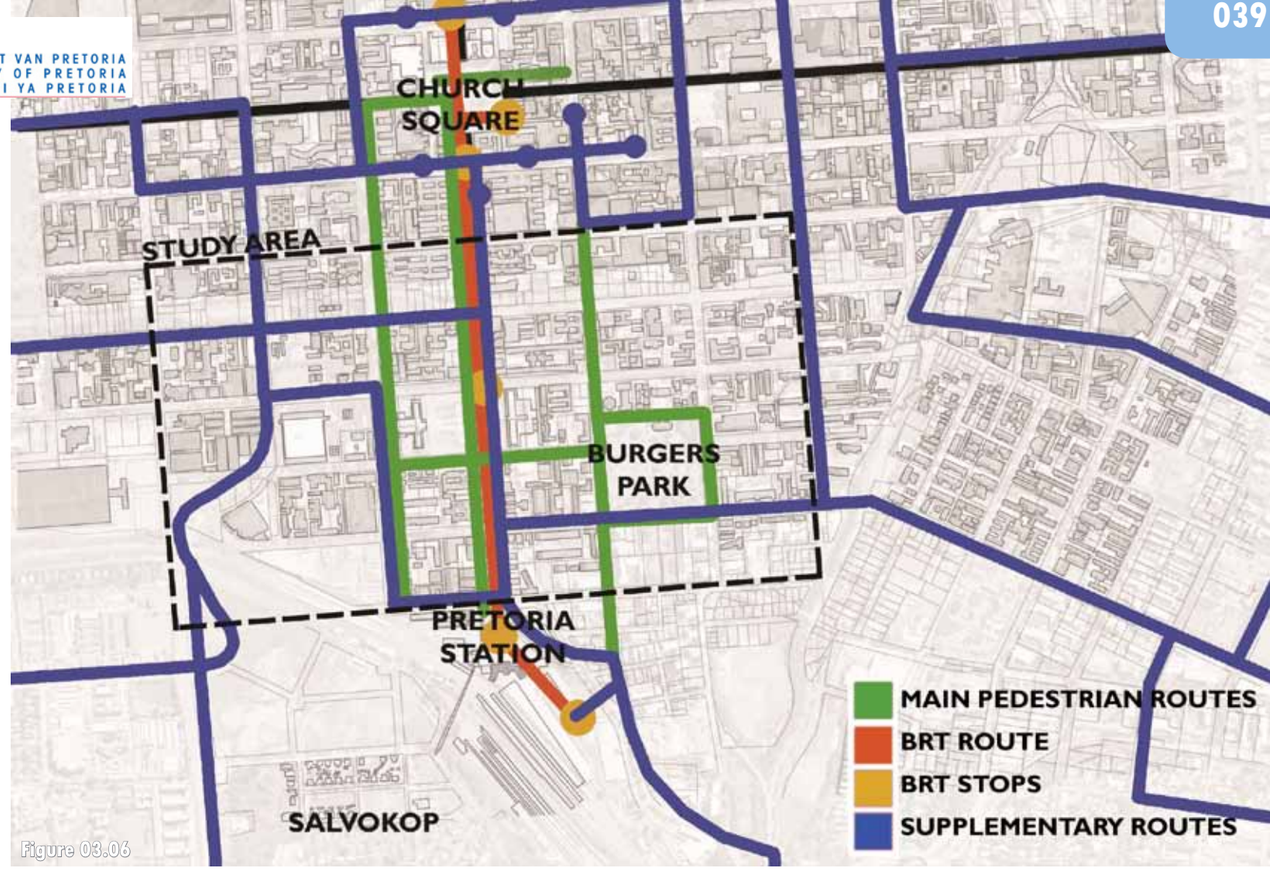


Figure 03.06
Transportation routes in Pretoria. This image shows the importance of Paul Kruger Street (which runs between the station, Church Square and beyond) as a spine in the city. This will only be further reinforced by the completion of the Gautrain.

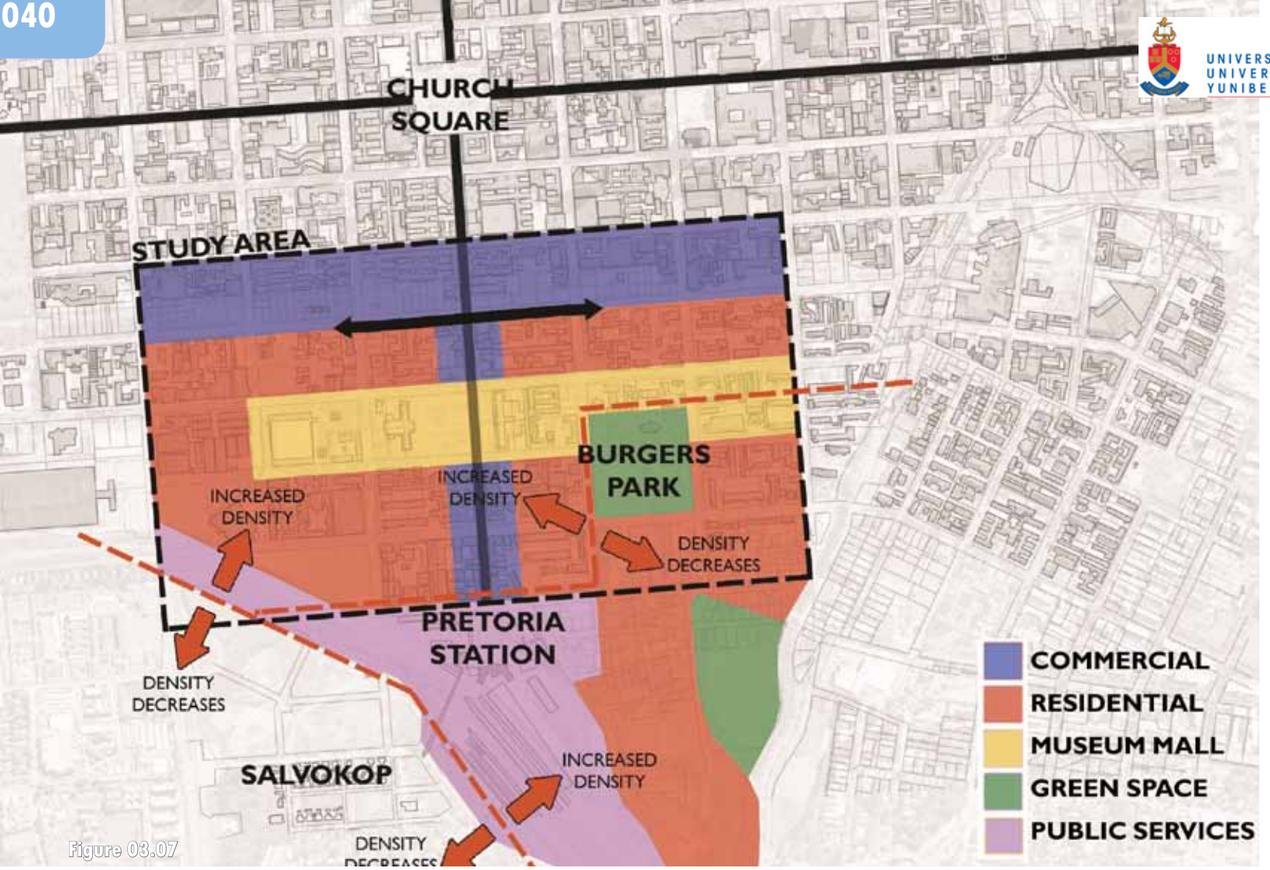


Figure 03.07

Figure 03.07
The Southern District is arguably the most programmatically diverse portion of Pretoria. It contains a small warehouse, semi-industrial area to the West. There is a strong commercial spine which is loosely organised around Paul Kruger Street, which runs North/South from Pretoria Station and through Church Square. The Eastern portion of the Southern District is largely residential in the form of high density apartments blocks which are grouped around Burgers Park.

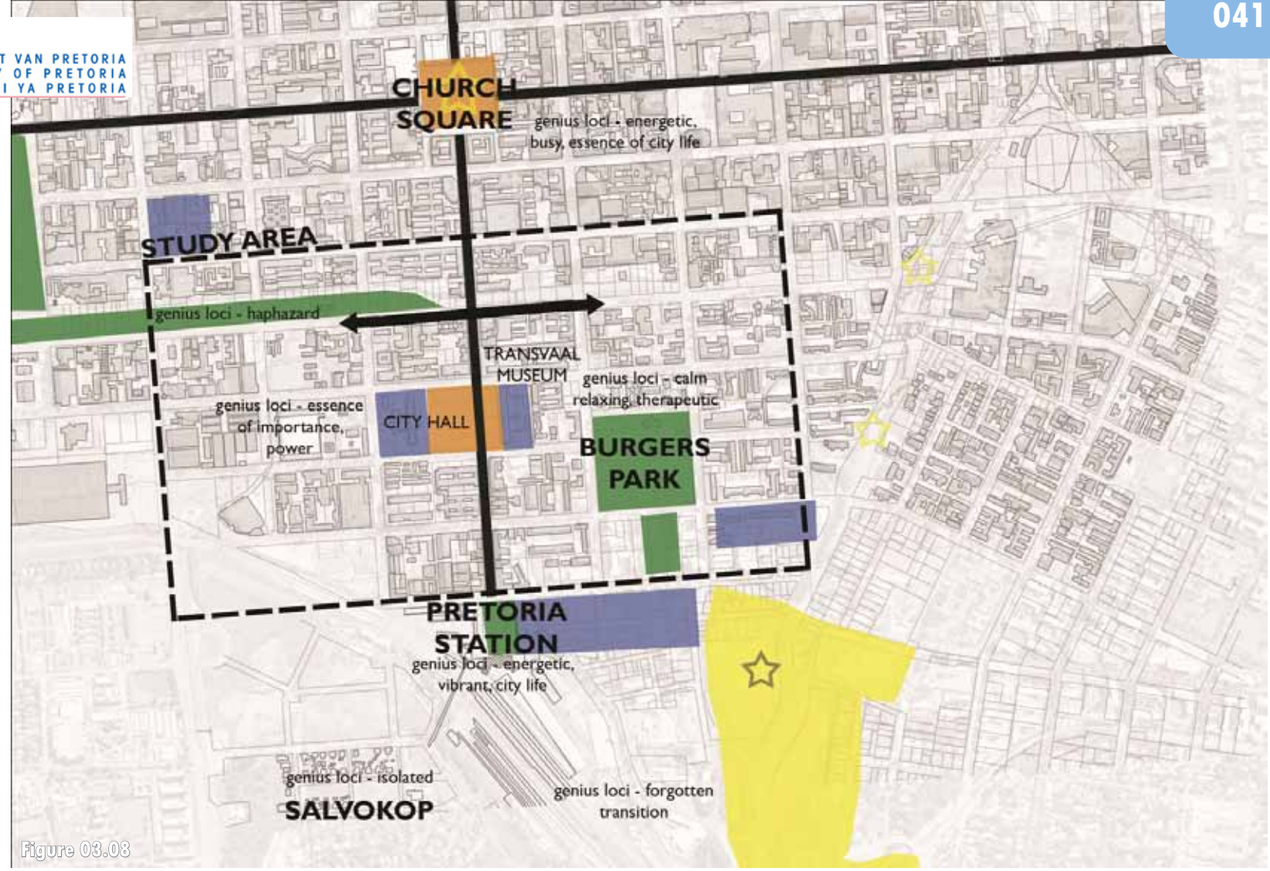


Figure 03.08

Figure 03.08
Description of the spirit of significant places in the Southern Precinct

Figure 03.09

Figure 03.09
Pretorius Square is located in the centre of the Southern Precinct and is the immediate context of the site chosen for this thesis.

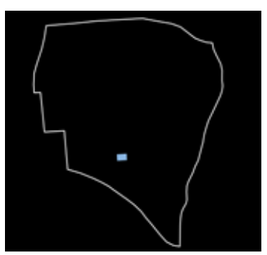


Figure 03.10

Figure 03.10
01 Pretorius Square
02 Pretoria City Hall
03 Rondalia Building (Incl. Metro Police)
04 Lisa Place (Residential)
05 Landbank
06 Transvaal Museum
07 NZASM Building (Site)
08 Burger's Park
09 Historical Fire Station

Figure 03.11

Figure 03.11
A panorama of Pretorius Square as seen from the roof of the NZASM Building. City Hall is on the left, the Transvaal Museum to the right and the Land Bank is directly across the square.


Figure 03.12


Figure 03.13


Figure 03.14

Figure 03.15

03 History and Statement of Significance

As stated in the introduction, the relationship of the site chosen for this thesis to its context is problematic.

Construction of the current NZASM building was completed in 1963 (Le Roux and Botes, 1993; 24). It was built on the property of the old Nederlandsch Zuid-Afrikaansche Spoorweg Maatschappij headquarters, hence the name. The site therefore has a long standing relationship with the railway.

The building that now stands on the erf is a truncated and diluted version of a far more ambitious scheme by Norman Eaton (Fisher, 2010). The whole city block would originally have been the site of the Ministry of Transport (Harrop Allen, 1975).

Transnet now owns the NZASM building and is also the main tenant, along with a number of their subsidiaries. There are a number of other occupants unrelated to Transnet, but much of the remaining office space is vacant.

The book Plekke en Geboue (Le Roux and Botes, 1993; 60) lists the following characteristics of the NZASM Building as being important:

- It has architectural or stylistic value.
- It has economic value and value in terms of reuse.
- It is in good physical condition or easily restored.
- It makes a strong contribution as it is the only building to the south which provides enclosure and an edge to Pretorius Square.

The aspects which are not considered to be of great importance are:

- The architect.
- Historical qualities.
- Contextual importance as part of a street facade.
- The building as a visual landmark.
- As an example of a typology.

04 Conclusion

While Norman Eaton is one of South Africa's most respected architects, this watered down version seems to have been produced by the Spoornet drawing office. As such it cannot be considered to be true to Eaton's vision (Clarke, 2010).

As an example of modernism and rationalist architecture the building is fairly mundane. I would argue that the Landbank directly across the square is a far better example of this school of architecture.

The NZASM's value is therefore is in the embodied energy it contains and the volumetric role it plays in the city. It serves to delineate Pretorius Square and reinforces Paul Kruger Street as an urban corridor. In terms of appearance the most distinctive features are that the corners on the Minnaar Street side step back.

