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Adaptive [re]use

An investigation into the adaptation of an existing building for various programmed scenarios at 116 Paul Kruger Street in the Pretoria City Centre

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Printed Paper

To ensure that responsible choices continue further than the design, all thesis books have been printed on appropriate sustainable papers. This includes papers which are acid free, elementally chlorine free (ECF), sustainable and certified by the Forest Stewardship Council (FSC).

According to Clement Zvikonyo, from Paper Smith and Son, it is regarded as better practice to make use of papers manufactured from sustainable forests endorsed by the FSC opposed to **[re]**cycled paper made from post consumer waste. This is due to the large amounts of chemicals such as chlorine and acid, which are **[re]**-quired to bleach the pulp in order to whiten the colour and make it viable for print.

Acid free	Papers which are free from traces of acid, i.e. made under neutral sizing conditions (Curtis Fine aper, n.d:3)
Bleaching	Bleaching method using chlorine or other chemicals to whiten the colour of woodpulp used in paper making (Curtis Fine Paper, n.d:3)
Chlorine	A bleaching agent used in the woodpulp production process to create whiter, stronger paper (Curtis Fine Paper, n.d:4)
De-inking	Removal of printing ink and impurities from recovery paper; to produce **[re]**cycled fibre pulp with improved whiteness and purity (Curtis Fine Paper, n.d:4)
Forest Stewardship Council (FSC)	An international non-governmental organisation, which promotes responsible and sustainable forest management. This allows papermakers to identify woodpulp originating from well-managed forests (Curtis Fine Paper, n.d:4/5)
Paper grades	Paper is classified into different grades according to the end use, the pulp used and the treatment of the paper (Curtis Fine Paper, n.d:6)
Post consumer waste	Is waste collected after the consumer has used and disposed of an item. **[Re]**covered materials can be de-inked to form **[re]**cycled pulp (Curtis Fine Paper, n.d:6/7)
Pre consumer waste	Also known as best white waste, typically these are unprinted off cuts, scraps, trimmings and overruns from printers that are then formed into **[re]**cycled pulp (Curtis Fine Paper, n.d:7)
Totally chlorine free	Paper made from woodpulps bleached without the use of chlorine chemicals (Curtis Fine Paper, n.d:8)

Abstract

Adaptive **[re]**use is a process that makes use of the principles of **[re]**duce, **[re]**use and **[re]**cycle, often giving products and extended lifespan not initially associated with the original function. Environmentally adaptive **[re]**use makes sense as the embodied energy of the host building is **[re]**tained opposed to the amount of energy **[re]**quired to construct an entirely new building.

The purpose of the urban group framework was to increase density within the city and provide a wider range of commercial, social and cultural activities that take place in a 24 hour cycle. Another aim was to **[re]**store existing buildings within the city, **[re]**juvenating the area and its surrounds.

The design strategy of this thesis was to investigate how new interventions could be in contrast to the existing building. This was achieved by allowing new structures to be read differently from the host building. The contrasting use of materials and construction technologies **[re]**sulted in an architectural language of “lightness”, allowing new components to be sensitively inserted into the existing building.

Additionally the design strategy included the exploration of layering and place making. Layering involved the preservation of the original building’s form and identity, while new structures are layered over the existing in order to create new spaces. Place making was achieved by adding new hanging structures to the northern and southern façade in turn articulating new functional spaces.

All new adaptations and interventions are constructed in such a manner so as not to hamper the flexibility and future adaptability of the building.

Summary

This proposal intends to demonstrate various strategies and principles that can be applied to an existing building in the Pretoria CBD. These strategies and principles can then be applied to other dilapidated or under utilised buildings in order for them not to be demolished in their entirety. The proposed design will identify various program scenarios and demonstrate how the different programs manipulate the building and how the building adapts to the program. Throughout this process, the new adaptations should not limit the future adaptability of the building and ought to be of a sustainable nature.

The Site

Address: 116 Paul Kruger Street, Pretoria
Name of building: Woltemade Building
GPS co-ordinates: S 25 ˚ 44' 64"
E 28 ˚ 11' 27"
Main function of the building: Residential
New function: Mixed Program Scenarios manifesting itself in the form of a Design Depot
Research fields: Environmental Potential, Housing and Urban Environments

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ARCHITECTURE

CONTRIBUTION TO THE ARCHITECTURAL PROFESSION

Future users and programmes are undeterminable and unpredictable in nature and therefore **[re]**quires a different approach to that which is currently implemented in the realm of the Built Environment.

The project moves into the realm of flexible versus permanent architecture that, despite not being part of the existing building or structure while still conveying meaning and being contextually relevant. Any alterations and **[re]**-configurations intend to serve the user's needs.

Space in the city is a valuable **[re]**source and it is not always deemed possible to construct a building from scratch. This thesis investigates flexible and adaptable enclosures and additions to an existing building which takes into account the realities such as phasing, structural integrity and the varied needs of the user.

RESEARCH FIELDS

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The thesis falls between two research fields of the Department of Architecture at the University of Pretoria: Environmental Potential and Housing and Urban Environments

ENVIRONMENTAL POTENTIAL

This thesis deals with aspects of the environment on many different levels, from the choice to make use of an existing building and services to the incorporation of harvesting solar energy as well as the addition of the screening system placed along the outside edges of the building on the northern façade.

The system placed in front of each unit enables the occupants to extend the needs of the program to the exterior of the building. This is achieved through the use of various screening materials. These screens address the environmental **[re]**quirements of the internal program as well as give expression and identity to the façade.

HOUSING AND URBAN ENVIRONMENTS

Housing within the CBD is always in demand, however the current conditions leave the Woltemade Building partially empty, even though it is predominently a residential building.

Residential units are vacant for many reasons including; high rental prices, little variation in unit type which does not address the needs of families as it does not allow room for growth.

This thesis intends to create useful spaces within each residential unit which can accomodate a larger amount of people without compromising the quality of living conditions.

The project intends to provide more choice to the user therby drawing residents back to the building.

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001

INTRODUCTION

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001 - INTRODUCTION

001-0 GLOSSARY/ KEYWORDS

Reclaimed material	material extracted from the waste stream of construction and other industries and used, either in its original form (re-use) or following processing (recycling) (CIRA, 1998:7)
Reconfigure	To reconfigure is to recycle the configurative process. The configurative process organises the parts or elements in a particular form or figure; it is a compositional process that ensures that the identity of the whole is present in the parts, and vica versa (Porter, 2006:154)
Recycling	collecting and separating materials from waste and processing them to make marketable products (CIRA 1998: 7)
Reduction	Waste reduction has two components: • Reducing the amount of waste produced • Reducing the hazard of the waste produced (CIRA, 1998:7)
Re-use	Putting objects back into use so that they do not enter the waste stream (CIRA, 1998:7)
Skin	Generally speaking, skin refers to the outer layer of a building. This is the external cloaking of all the layers of the building envelope that covers roof, walls and underside (Porter, 2006:173)
Waste minimisation	Any technique, process or activity which avoids, eliminates or reduces waste at its source or allows re-use or recycling of waste for benign purposes - (Crittenden and Kolaczkowski, 1992)

001-1 CLARIFICATION OF PRE-CONCEIVED IDEAS WITHIN THE ARCHITECTURAL REALM

Architects will be increasingly faced with having to **[re]**use buildings. The current perception is that **[re]**using an existing building falls within the realm of the interior designer/ architec and that this thesis will focus on the skin of the building and be limited in terms of architectural expression. However, in countries such as the United Kingdom the majority of architectural firms work with buildings and structures that are already established.

Many architects in the United Kingdom have never been faced with developing a building from scratch; nevertheless, their work is seen as architecture. This particular phenomenon occurs due to the lack of vacant land that is available as a result of the country being surrounded by water. High prices are therefore associated with greenfield sites. It is the intention of this thesis to follow an approach that demonstrates how dismantling an existing building down to its structure and then adding to and **[re]**configuring it, can in fact be considered architecture.

001-2 REAL WORLD PROBLEM

A problem exists in the Pretoria CBD of an increasing number of vacant and derelict buildings littering the city. The longer these sites are left underutilized the further they deteriorate and the greater the expense to **[re]**establish the urban fabric. An opportunity therefore exists in the CBD that this thesis intends to address.

001-3 PROBLEM STATEMENT

This project proposes to revive the urban fabric by making use of an existing building that is not being used to its full potential. Through the process of adapting and **[re]**-configuring it is the intention to **[re]**habilitate the building to make it more viable than it is at present.

Temporary solutions are invariably of inferior quality and workmanship, therefore a system needs to be developed that not only addresses the needs and program of a specific building but also privides a universal solution that can be applied to various buildings within the CBD. These “clip-on” structures are intended to act as a catalyst for an ecology to evolve within and around the building. Solutions need to be of such a nature that they are contextually suitable in terms of the building, local building practices, and the user, program, climate and location.

Psychological needs such as familiarity and finding a sense of place need to be taken into consideration when designing residential units.

Users of the office component will have different needs to those of the residents and the Design Depot. So how can a design account for the innumerable variations of its different users?

This question is **[re]**iterated upon the evaluation of the various architectural and interior spaces. When spaces and buildings are designed, consideration has to be given as to how each space will be used. An oppurtunity exists for the architecture of the interior, as well as interventions that are “attached” to the building, to contribute to the place making of the various programs.

Complex and temporary architectural solutions are often not solutions at all. Prefabricated solutions, if not locally manufactured, are often expensive, difficult to transport and take long periods to arrive on site. It is therefore important to establish a system in allignment with local building practices.

001-4 SUB-PROBLEMS

As this dissertation is intended to be the first in a series, the process of analysing an existing structure is important.

001-5 LIMITATIONS

- This dissertation is intended to be the first in a series aimed at demonstrating how the important process of analyzing an existing building structure could possibly take place. The process of analysing an existing building structure is important.
- Assessment of how waste management practices vary seasonally is outside the scope of this thesis document due to time constraints.

001-6 ASSUMPTIONS

- Assumptions made in this document include climatic data, which is assumed to be correct and will be used for this project.
- Incentives by government or private parties exist to encourage the use of lower-grade and **[re]**claimed materials.
- The client is willing to make use of and experiment with **[re]**claimed materials.

001-7 RESEARCH QUESTIONS

- **How can the proposed intervention be realized while still preserving the historical and structural integrity of the existing building?**
    - o How much of the existing building will remain and what proportion will be new?

- **How can the existing building be manipulated and [re]configured in order to [re]establish its presence?**
    - o Can this be achieved through the manipulation of new and existing building and structural components so that the interior can be **[re]**-vealed to the exterior?
- **How can this particular project act as civic activator?**
    - o Can this be achieved through the careful selection of compatible programs?
    - o How can the edge conditions along busy vehicular and pedestrian routes be utilised in order to generate circulation through the site?

001-8 RESEARCH METHODOLOGY

001-8.1 CONTEXT STUDY

The context is defined through a series of investigations, including location, surrounding buildings (historical and contemporary conditions), climate, and environmental conditions.

001-8.2 PRECEDENT STUDIES

Site visits and analysis of program and theory in:

- HOUSES AT PESSAC, France
  Type: Housing development
- LOS ANGELES DESIGN CENTRE, Los Angeles
  Type: Furniture showroom

001-8.3 INTERVIEWS

- Gerhard Breedt, Theatre designer, Kempton Park
- Muncha, Peace worker, Pretoria
- Resident, Pretoria, Louisa
- Tshepiso, Resident, Pretoria
- Tshepo, Resident, Pretoria

001-8.4 REVIEW OF SIMILAR PROJECTS

- Main Street Life, Johannesburg

001-9 HYPOTHESIS

The ultimate intention of the thesis is to encourage users to make changes to the building to suit their needs. These changes should be of a flexible nature that allows future users to once again adapt the building to their needs. One of the problems that need to be overcome is the effects of the various programs on services, structure and circulation. If the building is flexible in nature it increases its lifespan and

any possible changes in program and users over time.

001-10 FUNDING

The source of funding is always an important component to ensure project success. The potential for funding can be increased in the following ways:

a) Collaboration with industry

Business & Arts South Africa (BASA) is an organisation that attracts support for Arts and Culture from the corporate sector, whether financially or in kind. It is the mission of BASA to promote mutually beneficial, equitable and sustainable business-arts partnerships that are long term and benefit the broader community.

b) Letting of mixed use spaces

The letting of various residential units to applicable candidates. Office units are intended to be leased out to companies on a long term basis.

001-11 SUMMARY OF THE 6 "W'S"

The Who
Anyone interested in the design realm

The Where
Pretoria CBD

The When
This thesis/dissertation

The What
Vacant, derelict, and underutilised existing buildings

The Why
To **[re]**establish the urban fabric and teach skills

The HoW
Through the dismantling, **[re]**furbishing and **[re]**configuring of existing buildings and sites

001-12 AIMS + OBJECTIVES OF THE STUDY

a) **[Re]**duce the quantity of resources needed for construction (reducing waste eventually produced at demolition and decommissioning)

b) **[Re]**duce the quantity of waste generated by construction and demolition sites

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002

THEORETICAL APPROACH + PRECEDENT STUDIES

GLOSSARY/ KEYWORDS **002**-0
THEORETICAL PREMISE **002**-1
PRECEDENT STUDIES **002**-2

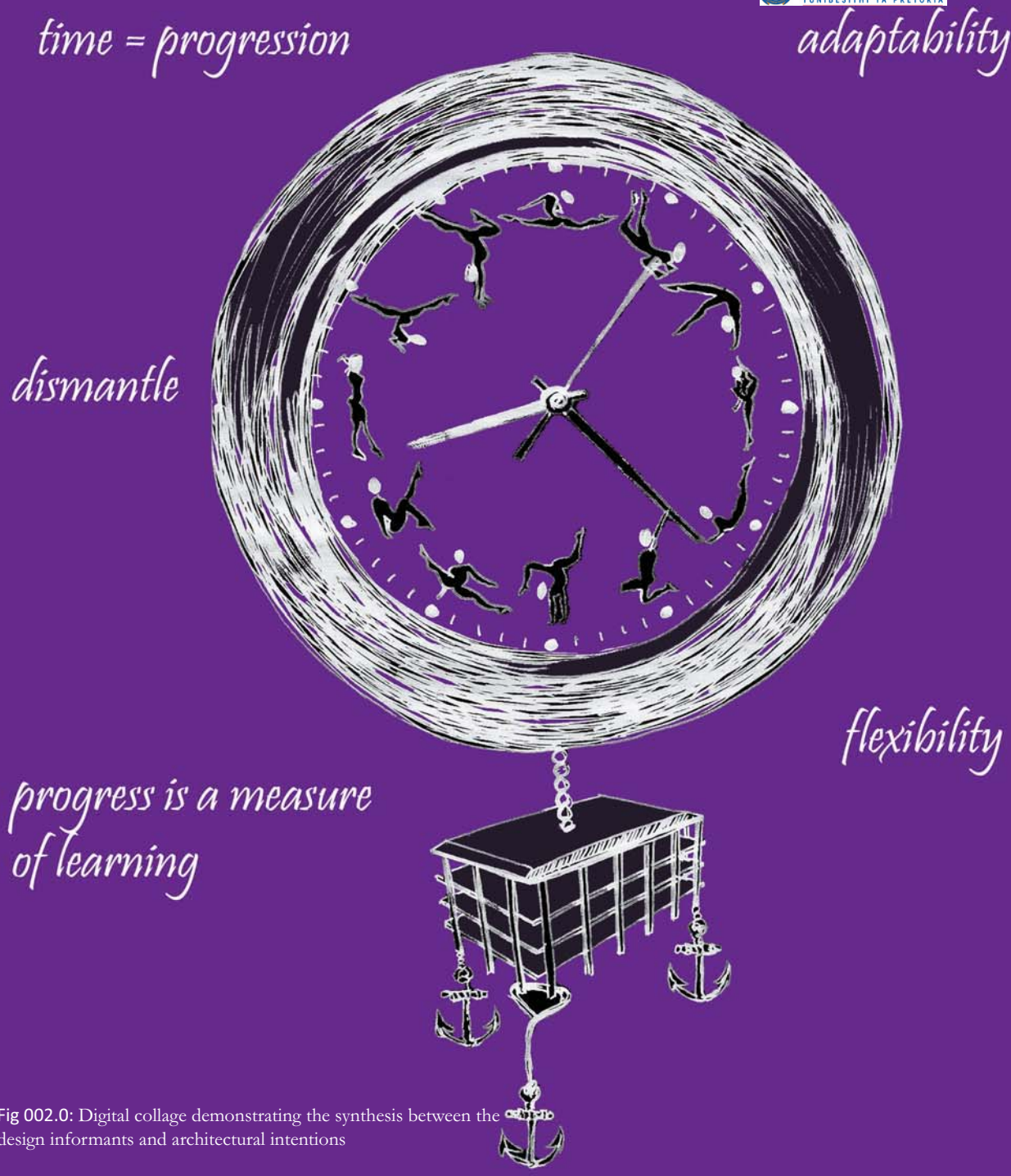

Fig 002.0: Digital collage demonstrating the synthesis between the design informants and architectural intentions

002 - 1 THEORETICAL APPROACH

Sustainability — A paraphrased definition of sustainability according to the Bruntland Commission: meeting today's needs without compromising the ability of future generations to meet their needs. Further sustainability implies using, but not depleting or hopelessly degrading, resources that are of limited availability (Porter, 2006:179)

002-1 THEORETICAL PREMISE

Introduction

In a booklet published by the Australian Department of the Environment and Heritage entitled *Adaptive Reuse – Preserving our past, building our future*, a definition is presented as to what encompasses adaptive **[re]**use. According to this document environmental sustainability and awareness have been the driving forces of modern communities. Adaptive **[re]**use is therefore a process that makes use of the principles **[re]**duce, **[re]**use and **[re]**-cycle, giving many products a second or even third life, with functions often not associated with their original use (Kerr, 2004:3). On occasion only the use of the product changes.

Adaptive **[re]**use has predominantly been used in historic buildings and those with significance in a particular setting. In keeping with the ideals of adaptive **[re]**use strategies, architects and developers should gain an understanding of what it is that makes a particular building significant, and then follow a development approach which is sensitive to the host building while giving it new purpose (Kerr, 2004: 3). If a development strategy fails to acknowledge and protect the host building the entire process would prove to be nothing more than a mockery.

As stated by the Australian Heritage Division the most successful adaptive **[re]**use projects are those that **[re]**-tain the significance of the host building while including "a contemporary layer that provides value for the future" (Kerr, 2004: 5). In many cases adaptive **[re]**use is the only way to preserve a host building's fabric, and often this is achieved by the adaptation of the original use.

Warren Kerr, the President of the Royal Australian Institute of Architects, asserts his standpoint by proclaiming that many policies have been put into place by state organisations in Australia, which include the standard criteria when adapting a building of significance in order to preserve its integrity. These criteria include:

- avoiding "façadism" – the process of gutting a building and **[re]**taining the façade
- adding recognisable contemporary new work – avoiding imitation of historical styles
- searching for a new programme – which is in line with the original use of the building

The progression of a simple dwelling

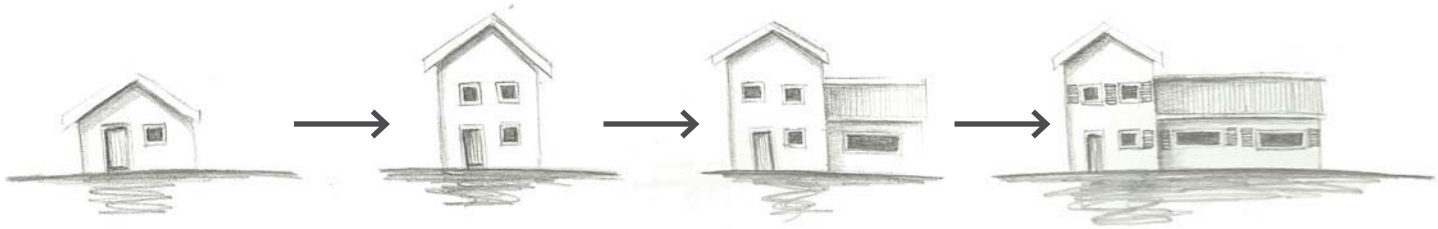

Fig 002.1.1: A simple dwelling

Fig 002.1.2: A second floor is added

Fig 002.1.3: An extension is added to the side of the dwelling

Fig 002.1.4: The extension to the side grows in size

Several benefits present themselves when adaptively **[re]**using a building, namely environmental, social and economic, as well as the creation of a platform for promoting innovation.

"Bypassing the wasteful process of demolition and [re]construction alone sells the environmental benefits of adaptive [re]use" (Kerr, 2004:2)

Environmentally, adaptive **[re]**use makes sense as the "embodied energy" of the original building is **[re]**tained, as opposed to the amount of energy it would take to construct an entirely new building. The Australian Greenhouse Office (Kerr, 2004:4) noted an approximate saving of 95% in embodied energy that would otherwise be wasted on unnecessary new construction. New construction in the built environment in Australia accounts for approximately 40% of the annual energy and raw materials consumption, 25% of wood harvested, 16% of fresh water supplies, 44% of landfill and 45% of carbon dioxide production.

On a social level the **[re]**using and adaptation of a building holds significant benefits for the communities who value them. The Heritage Division of Australia (Kerr, 2004:5) states that when buildings are adapted successfully they have the ability to maintain and possibly **[re]**store a buildings previous significance and to achieve continued appreciation for it. It has become the norm to seek methods of **[re]**ducing costs as well as the social and environmental impacts any study area. By adapting an existing building these criteria can often be addressed.

A number of financial savings and returns can be gained from the adaptive **[re]**use of existing buildings. Embodied energy, as previously discussed, will only increase in the future, thereby making the **[re]**use of existing structures more and more viable. Existing buildings constitute a layer of authenticity that should almost always be legible, even after the adaptation has taken place.

Conservation and **[re]**storation are seen as forms of alteration. By considering issues of conservation and **[re]**-storation, the act of alteration is **[re]**moved from the realm of low art (Scott, 2008:44).

John Ruskin wrote in *The Seven Lamps of Architecture* (Ruskin in Scott,2008) that "neither by the public nor by those who have care of public monuments, is the true meaning of the word **[re]**storation understood. It means the total destruction which a building can suffer: a destruction of which no remnants can be gathered: a destruction accompanied with false description of the thing destroyed. Do not let us deceive ourselves in this important matter; it is impossible, as impossible to raise the dead, to **[re]**store anything that has ever been great or beautiful in architecture" .

What one can deduce from the extract above is that regardless of how good the intentions are to **[re]**store a building to its former glory, it will never be authentic, because it is not. The fact that alterations are made to the building implies a certain degree of forgery or fabrication as authentic **[re]**placement parts are not readily available and are probably no longer manufactured.

Therefore the intention of this thesis is to make alterations and adaptations to the building which are clearly visible and do not pretend to be what they are not. The materials and

Fig 002.1.5: Symmetry is reached by adding a new wing

Fig 002.1.6: A balcony adds to the amount of living space

Fig 002.1.7: A flat roof rounds off the progression of alterations

Threshold Theory

Typically when one thinks of thresholds in a residential dwelling, one thinks of a house on a plot of land. Various elements begin to define the thresholds and become more private as they approach the front door. The front door is considered to be the most important threshold, which guards the interior that is most private. The typical threshold notion is challenged in the Woltemade building as thresholds occur on a horizontal as well as vertical plane.

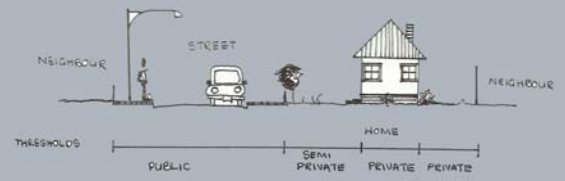

Fig 002.1.8: The conventional notion of a residential threshold

In the case of the Woltemade building the horizontal plane consists of the entrance located on the passage, while the vertical plane becomes more relevant the closer one is positioned to the edges of the building (north and south) where height is expressed as an additional dimension.

Lucien Kroll is of the belief that there are two areas of significance in a residential dwelling: the main entrance and the exit to the garden or terrace. The entrance and exit points need to be more than holes punched in the wall; they should be decorated and made unique to give them identity and reveal the personality of the occupants within (Kroll, 1986:78). This (very) theory can be applied to the Woltemade Building and its varying program.

"It is the way people care about their living spaces and express that care that preserves the living continuity of an urban texture, and which prevents it becoming an alien project placed amongst others of its own kind according to artificial geometry" (Kroll, 1986:78).

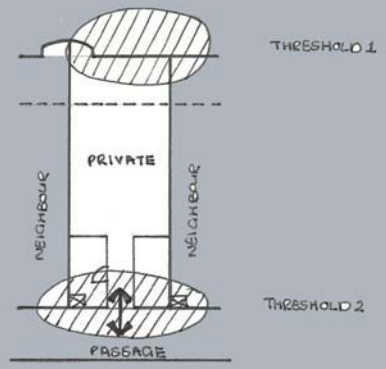

Fig 002.1.9: The current threshold condition that exists at each of the residential units

In the current state of the Woltemade building, the second condition of the exit is not being met. This thesis intends to explore methods of creating and expressing the "exit to the garden or terrace" through the addition of personalised balconies and living spaces, most notably to residential units throughout the building.

technologies used are to be in line with what is currently available on the market, therefore adding an additional layer to the existing building.

"Intervention needs to be an art" (Scott: 2008:92)

Fred Scott, the author of *On Altering Architecture* (2008:25), states that the degree of alteration made to a host building can be split into two different categories, the first being surface and the second being spatial, although spatial alteration can include the first category. Buildings of the past were often altered in order to accommodate new services such as electricity and sanitation, which invariably alterer the surface or spatial qualities of the building.

Surface is seen to be anything concerning itself with the colour of the building, including paint and plasterwork, while the spatial category involves alterations to the plan and section of a building. Moreover Scott (2008:95) classifies the following scenarios as alteration:

- **[Re]**taining the original spatial organization – through enlarging or sub-dividing
- Changing the existing spatial organization

A building is unavoidably ruined through any work undertaken (Scott, 2008:96). This means that once a building has been altered it is no longer in its original state. Where the **[re]**moval of old plaster, disintegrated floorboards and ceiling boards from a building is deemed necessary, they can be **[re]**placed by imitation work. These alterations will remain nothing more than imitation as the quality of the new plaster for instance is unable to replicate the layers of plaster which have been eroded by time. Scott believes that the full realization of an intervention **[re]**quires the building to be broken in order for test the possibilities of alteration to be tested.

Buildings acquire changes, whether minor or of an extreme nature, due to changes in program. These changes in program are often related to changes within the surrounding urban context.

In the case of this thesis, the building is already 'broken' as it has endured many changes. These changes range from the **[re]**configuration of internal spaces to the **[re]**moval of screen walls along the southern side of the building, and most notably the addition of the western block perpendicular to the linear residential component. These changes were largely due to changes in program and the socio-economic conditions of the urban environment.

"Stripping back is a process of delineation of the qualities of the host building, an analysis of the given" (Scott, 2008:108).

In Chapter 7 of Scott's book (2008:107), entitled "Stripping Back", he attempts to set up generic guidelines for the alteration of architecture:

1] Stripping back – of mainly plaster and wood
2] Making good – where original fabric is **[re]**paired or **[re]**placed
3] Demolition and **[re]**moval – of parts inhibiting future alterations
4] Installation – of new intervention

Fig 002.1.10: Southern elevation as it appeared in 1959

Fig 002.1.11: The "broken" southern façade as it appears in 2010 without screen walls above walkway walls

The Front Door = Identity

Just as the eyes reveal the soul of the human body so a front door reveals the soul of a home. A single **[re]**decorated door in a communal passage is a bold statement and gesture which requires a huge amount of courage from the inhabitant.

In a time not so long ago the window looking out to the street was where inhabitants expressed their identity. Beautiful ornaments or vases with plants or flowers were placed in the window and even the hem of the curtain faced away from the street (KROLL, 1986:27). The front door was an extension of the decorated window. Huge amounts of thought and detail went into elements such as the door knocker and letter box. These elements were pieces of craftsmanship. Today however, this same sentiment is hard to find. Door after door displays the same mass-produced handles, hinges and glass without any variation.

"Diversity encourages creativity, while repetition anaesthetises it" (Kroll, 1986:29).

A door is a tactile frontier between a public and private realm and it should be celebrated. Not all door or openings need to look the same because not every inhabitant or programme within a building is the same. The inhabitants personality needs to come through even if it is in something as simple as the door handle or type of glass used in a cottage pane window. This thesis wants to take this concept a step further and allow the real personality of the inhabitant to be expressed, whether it is through the adaptation of space outside the front door along the communal passage or through the variety of goods sold from the front door.

If adaptations of various natures are encouraged, bolder interventions will be made by the inhabitants which do not just relate to their front doors.

A better understanding by the designer is attained through the stripping back of the host building. The fundamental qualities of the host building need to be understood. Each building has a unique context with its own spatial, social and chronological aspects **[re]**sulting in a different end product in each case, even if the program **[re]**mains the same.

The notion of stripping back during an alteration implies a search for a "supposed ideal form" (Scott, 2008:111). The original condition of the building with **[re]**gards to style is unobtainable as is anything from in the past. Nonetheless, a designer needs to understand the initial design intent and the direction the original builders tried to take, and should not make changes on a whim. Any alterations made need to be appropriately **[re]**searched and should add to the longevity of the building.

According to Scott (2008:111), any perceived ideal form of a building is often ambiguous due to its usage, the failure to execute portions of the building during construction and, to a lesser extent, additions.

The point of stripping back is to establish the approach a designer may take in order to find a balance between the ideal and the actual, drawing together unrelated components to make a cohesive whole.

Stewart Brand (1994: Part 1/6) states in his television production that, where buildings that do not work are concerned, there are three possible actions the user can take: put up with it, change it or demolish it. This thesis does not intend to put up with a building that does not address its users' needs; neither does it want to demolish it in its entirety. The intention is to change it, making it more flexible for current and future users.

When faced with alterations or renovations many architects as well as designers fall back on traditional methods and materials in spite of innovations made in the realm of the construction industry (CIRA, 1998:12). Falling back on traditional methods can occur for many reasons, including the fact that designers are more comfortable working with and designing for something familiar. In addition, contractors

on site already understand traditional construction procedures (Kroll, 1986:84), after all "convention became conventional because it works" (Brand, 1994:54).

In this thesis traditional materials and methods of construction will be taken into consideration, along with the incorporation of newer and more appropriate materials and technologies.

Pre-fabricated System + It's Components

Not much seems to have changed in perspective some twenty four years after Lucien Kroll published *The Architecture of Complexity* (Kroll, 1986:25). Up until now no single manufacturer has taken it upon themselves to develop a universally open system. If there is such a manufacturer, the development and marketing of their product has not reached the masses of the open market. Moreover, traditional methods have not been **[re]**placed by mass-produced architecture because it's systems are not fully developed and not as universal as they claim to be.

Lucien Kroll (1986: 107)believes that "construction systems" derived from models, in particular pre-fabrication, are wrongly described as being "open" and providing freedom. These systems seem too be specific and only fit similar components of the same system.

"Having no fondness for disorder, we have prudently ignored it, and have been unable to reckon how necessary it is, how natural or how fertile" (Kroll, 1986:12).

This thesis therefore intends to identify products and materials that are currently on the market, and use them in various combinations to achieve a simple and effective architectural solution for various programme scenarios.

A rational attitude to the planning of urban environments, results in an environment which lacks "real texture" and prevents spontaneous development (Kroll, 1986:5). In opposition to a rational procedure which painstakingly plans programs and activities for every inch of the building the hierarchy in the proposed Design Depot is based on new **[re]**lationships between previously un-associated programs. Kroll states that this approach arises from the smallest and humblest of initiatives which grows to form a textured mosaic representing the social fabric of the community created within the building. The most important principle of this way of thinking is that the tools given to the user need to be sympathetic.

"Spontaneity and discipline produce very different ways of working and different arrangements of space and time. Sometimes these result in very different products even when starting with identical knowledge and techniques" (Kroll, 1986:19).

Where heavily pre-fabricated systems are concerned, "*The Architecture of Complexity"* (Kroll, 1986:108), discusses two opposing opinions that are still relevant today. The first is admiration for the technical knowledge and the intricacies associated with manufacture, transport and assembly. The second, on the other hand, is the disappointment **[re]**sulting from inflexible systems that achieve very little yet **[re]**main expensive.

According to Kroll, homogenous and repetitive architecture makes it difficult for inhabitants to establish their own identity **[re]**sulting in spaces rather than places. After all it is the inhabitants "who really create the city and not planners" this very phenomenon is illustrated in the precedent of the Houses at Pessac, which can be found later in this chapter (Kroll, 1986:29).

Where diversity is encouraged a varied texture develops which tightly knits the urban fabric, this is achieved through user participation real or simulated.

In 1979 in the town of La Vallée, Lucien Kroll and his team were asked to design a housing complex using the experimental techniques of user participation. Consultations with the home owners were deemed imperative in order to fully achieve the user's participation (Kroll, 1986:125). User participation will be simulated in the thesis as many of the inhabitants and tenants are fictional.

Current Course of Action

Benchmarks and tools have been set up by organizations such as the Green Building Council of South Africa, BREEAM and LEED, to name only a few. Nevertheless, these principles remain guidelines as no practical examples are given. Once documents such as these have been read one still does not know how to implement "green principles" (Mansfield, 2010).

It is up to individuals within the construction industry to come up with innovative methods of achieving the benchmarks provided by the Green Building Council of South Africa. Yet the methods acquired are kept under lock and key in order to give one architectural firm an advantage over another. Innovation is implemented for personal gain, not for working towards a better environment (Mansfield, 2010). It is therefore the aim of this dissertation to give practical examples and methods of implementing "green principles".

CIRA, an organisation based in the United Kingdom, aims to help designers think about waste minimization issues by introducing measures and ideas so that individuals can **[re]**view the efficiency of their designs (CIRA, 1998:25). Their series of handbooks focuses on three key aspects of minimizing waste incurred through the design process:

- **[Re]**ducing the quantity of **[re]**sources needed for construction (**[re]**ducing waste eventually produced at demolition and decommissioning)
- **[Re]**ducing the quantity of waste generated from construction and demolition sites
- Improving the **[re]**clamation of materials from the waste stream by **[re]**using and **[re]**cycling construction waste, and by using by-products from other industries

Waste should be **[re]**duced at the design stage and not as an afterthought. According to CIRA SP 134 it is best to adopt a positive environmental approach in the feasibility stages of a project.

Conclusion

The investigation of new and innovative materials is time consuming and may **[re]**duce the amount of work one is able to produce initially. However, it is thus investigation that leads to further developments as not all design issues can be **[re]**solved in the office, but rather need practical application, testing, manipulation and adaptation. Changes that are made to a building need to be done in such a manner so as not to hamper it's future adaptability. These adaptations need to be environmentally **[re]**sponsible and embrace the use of **[re]**furbished building materials and systems that are flexible and will continue to be so. Each site throughout the city centre will have a different client driving the brief. Identical approaches are discouraged as needs differ from client to client and site to site. Universal lessons need to be identified that can be used in each case; however, each site is unique and needs to be dealt with accordingly.

Nonetheless, the notion of flexibility should be the common thread carried throughout the design process. This thesis will demonstrate how one underutilised building can be altered in order to serve it's users and program. From this a process can be derived where the entire building and its structure is analysed, with the available building materials and structure being categorised according to what can be: **[re]**used, **[re]** cycled and sold in order to increase available capital. Once the available **[re]**-sources have been established the dilapidated building will be **[re]**furbished with minimal effort and cost. Optimistically, this process will be continued by the skilled persons moving from one building to the next, continuing to acquire skills as more buildings are **[re]**furbished.

002 - 2 PRECEDENT STUDIES

002 - 2.1 MULTI-STOREY APARTMENT HOUSE

Name of Architect: MVRDV
Location: Hengelo, The Netherlands
Year: 2001

Fig 002.1: Artist's impressions of the 'Apartment House' with the protruding balconies

Points of interest: MVRDV's multi-story apartment house with balconies **[re]**sembles a tree trunk with branches. By placing the trees at the ends of the balconies the tree symbolism becomes more accurate (www.dutchdesignevents.com). The trees serve to cool the building and filer noise and dust from the surroundings.

002 - 2.2 DUTCH PAVILLION

Name of Architect: MVRDV
Location: Hannover, Germany
Year: World Expo 2000

Fig 002.2: The Dutch Pavilion utilises a water **[re]**clamation system to distribute water throughout the building

Points of interest: A water **[re]**clamation system is utilised to collect the vast quanitity of water run-off and distribute it throughout the building as a grey water source (www.dutchdesignevents.com). Greenery on the protruding balconies facilitates the **[re]**moval of chemically saturated run-off before it is discharged to the surrounding area. The introduction of vegetation not only provides an attractive environment but could also be used to preserve the ecology of the indigenous natural environment.

002 - 2.3 WOZOCO'S APARTMENT

Name of Architect: MVRDV
Location: Amsterdam, The Netherlands
Year: 1997

Fig 002.3: The street elevation of the Wozoco's apartment building

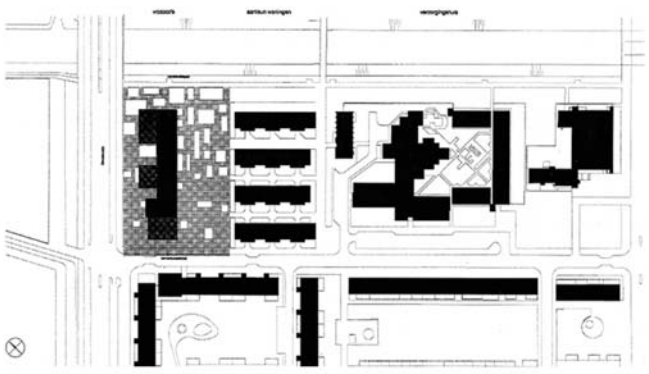

Fig 002.4: Site plan of the Wococo's apartment building indicating surrounding context

Fig 002.5: Perspectives showing the relationship of the building to the streetscape

Points of interest: The design evolved around the existing envelope of a **[re]**inforced concrete structure. It was decided to minimise coverage of the ground floor space through the incorporation of cantilever steel girders which form the structure of the suspended timber-clad boxes (www.cse.edu.uk). These timber-clad boxes are modular apartment units. They customise the façade and soften the monolithic scale and appearance of the building by adding character and creating a **[re]**lationship between the building and streetscape. Façade customisation is not limited to the colour or shapes of bay windows and defines the outdoor space.

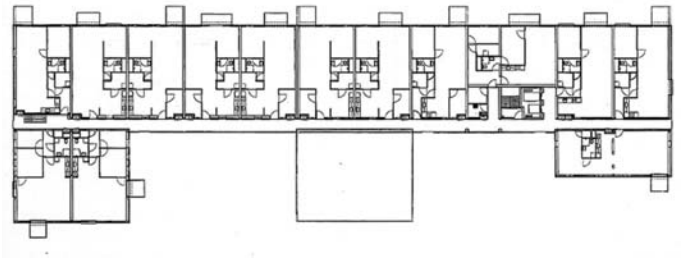

Fig 002.6: Fifth floor plan of Apartment building

Fig 002.7: Elevation showing the blurring of the solid block outline

Fig 002.8: Image of northern façade with suspended units employed to optimise sunlight and**[re]**duce coverage

Fig 002.9: The suspended units define the public space below while still **[re]**specting the human scale

Summary of Project: Wozoco's is a nine-storey mid-rise apartment block with 100 units of which 13 are suspended from the northern façade. The apartment was designed for people over the age of 50, and gives a higher degree of independence to the occupants when compared to conventional homes for the elderly.

002 - 2.4 LOS ANGELES DESIGN CENTRE

Name of Architect: John Friedman Alice Kimm Architects

Location: Los Angeles, CA, United Staes of America

Client: Cisco Brothers Corporation

Fig 002.10: The previous street façade

Originally South Central Los Angeles had many negative associations as many riots as well as the Rodney King beating accured here (Giovanni, 2003:166). Therefore it was decided to **[re]**name the area South Los Angeles in an attempt to attract business back to the district. Much of the area is typically characterized by festooned Spanoid façades; however, treasures can be found scattered throughout this area as
[re]invented warehouses of the 1920's. The L.A. Design Centre is one such example.

Program: Cisco Brothers Furniture Company occupies a number of warehouses distributed throughout the South Los Angeles district, known as the furniture district (Parades, 2006:166). Fransico Pinedo, owner of Cisco Brothers, decided that the company as well as other manufacturers would benefit from a showroom in the warehouse district, as rental costs outside this area were of an absurd nature.

The brief from the client was for a core building, on a limited budget, which had the potential to expand to house other avenues of the company in future. The chosen host building afforded the architects a sturdy two-storey brick structure, with high ceilings, timber floors and steel beams. These elements provided the architects with a strategy to use the givens and provide additional layering.

Fig 002.11: The street façade after the **[re]**novation

Solution: According to John Friedman Alice Kimm Architects, the old warehouse gave clues as to how to proceed with the **[re]**invention process. Steel columns on the outside of the building, adjacent to the parking lot, were modified and became a new façade of polycarbonate panels applied along the length of the building. The façade was turned parallel to the street with a new billboard structure erected to give the building a notable presence (Parades, 2006:167).

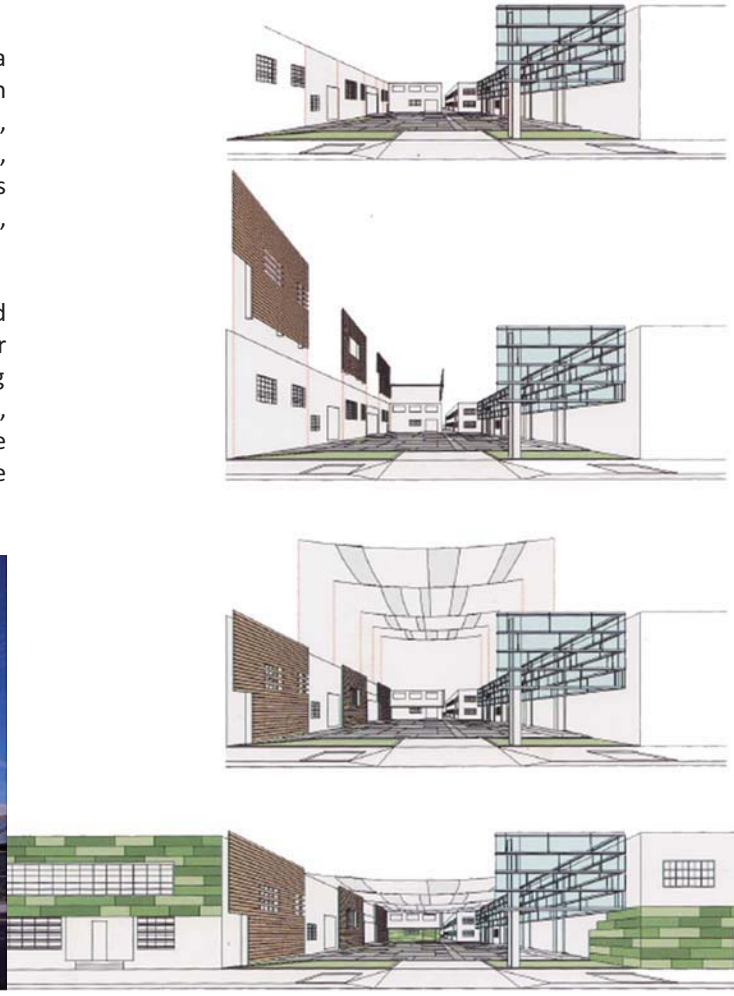

Fig 002.12: Series of images demonstrating how the various layers were placed over the existing building

Green concrete panels are wrapped around portions of the ground floor and the upper floor, adding additional interest for passing motorists, as well as visually joining the two separate buildings (Parades, 2006:167). The open space between the two buildings, usually **[re]**served for parking, is earmarked for future expansion. Suspended canvases over the parking area provide a whimsical element while **[re]**-ducing the visual expanse of the space.

Interventions within the warehouse include the **[re]**moval of sections of the first floor, and were **[re]**placing them with a hardwood landing large enough for furniture displays, as well as terraced display platforms which cleverly disguise the loading dock below. The most transformable space, according to Giovanni (2003:167), is the parking lot which also functions as a public space with a 'watering hole,' plaza and event space. The draping canvas overhead defines the space; at the same time the different shades of grey concrete blocks with planting in between add to the drama of the space. Giovanni (2003:166) sums the process up eloquently by saying that "the modest budget was spent on gesture rather than detail".

Fig 002.13: The hardwood landing for furniture displays

Fig 002.14: Terraced display platforms which cleverly disguise the loading dock

Conclusion: Intensity was achieved through the layering of simple materials in an unconventional manner, creating a 'spatial collage'. The strengths of the original building were **[re]**conditioned and brought to the viewer's attention. The warehouse **[re]**development can be seen as 'an act of psychic **[re]**investment in the community, affirmation rather than gentrification'.

Fig 002.15: Various layers of the building can be seen from the street edge

002 - 2.5 HOUSES AT PESSAC

Name of Architect: Le Corbusier
Location: Pessac, France
Year: 1930's

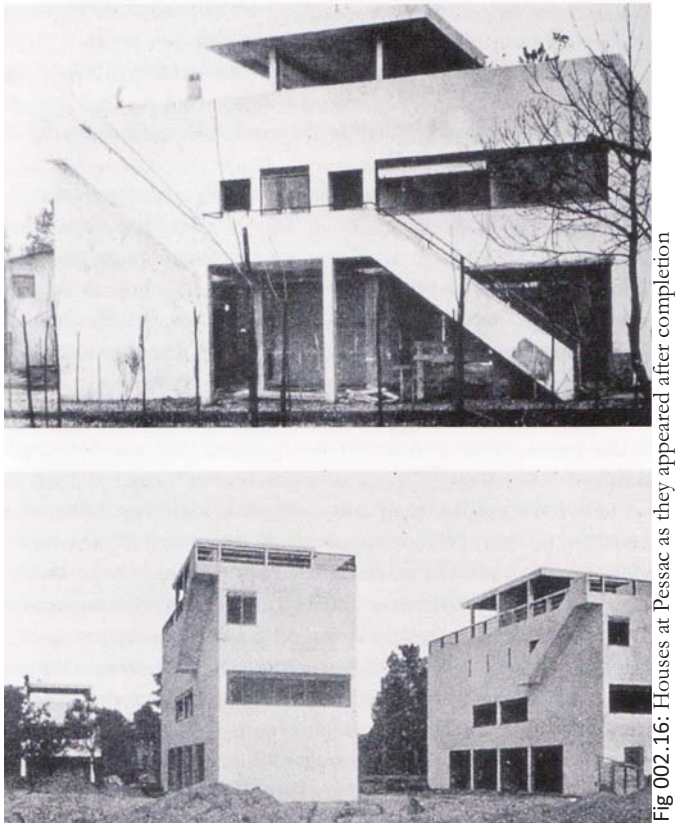

Fig 002.16: Houses at Pessac as they appeared after completion

Le Corbusier's Houses at Pessac represented his first chance to demonstrate the application of mass produced elements 'derived from the purification of standard forms'. (Scott, 2008:24).

This project started out with the noblest of intentions after the War in 1918, but the houses were ill received. This was due to a lack of amenities rather than aesthetic dissatisfaction. The lack of amenities was not entirely Le Corbusier's fault as the district municipality of the time **[re]**fused to lay water pipes for several years after the project was complete. The reason for this, according to Scott (2008:28), is that the houses broke tradition, with their simplicity and were imagined to be harems by the neighbourhood. The laying of municipal water would portray that the municipality accepted the aesthetic, and this would have gone against the beliefs of the time. Many years after the completion of the housing development, low-income families moved in. Subsequently people forgot about the contraversial nature of the development and water was installed.

Program: Each housing unit at Pessac is determined by a cell measuring 5 x 5 meters. This can then be broken down into cells of 5 x 2,5 meters. Houses are configured out of 6, 8, 9 or 10 cells depending on the size **[re]**quired by the occupant (Scott, 2008:26).

Fig 002.17: The façades have undergone a variety of changes

Fig 002.18: The strip window has been **[re]**placed by rectangular windows with shutters

The nature of adaptability: In the 1960s Philip Boudon conducted sociological studies of the extensive changes made to the units by the users (cited in Scott, 2008:27). Since these houses were so alien to the French occupants, they decided to make them more similar to their vernacular by adding planters as well as glass and metal canopies. The strip windows were either partially blocked or completely obliterated. Some exterior spaces were enclosed and pitched roofs were added by occupants to make the houses seem less foreign, while at the same time getting rid of the flat, leaky roofs.

Fig 002.19 & 20: The same portion of the house, with two different adaptations

When Boudon asked residents why they chose to alter their houses, they time and again **[re]**sponded by saying that the original attributes of the house were out of date. The most noted change was the altering of the strip window into regular rectangular windows. This is most ironic, as the large panes of glass were the pride of industrialisation and represented one of the major elements in Le Corbusier's "Five Points of Architecture."

Fig 002.21: The contrast between an un**[re]**stored and **[re]**stored unit in 2005

Further studies noted that the Houses at Pessac were extensively altered when compared to other housing developments of the same size. Residents stated that the original designs lent themselves well to alterations and conversions (Scott, 2008:27).

Martin Powely, in reviewing the book "Architectural design" of September 1969 (Powely in Scott 2008:27), said: "the fantastic pitched roof mutations which were once '*machines a habiter*' are now composite structures in time, carrying within their structure the memory of the previous form. They can, without irony, be compared to the cathedrals of medieval times for that reason."

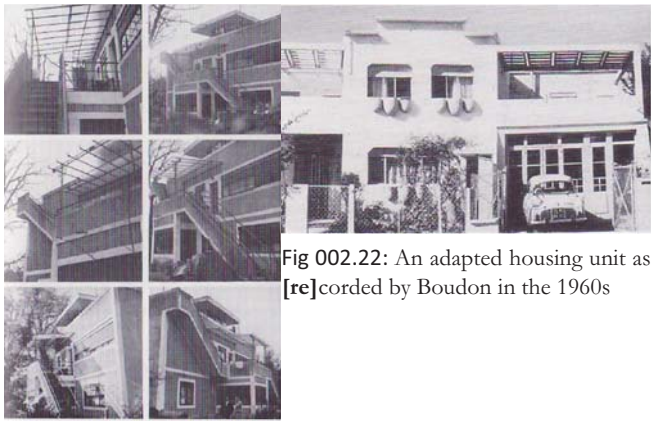

Fig 002.22: An adapted housing unit as **[re]**corded by Boudon in the 1960s

Fig 002.23: Altered houses at Pessac

Fig 002.24: The street façade after renovations

Fig 002.25: The contrast in façade according to the occupants' preferences

Conclusion: According to Scott (2008:32), for Pessac to have **[re]**mained unaltered would have implied a general population with the discipline of the defence force. If these homes were never altered for everyday living, it would have been counter to the liberating notion which le Corbusier set out to achieve. The essence of life implies that the family unit will shrink and swell according to events such as marriage, birth, ageing, death, and occupants moving out of Pessac.

Although all these alterations have taken place, Pessac is by no means a failure, as it demonstrates the true nature of adaptability and flexibility. The genius of the original architecture with its regulating lines and careful massing still shines through **[re]**gardless of the various layers deposited onto the building.

002 - 2.6 THE LCB DEPOT

Name of Architect: Ash Sakula Architects
Location: Leicester, United Kingdom
Year: 1970s (original building)

Fig 002.26: The previous street façade of the station sits uncomfortably in its Victorian surroundings

The LCB Depot was built in the 1970s and served as a bus station. It has however been vacant for many years and never merged with the surrounding Victorian buildings of the neighbourhood (Paredes, 2006:177). The building was never demolished because of its modest spaces and sturdy structure; above and beyond this, its proximity to St. George's Cathedral has been its saving grace.

Solution: Ash Sakula Architects approached this adaptive **[re]**use project by **[re]**taining the LCB Depot and constructing a new building at the rear, creating a courtyard which announces one of the entrances to the cathedral. The way, in which the station building and its edges are addressed, pulls together the surrounding urban fabric, which, according to Paredes (2006:176), "will convert the zone into a dynamic cultural neighbourhood".

Both the station **[re]**novation and the new building pursue the traditional industrial vernacular and make use of facebrick on the façades facing the street, while the rear façades enclosing the courtyard employ light light to ensure the courtyard is not dark and gloomy. The panels on the façades of the new building are made up of white and clear glass in aluminium frames, some of which have the artist Linda Schwab's artwork silk-screened onto them.

Fig 002.27: The LCB Depot renovated, showing the new facebrick, aluminium windows and café

Program: The station, as well as the new building, has become a centre for creative occupants such as artists, designers and film makers. The renovated station houses studios on the upper floors with a café on the ground floor. The location of the café ensures a constant flow of people through the site and provides a direct route to the cathedral from the west.

The new building also houses studios in addition to a conference room and art gallery on the ground floor. The art gallery provides a strong link to the cathedral, station building and courtyard, further integrating these components to make a single space.

