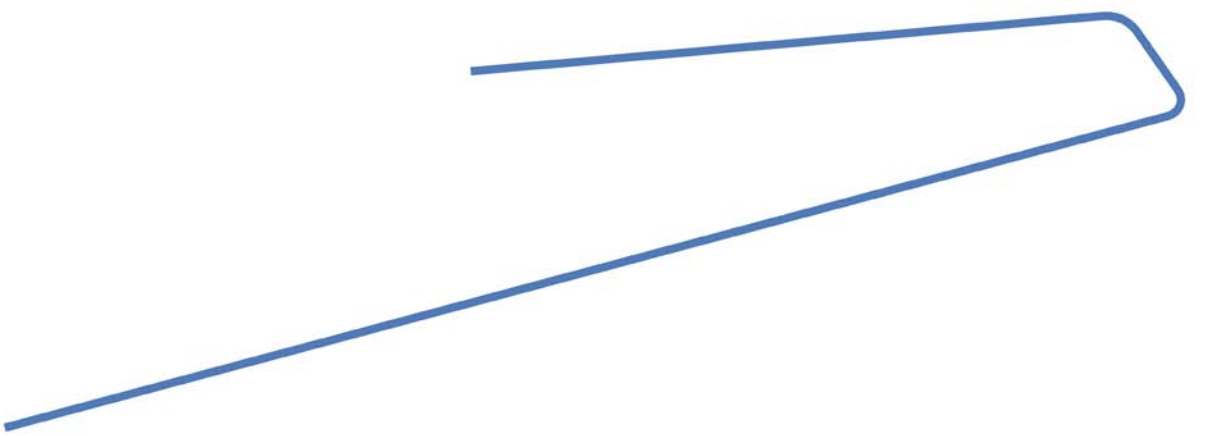

Abandoned spaces, abandoned design

Philip du Toit

2009

Abandoned spaces, abandoned design
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Submitted in partial fulfilment of the requirements for the degree Magister in Architecture (Professional), Department of Architecture, Landscape Architecture and Interior Architecture, in the Faculty of Engineering, the Built Environment and Information Technology, University of Pretoria.

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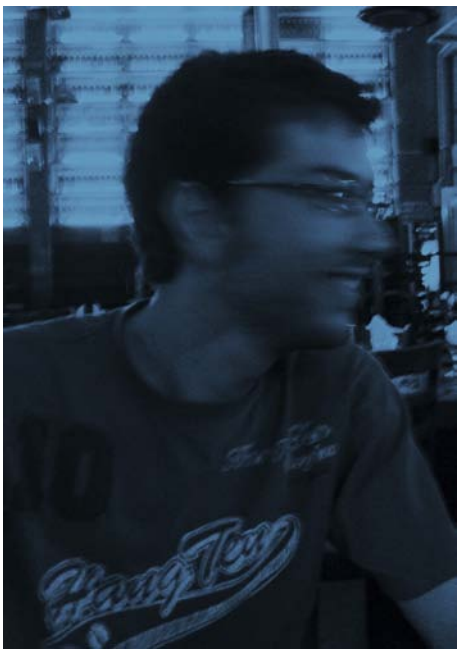
Submitted 25 November 2009



This dissertation investigates the significant problem of abandoned buildings in the Pretoria Central Business District and, to a lesser extent, the lack of public exposure to art, architecture and design. For the purpose of this study, empty spaces in the City Centre and Die Meent buildings are examined. A new system for their reuse is developed and a gallery for the exhibition of multiple art forms is incorporated therein, as an example of how the aforementioned system can be appropriated. These problems, especially the first, is not restricted to the local urban context.

The investigation is thus divided into two phases: the first provides a solution to the challenge of reusing abandoned spaces in buildings; the second phase, as a proposed future exploration of this system, provides a solution to the need for a multi-purpose exhibition area. City Property is the proposed client for the first phase, while MINI Space is the proposed client for the second phase.

Empty buildings are a growing concern worldwide, due to concerns for sustainable development and decreasing greenfield sites. This dissertation proposes that the term 'site' should be redefined, using the x-y-z axes as a base. By applying the theory of Deconstruction, it is argued that 'ground zero' be shifted to a higher level, to include not only the x- and y-axis, but also the z-axis, leading to the creation of truly three-dimensional cities.

Vacant floors within the buildings under investigation are stripped down to the structural elements and some service cores. These concrete planes are then divided into new 'sites', which can be rented or, preferably, sold to new owners. Green open space replaces some of the top floors, and slabs are selectively cut open to allow for access to sunlight and to create spatial definition. Principles are set up according to which this and further development should be done, including factors like functional zoning and new 'site' restrictions.

The objective of the MINI Space Gallery is to promote art, architecture and any other form of art or design to the public. A MINI store and a coffee shop are included as ancillary spaces, promoting a mix of uses within the gallery space.

A parti-diagram is developed for each of the two phases of the dissertation. These diagrams are based on elements of architecture derived from Deconstruction and the use of x-y-z. Each element or axis (form/beauty; function/programme; tectonics/structure) is examined separately, after which they are combined to create space. All aspects of the project, from large scale design to small scale technical details, are solved by means of applying these parti-diagrams.

This project aims to advance a new way of looking at the city and promoting different forms of art. Culturally rich spaces within vibrant cities with multiple levels of living, working and playing, aid the creation of new communities and unique spaces for each individual.

Summary

Hierdie verhandeling ondersoek die opvallende probleem van verlate geboue in die Pretoria Sentrale Besigheidsdistrik en, tot 'n mindere mate, die afwesigheid van publieke blootstelling aan kuns, argitektuur en ontwerp. Vir die doel van hierdie studie word leë ruimtes in die City Centre en Die Meent geboue ondersoek. 'n Nuwe sisteem vir hul hergebruik word ontwikkel en 'n galery vir die uitstal van verskeie vorms van kuns word in van die ruimtes ingesluit, as 'n voorbeeld van hoe die bogenoemde sisteem toegepas kan word. Hierdie probleme, veral eersgenoemde, is nie beperk tot die plaaslike stedelike konteks nie.

Die ondersoek is dus verdeel in twee fases: die eerste voorsien 'n oplossing tot die uitdaging om verlate ruimtes weer in gebruik te stel; die tweede fase, as 'n toekomstige ondersoek van die sisteem, voorsien 'n oplossing vir die benodiging van 'n multi-gebruik uitstalruimte. City Property is die voorgestelde kliënt vir die eerste fase, terwyl MINI Space die voorgestelde kliënt is vir die tweede.

As gevolg van die neiging tot volhoubare ontwikkeling en onaangeraakte terreine wat al hoe minder word, is leë geboue 'n groeiende besorgdheid wêreldwyd. Hierdie verhandeling stel voor dat die term 'terrein' herdefinieer moet word, met die gebruik van die x-y-z asse as basis. Deur die teorie van Dekonstruksie toe te pas, word dit aangevoer dat die 'nulpunt' ('ground zero') na 'n hoër vlak verskuif word, om nie net die x- en y-as in te sluit nie, maar ook die z-as, wat sal lei tot die skepping van egte drie-dimensionele stede.

Onbesette vloere binne-in die geboue wat ondersoek word, word gestroop totdat slegs strukturele elemente en sekere dienskerne oorbly. Hierdie beton vlakke word dan verdeel in nuwe 'terreine', wat verhuur of, verkieslik, verkoop kan word aan nuwe eienaars. Groen oop ruimtes vervang sommige van die boonste vloere en blaaie word op uitgesoekte dele oopgesny om sonlig bekombaar te maak en om ruimtelike definisie te skep. Beginsels word opgestel waarvolgens hierdie en verdere ontwikkeling gedoen moet word, wat faktore soos gebruiksonering en nuwe 'terrein' beperkinge insluit.

Die doel van die MINI Space Galery is om argitektuur en enige vorm van kuns of ontwerp aan die publiek te bevorder. 'n MINI winkel en koffiehuis word ingesluit as bykomstige ruimtes, wat 'n mengsel van gebruike bevorder in die galery ruimte.

'n Parti-diagram word vir elk van die twee fases van die verhandeling ontwikkel. Hierdie diagramme word gebaseer op elemente van argitektuur, afgelei van Dekonstruksie en die gebruik van x-y-z. Elke as of element (vorm/skoonheid; funksie/program; boukuns/struktuur) word apart bestudeer, waarna hulle gekombineer word om ruimte te skep. Alle aspekte van die projek, van grootskaalse ontwerp tot kleinskaalse tegniese details, word opgelos deur middel van die toepassing van hierdie parti-diagramme.

Hierdie projek streef om 'n nuwe manier om na die stad te kyk aan te voer en om verskillende vorms van kuns te bevorder. Kultuur-ryke ruimtes binne-in lewendige stede met verskeie vlakke van leef, werk en speel, dra by tot die skepping van nuwe gemeenskappe en unieke ruimtes vir elke individu.

Opsomming

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
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Table of Contents

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List of Figures

Chapter 1

Chapter 2

Chapter 3

Chapter 4

Chapter 5

Chapter 6

Chapter 7

Chapter 8

Chapter 9

1.1. Abstract

This dissertation proposes the adaptive reuse of existing abandoned spaces in the City Centre and Die Meent buildings, Pretorius Street, in the Pretoria Central Business District. City Property is the primary client, while MINI Space is the secondary client, for whom a gallery for the exhibition of art, architecture, design and cars is required.

Two problems are investigated. Firstly, a number of buildings in the city, especially the CBD, are abandoned due to their restrictive design, failed management or similar. Secondly, the neglect of architecture and design is particularly evident in the public sphere, where neither is being promoted. Therefore an existing, derelict building is investigated and its re-use explored. A gallery also forms part of this conversion, functioning as a place

Chapter 1

Introduction

Fig.1.1 - Aerial photograph of Pretoria CBD, with certain aspects and possible sites indicated.
Fig.1.2 - Aerial photograph of the TPA building.
Fig.1.3 - Multirama view of the TPA building.
Fig.1.4 - Aerial photograph of the City Centre and Die Meent buildings.
Fig.1.5 - Multirama view of the City Centre and Die Meent buildings.

Figure 1.1

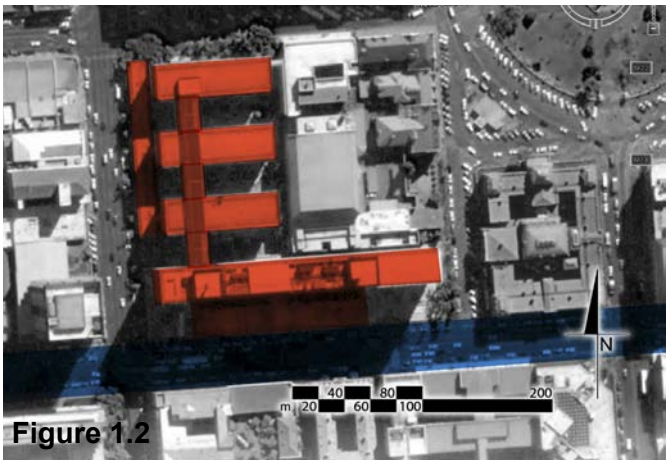


Figure 1.2

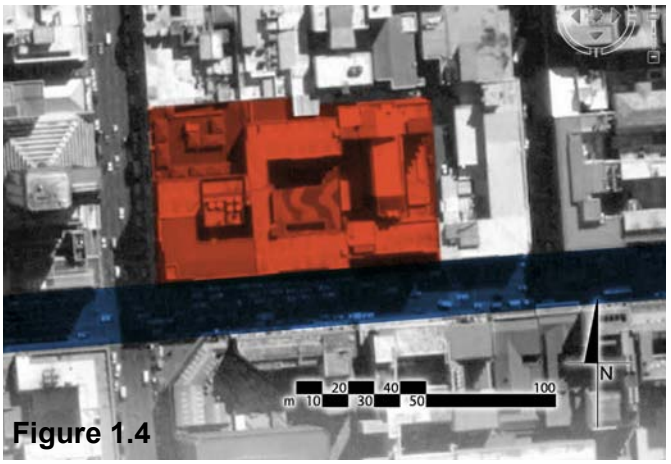


Figure 1.4

where architecture, art and design are accessible to everyone as an extension of the public realm.

The urban environment is investigated and therefore this dissertation is classified under the Housing and Urban Environments research field.

(Samevatting)

(Hierdie verhandeling stel die hergebruik van bestaande, verlate ruimtes voor in die City Centre en Die Meent geboue, Pretoriusstraat, in die Pretoria Sentrale Besigheidsdistrik. City Property is die primêre kliënt, terwyl MINI Space die sekondêre kliënt is, vir wie 'n galery vir die uitstalling van kuns, argitektuur, ontwerp en motors benodig word.

Twee probleme word ondersoek. Eerstens word baie geboue in die stad, veral die SBD, verlate gelos weens hul beperkende ontwerp, ongeslaagte bestuur of soortgelyk. Tweedens word argitektuur en ontwerp verontagsaam in die publieke sfeer, waar nie een bevorder word nie. Dus word 'n bestaande, vervalle gebou bestudeer en die hergebruik daarvan ondersoek. 'n Galery form ook deel van hierdie omskepping en funksioneer as 'n plek waar argitektuur, kuns en ontwerp toeganklik is vir almal as 'n uitbreiding van die publieke terrein.

Die stedelike omgewing word bestudeer, dus word die verhandeling geklassifiseer onder die navorsingsgebied van Behuising en Stedelike Omgewings.)

1.2. Background and context

Established in 1855 (Holm 1998:61), Pretoria is a relatively young city and yet a number of its buildings stand abandoned within the CBD. During the initial stages of this dissertation it was


Figure 1.3


Figure 1.5

Fig.1.6 - Perspective rendering showing simplified existing occupation in the City Centre and Die Meent buildings.
Fig.1.7 - Diagram indicating 'sites' on different levels.
Fig.1.8 - Multirama view of the City Centre building with possible site extension highlighted.

realised that unused buildings add to the growing deterioration of existing urban areas within the city and warrant design interventions.

Three such buildings were identified, both with low occupancy. The first is a government building housing various groups of offices in Pretorius Street and known as the old TPA ('Transvaal Provinsiale Administrasie') building ('1' on fig.1.1, also figs.1.2 and 1.3). This is a large-scale building wherein most floors are empty, especially in the main block. The second and third buildings are also in Pretorius Street ('2' on fig.1.1, also figs.1.4 and 1.5; City Centre and Die Meent buildings). A security guard (2009) stationed at the lifts on ground floor indicated that the first and second storeys of the City Centre building house educational institutes, while storeys three to seven are empty and have been for quite some time, however further investigation revealed a day-care centre on a portion of the third floor (fig. 1.6). Die Meent building has lesser empty floors, with offices and parking occupying most of the upper storeys (fig.1.6). These buildings were chosen as the site, because of

- their location between two important public spaces, Church Square and Lilian Ngoyi Square,
- their size being sufficient for the dissertation,
- their context, comprising of large numbers of pedestrians and high density buildings.