If these characteristics are maintained the building may be altered with relative freedom.

Figure 03.12
View of NZASM Building from the corner of Minnaar and Paul Kruger Streets.
Figure 03.13
The "moat" which provides light and natural ventilation to the basement, but also serves to further divide the building from its context.
Figure 03.14
The two courtyards are currently little more than service yards.
Figure 03.15
Composite image of the NZASM Building. Paul Kruger Street is on the left, Minnaar Street on the right. The Paul Kruger Street side sees little pedestrian activity because it offers no shelter from the sun. And although the sidewalk on the Northern side of the building is shaded, there is simply nothing to attract pedestrians to walk along it. On either side the conditions are exacerbated by the fence and relatively stark facade.

Figure 03.16

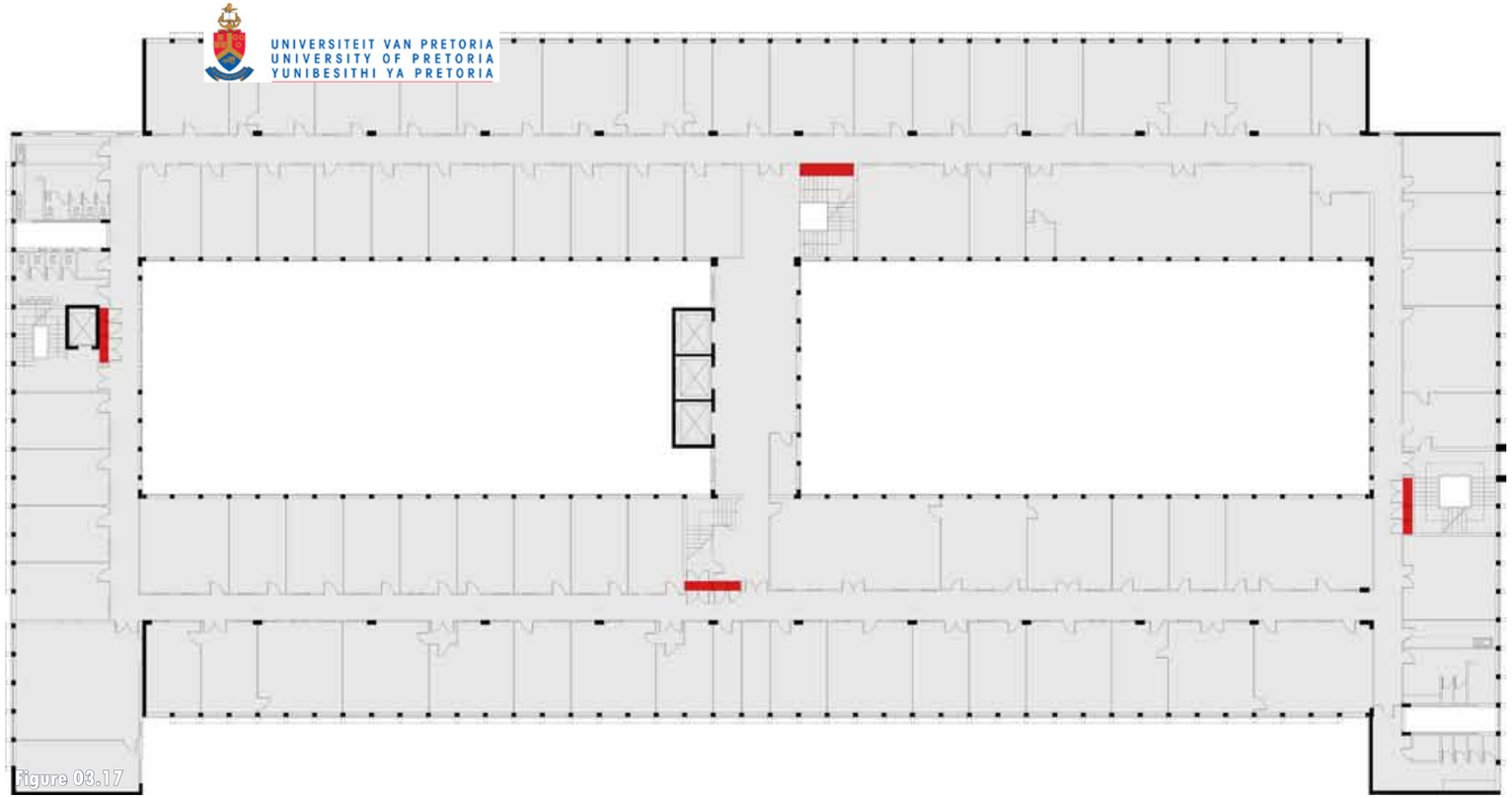


Figure 03.17

05 Problems to Solve

There are a number of issues that will need to be addressed in the building besides its division from the surrounding urban fabric. These relate primarily to issues of sustainability and the comfort of the inhabitants.

The first problem is that of solar control. The vertical concrete fins on the outward facing facade offer very little shelter to windows in terms of light and heat. This is especially true of the northern facade. The surrounding buildings also offer very little in the way of solar shading as the study on page 044 shows. Consequently, it was not surprising that the majority of the blinds in northern facing windows were found to be kept closed by the occupants when the site was visited. Artificial heating and cooling in the building is achieved by an inefficient system of individual air-conditioners for each office. There is also little cross ventilation because windows and doors leading to the passage are typically kept closed (Figure 03.18).

The final issue is that the two courtyards, which are prominent spaces within the building, are rarely used and are currently treated as little more than service cores.

Figure 03.16
Site diagram with existing building footprint
Figure 03.17
Typical existing plan with structure (black) and service cores (red) highlighted
Figure 03.18
Despite the fact that the corridors are wide enough to comfortably allow traffic in both directions, the low ceiling, length and lack of natural light make the space feel cramped and unpleasant
Figure 03.19
The courtyard is currently used for little more than a service yard
Figure 03.20
Image showing typical slab structure with beams at approximately 950mm centres

Figure 03.18

Figure 03.19

Figure 03.20

06 Opportunities to Exploit

As shown in the plan on the previous page the building contains four separate service cores. These the services are separated from the structure which means that they can be easily altered.

The slightly unusual ribbed slab configuration of the building (Figure 03.20) means that holes can be cut vertically between the beams without compromising structural integrity of the building.

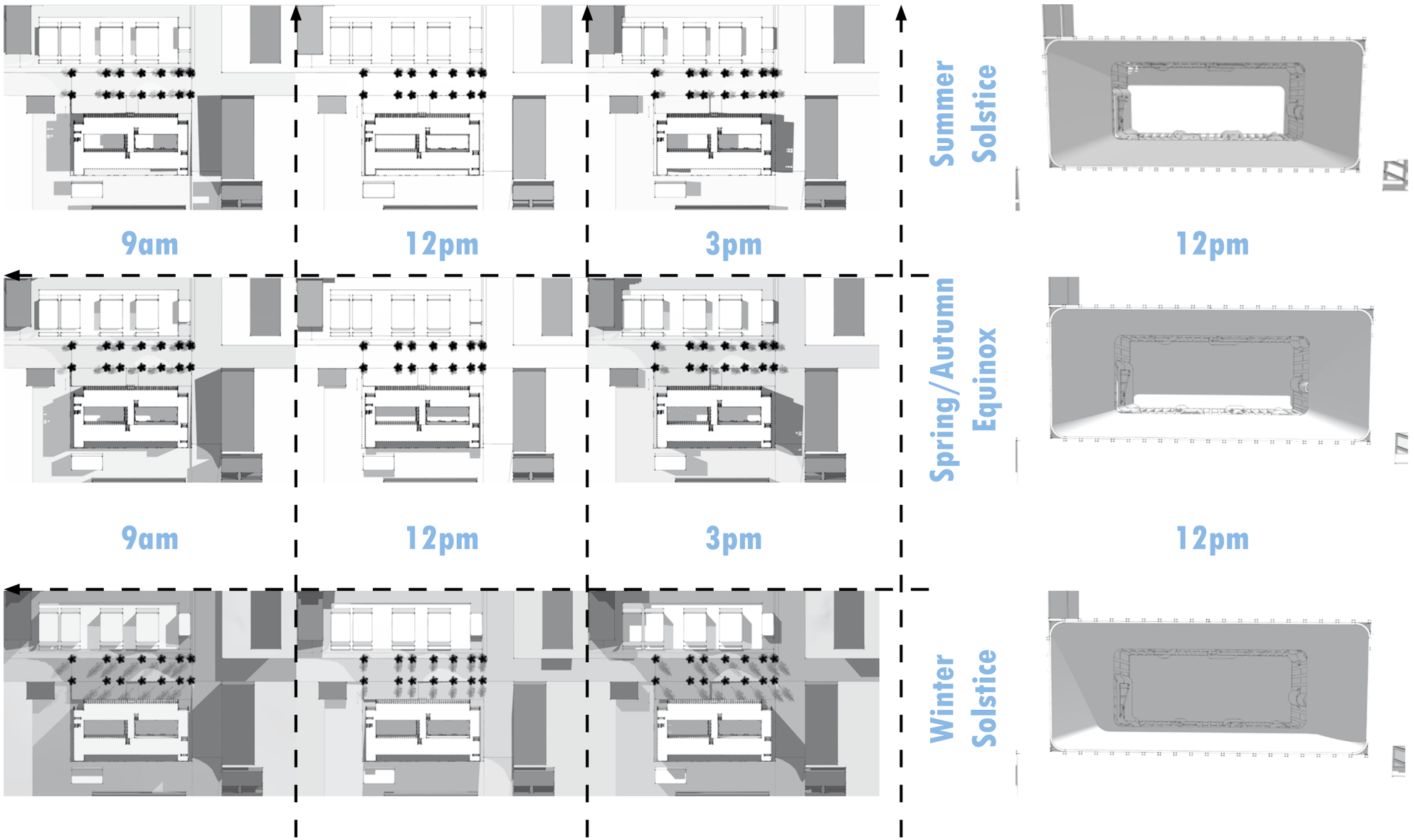
A service void runs from the ground floor up (red, Figure 03.21). This could potentially be put to an additional use.

A massive water tank is housed on the roof of the building (blue, Figure 03.21). It currently only serves as a backup system in case municipal water to the building is shut off.

Figure 03.20
Image showing slab structure with beams at approximately 950mm centres
Figure 03.21
Western elevation

In addition to this, rain water on the roof of the building is shed to the courtyards. From there it runs to a gutter which runs the length of the courtyard slab and down through the basement. This means that water for the entire 5000m² building footprint can potentially be collected.

Figure 03.21



The courtyard receive high exposure to sunlight during summer. Measures will need to be taken to compensate for heat gain.

The southern side of the courtyard receives the greatest amount of sunlight. Particular care will need to be given to this area. That said, this portion of the building is severely under-utilised and has the potential to become a dramatic space.

During winter the ground floor and first floor of the building receive very little direct sunlight. Artificial means of heating these floors will need to be provided.

Figure 03.22
Solar study with building and surrounding context on the left and courtyard on the right

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04_Consolidation

04_Consolidation

00 Introduction

This thesis will rely primarily on the grounded theory discussed in the chapter 2 and the experimental approach to research. These approaches will be used to inform and answer the following question:
How do we create an urban architecture which satisfies all the demands placed on it and that is primed to continue to do so in the future?
In the specific context of the site, how does one:

- Create a dialogue with the urban context?
- Create an architecture which is representative of the ideology of the city?
- Create an architecture which is adaptable so that it will remain relevant?

I hope to answer each of these questions by synthesising the concepts of urban branding, Jacob's approach to urban design and Brand's theory of adaptable buildings.
There are several challenges and problems which will have to be overcome in this approach. One example is the problem of representing identity in South Africa. With our cultural diversity this is an all but impossible task. That doesn't mean that it is impossible to express identity. One potential answer lies in creating an identity which users can interact with and appropriate.

Figure 04.01

Figure 04.02

Figure 04.03

Figure 04.04

01 Investing Identity

There are several international examples of appropriated urban identity. The most obvious is that of the Eiffel Tower in Paris. While it was meant to be temporary it has become the most common and lasting symbol of its city. A Google image search of "Paris" renders a result where thirteen of the first twenty one images are of the Eiffel Tower. If a brand needs a logo, then this is Paris'.

Approval of the Eiffel Tower was far from universal when it was first constructed. The writer, Guy du Maupassant, habitually ate lunch in the lower restaurant of the Eiffel Tower as it was the only place in Paris where he wasn't forced to look at it (Harris, 2004; 14). Perhaps it would be more appropriate to say that the Eiffel Tower was an imposed identity.

By contrast, the Guggenheim Bilbao Museum and the Sydney Opera House seem to have been appropriated more willingly by the residents of those cities. Even so, these three structures represent the extremes of lending identity to a city. A building with a similar plastic form to the Sydney Opera House could be placed in almost any harbour in the world and have much the same effect. Gehry's Bilbao Museum is built in two other cities for all intents and purposes (The Walt Disney Concert Hall in Los Angeles and the Peter B. Lewis Building in Cleveland). The Eiffel Tower could have been built alongside the Crystal Palace on British soil as a further exhibit of the latest construction techniques of the time.

In places which are oriented towards tourism these buildings serve a vital function. They can serve as informants for this thesis, but not as direct examples. Dubai serves as the classic example of iconic architecture run amok.

02 With Respect to Pretoria

This approach to architecture would be wholly inappropriate for a city which prides itself in service delivery. What Pretoria needs is urban space and buildings which are identifiable, but which respond to their context rather than dominate it. Buildings that will come to represent the inhabitants as well as the users. Buildings which adapt to the demands placed on them.

Figure 04.01
Eiffel Tower, Paris, France
Figure 04.02
Guggenheim Museum, Bilbao, Spain
Figure 04.03
Walt Disney Concert Hall, Los Angeles, US
Figure 04.04
Peter B. Lewis Building, Cleveland, US

Figure 04.05

Figure 04.05
The Sydney Opera House in its normal context.
Figure 04.06
Showing the Sydney Opera House as it might appear in the Port Elizabeth Harbour.