Fig 002.28: Site plan of the LCB Depot and new building to the west. The cathedral grounds are indicated in green

Fig 002.29: A section in perspective showing the internal configuration of the buildings as well as their proximity to one another

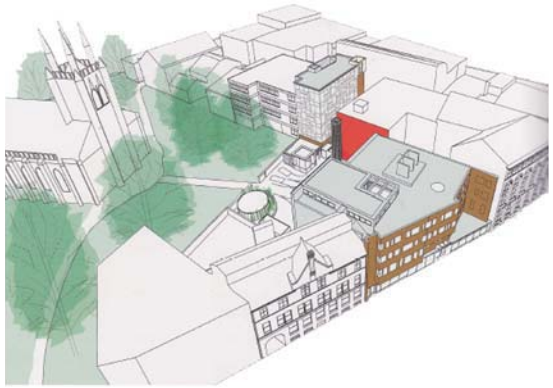

Fig 002.30: Perspective showing the proximity of the cathedral to the new building and **[re]**novated station

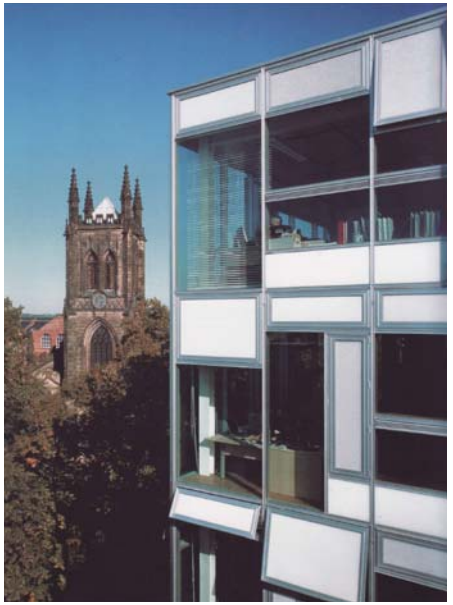

Fig 002.31: Photograph of the new building with the cathedral in the background. This image clearly shows the white and clear glass

Fig 002.32: Image of the new building illustrating the position of the art gallery on the ground floor and studios above

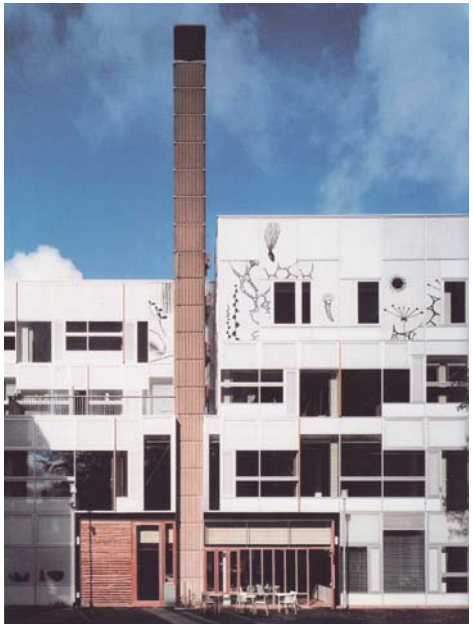

Fig 002.33: The rear of the station building is finished with clear as well as white glass. Some panels display artwork by Linda Schwab

Conclusion: The potency of the original building is not lost through this process of **[re]**novation. The station building has been updated by **[re]**moving the mosaic tile finish and exposing the brickwork in order to make it sit more comfortably in its Victorian neighbourhood. The window openings have been **[re]**configured and updated with aluminium frames which link with the new building constructed to the rear of the station.

002 - 2.7 PALLOTA TEAMWORKS

Name of Architect:	Clive Wilkinson Architects
Location:	Los Angeles, California, United States of America
Year:	Unknown

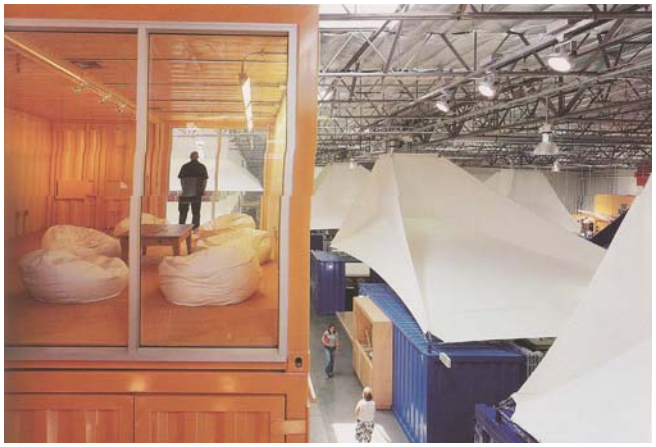

Fig 002.34: Containers provide space for offices and meeting rooms. Tensile structures are anchored to some containers to define spaces

An industrial warehouse of 46,285 square feet needed to be transformed with a minimal budget into the central offices for Pallota Teamworks, a non-profit organisation.

Solution: According to the **[re]**view in *Industrial Chic* (Paredes, 2003:115) the only alteration to the existing structure was the inclusion of skylights to improve ventilation and natural light. Furthermore, the new electrical and mechanical

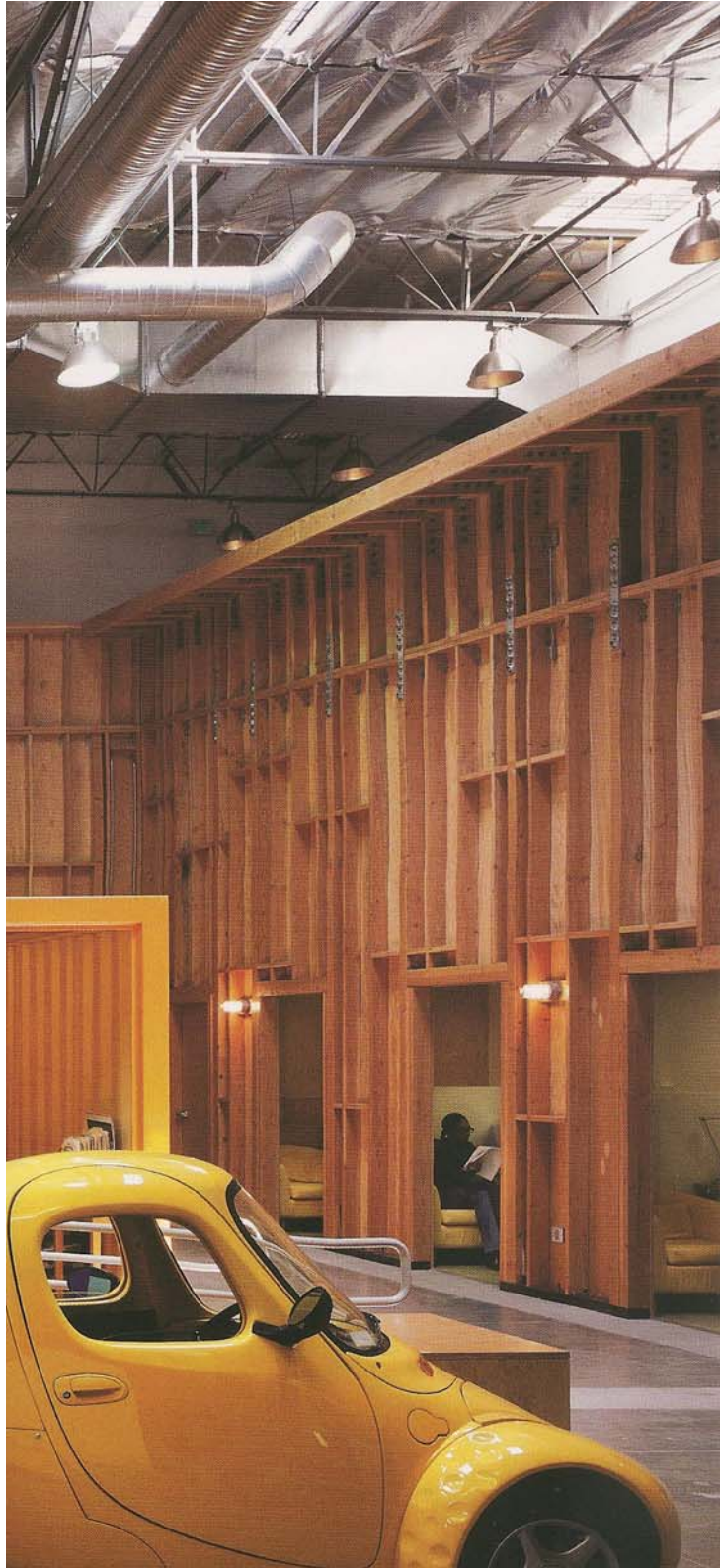

Fig 002.35: A timber structure has been added to a portion of the warehouse to provide a quiet room for employees. Spaces between the work zones are generous enough for bringing large items, such as the car, into the building

services were designed to **[re]**duce energy consumption.

Program: The tight budget forced the architectural team to think out of the box when zoning the existing warehouse. The **[re]**sult was clusters of **[re]**cycled shipping containers arranged in such a manner as to accommodate offices and meeting rooms (Parades, 2003:115). Tensile structures were then placed over some of the containers in order to define spaces and create work zones.

Conclusion: The internal configuration is a prime example of sustainable architecture that challenges the norm, while at the same time being visually attractive.

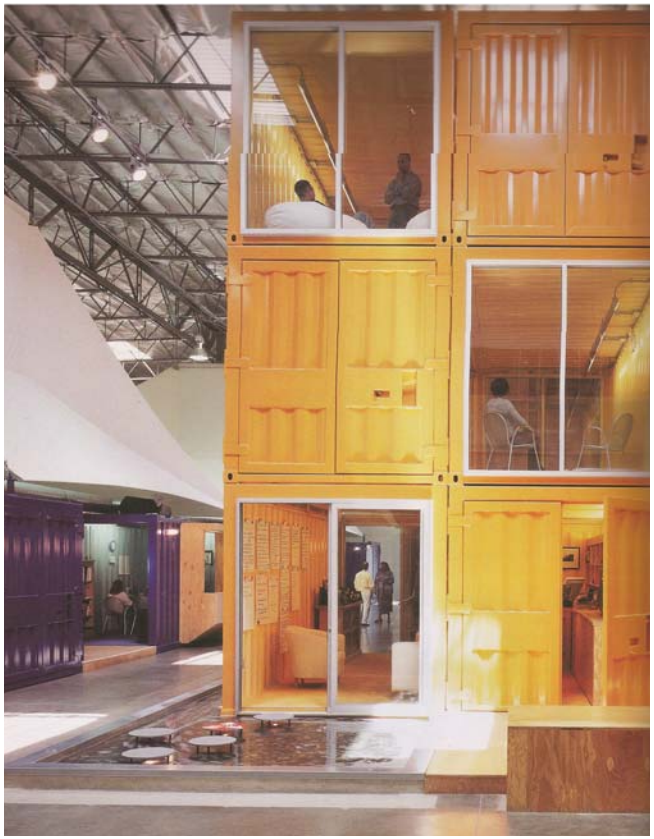

Fig 002.36: Glass sliding doors have been added to the ends of the containers to make them habitable. Further design elements such as the pond have been added for visual effect

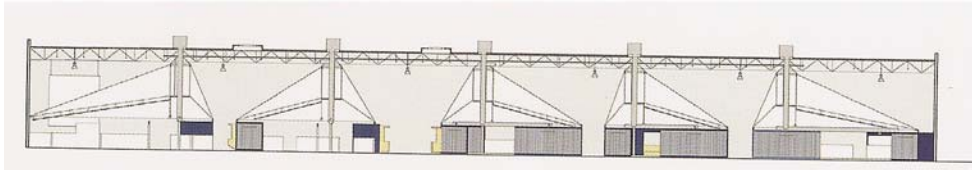

Fig 002.37: This section of the building (the lower portion of the plan below) has tensile structures anchored onto the containers

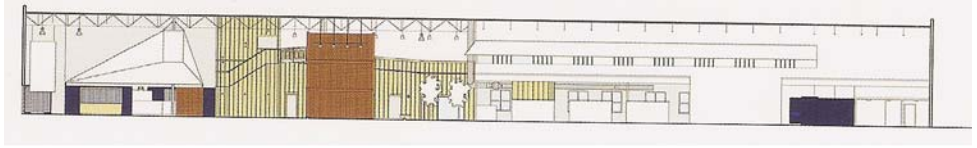

Fig 002.38: The section above is taken through the 'courtyard' portion of the building where the pond is located

Fig 002.39: The floor configuration of **[re]**cycled shipping containers is used to form 'work zones'

002 - 2.8 DALLAS THEATRE CENTRE

Name of Architect: Joshua Prince-Ramus
Location: Dallas, Texas, United States of America
Year: 2001

Fig 002.40: This side of the theatre can open and close according to the event being held

Joshua Prince-Ramus, principal of Rex Architects, is of the opinion that rchitects and architecture have come to serve decorative purposes only (ted.com). Somewhere along the line architects have forgotten how to bridge the gap between creation and execution. There have been advances in technology and construction, yet a large portion of architects take a step back. Joshua Prince-Ramus proposes that architects "stitch" creation and execution back together and stop presenting objects and start offering processes.

This phenomenon is beautifully illustrated in the "Home for the Dallas Arts" otherwise known as the Dee and Charles Wyly Theatre.

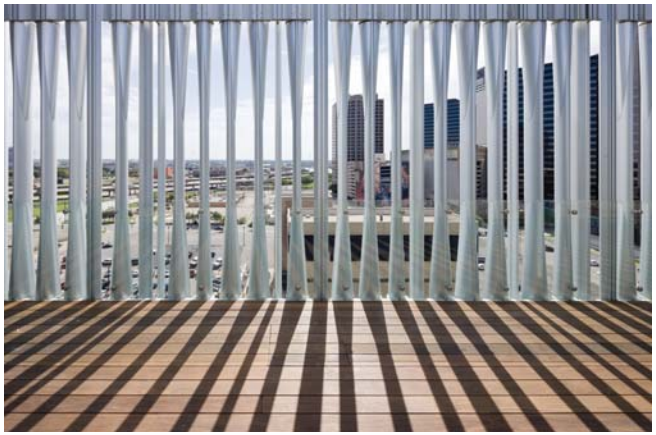

Fig 002.41: A view from the rooftop terrace through the skin of the building

Solution: In order for this to occur Prince-Ramus identifies three key areas that need to be addressed: **issue**, **architectural position,** and **manifestation** (ted.com). The issue with **[re]**gards to the Dallas Theatre Centre was that the previous building was dilapidated and characterless. However, the building allowed the art director to change it as and when he saw fit. The position that the architectural team had to follow was to design a building that was not a pristine object in the landscape, but one that allowed for the same degree of flexibility as the preceding building. The manifestation occurred on a vertical plane as opposed to the conventional horizontal plane.

Fig 002.42: The theatre seating which can be folded and packed away

By following these processes Prince-Ramus is able to demonstrate how he **[re]**gains "the lost art of productively losing control" (Prince-Ramus). This means that client and architect are empowered to critique the building according to the position identified as an issue.

Program: The extraordinary thing about this particular building is its ability to metamorphose according to the event taking place. Not only can the flat floor configuration be changed to raked seating, but the perimeter walls are able to fold away and engage with the spaces outside. In order to grasp how this is possible it is important to consider the core concept of the project – the "super-fly stage." The "super-fly stage" refers to the fly tower which is able to pick up the pristine elements, including the proscenium arch, and render the rest of the space provisional. This then allows one to "screw, cut, paint, drill, nail and **[re]**place with minimum cost" (Prince-Ramus).

By spreading previously associated functions of a theatre across the fly tower and auditorium, the art director gains unprecedented freedom to create different stage and audience configurations. The building is based on a series of technologies which have already been successfully implemented and have fail-safe measures, one instance being the balconies which operate in the same way as a score board lift. By employing this technique, the balconies are able to be completely **[re]**moved from the space in order to facilitate a different event.

Fig 002.43: The main theatre can be **[re]**configured into a variety of forms with minimal time and a few stage hands

Fig 002.44: This side of the theatre opens up onto a public gathering space

Conclusion: This affords the art director an opportunity to bring any activity to fruition within this "floating object". For example each act of a play can have a different background with the exterior gradually becoming the backdrop for the theatre performance, or vice versa.

Fig 002.45: The site plan of the theatre complex

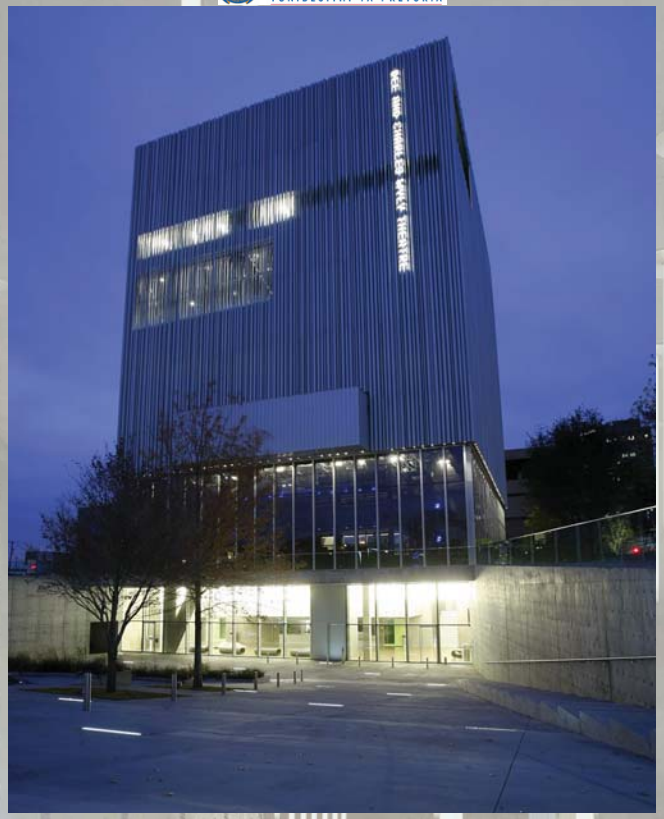

Fig 002.46: A view of the theatre building showing the lobby below with the theatre space above

Fig 002.47: Interior view of the lobby below the theatre

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003

CONTEXT

PROJECT LOCATION **003**-1
HISTORICAL CONTEXT **003**-2
SITE CONTEXT **003**-3
EXISTING BUILDING **003**-4
CONTEXT OF MATERIALS **003**-5

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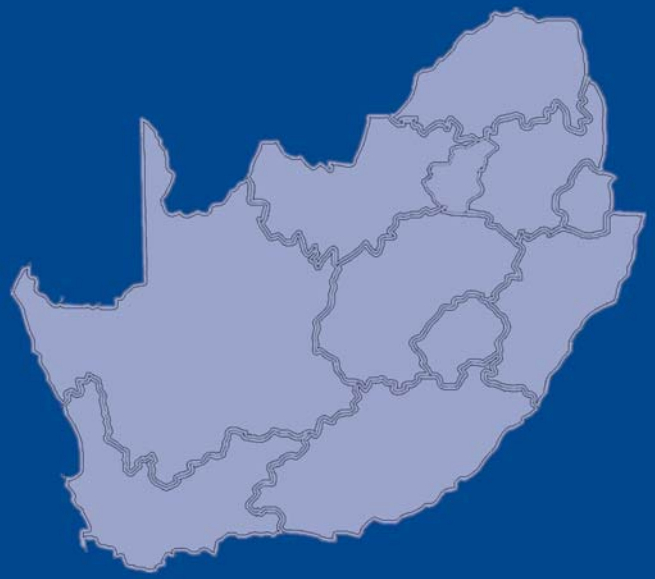
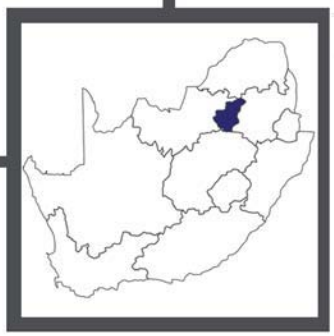
003-1 **PROJECT** LOCATION



Context

National scale

Provincial scale



Regional scale

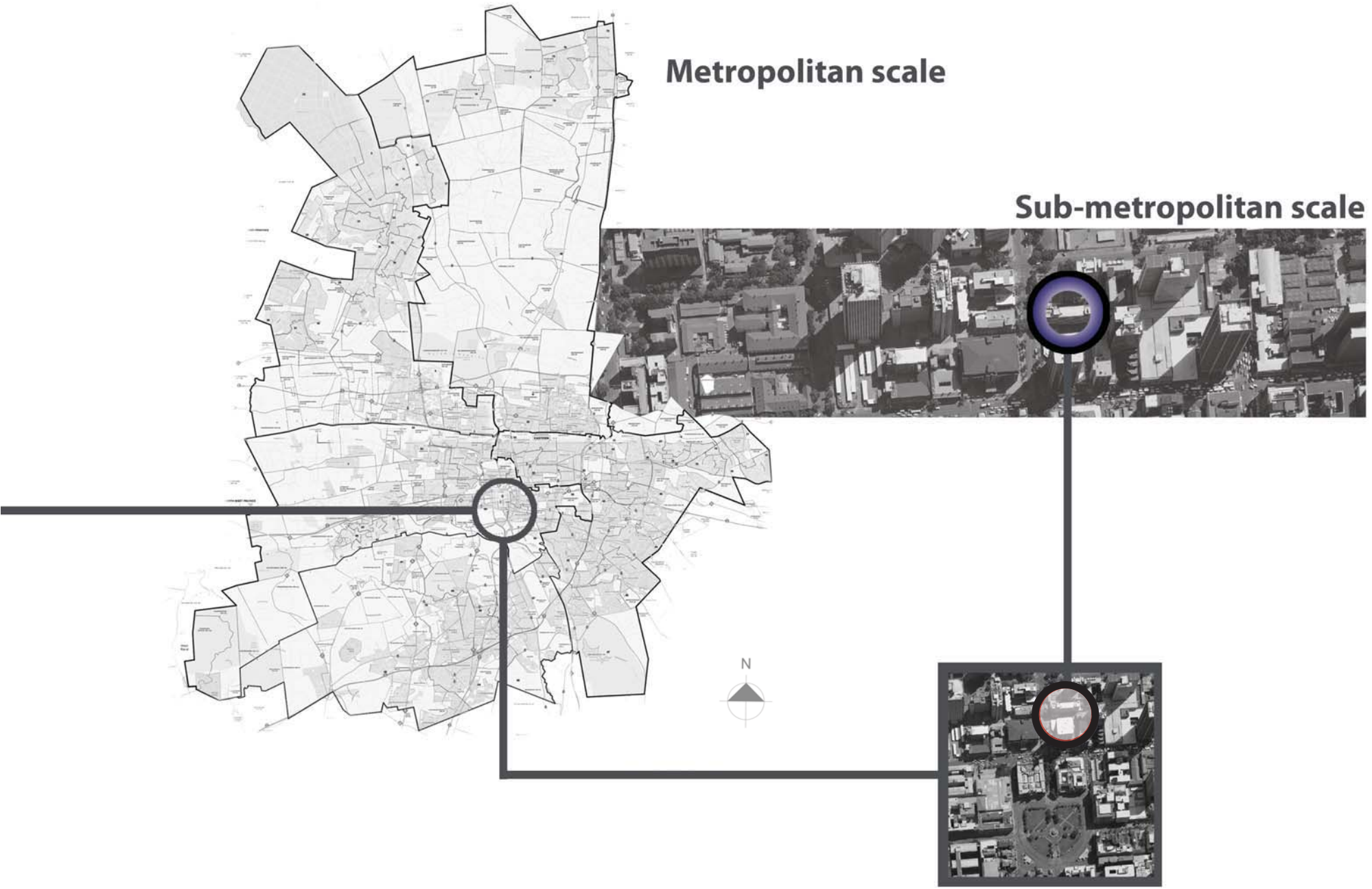
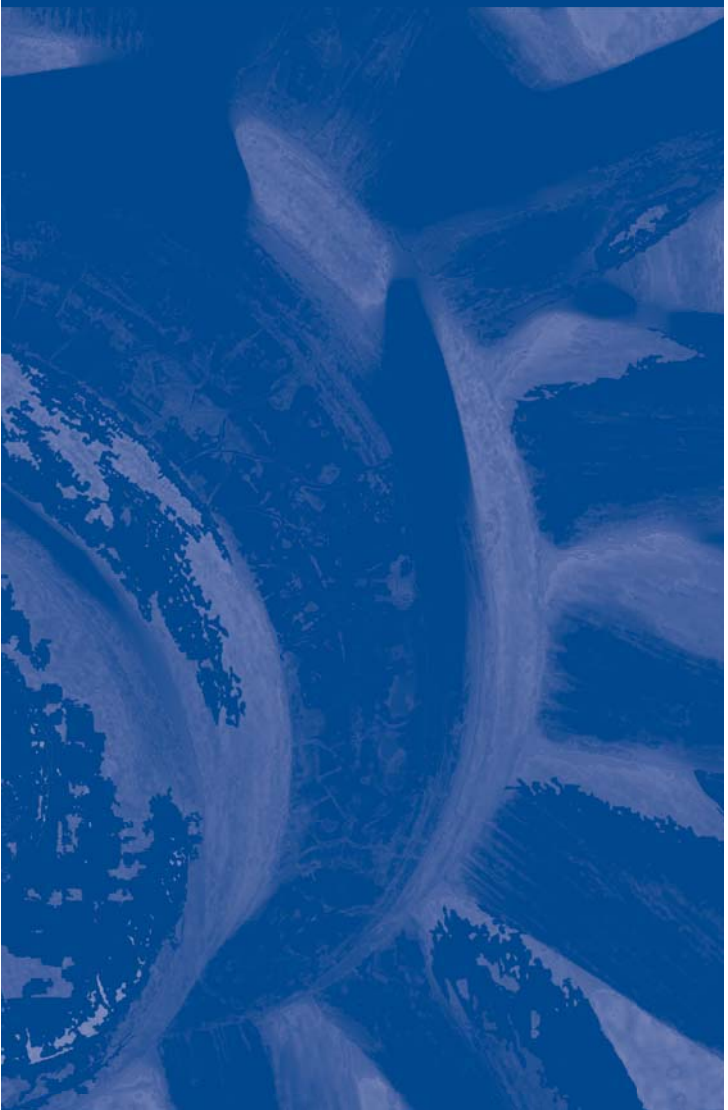


Fig 003.1: Digital collage indicating the location of the thesis project

003-2.1 HISTORICAL CONTEXT



003 - 2.1 HISTORICAL CONTEXT

Dates of importance

1855 – Pretoria is declared the capital of the Transvaal

1877 – Pretoria falls under British rule

1887 – The National Library of South Africa is founded

1888 – The German Club on Paul Kruger Street is founded

1894 – The Pretoria Station complex is completed. It includes workshops, sheds and separate houses for black and white employees

1903 – Leendert te Groen's Eureka Cigarette Factory is established

1908 – The University of Pretoria Merensky Library is founded

1927 – Somerset House is constructed on the northern side of Vermeulen Street

1933 – The clubhose of the German Club is inaugurated, as indicated on the corner-stone

1946 – The Transvaal Library and Museum Service is founded

1946 – The construction of the sunken garden in front of the station is set in motion in anticipation of the Royal visit in 1947

1947 – The University of South Africa Library is established

1951 – Charles Maggs Investments sells Somerset House to the Postal and Telecommunication Services

1954 – The Koopkrag building on Proes Street, designed by Maussmann, is erected

1955 – The Woltemade building, designed by WG Maussmann, is built

1959 – The Elm building, designed by J. Masureik, is completed on Proes Street

1959 – The western block extension to the Woltemade building, designed by Colyn and Meiring is completed

1964 – The South African National Film, Video and Sound Archives are built

1968 – The twelve-storey Masada building designed by Joubert Owens and van Niekerk is constructed

1969 – The National Cultural History Museum is founded
– Additions to the Woltemade building are done by Colyn & Meiring Architects

2001 – Pretoria Station is burnt down by protesting commuters

2001 – The Paul Kruger Street Development Framework is drawn up

2002 – The damaged portions of the station are **[re]**built

2002 – The construction of Freedom Park commences

2010 – The building of the Gautrain and its station gets underway

003 - 2.2 HISTORICAL CONTEXT

Buildings of importance

Fig 003.2: The roof of the German Club

Fig 003.3: The German Club today, seen from the north-west corner

The German Club, designed by Kallenbach Kennedy & Furner, has been in existance since 1888, with the Clubhouse dating back to 1933, as indicated by the corner-stone.

The Art Deco building stands proudly on the corner of Paul Kruger and Proes Streets and once had strong ties to the German community. However, the Club is now used by a variety of occupants, especially around its perimeter.

Fig 003.4: Western façade of the Old Synagogue

The Jewish Synagogue on Paul Kruger Street was designed by Ibler & Beardwood and dates back to 1897 (Le Roux, 1993:32). Its corner stone was moved to the new synagogue on Pretorius Street in 1958.

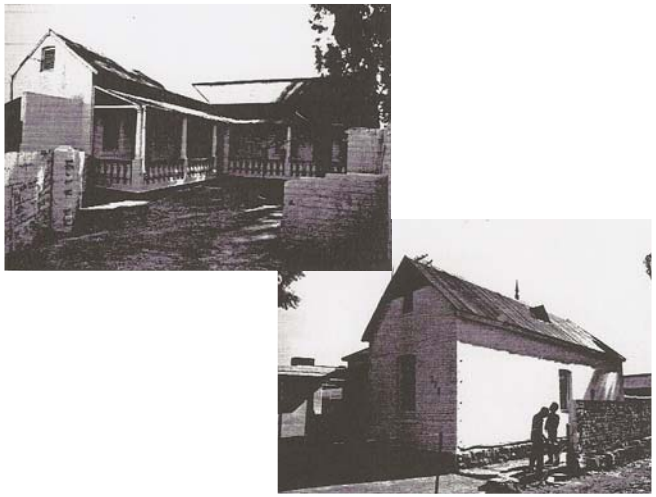


Fig 003.5: The Victorian house on Proes Street

This single-storey late Victorian house with sheet metal roof, stoep and toothed limestone sits uncomfortably within the urban context (Le Roux, 1993:19)

Fig 003.6: The Koopkrag residential building with its sculptural elements on the street

Koopkrag, an eight-storey building on Proes Street, was designed by Maussmann and erected in 1954 (Le Roux, 1993:18). This building is for the most part residential with retail activities on the ground floor, which was however originally designed as offices.

The building is very distinctive with its protruding balconies, roof garden and sculptural covering structure synonomous with South American examples of architecture (Le Roux, 1993:18).

Fig 003.7: The Eureka Factory with its surrounding context of tall buildings

The Pierneef Museum, also known as the Eureka Factory, was established in 1903 by Leendert te Groen. It is a prime example of the typology with a residential unit above and a shop below (Le Roux: 1993:15,16).

Fig 003.8: Southern elevation of Somerset House

The exact date when Somerset house was erected is uncertain, but it is assumed to have been just after 1927 when Charles Maggs Investments purchased the open piece of land (Le Roux: 1993:82). The architecture **[re]**sembles that of Church Square, designed by Gordon Ellis.

In 1951 it was sold to the Postal and Telecommunications Services. A division of Telkom is still housed in this building today.

Fig 003.9: The Telephone exchange building on Vermeulen Street

This building, designed by the DOW, dates back to 1936, with various additions after 1945 completed by the DOW and Gordon Ellis (Le Roux: 1993:83).

Materials have been carefully selected and detailed in order to remain within the contextual realm of Church Square.

Fig 003.10: Hilda Mansions from the south-west corner

Hilda Mansions is located on the corner of Proes and Bosman Streets and dates back to the late 1930s. According to Le Roux (1993:88) it is an example of Pretoria(n) Art Deco. Finished with yellow rectangular mosaic tiles and displaying mannerisms of the International Style it is of architectural value to Pretoria.

The building is still in good condition, housing a variety of offices as well as Telkom's west wing.

Fig 003.11: Image of the Panagos building in Struben Street

This neat building dates from the 1890s, and was established by Hendrik Zagt (Le Roux, 1993:65). The double storey building has a sheet metal roof, matching verandas over the sidewalk, and a limestone plinth.

Fig 003.12: Northern façade of the Elim building on Proes Street

The rectangular six-storey building called Elim was designed in 1959 by J. Masureik (Le Roux: 1993:87). It has a central axis with a symmetrical northern façade. One finds recessed balconies on the street façade, while the rear of the building is placed on columns to accommodate parking.

Fig 003.13: The Masada building as seen from the roof of the Woltemade building

The Masada building, now used by the Department of Correctional Services, was built and designed in 1968 by Joubert Owens and van Niekerk.

This twelve-storey building with open internal courtyard is situated on the north-western corner of Paul Kruger and Proes Streets. The façade of the building consists of a suspended structure with shading devices in front of the windows.

It is yet another example of functional architecture derived from South American Modernism (Le Roux: 1993:87).

003-3 **SITE** CONTEXT

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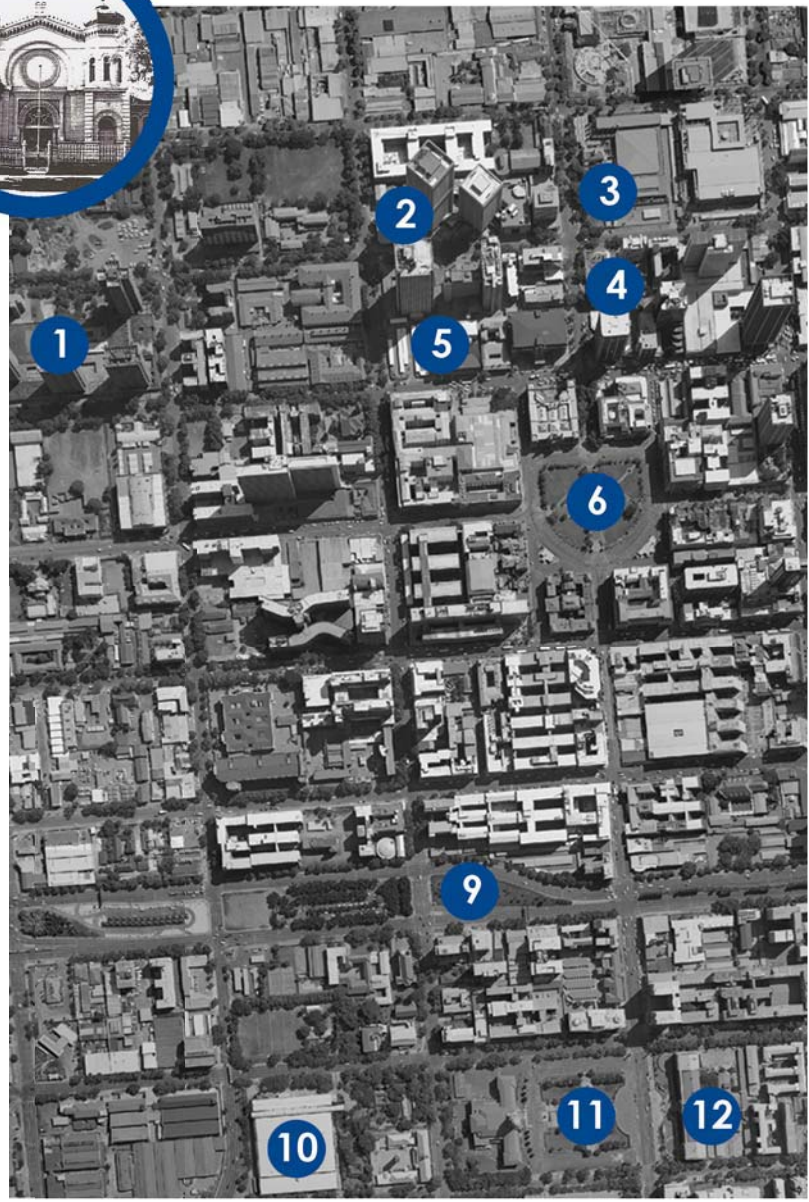


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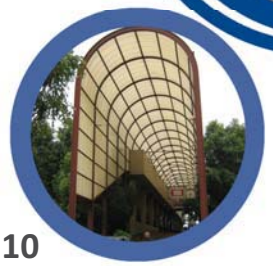
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1. Fig 003.3.1: The location of Schubart Park
2. Fig 003.3.2: Hilda Mansions is located to the north-west of the site
3. Fig 003.3.3: The Old Synagogue is located a block away from the Woltemade building
4. Fig 003.3.4: The location of the Woltemade building in relation to the surrounding areas
5. Fig 003.3.5: The cluster of Telkom Towers, with corporate offices distributed throughout the area
6. Fig 003.3.6: Church Square is an anchor point of the city that this thesis wishes to exploit
7. Fig 003.3.7: Sammy Marks Square opens onto a pedestrian orientated Church Street
8. Fig 003.3.8: Although Lillian Ngoyi Square is a harsh environment, it is well utilised due to its location
9. Fig 003.3.9: Skinner Street divides the Pretoria CBD into two halves
10. Fig 003.3.10: The African Culture Museum is well situated but enclosed by barriers, losing out on potential visitors
11. Fig 003.3.11: The City Hall with its vast open space could be better utilised
12. Fig 003.3.12: The Transvaal Museum houses some of the Nation's treasures; however, displays remain unchanged
13. Fig 003.3.13: Burgers Park is a well maintained green space within the city


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1. Fig 003.3.14: The Masada building
2. Fig 003.3.15: Vacant lot used for parking during the week
3. Fig 003.3.16: New Court Chambers
4. Fig 003.3.17: The Palace of Justice
5. Fig 003.3.18: The VWL Centre boarders the thesis site
6. Fig 003.3.19: The Pretoria High Court
7. Fig 003.3.20: The Old Reserve Bank
8. Fig 003.3.21: The German Club which adjoins the proposed site
9. Fig 003.3.22: 215 Proes Street houses the National Youth Development Agency which also boarders the site
10. Fig 003.3.23: The Koopkrag building adjoins the site to the east. Woltemade building shares the same owners
11. Fig 003.3.24: The Pretoria News building facing Vermeulen Street
12. Fig 003.3.25: A portion of the Pretoria News building shares a boundary with the thesis site
13. Fig 003.3.26: This 16 storey building houses the High Court Chambers

003-4 EXISTING CONTEXT

003 - 4.1 VIEWS FROM AROUND THE SITE

The purpose of this investigation is to determine the level of visibility of the Woltemade building from around its site, to determinine the most visible and eye-catching parts of the building, which will then be noted and addressed in the thesis as far as possible.

Fig 003.4.1: The Woltemade Building as seen from the north when travelling along Proes Street

This is the first glimpse of the building as seen from the north, travelling west along Proes Street. Pedestrians are more likely to see the building, as the tall building to the left in the photo above blocks a large portion of it.

The German Club (to the right in the photo) is of a much smaller scale and affords pedestrians as well as motorists an oppurtunity to view the building.

Fig 003.4.2: The view of the Woltemade building from in front of the German Club

A better view of the building can be obtained further west along Proes Street, in front of the German Club. As the nature of the northern edge of the German Club is single storey, it allows the northern façade of the Woltemade Building to be seen by passers-by.

It is by no means an imposing building as can be seen by the scale of the buildings in the background.

Fig 003.4.3: Looking towards the Woltemade building from the Paul Kruger and Proes Street intersection

The true character of the building begins to **[re]**veal itself from this corner, as the detailing becomes more evident and is less obscured. The high-rise tower blocks can once again be seen in the background.

Fig 003.4.4: The western façade is the most prominent side of the building as this is what most people see

This photograph was taken in April at midday, from the western side of Paul Kruger Street. The fashion outlet has since become a sweet shop.

This particular angle of the building, which is most visible, **[re]**veals the most of is character. The horizontal lines of the lower block of the building are contrasted by its height. Various materials can be seen: from the vertical mottled brown mosaic tiles on the lower building block to the horizontal blue mosaic tiles on the upper block facing the street.

Most notable however is the curved 'balconies' protruding from the façade, which are finished with blue, red and yellow mosaic tiles. The concrete frames around each unit contrast with the dark brown, almost black facebrick below these 'balconies,' which are in fact shelves to the units within.

Fig 003.4.5: Approaching the Woltemade Building from Church Square

When walking along Paul Kruger Street, on the same side as the building, one is able to catch glimpses of it from just before the intersection with Vermeulen, in-front of the Old Reserve Bank. During the winter months the building becomes more visible when the leaves of the Jakaranda trees have fallen off.

In the foreground of his picture, the VWL building is visible, with the Bank Pharmacy just behind it. The German Club is visible in the background where it steps out in-front of the Woltemade building.

Fig 003.4.6: Walking along Paul Kruger close to the street edge, more of the building is **[re]**vealed

The closer one walks to the street edge, the more of the building one can see. Further along the Jakaranda trees start to block the view entirely.

Here the Bank Pharmacy is more pronounced in the foreground, while the Woltemade building graciously takes its place in the background.

Fig 003.4.7: A glimpse of the Woltemade building between the VWL Centre and the Pretoria News building

This photograph, taken facing north from Vermeulen street, illustrates how the Woltemade building sits within the city block.

In the foreground the VWL Centre with the MK Café can be seen to the left. The gap in the middle is a servitude which feeds another Pretoria News building at the back. To the right is a portion of the Pretoria News building. The Woltemade building is visible in the middle ground while the building at 215 Proes Street can be seen in the background.

Conclusion: The Woltemade building is well situated geographically, as it is located only a block away from Church Square. Passers-by are able to catch glimpses of the building from three of its four sides. Therefore it is appropriate to include a multitude of functions as the visibility of building acts as an advertisement for itself.

003 - 4.2 POSSIBLE NEW LINKS TO THE SITE

The possibility of new links to the site were investigated as currently a single access point to the site allows only a single car to pass through at any time. This is undesirable as it can lead to congestion and become problematic should a fire break out or the entrance be blocked for some or other reason.

Conclusion: The most plausable new link to the site would be points 1 and 2. They are seen as relevant as they provide the most direct link to the most public area on the site. Point 6 is chosen as an additional link as it is located on a servitude and will facilitate a single direction of traffic through the site, decreasing the amount of congestion. Vehicles will enter on Paul Kruger Street, which is a bi-directional street, and will exit on Proes Street, which is a one-way leading back to Paul Kruger Street.

This configuration will give patrons and residents the most choice and allow for easy navigation to their next location.

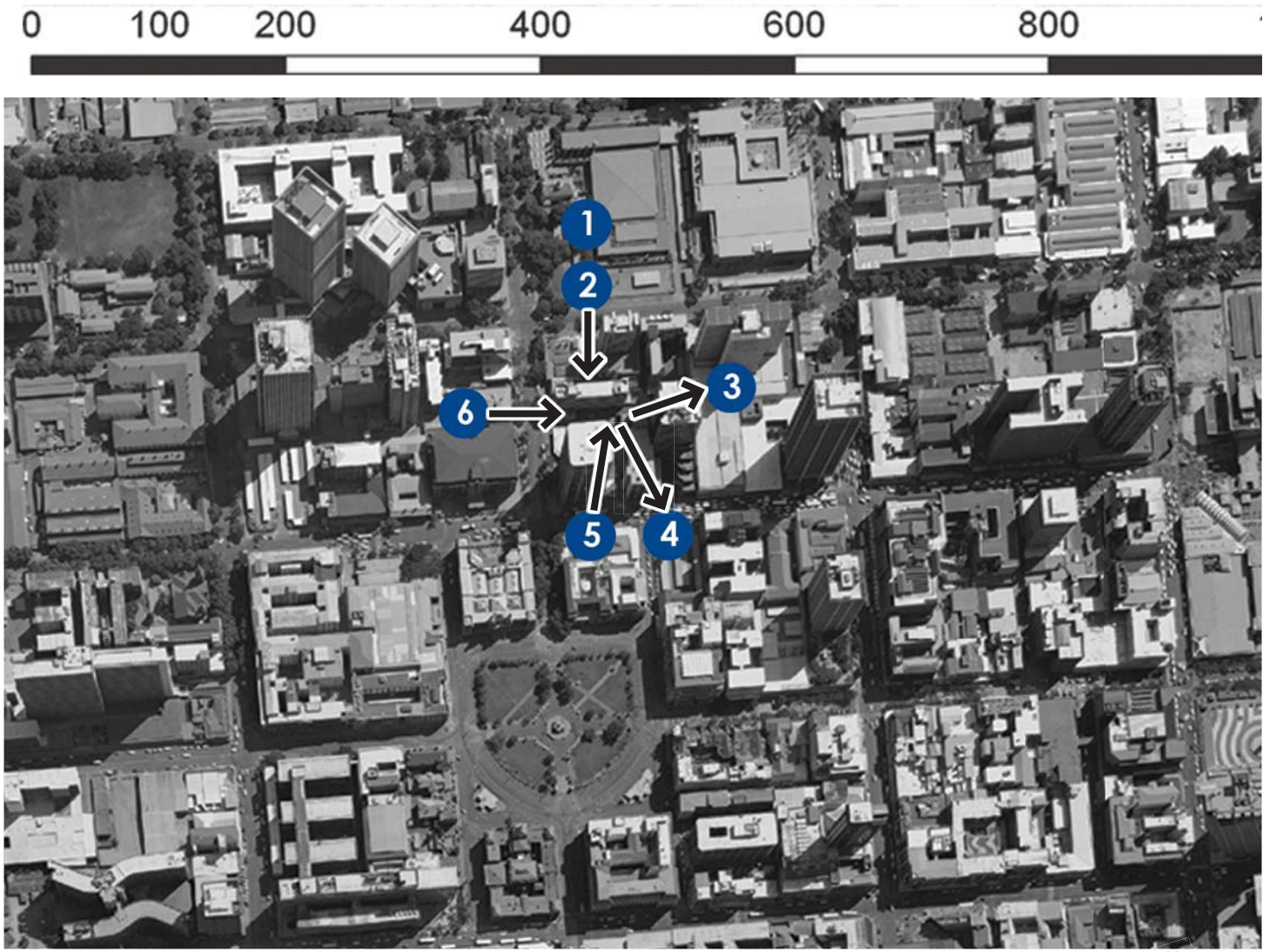

Fig 003.4.8: Site plan indicating the position of the various possible new link connections

Fig 003.4.9: A possible connection exists to the north of the Woltemade building, between the German Club and Koopkrag building on Proes Street

Fig 003.4.11: The current condition at the south-east corner of the site. Here the building line is obscured by a steel gate, which takes away a portion of the Woltemade site. This condition exists because the Woltemade and Koopkrag buildings are both owned by the same owner

Fig 003.4.13: The same link as in the previous image, however this time taken from Vermeulen Street looking towards the Woltemade building

Fig 003.4.10: Here the connection can be seen more clearly. The corrugated roof frames the linear passage towards the Woltemade building, which can be seen in the background

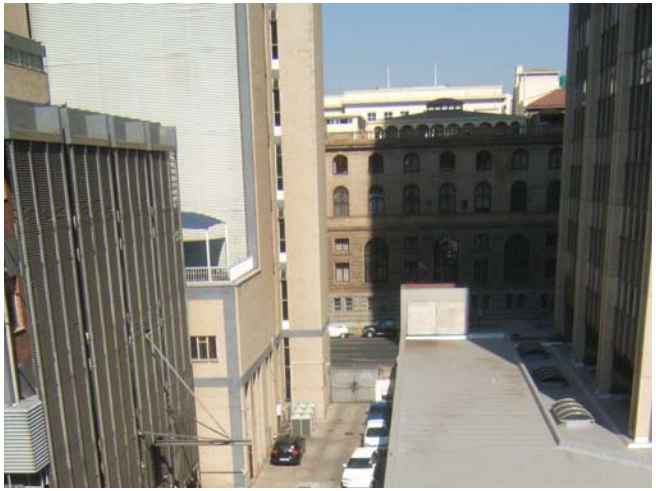

Fig 003.4.12: A link exists to the south of the site between the Pretoria News Building and the VWL Centre on Vermeulen Street

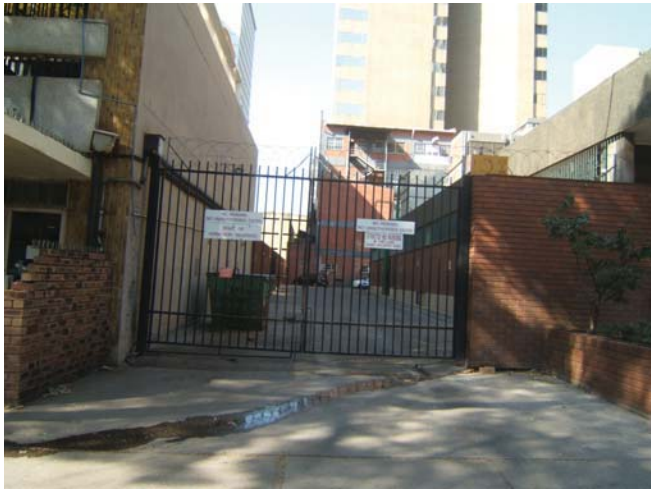

Fig 003.4.14: A servitude exists adjacent to the Woltemade building on the southern boundary. This gate can be found on the western edge along Paul Kruger Street

003 - 4.3 PROGRESSION OF THE SITE OVER TIME

The Woltemade building has undergone many changes in its lifetime. It was designed by WG Maussmann Architects and built in 1955, where it nestled itself between the existing buildings of the German Club and the Koopkrag building to the north. To the south of the new building an existing printing building as well as a modest sized residence could be found.

At this time only a small **[re]**tail portion of the building opened up onto the street. This configuration allowed patrons and residents to gain access to the site freely without visual obstruction.

The entire building besides the ground floor was **[re]**served for residential use. Covered parking is provided at the back of the site for eight cars, with a single row of parking spaces between columns under the slab of the first floor. Cars were a luxury at the time, thereby limiting the number of people who owned them.

Additionally the ground floor boasted a workshop, store room, bicycle store and ablutions.

In 1959 the three shops changed in configuration to accommodate offices.

