

LAYERING THE CITY:

RE-USE OF THE OLD PRETORIA FIRE STATION

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_ ABSTRACT:

Keywords:

re-use

existing urban areas

underutilised spaces

inward orientated

open-up

the good city

layering

centre for architecture

fire station, museum park, pretoria cbd

Due to considerations for sustainable development and urban sprawl we have to address the growing concern of abandoned buildings and cities.

Underutilised buildings and urban spaces are the development sites of the future.

This dissertation investigates the problems of underutilised buildings and cities, and by doing so aims to contribute to a good urban environment, “the good city” according to Stern (2003: 21). As a further challenge, many of these underutilised buildings were designed with abrupt thresholds and inward orientation, instantly divorcing them from the public domain.

Therefore not only is the re-use of an existing building explored, but is the extension of the public realm into the building also investigated.

The project addresses this extension of the public realm through layering as a tool and a design generator. The layered tectonic is applied through spatial, componential, material and transitional layering.

The building chosen for the dissertation is the old Pretoria Central Fire Station. The new proposed programme is a Centre for Architecture.

Site information:

Name: Old Pretoria Central Fire Station

Date: 1912

Location: 449 Bosman Street,
corner of Minnaar Street

Pretoria CBD

Erven 913 + 914

Between African Window and City Hall

GPS Coordinates: 25 S 45' 12.99" and 28 E 11' 8.61"

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01_INTRODUCTION:

“We don’t need new cities; we need to re-use and make better use of our existing urban areas.” (Stern, 2003: 21)

Wandering the streets of the Pretoria Central Business District (CBD), one would not need to look far to pick out signs of urban decay. Visibly abandoned buildings interrupt the city’s skyline and vacant spaces, serving no function except to invite informal activity, is a common feature of the city.

Many of these lost features are modern era structures and presently unkept spaces that simply need to be rehabilitated to a modified version of their original forms to be successfully integrated into the city’s composition fabric.

There are also the structures that have served their time in a past era and have outlived their original purpose. These structures have been left to decay for many years, their owners unable to find a sustainable use for them or adapt them to a suitable current use or way of living.

This dissertation puts forward a proposal for the adaptive re-use¹ of an existing and underutilised building found in the Pretoria Central Business District (CBD).

As a further challenge, many of these underutilised buildings

were designed with abrupt thresholds and inwardly orientated, instantly divorcing them from the public domain.

Therefore not only is the re-use of an existing building explored, but is the extension of the public realm into the building also investigated.

1.1 BACKGROUND + CONTEXT

Due to concerns for sustainable development and urban sprawl we have to address the growing concern of abandoned and underutilised buildings and cities.

¹ Adaptive re-use refers to the process of converting an old building to new uses usually involving a re-organisation of the building within an existing envelope. Its purpose is to make an old structure viable, contemporary and relevant, and reintegrate it in its environment. (Sheppard, 1981: 601)



1. Old Pretoria Central fire station:
Proposed site for dissertation
2. Cultural History museum
3. City Hall
4. Pretorius square
5. Natural History museum
6. Burger's park
7. Klein Teater
8. Melrose House
9. Barton Keep house
10. Victoria Hotel
11. Pretoria Metro train and Gautrain stations
12. Bus station
13. Taxi rank

Figure 1.1: Aerial photograph of Pretoria CBD south of Church square, with the context area and site indicated. (Source: Google Earth)

City fabric have to be adapted to suite current users' needs and in the process make city spaces more appealing to citizens in an effort to draw people back to the inner cities. Existing public squares and parks have to be improved, and infill of new green spaces into the city fabric should be a focus if the charm of the green periphery developments is to be challenged.

The accessibility of public parks and buildings have to be addressed for inner-city regeneration to be possible. Public amenities have to be improved, as well as the public interface of these facilities.

Underutilised spaces are the sites of the future.

The site was identified through criteria set by the author, as well as context analysis. The criteria as set by the author:

- an existing building
- abandoned or underutilised, of
- heritage value or older than sixty years
- within the Pretoria CBD with
- high potential of social interaction by the public (high traffic zone, or high potential thereof)

The selected site was chosen because of its potential to be integrated within an urban community due to its location, as well as to bring needed cohesiveness to the inner-city museum park precinct. The site is also located within walking distance from public transport nodes.

1.2 AIM

The aims of the proposed dissertation are to:

- show that it is possible to re-use an existing building in the Pretoria CBD and in doing so 're-knit' the holes in the city fabric. Adaptive re-use and infill can bring new life to abandoned/ underutilised places (building and context).
- promote public space through the new intervention (place making) and the accessibility of it.
- use heritage as catalyst for regeneration through adaptive re-use, by conserving the existing structure, but at the same time adding value through the new intervention.
- implement and integrate the new within the existing, but also contribute in developing a new identity, while respecting the existing.

- implement a new contemporary tectonic that can stand juxtaposed to the existing tectonic, the then contemporary. Through the investigation, parallels will be drawn between the existing tectonic and the possible new tectonic in order to find the contemporary tectonic (language) for the existing one.

1.3 DEFINING THE PROBLEM

The goal of the dissertation is to investigate the problem of underutilised buildings and cities, and in doing so contribute to a good urban environment, "the good city" according to Stern (2003: 21), in spite of the deterioration of these urban spaces due to their often inability to adapt to current use and living. The dissertation will attempt this through layering as a tool for the analysis of the existing as well as a design generator.

SPECIFIC PROBLEM

This dissertation will investigate the re-use of the historic old Pretoria Central fire station into a public building, as well as

the sensitive integration into the inner-city museum/ historical precinct of Museum Park, in Pretoria CBD. The dissertation will also attempt to make the city spaces more user friendly and cater for the public user's needs.

SUB-PROBLEMS

Possible sub-problems that might be encountered during the research stage and the proposals of the urban design and building intervention:

- Public buildings are not very accessible due to barriers and edges, like palisade fences. These barriers will have to be removed to make the urban environment function successfully. Once these barriers are removed, security should be considered in the design.
- Redesign of the public interface or reception areas to make these buildings more accessible and inviting.
- Address the public's perception that museums are for the elite. Re-branding of museums might have to be considered.
- Re-programme or add additional public programmes to

the existing museums to make the programme more public orientated. This can help change public perception.

- The pedestrian environment and infrastructure must be investigated. Improvement on walkways, pedestrian crossings and lighting might be necessary.

I.4 ASSUMPTIONS & DELIMITATIONS

- No original drawings exist of the current building(s).
- Hard copy drawings from 1998 of the proposed Discovery Museum for Children were in the possession of Museum Park.
- These hard copies, together with on-site measurements taken by the author, site visits, photos and drawings of similar buildings, informed and assisted in drawing the existing buildings.
- In no way should these drawings be accepted as completely accurate, but as educated assumptions concluded from the research and analysis done by the author.
- These drawings were accepted by the author as the exist-

ing in order to propose the new design.

I.5 HYPOTHESIS

In an attempt to activate better use of the underutilised space, the building will be turned inside-out: the formal, inward orientated, uninviting building will be opened up to be outward orientated, flexible, public city space. The intervention will attempt to extend the public realm into the building in an effort to make the building more accessible and inviting to the public. The programme will adapt to become more public in order to meet current needs.

I.6 RESEARCH METHODOLOGY

Research will be done by means of literature reviews, precedent studies, field work and interviews. Context (urban, historical and social context), site and building analysis, the client and the users will be researched, to identify the current situation, opportunities and needs. All information will

be collected and assessed. To assist in finding a solution to the design problem, applicable theories will be identified, and the argument will be narrowed down to one or two main theories. Further research will be informed by precedent studies and heritage charters, and a statement of significance will be created.

The design approach is defined through guidelines and criteria concluded into set parameters compiled from the exploration into the context, theory and precedent study. The findings are applied into a design solution, showing how the problem can be solved. All aspects of the design development are solved by applying these guidelines. See figure 1.2 for a diagrammatic explanation of the process.

The proposed intervention is the product of the necessary recording, analysis and interpretation of all historical-, cultural- and social values applicable to the specific site and its setting (both historic and current), as well as the theory and the design concept. See figure 1.2

² An Article 21 company is a South African nonprofit organization. Any income goes towards maintenance and/or administration.

1.7 CLIENT + PROGRAMME

On embarkment of the dissertation the proposed client was Museum Park, an Article 21² organisation established in 1995, whose main objective is the marketing of museums in the inner-city of Pretoria. Museum Park is currently located in the Old Pretoria Fire Station building. After the context mapping and analysis were done it was decided that the City Hall is a more appropriate location for Museum Park's office. In accordance with the museum nature of the area it was decided to incorporate a new museum or cultural centre for architecture.

The new proposed client will be institutions and councils within the urban design and architecture professions partnered under one umbrella. They will all be represented together under one roof. This will create a platform for professionals and the public to interact.

1.8 OUTLINE OF STUDY

Introduction:

Chapter 1: Background and context, aim, problem, hypothesis, methodology and introduction to the client.

Exploration: will conclude in guidelines for proposed development:

Chapter 2: Theory, heritage charters and precedent study.

Chapter 3: Context: location, background and information, mapping and analysis, proposed urban framework, site allocation and justification.

Chapter 4: Site analysis: neighbouring buildings, urban conditions and problems. Building analysis: history, uses, alterations, structural analysis, spatial analysis, identified problems and statement of significance.

Chapter 5: Client and programme.

Development:

Chapter 6: Design development.

Chapter 7: Technical development and technical precedents.

Product:

Chapter 8: Drawings.

Conclusion

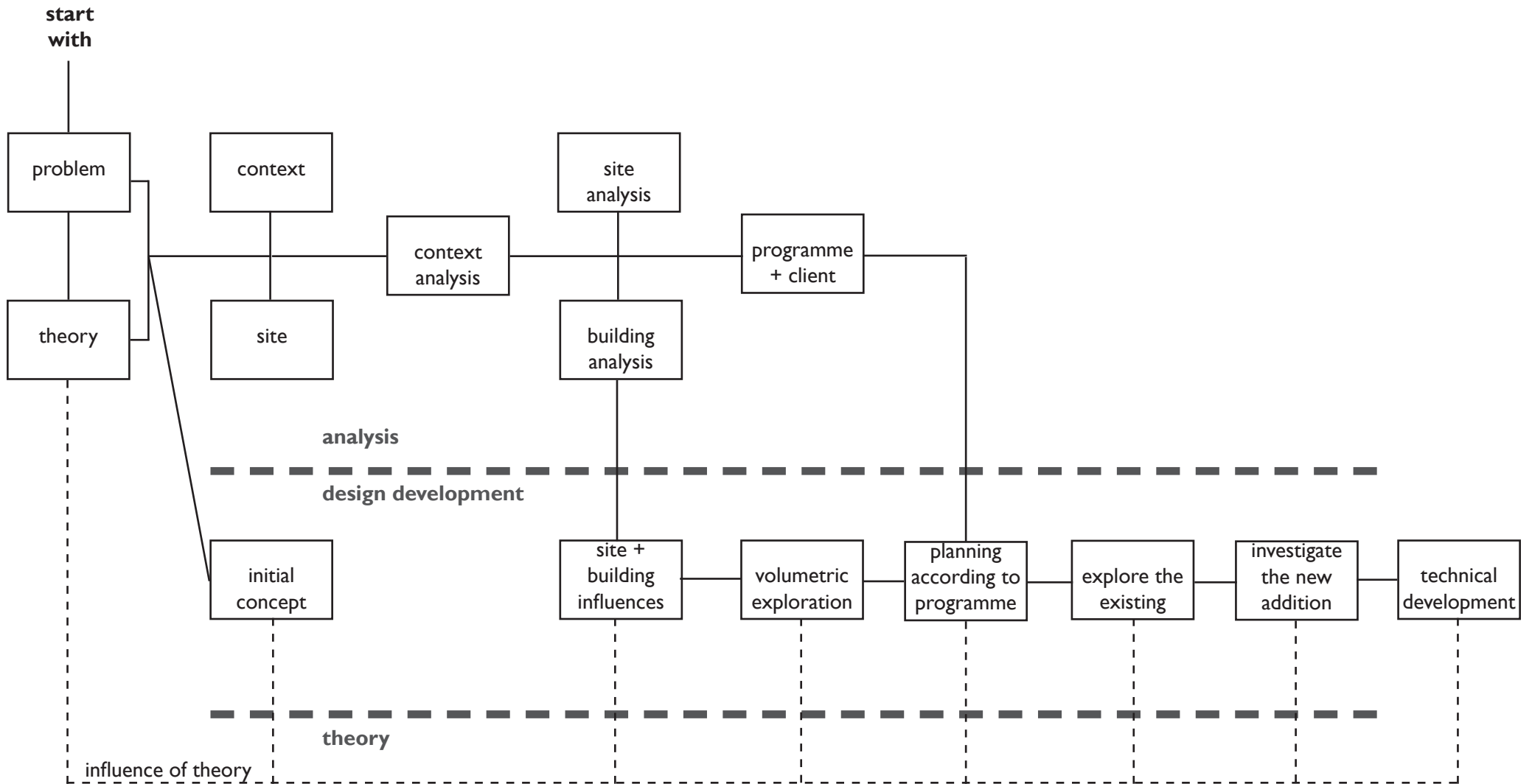


Figure 1.2: Diagram explaining the methodology used. (Source:Author)

02 _THEORY:

2.1 INTRODUCTION

The literature review will set the parameters for the design intervention. This chapter will first investigate an urban design approach, followed with an investigation into relevant heritage charters, and then conclude with layering as main theory. Layering will be defined and the application of layering in terms of architecture will be investigated through relevant precedent studies.

2.2 THE GOOD CITY, AN URBAN DESIGN APPROACH

In an attempt to define the good city that we as architects should advocate, the dissertation will investigate:

- Kevin Lynch's principles as a traditional top down approach
- Dewar and Uytendogaardt's manifesto on South African cities for local context

- The current debate on the good city at the beginning of the 21st century.

2.2.1 THE IMAGE OF THE CITY, KEVIN LYNCH, 1960

In Lynch's view the image of a city is comprised out of five elements that are interdependent (Lynch, 1960).

(a) Path

Two elements; the road and the visual corridor. The path is the critical component of urban spatial structure, or the framework of a city. It is the basic element of the identification of a city, linking all other components.

(b) District

Distinct districts have their own characteristics, with a social,

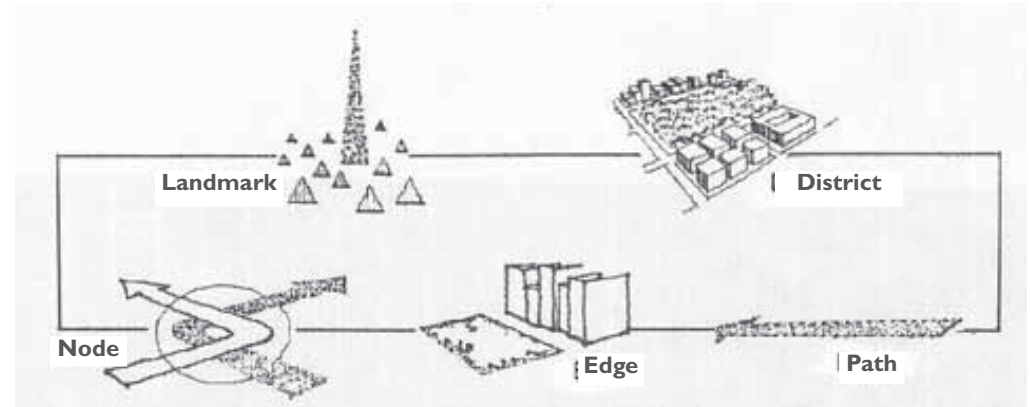


Figure 2.1: Five Key Elements of Urban Form (Source: Lynch, 1960: 47)

historical and cultural identity and community function. A precinct. For example historical architecture or modern high-rise buildings, a residential or industrial identity.

(c) Edge

The boundary between districts; either natural topography or artificial form, such as a greenbelt, waterfront or street wall.

(d) Node

A gathering place, an important focal point. It is usually the centre of a district that has the same functions and characteristics. It is important for people to clearly perceive the node and its surroundings.

(e) Landmark

A unique point in an environment, distinguished from its surroundings. It can be natural topography, trees, buildings or a particular feature. Landmarks provide orientation and hint at

the surrounding urban structure.

2.2.2 A MANIFESTO FOR CHANGE,

DEWAR + UYTENBOGAARDT, 1991

The following guidelines from Dewar and Uytendogaardt's manifesto are important for this dissertation;

(a) Accessibility

The degree of accessibility to public facilities for all urban residents are important in order to measure the success of an urban environment. It refers to the ease of access to facilities that exist within cities.

(b) Enclosure

If access to these facilities is limited through enclosure, it contributes to the privatisation (in practice) of former public

space and amenities contained within. It does so by restricting access into public buildings through palisade fences and gates. Closures reduce and negate many urban activities by restricting (and prohibiting) access, therefore constraining many aspects of urban life.

(c) Equity

All residents should enjoy relatively easy and equitable access to urban opportunities. Successful cities are unbiased. In positive performing environments it is possible for poorer inhabitants to gain access to opportunities and facilities which are generated through the resources of the more wealthy as a result of integration (Dewar & Uytendogaardt, 1991).

2.2.3 THE GOOD CITY

IN THE 21st CENTURY

In a book of essays edited by Bernard Tschumi at the beginning

of the current century, a new dialogue is opened on what the good city is at the beginning of the twenty first century.

Robert A. M. Stern writes that “we must make and preserve these cities, and for that, we need a vision of the good. What is a good city? What is the good city we as architects should advocate?” (2003: 21).

Stern continues stating that “we don’t need new cities; we need to reuse and make better use of our existing urban areas” (*ibid.*), as well as that “urbanism is about human life³. It is not about human form” (*ibid.*).

In another article Pasquarelli calls for an approach that “leads us closer to the goal of promoting human life over form... instead of traditional top down planning practices, I suggest that architects might look for specific, localised opportunities to intervene in the city’s fabric and infrastructure.” (*ibid.*: 24)

³ According to Stern the users and their needs should enjoy priority above architectural form or aesthetics (Stern, 2003: 21)

2.2.4 SUMMARY

In summary, according to the aforementioned literature, the following guidelines are important to advocate and design the good city;

- Follow good practice guidelines, like Lynch’s principles.
- Design for accessibility (ease of access) and equity.
- Urbanism should be about human life, not form.
- Traditional top down practice and principles that are followed blindly may lead to prioritising form over human life. A balance between the two should be achieved.
- Work within the existing fabric in an attempt to improve it for human life, and to mend the city fabric.
- Identify localised opportunities with specific needs.

These guidelines will be implemented during the proposed

urban framework.

2.3 HERITAGE CHARTERS

2.3.1 OVERVIEW

Paul Meurs states in his book, ‘Building in a stubborn city’, that the practice of intervention in projects of cultural-historic significance has shown that there are no clear guidelines or solutions for designing in a historic setting. “Each intervention requires its own framework and needs to be carefully integrated into the context.” (Meurs, 2008: 53)

⁴ Heritage charters are international accepted guidelines, to which a body such as the International Council on Monuments and Sites (ICOMOS) prescribed to. These charters are guidelines on how to approach the conservation of buildings, cities and sites with heritage value.

Meurs also states that heritage charters⁴ are sometimes blindly followed and this can lead to the loss of the intangible heritage (*ibid.*: 87). Heritage charters can even be abused to support the interventions (*ibid.*: 69). Charters should be seen as a source of reference and education. They contribute to well-thought-through interventions based on science and the expertise of specialists.

The proposed intervention must therefore be the product of the necessary recording, analysis and interpretation of all historical-, cultural- and social values applicable to the specific site and its setting (both historic and current); it must also be supported by legal and/or acknowledged heritage frameworks and guidelines, like the Heritage Charters.

2.3.2 CHARTERS

Relevant charters for the specific assignment will be the Venice -, Burra -, and Ename Charter, as well as the UNESCO Paper No. 9. Below are the guidelines from each charter that

are applicable.

I. The Venice Charter 1964

- Article 1: The concept of a historic monument embraces not only the single architectural work but also the urban or rural setting in which is the evidence of a particular civilization, a significant development or a historic event is found.
- Article 3: The intention in conserving and restoring monuments is to safeguard them as historical evidence.
- Article 5: The conservation of monuments is always facilitated by using them for a social purpose. Therefore such use is desirable, but it must not change the layout or decoration of the building. It is within these limits only that modifications demanded by a change of function can be envisaged and may be permitted.
- Article 6: The conservation of a monument implies preserving a setting which is not out of scale. Wherever the traditional setting exists, it must be kept. No new construction, demolition or modification that will alter the relations of mass and colour must be allowed.

- Article 7: A monument is inseparable from the history to which it bears witness and from the setting in which it occurs. The moving of all or part of a monument cannot be allowed except where the safeguarding of that monument demands.
- Article 9: The aim of restoration is to preserve and reveal the aesthetic and historic value of the monument and is based on respect for original material and authentic documents. Any extra work which is indispensable must be distinct from the architectural composition and must bear a contemporary stamp.
- Article 12: Replacements of missing parts must integrate harmoniously with the whole, but at the same time must be distinguishable from the original so that restoration does not falsify the artistic or historic evidence.
- Article 13: Additions cannot be allowed except if they do not detract from the interesting parts of the building, its traditional setting, the balance of its composition and its relation with its surroundings. (ICOMOS, 1965: 1-3)

2. The Burra Charter 1979, reviewed in 1999

This document encourages a cautious approach to change: “do as much as necessary to care for the place and to make it usable, but otherwise change it as little as possible so that its cultural significance is retained” (Australia ICOMOS, 1999: 1).

“Places of cultural significance enrich people’s lives, often providing a deep and inspirational sense of connection to community and landscape, to the past and to lived experiences. They are historical records that are important as tangible expressions of ... identity and experience. Places of cultural significance reflect the diversity of our communities, telling us about whom we are and the past that has formed us and the ... landscape.” (*ibid.*)

3. The United Nations Educational, Scientific and Cultural Organization’s (UNESCO) World Heritage Paper 9, 2003

The following points are important in the guidelines of UNESCO’s Paper 9;

- Culture and heritage are important vectors for development and stimulus.
- Heritage policies must benefit the people.
- Recovery and protection of the collective memory can be a central part of the common social project.
- Improve the quality of people’s physical surroundings, especially in neighbourhoods and public spaces, and stimulate community life and the social experience by preserving the ambiance and spirit of urban spaces.
- Improving neighbourhoods and social space, by laying the groundwork for dynamic social and cultural activities. Events are expressions of community and cultural life and can contribute just as much to a city’s spirit of place.
- Public participation in the decision-making process: Evaluating the needs and human resources of a given historical neighbourhood is indispensable. Respond to the inhabitants’ most important needs. (UNESCO, 2003)

The UNESCO Paper 9 focuses on heritage as a vector for development to benefit the people by improving social spaces and activities and meeting their important needs.

4. The Enane Charter

The aim of this Charter is to define the basic objectives and principles of site interpretation in relation to authenticity, intellectual integrity, social responsibility and respect for cultural significance and context. Interpretation and presentation programmes should heighten public awareness and enhance understanding of cultural heritage site.

- Principle 1: Access and Understanding - Interpretation and presentation programmes should facilitate physical and intellectual access for the public to cultural heritage sites.
- Principle 3: Attention to Setting and Context - The Interpretation and Presentation of cultural heritage sites should relate to their wider social, cultural, historical and natural context and setting.
- Principle 4: Preservation of Authenticity - The Interpretation and presentation of cultural heritage sites must respect the basic tenets of authenticity in the spirit of the Nara Document 1994.
- Principle 5: Planning for Sustainability - The interpreta-

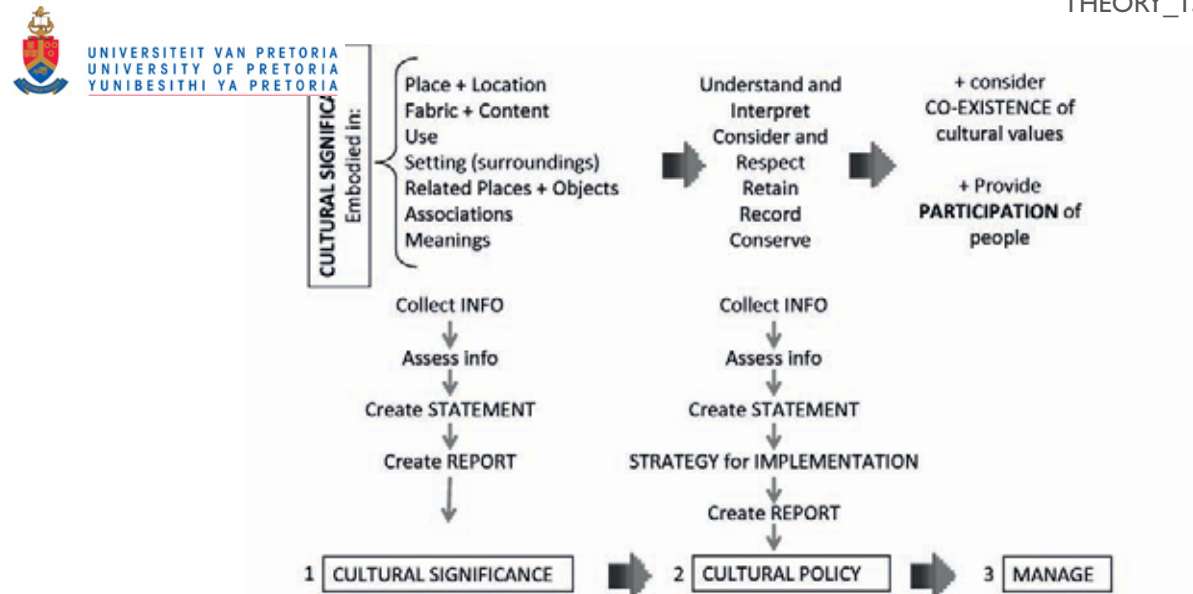


Figure 2.2: Schematic representation of the Burra Charter's proposed methodology and guidelines to be followed. (Author's own)

tion plan for a cultural heritage site must be sensitive to its natural and cultural environment, with social, financial, and environmental sustainability among its central goals. (ICOMOS, 2007)

2.3.3 GUIDELINES

“By defining the cultural significance of a building..., and relating it to the actual physical situation, we can determine and assess the impact of the envisaged intervention on the value as a monument. Thus, cultural-historical studies can identify the opportunities for preservation and change, depending on the historical characteristics, current situation and new needs.” (Meurs, 2008: 88) [My underlining]

After collecting all available information, creating a cultural significance statement and researching applicable heritage legislation (charters) and current practice (precedents) specific to the context of the assignment, a strategy for implementation can be implemented.

The following are guidelines to be used as a framework for the envisioned intervention;

(a) Heritage values

- The new intervention will use heritage as a catalyst for development. It must add value and inject new life into the monument and its setting.
- Not just the physical monument has value, but also the setting which includes historic events.
- Respect heritage values.

(b) Cultural values

- Consider co-existence of possible multi-cultural values found on the site and provide participation of people.

(c) Social values

- The intervention should benefit people by improving social spaces and activities and meet peoples' important needs.

(d) New programme

- Must focus on a socially useful purpose in order to be sustainable and successful.
- Should meet current social uses and needs.
- Must address real life issues and be grounded.
- Stimulate public interest.
- Must strive to be sustainable.
- Must have the possibility for flexibility in programme.
- Should inject new life into building, create weekend and after hours gathering space.
- Should be a possible source of revenue.
- Should have universal access.

(e) Infill and adaptive reuse

- Respect the existing layout and circulation.
- Respect original material.
- New additions cannot detract from the historical value of the building, its traditional setting, the balance of its composition or the spatial quality of the interior.
- The new intervention or structure must be independent

and free standing to have minimum impact on the existing structure.

- Any extra work must be distinct from the architectural composition and must bear a contemporary stamp⁵. The new addition must be distinctive in materiality.
- Attention must be given to the design of details, like the fixing of the new to the old, in order to preserve or not damage the existing, or alternatively the new additions can be structurally independent from the existing.
- New additions can be prefabricated or even demountable.

(f) Presentation

- Implement presentations to heighten public awareness and enhance understanding of the specific heritage monument. (E.g. implement museum or exhibition space in monument and make accessible to public).

⁵ Through the use of current materials, construction methods, ideas or styles of the present the new intervention will bear a contemporary stamp.

2.3.4 SUMMARY

By using the above guidelines an assessment on the impact of the intervention can be made.

The intervention should;

- Be within the cultural significance that was stated.
- Be within a framework of heritage legislation.
- Use current good practice (precedents).
- Relate to the actual physical situation.
- Meet current needs.
- Have a positive social impact.
- Add value to the existing heritage monument.

2.4 LAYERING

2.4.1 DEFINITION OF LAYERING

To explain and define layering, also known as stratification, the palimpsest and Michel Foucault's theory on Archaeology will be investigated.

(a) Palimpsest

Palimpsest is probably the best known example of layering. The definition of the palimpsest in different contexts are as follow;

1. Parchment: The Oxford dictionary defines a palimpsest as "an ancient sheet of parchment from which the original writing has been removed to make room for new writing" (Oxford University Press 2006: 491). Often traces of the previous manuscript(s) remained visible.
2. Forensic Science: In forensic science the overlaying

of clues revealing the sequence of events at a crime scene is known as palimpsest.

3. Psychology: In psychology palimpsest refers to the erasing of memories in the subconscious.

4. Architecture: Architecture can represent time as layers of the existing and the new, and how through their juxtaposition the various times can be revealed and expressed.

(b) Archaeology

The use of the term archaeology derived from the writings of Michel Foucault (Hays, 1998: 620).

Archaeology according to Foucault;

- Analysis as a process of deconstruction/ decomposition of superimposed systems.
- Not a closed system, but system of interweaving languages/ layers.
- Cannot just study the object, but also the systems of

knowledge of the object, i.e. study the history and the context.

- The layers offer themselves in a discontinuity over time, whose reading as juxtaposition is the closest estimate to reality at our disposal.
- Analysis and comprehension of the processes of juxtaposition elucidate relationships of the layers/system.

According to Foucault these systems/layers;

- Move independently according to their own logic.
- Approach one another without touching.
- Draw nearer, yet never make contact.
- Overlap

2.4.2 APPLICATION OF LAYERING IN ARCHITECTURE

Layering in architecture is examined. One of the best known architects who used layers in practice was Italian architect Carlo Scarpa. South African precedents will also be examined.

(a) Types of layering defined

During the investigation the author found different approaches towards layering and ways to implement it into architecture. Below and in figure 2.6, these types are named and explained. The precedent studies were analysed accordingly.

I. SPATIAL LAYERING

Spatial layering is divided into two categories;

a. **Views** - experience spatial sequences through visual axis, this creates transparency.

b. **Movement / circulation** - experience spatial sequences through by through consecutive spaces, and understanding a space as a succession of planes.

2. LAYERING OF AN ARCHITECTURAL COMPONENT

Architectural component layering is the deconstruction or pulling apart of an architectural component, like the wall.

3. MATERIAL LAYERING

Material layering is used as a tool to juxtapose the old and newly added materials. Material layering is divided into two categories;

a. **Gapless material layering in cross-section** - the gapless juxtaposing of the old and the new through assembly and palette (colour, texture, pattern, and form), like wall cladding. Looking at this layering in elevation Scarpa would leave gaps in or around the new enabling one to see the original behind the new.

b. **The void between materials in cross-section** - the juxtaposing of the old and the new by separating the old and the new structure with a void between them. The new would be set back from the original.

4. TRANSITIONAL LAYERING

With transitional layering points of transition and interface are treated with importance. Transitional layering is also divided into two categories;

a. **Thresholds** - the transition between one space and another, for instance when a threshold space is introduced in between two spaces with different functions or experiences, or on a smaller scale when the first step at a staircase has a special detail.

Dewar and Uytendogaardt (1978: 176-207) did a study of thresholds, where the differences of thresholds between private and public buildings are indicated, as well as different public threshold typologies. The study shows how a threshold can

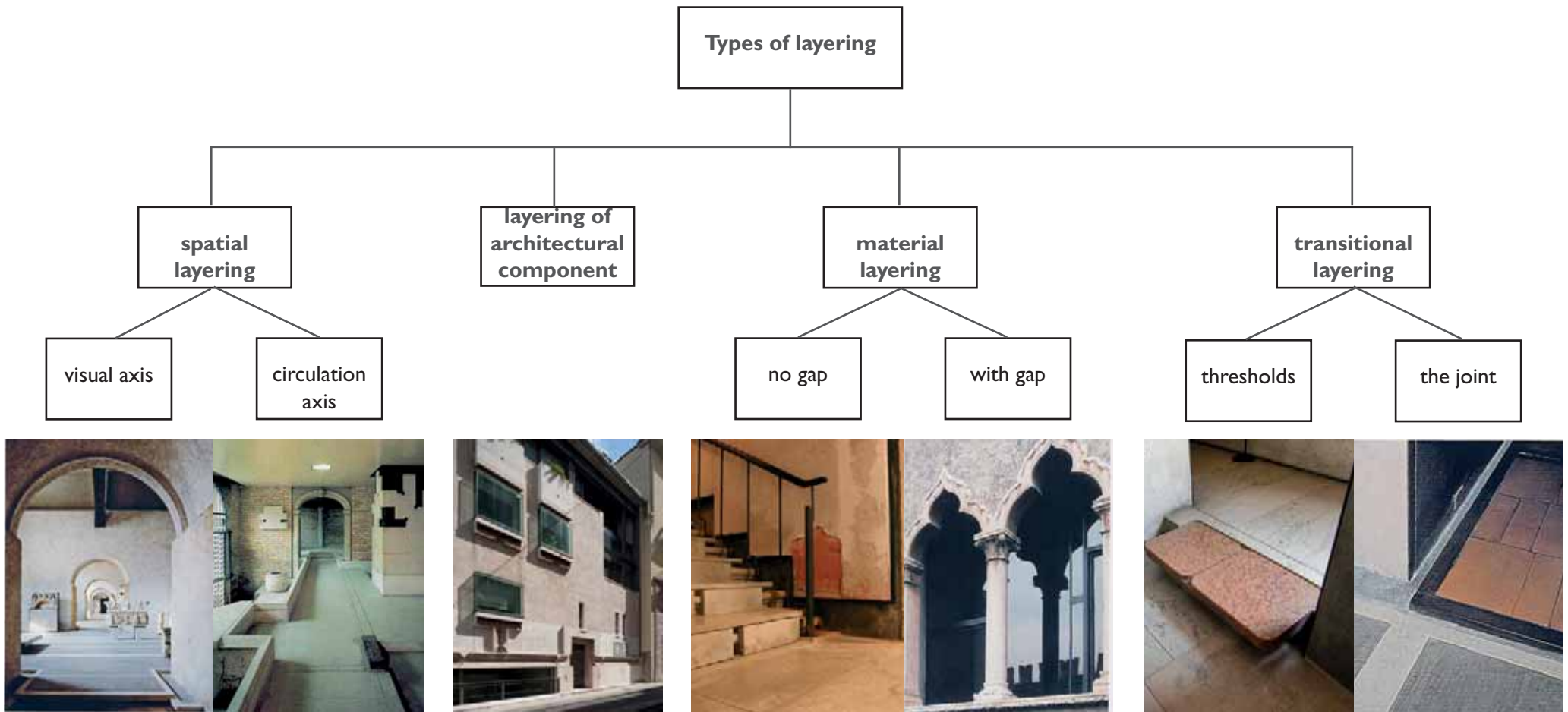


Figure 2.6: Diagram illustrating the different types of layering. (Source: Author)

be stepped back to create public rooms. These public spaces draw the public realm into the building and invite people inside. This leads to a system of layered public spaces instead of an abrupt threshold between public and private (see figures 2.3-2.5).

Zaha Hadid refers to it as porosity: “drawing public space into a building’s interior to make a series of public rooms in the city” (Hadid, 2003: 71). This exploration of hers, she says, is partly in response to London, where buildings tend to be fortified and public spaces come about by accident.

Thresholds, deep edges, layered spaces, porosity, inter face all refer to the same principle of creating a sequence of spaces or edges to define the public and the private realm. The approach to create these layered edges and the spaces within depend on the function of the building in the city.

b. **The joint** - the transition between different materials. Connections are emphasised / accentuated through the joint.

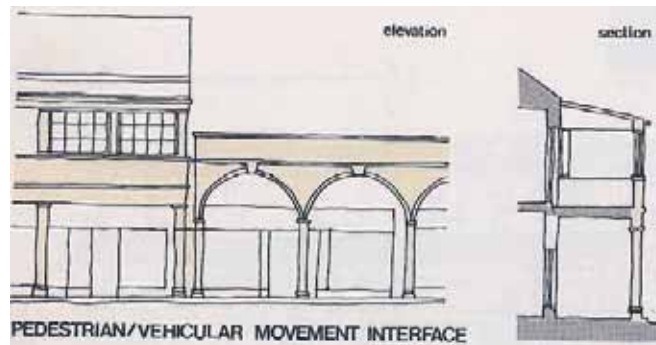


Figure 2.3: The colonnade. (Source: Dewar *et al.*, 1978: 190)

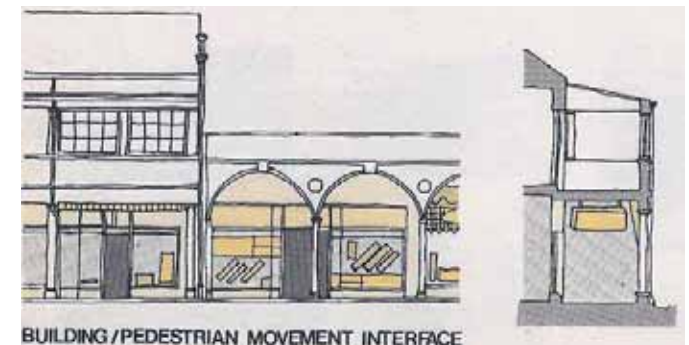


Figure 2.4: The shop window. (Source: Dewar *et al.*, 1978: 190)

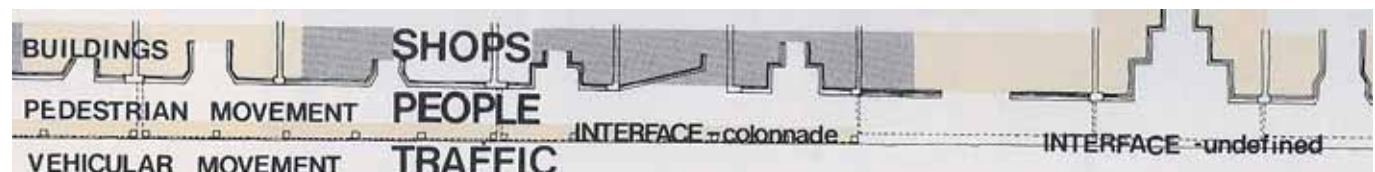


Figure 2.5: Plan showing the different public rooms. (Source: Dewar *et al.*, 1978: 190)

2.5 PRECEDENT STUDIES

2.5.1 INTRODUCTION

The precedent study will be divided into two groups;

1. Tectonics of layering -
Scarpa and two local projects will be examined.
2. Examine the reuse of existing buildings -
why and how?

Aspects to analyse and identify during precedent studies;

- a. Transformation over the years
- b. Aims and reasons for change, as well as problems experienced.
- c. Approach to the existing and the new structure;
Attitude towards the existing.
How the new was added? (Nucleus infill; integrated infill; addition / incision; new shell i.e. new roof or facade; demolish; rebuild; etc.)
- d. Type of layering and how it can be achieved –
 - Spatial layering, both through views and movement; How

was layering achieved in terms of spatial stratification?

- Architectural component layering; any evidence of component layering?
- Material layering; how was the old and the new juxtaposed? How was material layering achieved in terms of assembly, palette (colour, texture, pattern, and form) and layering of the old and the new?
- Transition, both through thresholds and the joint.
- e. Could evidence of the hypothesis of opening up / exposing been found in the design? If it could, how?

2.5.2 PRECEDENT STUDY: LAYERING

CASTELVECCHIO



Figure 2.7: Roof suggesting roof layers. (Source: Schultz, 2010: 85)

a) **Project information**

Project name: Castelvecchio
 Location: Verona, Italy
 Date: 1958-64
 Architect: Carlo Scarpa

(b) **Transformation**

The history of Castelvecchio traces back to Roman times. The actual fortress and bridge was built in 1354-1356. In 1405-1797 it was used for military purposes. In 1799 the French took it over, and in 1806 it was expanded (the L-shaped Caserma). In 1923 it was decided that the city's collection of paintings will be housed in Castelvecchio. The buildings were refurbished and historical elements, like Gothic windows and columns, were added. By the time Scarpa started working on Castelvecchio it has been altered several times. (Schultz, 2010)

(c) **Aims, reasons for change and problems**

The spaces of the fortress were turned into exhibition spaces for art. Scarpa stripped Castelvecchio down to its authentic layer, without destroying the most valuable interventions. What was considered worth keeping was Scarpa's personal decision.

(d) **Approach to the existing and the new structure**

- Scarpa's strategy consisted firstly of an examination and diagnosis phase where he exposed and clarified the layers of history through selective excavation and creative demolition.
- 'In the style of' additions were demolished or removed, and the building was stripped back to its original state. Scarpa didn't practice restoration but rather made history clear or visible.
- Valuable interventions were kept at Scarpa's own discretion.
- This phase was followed by the reassemble and juxtapose of the disjointed members in new composition.
- The new was juxtaposed with the old through materials, form and/or detailing.
- The new was incorporated through integrated infill. Scarpa preferred adding to the existing to designing a whole new structure.
- Scarpa designed to accommodate the required functions, and redefined spaces accordingly.
- Natural light was an important factor/ design generator.

(e) **Layering**

Spatial layering through movement:

- Scarpa layers and accentuates the circulation route through the use of wall heights and wall material layering. People are directed through the curb height walls. Half height or low walls are used at features, like the water feature (figure 2.13).

Component layering:

- The different elements of the roof in the Cangrande were exposed; the structure, the copper and the roman roof tiles (figure 2.7).

Material layering without a void (gapless):

- Layering of wall at riverside through use of different materials, brick and concrete.
- The staircase was layered by adding a new floor finish to the existing (figure 2.9).
- New wall cladding was layered over the existing. A gap was left, on elevation, at the bottom where the old was peeking out. This creates a shadow line (figure 2.9).

- 1 entrance into Reggia
- 2 passage between Casserma and Reggia
- 3 secondary entrance into courtyard
- 4 main entrance into museum
- 5 entrance to library and Sala Bogan
- 6 access to courtyard

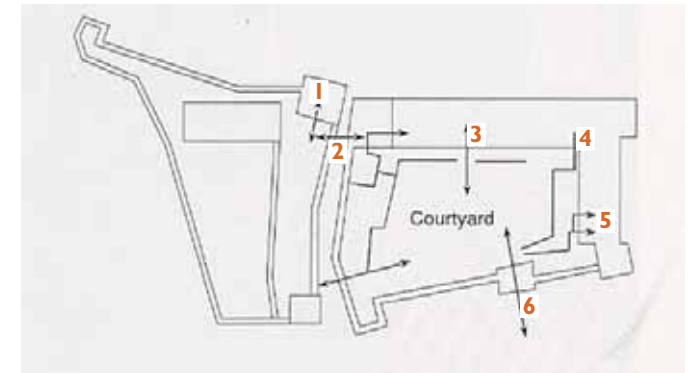


Figure 2.8: Site plan diagram indicating entries and circulation. (Source: Schultz, 2010: 83)



Figure 2.9: New stucco wall panels at staircase with the original wall finish still visible. (Source: Schultz, 2010: 94)



Figure 2.10: New windows set back from the original. (Source: Schultz, 2010: 92)

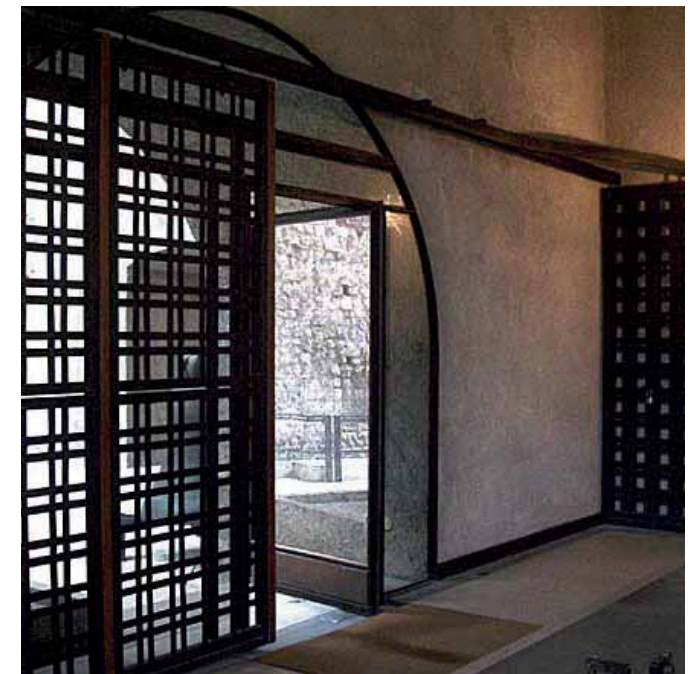


Figure 2.11: New steel door layered through a gap, materiality and geometry. (Source: Schultz, 2010: 94)

Material layering with a void:

- New glazed walls and openings in courtyard facade were set back deliberately and juxtaposed behind the existing facade with a void in between (figure 2.10).
- New door on the inside of the wall, not just separated through location but also through geometry and materiality (figure 2.11).

Transition layering through thresholds:

- Create thresholds through;
 - change in paving materials
 - change in paving patterns (figure 2.15)
 - framing the floor material edges (figure 2.14)
- Created threshold areas between main spaces, e.g. the entrance lobby between the Caserma and the offices, and the Cangrande between the Caserma and the Reggia.

Transition layering through the joint (figure 2.12):

- A bronze metal strip is inserted between different materials.
- At the Caserma in Castelvechio the floor material is framed and a gap is left between the wall and frame/ floor

finish; this border defines the space, and creates spatial quality, a platform within the room.

(f) Evidence of the hypothesis of opening up / exposing

- Scarpa exposed the original, thus making history visible.
- The way that the new was layered onto the old made the new and the old distinctive and clearly visible, therefore the different layers can be read as a timeline.

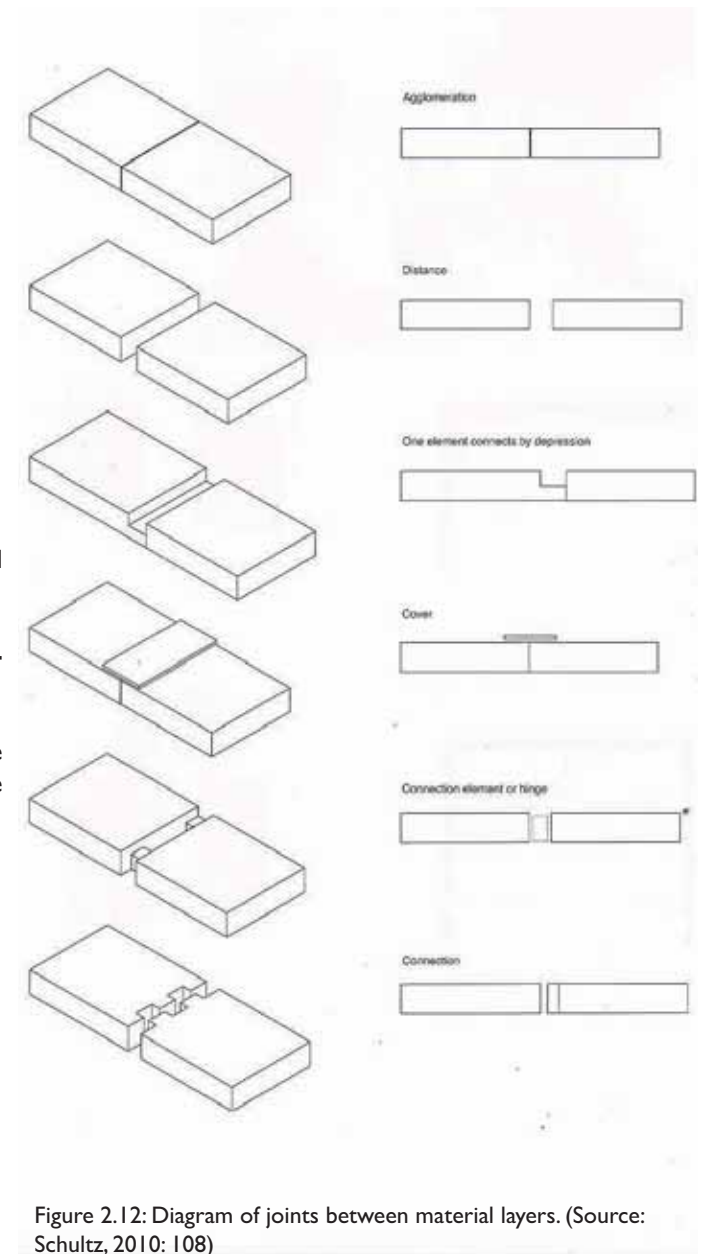


Figure 2.12: Diagram of joints between material layers. (Source: Schultz, 2010: 108)

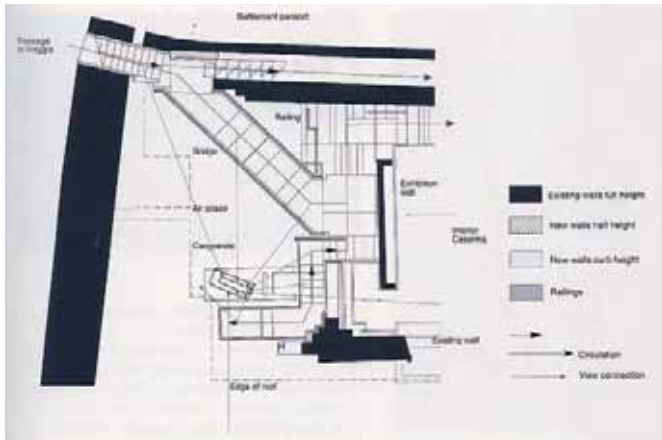


Figure 2.13: Cangrande first floor plan illustrating circulation and views. (Source: Schultz, 2010: 89)

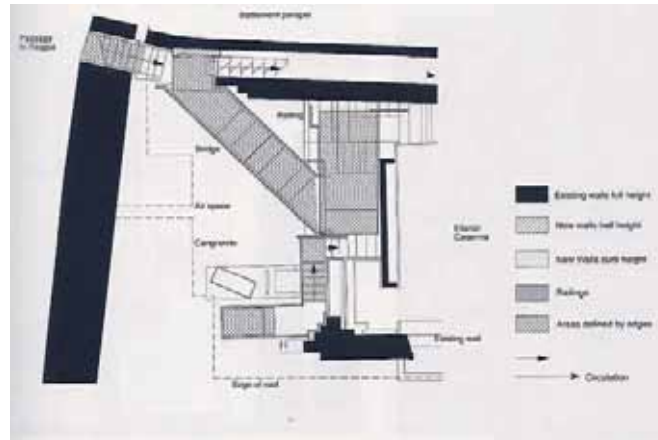


Figure 2.14: Cangrande first floor plan illustrating areas defined by edges. (Source: Schultz, 2010: 89)

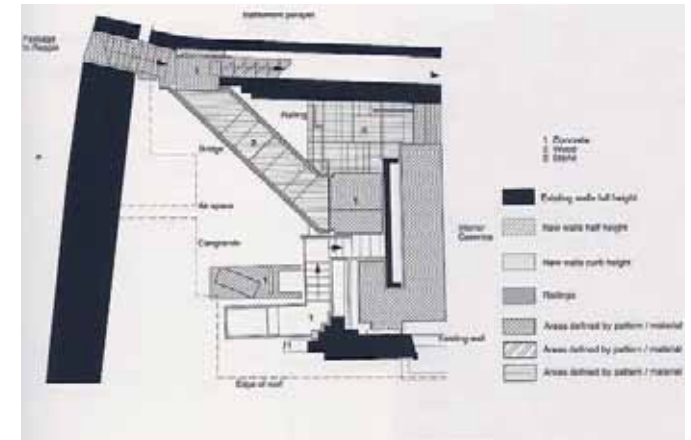


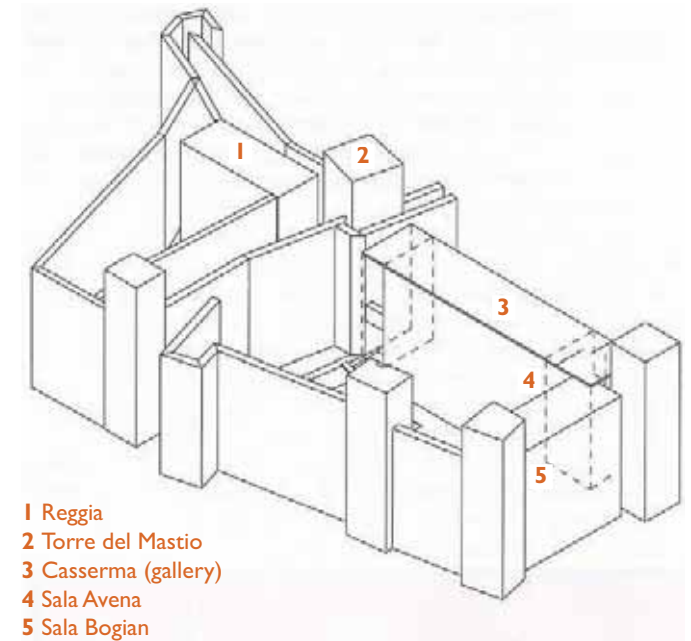
Figure 2.15: Cangrande first floor plan illustrating areas defined by floor patterns. (Source: Schultz, 2010: 89)



Figure 2.16: Cangrande first floor. (Source: Schultz, 2010)



Figure 2.17: Threshold layering through step detail. (Source: Schultz, 2010: 59)



- 1 Reggia
- 2 Torre del Mastio
- 3 Casserma (gallery)
- 4 Sala Avena
- 5 Sala Bogian

Figure 2.18: Locations of layering applied: transition between Casserma and Cangrande, and at new library. (Schultz, 2010: 104)

2.5.3 PRECEDENT STUDY: LAYERING

FONDAZIONE QUERINI STAMPALIA



Figure 2.19: View of exterior and bridge. (Source: Schultz, 2010: 97)

(a) Project information

Project name: Fondazione Querini Stampalia
 Location: Venice, Italy
 Date: 1510-1523; 1961-1963
 Architect: Carlo Scarpa

(b) Transformation

The palace was built in 1510-1523. When the owner, Giovanni Querini Stampalia, died in 1869 the palace and his collection of art were turned into a study foundation. (Schultz, 2010).

(c) Aims, reasons for change and problems

The ground floor of the palace was remodelled into venue space for special occasions or exhibitions, lectures and gatherings.

(d) Approach to the existing and the new structure

Integrated infill was used to adapt the existing into venue space.

(e) Layering

Spatial layering through views (figures 2.23 + 2.25):

- Spatial stratification is used well in this project, it is possible to simultaneously experience intimate and public spaces. Looking from the outside through the water gates, a glass partition, the exhibition space, the glass doors, and finally the courtyard garden. Scarpa's different materials and colours that characterise each individual space are experienced all at once. A dialogue commences between the city and the interior courtyard through views into as well as through the spaces.
- Views into the building, through the building, and into the courtyard. Spatial stratification creates transparency between the street and the building, or the courtyard.

Spatial layering through movement (figures 2.23 + 2.25):

- Scarpa predetermines the circulation route he wants visitors to take and designs axial views and circulation routes accordingly.
- The circulation route is in the form of a platform raised higher than the rest of the floor, and framed with low

kerb height walls. A few steps connect it to the lower exhibition hall.

Material layering without a void (gapless):

- The rooms are almost completely clad and modified, in contrast with Castelvechio's fragmented procedure. Layers are added to the floor, the wall and the ceiling (figures 2.22 + 2.24).

Transition layering through thresholds:

- In a transition zone special attention is given to the detailing of these layers. For example the floor pattern changes direction and a different size tile is used. Transparent partitions are incorporated in transitional areas to create a movement barrier but still keep the straight visual axis (figure 2.27).
- The choice in floor cladding, ceiling cladding and wall cladding gives each space a different atmosphere.
- Separate zones are created through cladding or layers. For example the floor layers; the choice of floor covering, the colour, the pattern, the size, the difference in floor heights, all define the function of each area (figure 2.27).

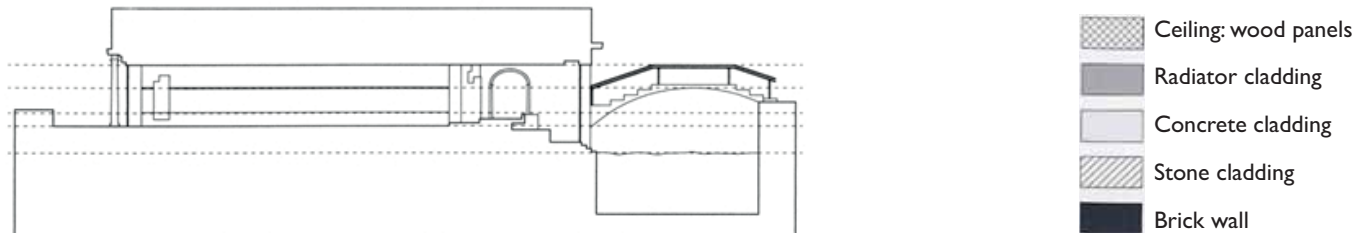


Figure 2.20: Section diagram indicating levels of canal water, gallery floor, concrete step, picture rail and bridge crest, gallery ceiling and bridge rail.

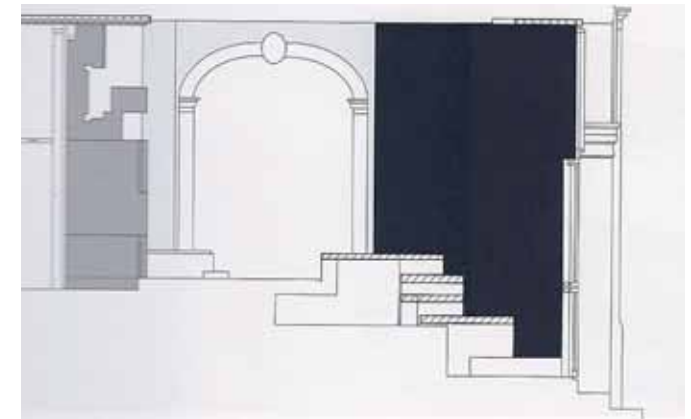


Figure 2.21: Section diagram through hallway at water entrance, illustrating the layering of materials. (Source: Schultz, 2010: 104)



Figure 2.22: Stair cladding and stucco wall panels. (Source: Schultz, 2010: 108)



Figure 2.23: View of hallway connecting entrance and exhibition hall. (Source: Schultz, 2010: 105)



Figure 2.24: Water entrance, with concrete steps and stone treads. (Source: Schultz, 2010: 104)

- Create thresholds through;
 - change in paving materials
 - change in paving patterns (figure 2.27)
 - floor height differences
- A mosaic floor finish is used in the foyer.

Transition layering through the joint:

- The floor in the exhibition hall is separated from the wall by a water channel. It creates a virtual space. When water enters these channels it looks like the floor is a platform that floats on the water.

(f) **Evidence of the hypothesis of opening up / exposing**

- Exposed construction, details and the original narrative.
- Water; by designing for the flooding of the city, Scarpa let the city's ideal nature take its course; allowing it into the building. [Note: The movement of people can be treated in the same way as the flooding of water; the movement of people can take its natural course into and through the building.]
- Letting light into the building; the reflection from the wa-

ter gives the building a feeling of openness.

- Memories; the mosaic floor finish in the foyer is reminiscent of historical church floors. This is an example of how Scarpa uses details to bring forward associations with the city. This connects the visitor to other buildings, construction methods and architecture in the city. It makes the building part of a precinct.