Figure 04.06

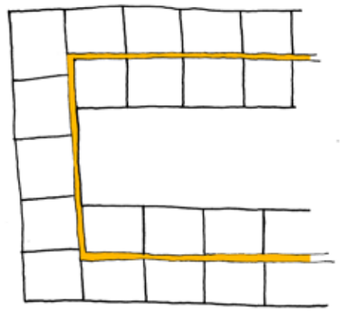
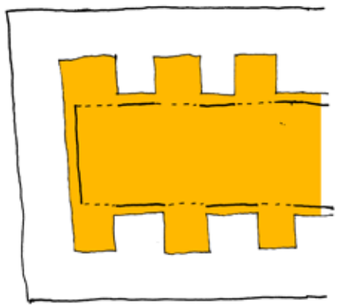


Figure 04.07



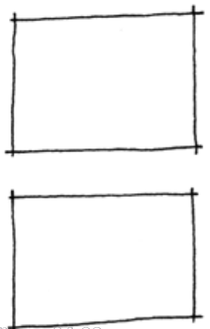
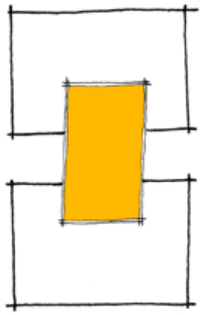


Figure 04.08



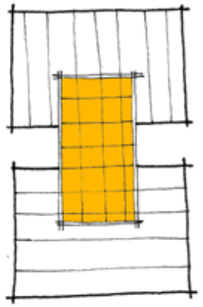


Figure 04.06
Diagrammatic plan with existing NZASM design on the left and a new plan on the right.
Figure 04.07
The introduction of a third element bridges and integrates to other disparate elements

03 Secondary Theory

Although the theories outlined so far define this thesis at the macro level, none have direct implications for the building form. Branding means that the building must comply to the spirit of Pretoria, but this is largely addressed by the program. It does have implications for how the users of the building and the immediate context must be treated, but no direct implications for the shape of the building. Jacobs' approach to urbanism defines how the building should treat the street, but again form cannot be directly derived from her work. Stewart Brand's theory as outlined in Chapter 02 suggests modularity in the building elements, but not what the shape of that module should be; although Brand favours rectilinear form (Brand, 1994; p60). As a result a concept and appropriate theory had to be found to serve all of the demands placed on the design.

The most important design informant for the NGO Hub scheme has been the disassociation of the NZASM Building from its context. The second is the program itself which calls for a high degree of interaction, communication and transparency.

The building has to be legible, adaptable, accessible and suitable in terms of environment and society as outlined in the previous chapters.

05 Concept

The concept that was eventually chosen was that of **Interface**. The idea is that the role of architecture in this building would be very similar to that of an operating system in a computer. It would be responsible for mediating and facilitating the interactions of visitors and the inhabitants while also managing the other building processes. In other words a user interface.

This has implications for the hierarchy of spaces in that places where people can interact with one another gains precedence over isolation and solitude which the existing internal layout of the NZASM Building favours. One early diagram representing this is shown in Figure 04.06.

Figure04.07 consists if three simplified diagrams showing the introduction of a third bridging element between two others. It is this third space which forms the focal point of the design investigation. In spatial terms this third/intermediate element can be seen to refer to streets, lobbies, lecture rooms, staircases, courtyards, passages, meeting rooms, the space immediately around the proverbial water cooler, etcetera. These are places of exchange and transmission. The roles that they play spatially is similar to the role that NGOs play in society; they exist primarily as a means to reach a goal. That might mean getting upstairs or getting basic amenities in a particular area.

From a more material, tangible standpoint this third element can also refer to built elements such as the facade; the intermediary between inside and outside.

This concept borrows from a number of architectural theories including semiotics, wayfinding and the guidelines for built environment design set out in Christopher Alexander's *A Pattern Language* (1977)

06 Pattern Language

The rightmost diagram in Figure 04.07 shows that one approach to dealing with this kind of intermediate space is to incorporate aspects of the elements that it bridges. This is a simplified version of the approach recommended by Alexander.

06 Semiotics

Semiotics is the theory that architecture is a language equivalent to that of the spoken and written word (Porter, 2004; p164). The idea is that a building element such as a door has a particular associated meaning in much the same way that the word "cat" has a particular associated meaning. Where the concept of this project deviates from semiotics is that it doesn't treat the meaning in architectural forms as being inherent. Rather, like an operating system, this thesis will seek to create a logic of use and space which can be grasped intuitively - or failing that - learnt by the user. We find this approach in operating systems such as Microsoft Windows where the button for closing a program is always on the top right of the screen and the button for starting a program is usually on the bottom left.

06 Wayfinding

Wayfinding is the idea that architecture shoud be used to aid orientation within the built environment.

> "Let the mishap of disorientation occur and the sense of anxiety and even terror that accompanies it reveals to us how closely it is linked to our sense of balance and well being. The very word "lost" in our language means much more than simple geographical uncertainty: it carries the tone of utter disaster" (Lynch, 1960; p60)

Spatial orientation is also not only about knowing where you are, but also about knowing how to get where you are going (Passini, 1992; p43). In buildings this most frequently means using shapes, volume and signs to provide a system by which people can orientate themselves. A simple example of this is that large volumes typically mean more public space in buildings. Therefore moving towards a greater volume means moving towards the outside (though there are clearly exceptions such as theatres). This theory as it is outlined in Romedi Passini's *Wayfinding in Architecure* provides a framework by which the other two theories are utilised.

The exact application of the concept will be shown in Chapter 07.

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05_Precedents

05_Precedents

00 Introduction

Because of the nature of the program, finding a typological precedent has proven to be a difficult task.

While business collectives (resource and space sharing) are nothing new, they generally consist of individuals or small companies in creative industries banding together to share running costs. This practice seems to be most typical amongst architects, artists and writers.

The problem is that none of these plan for a high volume of visitors that is central to the program of the NGO Hub. The closest precedent, taken from the point of view of visitors, is probably that of a government department such as the Department of Home Affairs. The problem here is that typologies of this type do not typically make allowances for subgroups within them to express individual identity to any great degree. Meanwhile, it is important that organisations retain individual identity in the NGO Hub. This is done largely to avoid the creation of a single, large bureaucracy.

This issue is further compounded by the fact that the building is multifunctional. The approach has therefore been to borrow from a wide range of typologies, instead of drawing inspiration from a single one.

Figure 05.01

01 Adaptive Reuse Precedent

High Street Loft - Kokaistudios
Shanghai, China

Adaptive reuse of obsolete built fabric is the responsible choice for reasons of sustainablity. But it is also a good decision from an experiential standpoint. The reason for this is that the interplay of new and old adds a layer of character to buildings which is impossible to manufacture.

This approach is especially important in cities such as Shanghai which have experienced explosive growth. This growth has meant that the predominantly commercial and residential inner-city has expanded to overtake and consume the outlying industrial regions.

Rather than demolishing an existing factory, Kokaistudios employed an "Aikido strategy where you use your enemy's energy for your own purposes" (Saieh, 2010). The new program is for a multifunctional building with a fashion design centre at its core.


Figure 05.02

The effect of the renovation was to turn an outmoded textile factory at odds with its new environment into a building which embodies the spirit of progress and development of contemporary China. This was accomplished while also maintaining a relationship with the building's historical use.

Conclusions drawn from the precedent:

Where the High Street Loft succeeds is in treating the existing fabric as a springboard rather than a hurdle. Inspiration is drawn from the old factory, spatially and programmatically, to create new spaces.

It does this while also serving the needs of a modern Chinese city, both aesthetically and in terms of the way the building functions. The most important feature of the functionality of the building is the public spaces it creates and the fact that it provides an interactive ground floor in the form of retail. This enmeshes the building within its context in terms of use.

These aspects of the design serve as an example for the alterations to the NZASM building.

Figure 05.03

Figure 05.01
Highstreet Loft in Shanghai, China by Kokaistudios is an excellent example of adaptive reuse.
Figure 05.02
Atria have been created by the simple expedient of removing floors. While retaining the columns and beams might have been structurally necessary, they serve to lend character to the space that it would not have had otherwise. In a new building their construction would likely have been considered wasteful.
Figure 05.03
Degrees of permeability and an interplay of new and old make for a visually interesting facade.


Figure 05.04


Figure 05.05


Figure 05.06

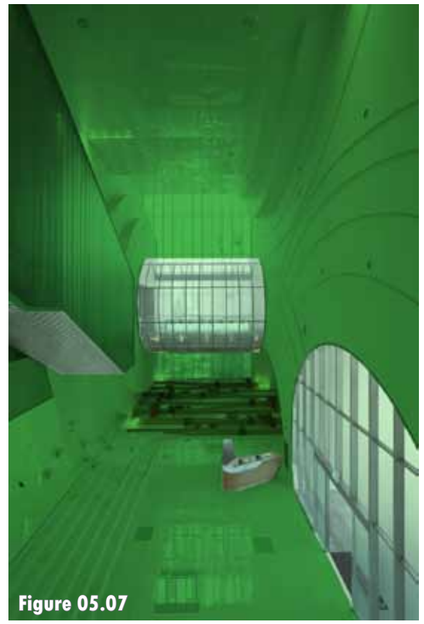
Figure 05.07

02 Spatial Precedent

Kring Kumho Culture Complex - Unsangdong Architects

"Our intention is to construct an architectural building to create codes for companies and consumers to facilitate communication, then embed an identity in that architecture." (Sebastian, 2010)

This building serves as precedent in two ways. The first is that it was designed to represent and express the client's brand; that of Kumho EC (Sebastian, 2010). This was not done by slavishly complying with a predetermined company aesthetic. Rather the brief was that the architecture should embody harmony. While it is difficult to say whether this was accomplished, it certainly seems as if the architects were able to create a series of unique spacial experiences; this speaks to their desire to embue the building with a strong sense of identity.

The second reason that this building is of interest is the use of circles and curves to draw attention to places of exchange. These are the portions of the building which facilitate the transmission of ideas as well as air, light and people. The result is highly identifiable and navigable space.

Conclusions drawn from the precedent:

This is a highly iconic building, but its value as an example to this dissertation lies in the use of form to identify points of interaction. This system of shapes effectively provides a manual of use for the Culture Complex.


Figure 05.08

Figure 05.04
Kumho Culture Complex in Seoul, South Korea.
Figure 05.05
A meeting room in an elevated glass tunnel.
Figure 05.06
A hierarchy of use is apparent in the expression of form. The most important element in the room has an organic form and the least important is rectilinear. In between these extremes there are circular forms and elements which combine lines and curves.
Figure 05.07 & 05.08
By creating exceptions in the generally rectilinear form of the building the architects are able to direct the attention of the user. There is a risk that if employed too generously the exception will become the rule and the space will lose its legibility.

Figure 05.09

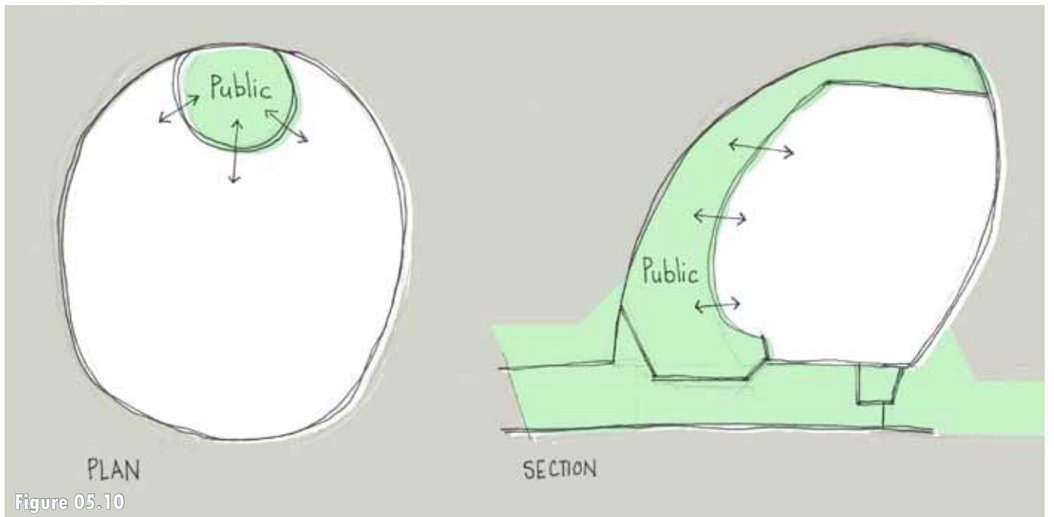

Figure 05.10

Figure 05.11

Figure 05.12

Figure 05.09
Western view of London City hall and amphitheatre with cafe and exhibition space below.
Figure 05.10
Diagram showing public access. The chamber itself also contains 250 seats for press and the general public.
Figure 05.11
View of ramp from above in use by members of the public.
Figure 05.12
View of ramp and public gallery from the assembly chamber floor.

03 Typological Precedent

London City Hall - Foster and Partners

While both the Kring Kumho Cultural Complex and the High Street Loft have informed the program, their primary contribution is to design approach. The reverse is true of the London City Hall.

"City Hall has been designed as a model of democracy, accessibility and sustainability... It is a highly public building, bringing visitors into close proximity with the workings of the democratic process." (Anon, 2002)

This statement could equally serve to define the intent of the NGO Hub. The City Hall provides an open air amphitheatre for public events and houses a cafe and exhibition space on the lower ground floor level. However, the element which makes the largest contribution to the accessibility of the building is the public ramp.

The ramp rises from the bottom of the building to the public viewing deck and event room at the top. Above the second floor the ramp offers an unrestricted view of the Greater London Assembly chamber below. The middle and upper portion of the ramp also allows the public to see into the offices of the GLA staff.

It happens frequently that buildings which are designed to be transparent to the public are not because of the reflectivity of glass which is not properly shaded. The London City Hall circumvents this problem by allowing public viewing from the inside.

Conclusions drawn from the precedent:

The London City Hall is therefore a place where residents of that city can go to not only see, but hear their elected officials at work. One of the most important objectives of this thesis project is to achieve a similar degree of transparency.

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06_Program

06_Program

00 Introduction
This chapter deals with site accommodation, but will first elaborate on the program.

01 Utilising Existing Support Systems
While the promised government expenditure on infrastructure is certainly a positive step, speaking to disadvantaged members of the general public has revealed another problem; there are already existing services and aid systems which are currently severely under-utilised.