Considering that some floors in the building are empty, the definition of 'site' was questioned. The term 'site' in this case does not necessarily refer to a piece of land, but rather each empty floor can be seen as a site or groups of smaller ones (fig.1.7). The redevelopment of the World Trade Centre in New York City deals with the term

Figure 1.6

Figure 1.8

'ground zero' (Eisenman 2003:60), yet this term was never questioned directly during the process of designing the proposed new buildings. If the concept of "ground zero", created as the result of the destruction of a building, is equal to the notion of 'site', which is conventionally thought of as a "ground plane" (Ching 2007:20), then should the scope of 'site' not be widened to include the vertical space above ground plane, where the building once existed or where empty storeys stand disused? This dissertation thus asks:

- what is 'ground zero'?
- could 'site' in some cases be 'ground zero + 3 meters'?
- should sites consist of physical soil or could they rather be sold off at higher levels and then redeveloped or consolidated to create three-dimensional cities?

The initial site boundaries, which only included the empty spaces in the City Centre building, were thus extended beyond this building, to include empty floors and rooftops of neighbouring structures (fig.1.8). This argument is explored further in Chapter 3.

1.3. Aim of the study

The study aims to show that one can reuse existing buildings and in so doing Pretoria CBD can be adapted, and 'repaired', to become a city where everyone can live, work and play. Terms like 'site', 'arcade' and 'architecture' are questioned through the adaptive design of an existing building, while in addition, a new model for dividing city land, or space, is proposed. The product furthermore promotes the accessibility of architecture and design for all.

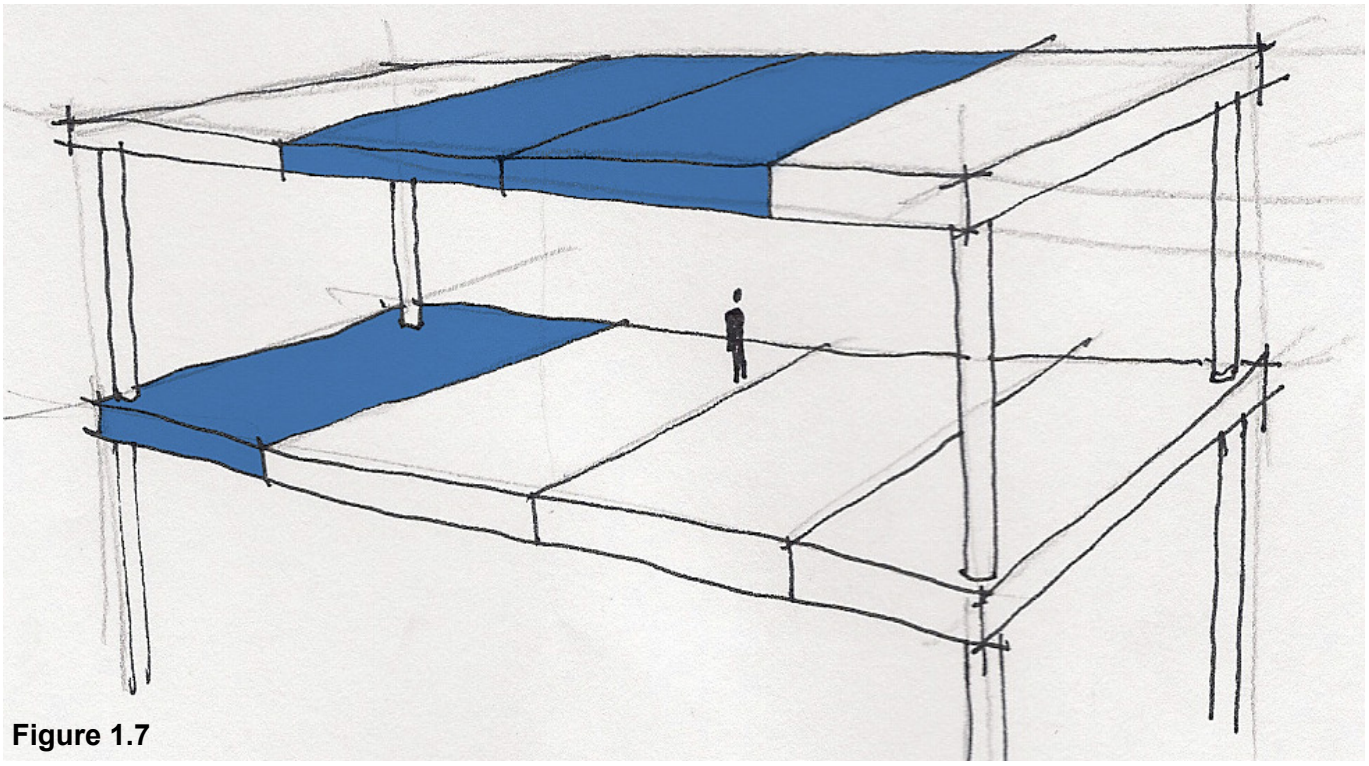


Figure 1.7

1.4. Research methodology

To find a solution for the dissertation problem, a principle theory was identified by which a new way of creating space was made possible. The research was informed by a host of other factors (e.g. context, programme and secondary theories) and from this onwards a circular system was applied (fig.1.9). The design intervention was then used to apply the research findings and to show how the problem can be solved. This process was one of continuous asking, answering and re-asking.

Current theories applicable to the dissertation problem were researched, after which a specific argument was formulated. Research was conducted by means of literature reviews, interviews and field work.

1.5. Research problem

The concept behind this research problem is based on the investigation of the Cartesian axes x, y and z, a formula that is used for locating objects, thus Q:xyz. Questioning this system is translated into four points in this dissertation:

- the typical Pretoria CBD building is questioned: where is it located with regards to site?
- the Pretoria CBD arcade is investigated: why does it usually only have x- and y-directions?
- the x-y-z of architecture is also questioned: what is architecture?
- a new notion of ‘site’ is investigated: what is ‘site’?

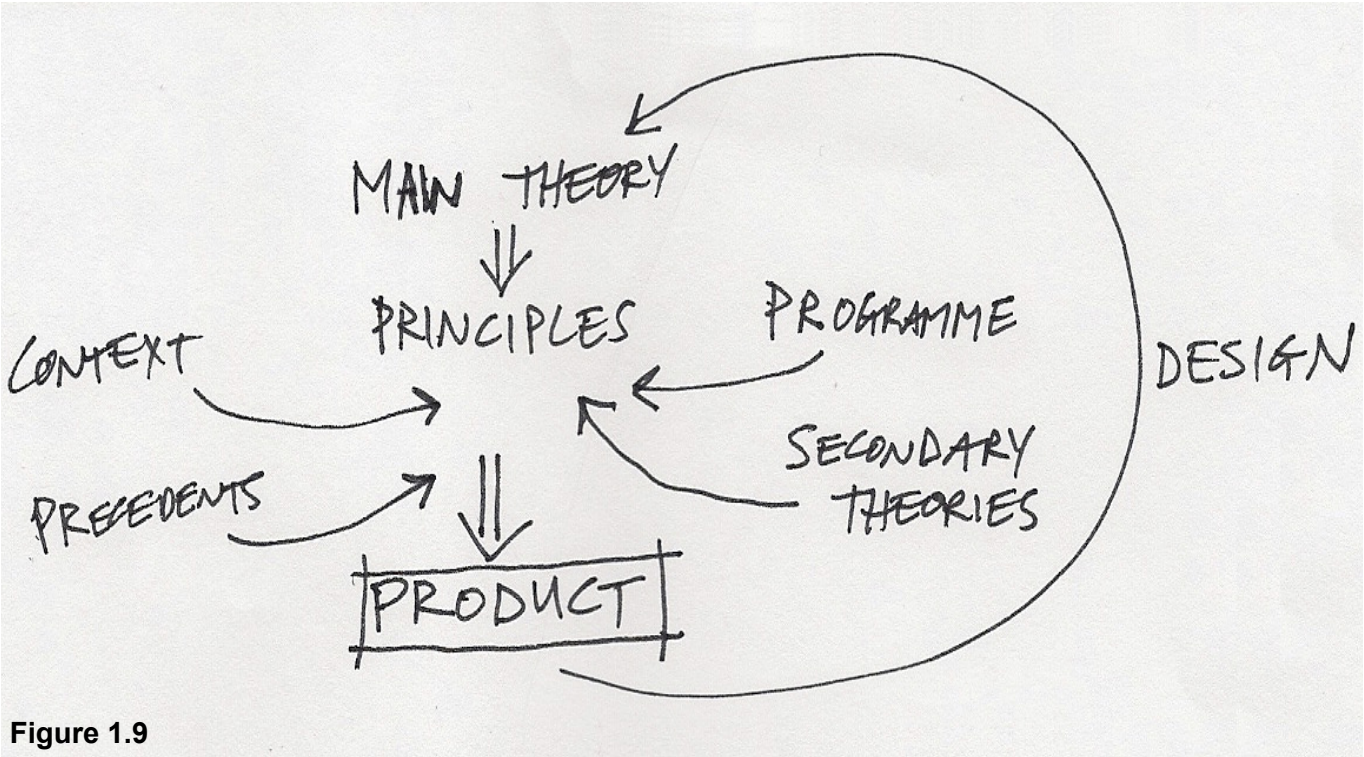


Figure 1.9

Fig.1.9 - Diagram of the research methodology.
Fig.1.10 - Diagram explaining the difference between a '*multirama*' and similar other terms.

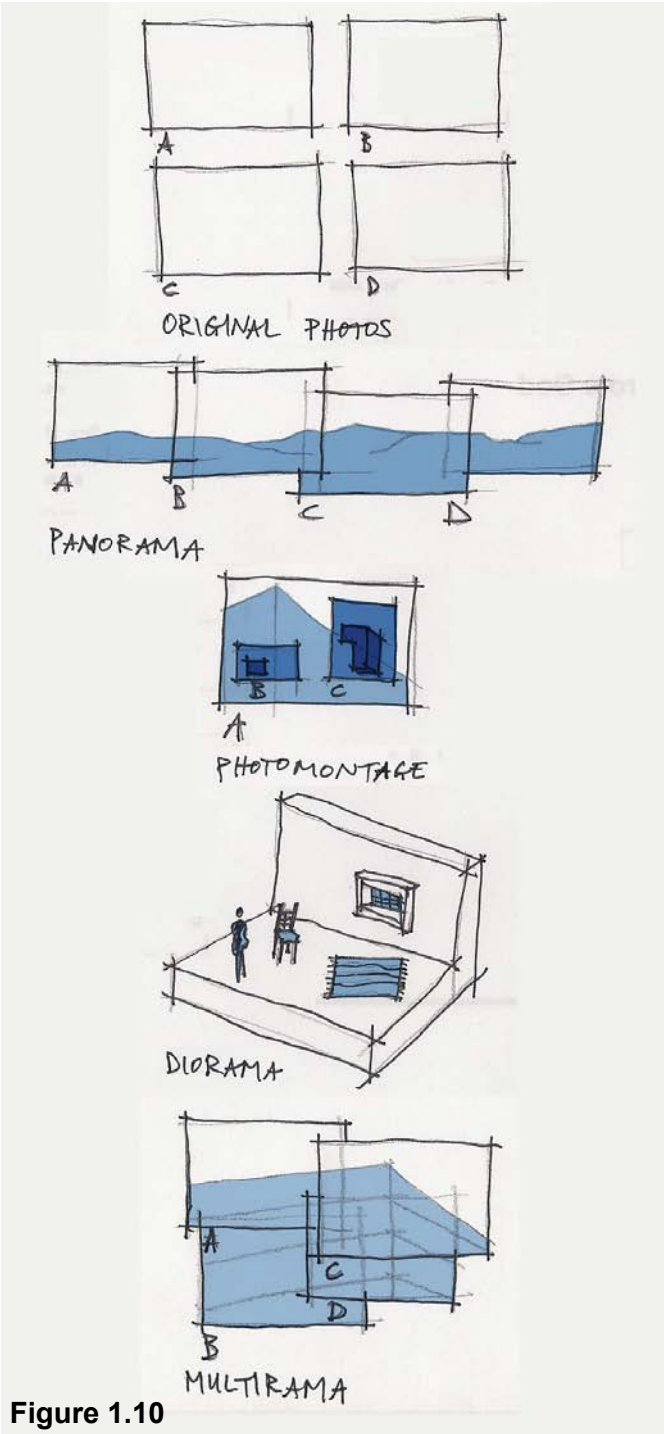


Figure 1.10

1.6. Client brief

The primary client is City Property, whose main objective for the proposed site is to unlock financial profit and thus finding tenants for all the empty spaces in the buildings they currently manage. MINI Space, the secondary client, is in need of a gallery space in which anything from paintings to cars can be exhibited within the CBD.

1.7. Design brief

The project is divided into two phases. The first is the design of a system proposed to solve the issue of empty space in the two buildings under investigation, referred to as the 'Site Development'; it includes specific, physical components. Secondly, the MINI Space Gallery will be designed as an

example of how the system can be used in future applications.

1.8. Definitions, assumptions and exclusions

Deconstruction, for the purposes of this dissertation, is defined as the theory that questions contemporary ideas, especially those taken for granted. It does so by using that which is within the idea or concept under examination, and in this process, a new way of combining elements is investigated (see Chapter 3).

"*Multirama*" refers to an image composed of a number of photographs taken in a series of two directions, i.e. horizontal (left-to-right) as well as vertical (up-to-down). It is a specific type of photomontage that was derived from the "*panorama*" which is a similar type of image, but where the successive photographs are taken only in one direction (usually horizontal). Thus the need was identified to create a new term. Fig.1.10 compares a *multirama* to different similar terms.

Stereotomic, as Semper describes it (Porter 2004:193), refers to the "massive form of load-bearing masonry rooted in the earth." When used in this thesis it therefore refers to the massive parts of a building.

The term *tectonic* is used with two different meanings. The first is used together with structure in defining one of the components of architecture - in this case it means the art of construction (*ibid*.). The other sense is the direct opposite of *stereotomic*, thus it refers to the lightweight elements of a design (*ibid.*).

1.9. Outline of study

Introduction:
Chapter 1: The problem and its setting.
Research:
Chapter 2: Context: analyses, client profile and group frameworks.
Chapter 3: Argument: Q:xyz - theoretical base: deconstruction; the new site; architecture.
Chapter 4: Precedent studies and analyses thereof.
Product:
Chapter 5: Assignment: the setting out of the project and accommodation schedule.
Chapter 6: Design development.
Chapter 7: Design solution.
Chapter 8: Technical development and report.
End:
Chapter 9: Conclusion.

Each chapter has an introductory paragraph, followed by the examination of the particular topic. The conclusions at the end of the research chapters contain principles for the design of the Site Development and the MINI Space Gallery.

Chapter 2

Context

2.1 Introduction

Different layers of context are investigated in this chapter: firstly, the proposed site as situated in an urban context; secondly, the existing buildings within which the project is situated. Furthermore, the proposed client is discussed, followed by different frameworks applied to the design.