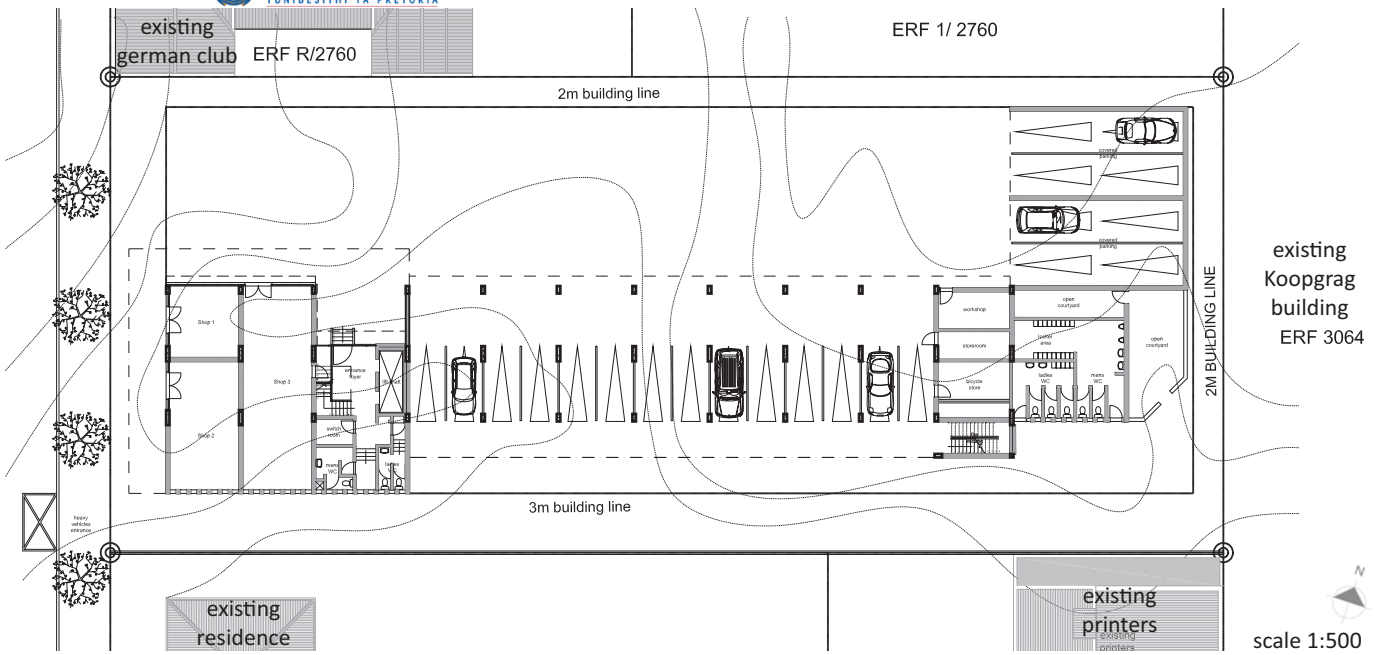

Fig 003.4.15: The ground floor plan of the Woltemade building as it appeared in 1955

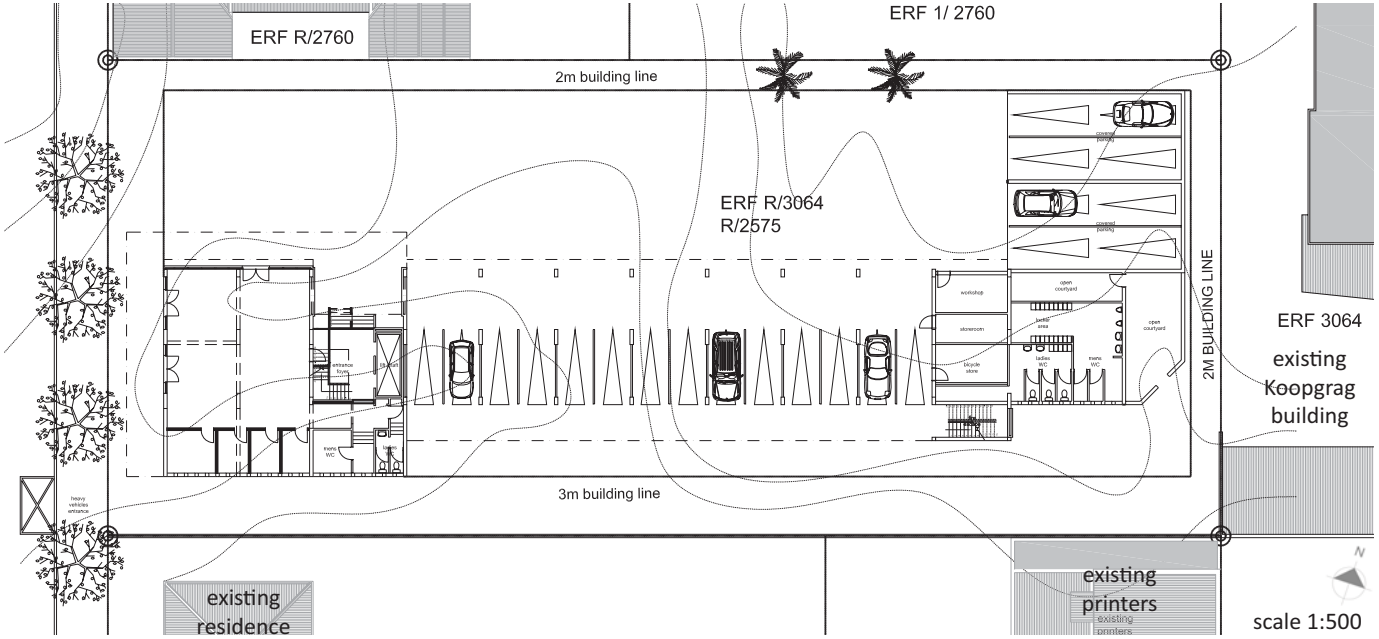

Fig 003.4.16: The ground floor plan of the Woltemade building after alterations were made to the internal layout of the street edge in 1959

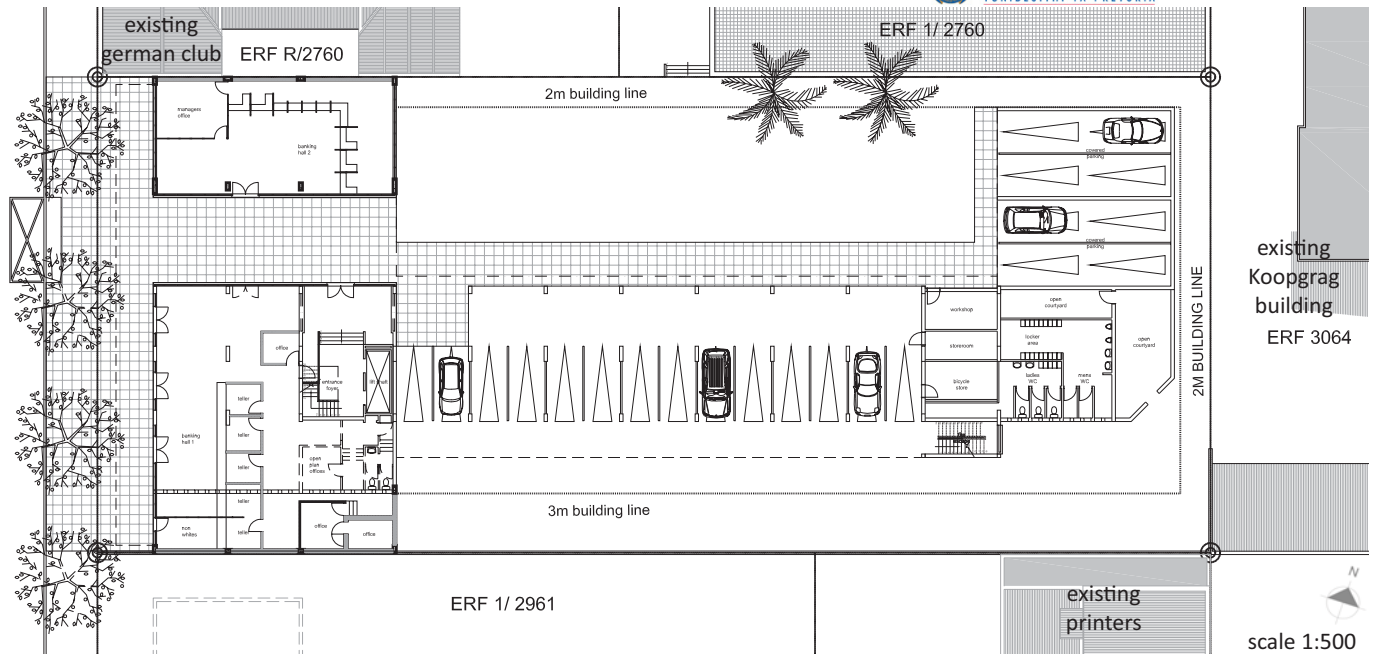

Fig 003.4.17: The western block was added to the street edge in 1961

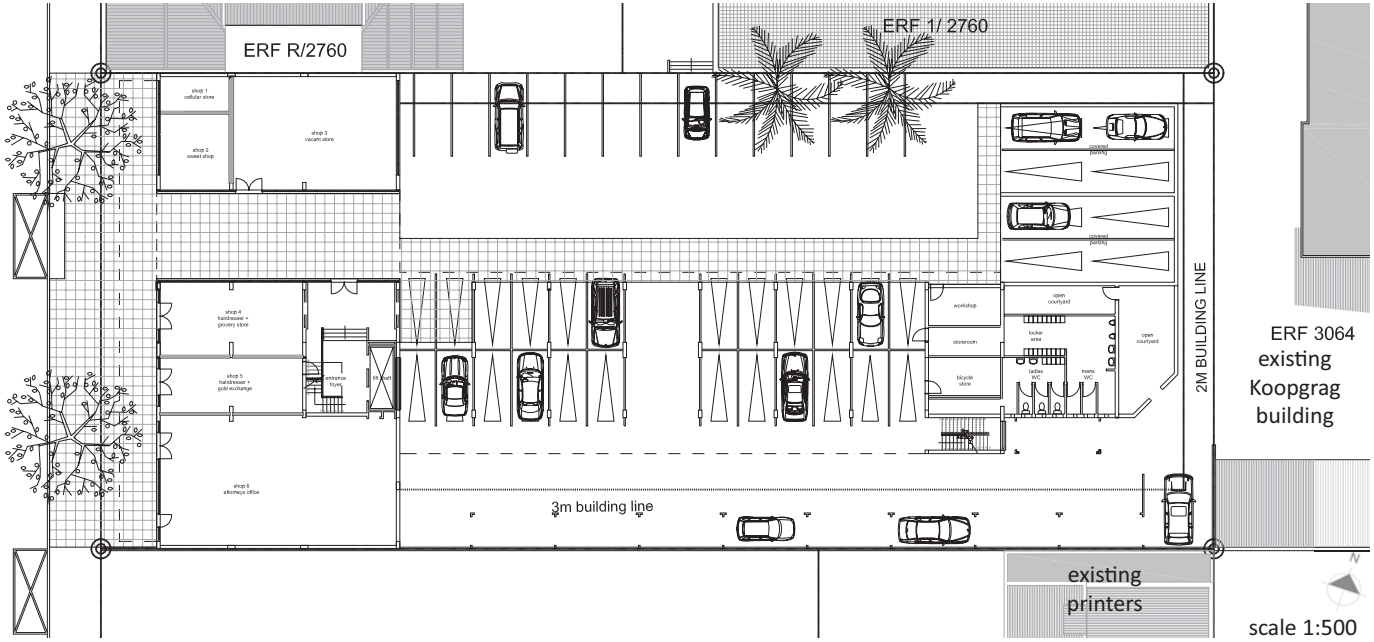

Fig 003.4.18: Many alterations have been made to the site. This is how it appears in the year 2010

According to plans obtained from First Property Trust, the trustees of the building, alterations were once again made to the building in 1961 by Colyn and Meiring Architects. A block stretching the length of the front boundary was erected with an opening on the northern side of the original building allowing vehicular access to the rear.

The programme of the ground floor changed to accommodate a bank. As was typical at the time separate entrances into the bank were provided for whites and non-whites.

The surrounding cityscape also changed with the erection of 215 on Proes Street. The residence to the south of the site was demolished and **[re]**placed with a single storey platform which wraps around an eighteen-storey building.

In 2010 it was noted that the programme of the ground floor had once again been modified. It is uncertain when exactly the bank was **[re]**placed by **[re]**tail in the northern parts of the block, and a mix of **[re]**tail and offices in the southern portion of the block.

Conclusion: The Woltemade building has undergone many changes over time, some of which have been documented.

003 - 4.4 EXISTING STRUCTURE + SERVICES

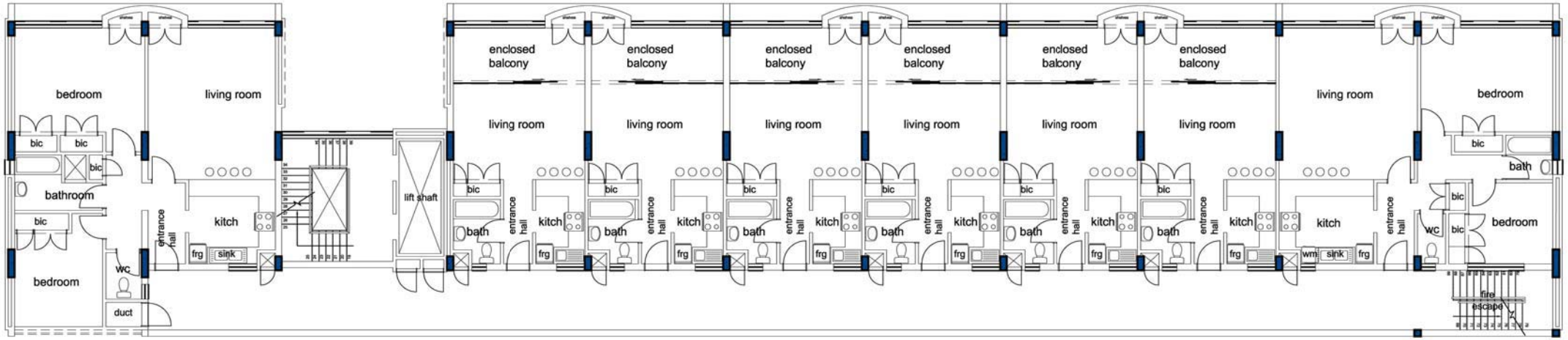

Fig 003.4.19: The primary structure of the building consists of concrete columns placed on an east/west grid of 5000mm and a north/south grid of 4250mm. Rows of 230 x 500mm columns can be found along the edges with 230 x 1000mm columns along the centre line of the length of the building.

typical floor plan (3-7) scale 1:200

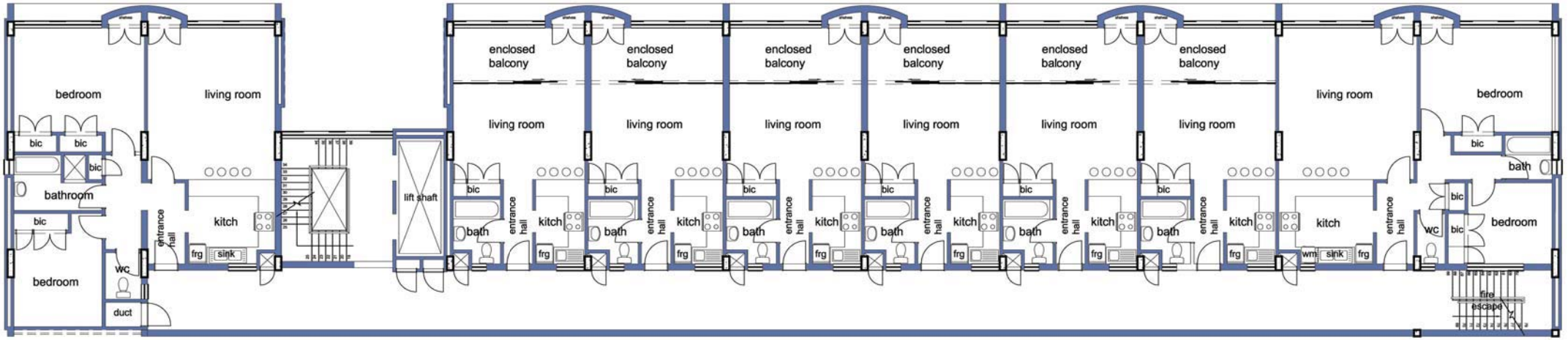

Fig 003.4.20: The secondary structure of the building consists of brick infill walls. These walls form barriers between units and divisions between spaces within each unit. Additional stiffening is provided by the walls of the lift shaft and staircases.

typical floor plan (3-7) scale 1:200

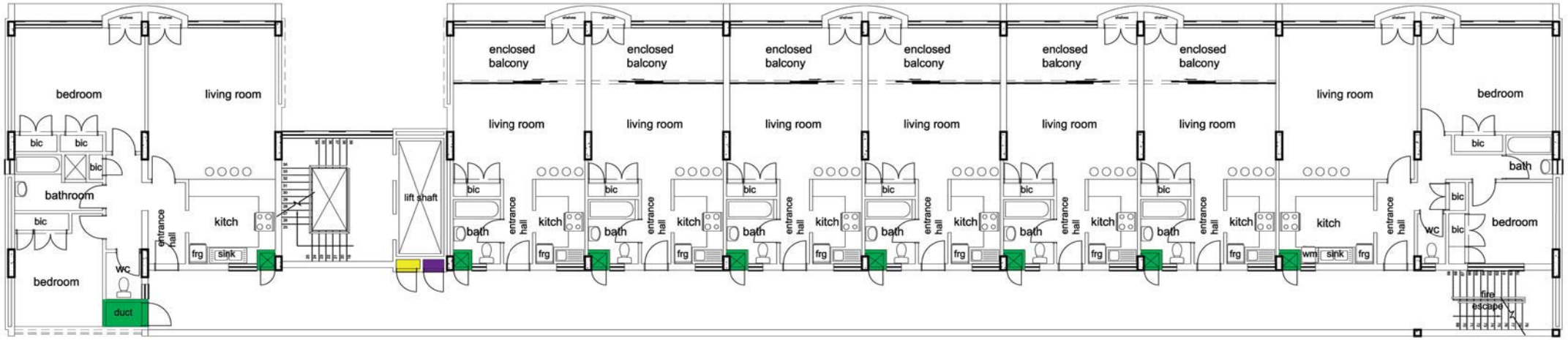

Fig 003.4.21: Service ducts are evenly distributed along the passages of the building. Potable and black water are placed within the green ducts, while electrical services such as the distribution boards are found in the yellow ducts and FHR in the purple ducts on each floor.

typical floor plan (3-7) scale 1:200

Fig 003.4.22: **T**he service ducts are concealed behind doors along the passages.

Fig 003.4.23: Once the duct is open, only two pipes are visible. The smaller pipe distributes fresh water vertically to the units above, while the larger pipe removes black water from the building.

Fig 003.4.24: Electrical switches are located in a single cupboard, as seen below

Fig 003.4.25: The electrical switches as they appear behind the doors. The colour of these doors change on every floor of the building. This small gesture begins to give identity to each floor.

Fig 003.4.26: A single fire hose reel is located on each floor where one exits the lift core.

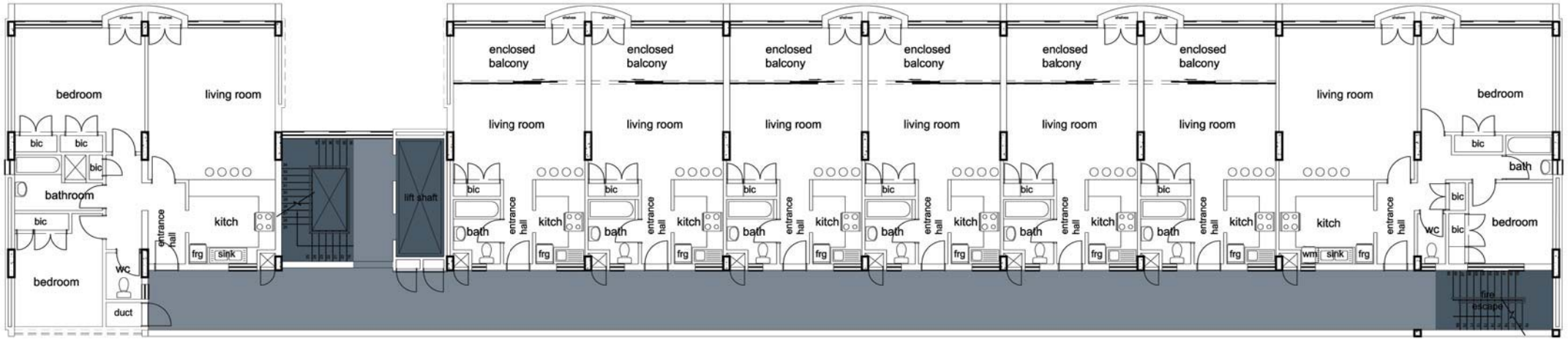

Fig 003.4.27: Vertical points are indicated in dark grey and located at either end of the building. Horizontal circulation spaces, indicated in light grey, are placed to the south of the building.

typical floor plan (3-7) scale 1:200

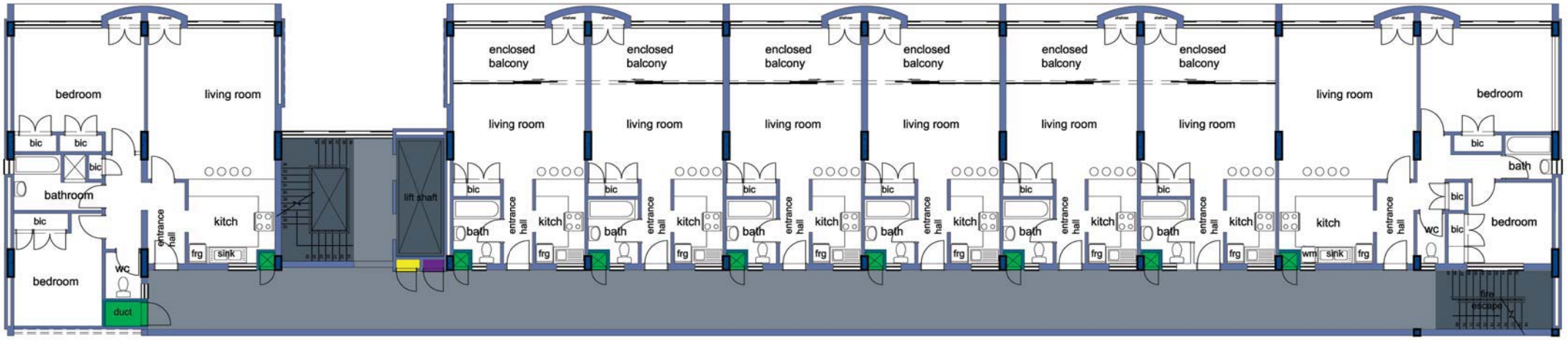

Fig 003.4.28: A plan with the various overlays of structure, services and circulation. This clearly illustrates that the southern side of the building is the most private. The spaces become more private towards the north once one is inside the residential unit.

typical floor plan (3-7) scale 1:200

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003-5 **CONTEXT** OF MATERIALS

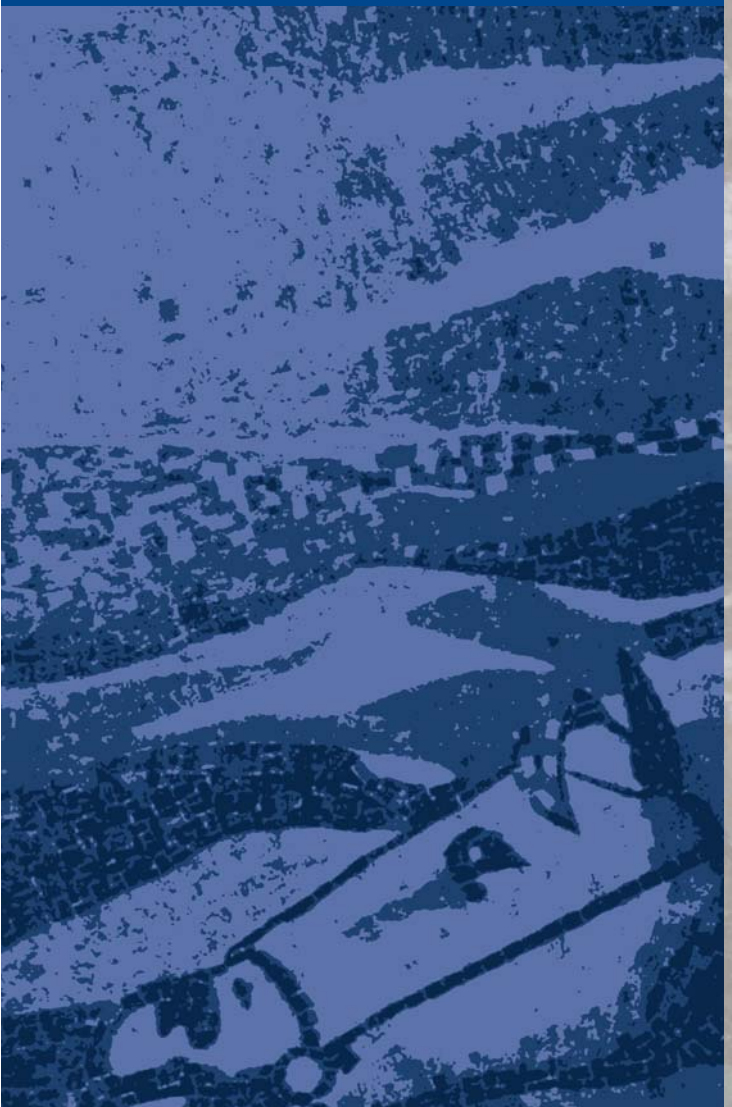

Fig 003.5.0: A scene depicting the story of Wolraad Woltemade appears on a wall in the ground floor entrance lobby

003 - 5.1 EXTERIOR FLOOR TEXTURES

Fig 003.5.1: The major of the ground floor consists of parking finished with a layer of asphalt

Fig 003.5.2: Concrete pavers are used in the "tunnel" leading from the front of the site to the back of the site

Fig 003.5.3: The junction between the asphalt and concrete pavers

003 - 5.2 EXTERIOR TEXTURES OF VERTICAL ELEMENTS

Exterior walls

Fig 003.5.4: The block addition on the street edge is finished in gamma zenith which has been painted

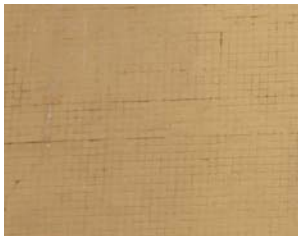

Fig 003.5.5: Upper portions of the block addition have a mosaic tile finish which has subsequently been painted

Fig 003.5.6: The eastern and western exterior planes of the building have been finished in 100 x 50mm blue ceramic tiles

Fig 003.5.7: Care has been taken in the details, as can be seen by the exposed gamma zenith strip

Fig 003.5.8: Entrance columns on the street façade are clad in tiles

Fig 003.5.9: Exterior walls along the circulation walkway on the southern side are finished in a light coloured facebrick

Exterior of individual units

Fig 003.5.10: There are a number of protrusions on the northern façade which look like balconies, but which are in actual fact shelves to the units within. Blue, red and yellow mosaic tiles are used to accentuate the "balconies"

Fig 003.5.11: This dark facebrick can be found below the windows and "balconies" on the northern façade

Exterior screening elements

Fig 003.5.12: A concrete screen extends the full height of the building on the northern façade in front of the circulation core

Fig 003.5.13: Screen walls on the roof consist of a satin finish facebrick laid in a combination of stretcher bond and brick on edge

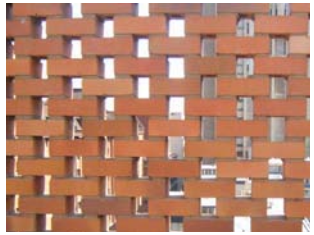

Fig 003.5.14: Portions of the walls on the roof are staggered to allow views of the city beyond

003 - 5.3 INTERNAL FLOOR FINISHES

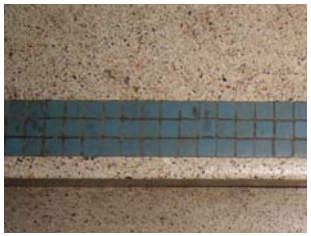

Fig 003.5.15: Terrazzo with blue mosaic detail can be found on the ground floor entrance lobby floor

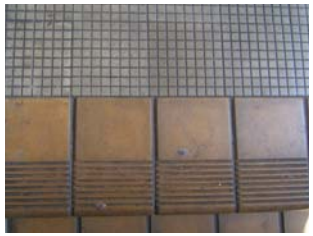

Fig 003.5.16: In the communal stairwell clay tiles on the stairs are contained with terrazzo tiles on the landings

Fig 003.5.17: Floor and wall junction in front of the lift cart

Fig 003.5.18: The transition from inside the lift lobby to the external walkway

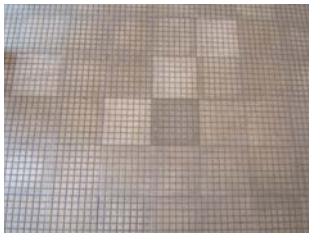

Fig 003.5.19: External walkways on the southern side are finised with the same tiles as the stair landing

Fig 003.5.20: The floor of the roof terrace above the penthouse suite is covered by beach sand, crushed stone and fake plants. These are the remnants of a pub that was once in this location

003 - 5.4 INTERNAL TEXTURES OF VERTICAL ELEMENTS

Fig 003.5.21: This tile finish can be found in the lift lobby on the ground floor

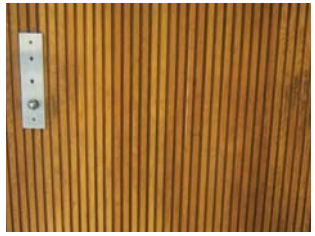

Fig 003.5.22: A slatted timber panels can be found between the two lifts on each floor

Fig 003.5.23: Paint colour on stair landings varies throughout the building

Fig 003.5.24: A weathered timber door welcomes visitors to the laundry area on the roof

Fig 003.5.25: The walls of the laundry area connected to the building are finished with gamma zenith. White tiles can be found above the wash troughs

Fig 003.5.26: The material and finish of the wash troughs

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004

DESIGN DEVELOPMENT

DESIGN EXPLORATION 1 **004**-1
DESIGN EXPLORATION 2 **004**-2
CONCEPT DEVELOPMENT **004**-3

LIVE & LEARN
ADAPTIVE

004 - DESIGN EXPLORATION

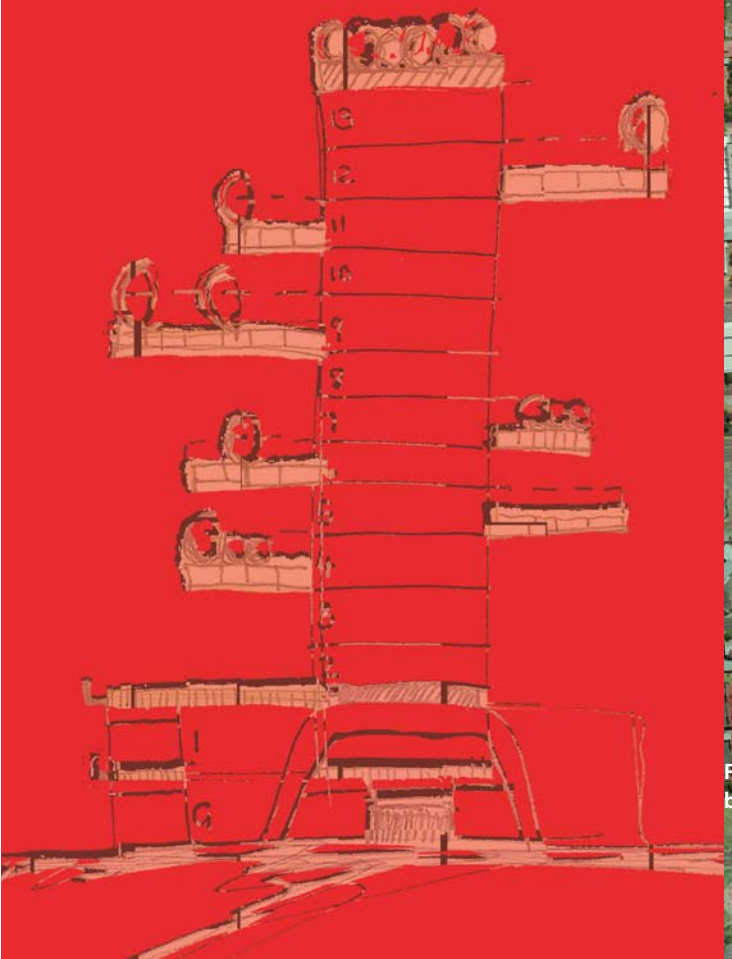

Fig 004.1: Aerial photograph indicating the various sites with existing buildings that were investigated for further development

004-1 DESIGN EXPLORATION 1

Fig 004.2: Aerial photographs illustrating the context of the site

Site 1: Malema College

Street: Bosman Street
No. Storeys: Ground plus two
Current Occuption: College

General Characteristics: Concrete frame structure with facebrick infill. Tree lined street frontage with basement parking. Sidewalk with palisade fencing blocking public access. Advantage of having a space for expansion because building is small and placed towards the front of the site

Fig 004.3: Site 1 from the south-west corner

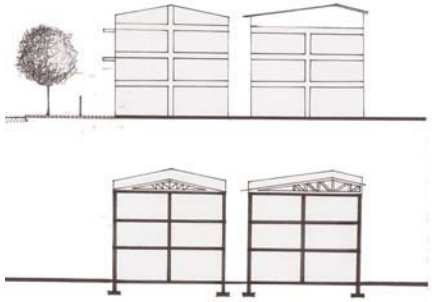

Fig 004.4: Existing elevation and section of Malema College

004-1.1 DESIGN Development

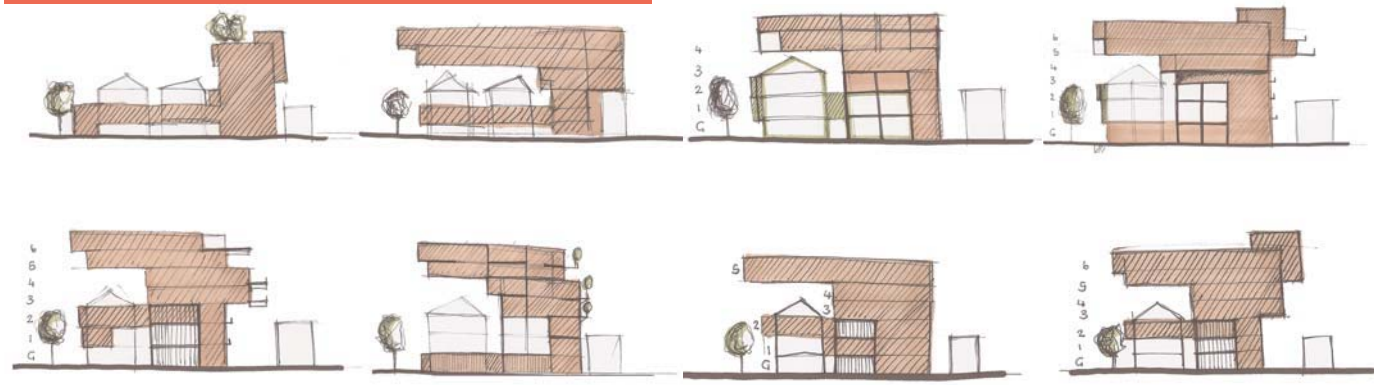

Fig 004.5: Series of sections through the site illustrating possible configurations of new versus old construction

Fig 004.6: Possible configuration of street elevation

Opportunities the Site Presented:
- it is located opposite a green space
- the school provides possible users

Reasons for not choosing the Site:
- not enough existing fabric
- harsh surrounding site conditions
- site is too small

004-1.2 PRELIMINARY Design

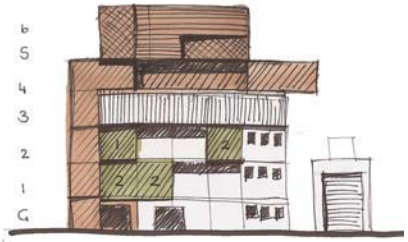

Fig 004.7: Elevation of Industrial Design Centre

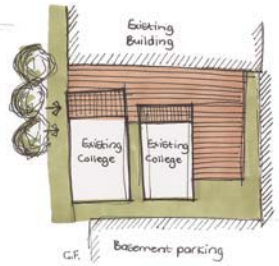

Fig 004.8: Ground floor plan of proposed Industrial Design Centre

Fig 004.9: Floor plans of first to sixth floors of proposal on Site 1

004-1.3 THREE DIMENSIONAL EXPLORATION

Fig 004.10: Street level view of the site model from Bosman Street looking towards the north-east

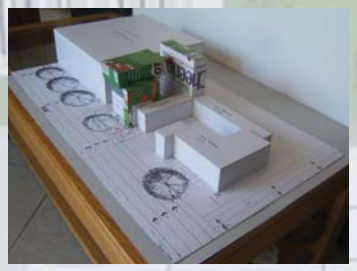

Fig 004.11: A similar view as in the previous image, this time **[re]**vealing the extent of the intervention

Fig 004.12: A bird's eye view of the proposed site which demonstrates the **[re]**lationship between adjacent buildings

Fig 004.13: A view towards the east depicting the abrupt break of the Department of Transport building to the left

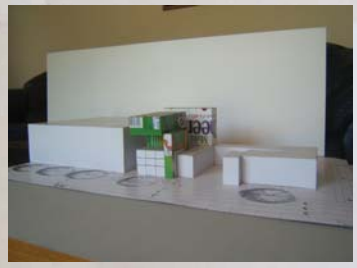

Fig 004.14: The massing **[re]**-lates to that of the surrounding buildings

Fig 004.15: The new intervention is not imposing to passers-by on street level as it merges with the existing architectural fabric

Fig 004.16: To a large extent the Department of Transport in the foreground blocks the view of the proposed intervention

Fig 004.17: A bird's eye view of the concept model looking towards the south

004-2 DESIGN EXPLORATION 2

Fig 004.18: Aerial photographs illustrating the site in context

Site 6: Genleral H.G. de Witt Building

Street: Corner Skinner and Bosman Streets
No. Storeys: Ground plus 13
Current Occupation: Vacant

General Characteristics: Double storey protrusion on northern side of block. Concrete frame building with brick infill and steel window frames. Possibility to expand out of structure.

004-2.1 STRUCTURAL Analysis

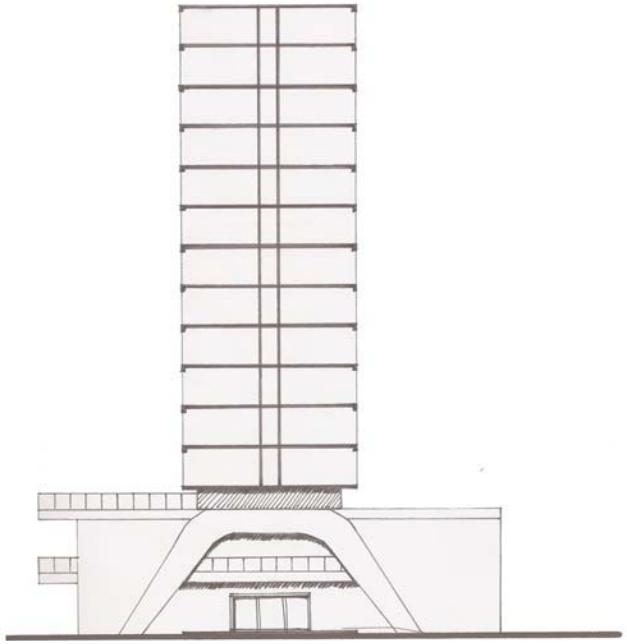

Fig 004.19: Section through the General H.G. de Witt Building

Fig 004.20: Series of photographs illustrating the character of Site 6, starting with the southern most border and moving towards the northern façade

004-2.2 PROGRAM Analysis

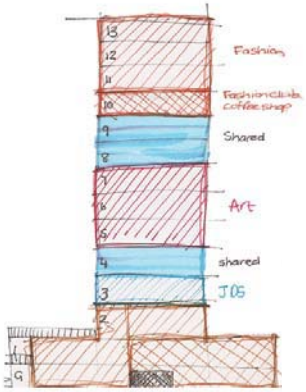

Fig 005.21: Diagram illustrating possible programme configuration

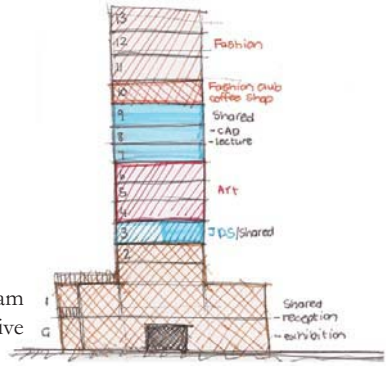

Fig 004.22: Diagram illustrating an alternative programme configuration

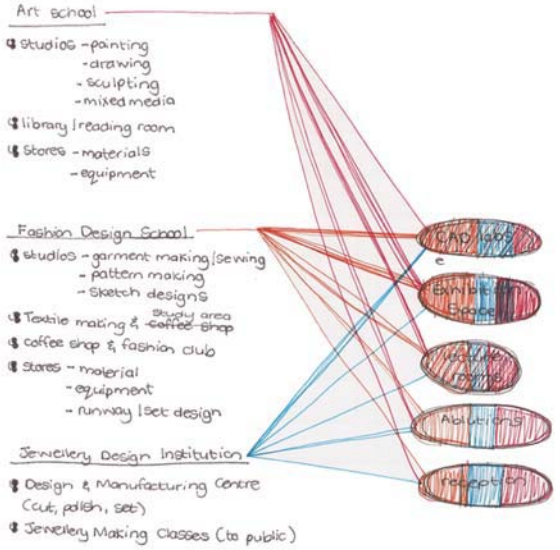

Fig 004.23: A bubble diagram showing the **[re]**lationship between the various programmes

004-2.3 CONCEPT Development

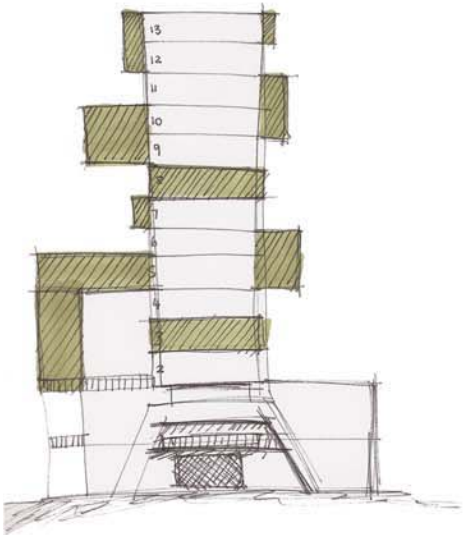

Fig 004.24: West elevation with new "clip-on" units indicated in green

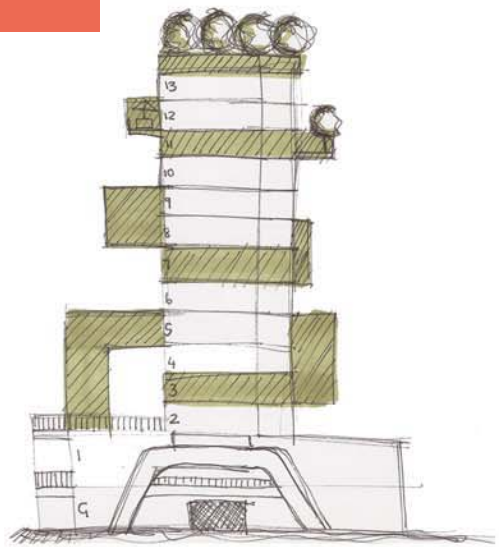

Fig 004.25: West elevation with roof garden and balconies with planting

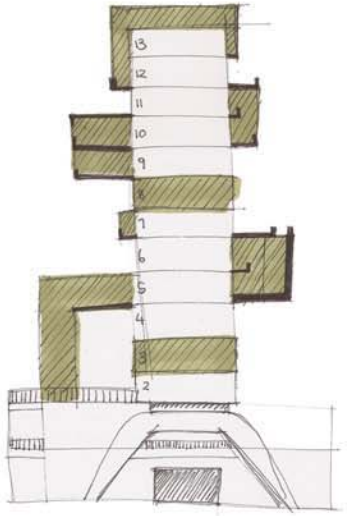

Fig 004.26: New "clip-on" units wrap over the top of the existing structure

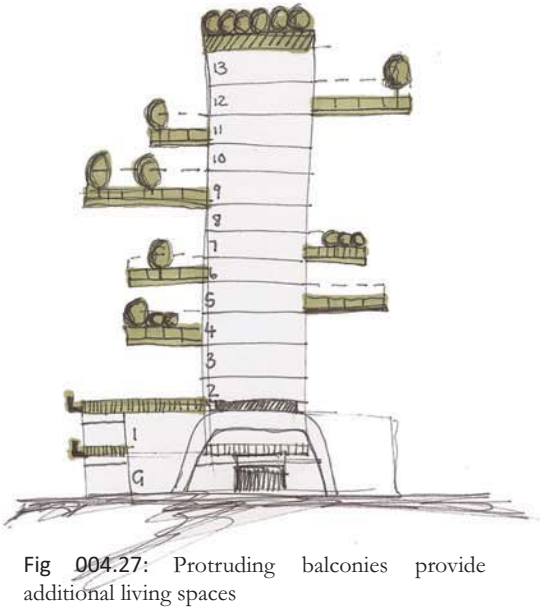

Fig 004.27: Protruding balconies provide additional living spaces

004-2.3 DESIGN Development

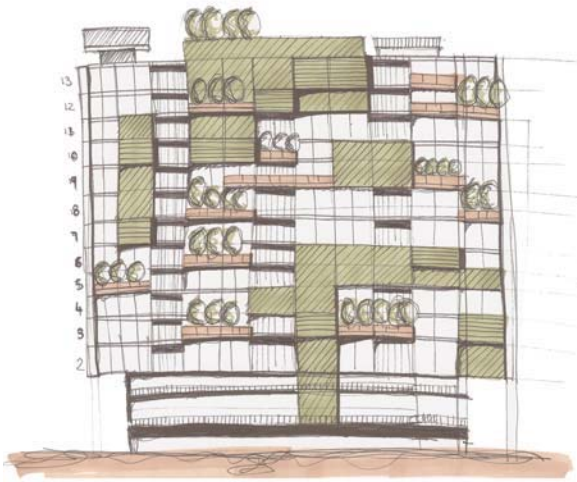

Fig 004.28: Northern elevation demonstrating the dynamic of components which could be achieved

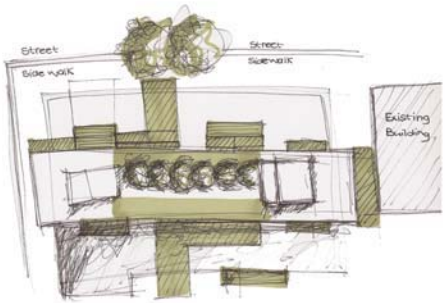

Fig 004.29: Roof plan showing the new box structures clipped to the northern and southern façade

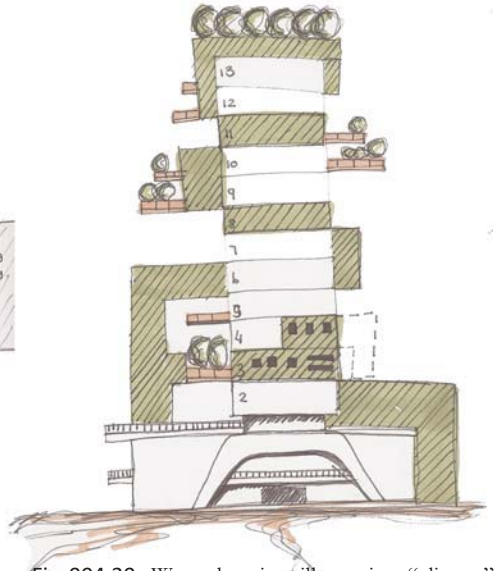

Fig 004.30: West elevation illustrating "clip-on" units and balconies

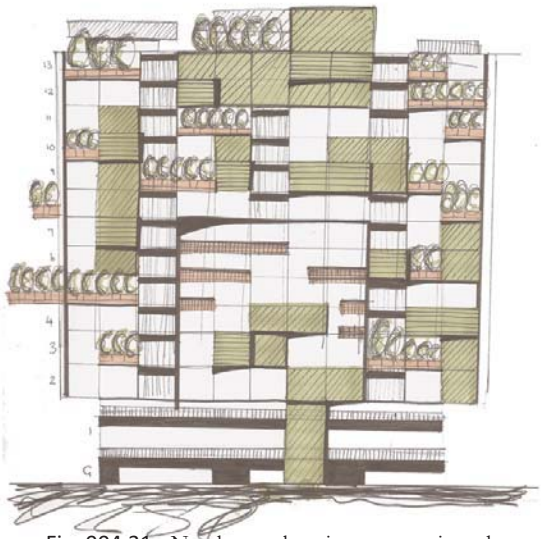

Fig 004.31: Northern elevation expressing the new "clip-on" units indicated in green

004-2.4 THREE Dimensional Exploration

Concept Model One

Fig 004.32: Series of images rotating clockwise around the concept model, starting with the western side of the model

Fig 004.33: The north-west corner of the General H.G. de Witt building. Additions to the existing building are indicated in green

Fig 004.34: New interventions are indicated in green

Fig 004.35: A photograph of the concept model from an elevated position **[re]** veals the extent of possible interventions

Fig 004.36: New interventions range in single blocks, blocks grouped together and external balconies which provide additional space

Fig 004.37: The north-east corner of the concept model

Fig 004.38: The roof of the existing building is altered in order to achieve additional space for future programming

Concept Model Two

Fig 004.39: Series of images rotating clockwise around the concept model, starting with the western side of the model

Fig 005.40: This concept model explores the possibilities of larger, more "solid" boxes protruding from the façade

Fig 004.41: Skinner Street runs past the northern façade of the building

Fig 004.42: Protruding balconies with greenery are suspended from the northern façade

Fig 004.43: The north-east corner of the concept model demonstrates additions to the northern façade, southern façade and roof

Fig 004.44: Additional service cores and spaces are added onto the southern façade

Fig 004.45: A new structure rises from the existing base and frames the southern façade

Fig 004.46: New service cores rise up the sides of the existing structure to accommodate additional programming

Fig 004.47: The new addition on the roof protrudes over the edges of the existing building. The additions to the southern side can also be seen

Fig 004.48: An image of the roof illustrating the relation of the new additions to one another

Opportunities the Site Presented:
- the site is centrally located to city landmarks
- located on a strong axis, with Skinner and Bosman Streets

Reasons for not choosing the Site:
- not connected to an existing urban framework
- building is very large and is unlikely to form a cohesive programme scenario
- not enough room for expansion as bulding extends the limits of the site

004 - 3 DESIGN DEVELOPMENT

004-3 DESIGN EXPLORATION 3

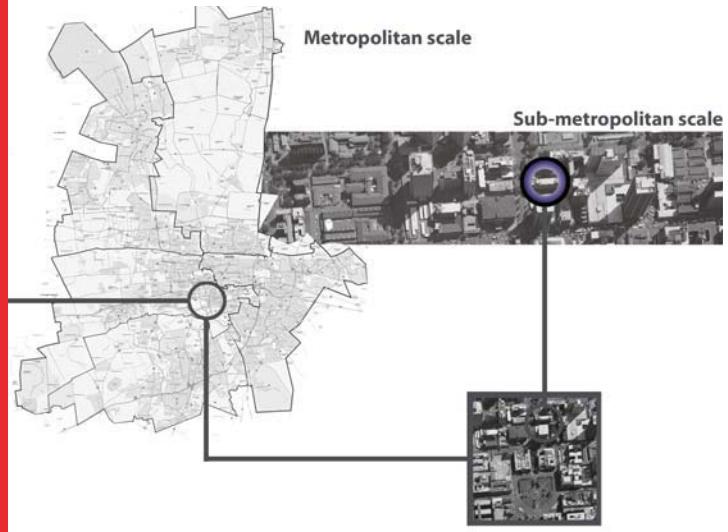

Fig 004.3.1: Digital collage illustrating the context of Site 14

Site 14: Woltemade building

Street: 118 Paul Kruger Street
No. Storeys: Ground plus 7
Current Occupation: Commercial on ground floor with residential above

General Characteristics: A flat-roof double-storey western wing/block on the street edge with commercial functions housed inside. Parking available on site on ground floor under the linear residential block above. Accents of mosaic tiles can be found on the sides of the building and on the "balconies" , which are in fact shelves to the residential units within.

Fig 004.3.2: Photograph illustrating the location of the shelves as well as the tile detail to the side of the building (on left)

004-3.1 ARCHITECTURAL CONCEPT + INTENTION

Fig 004.3.3: The synthesis of the architectural concept and intentions

Architectural Intention: Adaptive **[re]**use
Concept Statement: Existing structure as facilitator, with process as a means of learning
Architectural Concept Statement: Live and Learn
Architectural Concept Intentions: To demonstrate how an existing building can be **[re]**used and adapted to changes in programme and circumstances over time.

004-3.3 ARCHITECTURAL CONCEPT + INTENTION

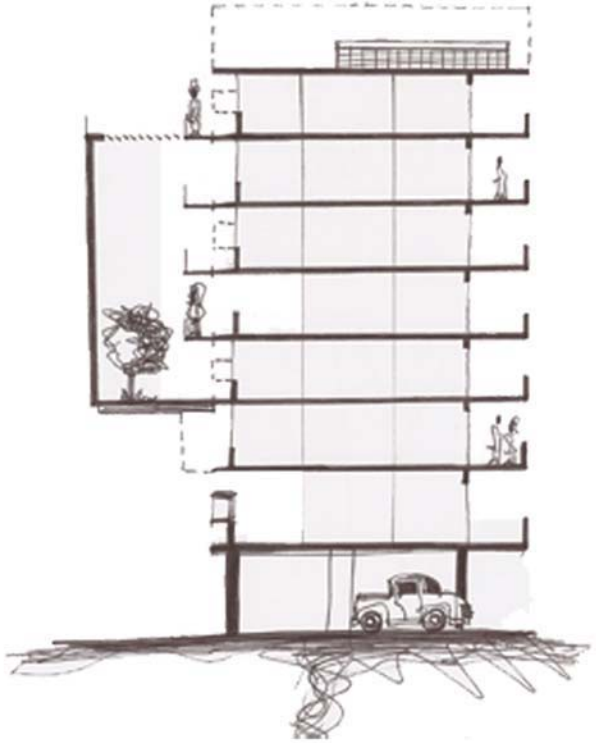

Fig 004.3.4: The synthesis of the architectural concept and premise

There are numerous ways in which to approach the incorporation of balcony extensions. Each method has its own set of advantages and **[re]**strictions. The intention is for the balconies to provide additional space to the individual units within, especially for the residential component.

The simplest way a balcony can be created is by fixing a balustrade or pre-fabricated steel component to the underside or edge of the existing floor slab, as shown in figures 3.5 and 3.6 below.

An alternative approach would be to increase the amount of available space by extending the steel components past the floor slab, as illustrated in figures 3.7 and figure 3.8. Figure 3.9 demonstrates the visual expansion of space as opposed to the physical addition of space.

Enclosed space can also be achieved by making use of pre-fabricated components at both of the exposed slab ends. These spaces can then be used for a multitude of functions, for example as dining rooms, living rooms or meeting spaces.

Possible Architectural Approaches to Balcony Extensions

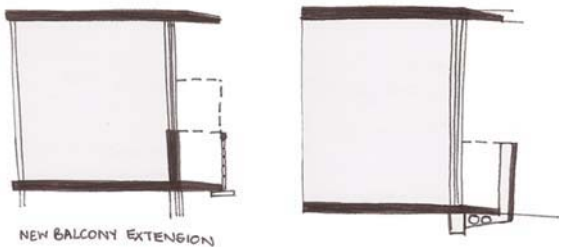

Fig 004.3.5 & 6: The erecton of a simple balustrade to form a balcony

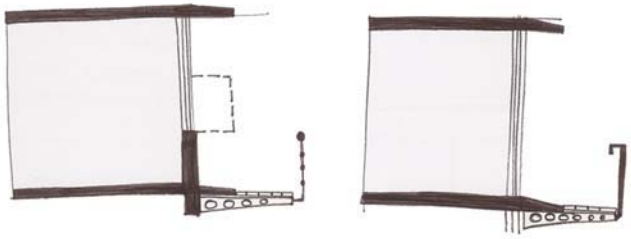

Fig 004.3.7 & 8: Pre-fabricated steel components extend past the existing structure to achieve additional space

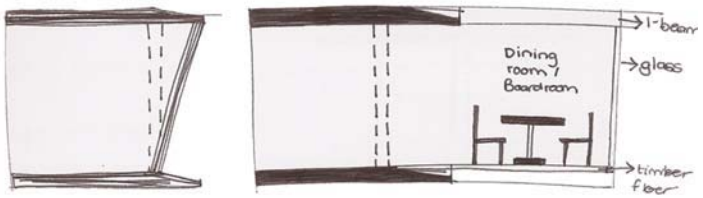

Fig 004.3.9: The enclosed space is determined by a diagonal element
Fig 004.10: Additional space can be enclosed on all sides

004-3.4 THREE-DIMENSIONAL EXPLORATION

Fig 004.3.11: A concept model of the existing northern façade of the Woltemade building

Fig 004.3.12: A concept model of the southern side of the building showing the horizontality of the various planes

Fig 004.3.13: The southern side of the concept model illustrating the internal configuration dictated by the dividing walls

Possible adaptations that could take place on different floors on the northern façade

Fig 004.3.14: Floor 5, 6 & 7 and the roof with new interventions indicated in green

Fig 004.3.15: Simple balustrades are added in addition to a "clip-on" box on floor 5

Fig 004.3.16: Simple and extended balconies are inserted on the fourth floor

Fig 004.3.17: A "clip-on" box extending the height of three floors is incorporated on the third floor

Fig 004.3.18: An option without the "clip-on" box spreading over three floors

Fig 004.3.19: Balconies and box extensions are added to the second floor

Fig 004.3.20: The building could possibly take this configuration over time

Methods of addressing the existing **[re]**cess of the circulation tower on the northern façade

Fig 004.3.21: The northern façade as it currently appears

Fig 004.3.22: The first option is to insert a structure that **[re]**-sults in a flush façade

Fig 004.3.23: The north western corner of the concept model displaying the flush finish

Fig 004.3.24: The second option inserts a structure that protrudes past the façade and extends past the height of the existing building

Fig 004.3.25: The new tower is emphasised by its height over the existing structure

Possible adaptaions that could take place on different floors on the southern façade

Fig 004.3.26: Possible interventions are indicated in green

Fig 004.3.27: A new room is added on the left and the open roof space gains a new programme

Fig 004.3.28: The length of the passage **[re]**ceives additional space

Fig 004.3.29: A hanging floor is added to a residential unit

The effects of cutting away the existing structure

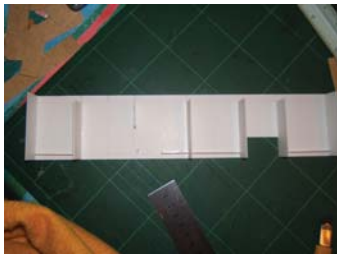

Fig 004.3.30: The internal configuration of the existing residential units are changed

Fig 004.3.31: A different angle of the image before showing the **[re]**-moval of an internal wall

Fig 004.3.32: Three altered floors are placed on ontop of another

Fig 004.3.33: The façade as it would appear with the altered floors

Fig 004.3.34: Another floor has a portion of the existing structure cut-out

Fig 004.3.35: Two floors with cut-outs are stacked on one another

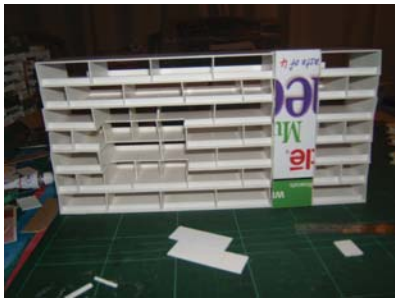

Fig 004.3.36: The northern façade as it would appear with cut-ots and the flush circulation tower

Fig 004.3.37: The façade as it would appear with cut-ots and the protruding tower

004-3.5 ALTERNATIVE INVESTIGATION THE WOLTEMADE AS A THEATRE

An investigation into the conversion of the Woltemade building as a theatre. The strategy for this concept was to remove a portion of the existing column and slab structure so as to provide an uninterrupted view of the stage.