One example of this is of a cleaning lady working in the Pretoria Inner-city. She had no hope of her children receiving anything beyond a high school education because she couldn't afford it. She had never heard of a bursary or scholarship and the idea that her children could potentially be paid to study was completely alien to her. Similar is the story of a small scale farmer in Mamelodi who had received startup capital from the government, but whose crop had been destroyed by heavy rain. The loss was debilitating and he had never heard of insurance outside of the context of homes and cars. As a result, without further funding, he is incapable of returning his farm to full production.

A more positive example is that of somebody seeking investment so that they can realise a business idea or fund a project. There are many web sites such as www.kickstarter.com or www.go4funding.com which offer a forum for investors and those seeking investment to meet. Unfortunately, in South Africa the majority of people have neither the knowledge nor the facility to take advantage of these resources.

02 Challenges for NGOs
Concurrently there is the plight of non-profits and NGOs. These organisations are frequently dependent on donations and as a result their income can be inconsistent. This means that high overheads can be problematic. This puts a limit on the facilities which they can maintain as well as their ability to market themselves.

This scheme proposes a solution to this problem in the form of the NGO Hub. The program offers the NGOs the ability to share resources and thereby minimise overheads. There is also the opportunity for collaborative marketing. At the same time it offers the public a centralised location to find aid for a wide variety of needs.

03 Considering Alternative Locations
One might suggest that this type of project would be more appropriate in Mamelodi or Soshanguve. The counter argument to this is twofold. Regarding location: this is the first building of its type and the site offers significant and much needed exposure. If handled correctly it advertises itself simply by being present. The site is also central and therefore accessible to the major population groups of Tshwane. With regard to appropriateness: this typology is defined by the appropriateness of its occupants. The offices of basic service delivery and rural development organisations are likely better located near the populations they serve; this particular

Site Development Accommodation Schedule

Total Site Area:	29974 m²			
Name	**Total Quantity**	**Type**	**Quantity**	**Description**
New Interventions				
NGO Offices	9	Offices	1	Financial Aid, advice and Entrepeneurship
		Offices	1	Social Justice, Human Rights and Legal Advice
		Offices	1	Health
		Large		Advocacy Groups for AIDs, STIs, TB, etc. Counselling and Therapy
		Offices	1	Participatory Democracy
		Large		Information and Permanent Voting Station
		Offices	1	Access to Information and Education
		Large		Including Research, Access to Technology, Career Guidance and Skills Training
		Offices	1	Culture and Recreation
		Small		Organisations for Sports, Arts and Entertainment
		Offices	1	Animal Rights and Environment
		Small		
		Offices	1	Urban Development
		Small		
		Offices	1	Infrastructure Development and Government
		Small		Representation/Intermediary
NGO Market	1	Open Market	1	Minnaar Street Market
				Market which sells goods produced with the help of NGOs as well as providing space for informal vendors

Hub will focus on urban appropriate services. Examples of these include NGOs which focus on finance, tertiary education, urban development and information on governance and democracy. That said, similar location appropriate projects could easily take place in disadvantaged communities with this scheme serving as a prototype.

04 What the Hub is for

The ultimate objective is to create a comprehensive structure for serving the needs of people which runs parallel to government. This program is aimed at improving the general standard of living and is therefore well suited to the "African city of excellence".

05 Large and Small Scale

In addition to providing a service to Pretoria and Tshwane at large, the program must also serve the immediate environment. The most direct ways that it will do this is by providing continuity of experience along Paul Kruger Street and an active edge to Pretorius Square. By doing this and with proper handling of the site boundary the NZASM Building will become enmeshed in the fabric of the city and cease to be an island.

06 Market

On the Minnaar Street side there is a market which also serves as public open space. This is empathetic with Pretorius Square and responds to the design of Da Costa's scheme. Although the market would be open to all traders, people who have produced their goods with the help of and NGO will have precedence. The sole exception to this rule is the space immediately on the corner of Paul Kruger and Minnar Streets. This space is reserved for informal street vendors which is how it is currently employed (Figure 06.01).

A restaurant and live music zone on the north western corner of the site completes the tie to Pretorius Square and provides a wider range of use of the area in terms of time.

07 Retail

The building will be embedded with Paul Kruger Street by introducing retail which the general public can interact with at ground level. This provides continuity of experience along Paul Kruger Street as well as adding interest along the building facade.

Figure 06.01
It is common for street vendors to locate themselves on the corner of the site, a use which will be incorporated in the design.

Name	Total Quantity	Type	Quantity	Description
NGO Supporting Elements	11	Ablutions	1	Market Toilets (51 Vendors + Visitors)
				Male (Min. WC x 2, Urinal x 3, WHB x 3) Female (Min WC x 5, WHB x 3)
		Shared Kitchenette	4	Provision of Casual Interaction Space
				Provision for seating and food preparation
		Shared Meeting	4	Provision of Formal Interaction Space
				Min. 1 Meeting Room on each floor to be accessible to all organisations
		Ablution Ext.	2	Hub Toilets
				Extension of existing toilets to cater for visitors (Min. +1 WC, +1 WHB for each sex)
Commercial	5	Retail	3	General Retail
				Paul Kruger Street Retail
		Food & Beverage	1	Coffee Shop
				On Minnaar Street Including Free WiFi Zone Provided by the NGOs
		Food & Beverage	2	Restaurants
				On Minnaar Street Including Free WiFi Zone Provided by the NGOs
Renovation				
Shared Space	2	Courtyards	1	NGO Courtyard
				Circulation and Lecture Space
			1	Office Courtyard
				Cool Space and Summer Garden
Commercial	Remainder of Existing Office	Offices	1	Generic Adaptable Office Space

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07_Design Process

07_Design Process

00 Introduction

What follows is a description of various elements of the design investigation which will rely primarily on diagrams.

01 Program

Because the concept for the project is interfaces, the first step was to examine the kinds of connections that would be required between the various components of the program as well as the greater context.

The next step was to decide on a hierarchy of interaction. Figure 07.01 is a conceptual diagram showing the perceived degree of public interaction with the building, as well as a different degrees of exposure. Retail, market and restaurant are external because they help the building connect with its context. NGO is simultaneously central and given the most importance. The general offices in the building are shown as being smallest representing the majority of the floor area occupation. This is because their public interaction is the least of the different function.

02 Democracy of Interaction

While the NGO Hub is located around the easternmost courtyard, it is layered in the programs which tie the building to its context. Even so, it is important that those functions do not serve as a barrier. In the interest of tranparency the courtyard will behave as public open space. Safety is still a concern so security for the NGOs will be dealt with at the level of individual clusters (e.g. the financial NGOs).

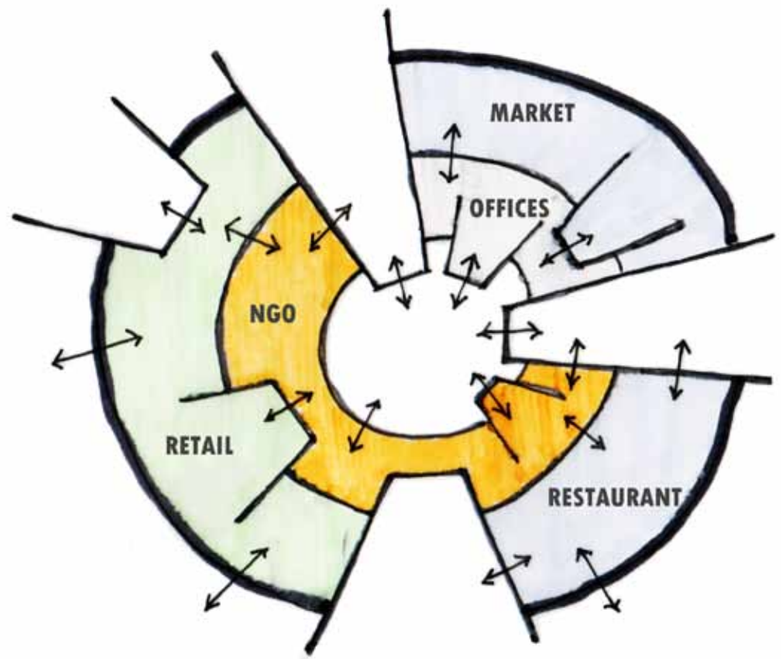


Figure 07.01

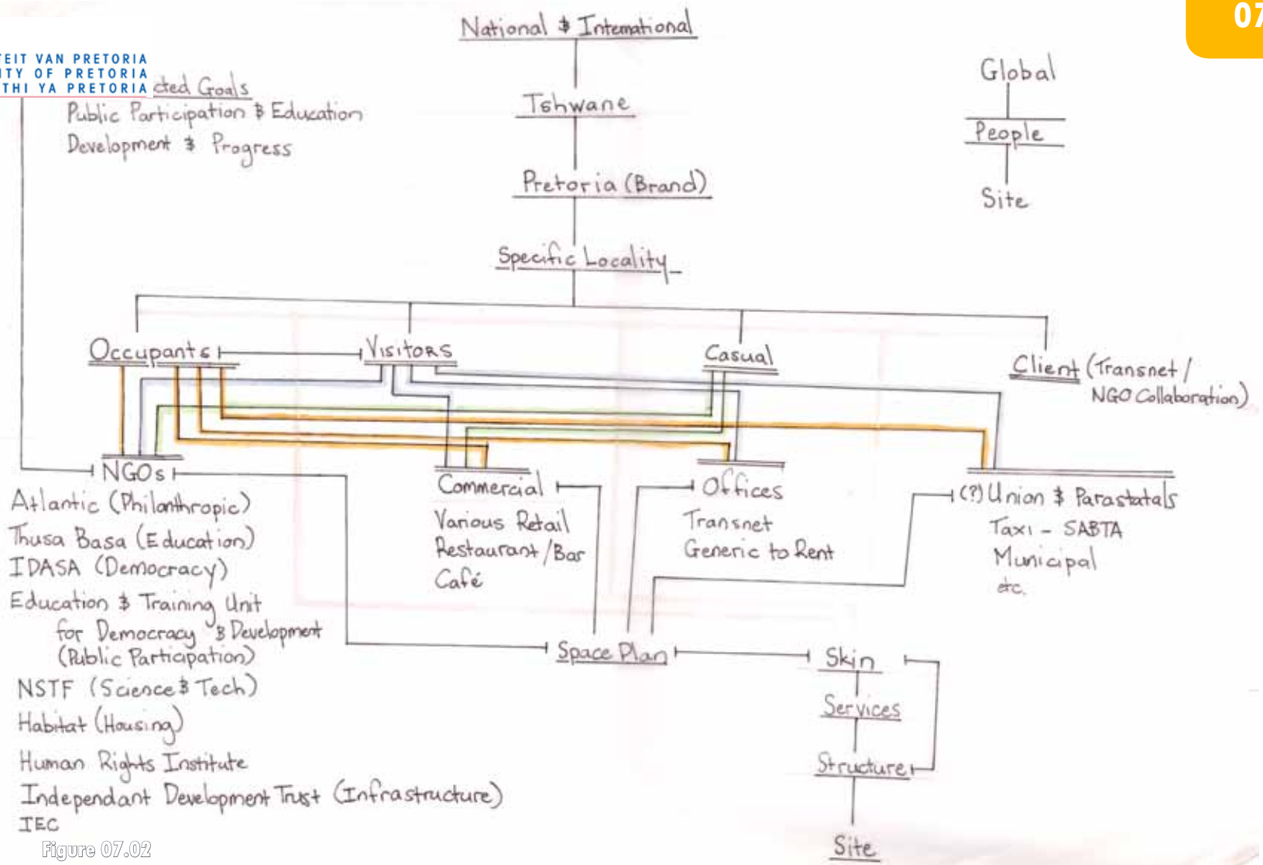


Figure 07.02

Figure 07.01
Conceptual diagram showing the introduction of the interface element
Figure 07.02
Potential programmatic interfaces

03 Palette

The choice of materials played an important role in the design of the building. The central question was whether to employ reinforced concrete as the primary structure so that the new intervention would comply the materiality of the buildings around the square. While this may have been the obvious choice, steel was chosen instead. The first reason for doing so is that steel offers greater flexibility in term assembly and disassembly which supports Stewart Brand's theory of adaptability. The second is that creating differentiation between new and old allowed for the design of more interesting Interface/Bridging elements.

The second significant material decision was what material to use in the construction of the screening elements in the building which call for flexibility and transparency. Because of the way that NGOs are funded, high maintenance materials were necessarily excluded. This excludes most forms of timber. The remaining potential candidates were polycarbonate sheeting, stainless steel architectural mesh or perforated aluminium. See table 07.01 for a detailed analysis.

When comparing stainless steel with aluminium there is a clear advantage in terms of energy and financial cost. Stainless steel is also the responsible choice in terms of South Africa's economy because there are sources of entirely locally produced material. Having said that, aluminium will still be employed in opening sections of windows and doors. The reason for doing so is that aluminium's performance in these applications over time is significantly better than any other material. However, use of aluminium in the building will be kept to a minimum.

Material Selection Criteria - Screening Elements

Material	Embodied Energy	Source	Recyclability	Financial Cost	Conclusion
Alumimium and Glass	Alumimium = 204.8 MJ/kg	South Africa is the 8th largest manufacturer of aluminium in the world. However, the majority of feedstock is imported. (http://www.southafrica.info/business/economy/sectors	Very high	Approximately 4 or 5 times the cost of stainless steel. (www.metalprices.com)	Because of the high material, transport and energy cost, aluminium will only be used where necessary.
	Glass = 16.96 MJ/kg	Manufactured locally	High		
Steel and Glass	Steel = 31.1 MJ/kg	Mined and manufactured locally	High		The combindation of stainless steel and glass in this application is the least expensive in terms of money and energy. It is also entirely locally manufacture which means that the expenditure is
	Glass = 16.96 MJ/kg	Manufactured locally	High		
Lexan Polycarbonate	Data unavailable, the closest equivalent information is for Polyethylene = 68.96 MJ/kg	Manufactured by SABIC in Saudi Arabia, imported via Durban (http://www.sabic.com/me/en/default.aspx)	Very Low. Polycarbonate is a number 7 plastic which means that it falls in the miscellaneous category. Consequently it cannot be recycled unless it is collected in large quantities of that specific chemical composite.	Data unavailable.	The fact that Lexan Polycarbonate is entirely imported as well as being an oil product means that it is largely excluded from consideration for large scale use in this scheme.