- 1 entrance over new bridge
- 2 foyer
- 3 access to library
- 4 cashier / bookstore
- 5 water entrance
- 6 small exhibition space
- 7 exhibition hall
- 8 garden

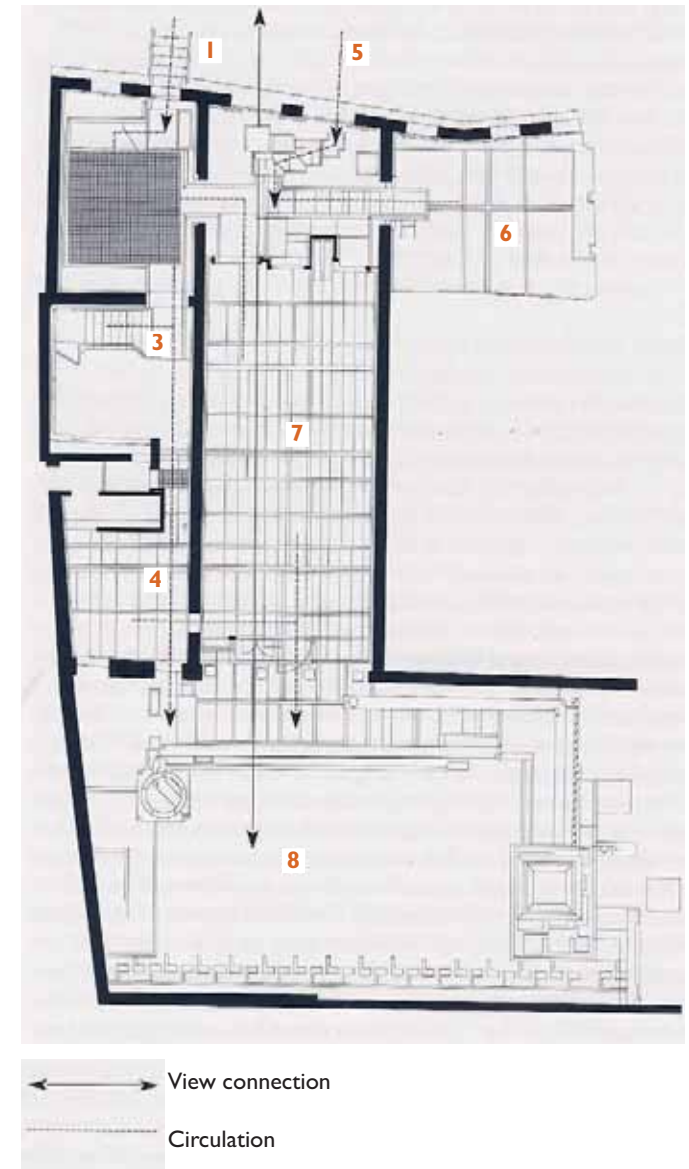
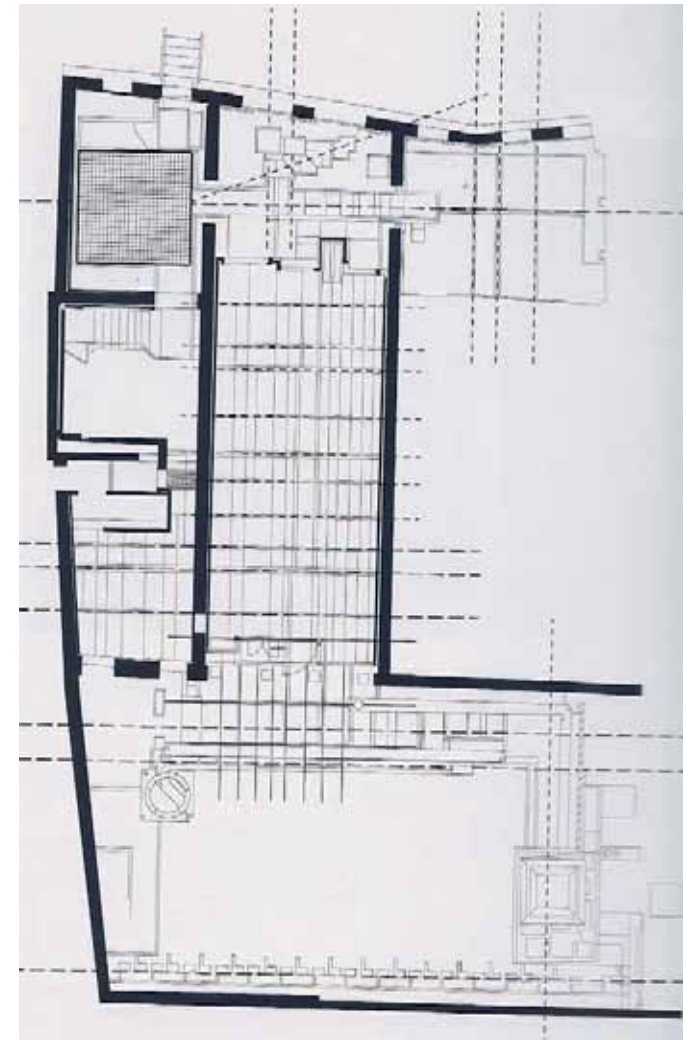
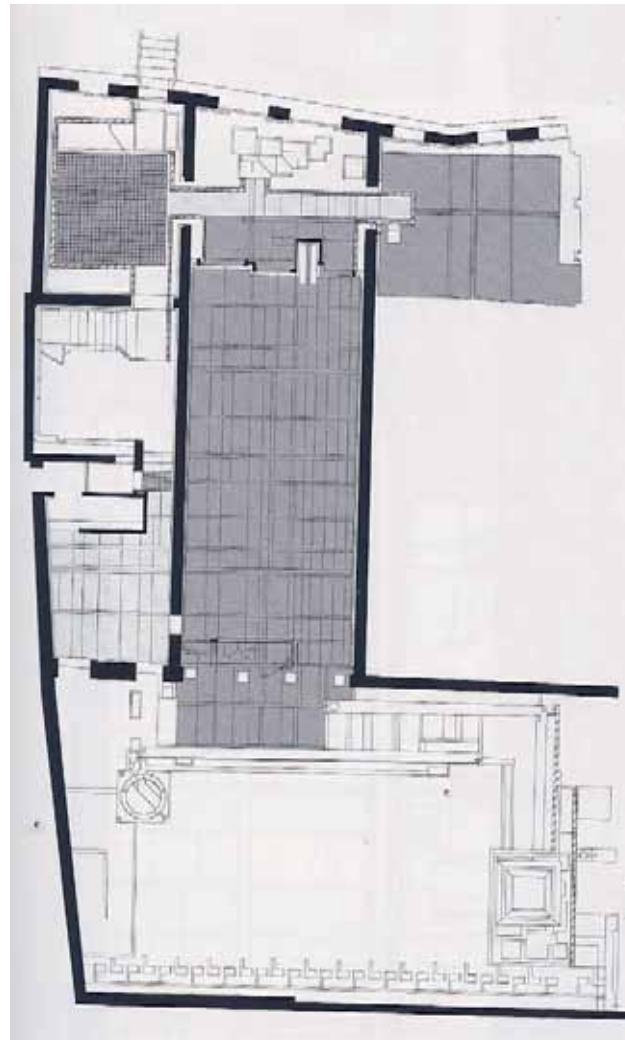
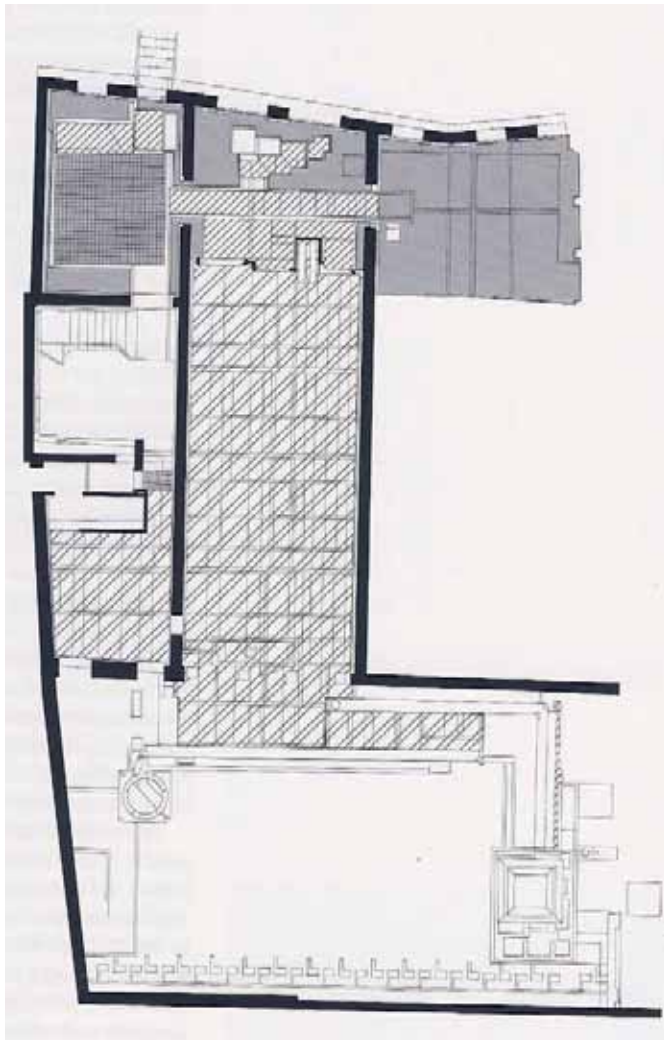


Figure 2.25: Ground floor plan. Access and circulation. (Source: Schultz, 2010: 100)





-  Existing walls full height
-  New walls half height or less

Figure 2.26: Ground floor plan. Areas defined by paving materials (Source: Schultz, 2010: 100)

Figure 2.27: Ground floor plan. Areas defined by paving patterns. (Source: Schultz, 2010: 101)

Figure 2.28: Ground floor plan. Axis patterns. (Source: Schultz, 2010: 101)

2.5.4 PRECEDENT STUDY: LAYERING

BANCA POPOLARE

Figure 2.29: Facade facing Piazza Nogara. (Source: Schultz, 2010: 113)

(a) Project information

Project name: Banca Popolare
 Location: Verona, Italy
 Date: 1970-1980
 Architect: Carlo Scarpa

(b) Transformation

The new building was fitted into a gap between two existing buildings. A new corridor connects the old and the new. (Schultz, 2010).

(c) Aims, reasons for change and problems

- Enlargement of bank
- Security needs
- Create a public image

(d) Approach to the existing and the new structure

- A new building/extension; design principle for creating new facades vs. integrating individual elements into existing buildings

- Focus was on the facade as a freestanding addition in front of the new building, like a screen
- The interior walls and ceilings at rooms of importance were clad
- Light into the interior through shafts. The interior then acts as a light catcher
- A new elevated corridor connects the new building with the existing building

(e) Layering

Component layering:

The new facade of the Banca Popolare is probably the best example of how Scarpa layered a component, like the wall, into its different elements.

- The stratification is most visible at openings during the transition from inside to outside. One can see the layers as you move through the facade.
- The separation of floor, wall and ceiling was made visible on the outside; the facade was treated as two dimensional.
- The facade was layered through cladding, and created dynamism through the use of;
 - Various materials (figure 2.31 c)

- - Relief (figure 2.31 a)
- Three dimensional articulated through shadow effects created by (figure 2.30);
 - Ledges
 - Projecting stone work
 - Openings
- The facade was designed in Tripartite form; base, middle and roof (loggia in this case)
 - Base (figure 2.32);
 - Made from marble
 - Middle (figure 2.33);
 - Medium-course plaster
 - Square and round openings with glazing
 - Glazing is either flushed or staggered inward
 - Vertical linear water channels under windows; both functional and visually anchor the openings. Functional details become ornaments.
 - Loggia (figure 2.34);
 - Two dimensional; created by
 - Steel framework on outside
 - And continuous glazing on inside

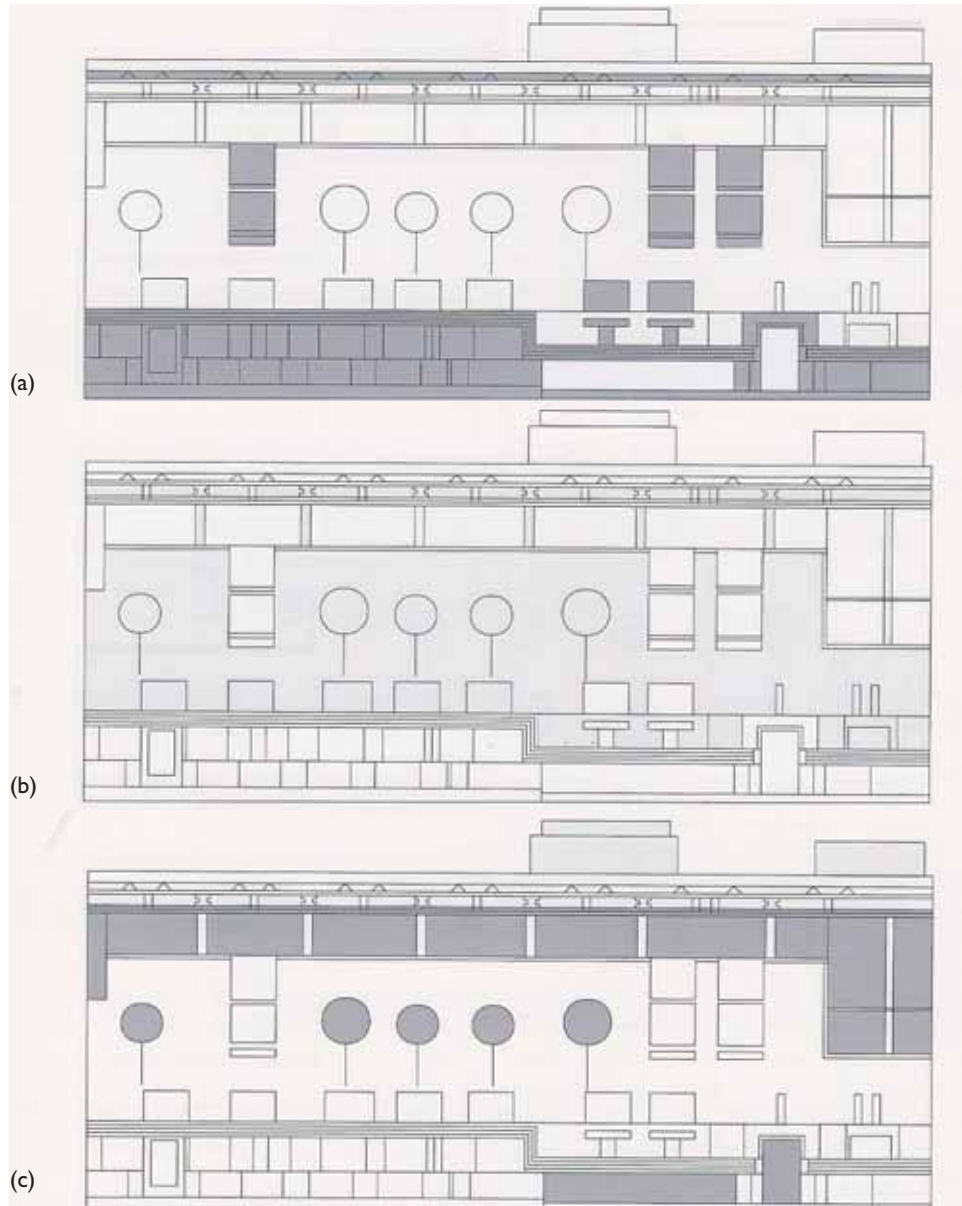


Figure 2.30: Relief of facade:(a) most protruding elements, (b) main surface, (c) set back elements. (Source: Schultz, 2010: 118)

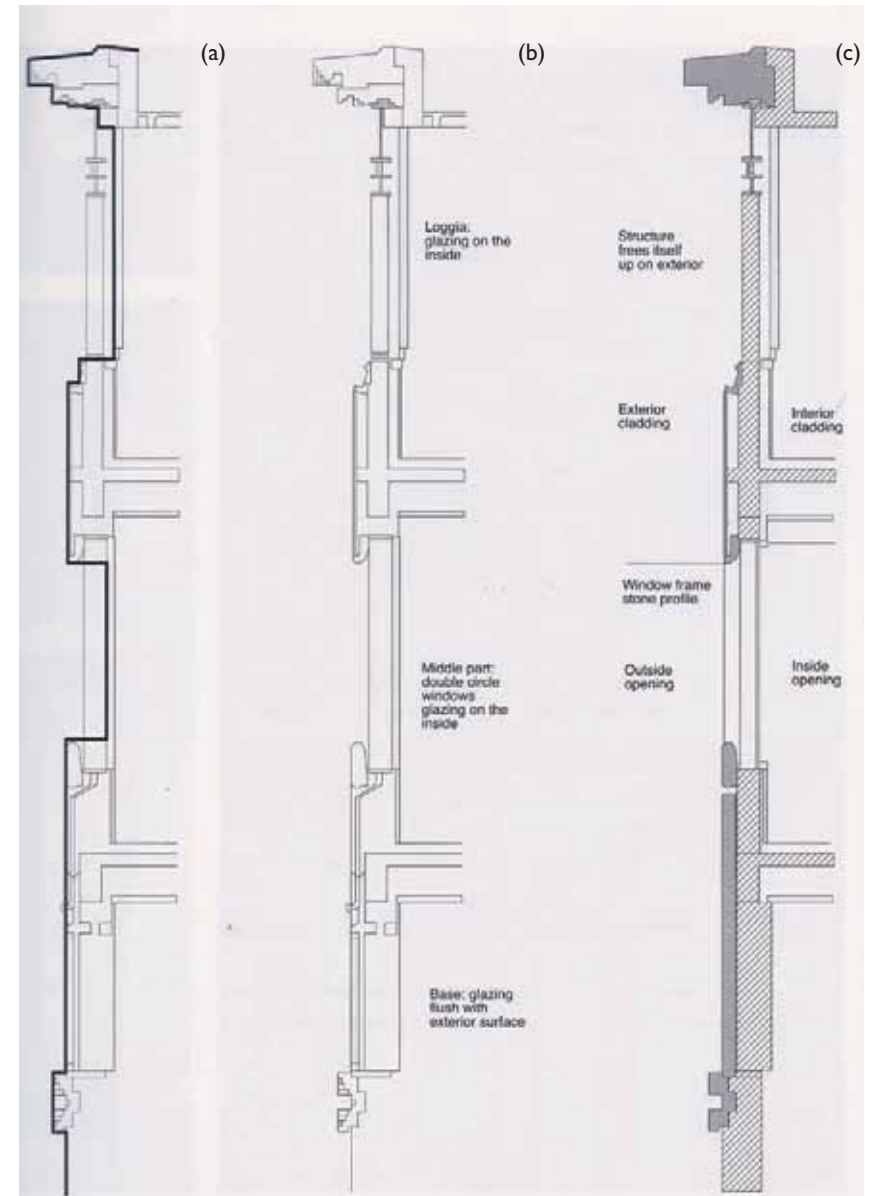


Figure 2.31: Facade section: (a) relief, (b) plane of glazing, (c) layering of materials. (Source: Schultz, 2010: 125)

- Roof cornice from marble; creates a border that together with the base frames the building
 - Openings;
 - Variably formed and seemingly irregularly arranged
 - No continuous grid
 - Asymmetrical arrangement of openings
 - Individual systems connected together
 - Cohesion thorough the individual systems referencing to each other
 - Balanced the individual parts through;
 - Light
 - Material
 - Association through viewing
 - Interior; at joint between materials, the materials are separated or the edges framed.
 - Facade; Indents and glass used at transitions to existing neighbouring facade (figure 2.34)
- (f) **Evidence of the hypothesis of opening up / exposing**
- Light shafts bring light into the building.
 - The different functions of the facade were separated; and moved horizontally away from each other. In this way, functions of shell, opening, shading and weather protection appear layered. The facade is broken down and is exposed as its simplest elements.

Material layering without a void (gapless):

- Some interior cladding have openings cut into them; view of the layer behind.

Transition layering through thresholds:

- Indents at special functions (e.g. Stairwell)

Transition layering through the joint:



Figure 2.32: Stone cladding of the facade's Base Zone. (Source: Schultz, 2010: 121)



Figure 2.33: Window detail of round window with rectangular window below. (Source: Schultz, 2010: 124)



Figure 2.34: Facade joint to adjacent building with glazing detail. (Source: Schultz, 2010: 121)

2.5.5 PRECEDENT STUDY: LAYERING

SOUTH AFRICAN BREWERIES VISITOR'S CENTRE



Figure 2.35:View of new link and glass lift. (Source:Author)

(a) **Project information**

| | |
|---------------------------------|-------------------------------|
| Project name: | SA Breweries Visitor's Centre |
| Location: | Newlands, Cape Town |
| Date: | 1859; 1892; 1995 |
| Client: | SAB |
| Architect: | Gabriël Fagan |
| Civil and structural engineers: | Henry Fagan & Partners |
| Electrical and mechanical: | Du Toit & van der Vyver |
| Quantity surveyor: | Farrow Laing |
| Contractor: | RH Morris |

(b) **Transformation**

During the 19th century Letterstedt and Ohlsson developed a successful beer trade at the location. The old Mariendahl Brewery was built in 1859 by Letterstedt. The Malthouse with kiln was added in 1892 by Ohlsson. In 1956 South African Breweries merged with Ohlsson's Cape Breweries.

(c) **Aims, reasons for change and problems**

The centenary of Ohlsson's Cape Breweries and the need of a more comprehensive tourist experience motivated the restoration of the old brewery and malthouse for the use of a

visitor's centre where the historical background of beer and beer-making could be displayed. (De Beer, 1995) (SAIA, 1997)

The brief called for the following;

- Parking for 200 cars; visitors and staff
- Lecture room for staff
- Dining and pub facilities for staff
- Memento shop
- Environmental centre

(d) **Approach to the existing and the new structure**

- Fagan's approach reminds of Scarpa who integrated his layers, revealing them through contrast.
- The first step was to design new flow patterns for vehicles, visitors and staff.
- Original structures like the furnace chimney were reinstated. Integrated infill was used within the original to incorporate exhibitions and circulation.
- New connecting structures, a covered walkway and a lift were added to provide chronological circulation through the visitor's centre and to act as an ordering device.



Figure 2.37: New floor finish layered over the old in exhibition space in Ohlsson's malt house (Source:Author)

- 1 display area
- 2 environmental centre
- 3 shop
- 4 pub and functions
- 5 kitchen
- 6 dining room

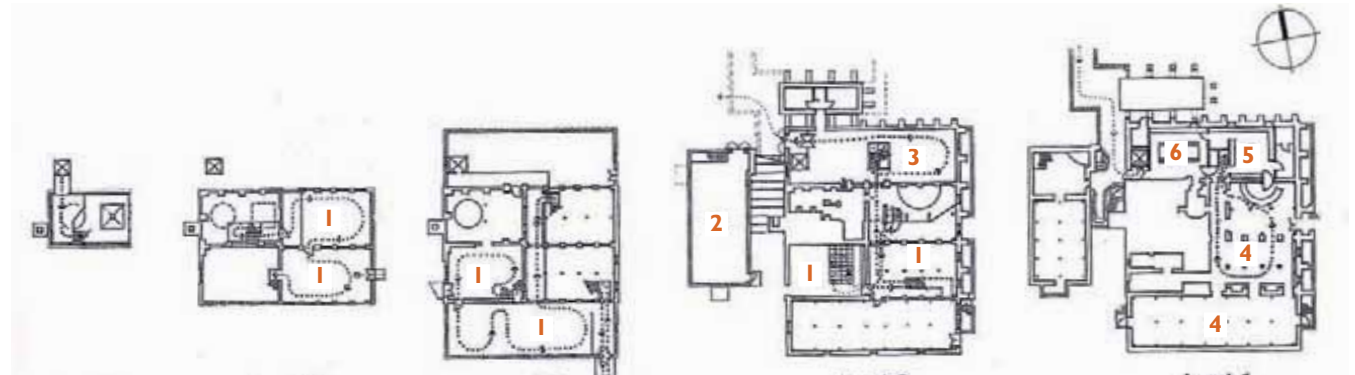


Figure 2.36: Circulation diagrams through brewery starting in the tower. (Source: Joubert, 2009: 289)



Figure 2.38: The new covered link with the water feature between Ohlsson's malt house and the archaeological excavations. (Author)



Figure 2.39: The archaeological excavations with information boards. (Source: Author)



Figure 2.40: The old and the new towers juxtaposed through materiality. (Source: Author)

- A new parking structure was incorporated.
- Unnecessary walls and plants were removed to simplify the landscape.

(e) Layering

Spatial layering through a movement route:

- The circulation route starts at Ohlsson's malt house displaying an exhibition on the history of the breweries (figure 2.37).
- From here, a new covered walkway with a water feature, symbolising the Newlands spring water used for beer-making, leads to a tunnel (figure 2.38).
- The tunnel enters the archaeological excavations of a demolished older malt house (figure 2.39).
- From here, a lift into the tower of the brewery provides a panoramic view of Newlands (figures 2.40 + 2.43).
- Following the new integrated route through the gravitational brewing process in Letterstedt's brewery (figures 2.42 + 2.44).
- End on ground floor where the pub and memento shop are located.
- The beginning of the route at the malt house is not clearly marked.

- When the new glass lift is not working the chronological route fails.

Material layering without a void (no gap):

- Existing floor finishes were kept and a new layer was added on top. The new layer is vinyl floor on the original timber floor, detailed with brass edge strips (figure 2.41).

Transition layering through thresholds:

- The new connecting structures provide thresholds between different functions. Clear distinction was made between original and new. Contrasting materials like glass and steel were used, and the new was painted blue.

(f) Evidence of the hypothesis of opening up / exposing

- The new centre makes the beer-making process comprehensible.
- The new visitor's centre facilitates increased visitation.
- Clarity of the design exists in the clear distinction between old and new, as well as the circulation route. This route only falters if the start of the route is not clearly marked and when the lift is not working.



Figure 2.41: Layering of the old and new.
(Source: Author)

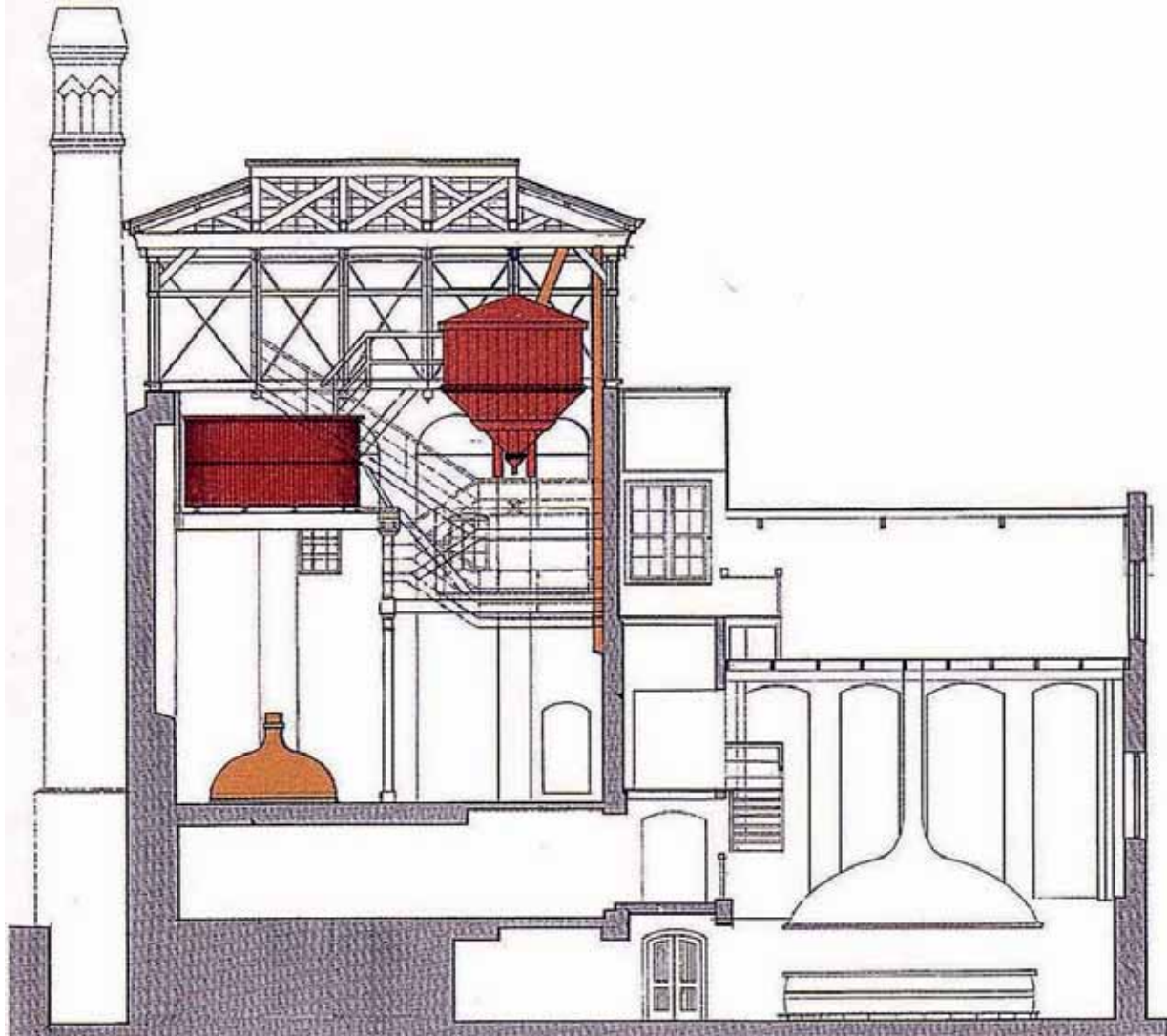


Figure 2.42: Section through the Letterstedt Brewery with the descending route following the beer-making process. (Source: Joubert, 2009: 289)



Figure 2.43: The new glass lift at the top of the tower. (Source: Author)



Figure 2.44: The new mild steel circulation route, painted blue, descending in between the existing. (Source: Author)

2.5.6 PRECEDENT STUDY: LAYERING

WOMEN'S JAIL AT CONSTITUTION HILL



Figure 2.45: New addition on the left and the original building on the right with the new covered walkway. (Source: Author)

(a) Project information

| | |
|----------------------------|---|
| Project name: | Women's Jail Precinct |
| Location: | Constitution Hill, Braamfontein, Johannesburg |
| Date: | 1907; 2005 |
| Client: | Johannesburg Development Agency |
| Architect: | Kate Otten |
| Civil and structural: | Calibre; BT Mongwe & Associates |
| Electrical and mechanical: | Campbell Davies |
| Quantity surveyor: | Bham Tayob Kahn Matunda |
| Project managers: | Holicki & Associates |
| Heritage consultants: | Herbert Prins, William Martinson |
| Contractor: | Rainbow Construction |

(b) Transformation

The Old Fort was built in 1892, and the Women's Jail was added in the early 1900's. The prison was closed down, and occupied by the Traffic Department and Civil Co-operation Bureau in 1982. In the late 1990's and early 2000's the site was adapted along with the new Constitutional Court (Constitution Hill, 2011).

(c) Aims, reasons for change and problems

The entire site of the Old Fort in Braamfontein was injected with a new meaning and energy when it was chosen in the mid 1990's as the site for the new Constitutional Court. The Women's Jail was converted into the Women's Jail Museum, hosting temporary exhibitions that honour the contribution of women to the struggle for freedom in South Africa, as well as two new office buildings. The new office buildings house the Commission on Gender Equality and other Human Rights Commissions (Kate Otten Architects, 2007).

(d) Approach to the existing and the new structure

- Later additions to the original complex were demolished to restore the significance of the original buildings and courtyards and to create space for the new office buildings. Only that which was not considered architecturally or culturally significant was demolished.
- Two new office buildings are inserted on the eastern and western sides of the northern courtyard; they are placed symmetrically about the central axis of the existing jail. Thereby retaining the sense of space of the original court-

yard and the prominence of the central atrium. The new buildings also respect the scale of the existing buildings.

- A new entrance was created in the northern perimeter wall, creating equal entry from the new Northern entrance and the old Southern entrance.
- Clarity between what was the original building and what is the new was created through the architectural language.

(e) Layering

Spatial layering through views:

- The new Northern entrance provides a full view of the atrium and cell wings and the two new buildings across the courtyard (figure 2.49).
- The old Southern entrance provides a look through the open doors, lined up to create a visual axis, through the building, across the inner courtyard and into the atrium (figure 2.50).

Spatial layering through movement:

- From the new entrance a new glass covered walkway bisects the northern courtyard leading to the atrium (figure 2.50).

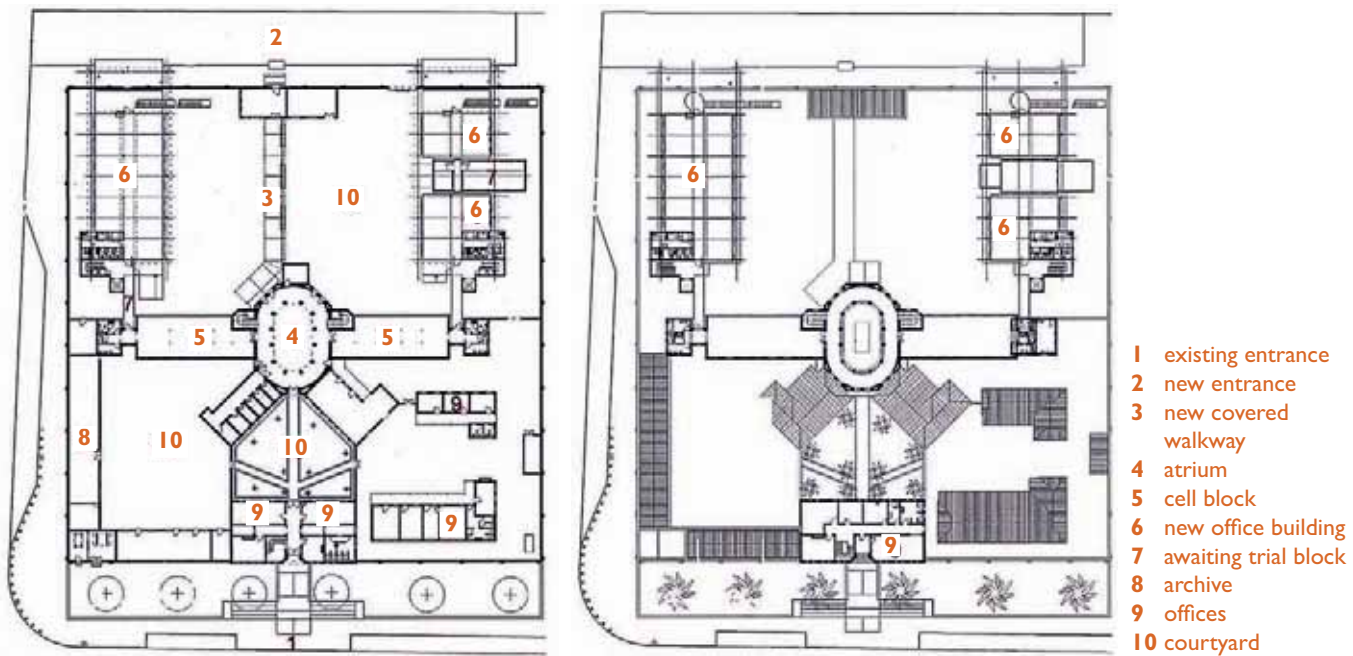


Figure 2.46: Ground floor plan and first floor plan. (Source: Joubert, 2009:121)



Figure 2.49: Existing main entrance with view axis into courtyard. (Source: Author)



Figure 2.50: New covered walkway and axis in courtyard. (Source: Author)



Figure 2.47: Section through new office buildings, with elevation of original building. (Source: Joubert, 2009:121)



Figure 2.48: Section through original building, with elevation of new office building. (Source: Joubert, 2009:121)

- From here, the public moves through exhibition and commemoration spaces in the cell blocks before arriving at the new offices.
- Entry to the two new office wings is thus via the old atrium.

Component layering:

- The new buildings have screens that slide between the glass facades and the colonnade. This divides and exposes the wall component into elements of structure (columns), openings (glass), sun protection and privacy (screen) (figure 2.51).

Material layering:

- New mild steel ramps were layered over the existing floor finishes at door openings and entrances into courtyards (figure 2.52).
- A new timber floor with a ramp was layered over the existing concrete stoep.
- A frameless glass door was installed into an existing steel grille door. This juxtaposition of a very modern element against the old highlights the historic layer (figure 2.53).

- A glass panel was inserted in a previously bricked-up entrance recording the original opening.
- New exhibition installations are made from steel and glass and fixed to the original plastered walls with a void in between.

Transition layering through thresholds:

- The old building is the interface between public space (outside and courtyard) and less public or private space (offices).
- A corridor links the old with the new, creating a threshold between old and new (figure 2.54).
- New mild steel ramps at doors and entrances announce a new space (figure 252).

Transition layering through the joint:

- The new buildings 'touch' the old building 'lightly' at the new links. This can be seen at the junctions where the new buildings connect into the old, accentuated with glass infill between the old and the new (figure 2.54).

(f) Evidence of the hypothesis of opening up / exposing

- The programme of the museum is educational and informative. It exposes and displays the past to the visitor.
- By physically opening the building's doors and inserting glazing, light is brought into a previously dark space; a dark place that is now shedding light.
- The see-through nature of the façades on- the lower levels of the new office buildings equates to the transparency of our new democracy.



Figure 2.51: Facade with screen of new building.
(Source:Author)



Figure 2.52: New steel ramps layered over existing steps.
(Source:Author)



Figure 2.53: New frameless glass door layered in an existing steel door.
(Source:Author)



Figure 2.54: New glass link connecting the new with the old.
(Source:Author)

2.5.7 PRECEDENT STUDY: ADAPTIVE REUSE

AND NEW ADDITIONS:

PASEO DEL PRADO, MADRID, SPAIN

REINA SOFIA

The three adaptive reuse precedents chosen are all located on the Paseo del Arte (The Art Walk) a two kilometre-long walk devoted to culture in Madrid, Spain. This corresponds contextually to the location of the proposed dissertation context of Minnaar Street in Museumpark.



Figure 2.55: Aerial view of the Reina Sofia Museum.

(a) **Project information**

Project name: Hospital de San Carlos
(now also known as the Sabatini building);
Museo Nacional Centro de Arte Reina Sofía
(MNCARS)

Location: Paseo del Prado, Madrid, Spain

Date: 1755-88; 1988-90; 2001-05

Architect: Francisco Sabatini;
Antonio V. De Castro, José L. de Onzoño
and Ian Ritchie;
Jean Nouvel

Structural & civil: unknown; Ove Arup & Partners; Esteyco

Quantity surveyor: unknown; unknown; Rafael Guijarro
Consultant: unknown; Huarte; Hubert Tonka
Cost: unknown; unknown; € 91 million
Area: 51297m²; 57247m²; 84048m²

(b) **Transformation**

The Reina Sofia was converted from a hospital into a centre for contemporary arts in 1988 by Antonio V. De Castro and José L. de Onzoño and additional glass circulation towers were added by Ian Ritchie.

From 2001 to 2005 the museum was extended in size and function and a new addition of 26800m² was designed by Jean Nouvel. The new addition includes a library, bookshop, restaurant, auditoriums, temporary exhibition galleries and offices (Cohn, 2006) (Fernandez, 2006).

(c) **Aims, reasons for change and problems**

Adaptive reuse and new additions (lifts), 1988:

- Large many-windowed hospital wards were adapted into exhibition galleries and created infinite corridors. For this reason the decision was made to move circulation out-

side the existing building. This created ease of movement and changed the image of the existing building, creating a new face for the new programme (location shown in figure 2.56) (Centro de Arte Reina Sofia, 1991).

New addition, 2001 – 2005:

- The new addition was added due to the need for space caused by an increase in collections, temporary exhibitions, audiovisual and educational activities, services and number of visitors. The new addition also transformed the surrounding environment and created a necessary public square (location shown in figure 2.56).

(d) **Approach to the existing and the new structure**

Adaptive reuse and new addition (lifts), 1988:

- The interior of the Sabatini designed building was adapted into gallery spaces. Three new glass circulation towers with elevators were added onto the facade. The image of the towers is in keeping with the monotonous receptiveness of the old windows. The towers were connected to the old at existing window openings. A big contrast exists between the glass towers and the original massive walls

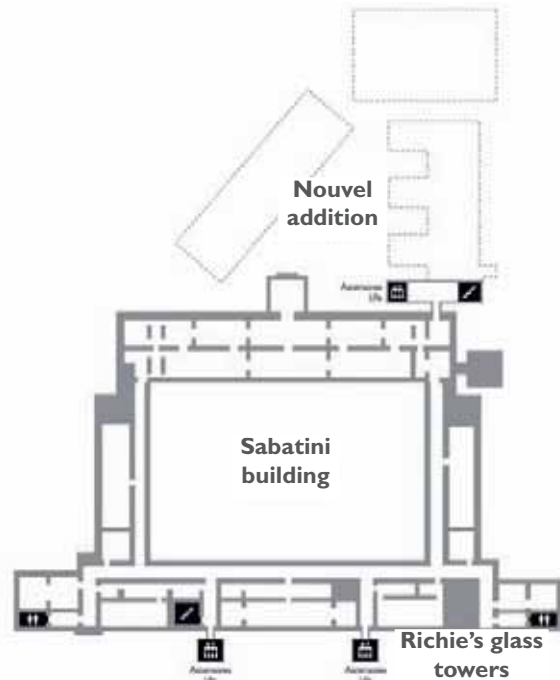


Figure 2.56: Site plan indicating the location of the different transformations. (Source:Author)



Figure 2.57: Contrast between glass lifts and original Sabatini building. (Source:Architectural Review: 55)

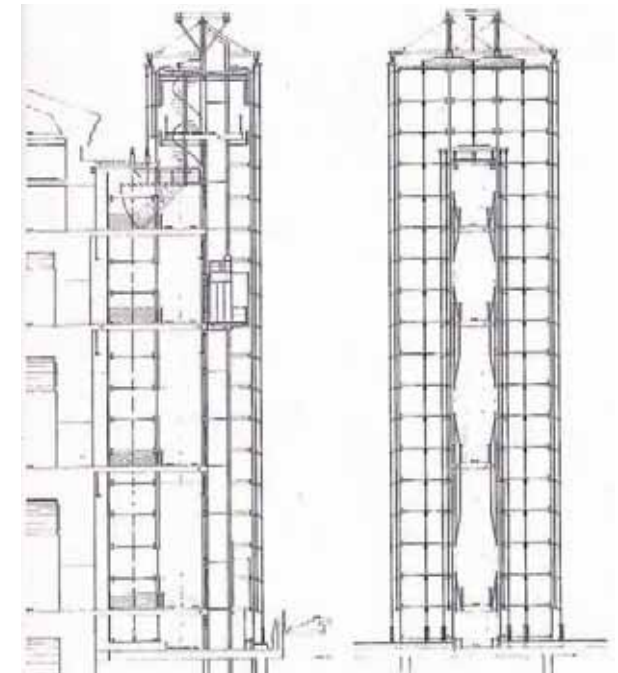


Figure 2.58: Sections through glass towers. (Source:Architectural Review: 55)

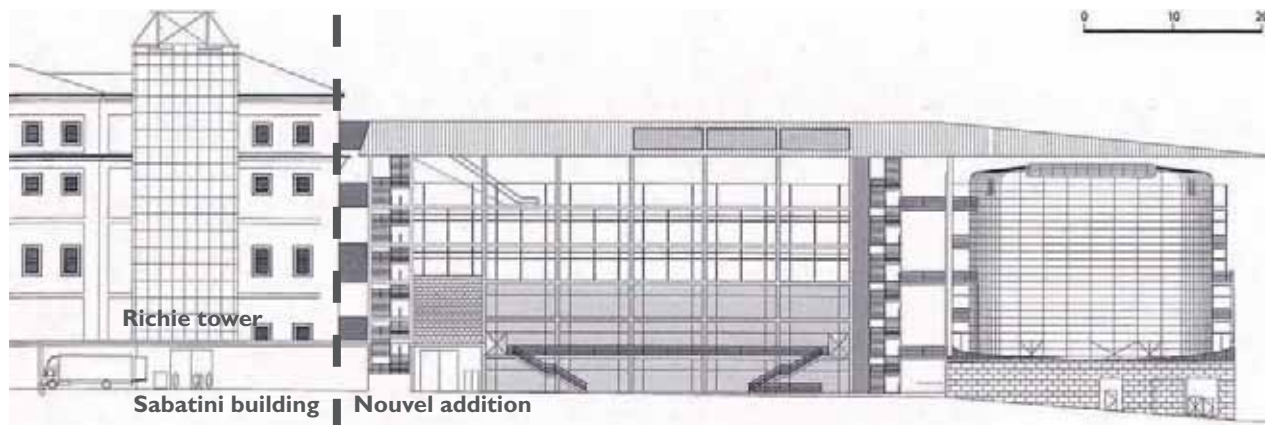


Figure 2.59: Northern elevation. (Source: Domus 2006: 33)



Figure 2.60: The original Sabatini building juxtaposed against Nouvel's new pavilions and aluminium roof. (Source: Architectural Record: 89)

(figures 2.57 + 2.58).

New addition, 2001 – 2005:

- The Nouvel addition exists out of three independent pavilions arranged around a new central public square, with the original Sabatini building forming one of the edges. A big floating roof hovers over the square and the three pavilions. The new addition doesn't touch the original building except for links on every floor between the new temporary exhibition galleries and the Sabatini building (figures 2.59 + 2.62).
- The three pavilions respectively contain: the library and bookshop; the temporary galleries and offices; and two auditoriums above the restaurant and café (figure 2.62).

(e) Layering

Spatial layering through views:

- Nouvel designed ground floor windows on either side of the library allow for visual connection between the street and the square.
- Precision cut-outs in the roof allow views of the sky (figure 2.60).

Spatial layering through movement:

- Richie's glass circulation towers outside the original building create a continuous circulation route between old and new, and inside and outside.
- Nouvel kept stairs, walkways and glass lifts outside the pavilions, therefore circulation acts as another layer.

Component layering:

- The facade of Nouvel's new addition is broken down into layered elements of motorised aluminium louvers on the outside, a wall of glass and interior blinds.
- In areas where the stairs and walkways are located, they are layered in front of the glazing and act as brise-soleils. In this way the stairs become part of the facade's cross-section.

Material layering:

- In both additions, that of 1988 and of 2001, the new contrasts with the old. Richie's glass lifts are in contrast with the original facade walls (figure 2.57). Nouvel's red block consisting of red polyester tiles, galvanised metal grilles, red aluminium louvres, glass and other shiny and transpar-

ent materials also contrasts with the traditional granite and stucco-finished brick building (figure 2.60).

Material layering with a void:

- The meeting of Sabatini's old and Nouvel's new is accentuated by a gap between the cornice of the original museum's solid rear wall and the thin blade of the new aluminium canopy (figure 2.61).

Transition layering through thresholds:

- Richie's glass circulation towers force the visitor to continuously move from inside to outside, creating a new threshold before entering a new level.
- Nouvel's three new pavilions are accessed through the new public square located in the centre, which opens to the street. The square acts as a threshold between the very public street and the more private exhibition and library spaces. Stairs and glass lifts are located outside the pavilions, creating a threshold before entering the buildings.



Figure 2.61: The original Sabatini building juxtaposed against Nouvel's new pavilions and aluminium roof. (Source: Architectural Record: 89)

- 1 restaurant and café entrance
- 2 restaurant
- 3 café
- 4 auditorium entrance
- 5 entrance to library and office
- 6 library entrance
- 7 hall
- 8 indexes
- 9 reading room
- 10 bookshop
- 11 main entrance
- 12 tickets and info
- 13 entrance to exhibition rooms
- 14 reception
- 15 link to original building
- 16 temporary exhibition room

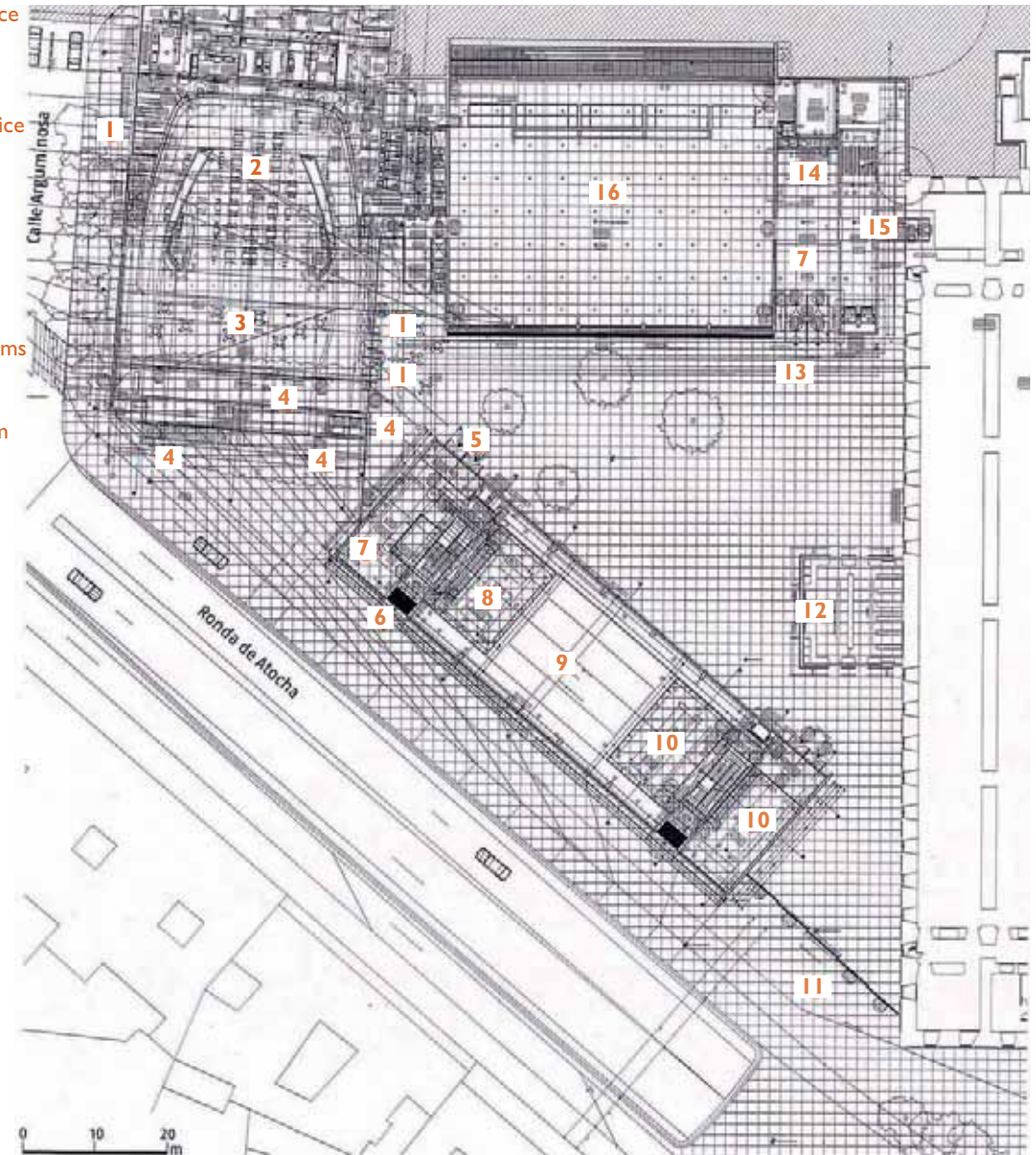


Figure 2.62: Ground floor plan of Nouvel addition. (Source: Domus, 2006: 32)

(f) **Evidence of the hypothesis of opening up / exposing**

Adaptive reuse and new addition (lifts), 1988:

- The addition of the new glass towers improved legibility and enhanced usability of the building.
- It also created a new image for the new programme of art museum.

New addition, 2001 – 2005:

- Provided a new public square
- Greater public interface and amenities
- Better public image
- Where the original building is inwardly focussed around a large central courtyard, the new invites the surrounding city into the new public square.
- The cut-outs in the new roof open up the square to the sky, and let natural light in.
- Through the use of shiny and transparent materials, reflections and indirect light are captured, creating a sense of transparency and openness.
- The new is designed to expose its lightweight steel structure.

2.5.8 PRECEDENT STUDY: ADAPTIVE REUSE

AND NEW ADDITIONS:

PASEO DEL PRADO, MADRID, SPAIN

EL PRADO MUSEUM



Figure 2.63: View of the original Villanueva building on the left and the new Moneo addition on the right with the Jeronimos Cloister. (Source: Architectural Record)

(a) **Project information**

| | |
|----------------|--|
| Project name: | Museo Nacional del Prado (The Villanueva building); Prado Museum Expansion (The Jerónimos building) |
| Location: | Paseo del Prado, Madrid, Spain |
| Date: | 1785; 1998-2007 |
| Architect: | Juan de Villanueva; Jose Rafael Moneo |
| Structural: | Jesús Jiménez Cañas, NB 35 Ingenieros |
| Mechanical: | Rafael Úrculo Aramburu, Úrculo Ingenieros Consultores |
| Contractor: | UTE Prado (Dragados y San José) |
| Cost: | 215 million USD |
| Area: unknown; | 22000m ² |

(b) **Transformation**

- A much-needed renovation of the existing galleries was executed.
- In the new extension Moneo accommodated the following programmes in the partially underground visitor's centre he added to the back of the existing building; main

foyer with ticket sales, checkrooms, restrooms, information desk, group tours, as well as educational facilities, new museum storage and new galleries for temporary exhibitions (Cohn, 2008). The new wing also provides a suitable home for the necessary appurtenances of the modern museum (café, auditorium and gift- and bookshop), leaving the original 18th century building by Juan de Villanueva free of everything but art. The rest is dedicated to the conservation of artwork and building maintenance (figures 2.65 + 2.66).

(c) **Aims, reasons for change and problems**

- Space - chronic problem with insufficient space for entire collection
- Space – The Prado had a chronic problem with insufficient space for its entire collection. The Moneo expansion created fifty percent more space.
- Natural light – The Prado, was often too dark, with works poorly displayed, it needed more natural light.
- Public – The existing building had limited services and little explanations for the foreign visitor. “The relationship between museums and society has changed,” says Miguel

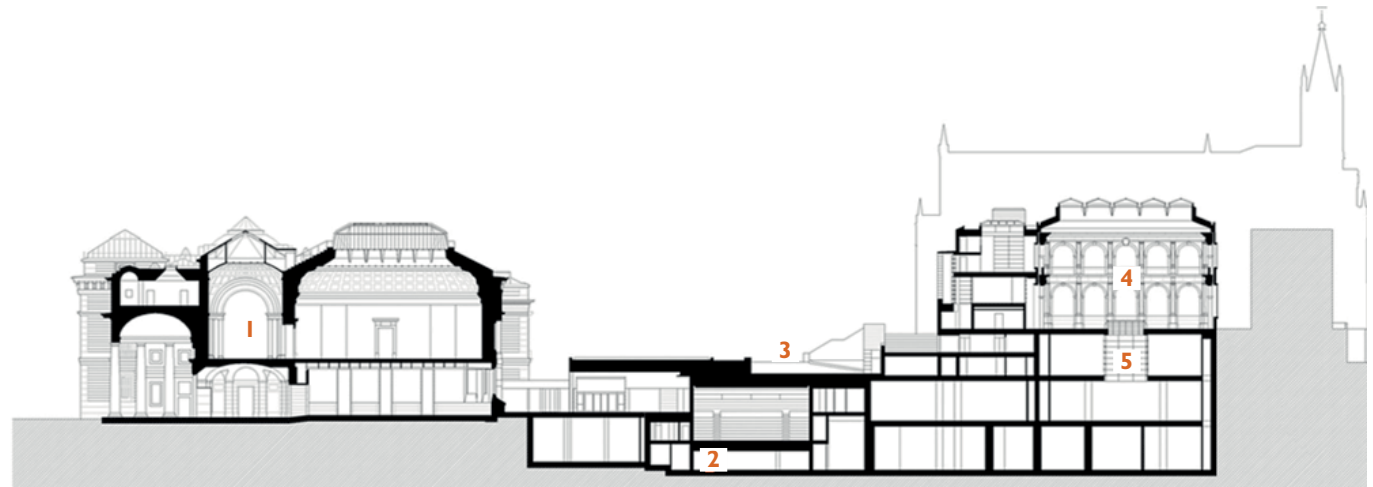


Figure 2.64: Section through the original Villanueva building and the Moneo extension. (Source: Building UK)

Zugaza, the Prado's director. “Before, museums were the preserve of the few, but now they're massively attended. We had to change to match that.” By adding a new entrance for groups and permitting the museum's main doors on the Paseo del Prado to re-open for everyone else, the extension does away with the awkward side entries. (Woodman, 2007)

(d) **Approach to the existing and the new structure**

Architect Rafael Moneo says the project is a modern addition that brings the museum to the new century while being respectful and in harmony with the existing. Moneo explained that it has to be a respectful addition since it includes the old cloister of Los Jeronimos Church. The 15th century cloister was incorporated into the new construction. In an interview with Moneo he says that the new building should not break but blend, “The new building should not be an icon, we already have the Prado Museum as an icon”.

The new wing was dug out between the Prado and the Cloister, placing the new entrance hall, and the temporary exhibi-

- 1 the original Villanueva building
- 2 underground linking galleries
- 3 landscaping (hedges)
- 4 Jeronimos cloister
- 5 glazed lantern
- 6 the Velazquez entrance
- 7 the Villanueva building
- 8 the Jeronimos entrance
- 9 the Moneo extension
- 10 temporary galleries under lantern
- 11 Jeronimos cloister
- 12 landscaping (hedges)
- 13 the Villanueva building



Figure 2.65: Lower basement (entry level at Villanueva building).
 (Source: Building UK)

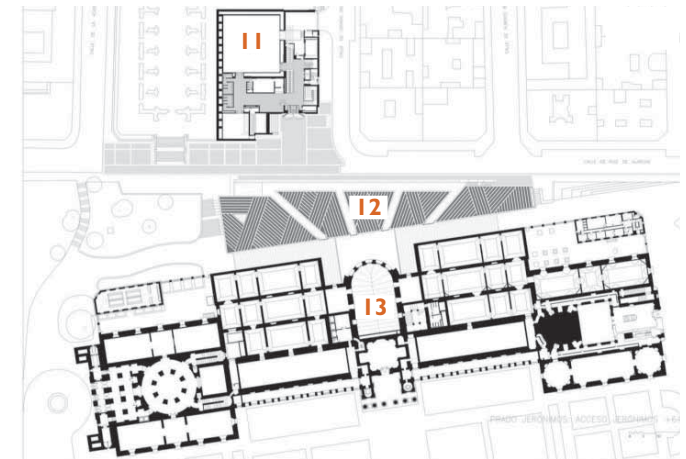


Figure 2.66: Ground floor plan.
 (Source: Building UK)



Figure 2.67: The new Moneo extension with the Jeronimos cloister incorporated. (Source: Arcspace)



Figure 2.68: The new Jeronimos entrance with the original Villanueva building in the background. (Source: Architectural Record)



Figure 2.69: The connection between the Jeronimos cloister and Moneo's extension. (Source: Architectural Record)

tion galleries, below the restored Cloister, now the top floor of the building (figure 2.64). (Mayer, 2011) (O'Leary, 2007)

(e) **Layering**

Material layering:

The only decorative element on the otherwise simple, plain facade of brick, glass and stone, with its two story portico of fluted pillars, is a set of massive bronze doors. Moneo's new building is a box of brick-and-bronze fenestration with an interior of wood, marble/limestone and copper. (Figures 2.67 + 2.69)

(f) **Evidence of the hypothesis of opening up / exposing**

The Cloister receives daylight through a new skylight. A light well/lantern cutting through the Cloister's floor brings light down to the galleries below (figures 2.67 + 2.69). The Cloister can be understood as a lantern that illuminates the new building, as a work of art that has been incorporated into the Museum's collections and as an architectural element that gives meaning to all that is built around it. The Cloister is all of these things at once, but it is also a reference to the past.



Figure 2.70: Inside the Jeronimos cloister. (Source: Architectural Record)



Figure 2.71: The skylight of Moneo's glazed lantern in the Jeronimos cloister. (Source: Arcspace)



Figure 2.72: The glazed lantern in the exhibition space under the cloister. (Source: Arcspace)

2.5.9 PRECEDENT STUDY: ADAPTIVE REUSE

AND NEW ADDITIONS:

PASEO DEL PRADO, MADRID, SPAIN

THYSSEN BORNEMISZA

Figure 2.73: The original classic building on the left with the new contemporary addition on the right.

(a) Project information

Project name: Palacio de Villahermosa;
Museo Thyssen Bornemisza;
Expansion of Thyssen Bornemisza Museum

Location: Paseo del Prado, Madrid, Spain

Date: 1789; 1992; 2004

Architect: Silvestre Perez, Antonio Aguato;
Rafael Moneo;
BOPBAA

Cost: unknown; unknown; € 36 million

Area: additional 8400m²

(b) Transformation

- The Villahermosa Palace was built during the 17th and 18th centuries.
- In 1973 it was adapted to become the headquarters of a bank.
- In 1983 the building held the exhibitions of the Prado museum.
- In 1989 the building became the headquarters of the Prado museum. A complete remodel of the interior was done by Rafael Moneo. The museum opened in 1992.

- In 2002-04 two adjacent late 19th century buildings were acquired and the Prado was extended. A new addition was also added. The architects were the BOPBAA team from Barcelona. (Figures 2.74 + 2.75) (Museo Thyssen-Bornemisza, 2009)

(c) Aims, reasons for change and problems

Moneo conversion, 1989-1992:

- Adapted from office spaces to exhibition galleries and other museum facilities
- Provide natural lighting; the central body of the building, behind the main facade, now consists of a gallery or covered courtyard that is illuminated by a peak that goes through all three floors, and around which all the rooms are connected so that a circular movement is produced on each floor, a system that is highly recommended for this type of purpose.

BOPBAA expansion, 2002-2004:

- More space was needed for collections and exhibitions, and the library size was increased. The expansion has given the Museum 50% more surface area and has allowed it to update and improve all its installations and

programmes that complement the Permanent Collection. This is crucial for any modern museum.

(d) Approach to the existing and the new structure

Moneo conversion, 1989-1992:

- During the renovation the classical exterior was respected
- The entrance was moved to recover what had once been the northern facade and to give the museum a quiet and relaxed entrance, giving the garden purpose
- The interior was completely remodelled
- Respect for existing proportions

BOPBAA expansion, 2002-2004:

- The overall intention was to turn the old and new building into a single space that could share activities and circulation.
- The two adjacent buildings were partly demolished and refurbished. The design retained their facades. New offices were located in this new area, a function that best suited the residential nature of these buildings.
- The two buildings were linked to the museum with a new

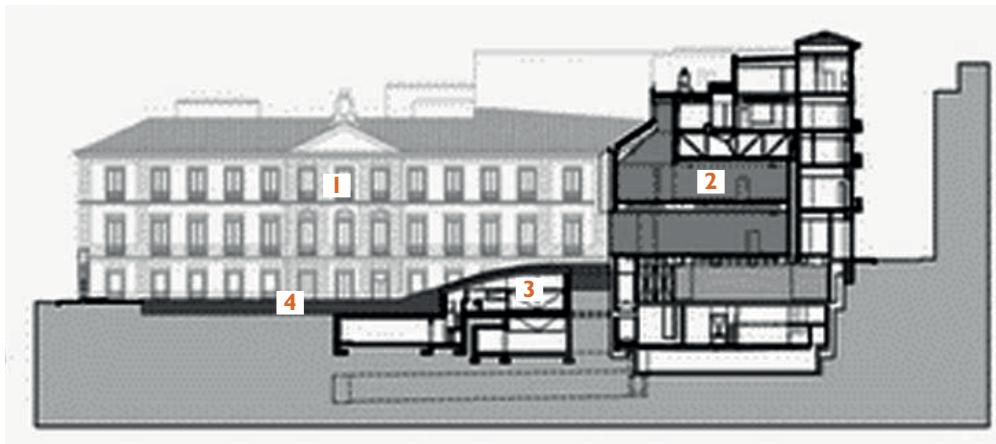


Figure 2.74: Section through the new additions and garden. (Source:Wikiarquitectura, 2010)

- 1 the original Villahermosa Palace
- 2 the new BOPBAA expansion
- 3 new café and bookshop
- 4 garden

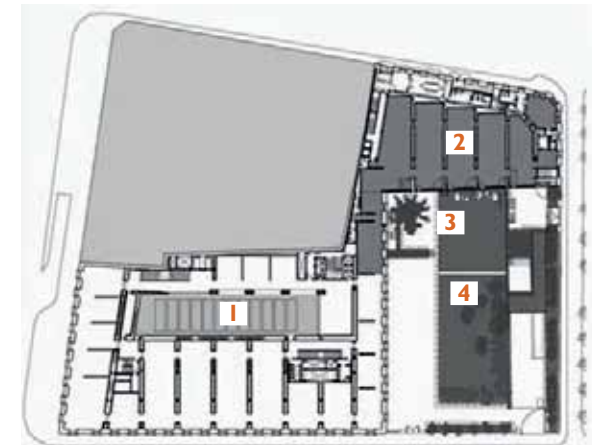


Figure 2.75: Ground floor layout. (Source:Wikiarquitectura, 2010)

glass pavilion facing a garden terrace with new exhibition galleries. A new entrance court is created, which also houses the museum café. The new book- and gift shop is larger and better located.

- The garden functions as a meeting place and relaxation area for visitors and as a threshold to the new entrance. It is no longer a passing-through area. (Boegl, 2011)

(e) Layering

Material layering:

- New materials used were stone, aluminium and glass, contrasting with the existing buildings.

Transition layering through thresholds:

- The garden acts as a threshold into the new building, while the new building acts as a threshold into the original building.

(f) Evidence of the hypothesis of opening up / exposing

- The new entrance court with the café as well as the redesigned garden opens up the museum and facilitates increased visitation.

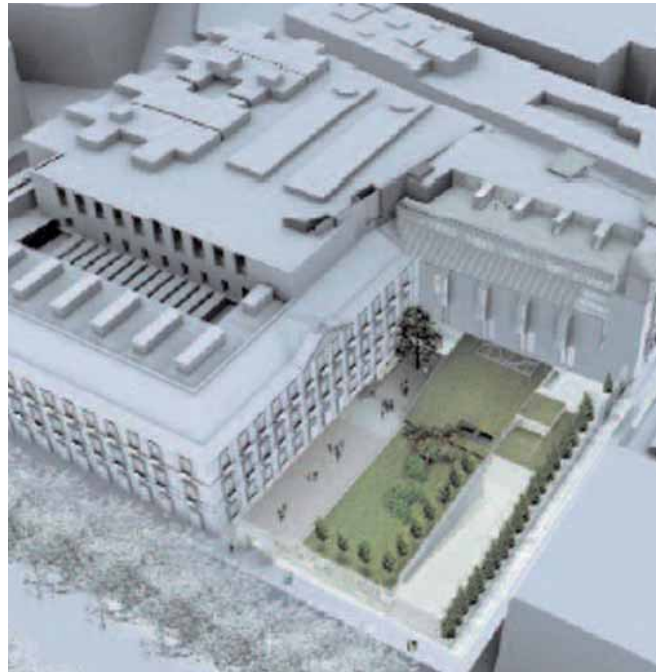


Figure 2.76: Model showing the garden with the original building on the left and the new addition on the right. (Source: BOPBAA)



Figure 2.77: The new BOPBAA addition and café. (Source: BOPBAA)

2.5.10 SUMMARY OF LAYERING

After the theoretical investigation layering can be summarised as follow;

- Through the deconstruction of existing layers the object, in this case the context or the building, can be analysed.
- Often the juxtaposition of layers lead to the clarification of the relationship between these layers.
- In architecture within the heritage realm the principles of layering are used to juxtapose the old and the new to clearly distinguish between them, explained as material layering in the dissertation.
- The juxtaposing of the old and new is not the only layering that exists. Spatial layering describes the succession of planes, or spatial sequences. This can be achieved by incorporating visual corridors or axes, circulation paths and thresholds.

- Juxtaposing layers within architecture draws attention or highlights aspects like the existing tectonic, spatial qualities and materials used.
- Layering is the design narrative that explains or elucidates the tectonic qualities of the building.
- Layering can be used as a tool to achieve the proposed hypothesis of opening up.

2.6 CONCLUSION

After studying possible urban design approaches, relevant heritage charters and theory pertaining to layering, the following guidelines were formulated;

- Question the definition of the good city and focus on human life not form.