To compensate for the the change in load, three new columns are inserted to **[re]**direct the structural load back

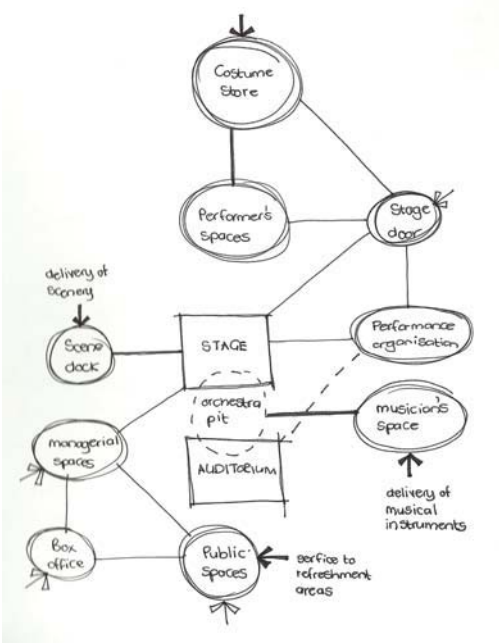

Fig 004.3.38: A simplified version of the New Metric Handbook's diagram that relates to the site

Fig 004.3.39: The new columns **[re]**direct the structural load of the building to the ground

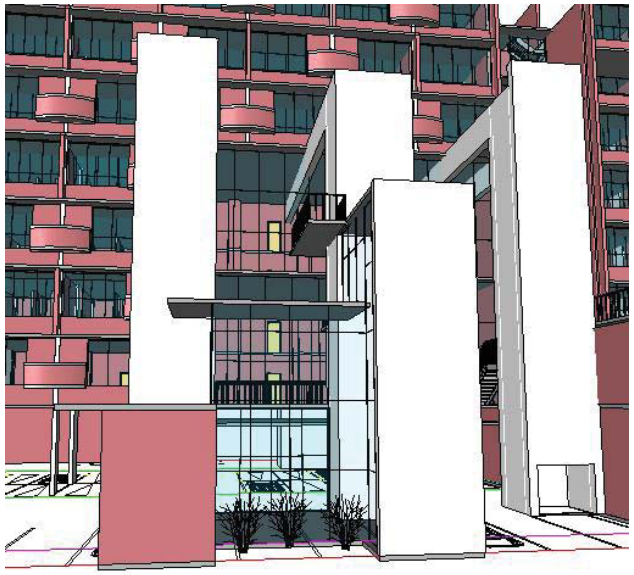

Fig 004.3.40: The ticketing office, scene dock and patron lift are located in and around the new column structures

Fig 004.3.41: Columns protrude past the existing structure to create an new dynamic of space between these two structures

to the ground. These columns additionally serve as means of getting patrons to the new theatre level, provide much needed storage and a scene dock.

Conclusion: The theatre concept was dismissed as too much demolition would have to take place and this would jeopardise the sustainability and adaptability of the new building.

004-3.5 THE LOCATION OF NEW INTERVENTIONS

Fig 004.3.42: The position of the various interventions are illustrated in different colours with the existing building located in the middle

004-4 WOLTEMADE AS A DESIGN DEPOT

Various programme scenarios were investigated throughout the concept development phase of the design process including; an industrial design school, a theatre and finally a Design Depot.

The term "Design Depot" refers to any programme **[re]**-lateing to the design realm. This may include design firms, concept stores, boutiques and exhibition spaces. A Design Depot allows for a great deal of diversity and a mix of programmes that are not traditionally placed together. This is true where live/work units are placed adjacent to a retail store.

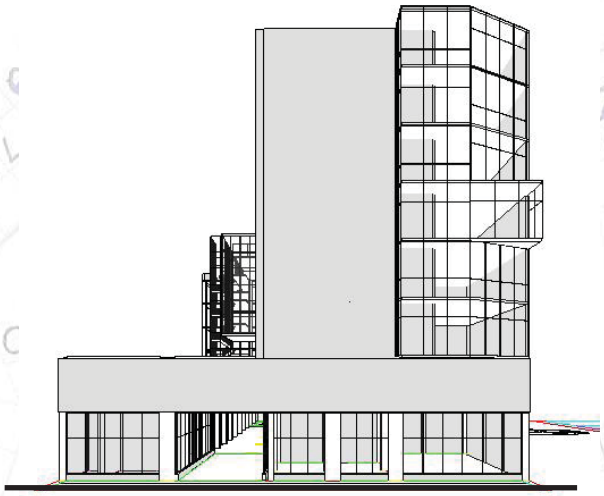

Fig 004.4.1: A perspective of the west, which borders Paul Kruger Street. The glass addition to the right is **[re]**served for product displays and exhibitions

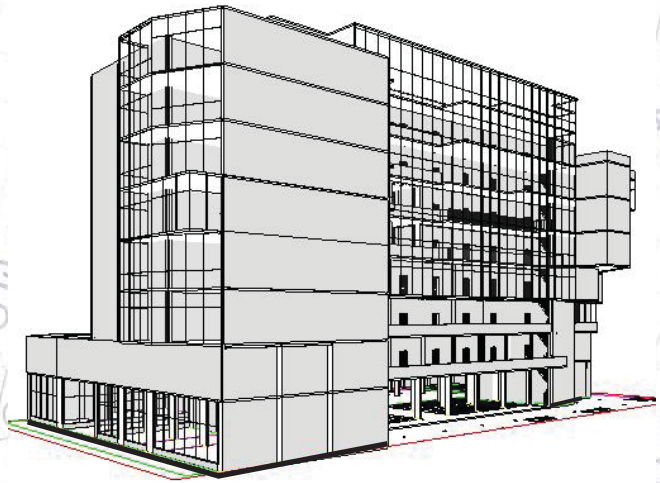

Fig 004.4.2: A perspective illustrating the new exhibition space (in the previous image) and the glass wrapping structure

Fig 004.4.3: The street perspective looking south towards Church Square. The exhibition space to the rear allows the building to showcase its contents

004-4.1 WOLTEMADE AS A DESIGN DEPOT - REVISION A

The first [re]vision includes a new public platform on the first floor aimed at drawing people in from the street and from the new link created to the north between the German Club and 215 on Proes Street.

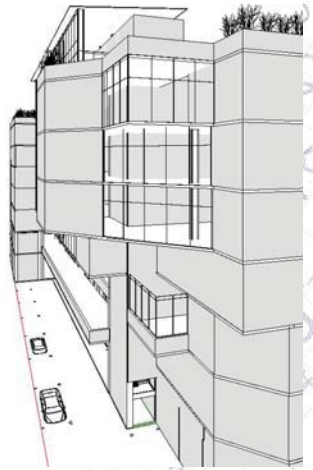

Fig 004.4.4: The south-east corner of the new intervention

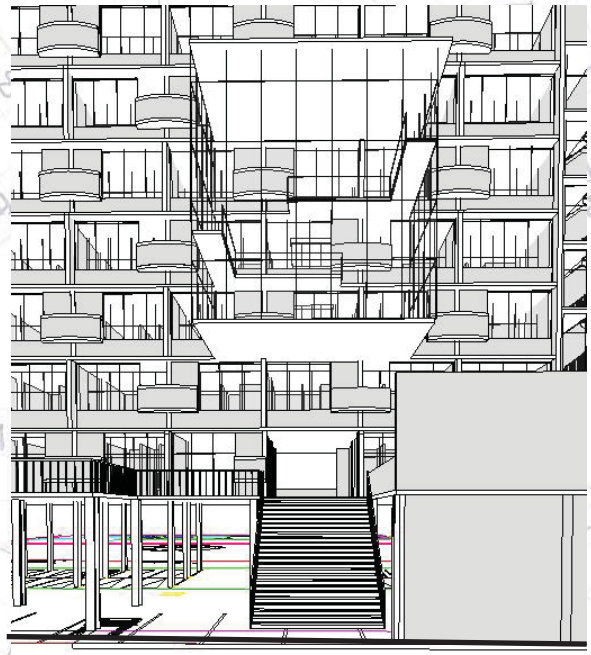

Fig 004.4.5: The new stairs form part of the new link between the German Club and 215 on Proes leading up to the new platform. The new gallery and exhibition space is contained within the glass box

Fig 004.4.6: The new platform on first floor, otherwise known as intervention D, provides space for public activities to take place such as a market and dining areas. New planters are visible in the back

Fig 004.4.7: The new glass gallery box protrudes from the existing façade

Fig 004.4.8: Water storage tanks are provided under the market stall roofs

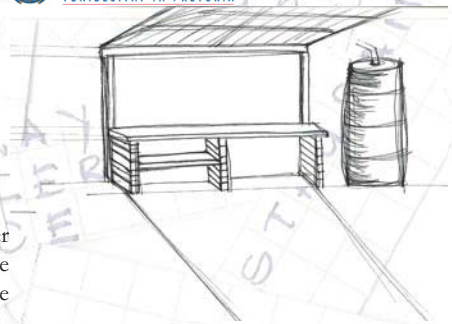

Fig 004.4.9: A diagramatic representation of what the market stalls could look like

Fig 004.4.10: The plan of the planter wall that occurs at the edge of the platform

Fig 004.4.11: An elevation of these new planters

Conclusion: This **[re]**vision of the Design Depot presented many valuable ideas that can be carried forward in further concept development. The first of one of these ideas is the inclusion of the new platform. Not only does it provide additional space to the entire building, but it also provides a public area which is not disrupted by the services and parking located on ground floor. In addition the platform **[re]**-sults in no floor spaces being taken away from the existing parking area therefore furthering the notion of flexibility.

The glass gallery box is another element that is explored in further development. The position of the Glass gallery box determines the starting point for Intervention B (the wrapping structure). These two points (glass gallery box and Intervention B) connect the building on a horizontal and vertical level.

004-4.2 THREE DIMENSIONAL EXPLORATION

Concept Model One: Southern Façade

The southern intervention on the Woltemade building, otherwise called Intervention B, is one of the larger interventions of this thesis project. The aim of this block is to provide additional space on the southern façade where activities are able to spill out from the variety of programmed units within.

This concept models investigates how the glass gallery box on the northern façade can be acknowledged on the new southern intervention. The design concept explored possible configurations of panels of framed glass. The inclusion of coloured glass is made on the façade only where the glass gallery box occurs while the **[re]**mainder of the intervention is completed with clear, opaque and translucent glass.

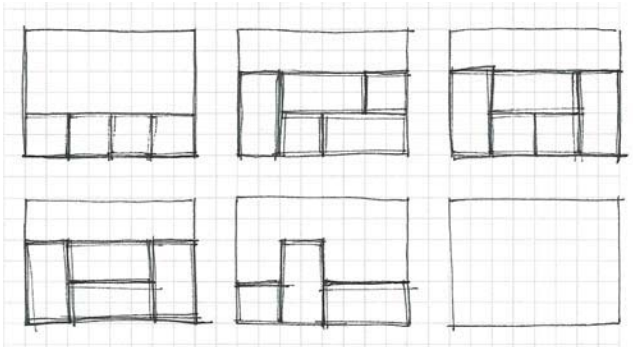

Fig 004.4.12: Series of images demonstrating possible glass panel configurations

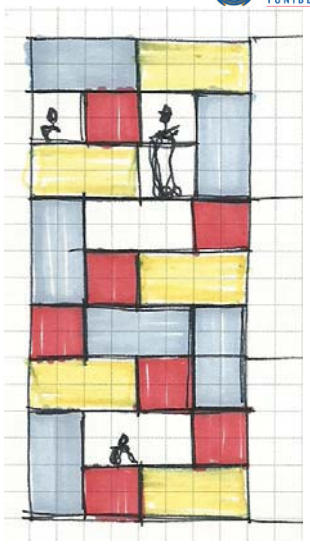

Fig 004.4.13: These images experiment with the **[re]**-lationship between coloured and open panels

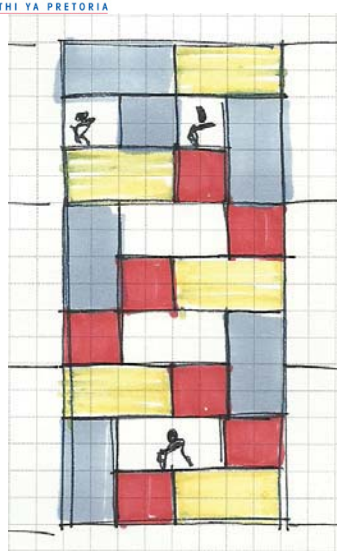

Fig 004.4.14: This coloured section of the façade is used to indicate the location of the glass gallery box on the north

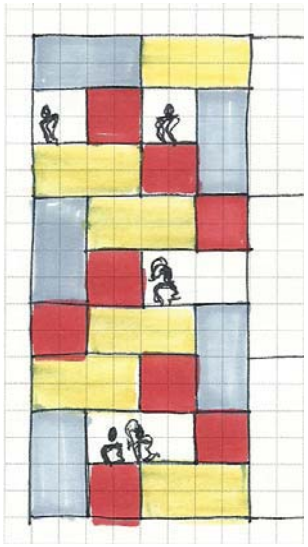

Fig 004.4.15: Colours used in the glass panels are the same in colour to the "balconies" on the northern façade

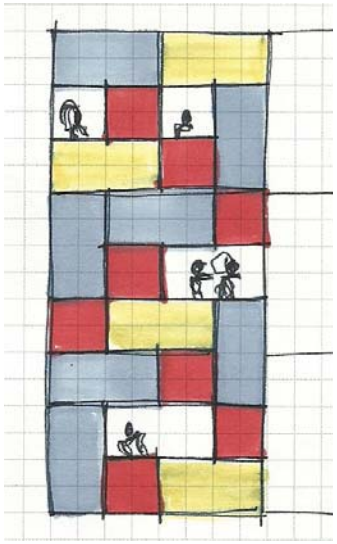

Fig 004.4.16: Sections are left open to take advantage of the views to the south

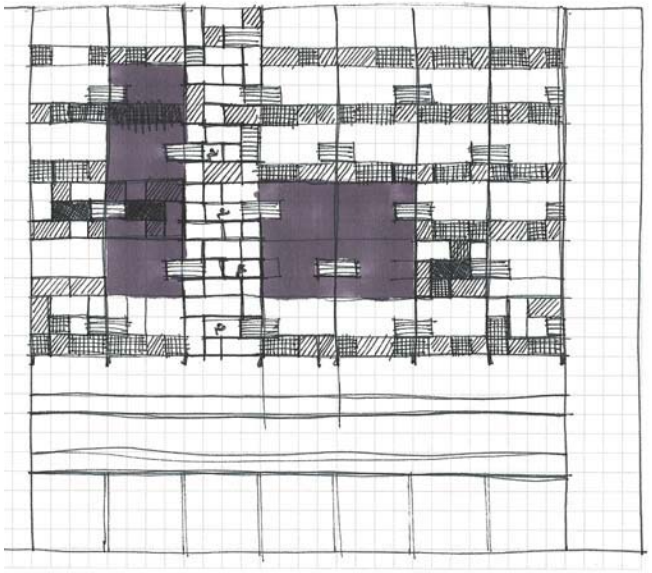

Fig 004.4.17: The southern façade of the Woltemade building indicating where **[re]**cesses occur behind the truss structure

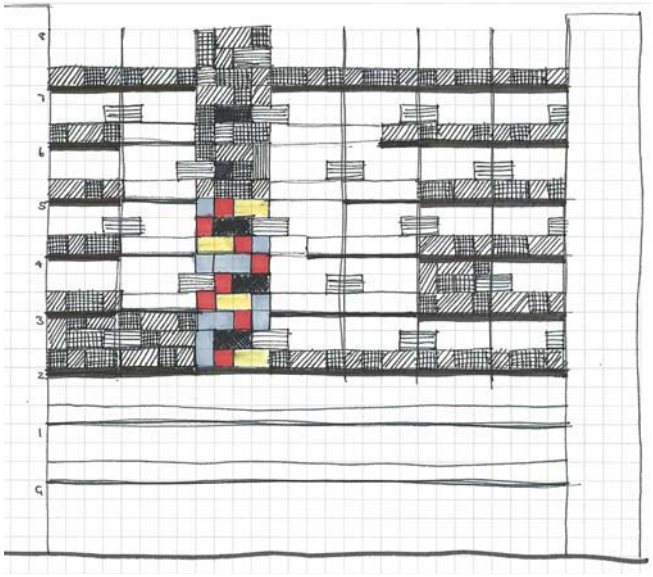

Fig 004.4.18: This image shows where the coloured panels occur on the façade in conjunction with spaces that are more enclosed

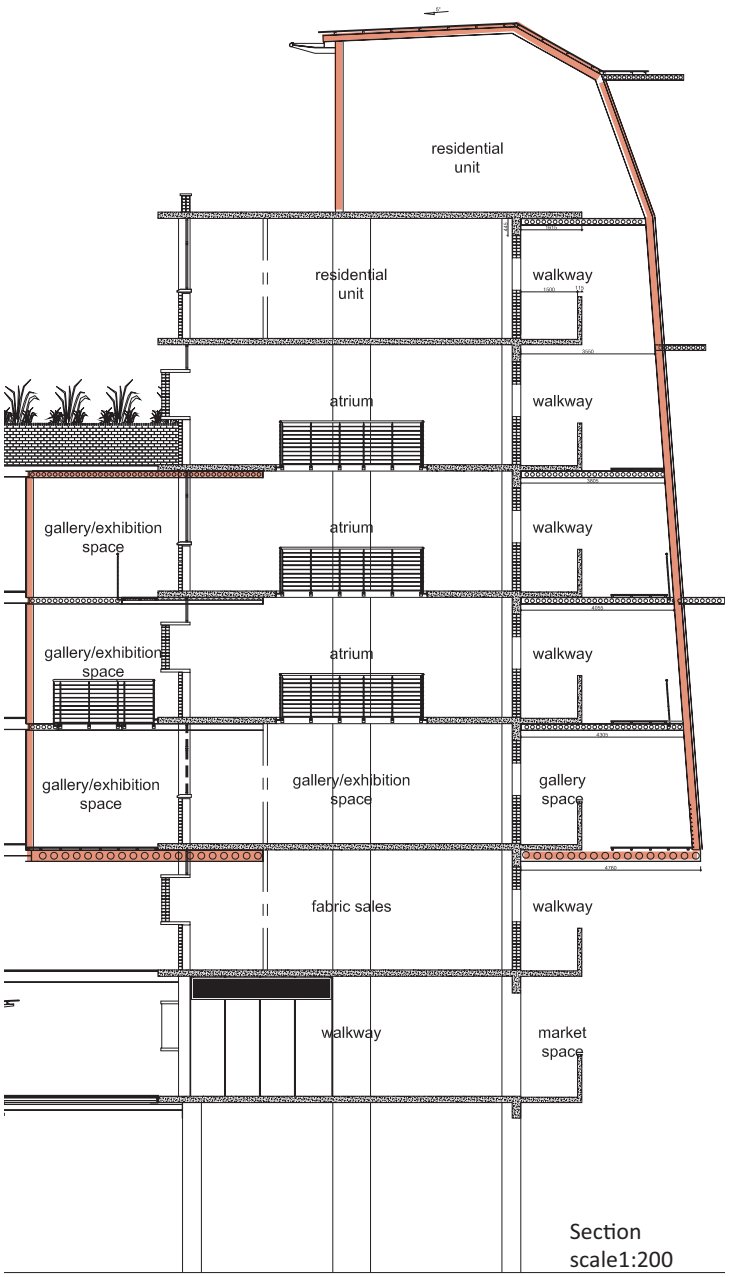

Fig 004.4.19: Section through the building. The glass box can be seen to the left while the wrapping structure can be found to the right

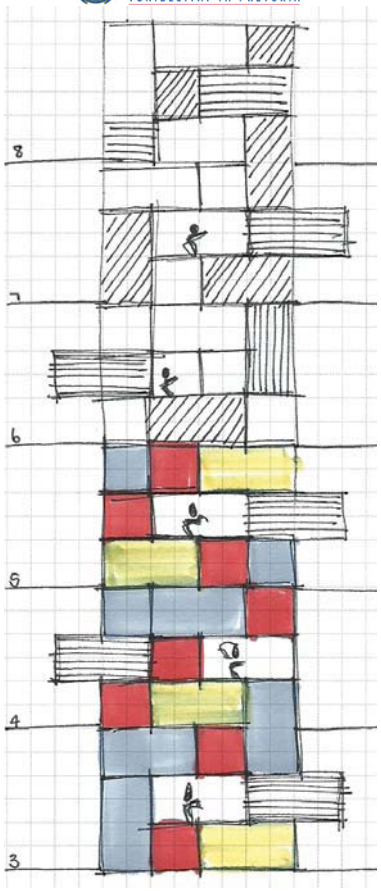

Fig 004.4.20: The configuration of coloured, clear, opaque and translucent glass extending the height of the building

Fig 004.4.21: South-east corner of the concept model with trusses wrapping the building

Fig 004.4.22: White, clear, translucent and coloured panels can be seen on the façade

Fig 004.4.23: Trusses wrap themselves around frames which are intended for residential units

Fig 004.4.24: Steel trusses define space with their change in shape causing a fan-effect along the walkway

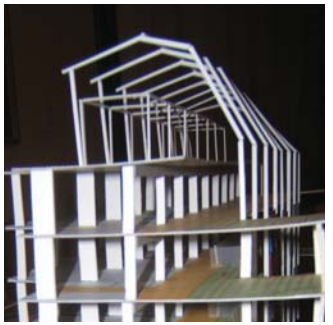

Fig 004.4.25: The wrapping structure defines space along the walkways

Conclusion: concept model one, utilises steel trusses which wrap around the southern façade while still **[re]**vealing the bottom edge of the host building. The northern façade is acknowledged on the southern façade by using white panes of glass to represent the balconies and coloured glass to indicate the position of the gallery box on the north.

Furthermore balconies are constructed using alternate sizes and panes of translucent and opaque glass.

Concept Model Two: Southern Façade

This concept model investigates how changing the shape of the steel trusses that wrap around the façade affect the space of the internal walkways.

The southern façade explores the use of different materials while at the same time **[re]**sponding to the surrounding environment.

Additionally this block controls the internal environment through the incorporation of solid, semi-solid and open screening elements. Internal activities and programmes are expressed on the exterior while at the same time **[re]** sponding to the surrounding context. This is achieved through the acknowledgement of the links to adjacent sites. Furthermore the new access point to the site is accentuated by dropping the panels past the base of the remaining wrapping trusses.

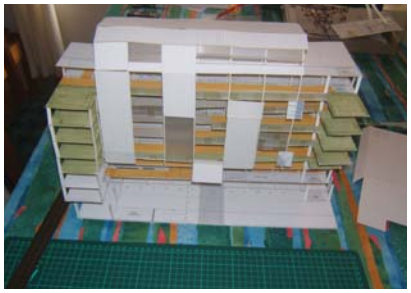

Fig 004.4.26: Corrugated panels run down the left hand side of the model, indicating more private areas such as meeting rooms. Large white panels mimic the positions of balconies on the opposite façade

Fig 004.4.27: The translucent area **[re]**-flects the position of the glass box on the northern façade. Screening panels are extended past the rest of the structure to indicate the entrance to the site below

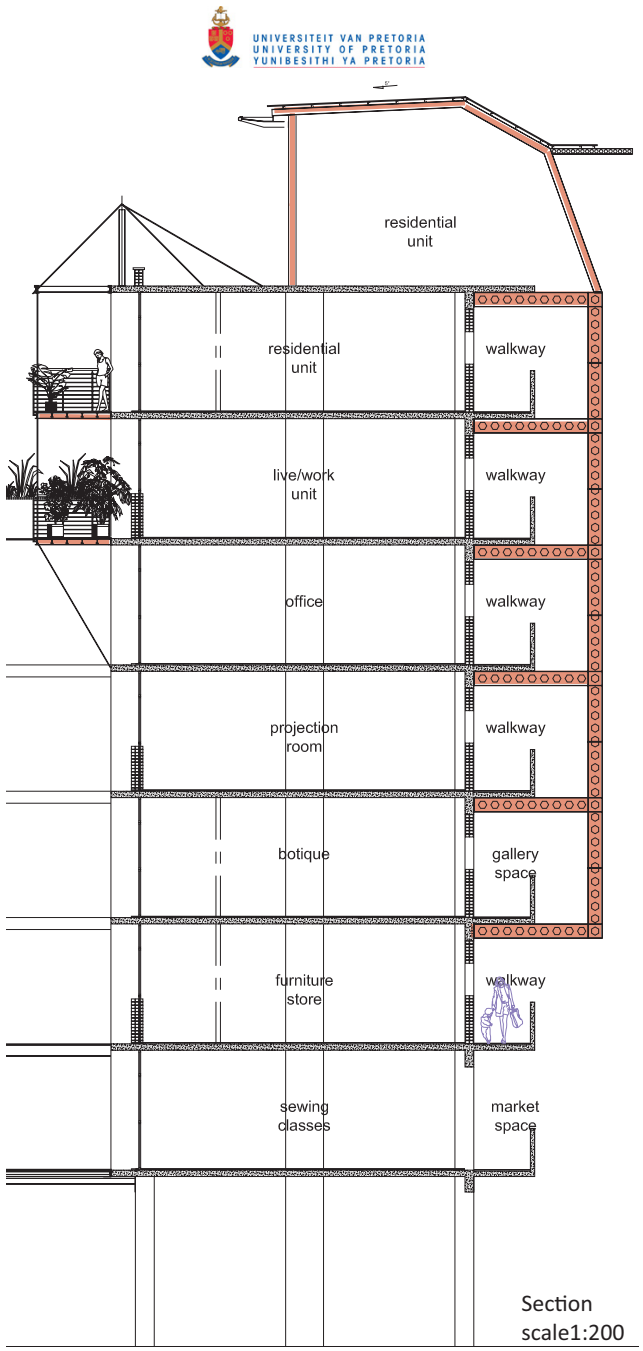

Fig 004.4.28: A section through the building. The wrapping structure has been **[re]**placed with a castellated beam. Even though there is enough head room the structure looks too bulky

Fig 004.4.29: Residential units can be found between the trusses that wrap themselves around the building

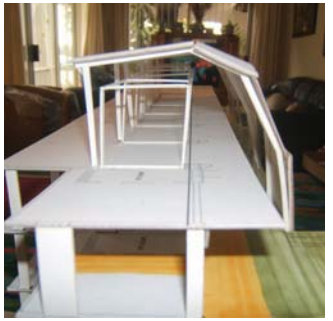

Fig 004.4.30: Trusses are regular in nature however the screening elements are not thereby allowing for different experiences throughout the space

Fig 004.4.31: Portions of the screening elements are fixed while others openable

Conclusion: concept model two, explores a different method of enclosing Intervention B. Portions of the buildings that are enclosed house private programmes like meeting or projection rooms. The translucent material indicates the position of the glass gallery box on the northern façade.

The most important **[re]**alisation of this exploration is that a steel truss system in not appropriate for this application as too much steel is used in **[re]**lation to the amount of space gained.

Fig 004.4.32: A photograph of the south-west corner of the concept model showing the **[re]**spective positions of different screening elements

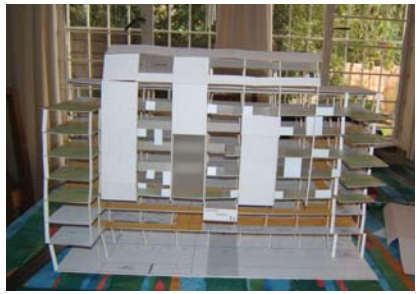

Fig 004.4.33: White panels have been included with the opaque and translucent glass. Large white panels indicate the position of balconies on the northern façade

Fig 004.4.34: A hanging floor is extended to indicate the entrance to the site below. This extension provides advertising opportunities

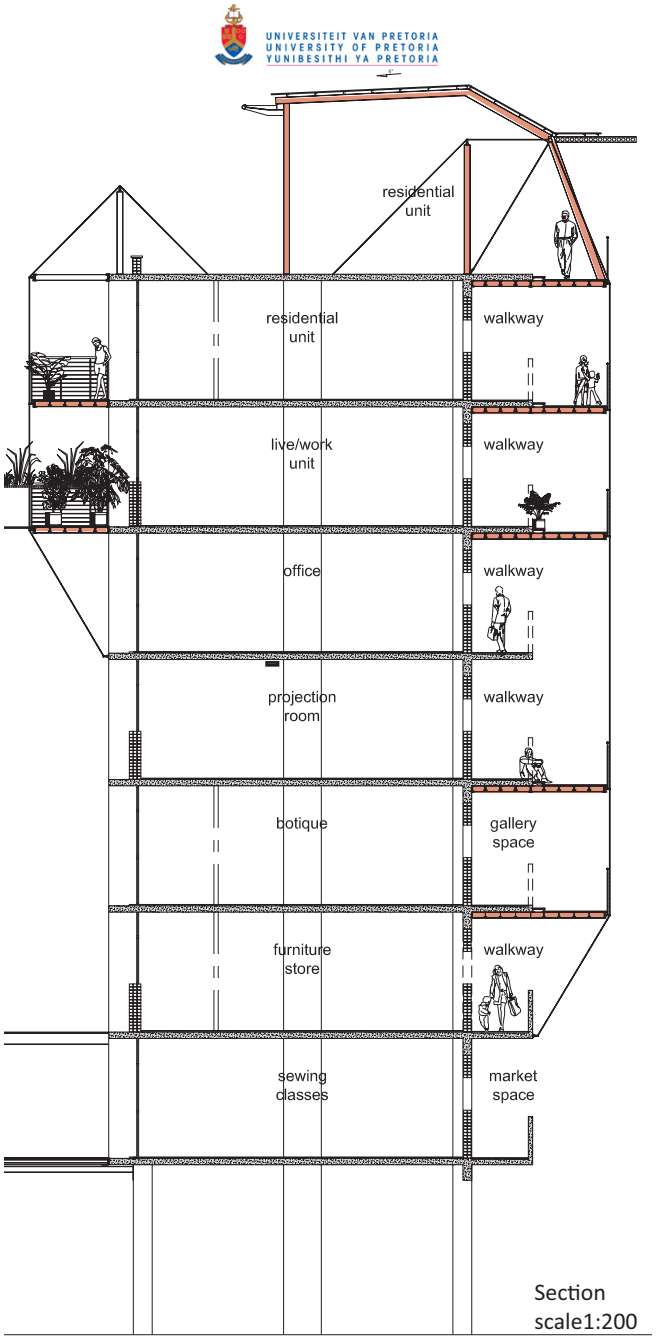

Fig 004.4.35: Solid trusses have been **[re]**placed with hanging floors **[re]**sulting in a much more elegant system

Conclusion: the section to the left demonstrates the use of a much lighter system that **[re]**quires less material to achieve the same goal. Hanging floors suspended with cables is therefore deemed the most appropriate system to implement for Intervention B as the most amount of flexibility is achieved with minimal material.

Enclosing materials **[re]**spond to the internal programmes, context and climate. Solid elements are placed in front of private areas and screens are placed in front of the circulation route, providing protection from the elements while still allow views so the south.

Residential unit

Residential units to receive hanging balconies suspended from cables. Each balcony is intended to be unique in character reflecting the personality of the occupant within.

Residential unit

Residential units to receive hanging balconies suspended from cables. Each balcony is intended to be unique in character **[re]**flecting the personality of the occupant within.

Office

Office spaces **[re]**quire light which is condusive to a productive workspace. Perforated screens will help filter light on a sunny day.

Projection room

Projection room require the most amount of controlled light. The room needs to be dark during daylight hours in order to view presentations, movies or hold conferences.

Boutique

[Re]tail spaces necessitates the need to provide a comfortable environment for visiting patrons. Merchandise needs to be displayed properly without glare in order to increase sales.

Meeting room

Meeting rooms call for less light than office spaces, however they still needs to be sufficient lighting to be a productive space.

Sewing classes

Workshops and other craft areas need to have sufficient light for tasks to take place therefore direct sunlight needs to be omitted.

Parking

Fig 004.4.36: A sectional model through the northern façade of the building. Various screening materials are used to address the programmatic needs of the internal spaces. These screens aid in a more comfortable environment

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005

DESIGN CLARIFICATION

EXISTING BUILDING **005**-1
NEW INTERVENTION **005**-2
EXISTING CIRCULATION **005**-3

005-1 EXISTING BUILDING

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The existing building presents a number of problems and opportunities that this thesis wishes to address. The following were highlighted and noted:

Positive Elements:

PROPORTION OF BUILDING
The depth of the units allows for good lighting in the main room of each unit.

VENTILATION
Openable windows on the northern and southern sides of each unit allows cross-ventilation to take place.

STRUCTURE
1. Concrete column and slab construction: provides a robust frame with infill which can be **[re]**moved, allowing for a great variation in programme.

SITE LOCATION
1. Church Square is a short walk from the site
2. It is **located on Paul Kruger Street**, which is an active spine of the city.
3. It is **centrally located** in **[re]**lation to amnenities

Negative Elements:

ACCESS
1. Offices on the first floor: employees of the various legal firms in the existing building gain access to the first floor through the “tunnel” and up the stairs, which are shared with the residential stock of the building.

2. Access to front of site: there is only a single lane of access to the back of the site where the parking is located. This route is shared by vehicles as well as the pedestrians/ residents who have no alternative method of gaining access to their residential units.

3. Access to building once parked: this building presents two possible points of entry. The first is to go back to the “tunnel” and make use of the stairs and lifts in the lobby, while the second would be to use the fire escape located at the south-east corner of the site.

LIGHT
1. Circulation core/entrance lobby: very little light enters the entrance lobby on the ground floor as it is surrounded by solid walls on three of its four sides.

2. Tunnel: the length of the tunnel poses a problem as there is not enough light that penetrates its length. There is a strong contrast in light that disorientates the person walking through the “tunnel” as their eyes need a minute to adjust.

SIZE OF UNITS
1. Bachelor units: these units are both too big and too small- too big as a single space and too small to be divided up into different rooms. Unfortunately residents do not know how to make use their space as no definite clues are present.

2. Lack of living/recreational space: the units are small and have no room for growth. This makes living in this building temporary unless one can afford one of the limited two-bedroom units. Residents **[re]**sort to hanging their washing out the windows or along the railings of the passage wall outside the kitchen.

Fig 005.1.1: All office employees and residents need to pass through the opening/ tunnel in front of the blue car

Fig 005.1.2: Once parked occupants of the building need to return to the street side where the entrance lobby is located

Fig 005.1.3: Users of the building can utilise the fire escape at the back of the site

Fig 005.1.4: The middle of the "tunnel" is dark, especially with the lights turned off

Fig 005.1.5: Residents resort to placing their beds in the sun-room on the northern side of the units in order to create a private space

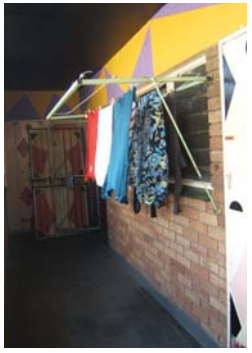


Fig 005.1.8: Some residents of the two-bedroom units utilise their entrance passages to hang their washing

Fig 005.1.6: Residents make use of the railings to dry their washing. The building becomes a tapestry of colourful clothing over the weekends, when most residents do their laundry

Fig 005.1.7: Residents also resort to hanging washing out the windows on the northern façade. The original clothes lines placed in the bathrooms are inadequate and many have been **[re]**-moved

Fig 005.1.9: According to other shop owners, the shop to the rear with blacked-out windows has been vacant for more than a year

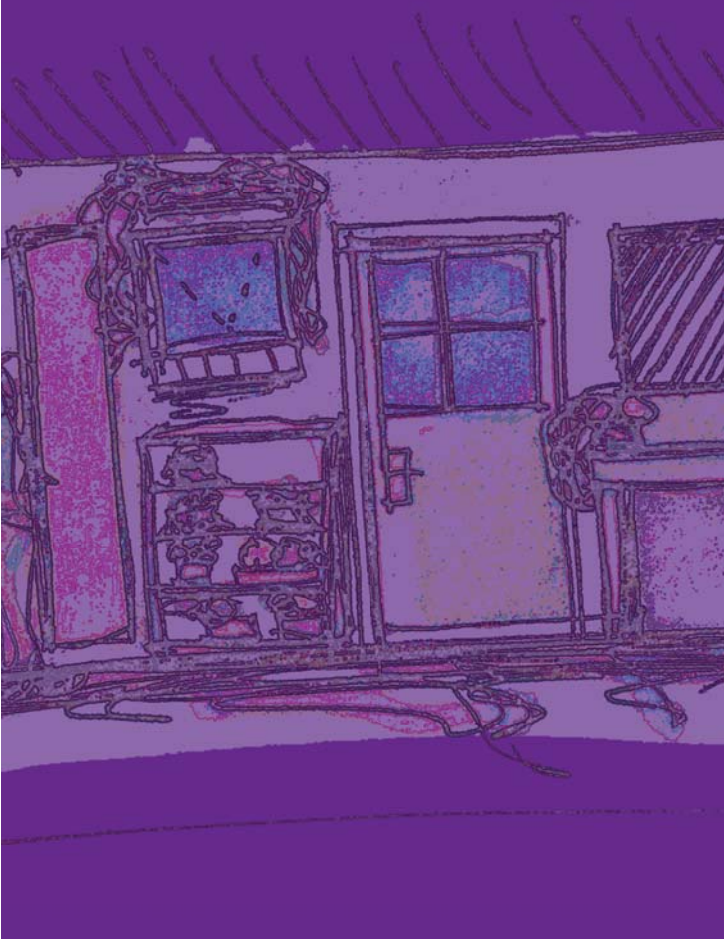
PROGRAMME

1. Little variation in unit types: two-bedroom units are located at the ends of the passages with bachelor units filling up the **[re]**mainder of the building. Units are expensive, costing R450 000 for a bachelor unit of 45m². At least one bedroom is needed in these bachelor units that do not cater for families. This leaves a large portion of the building vacant.

2. Lack of cross-programming: current programmes are isolated from one another and the residential and office components do not acknowledge each other.

3. Shop located at rear of tunnel: this particular shop has been vacant for a while and shows no signs of being let soon. Not enough feet pass by and therefore its success would **[re]**ly soley on the users of the building.

005-2 NEW INTERVENTIONS



005 - 2.1 CONSTRUCTION STRATEGY

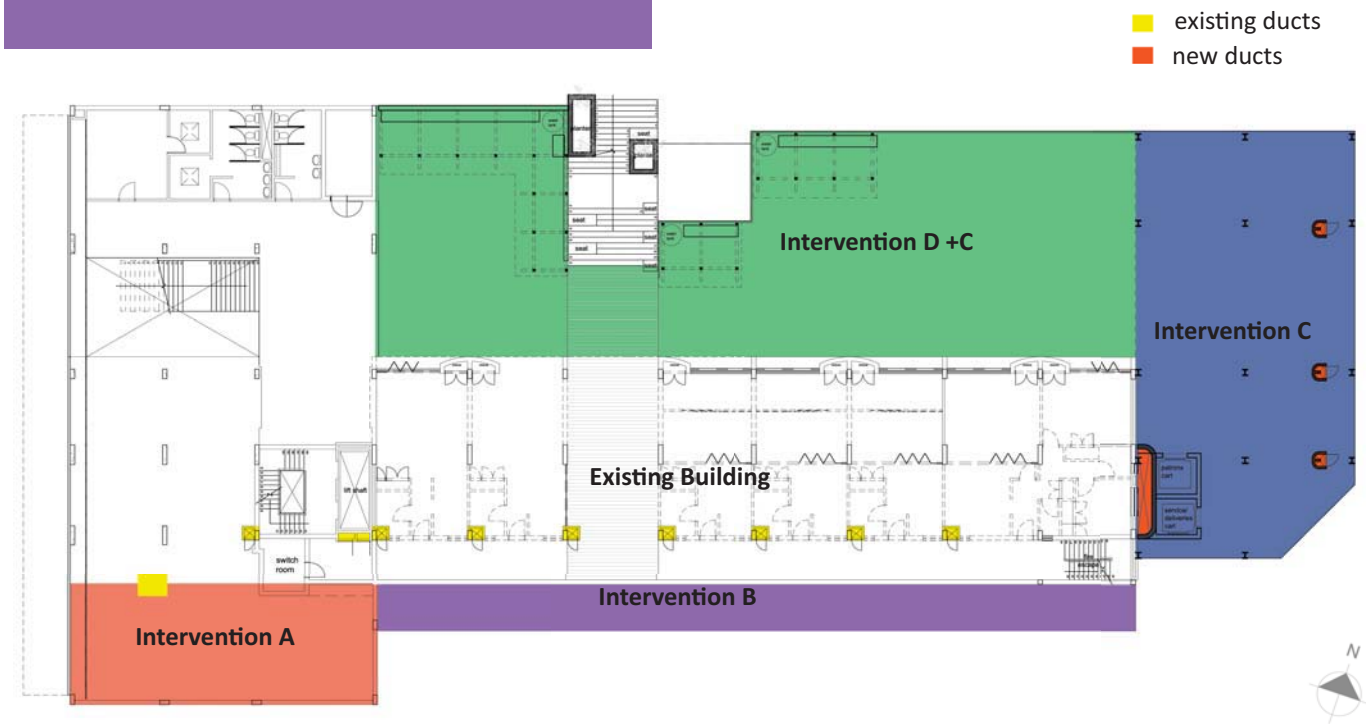


Fig 005.1.10: This diagram indicates the location of the various interventions that will take place in conjunction with existing Woltemade building

The existing Woltemade building is currently underutilised and **[re]**quires a strategy that will draw people back into the building. This strategy is to incorporate additional spaces and new programme scenarios through a variety of interventions. Four interventions have been identified that will each be treated seperately in terms of structure, application and site context/orientation adding to the qualities of the host building.

Intervention A: Exhibition + Gallery Space

Location of intervention
Second floor to sixth floor on the roof of the existing first floor

Construction technique/structural system
A conventional approach to building this portion of the building will be taken, which includes the use of brick and concrete. Small portions of intervention A will cantilever over the street edge. These cantilever portions will be constructed using a lightweight steel structure with screening elements.

Reasons for construction method
Fire regulation are the biggest concern of this intervention as it occurs on the site boundary and therefore needs to constructed from materials which do not pose as a fire hazard.

Services system
No wet services are **[re]**quired in this block, however should future programmes dictate wet services they can be connected to the host building's duct which is located adjacently to this intervention.

Electrical services will be surface mounted and distributed throughout the space in cable trays.

Associated advantages to intervention A

- Additional space to building footprint
- Provides new advertising opportunities for the building
- Gallery spaces allow for interaction with the street
- New dimension to western façade

Intervention B: The Wrapping Structure

Location of intervention
From the walkway on the third floor to the eighth floor.

Construction technique/structural system
A light weight hanging structure is deemed the most appropriate construction method for intervention B. The hanging structure consists of a system of cables held in tension, fixed to the roof structure and southern façade. Walkways will be hung from these cables to provide additional space.

Reasons for construction method
Other methods of construction were investigated, namely a pre-fabricated castellated steel trusses. However this **[re]**-quired a huge amount of steel and **[re]**sulted in a combersum structure that sat akwardly on section through the passages. Therefore the most appropriate method of construction for this intervention is a cable system with hanging floors. This particular method of construction uses the least amount of building material, while providing the greatest amount of flexibility.

Services system
No wet services are provided for in this area as it mainly consists of a walkway.

Existing electrical roof lights will be **[re]**placed by energy efficient lamps once they have fused. New footlights will be concealed under the new hanging floors and be distributed by cables via trunking placed inside the lipped channels.

Associated advantages to intervention B

- Provides additional space
- Multi-purpose exhibition + gallery space
- Becomes an extension of public space on the northern platform
- Provides horizontal and vertical connection through the building
- Place for coincidental meeting spaces
- Takes advantage of surrounding views

Intervention C: The Eastern Block

Location of intervention
Ground floor to sixth floor

Construction technique/structural system
Light weight steel structure in the form of QC flooring will be implemented in this intervention. QC flooring is permanent steel shuttering that is filled with concrete. Additional **[re]**-inforcing is not **[re]**quired as the shuttering acts as **[re]**-inforcing. Furthermore only light weight infill and cladding is used.

Horizontal shading devices are provided for on the northern façade, while vertical shading devises are included on the eastern and western façades.

Services system
New ducts have been provided for in this intervention with two sections. The first compartment houses fresh water and sewage and the other houses data and telecommunications.

All electrical services will be distributed throughout the space in suspended cable trays. Cable trays allow for the most flexibility in terms of the continual movement of internal partitions to accommodate changes in tenant layouts.

An alternative to an HVAC system had to be found because of the limited headroom within the existing building. One could **[re]**sonable assume that FFLs of the new interventions would line up with the FFL of the existing floors. Therefore the heating and cooling of Intervention C will to a large extent rely on PEX pipes running through the the slab.

This system consists of pipes filled with water cast into the concrete slab. The water is heated or cooled, depending on the season , and circulated throughout the building. This system ensures a comfortable environment without the need for a HVAC system.

Associated advantages to intervention C

- Additional space is provided
- New service/circulation core
- Provides water harvesting potential with planters
- Physical connection to intervention B + D

Intervention D: First Floor Platform

This intervention is marked as both D and C because it forms its own element, that being the platform, and merges with intervention C on the first floor. Intervention C then goes on to rise six floors.

Location of intervention
First floor

Construction technique/structural system
Light weight steel structure in the form of QC flooring will be implemented in this intervention. QC flooring is permanent steel shuttering that is filled with concrete. Additional **[re]**-inforcing is not **[re]**quired as the shuttering acts as **[re]**-inforcing. Furthermore only light weight infill and cladding is used.

Services system
Due to the nature of the space being a platform the only electrical serveices provided for will be footlights on the new stairs and lights in the trader's stalls. Both these circumstances **[re]**quire that fittings and cables be protected.

Associated advantages to intervention D

- Provides a new entrance and access point to the site
- Services are concealed below and are not tampered with
- The raised platform facilitates public activities
- Allows a direct link to intervention B and views to gallery space above

005 - 1 DESIGN STRATEGY

Layering: The design strategy intends to preserve the original building's form and identity. New structures are layered over the existing in order to create new spaces for new programmes. New interventions will wrap around the host building and expose the edges in order for the original building to be read seperately.

A large portion of the new intervention will take place to the south of the existing building, as this façade has over the years been altered and no longer **[re]**tains its original integrity.

Old versus new: All new structures would deliberately read differently to the host building through the use of contrasting materials and construction technologies. Steel is predominantly the material of choice as its use **[re]**quires no wet construction; components are pre-manufactured and would contast with the host building.

In addition to the steel construction, transparent and translucent components would create an architectural language of 'lightness". This would allow the new components to be sensitively inserted into the existing building.

Place making: New structures are added to the existing building to articulate new functional spaces. The new entrance on the ground floor leads patrons up to a new public platform on the first floor, which accommodates a market, restaurant and **[re]**tail spaces. Intervention "A" becomes an exhibition/advertising space for programmes that take place within the building. The new hanging structure (Intervention "B") on the southern façade would bring a certain verticality to the building through physical and visual links which were previously missing. Intervention "C" allows for additional space and programmes while at the same time providing new services.

005 - 1.1 LAYERING

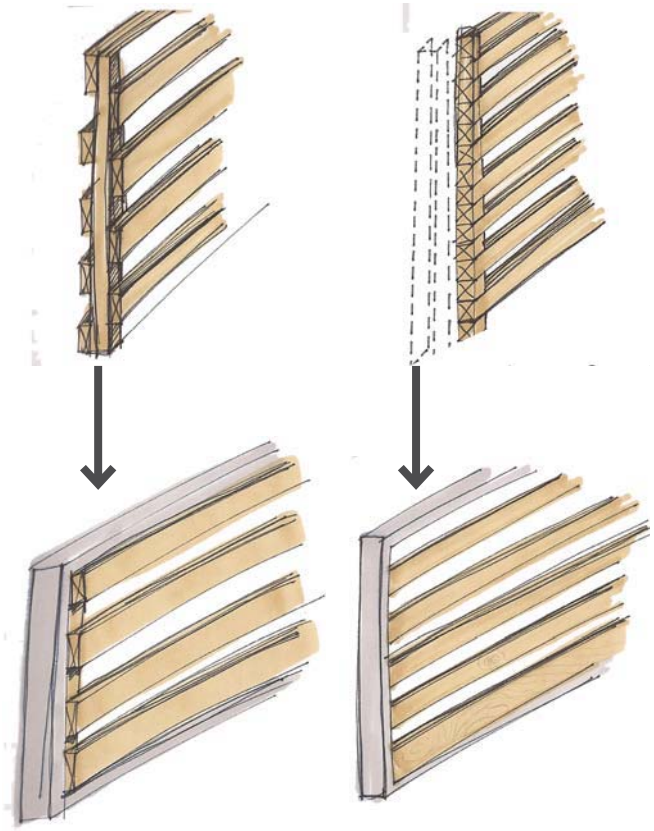


Fig 005.11: The various configurations the timber screens could take on the northern façade

Fig 005.12: The timber screen allows for partial light infiltration as well as a degree of privacy

Fig 005.13: The corrugated screen allows for total light eradication and complete privacy from the outside

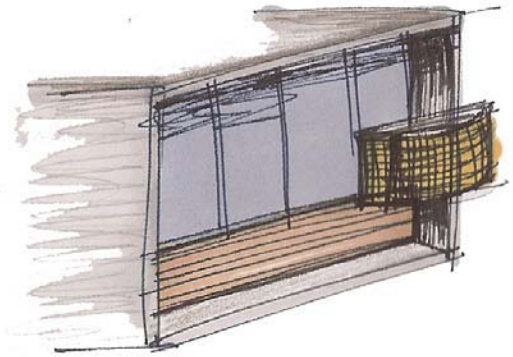


Fig 005.14: The northern façade of each unit as it appears before being altered

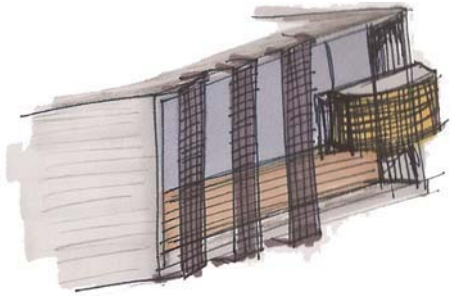


Fig 005.15: Perforated shading devices are added to the façade for programmes such as retail spaces

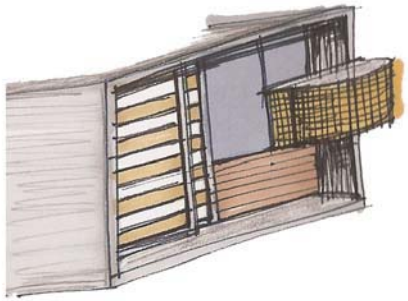


Fig 005.16: Timber screens are incorporated into the façade for offices and meeting rooms

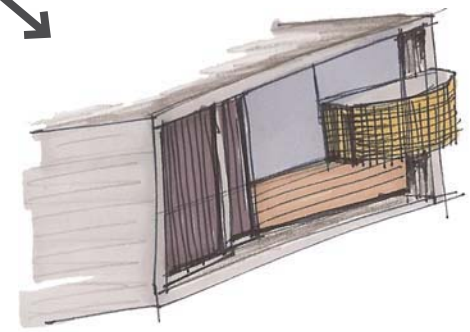


Fig 005.17: Corrugated screens are placed on the façade where light needs to be blocked from the interior. This would be done in front of projection rooms

level of privacy

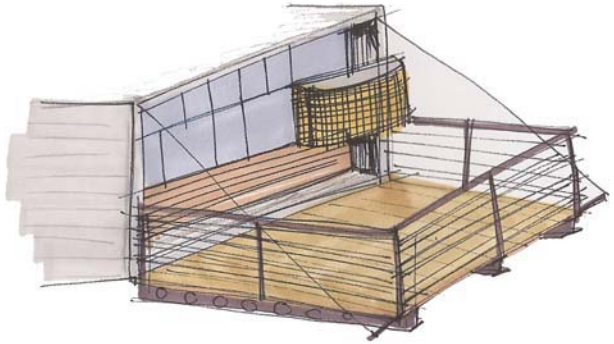


Fig 005.18: Areas where residential units are located will be treated differently. Balconies of various sizes can be added to increase the amount of living space

One component of the layering process would be the addition of movable screens to the northern façade. One of the intentions of this thesis is to install the rails of the movable screening system onto the façade of each unit.

The internal programme and its **[re]**quirements would then determine the type of screen that would be needed. In the case of a retail programme, a perforated screen could be considered to limit the amount of direct sunlight falling onto the merchandise.