*Energy values are an average of values found in *Environmental Auditing for Building Construction: Energy and Air Pollution Indices for Building Materials* (Cole and Rosseau, 1992)

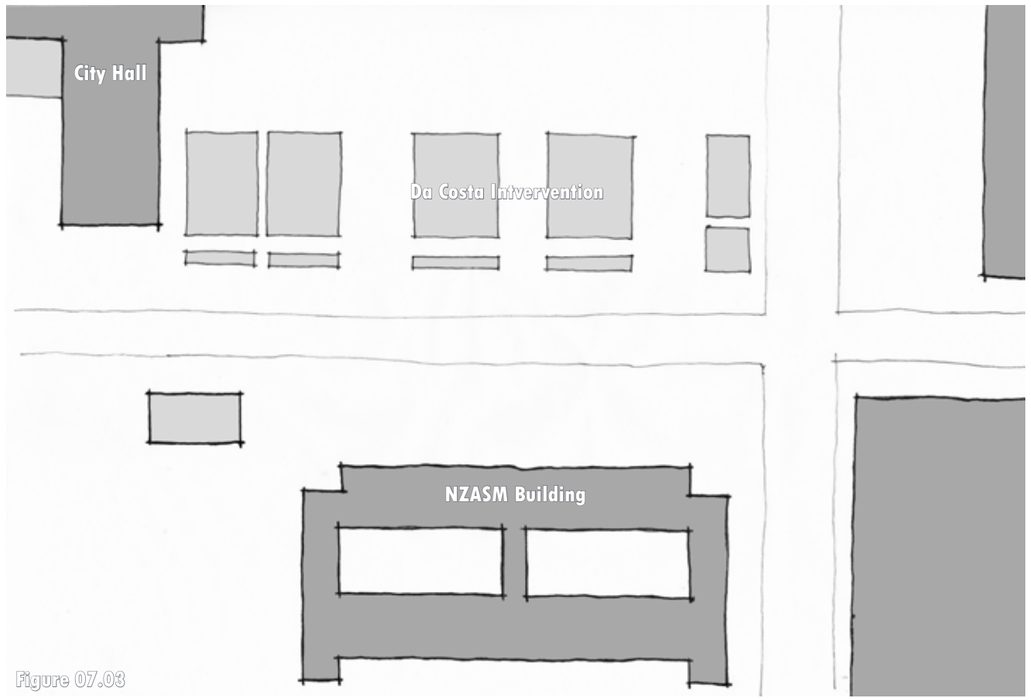


Figure 07.03

Figure 07.04

Figure 07.03
NZASM Building and immediate context
Figure 07.04
Introducing interface elements
Figure 07.05
Distinct zones of interface
Figure 07.06
Expressing NGO presence outward

04 Tying the Building to Context

As discussed in chapter six, the building embeds itself in the city by partaking of its context. In Figure 07.04, from left to right, the first rectangle assumes characteristics of the mass and extrusions of Da Costa's scheme.

The next rectangle ties the building to the street itself. The third rectangle is the market space and incorporates the open space of the square. As the eastern courtyard provides a space for the public to enter the NGO sphere, the market provides a space for the NGOs to enter the public sphere.

The final square borrows from the retail outlets typical of Paul Kruger Street in this area.

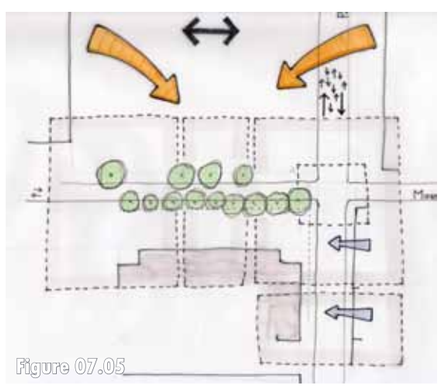


Figure 07.05

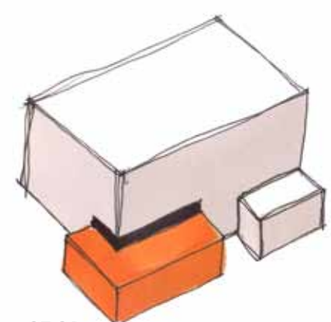
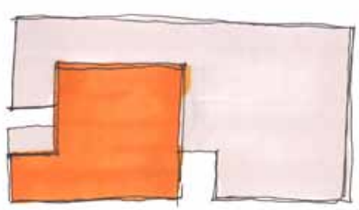
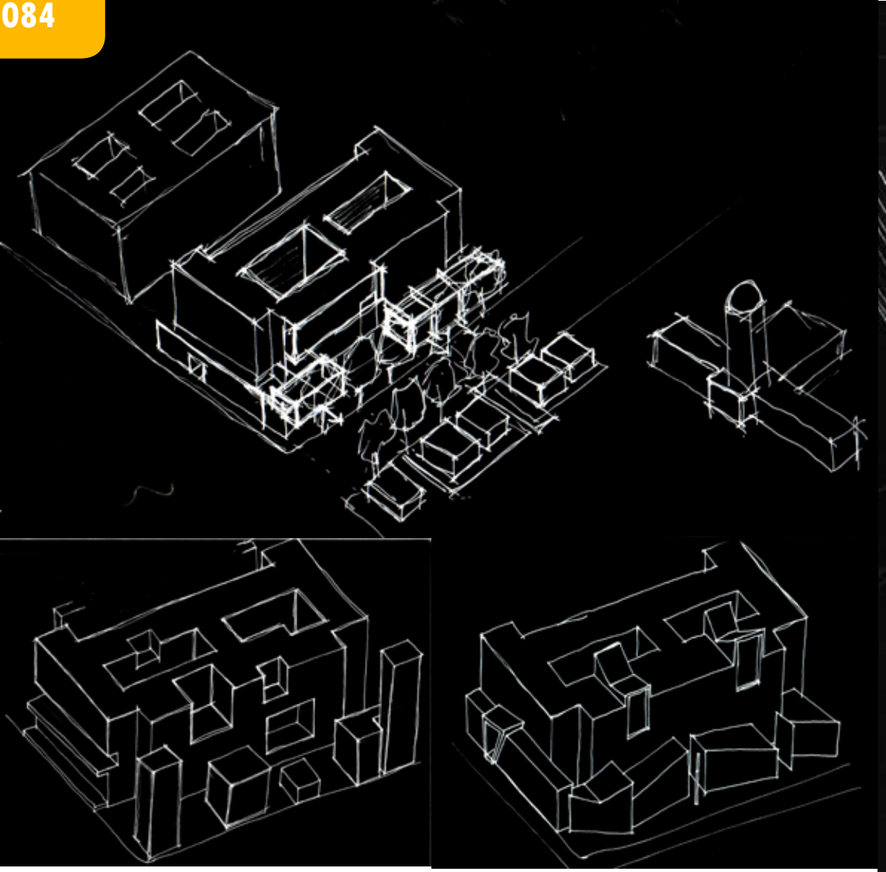
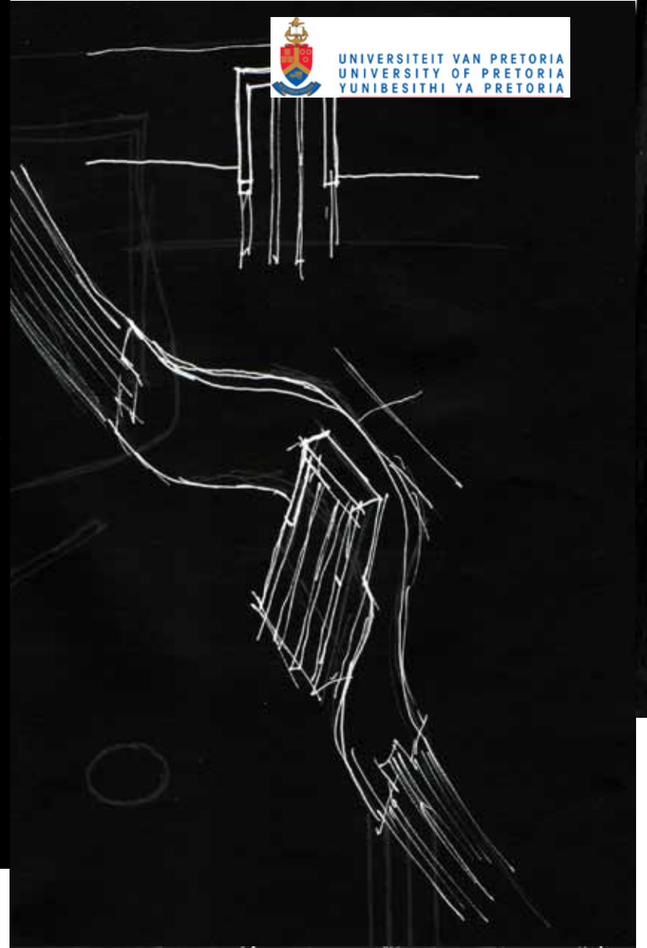
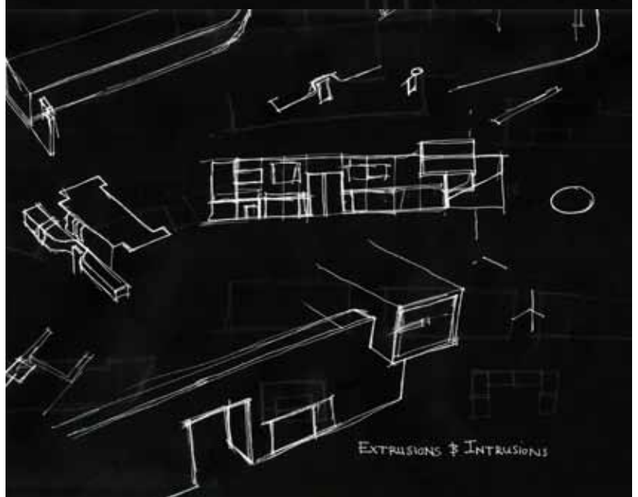


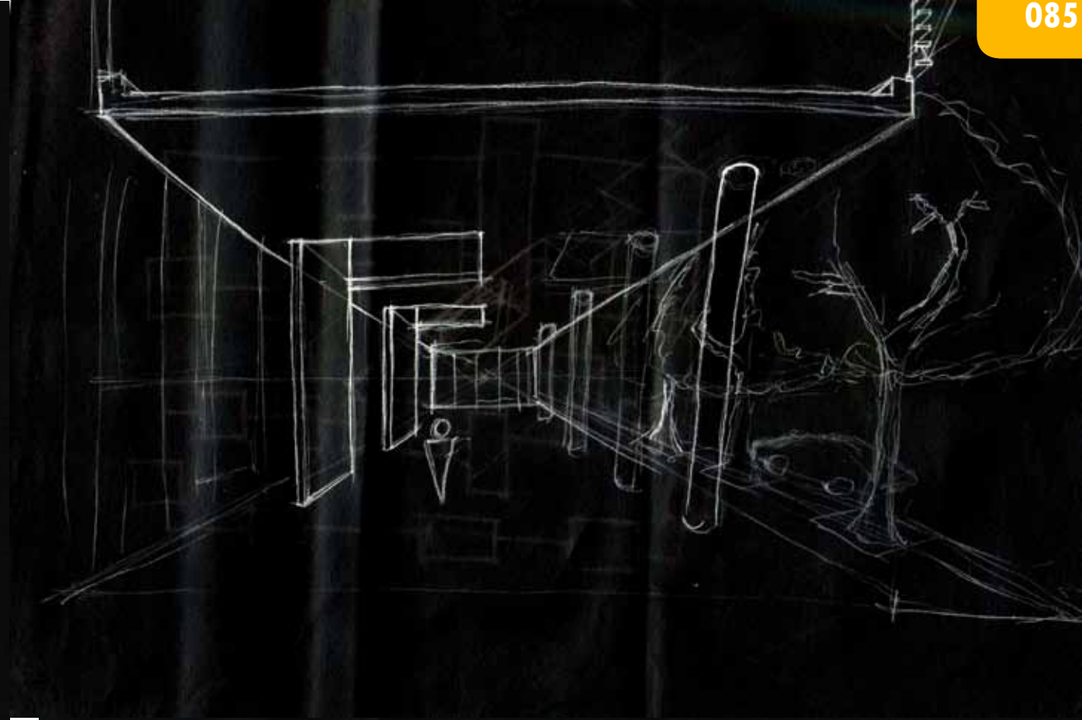
Figure 07.06











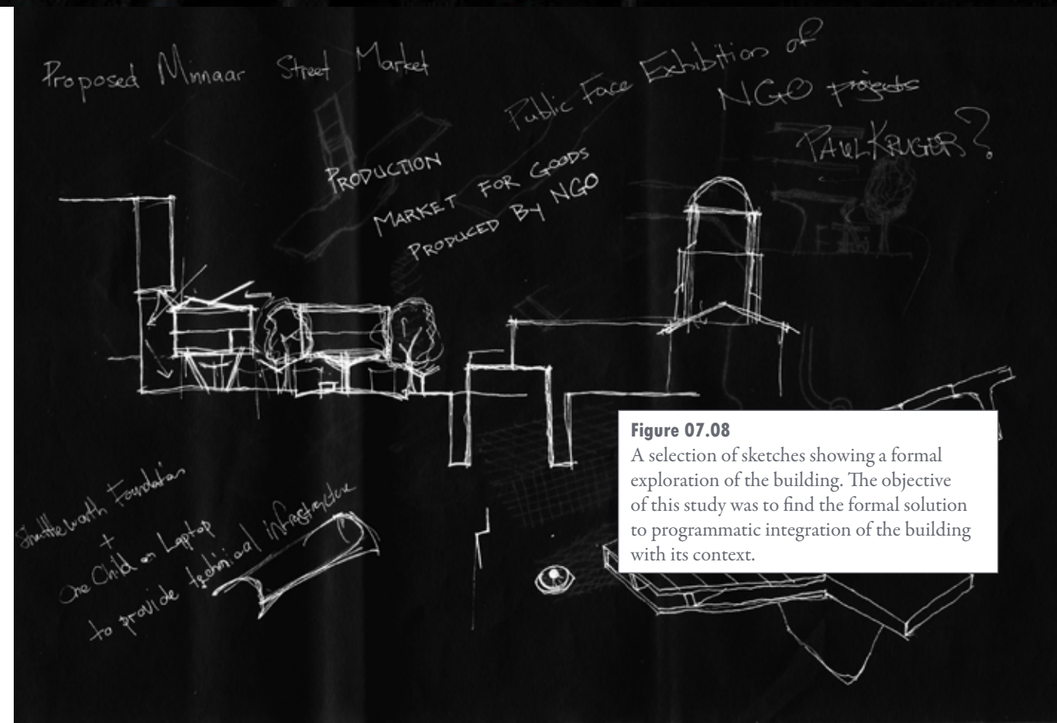


Figure 07.08
A selection of sketches showing a formal exploration of the building. The objective of this study was to find the formal solution to programmatic integration of the building with its context.