- Design within the defined statement of significance.
- The programme focus must be on socially useful purposes to be sustainable and successful.
- The intervention should be grounded; relate to the actual physical situation and meet current needs.
- Add value to the existing heritage building, the urban context and the public/users.
- Use layering as a tool to juxtapose the existing with the new, in order to showcase the physical heritage value of the existing.
- Layering can be implemented through;
 - Spatial layering through visual axis and circulation
 - The decomposition of an architectural component
 - Material layering

- Transitional layering through thresholds and emphasis on the joint
- The hypothesis of opening up / exposing can be achieved through;
 - exposing the original layers/construction/details
 - juxtaposing the old and new to make the different layers clearly visible
 - separate the different functions of an architectural component into its individual elements, and let the user experience a previously one-plane component in different planes as well as the spaces in between
 - allowing the city's natural nature take its course, the way water was let into the building at Fondazi-one Querini Stampalia, or allow for the natural movement of people.
 - allowing natural light into the building, and make
- use of reflection
 - memories and association; use materials, construction methods and details to bring up association with other buildings in the precinct and make the visitor connect with the context
 - the programme that is informative and educational to the user
 - accommodate and improve user numbers by implementing visitor facilities and recreational areas, including outside garden areas.
 - improve legibility of the building, subsequently giving it a new image
 - enhance usability through circulation
 - physically open the building with new or improved entrances
- visually connect the exterior to the interior, even though physical connection or movement is not possible

03 _CONTEXT + FRAMEWORK:

3.1 INTRODUCTION

The context is investigated in this chapter: firstly the Burger's Park framework area as situated within Pretoria, its location, character, background and history; secondly context mapping and subsequent analysis; thirdly the proposed urban framework; and fourthly the selection and the justification of the proposed site.

- The Burger's Park housing cluster is located to the east.
- The Museum Park precinct is situated between Visagie street on the north, Van der Walt street on the east, Minnaar street on the south and Schubart street on the west (figure 3.1). The park includes the National Cultural History Museum, City Hall and Pretorius Square, the Museum of Natural History, Burger's Park and Melrose house.

3.2 LOCATION

The Burger's Park framework area (BPFA) is located between Skinner street on the north, Nelson Mandela drive on the east, the rail tracks on the south and Potgieter street on the west (figure 3.1).

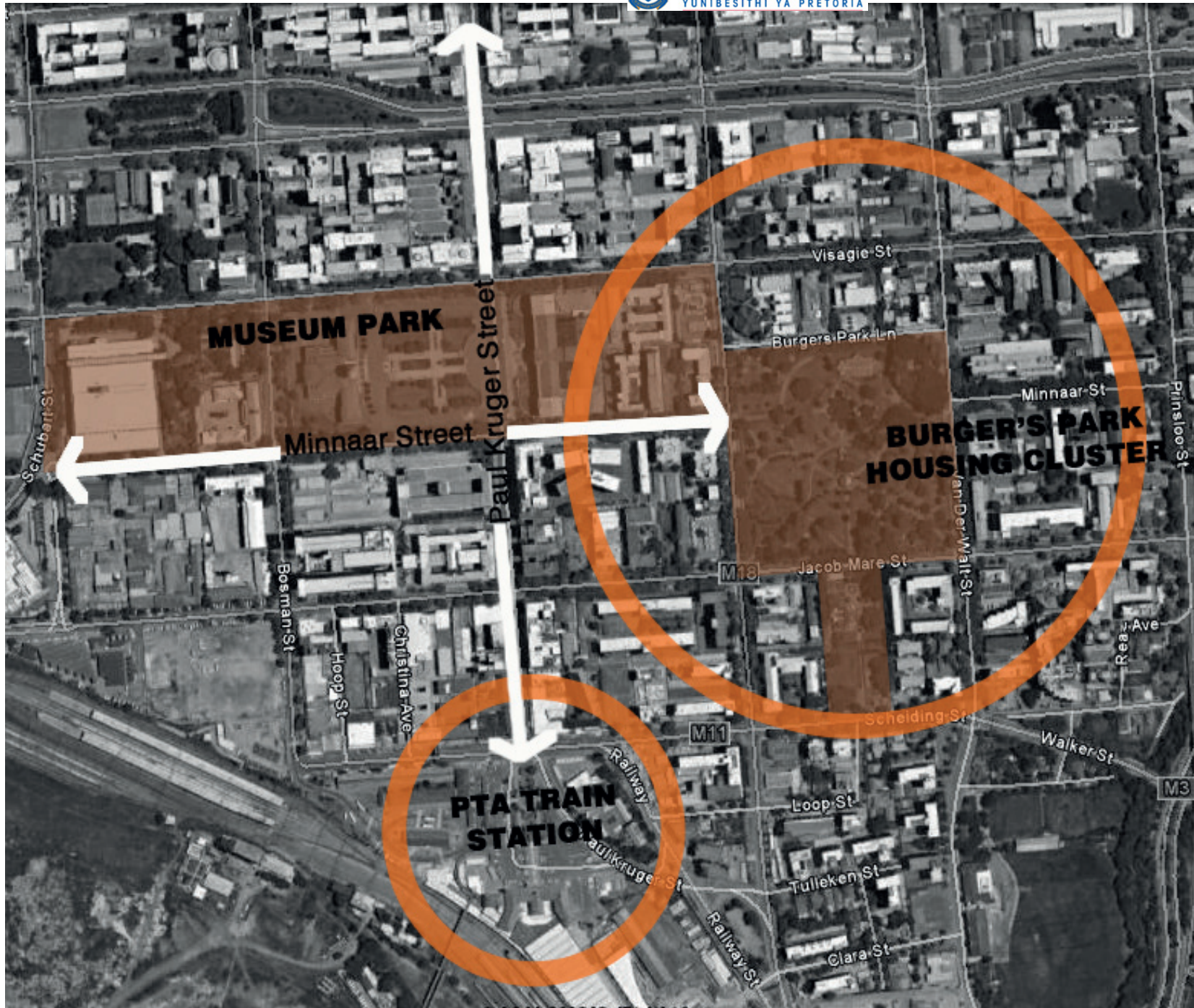
Within the BPFA there are three distinctive precincts or districts:

- To the south one finds the Pretoria Station precinct with major transport nodes.

3.3 CHARACTER

The BPFA was chosen due to its unique sense of place compared to the rest of the CBD, its potential, the already existing residential community and the fact that this area's problems are different from the rest of Pretoria CBD's problems.

This precinct serves as a transitional zone and gateway for pedestrians and commuters moving to and from the CBD by train and taxi. There is also a Gautrain station, which contributes to the high level of pedestrian movement in this area. The area has a suburban feel within an urban area, and is a very



- Pretoria Station Precinct
- Burger's Park housing cluster
- Museum Park

Figure 3.1: A recent aerial photograph indicating the location of the three most identifiable districts in the Burger's Park Framework Area. (Source: Google Earth)

- 1 Melrose House
- 2 Burger's Park
- 3 Transvaal Museum
- 4 City Hall
- 5 Proposed museum for children:
Proposed site for dissertation
- 6 Museum of Culture
- 7 Museum for Science and
Technology
(location was not finalised)
- 8 New State Library
(proposed for 2001)

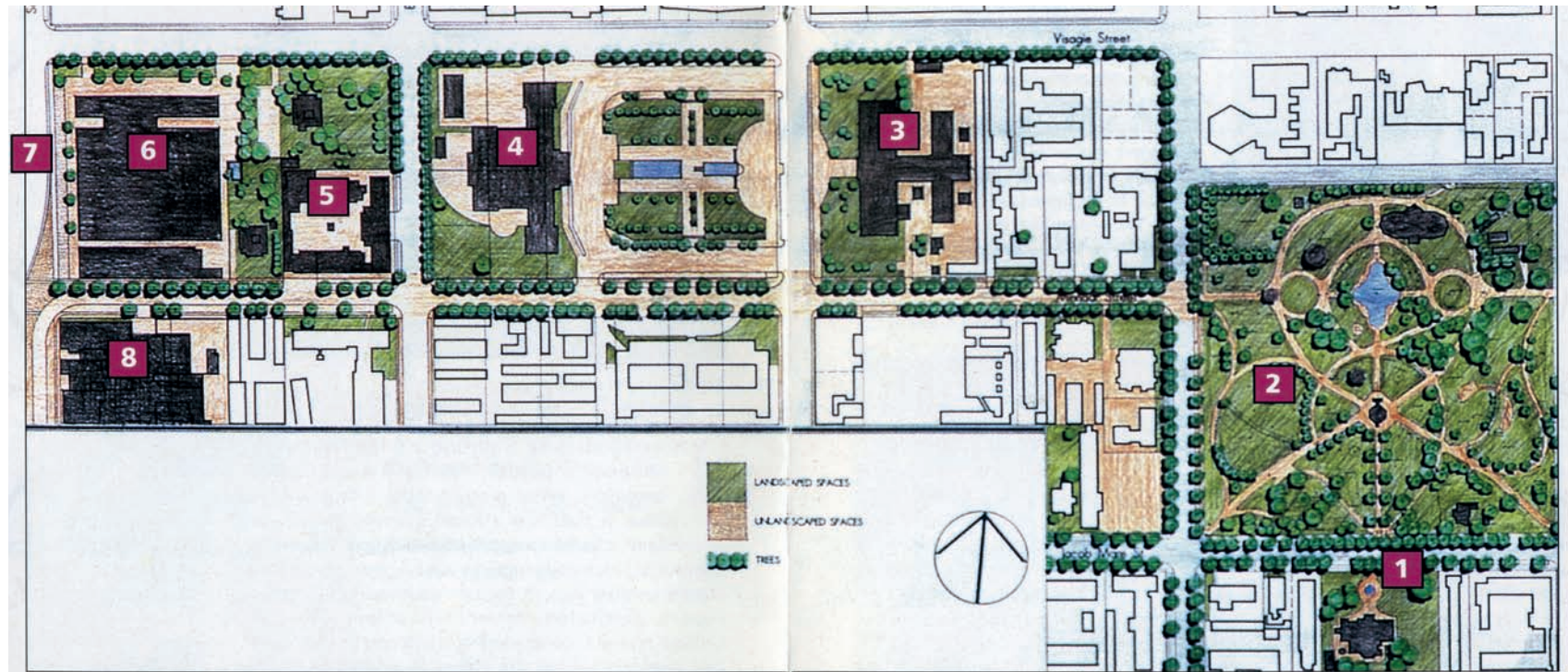


Figure 3.2: The proposed Museum Park precinct in 1995. (Source: Krige et al., 1995: 16)

liveable space with Jacaranda trees lining the streets and Burger's park. Although located in the CBD it has a human scale.

The buildings and the area have historical importance and are lined with museums.

3.4 BACKGROUND AND HISTORY

As mentioned the Burger's Park Framework Area (BPFA) consists of different districts or precincts, of which the Pretoria Station node, Burger's park housing cluster and Museum Park are the most distinct.

- **Transport node;**
 - Pretoria Metro station,
 - Gautrain station,
 - Blue train,
 - Shosaloza Meyl,
 - Bus station,

- Bosman Metro station,
- Newly developed metro mall and taxi rank.

The Pretoria station will be the main transportation node in the southern CBD, possibly the whole of the CBD. The Gautrain and relevant feeder and distribution services, the Metro-rail services, bus services provided by Pretoria City Transport and taxi services are all operating to and from the station.

“Being one of the anchor stations of the project, the Gautrain Pretoria Station provides access to and from the Pretoria CBD. It will further also have an important tourism role and stimulate urban renewal in Pretoria's CBD. The Gautrain Station would be a tourism starting point for the CBD from where tourist attraction within and beyond the city can be visited and from where connections to regional tourist destinations can be made. Accordingly, the station should accommodate all relevant tourism information.” (Gautrain, 2009)

It is anticipated that more than 55 000 people (Gautrain, 2009) will use the Gautrain station on a daily basis. A significant number of these people will walk to their end destinations.

Pedestrian links will have to be upgraded to accommodate easy access to and from the station.

- **Museum Park** precinct of cultural and historical value, includes;
 - National Museum of Cultural History
 - Old Fire Brigade building
 - City Hall and Pretorius Square
 - National Museum of Natural History (previously known as the Transvaal Museum)
 - Burger's Park
 - Melrose House

The Museum Park precinct was established in 1995 (figure 3.2), and was based on the Smithsonian Institute in Washington D.C., United States of America (Krige & Van der Waal, 1995: 2).

The project is run by Museum Park, an article 21 company, with the Pretoria Metropolitan Substructure, the National Cultural History museum, the National Cultural museum and the Geoscience museum all represented.

Minnaar street is the main route linking all the museums in this precinct. A low level of vehicular traffic is present and the street is only used to gain access to buildings and parking. The pedestrian walkway on the north of Minnaar street was developed in 1996 and new street lights and benches were installed. Holm Jordaan Holm Architects executed the upgrade.

- **Burger's Park** district, which includes;
 - Burger's Park as central node
 - Residential buildings around the park
 - Churches and community services to the north of the park

Burger's Park is Pretoria's first park, established in 1882. Originally the property was set to be the Botanical Garden of Pretoria (circa. 1874). The park as it is today was laid out by George Hays (owner of Melrose house opposite the park) and was realised by the botanist James Hunter (City of Tshwane, 2009). The completion of the park was only realised in 1892, making it the oldest park in the city. This Victorian park with its Victorian Keeper's house (le Roux, 1990: 131), has asymmetrical walkways and abundant curves. The florarium, kiosk

and Band stand are of architectural value (Be my Guest, 1990: 17). It also houses a World War I memorial for the South Africans who died in battle as part of the Scottish Regiment (Visit Pretoria, 2010). The park is well kept and used; it is an escape from the busy city centre to the north. Many children, residents and passersby frequent the park daily (ibid).

Other district also within the BPPA are;

- School district - three schools are located along Visagie Street
- Area between Visagie and Skinner streets; high density, commercial and office district, with residential on the upper floors. Act as buffer between Skinner Street and the housing clusters.
- Scheiding and Jacob Mare streets, in the area between Bosman street and Nelson Mandela lane; high density, commercial and office district, with residential on upper floors.
- Berea Park area

3.5 MAPPING AND ANALYSIS

A mapping exercise for the precinct was done. See figures 3.3 - 3.15 for the results of the mapping exercise, as well as the subsequent analysis.

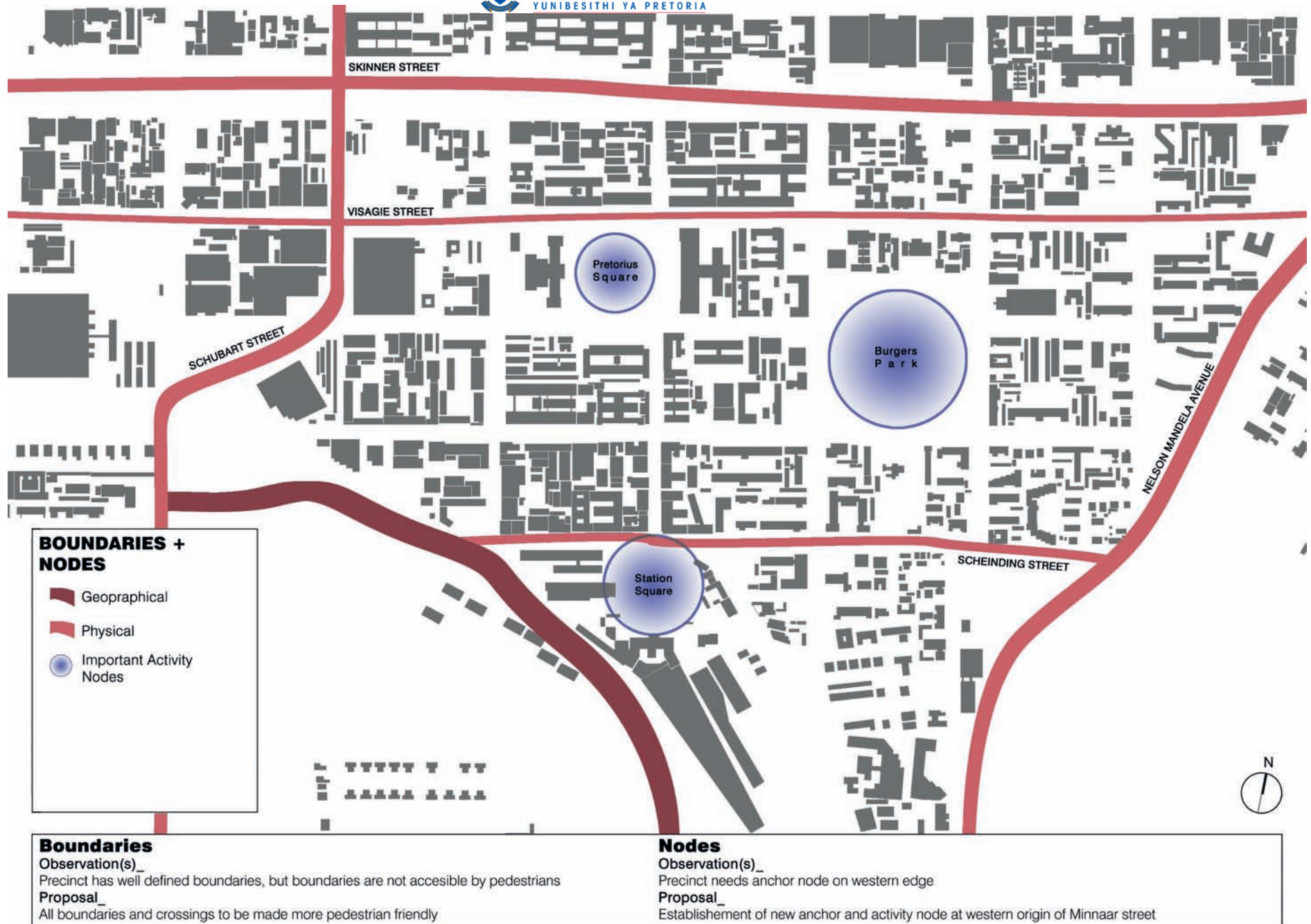


Figure 3.3: Boundaries and nodes

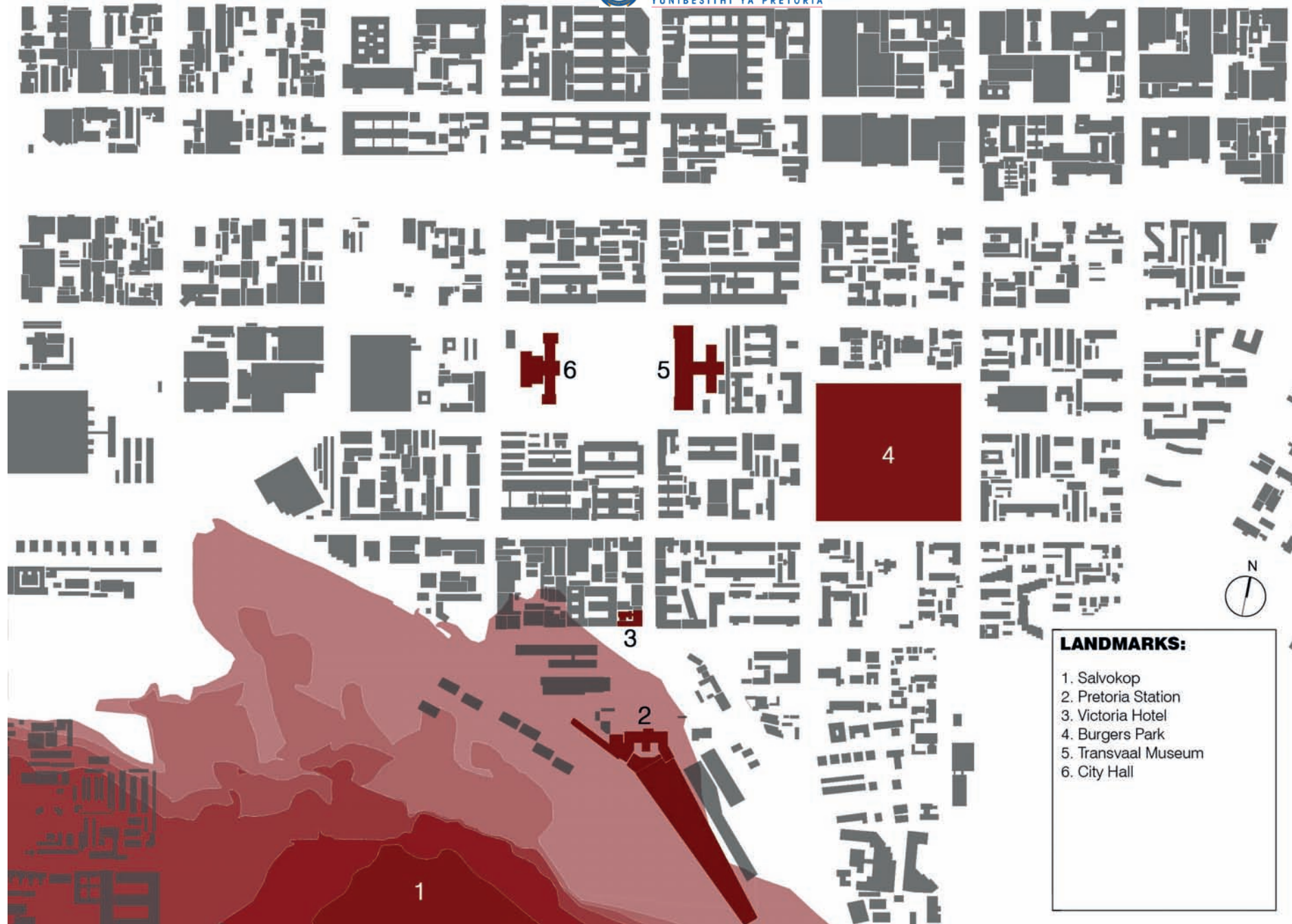


Figure 3.4: Landmarks in the Burger's Park Framework Area

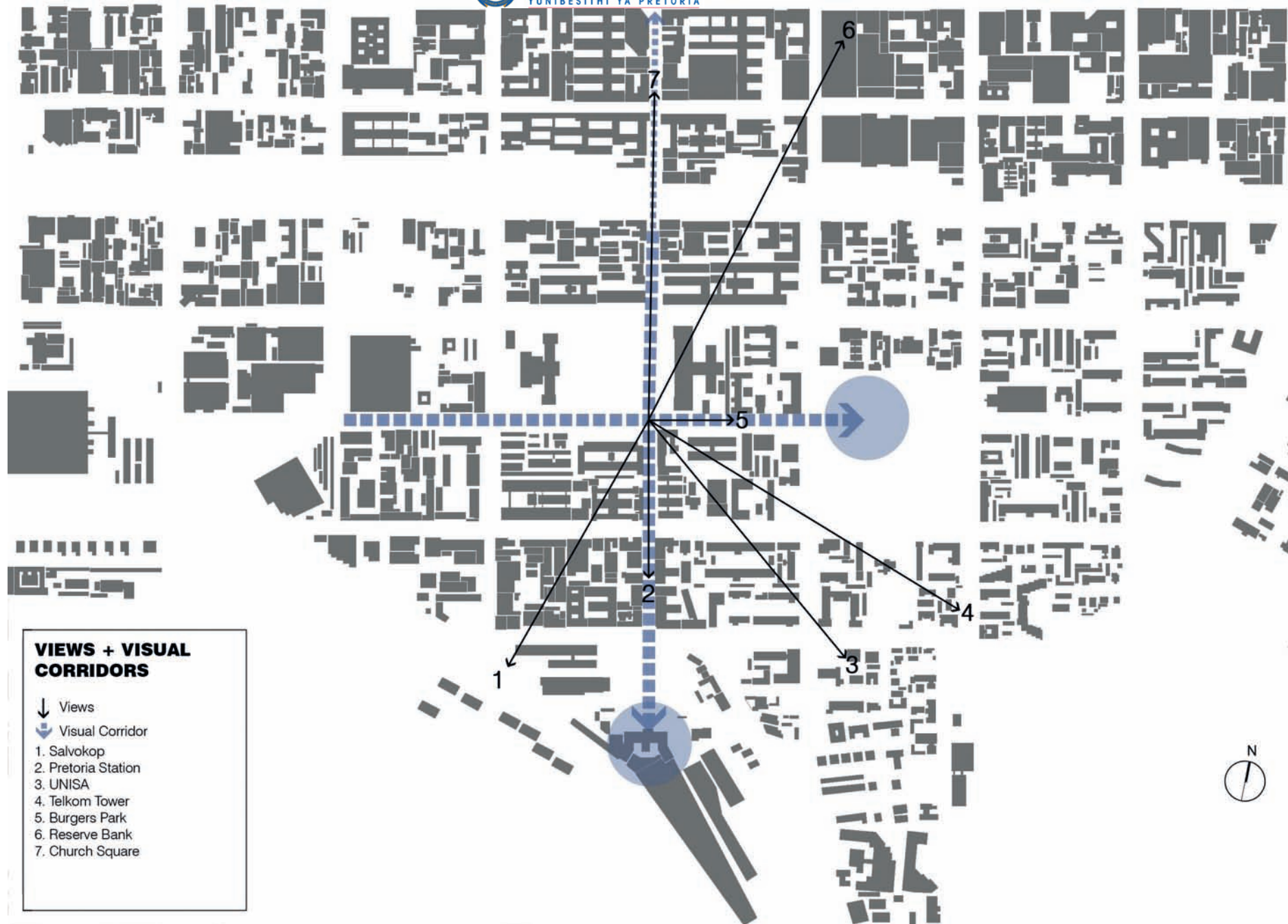


Figure 3.5: Views and visual corridors

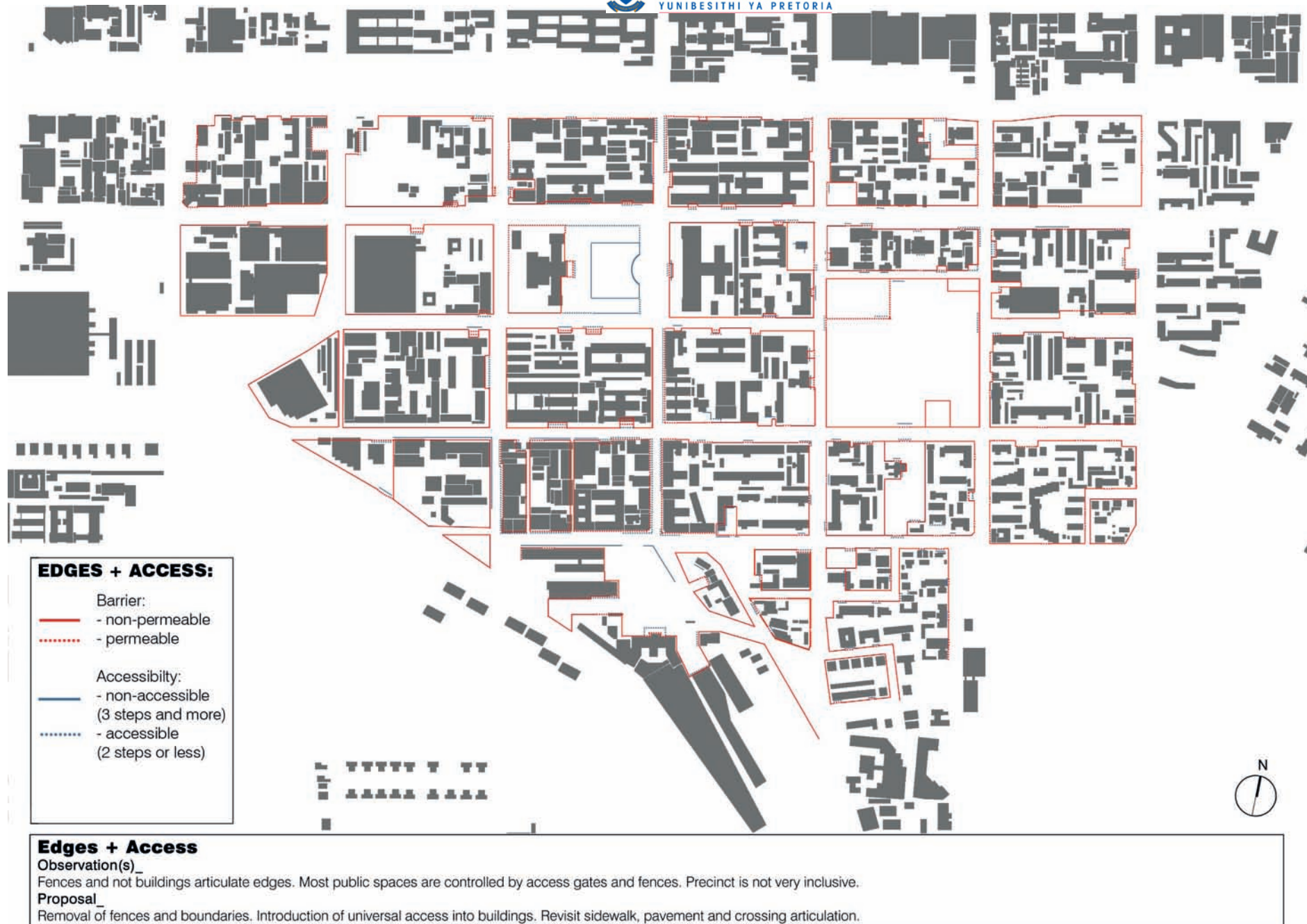


Figure 3.6: Accessibility and barriers



Figure 3.7: Network of public spaces



Figure 3.8: Existing uses in the Burger's Park Framework Area

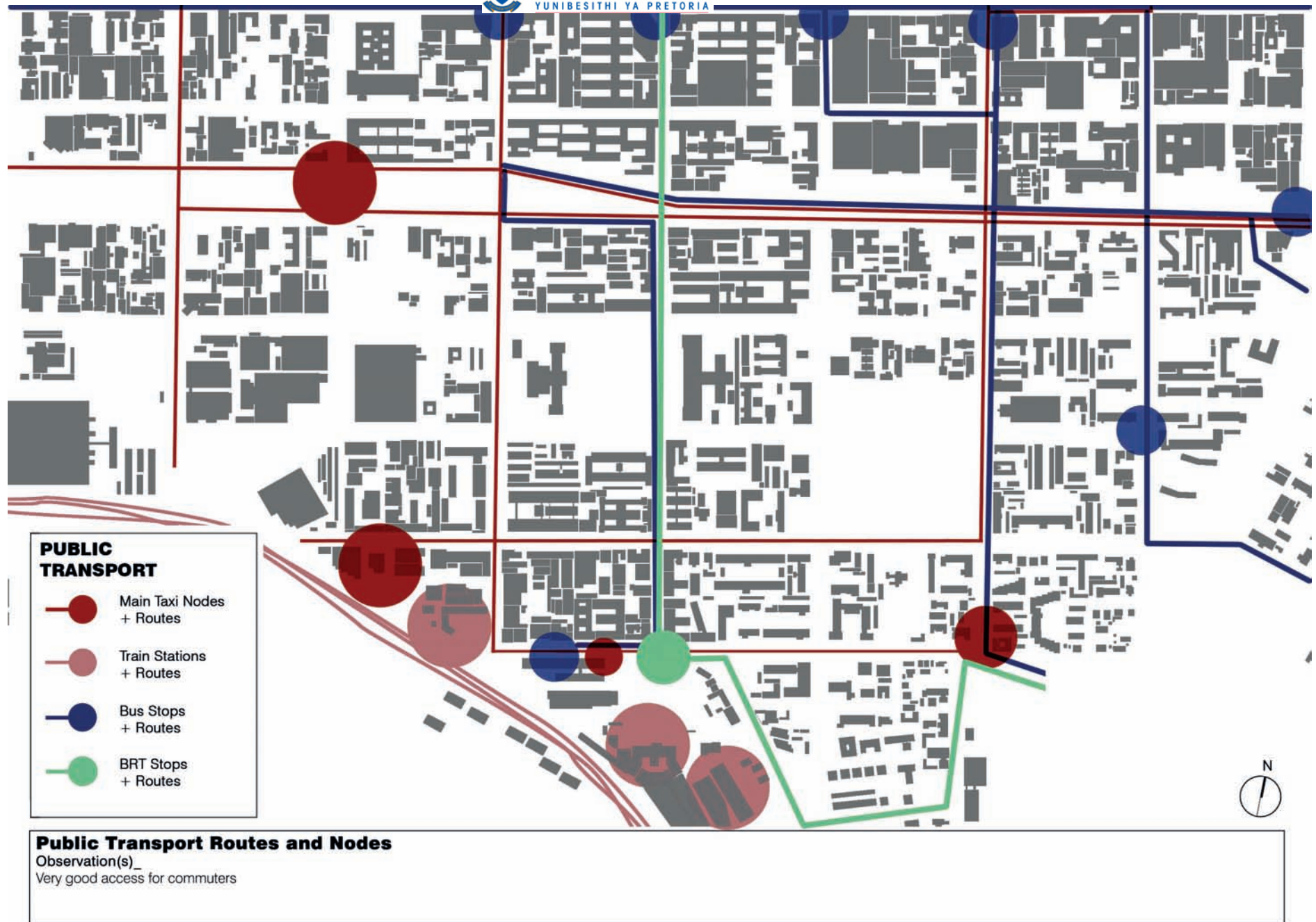


Figure 3.9: Public transport nodes and routes



TRANSPORT ROUTES:
PRIVATE

- Primary private transport routes.
- Secondary private transport routes.
- Direction of traffic

Private Transport Routes
Observation(s)_
Very good access for private commuters

Figure 3.10: Private transport routes



Figure 3.11: Parking currently available

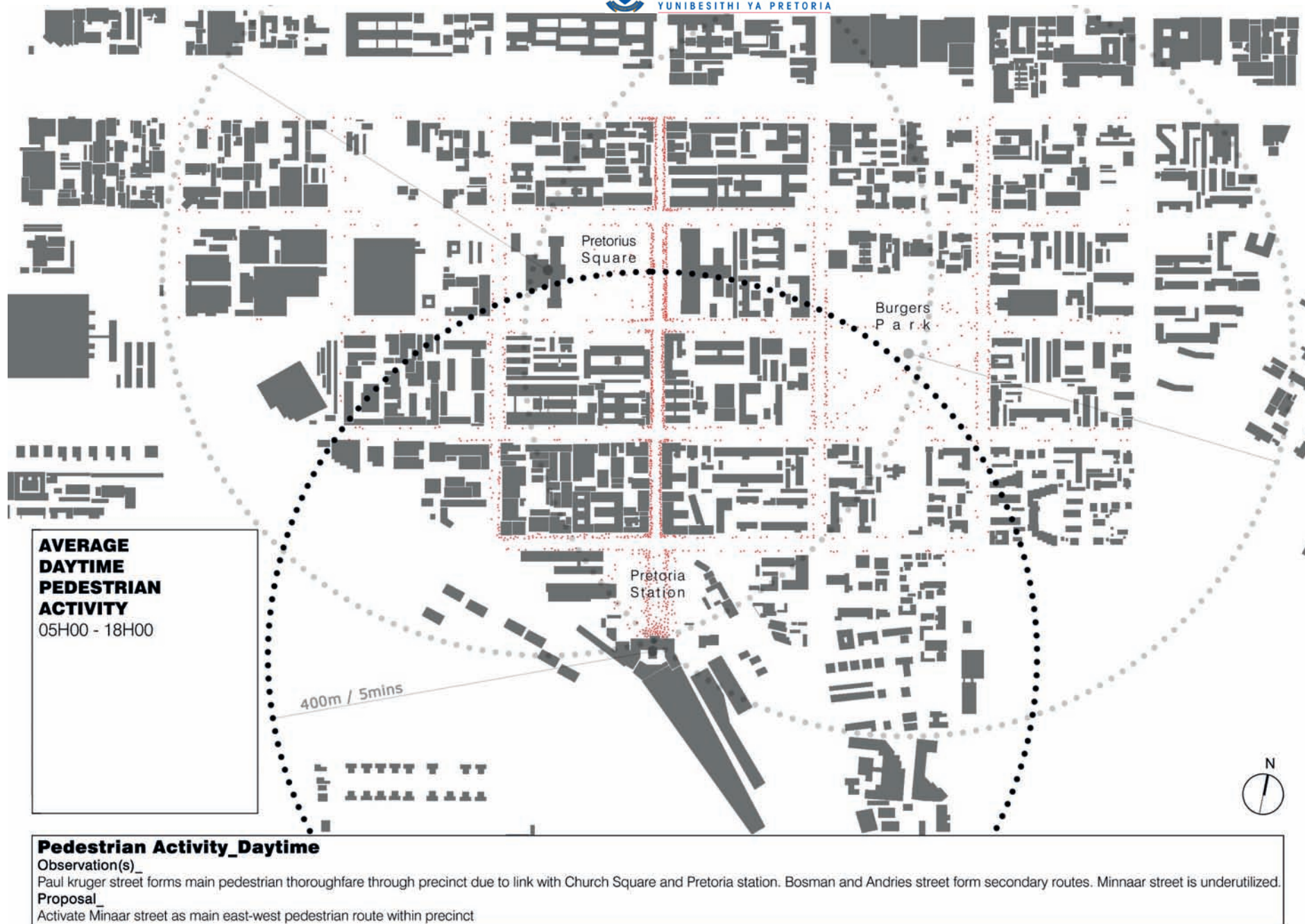


Figure 3.12: Pedestrian activity during the day

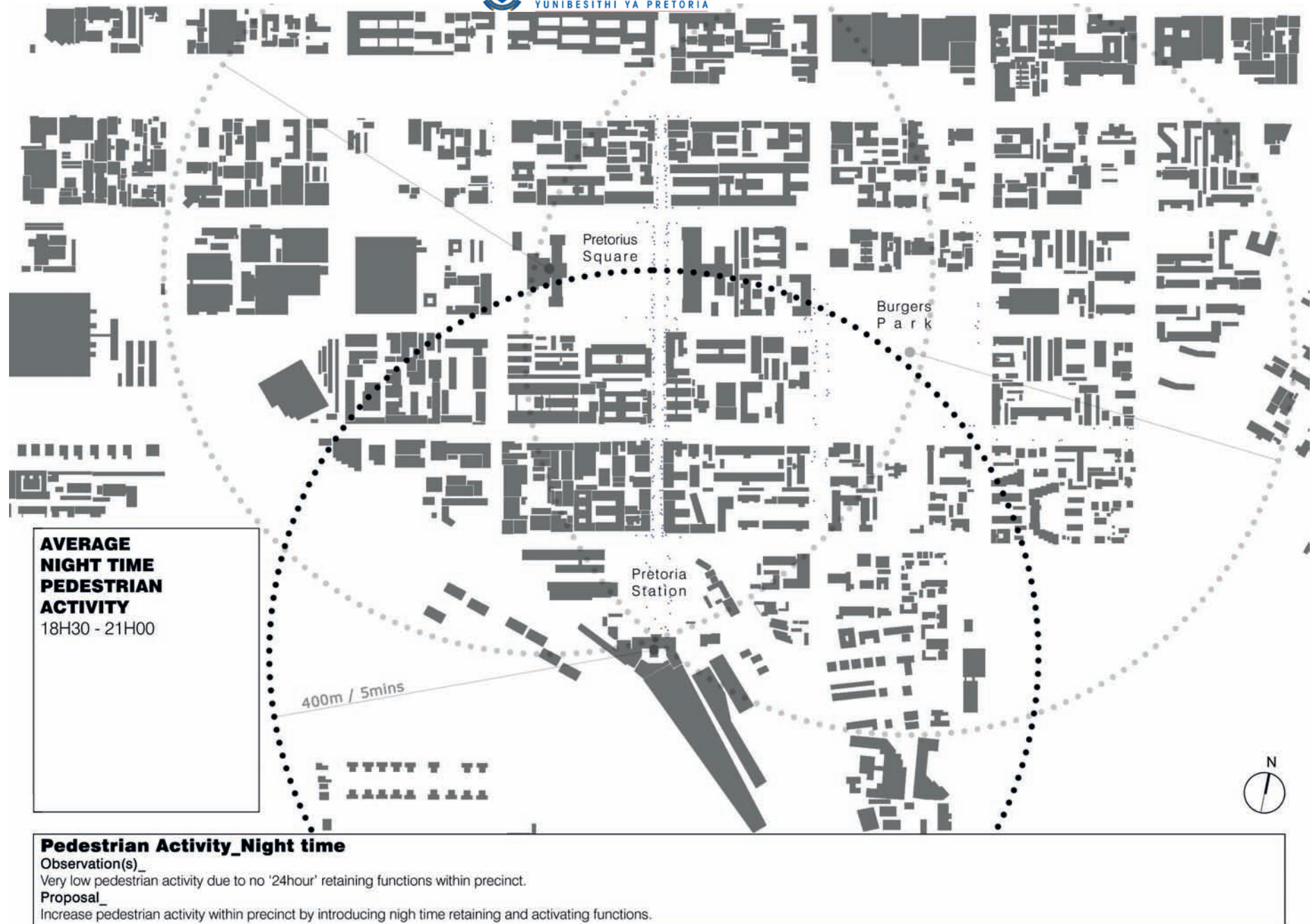


Figure 3.13: Pedestrian activity during the night



Figure 3.14: Strength, Weakness and Threat Analysis



Figure 3.15: Opportunity Analysis

3.6 PROPOSAL OF GROUP URBAN FRAMEWORK

3.6.1 INTRODUCTION

The urban framework proposal opens with its vision and aims, followed by the target user. A few guidelines are set out before the proposal is introduced showing a summary of the identified problems and opportunities. This is followed by the urban proposal and the selected sites.

3.6.2 VISION AND AIMS

- Promote a unique environment with an own identity; a museum precinct.
- Change public perception of museums. Possible re-branding or renaming of the word 'museum'. Attach public pro-

grammes, like restaurants, after school care and educational centres for children, to the museums in an attempt to make museums appear more accessible and open to users.

- Give back museums to the public by making the spaces physically more accessible, or by associating the museum with public programmes.
- Create an environment which attracts museum and art education institutes, other similar programmes and venture capital.
- Clear understanding of what the public environment looks like, and how it can be translated into a sense of identity.
- Provide facilities for all users: community and service facilities for tenants (both residents and workers), commuters and visitors (local, South African and international).
- Maximise social exchange between all users.

- Safe and secure environment for tenants, commuters and visitors.
- Environment that promotes ease of movement for pedestrians and vehicles.
- Flexibility: ensure that structure, form and spaces can respond to changing requirements. Adapt existing and use as guideline for future development.
- Eventual relocation of all museums in Pretoria to Museum Park.
- Provide codes and regulations for development.

3.6.3 TARGET GROUP

- Local residents
- Workers
- Commuters

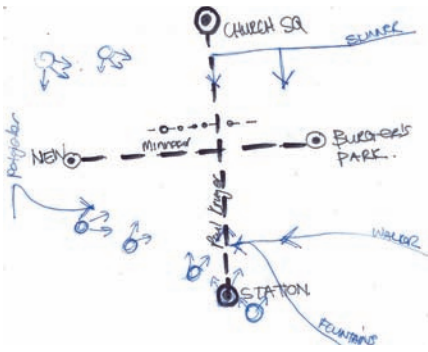


Figure 3.16: A legible whole

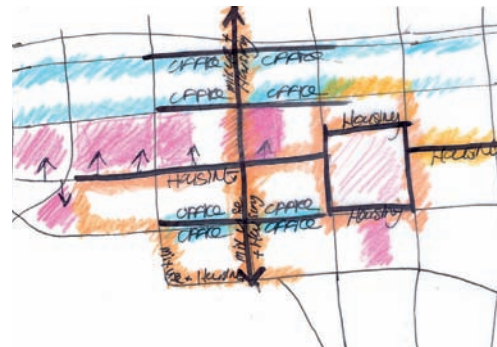


Figure 3.17: Network of streets



Figure 3.18: Public open space - focal points of social interaction

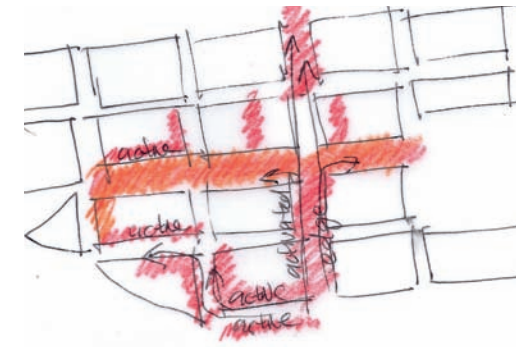


Figure 3.19: Public realm - supports social interaction

- Educational users and groups (example: school children on field trips)
- Citizens
- Tourists

It is believed that the main target group should be the local residents, everyday users and groups visiting for educational purposes, like school children. Hereafter other citizens are focussed on. If the urban environment succeeds in facilitating for its citizens, tourists will follow.

Programmes should therefore firstly focus on amenities for the local residents and everyday users. According to the uses analysis done, there are a shortage of social amenities in the area. The second focus is on educational programmes and exhibitions connected to the museums.

3.6.4 GUIDELINES

The guidelines for the urban framework are based on the theory of an urban design approach that was investigated in an attempt to define The Good City in Chapter 2.

1. A legible whole -

Physical and visual connections (figure 3.16):

- Paths
- Entrance and exit points
- Destinations
- Visual corridors
- Landmarks

2. Network of streets -

Routes for a various functions (figure 3.17):

- Street networks according to hierarchy
- Functions follow uses of streets

3. Open public space -

Focal point for social interaction (figure 3.18):

- Nodes
- Public spaces, squares, parks and walkways
- Pedestrian prioritisation

4. Public realm -

Support social interaction (figure 3.19):

- Perimeter blocks
- Active building edge
- Mixed use and public inter-face

Urban Problems Identified within Study Area

1. Minnaar street termination

Poor spatial beginning for prominent road within precinct

2. Minnaar street / Schubart street intersection

Unarticulated and dangerous for pedestrians

3. Crossings within precinct

Orientated towards vehicular use

4. Current museum buildings

Severely underutilised and neglected

5. Palisade fences and brick walls

Prevents urban and pedestrian amalgamation of space

6. Underutilized and vacant lots

Degrades urban character of precinct

7. Taxis along Jacob Mare street

Creates dangerous urban edge to street

8. Government Buildings

All government, office and institutional buildings to have public interface ground floors

9. Block thoroughfares

Poorly defined and severely under utilized arcades

10. Pretorius square

Poorly functioning public space - no established hierarchy

11. Pretorius square / Paul Kruger street edge

Edge not defined - public space bleeds into street

12. Paul Kruger street

Street and edges need revision in order to improve pedestrian environment

13. Informal off-street parking

Street edge definition and pedestrian environment compromised

14. Buildings close to Pretoria Station

Densities too low to accommodate increased economic activities from Gautrain

15. Pretoria Station crossing

Unarticulated and dangerous for pedestrians - lacks "gateway" to precinct

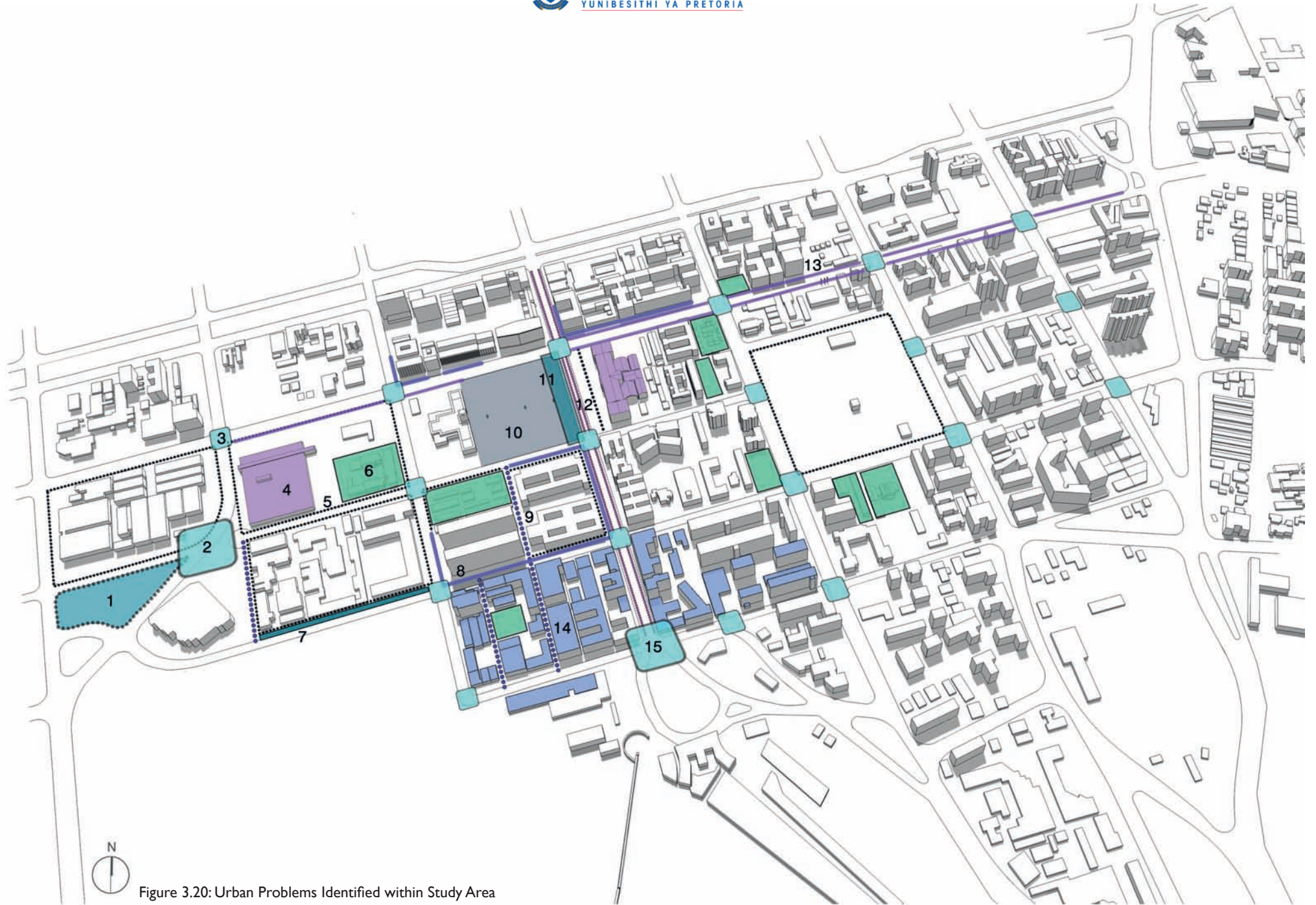


Figure 3.20: Urban Problems Identified within Study Area

1. Minnaar street termination

New civic space and anchor node to be established.
 Post office building to be demolished and relocated to Post office precinct west of Potgieter street

2. Minnaar street / Schubart street intersection

Crossing to be articulated and made highly pedestrian orientated

3. Crossings within precinct

Articulated and orientated towards pedestrian use

4. Existing museum buildings

Museums to be fully refurbished and modernised.
 What is exhibited needs to be showcased and propagated to the public.

5. Palisade fences and brick walls

Boundaries to be removed to allow for better spatial utilisation and amalgamation

6. Taxis along Jacob Mare street

To be accommodated in newly developed taxi rank south of Jacob Mare street

Interventions + Opportunities

7. Government Buildings

All government, office and institutional buildings to have public interface ground floors

8. Block thoroughfares

Connections between city, pedestrian and public space need to be considered

9. Pretorius square

Square to be programmed and hierarchy to be introduced

10. Pretorius square / Paul Kruger street edge

Edge to be articulated and densified

11. Informal off-street parking

Parking to be landscaped and formalized in order to improve identity and character of precinct

12. Buildings close to Pretoria Station

Replacing existing low-rise structures with high density mixed use buildings

13. Pretoria Station crossing

Crossing to be articulated and made highly pedestrian orientated
 Establishment of gateway necessary

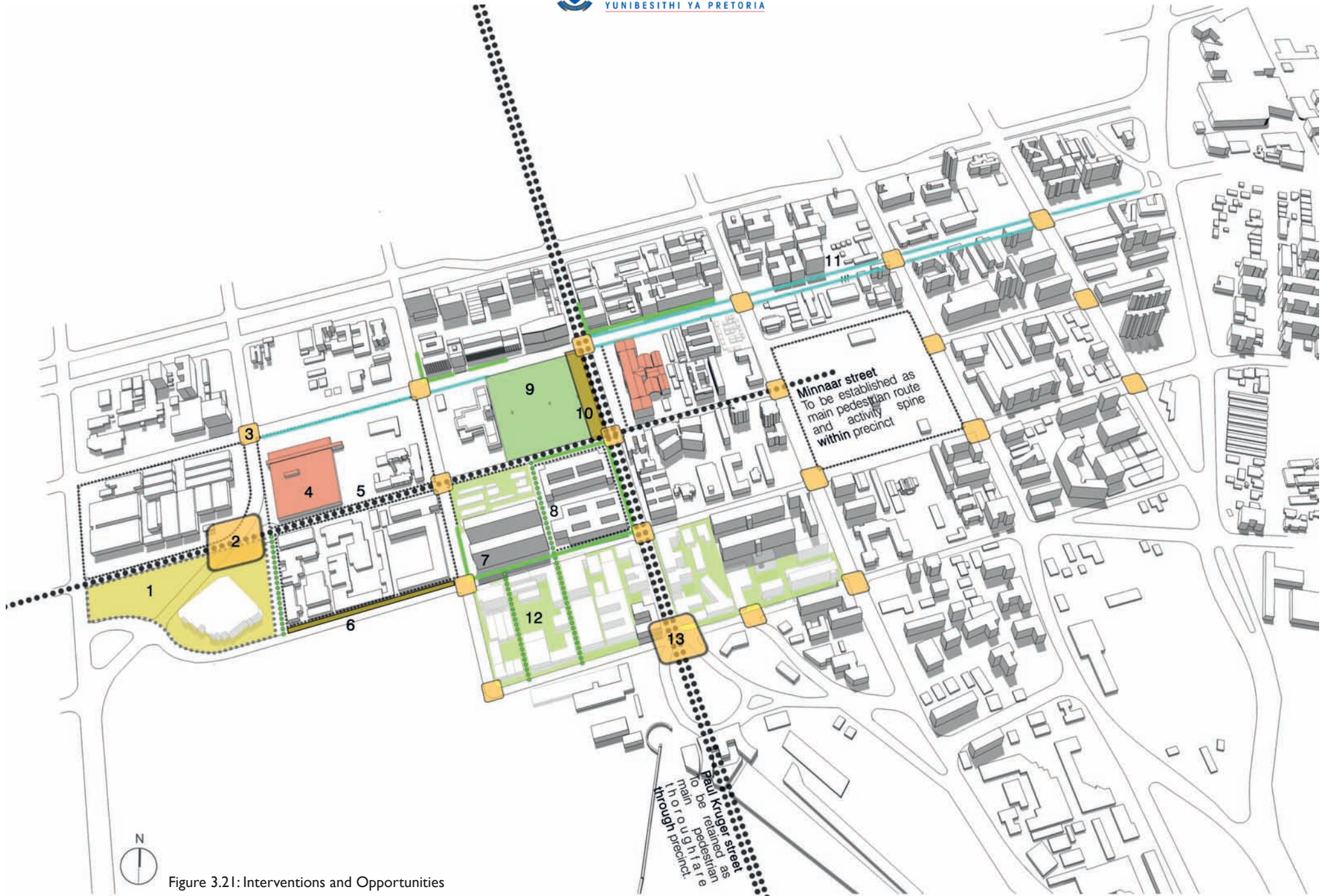


Figure 3.21: Interventions and Opportunities

The Urban Design Proposal for Precinct

1. Minnaar street termination

Creation of a new pedestrian anchor node. The node will include new landscaped areas as well as new cultural facilities.

2. Relocation

New site for the relocation of the Pretoria Art Gallery.

3. Reprogram

Government Printers to be reprogrammed in order to interact with the new node as well as gain museum / educational functions.

4. Minnaar street / Schubart street intersection

Crossing to be paved in order to facilitate a change in texture as well as level.

5. Crossings within precinct

Crossings to be paved in order to facilitate a change in texture as well as level in order to indicate the predominance of pedestrian use.

6. Paul Kruger street

Sidewalks along Paul Kruger Street to be extended by one lane on each side in order to better facilitate informal trade as well as flow along the Paul Kruger axis. Boulevard to be created through the addition of a pedestrian island in the middle of the road in accordance with the Re Kgabisa Tshwane framework. Landscaping to be dealt with appropriately.

7. Block thoroughfares

Thoroughfares to be articulated as arcades. Building interfaces and landscape to be dealt with appropriately.

8. BRT Station

Proposed BRT Station to be moved one city block to the north.

9. Buildings close to Pretoria Station Western block

Building densities to be increased and reprogrammed as mixed use high density development. Perimeter blocks to define street edge with a building height of 5-10 storeys.

10. Buildings close to Pretoria Station Eastern block

Building densities to be increased and reprogrammed as mixed use high density development. Buildings above 5 storeys to be considered for adaptive re-use.

11. Pretoria Station crossing

Crossing of Scheiding Street to be adapted to facilitate high levels of pedestrian movement.

12. New cultural / civic building

Existing structures to be demolished and underutilised site to be developed. Program to be cultural / civic based and highly public in nature. Building height to be between 7 and 9 storeys. Public parking to be included.

13. Vacant / underutilised lots

Vacant sites to be developed. Buildings to be highly public in nature with the building height in accordance with existing built fabric.

14. Melrose House

Bicycle rental facilities to be provided.

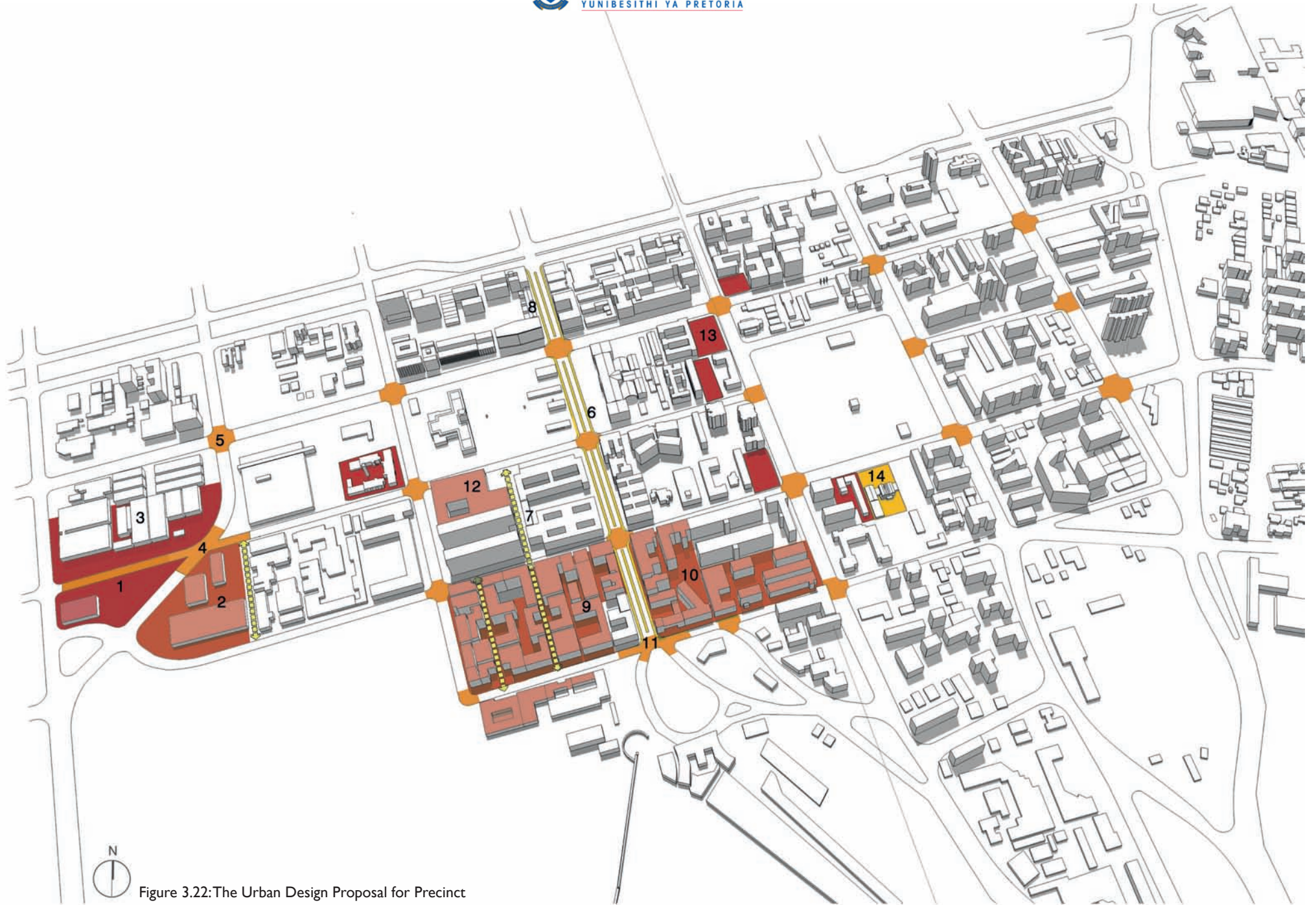


Figure 3.22: The Urban Design Proposal for Precinct

Proposed New Uses within Study Area

1. New Minnaar street node

Creation of a new pedestrian anchor node with new cultural facilities.

2. Crossings within precinct

Crossing to be paved in order to facilitate a change in texture as well as level in order to indicate the predominance of pedestrian use.

3. Underutilised museums

- All existing cultural and historical buildings (City Hall, National History museum, Natural Cultural museum, Victoria hotel) must have retrofitting / interior interventions done. New interiors for exhibition spaces. Rotate exhibitions monthly. Kitchens to be renovated for functions.
- All cultural buildings along Minnaar street must have their main entrance in Minnaar street
 - Provide signage within the precinct for identity and overall transparency of events.

4. New museum or cultural buildings

Underutilised sites to be developed. Program to be cultural / civic based and highly public in nature. Public parking to be included.

5. Reprogram as cultural functions

Government Printers to be reprogrammed in order to interact with the new node as well as gain museum / educational functions.

6. Vacant / underutilised lots

Vacant sites to be developed. Buildings to be highly public in nature with the building height in accordance with existing built fabric.

7. Barriers and public inter face

Reactivate or reprogram public buildings; add public programme, public inter face at ground floor, remove fences, etc.

8. Block thoroughfares

Thoroughfares to be articulated as arcades. Arcade extended into Minnaar street.

9. Paul Kruger street

Sidewalks along Paul Kruger Street to be widened in order to better facilitate informal trade as well as flow along the Paul Kruger axis. Paving to clearly demarcate areas for informal trade. Boulevard to be created through the addition of a pedestrian island in the middle of the road, between Pretorius Square and the Transvaal Museum, in accordance with the Re Kgabisa Tshwane framework.

10. BRT Station

Proposed BRT Station to be moved one city block to the north.

11. New Metro Mall development

12. Building densities to be increased and reprogrammed

As mixed use high density development. Perimeter blocks to define street edge with a building height of 5-10 storeys.



Reprogramming:

Reprogramme Government Printers to have museum or cultural programme, public building

City hall:

Tshwane Public Forum, Tshwane tourist office, Museum Park head office (marketing of museums), dedicated events office for City Hall building and Pretorius square, overall coordination and information of all existing and available events spaces in the precinct.

Pretorius Square:

Outdoor exhibitions and installations.