Where office spaces are programmed, timber screens would be a reasonable choice for spaces with boardrooms or conference rooms to reduce lighting levels for activities such as presentations.

Projection rooms inherently need less light, therefore the screening material should attempt to completlt block the light. Corrugated sheet metal fixed to a frame would fulfill this criterium.

Residential units are treated differently to the other programs found within the building. The new balconies provide much needed space which can be programmed according to the needs of the inhabitants. Some residents might prefer a washing line, while others might find a planting area more useful. Yet another resident might find an outdoor living area more useful.

005 - 1.2 PLACE MAKING

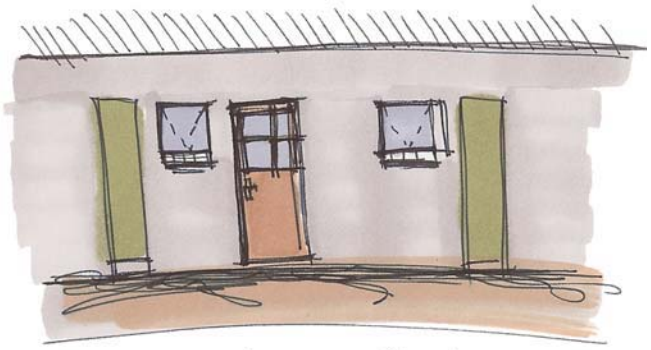


Fig 005.19: Existing residential units are all similar in appearance and open onto the Southern walkway

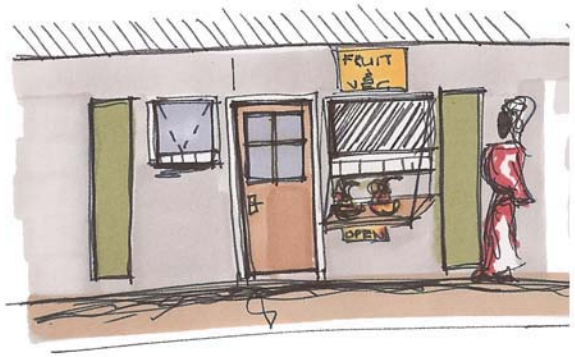


Fig 005.20: Simple modifications turn an existing residential unit into a fruit and vegetable stall

Fig 005.21: The fruit and vegetable stall as it would appear when closed

Fig 005.22: The existing kitchen window can be altered to make way for a small scale bakery catering for the needs of residents

Fig 005.23: The bakery display can be folded away and the window boarded up

Fig 005.24: The Herb and Vegetable stand sells fresh produce to residents in the building

Fig 005.25: The Herb and Vegetable stall as it would appear when closed

Fig 005.26: The front of a live/work unit can be altered to showcase merchandise

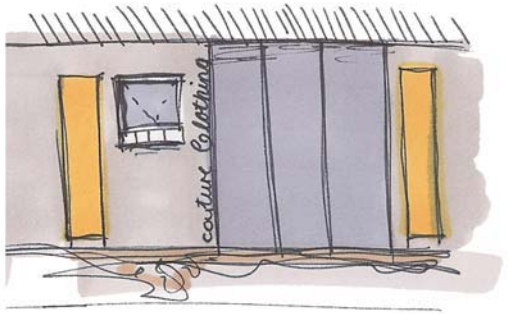


Fig 005.27: The occupant of the live/work unit can close the shop doors when needed

Fig 005.28: Live/work units can be altered further to incorporate more retail space

Fig 005.29: The Boutique as it would appear if closed

Residential units are not intended to be average. The residential unit. Residential units distributed throughout the Design Depot are intended to be places where residents can earn an income, while at the same time serving the inhabitants of the building as well as outsiders who visit the building. By incorporating the residence and small businesses into a single component the inhabitant makes a saving in terms of renting business premises and travelling to and from these premises.

In some cases the live/work units could be converted to form sales points for fresh fruit and vegetables, while others could sell goods which have been crafted or sewn by the inhabitant. Furthermore, the balconies of these live/work units could becomegreen houses which grow herbs and flowers that can be sold along the communal walkways.

Various levels of intervention can take place within the live/work units. Simple modifications would entail the adaptation of the kitchen window, which could include adding shutters or opening it up to serve patrons. More elaborate alterations would include converting the kitchen into a display area, thereby making the living component more compact.

Not only does this cross programming ensure the sustainability of the building but it also allows for diversity which can be expressed on the façades and in the passages. Residents are encouraged to adapt their units as they see fit. The only **[re]**striction would be that adaptations not limit further growth of the building and be constructed in such a way that they are demountable and easy to dismantle should the programme need to change in the future.

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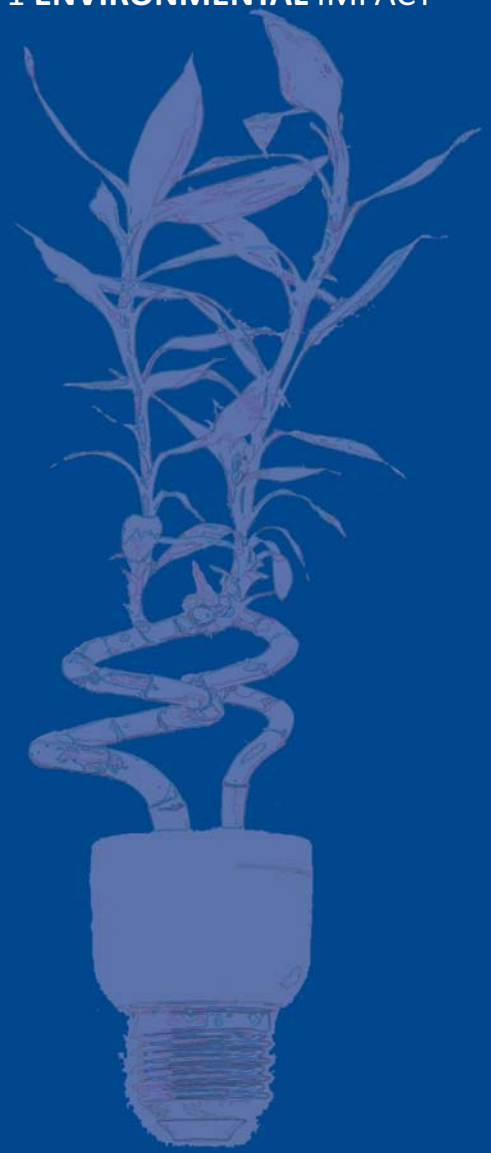
006

TECHNICAL INVESTIGATION

ENVIRONMENTAL IMPACT **006**-1
EXISTING BUILDING SERVICES **006**-2
EXISTING CIRCULATION **006**-3

006-1 ENVIRONMENTAL IMPACT



It is becoming more and more important for architects, developers and project managers to be **[re]**sponsible about the choices made and the products specified in building projects new and old.

This chapter will analyse interventions made to the Woltemade building in a simplified manner according to the Green Star Rating System set up by the Green Building Council of South Africa.

The Green Star SA Environmental rating system is a tool used in the comprehensive evaluation of "environmental design and performance of south African buildings" based on a number of criteria (www.gbcsa.or.za).

According to the Green Star SA rating tools nine separate environmental categories are identified:

- Management
- Indoor Environment quality
- Energy
- Transport
- Water
- Materials
- Land Use and Ecology
- Emissions
- Innovation

Fig 006.1: The Green Building Council of South Africa's logo

Fig 006.2: The Green Star Rating System logo

006 - 1.1 MANAGEMENT

The Green Building Council of South Africa (GBCSA) promotes the adoption of sound environmental principles from project inception to the design and construction phases (www.gbcsa.org.za). This process is made easier with a professional on the project team who has a good understanding of the principles of GBCSA and its tools. Furthermore an understanding of appropriate methods of **[re]**cycling and demolition on site.

Attribute: Environmental Management

[Re]lating to the guidelines setup by Davis Langdon, a formal environmental management system needs to be adopted during construction. Guidelines for each project will be different and needs to be drawn up by the professional team involved in the project.

Cost implications
Minor expenses are associated with the process.

Attribute: Waste Management

Waste management is a set of guidelines set up by the professional team and implemented by the site foreman on the construction site. Guidelines included in the waste management protocol are measures which serve to minimise the amount of construction waste going to landfill.

Measures include designated zones for the sorting and storage of construction waste into their various categories

such as steel, timber, plastic, glass and biodegradable waste.

Cost implications
Additional costs for skips and additional space **[re]**quired for storage and sorting of waste

006 - 1.2 INDOOR ENVIRONMENT QUALITY

This category of the GBCSA's main objective is to address the needs of the occupants and ensure their well-being.

Attribute: Mixed Mode Ventilation

The GBCSA refers to mixed mode ventilation as being a hybrid approach to ventilation, combining natural and mechanical means. This approach is common where natural ventilation is aspired to however due to the unpredictable nature of the environment a constant rate of ventilation is not always achieved. Hence the introduction of mechanical means to ventilate the building when **[re]**quired, **[re]**sulting in mixed mode ventilation.

Free standing air-conditioning units will be added to the existing building as it does not have sufficient headroom for new ducting. It is however the intention for the air conditioning to be used only where necessary and when natural ventilation is not sufficient.

Attribute: Ventilation Rates

Natural ventilation is the most sought after method of ventilation promoted by the GBCSA as it is non-mechanical and does not **[re]**ly on the use of fossil fuels thereby lowering the Carbon emissions. Through the incorporation and management of natural ventilation flow of air through the building can take place in the form of air movement through the building or through convection currents which pull the hot air up while drawing fresh cool air into the building.

Cost implications
Minor costs associated with design, but needs to incorporated from inception.

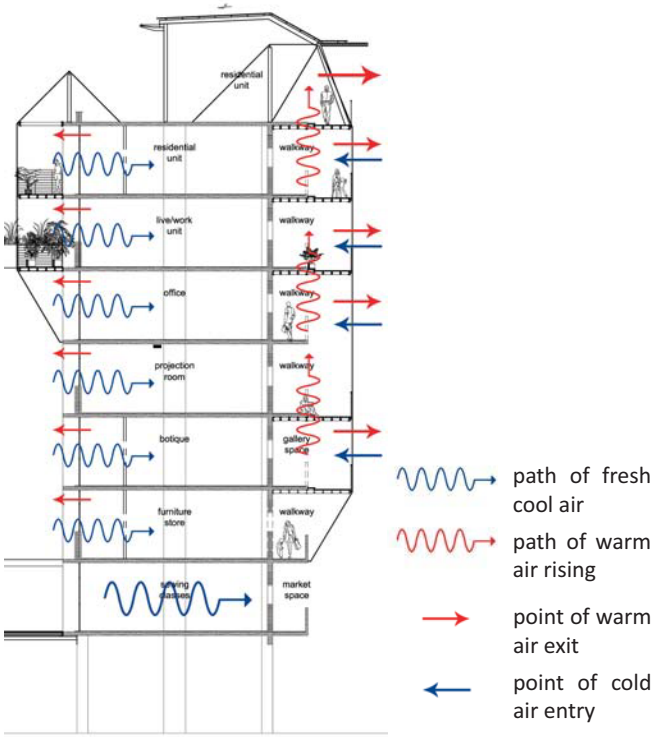


Fig 006.3: Diagram indicating the manner in which fresh air is drawn into and expelled from the building

Attribute: Natural sunlight

Natural sunlight is a natural **[re]**source that is free to use and dramatically improves the qualities of the indoor environment. Too much sunlight is not wanted either therefore it needs to be managed by sunshades and screening elements.

Natural sunlight is taken advantage of on the existing northern façade. The new interventions also utilise the sun's full potential to provide light to the interior and heat to the building during winter months through the installation of overhangs or screening.

Cost implications
None

Attribute: Daylight Glare Control

The definition of glare is "a bright light that blinds and strains the eyes" (Smith, [S.a]:485)

Glare is easily overcome in interior spaces through the incorporation of tinted glazing, external shading or screens. A combination approach is taken in the Woltemade building. Movable screens are used on the host building while tinted glass and screening elements are used on the new interventions.

A **[re]**duced consumption of energy is achieved through the incorporation of daylight glare control measures as heat gain into the building is lowered. At the same time the indoor environment is improved and **[re]**duces the amount of strain on the eyes of occupants.

Cost implications
Costs can be significant depending on the glare control method selected for the project. Costs are also associated with maintenance, especially for systems that are automated.

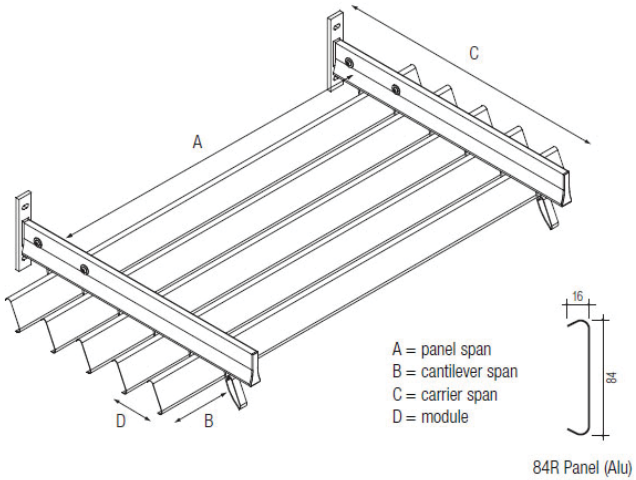


Fig 006.4: A typical sunscreen that can be attached to the façade providing shade to the interior and **[re]**ducing glare

Attribute: Low-E Glazing

Low-E glazing, according to Davis Langdon, is high peformance glazing which allows daylight to be transmitted into the building without the heat. Thereby lowering heat gain and **[re]**ducing energy consupmtion that would otherwise be used to lower the internal temperature.

Smart Glass is a South African manufacturer of glazing products that manufactures a number of products that are deemed appropriate in the application of the Woltemade building.

The products that are ear-marked for the instalation are E-Range, SolarShield, ArmourLam, CoolVue and InsulVue.

Cost implications
Considerable costs are associated with glazing generally especially in terms of safety glass. Safety glass would have to installed to the glazed façades in any case, the additional peformance quality of the glazing therefore comes at a minimal cost. The more complex the composition of the glass the more costly it becomes, however the better the performance.

Fig 006.5: ArmourLam as it would appear if applied to the Woltemade building

Glass Properties:
Shading coefficient = 0.14 to 0.46
Light transmission = 0 to 30

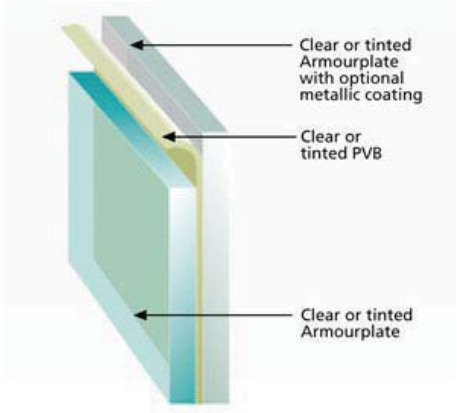


Fig 006.6: A diagramatic drawing of the composition of ArmourLam

Fig 006.7: Characteristics that the ArmourLam posseses are; security, safety, solar control and sound control solutions

Fig 006.8: E-Range low emissivity saftey glass offers superior thermal insulation in a standard frame for single glazing. This glass **[re]**-duces heating and air-conditioning costs

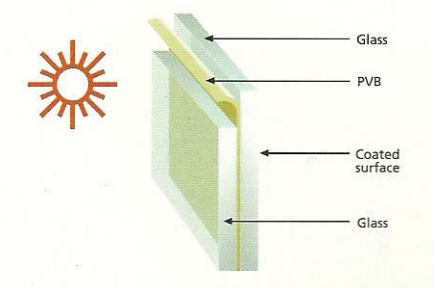


Fig 006.9: The composition of E-Range low emissivity saftey glazing

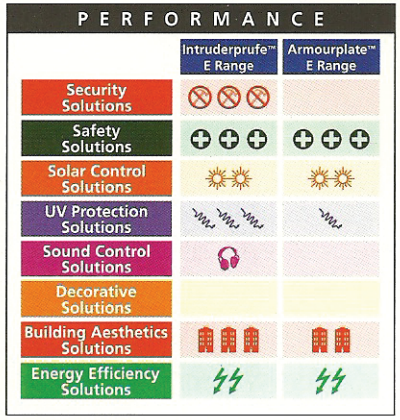


Fig 006.10: The peformance characteristics of E-range glazing

Attribute: Individual Comfort Control

Individual comfort **[re]**fers to the occupant being able to change their own environment instead of lying on a system which would change the internal environment of the whole building. The **[re]**furbishment and **[re]**configuration of the host building allows for individual comfort control. This is because units are already seperate entities defined by columns and ducts of the host building.

Free standing air-conditioning units form part of the individual control occupants have over their environments leading to fewer tenants complaints to management.

Cost implications
Minor, however productivity levels are increased and energy is used efficiently.

Attribute: External Views

This criteria deals with maximising the potential for external views. A visual connection to an external view potentially **[re]**duces eyestrain for occupants especially in areas such as offfices where high levels of concerntration are needed to complete a task (Davis Langdon, 2101:29).

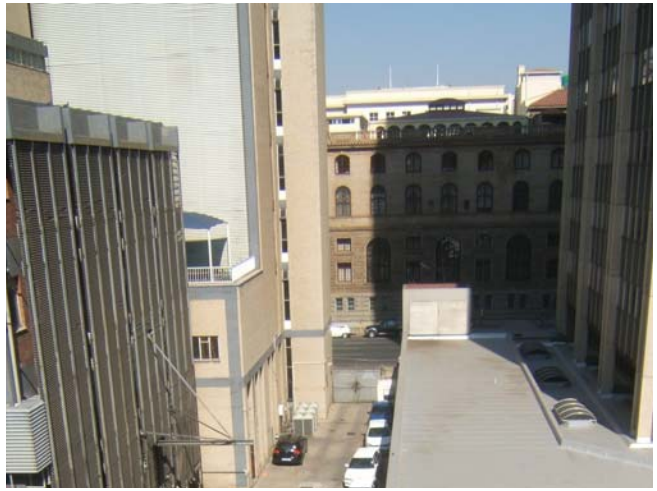


Fig 006.11: An existing view from the the south of the site which can be exploited in Intervention B

Fig 006.12: The view of the Supreme Court and Palace of Justice as seen from the south-west corner of the building

Cost implications
None, acknowledging the views from early in the design is important.

Fig 006.13: The view from the north-west corner of the building showing the New Court Chambers and the Masada building

Fig 006.14: A view to the north **[re]**vealing the Magaliesburg Mountains

Attribute: Internal Noise Levels

Appropriate internal noise levels are important in order to achieve a productive working environment (Davis Langdon, 2010:31). Various materials have different acoustic properties, thereby it is important to select the appropriate material for the internal partitioning to manage the acoustics. Increased insulation and acoustics add to tenant satisfaction.

Cost implications
Costs can be minimal, however acoustic treatment can become costly

Attribute: Volatile Organic Compounds

Typically Volatile Organic Compounds (VOCs) can be found in paint and carpet adhesives. These additives are **[re]**-sponsible for many ailments such as headaches and skin irritations (Davis Langdon, 2010:32). Due to the growing concern of protecting the environment paint manufactures have developed products with **[re]**duced levels of VOC or the complete omission of VOCs from their paint products. Manufacturers such as Dulux and Plascon are the leaders in this field.

Changing a paint specification to a paint with a low or no VOC content is becoming easier and no longer needs large amounts of capital to make it possible. The **[re]**duction of VOCs in the construction process maximises indoor air quality and **[re]**duces the risk of Sick Building Syndrome (Davis Langdon, 2010:32).

Cost implications
Low cost impact, it is important to **[re]**search new products however these are not always readily available.

Attribute: Formaldehyde Minimisation

Formaldehyde is a chemical that is widely used in the construction industry during the manufacturing of many building materials (Davis Langdon, 2010:33). Formaldehyde emissions are toxic and can contribute to irritations of the

skin, eyes and throat should a high percentage of formaldahyde be present in the air.

Many products are available on the market which have **[re]**-duced quantities or formaldahyde namely, carpet adhesives, sealants and a few pressed wood products.

Plywood was eliminated from the partitioning materials as they contain Formaldehyde UF (interior application) and Formaldehyde PF (exterior application).

Cost implications
Minimal costs however alternative materials need to be specified.

006 - 1.3 ENERGY

Attribute: Site Orientation

In the case of the Woltemade building, the majority of the existing building faces north. This increases its efficiency and makes internal environments more comfortable for occupants. The new interventions are forced to wrap themselves around the host building **[re]**sulting in new portions being exposed to the east and west. These area are treated with sunscreens and low-E glazing.

Cost implications
Site specific and dependant on the architectural design.

Attribute: Green Power

Green power is a generic name given to power sources that are considered to be clean and generated from **[re]**newable sources (www.davislangdon.com). Examples of green power include but are not limited to; solar, wind, wave energy, biogas and landfill gas. The green power source used in this thesis is solar energy which is harvested by photovoltaic modules for lighting in portions of the new interventions and hot water geysers on the eighth floor. Each of these elements will be discussed below.

Cost implications
Costs are currently still inflated and consumers are paying a premium to make use of green power. It should however become cheaper in the future.

Attribute: Photovoltaics

Location of intervention
Eighth floor - roof of intervention B

Cost implications
Cost depends on application. Utilising PV cells to only run a portion of a buildings **[re]**quirements for low energy lighting is viable as less PV cells and batteries are needed.

Attribute: Solar Heating - Hot Water

Solar hot water systems are a form of green power. They utilise the sun's energy to generate hot water. The hot water passes through collectors and is stored in a tank ready to be used.

New steel frame structures are added to the existing roof structure to increase the amount of usable space. Currently this space is unaccessable and not used, therefore the introduction of additional programmed space to this area is benificial without exorbitant additional costs. Panels can also be homogenously intergrated with the roofing material.

Fig 006.15: An image of the solar water system that will be installed on the roof of Intervention B

Instead of installing new geysers and plugging them in to the existing power grid, solar heating panels will be added to the roof of the units on the eighth floor. The solar water heating system investigated and deemed relevant for this application

is a Solahart® 302Kf (300 litre) water heating sytem with gas back-up element. This size of system could easily fulfill the needs of two 20m² residential units.

Gas has been chosen as the back-up power source because it is cheaper than electricity (Brümmer, 2010:42). The size of the system is 2475 x 2480mm x 510mm high and weighs 472kgs when full and is fixed onto a hot dipped galvanised mild steel roof angle stand of 20°.

Hot water units are to be orientated to the north and positioned with a clearnce of at least 2m to the left of the unit for servicing purposes and to avoid shadows being cast on adjacent panels. In addition a space of no less than 0.5m around the entire unit should be left clear to ensure that units peform at their best.

Cost implications
Aproximately R30 000 per 300 litre geyser.

Attribute: External Shading

External shading is considered to be anything that creates shading for a building façade. External shading can come in the form of vertical or horizontal shading devices or even an additional skin (Davis Langdon, 2010:53). Devices need not be complicated as shading can be achieved by a simple overhang, window shades, blinds or even trees.

In the case of the Woltemade building additional sliding screens are added to the northern façade. Intervention B has portions of the southen façade screened with a variety of materials, while Intervention C makes use of overhangs to the north, vertical screens to the east an additional skin to the west.

Cost implications
Can become expensive depending on the product and means of installation.

Attribute: Lighting Power Density

Lighting in the Woltemade building

All existing lighting in the Woltemade building is to be **[re]**-place with low Watt power lamps over time. This is so that less power is consumed from the national power grid. Even though a higher capital outlay is initially **[re]**quired, a saving will be made in terms of energy consumption, maintenance and **[re]**palcement of lamps. This simple alteration will not only save the building owner money in the long run but will also **[re]**duce the amount of Carbon Dioxide **[re]**lease into the atmosphere because less fossil fuels are used to generate power for the building. The table below comapres the various lamp types, wattages and Lumen outputs **[re]**-vealing why the LED lamp is the most efficient lamp.

In order to calculate the amount of lighting **[re]**quired for the new portions of the building it is necessary to determine the area of each intervention and insert it into a formula. Khyansia Electrical Suppliers in Midrand use the following formula to determine the number of lamps needed;

m² ÷ lux quired ÷ 54 ÷ lumen= no. lamps **[re]**quired

An average of 600lux has been used across the board because the spaces provided for are generic and gain character onces occupants inhabit the space. Should additional lighting be **[re]**quired it can be achieved through free standing floor lamps, task lighting or any other method as long as the method is energy efficient and does not overload the transformer.

LAMP WATTAGE COMPARISON

Incandescent	CFL	Halogen	LED	High Pressure sodium	Approximate Lumen range
					
12-5W			1.3W		
25W	5-6W	25W	3W		
30W	7-9W				
40W	9-13W	50W	5W		**450lm**
60W	13-15W	60W	7W		**800lm**
75W	18-23W		9W		**1100lm**
100W	25-30W		13W		**1600lm**
150W	30-52W				**2600lm**
		150W	40W		
			35W	150-250W	**2500lm**
			70W	250-300W	**5000lm**
			140W	300-400W	**10 000lm**
			210W	400-450W	**15 000lm**
			224W	450-550W	**20 000lm**

Fig 006.16: Table comparing the characteristics of various lamps

The following table is a summary of these areas:

AREAS TO BE LIT IN BUILDING		
GROUND FLOOR		
Existing to be [re]placed		484m²
New intervention		
	Parking	429m²
	TOTAL	**429m²**
FIRST FLOOR		
Existing to be [re]placed		896m²
New intervention		
	Intervention D	429m²
	Block C	250m²
	TOTAL	**679m²**
SECOND FLOOR		
Existing to be [re]placed		514m²
New intervention		
	West block roof	317m²
	Intervention C	263m²
	TOTAL	**580m²**
THIRD FLOOR		
Existing to be [re]placed		514m²
New intervention		
	Intervention A	172m²
	Intervention B	76m²
	Intervention C	249m²
	Glass Gallery Box	28m²
	TOTAL	**525m²**
FOURTH FLOOR		
Existing to be [re]placed		514m²
New intervention		
	Intervention A	129m²
	Intervention B	76m²
	Intervention C	307m²
	Glass Gallery Box	28m²
	TOTAL	**540m²**
FIFTH FLOOR		
Existing to be [re]placed		514m²
New intervention		
	Intervention A	133m²
	Intervention B	76m²
	Intervention C	322m²
	Glass Gallery Box	28m²
	TOTAL	**559m²**
SIXTH FLOOR		
Existing to be [re]placed		514m²
	Intervention A	128m²
	Intervention B	76m²
	Intervention C	338m²
	TOTAL	**542m²**
SEVENTH FLOOR		
Existing to be [re]placed		514m²
New intervention		
	Intervention A	128m²
	Intervention B	76m²
	Intervention C	135m²
	TOTAL	**339m²**
EIGHTH FLOOR		
Existing to be [re]placed		177m²
New intervention		
	Intervention B	187m²
	TOTAL	**187m²**

To view the lighting selection go to the "Lighting Schedule"in the Appendix.

Intervention A

Average size of floor plate = 138 m²
138m² ÷ 600lux = 82 800 ÷ 54 = 1533.3 ÷ 18 = 85W
85W ÷ 9W(LED) = 9.4 lamps
Therefore 10 x 9W lamps per floor
10 lamps x 5 floors = 50 lamps
50 lamps x 9W = 450Watt

Intervention B

6 floors x 76m² + 111m²(roof units) = 456m²
14 x (12 x 0.1W) = 16.8Watts per floor (Footlights)
Therefore 16.8Watts x 6 floors = 100.8Watts
16 lamps x 9W = 144Watt
144W x 7 floors = 1008Watts (Passage lights)

Intervention C

36 lamps x 9W per floor plate = 324Watts
36 x 5 floors + 39 lamps (floor 6 & 7) = 219 lamps **[re]**quired
219 lamps x 9W = 1971Watts

Glass gallery Box

28m² x 600lux = 16 800 ÷ 54 = 311.11 ÷ 5 = 62.22Watts
62.22W ÷ 35W(lamp) = 1.7 lamps [re]quired
However due to the volume of the space and to create an effect 5 lamps will be used
5lamps x 35W = 175Watts

Summary: The total amount of energy [re]**quired**

Intervention A + Intervention B + Intervention C + Glass gallery Box

450W + 1108W +1971W + 175W = 3704Watts or 3.7KW

If all of the new lights were to be place on a photovoltaiic system the **[re]**sult would be over 300 PV cells and battery costs which near one million rand (calculation be First National Battery Consultant). This approach is not deemed to be sustainable and the building does not have the space to accomodate the number of PV cells **[re]**quired.

Therefore the recommended route is to zone the the new lighting **[re]**quirements into areas that are powered by an Alternative Energy System (PV cells) and areas that plug into the existing power grid. The lighting **[re]**quirements have been zoned as follows;

All emergency and emergency passage lighting will be low energy lighting powered by the Alternative Energy System (PV cells) and the **[re]**mainder will make use of of conventional 220V electricity.

A) Lights to be powered by Alternative Energy System (PV cells)

Intervention A	+	Intervention B	+	Intervention C	+	Glass gallery Box
(p + e)[1]		(all)		(p + e) [1]		(all)

75W + 1108W +100W + 175W = 1458Watts or 1.458KW

B) Alternative energy load calculator

In order to power the passage and emergency lights from a solar PV system for 12 hours (night only) the following will be **[re]**quired:

Watts x hours + inefficiencies = Watt/hour

1458W (from A above) x 12 + 20% = **20 995W/h**

I(current) = P(power) ÷ V(voltage)

I = 20995 ÷ 48 = **437Amps**

C) To calculate the battery [re]**quired:**

From the calculation (A) it is now possible to determine the battery size needed for the photovoltaic system. The size of the battery is derived from a 3 day autonomy and allows for inefficiencies (cable and battery losses etc.). Therefore a 1573Amp/h battery will be needed accoding to the First National Battery Consultant.

D) To calculate the PV panels [re]**quired:**

From the calculation (B) it is possible to deduce the number of PV panels needed in the system. If a 210W panel is used then the calculations are as follows:

Load (B) ÷ (peak sunshine hours) = Amp

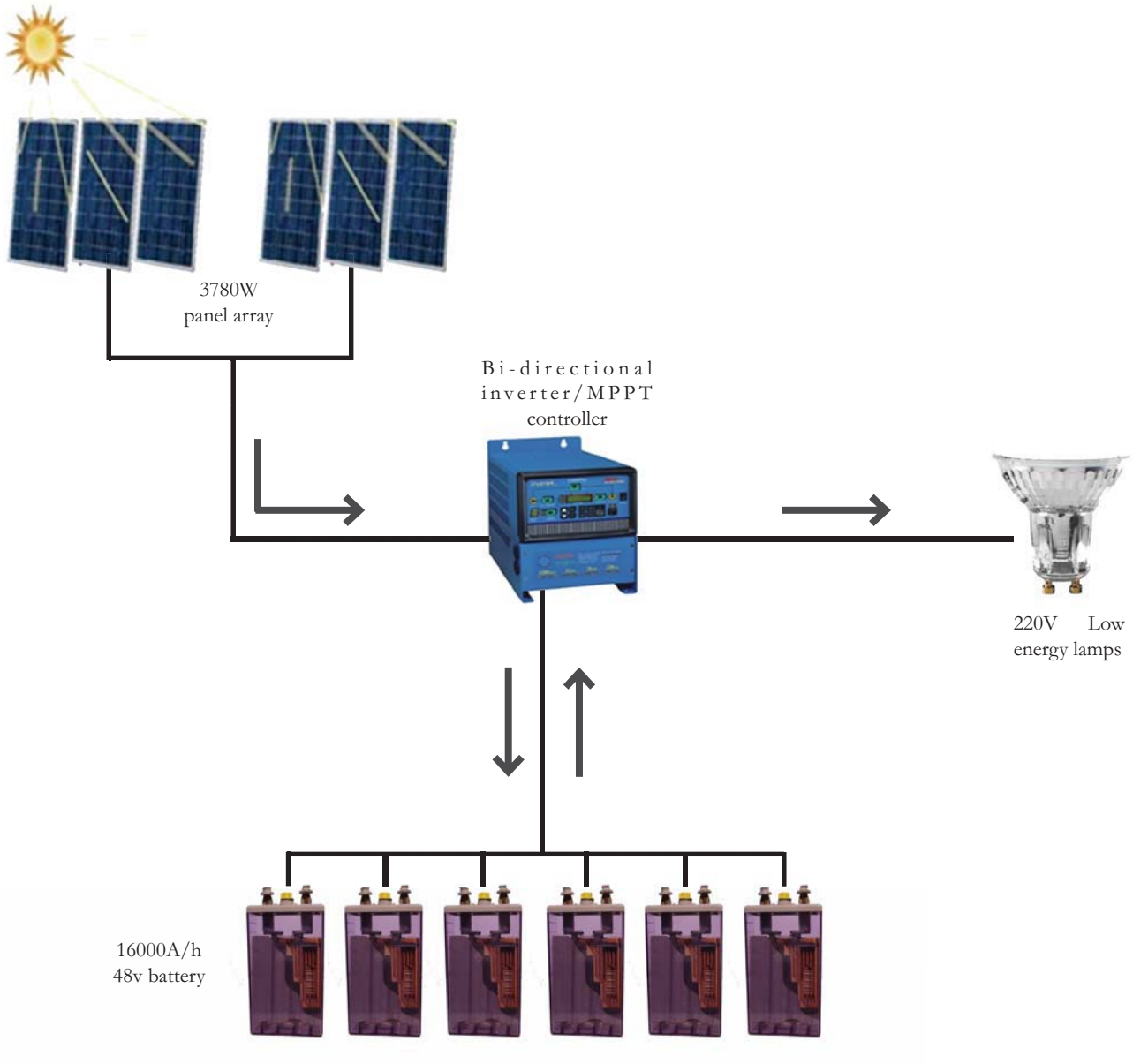


Fig 006.17: Alternative energy system configuration

437 ÷ 5.5 = 79.45A

Amps ÷ I(output of panel) = number of panels

79.45 ÷ 4.4^2 = 18.05
Therefore 18 x 210W PV Panels are [re]**quired**

[1] (p + e) = passage + emergency lights
[2] PV panel Watt ÷ Voltage
= 210W ÷ 48V = 4.4W

E) To calculate the Bi-directional/Maximum Peak Point Tracker (MPPT) [re]**quired:**

From the calculation (A) the load was found to be 1.458KW

Therefore 1 x 3KVA combi-3 inverter will be [re]**quired**

F) System Costing

System costing includes; batteries, PV panels and charge **[re]**gulator would cost approximately R300 000 excl. Vat.

006 - 1.4 TRANSPORT

Attribute: Maximum Car Parking

The Woltemade site is fortunate with its location as it is situated in close proximity to a variety of transportation modes. These modes include the private car, motorcycle, taxi, bus and train. Therefore it is important to promote the various public transportation modes on site as well as motorcycles and bicycles.

The number of motor vehicle parkings has been decreased in order to include motorcycle and cyclist parking with its necessary facilities.

Through the promotion of these different modes of transportation savings can be made with **[re]**gards to fuel for the individual, thereby decreasing carbon emissions (Davis Langdon, 2010:69). As the parking area is already provided for on site, little capital needs to be spent on this category.

Cost implications
No additional cost is associated with this as the parking is already in place and will only **[re]**quire **[re]**configuration.

Attribute: Fuel Efficient Transport

Fuel efficient transportation modes include; smaller cars, motorcycles and public transportation. These modes of transportation need to be encouraged for the weekly commute to work.

Fuel efficient transportation methods also **[re]**duce the amount of fuel consumed as well as a **[re]**duction in carbon emissons for the user.

Cost implications
No costs associated to the buiding owner, however motorcycles are considered dangerous and carpools are not always practical.

Attribute: Cyclist facilities

According to a Davis Langdon's *Quick Guide* (2010:71), bicycle storage needs to be secure and under cover. The dedicated storage area needs to be in close proximity to changing facilities with showers and locker facilities.

Cyclist facilities are provided for at The Woltemade building as they promote healthy living, **[re]**duce carbon emissions and encourage alternative means of transportation. Cycling is deemed appropriate in this instance as the framework (section 009.2 in the Appendix) promotes the inclusion of cycle lanes on major routes within the city.

Cost implications
Bicycle racks are relatively inexpensive however the ancillary spaces could significantly add to the cost of a project.

Attribute: Local Connectivity

The Woltemade site is conveniently located to community amenities such as the German Club, Church Square and Church Street to name but a few. The close proximity to these amenities **[re]**duces the amount of trips that would otherwise be taken in a private motor vehicle or public transport.

Cost implications
None

006 - 1.5 WATER

Attribute: Rainwater Harvesting

Rainwater harvesting is simply the collection of water from roofs or other hard surfaces (Davis Langdon, 2010:77). The installation in the case of the Woltemade building will consist of a series of downpipes that lead to a storage tank. Water will be used for irrigation purposes on the site. Various collection points will serve different planters, potted plants and the large palm trees found on site.

Utilising rainwater **[re]**duces the amount of potable water consumption as well as **[re]**ducing stormwater runoff.

Cost implications
Minimal

Attribute: Water Efficient Fixtures and Flow Restrictors

Flow **[re]**strictors can be retrofitted to old installations as well as fitted to new installations. Many showers and user interface valves (taps) make use of these **[re]**strictors to **[re]**-duce the quantity of water consumption.

All new installations in this thesis will be fitted with water efficient fixtures. Not only will this significantly save on the amount of water used it can potentialy save 60% on domestic water heating costs (Davis Langdon, 2010:79).

Cost implications
Minimal per fixture

Attribute: Waterless Urinals

No urinal is truely waterless, however this category of urinal significantly **[re]**duces the amount of potable water used for flushing. These urinals are similar in appearance to the conventional type however water in not used continiously for flushing. An air seal and air trap are the two components that make the system work.

Liquids flow through the trap and are immersed through a floating layer of sealant liquid, which controls potential odours.

This system does cost more than the conventional system and **[re]**quires more maintenance however the saving in potable water consumption is significant.

Cost implications
R1000 - R3000 per fixture including labour, excluding pipe work

Attribute: Water Meters

Water meters aid in monitoring water usage and locating potential water leaks and identify areas of high usage. A water meter will be added to each floor to monitor the amount of water consumed, water should not be used in areas of **[re]**tail at night therefore making it easier to locate a water leak.

Cost implications
Meters are **[re]**latively cheap and easy to install

Attribute: Landscape Irrigation

Rainwater will be used for the irrigation of landscaped and potted plants on the Woltemade site **[re]**ducing the amount of potable water consumed.

Indigenous plants are also used to further **[re]**duce the quantity of water consumed.

Cost implications
None

006 - 1.6 MATERIALS

Attribute: Building **[Re]**use

An existing building has been chosen in order to **[re]**duce materials consumed during the construction phase. By **[re]** using an existing building, such as the Woltemade, much of the structure is maintained and added onto in order to create a much more diverse programme that has the potential to draw people further up Paul Kruger Street past Church Square.

Natural **[re]**sources are saved and demolition is overted **[re]**-sulting in less waste that needs to go to landfill.

Cost implications
Minimal, however some buildings can be expensive or unpractical.

Attribute: **[Re]**used Materials and Concrete

[Re]cycled concrete may contain a portion of **[re]**cycled aggregate meaning that less raw materials need to be mined. Some manufactures such as Lafarge and AfriSam produce “green concrete” that is available as a pre-mix which is available in various strengths. Intervention A and C will make use of **[re]**cycled concrete and aggregate in the floor slabs.

Advantages associated with **[re]**cycling concrete is that less waste is sent to landfill and given a second life.

With **[re]**gards to **[re]**using materials in the Woltemade building, every effort will be made to **[re]**use the existing materials on site as well as sourcing additional materials from other sites and salvage yards.

The general approach in this thesis is that elements that **[re]**quire structural strength and integrity will have to be manufactured from portions of **[re]**cycled material and not **[re]**used material as the structural integrity cannot be guaranteed. Areas that will adopt this approach is Intervention B with its wrapping steel structure. Structural components of Intervention C and the new balcony extensions on the northern façade.

The screening materials used on the sliding screens on the northern façade could very easily incorporate **[re]**used materials as long as they still fufill the programmatic needs of the interior space. **[Re]**used materials could include, but are not limited to salvaged timber, corrugated sheeting and steel and aluminium off-cuts.

Walls which are demolished in the existing structure will first be cleaned and prepared to be **[re]**used for new walls and ducts while the **[re]**mainder is to be donated to an organisation that aids in persons building their own home. Material will be offered to them free of charge all that is **[re]**-quired is the labour needed to clean the bricks.

Internal partitions could also incorporate **[re]**used materials to a degree however regular sizes with similar materials and finishes will be difficult to achieve. In addition a neat finish may not be possible, therefore an analysis will have to be done when internal partitions are to be manufactured The analysis will include sizes and quantities of appropriate salavaged or **[re]**used materials available in comparison to new materials. If new materials are deemed the most viable option then the material choice needs to be **[re]**sponsible.

The following information relats to table 1:

Supawood is an engineered medium density fibreboard (MDF) with wood fibres bonded with synthetic resins. This allows for traditional woodworking techniques. The surface is ideal for priming, painting, veneering and laminating. Laminating can take the form of Formica, Deccon, paper foils and melamine impregnated paper.

SupaLam Super White is a white melamine faced MDF. This board can be routed with patterns before being painted with a PVC or Acrylic paint. This particular board is mostly used for decorative door panels and kitchen carcasses.

Hardboard, otherwise known as Masonite, is formed from reduced ligno-cellulose fibres which are wet-felted and hot pressed to form a board. Natural resins are used to bond the panels together opposed to synthetic resins. Tempered hardboard is suitable for vertical exterior applications, provided all surfaces and edges of the board are adequately sealed and protected with a good quality paint or varnish.

Orientated Strand Board consists of resin coated wood strands laid in three cross-directional layers. Performance rated structural OSB panels are engineered boards with superior strength and uniformity. Typically OSB is used in the following applications; walls, ceilings, roof construction, mezzanine floors, display material and shop fittings to name but a few.

Plywood products are constructed using an odd number of wood veneers bonded together in a cross-directional fashion. Hardwood Plywood makes use of a variety of hardwood species bonded together using an exterior grade waterproof and pheolic resin. Unfortunately both the interior and exterior plywoods make use of formaldehyde.

Nu-tec Board consists of fibre cement, although it is not as **[re]**cyclable a timber, it is a durable product that can be dismantled and **[re]**used somewhere else. For the dismantling to be successful the installation of the product needs to be carefully considered. It is therefore the reason that internal as well as external partitioning be made up into manageable size panels complete with insulation and protected corners to ensure longevity.

MATERIAL: PARTITIONING								
Material	**Thickness**	**Weight kg/m²**	**Sheet size**	**Finish**	**Substrate**	**Distance to site**	**Recyclability**	**Appropriateness**
Supawood 	6mm 9mm 12mm	4.68kg 6.75kg 9.36kg	2750 x 1830mm 2750 x 1830mm 1830 x 915mm	raw	Supawood	Boksburg Board Plant 50km	✓	A wide variety of applications are possible for interior applications
SuperLam Super White 	12mm 16mm 18mm	10.50kg 13.68kg 15.70kg	2750 x1830mm 3660 x 1830mm	Executive Peen Ashwood	Supawood	Boksburg Board Plant 50km	White face is difficult to remove without the use of harmful chemicals should the board be recycled	X Panels are substantially heavier than other panels of the same thickness
Hardboard 	3.2mm 4.8mm 6.4mm	3.20kg 4.80kg 6.40kg	2440 x 1220mm 2750 x 1220mm 3050 x 1220mm 3660 x 1220mm	raw	Hardboard		✓	Natural resins are used for bonding
Tempered Hardboard 	3.2mm 4.8mm 6.4mm	3.20kg 4.80kg 6.40kg	2440 x 1220mm	tempered	Hardboard		✓	Board has superior strength, hardness and water resistance
Orientated Strand Board (OSB) 	6mm 9mm 12mm	3.81kg 5.95kg 7.80kg	2500 x 1250mm	Raw timber strands	Typically Pine, Poplar or Aspen		Boards can be used in a variety of applications increasing its life span	A structural board which is uniform in nature
Plywood (interior application) 	6mm 9mm 12mm	4.20kg 5.80kg 7.5kg	2500 x 1200mm	Raw veneer: Meranti or Seraya	Meranti or Seraya		X	X Contains Formaldehyde UF
Exterior Hardwood Plywood 	6mm 9mm 12mm	4.20kg 5.80kg 7.5kg	2500 x 1200mm	Raw veneer: Meranti or Seraya	Meranti or Seraya		X	X Contains Formaldehyde PF
Material	**Thickness**	**Weight kg/m²**	**Sheet size**	**Sub-frame spans vertical + horizontal**	**Finish**	**Distance to site**	**Recyclability**	**Appropriateness**
Nu-tec Medium Density Board	9mm 12mm	40.50kg 54.00kg	2700 x 1200mm 2700 x 1200mm	600/800mm 600/900mm	paint or wallpaper		✓	
Nu-tec High Density Board	5mm 10mm 15mm	37.3kg 62.1kg	3600 x 1200mm 3000 x 1200mm 3000 x 1200mm	400/500mm 600/800mm 800/1200mm	paint or wallpaper		✓	

Table 1: Study of various partitioning material

The following information relates to table 2:

Kliplok 406/700 is a rolled-formed profile used as a roofing and/or side-cladding solution. Profiles come in continuous lengths of 12.5m and widths of either 406mm or 700mm. The manufacturer recommends a sub-frame of either steel or timber depending on the design and application. **Mascaret** is a perforated aluminium façade system is manufactured to illuminate or filter light into interior spaces. This perforated screen is typically used as a vertical or horizontal sun¬shade.

Cost implications

[Re]cycled/'green' concrete costs significantly more than standard concrete. Salvaged or **[re]**cycled materials are not always cheaper (in the case of bricks) however they have substantial value in **[re]**ducing the amount of virgin material that is mined, minimising the amount of waste going to landfill, **[re]**ducing the embodied energy.

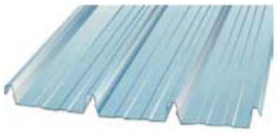
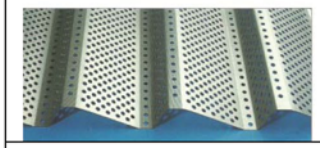
MATERIAL: SCREENING								
Material	**Thickness**	**Weight kg/m²**	**Sheet size**	**Sub-frame spans**	**Finish**	**Distance to site**	**Recyclability**	**Appropriateness**
Kliplok 406/700 (galvanised)  Kliplok 406	0.5mm 0.58mm	5.50kg 6.60kg	12.5m x 406mm or 12.5 x 700mm	1400mm 1800mm	Galvanising with or without paint	Boksburg North 55km	✓	
Kliplok 406/700 (zincalume)  Kliplok 700	0.47mm 0.53mm	5.10kg 5.70kg	12.5m x 406mm or 12.5m x 700mm	1400mm 1700mm	Zincalume with colour choice of Globalcoat™	Boksburg North 55km	✓	
Mascaret 	1.0mm 1.2mm	9.10kg 11.63kg	2950 X 910mm	910mm			✓	

Table 2: Alternatives to screening materials

Attribute: Steel

It is important when specifying steel that **a** certain percentage of **[re]**cycled is steel is incorporated during manufacture. This not only **[re]**duces the amount of accumulated embodied energy, the **[re]**duction of virgin material and the **[re]**duction in **[re]**source depletion (Davis Langdon, 2010:91).

Steel with a percentage of **[re]**cycled material should be used in all steel elements of the Woltemade building. **[Re]**-used steel on the other hand should be limited to elements which do not **[re]**quire inherent structural stength and integrity such as external screens, cable trays and steel framing materials.

Cost implications
Medium to high, but the environmental benifits far out weigh this.

Attribute: Sustainable Timber

Sustainable timber **[re]**fers to timbers that are sourced from sustainable forests, including the management and all other forest **[re]**sources (Davis Langdon, 2010:92). Products that display the FSC symbol carry a Forest Stewardship Council certification, however it is important to note that a full chain of custody (COC) needs to exist for every lot of timber purchased by a supplier who intends to manufacture, process or trade in timber. According to the FSC website a COC serves to demonstrate to customers that a manufacturer is **[re]**-sponsible in the use of raw timber (www.fsc.org).

A major downfall that exists when specifiyng sustainable timber is that a limited choice of timbers are available.

Timber for this project will be sources from Merensky, a hardwood sawmill in Limpopo that is FSC certified. Merensky's kiln drys Eucalyptus hardwood lumber is used for joinery, furniture manufacture and construction.

Even though Eucalyptus is not indigenous to South Africa, Eucalyptus plantations are a sustainable alternative to the logging of endangered tropical hardwood species.

Cost implications
Minimal cost implication, however credentials of supplier needs to be checked in order to be certain that timbers are indeed sourced from sustainable forests.

Attribute: Design for Disassembly

Dissasembly typically goes hand in hand with pre-fabricated components. These components are manufactured off site and delivered to the construction site ready for assembly (Davis Langdon, 2010:93).

In the case of the Woltemade building the componets that are able to be dismounted **[re]**configured and **[re**]installed are the internal partitions. These panels are designed to be dismantled in order to allow for a greater deal of flexibility to the interior configuration. This will allow the building to adapt should the programme of a unit change or need to be **[re]**located.

Generally off-site manufacture of pre-fabricated units saves time and money which is pertinant to any project. On-site congestion is minimised along with material wastage as off-cut materials can be **[re]**used in the factory or sent to the appropriate location.

Unfortunately many pre-fabricated components are difficult to source and waterproofing is not guaranteed. The waterproofing of the elements is not crucial as components are used for an interior application.

Cost implications
Project and item specific

Attribute: Local Sourcing

Transportation emissions are **[re]**duced if building materials are sourced locally and within close proximity to the site. This not only supports local manufacturers but also **[re]**-duces traffic congestion.

Cost implications
Site specific. Additional costs and limited products available in immediate proximity.

006 - 1.7 LAND USE + ECOLOGY

Attribute: **[Re]**use of Land

Although the site used for this thesis project is not being **[re]**developed it does exist with an existing muncipality and does not **[re]**ly on the use of a vacant or greenfield site (Davis Langdon, 2010:99).

Cost implications
Medium to high. The site costs more because an existing building and services are present on site. It does however need to be **[re]**zoned from residential to mixed use.

Attribute: Indigenous Landscaping

The Odhams English Dictionary's definition of indigenous is "native, belonging naturally to" a particular area (n.d:569). Davis Langdon's Quick Guide (2010:100) adds to this notion by including the phrase sustainable indigenous landscaping. This phrase implies that permanent indigenous plants as they will **[re]**quire less water and **[re]**duce the consumption of water for irrigation.

A disadvantage of using indigenous plants is that there is a limited number of species for designers to choose from.

The planting selected for the Woltemade site includes a number of indigenous plants that have been chosen for their drought tolerance, beauty and medicinal qualities.

Cost implications
Cost effective depending on plant choice and quanitity.

Fig 006.18: Aloe plants produce beautiful flowers, are easy to grow and have healing properties

Fig 006.19: The Barleria Repens, commonly known as the small bush violet has a pretty tubular flower and can be used as a climber on a trellis

Fig 006.20: Jasminum multipartitum is commonly known as Starry Wild Jasmine is a sweetly scented plant that is a good climber

006 - 1.8 EMISSIONS

Attribute: Ozone Depletion Potential

The Ozone Depletion Potential of a chemical **[re]**lates to the damage that a particular chemical can cause to the Ozone layer, which supports life on earth. Traditionally refrigerators relied on the compound chloroflourocarbons (CFC's), these compounds are known to contribute to the depletion of the ozone layer. Hydrochlorofluorocarbons (HCFC) have **[re]**-placed CFC's and do not cause damage to the ozone layer therefore they should be used. It is important to ensure that free standing air-conditioning units proposed in this thesis project make use of a HCFC refrigerant.

Cost implications
Project specific

Attribute: Light Pollution

Light pollution **[re]**fers to the unwated discharge of light into the surrounding environment and atmosphere. Sources of light may include illuminated signs for advertising, street and building lights.

Simple measures to ensure light is not discharged into the atmosphere is to direct light where it is needed and shield the **[re]**mainder of the lumanaire.