2.2. Site analysis

The proposed site (fig.2.2) is situated in the heart of the Pretoria CBD, on Pretorius Street, a prominent, one-way road which feeds traffic into the city from the east. Although this is mainly a vehicular route containing cars, taxis and busses, large numbers of pedestrians also use it. This happens primarily on the sidewalks with canopies

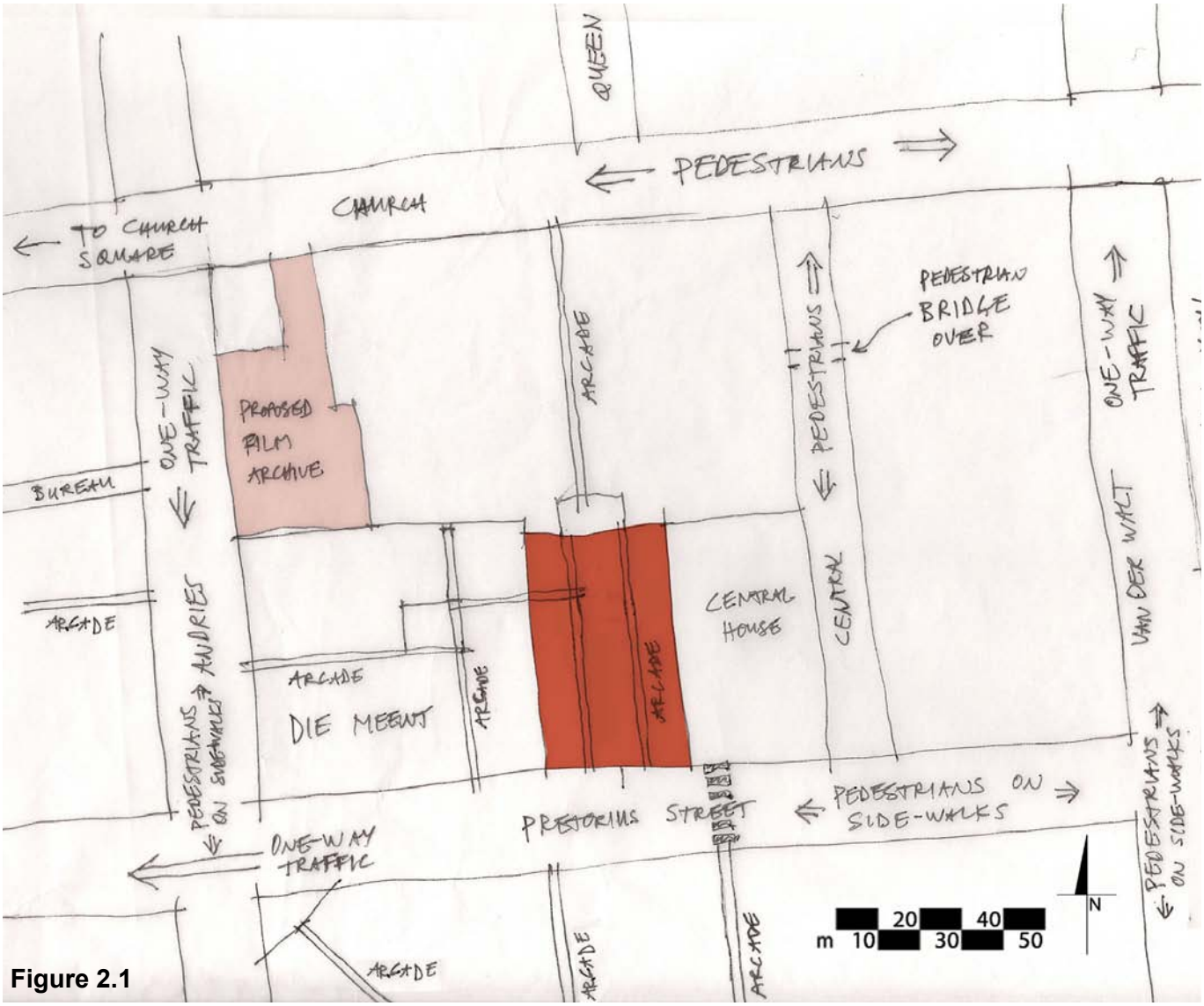


Figure 2.1

Figure 2.2

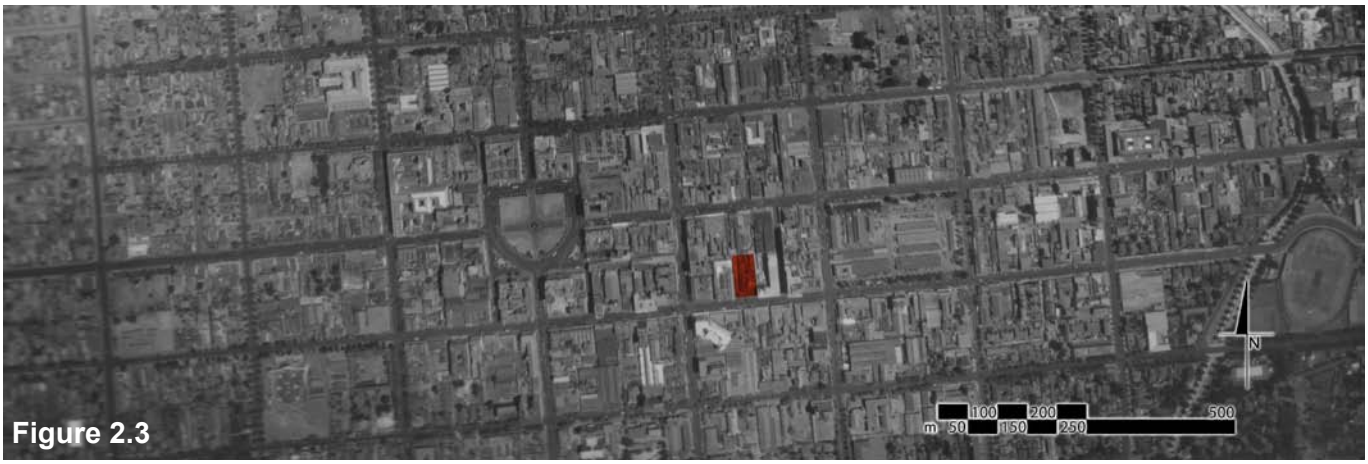


Figure 2.3

Fig.2.1 - Sketch showing aspects of the proposed site (highlighted), in plan.
Fig.2.2 - Multirama view of the proposed site.
Fig.2.3 - 1947 aerial photograph of the Pretoria CBD with the proposed site highlighted.

projecting from the buildings, within arcades, and lastly, in dedicated pedestrian crossings with traffic lights (fig.2.1).

To the west of the site is Central House, a retail, office and apartment building that is significant, because of its Art Deco style (Le Roux 1990:91-92). It is also a historically protected building and thus over 60 years old, as evidenced on the 1947 aerial photograph of the region (fig.2.3). This is also the case with some of the neighbouring buildings (*ibid.*:88-95).

The city layout was originally based on the Roman city grid that was adjusted to the natural environment (Holm 1998:60, 62-63). Church Street is historically significant, because it is the *decumanus*, the main east-west street (*ibid.*:62). Currently it is the main pedestrian street in the Pretoria CBD connecting the two main open spaces of this area: Church

Fig.2.4 - Sketch of the proposed site as viewed from Pretorius Street, indicating characteristics.
Fig.2.5 - Sketch of the western courtyard between the City Centre and Die Meent buildings, with characteristics shown.

Square and Lilian Ngoyi Square; the former being a relaxation space for those working in the city and the latter being a market area. Pretoria's growth is characterised by the addition of many areas, with a faster rate of development occurring in the east. (Jordaan 1990:53).

The arcade system is a unique part of the city centre and was implemented to divide the long east-west city blocks into at least two parts in order to promote pedestrian accessibility. There are two north-south arcades on the site, which in turn connect to others (fig.2.1).

The proposed site is situated in the North Gauteng climatic zone (Holm 1996:69). Temperatures vary highly from morning to evening, with moderate humidity levels (*ibid.*). During the winter months the climate is usually dry and warm with erratic cloudbursts during the summer months (*ibid.*:69-70). The vertical sun angle at 12:00 during winter is 40,7°, while during the solstice it is 64,2° (*ibid.*:72). The main wind directions during summer is east-north-easterly to east-south-easterly and during winter south-westerly with some from the north-east (*ibid.*:69). For a summary see figs.2.4-2.6.

2.3. Building analysis

The building's shape and structure is illustrated in figs.2.7-2.8, with photographic views in figs.2.9-2.16. The City Centre building and Die Meent building are located on the same municipal erf (fig.2.17). These two buildings can thus be seen as one site. However, for the purposes of the project, they are treated as separate entities, because they were originally built as such and because the argument calls for it (see Chapter 3). They only

Figure 2.4

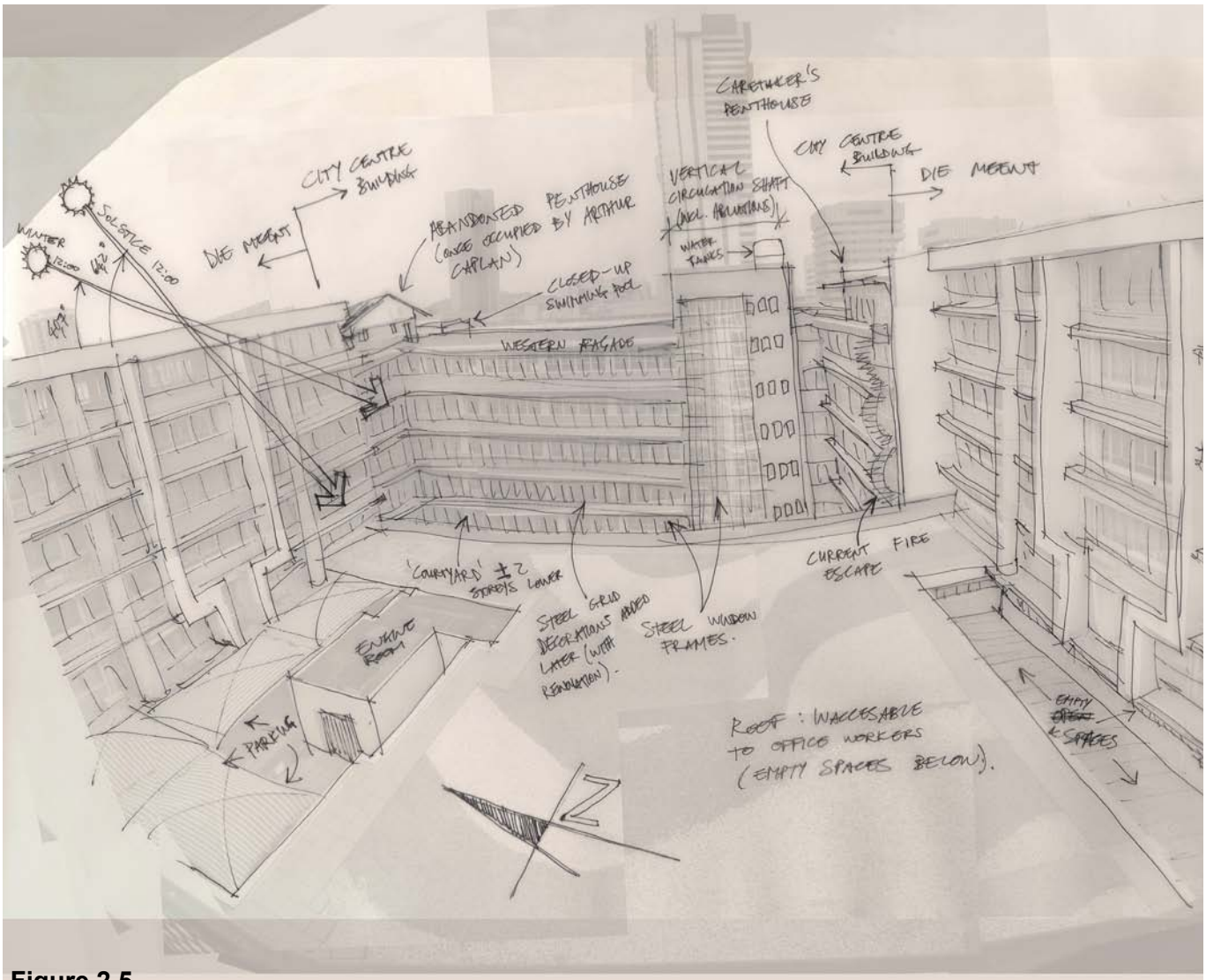
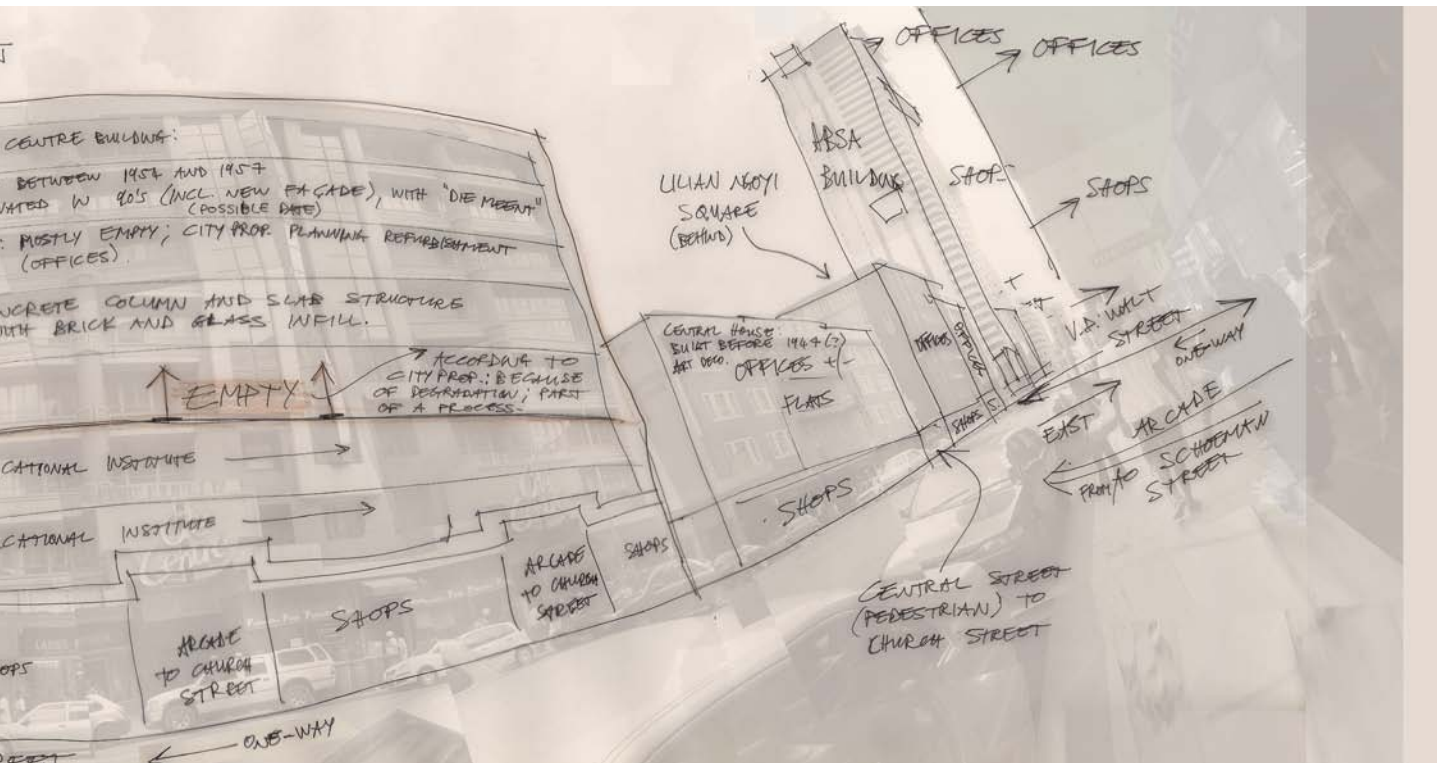