National History museum and Natural Cultural museum:

focus is on education; rotating school programme and workshops. All existing museums must have interior intervention done. New exhibition spaces. Rotate exhibitions monthly. Kitchens to be renovated for functions

Melrose house:
cycling tours

New proposed node:
museum or cultural programming, very public

Possible relocation of Pretoria Art Museum

Museum or Centre for Architecture / Built Environment:
Archives, collections, library, bookshop, auditorium, museum of architecture, exhibitions, institute of architecture

Centre for Creative Arts:
see CCA at UKZN/ SA Institute for performing and creative arts- see GIPCA at UCT:
'museum' of creative writing, film and media, drama, music, dance

New Art Gallery
with focus on the community due to location at Burger's Park

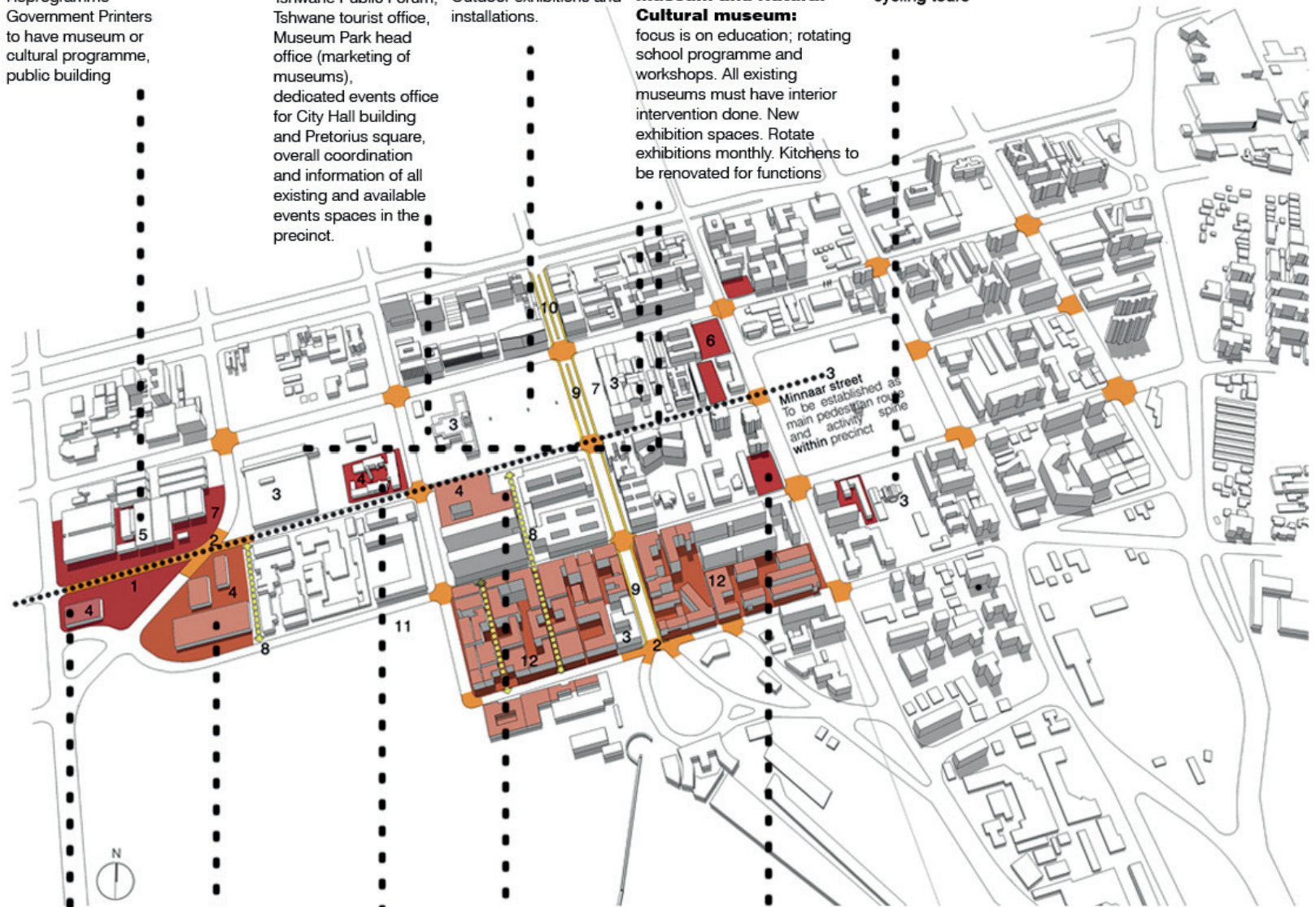


Figure 3.23: Proposed New Uses within Study Area

Selected Sites within Framework Area

1. Isabel van Wyk - Centre for Architecture

2. George F. Pieterse - Museum of Typology
3. Gavin Williams - Burger's Park Opportunity Platform
4. Alexia Philippou - Community Creativity Facility
5. Deirdre Marais - Drop-in Soup Kitchen and Dance Centre
6. Heinrich Olckers - Urban Transition Space

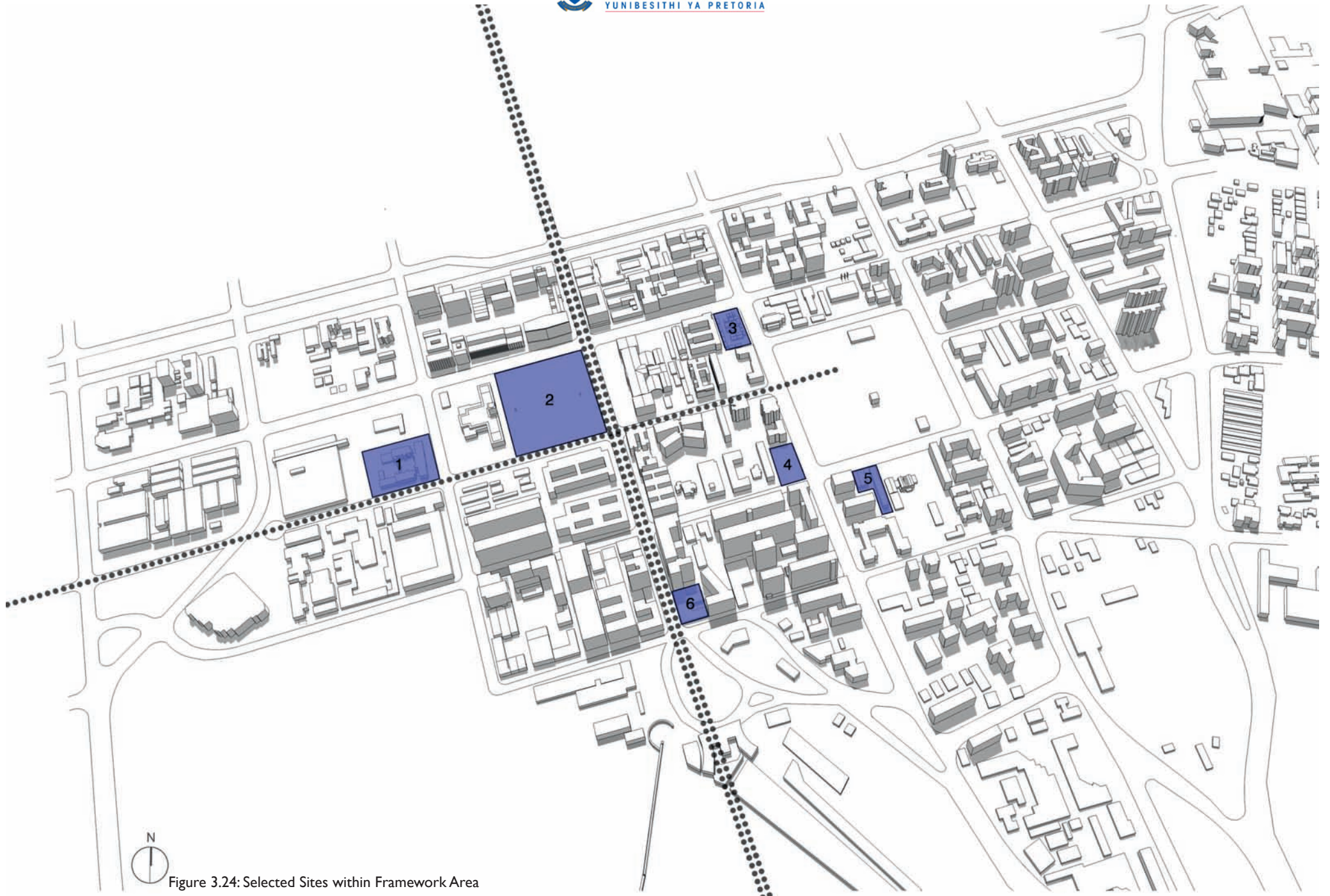


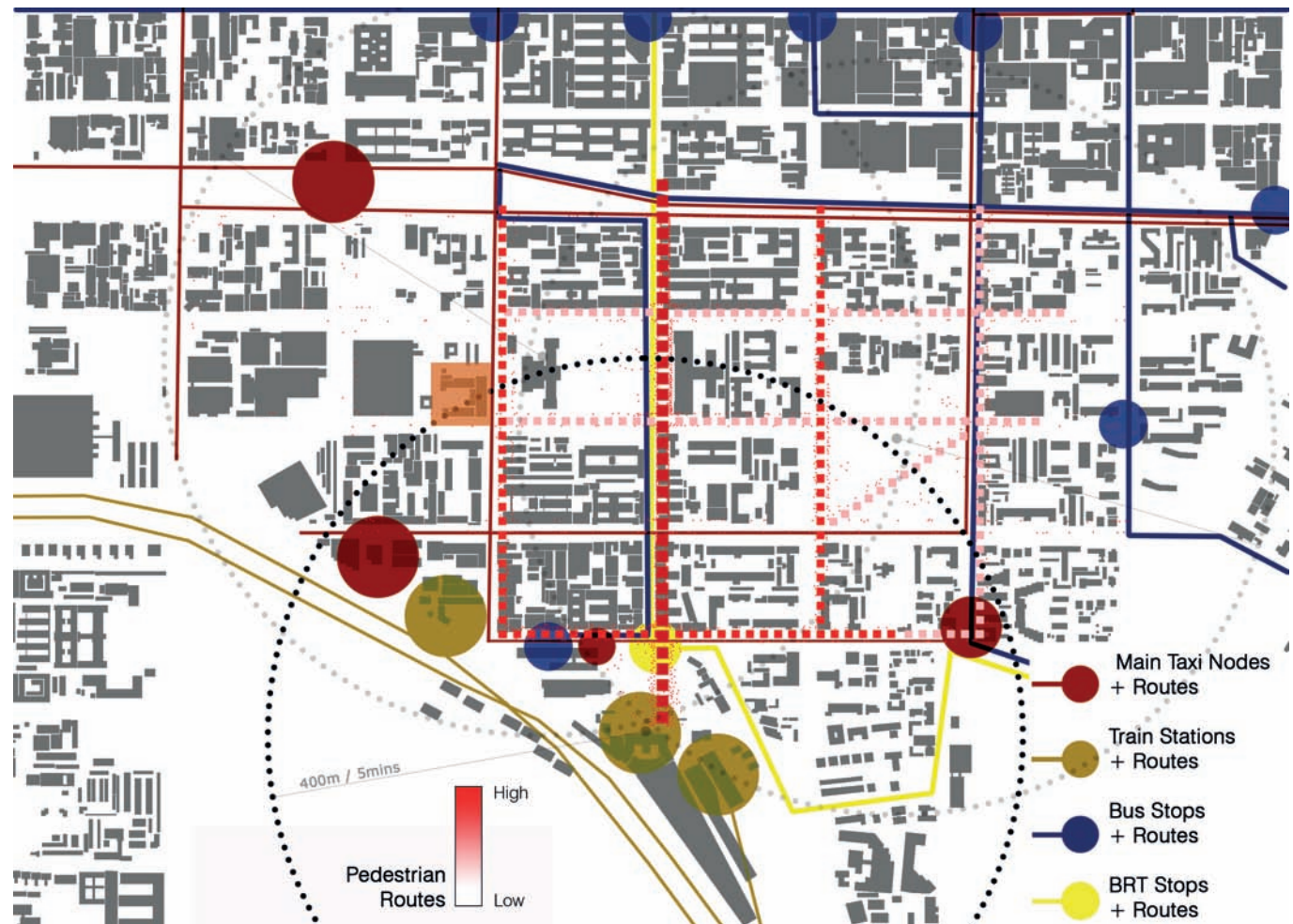
Figure 3.24: Selected Sites within Framework Area

3.7 SITE ALLOCATION

Justification for the site was done through the context analysis. The site was identified as a site with potential through the mapping exercise. The selected site is conveniently located within the five minute walking radius from the Pretoria train station, Gautrain station, Bosman street station and two taxi ranks. Due to this there is a high level of pedestrian movement (figure 3.25).

Pretoria's original Central Fire Station, designed by Cowin & Powers and built in 1912 (Le Roux, 1990: 36), is located on the corner of Bosman and Minnaar Street, Pretoria CBD, within the Museum Park Precinct. It is an example of an inward-driven, formal building with a current programme that is not fully functional due to the lack of public interface of the building. After context analysis this site was proposed for re-use into a highly public building with a cultural programme, building height to be in accordance with the existing built fabric.

Figure 3.25: A figure ground map of the urban context with the proposed site indicated together with pedestrian density, a five minute walking radius and the public transport nodes. (Author)



3.8 CONCLUSION

The following guidelines were formulated after a context investigation and the formulation of a proposed urban framework;

(a) Context:

- Promote a distinct identity as a museum precinct.
- Focus on the users and social exchange.
- Pedestrian movement has to be considered.
- Public amenities are a big focus. Make public space more accessible and open (outward orientated). Address the existing buildings' public interface.

(b) Site:

- Focus on community and educational users.
- Provide public amenities.
- Reuse the existing and accommodate a public cultural programme.
- Make the building more accessible by addressing the existing threshold. Remove any barriers.

04_SITE + BUILDING:

4.1 INTRODUCTION

This chapter is divided into the site analysis and the existing building analysis. Location and background on the site and the surrounding buildings are discussed, as well as the Old Fire Station. Problems of both the site and the building will be identified. The building analysis will end with the statement of significance. The chapter concludes with the identification of the opportunities for both the site as a whole, and the building.

4.2 THE SITE

4.2.1 LOCATION

- North-western corner of Bosman and Minnaar Street (figure 4.1).
- Part of Museum precinct and historical heritage of Pretoria, and has potential to become an important cultural node.

- Conveniently located on major movement routes.
- Close proximity to transport nodes; Pretoria Metro station, Pretoria Gautrain Station, Bus station, Bosman Metro station, Jacob Mare street taxi rank, Skinner street taxi rank, the new Metro Mall on the corner of Bosman and Jacob Mare street.
- Located in a Gautrain station precinct, within a five minute walking radius.
- •New station will act as catalyst for upgrading and renewal of Pretoria CBD, making new development financially viable.
- More users will move through area.
- Integrated with the need to improve pedestrian walkways, proper links, clean environments, develop underutilised spaces (counteract urban decay).
- Will lead to improved living and working environments for local users.



- 1 Old Fire Station: **SITE**
- 2 African Window
- 3 Minnaar Street house
- 4 Mint House
- 5 Amphitheatre
- 6 City Hall with Pretorius square
- 7 Parking for government buildings
- 8 New Fire Station Headquarters
- 9 Government printers
- 10 Loreto Convent School
- 11 Catholic offices
- 12 Petrol station

Figure 4.1: Aerial photograph with the surrounding buildings in the context area and site indicated. (Source: Google Earth)

4.2.2 SURROUNDING BUILDINGS

**(a) Loreto Convent**

- 105 Skinner street
- A convent school for girls
- Established in 1878
- Parts of the original building still exist
- Big sports ground can be possible overflow parking for events

(b) Catholic offices part of Loreto Convent

- Circa 1962
- Four storeys
- Flat roof
- Plastered finish

**(c) Petrol Station**

- Two storeys
- Flat roof
- Plastered finish

**(d) City Hall with Pretorius Square**

- Paul Kruger Street, between Minnaar and Visagie Street
- The City Hall was built to celebrate Pretoria's city status obtained in 1931.
- A competition scheme won by FG McIntosh in 1926, during the Great Depression. Inaugurated in 1935.
- Pretorius Square named after the two statues in front of the building depicting Voortrekker leaders Marthinus Pretorius and Andries Pretorius, his father, after whom Pretoria was named when it was established in 1855.
- Main tourist attractions in area together with the Transvaal Museum (National Museum of Natural History) across the road.
- Landmarks
- City Hall set back from street with square in front – gives prominence.
- Three storeys high with clock tower in centre.
- Sandstone facades.
- Neoclassical style, with Neo-Cape-Dutch and Art Deco influences.
- Central point of Museum Park, aptly located for the head office for Museum Park.
- Western facade does not define street edge, nor respond to old fire station building.
- Due to its existing accommodation City Hall can be the main events and conference facilities building in Museum Park.

**(e) Parking lot for government buildings**

- Parking lot on south eastern corner of Bosman and Minnaar Street intersection.
- High wall around parking area, with entrance in Minnaar Street.
- Street corner and street edge need development to improve street quality.

**(f) Head quarters of Fire Station**

- 499 Bosman Street, between Minnaar and Jacob Mare Street.
- Built in 1969 to replace the old fire station.
- Three storey building with flat roof.
- Offices, housing, training facilities and training tower.
- Set back from street edge, with grass berm between building and street.
- Palisade fence with pedestrian entrance in Minnaar Street.



(g) Government printers

- 87-95 Visagie Street, between Schubart and Potgieter Street
- Previous uses include Staats Garage, SABS, CSIR
- Double volume high warehouses and storage with three story offices
- Face brick or steel buildings with corrugated steel roofs
- Surrounding high brick wall
- Entrances in Visagie and Minnaar Street

can Window adaptation by KWP Architects.

- The largest collection of artefacts of all the cultural history museums in South Africa (mp 2006)
- Approximately 16 000m² storage space
- Two storeys above ground level, with a triple volume high entrance corridor.
- Ceramic tile facade



(d) Minnaar Street House with summerhouse

- 130 Minnaar Street
- Originally the Director of Work's house
- Currently vacant
- One storey house with slate pitch roof
- Vacant, storage
- Face brick facades
- New proposal for a restaurant in Minnaar street



(b) Open-air Amphitheatre and formal garden

- Located between African Window and Mint House
- Treats from grass with granite and brick edges, with a stage area
- Five seats high

4.2.3 BUILDINGS ON CITY BLOCK



(a) African Window / National Museum of Cultural History

- 105 Visagie Street, corner of Schubart Street
- Site originally known as the Convent Redoubt
- The Royal Mint built in 1921
- The subsequent Suid-Afrikaanse Munt was designed by Interplan Architects in 1968 and finished in 1976
- Relocation of National Cultural History and Open-Air Museum in 1991 from Boom Street due to flooding.



(c) Mint House

- 139 Visagie Street
- Originally the Director of the Mint's house
- With the African Window conversion it was proposed as a restaurant
- Currently offices
- One storey house with slate pitch roof
- Office space
- Face brick facades



(e) On-site Parking

- Currently four parking areas on site;
- 54 x Parking on north of African Window
 - 25 x Parking at west of African Window (underutilised)
 - 27 x Parking at Mint House (underutilised)
 - Parking in courtyard of Old Fire Station building for current tenants only.

Total 105 parking bays, excluding the courtyard parking.

4.2.4 STREET CONDITIONS



Figure 4.2: View of Minnaar Street towards east (Burger's Park); lined with trees with pedestrian walkways, but high wall at parking lot



Figure 4.5: Paving design of pedestrian walkway and benches in Minnaar Street



Figure 4.8: Minnaar Street at African Window; note palisade fence and paving design



Figure 4.3: View of Minnaar Street towards west (cul de sac); lined with trees with pedestrian walkways but palisade fences on both sides of the road



Figure 4.6: Minnaar Street pedestrian walkway in front of new Fire Station; note palisade fence and walkway can be widened



Figure 4.9: Bosman Street; palisade fence and pedestrian walkway uneven and broken



Figure 4.4: Intersection of Bosman and Minnaar Street; note the cobbles in the intersection and the palisade fence around the block



Figure 4.7: Palisade fence in front of Minnaar house in Minnaar Street, house set back from the road



Figure 4.10: Pedestrian walkway and palisade fence in Visagie Street at African Window and Mint house



4.2.5 PROBLEMS IDENTIFIED

- The city block is not unified and all the buildings are not interconnected. The Old Fire Station is isolated from the rest of the block by subsequent additions on the western edge and a high boundary wall.
- Main entrance to African Window is located in Visagie Street, with a pedestrian entrance in Minnaar Street. This entrance is always locked. Improving this entrance will enhance pedestrian activity in Minnaar Street.
- Palisade fence around whole block
- Entrances, except African Window in Visagie Street, are permanently locked, badly defined and closed off by palisade fence.
- Minnaar Street house is vacant.
- Old fire station building is underutilised.

Figure 4.11: Diagram identifying current problems on site. (Author)

4.3 THE BUILDING



Figure 4.12: The Old Fire Station building today (Source: Author)



Figure 4.13: The Old Fire Station building in use (Source: Archive of Department of Architecture, UP)



Figure 4.14: The Old Fire Station building with the original clay tile roof (Source: Archive of Department of Architecture, UP)

4.3.1 PROJECT INFORMATION

| | |
|----------------------|---|
| Name: | Old Pretoria Fire Station |
| Also known as: | Old Pretoria Central Fire Station Fire Brigade |
| Date: | 1912 |
| Location: | 449 Bosman Street, corner of Minnaar Street Pretoria CBD Erven 913 + 914 Between African Window and City Hall |
| GPS Coordinates: | 25 S 45' 12.99" and 28 E 11' 8.61" |
| Architects: | Cowin & Powers Architects |
| Commissioning owner: | City council of Pretoria |
| Current owner: | Municipality |
| Current occupant: | Museum Park Bennington Guesthouse |
| Previous uses: | Fire Brigade Ambulance Centre |
| Current uses: | Tourist information Offices Housing |

4.3.2 BACKGROUND

The fire department moved from the corner of Schubart and Minnaar Street into the old fire station, at the north western corner of Bosman and Minnaar, and thereafter to the building across the road from the old fire station (south western corner) during 1969. According to the University of Pretoria's Ablewiki website this location change was due to the modern view of the city during those periods (University of Pretoria, 2010).

The old fire station was thereafter utilised as an ambulance centre. At the time of the African Window conversion, done by KWP Architects, the ambulance services refused the City Council's proposal to develop the building and subsequently the Old Fire Station was not incorporated into the new landscape design.

A proposal for a discovery museum for children was made by Museum Park for the building. However it seems more viable for the Transvaal Museum to develop a more interactive function, and in doing so increase the density of functions and combat current underutilisation and low visitor numbers.

4.3.3 DESCRIPTION OF BUILDING

- One of few buildings in precinct that defines the street edge, both in Bosman Street and Minnaar Street.
- Two storeys high with pitch roofs, and interacts well with surrounding buildings
- U-shape building
- Inner courtyard
- Brick training tower in centre of courtyard, six storeys high
- Main building located east of tower, in Bosman Street.
- White plaster finished building
- Building designed to look symmetrical.
- Main entrance located in centre of building and defined by a tower on the roof.
- Fire truck parking on ground floor
- Conference or training hall on first floor
- Rest of the rooms cater for housing and offices
- Original clay tile roof replaced by corrugated iron sheeting
- Original wooden doors of vehicle entrance have been replaced by rolling steel doors.
- Wood-framed windows and doors, timber flooring and ceilings and fireplaces can be recognised as original.



Figure 4.15: A scanned portion of Plate 37: Fire Brigade Station - a composite photograph circa 1913. (Source: Artefacts, 2011)

- Inside the paint is peeling, damp spots are visible and some floor finishes have been replaced.
- Two identical buildings to north and south of tower were apartment housing for married firemen
- Brick walls painted white
- Buildings to west are storage space and parking
- Training tower with unpainted bricks
- Structurally sound and relies on external and internal load bearing walls
- Overall in good condition, but no sign of maintenance on the site



Figure 4.16: An old aerial photograph of Museum Park, with the old Fire Brigade, City Hall, Transvaal Museum, Burger's Park and Melrose House, date unknown.

4.3.4 ADDITIONS AND EXPANSIONS OVER TIME

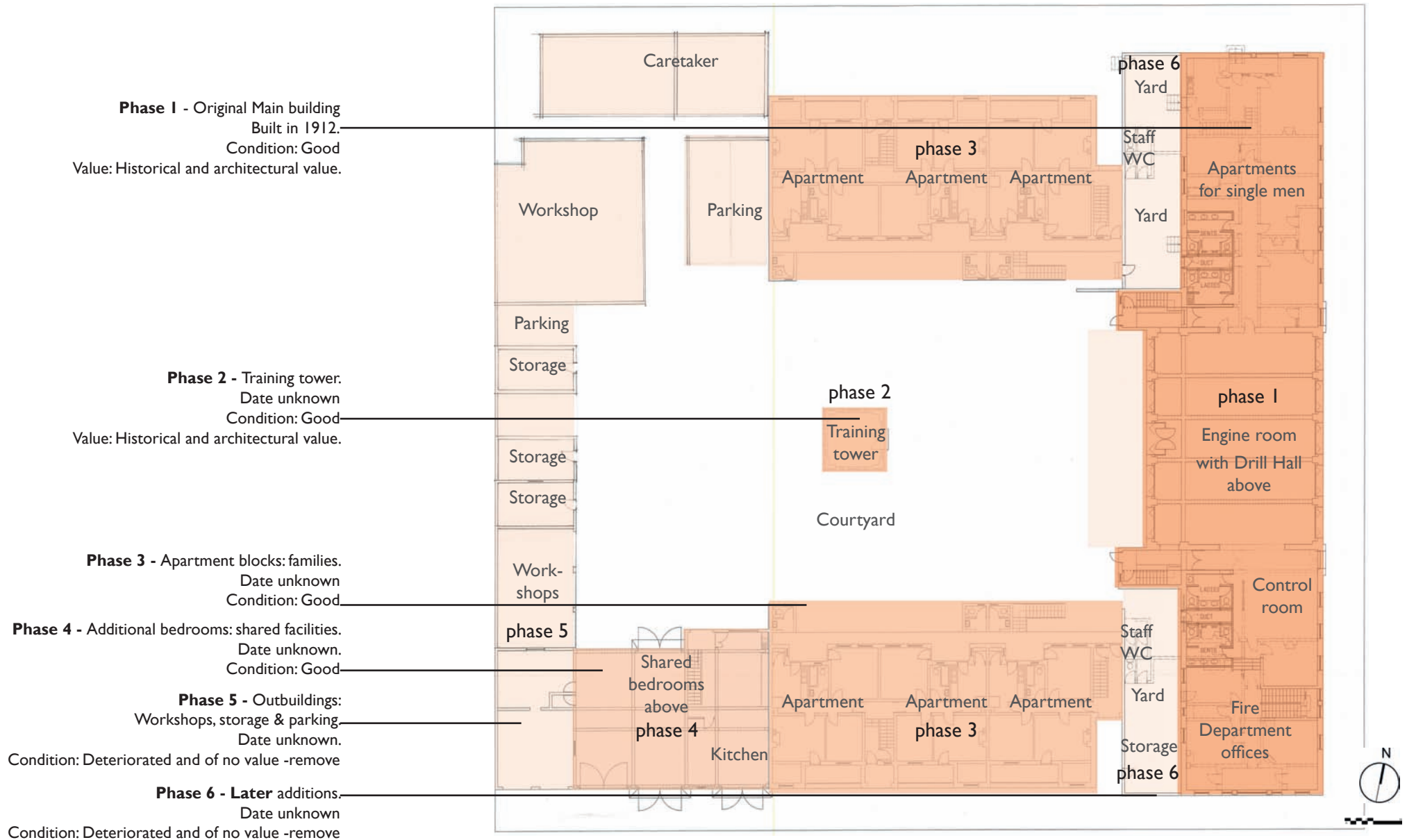
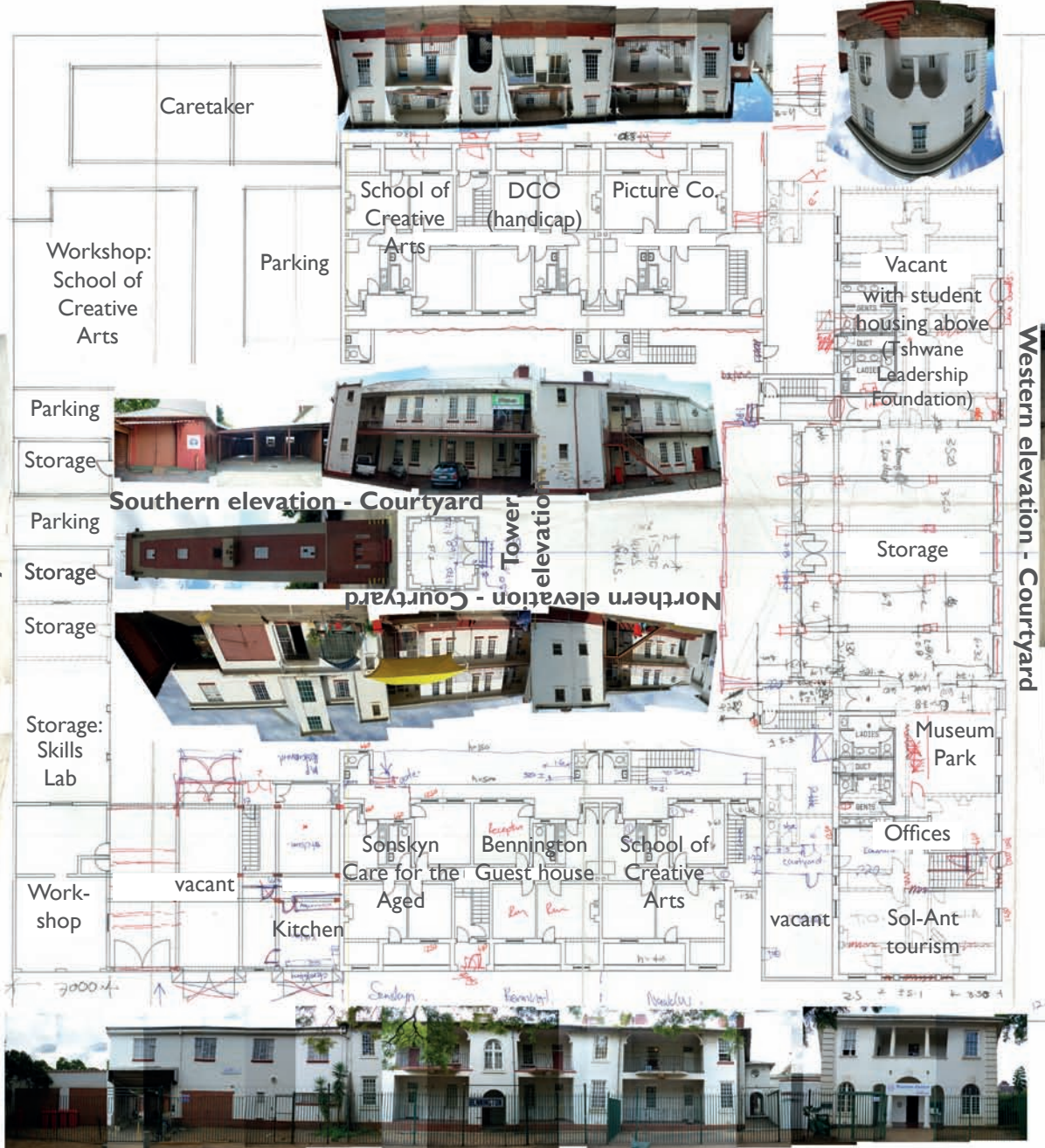


Figure 4.17: Additions to the Old Fire Station building over time with the original functions. (Author)

Northern elevation



Eastern elevation - Courtyard



Western elevation - Courtyard



Eastern elevation - Bosman Street



Southern elevation - Minnaar Street

Figure 4.18: The existing Old Fire Station building with current uses. (Author)

4.3.5 STRUCTURAL ANALYSIS

The structural elements of the existing main building;

- 1 Load bearing masonry walls - exterior (light grey)
- 2 Load bearing masonry walls - interior (yellow)
- 3 Concrete slabs (grey)
- 4 Concrete columns (dark grey)
- 5 Concrete beams (dark grey)
- 6 Timber roof structure

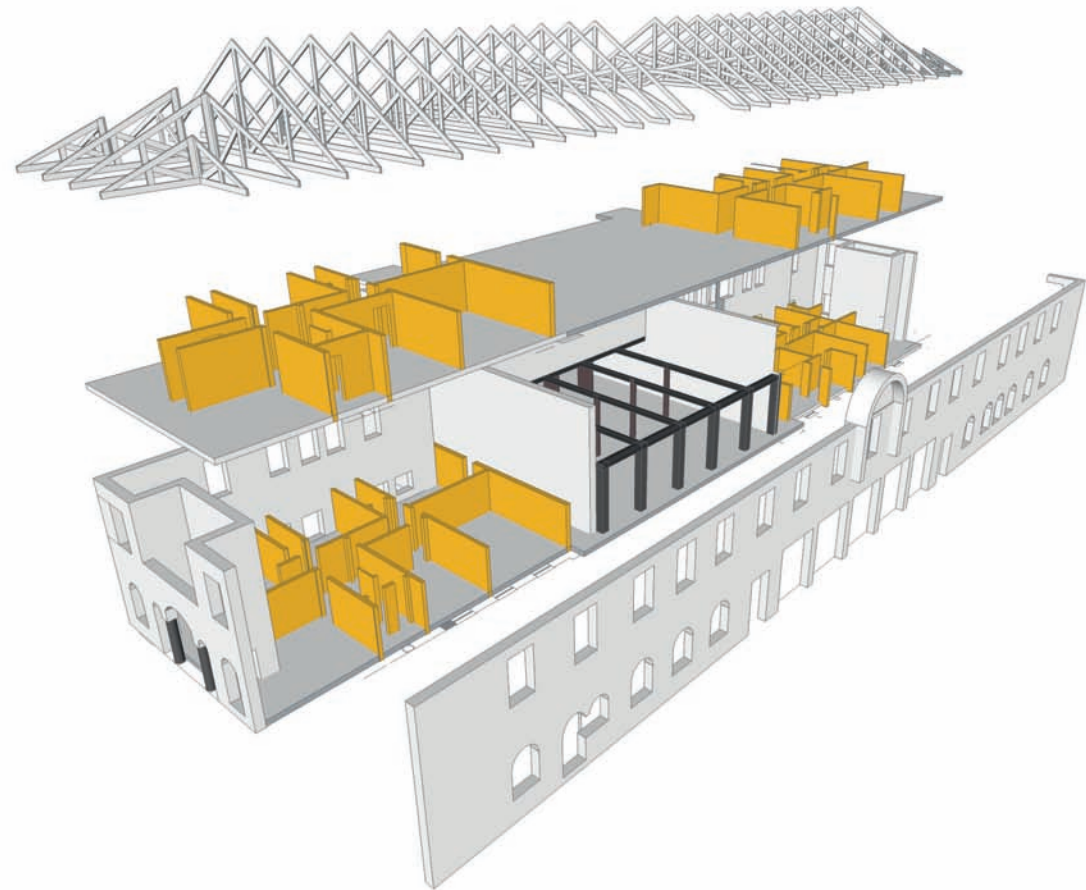


Figure 4.19: 3D model diagram illustrating the structural elements of the main building. (Author)



East-West section through main building

Figure 4.20: Sectional drawing and photo collage through existing main building illustrating the internal spatial qualities. (Author)



North-South section through apartment building

Figure 4.21: Sectional drawing and photo collage through existing apartment building illustrating the internal spatial qualities. (Author)

4.3.7 PROBLEMS IDENTIFIED

- Building underutilised
- Fire Station building not linked to other buildings on block
- Fire Station building, including the main entrance in Bosman Street, is closed off by a palisade fence
- Existing entrance in Minnaar Street not well defined
- No cohesion between individual Fire Station buildings.
- Building inward driven and is not perceived as a building with a public nature
- No interaction between public and building
- The site is missing a node
- No recreation areas for public
- No landmark or image
- No view of courtyard, thus the passerby is unaware of the courtyard space
- No legibility of what is happening in the building

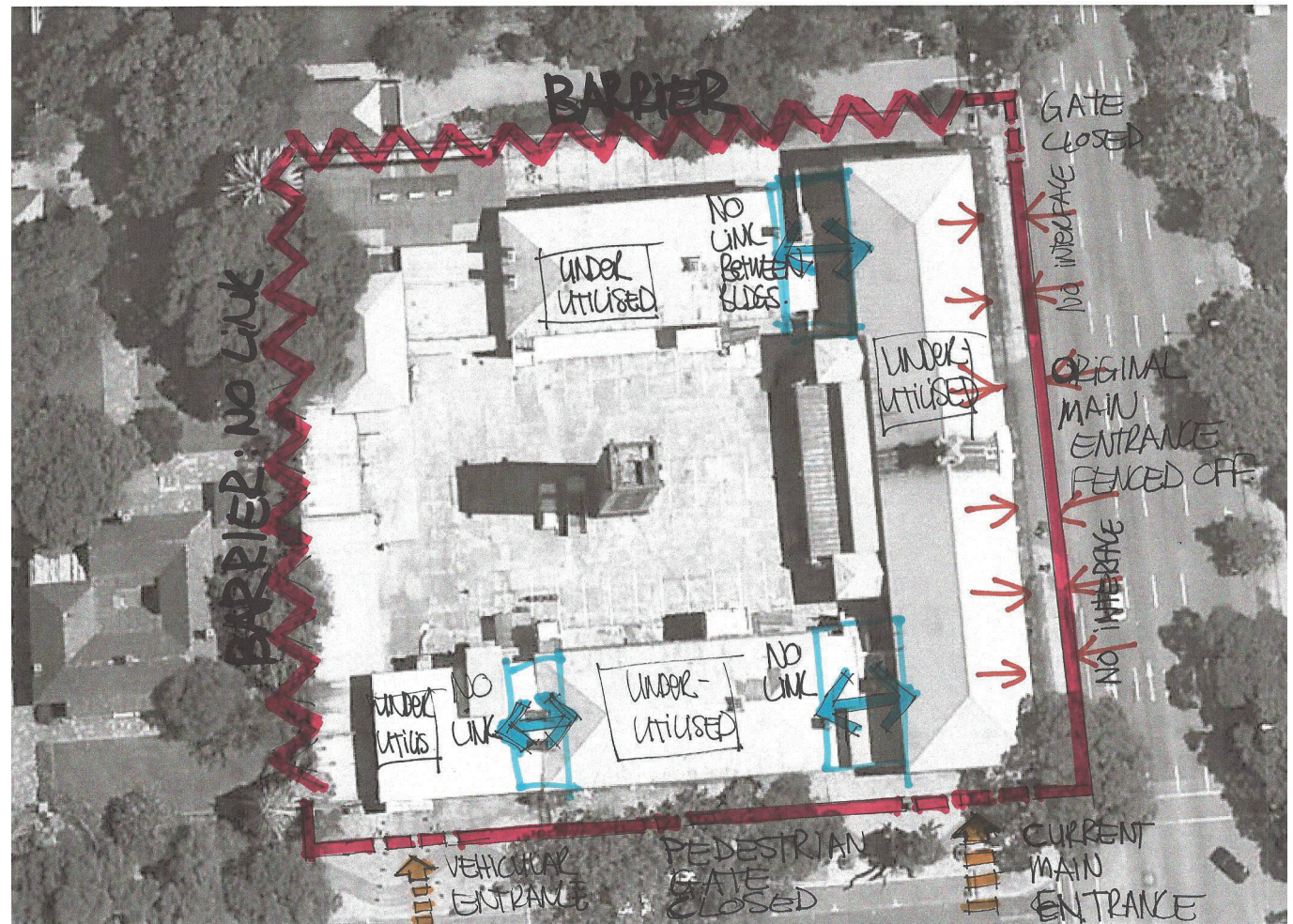


Figure 4.22: Diagram identifying current problems of the building

4.3.8 STATEMENT OF SIGNIFICANCE

The old Fire Station was built in 1912, therefore it qualifies as a heritage building under the 60 year rule.

It was however not the first fire station built in Pretoria, and no fire equipment is left in the building. The only traces that are left of the original function of the building are the training tower in the courtyard, the fire truck engine entrance with the parking area and the emblems on the down pipes of the main building. These should be retained. If a museum for the Fire Brigade is considered, the site of the first fire station, corner of Schubart and Minnaar Street, will be more appropriate. This site is also located in Museum Park and can easily be linked to the new active fire station on the same block.

Architecturally the courtyard typology should be retained together with the spatial experience of the symmetrical facade and plan.

Other valuable features that must be retained are the ceiling of the hall on the first floor and some of the original fireplaces.

The roof and some of the interior finishes are not original and can be altered. The addition to the parking area into the courtyard can be removed and the building footprint restored to its original state.

4.4 CONCLUSION

The chapter will be concluded by identifying the potential and opportunities on site and in the building. This will be done by using Lynch's five principles; path, district, edge, node and landmark as discussed in Chapter 2;

(a) Path

- Easily accessible
- High pedestrian activity exists
- Within walking distance of transport nodes
- This decreases the number of parking needed
- Improve the Minnaar Street pedestrian entrance to the site.
- Although it is not practically possible to remove the pali-

sade fence completely for security reasons, provision has to be made for openings and entrances must be defined properly.

- Link Old Fire Station to the rest of the block and subsequently improve movement through the site and integration of all the existing.
- Interaction between two houses and the Old Fire Station
- Visual corridor between Bosman Street and courtyard and into the rest of the site beyond the courtyard
- Visual corridor from Minnaar Street entrance into site
- Visual corridor from Bosman street entrance, between fire station building and Mint House, into site
- Thus visual connection can also bring cohesion, as well as open up the site.

(b) District

- The development of the Museum Park proposal already forms a district with an identifiable character.
- These guidelines should subsequently be applied to any further development to improve the legibility of the Museum Park precinct in urban context.
- Thus the site must be developed within the Museum Park

identity.

(c) Edge

- Fence at main building to be removed, this way the building facades are reinstated as the edge, and not the palisade fence.
- Open up the building's main entrance and implement a visual link into the courtyard
- Define a secondary entrance to the building in Minnaar street
- New proposed links between the existing buildings of the Old Fire Station will enforce the street edge, whilst connecting the buildings as a unit
- The set back in front of the Minnaar house indicates a possible location for the new entrance to the city block. A new pedestrian entrance from Minnaar Street will be implemented here, connecting all the buildings on the block to Minnaar Street, and thus the Museum Park precinct.
- A new entrance as well as a visual link between this proposed pedestrian link and the courtyard must be implemented.
- Edge at west facade of building – boundary wall to be

removed and a new facade will be the edge of the Fire Station building.

- Edge at northern facade of building – boundary wall to be removed, a new pedestrian link from Bosman Street to be implemented, as well as a new entrance in the northern facade into the Fire Station building. Connect northern edge of building to other buildings (Mint House and African Window) by way of pedestrian links.

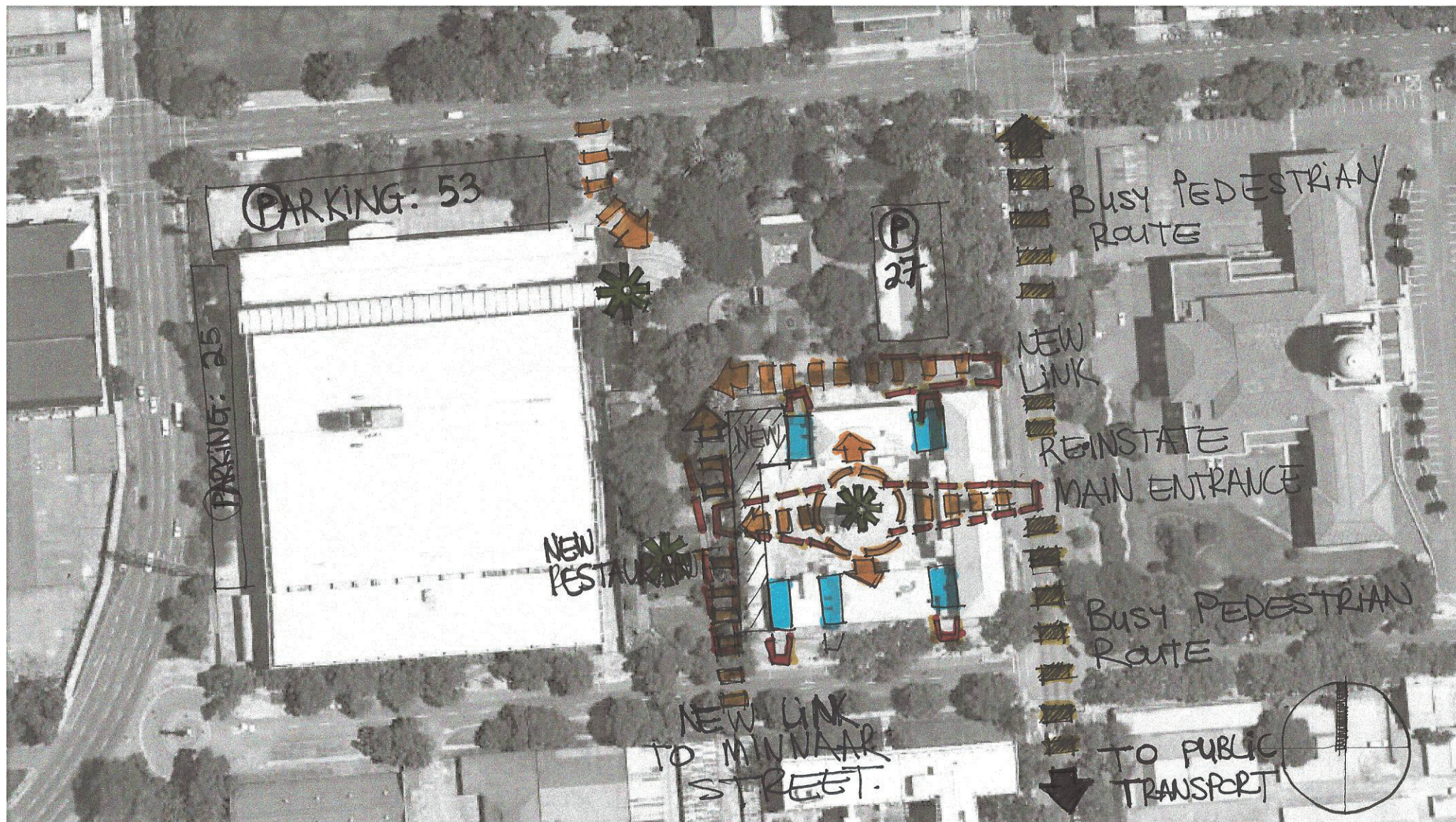
(d) Node

- Nodes are defined as an important focal point or areas where paths meet or cross. In the precinct the nodes are the Pretoria station, Burger's Park and Pretorius Square.
- The Old Fire Station courtyard has the potential to be a node on a smaller scale, that of the city block. An area where paths meet or cross and activities take place.
- African Window is an already existing node on the city block.
- A new restaurant can be introduced at the Minnaar street house that is currently vacant.

(e) Landmark

- The entrance to the African Window acts as a landmark on the city block
- The Old Fire Station's training tower has the potential to be a landmark and provide orientation. However the tower can easily be missed, therefore the visibility of the tower must be improved. This can be done by adding an addition to the top of the tower that acts as signage, and can be lit up at night by incorporating lighting.

Figure 4.23: Diagram identifying current opportunities on site. (Author)



05_ PROGRAMME + CLIENT:

5.1 INTRODUCTION

This chapter will firstly investigate a precedent for a typology of the proposed cultural centre for architecture and planning, followed by a discussion on the proposed programme and client. The type of partnership and sponsors needed to realise the project are then briefly looked into.

5.2 PRECEDENT STUDY

5.2.1 NETHERLANDS ARCHITECTURE INSTITUTE (NAI)

(a) Project information

Project name: Netherlands Architecture Institute (NAI)
 Location: Museumpark, Rotterdam, Netherlands
 Date: 1988-1993
 Architect: Jo Coenen



Figure 5.1: The Netherlands Architecture Institute (NAI, 2011).

(b) Background and client

The client is the Netherlands Institute of Architecture (NAI). The project was the result of a competition scheme in which

only six practices were invited to partake. Jo Coenen's design was chosen.

In a press release on 3 October 1988 the board made the following statement: "Coenen's design paints a distinctly expressive and differentiated picture of the institute's functions. The design of the building elements does not focus on an overt modernism, but rather on a timeless repertoire that represents the equivalency of the history and topicality of the institute's formula." (NAI, 2011). Practicality, expression and references to the history of architecture had won over the conceptual strength of Rem Koolhaas' design (NAI, 2011).

The design differentiates between the different functions of the NAI, and houses them in separate buildings. The building then sits on a pool of water with a bridge to the main entrance. This heightens the drama and gives it a monumental quality.

(c) Programme

As mentioned above the building is a grouping of four interlocking parts, each representing the institutes various func-

tions. The four components are;

- Archives
- Exhibition hall
- Library and administration
- Pavilion with reception, café and lecture room (Rotterdam Redux, 1994)

Archives

- The archive is a long, curved, concrete building that acts as a wall, sheltering the institute from the busy street behind it.
- The NAI stores important architecture archives and collections, and makes them accessible to the public.

Exhibition halls

- The exhibition hall is a box shaped, brick covered building.
- The NAI presents exhibitions, lectures, symposiums, debates, study trips and issue publications.
- The institute follows both national and international developments shown in temporary exhibitions.
- Tourists often use the NAI as a starting point for architecture trips in and around the Netherlands.

- As part of educational programmes the NAI organizes activities for children and teenagers. The program for primary and secondary schools includes workshops, tours and specific assignments connected to the ongoing exhibitions. A room in the NAI building is reserved for pupils completing school-related assignments and for exhibitions of the resulting models and drawings.

Library and administration offices

- The library and administration offices are housed in a transparent glass and steel tower on columns overhung by a steel canopy.
- The NAI's library is open to the public and has facilities for research.

Public pavilion

- The pavilion is angled under the glass tower and consists of concrete in combination with structural double glazing and glass bricks.
- The NAI has a museum café and runs a specialised bookshop.
- The foyer, the lecture room (K.P.C. de Bazel Room) and

the conference room (J.B. Bakema Room) can be rented.

(d) Context

The building is situated on the edge of the Museumpark in the centre of Rotterdam.

(e) Conclusion of study

- in the NAI's case a design with practicality and references to the history had won over conceptual strength.
- to improve legibility the different functions can be grouped and located in different buildings.
- the context corresponds with the proposed site's location.
- building closed off from street, main entrance focussed towards Museumpark

5.3 PROPOSED PROGRAMME

Initially the dissertation project was referred to as the Museum of Architecture and Planning (MAP). Due to the perception that the word 'museum' installs in the reader's mind, it was changed to the Centre for Architecture (CA).

Collection, archives and library

The CA will have and manage the main archives and collections concerning the making and shaping of human space in South-Africa (SA), with particular focus on Pretoria (Pta) and surroundings, and make them accessible to the public. Virtually every prominent South-African architect and project must be represented. The institute will offer facilities for research. The library will be open to the public and contain books on architecture and planning, plus an extensive range of South African and international architectural journals. It will have updated catalogues and material specifications. Researchers, students and anyone else interested in architecture may consult publications and archives in the reading room.

Exhibitions and events

The CA presents architecture, urban design, interior architecture and landscape architecture. The permanent exhibition will highlight the way of living in SA, in particular Pta since the 1840's.

The CA follows both national and international developments shown in changing exhibitions. These developments include national and international completion schemes. Besides reflecting on current developments, the program will address

contemporary issues such as "Sustainable building".

Bimonthly exhibitions will showcase a new architect/practice, alternating between national and international professionals. This will include a talk by the national architect or previously filmed interviews from international architects.

The CA will aim to stimulate architectural debate by organizing lectures, symposiums, study trips and other events. These projects are intended to provide the professional audience with specialized information.

Guided tours of the exhibitions will be run, as well as tours of the building as a whole enabling the public to experience spaces like studios and archives.

Foreign visitors can use the CA as a starting point for architecture trips in and around SA and Pta. For this purpose, the CA will offer lectures, tours etc. for foreign visitors.

Education

The CA will organize activities for preschool and school children throughout the year. The program will include workshops, tours and specific school assignments. A room in the

CA building can be reserved for pupils completing school-related assignments and for exhibitions of the resulting models and drawings. This will help create awareness of the profession within the public.

South African Council for the Architecture Profession (SACAP) accredited Continuing Professional Development (CPD) Category I (Development Activities i.e. lectures, courses, seminars, conferences and workshops) programmes will be presented throughout the year to keep professionals up to date with technology and new ideas.

The CA will run a host practice where an individual can rent a desk space for a limited period. This will work in one of two ways;

- any practice can appoint the individual to do work for them on a temporary basis, or
- if the individual is a student he/she can interact with appointed practicing professionals. These professionals will then accumulate CPD points within the Work-base category or Individual activities (i.e. lecturing and mentoring).

Facilities

The CA will have a café-restaurant with a terrace in the court-

yard. The auditorium and the conference rooms can be rented by individuals, companies, and institutions. Catering will be available if desired. The in-house client body shares these conference facilities and auditorium for their day-to-day administration and annual meetings.

Bookshop

The CA will house a specialized bookshop with books dedicated to the fields of architecture and planning, as well as national and international journals and magazines. It will also sell design related merchandise and curios.

Friends of the CA

The objective of Friends of the CA is to enhance the public component of the centre and generate interest in the CA's activities. CA will organize excursions, lectures and other activities for its members, and include discounts and regular updates of the current exhibitions and events.

5.4 PROPOSED CLIENT

The proposed client will be institutions and councils within

the urban design and architecture professions, partnered together. They will all be represented together under one roof. This will create a platform for professionals and the public to interact.

Institutions and councils, with focus on the design institutes, representing urban design and planning and all three components of architecture will be housed within the building. They will be partners under one roof and will represent the in-house client body.

List of client body:

- SACAP – South African Council for the Architectural Profession
- The 5 voluntary associations recognised by SACAP;
 - SAIA – South African Institute of Architects, together with PIA (Pretoria Institute of Architecture) on regional level
 - IID – South African Institute of the Interior Design Profession
 - SAIAT - South African Institute of Architectural Technologists
 - SAIBD - South African Institute of Building Design
 - SAID - South African Institute of Draughting

- SACLAP- South African Council for the Landscape Architectural Profession
- UDISA – Urban Design Institute of South Africa

- partnerships (years)
- sponsorship for activities (once-off)

The planning process will be further explained in Chapter 6 Design Development.

By affiliating with SA's largest architecture centre, the CA's sponsors demonstrate their social and professional commitment and afford themselves entry to the world of national and international architecture.

5.5 PARTNERS AND SPONSORS

Due to the nature of the client body, a Public-Private-Partnership (P.P.P.) will be undertaken. SACAP could secure financial backing from the government, with possible additional support. SACAP and the government will select the architect and design, and send out tenders for development accordingly. The developer will build the project and afterwards will run a lease with the client for a period of 20 or more years. The developer will manage and maintain the building until the lease is up, and the client owns the building.

Possible sponsorships for lease;

- financial support from the government
- grant-giving bodies
- business/professional community

5.6 CONCLUSION

The CA is not just a museum of architecture. It is a cultural centre that is open to the public and that uses a variety of methods to communicate the shaping of human space. It is a platform for discussion, a gathering place where professionals and the public can interact. It is the interface of architecture to the public. It is also the organisations and institutes of Architecture housed 'under one roof'. The CA informs, inspires and stimulates both professionals and the general public.

Figure 5.2 illustrates a proposed grouping of functions on site.

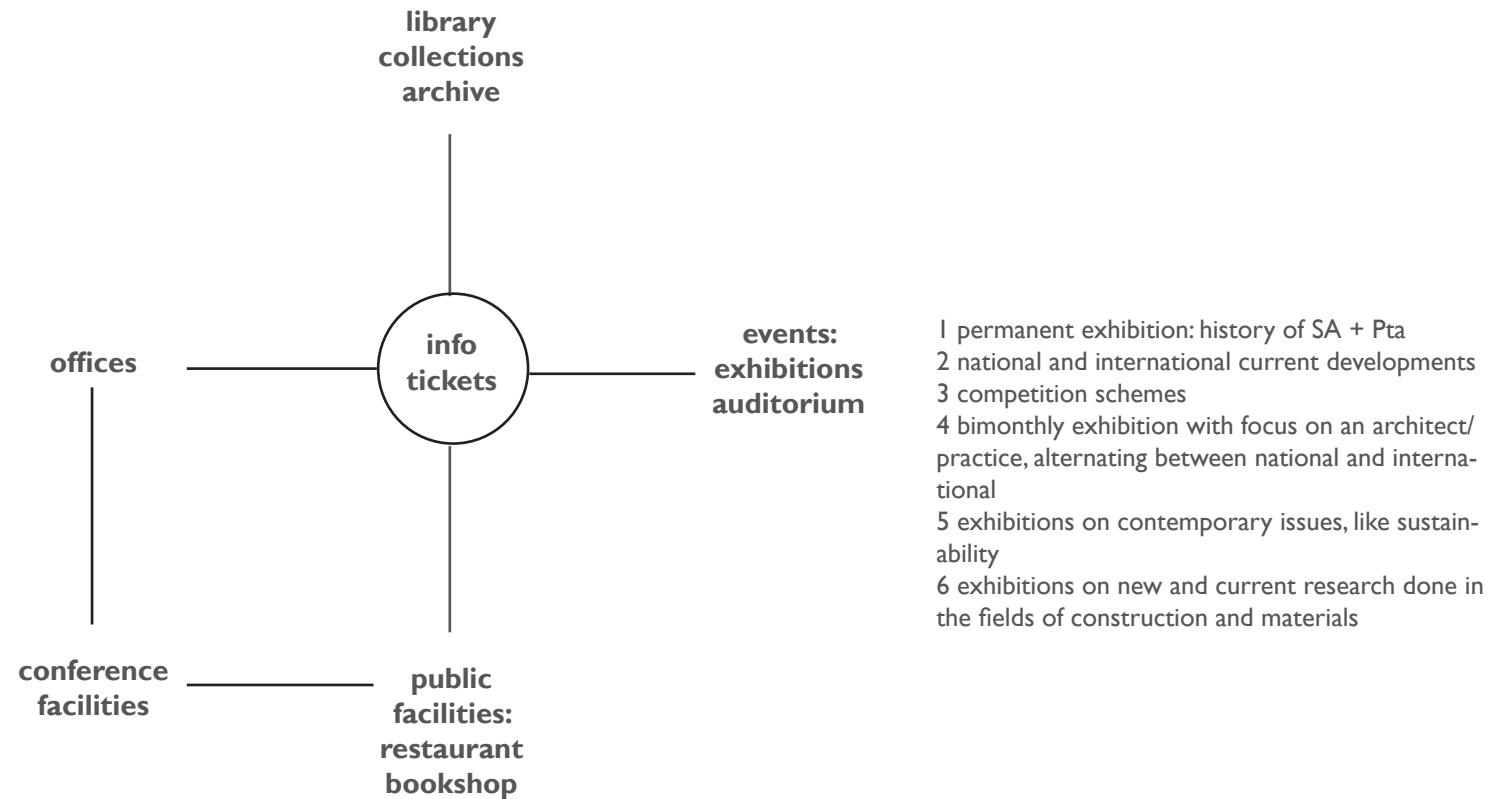


Figure 5.2: Diagram illustrating proposed grouping of functions. (Source: Author)

06_DESIGN DEVELOPMENT:

6.1 INTRODUCTION

The following will be discussed as part of the design process;

- Initial parti diagrams and concepts
- Quick volumetric exploration
- Planning for the new programme
- Exploring the old: Block A
- Exploring the new: Block E
- Exploring the courtyard
- Application of layering

Figure 6.1 indicates the location of the different focus areas.

- Blocks A, B, C and D is the focus of adaptive reuse interventions.
- Blocks E and F are new additions to the building.

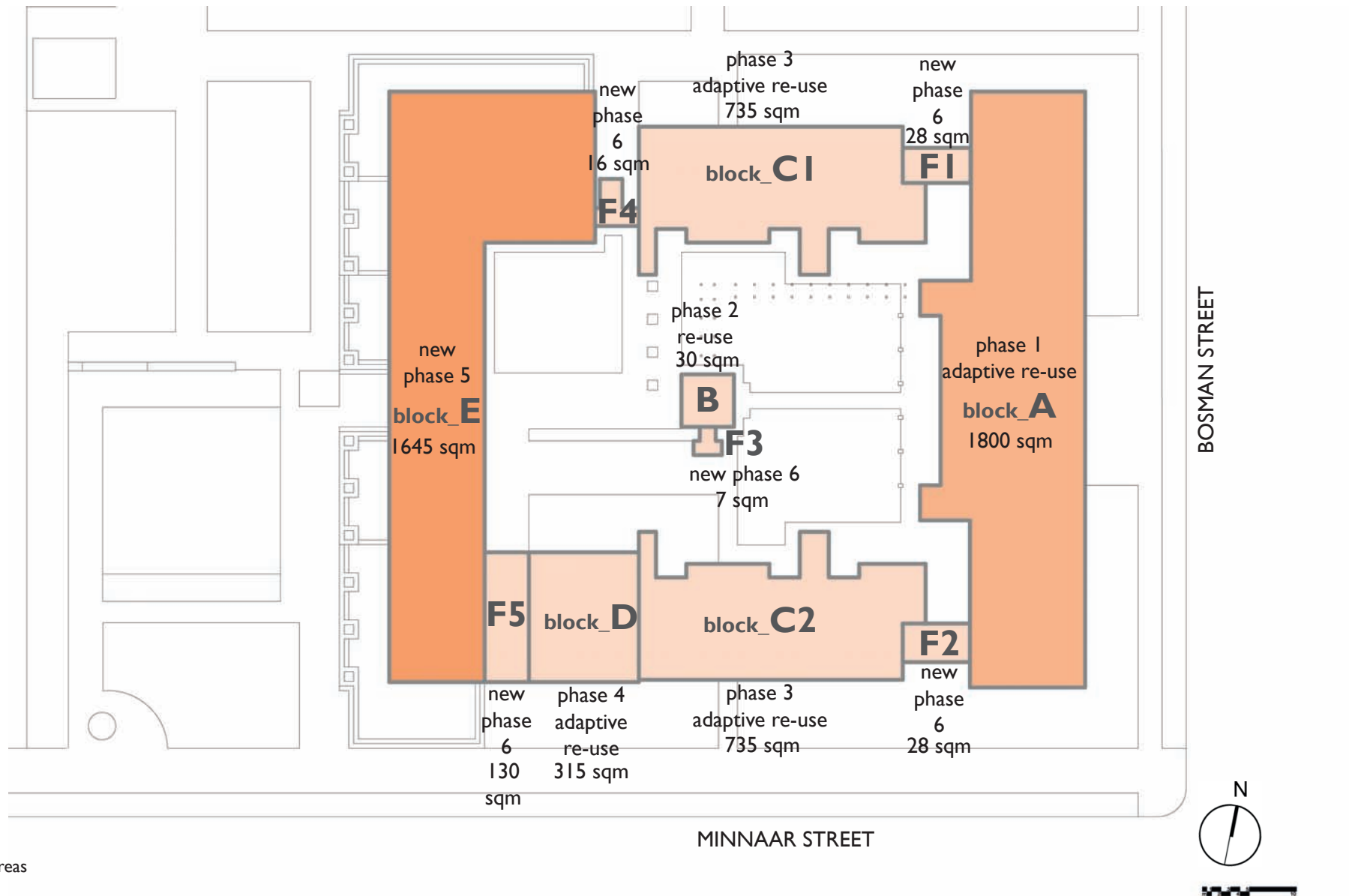


Figure 6.1: Locality plan indicating the different buildings. (Author)

6.2 INITIAL CONCEPTS + PARTI DIAGRAMS

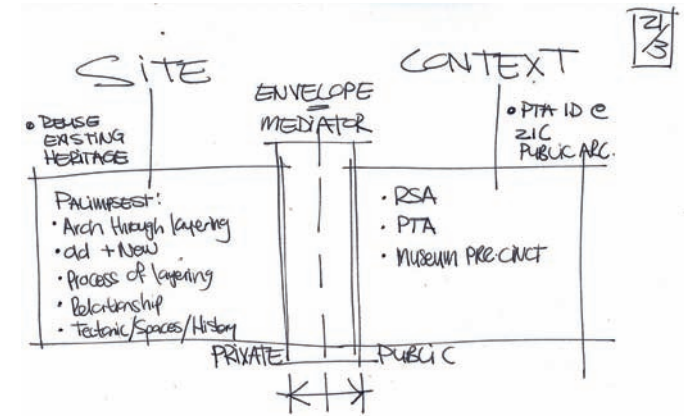
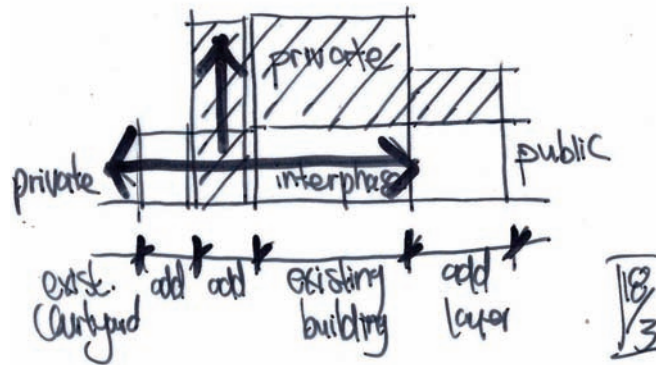
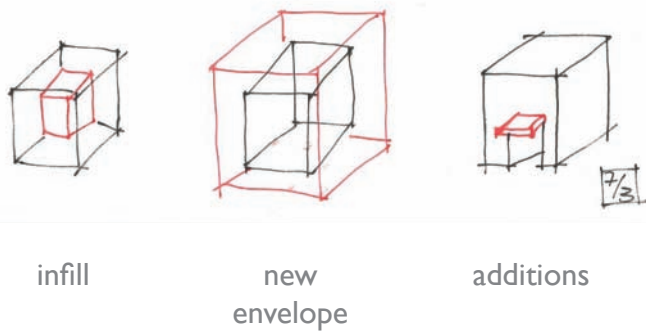


Figure 6.2: Parti diagrams for approaching the intervention within the existing fabric

Figure 6.3: Sectional diagram showing thresholds creating layered spaces

Figure 6.4: Concept of the envelope or facade being the mediator between public and private / context and site.