Cost implications
Minimal cost in the prevention of light pollution

ACCOMODATION SCHEDULE OF DESIGN DEPOT

GROUND FLOOR

EXISTING ROOM/ AREA	AREA
Shop 1	m²
Shop 2	m²
Shop 3	m²
Shop 4	m²
Shop 5	m²
Shop 6	m²

NEW ROOM	AREA
Recycling sorting + storage	m²
Service + deliveries area	m²
Refuse storage	m²

CIRCULATION	AREA
Entrance lobby	m²
New circulation core	m²
"Tunnel"	m²

PARKING	NO.
Old parking bays	
New parking bays	
Total number of bays	
Bicycle parking	
Motorcycle parking	

FIRST FLOOR

EXISTING ROOM/ AREA	AREA
Ablutions	m²
Switch room	m²
Restaurant 1 (converted)	m²
Furniture design office (converted)	m²
Accessory shop (converted)	m²
Sewing class sales (converted)	m²
Sewing class + pattern making (converted)	m²
Trader's stalls:(south (converted)	m²

NEW ROOM	AREA
Restaurant 2	m²
Trader's stalls + platform	m²

CIRCULATION	AREA
Lift lobby	m²
New circulation core	m²
New circulation	m²
Existing passages/circulation	m²

TOTAL AMOUNT OF ADDITIONAL SPACE PROVIDED	m²
TOTAL FIRST FLOOR	**m²**

SECOND FLOOR

EXISTING ROOM/ AREA	AREA
Restaurant (converted)	m²
Shop (converted)	m²
Live/work unit 1(converted)	m²
Fabric Sales (converted)	m²
Boutique (converted)	m²
Live/work unit 2 (converted)	m²
Furniture store (converted)	m²

NEW ROOM	AREA
Ablutions x2	m²
Restaurant seating	m²
Workshop (scrapbooking, craft + jewellery)	m²
Building manager's office	m²

CIRCULATION	AREA
Existing lift lobby	m²
Existing passages/circulation	m²
New circulation core	m²
New circulation	m²

TOTAL AMOUNT OF ADDITIONAL SPACE PROVIDED	m²
TOTAL SECOND FLOOR	**m²**

THIRD FLOOR

EXISTING ROOM/ AREA	AREA
Office 1 (converted)	m²
Office 2 (converted)	m²
Platform store (converted)	m²
Main exhibition space (converted)	m²
Main exhibition seating (converted)	m²
Shoe designer (converted)	m²
Boutique (converted)	m²
Dvd rentals (converted)	m²
Ablutions (converted)	m²

NEW ROOM	AREA
Exhibition space	m²
Hanging walkway	m²
Store	m²
Workshop	m²
Express print	m²
Gallery box	m²

CIRCULATION	AREA
Existing lift lobby	m²
Existing passages/circulation	m²
New circulation core	m²
New circulation	m²

TOTAL AMOUNT OF ADDITIONAL SPACE PROVIDED	m²
TOTAL THIRD FLOOR	**m²**

FOURTH FLOOR

EXISTING ROOM/ AREA	AREA
Confectionary (converted)	m²
Office 1 (converted)	m²
Tailor (converted)	m²
Atrium (converted)	m²
Seamstress sales (converted)	m²
Shoe shop (converted)	m²
Live/work unit (converted)	m²
Projection room (converted)	m²
Trader's stalls (converted)	m²
Ablutions (converted)	m²

NEW ROOM	AREA
Gallery space	m²
Hanging walkway	m²
Design Café	m²
Weaving workshop	m²
Clothing designer	m²
Sewing workshop	

CIRCULATION	AREA
Existing lift lobby	m²
Existing passages/circulation	m²
New circulation core	m²
New circulation	m²

TOTAL AMOUNT OF ADDITIONAL SPACE PROVIDED	m²
TOTAL FOURTH FLOOR	**m²**

FIFTH FLOOR

EXISTING ROOM/ AREA	AREA
Craft workshop (converted)	m²
Projection room (converted)	m²
Atrium (converted)	m²
Live/work unit (converted)	m²
Office (converted)	m²
Ablutions (converted)	m²

NEW ROOM	AREA
Furniture showroom	m²
Gallery space	m²
Hanging walkway	m²
Design Café	m²
Live/work unit	m²
Office	m²
???	m²

CIRCULATION	AREA
Existing lift lobby	m²
Existing passages/circulation	m²
New circulation core	m²
New circulation	m²

TOTAL AMOUNT OF ADDITIONAL SPACE PROVIDED	m²
TOTAL FIFTH FLOOR	**m²**

SIXTH FLOOR

EXISTING ROOM/ AREA	AREA
Office (converted)	m²
Arts supply (converted)	m²
Art classes (converted)	m²
Atrium (converted)	m²
Office 2 (converted)	m²
Furniture store (converted)	m²
Live/work unit (converted)	m²
Shop 1 (converted)	m²
Shop 2 (converted)	m²
Ablutions (converted)	

NEW ROOM	AREA
Craft workshop	m²
Gallery space	m²
Hanging walkway	m²
Café + seating	m²

CIRCULATION	AREA
Existing lift lobby	m²
Existing passages/circulation	m²
New circulation core	m²
New circulation	m²

TOTAL AMOUNT OF ADDITIONAL SPACE PROVIDED	m²
TOTAL SIXTH FLOOR	**m²**

SEVENTH FLOOR

EXISTING ROOM/ AREA	AREA
Residential unit 1 (reconfigured)	m²
Residential unit 2 (reconfigured)	m²
Residential unit 3 (reconfigured)	m²
Residential unit 4 (reconfigured)	m²
Residential unit 5 (reconfigured)	m²
Residential unit 6 (reconfigured)	m²
Residential unit 7 (reconfigured)	m²
Residential unit 8 (reconfigured)	m²
Residential unit 9 (reconfigured)	m²

NEW ROOM	AREA
Roof terrace 1	m²
Roof terrace 2	m²

CIRCULATION	AREA
Existing lift lobby	m²
Existing passages/circulation	m²
New circulation core	m²
New circulation	m²

TOTAL AMOUNT OF ADDITIONAL SPACE PROVIDED	m²
TOTAL SEVENTH FLOOR	**m²**

ROOF/EIGHTH FLOOR	
EXISTING ROOM/ AREA	**AREA**
Laundry (reconfigured)	m²
Residential unit 2nd floor + roof terrace (reconfigured)	m²
NEW ROOM	**AREA**
Residential unit 1	m²
Residential unit 2	m²
Residential unit 3	
Residential unit 4	
Residential unit 5	
CIRCULATION	**AREA**
Existing lift lobby	m²
Existing passages/circulation	m²
New circulation core	m²
New circulation	m²
TOTAL AMOUNT OF ADDITIONAL SPACE PROVIDED	m²
TOTAL SEVENTH FLOOR	**m²**

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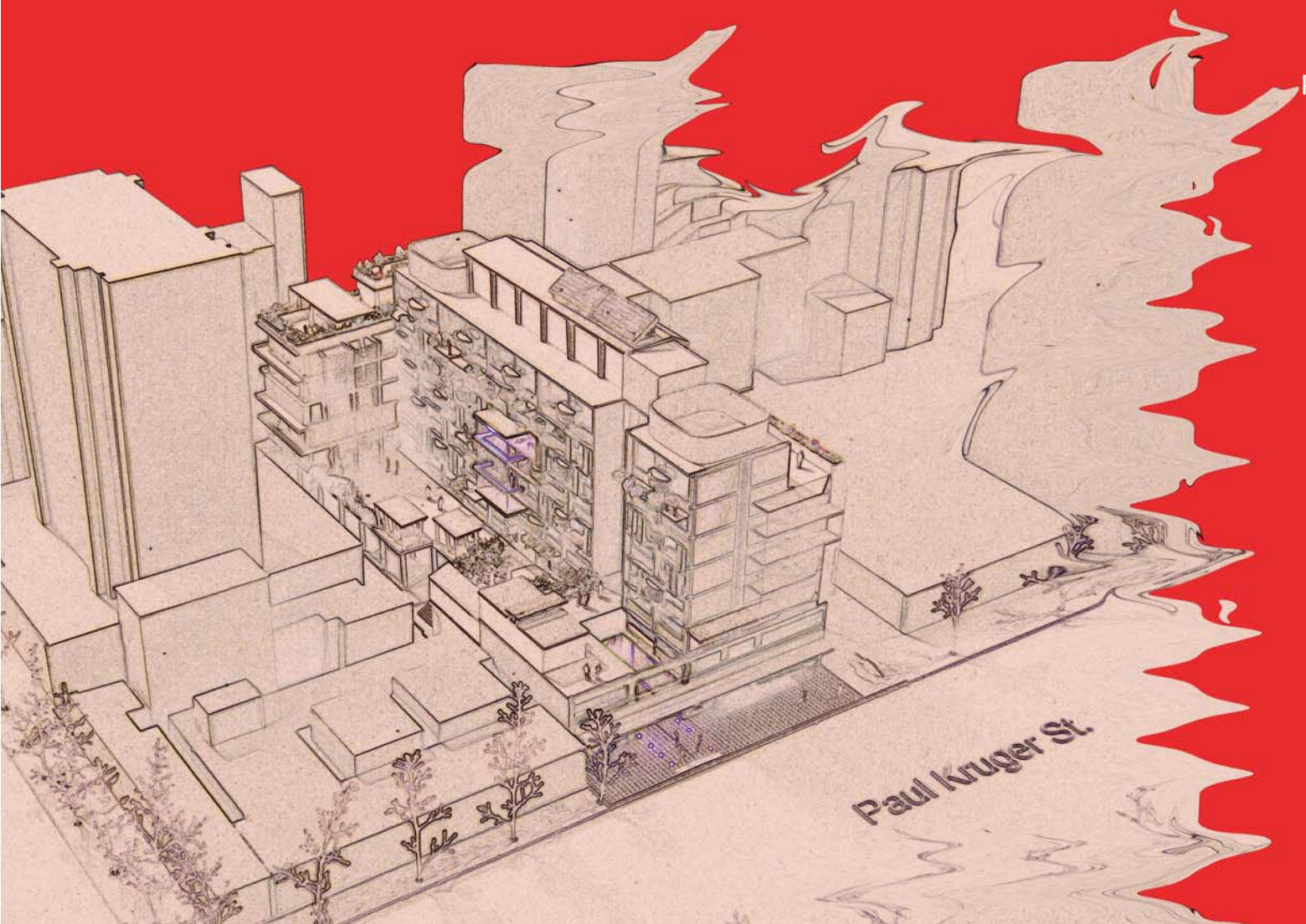
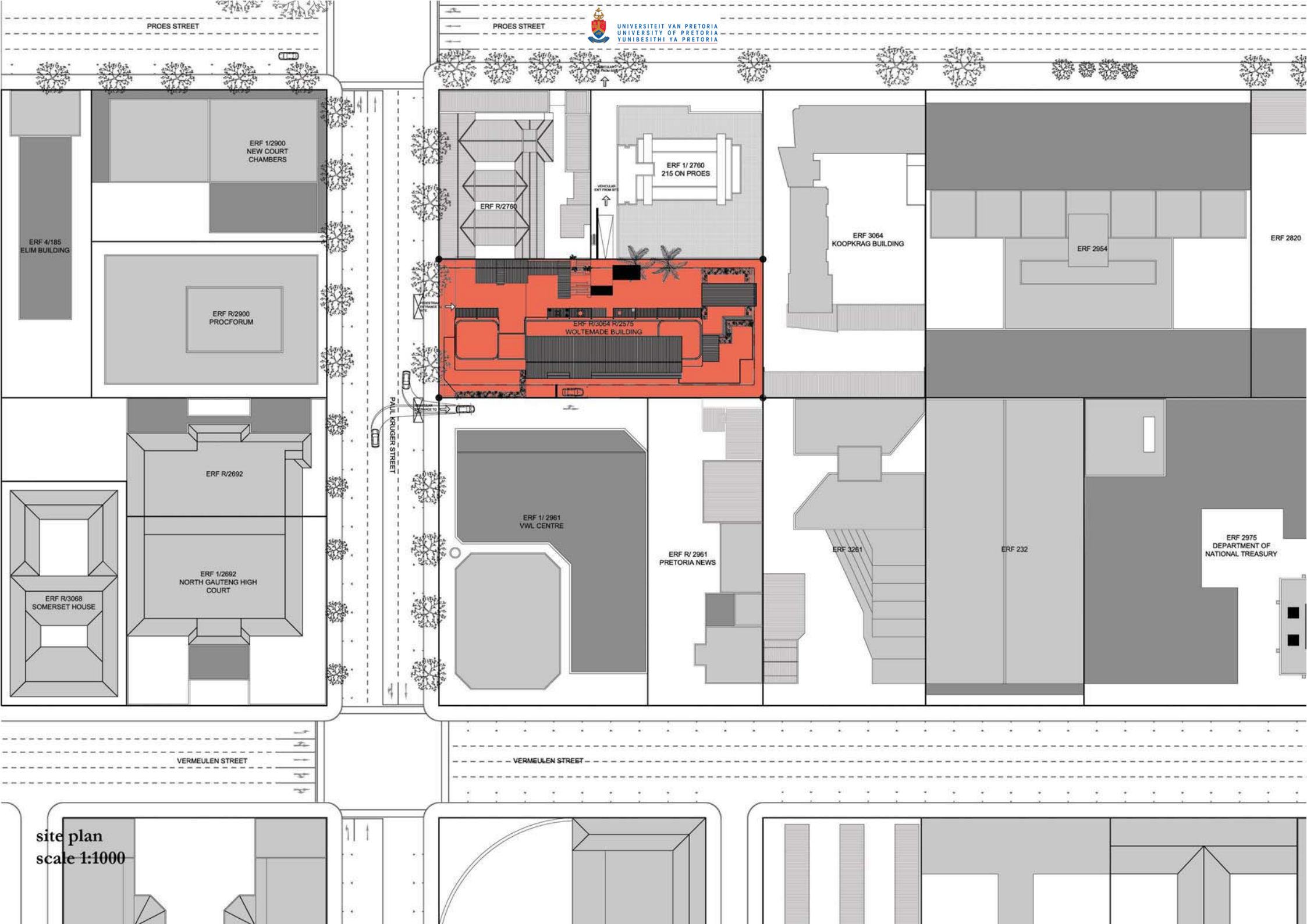
007

DESIGN CONCLUSION + RECOMMENDATIONS

PLANS, SECTIONS + ELEVATIONS **007**-1
DETAILS **007**-2
MODEL **007**-3





site plan
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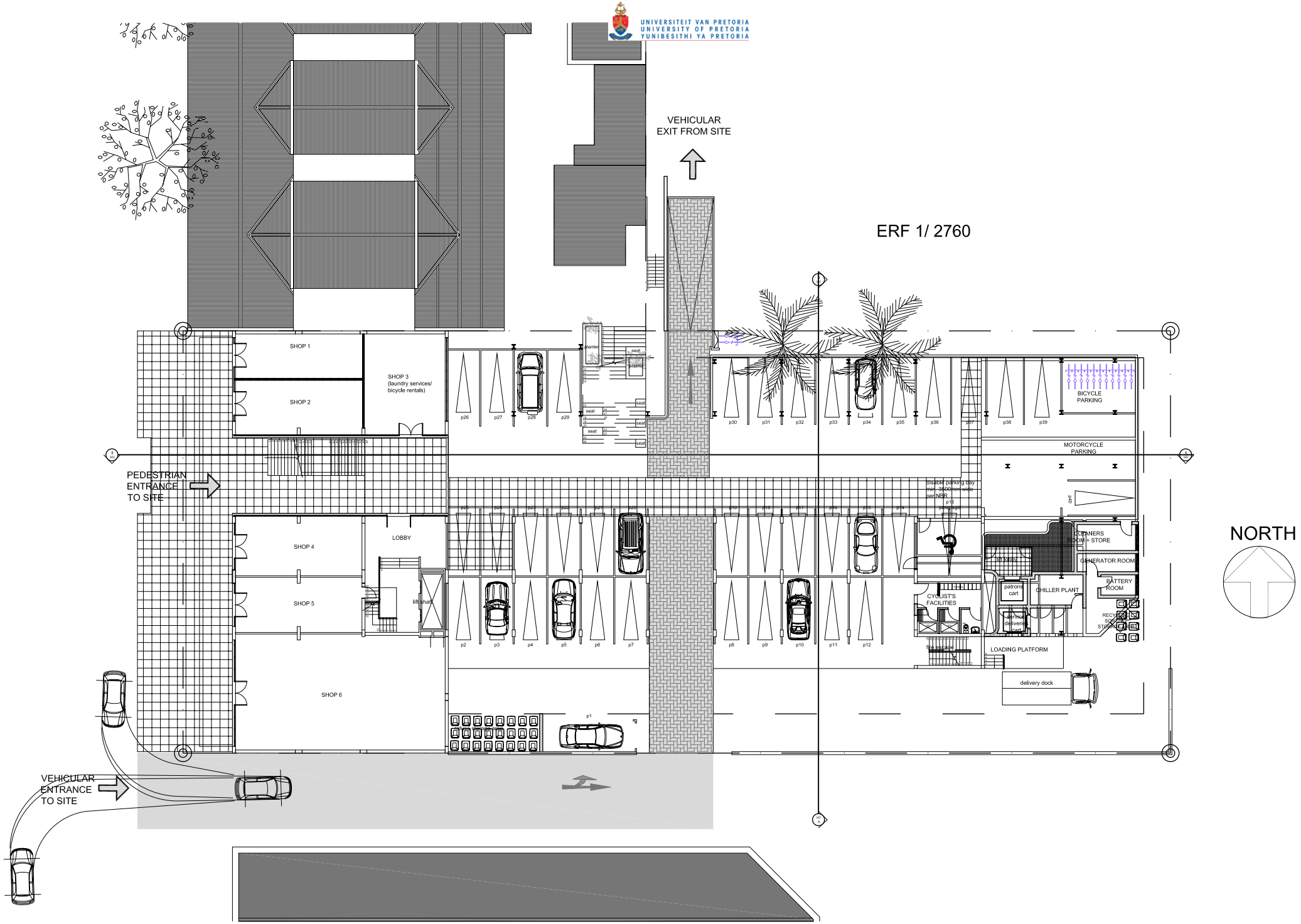
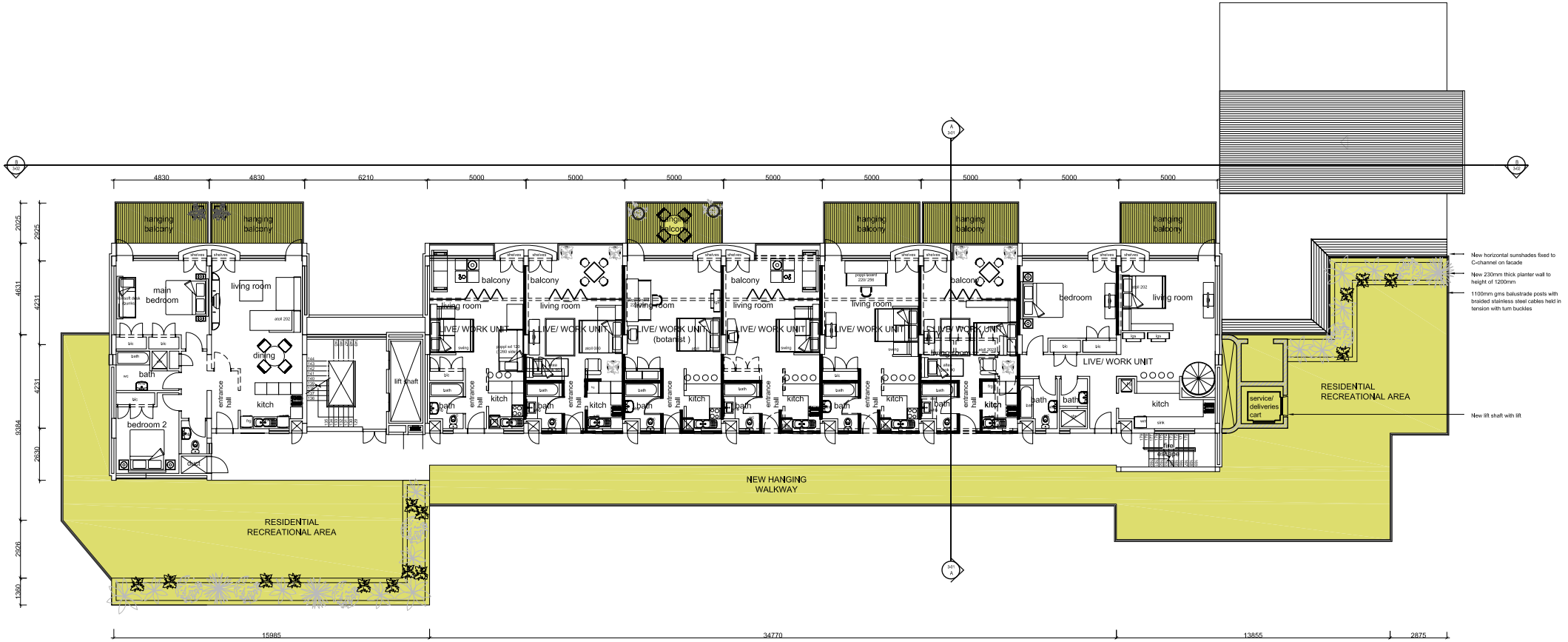


Ground Floor Plan 2010 + scale 1:100



NORTH

Seventh Floor Plan 2010 + scale 1:200

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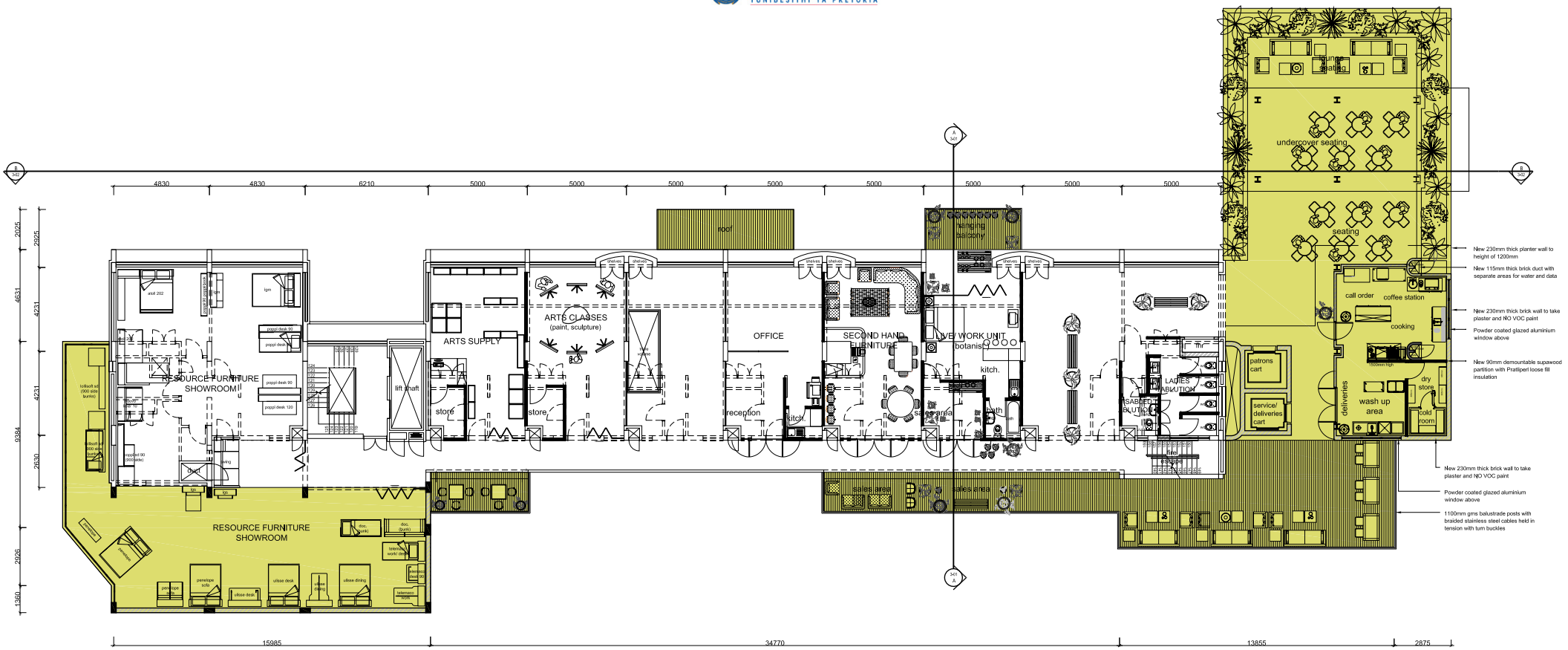

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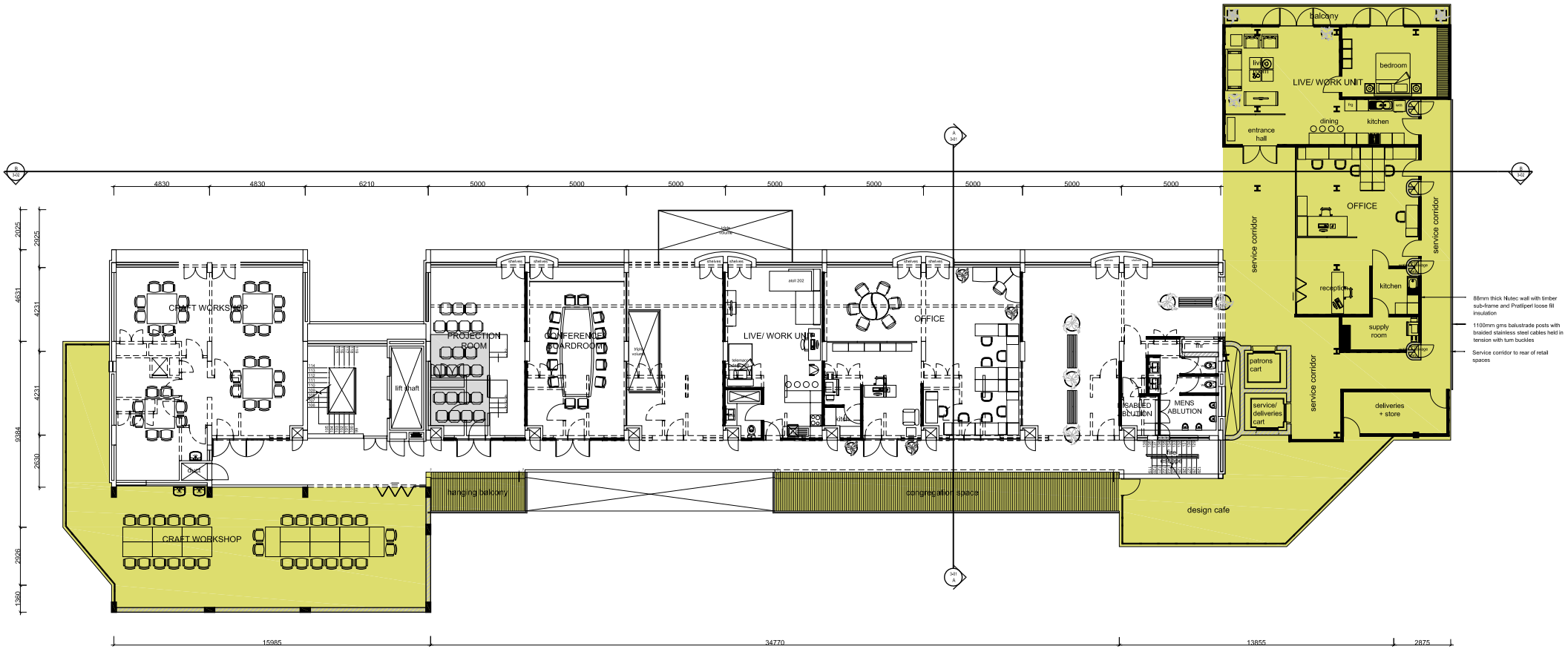
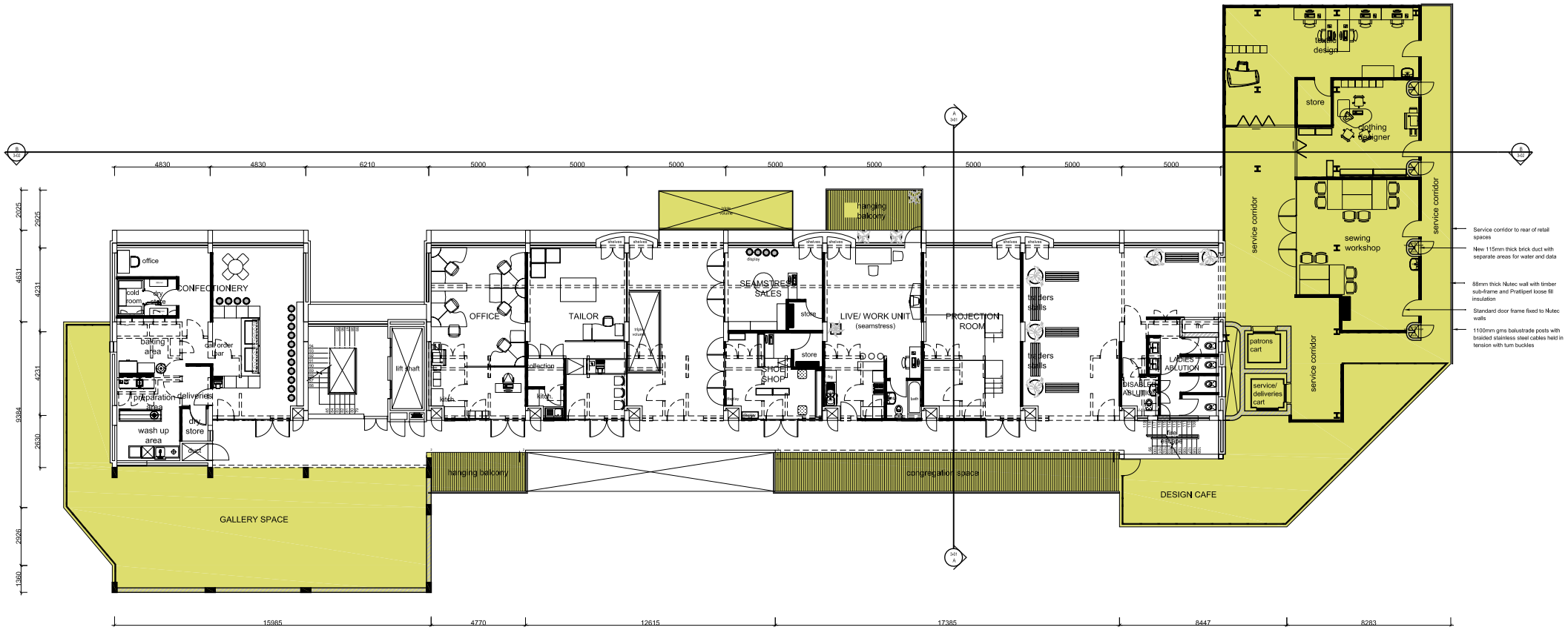
Sixth Floor Plan 2010 + scale 1:200



NORTH

Fifth Floor Plan 2010 + scale 1:200



NORTH

Fourth Floor Plan 2010 + scale 1:200

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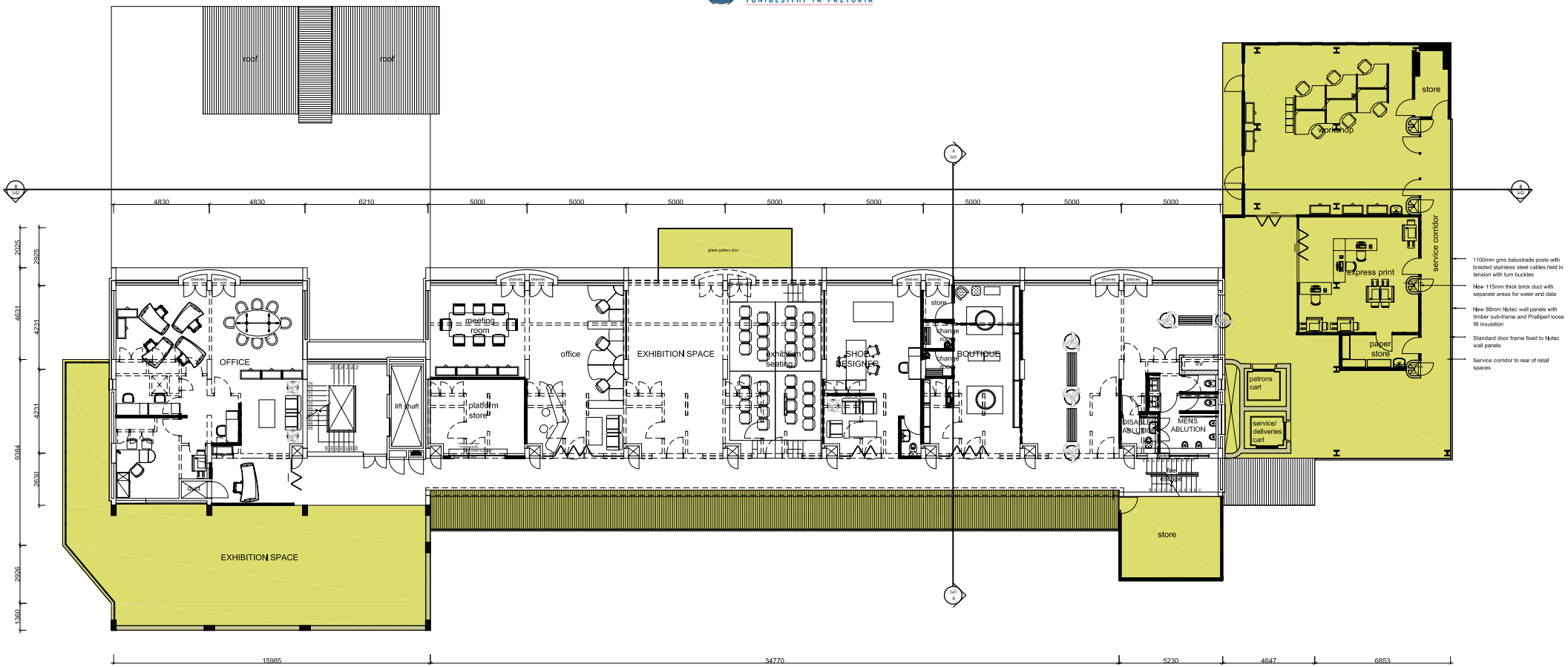
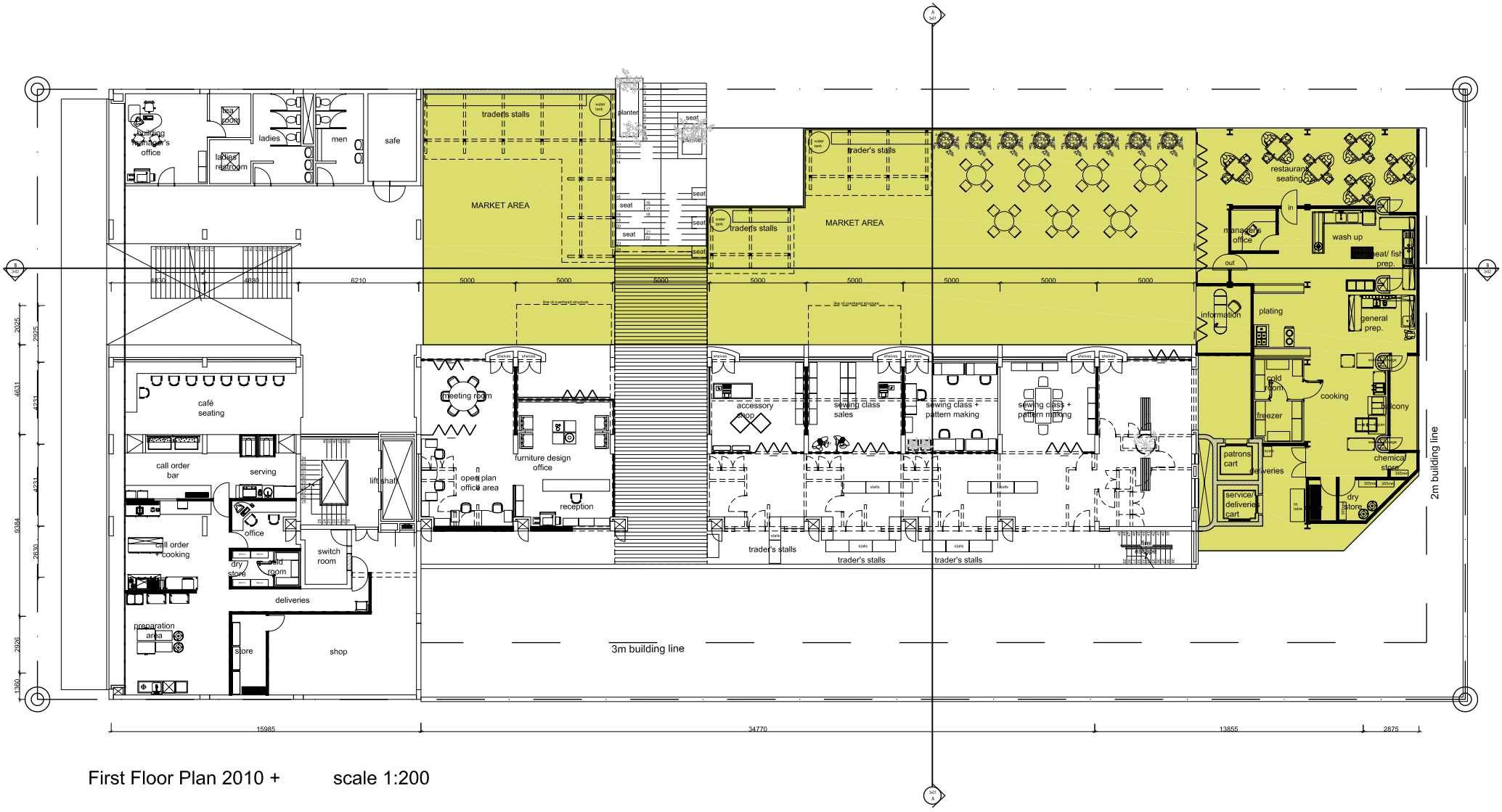


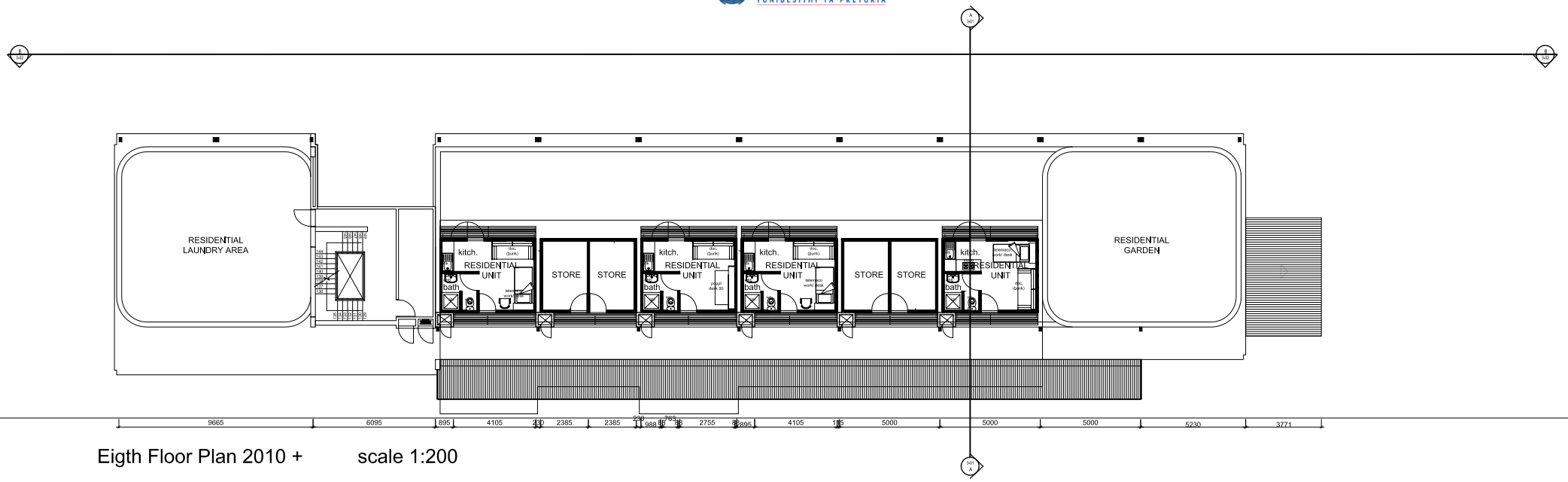
NORTH

Third Floor Plan 2010 + scale 1:200

Second Floor Plan 2010 + scale 1:200



First Floor Plan 2010 + scale 1:200



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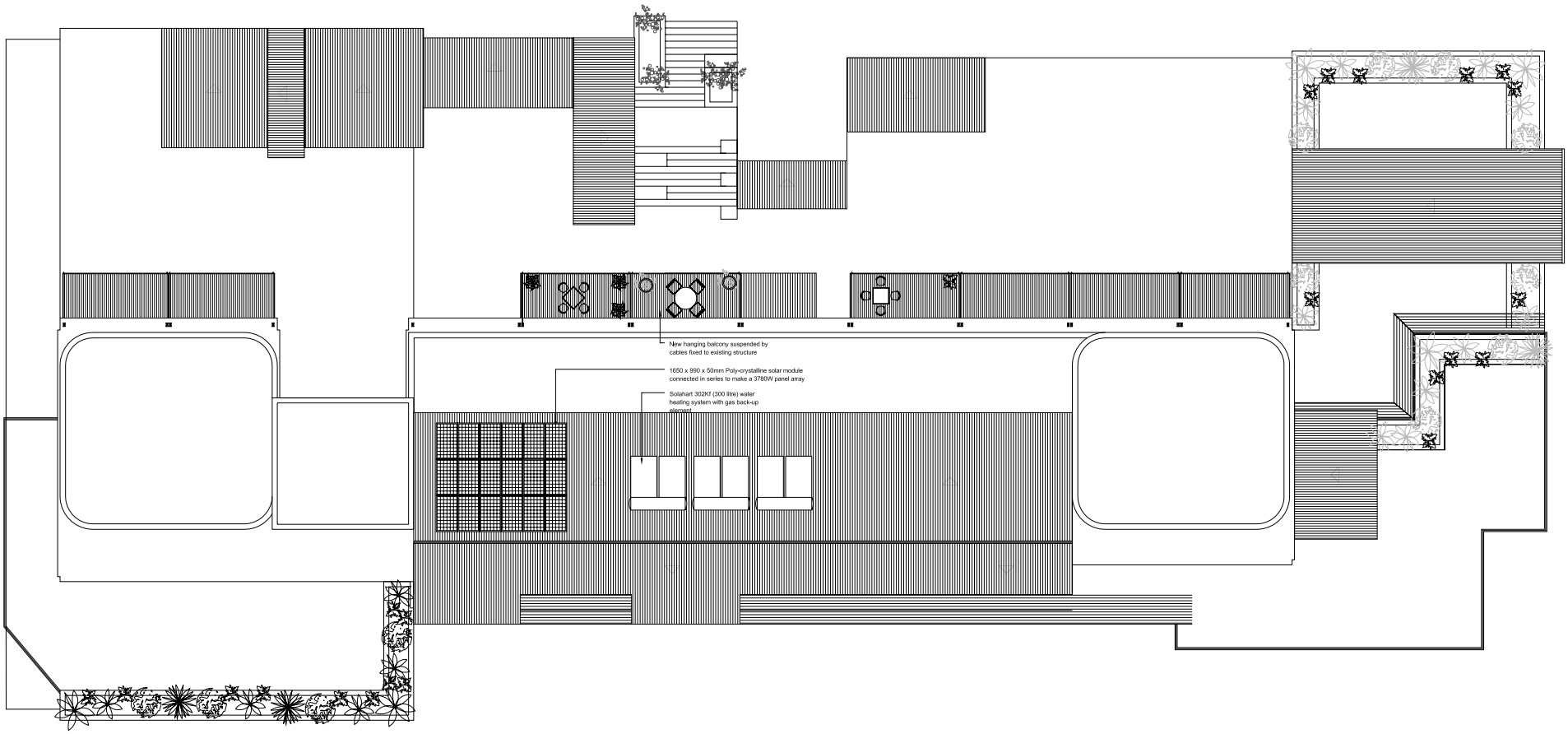


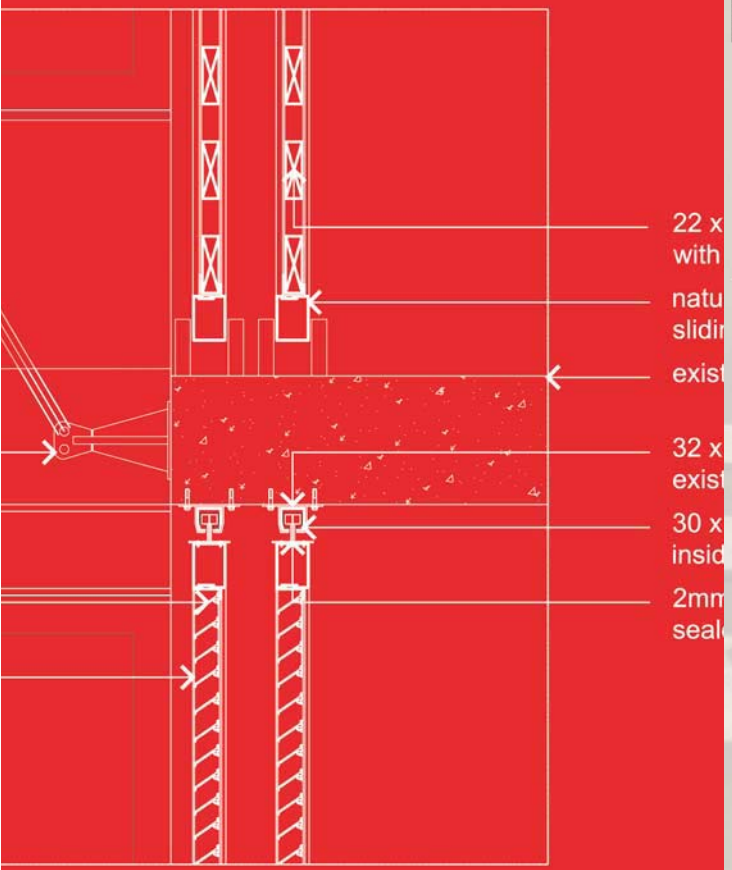

Solahart 300 litre water heating system with gas back-up element, size 2475 x 2480 x 510mm high fixed on 20 degrees hot dipped galvanised mild steel roof stand. Units positioned to face north
Collector plate of water heating system
Klip-Lok 700 sheeting with globalcoat to both sides. Colour: Dove grey
75 x 50 mm x 3.14kg/m cold-formed lipped channel purlins spaced at 750mm centres
IPE AA 180 pre-fabricated steel frame structure bolted to existing concrete slab
Sisalation fixed to 30 x70mm timber frame spaced at 600mm centres in horizontal and vertical plane. Insulation placed poured inside frame
2700 x1200 x 9mm Nutec medium density flat sheet walls with
18mm Nutec HD floor boards, size 2400 x900mm x100.6kg/m, fixed to timber sub-frame with self taping screws with countersunk head, 30 x 5.5mm spaced at maximum 150mm centres with sisalation below
50 x 150mm timber floor joists spaced at 600mm centres fixed to
114 38mm timber sole plate
mm timber bearer beam at
residential unit
refer to DETAIL 01
residential unit
walkway
refer to DETAIL 02
refer to DETAIL 03
live/work unit
walkway
office
walkway
refer to DETAIL 04
projection room
walkway
boutique
gallery space
furniture store
walkway
sewing classes
market space
parking
SITE BOUNDARY
BUILDING LINE
building line
site boundary

section A-A


service passage
OFFICE
circulation corridor
service passage
CLOTHING DESIGNER
circulation corridor
refer to DETAIL 05
refer to DETAIL 08
service passage
WORKSHOP (craft)
balcony
service passage
WORKSHOP (scrapbooking, craft + jewellery
refer to DETAIL 07
restaurant kitchen
plating
pay station
DESIGN DEPOT
DESIGN DEPOT
DESIGN DEPOT

section B-B

007 - 2 DETAILS



ging sliding screen

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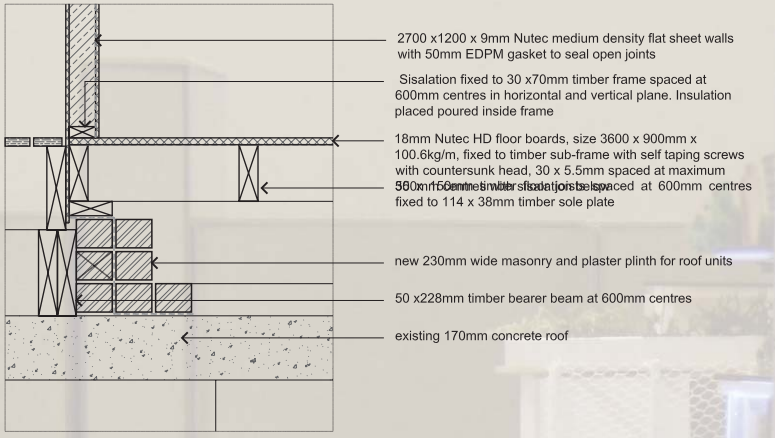
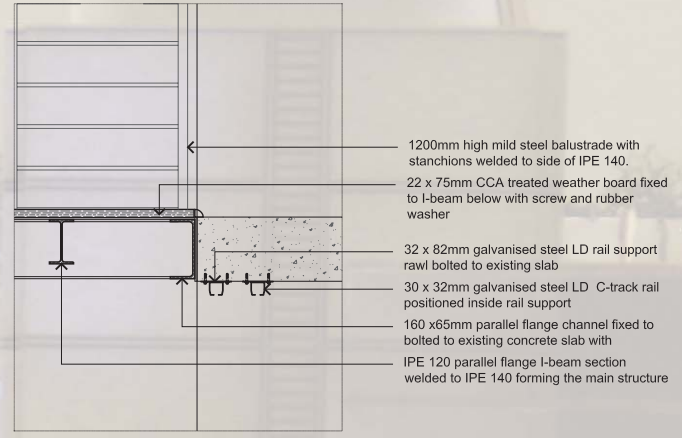
DETAIL 01



base condition of new roof units

scale 1:20

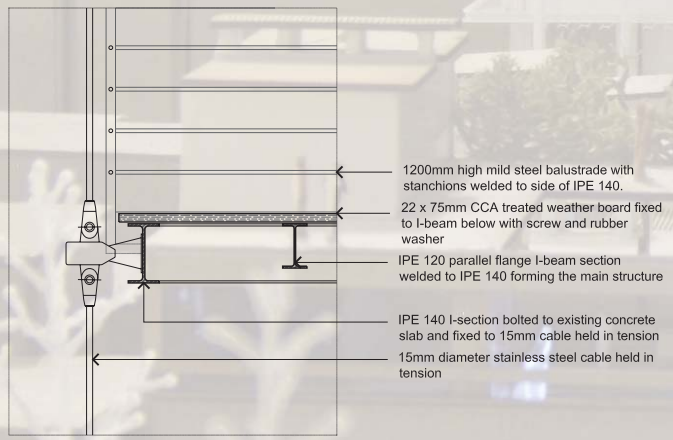
refer to DETAIL 03



connection between hanging balcony + existing slab

scale 1:20

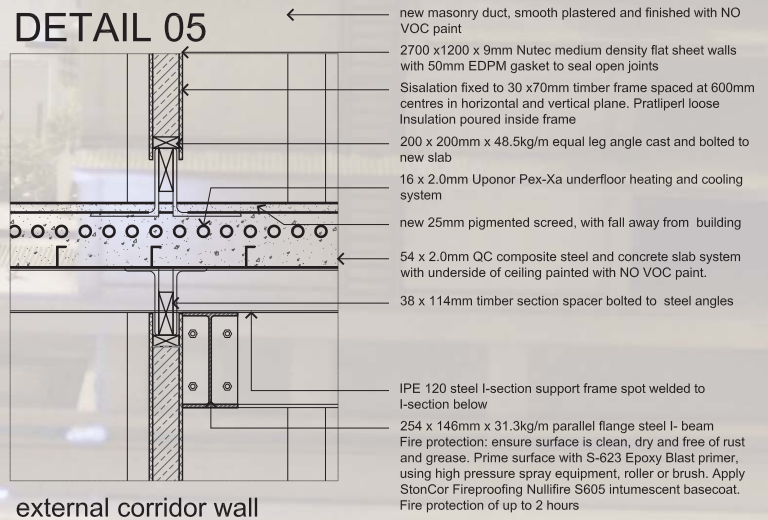
DETAIL 02



edge condition of hanging balconies

scale 1:20

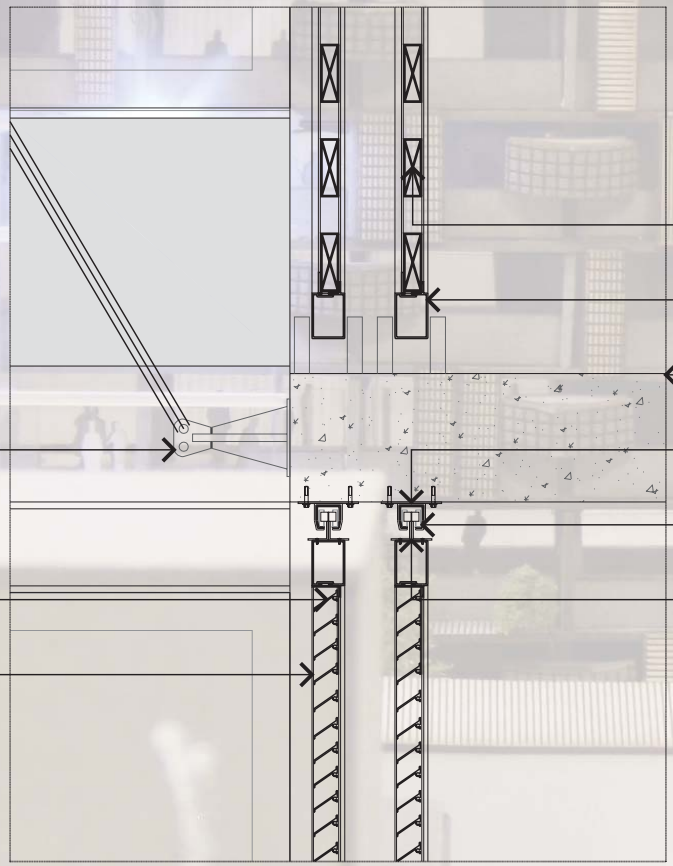
DETAIL 05



external corridor wall

scale 1:20

DETAIL 04



32 x 82mm galvanised steel LD rail support

ɔwder coated louvres screwed to aluminium sub frame and siliconed to door frame

ɹide hanging naturally anodised aluminium door frame

22 x 75mm CCA treated timber section sanded and painted with linseed oil

naturally anodised aluminium hanging door frame forming sliding screen

existing 170mm concrete floor slab

32 x 82mm galvanised steel LD rail support rawl bolted to existing slab

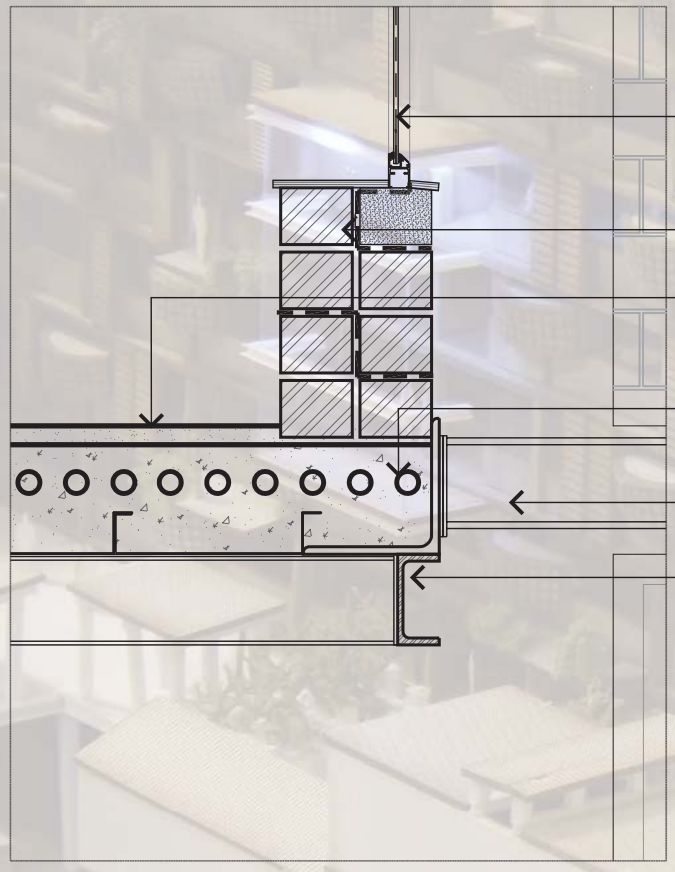
30 x 32mm galvanised steel LD C-track rail positioned inside rail support

2mm thick galvanised steel sliding C-track carrier with sealed ball bearings

hanging sliding screen

scale 1:10

DETAIL 06



naturally anodised aluminium framed window with dpc below cill

new 230mm masonry wall with plaster and NO VOC paint

new 25mm pigmented screed on 54 x 2.0mm QC composite steel and concrete slab system with underside of ceiling painted with NO VOC paint.