CARETAKER'S PENTHOUSE
CITY CENTRE BUILDING
DIE MEENT
VERTICAL CIRCULATION SHAFT (INCL. ABLUTIONS)
WATER TANKS
CITY CENTRE BUILDING
DIE MEENT
SOLSTICE 12:00
WINTER 12:00
ABANDONED PENTHOUSE (ONCE OCCUPIED BY ARTHUR CAPLAN)
CLOSED-UP SWIMMING POOL
WESTERN FAÇADE
'COURTYARD' ± 2 STOREYS LOWER
STEEL GRID DECORATIONS ADDED LATER (WITH RENOVATION).
STEEL WINDOW FRAMES.
CURRENT FIRE ESCAPE
ENTRANCE ROOF
PARKING
ROOF: INACCESSIBLE TO OFFICE WORKERS (EMPTY SPACES BELOW).
EMPTY SPACES

Figure 2.5


CENTRE BUILDING:
BETWEEN 1954 AND 1957
90's (INCL. NEW FAÇADE), WITH 'DIE MEENT'
(POSSIBLE DATE)
MOSTLY EMPTY; CITY PROP. PLANNING REFURBISHMENT
(OFFICES)
CONCRETE COLUMN AND SLAB STRUCTURE
WITH BRICK AND GLASS INFILL.
EMPTY
ACCORDING TO CITY PROP.: BECAUSE OF DEGRADATION; PART OF A PROCESS.
CATIONAL INSTITUTE
CATIONAL INSTITUTE
SHOPS
ARCADE TO CHURCH STREET
ARCADE TO CHURCH STREET
SHOPS
ONE-WAY
OFFICES
OFFICES
ABSA BUILDING
SHOPS
SHOPS
ULIAN NGOYI SQUARE (BEHIND)
CENTRAL HOUSE BUILT BEFORE 1944 (?) ART DECO.
OFFICES +/-
FLATS
OFFICES
OFFICES
SHOPS
V.D. WALT STREET
ONE-WAY
EAST
ARCADE
FROM/TO SCHOEMAN STREET
SHOPS
CENTRAL STREET (PEDESTRIAN) TO CHURCH STREET

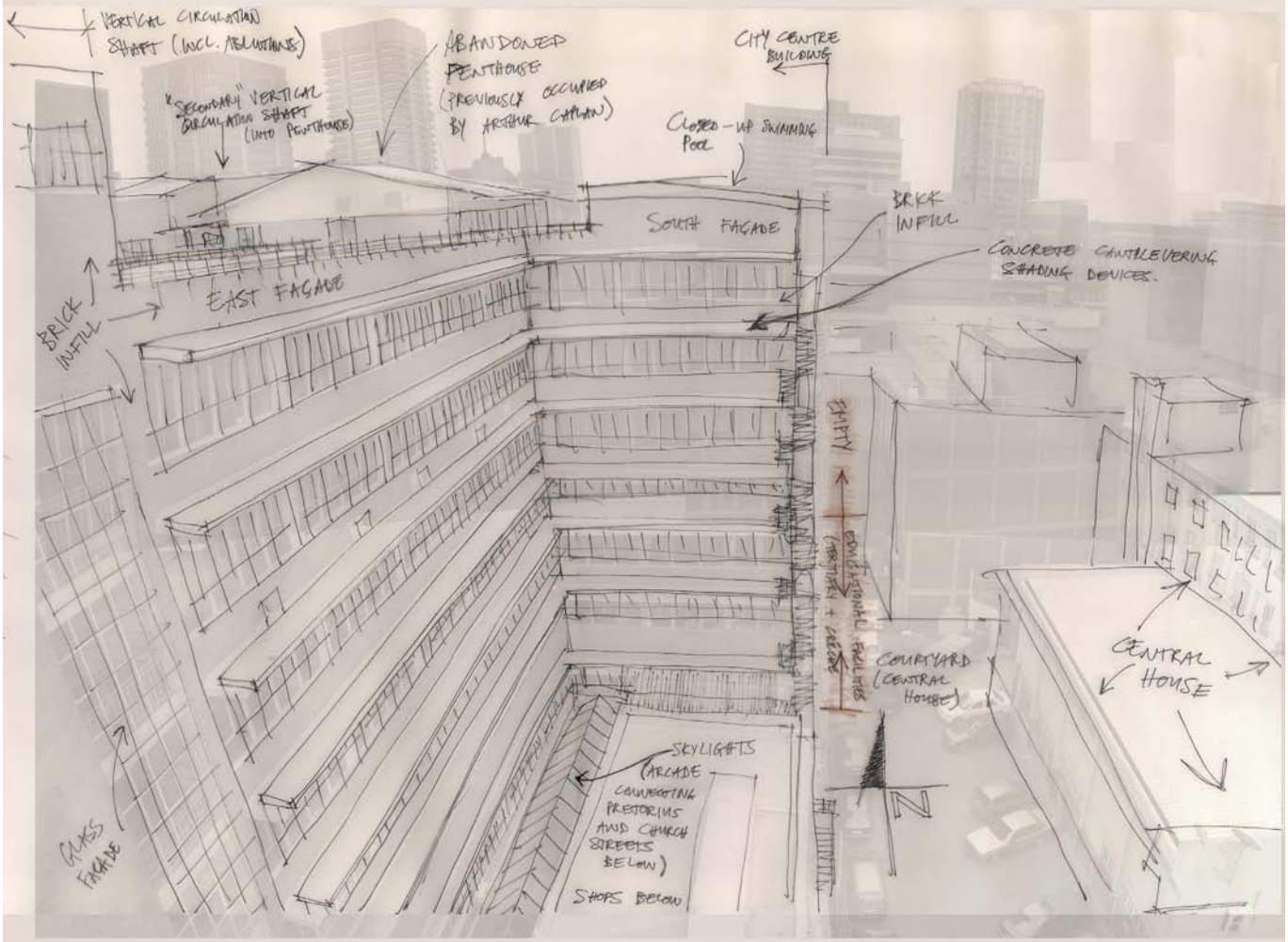


Figure 2.6

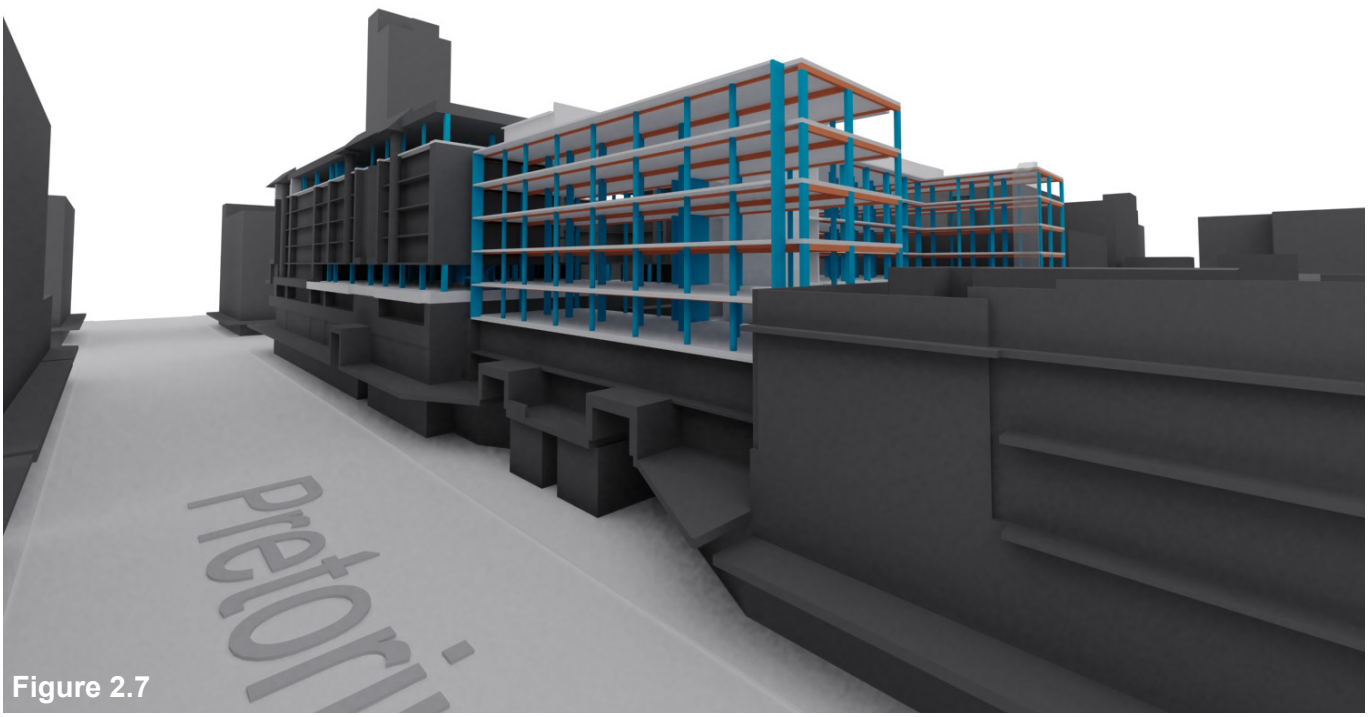


Figure 2.7

connect spatially at ground floor level, although they do share the same fire escape. City Property manages both buildings.

The City Centre building was built between 1954 and 1957. This is derived from old newspaper photographs of the Old Town Hall (figs.2.18 and 2.19, the latter having the original City Centre building in the background, the former with it not yet built). Fig.2.20 also shows the original modernist façade. Die Meent building was constructed on the Old Town Hall site in the 1970's, originally up to three storeys (Hoofstad 1975:24-25, fig.2.21) and later extended to its current size. Renovations were done on both buildings in the 1990's by Louis Peens Architects (van Rensburg 2009), which led to the buildings' current cohesive image. The façades on Pretorius Street of both buildings are a combination of painted and plastered surfaces,

Fig.2.6 - Sketch of the eastern courtyard between the City Centre and Die Meent buildings, with characteristics indicated.

Fig.2.7 - Perspective rendering of the structure of abandoned spaces in the City Centre and Die Meent buildings, viewed from the eastern side of Pretorius Street:
light grey - slabs and structural brickwork,
orange - horizontal beams,
blue - columns.

Fig.2.8 - Perspective rendering of the structure of abandoned spaces in the City Centre and Die Meent buildings, viewed from the Central House building:
light grey - slabs and structural brickwork,
orange - horizontal beams,
blue - columns.

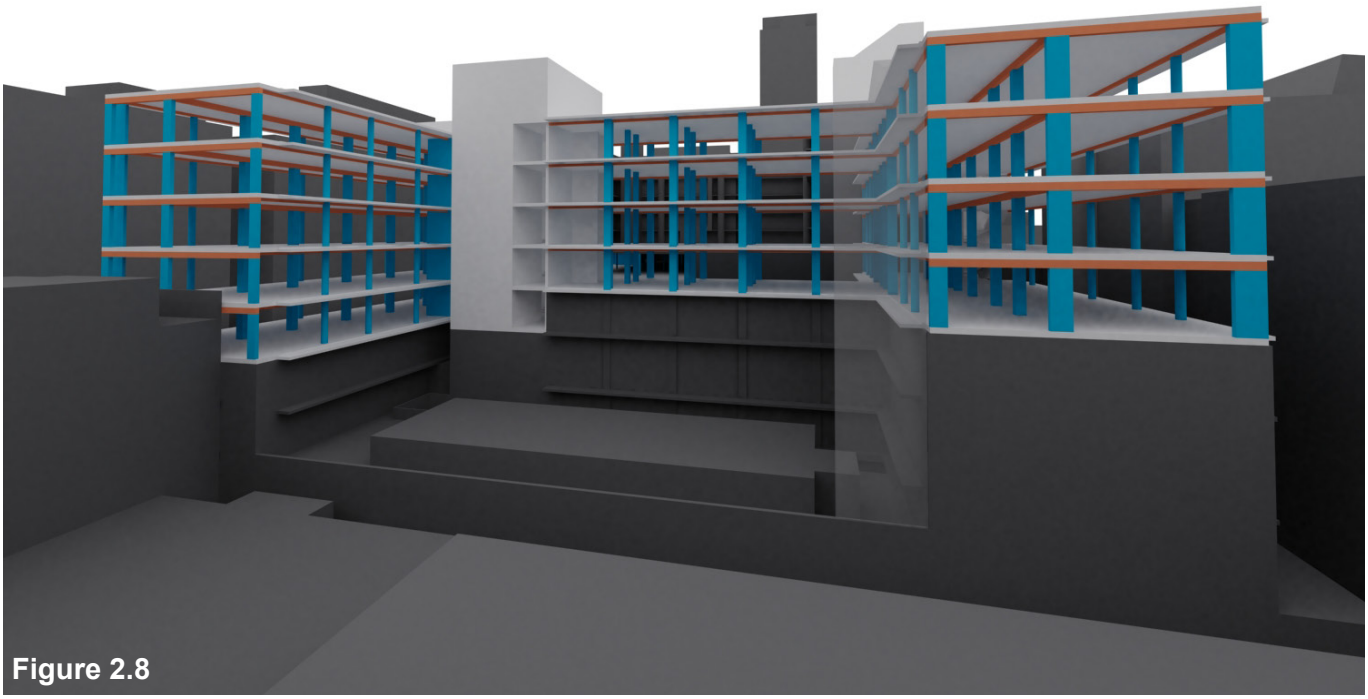


Figure 2.8

Figure 2.9

Fig.2.9 - Multirama view of Pretorius Street from Die Meent building empty floor towards the east.

Fig.2.10 - Multirama view of the northern courtyard between the City Centre building and the luxury apartments building.

Fig.2.11 - Multirama view over Pretorius Street from Die Meent empty floor towards the south.

Fig.2.12 - View of the unused courtyard in between the empty spaces of Die Meent building.

Fig.2.13 - Multirama view of the Central House building and the eastern courtyard between it and the City Centre building, from the latter.