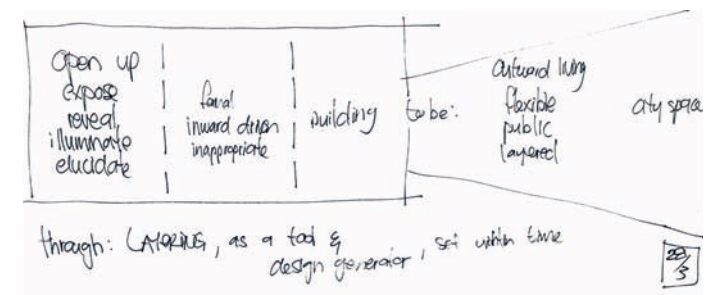
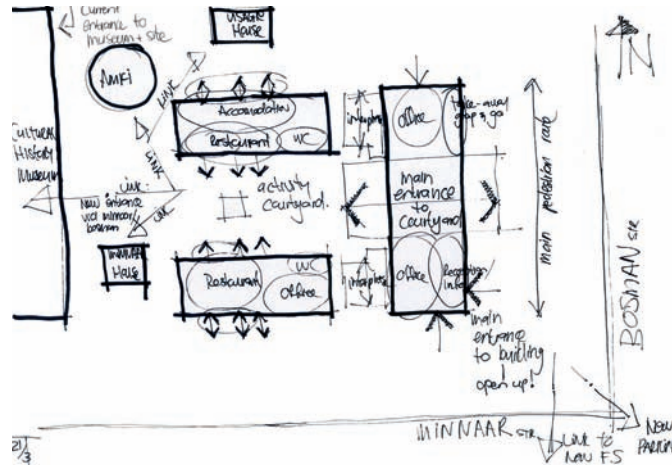
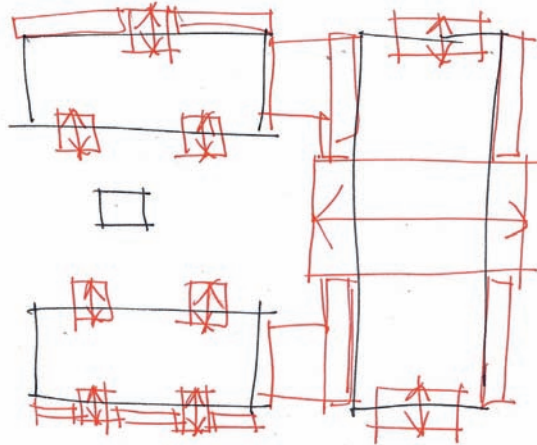


Figure 6.5: Plan diagram showing areas of threshold or mediators between public and private spaces.

Figure 6.6: Initial diagram showing entrances, thresholds, connections, links and possible functions according to site and building conditions.

Figure 6.7: Diagram illustrating the concept of opening up.

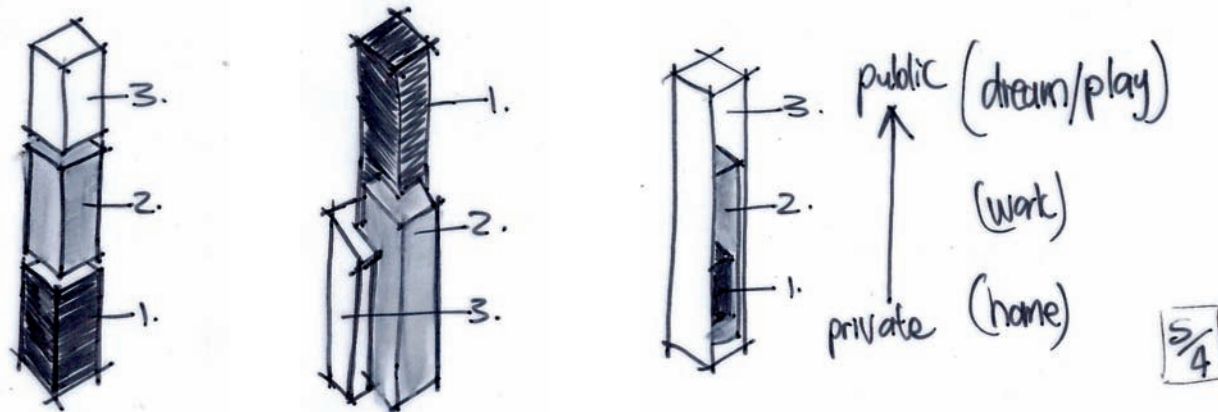


Figure 6.8: Parti diagrams illustrating the succession of public to private space and its possible location, together with appropriate functions to illustrate. In the diagram 1 represents the most public, while 3 represents the most private.

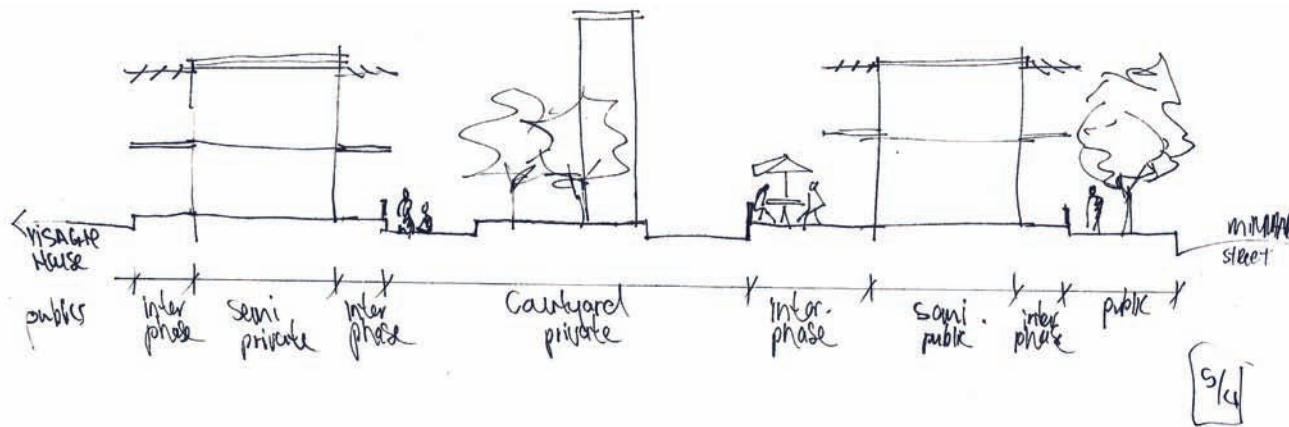


Figure 6.9: Diagram showing the concept of layered spaces in a cross section through the building.

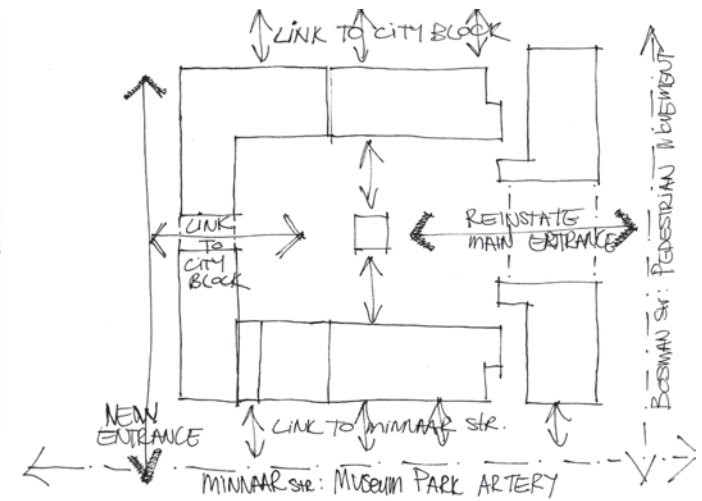


Figure 6.10: Diagram illustrating site opportunities.

6.3 VOLUMETRIC EXPLORATION

In determining the location for inserting the new addition a quick volumetric exploration was done. It was decided to respect the existing building and context. The new addition will complete the layers of transformation as illustrated in Figure 4.17 on page 98, as well as complete the courtyard.

Figure 6.13 illustrates the location of the new addition. Transitional layering will be introduced through inserting thresholds in-between the different phases of transformation over time (figure 6.14). This will elucidates the transformation phases, whilst at the same time unify the building.

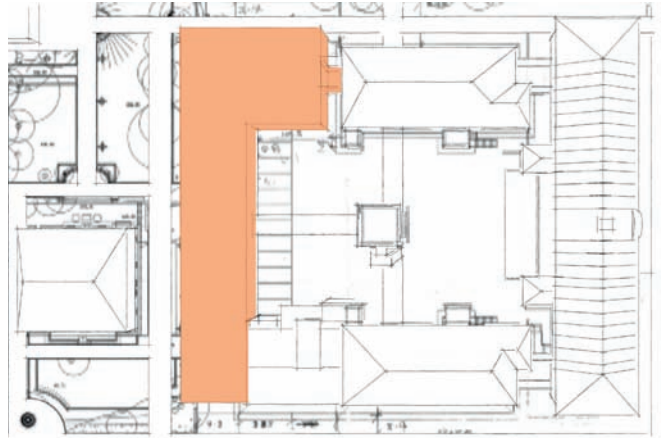


Figure 6.14: Exploration 3. Completing the addition of layers of transformation over time. (Author)

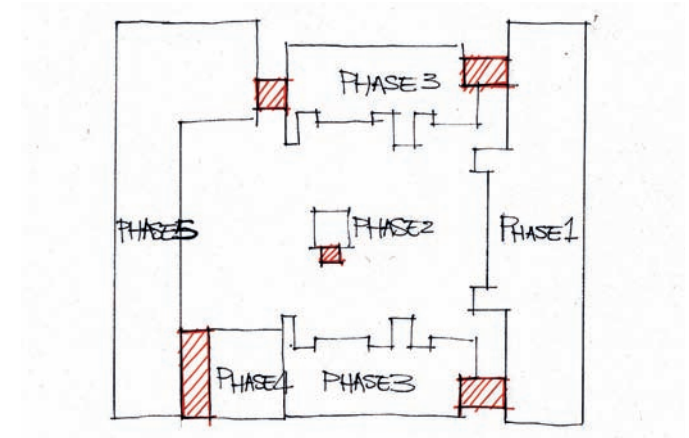


Figure 6.15: Transitional layering through inserting links between the different additions. (Author)

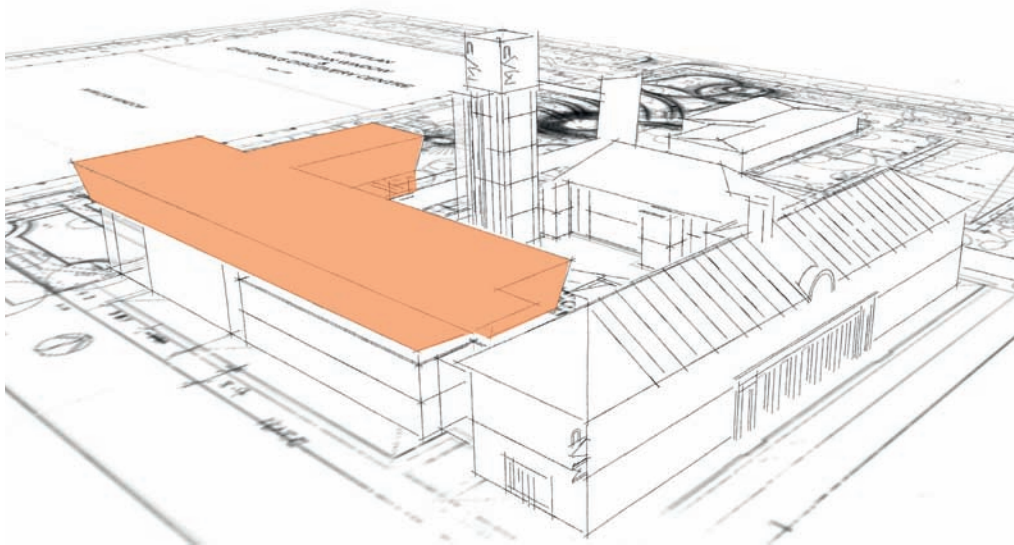


Figure 6.11: Exploration 1. (Author)

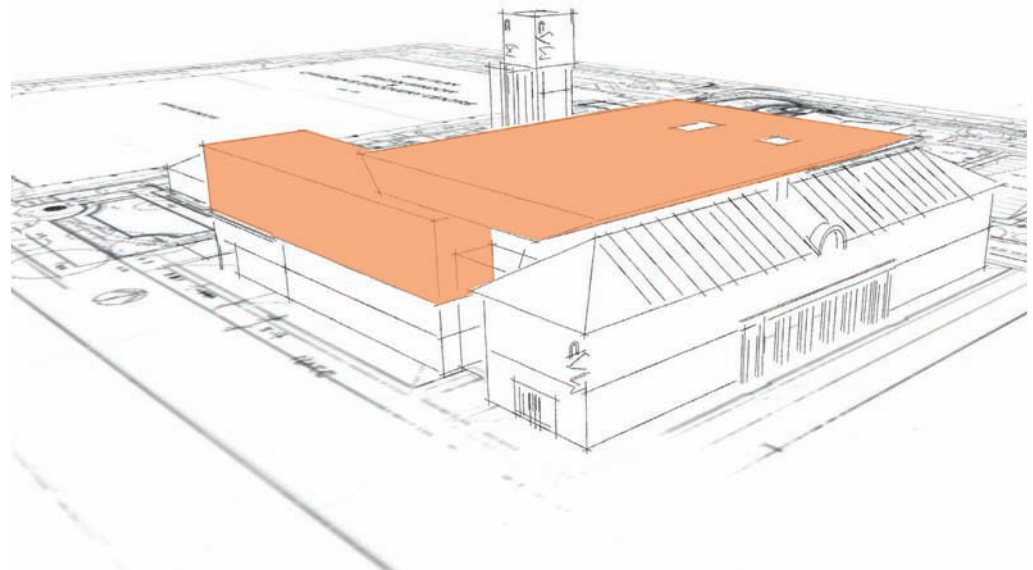


Figure 6.12: Exploration 2. (Author)

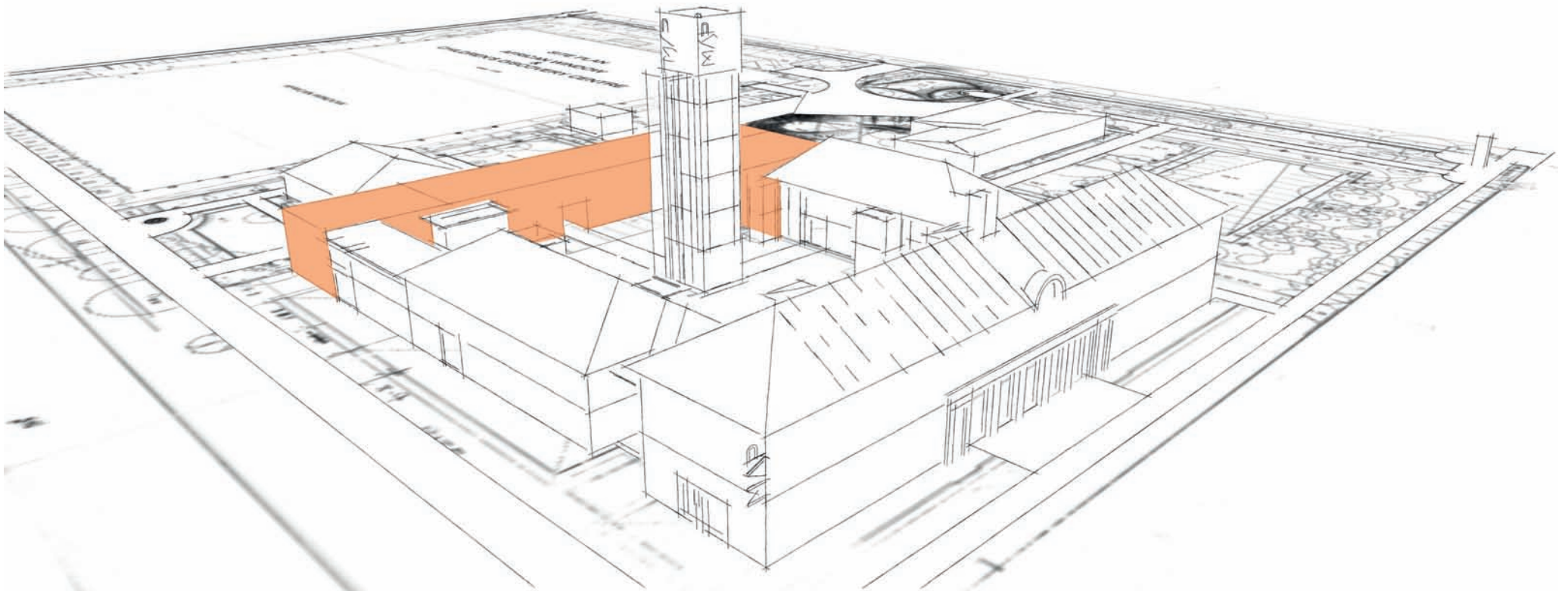


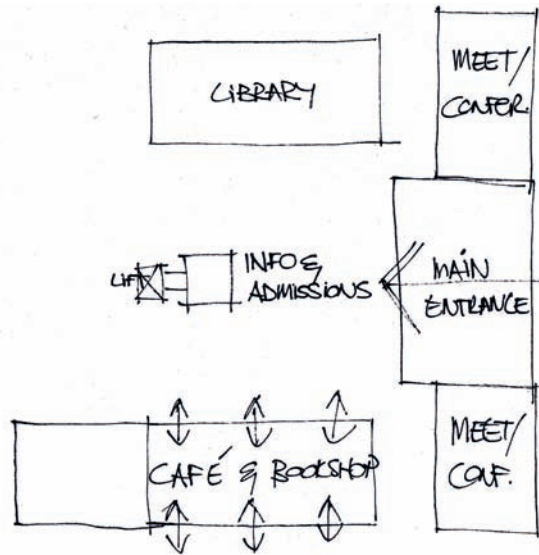
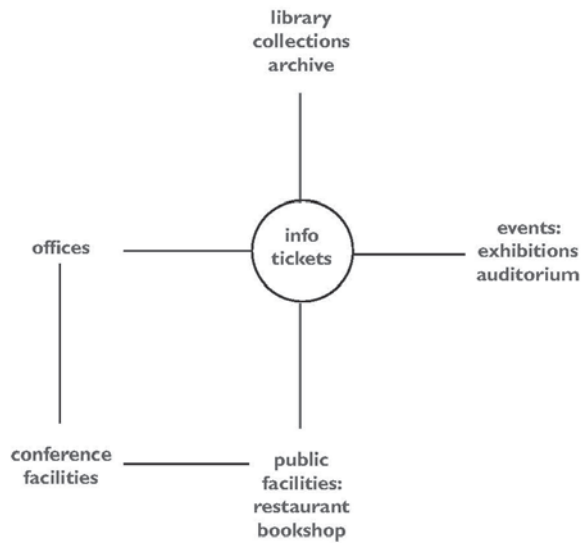
Figure 6.13: Exploration 3: Completing the courtyard. (Author)

6.4 PROGRAMME AND PLANNING

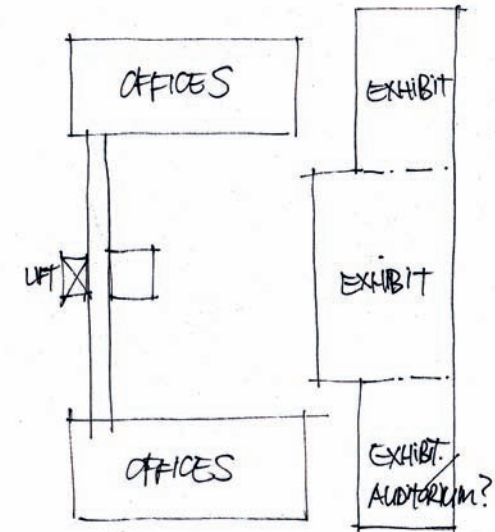
Figure 6.15 illustrates the proposed grouping of functions as indicated in Chapter 5.

The possible location of the new programme was explored in terms of the original groupings of functions, the existing building and the new addition (figures 6.16-6.19).

The transitional layering as introduced previously in figure 6.14 links the functional groups (figure 6.20).



GF



1FL

Figure 6.16: Proposed grouping of functions.

Figure 6.17: Exploring possible planning for ground floor.

Figure 6.18: Exploring possible planning for first floor.

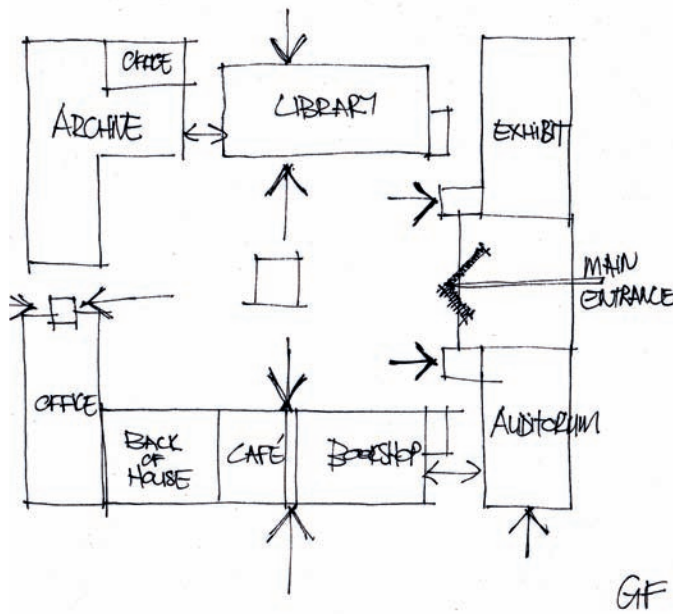


Figure 6.19: Exploring possible planning for ground floor.

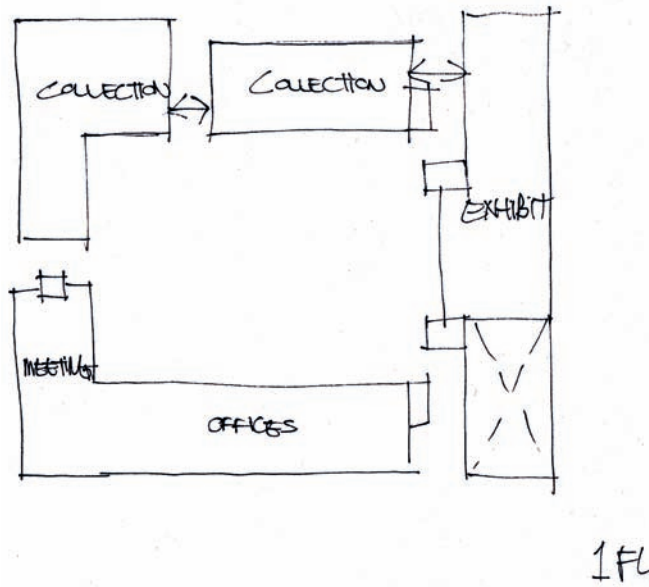
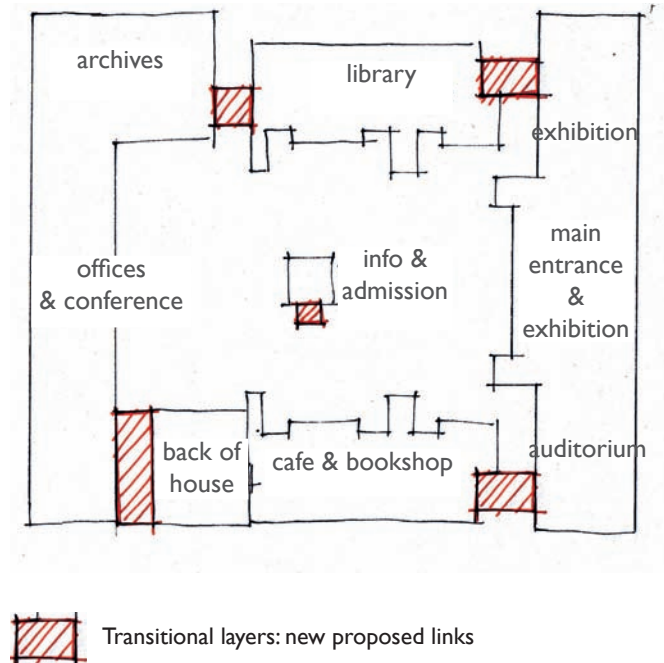



Figure 6.20: Exploring possible planning for first floor.



 Transitional layers: new proposed links
 Figure 6.21: Transitional layering through inserting links between the different additions. (Author)

Figures 6.21-6.23 illustrates parti diagrams introducing movement routes and entrances together with the new programme groups.

Four quadrants are formed for four programme groups; information (library, collections, archives, and access thereof), exhibition, public interface (restaurant and bookshop), and offices (including conference facilities). Four movement axes are introduced together with four entrances.

The tower becomes a landmark and acts as an orientation device for the building (figure 6.24.)

Figure 6.25 is the amalgamation of figures 6.20-6.24; the parti diagram for ordering the programme and movement for the site and building.

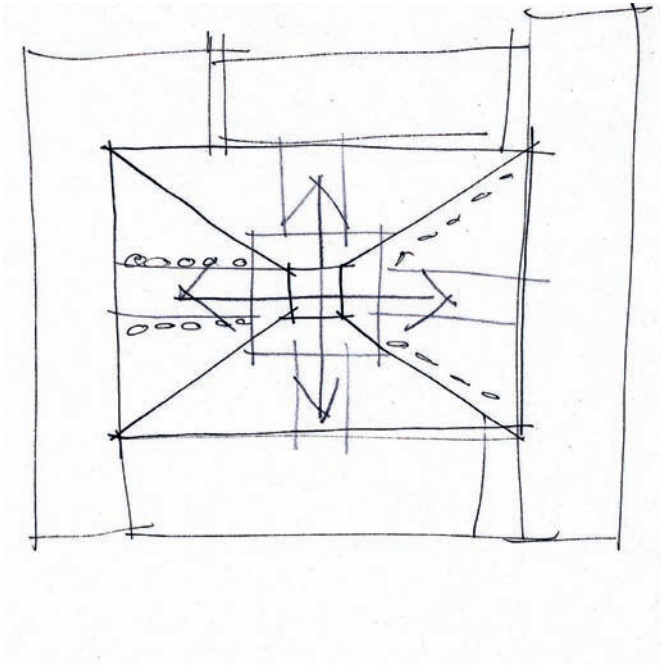


Figure 6.22: Parti diagram illustrating circulation.

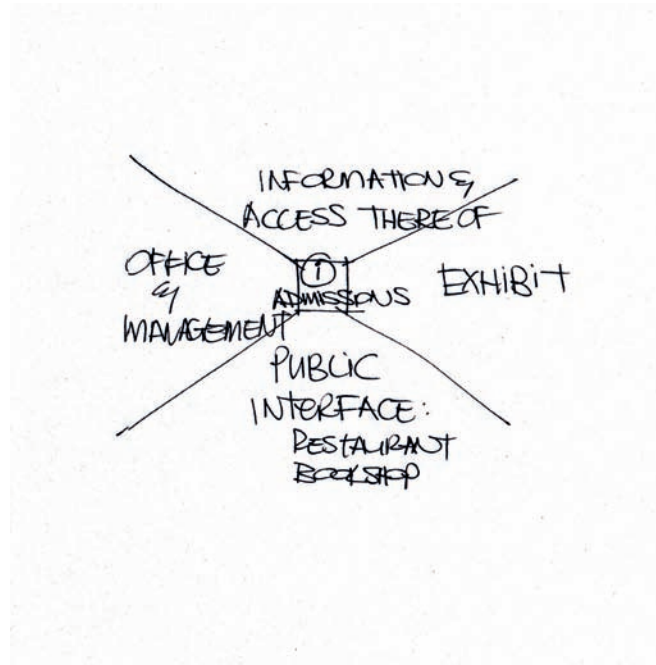


Figure 6.23: Parti diagram illustrating location of programme groupings.

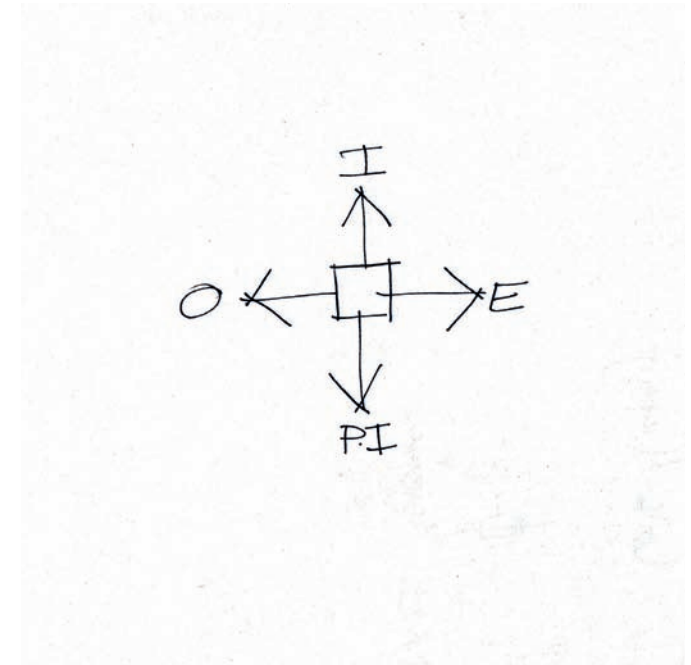


Figure 6.24: Parti diagram illustrating circulation axes to different programme groups.

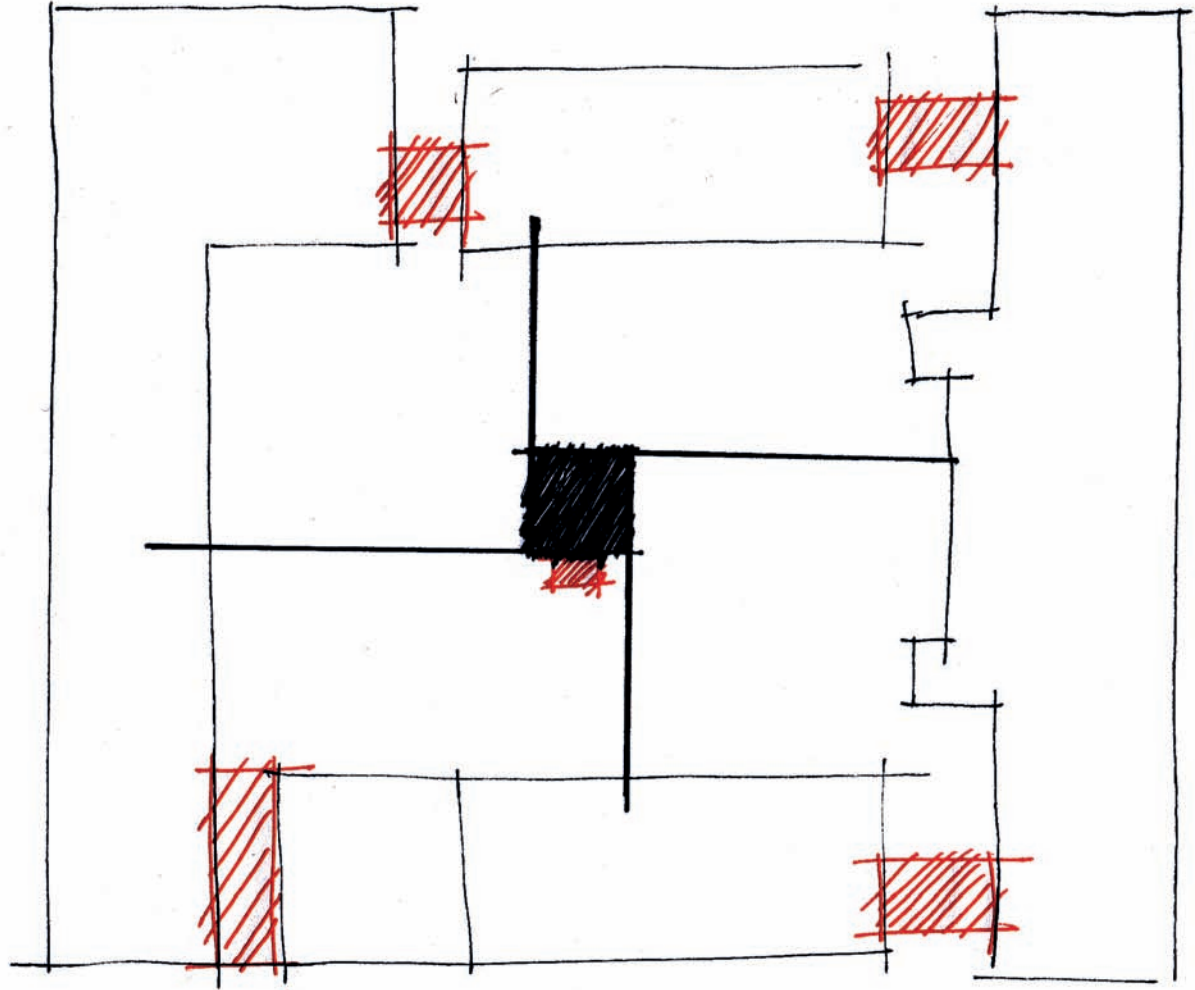
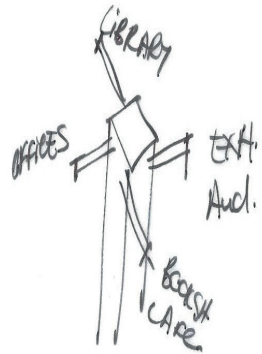


Figure 6.25: Tower introduced as orientation, becomes centre point of building and landmark.

Figure 6.26: Parti diagram indicating circulation axes, entrances and links.

6.5 EXPLORING THE OLD

The new is introduced within the existing through the concept of box-in-box (figure 6.26). The new is set back in the existing with a gap or void in-between (figure 6.27).

Figures 6.28-6.29 illustrates the incorporation of new circulation as a threshold between the existing and the new.

By removing the first floor slab a double volume space is created taking advantage of the spatial qualities of the existing building. The existing arched ceiling is accentuated as part of the new double volume entrance foyer. The new double volume lends itself to new exhibition opportunities. (Figure 6.31)

New vertical circulation is inserted for universal access as well as the movement of installations and exhibitions (figure 6.31).

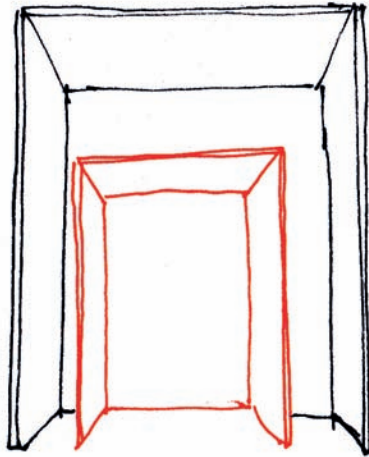


Figure 6.27: Parti diagram illustrating the concept of box in box.

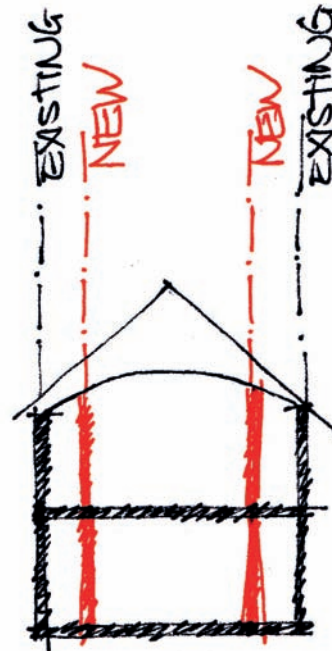


Figure 6.28: The new will be located within the existing, but set back.

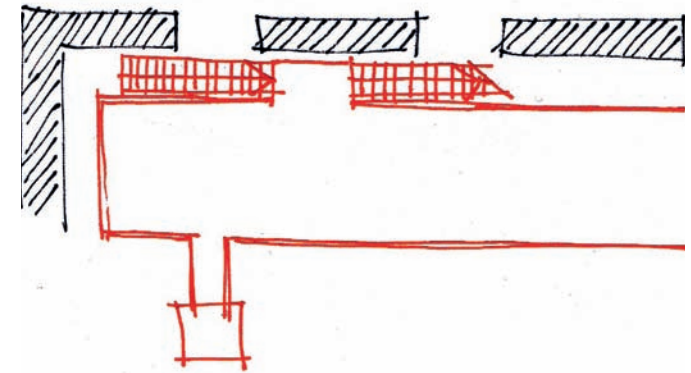


Figure 6.29: Plan diagram illustrating how circulation is introduced between the new and the existing - an additional threshold.

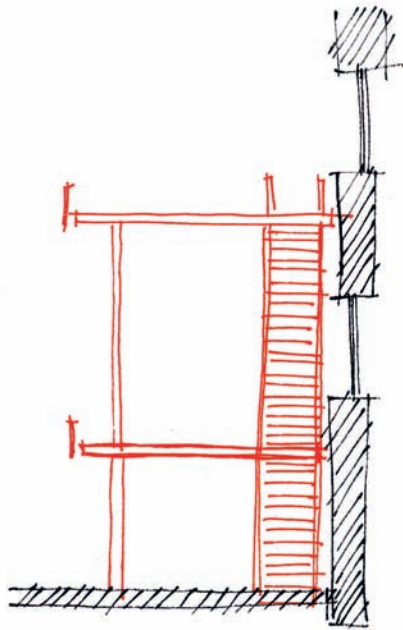


Figure 6.30: Section diagram illustrating how circulation is introduced between the new and the existing - an additional threshold.

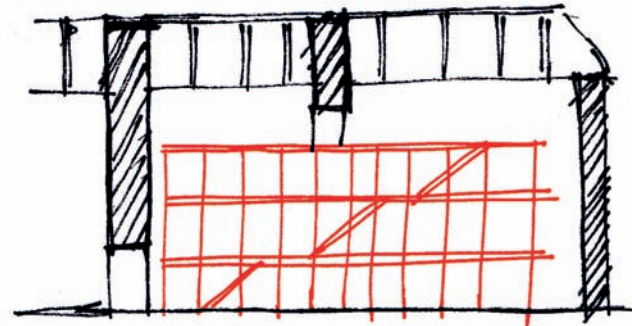


Figure 6.31: Sectional diagram illustrating the new inside the existing.

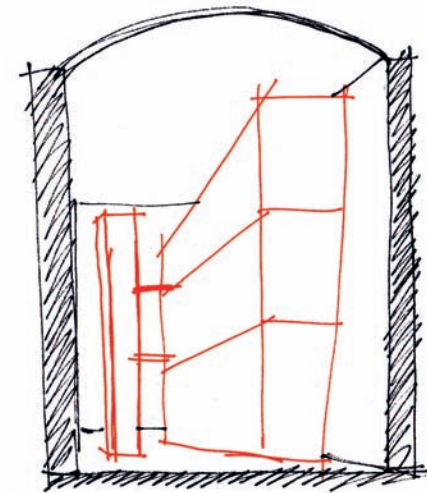


Figure 6.32: The new is freestanding inside the existing.

The componential layering of the balustrade at the new mezzanine floor is explored in figure 6.33. The balustrade is layered in the following elements; safety, fixing, vertical structure, fixing, floor line and handrail.

New glazing is introduced by setting it back from the existing (figure 6.34).

The layers of the new mezzanine steel floor is explored in figure 6.35. Track lighting will be introduced for flexibility in the exhibition areas.

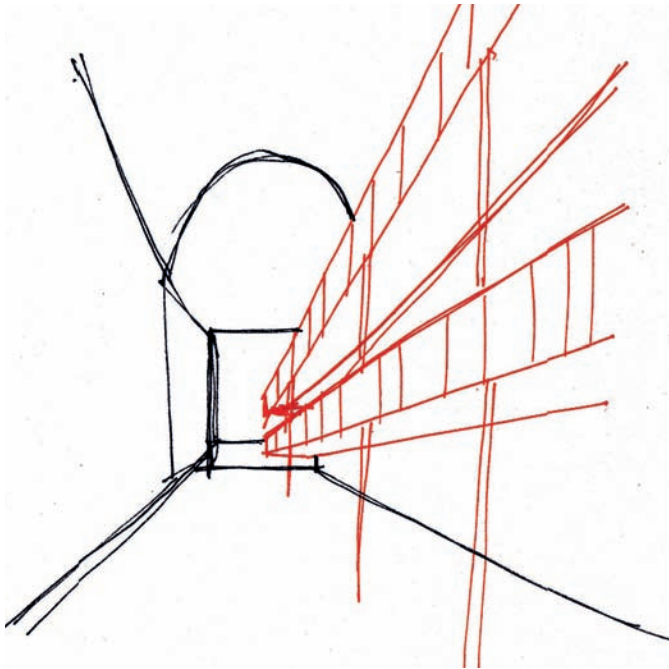


Figure 6.33: A new steel mezzanine structure inside the existing with new double volume space for exhibition opportunities.

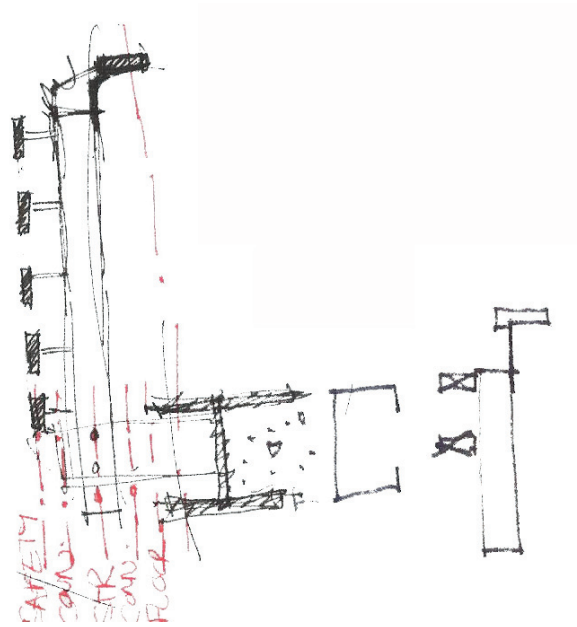


Figure 6.34: Componential layering of the balustrade.

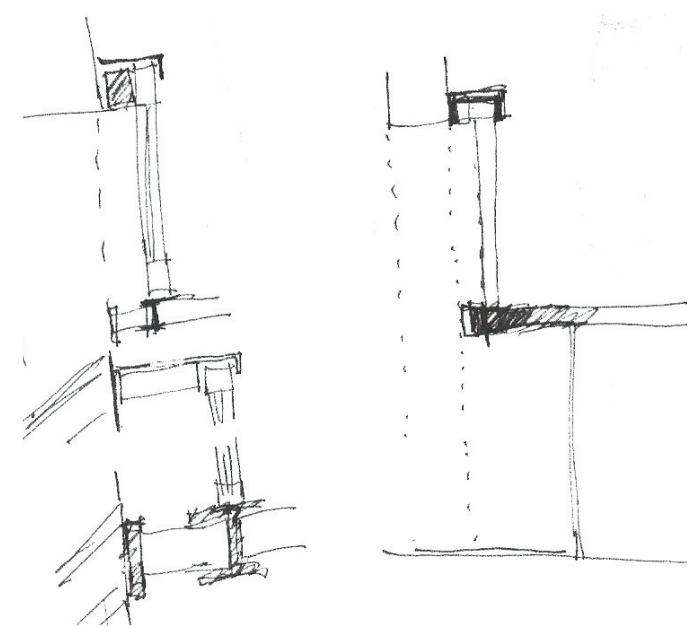


Figure 6.35: Exploring the set back of the new away from the existing.

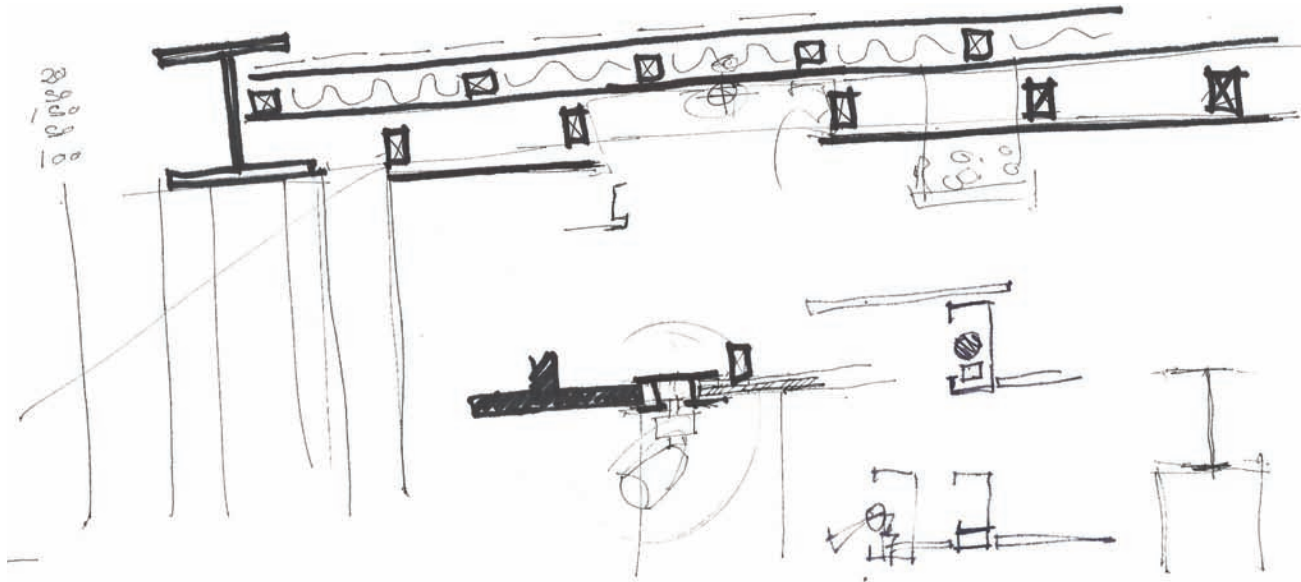


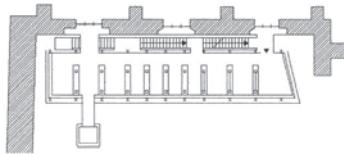
Figure 6.36: Exploring the layers of the new mezzanine floor.

6.5.1 DESIGN INSPIRATIONS: REUSE



reuse:
new inside old

(a) Selexyz Dominican Church, Maastricht, by Merx + Girod



reuse:
new freestanding
inside old

(d) Church and library, Munchenberg, by Klaus Block Architekt



reuse + addition:
tower

(g) Towers at Constitution Hill, Jhb by omm design workshop



reuse:
new inside old

(b) Church and library, Munchenberg, by Klaus Block Architekt



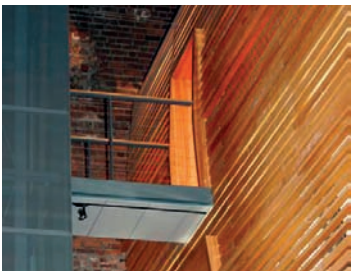
auditorium

(e) Auditorium of Kunsthall, Rotterdam by Rem Koolhaas



skylights

(h) Museum of Fine Arts with skylights, Houston USA by JR Moneo



reuse: new circulation
inside old

(c) Church and library, Munchenberg, by Klaus Block Architekt



new layer - acoustics

(f) Auditorium of Banca Popolare, Lido Italy by Renzo Piano



sky lanterns

(i) Sky lanterns at Museum of Fine Arts, Houston USA by JR Moneo

Figure 6.37: Colleague with reuse inspirations.



bridge

(j) Bridge at Constitution Hill, Jhb by omm design workshop



walkway - new over old

(m) New ramp and stairs at Women's Jail, Jhb by Kate Otten



traces of old kept

(p) Traces of removed walls at Constitution Hill, Jhb by omm design workshop



bridge

(k) Walkway at Arts On Main, Jhb by Enrico Dalfonchio



new over old - accentuating threshold

(n) New threshold detail at Women's Jail, Jhb by Kate Otten



traces of old kept

(q) Traces of removed walls at Constitution Hill, Jhb by omm design workshop



ballustrade

(l) Ballustrade at Arts On Main, Jhb by Enrico Dalfonchio



walkway - new over old

(o) New walkway at Cultural Centre, Toledo Spain by Ignacio M. Corsini Arquitecto



signage

(r) Layered and robust signage at Arts On Main, Jhb by Enrico Dalfonchio

6.6 EXPLORING THE NEW

The new facade is designed through componential layering (figure 6.37). The concept of block-in-block is also introduced in the new addition (figure 6.38). A walkway is introduced as threshold between the exterior and the interior.

Figures 6.39-6.40 illustrates the exploration of layering of the new facade.

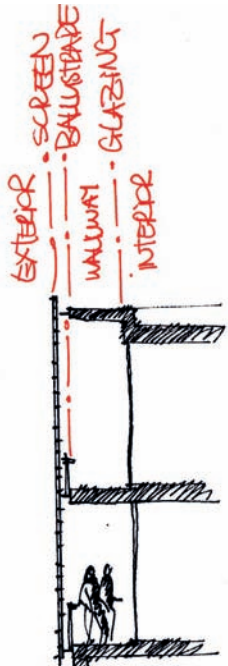


Figure 6.38: Componential layering of the new facade.

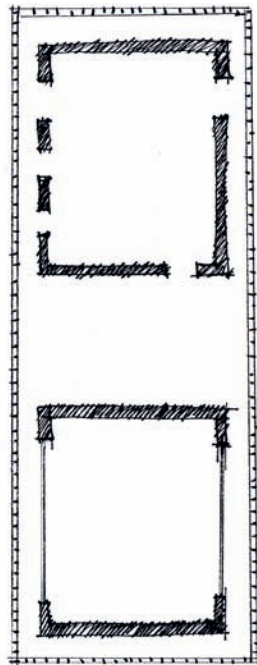


Figure 6.39: Plan diagram illustrating the block inside block concept.

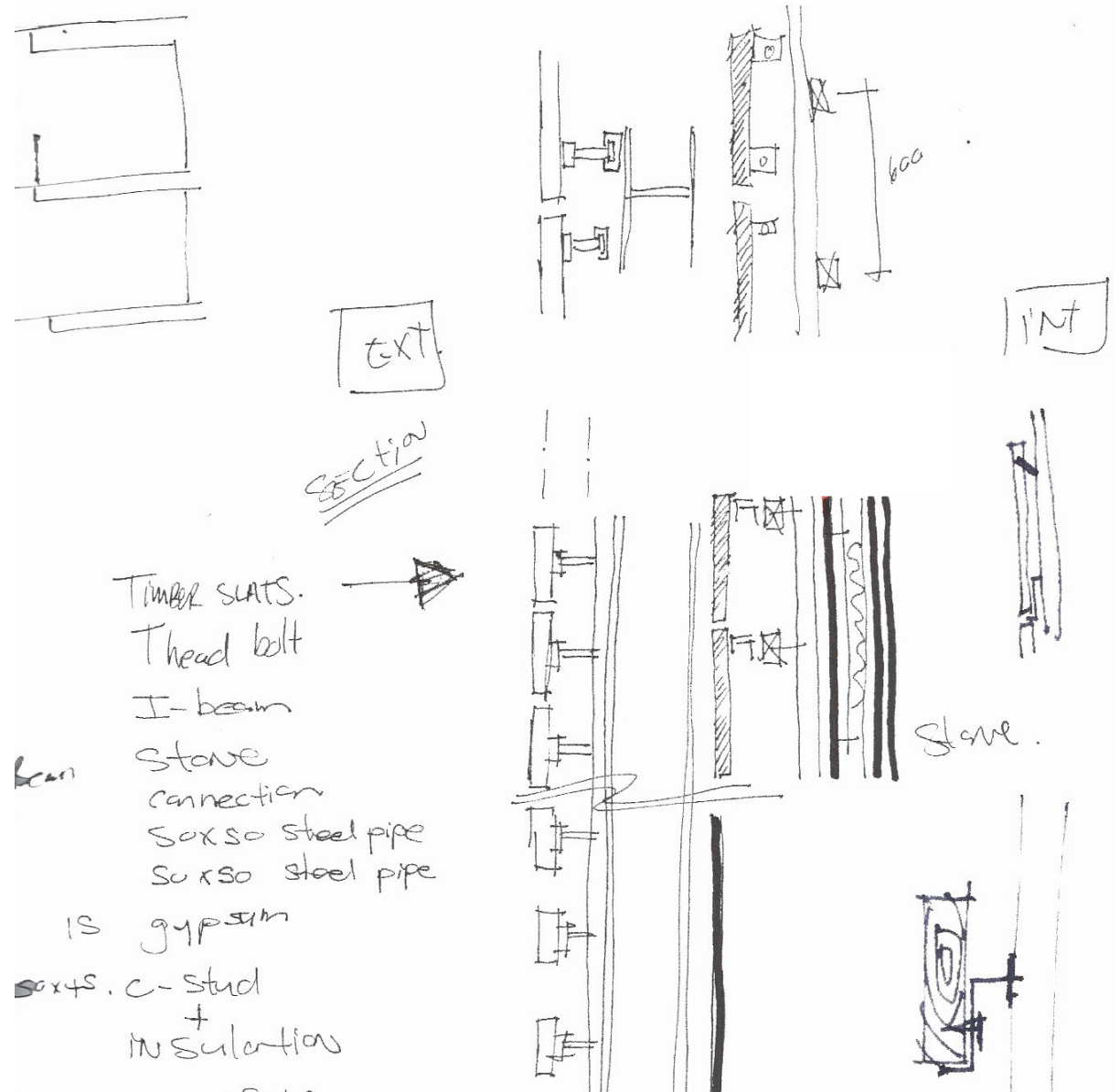


Figure 6.40: Exploring the facade layers.

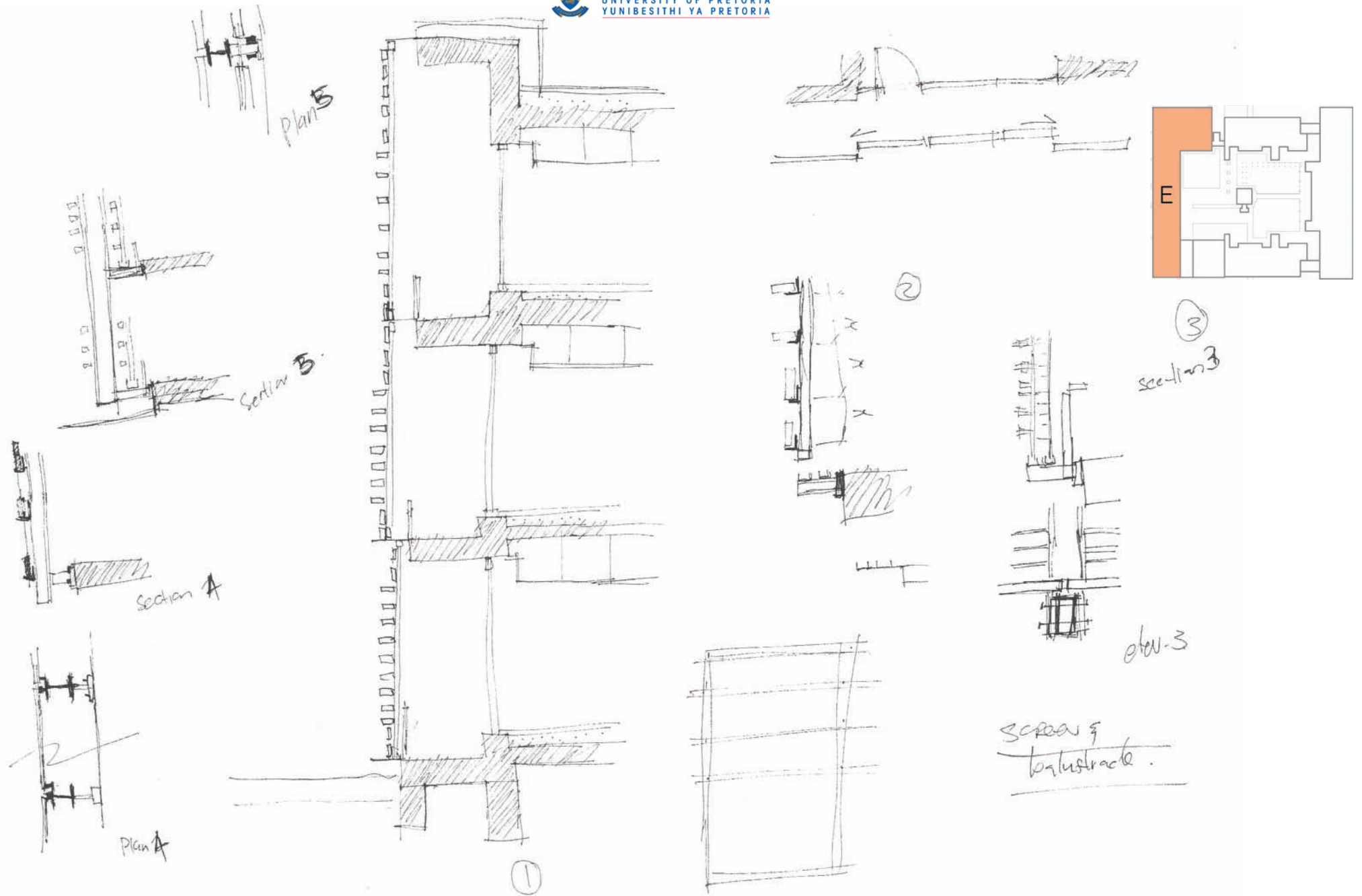


Figure 6.41: Exploring the facade layers.

The location of the new addition was decided as illustrated in figures 6.12-6.14.

The new addition is to be an anonymous block as not to compete with the existing.

Figure 6.41 illustrates how the purity of the anonymous block is lost with the introduction of glazing. In figure 6.42 a screen is introduced for anonymity.

A water feature is introduced, creating the impression of a moat protecting the collections archived in the new building (figure 6.43).

The form of the new addition, Block E, is the culmination of site conditions, the existing building (courtyard typology), the programme as well as the concept of an anonymous block.



Figure 6.42: Purity of the anonymous block lost with the introduction of glazing. (Author)

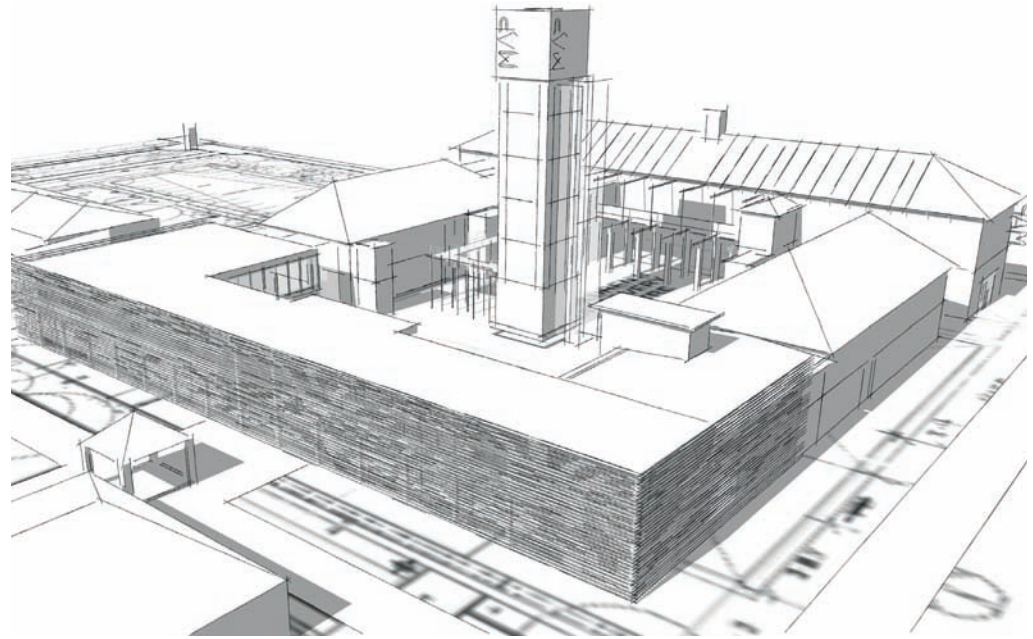


Figure 6.43: Anonymous block with a screen introduced. (Author)

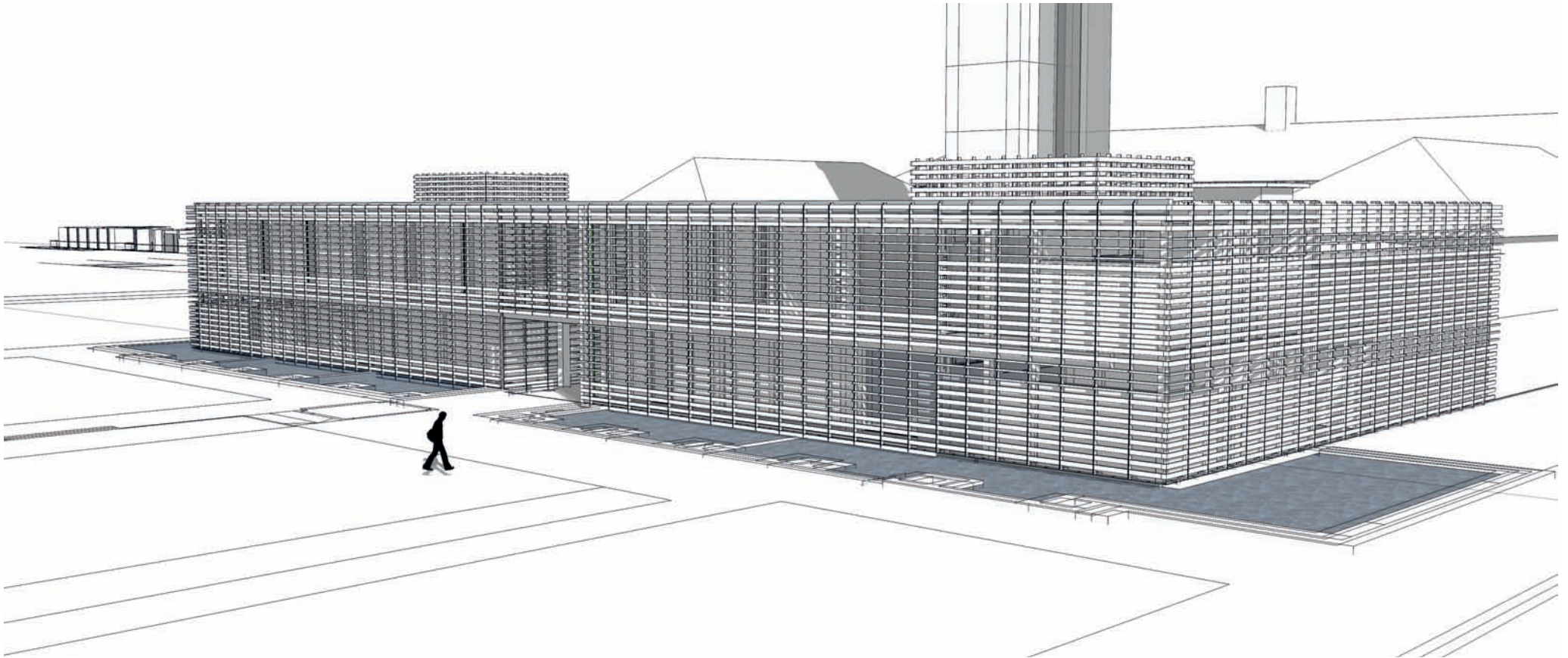


Figure 6.44:a View of the new addition.



Figure 6.44b:View of the new addition - southwest corner.