05 Spatial/Formal Enquiries

It is at this point in the design that curved surfaces entered the design. There are a number of reasons for doing so. The first is that, of the four major buildings facing Pretorius Square, the NZASM Building is the only one which doesn't incorporate round form into the facade. All three of the others, the Transvaal Museum, Land Bank and City Hall have round columns evident on the facade. The museum and City Hall also have round and arched windows. These elements serve to soften and make the buildings more inviting. By contrast, the NZASM Building has not such elements.

It is also a characteristic of human sight that it is attuned to edges and borders (Baldwin, n.d.). This means that when the eye meets a curved surface, it naturally follows it until it perceives an edge. Consequently, curved surfaces can be used to direct attention and aid orientation.

So the decision to introduce curves to the design is partly in deference to the context, partly in reaction to the harsh rectilinearity of the NZASM Building and partly to aid orientation.

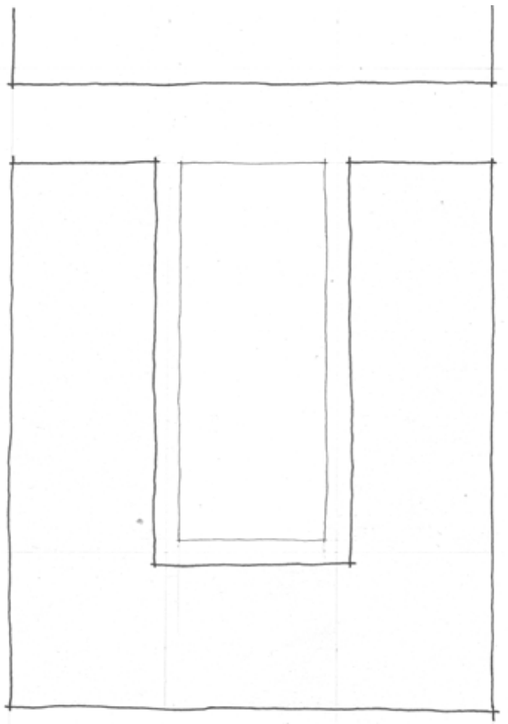


Figure 07.09

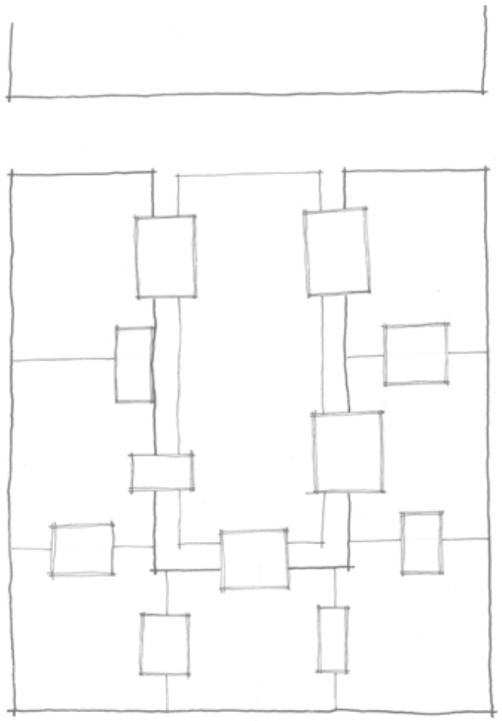


Figure 07.10

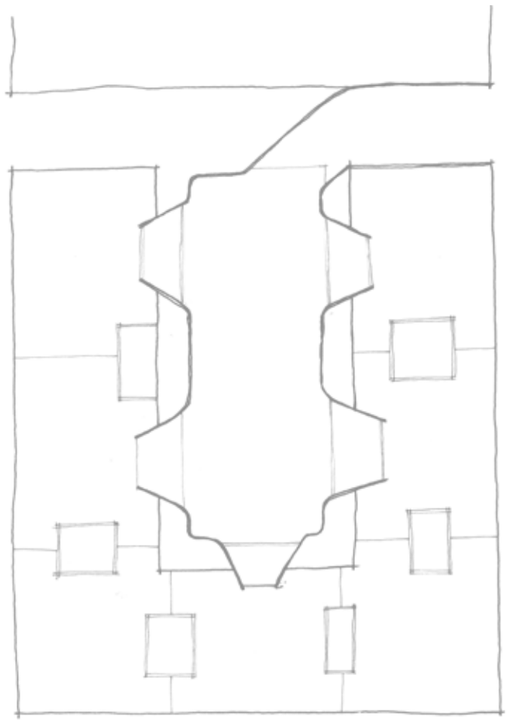


Figure 07.11

Figures 07.09 to 07.11
Introducing bridging elements and differentiation to aid orientation into the courtyard space.

06 Courtyard development

By pulling the courtyard into the building a third space which serves a multitude of functions. It emphasises emphasises entrance and provides space for the NGO clusters to advertise their presence. It also creates a sheltered foyer space which can act as a place for wating as well as a security and transmission zone.

It is at this point where form (as well as scale) begins to play a role in aiding orientation of the space.

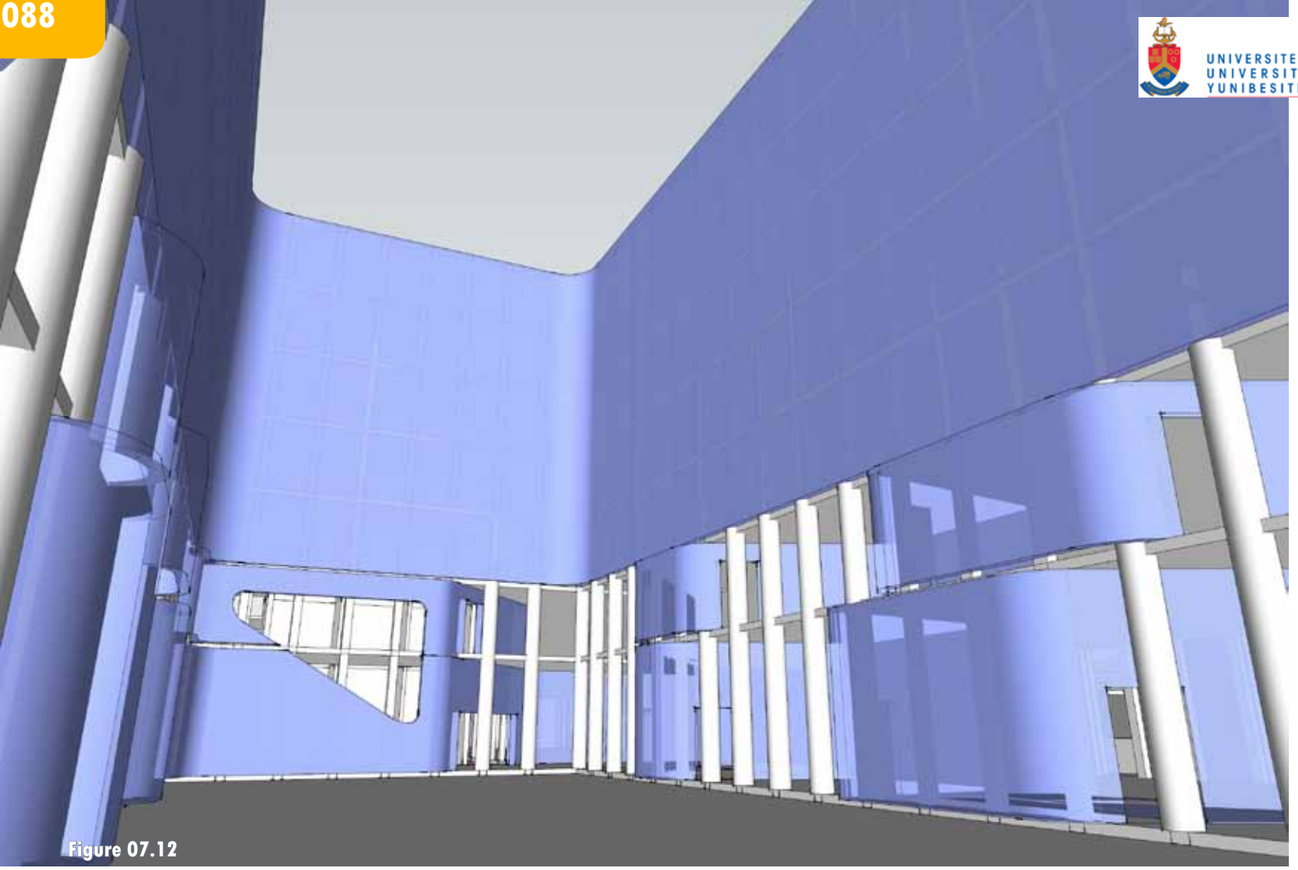


Figure 07.12

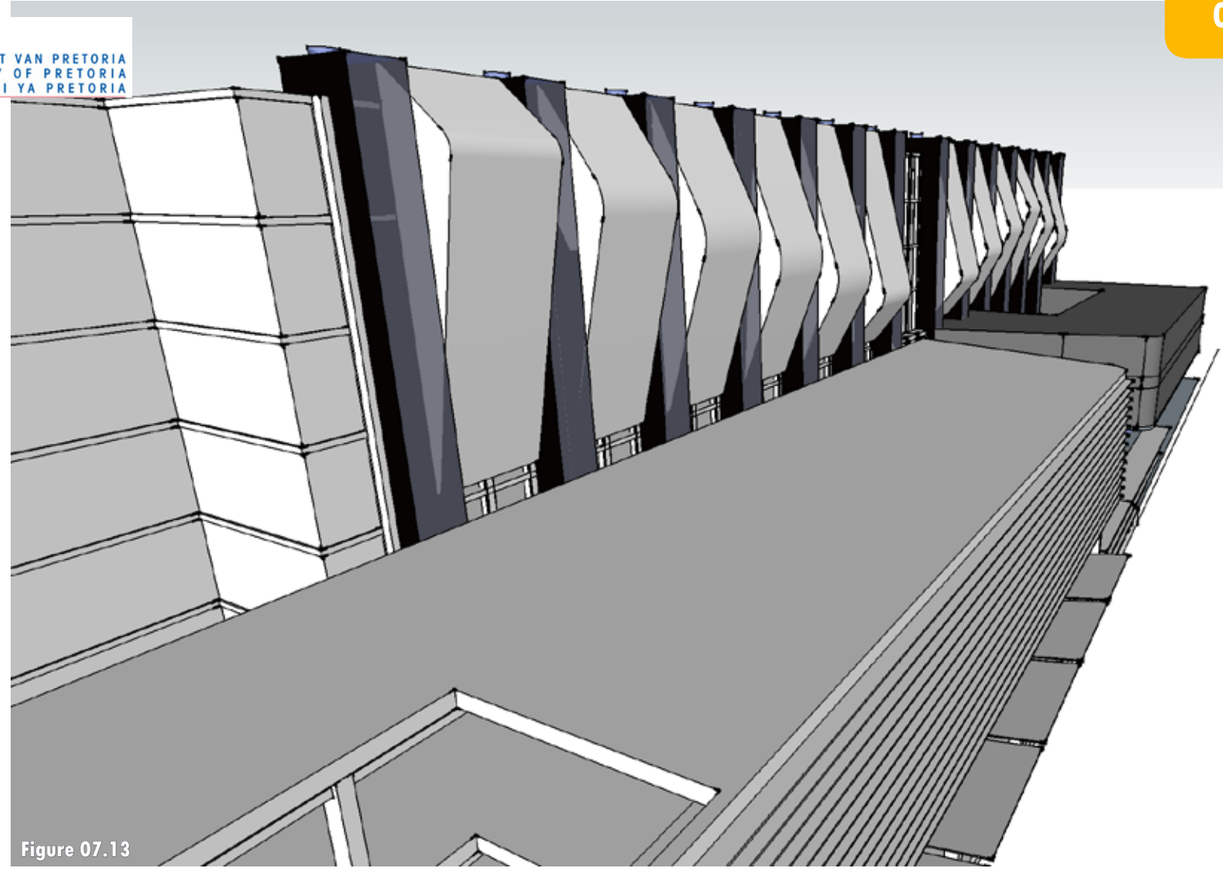


Figure 07.13

07 Early Building 3D

These are preliminary sketchup models of the building. Design features that have been carried through from Figure 07.08 include altering the existing square profile columns to be round and retaining the rounded triangle to denote the position of the escalator.

It is also an important feature of the design that the blue screen which weaves between the structure only aligns at the entrances/ exits. This also helps with differentiation of the space.