Figure 2.10

Figure 2.11


Figure 2.12

face brick elements and steel decorations (figs.2.2 and 2.9). This theme is carried into the interiors of Die Meent building (fig.2.16). The City Centre building's façade remains unchanged, except for the same steel decorations fastened to the concrete cantilevering shading devices, and the brick infill façade of the western courtyard (figs.2.15 and 2.16). Both buildings' windows are made of standard steel window sections, together with concrete roofs and parapet walls.

The concrete frame structure of both the City Centre building and Die Meent building also consists of horizontal beams at some of the edges and in-between some of the columns (figs.2.7 and 2.8). Although this structure is restricting, it can be adapted slightly to aid in connecting the spaces of the two buildings. Due to level differences between the open spaces of these buildings, some parts of


Figure 2.13

Figure 2.14

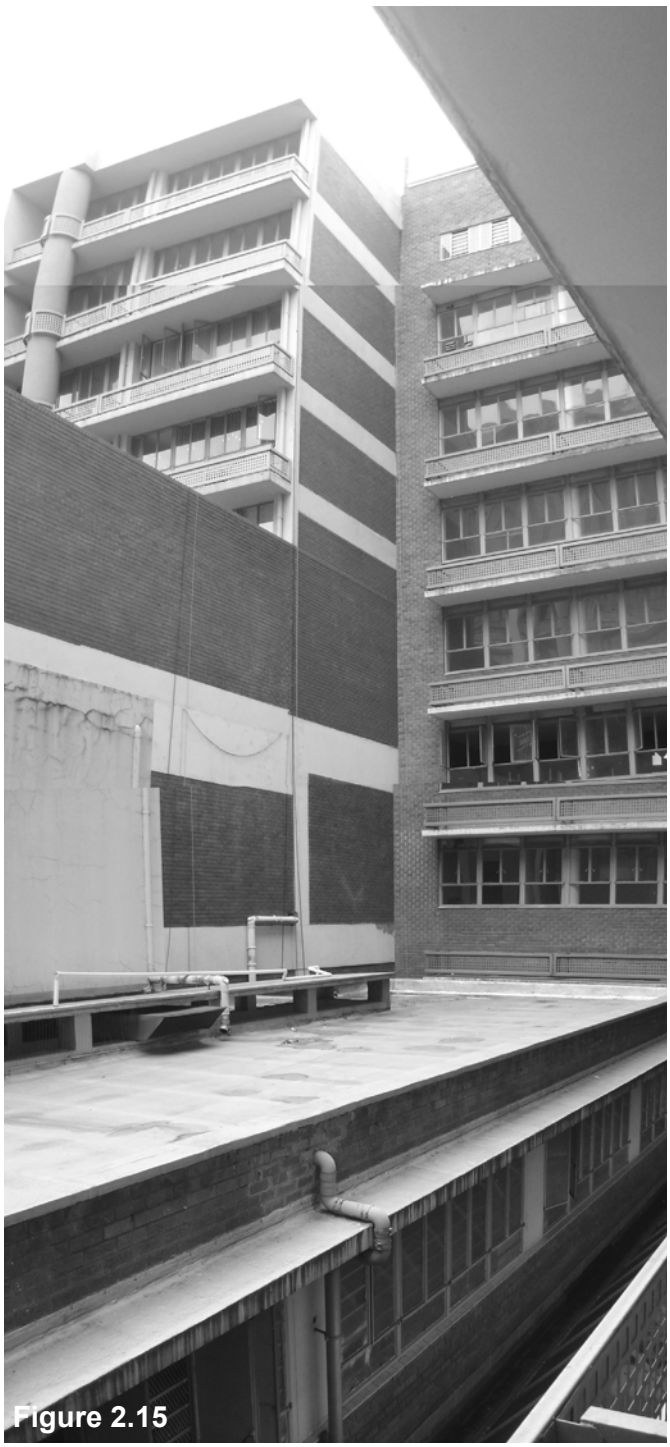


Figure 2.15

Fig.2.14 - Panorama view of the interior of an empty space in the southern block of the City Centre building.

Fig.2.15 - Vertical panorama view of the western courtyard of the City Centre building, with Die Meent building's largest courtyard to the left above.

Fig.2.16 - Multirama view from the northern block of Die Meent building towards the south to its largest courtyard, with the City Centre building to the left.

the slabs can be demolished, however removing a whole floor will be difficult and will generate too much concrete waste (Burdzik 2009).

2.4. Client profile

City Property, the proposed primary client, currently manages City Centre and Die Meent buildings and is in the process of renovating their empty interiors, after which they plan to rent them out (Lalor 2009). Barnes Van Der Walt Architects handed a draft proposal to City Property during March 2009 (*ibid.*). The building will stay in its current state, until the shareholders approve the planned actions.

The proposed secondary client is MINI Space, an “urban initiative by MINI” (www.minispace.com). This team hosts events and competitions, with the

Figure 2.18

underlying theme of “creative use of space”. The principle behind the initiative is the original MINI motorcar and their events comprise of design competitions, parties, “the Young Directors Project”, etc. (*ibid.*). They promote many different fields of art and design, including architecture, photography, visual art and much more. Anyone can become part of this community via the Internet.

MINI Space also hosts physical events, such as the MINI Rooftop NYC, which was a social event hosted over a few days on the roof of a building in New York City (*ibid.*). MINI Space has not expressed the need for a permanent gallery and therefore this brief is hypothetical.

2.5. Application of group frameworks

Fig.2.22 indicates how the project fits into the different proposed frameworks together with the proposed film archive by fellow student J. Bruwer.

Pretorius Street is classified in the proposed Pretoria CBD Framework (see Appendix A) as a secondary street. Together with Schoeman and Vermeulen Streets it will have a character of movement, where traffic can either enter or exit the city. Chevron-shaped, rough surfaces will indicate the direction of travel and also slow down traffic (fig.2.23). No specific colour is proposed for this street, which thus allows for freedom in the proposed project.

The project incorporates the principles of the framework as follows:

- new façades to aid in the legibility of the city and accentuate the proposed gallery,
- the interface with the street is at pedestrian level, yet it leads to a higher space which

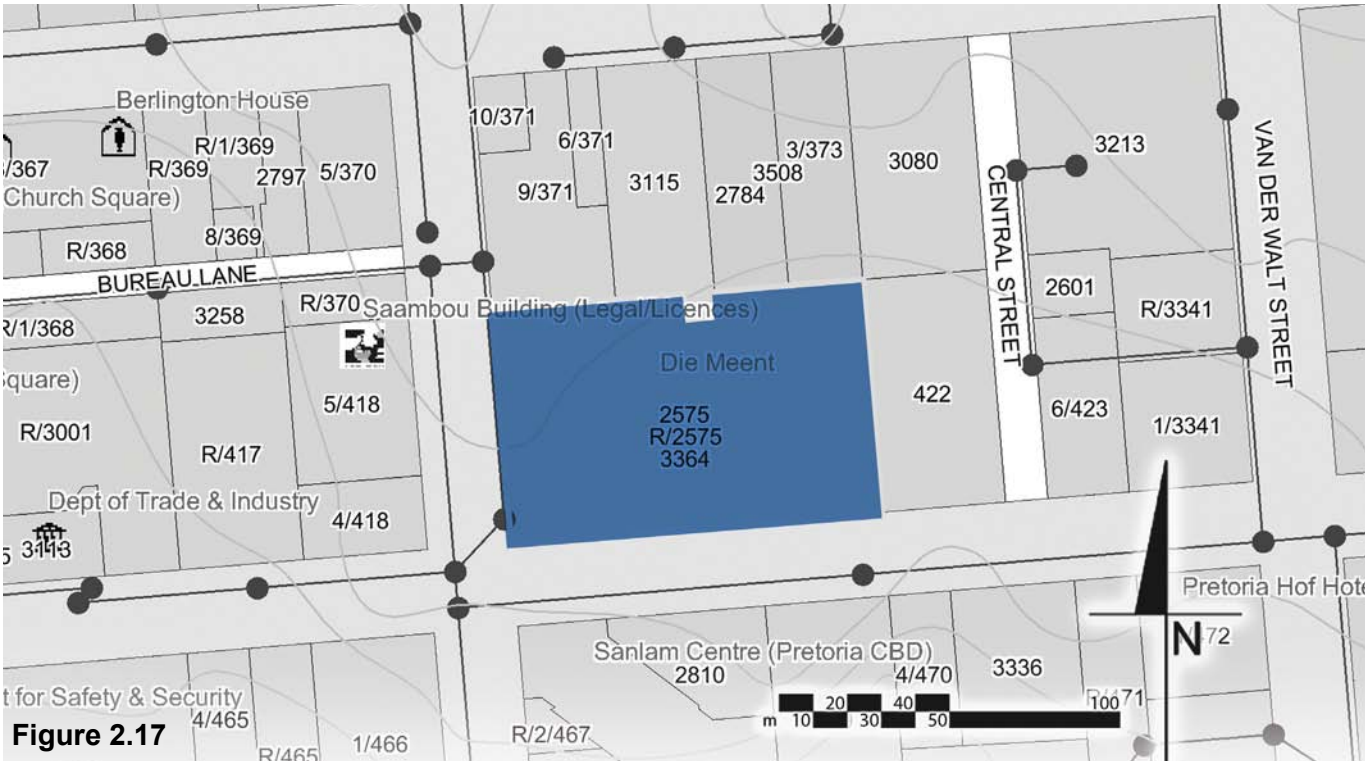


Figure 2.17

Fig.2.17 - Plan indicating municipal erf boundaries with the City Centre and Die Meent buildings' site highlighted.

Fig.2.18 - Photograph of the proposed site published in the Pretoria News in 1954, with the City Centre building still unbuilt.

Fig.2.19 - Photograph of the proposed site published in the Pretoria News in 1957, with the City Centre building just visible in the background.

Fig.2.20 - Photograph of the proposed site published in the Pretoria Mail in 1970, showing the City Centre building's original façade.

Fig.2.21 - Photograph of the original Die Meent building, published in the Pretoria News in 1988.

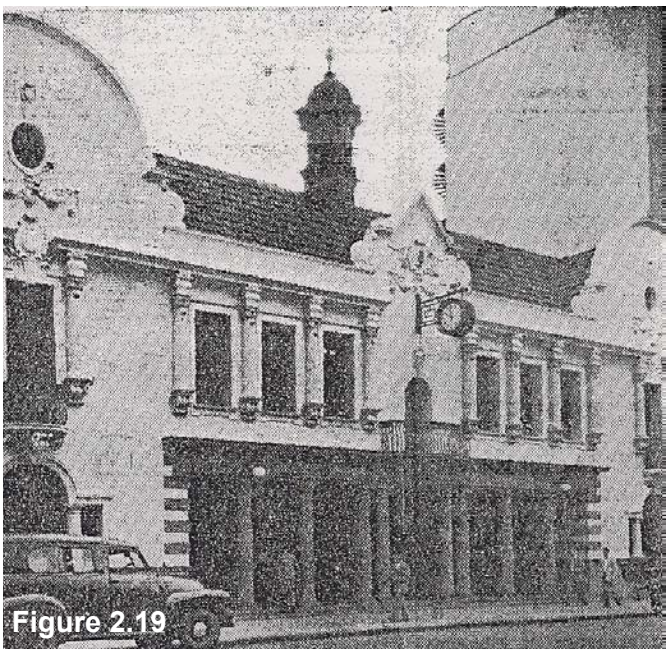


Figure 2.19

Figure 2.21

Figure 2.20

can be seen from below,

- this new building acts as an element of surprise and becomes a secondary pause space along a movement spine,
- the arcades are incorporated in the new design, with secondary routes on higher levels connecting the proposed gallery and the proposed film archive.

The second framework in which this proposal is grounded, focuses on the city block (see Appendix A). Together with the film archive (fig.2.1) this framework suggests a new way of looking at a cityscape, putting forward the idea of using forgotten roof or interior spaces and the consequent creation of secondary routes through buildings on higher levels in or on existing structures. These principles are evident in the scheme's questioning of site and the hollowing out of empty floors to create new sites. The lack of a social framework in the city is also addressed in this framework and the project thus proposes the new multi-purpose gallery.

The third framework applied in this study, Schizocity, puts forward a new way of finding solutions to the urban issues of Pretoria (especially the CBD). It is a theoretical model rather than a set of specific guidelines. Its principles are also evident in the new way of creating sites and looking at the city block in a three-dimensional way (as with the City Block Framework).

2.6. Conclusion

- The principles of the arcades should be incorporated.
- Current and proposed pedestrian movement has to be considered.

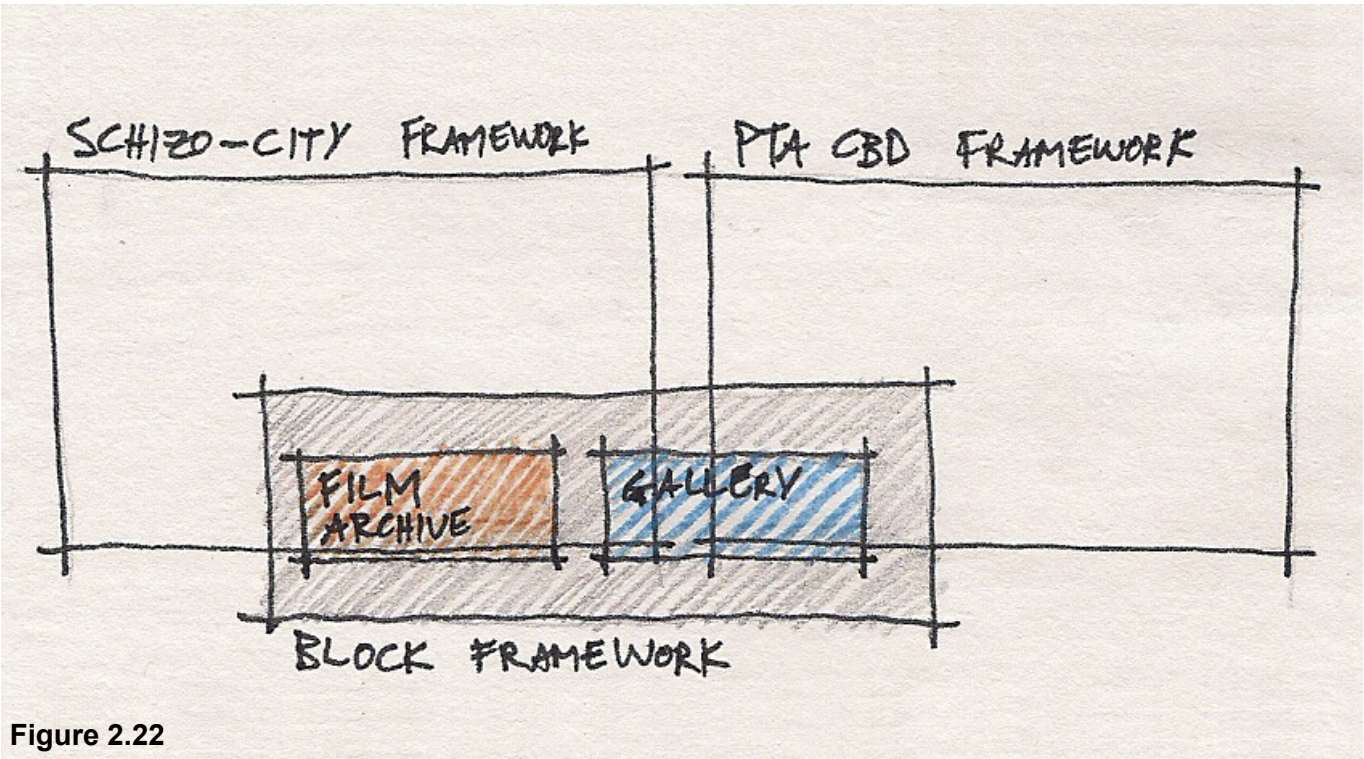


Figure 2.22

Fig.2.22 - Diagram indicating how the proposed buildings are incorporated within the relevant frameworks.