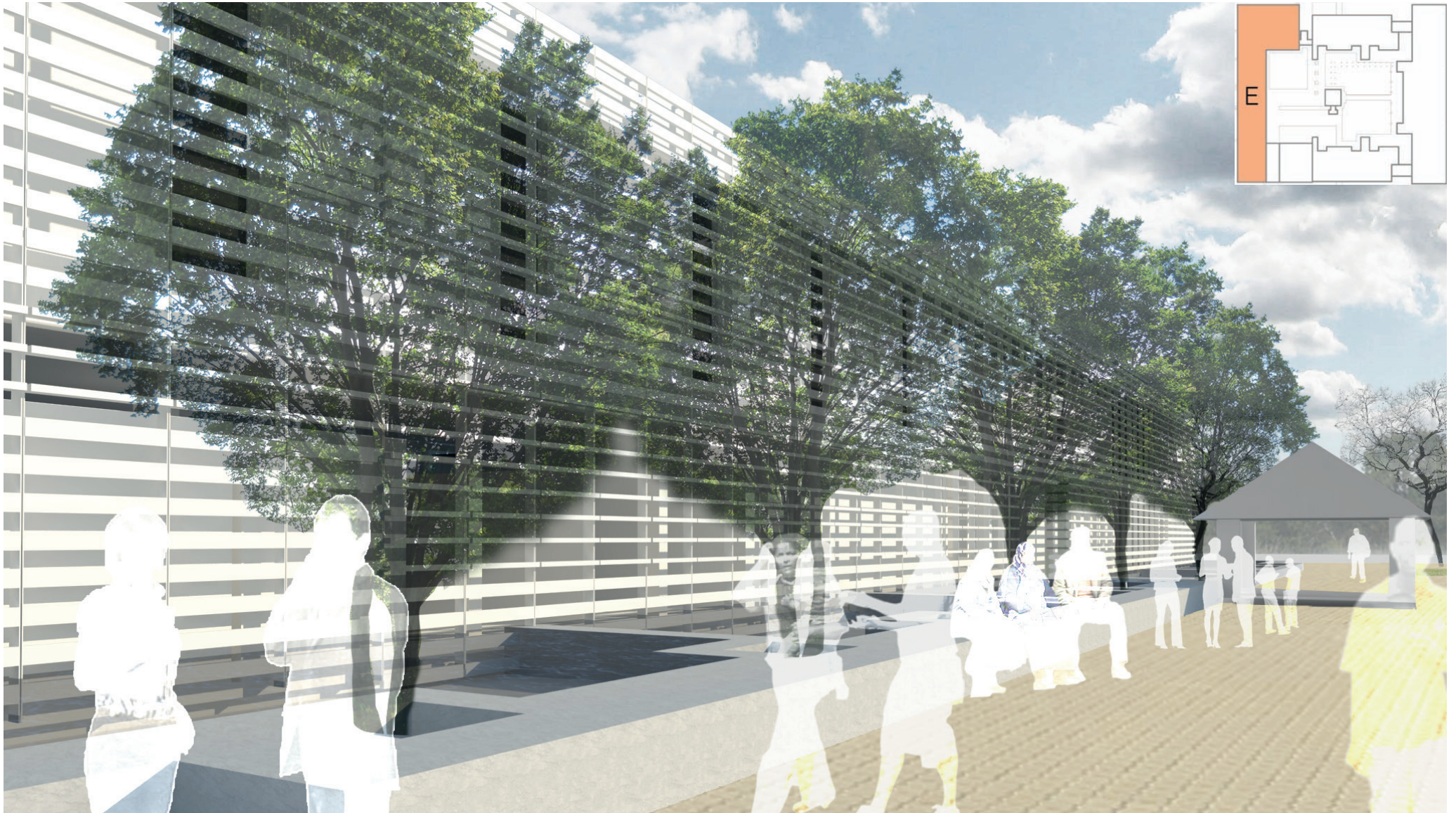


Figure 6.44:c View of the new addition - new link to Minnaar street.



6.6.1 DESIGN INSPIRATIONS: NEW



new:
contrasting materials

(a) Glass circulation towers, Reina Sofia by Ian Richie



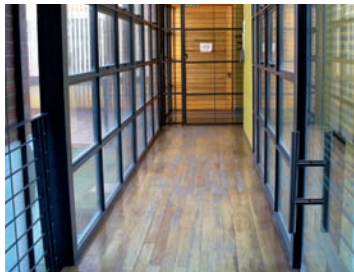
joint:
glass between old and new

(d) Glass infill between old and new at Women's Jail, Jhb by Kate Otten



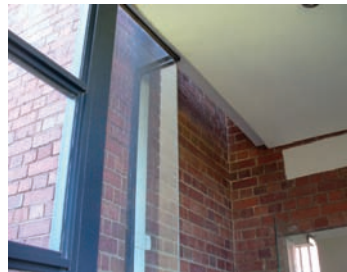
new:
anonymous block
david chipperfield

(g) Liangzhu Cultural Museum, China by David Chipperfield



link:
glass and steel

(b) Glass and steel links between old and new at Women's Jail, Jhb by Kate Otten



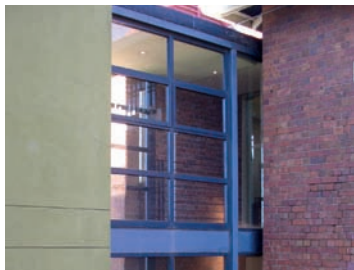
joint:
new pulled away from old

(e) Void between old and new at Women's Jail, Jhb by Kate Otten



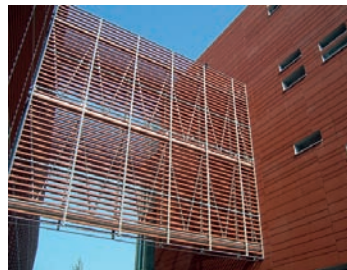
new:
block with screen

(h) Arts Centre, Wurzburg by Bruckner & Bruckner



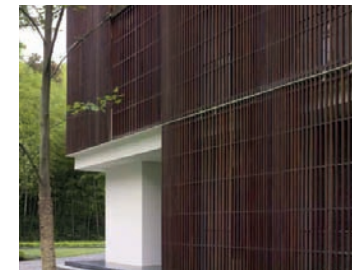
link:
glass and steel

(c) Glass and steel links between old and new at Women's Jail, Jhb by Kate Otten



link:
glass and screen

(f) Glass and steel link with terracotta screen



new: screen
david chipperfield

(i) Ninetree Village, China by David Chipperfield

Figure 6.45: Colleague with design inspirations for the new additions.



new:
block inside block
david chipperfield

(j) Ninetree Village, China by David Chipperfield



new: screen
renzo piano

(m) New York Times Building, New York USA by Renzo Piano. Screen manufactured by Shildan.



new:
screen

(p) National Graduate Institute for Policy, Tokyo by Richard Rogers. Screen by Palagio Engineering.



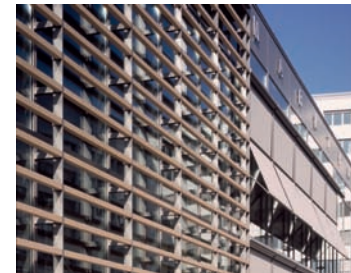
new:
layered facade

(k) Arts Centre, Wurzburg by Bruckner & Bruckner



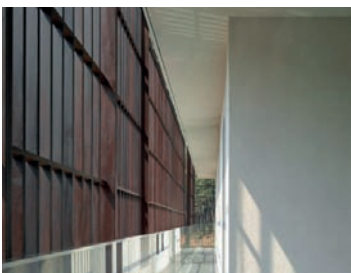
new: screen
renzo piano

(n) Banca Popolare di Lodi, Italy by Renzo Piano. Screen manufactured by Palagio Engineering.



new:
screen

(q) Terracotta Screen manufactured by Shildan



new:
layered threshold
david chipperfield

(l) Ninetree Village, China by David Chipperfield



new:
screen

(o) Commercial building, Torino Italy by BUFFI Associates. Screen by Palagio Engineering



new:
screen

(r) Terracotta Screen manufactured by Shildan

6.7 EXPLORING THE COURTYARD

The layout for the courtyard was generated through the circulation axes and the location of the entrances to the four quadrants. Green areas and a water feature were also introduced.

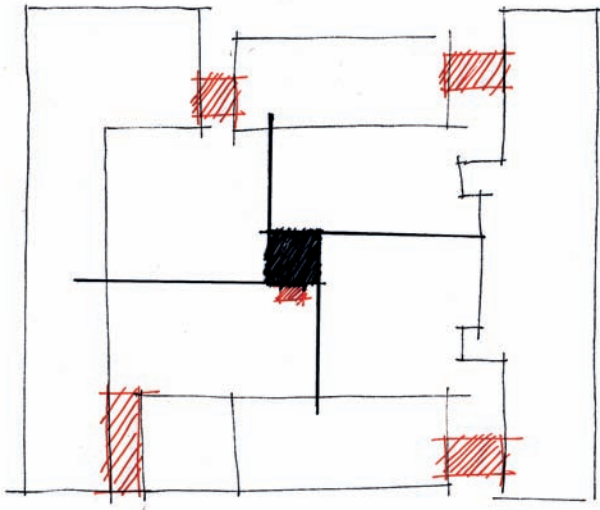


Figure 6.46: The parti diagram for circulation.

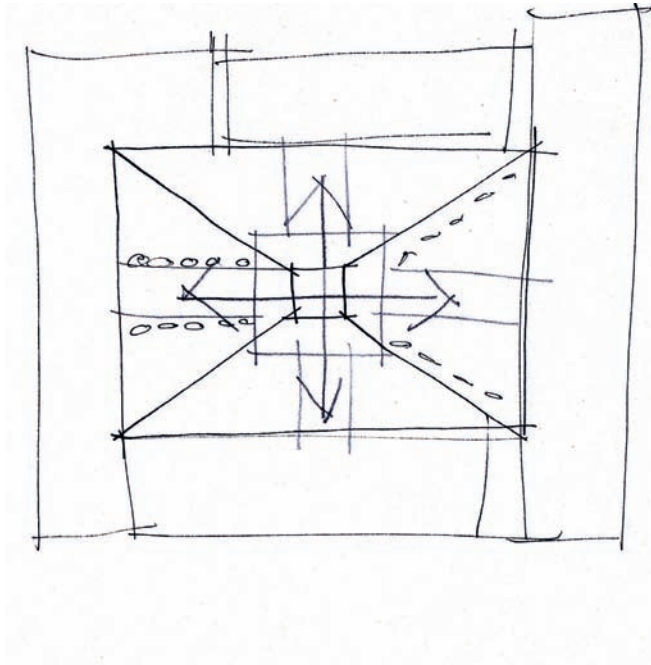


Figure 6.47: Diagram showing the quadrants and movement axes in courtyard.

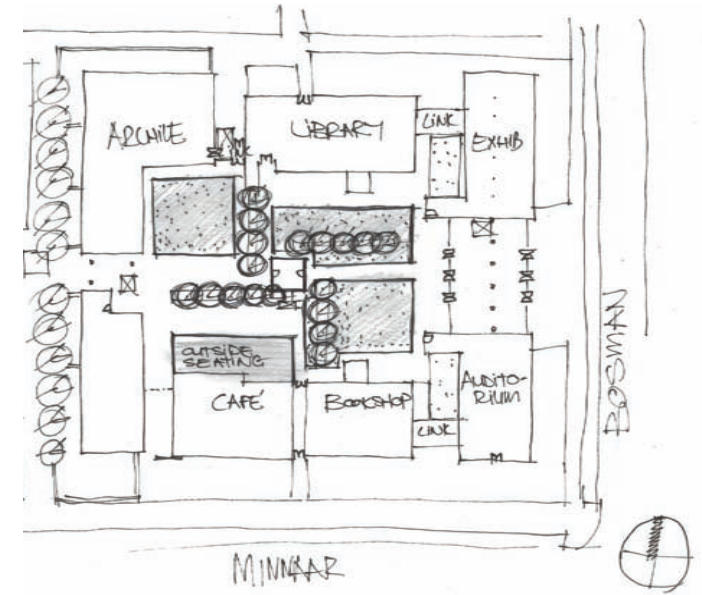
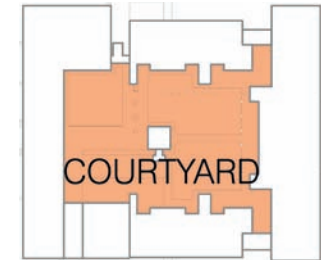


Figure 6.48: New courtyard layout based on parti diagram for circulation.



6.2.3 DESIGN INSPIRATIONS: COURTYARD



courtyard
soft

(a) Simple courtyard design at Castelvécchio by Scarpa



water

(d) Water feature in Vigo by Guillermo V. Consuegra



material + texture +
edges + layers

(g) Edges and transition defined by layering of material and texture



courtyard
hard

(b) Hard space, with social activities, height difference and material define edge



water

(e) Water feature by Carlo Scarpa



installation

(h) Exterior installations at Topography of Terror Museum, Berlin by Ursula Wilms



courtyard
hard vs soft

(c) Raised areas with lawn and trees, hard vs soft, by Guillermo V. Consuegra



courtyard
soft

(f) Green courtyard with berms, trees and circulation layered over lawn



installation

(i) Exterior installations at Topography of Terror Museum, Berlin by Ursula Wilms

Figure 6.49 Colleague with design inspirations for the landscaping.

6.8 CONCLUSION: THE APPLICATION OF LAYERING

Opening the building was achieved through; a public programme, accessibility through movement, views into and through the building connecting private and public spaces, and a programme that informs. The new tectonic is that of layered architecture. Application of the layered tectonic in the project can be found as follows;

Spatial layering through views at two main entrances, at secondary entrances, as well as through the transparent links into the courtyard.

SPATIAL LAYERING: VIEWS

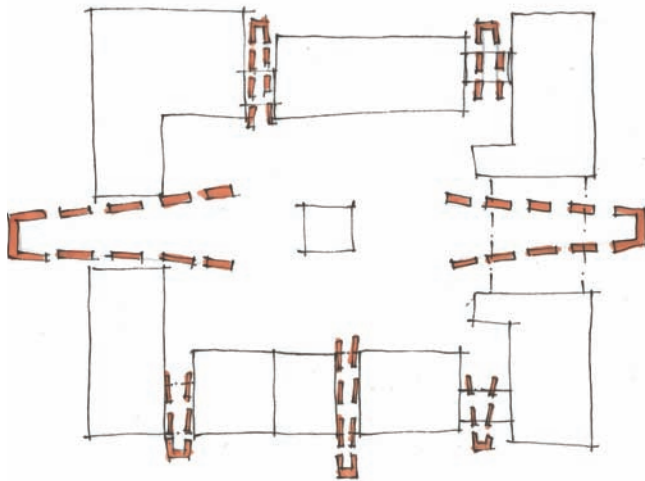


Figure 6.50: Spatial layering through visual axes.

Spatial layering through circulation.

SPATIAL LAYERING: MOVEMENT

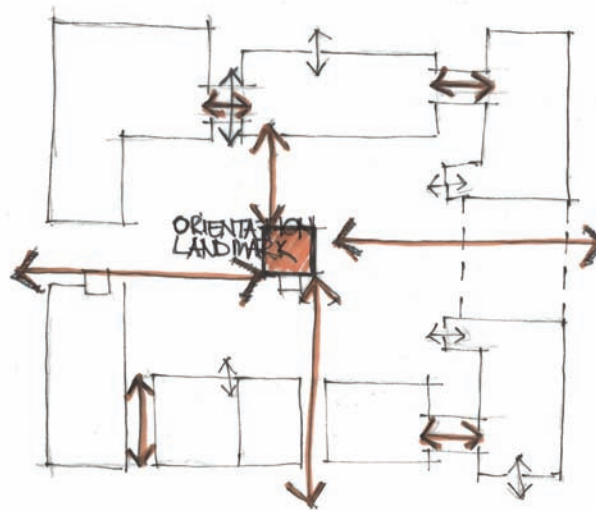


Figure 6.51: Spatial layering through circulation axes.

Component layering - the new facade is broken down into its simplest elements, and then assembled back together as a whole, but still within their individual layers. In this way one is made aware of the composition of the facade, being able to see each layer separately, but still functioning as a whole. This facade creates a more noticeable transition between inside and outside that gains depth through vertical differentiation. As one moves from inside to outside one experiences the transition space that is created through the layered glazing, walkway, balustrade, metal frame and screen, all forming the facade.

COMPONENTIAL LAYERING

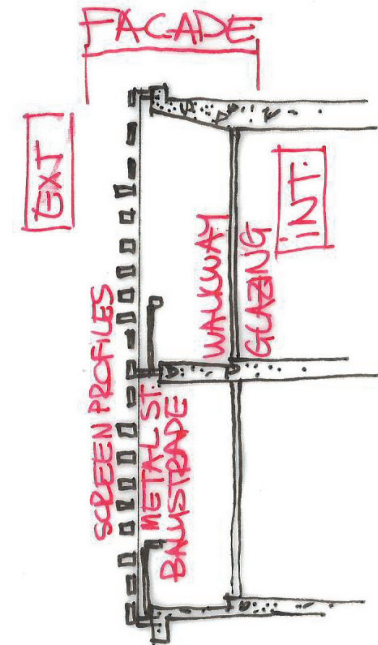


Figure 6.52: Componential layering of the new facade.

Material layering - the new is introduced within and juxtaposed against the old through a void; block-in-block, the new is set back inside the existing, freestanding or touching lightly.

MATERIAL LAYERING

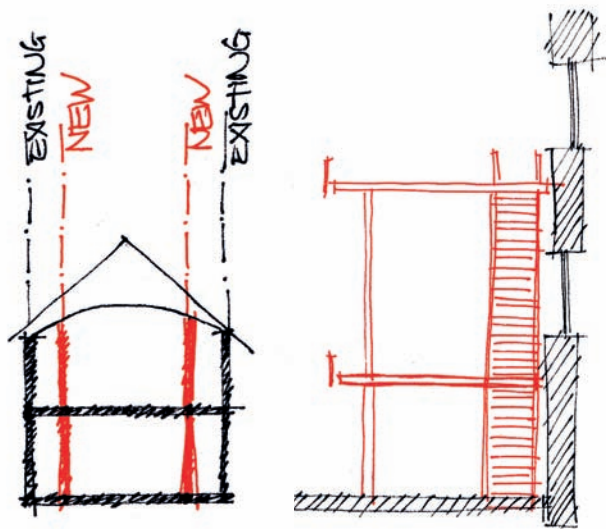


Figure 6.53 Material layering juxtaposed through the introduction of a void between the new and the old.

Transitional layering: Thresholds - links as thresholds between phases allowing the building to express the passage of time and change.

TRANSITIONAL LAYERING: THRESHOLDS

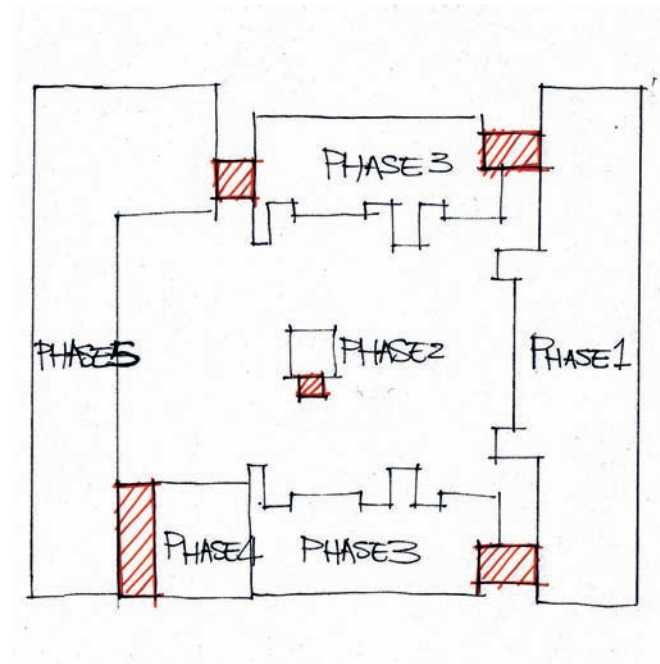


Figure 6.54: Transitional layering through thresholds.

Transitional layering: Joints - Connection between new building and existing is glazing.

TRANSITIONAL LAYERING: THE JOINT

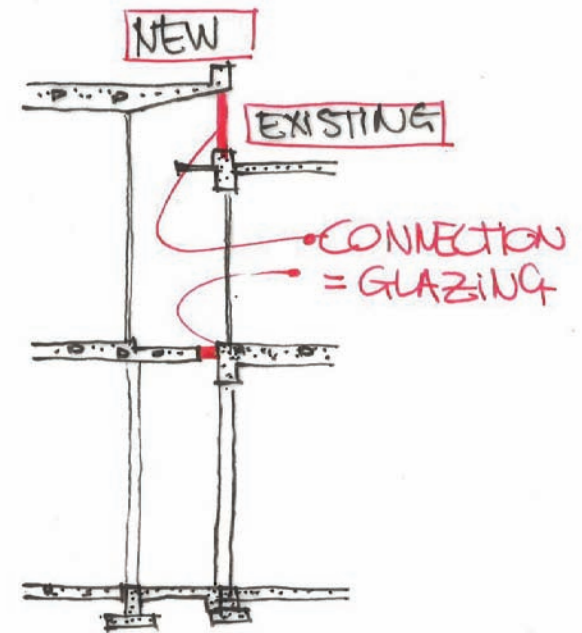


Figure 6.55: Transitional layering through the joint between the existing and the new.

07_TECHNICAL DEVELOPMENT:

7.1 INTRODUCTION

The technical investigation is the focus of this chapter.

- South African (SA) projects are investigated as technical precedents for a clay screen.
- This is followed by an investigation into the manufacturing, specifications and detailing of typical clay screens, done through a study of well known international projects.
- The chapter continues with the technical development of the design. Principles guiding the facade and screen design of the new building are illustrated.
- Selected materials, construction details and services are discussed.

7.2 SOUTH AFRICAN PRECEDENTS FOR THE CLAY SCREEN

As discussed in Chapter 6 the new addition, Block E, will incorporate a screen. It was decided to instead of timber or metal investigate clay profiles as possible materiality of the new screen.

The use of clay screens in existing local projects are thus investigated. Firstly two of Norman Eaton's projects are investigated. This is followed with another local example, that of the Mangosuthu Technikon by Hallen Theron & Partners. Thirdly the DTI competition scheme and relevant research of Christopher Malan from Meyer Pienaar are discussed.

7.2.1 NETHERLANDS BANK, DURBAN

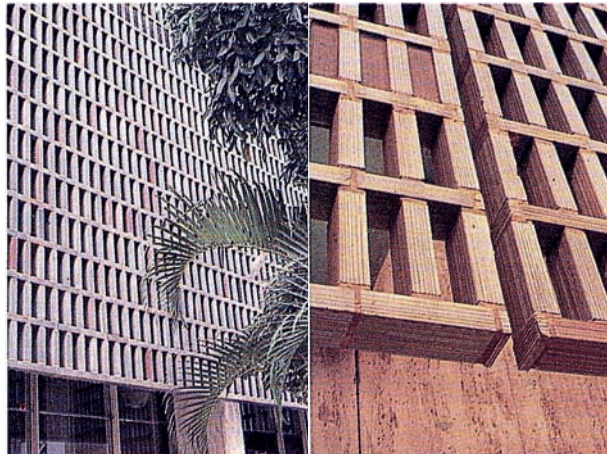


Figure 7.1: The Netherlands Bank building with a hollow clay brick sunscreen designed by Eaton

(a) Project information

Project name: Netherlands Bank
 Location: Durban
 Date: 1965
 Architect: **Norman Eaton**
 Clay product manufacturer: Briti, in Alberton

(b) Material

Eaton's external sunscreen is constructed of hollow clay bricks. The bricks were manufactured by Briti in Alberton and were very similar to their standard spacer blocks used for reinforced concrete floor construction. After manufacturing it was glazed on the outside by Dykor in Pretoria, then railed to Durban.

(c) Structure and installation

The screen is supported from projecting floor slabs by 25x3mm vertical steel hangers in every second vertical clay block. Each horizontal course is reinforced with two 6mm diameter steel rods welded to the vertical steel hangers. The hangers and rods were welded together in 900mm intervals as the work proceeded. This enabled the clay blocks to be

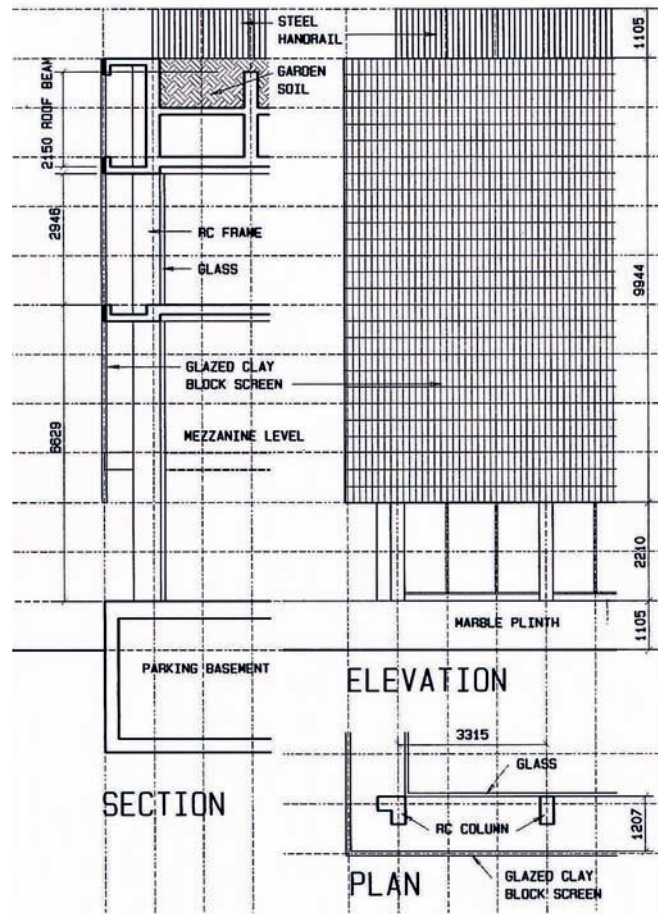


Figure 7.2: Partial elevation, section and plan of the building

strung over the rods as the screen was installed.

The screen was erected from the bottom up, bedded in plaster on correctly levelled scaffolding. Each block was filled with mortar and tamped to ensure positive coverage of the steel before the next block was put in place.

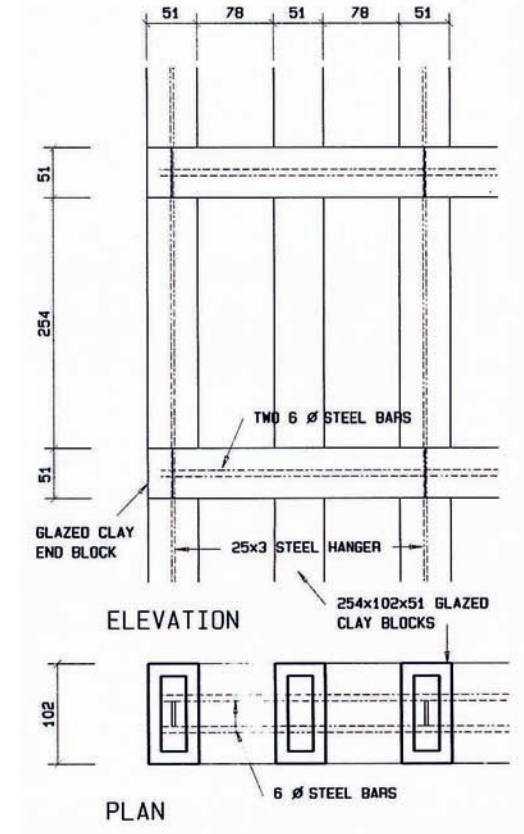


Figure 7.3: Elevation and plan of the clay sunscreen

(d) Condition

Remedial work was done five years after completion. Inadequate coverage in some places led to the rusting of the steel hangers and rods, resulting in spalling some of the blocks. The screen is in excellent condition.

7.2.2 NETHERLANDS BANK, PRETORIA



Figure 7.4: The Netherlands Bank building with clay brick cladding designed by Eaton

(a) Project information

Project name: Netherlands Bank
 Location: Pretoria
 Date: 1954
 Architect: **Norman Eaton**
 Clay product manufacturer: not mentioned
 Builder: Engel & Ruyter

(b) Material

In this project Eaton designed a terracotta cladding system. He had three special bricks made to clad the concrete structure. Two of these bricks were reeded faggots, giving the bricks a finer texture and scale. See type 1 and 2 in figure 7.5. The third type was a chamfered unit, which lends depth to the facade by the shadows created in the narrow horizontal recesses. See type 3 as well as Detail Section A in figure 7.5.

(c) Structure and installation

The bricks were fixed to the concrete structure with wire ties cast into the concrete and bedded into the joints between the faggots.

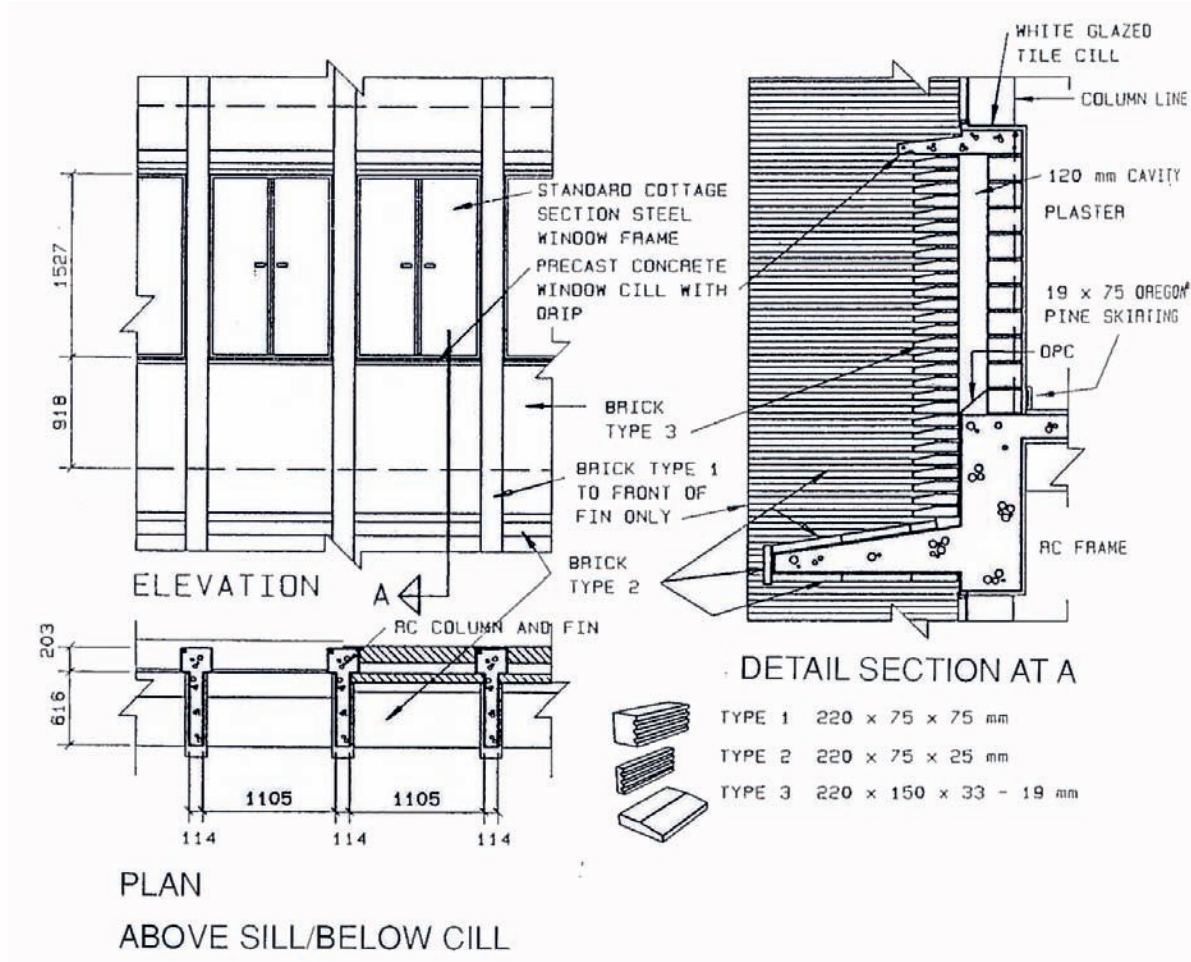


Figure 7.5: Drawing showing the three brick types, and a section through brick type 3

(d) Condition

The cladding has stood up well over fifty years, and the building seems to be in good condition.

7.2.3 MANGOSUTHU TECHNIKON

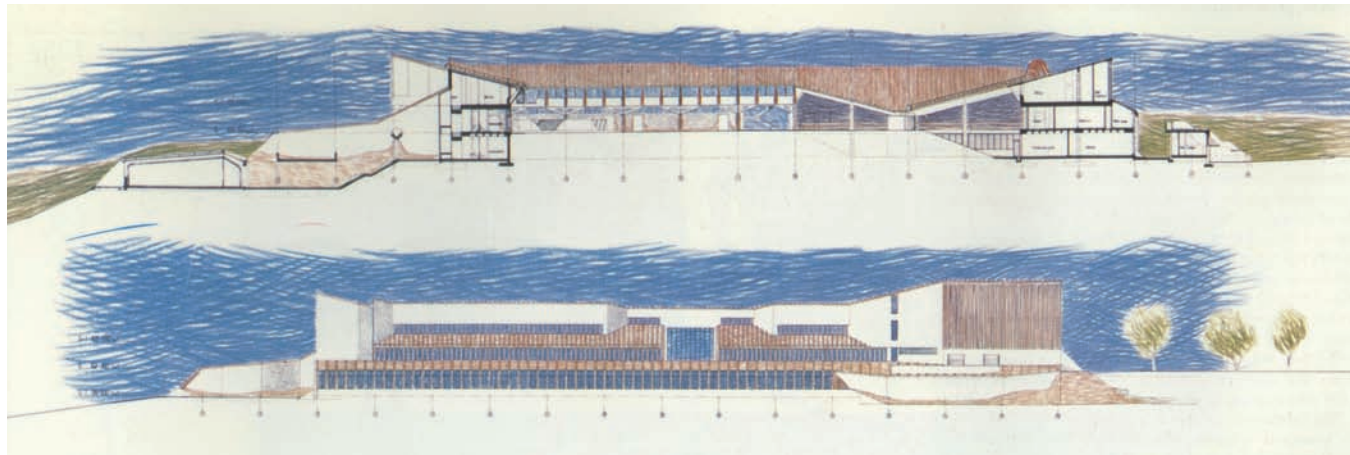


Figure 7.6: Drawn section and elevation of the Mangosuthu Technikon designed by Hans Hollen

(a) Project information

Project name: Mangosuthu Technikon
 Location: Umlazi, Natal
 Date: 1979-82
 Architect: **Hallen Theron & Partners**
 Clay product manufacturer: not mentioned

(b) Material

One of the guidelines concerned to create the building was that of longevity and low-maintenance. Unfortunately no information could be found on the material, the fixing or the manufacturer.

(c) Structure

The cross section has been designed to provide deep roof overhangs and shading devices and to use natural ventilation both by cross ventilation and by induced updraft.



Figure 7.7: North-east elevation



Figure 7.8: Photos showing the clay sunscreen and the terracotta roof tiles laid on asbestos

7.2.4 DTI COMPETITION SCHEME



Figure 7.9: The DTI competition scheme by Meyer Pienaar

(a) Project information

Project name: Department of Trade and Industry Competition Scheme
 Location: Pretoria
 Date: not built
 Architect: **Christopher Malan from Meyer Pienaar Architects**

PROPOSED clay product manufacturer: Corobrik

(b) Material

A terracotta screen was proposed.

(c) Manufacturer

Chris Malan did the research into the design and manufacturing of the clay screen with the collaboration of Corobrik.

7.2.5 CONCLUSION

Although SA do not currently have these clay profiles readily available in the market we have the knowledge and capability to manufacture clay profiles to be used in screen installations.

7.3 INTERNATIONAL PRECEDENTS

To design and specify the terracotta sunscreen system, one must understand the manufacturing process, structure and components necessary as well as the installation procedure.

Although we know that South Africa has the capability and means in place to manufacture these products, the product doesn't exist in the local market yet. To understand the product international projects and manufacturers were studied.

During an investigation of projects done by Renzo Piano it was discovered the two main manufacturers used are Palagio Engineering, in Italy but also represented in the USA, and Shildan in Germany. It was decided to research these two companies' products to gain knowledge into the product.

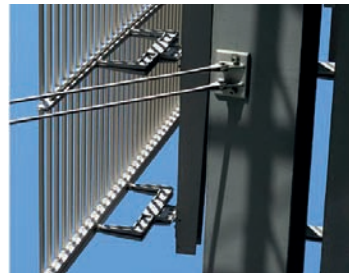
Figure 7.10 shows the fixing details of a selected few projects.

Information and conclusions of the manufacturers' products and projects researched are discussed next.



fixing

(a) New York Times Building, New York USA by Renzo Piano. Screen manufactured by Shildan.



fixing

(b) New York Times Building, New York USA by Renzo Piano. Screen manufactured by Shildan.



fixing

(c) Screen manufactured by Shildan.



fixing

(d) Building in Germany designed by Renzo Piano. Screen manufactured by Palagio Engineering.



fixing

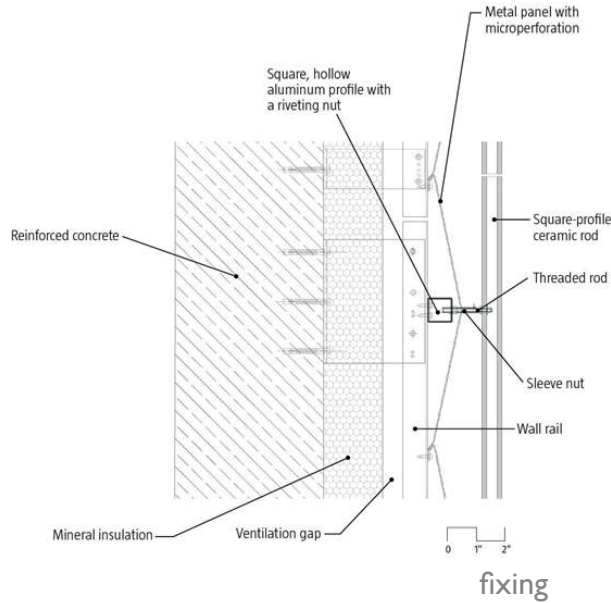
(e) Screen manufactured by Palagio Engineering.



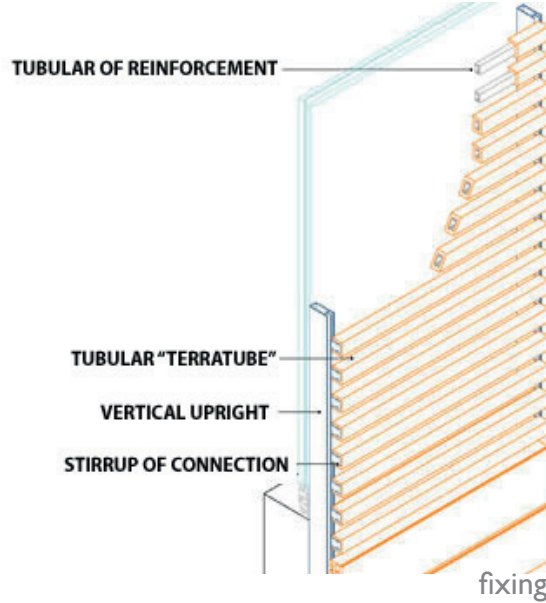
fixing

(f) Screen manufactured by Palagio Engineering.

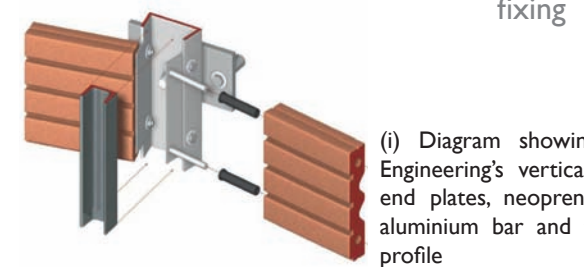
Figure 7.10: Colleague with international precedents.



(g) Diagram showing the fixing detail at the Brandhorst Museum designed by Sauerbruch Hutton



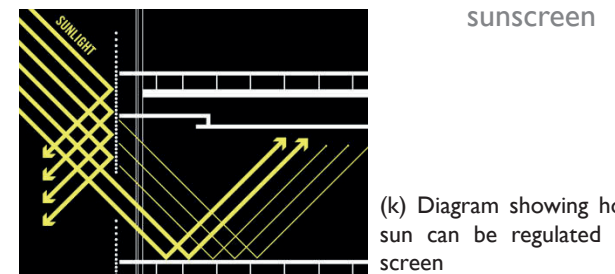
(h) Diagram showing the structure by manufacturer Pelagio Engineering, Italy.



(i) Diagram showing Pelagio Engineering's vertical support, end plates, neoprene gaskets, aluminium bar and terracotta profile



(j) Examples of how sunscreen effectiveness can be modulated by adjusting the distance between the parts.



(k) Diagram showing how the sun can be regulated by the screen

TECHNICAL DATA SHEET

| | |
|------------------------------|---|
| Material | Cotto pregiato Imprunetino IL PALAGIO ® |
| Manufacturer | VIVATERRA |
| Method of moulding | EXTRUSION |
| Freeze/thaw resistance | UNI EN ISO 10545-12 Guaranteed |
| Linear thermal expansion | UNI EN ISO 10545-8 6×10^{-6} c° - 1 |
| Resistance to thermal shocks | UNI EN ISO 10545 - 9 Guaranteed |
| Bending tension strength | UNI EN ISO 10545-4 19 N/mm ² |
| Treatment | "Water Resistant": exclusive special treatment applied by immersion of the slabs. It reduces the water absorption and allows easy cleaning of graffiti. |

Figure 7.11: Technical Data Sheet from Palagio Engineering manufacturer.

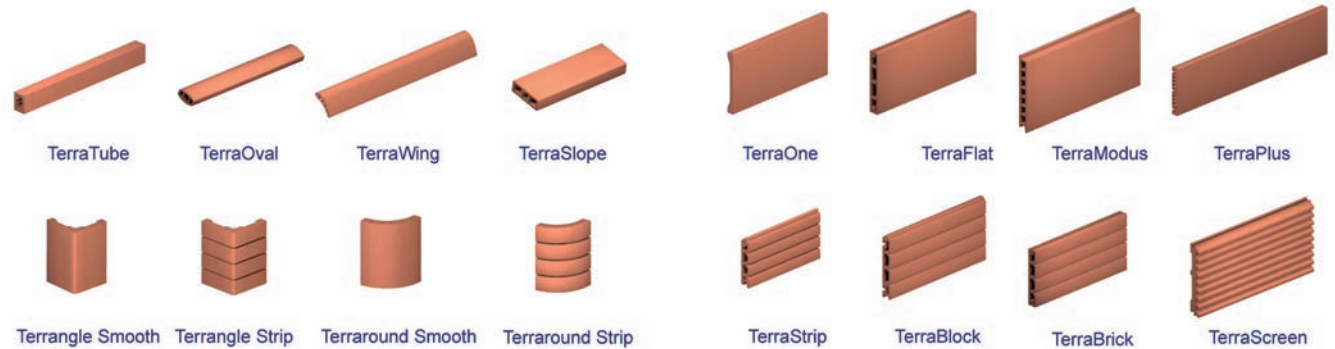


Figure 7.12: Typical sunscreen profiles, as well as corner profiles for wall cladding systems.

Figure 7.13: Typical wall cladding profiles in the market.

7.3.1 BENEFITS AND CAPABILITIES

- easy installation
- faster and more accurate installation time
- available sizes: from brick sizes to 2700mm
- engineered to resist wind forces, change in temperature, freeze-thaw cycle, fire, impact, hurricane, seismic raking, shear movement
- easy to repair by replacing a single element
- low to no maintenance
- long life-span
- design flexibility
- custom made production possible according to design

7.3.2 ECOLOGICAL BENEFITS

- raw natural material, with a recycled material content
- completely recyclable
- local material from local quarries; excavation, manufacturing and production possible on same premises
- lightweight and no heavy equipment needed for installa-

- tion; need less fuel for transportation
- acts as sunscreen: reduction of solar radiation; decrease demand on air-conditioning system in summer without sacrificing positive contribution from sun in winter
- optimise energy performances inside building
- reduces heat island effect
- no V.O.C. emissions; no adhesive, corks, sealants, mortar, no toxicity
- innovation in design possible
- current manufacturers like Palagio Engineering are members of the Green Building Council

Sunscreen technique

The sunscreen system in this case is a wall of which the external covering consists of terracotta materials which are dry-assembled and installed through mechanical fixing to form a gridded screen, its effectiveness can be modulated by adjusting the distance between the parts.

The sunscreen system is an important architectural solution for the thermal regulation of the building.

The use of large, glass covered surfaces are today being called into question due to overheating problems as a result of direct exposure to the sun's rays during the summer months, and consequently high air-conditioning costs, and higher levels of discomfort for users.

The sunscreen, produced with different sized and shaped terracotta parts can be adapted for each project in order to create light and shading effects, to filter the sun's rays and also to achieve the correct lighting levels.

7.3.3 PRODUCTION CYCLE

- excavation
- dry grinding (less energy than wet grinding)
- mix with water (no chemical additive)
- extrusion
- drying through exhausted thermal energy from kiln
- firing (ecological combustible, CH₄)

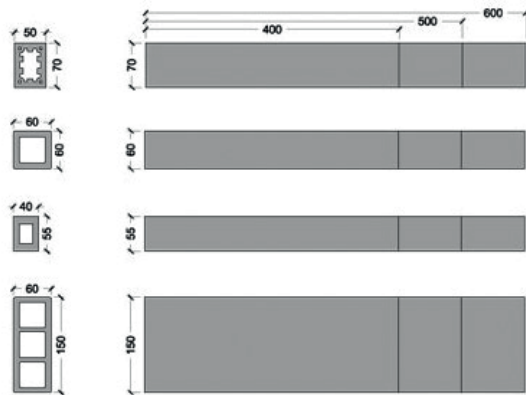


Figure 7.14: Drawing showing typical terracotta profiles.

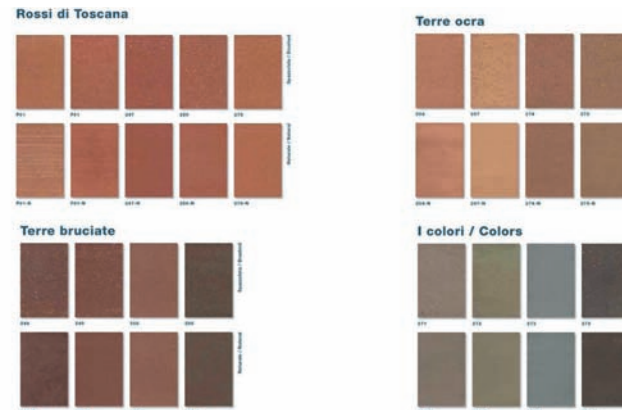


Figure 7.15: Typical extruded terracotta colours available



Figure 7.16: Typical extruded terracotta glazed elements available

7.3.4 SPECIFICATION

Please see figure 7.11 for a technical data sheet.

7.3.5 PROFILE AND COLOURS

Typical profiles currently in the market, as well as colours are shown in figures 7.12 - 7.16.

7.3.6 SYSTEM DESCRIPTION AND INSTALLATION

This is a basic design and can be adjusted according to the building design.

1. The system is composed of hollow terra-cotta (square, round or oval) tubes.
2. The tubes have a continuous aluminium cross shape bar running through it.
3. The aluminium bar fits into the channels, which are lo-

cated on the four interior sides of the terracotta tube. This prevent the terracotta pieces from falling in case of breakage.

4. The aluminium bar is connected to aluminium plates (closure pieces), which close the terracotta tube. Silicone/neoprene gaskets are installed between the aluminium bar and the terracotta tube.
 5. The terracotta tubes including the aluminium bar and plates are preassembled by the manufacturer.
 6. The plates are attached to vertical aluminium studs, which are attached with aluminium clip angles to the building structural system.
- installation is easy and quick, and no heavy equipment is necessary
 - support structure allows for necessary adjustment, and thermal expansion
 - system is designed to remove and replace damaged tubes at any location
 - under no circumstances shall it be possible to remove individual tubes without the necessary tools
 - neoprene gaskets keep the clay profile from rattling and allow for thermal movement

- gaskets between terracotta and aluminium bar shall be silicone with Shore A hardness as required to keep water from leaking through terracotta joints and to maintain structural and alignment requirements
- through a study of the local shadows and sun angles, the screen design can be optimised by increasing or decreasing the space between the profiles
- the system is typically also in mild steel, with the aluminium bar inside the channels, together with all the necessary gaskets at the joints between the steel and the aluminium

7.4 SCREEN DEVELOPMENT

Wall section conditions were used as design guidelines to develop and design the screen.

7.4.1 DESIGN GUIDELINES: WALL SECTION CONDITIONS

- **Wall Section Condition 1:**

Condition between the screen, a walkway and a public/accessible active programme (conference facilities/information offices).

- **Wall Section Condition 2:**

Condition between the screen, a walkway and a public/private inactive programme (conference lunch area/staff break room)

- **Wall Section Condition 3:**

Condition between the screen, a walkway and the archives.

- **Wall Section Condition 4:**

Condition between the screen and the bathrooms.

- **Wall Section Condition 5:**

Condition between the screen and a private/unaccessible programme (archive offices).

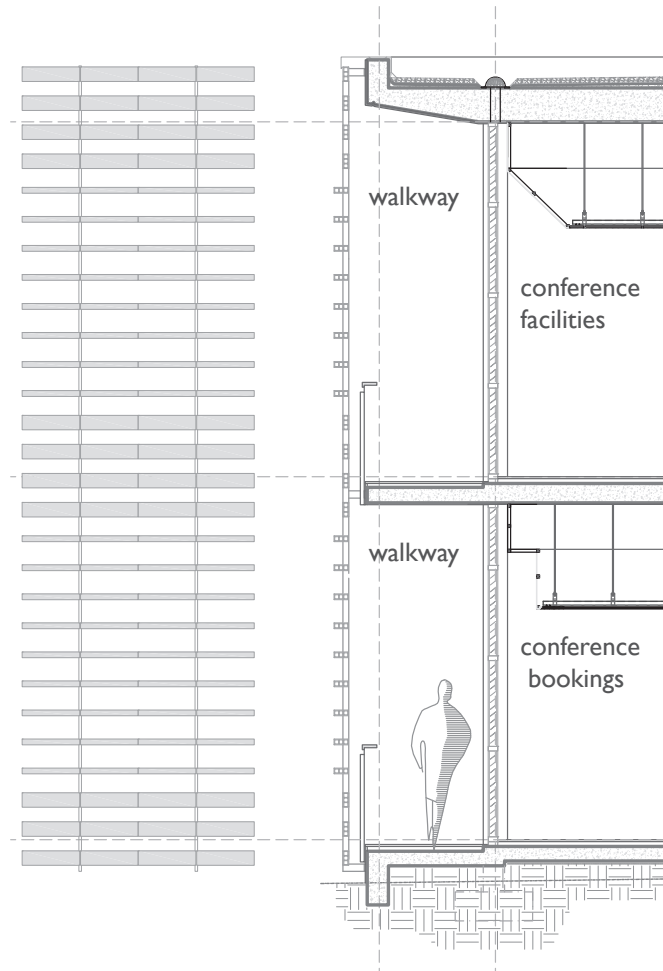


Figure 7.17: Wall section condition 1

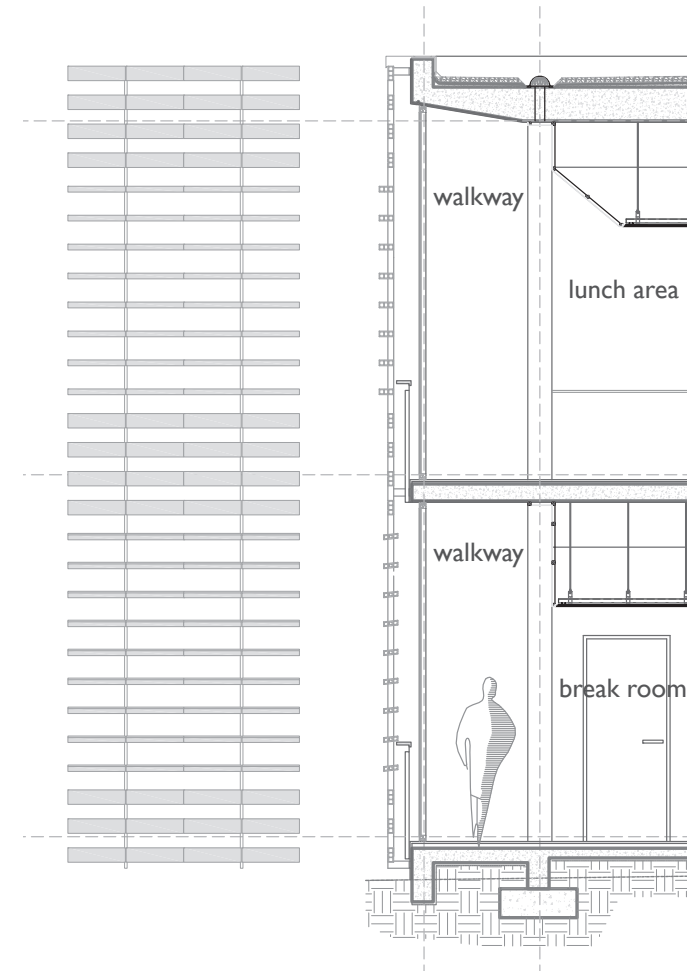


Figure 7.18: Wall section condition 2

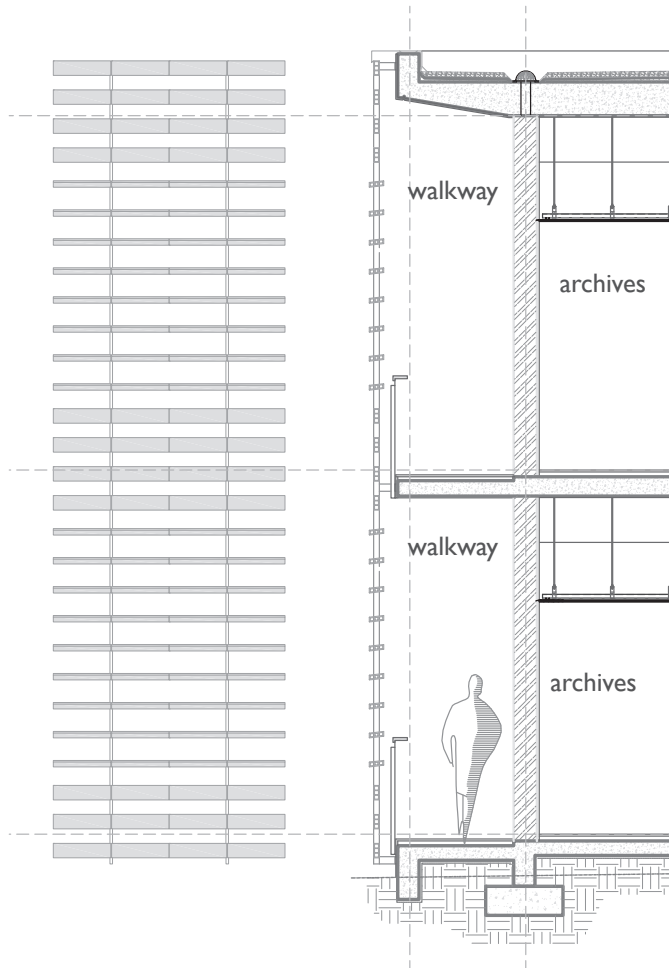


Figure 7.19:Wall section condition 3

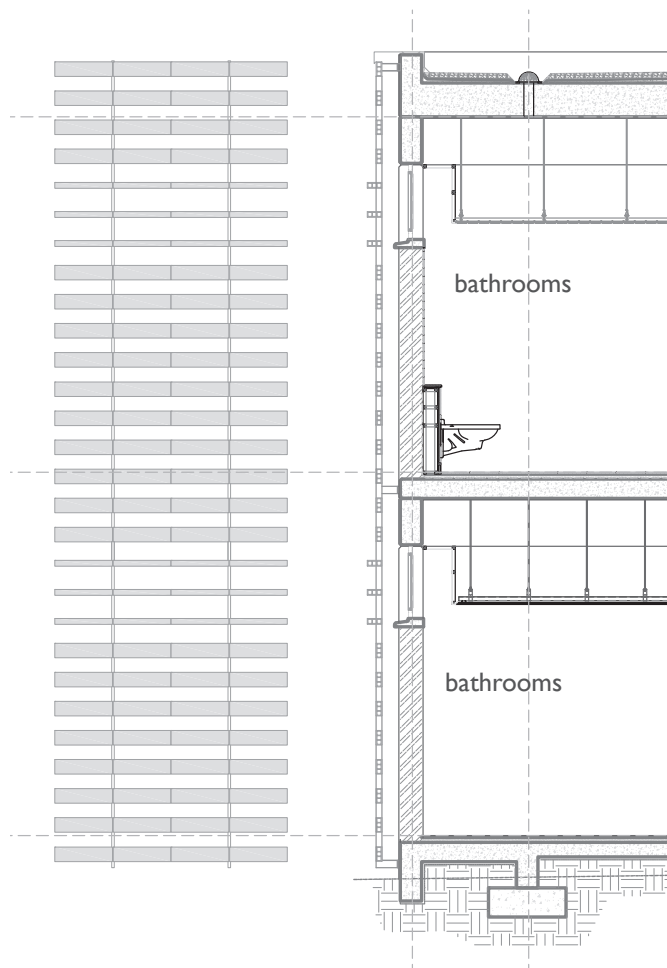


Figure 7.20:Wall section condition 4

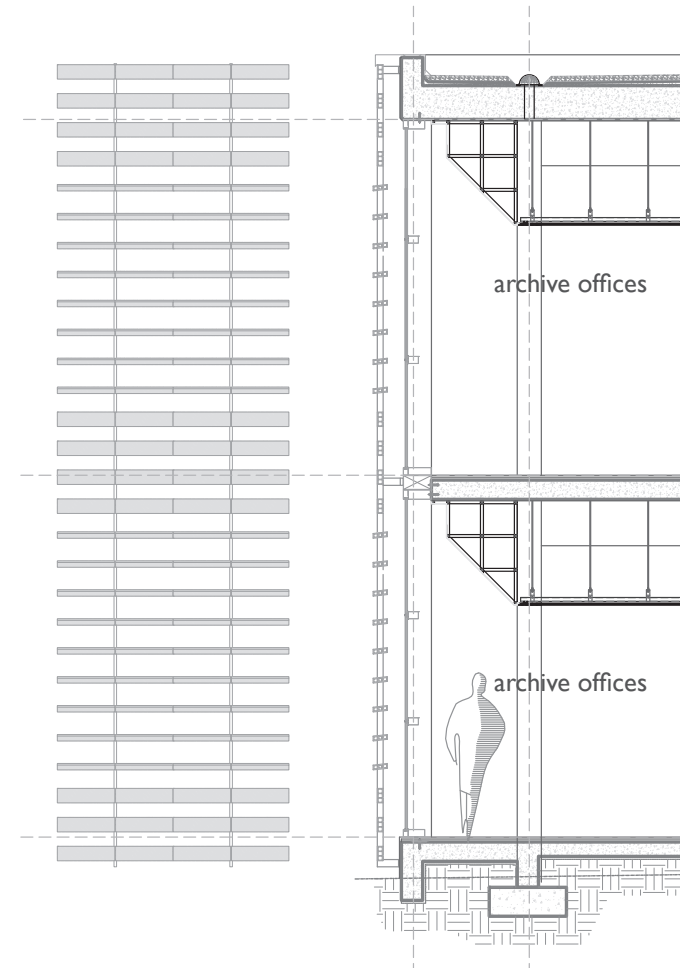


Figure 7.121 Wall section condition 5

7.5 SELECTED BUILDING SERVICES

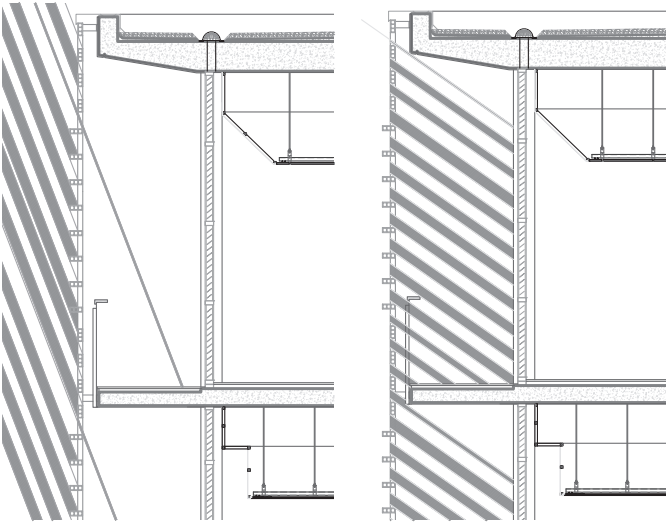


Figure 7.22: The screen blocks harsh summer sun (88-64 sun angle) from entering the building (left), but letting sun in early in the morning and late afternoons (35 sun angle) (right).

7.5.1 LIGHTING

Lighting accounts for 20% of an average building's energy consumption. Optimising the building's fenestration for the influx of daylight is desirable, also known as daylight harvesting. Day lighting methods will therefore be implemented. Pretoria is blessed with high solar irradiance, typically 1kW/m² in direct sunlight. These high energy levels, while excellent for maximizing natural lighting in the work spaces of the offices and other areas of the building, will have an undesirable effect on the solar heat gain of the building.

Window shading and other devices and architectural techniques will therefore be employed to control the influx of direct sunlight while still encouraging the less aggressive diffuse skylight. The mechanical engineer, skilled in the estimation of internal heat gain, which incidentally varies depending on the geographical location of the site, will be consulted in order to arrive at a suitable compromise.

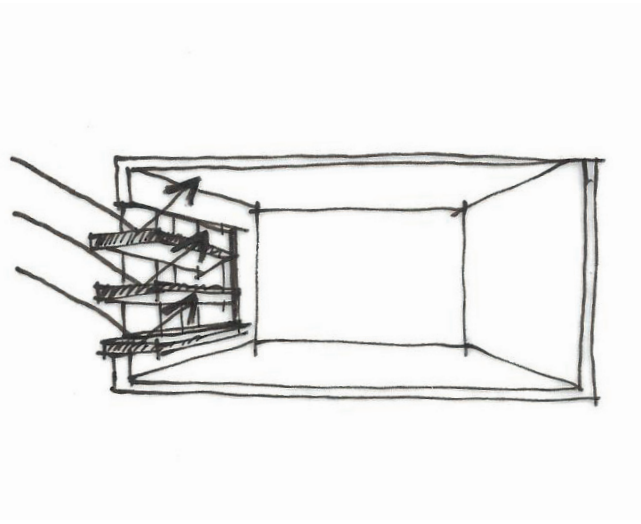


Figure 7.23: New light shelves layered inside the existing. The light shelves diffuse the direct sunlight.

Offices, Block E

A sunscreen is incorporated into the design of the new building, Block E. This will keep harsh summer sun out and allow early morning and afternoon sun to filter through. Double glazing walls with integral blinds will take advantage of the natural lighting let in, whilst direct sunlight is blocked before entering the building. (Figure 7.22).

The offices of the new building will be filled with ambient (general) lighting, sufficient to meet building codes. Electric lighting will be used to supplement the harvested daylight and allow for early morning and night work. The electrical engineer will typically specify efficient luminaires, typically fluorescent lamp fittings installed in a grid layout in the ceiling plane. The lamps will automatically adjust the light output through the day to compensate for daylight, and by doing so save energy.

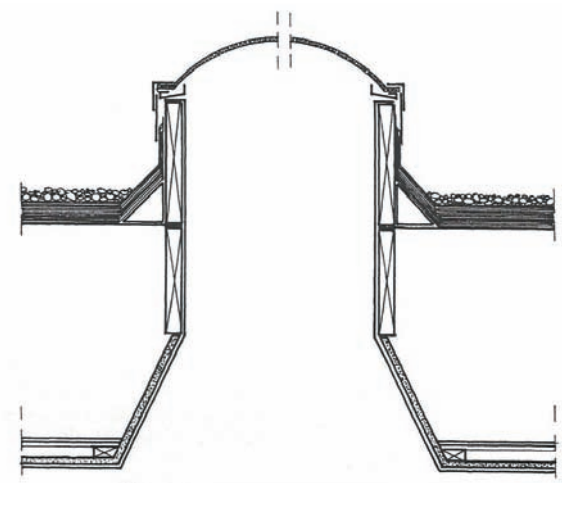


Figure 7.24: A light well associated with a skylight. The bottom of the light well is opened up to distribute more indirect light into the building.