Figures 07.12
Courtyard 3D
Figures 07.13
North facade 3D

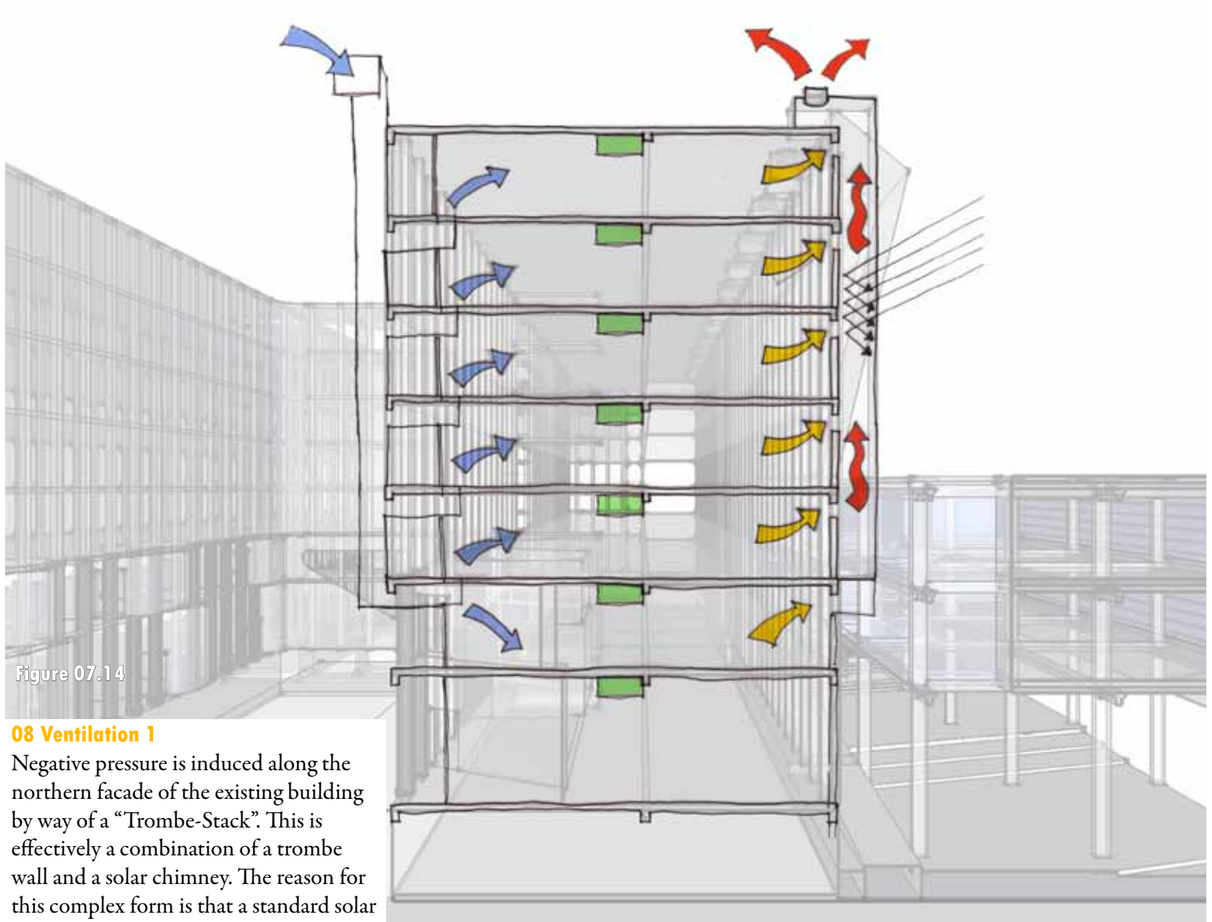


Figure 07.14

08 Ventilation 1

Negative pressure is induced along the northern facade of the existing building by way of a "Trombe-Stack". This is effectively a combination of a trombe wall and a solar chimney. The reason for this complex form is that a standard solar chimney progressively loses pressure in a multiple storey building as one gets closer to the ground. While the this design will likely suffer from the same effect it should be less pronounced as each floor has a dedicated trombe wall which generates heat and upward motion of the air.

The design also incorporates a whirly bird ventilator at the top to assist with the process.

Another aspect of design that the standard solar chimney doesn't offer is the cavity immediately behind the trombe wall. This cavity can be filled with concrete or an additional brick skin to take advantage of thermal mass. It can also be filled with insulation to isolate the trombe wall thermally in rooms which are typically warm. Finally it can be allowed to remain empty, which supports short term heat transmission which would be beneficial to rooms which are typically cold.

As a result the facade can compensate for varying internal temperature profiles.

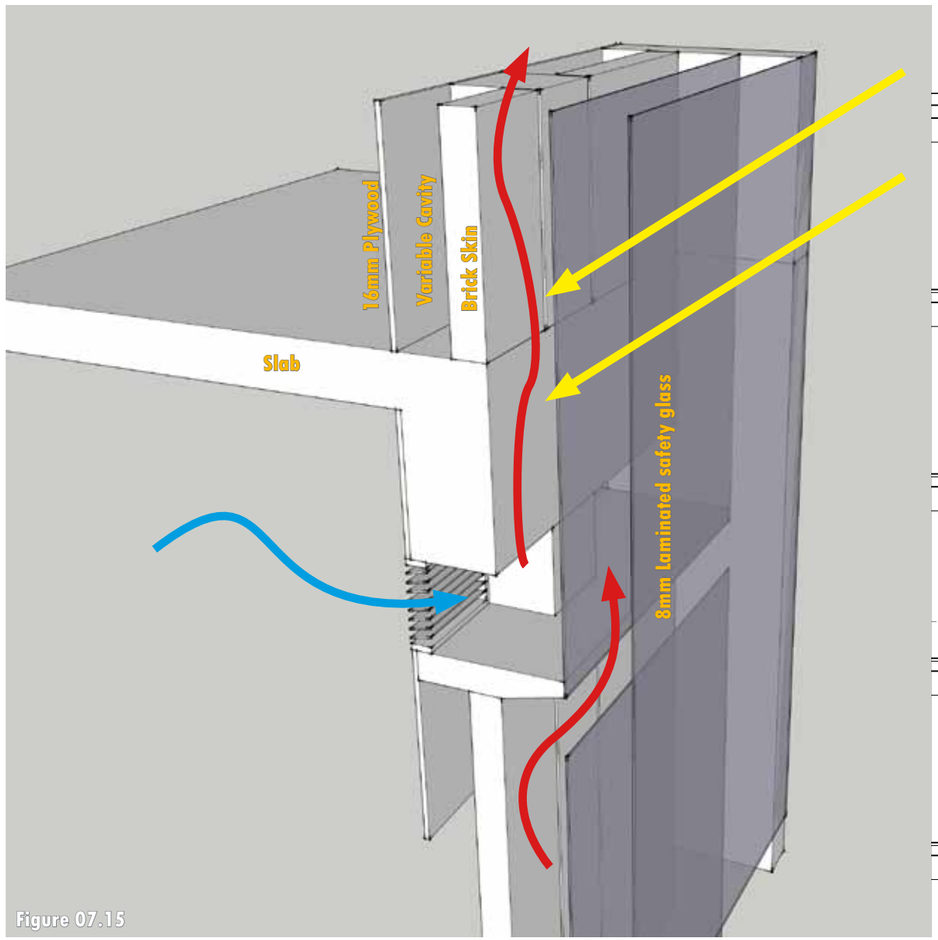


Figure 07.15

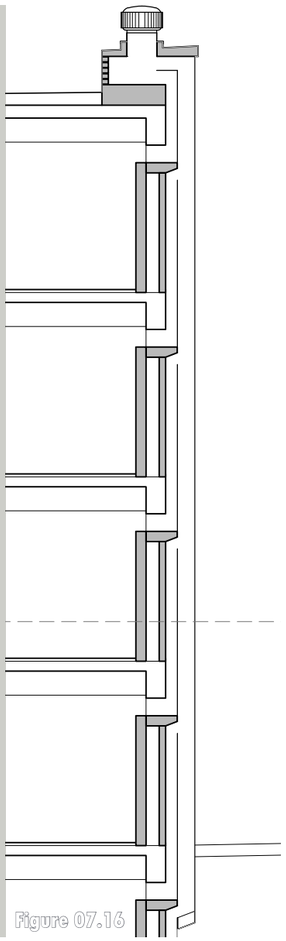


Figure 07.16

Figures 07.14
Ventilation Section
Figures 07.15
Cutaway of trombe-stack
Figures 07.16
Trombe-stack section

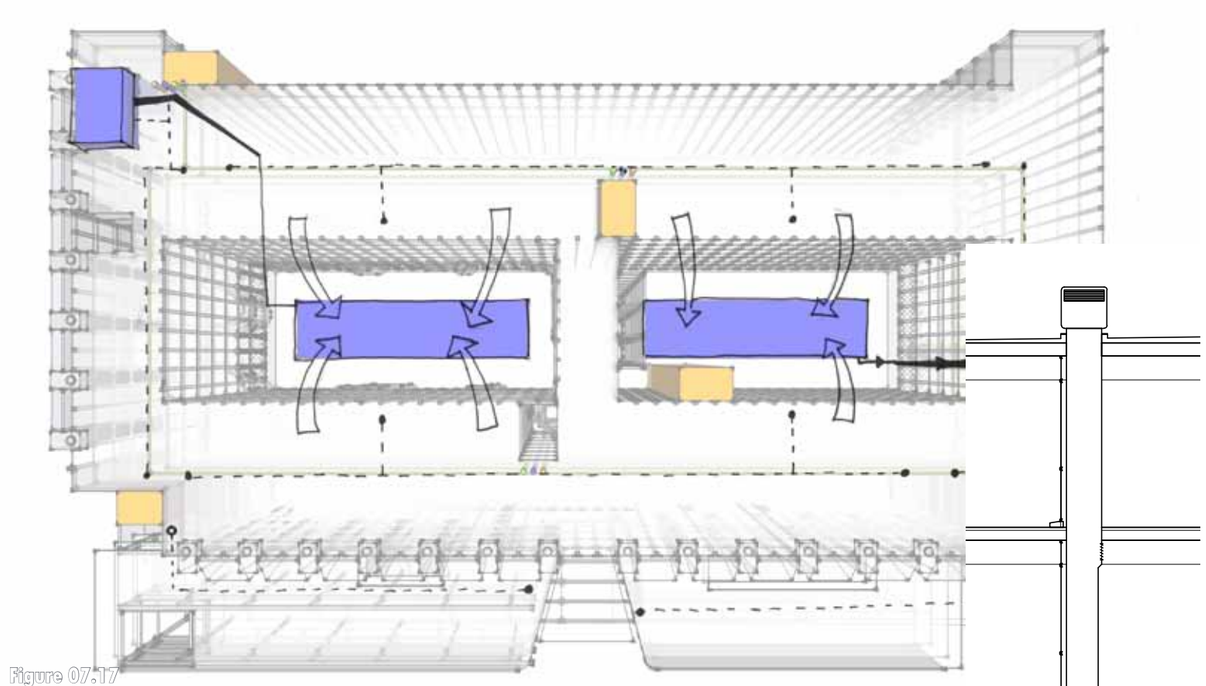


Figure 07.17

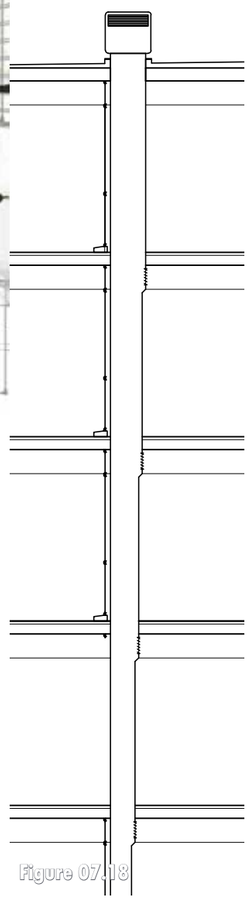


Figure 07.18

09 Ventilation 2

Positive pressure as well as heating and cooling are provided by water based heatpumps. Heatpumps use mechanical means to move heat from one place to another. They differ from airconditioners in that they are able to provide heat as well as cold.

During summer the system utilises cool water pumped directly from the basement storage tanks. During winter, the water is first pumped through solar water heater. This improves the system's efficiency.

Figures 07.17
Water collection diagram, aerial
Figures 07.18
Cutaway of heatpump and ventilation duct
Figures 07.19
Roof plan and water supply to heat pumps
Figures 07.20
Water collection diagram, section