Fig.2.23 - Diagram showing the proposed rough surfaces in Pretorius Street, in plan.

- A movement link should be created on a higher level to connect the MINI Space Gallery with the proposed film archive.
- The existing structure must be used as another layer for the design of the gallery.
- Climatic and geographical factors should be incorporated.
- MINI Space's identity has to be used to establish the gallery as a destination point in the city.

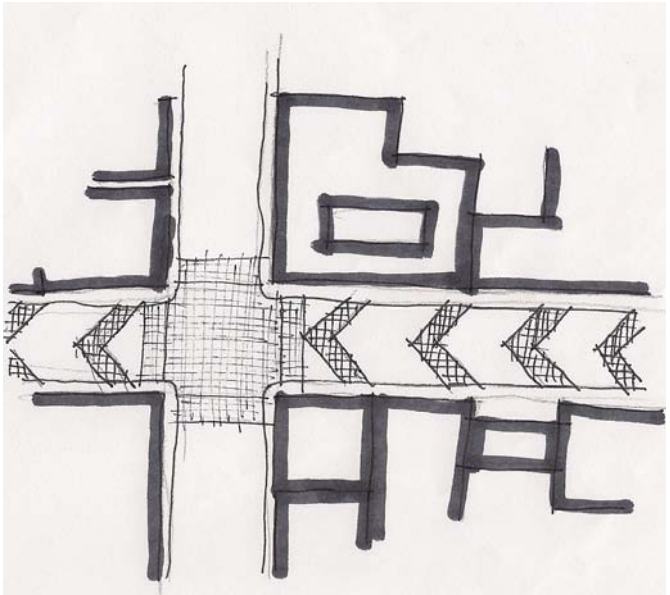


Figure 2.23

Chapter 3

Theory

3.1. Introduction

What is architecture? With this question in mind, this chapter focuses on the argument used in the design of the dissertation project. The main theory, deconstruction, is examined first, after which its application and further theories about the definition of architecture are investigated.

3.2. Deconstruction

There are two principle streams of thought in architectural deconstructive theory. The proponents of the first stream, use the philosophical and linguistic theories of Jacques Derrida to influence their work. (Broadbent 1991). The second group focus on architectural theory, claiming that it came into being through their involvement in the

discipline, as is evident in Johnson's and Wigley's (1988) publication.

The first group see deconstruction as a new form of logic (Broadbent 1991:35). It is about analysing ways of thinking, as Derrida (1996:146) put it:

> "Something has been constructed … and along comes a de-constructor and destroys it stone by stone, analyses the structure and dissolves it … one looks at a system … and examines how it was built, which keystone, which angle of vision supports the building; one shifts them and thereby frees oneself from the authority of the system … however … this is not the essence of deconstruction … It is not simply the technique … but a probing which touches upon the technique itself."

Derrida goes further by attacking the beliefs of ethnocentrism, wherein one culture asserts its superiority over another; logocentrism consisting of abstract truths; phonocentrism comprising of the spoken versus written word; and, to a lesser extent, metaphysics, ontotheology and science (Broadbent 1991:36). This line of thought was applied by other philosophers, as described in Patin's (1993:94) explanation of deconstruction. He concurs (*ibid.*) with Goosen (2009) when he states that it is the means by which binary oppositions are identified, with one being of a higher value. It is then deconstructed, so that the other term becomes greater, showing the flaws in the argument. By applying this theory to architecture one can deconstruct:

- architectural texts, e.g. the phrase "less is more" (Broadbent 1991:63-67),
- brief or programme, e.g. Tschumi's Parc de

la Vilette (*ibid.*:67-80),
- architectural form (*ibid.*:80-85),
- and structure (*ibid.*:85-91).

Broadbent (*ibid.*:91) admits that deconstruction in architecture can be called a 'style' as hinted at by Porter (2004:47-48) in his definition of the theory, stating that Coop Himmelb(l)au's rooftop remodelling (see chapter 4) is based on aesthetics. However, it becomes clear in Broadbent's (1991) writing that this is not the case. Johnson (1988:7) agrees, stating "deconstructivist architecture is not a new style."

The second group's theory is slightly different. As Wigley (1988:10-11) states:

> "It is the ability to disturb our thinking about form that makes these projects deconstructive. It is not that they derive from the mode of contemporary philosophy known as 'deconstruction'. They are not an application of deconstructive theory. Rather, they emerge from within the architectural tradition and happen to exhibit some deconstructive qualities."

Architects have always wanted to achieve pure form (*ibid.*:10), in order to attain Vitruvius' (1960:17) "beauty" or "delight", but deconstructivism acknowledges that impurities are important elements in building forms (Wigley 1988:10-11). "Traditional thinking about the nature of the architectural object was placed in doubt" by the constructivists (*ibid.*:11). This was taken as the inspiration of deconstructivism, but adapted to result in the "de-" (*ibid.*:16). While constructivism creates instability by using pure forms in dynamic and innovative

Fig.3.1 - Perspective sketch of buildings at different levels, intersecting each other.

relationships, deconstructivist architecture distorts the forms themselves from within the structure (*ibid.*:15-17). "By exploiting the hidden potential of modernism" (*ibid.*:19), deconstructivist architecture opposes post-modernism, but in a different way – instead of letting form follow function, like the modernists (*ibid.*), form becomes more important, in such a way that "function follows deformation" (*ibid.*).

There are, however, strong similarities between both deconstructive theories. Both deconstruct using the elements in question themselves, working from within (Goosen 2009 and Wigley 1988:16-17). Broadbent (1991:22) even goes as far as quoting Wigley's 'non-Derridean' description of Coop Himmelb(l)au's rooftop remodelling to prove his point that deconstructivist architecture has Derridean influences.

Both types of deconstructive architecture can seem to disregard function in order to emphasise form. Some of Eisenman's work focuses on being autonomous (Patin 1993:89), yet "if Eisenman's early design and theory are taken seriously, architecture can no longer be simply functional, but neither could it be autonomous" (*ibid.*:98). Thus:

> "Despite calling into question traditional ideas about structure, these projects are rigorously structural. Despite calling into question the functionalist rhetoric of modernism, each project is rigorously functional." (Wigley 1988:19).

The combination of these concepts, forms the basis of the definition for "deconstruction" that has been determined as the theory by which norms and

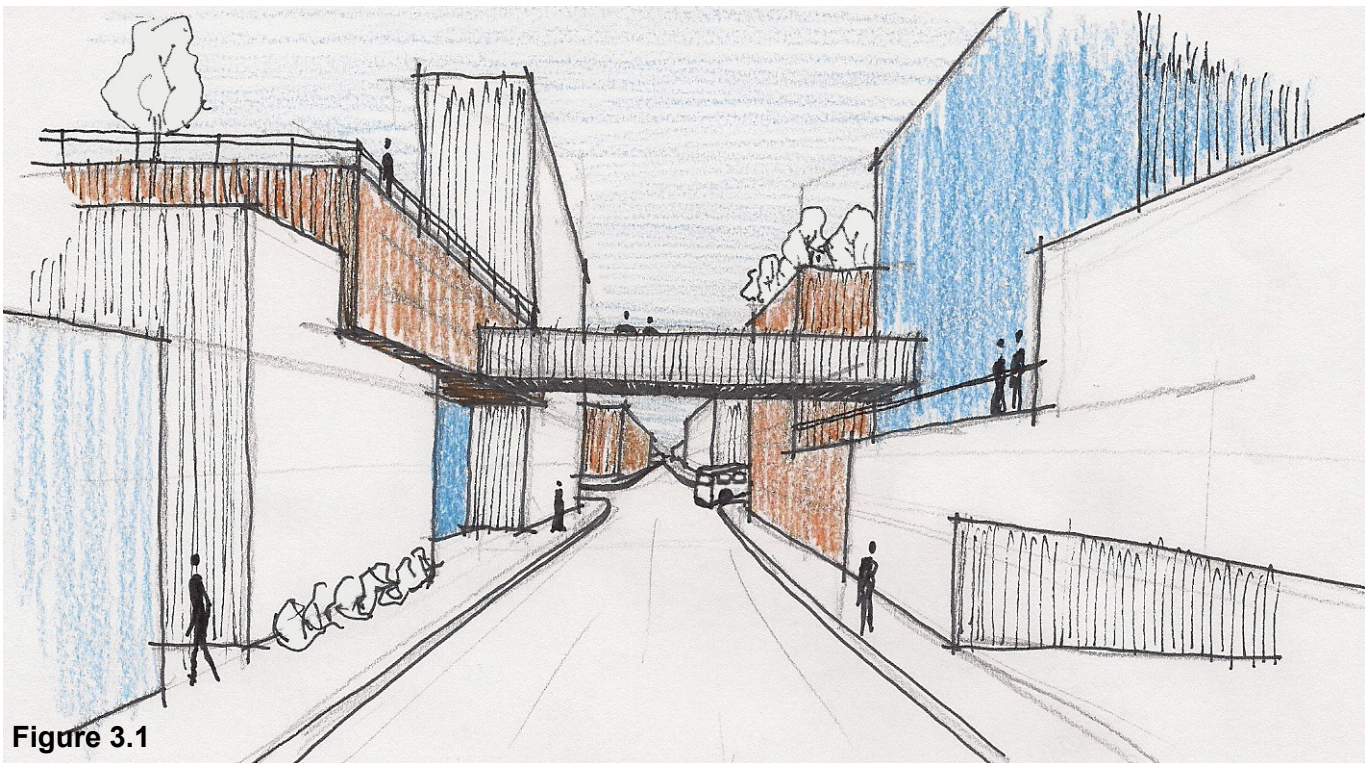


Figure 3.1

ideas are questioned and restructured from within to form new ways of thinking and new products. In architecture this theory results in the deconstruction of form and its elements to create buildings.

3.3. Q:xyz

This dissertation thus questions the cartesian x-y-z axes, re-examining the position of site and the arcade. The x-y-z of architecture is questioned as part of the deconstructive process of design. As with so many abandoned buildings in the Pretoria CBD, the owners need a new model for selling, or renting land. Traditionally, the term ‘site’ deals with the soil on which something will be built. However, following from the global economic crisis and the increasing lack of developable land in urban areas, the re-use of existing structures, becomes important. Thus, this dissertation proposes that each floor in a building be seen as ‘sites’. When spaces in buildings become vacant, the owners should be able to re-sell spaces as new ‘sites’ with certain regulations and provisions. In this way, cities can truly become three-dimensional, using the x-, y- and z-planes to create buildings that intersect with each other in all three directions (fig.3.1).

3.4. The new site

New sites are established within the existing spaces. Much like Coop Himmelb(l)au’s existing rooftop remodelling (Wigley 1988:17), these sites have always existed, but are only now released. To achieve this, the empty floors of the City Centre and Die Meent buildings are divided into sectional title stands, which in turn are sold. This division is done

according to set principles, providing service points to every new site.

With the proposed model for creating ‘sites’, new buildings will be constructed on different levels. The dissertation aims to emphasise this fact, with one building intersecting two others (fig.3.2). For this reason, the City Centre and Die Meent buildings are treated as two separate buildings, even though they are on the same municipal stand.

It is proposed that the arcade system is adopted to cater for movement in the new three-dimensional city. A link is established between the proposed new ‘sites’ and the proposed film archive, but on a higher floor than ground level. This link is strengthened by semi-private and semi-public green spaces on the same level, geared toward users of the proposed spaces (fig.3.3).

3.5. Architecture

The question of “what is architecture” is still raised in architectural theory, though, after studying various essays, it was found that it is only referred to indirectly. Architecture, according to the following sources, can be defined as:

- about space (Lao-Tzu, c.6th century BC, in Broadbent 1991:63),
- “durability, convenience, beauty” (Vitruvius, c.46 BC, 1960:17),
- mass and surface which is generated by the plan (le Corbusier 1931:17, 26),
- “the masterly, correct and magnificent play of masses brought together in light” (*ibid.*:37),
- space (Wright, in Broadbent 1991:63),
- “complex and contradictory”, incorporating Vitruvius’ aspects (Venturi 1966:16),

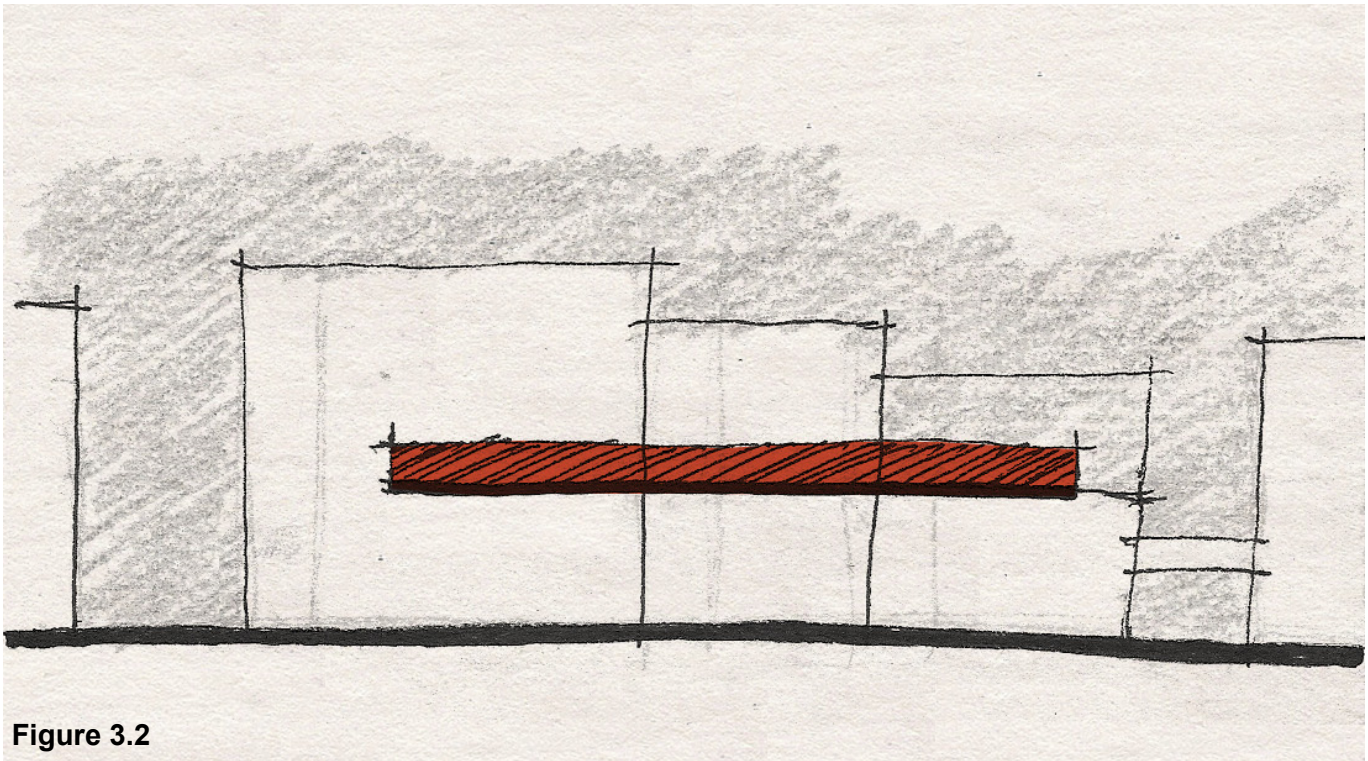


Figure 3.2

Fig.3.2 - Sketch showing the proposed building highlighted, intersecting two existing buildings and extending onto another's roof.