16 x 2.0mm Uponor Pex-Xa underfloor heating and cooling system

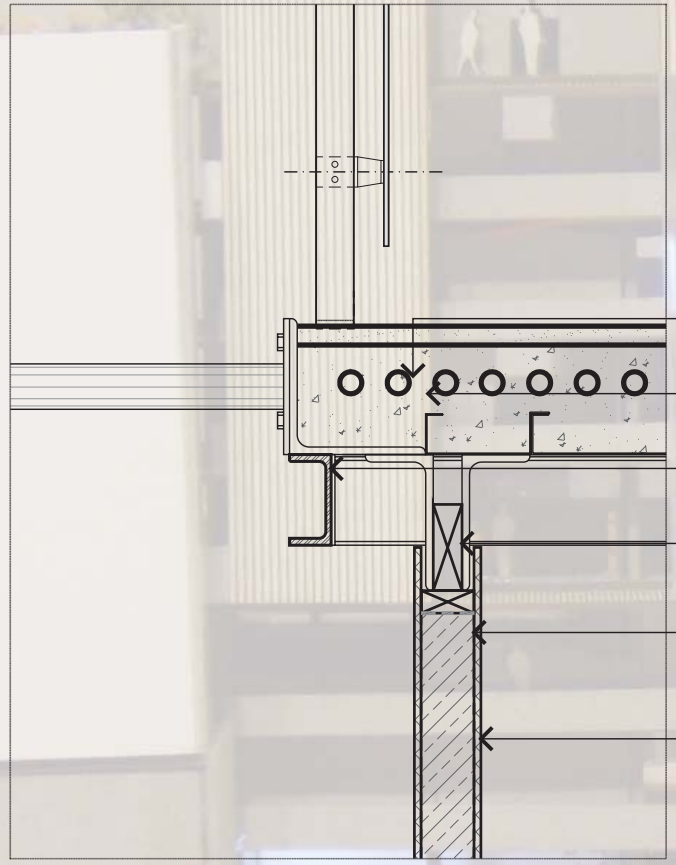
IPE 120 steel I-section frame with 50 x 50mm channel and screening element

120 x 55mm x 13.3kg/m steel channel fixed to ends of I-sections. Fire Protection: ensure surface is clean, dry and free of rust or grease. Prime surface with S-623 Epoxy Blast primer applied to a dry film thickness of 94 microns per coat, using high pressure spray equipment, roller or brush. Apply StonCor Fireproofing Nullifire S605 intumescent basecoat . Fire protection of up to 2 hours

edge condition of slab

scale 1:10

DETAIL 07



25mm pigmented screed with fall away from building

16 x 2.0mm Uponor Pex-Xa underfloor heating and cooling system

120 x 55mm x 13.3kg/m steel channel fixed to ends of I-sections.

38 x 114mm timber section spacer bolted to steel angles

Sisalation fixed to 30 x70mm timber frame spaced at 600mm centres in horizontal and vertical plane. Pratliperl loose Insulation poured inside frame

2700 x1200 x 9mm Nutec medium density flat sheet walls with 50mm EDPM gasket to seal open joints

edge condition of slab at service corridor

scale 1:10

007 - 3 MODEL

Fig 007.1: The western view of the 'new Woltemade building looking from between the New Law Chambers and the Procforum buildings

Fig 007.2: A closer look at the western façade **[re]**veals portions of the new Intervention C (back left) and Intervention A (to the right)

The final model of the Woltemade building was constructed using two different colours of building material. The grey cardboard was used to demonstrate the context of surrounding buildings and the existing context on the Woltemade site. White elements (except the trees) are used to illustrate the location of the various new interventions.

The new interventions tend to be light and speak a different architectural language when compared to the original structure. This variation in colour and materials ensures that new elements are read differently .

New interventions delicately wrap themselves around the host building always being mindful to expose the edges.

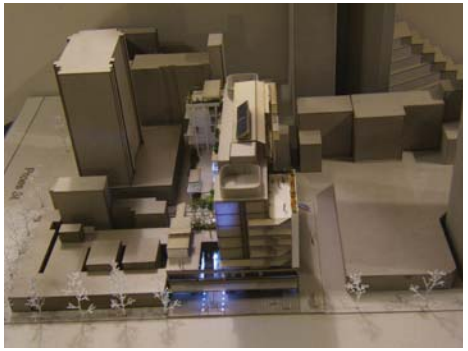


Fig 007.3: A street perspective from the west looking down at the Woltemade building

Fig 007.4: The new illuminated glass gallery box in the centre of the façade

Fig 007.5: The new interventions are indicated with white triplex cardboard

Fig 007.6: The northern façade of the Woltemade building has undergone a number of changes, however they are of a sensitive nature and are **[re]**versable

Fig 007.7: The southern façade of the building where Intervention B takes place. This intervention consists of hanging walkways with an extension of roofing material to define internal spaces

Fig 007.8: Intervention C, on the east, consists of permanent concrete shuttering with light infill panels.

Fig 007.9: Roofs are used to accommodate additional programs and allow for planting

Fig 007.10: The south east corner of the building where the majority of the new bulk is located

Fig 007.11: Translucent material is used on the façade of the hanging structure to indicate the location of the glass gallery box. White and translucent glass panels are incorporated into balustrades along the walkways

Fig 007.12: Intervention C + D are evident in this picture as is the glass gallery box. Intervention C (to the left) houses mixed-use activities. Intervention D, the platform on first floor, allows for a new public area without disturbing the existing services of the ground floor.

Fig 007.13: The southern façade depicts the wrapping of the various interventions around the host building. Edges of the existing are exposed

Fig 007.14: The bottom edge of the building is left exposed below the wrapping structure of Intervention B

Fig 007.15: The building as seen from Vermeulen Street

008 LIST OF SOURCES + REFERENCES

008 LIST OF SOURCES + REFERENCES

A

- AC/DC DYNAMICS. 2011/2012. *Electrical & Electronics, Distributors & Manufacturers.*Johannesburg
- Antalis. n.d. *Coated and Packaging Product Specifications*. Booklet. Available from Paper Smith and Son Merchant
- ArcelorMittal. n.d. *Arval Imagine: New architectural and technical solutions*. Brochure. Available from ArcelorMittal representative
- Architecture Photography: Dee Charles and Wyly Theatre. n.d. digital photograph. Available from http://archdaily.com/wyly-theatre-02-photo-by-iwan-baan
- ATTPAC: Wyly goes through its paces. 2009. digital photograph. Available from http:// artsblog.dallasnews.com/wyly theatre. (Accessed 05 August 2010)

B

- BARRANGER, M. 1986. *Theatre: Away of Seeing - Second Edition.* Belmont, California: Wordsworth Publishing Company.
- Big & Green: Toward Sustainable Architecture in the 21st Century 2003. Website. Available from http://dutchdesignevents.com [Accessed: 9 March 2010]
- BRAND, S. 1994. *How Buildings Learn: What happens after they're built*. New York: Penguin Books.

C

- CIRIA. 1998. *Waste Minimisation and Recycling in Construction: Design Manual – Special Publication 134*. London: CIRIA.
- CIRIA. 1999. *Waste Minimisation and Recycling in Construction: Technical Review – Project report 28*. London: The Basingstroke Press (75) Ltd.
- Cube Shaped House. 2008. Digital photograph. Available from http://3d.designcommunity.com/f_pessac. [Accessed 29 July 2010]
- COHEN. R. 1981. *Theatre: Brief Edition.* Irvine, California: Mayfield Publishing Company.
- CURTIS FINE PAPERS. n.d. *The Green Glossary.* Brochure (p 3-7)

D

- Dee and Charles Wyly Theatre/REX/OMA. n.d. digital photograph. Available from http://milimet.com/ 2371_2_wyly-lobby (Accessed 05 August 2010)
- Dee and Charles Wyly Theatre/REX/OMA. n.d. digital photograph. Available from http://milimet.com/ 2603_2_26-wyly-performance-hall (Accessed 05 August 2010)
- Dee and Charles Wyly Theatre/REX/OMA. n.d. digital photograph. Available from http://milimet.com/ 1255525676-2372-2-wyly-891x900. (Accessed 21 October 2010)
- Dee and Charles Wyly Theatre/REX/OMA. n.d. digital photograph. Available from http://www.archdaily.com/ 1255525764-wyly-theatre-02-photo-by-iwan-baan. (Accessed 05 August 2010)
- Dee and Charles Wyly Theatre/REX/OMA. n.d. digital photograph. Available from http://www.archdaily.com/2605_2_30-wyly-rooftop-terrace. (Accessed 05 August 2010)
- DIGEST OF SOUTH AFRICAN ARCHITECTURE. 2007/8. *36m² Challenge*. 2007/8 *Digest of South African Architecture*: Volume 12, p 60-62.

E

- Enough Arts; More District. n.d. digital photograpg. Available from http://www.architectmagazine.com/ tmpD772.tmp_tcm20-283196(Acessed 21 October 2010)

G

- GIOVANNI, J. 2003. *Adaptive reuse: Beyond Bricolage*. Architectural Record: July Volume (p 135-145)
- Global Roofing Solutions: Klip-lok 406. n.d. Technical brochure. Available from Brownbuilt
- Global Roofing Solutions: Klip-lok 700. n.d. Technical brochure. Available from Brownbuilt
- GOULET, P. et al. 1991. *Team Zoo: Buildings and Projects 1971-1990.* New York: Rizzoli International Publications.
- GRIPPA CURRENT SUPPLY SYSTEMS. 2008. *Festoon Systems, IBR Cable carrier Systems, Copper Head Rails.* South Africa

H

- *How Buildings Learn: What happens after they're built: episode 1-6. 1994*, video recording, BBC, New York. Featuring Stewart Brand.

J

- JACOBS, J. 1994. *The Death and Life of Great American Cities*. New York: Penguin Books.
- JORDAN, V. 1980. *Accoustical Design of Concert Halls and Theatres: A personal account.* London: Applied Sciences Publishers Ltd.

K

- KAUFMANN, M. and REMICK, C. 2009. *Prefab Green*. Layton,Utah: Gibbs Smith
- KERR, W. 2004. *Adaptive Reuse - Preserving our Past, Building our Future*. Australian Government: Department of the Environment and Heritage.
- KROLL, L. 1986. *The Architecture of Complexity*. Great Britain: B.T. Batsford Ltd.
- KROLL, L. 1988. *Lucien Kroll: Buildings and Projects.London:* Thames and Hudson Ltd.

L

- LE ROUX ed and BOTES. 1993. *Plekke en Geboue: Volume Three*. Pretoria: Stadsraad van Pretoria.

P

- PAREDES, C. 2006. *Industrial Chic - Reconverting Spaces*. Italy: Gribaudo
- Pessac, France: Quartiers Modernes Fruges. 2008. Blog. Available from http: http:// incrementalhouse.blogspot.com [Accessed: 29 July 2010]
- PORTER, T. 2006. *Archispeak: An illustrated guide to architectural terms*. New York: Spon Press.

R

- Radiant Lighting and Electrical. 2008. *Catalogue2008: Edition One. Catalogue*. South Africa: Radiant Group. Also available from http://www.radiant.co.za

- Radiant Lighting and Electrical. 2009. *Light Collection 2009: Edition One*. Catalogue. South Africa: Radiant Group. Also available from http://www.radiant.co.za
- Regent Lighting Solutions - Product Guide: First Edition. n.d. Catalogue. Also available from http://www.regentlight.co.za

S

- SCOTT, F. 2008. *On Altering Architecture*. New York: Routledge.
- SELF, D. 1981. *The Drama & Theatre Arts Course Book.* london: Macmillan Education Ltd.
- SCHUBERT, H. 1971. *Moderner Theaterbou.* Stuttgart: Karl Krämer Verlag Stuttgart/ Bern Slot Box House. n.d. digital photograph. website. Available from http:// aedesign.files.wordpress.com [Accessed: 29 July 2010]
- SMITH, A. and O'LOUGHLIN, J. ed. n.d. *Odhams Dictionary of the English Language.* London: Odhams Press Limited.

T

- Theatre Chairs by Studio Arne Quinze. 2009. digital photograph. website. Available from http:// curatedmag.com/ moroso-wyly-theatre-front

W

- Water Cube. n.d. digital photograph. website. Available from http://www.archdaily.com/50092/the-watre-cube-mvrdv/. [Accessed: 9 March 2010]

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UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

009

APPENDIX

EXISTING BUILDING'S DOCUMENTATION **009**-1
URBAN FRAMEWORK **009**-2

009 - **1 EXISTING BUILDING'S**
DOCUMENTATION

CONSOLIDATED TITLE
DIAGRAM
Section 41, Act No., 9 of 1927

Description of Beacons

S.G. No. A. 4049

Approved

for Surveyor-General
19-7-1951

SIDES Cape Feet		ANGLES	
AB	117·00	A	90°00'00
BC	220·00	B	90°00'0
CD	234·00	C	90°00'0
DE	100·00	D	90°00'0
EF	117·00	E	90°00'0
FA	120·00	F	270°00'0

✱ Now known as Erf No. 3063

Scale 1 : 1250

The figure A B C D E F represents 37440 Square Feet of land being ✱ CONSOLIDATED ERF NO.188 in the Township of P R E T O R I A and comprises:—

1. THE FIGURE A B C G F REPRESENTING ERF NO.188, IN EXTENT 178 SQ.ROODS 108 SQUARE FEET. VIDE DIAGRAM S.G.NO. ~~[illegible]~~. DEED OF TRANSFER NO. ~~[illegible]~~. 1791/1875.

2. THE FIGURE E F G D REPRESENTING THE REMAINDER OF PORTION 1 OF ERF NO. 187 IN EXTENT 81 SQUARE ROODS 36 SQUARE FEET. VIDE DIAGRAM S.G.NO. DEED OF TRANSFER NO. 1110/1877.

situate in the District of PRETORIA Transvaal Province

Compiled in MAY, 1951 by me

Land Surveyor.

This diagram is annexed to Transfer Deed No. 10929/54 dated in favour of

Registrar of Deeds

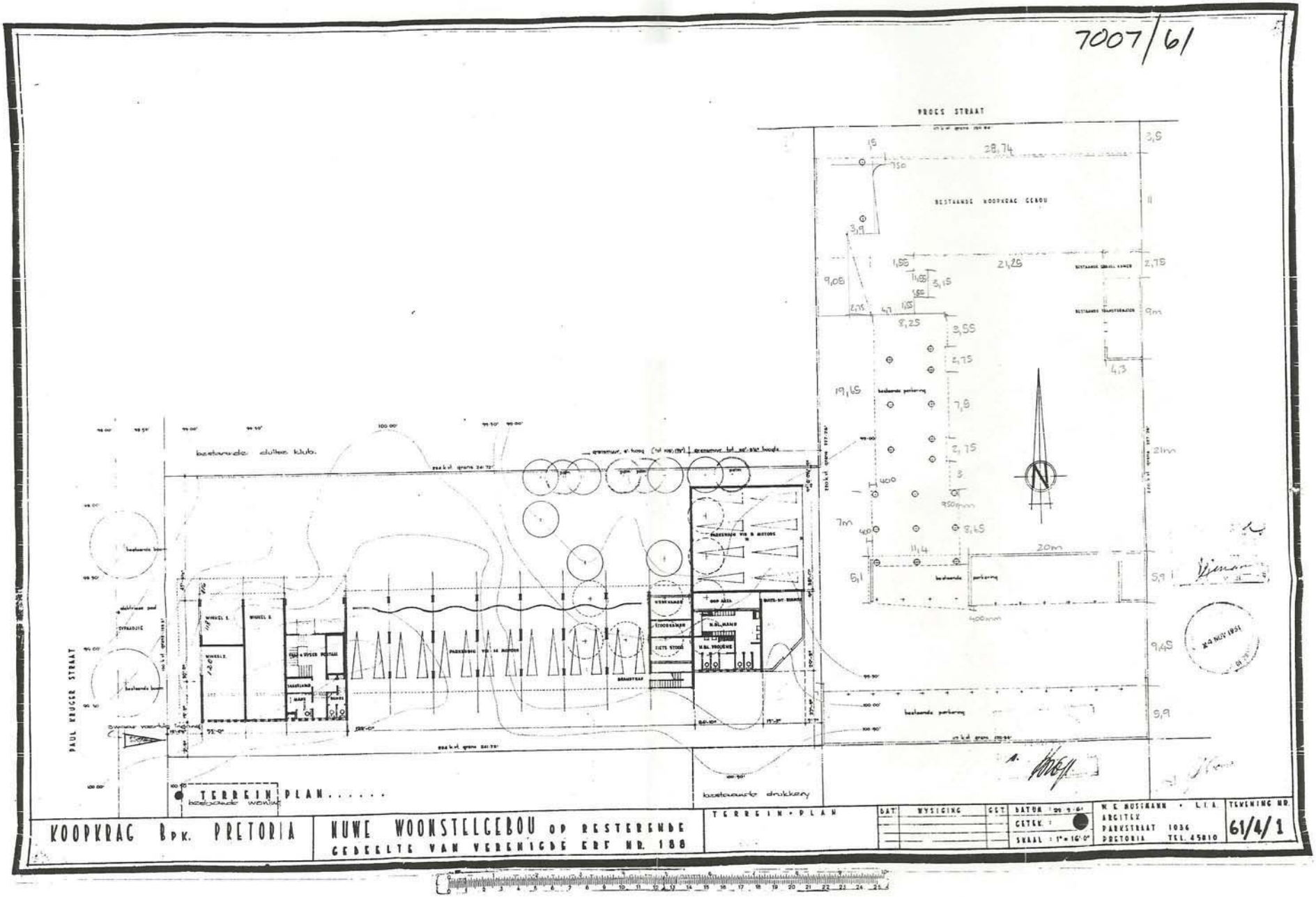
The existing diagrams are as tabulated above

File No. SG Y/7
General Plan No. 2/5
Survey Records No.

CITY OF TSHWANE CITY PLANNING 2010-05-05 GEOMATICS METROPOLITAN MUNICIPALITY

Scale: 1:39375

7007/61

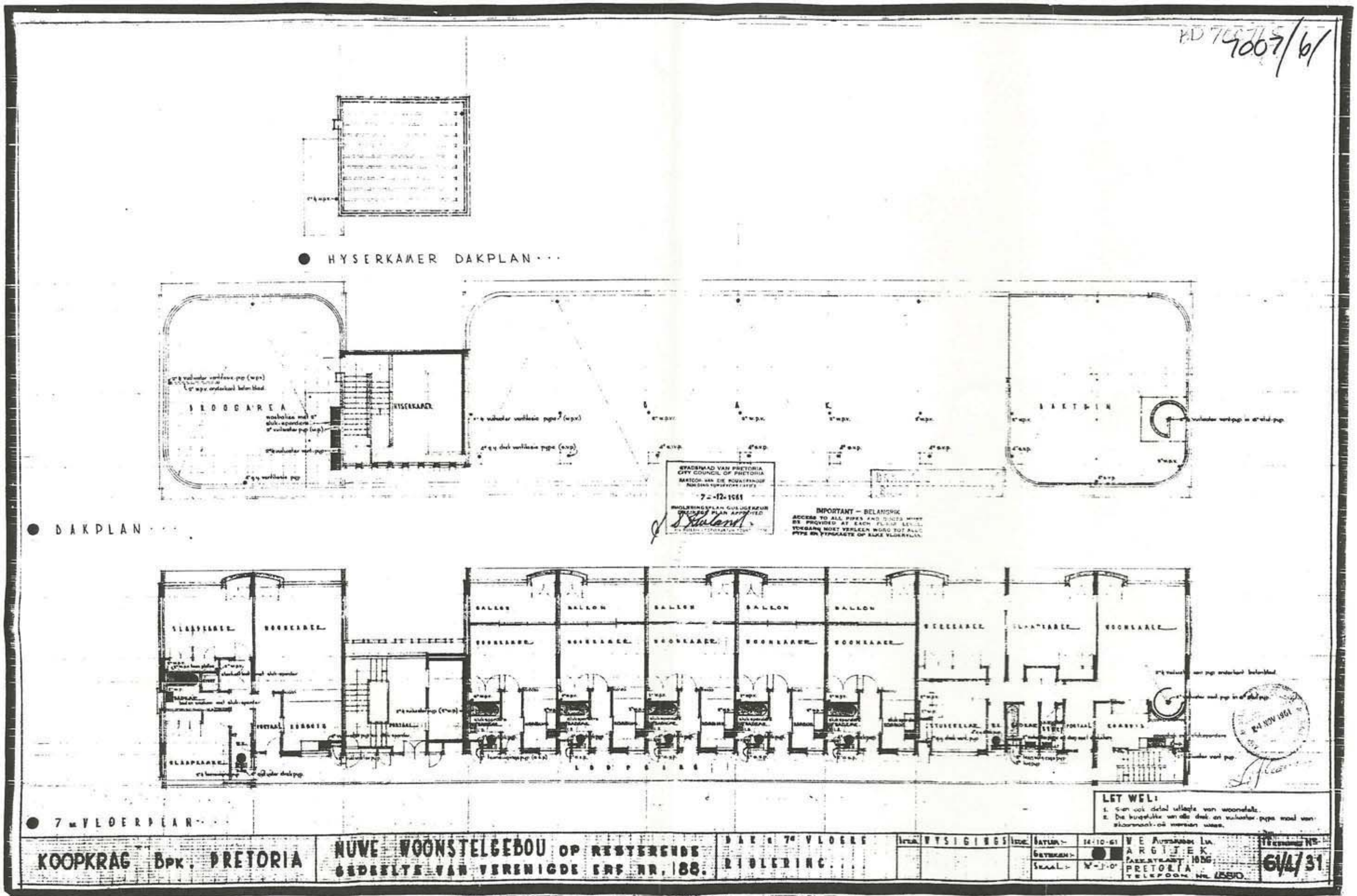


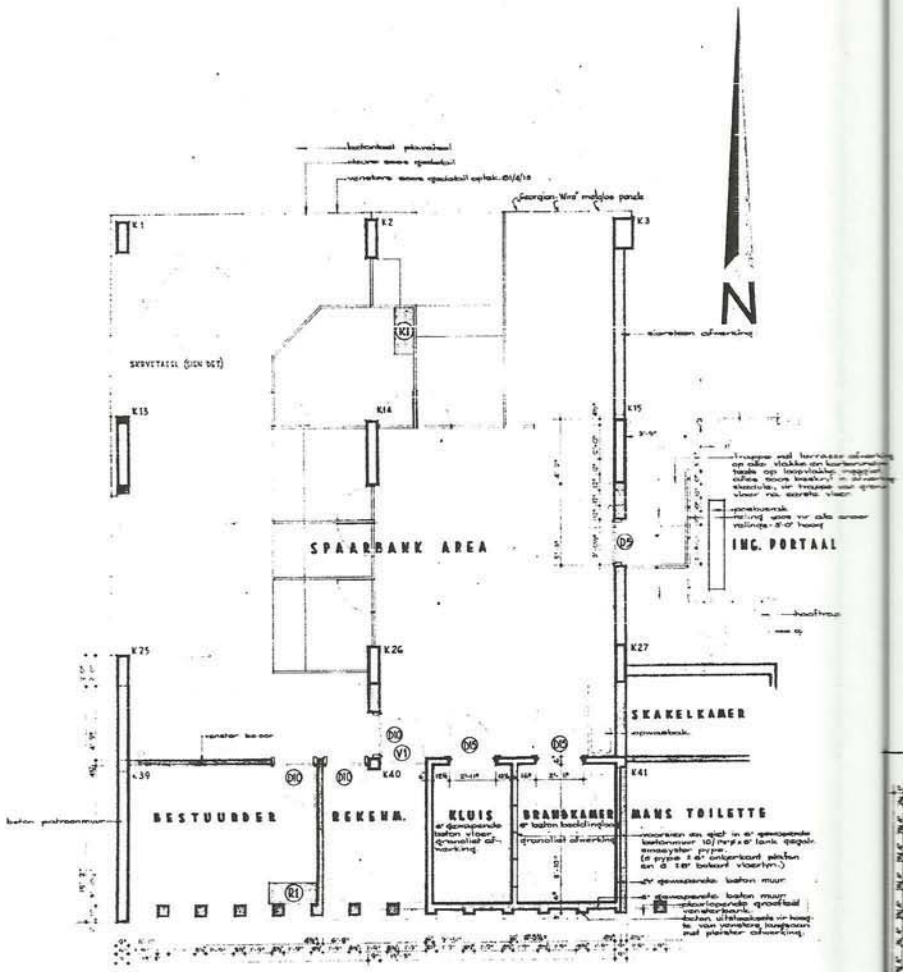
KOOPKRAG Bpk. PRETORIA	NUWE WOONSTELGEBOU OP RESTERENDE GEDEELTE VAN VERENIGDE ERF NR. 188	TERREIN-PLAN	DAT. WYSIGING GET. DATUM: 29-9-61 GETEK.: SKAAL: 1"=16'-0"

W. E. HUSMANN · L.I.A. ARGITEK PARKSTRAAT 1036 PRETORIA TEL. 45810

TEKENING NR. 61/4/1

MICROBOX





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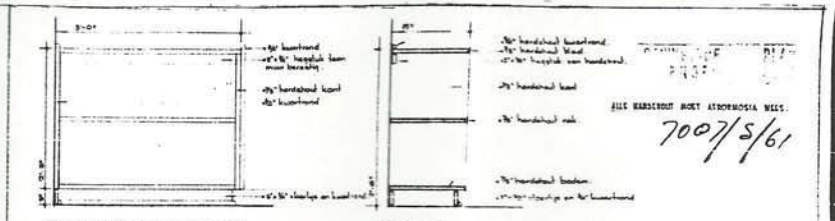

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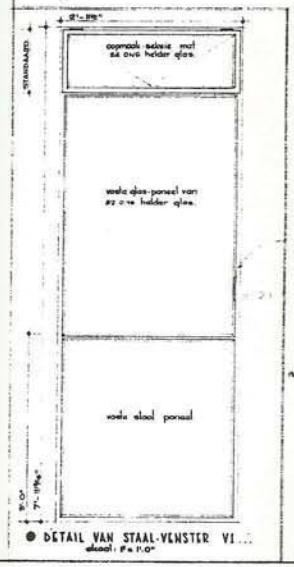

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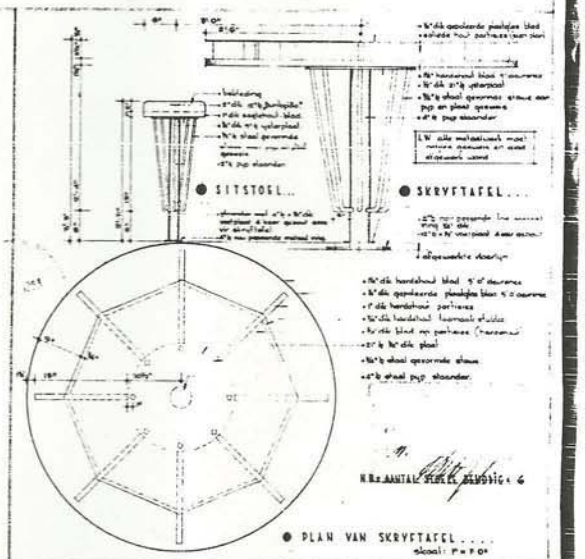

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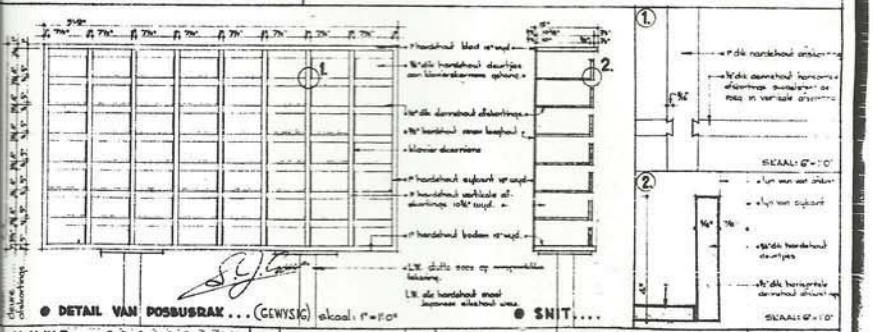

● DETAIL VAN POSBUSRAK... (GEWYSIG) skaal: 1" = 1'-0" ● SNIT.... SKAAL: 6" = 1'-0"

KOOPKRAG Bpk. PRETORIA	NUWE WOONSTELGEBOU OP RESTERENDE GEDEELTE VAN VERENIGDE ERF NR. 188	NUWE SPAARBANK	BAT. WYSIGING GET. DATUM : GETEK : SKAAL :

W. E. MUSSMANN • L I A
ARGITEK
PARKSTRAAT 103C PTA.
TEL. 74-5810 • PRETORIA

TEKENING NR. 61/4/54.

MICROBOX

009 - 2 URBAN FRAMEWORK

009 - 2.1 OBJECTIVES OF THE FRAMEWORK

This urban framework was established in the first quarter of the year within a group. The group consisted of Andrea Beckenstrater, Conrad Martin and Samantha Moolman. Even though this thesis project is not located within the study area, the same principles have been applied to the thesis site. The following objectives were established for the study area:

- To create an environment in the inner city of Pretoria which is attractive and desirable to both inhabitants and visitors.
- To increase density within the city and provide a wider range of commercial, social and cultural activities that function throughout the day and night.
- To **[re]**store existing buildings within the city, thereby **[re]**juvenating the area and its surrounds.
- To **[re]**emphasise and highlight the historic link between Church Square and Pretoria Station.
- To **[re]**inforce the existing rich character of the city, and
- To create an environment which is pedestrian friendly out of the existing fabric which is currently to focused on vehicular movement.

These guidelines are intended for the use of any individual or group who wishes to develop within the study area. The study area was investigated according to the categories found in the Susan McDonald File. The categories are: Character, Scale and Form, Siting, Materials and Detailing.

009 - 2.2 CHARACTER ANALYSIS OF THE STUDY AREA

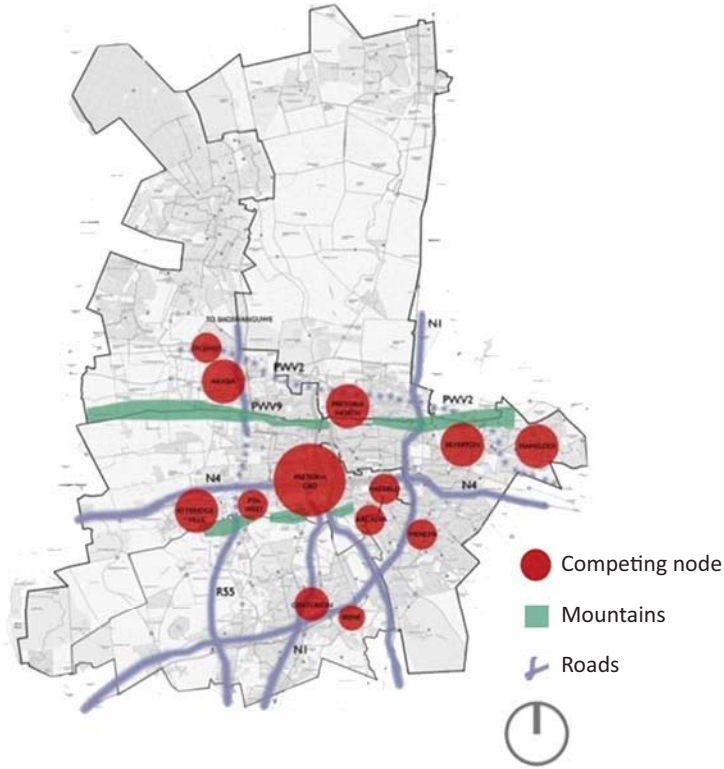

Fig 009.1: A map of Tshwane indicating the location of mountains and main roads in relation to competing nodes

This framework investigates various scales of the context, namely:

- Country wide scale - South Africa
- Provincial scale - Gauteng
- Municipal scale - Tshwane
- City scale - Pretoria, which addresses the particular study area (the Southern Precinct).

On a municipal scale, Tshwane is the metropolitan area in which 13 former city and town municipalities were consolidated to form a municipality under one mayoral system.

The Pretoria CBD forms the main central node of the Tshwane municipality. It is surrounded by various competing nodes, some of which include Atteridgeville, Mamelodi, Menlyn and Centurion. There seems to exist a trend for **[re]**-sources originate in these outer parts and converge in the Pretoria CBD.

Within the heart of metropolitan Tshwane, the Pretoria CBD is the area from where roads, railway lines and other transportation routes depart. This therefore emphasises the CBD as the portion of the metropolis which is most important as a cultural and economic node.

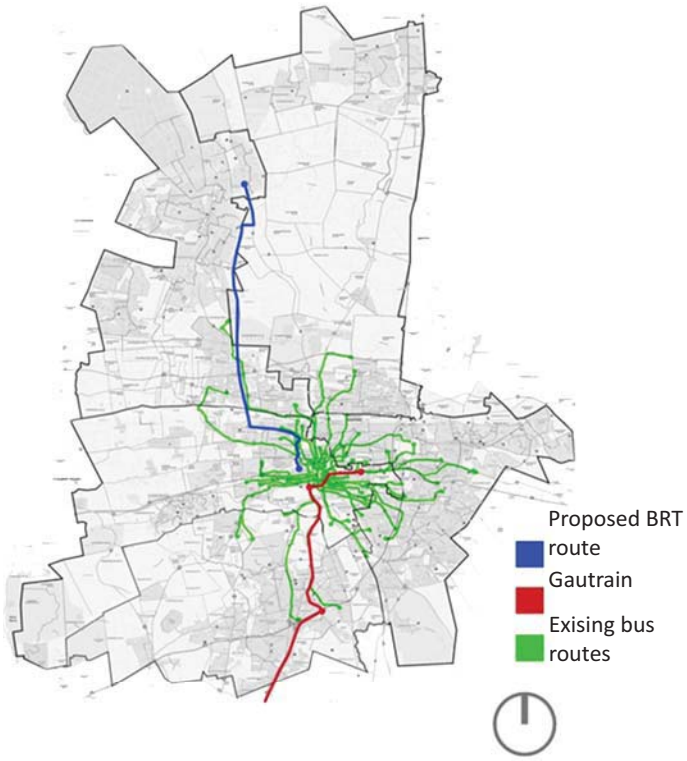

Fig 009.2: A map indicating various methods of public transportation. The prominence of bus routes is noticeable over the Gautrain and BRT routes

The original street grid of the city was designed by A.F. du Toit according to the Roman Cardu Decomanus system. Pretoria is based on the Graaff Reinet urban design scheme, where the public square is situated at the centre of the city. Church Square forms the centre of the Pretoria CBD, from which the rest of the city radiates.

Unique circumstances strict the outward growth of the city. The Apies River hampers urban expansion to the east, while Salvokop limits spread to the south and the Magaliesberg Mountains contains itto the north.

Fig 009.3: The design of Pretoria is illustrated through this image of a Nolly map. The solid blocks represent building footprints while the voids represent roads and open spaces. Church Square, the open space between City Hall and the Transvaal Museum, and the station are evident. Skinner Street, the Apies River and Nelson Mandela Drive are seen as linear barriers

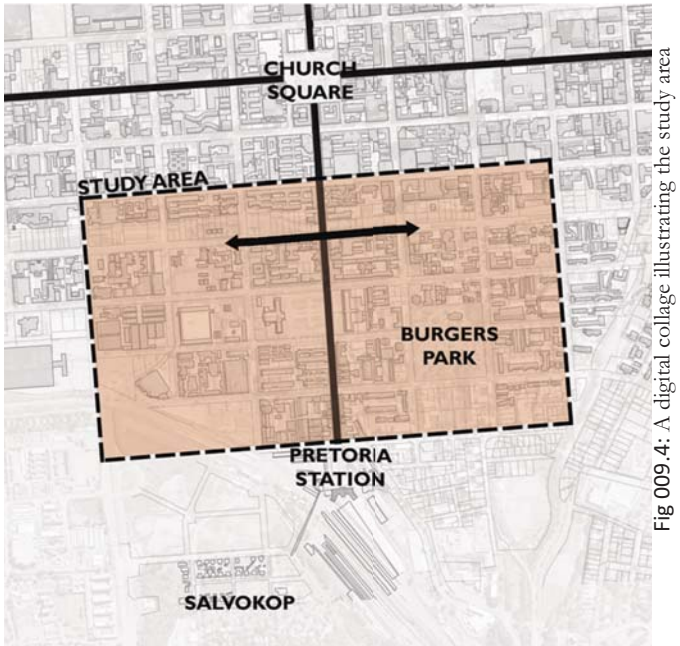

Fig 009.4: A digital collage illustrating the study area

The study area identified for the framework begins two blocks south of Church Square and ends one block north of the Pretoria Station. The study area does not include the historic elements of Church Square and the Pretoria Station. Nevertheless, Paul Kruger Street runs through the middle of the study area, physically linking these two historic spaces. The eastern border of the study area is located one block east of Burgers Park, while the western the border lies one block west of Potgieter Road.

During the course of the investigation of the study area, many positive and negative elements were highlighted. Positive elements within the study area should be emphasised, while the negative elements need to be addressed to encourage development in order to positively contribute to the study area.

Negative elements which need to be addressed are:

- A lack of cross programming, 24 hour activities and mixed-use development
- There are many dilapidated buildings
- The social diversity of South Africa is not addressed
- Fences currently surround public green spaces
- There are constant breaks in the city fabric
- Numerous run-down industrial developments exist
- Focus is on the motorist, rather than on pedestrian movement
- Many sidewalks are harsh and hot with too few trees and little shade

The positive elements within the study area which should be highlighted and emphasised are the following:

- The high-density residential stock in the area
- Easy access to the city and transport routes
- The area is within walking distance of Church Square and other significant sites
- There are many tourist attractions and museums in the area
- Burgers Park is an important amenity

- Development of a high standard is already taking place in Minnaar, Visagie and Bosman Streets
- There are many historically rich buildings in the surrounding areas
- The area is rich in social and cultural diversity

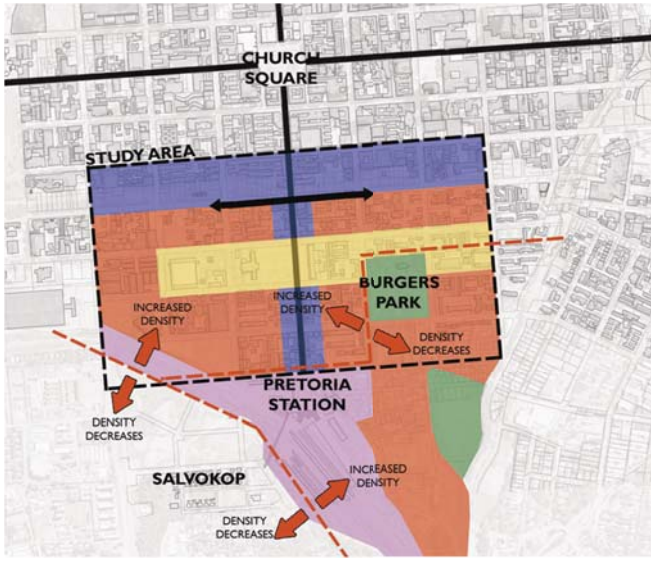

Fig 009.5: A schematic image illustrating the land use and density of the study area and its surrounds

Land-use: A diverse array of land-use types is evident in the study area. Paul Kruger Street links the Station to Church Square and is rich in commercial activity. A predominantly industrial area can be found to the west, while Burgers Park is a green space with residential development occurring on its outskirts. This assortment of uses attracts an assortment of individuals, matching the rich diversity which is evident country-wide.

There is however very few to no mixed-use buildings and cross-programmed developments within the study area. Therefore large areas and buildings are left unoccupied for a 24 hour period, **[re]**sulting in many unsafe and underutilised spaces within the CBD. Skinner Street further manifests itself as a problem as it creates a barrier splitting the CBD in two. This needs to be addressed in order to allow pedestrians and cyclists to move more effectively within the city as well as to encourage development along this busy street.

During the investigation of the study area it was noted that the population and building density decreases to the south and west of both the city as well as of the study area, as seen in image 004.5. The railway line to the South of the study area creates a physical barrier between the CBD and the developments on Salvokop and Freedom Park, and Nelson Mandela Drive creates a barrier between the CBD and development to the east. These physical barriers **[re]**-sult in 'lost space' alongside them where little development occurrs. Land is therefore not being utilised to its full potential.

Additionally, a lack of activity on ground floor level is evident within the city. Numerous buildings do not spond to their immediate environment, which includes the streets they open onto as well as pedestrian movement past the buildings. These are problems which need to be addressed.

Movement routes through the city play an important role in this framework. The diagram below shows the proposed pedestrian movement routes, BRT route and stops, and supplementary public transport routes. It is clear that a great deal of movement happens in and through the study area, with Paul Kruger acting as the main axis. This is one of the reasons it is believed that the Southern District has more potential than what has been explored to date.

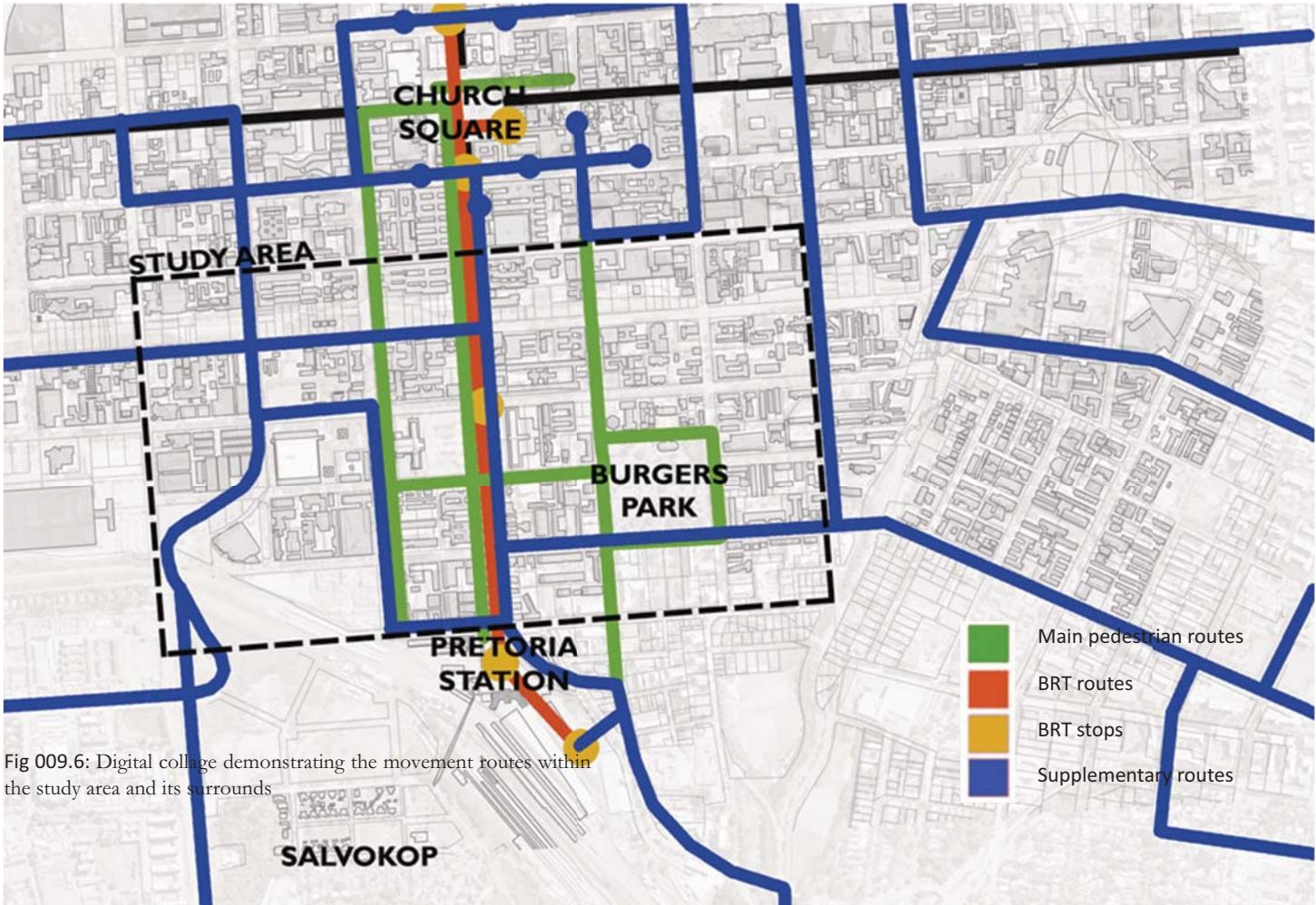

Fig 009.6: Digital collage demonstrating the movement routes within the study area and its surrounds

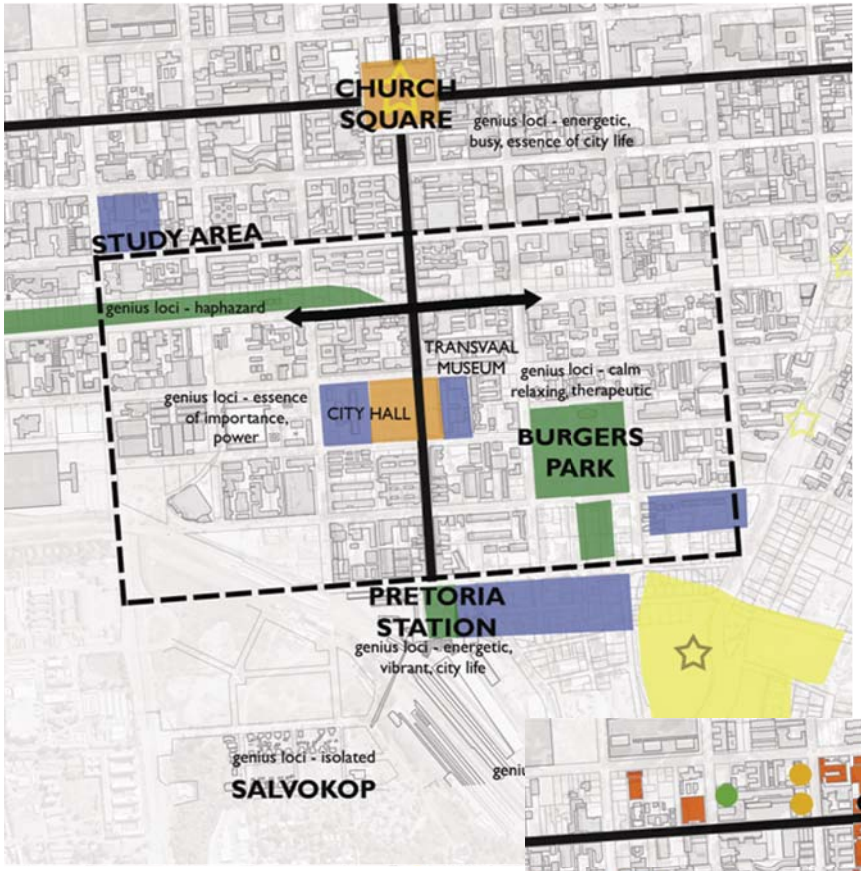

Fig 009.7: Features of significance

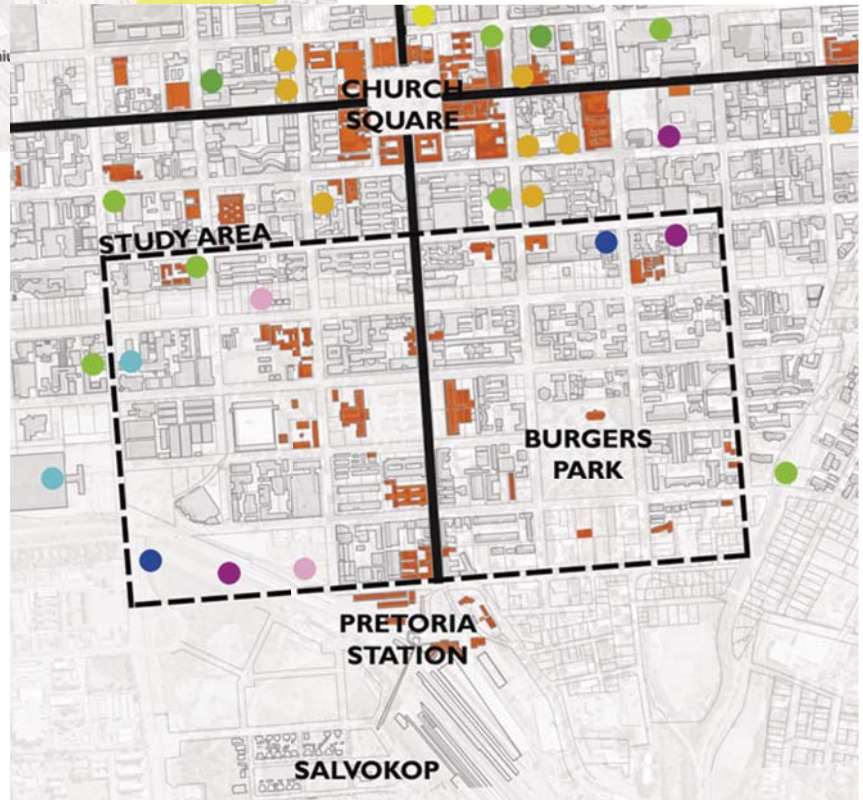

Fig 009.8: Historical buildings and uses

Features of Significance: within the city and more importantly the study area appear in various forms, from open public gathering spaces to places of historical significance and even places of lush greenery.

There is a rich diversity in social and cultural activities with locations that encourage local as well as tourist activity within the area. “Museum Mall” is such an area within the Southern Precinct which most notably houses the Cultural Museum, City Hall and the Transvaal Museum, which in turn draws a variety of people into the area.

Historic buildings and uses are scattered throughout the inner city, four of which are of particular importance to the framework and study area: Burgers Park being Pretoria’s first botanical garden as well as housing various historical buildings, Pretoria Station, Pretorius Square and Church Square. All these historical landmarks serve to emphasise Paul Kruger Street as a major axis within the city. These buildings and their associated activities add depth of character to the city and a variety to the urban experience.

It should be noted at this stage that the site of this thesis project is not situated within the study area; nevertheless the same principles will be used on the site, a block north of Church Square on the eastern side of Paul Kruger Street. The site for this thesis will be represented by a green circle in the group framework which is to follow.


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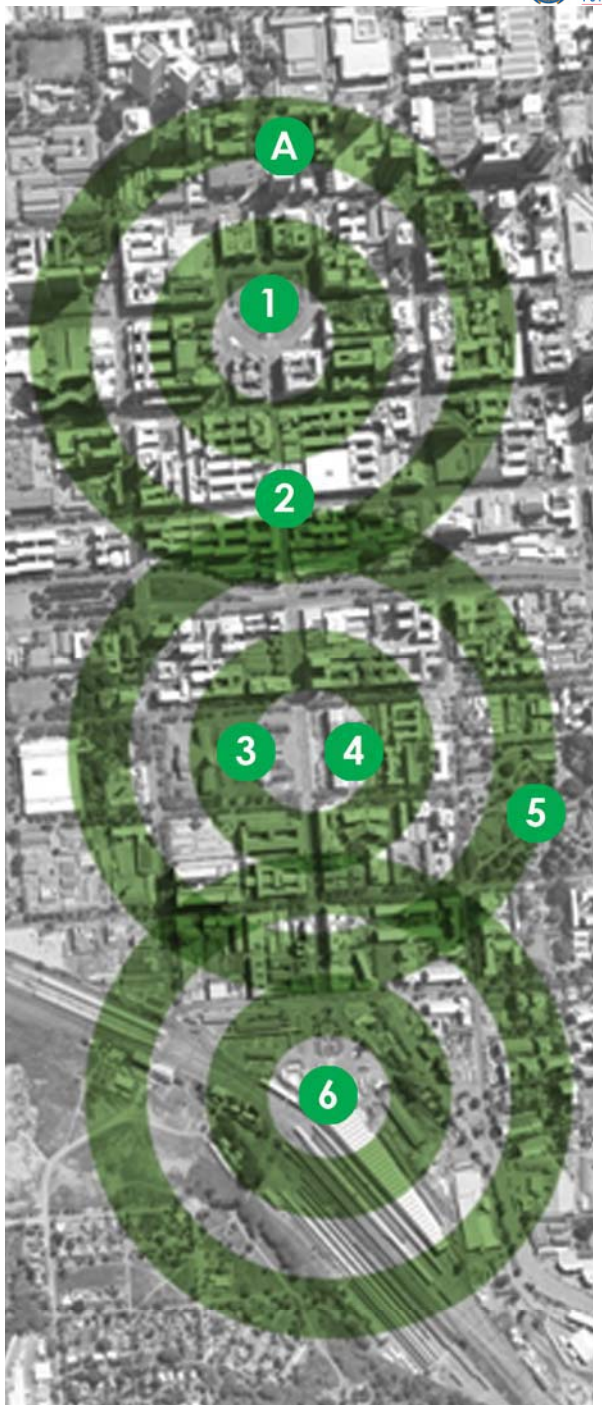


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Fig 004.9: Image indicating 100m walking distances from places of significance

A The location of the proposed thesis site

1 Fig 009.10: The statue of Paul Kruger at the centre of Church Square

2 Fig 009.11: Portion of Paul Kruger Street looking towards the Station

3 Fig 009.12: The front of the Pretoria City Hall

4 Fig 009.13: The Transvaal Museum, which overlooks City Hall

5 Fig 009.14: Burgers Park seen from the perimeter fence

6 Fig 009.15: The façade of Pretoria Station

100m Walking distances: This digital collage serves to demonstrate the proximity to each other of the four major historic landmarks along Paul Kruger Street, which ultimately connects the Pretoria Station with Church Square. It also establishes comfortable walking distances that people would be willing to travel.