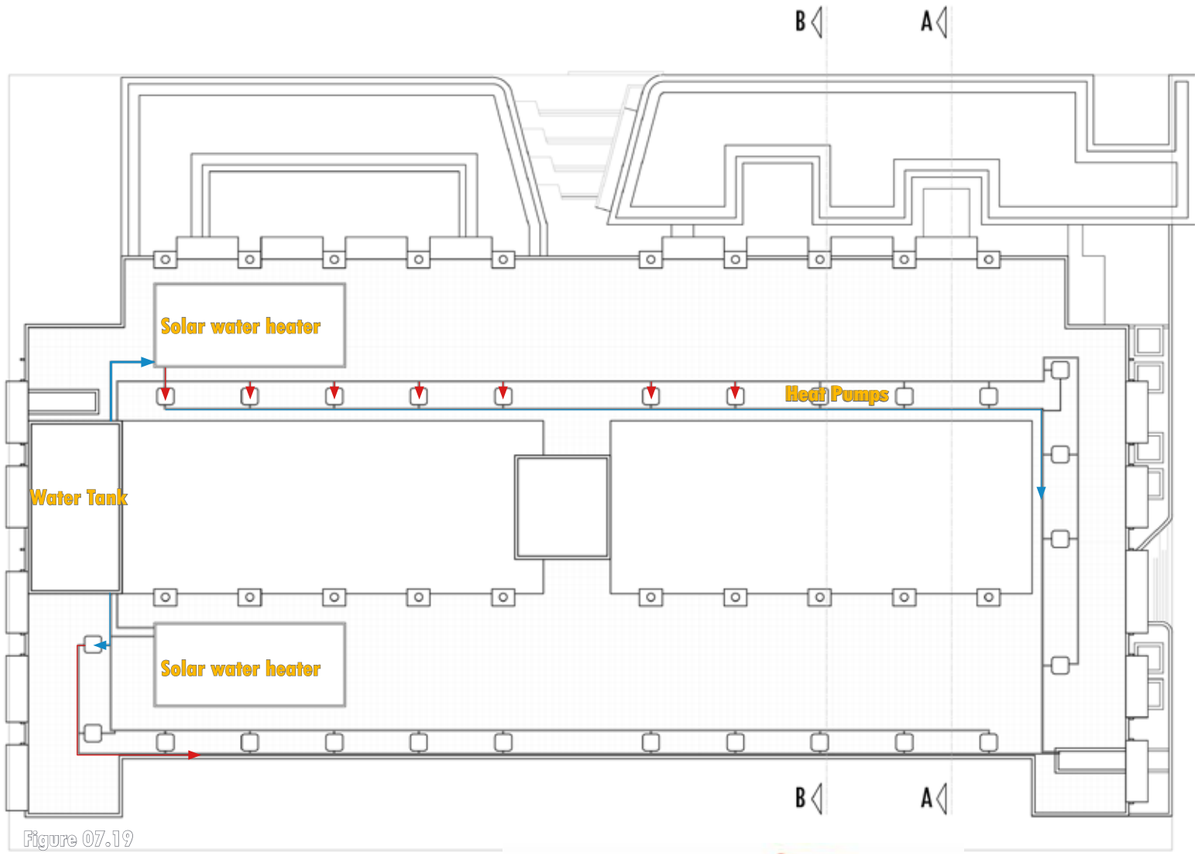


Figure 07.19

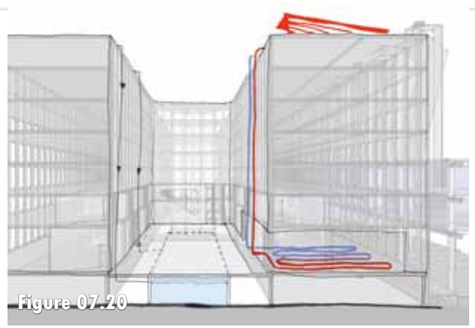


Figure 07.20

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08_Design

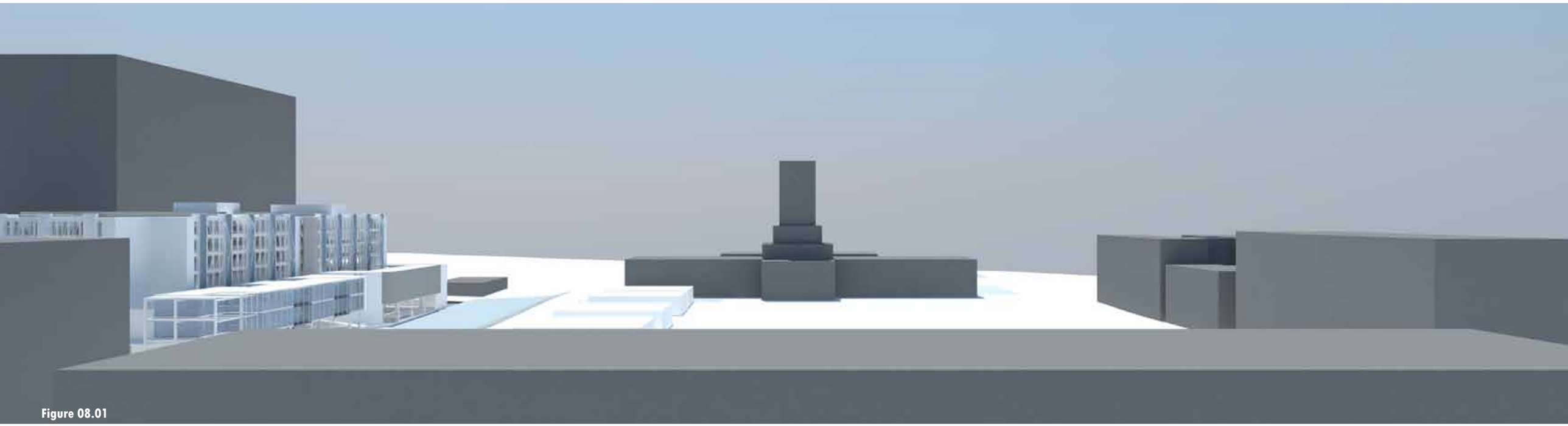

Figure 08.01

Figures 08.01
3D view of Pretorius Square from above the Transvaal Museum including new intervention.

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Figure 08.02

Figure 08.03

Figure 08.04

Figures 08.02
Rendered 3D view of new intervention from the corner of Paul Kruger and Minnaar Streets.
Figures 08.03
View of existing building from Paul Kruger and Minnaar Streets.
Figures 08.04
Elevated view of the building from Paul Kruger and Minnaar Streets.

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Figure 08.05

Figure 08.06

Figures 08.05
View of new intervention from Minnaar Street.
Figures 08.06
View of new courtyard.

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09_Technical

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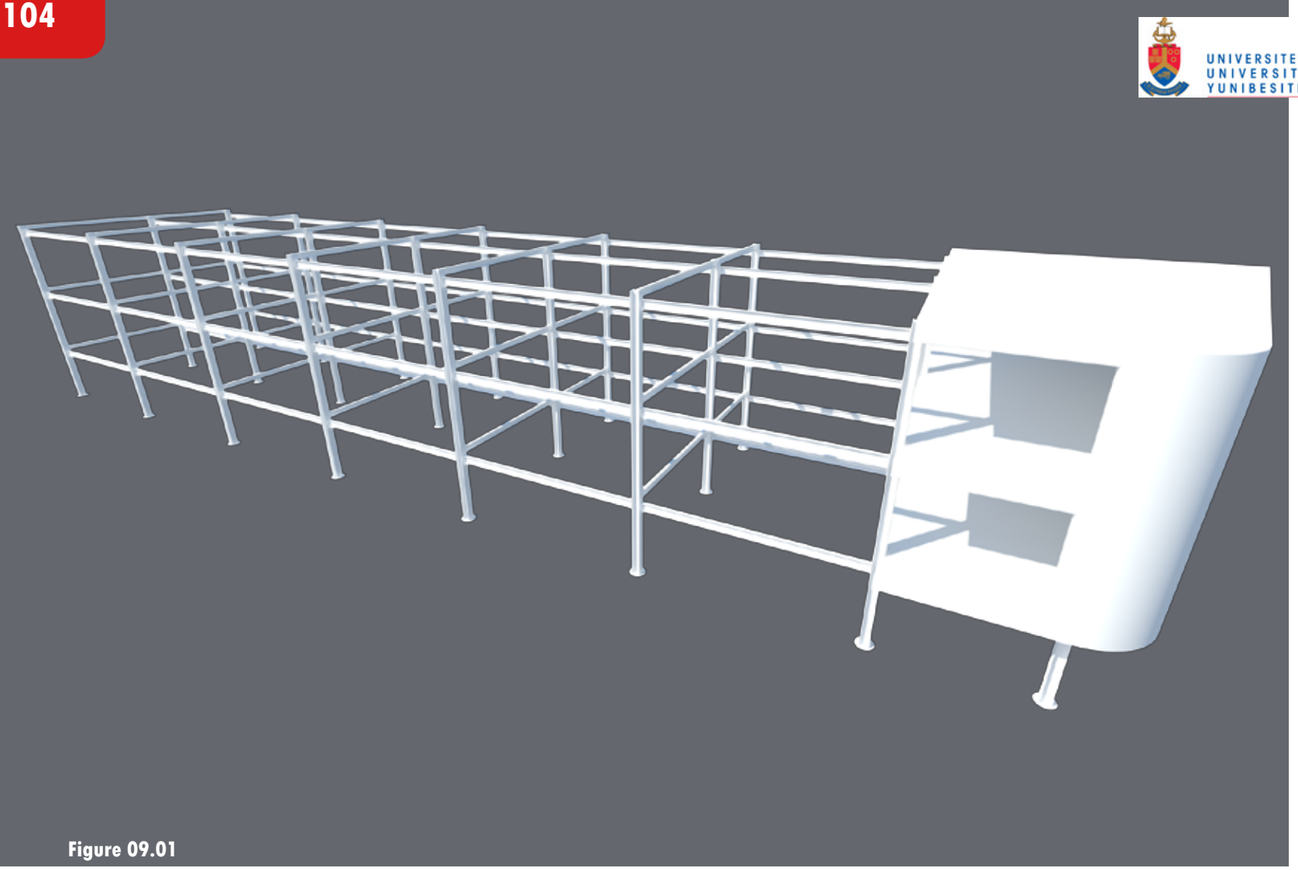

Figure 09.01

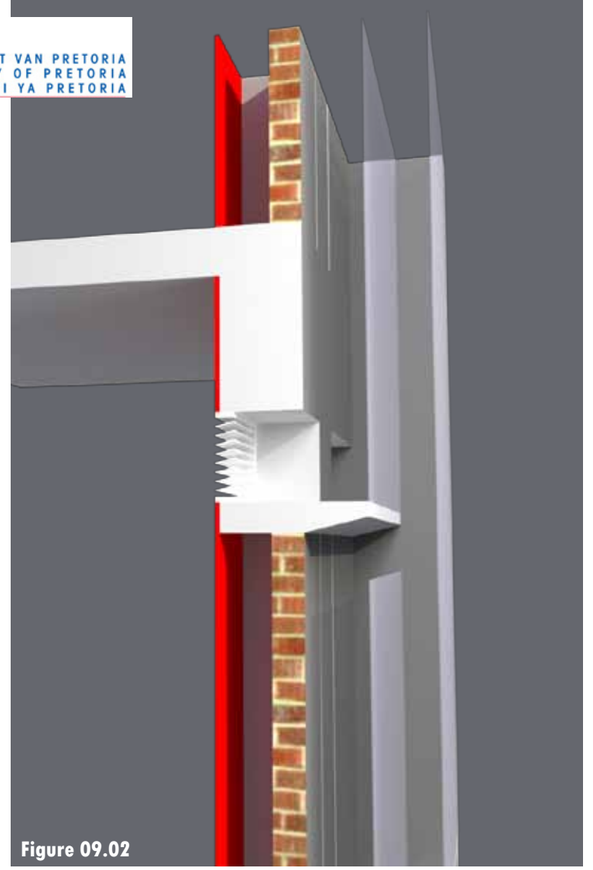

Figure 09.02

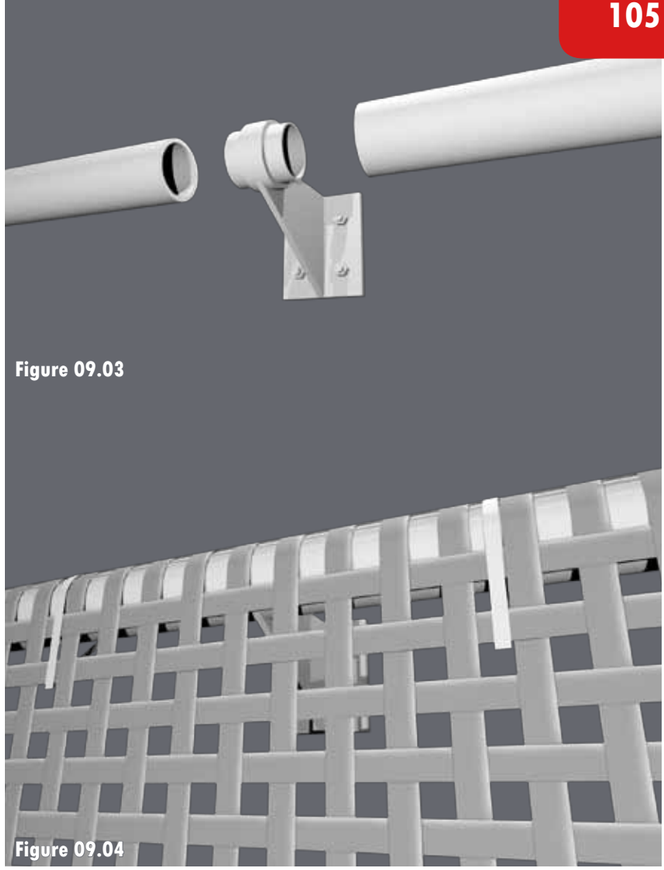

Figure 09.03

Figure 09.04

Figures 09.01
Detail 3D of new structure.
Figures 09.02
Detail 3D of trombe-stack ventilation system.
Figures 09.03
Detail 3D of woven stainless steel screen support structure.
Figures 09.04
Detail 3D of woven stainless steel screen.

00_Conclusion

00 The goal of this thesis was to adapt existing built fabric in Pretoria to become more relevant to the contemporary city. This had to be accomplished in terms of sustainability, urban brand and urban context. It also had to ensure that future alterations to the building could be accomplished greater ease, allowing it to change in accordance its environment.

01 Because of the experimental nature of the program the success of the building would remain largely in question until it was actually attempted.

02 What if the building does fail? "All buildings are predictions. All predictions are wrong." (Brand, 1994; 178)

Program: The benefit of a multifunctional building is that if any particular part of the program fails, the other components can simply expand to compensate. If the NGO Hub does not prove sustainable, the space that it occupies can be converted to retail or standard office space with the minimum of difficulty. On the other hand, if it dramatically succeeds it can expand to occupy more of the building, although to maintain the spatial quality it would need to be limited to the first two floors.
The same can be said of any of the other functions. In that sense diversification plays the same role in this building as it does in investment; insulating against catastrophic failure.

Building Form: Similar to the program, if the building form fails it is also capable of change. This is especially true of the new intervention which provides the public interface of the building and is therefore the most likely to be subject to change. The only hurdle is the low floor to ceiling height of the existing building about which very little can be done.

Environmental Systems: The systems used in the project were deliberately chosen because they have a low running cost and can be adjusted. That said, they represent a massive investment of resources. Whether that cost would be recouped is almost entirely dependent on the longevity of the building, but hopefully the adaptability of the design as a whole will ensure that.

Social Relevance: There is a risk that the NGO Hub might not succeed in engaging the public. That, however, is largely a societal issue over which the architect has very little control. The worst that can come of that scenario is that after significant investment the organisations housed by the NGO Hub will receive the same amount of exposure that they currently do.

Branding: Precisely because the city is a dynamic or because the author is mistaken, the urban brand that the building assumes might be wrong. If that is the case the building will fail to contribute to the development of the identity of Pretoria.

Aesthetics: The final and most likely potential problem is that the alteration may cause a building which is currently unassuming to overwhelm the square and the relationship between the Transvaal Museum and the Pretoria City Hall. The line of buildings in Da Costa's design and the trees on Minnaar Street partially screen the building from the square, but this still remains a threat.

04 It is the opinion of the author that it would be good practice - regardless of the success - to return to the project two years after construction in order to fine tune the environmental systems and make any changes to the form that are deemed necessary and feasible. The practicality of this action would also need the be tested.

04 Consequently the building does seem to be adequately "scenario-buffered" (Brand, 1994; 178) so that even it fails after construction it has the potential to succeed in time.