Fig.3.3 - Aerial photograph with the proposed green spaces on higher levels highlighted.

- according to deconstructivists form is primary, yet function and structure is still included (Wigley 1988:19),
- "solids whose surfaces do the enclosing of spaces" (Broadbent 1991:64),
- "sustainable, malleable, and beautiful" (Sorkin 2003:23),
- human life is above form and "we need to investigate processes … in construction … design and use" (Pasquarelli 2003:24),
- craftsmanship is the pleasure of moving between utility and beauty (Paz, according to Mayne 2003:41),
- form is beyond function, yet form and function are never distinct (McLeod 2003:50),
- "contextual and contingent" and "form never comes first" (Decq 2003:54),
- "organizing materials in such a way that the form and program of a building become consistent' (Zaera-Polo 2003:56),
- vectors (from programme), envelopes (from context) and, to a lesser extent, materials and concept (Tschumi 2003:64),
- to give form to the world, with components of 'life and 'community' and a focus on beauty (Goosen 2009).

From this it is concluded that architecture is primarily about the design of space, incorporating form/beauty, function/programme and tectonics/structure, which is the x-y-z of architecture.

Instead of working with these aspects from the start, a new method is followed. Each of them is designed separately, after which they are overlaid forcibly. This causes them to influence each other, without one being superior to any other. The in-between 'spaces' created by this overlaying become

Figure 3.3

important, just as the ‘space’ between binary oppositions are important to the deconstructivists (Goosen 2009).

3.6. Conclusion

- Question the definition of the site and consequently provide a solution by releasing new sectional title stands.
- Provide for movement by utilising ‘arcades’ to link the proposed gallery and film archive.
- Design each component of architecture separately at first, then layer all together and adjust accordingly.
- Provide dynamic yet simple spaces.
- Design for change, based on the fact that Deconstruction abandons absolute truths.

Chapter 4

Precedents

4.1. Introduction

This chapter evaluates projects that are similar to the thesis proposal. The projects were chosen for their functional, typological, theoretical or thematic similarities. Each project is described shortly, after which it is evaluated in terms of its influence on both the Site Development and the MINI Space Gallery.

4.2. Fiat Works (Lingotto), Turin

Originally by Giacomo Matté Trucco, 1916-1926, altered by the Renzo Piano Building Workshop, 1983, 2002 (figs.4.1-4.3)

This factory for the Fiat automobile manufacturing company, a marvel in its time, was adapted to suit contemporary needs after the factory closed (Encyclopedia of 20th Century Architecture,

Figure 4.1

Figure 4.3

2004:458-459). It is significant for this study, because it originally had the automobile as the subject, but has been adapted to suit an entirely different use.

The building, which is now seen as a monument for art (Buchanan 1997:62), became outdated in the 1970's, after which the Renzo Piano Building Workshop won the competition for its revival (*ibid.*:63). It is a long-running project (*ibid.*), the most recent addition being the most relevant for this investigation.

A small museum was added in 2002, comprising of a structure that seems to float above the roof of the existing building (di Paderno and Stephens 2003:130, fig.4.2). The new spaces continue to the floors beneath this structure (*ibid.*), allowing the museum to become part of, but also separate from the old building (fig.4.5). The massing is composed

Figure 4.2

Fig.4.1 - Fiat factory after the first renovations.
Fig.4.2 - The original Fiat factory.
Fig.4.3 - The museum, the latest addition to the factory.
Fig.4.4 - Sketch showing the massing of the museum, in section.
Fig.4.5 - Simplified section of the museum.

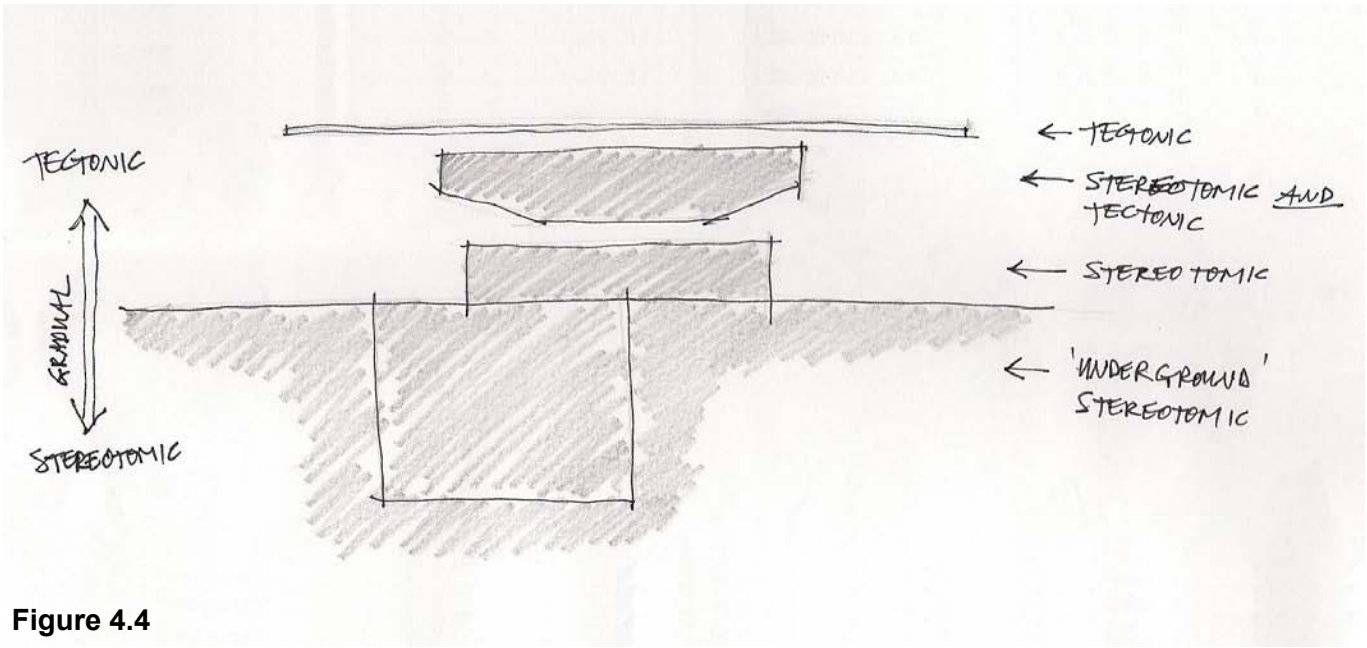


Figure 4.4

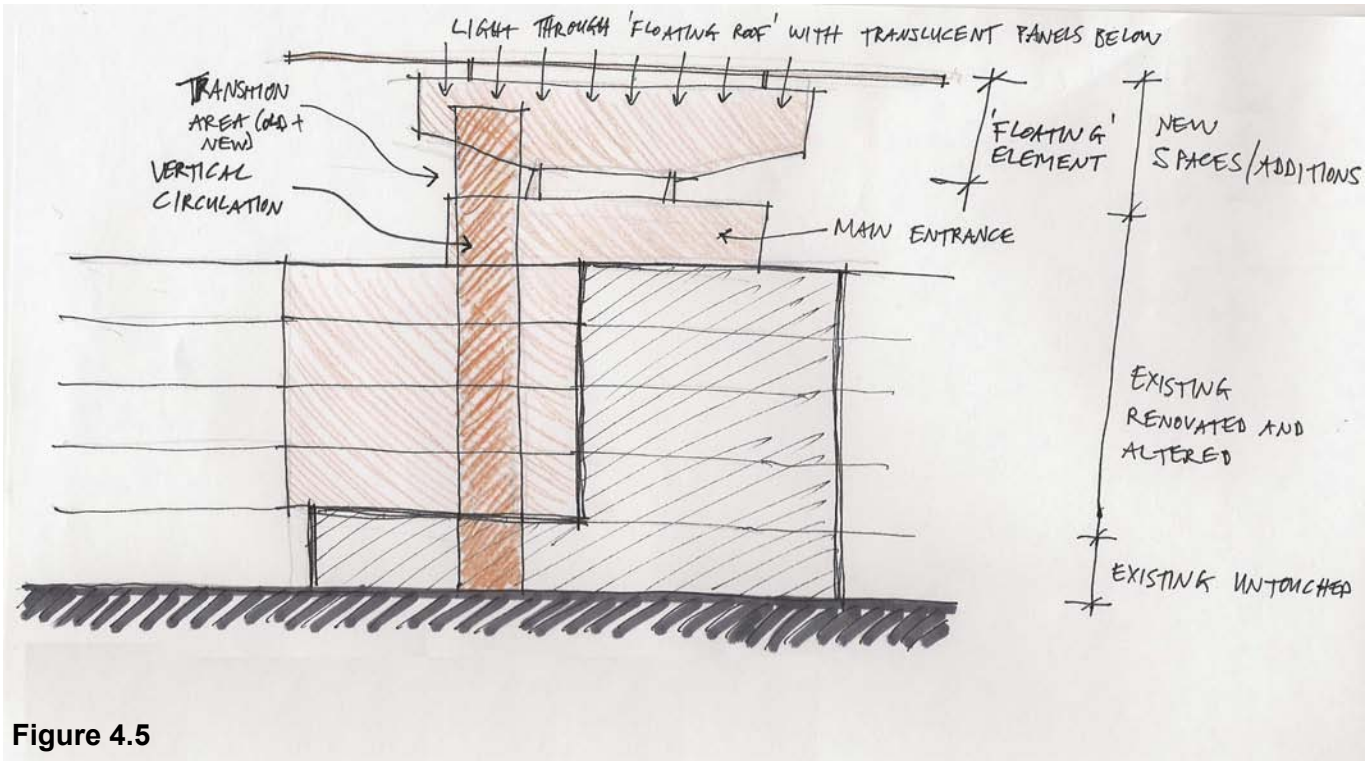


Figure 4.5

Fig.4.6 - Interior view of the museum.

Fig.4.7 - Exterior view of the rooftop remodelling.
Fig.4.8 - Diagram showing the rooftop remodelling's new elements with the old, in elevation.
Fig.4.9 - Interior view of the rooftop remodelling.

Fig.4.10 - Perspective rendering of the car museum.

Figure 4.6

in such a way that as one moves upward within the exhibition spaces, the building becomes lighter, progressing from the underground stereotomic, renovated areas, to the tectonic, floating, louvered roof (fig. 4.4).

This precedent serves to show how a new structure and function can be introduced into an existing building. It appears that people can move effortlessly between the old and the new intervention. This is enhanced by the staircase with open risers and glass balustrades (*ibid.*:132, fig.4.6), marking the difference between the old and the new, and enhanced by the transition space in the vertical circulation shaft (fig.4.5). The calmness achieved in the exhibition spaces of the older part (*ibid.*) is incorporated in the design of the proposed MINI Space Gallery.

Figure 4.7

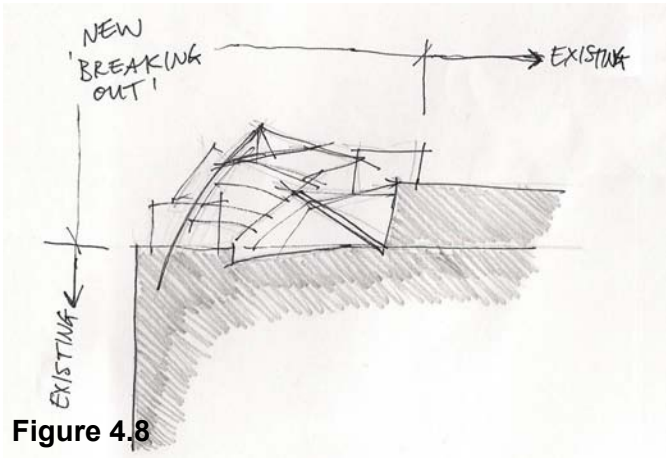


Figure 4.8

4.3. Rooftop remodelling, Vienna

By Coop Himmelb(l)au, 1983/1987-1988 (figs.4.7-4.9)

The roof of an apartment building was broken up to create office space beneath (Broadbent 1991:21-22). This project is yet another example of adaptive re-use and is seen as a relevant illustration of deconstructivist architecture (Johnson and Wigley 1988:17, 80).

Johnson and Wigley (1988:17, 80) describe this work as a distorted form breaking out of the existing structure. These dynamic forms are clearly visible in the building (figs.4.7, 4.9) and, when looking from within, are not merely decorations, but are elements with an influence on the space.

Similar forms are incorporated in the design approach of the MINI Space Gallery, as was the same 'breaking out' of elements (fig.4.8). Although the Rooftop Remodelling is formalistically complex, a simpler aesthetic is to be implemented in the Site Development and the MINI Space Gallery. This precedent also shows how an addition and renovation of an existing building can merge with the old, by means of contrasting and dynamic forms.

4.4. Car museum, Nanjing

By 3GATTI, Francesco Gatti (chief architect), to be completed in 2010 (fig.4.10 and 4.11)

This project was the winner of a competition for the design of an automobile museum (www.worldarchitecturenews.com). The architect uses folded planes to create a structure in which automobiles are displayed (*ibid.*). These forms were inspired by the art of origami and a piece of paper


Figure 4.9


Figure 4.10

Fig.4.11 - Interior perspective rendering of the car museum.
Fig.4.12 - Second level plan of the car museum, with column grid lines 7, 9, 14 and C darkened.
Fig.4.13 - Diagram of the car museum's structural layout, with columns, beams and floors.
Fig.4.14 - Diagram of the car museum's functional layers.