Archives, Block E

The archive spaces will not be required to be especially aesthetically pleasing, but function is important. Inexpensive luminaires will likely be used. Due to the close spacing of the tall archive shelves consideration of the type of light fitting is nevertheless necessary. Luminaires with a suitable photometric, ideally having a horizontal vector component that throws a large proportion of its light on vertical surfaces, will be employed in order to ensure the shelf wares are adequately lit.

Exhibition spaces, Block A

Exhibition spaces are molded to enhance the works on display and to suit the owner or client's needs. The client will not only want the works to be optimally displayed but he will also want the visitor to experience the work in a setting he has in mind. Together with sound, lighting therefore plays a pivotal role in setting the mood of the exhibition space.



Figure 7.25: Examples of sky lanterns acting as skylights letting light in through glazing located on the sides with incorporated diffusers.

In order to provide as much control as possible preference will be given to electric lighting, whilst indirect day lighting will be harvested to supplement ambient lighting.

Window shading in the form of light shelf apertures (figure 7.23) will be employed at the existing window openings to control the influx of direct sunlight. Sky lanterns with light pipes channelling diffuse skylight through the deep ceiling void into the high ceiling vault is also proposed (figures 7.24 - 7.25).

Electric lighting will generally be layered. Ambient lighting will be provided by ceiling, non-directional luminaires. This will serve for way finding and general tasks. The colour of the lamp output is important and will be carefully considered. The exhibitor may have his special requirements, but in most situations, lamps with high colour correlation index will be employed in order to accentuate all colours of the spectrum.

Accent lighting will serve as the second layer of lighting. Spots

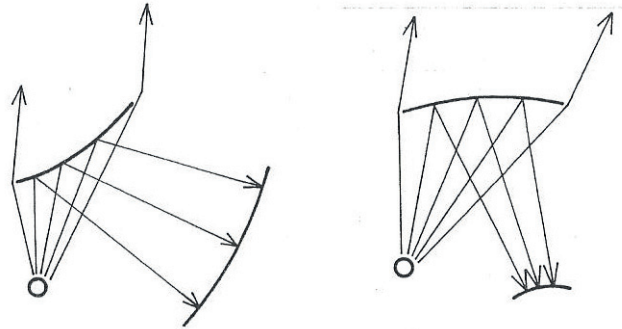


Figure 7.26: Reflectors made to disperse or concentrate sound; note that the angle of incidence is equal to the angle of reflection.

will be employed to highlight models and sculptures. Spots on a flexible track system will be employed along the walls and under the mezzanine floor structure to highlight the vertical displays along the walls and the moveable exhibition panels. The spots will typically employ low voltage tungsten halogen lamps in dichroic reflectors. The tracks enable the spots to be positioned to suit the orientation and location of the displays. The dichroic reflectors will be specified to minimize the heating effect on sensitive works. The choice of lamps will mainly be fluorescent and incandescent. While the latter is less efficient, the light output of these point sources is easily contained and ideal for precise lighting. These lamps are also easily dimmed and therefore suitable for mood setting.

External lighting

Like many living organisms on this planet, humans are photopic creatures. Landscape lighting in the courtyard will be designed to draw visitors to areas of importance, such as building

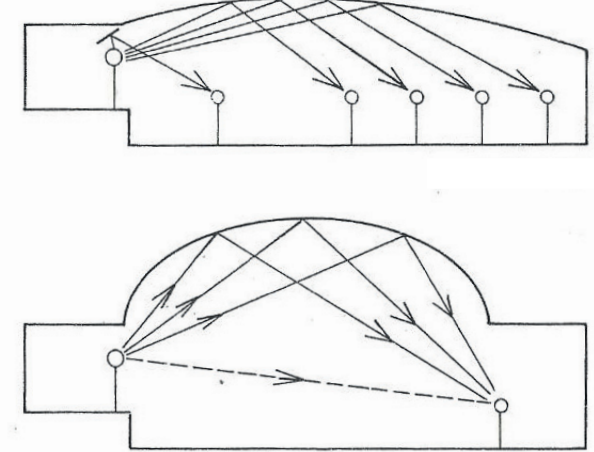


Figure 7.27: Ceiling shape giving good distribution of sound (top), and a ceiling shown causing excessive focusing (below).

entrances, sitting areas and other amenities. Facade lighting to accentuate the features of the detailed building, such as the entrance and the clock tower will be employed, attracting interest from passing pedestrians and motorists, and offering the approaching visitor a pleasant introduction to the treasure it holds.

7.5.2 ACOUSTICS

Auditorium, Block A

Architectural form plays an important role in good acoustic design. Careful consideration of surface finishes and form is necessary to ensure speech is intelligible and uniformly projected.

Some sound reinforcement may be required in order to supplement weak voices or add dramatic effect to visual presentations. The ceiling will be constructed of a hard surface – elastic

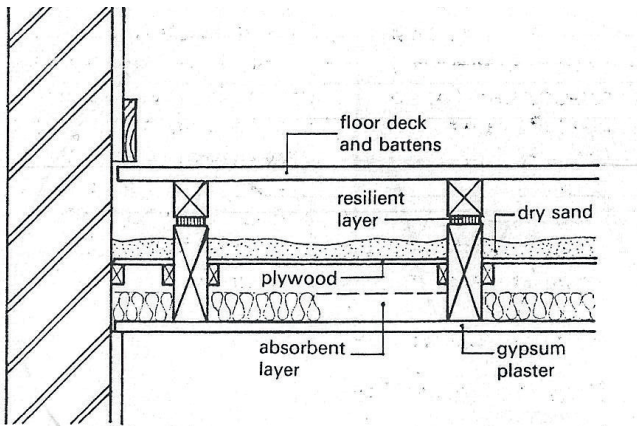


Figure 7.28: Typical construction used in timber floors to limit air-borne and structure-borne sound transmission.

in physics terms, such as high density concrete. The surface will be efficient in reflecting sound off its surface at an angle complementary to the angle of incidence. The ceiling form will be such that all sound is reflected back towards to audience. (Figure 7.27).

In order to avoid reverberation (echo), acoustic sound absorbing surfaces are specified at strategic surfaces such as the side walls and back of the auditorium. Absorbing these extraneous sound waves will minimize the echo effect. An acoustic engineer will assist in profiling the shape of the internal architecture. Reverberation can be minimized with the correct specification of surface finishes, but resonance, an undesirable characteristic that also impairs speech intelligibility, can only be predicted by complex calculations or software modelling.

Exhibition spaces, Block A

The focus for acoustics in the exhibition spaces is that of

OWAcoustic® Panels with acoustic fleece and Creaprint

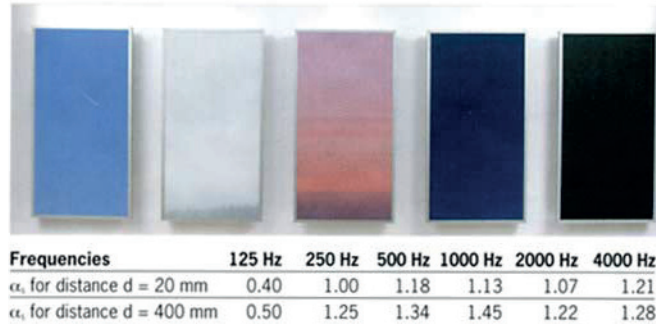


Figure 7.29: Acoustic absorbing material: OWAcoustic Panels with acoustic fleece.

structure-borne sound and reducing noise. Figure 7.28 illustrates how to reduce structure-borne sound in floors.

Sound absorbing surfaces are specified for noise reduction. Typical materials are OWA's Impressions Range with acoustic ceilings, OWA's fleeces and perforated panels and ISOVER mineral wool and fibreglass ceilings. (Figures 7.29 - 7.30).

7.5.3 HEATING , VENTILATION + CONDITIONING

A measured amount of natural ventilation is a statutory requirement in all occupied buildings. This is typically specified at 8 liter/second of fresh air. While not a statutory requirement, conditioning of internal air is important for the thermal comfort of the building's occupants. Gauteng experiences temperatures in both extremes and requires some mechanical conditioning, both heating and cooling.

Perforated Aluminium panels circular hole RL 2.5/8.0 with an open area of 7.6 %

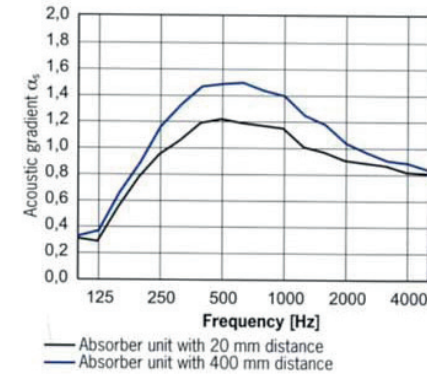


Figure 7.30: Acoustic absorbing material: OWA Perforated Aluminium panels.

These HVAC (heating, ventilation and conditioning) services are typically designed and specified by the mechanical engineer. In consultation with the consultant, space for services will be provided. Energy efficient systems will be employed as far as possible, such as natural ventilation during temperate weather conditions. Ambient temperatures of 21 degree Celsius is ideal. The mechanical services will be accommodated on the roof, and the refrigerant piping will be run inside ceiling plenums to the locations of the air handling units.

Occupants of buildings desire an environment that they can control. Open able windows are therefore highly desirable, and temperatures exceeding 21 degree Celsius are generally acceptable with this kind of control. All the buildings have a narrow footprint with no internal obstacles making natural ventilation conceivable.

Heat pump technology, an efficient heating system, can be employed for introducing heat into the recycled air. A building

7.6 MATERIALITY

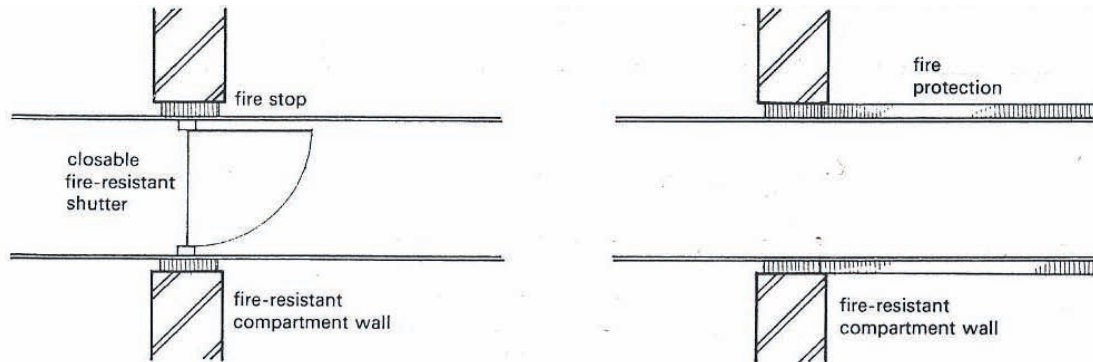


Figure 7.31: Air-conditioning ducts penetrating fire compartments should have fire shutters (left), or be fire protected (right) to prevent smoke and fire from spreading.

management system (BMS) will ensure the HVAC system operates efficiently and adapts the environment to the building application, for instance switching off heating after hours.

7.5.4 FIRE

Archives, Block E

Early smoke detection with fire extinguishers and fire hose reels are important for the archives, as well as a flooded gas fire sprinkler system, like Inergen Gas.

Compartmentation of a building consists of subdividing it into compartments, with fire-resisting walls, floors or roofs. The subdivision is made to limit the spread of fire and restrict damage to the building and its contents.

Due to the concept of block-in-block of the new building,

the archives are already compartmentalised, with a walkway around the archive rooms.

In the case of air ducts, fire dampers must be installed inside the ducts or the ducts must be fire insulated (figure 7.31).

7.5.5 ENVIRONMENTAL CONTROL

Archives, Block E

Temperature and humidity should be controlled inside the archives. Approximately 45% relative humidity (RH) at 22.5 degree Celsius is needed. This means that although thermal comfort is not necessary, allowances must be made for ventilation ducting for humidity requirements.

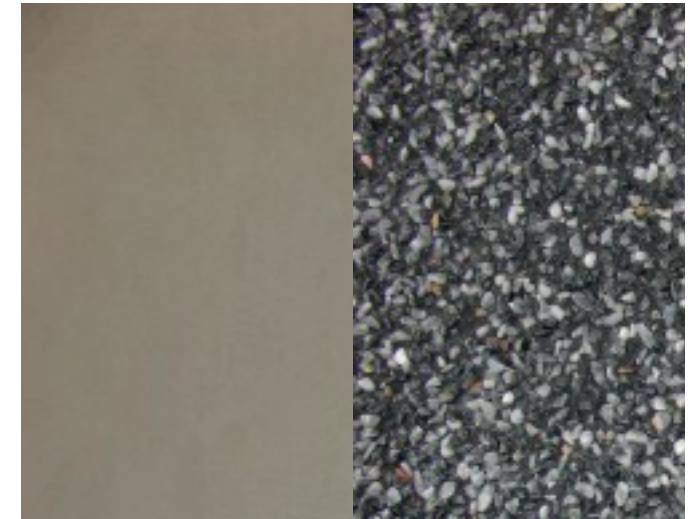


Figure 7.32: Versus Suede Paint on the left, and Versus Paint Stone Finish on the right.

7.6.1 EXTERNAL WALL FINISH

Exterior wall finish, Block E

Due to the close proximity of the screen to the wall in some areas (wall section condition 5) a low maintenance external wall finish was chosen.

Typical low maintenance wall finishes are Versus Suede plasticised paint or Versus Paint Stone Finish. Both are applied using a steel trowel (figure 7.32).

08_DESIGN RESOLUTION:

8.1 PRESENTATION



BACKGROUND + CONTEXT

"We don't need more cities, we need to create and sustain further bits of our existing urban fabric." - Robert A. M. Stern (2003:11)

Due to concerns for sustainable development and urban sprawl we aim to address the growing issues of development and potential flood buildings and sites.

PROBLEM STATEMENT

The goal of the dissertation is to investigate the problem of under-utilised buildings and sites, and to bring an alternative to a post-war urban environment. "The good city" according to Jane Jacobs (1961) has a further challenge, many of these underutilised buildings were designed with strict thresholds and means orientation, thereby driving them from the public domain.

Therefore one reply to the issue of an existing building requires use is the intention of the public realm view. The building site is re-used and the surrounding will try to address this through landscaping and use for the public of the existing building as a design proposition.

KEYWORD PROBLEM

The dissertation will investigate the reuse of the historic and Pretoria Central fire station into a public building as well as the integration into the area the museum historical precinct of Pretoria Park, in Pretoria CBD. The dissertation will also attempt to make the city space more open, lively and green for the user's needs. The proposed response is applied through spatial, conceptual, material and structural layering.

IMPORTANCE

It is essential to address better use of the underutilised space the building will be re-used as the historic monument architectural building will be opened up to be re-used, re-activated for the public city space. The intervention will attempt to extend the public realm over the building in an effort to be more accessible and inviting to the public. The programme will deal to become more public in order to host the user's needs.

PROGRAMME + CLIENT

The building has had a programme of serving the community.

The proposed client will be interested and curious within the urban design and architecture practitioners and specialist. They will all be experienced, organized and organized and will represent the on-going client group. They will create a solution for practitioners and the public to interest.

NEW PROPOSAL

Client of Architecture

1. Urban
2. Architecture
3. Building
4. Public

LIST OF CLIENT BODY

- SACAP
- The 5 statutory institutions recognized by SACAP
- SAGP/PA
- IO
- SAGP
- SAGD
- SACUP
- UGSA

STATEMENT OF SIGNIFICANCE

- The old fire station was built in 1923, considered older than all other buildings in the area.
- The site has a rich history and is a key part of the city's heritage.
- The building is a landmark and a symbol of the city's history.
- The site is a key part of the city's urban fabric and is a key part of the city's identity.
- The building is a key part of the city's urban fabric and is a key part of the city's identity.

URBAN ANALYSIS

LAYERING THE CITY

Re-use of the Old Central Fire Station in Pretoria Central Business District

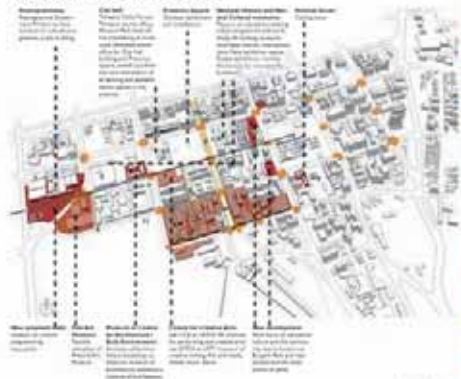
URBAN RESPONSE

PROBLEMS + OPPORTUNITIES



1. Lack of formal urban structure in the area
2. Poorly planned urban form with no clear structure
3. Lack of green spaces
4. Lack of public facilities
5. Lack of public transport
6. Lack of public services
7. Lack of public housing
8. Lack of public infrastructure
9. Lack of public amenities
10. Lack of public services
11. Lack of public facilities
12. Lack of public transport
13. Lack of public services
14. Lack of public housing
15. Lack of public infrastructure
16. Lack of public amenities
17. Lack of public services
18. Lack of public facilities
19. Lack of public transport
20. Lack of public services

PROPOSAL + INTERVENTIONS



1. New Urban Form
2. New Urban Form
3. New Urban Form
4. New Urban Form
5. New Urban Form
6. New Urban Form
7. New Urban Form
8. New Urban Form
9. New Urban Form
10. New Urban Form
11. New Urban Form
12. New Urban Form
13. New Urban Form
14. New Urban Form
15. New Urban Form
16. New Urban Form
17. New Urban Form
18. New Urban Form
19. New Urban Form
20. New Urban Form

THEORY: LAYERING AS

PROBLEMS + OPPORTUNITIES

PALEONEST
1. Planning - bringing plan and raising a written parchment, of which traces remain. Manucripts were ancient layers of overlapping plans.
2. Reverse Senses - Overlap of their meaning the sequence of events in a scene.
3. Psychology - Easing of memories in the subconscious.
4. Architecture - Rationalizing time in layers of existing and new and how through their juxtaposition the various forms can be revealed and exposed.

ARCHAEOLOGY by Foucault
- Process of dissemination/ decomposition of experiential systems.
- Plan a visual system for system of time-revealing layered layers.
- Cannot just study the object, but also the layers of knowledge of the object.
- The layers after themselves in a discontinuity over time, whose reading is contingent on the object's history to reality in our present.
- Analysis and comprehension of the process of progression through relationships of the layers.

EARLY SCARPA
- Project Superposition, Spaces and Relationships concerning the elements.
- Volume consists of planes. Scarpa decomposes the volume into planes and the planes into layers.
- The form of a structural element is also the architectural element as suggested in form, wall and ceiling.
- Points of transition and interface are very important.
- Scarpa creates a visible cross section.

PROBLEMS + OPPORTUNITIES

OPEN UP: EXTENDING THE PUBLIC REALM
The topography of opening up can that be achieved through:
- exposing the original form/structure/condition
- juxtaposing the old and new to make the different layers clearly visible
- physically open the building with into an improved structure
- virtually connect the system to the viewer
- enhance usability through circulation
- expose the functions of an architectural component into its individual elements
- allow the city's nature also to come up for the natural movement of people
- allow natural light into the building and make use of reflection
- materials and connections connect with the context
- programme that is informative and educational to the user
- improve user numbers by implementing water elements and recreational areas
- improve legibility of the building, subsequent giving it a new edge.

CHARTERS USED:
- Venice Charter 1964
- Burra Charter 1989
- UNESCO Paper No. 9 2001
- Venice Charter 2007

PROBLEMS + OPPORTUNITIES



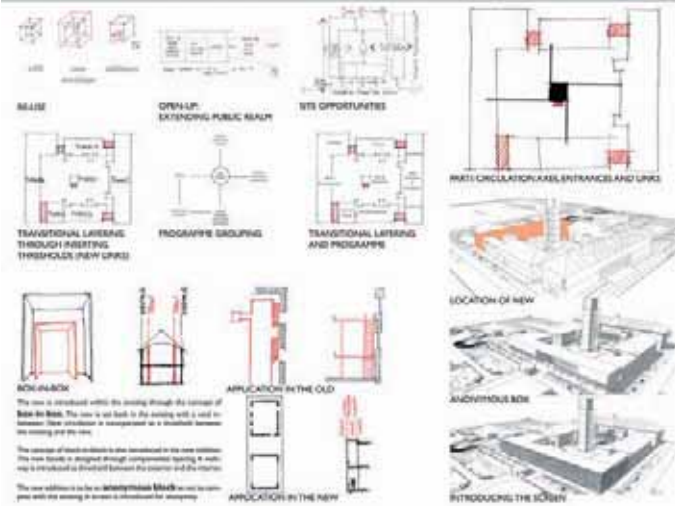
PROBLEMS + OPPORTUNITIES



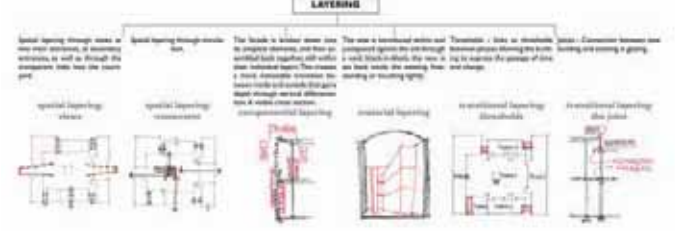
PROBLEMS + OPPORTUNITIES

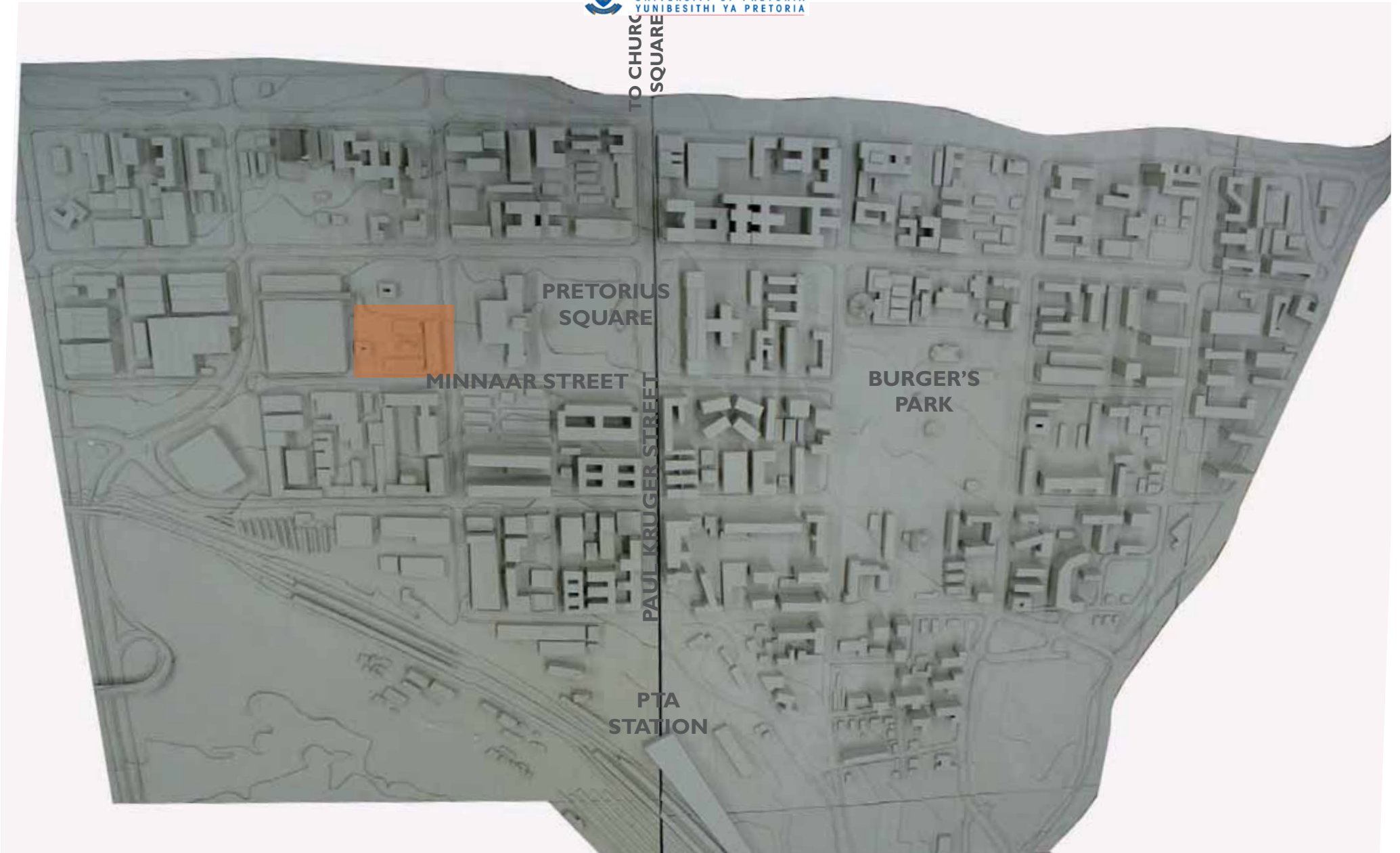


ARCHITECTURAL RESPONSE PARTI-DIAGRAMS + CONCEPT + DESIGN DEVELOPMENT



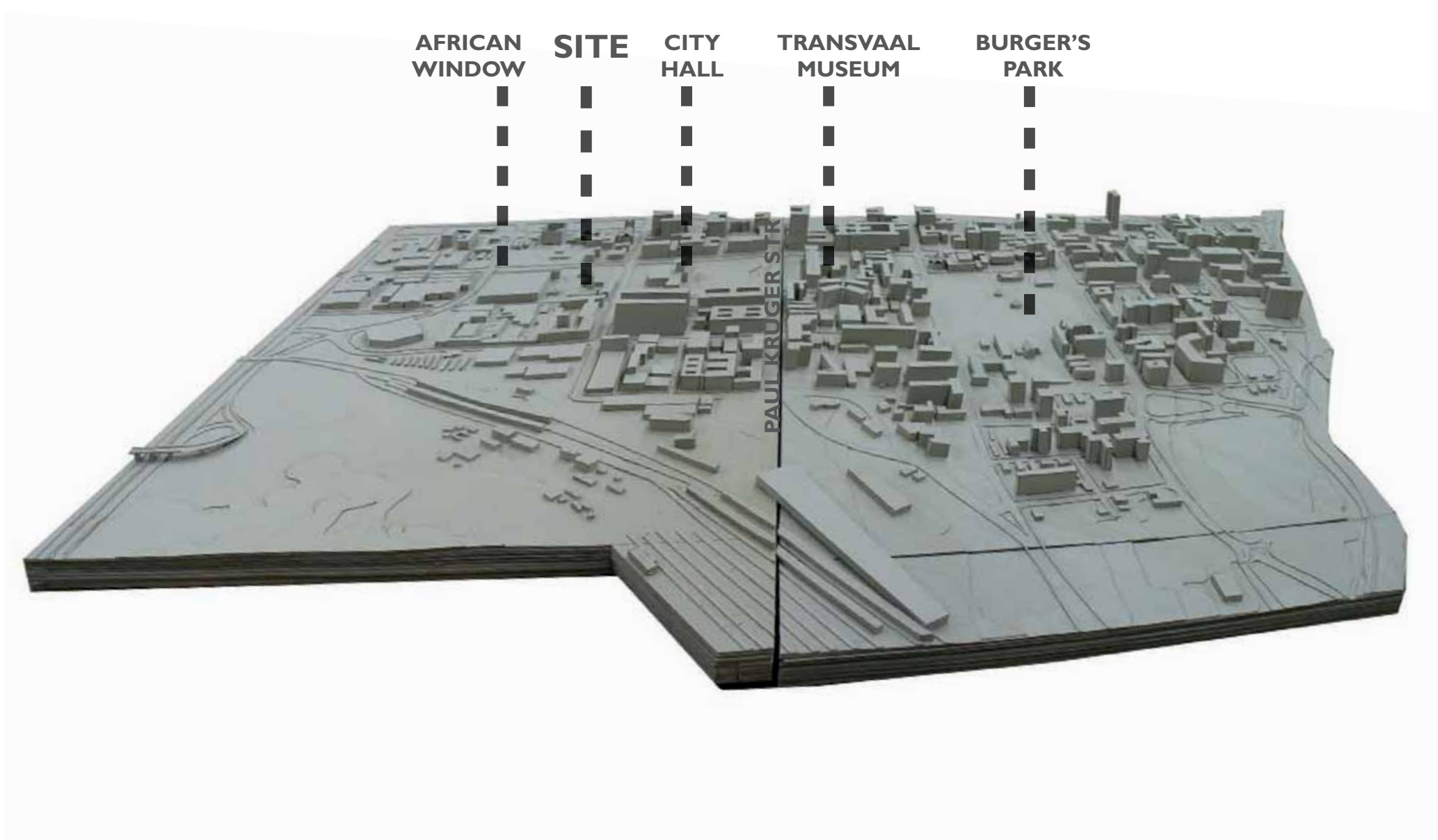
ARCHITECTURAL RESPONSE PARTI-DIAGRAMS + CONCEPT + DESIGN DEVELOPMENT





CONTEXT MODEL_BURGER'S PARK FRAMEWORK AREA





CONTEXT MODEL_BURGER'S PARK FRAMEWORK AREA 

BURGER'S
PARK

TRANSVAAL
MUSEUM

CITY
HALL

SITE

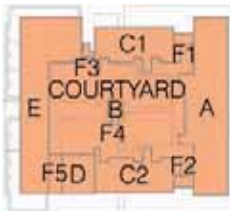
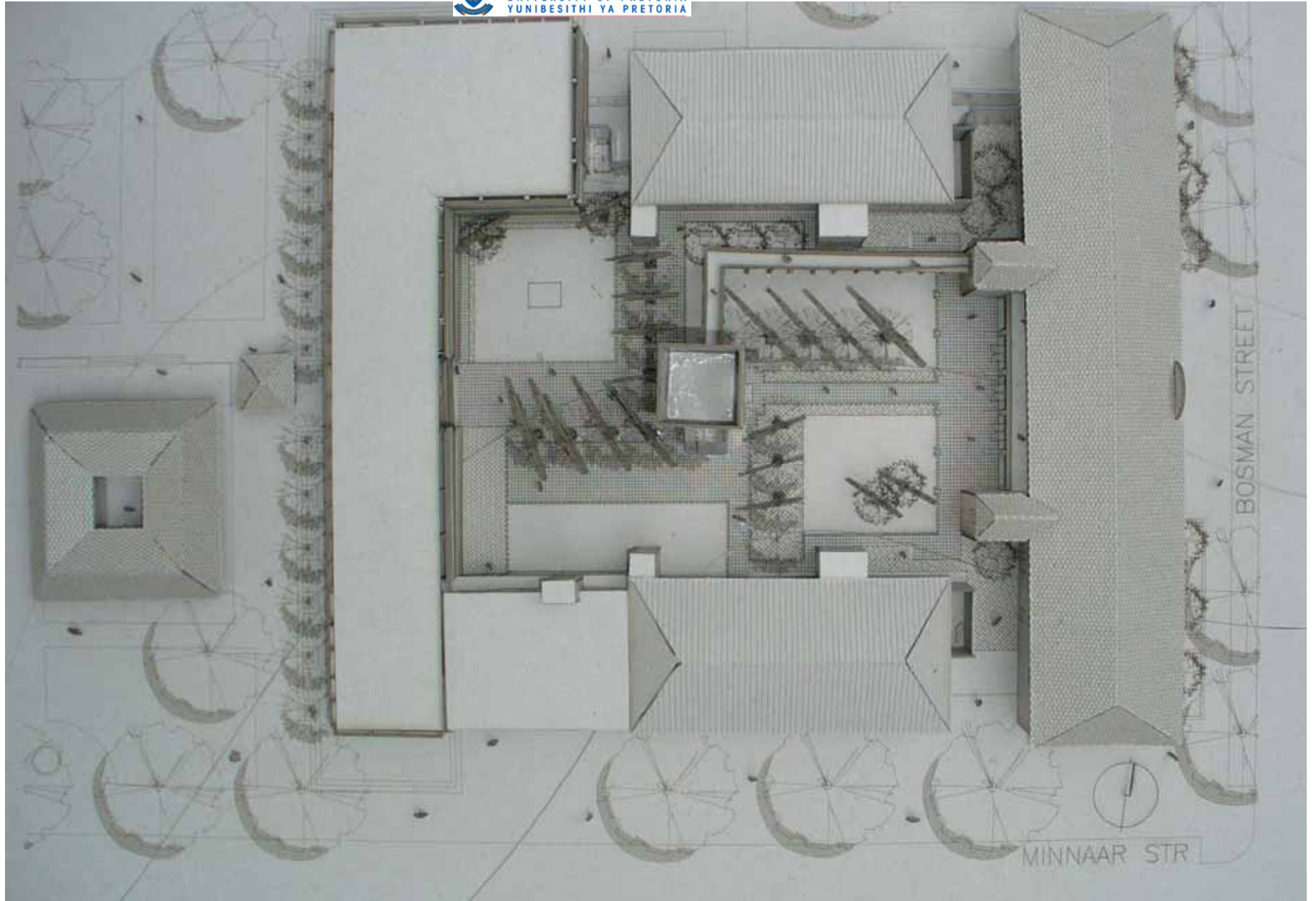
AFRICAN
WINDOW

NEW
PROPOSED
NODE



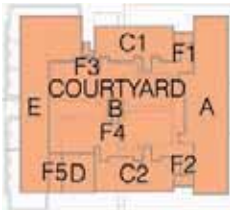
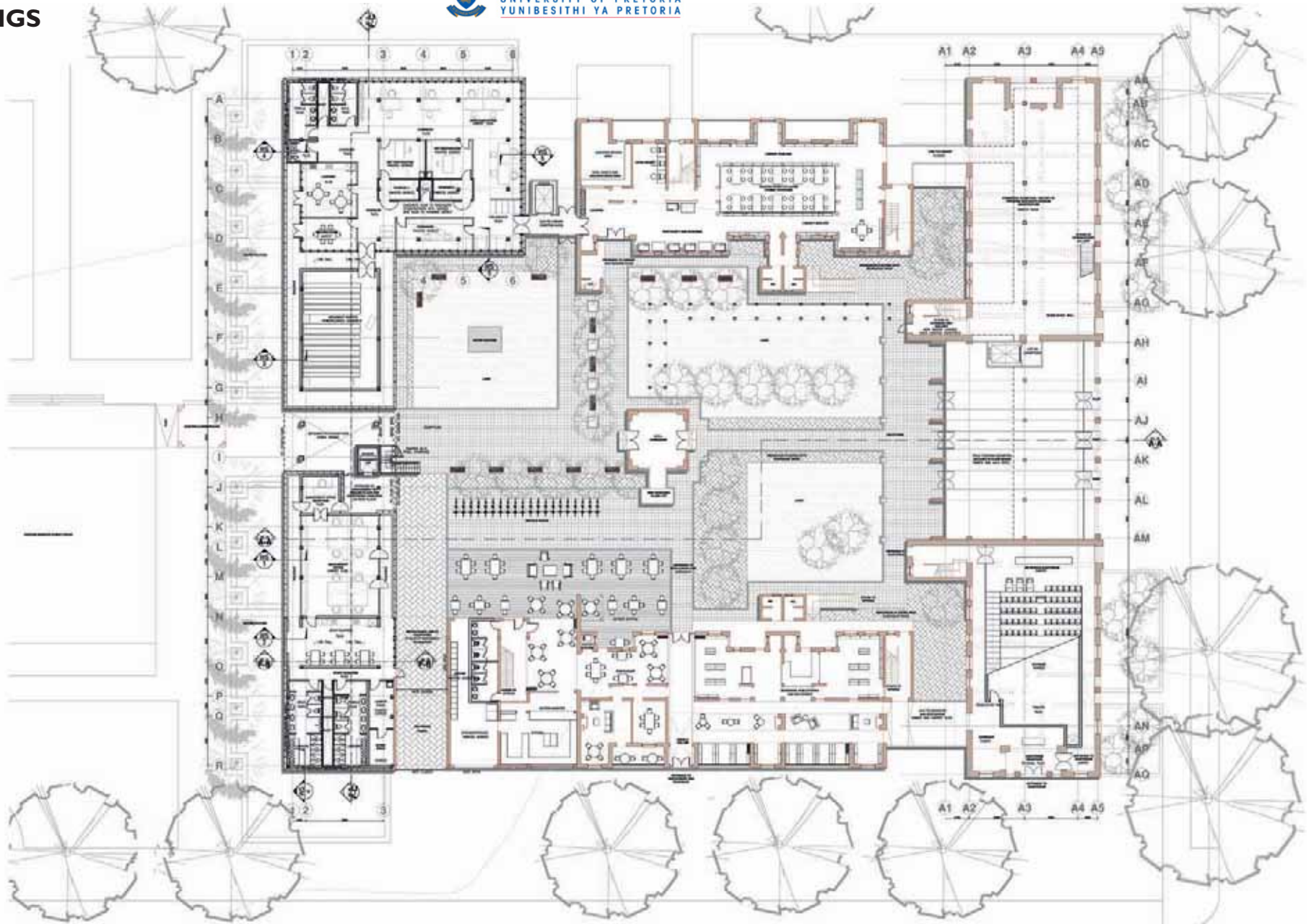
CONTEXT MODEL_MINNAAR STREET



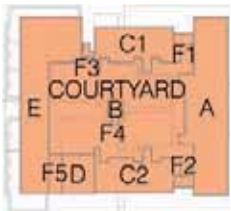
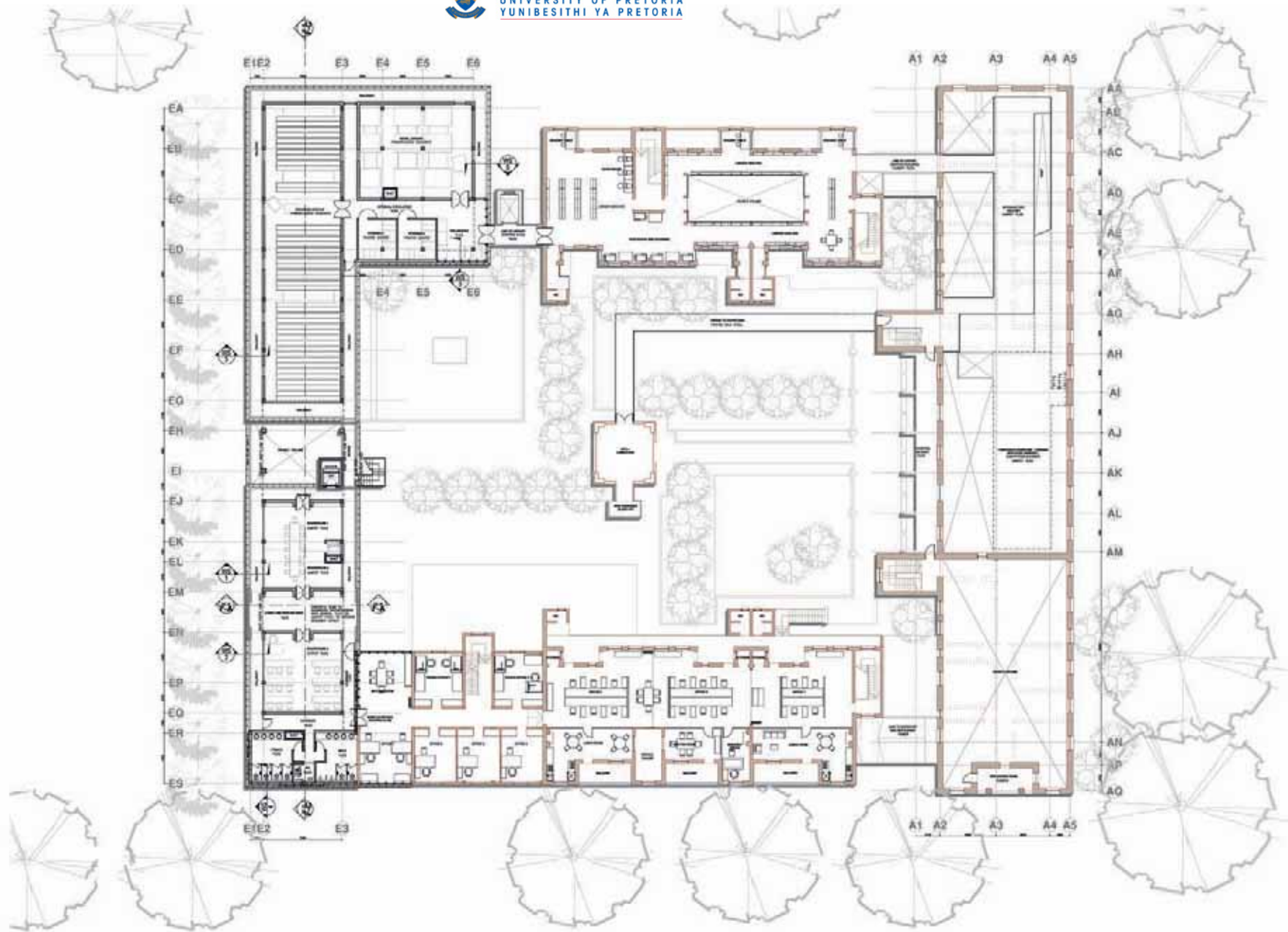


SITE MODEL_n.t.s. 

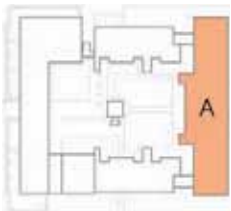
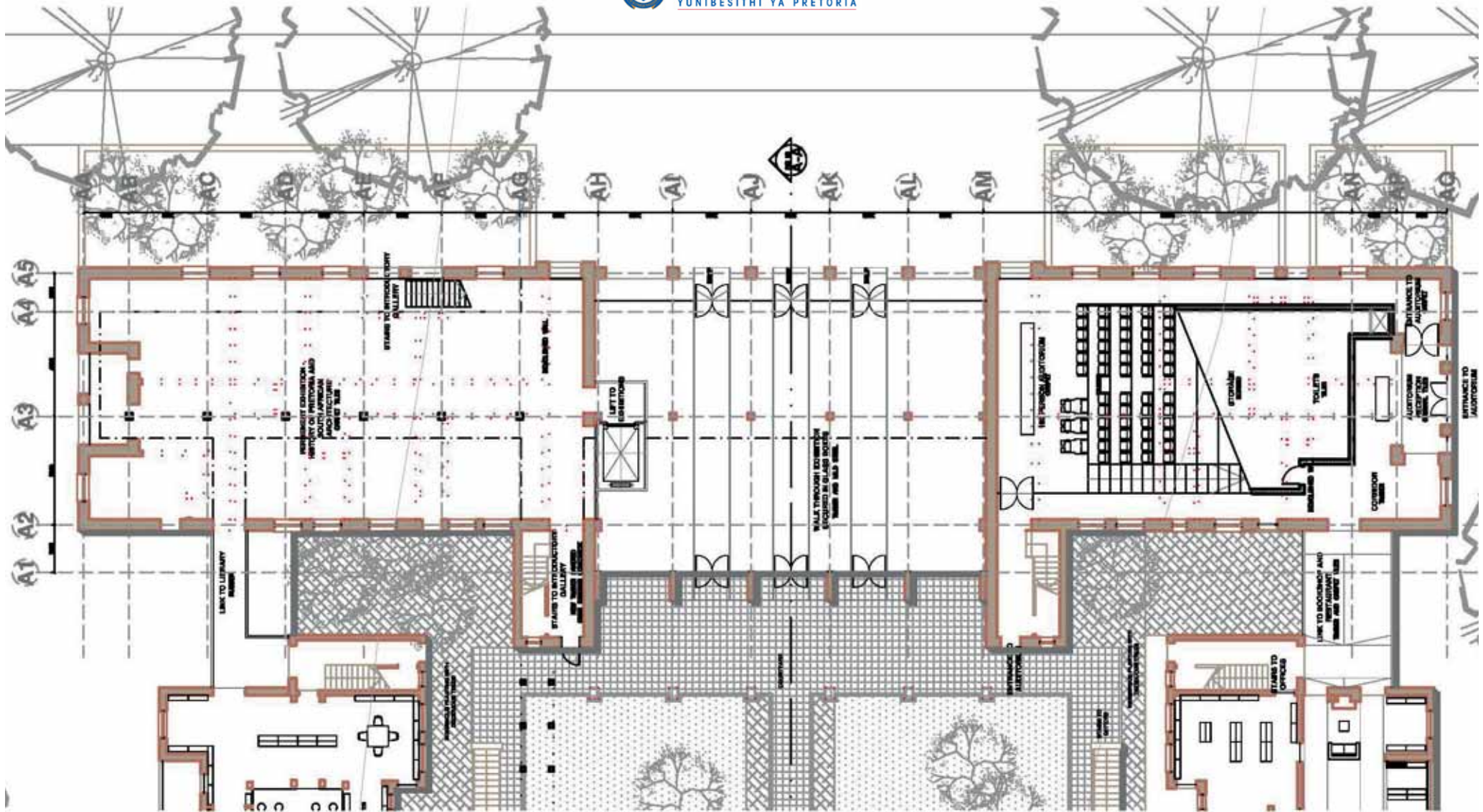
8.2 DRAWINGS



GROUND FLOOR PLAN_n.t.s. 

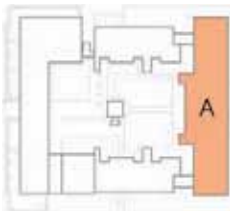
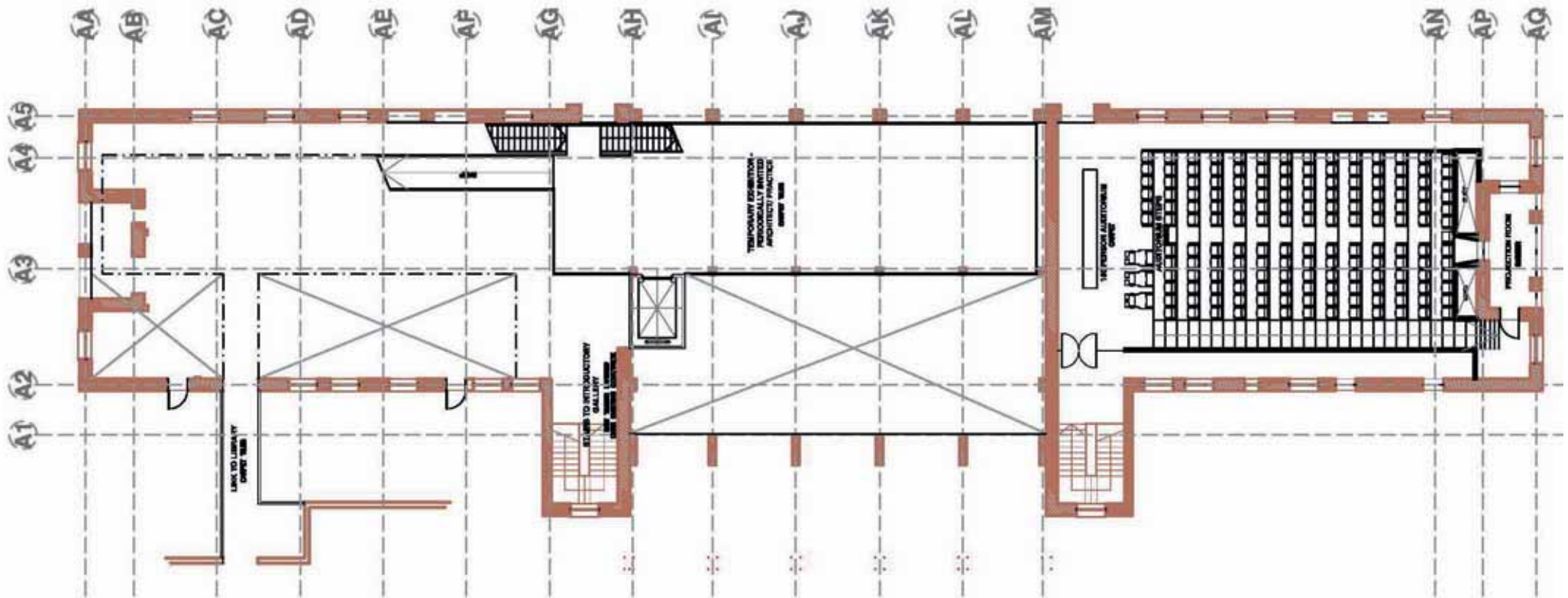


FIRST FLOOR PLAN_n.t.s. 



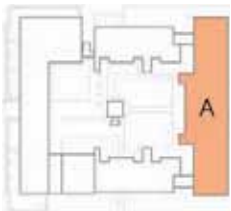
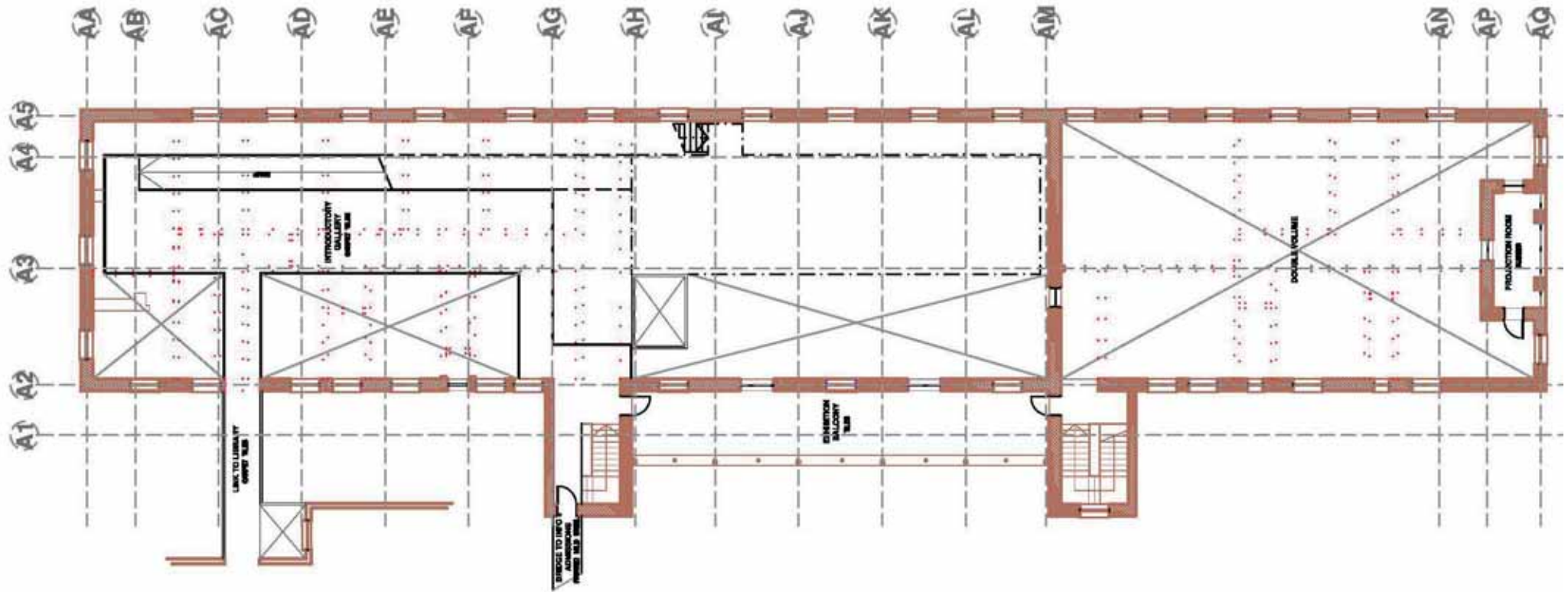
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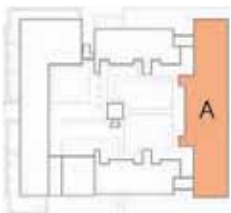
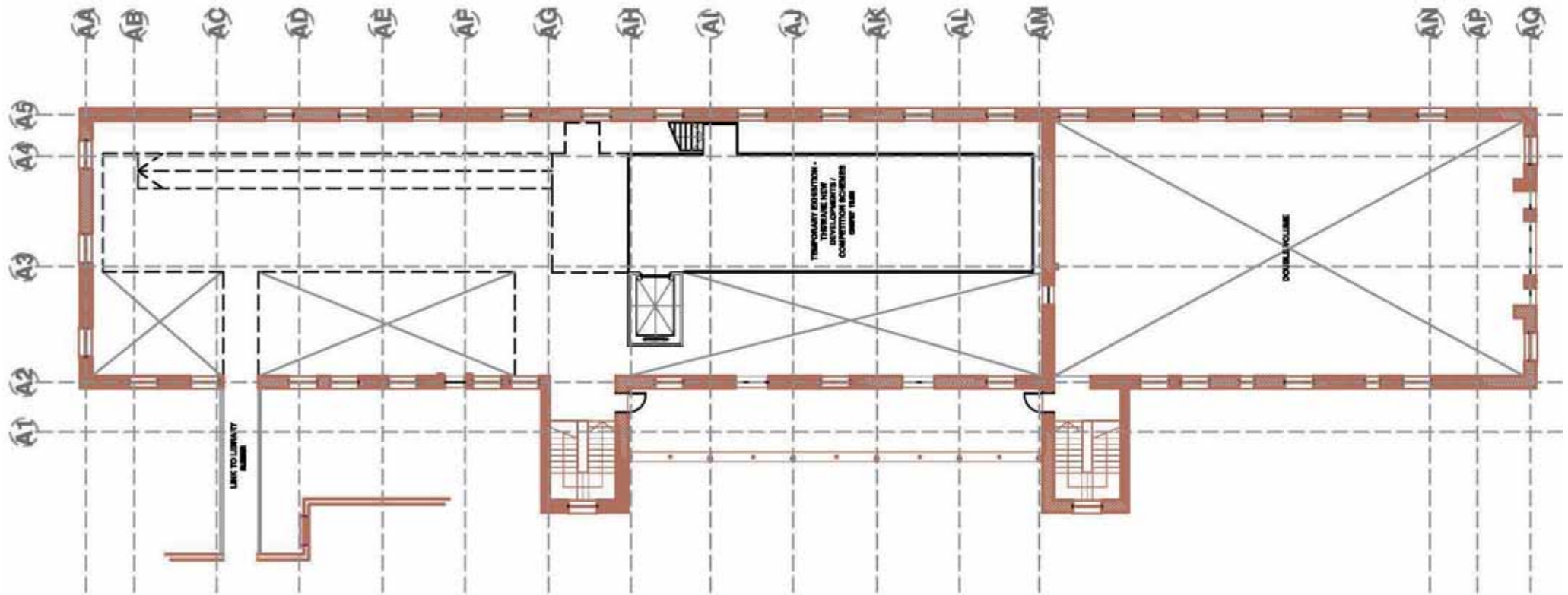
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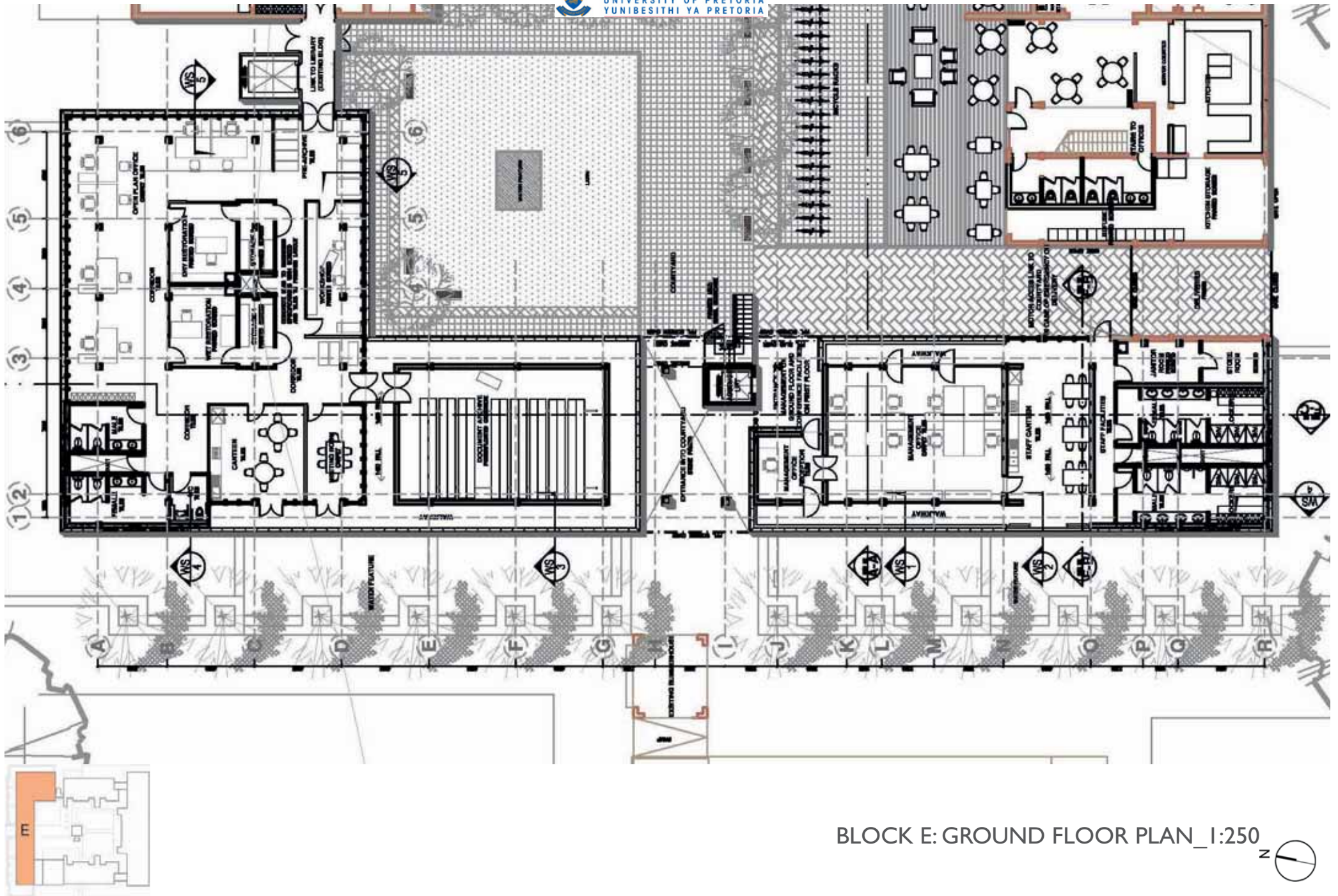
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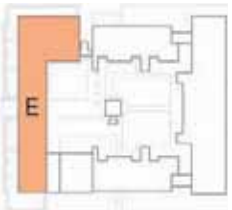
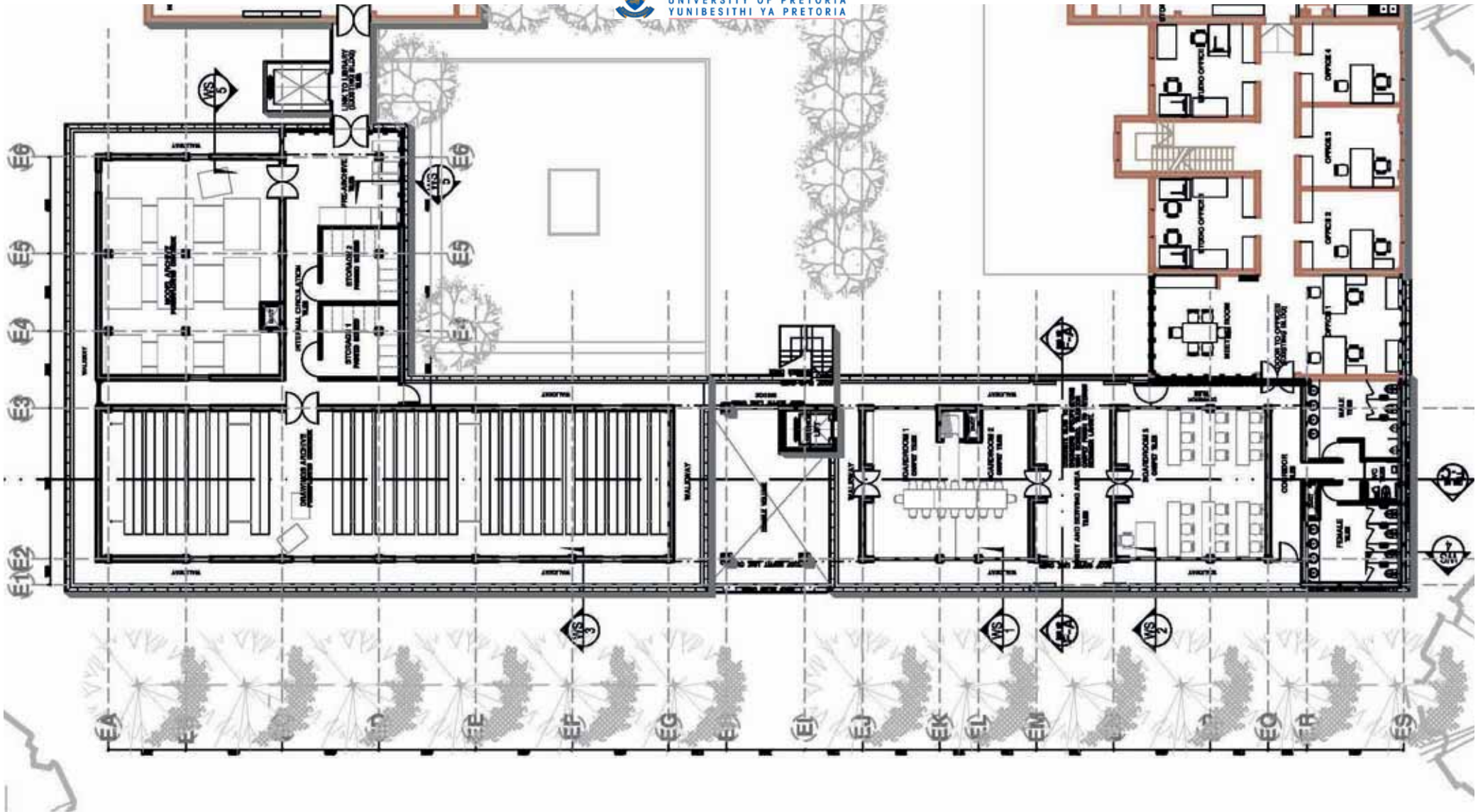
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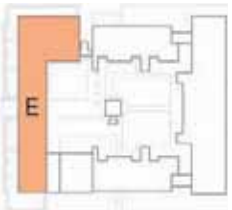
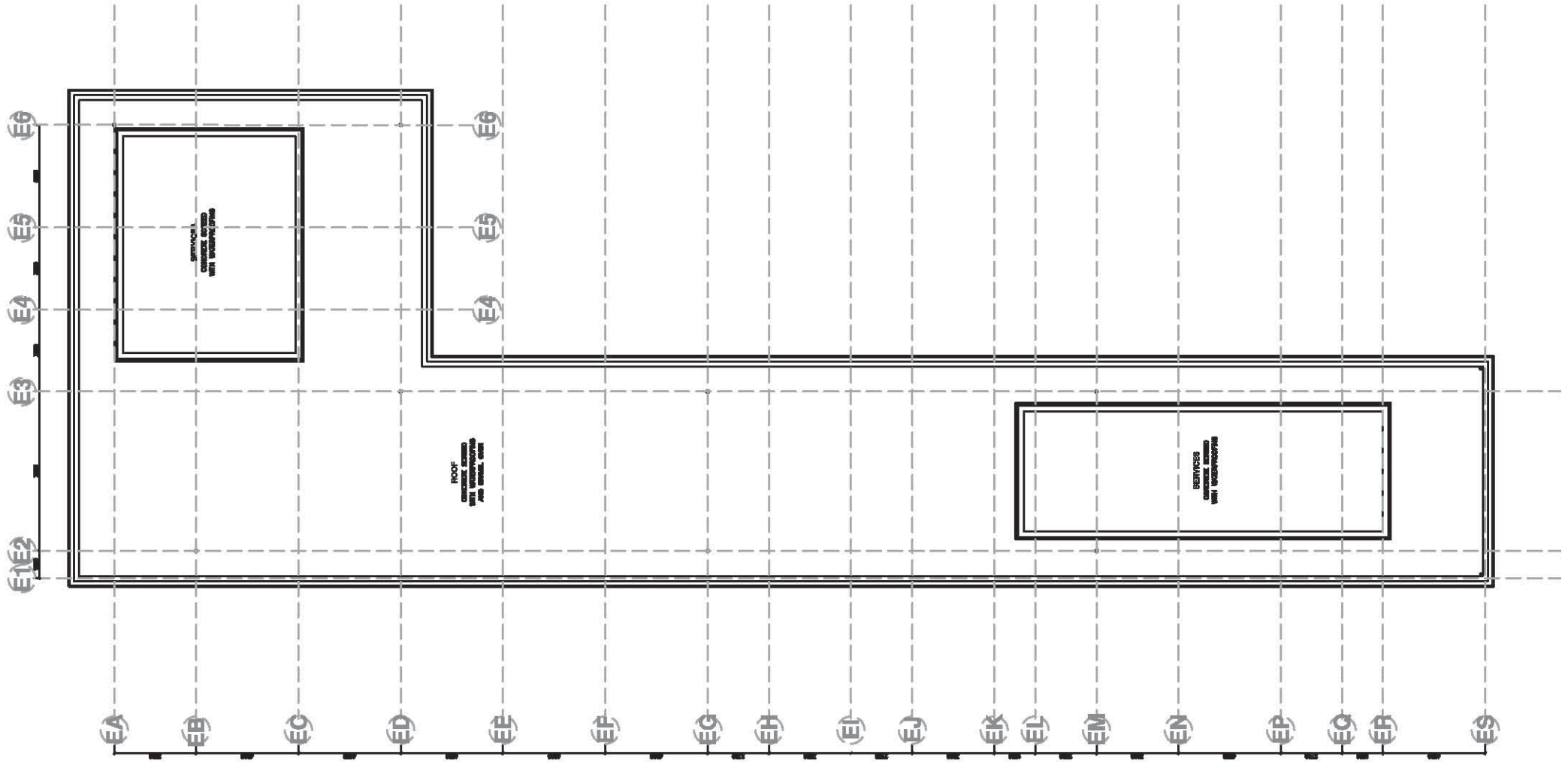
BLOCK E: GROUND FLOOR PLAN_1:250