Unfortunately the Station and Church Square are too far apart for the average person to traverse comfortably in a single trip. However, the open space between City Hall and the Transvaal Museum, halfway between these two points, serves as a resting spot where pedestrians can catch their breath before continuing their journey.

These images further serve to enforce the immediacy of Church Square in terms of the thesis site.

009 - 2.3 SITING: SCALE + FORM OF EXISTING STREET SECTIONS

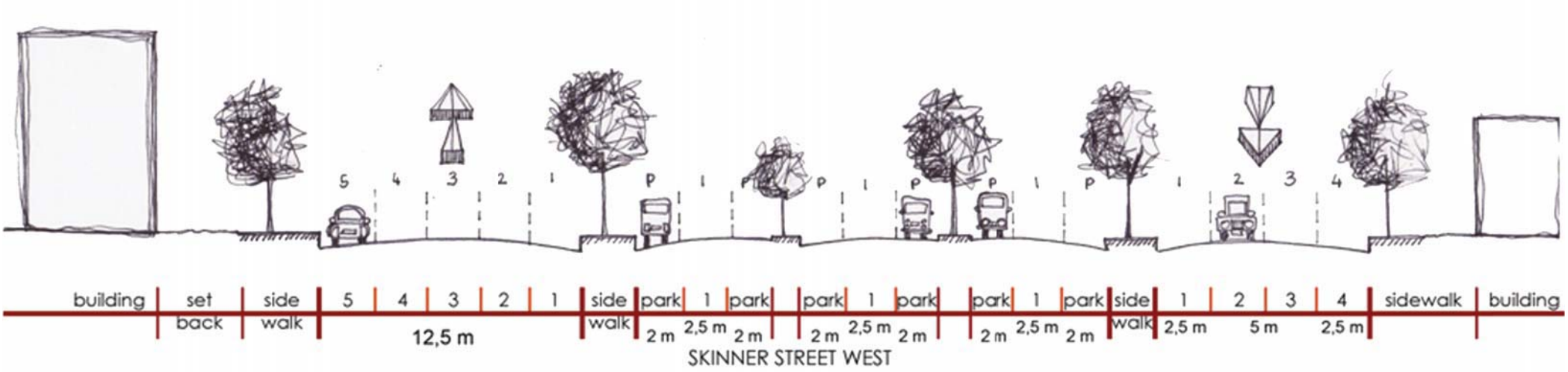


Fig 009.16: Existing section through Skinner Street

This section is taken through the taxi rank on the western portion of Skinner Street. The existing road consists of two-way traffic separated with a large island, with four lanes in each direction. In the middle of the two way traffic, on the island, one finds the taxi depot. The taxi depot consists of ample parking, with sections being used as an informal car wash.

An admirable feature of this portion of the street is the planting of various trees on the "taxi island". The trees help create the illusion that the street seems narrower, while at the same time beautifying the city.

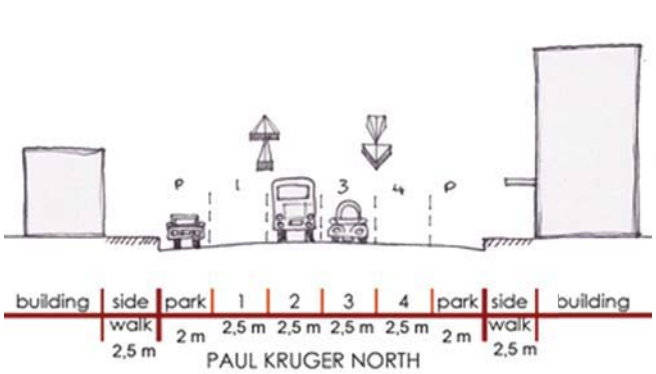


Fig 009.17: Existing section through the northern part of Paul Kruger street

The second section shows Paul Kruger Street, the major north/south street in the Southern Precinct, as a vibrant street full of commercial activity. Although the street is not without fault, it is relatively pleasant to walk along even with the absence of trees. Pedestrians have adapted by walking on the eastern side of the street where shade is provided by canopies on building façade.

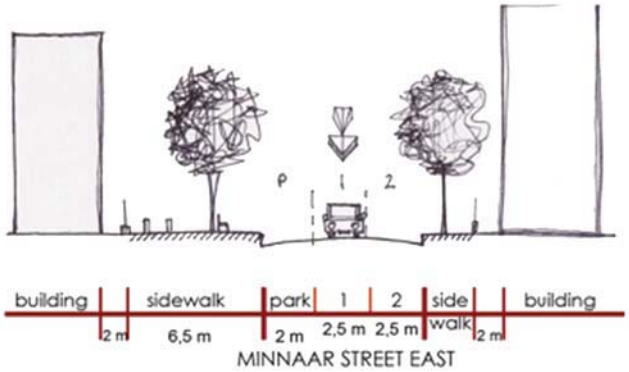


Fig 009.18: Existing section through Minnaar Street

The third section above refers to the eastern side of Minnaar Street bordering Burgers Park. Minnaar Street is one of the few streets within the city which has been **[re]**juvenated through new paved walkways and street furniture with integrated lighting.

009 - 2.4 MATERIALS + DETAILING

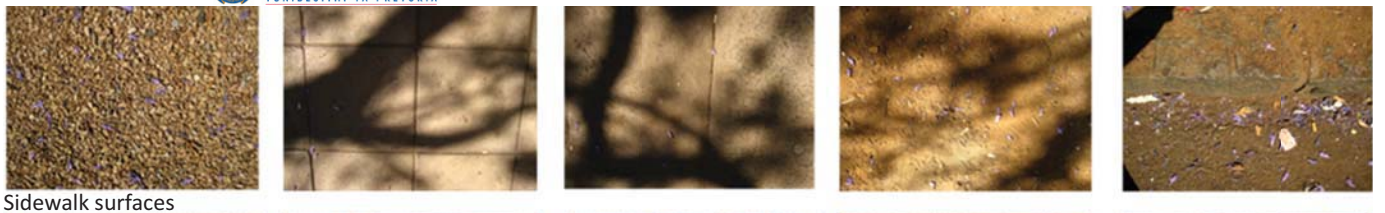
The sidewalk surfaces in the study area range wildly in type and texture, creating an exciting tapestry in the city. The continuous level changes in the sidewalks create an environment that is not favourable for pedestrians, especially the very young and old. This framework encourages an assortment of paving types; however, the sidewalk surface needs to be even and consistently level with adjacent buildings where new interventions are to take place. This will ensure that pedestrians can navigate the city with ease.

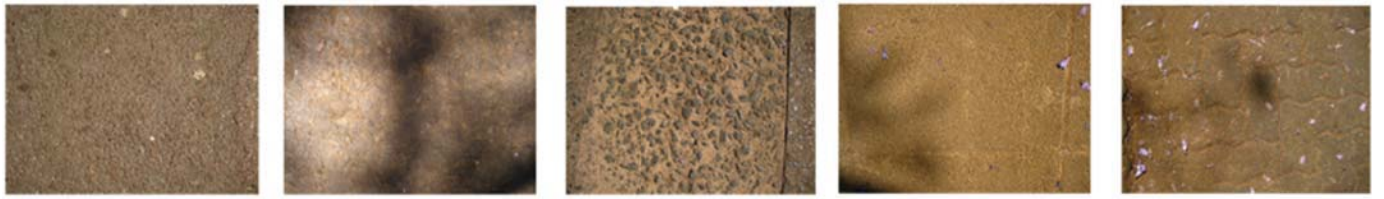
In the bottom row of the series of paving images shown right above, it can be seen that Minnaar, Visagie and Bosman Streets have physical strengths bringing them closer to reaching this goal.

A variety of textures, materials and colours can be found within the Pretoria CBD, highlighting the multi-layered diversity of Pretoria and South Africa's history. The existing materials, textures and colours need to be considered when adding another layer to the city fabric.

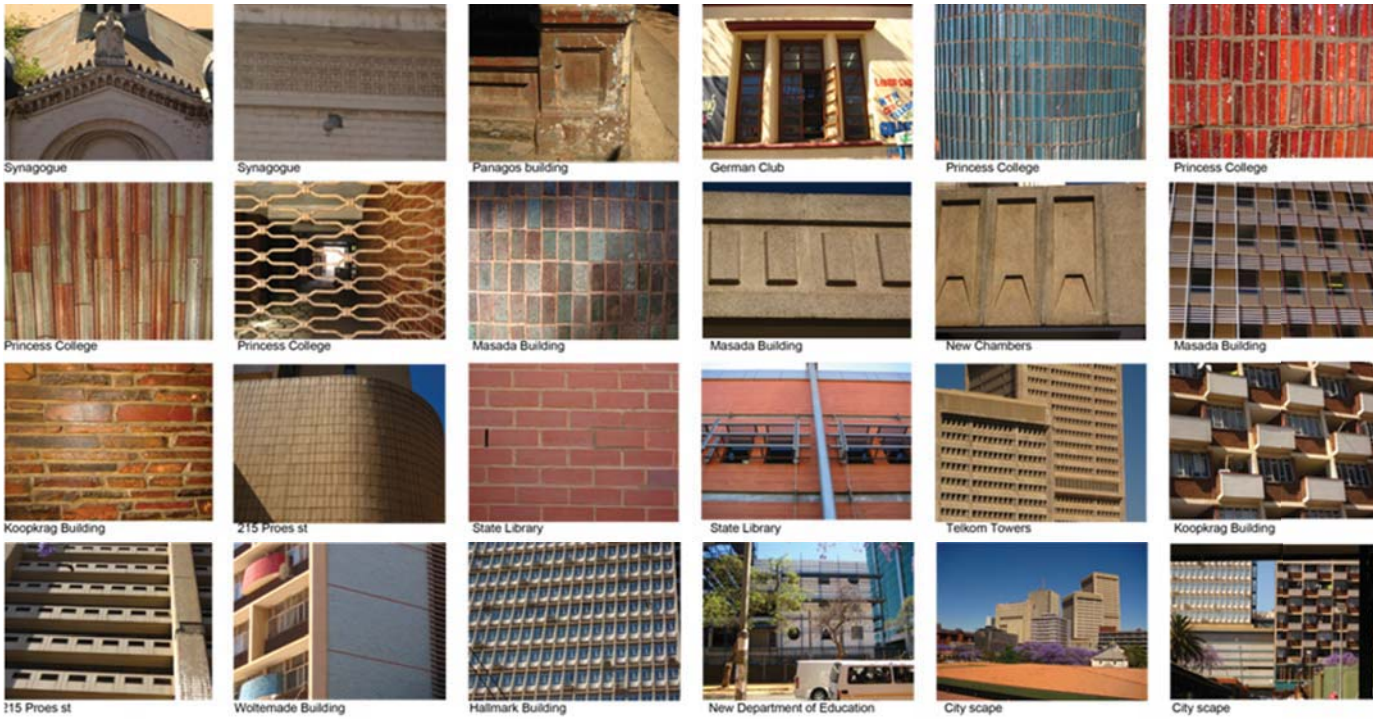
Fig 009.19: Various sidewalk surfaces which can be found in the study area

Fig 009.20: The city is rich in colour and texture as expressed in these images


Sidewalk surfaces


Sidewalk surfaces where buildings are derelict


Sidewalk surfaces where buildings are new or maintained



009 - 2.5 FRAMEWORK PRECEDENTS

Tshwane Inner City Project

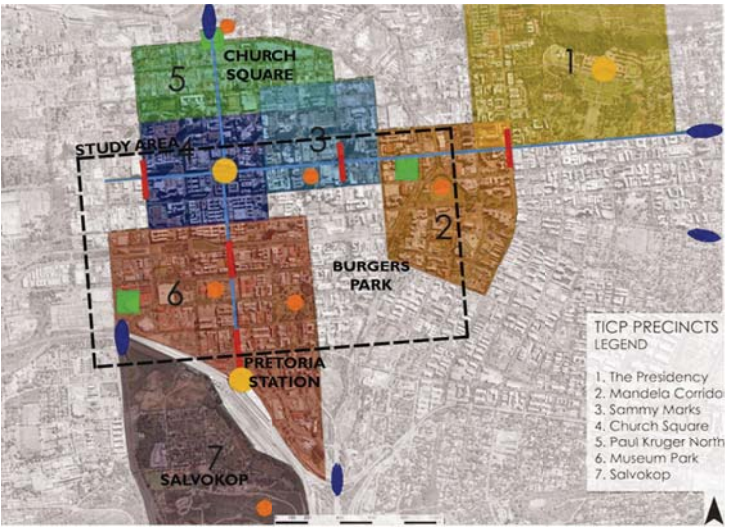


Fig 009.21: A diagrammatic representation of the TICP framework

The Tshwane Inner City Project, otherwise known as the TICP, identifies three strategic corridors:

- The Church Street Corridor
- The Paul Kruger Street Corridor
- The visual corridor between the Union Buildings and Freedom Park

Furthermore, three symbolic sites are acknowledged:

- The Union Buildings, which houses the seat of the Presidency
- Church Square, which is considered to be the centre of the City
- Freedom Park, the new National Legacy site

The primary objectives of the TICP are to:

- Link the three symbolic sites
- Consolidate infrastructure, pedestrian movement and public transport
- Consolidate individual departments
- Cluster departments in synergistic **[re]**lationships
- Integrate urban management
- Promote resource efficient design
- Encourage the **[re]**location of the private sector, foreign government offices, institutions and NGO's to the Inner City

Pretoria Inner City Spatial Development Framework

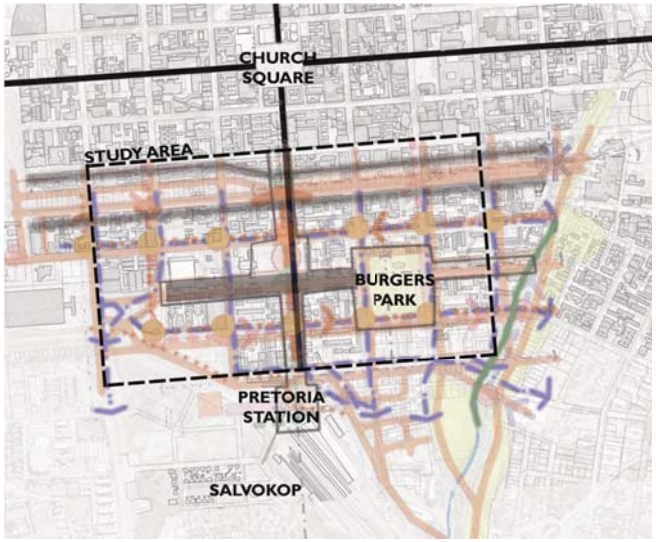


Fig 009.22: A diagrammatic representation of the Pretoria Inner City Spatial Development Framework

The Pretoria Inner City Spatial Development Framework highlights the following items:

- The study area has good qualities and high-density residential stock; however, it is suffering neglect and decay
- The main areas to be developed in this framework are "Station Square", "City Hall Square", "Museum Mall" and the "Skinner Street Crossing"
- This framework focuses on the development of the Berea retail and **[re]**creational facilities and offices, and promotes the **[re]**use of the industrial buildings to the west of the area
- It emphasises the link between Church Square and Pretoria Station on both a physical and symbolic level
- The development of Skinner Street is proposed to break the barrier which it currently forms
- Industrial structures found to the west can be **[re]**-used
- Development around Burgers Park should be increased
- Residential development within the CBD should be increased
- The alignment of public transport routes should be addressed and new transport nodes created
- The existing Museum Mall should be emphasised and extend to the Apies River
- The proposed "Woonerf" Street should be developed
- The Apies River open space should be developed
- The Paul Kruger Street axis is to be emphasised & pedestrianised

City of Tshwane Compaction + Densification Strategy

The intentions of the City of Tshwane Compaction and Densification Strategy are the following:

- To inform area specific spatial frameworks
- To propose certain legislative changes and incentives to encourage densification in the city
- To include design guidelines in the framework to ensure that densification does not negatively affect the experience of the users.

Fig 009.23: The promotion of a consistent scale and the principle of building to the erf boundary on the street side of the site

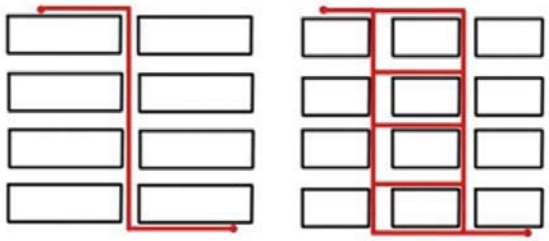


Fig 009.24: Integrated and connected streets are encouraged

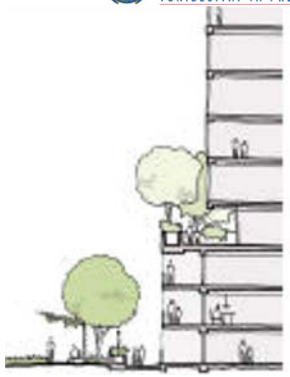


Fig 009.25: A section through a building demonstrating consistent scale as well as building to the erf boundary

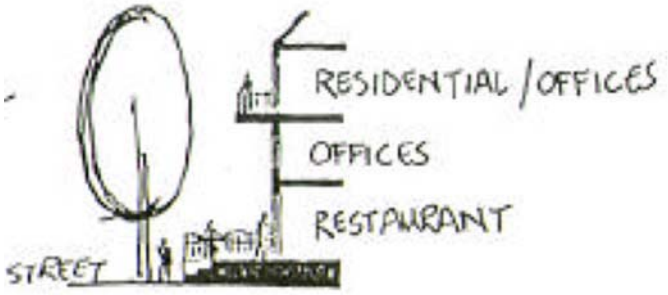


Fig 009.26: Demonstrating an active edge incorporating the ground floor

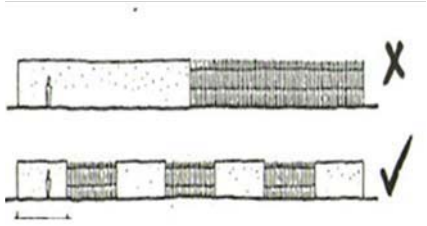


Fig 009.27: Design guidelines promote a fine grain in the architectural fabric. Buildings should be visually permeable except where privacy is specifically needed

009 - 2.6 GROUP FRAMEWORK + GUIDELINES

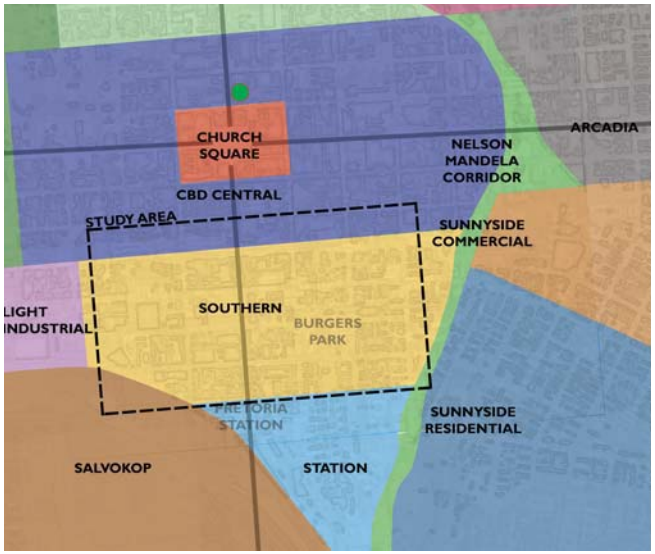


Fig 009.28: Various precincts are identified in the study area

In the framework, precincts have been identified according to their particular character and programme as well asaccording to information gathered from existing frameworks.

The major part of the study area falls within the Southern Precinct. The areas directly adjacent to this precinct are:

- The CBD Central - where the majority of businesses are found within the city
- The Light Industrial District
- Salvokop - a 'koppie' with recent developments such as Freedom Park
- The Station District - the area south of the study area that houses the Pretoria Station and the railway lines, and
- The Nelson Mandela Corridor and Sunnyside Districts towards to the east.

The location of this thesis falls within the CBD Central Precinct, and will employ the principles as these set out in this framework.

Land-use and height allocation: In general, there is a concern that the study area is not dense enough as many low-rise buildings exist and building sites are not used to their full potential. There is however an opportunity to improve on this. Land-use as well as height suggestions have been allocated to various areas within the study area to allow for an increase in density while still addressing the existing urban environment.

Presently, a strong residential component can be found around Burgers Park, which must be maintained and further densified.

A commercial hub is to be created along Paul Kruger Street to act as a catalytic development representing economic opportunities for current and future inhabitants of the city.

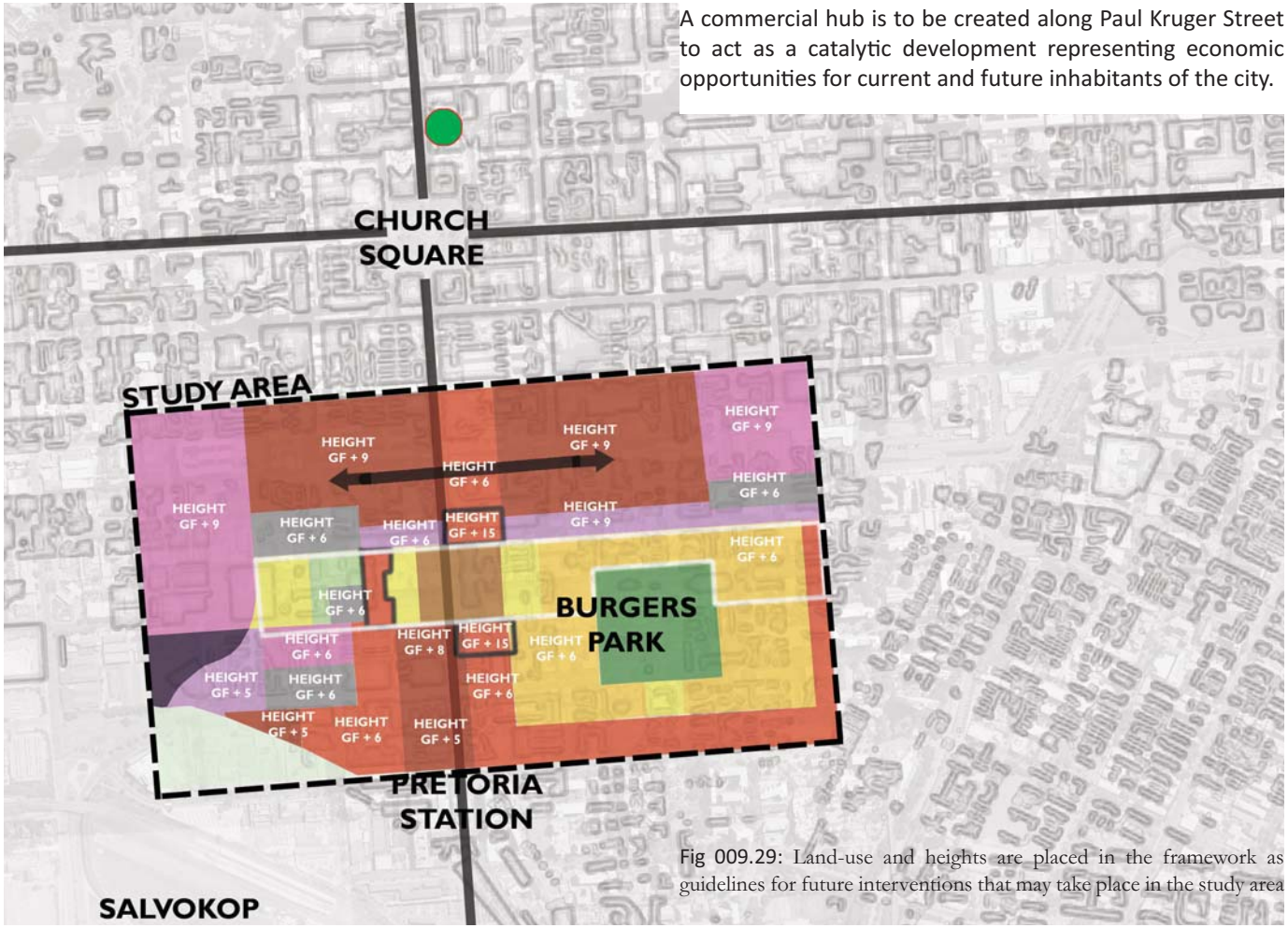


Fig 009.29: Land-use and heights are placed in the framework as guidelines for future interventions that may take place in the study area

Adaptive **[re]**use and the introduction of mixed-use development into the area will also help achieve these results.

The concept of Museum Mall from previous frameworks is to be extended to the Apies River to allow a cultural link between the CBD and the sprawl and neglect of the east. This would also increase the tourist trade in the area allowing the economy of the city to flourish.

It is also proposed in this framework to upgrade and develop historic buildings within the city into multi-functional buildings. This will **[re]**inject of life into stagnant dust-filled buildings, making them more accessible to the public.

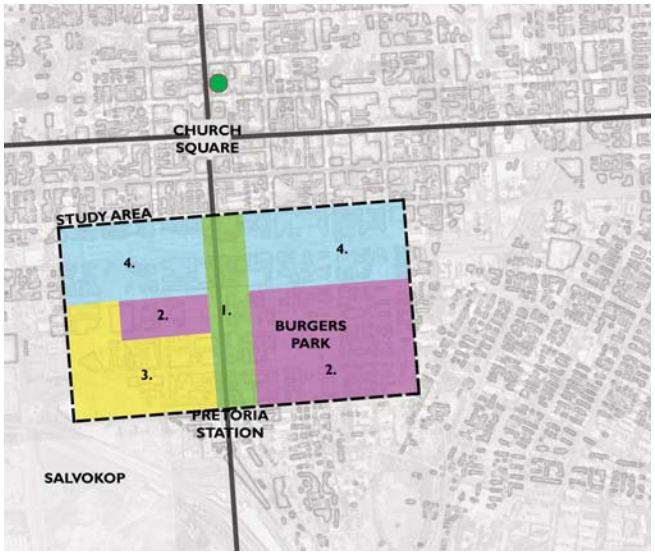


Fig 009.30: Development of the study area is broken down into four phases according to importance

Phasing: The development of the Southern Precinct is divided into four phases.

The first phase entails interventions along the Paul Kruger Street Spine. These would act as catalysts for the development of the entire area and will encourage future development and growth around the area as a commercial hub. The thesis proposal will take part in this first phase of development.

The second phase of the framework proposes to upgrade and develop the areas around the social and political nodes of City Hall and Burgers Park. Continued commercial, social and residential development will occur around these nodes.

The third phase entails the upgrading of the existing light industrial area west of City Hall. It is anticipated that development and capital input will be injected back into the area and the light industrial buildings will once again be utilised. This particular area will encourage the principles of adaptive **[re]**use in order to convert buildings into studio apartments, exhibition spaces and venues for social gatherings.

The final phase for the study area is to upgrade the existing commercial strip along Skinner Street. In future there will be an even larger need to create a safe pedestrian link between Church Square and the newly developed southern parts; therefore this framework proposes to connect these two sides and create a continuous commercial street.

Fig 009.31: Visual links and circulation routes in and around the study area

Visual links and circulation: Visual links are important in terms of the orientation and character of a city. Some important visual links in the study area are currently obscured and others need to be **[re]**inforced. This particularly refers to a traffic signboard placed directly in front of Pretoria Station. This building is a symbol of Pretoria, yet it is most certainly not treated as one as it is largely obscured. Care needs to be taken when planning for and erecting signboards and other advertising media.

The Cultural Museum only **[re]**presents itself on the Visagie Street façade. Although Schubart Street is a main road leading out of the city, there is nothing along it to suggest the Museum's presence. Buildings, especially those as significant as the Cultural Museum, need to **[re]**spond to their immediate environment and make vital visual connections if physical connections are not possible.

The links between Church Square and Paul Kruger Street, as well as between Burger's Park and Minnaar Street, need to be **[re]**inforced.

Visual links also need to be considered in the design of the area around Salvokop and the gateway alongside the Prison.

Conclusion

The major issues addressed in the urban framework were to densify the city, make it more active in a 24 hour cycle and **[re]**inforce the civic spine created by Paul Kruger Street. This is achieved through the incorporation of mixed-use buildings throughout the city and the restoration of existing buildings.

009 - 2.7 GUIDELINES: STREET EDGES + SETBACKS

The group frame work and guidelines helped to formulate guidelines that can be applied to new and existing buildings in the study area.

A few general guidelines apply to the entire study area:

- Soffit heights on ground floors should be a minimum of 3,8m and a maximum of 4,5m in height for both commercial & residential use
- Floors above the ground floor ought to have a minimum 3m soffit height
- Buildings that are located on active street edges must be well defined
- Semi-private areas should be demarcated by items like low walls; however, no high fences or walls are to be constructed

Guidelines for the section through the northern part of Paul Kruger Street:

- The build-to line is 5.5m from the street kerb. 100 % of the ground floor façade must be built to this line. If the building is higher than six stories, a step back of no less than 2m from the build-to line is applicable above the third floor
- Pedestrian comfort is taken into consideration through the incorporation of canopies no more than 2.5m high on the active street edge. Care is to be taken to consider adjacent buildings when implementing these elements

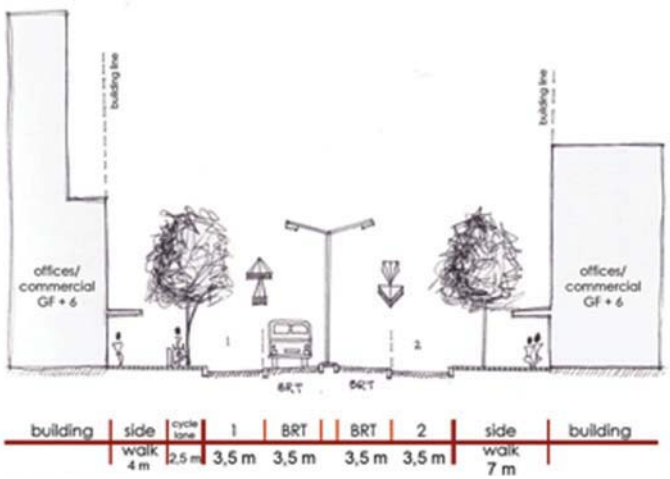


Fig 009.32: A section through the northern part of Paul Kruger Street depicting the character of the street

- The incorporation of trees along Paul Kruger is another component of this intervention

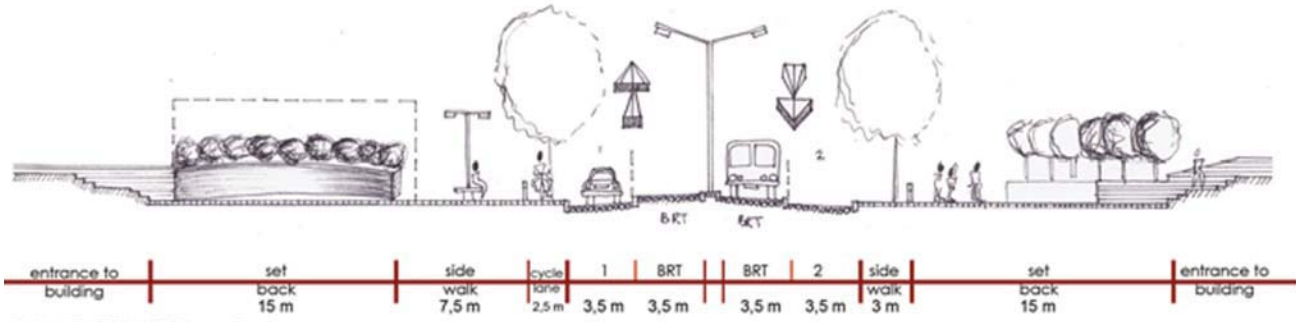


Fig 009.33: A second section through Paul Kruger Street in front of City Hall and the Transvaal Museum

Guidelines for the section in front of City Hall and the Transvaal Museum:

- The location of the BRT and cycle lanes are indicated in their respective positions
- Street furniture is to be added to major routes within the precinct to create identity as well as pause areas for pedestrian comfort
- The area in front of City Hall offers an opportunity for intervention

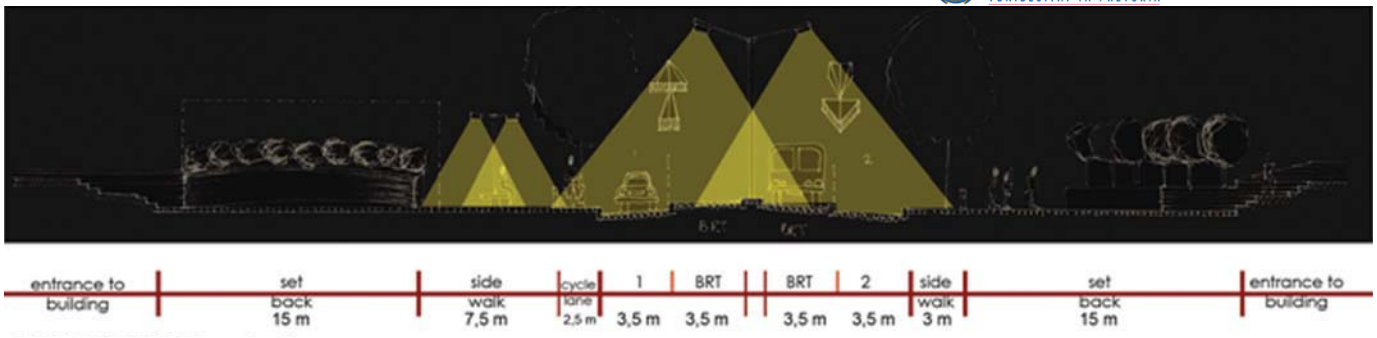


Fig 009.34: The same section as before, this time illustrating the impact of new lighting on the character of the street

The image above illustrates the position of new lighting in front of City Hall and the Transvaal Museum and the effect it would have on the surrounding area.

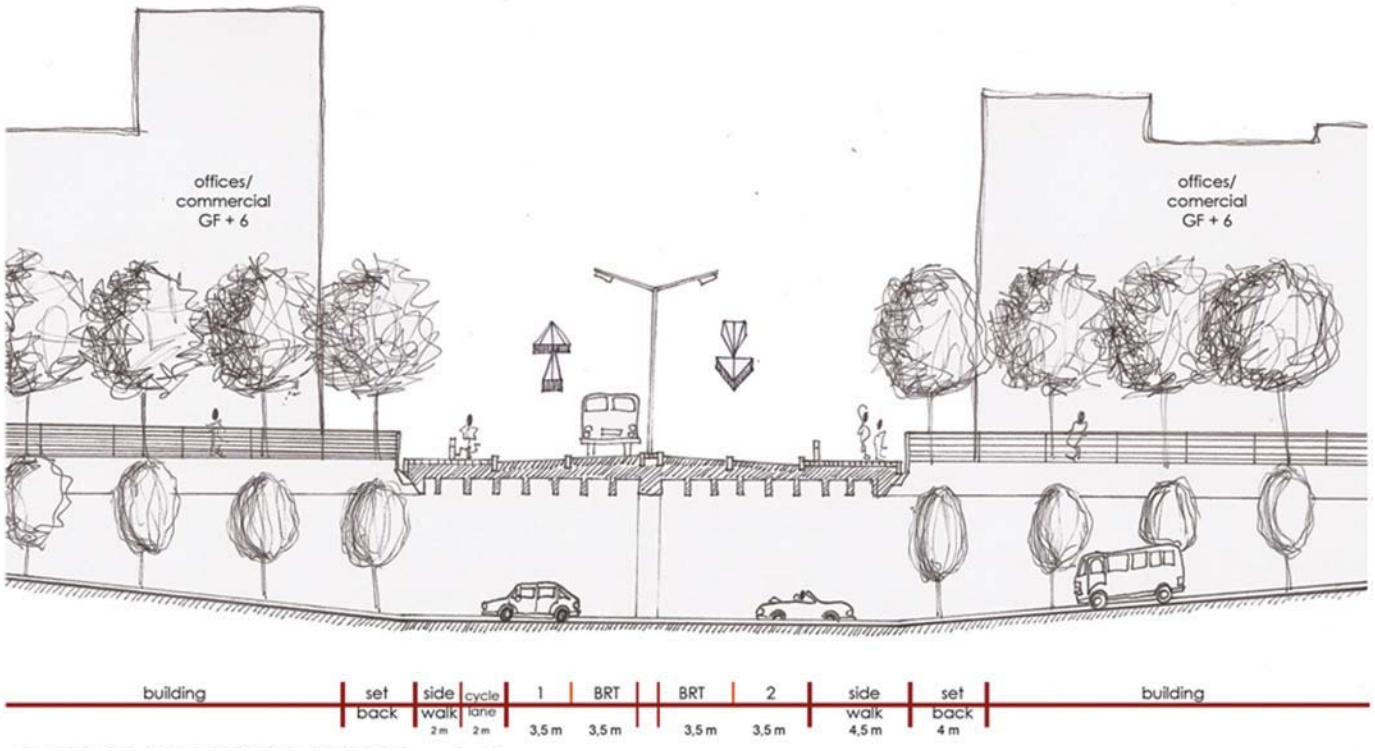


Fig 009.35: This section taken through the intersection of Paul Kruger and Skinner Streets reveals the intention to accommodate pedestrians in crossing this otherwise busy intersection

Guidlines for the intervention on Paul Kruger & Skinner Streets:

- Active street edges are encouraged along the length of Paul Kruger Street
- The harsh environment of the city is to be broken up by the inclusion of vegetation in the form of trees and shrubs, which will not only provide shade for pedestrians but will begin to break the streetscape into a scale appropriate to the users of the city
- BRT and cycle lanes should be in consistent locations from the Station, past Church Square
- The most prevalent intervention that has been made is the sinking of Skinner Street below the level of Paul Kruger. This has been done in order to decrease the barrier effect created by Skinner Street and allow pedestrians and cyclists to move more freely in their daily migrations within the city

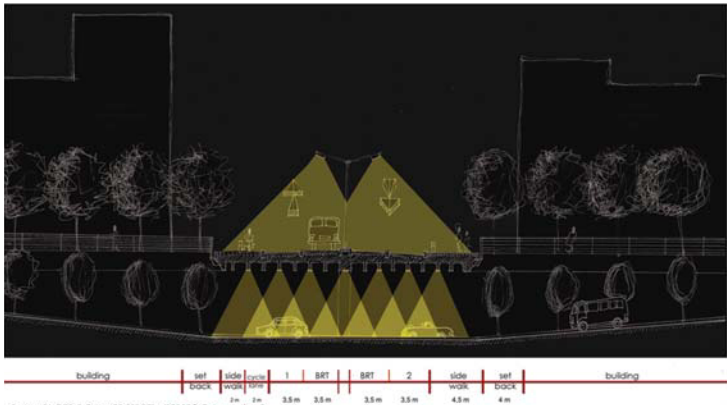


Fig 009.36: Study of the effects of light at night at the Paul Kruger/ Skinner Street intersection

The image above illustrates the position of new lighting and the impact it would have on the surrounding area.

It is important in this framework to keep the sidewalks and cycle lanes lit to promote safety and a 24 hour cycle of activity.

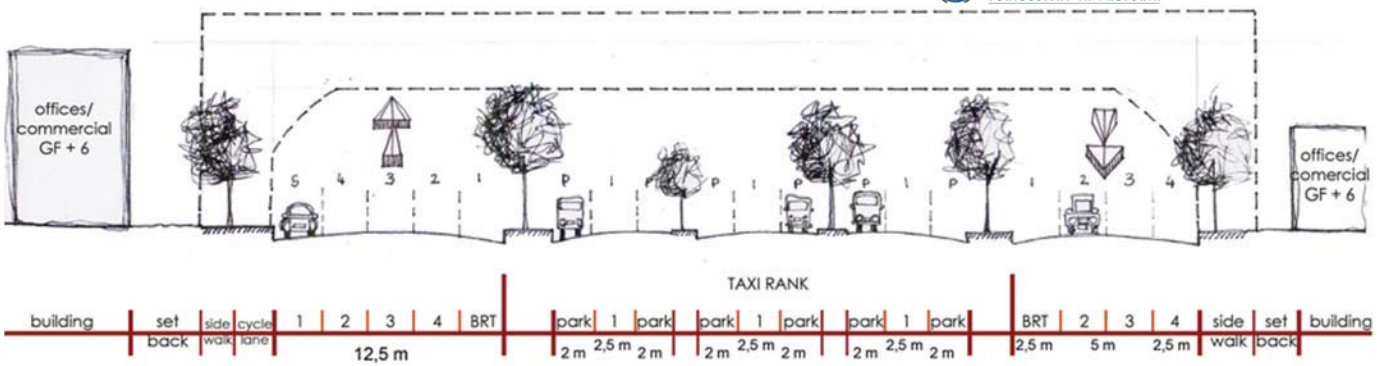


Fig 009.37: A section through Skinner Street at the taxi depot. This section proposes a possible intervention over Skinner Street as well as the position of cycle and BRT lanes

Guidelines for the length of Skinner Street:

- The section depicted above is taken through the widest part of Skinner Street which features the taxi rank in the middle with four lanes of traffic on either side
- A building line of 3m from the street kerb is implemented, with 100% of all ground floor façades to be built to this line
- BRT lanes are located on either edge of the taxi rank island, with a dedicated cycle lane to the south of the street
- An intervention opportunity has been identified over Skinner Street whereby the barrier effect can be eliminated, bringing the north and south of the city back together

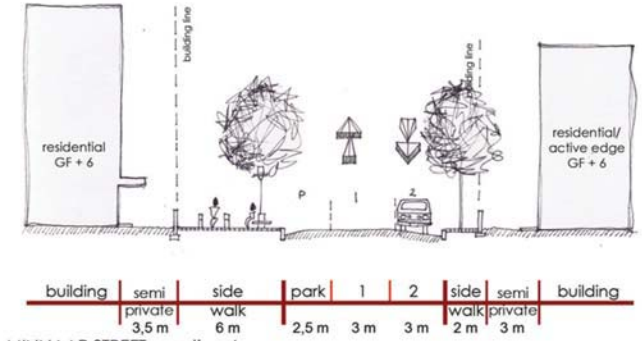


Fig 009.38: Minnaar Street provides the study area with a unique street section, with integrated street furniture and lighting as well as traffic calming methods heading east towards Burgers Park

The guidelines on Minnaar Street:

- The building line on Minnaar Street is 5m from the street kerb
- A build-to line of 2.5 - 3m from the boundary line has been established. The exception to this is that buildings with publicly accessible ground floors may extend their street façade to the boundary line

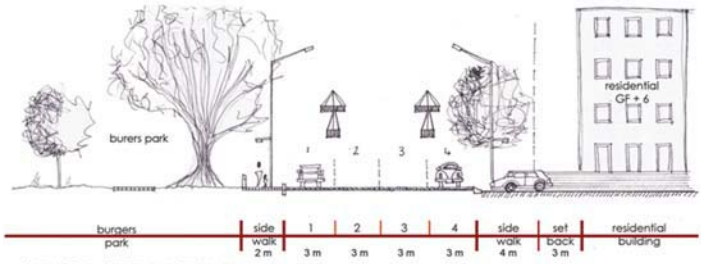


Fig 009.39: Van der Walt Street a very important pedestrian and vehicular route into the city

The guidelines demonstrated on Van der Walt Street reveal the following:

- This slide illustrates the approach taken around the Burgers Park area, which is slightly different to the other north/south streets due to its unique qualities. However, the approach is similar to that of Minnaar Street
- The building line on the streets around Burgers Park are 5m from the street kerb
- A build-to line of 2.5 - 3m from the boundary line has been established. Once again, the exception is that buildings with publicly accessible ground floors may extend the street façade to the boundary line
- Lighting has been added to Burgers Park and the surrounding streets in order to create a safe 24 hour active zone, as indicated in the image below

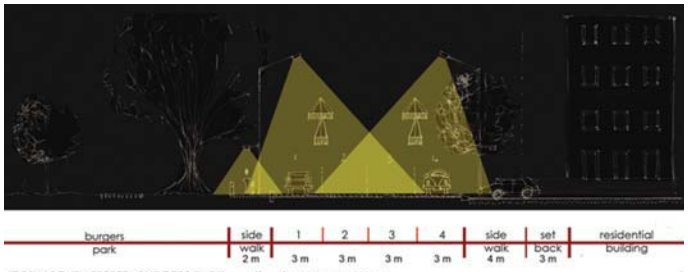


Fig 009.40: The effects of light on Van der Walt Street at night

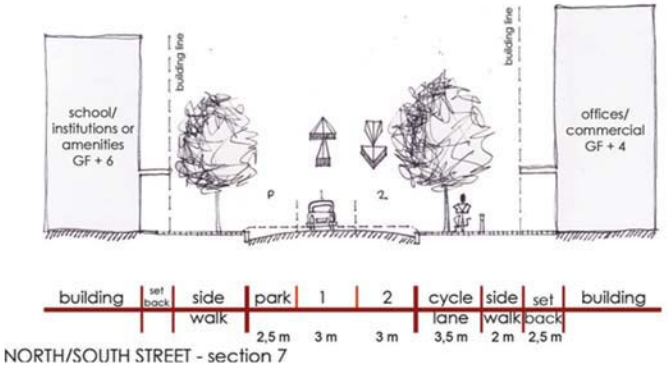


Fig 009.41: A typical section through a north/south street indicating overhangs, sidewalks and cycle lane

Guidelines implemented on a typical north/south street :

- This slide indicates a typical north/south street within the boundaries of the framework
- The boundary and build-to line is 3m from the street kerb, with the exception that buildings with publicly accessible ground floors may extend the street façade to the boundary line

BEREA PRECINCT SWOT ANALYSIS					
STUDY FIELD	**STRENGTH**	**WEAKNESS**	**OPPORTUNITY**	**THREAT**	**FRAMEWORK APPLICATION**
PHYSICAL CONTEXT	• High density residential stock • Easy access to the city and other public/private transport routs to other areas (e.g. JHB) • Centre of Tshwane municipal district • Tourist attractions • City boundaries are contained by the mountains	• Lack of activity on ground floor levels • Buildings do not respond to the sidewalk activities • No cross programming • Many dilapidated buildings • Semi-private open spaces in need of attention • Clay in area makes construction expensive	• We can increase the intensity of sites by building higher • Increase the number of residential buildings • [Re]store buildings and bring life to them • Adaptive [re]use of ground floors • Create a commercial 'hub' within the city	• Buy in from the social and private sector is minimal, everyone wants to move east of the CBD	• Proposing higher buildings • Increased residential zoning • Restoration and [re]use of industrial buildings to the west • Increase of commercial activities on ground floor level
SOCIAL CONTEXT	• Social & cultural diversity • Variety of income levels • Tourists in the area • Museum mall	• The social diversity is not utilized to its fullest potential • No 24 hour activities • Commercial activities along Paul Kruger street are interrupted	• Economic opportunities • Extending Museum mall to Apies River • Make the most of tourist trade • Providing facilities/activities for a wider range of income levels • Creating 24 hour activities	• Government policies and bureaucracy	• Improved infrastructure • Allowance made for various income and social groups • Mixed use development where 24 hour eyes will be on the street • Extension of Museum Mall
STAKE HOLDERS	• Government has a vested interest in uplifting the area • Strong residential development • Influx of people into the Burgers Park vicinity as a	• Council has no money to maintain buildings • Owners do not want to spend money fixing up buildings to the west • There is little/no	• Create catalytic activities to promote development and economic growth in the area • Bringing a wider range of users into the area	• Buy in from the social and private sector is minimal, everyone wants to move east of the CBD • Financial • Threat of lower	• Increased/improved residential facilities • Maintaining Burger's Park as a utilised open green space • Increase activities in the area to encourage people to move here

	residential area	interest in occupying the west		income groups being 'pushed out'	
HERITGE	• Strong heritage component in the area: modern buildings, synagogue, city hall etc.	• Many heritage buildings are run down and dilapidated, but are still protected • Break in city fabric due to these buildings having lower densities	• Tourism opportunities • Upgrade heritage buildings into functional uses - adaptive [re]use • Create and promote cultural heritage in Pretoria	• Some heritage buildings hinder new/positive development due to protection • Structural decay • Creation of superficial environments	• Museum Mall • Upgrading of heritage buildings with adaptive [re]use
CURRENT USSES	• Paul Kruger Street is rich in commercial activity • Burger's park is well utilised and maintained • Variety of uses in the area, which attract different people	• Little/no mixed use development • most buildings are not utilised to their full potential • Industrial buildings to the west are not utilised • Skinner Street island is a dead space	• Adaptive [re]use • Encourage further commercial activity on ground floor level • create mixed use buildings • Focus on activities to improve economic growth and increase density	• Zoning can conflict with heritage • Existing zoning is one dimensional • Current zoning hinders commercial activity	• Highlight Paul Kruger Street as an interactive commercial node • Maintaining Burgers Park • Increase mixed development • Upgrading and adaptive[re]use of buildings to the west • Intervention to cross Skinner Street safely
AXES	• Paul Kruger Street (government walk) in the centre of the study area	• Skinner Street is a barrier, not an axis	• Emphasize the link between the Station and Church Square	• Skinner street	• Paul Kruger emphasised as a strong pedestrian and commercial route/ axis • Allow for safe crossing of Skinner Street
VISUAL LINKS	• Freedom Park • Church Square	• Sign board outside the station limits views	• [Re]emphasise the visual link between the Station and Church Square and Freedom Park	• Views from ground floor level is limited	• Emphasise the link between Church Square and the Station • Remove sign board outside the station • Other visual links also emphasised

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TOPOGRAPHY	• Flat topography allows for easy pedestrian movement	• Limited opportunities for views	• Create more pedestrian friendly streets	• We can't change the topography, therefore views will always be hindered	• Increase pedestrian movements through the city
PEDESTRIAN ROUTES	• Minnaar, Visagie and Bosman Streets have physical strengths	• Minnaar Street is underutilised • Skinner Street does not allow for pedestrian use • All streets are unfriendly to pedestrians	• Create pedestrian friendly sidewalks to encourage walking • Create safe pedestrian crossings etc. at Skinner Street • Development on the island at Skinner Street	• Skinner Street will likely always be a fast vehicular route through the city	• Improvement of existing pavements and pedestrian routes • Strengths of Minnaar, Visagie and Bosman streets emphasised • Intervention to allow safe pedestrian crossing of Skinner Street
VEHICULAR/TRAIN ROUTES	• Proposed BRT system • Easy access to transport nodes • Gautrain	• The city is predominantly designed for vehicles and not pedestrians	• Gautrain will make Paul Kruger etc. a main tourist area • BRT route could reduce the need for private transport and increase pedestrian movement • Reduce number of parking lots • Create bicycle friendly lanes	• There is no immediate solution, you cannot design a city with no cars, only try and manage them	• Allowance made for the BRT route • Station emphasised as an important transport node • Design for fewer cars and slowing down traffic, however not the forced removal of cars • Off street parking limited and parking lots removed
SCALE & PROPORTION	• Variety of scale along Paul Kruger Street • Proportions of city blocks (N/S acceptable)	• Some streets do not utilise the correct heights • Too many 1 storey buildings and buildings between 5-6 story buildings • City blocks are too long in E/W direction	• Increasing of densities due to open pieces of land and current height of buildings • Arcades could reduce dimension of blocks in the E/W direction	• Heritage buildings are of a much lower scale than the density required	• New buildings to [re]late to the existing scales and proportions of their neighbours • Create walkways through the blocks to limit the E/W length of blocks • Increase heights of

					lower buildings where allowed
MATERIALS & TEXTURES	• Variety of materials & textures in the area	• Road surface harsh • Sidewalks need attention, except in Minnaar Street	• There is a rich dialogue in which we can take park • Sidewalks to be improved and easily accessible	• Lack of context analyses	• Try to refer to the rich dialogue of textures and colours that make up the city
ASPATIAL	• Minnaar Street - flush, enjoyable walk • Residential area still has many trees • Paul Kruger is vibrant	• Skinner Street - dead, inaccessible space to pedestrians	• To create vibrant, energetic environments which are accessible and democratic	• Decay & litter • Excessive allowance for private car use	• Commercial activity/buzz created • Creation of 24 hour activity environments
LEGISLATION	• 60 year protection of historically rich buildings • Zoning of the area allows for increased density	• Too many frameworks exist that do not link the area as a whole • The frameworks that exist are too vague in their solutions	• Government will provide incentives to occupy this part of the city (e.g. tax breaks) • Increase density • Create one framework for all people to follow rather than having many different ones	• Municipalities are unwilling to make and implement bold decisions	• [Re]zoning to allow increased densities
LANDSCAPING	• Minnaar Street has lovely vegetation leading to Burger's Park	• No trees in Paul Kruger makes for a harsh & hot environment • Fences around public green spaces make areas inaccessible • Not enough green pockets within walking distance to one another	• City Hall Square • Opening up public gardens to the public • Take advantage of the good qualities at Burgers park • Increase green spaces within the city	• The fact that you can't plant new Jacaranda trees in the Jacaranda city	• Increased number of trees on pavements etc. • Fences around public and semi-private zones to be removed and not allowed • Development of city hall square