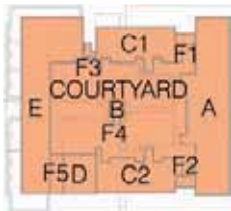
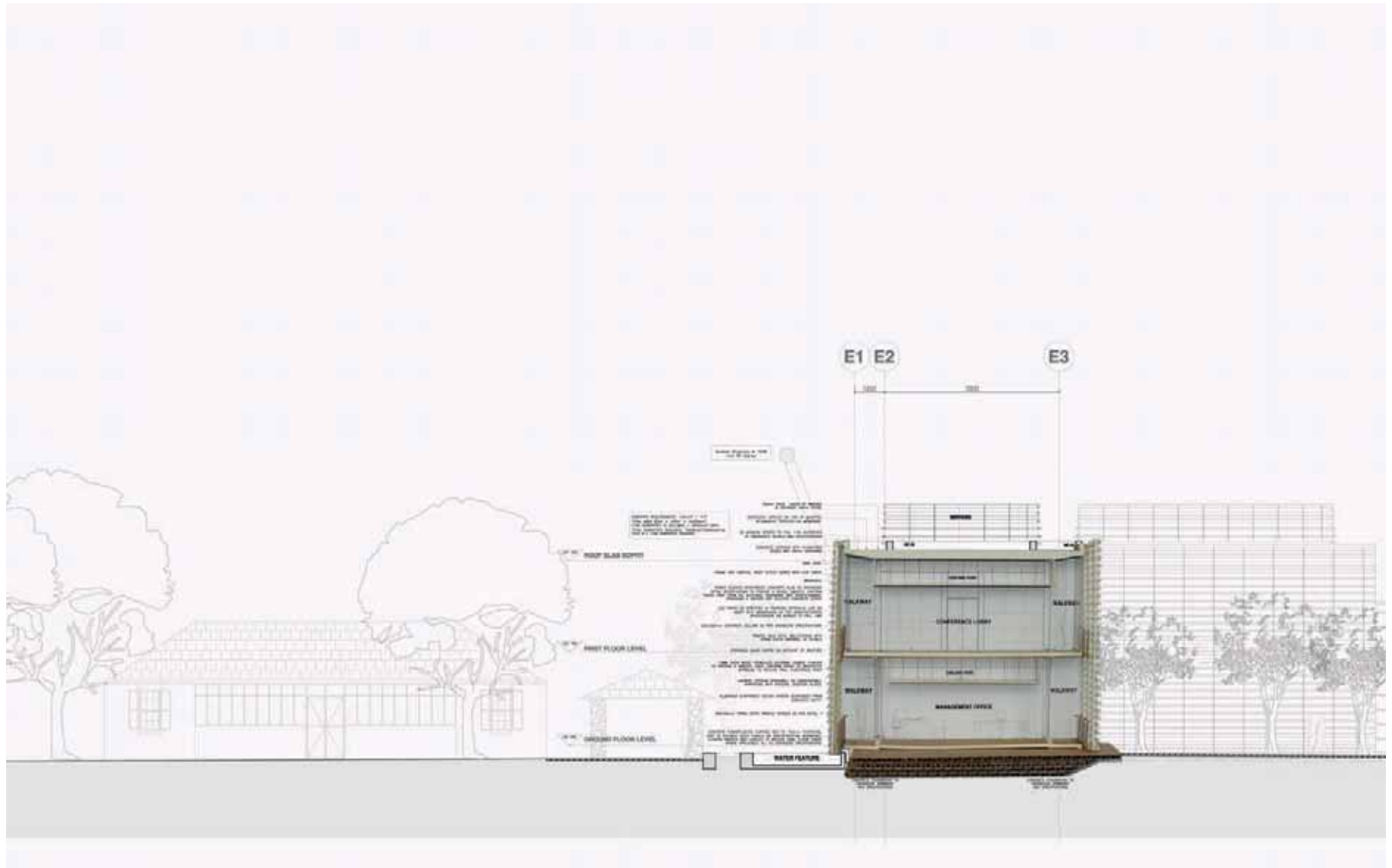
BLOCK E: FIRST FLOOR PLAN_1:250

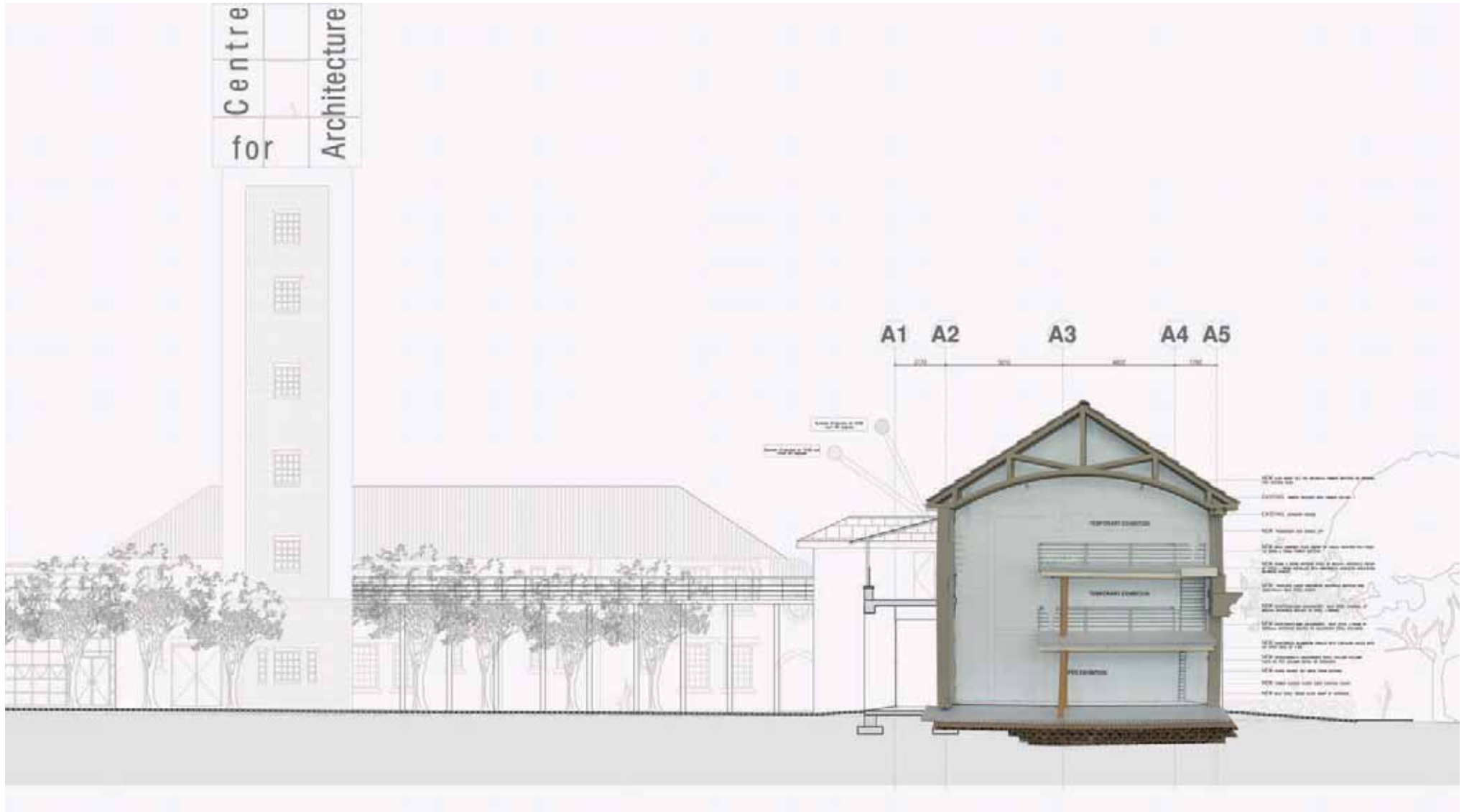




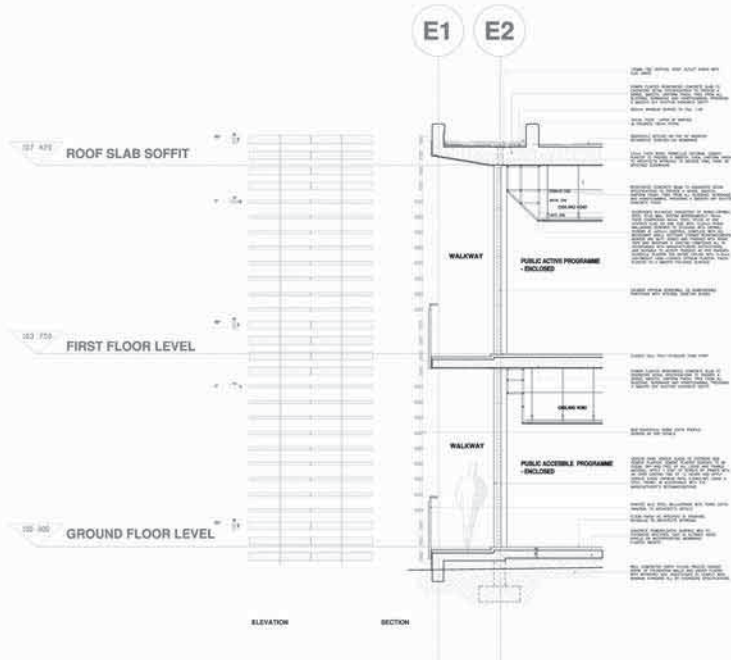
BLOCK E: ROOF PLAN_1:250



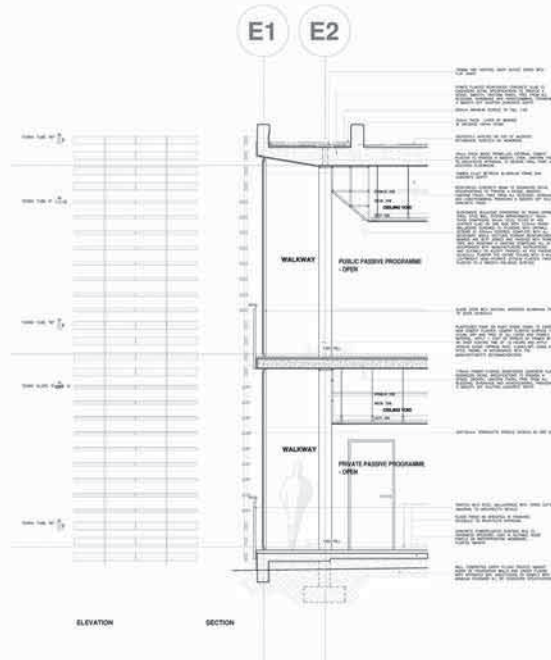




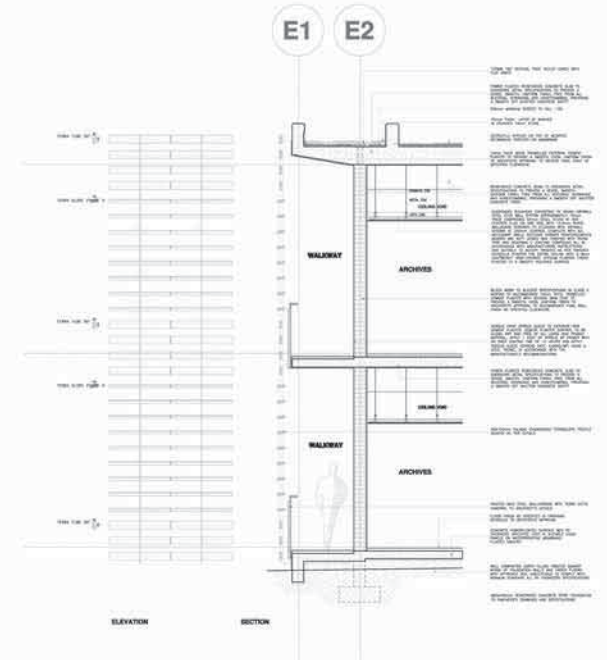
SECTION AA-AA: STRIP MODELS_n.t.s.



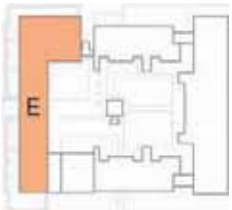
WALL SECTION CONDITION 01

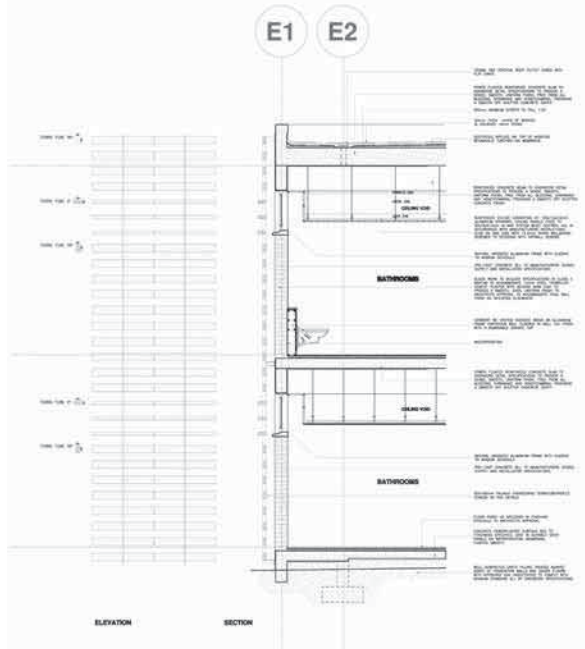


WALL SECTION CONDITION 02

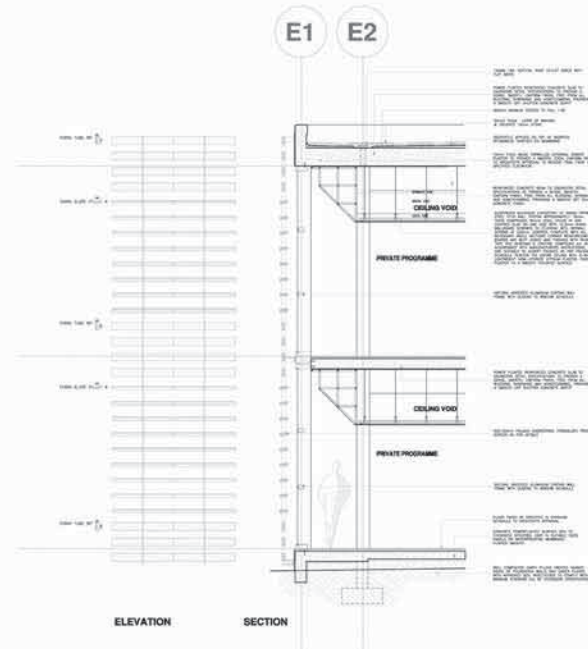


WALL SECTION CONDITION 03

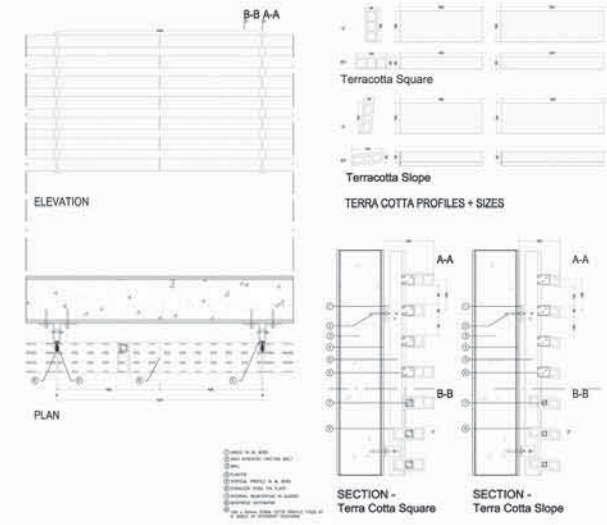




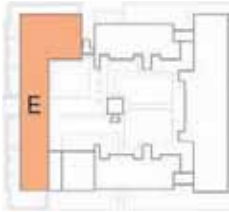
WALL SECTION CONDITION 04



WALL SECTION CONDITION 05



DETAIL 01: SCREEN



E1 E2

150mm 1:80° VERTICAL ROOF OUTLET EARED WITH PLAN GRADE

POWER FLOATED REINFORCED CONCRETE SLAB TO BE FINISHED WITH POLISHED STONE FINISH. ALL BLEEDING, SHRINKAGE AND HONEYCOMBING, PROVIDING A SMOOTH OFF SHUTTER CONCRETE SOFFIT

300mm MINIMUM SCREED TO FALL 1:50

50mm THICK LAYER OF WASHED & CRUSHED 19mm STONE

GEOTEXTILE APPLIED ON TOP OF MODIFIED BITUMINOUS TOUCHED-ON MEMBRANE

15mm THICK WOOD TROWELLED EXTERNAL CEMENT PLASTER TO PROVIDE A SMOOTH, EVEN, UNIFORM FINISH TO EXTERIOR SURFACE. TO RECEIVE FINAL PAINT AS SPECIFIED ELSEWHERE

TIMBER FILLET BETWEEN ALUMINIUM FRAME AND CONCRETE SOFFIT

REINFORCED CONCRETE BEAM TO ENGINEERS DETAIL SPECIFICATIONS TO PROVIDE A DENSE, SMOOTH, UNIFORM FINISH, FREE FROM ALL BLEEDING, SHRINKAGE AND HONEYCOMBING, PROVIDING A SMOOTH OFF SHUTTER CONCRETE FINISH

SUSPENDED BULKHEAD CONSISTING OF RHINO-DRYWALL THICK 12.5mm RHOINO-DRYWALL STUDS AT 400mm CENTRES CLAD ON ONE SIDE WITH 12.5mm RHOINO WALLBOARD SCREWED TO STUDS WITH DRYWALL JOINTS AND CORNER REINFORCEMENTS. NECESSARY ANGLE SECTIONS CORNER REINFORCEMENTS, BOARDS ARE BUT JOINED AND FINISHED WITH RHINO BOARD FINISH TO PROVIDE A SMOOTH OFF SHUTTER ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS, AND SUITABLE TO ACCEPT FINISHES AS PER FINISHES SPECIFIED ELSEWHERE

UNIFORM FINISH, FREE FROM ALL BLEEDING, SHRINKAGE AND HONEYCOMBING, PROVIDING A SMOOTH OFF SHUTTER CONCRETE FINISH



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UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

GLASS DOORS WITH NATURAL ANODIZED ALUMINIUM FP TO DOOR SCHEDULE

PLASTERED PAINT OR PAINT STONE FINISH TO EXTERIOR SURFACE. ALL BLEEDING, SHRINKAGE AND HONEYCOMBING, PROVIDING A SMOOTH OFF SHUTTER CONCRETE FINISH. MATERIAL APPLY 1 COAT OF VERSUS SP PRIMER WITH AN OVER COATING TIME OF 12 HOURS AND APPLY A SECOND COAT (AS PER MANUFACTURER'S INSTRUCTIONS) USING A STEEL TROWEL IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

175mm POWER FLOATED REINFORCED CONCRETE SLAB TO BE FINISHED WITH POLISHED STONE FINISH. ALL BLEEDING, SHRINKAGE AND HONEYCOMBING, PROVIDING A SMOOTH OFF SHUTTER CONCRETE SOFFIT

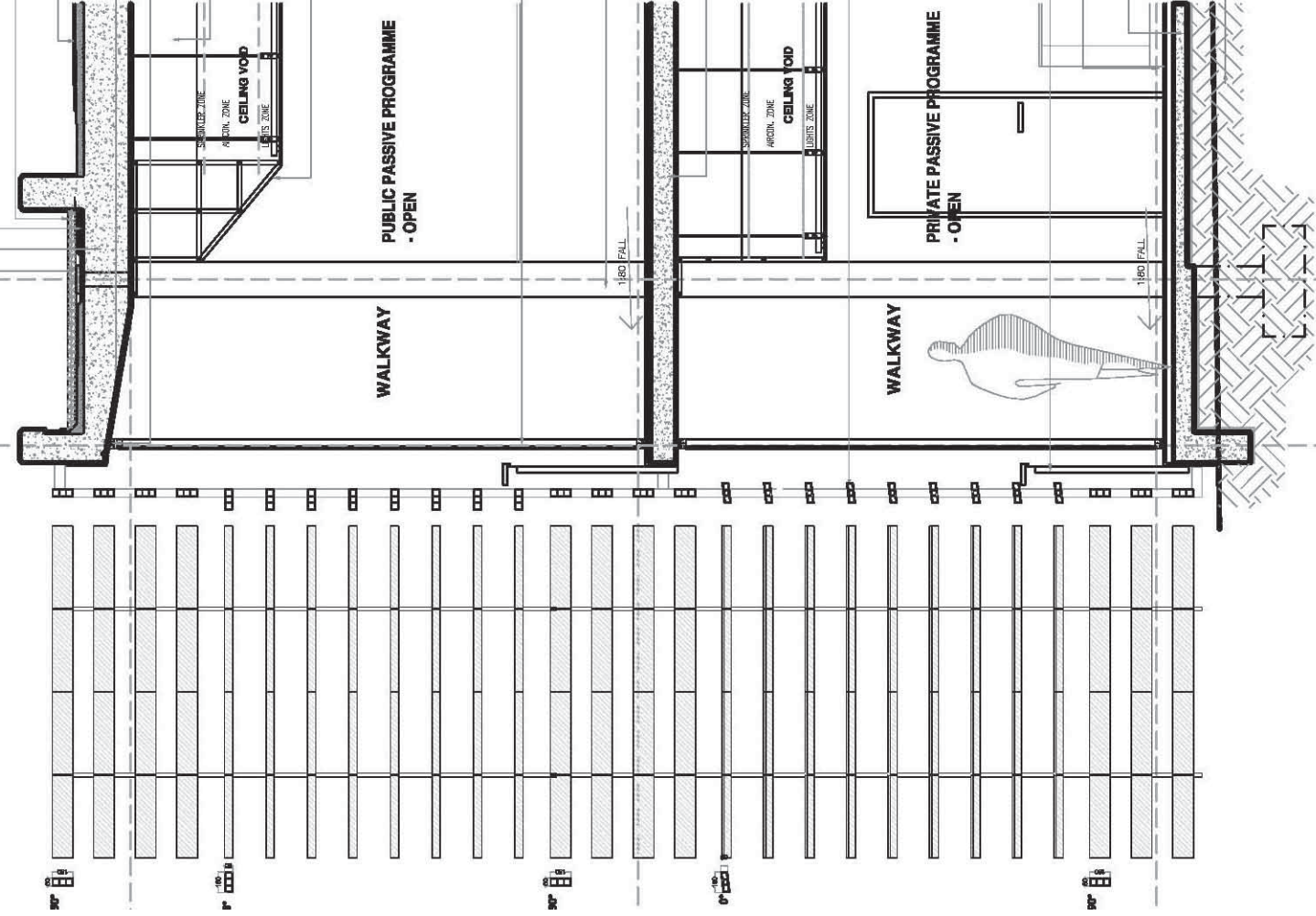
50x150mm TERRACOTTA PROFILE SCREEN AS PER DETAILS

PANKEED MILD STEEL BALLUSTRADE WITH TERRA COTTA HANDPAI TO ARCHITECT'S DETAILS

FLOOR FINISH AS SPECIFIED IN FINISHING SCHEDULE TO ARCHITECT'S APPROVAL

CONCRETE POWERFLOATED SURFACE BED TO THICKNESS SPECIFIED, CAST IN SUITABLE SIZED PANELS WITH PERFOILING MEMBRANE, FINISHED SMOOTH

WELL COMPACTED EARTH FILLING TREATED AGAINST SETTLEMENT. ALL FOUNDATIONS TO COMPLY WITH MINIMUM STANDARD ALL BY ENGINEERS SPECIFICATIONS.



WALKWAY

PUBLIC PASSIVE PROGRAMME
- OPEN

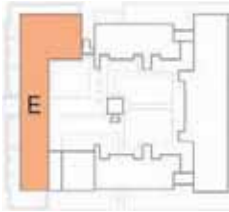
WALKWAY

PRIVATE PASSIVE PROGRAMME
- OPEN

SECTION

ELEVATION

WALL SECTION CONDITION 02_1:50



E1 E2

150mm x 180° VERTICAL ROOF OUTLET EARED WITH FLAT GRATE
 POWER FLOATED REINFORCED CONCRETE SLAB TO ACCOMMODATE ALL SERVICES AND PROVIDE A DENSE, SMOOTH, UNIFORM FINISH, FREE FROM ALL BLEEDING, SHRINKAGE AND HONEYCOMBING, PROVIDING A SMOOTH OFF SHUTTER CONCRETE SOFFIT
 300mm MINIMUM SPEED TO FALL 1:50

30mm THICK LAYER OF WASHED & CRUSHED 19mm STONE
 GEOTEXTILE APPLIED ON TOP OF MODIFIED BITUMINOUS TORCHED-ON MEMBRANE

15mm THICK WOOD TROWELLED EXTERNAL CEMENT PLASTER TO PROVIDE A SMOOTH, EVEN, UNIFORM FINISH
 REINFORCED CONCRETE STRIP FOUNDATION TO RECEIVE FINAL PAINT AS SPECIFIED ELSEWHERE

REINFORCED CONCRETE BEAM TO ENGINEERS DETAIL SPECIFICATIONS TO PROVIDE A DENSE, SMOOTH, UNIFORM FINISH, FREE FROM ALL BLEEDING, SHRINKAGE AND HONEYCOMBING, PROVIDING A SMOOTH OFF SHUTTER CONCRETE FINISH

SUSPENDED BULKHEAD CONSISTING OF RHINO-BRT WALL TIE SYSTEM WITH 100mm LEVEL, 400mm THICK COMPRESSING RAYS AT 400mm CENTRES CLAD ON ONE SIDE WITH 12.5mm RHINO WALLBOARD SCREWED TO STUDING WITH DRYWALL WALLBOARD SCREWED TO STUDING WITH NECESSARY ANGLE SECTIONS CORNER REINFORCEMENTS. BOARDS ARE BUT JOINED AND FINISHED WITH RHINO WALLBOARD. ALL WORK TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND SUITABLE TO ACCEPT FINISHES AS PER FINISHES SCHEDULE. PLASTER THE ENTIRE CEILING WITH 5-8mm THICK PLASTER TO PROVIDE A SMOOTH, FINISH PLASTER TO A SMOOTH POLISHED SURFACE.

ARCHIVES

BLOCK WORK TO BUILDUP SPECIFICATIONS IN GLASS MORTAR TO ACCOMMODATE 15mm STEEL TROWELLED GENTLE PLASTER WITH SECOND SKIN COAT TO PROVIDE A SMOOTH, UNIFORM FINISH TO ARCHITECTS APPROVAL TO ACCOMMODATE FINAL FINISH AS SPECIFIED ELSEWHERE

VERSUS PAINT VERSUS SUIDE TO EXTERIOR VIEW OF INTERIOR FINISHES TO BE CLEAN, DRY AND FREE OF ALL LOGS AND FINABLE MATERIAL. APPLY 1 COAT OF VERSUS SP PRIMER WITH AN OVER COATING TIME OF 12 HOURS AND APPLY A SECOND COAT OF VERSUS SP PRIMER TO USING A STEEL TROWEL IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

POWER FLOATED REINFORCED CONCRETE SLAB TO ENGINEERS DETAIL SPECIFICATIONS TO PROVIDE A DENSE, SMOOTH, UNIFORM FINISH, FREE FROM ALL BLEEDING, SHRINKAGE AND HONEYCOMBING, PROVIDING A SMOOTH OFF SHUTTER CONCRETE SOFFIT

500x150mm PALGALO ENGINEERS TERRASCOPE PROFILE SCREEN AS PER DETAILS

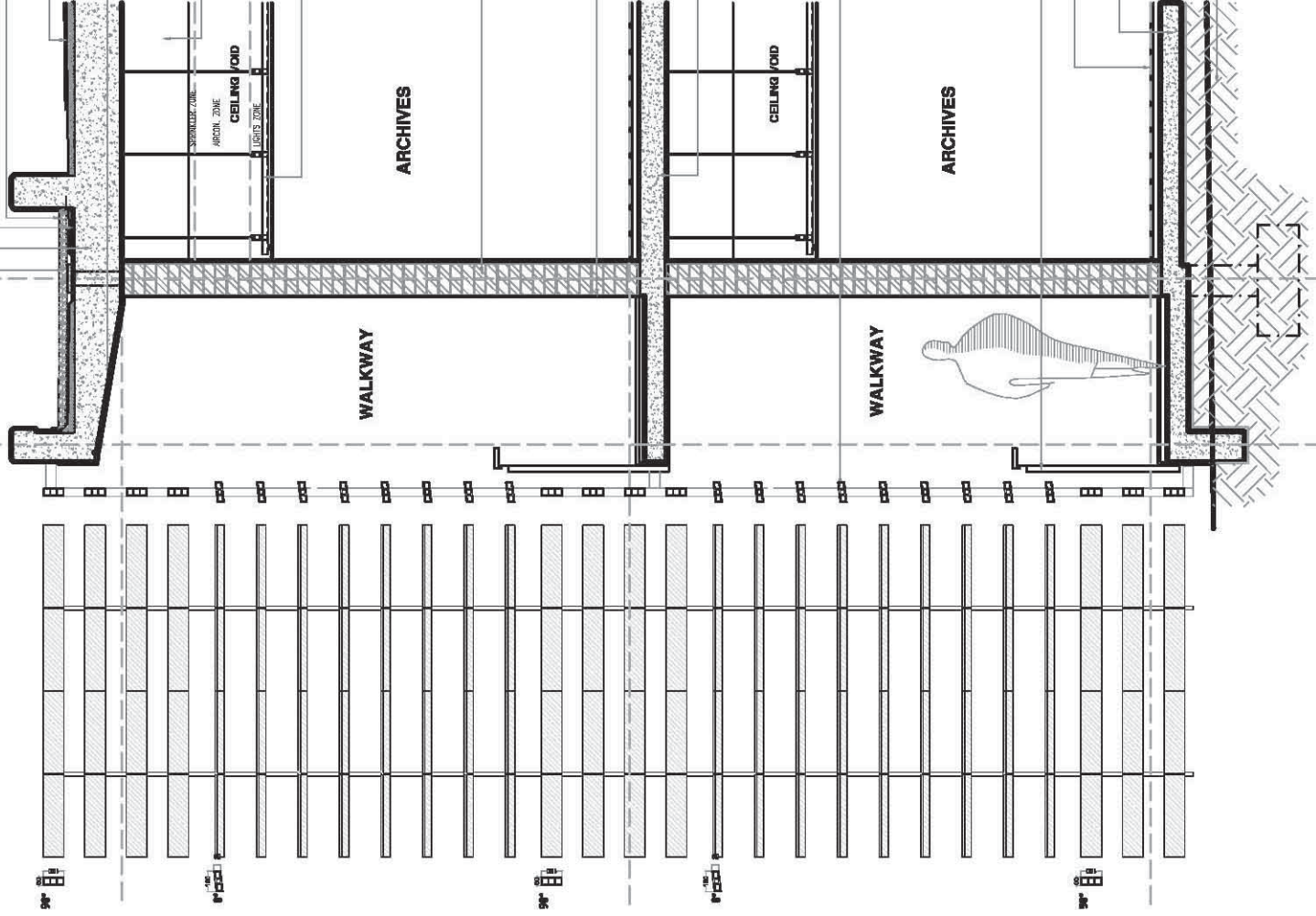
ARCHIVES

GRADED MILD STEEL BALLASTRADE WITH TERRA COTTA HANDRAIL TO ARCHITECTS DETAILS
 FLOOR FINISH AS SPECIFIED IN FINISHING SCHEDULE TO ARCHITECTS APPROVAL

CONCRETE POWERFLOATED SURFACE BED TO THICKNESS SPECIFIED, CAST IN SUITABLE SIZED PANELS ON WATERPROOFING MEMBRANE, FLOORED SMOOTH

WELL COMPACTED EARTH FILLING TREATED AGAINST WATER PENETRATION TO BE COMPACTED TO A MINIMUM STANDARD ALL BY ENGINEERS SPECIFICATIONS

800x140mm REINFORCED CONCRETE STRIP FOUNDATION TO ENGINEER'S DRAWINGS AND SPECIFICATIONS

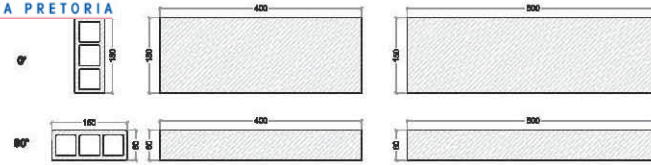
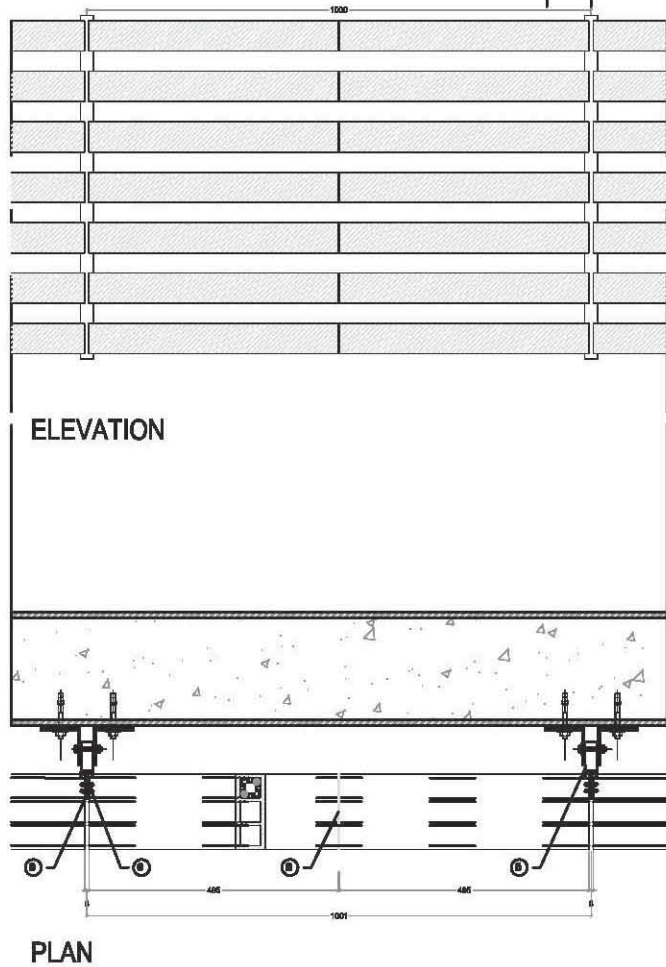


SECTION

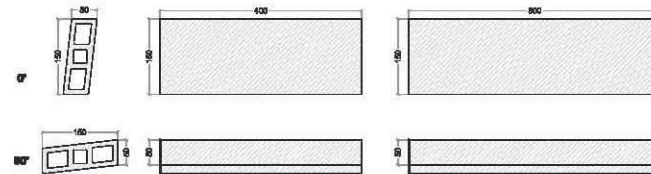
ELEVATION

WALL SECTION CONDITION 03_1:50



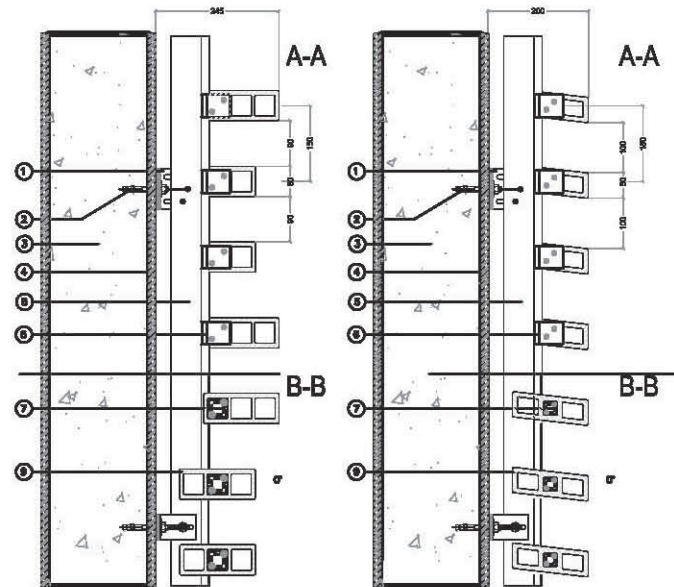


Terra Cotta Square



Terra Cotta Slope

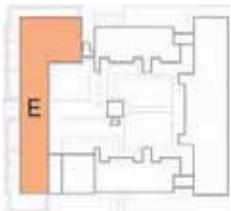
TERRA COTTA PROFILES + SIZES

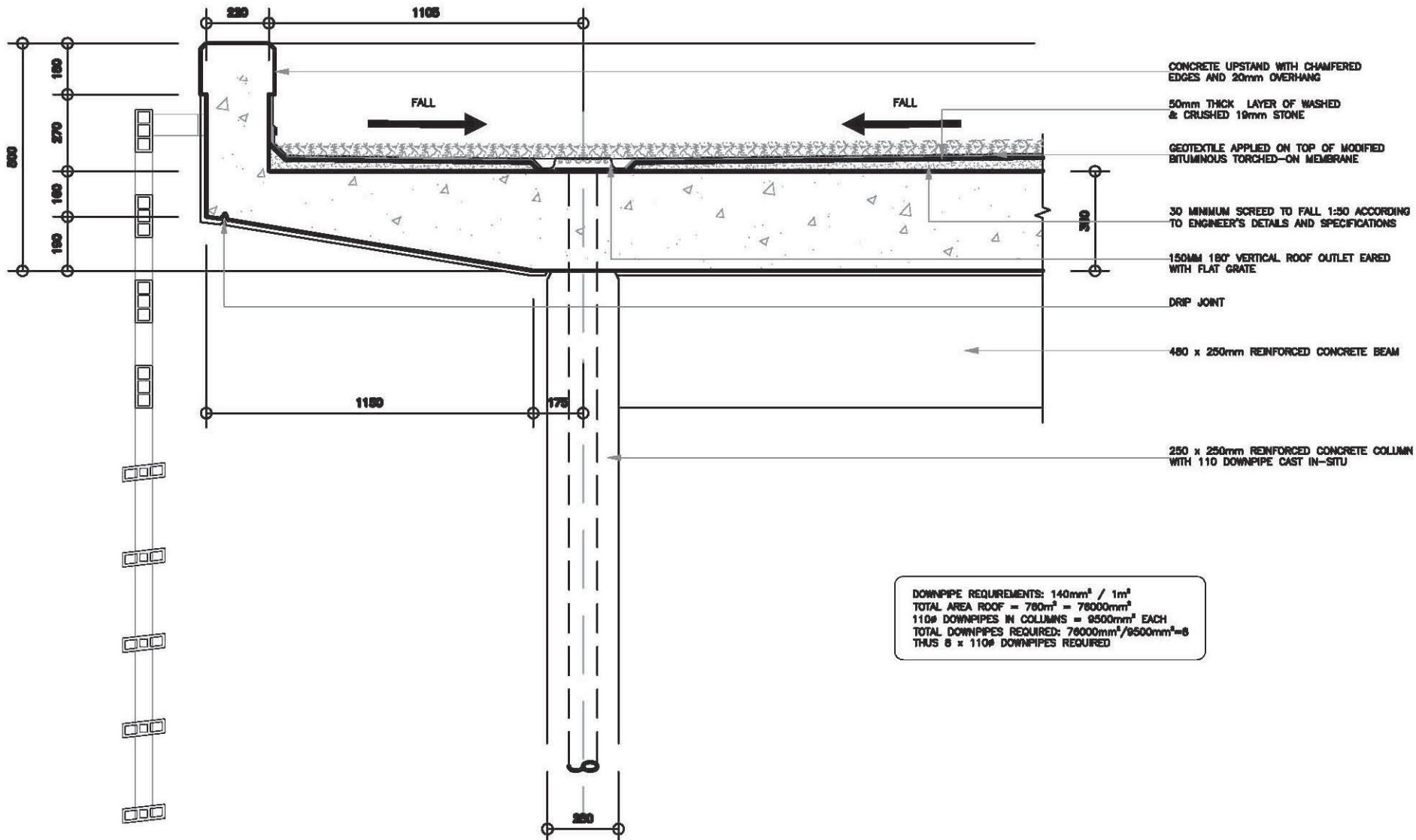


**SECTION -
Terra Cotta Square**

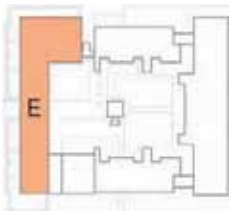
**SECTION -
Terra Cotta Slope**

- ① ANGLE IN AL 6000
- ② HIGH STRENGTH FRICTION BOLT
- ③ WALL
- ④ PLASTER
- ⑤ VERTICAL PROFILE IN AL 6000
- ⑥ SEAMLESS STEEL FIN PLATE
- ⑦ INTERNAL REINFORCING IN AL6000
- ⑧ NEOPRENE SEPARATOR
- ⑨ 100 x 50mm TERRA COTTA PROFILE FIXED AT 0° ANGLE AT DIFFERENT POSITIONS

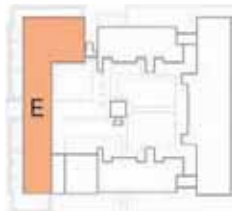




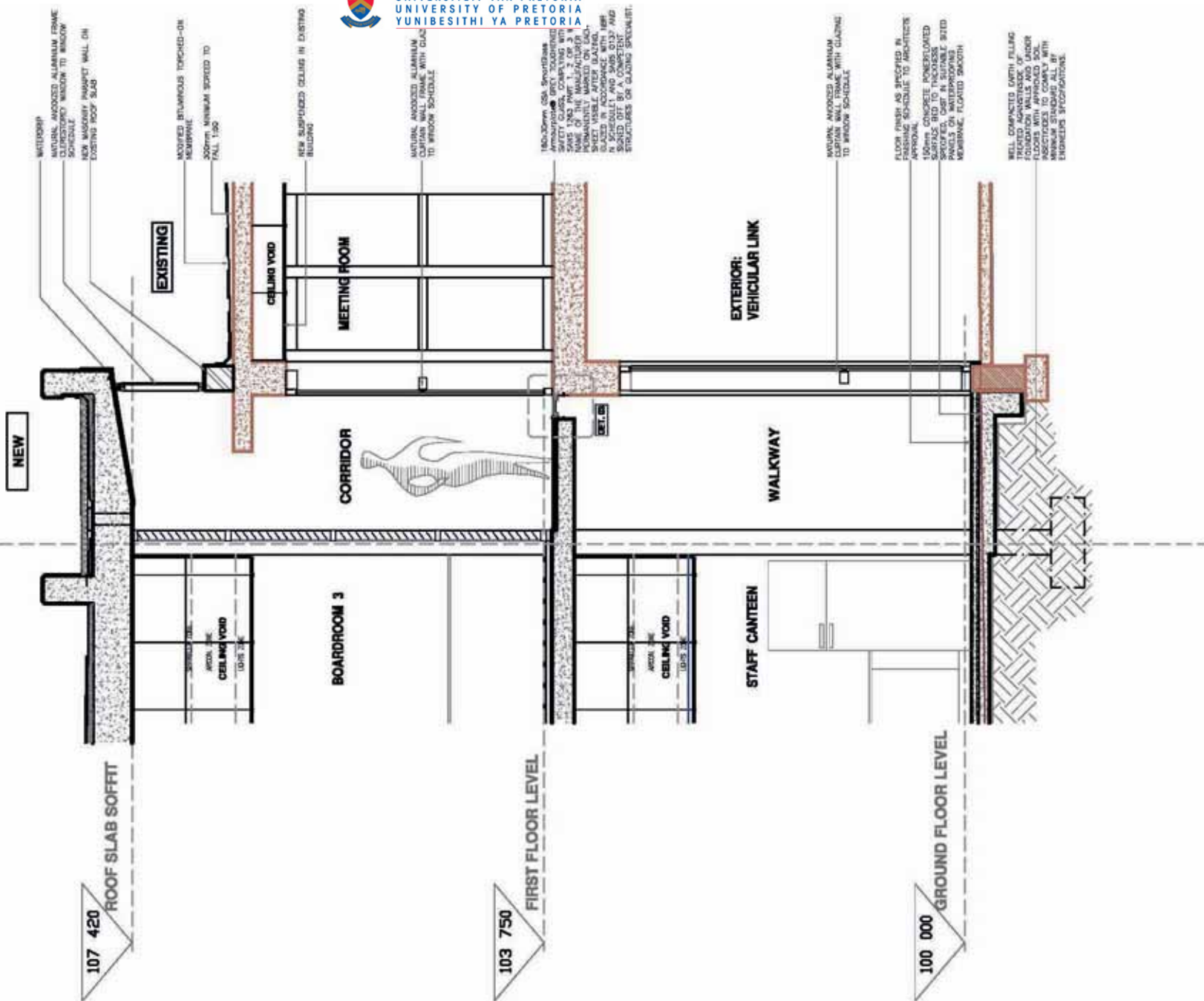
DOWNPIPE REQUIREMENTS: 140mm² / 1m²
 TOTAL AREA ROOF = 780m² = 78000mm²
 110# DOWNPIPES IN COLUMNS = 9500mm² EACH
 TOTAL DOWNPIPES REQUIRED: 78000mm²/9500mm²=8
 THUS 5 x 110# DOWNPIPES REQUIRED



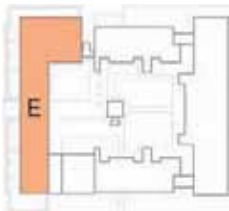
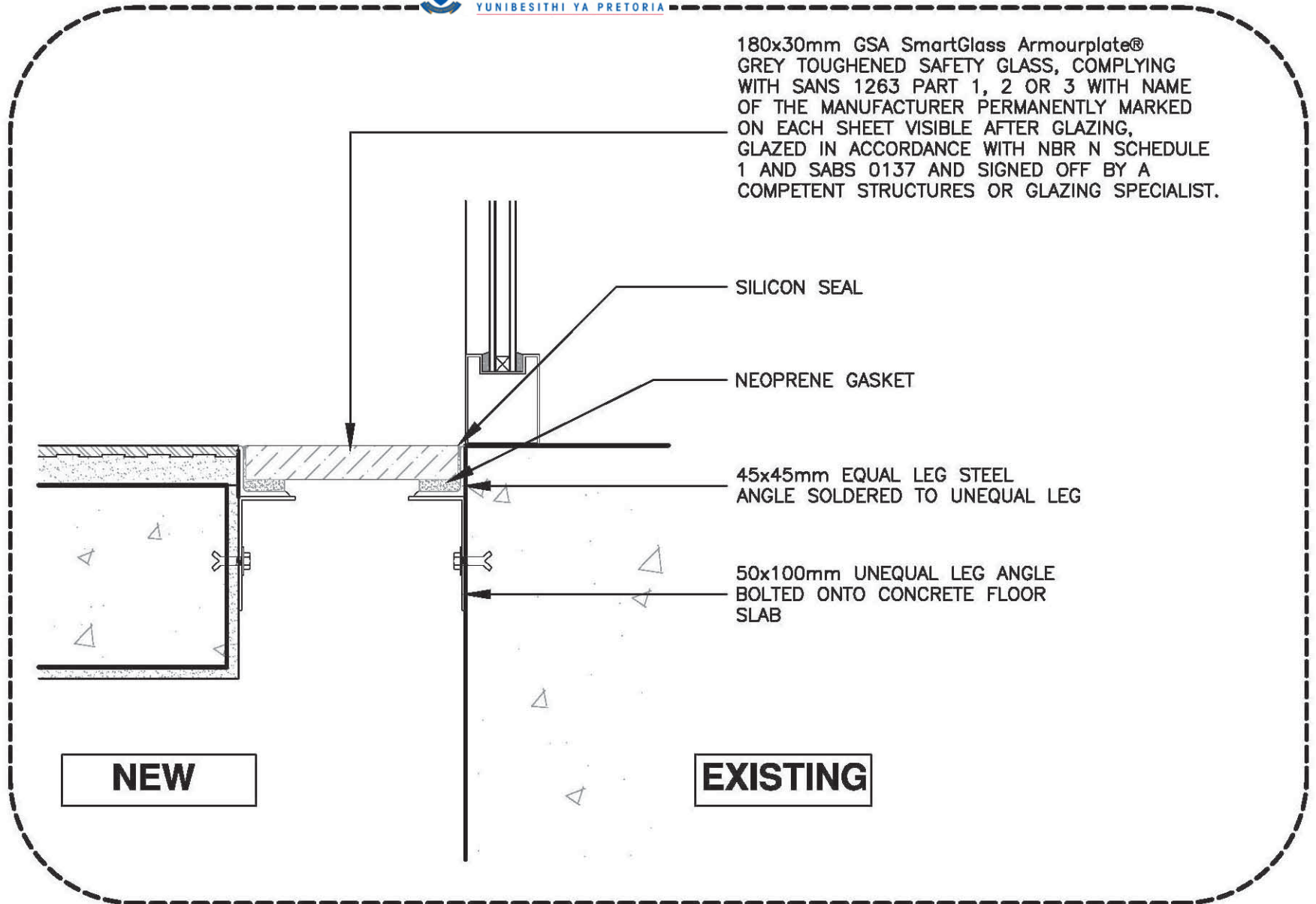
DETAIL 02: ROOF EDGE DETAIL_1:20



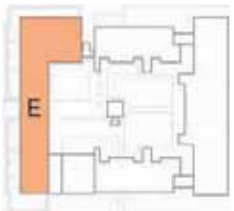
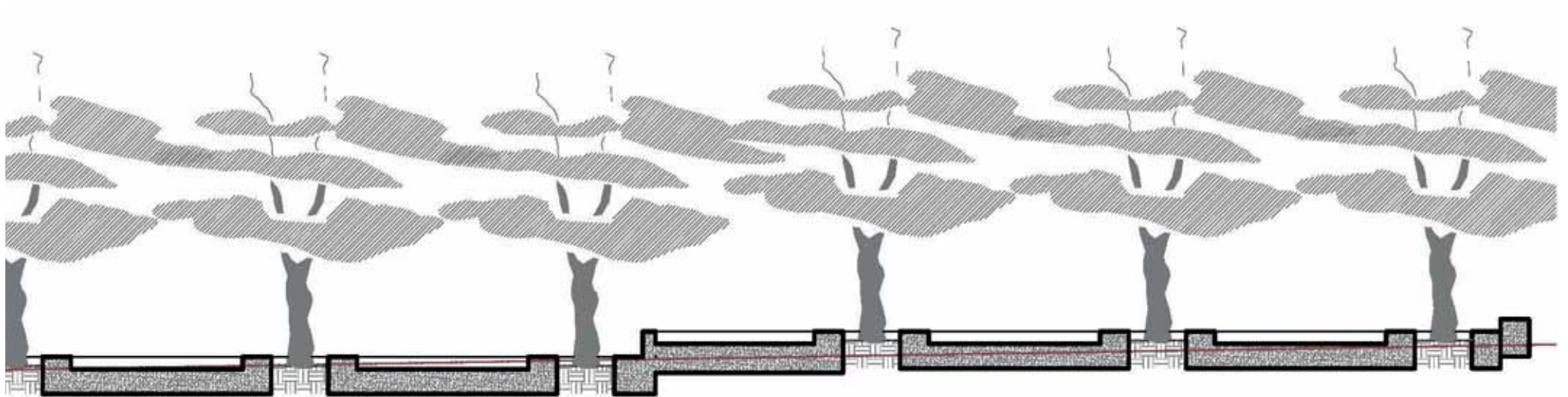
E3



SECTION EB-EB: CONNECTION BETWEEN BLOCKS E+F5_I:50



DETAIL 03: CONNECTION BETWEEN BLOCKS E+F5_1:5



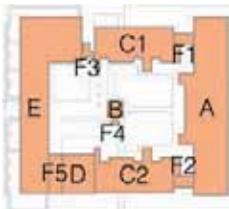
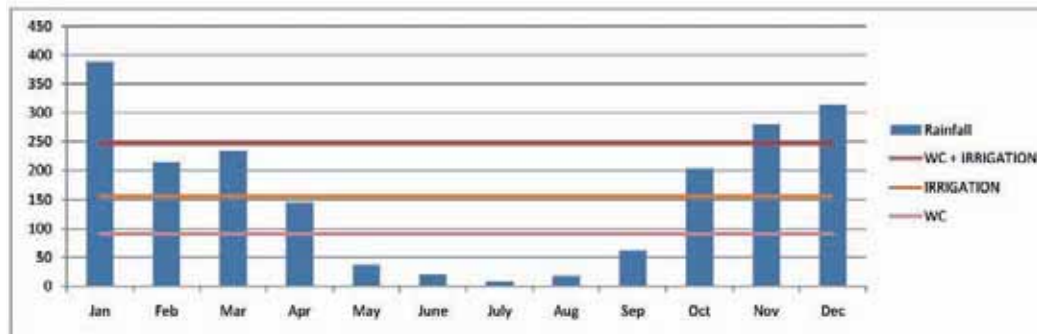
DETAIL 04: WATER FEATURE_1:100

8.3 CALCULATIONS

| RAIN COLLECTION | | | | | | | | | | | | | |
|-----------------|----------------|------------------------|----------|------------------------|----------|------------------------|----------|------------------------|----------|------------------------|----------|------------------------|----------|
| Env. Parameters | | Roof Plan | | | | | | | | | | | |
| Moth. | Ave Rain (PTA) | Fire Station | | Bookshop | | Canteen | | New building | | New building | | Library | |
| | | Area (m ²) | eff. (%) | Area (m ²) | eff. (%) | Area (m ²) | eff. (%) | Area (m ²) | eff. (%) | Area (m ²) | eff. (%) | Area (m ²) | eff. (%) |
| | | 950 | 90% | 360 | 90% | 360 | 90% | 750 | 90% | 0 | 90% | 350 | 90% |
| Jan | 136 | 116 | 0.12 | 69 | 0.07 | 69 | 0.07 | 92 | 0.09 | 0 | 0.00 | 43 | 0.04 |
| Feb | 75 | 64 | 0.06 | 38 | 0.04 | 38 | 0.04 | 51 | 0.05 | 0 | 0.00 | 24 | 0.02 |
| Mar | 82 | 70 | 0.07 | 41 | 0.04 | 41 | 0.04 | 55 | 0.06 | 0 | 0.00 | 26 | 0.03 |
| Apr | 51 | 44 | 0.04 | 26 | 0.03 | 26 | 0.03 | 34 | 0.03 | 0 | 0.00 | 16 | 0.02 |
| May | 13 | 11 | 0.01 | 7 | 0.01 | 7 | 0.01 | 9 | 0.01 | 0 | 0.00 | 4 | 0.00 |
| June | 7 | 6 | 0.01 | 4 | 0.00 | 4 | 0.00 | 5 | 0.00 | 0 | 0.00 | 2 | 0.00 |
| July | 3 | 3 | 0.00 | 2 | 0.00 | 2 | 0.00 | 2 | 0.00 | 0 | 0.00 | 1 | 0.00 |
| Aug | 6 | 5 | 0.01 | 3 | 0.00 | 3 | 0.00 | 4 | 0.00 | 0 | 0.00 | 2 | 0.00 |
| Sep | 22 | 19 | 0.02 | 11 | 0.01 | 11 | 0.01 | 15 | 0.01 | 0 | 0.00 | 7 | 0.01 |
| Oct | 71 | 61 | 0.06 | 36 | 0.04 | 36 | 0.04 | 48 | 0.05 | 0 | 0.00 | 22 | 0.02 |
| Nov | 96 | 84 | 0.08 | 49 | 0.05 | 49 | 0.05 | 66 | 0.07 | 0 | 0.00 | 31 | 0.03 |
| Dec | 110 | 94 | 0.09 | 55 | 0.06 | 55 | 0.06 | 74 | 0.07 | 0 | 0.00 | 35 | 0.03 |

| RAIN USAGE | | | | | | | | | | | | | | |
|--|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|----------------------|-----------------|-------------|-------------|-----|
| Landscape | | | | | | | | | | | Population Est. | | | |
| A | B | C | D | E | F | G | H | New building (South) | | New building (North) | | Library | | |
| Area (m ²) | Area (m ²) | Area (m ²) | Area (m ²) | Area (m ²) | Area (m ²) | Area (m ²) | Area (m ²) | Area (m ²) | Area (m ²) | Office Area | Public Area | Office Area | Public Area | |
| 200 | 260 | 200 | 100 | 100 | 20 | 20 | 20 | 60 | 400 | 350 | 400 | 350 | 50 | 300 |
| Estimated water requirement/m ³ | | | | | | | | | | | WC/flush | | | |
| 32 | 41.6 | 32 | 16 | 16 | 3.2 | 4.48 | 16.6 | 0.007 | | | | | | |
| Population/day | | 0 | 304 | 10 | 115.2 | 10 | 147.2 | 40 | 112 | 40 | 112 | 5 | 96 | |
| Water Usage/m ³ | | 11.70 | 9.83 | 11.06 | 25.87 | 25.87 | 6.39 | | | | | | | |

| | Rainfall | WC + IRRIGATION | IRRIGATION | WC |
|------|----------|-----------------|------------|---------|
| Jan | 388 | 246.5614 | 155.84 | 90.7214 |
| Feb | 214 | 246.5614 | 155.84 | 90.7214 |
| Mar | 234 | 246.5614 | 155.84 | 90.7214 |
| Apr | 146 | 246.5614 | 155.84 | 90.7214 |
| May | 37 | 246.5614 | 155.84 | 90.7214 |
| June | 20 | 246.5614 | 155.84 | 90.7214 |
| July | 9 | 246.5614 | 155.84 | 90.7214 |
| Aug | 17 | 246.5614 | 155.84 | 90.7214 |
| Sep | 63 | 246.5614 | 155.84 | 90.7214 |
| Oct | 203 | 246.5614 | 155.84 | 90.7214 |
| Nov | 280 | 246.5614 | 155.84 | 90.7214 |
| Dec | 314 | 246.5614 | 155.84 | 90.7214 |



CALCULATIONS: RAINWATER

8.4 SITE MODEL



Figure 8.1:View from southeastern corner.

Figure 8.2:View from southeastern corner - Block A.

Figure 8.3: Eastern entrance - Block A.



Figure 8.4:View from northeastern corner - Block A.

Figure 8.5:View from east.

Figure 8.6:View from east.



Figure 8.7:View of Block E from southwest.



Figure 8.7: Southern elevation - Minnaar street.



Figure 8.8: New link to Minnaar street



Figure 8.9: Western elevation - Block E



Figure 8.10: Northeastern view of courtyard.



Figure 8.11: Northwestern view of courtyard.



Figure 8.12: Southwestern view of courtyard.



Figure 8.13:View of courtyard - bridge.

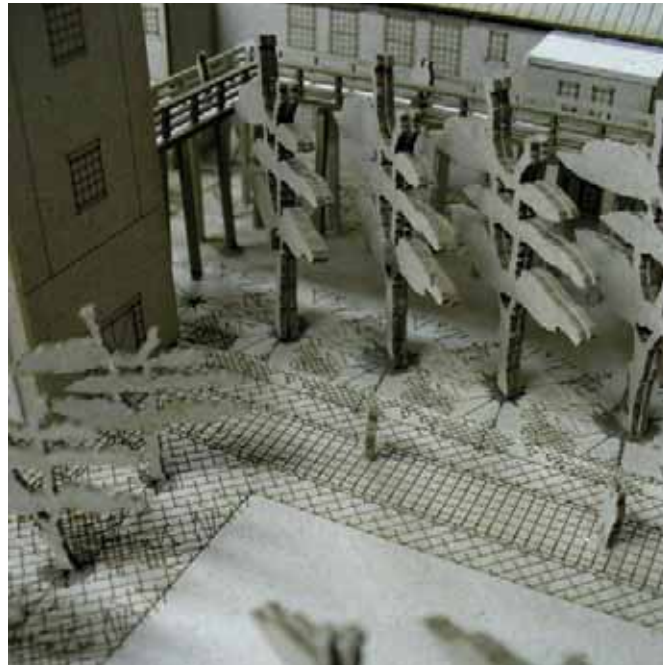


Figure 8.14:View of courtyard.



Figure 8.15:View of courtyard - main entrance east.

8.5 STRIP MODELS



Figure 8.16: Strip model - Block A

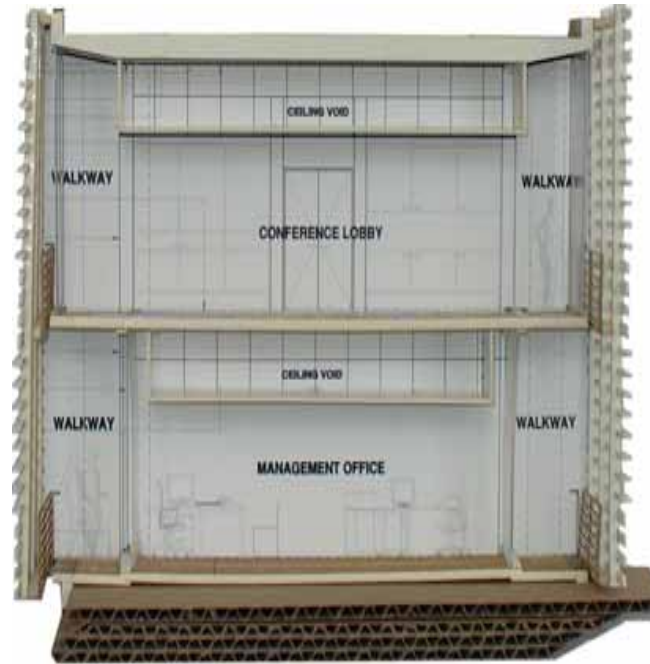


Figure 8.17: Strip model - Block C



Figure 8.18: Strip model - Block C



Figure 8.19: Strip model - Block C



Figure 8.20: Strip model - Block C



Figure 8.21: Strip model - Block C

CONCLUSION:

In conclusion, this dissertation proposes that Layering can be used as an approach to the re-use of underutilised urban spaces.

The applied design principles formulated through layering as design generator does not aim to reproduce the past or design in the past style. The new work is rather in constant dialogue with the existing building and the history. The new is build on and construct within the history, and doesn't turn it's back on history. Thus history is neither irrelevant, but also not blindly revered. The coexistence of old and new are promoted, to be mutually beneficial and non-hierarchical.

The architectural form was shaped by considering the existing buildings, surrounding context, needs and new programme. In this way any future intervention within the city will be unique and respond to the existing problems.

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