Figure 4.11

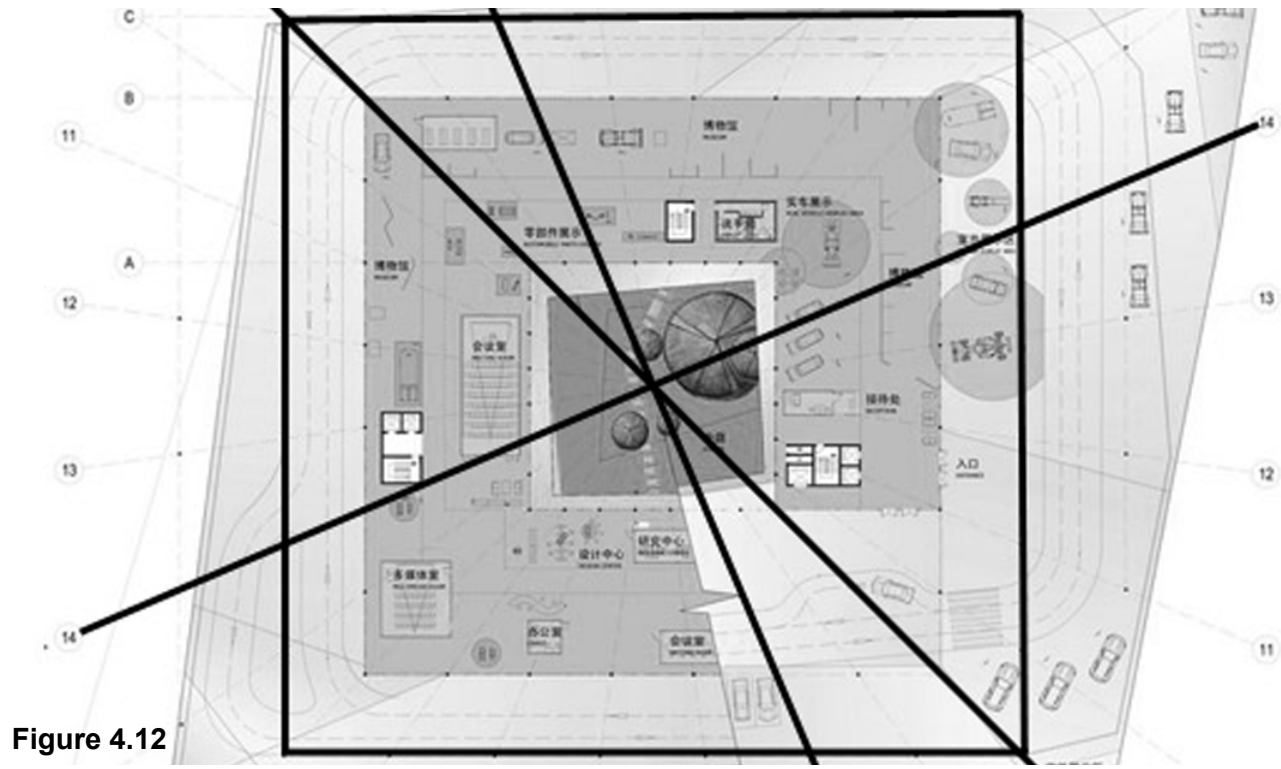


Figure 4.12

Fig.4.15 - Perspective rendering of the exhibition space.

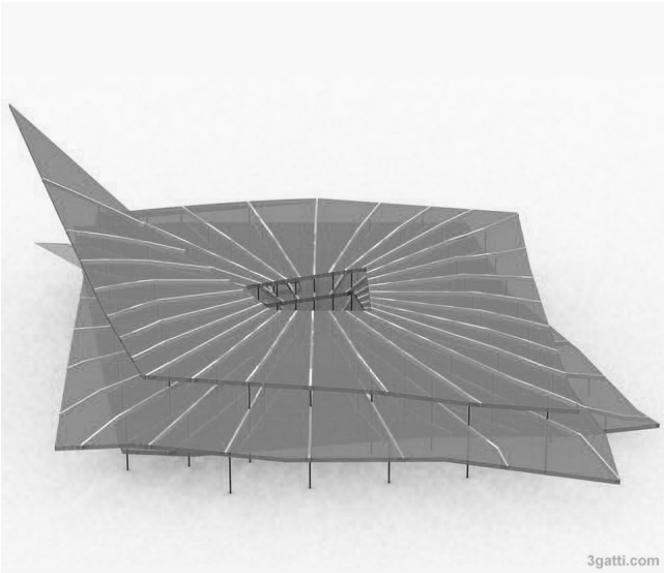
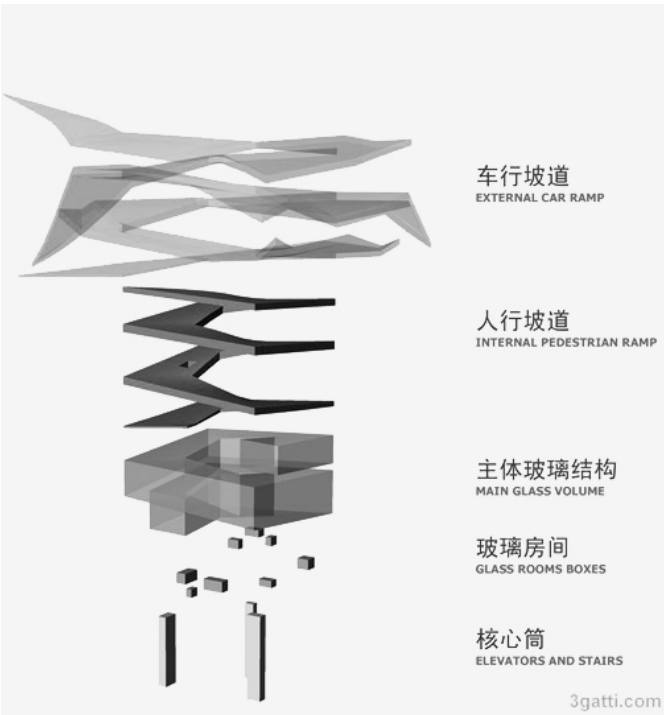


Figure 4.13

was cut and folded to generate the building's form (*ibid.*) It was chosen as a precedent for this study, because of its innovative ways of exhibiting objects.

The building consists of many layers. Functionally, movement is catered for by pedestrian and ramps, vertical circulation shafts and a glass volume (fig.4.12). Structurally, its columns, beams and floors form an additional layer (fig.4.13). The act of moving through the building is primary, with cars and pedestrians both using the slanted floors to access the whole building (*ibid.*). On plan, it becomes evident that new ideas were implemented instead of the normal grid layout to order the columns, the one set of lines converge at the centre of the building, with the second set forming squares (fig.4.14).

The principle of layering was applied in the Site Development plan and the MINI Space Gallery



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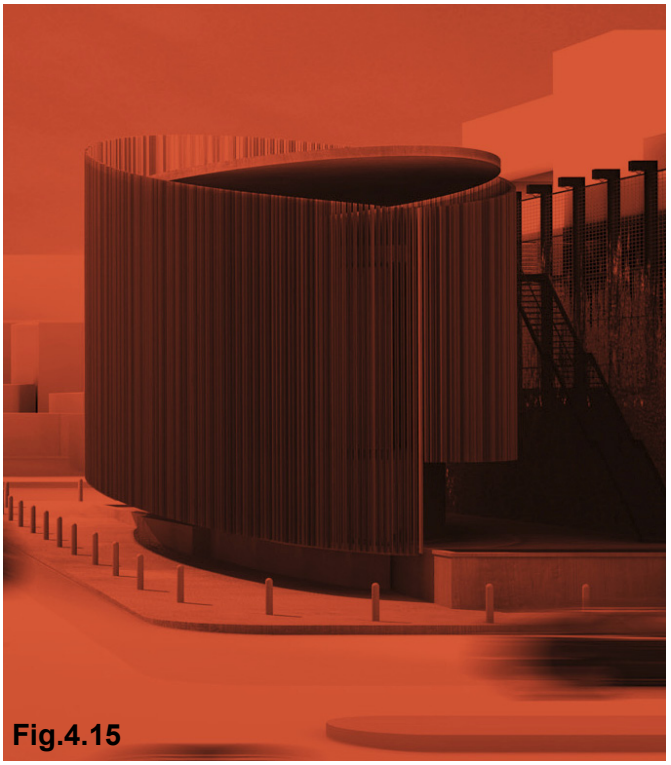


Fig.4.15

design, being translated as layers of form or beauty, function or programme and tectonics or structure. Similar dynamic volumes and planes were also incorporated.

4.5. Multi-purpose exhibition space, Rosebank

By studioMAS, under construction (fig.4.15-4.19)

An extension to an existing gallery, the new addition provides multifunctional spaces in which art can be exhibited as well as a space for social events (www.studiomas.co.za). The significance of this building is that its programme is the same as the proposed MINI Space Gallery.

The elliptical plan (fig.4.16) was chosen because it relates to a handmade process similar to the process of creating art (studioMAS). Detail elements, like the façade's aluminium strips, are inspired by the immediate and cultural context: reeds found on site, as well as cladding on Zulu Kraals (*ibid.*).

The simplicity achieved in this project is important for the dissertation. Figs.4.17 and 4.18 show the simple functional layouts. The principle of flexibility in the exhibition spaces, accomplished by vertical panels that can be rotated at will, but also lowered when not needed (*ibid.*; fig.4.19), is also integrated with the dissertation project.

4.6. Scuderie Aldobrandini, Rome

By Massimiliano Fuksas (fig.4.20 and 4.21)

This museum, gallery and conference centre was constructed within an existing building. It serves as a precedent primarily for the Mini Space Gallery.

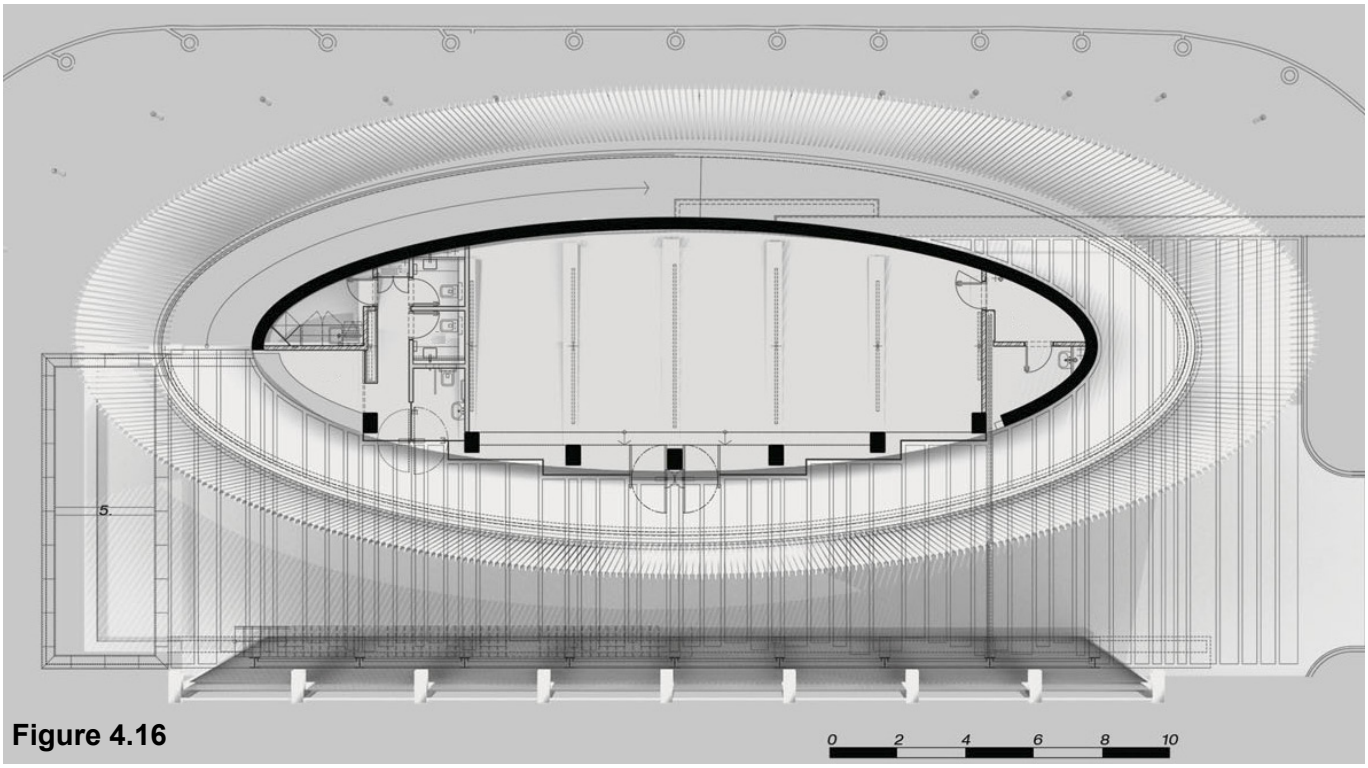


Figure 4.16

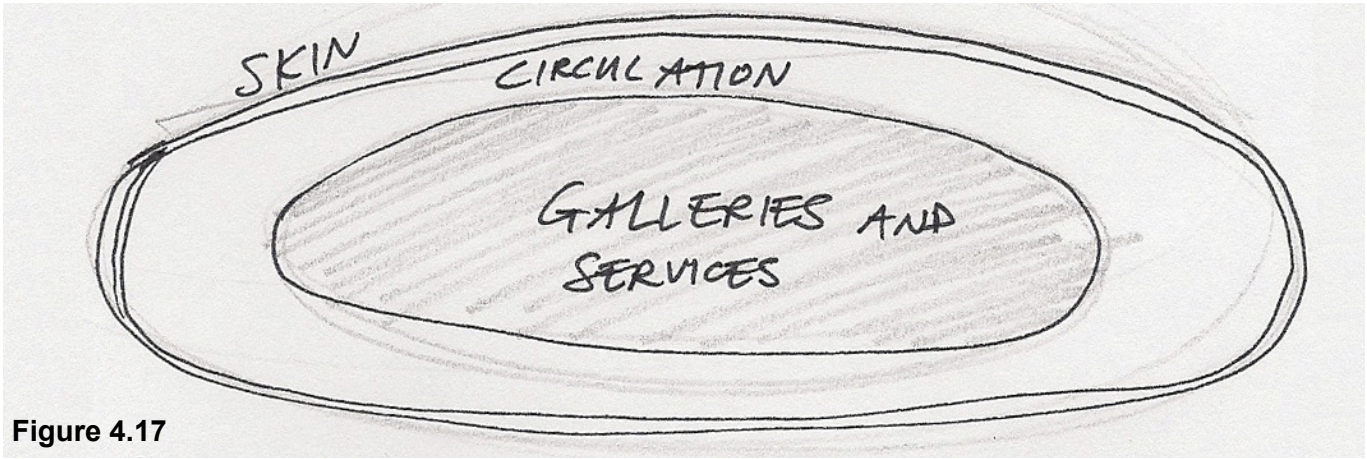


Figure 4.17

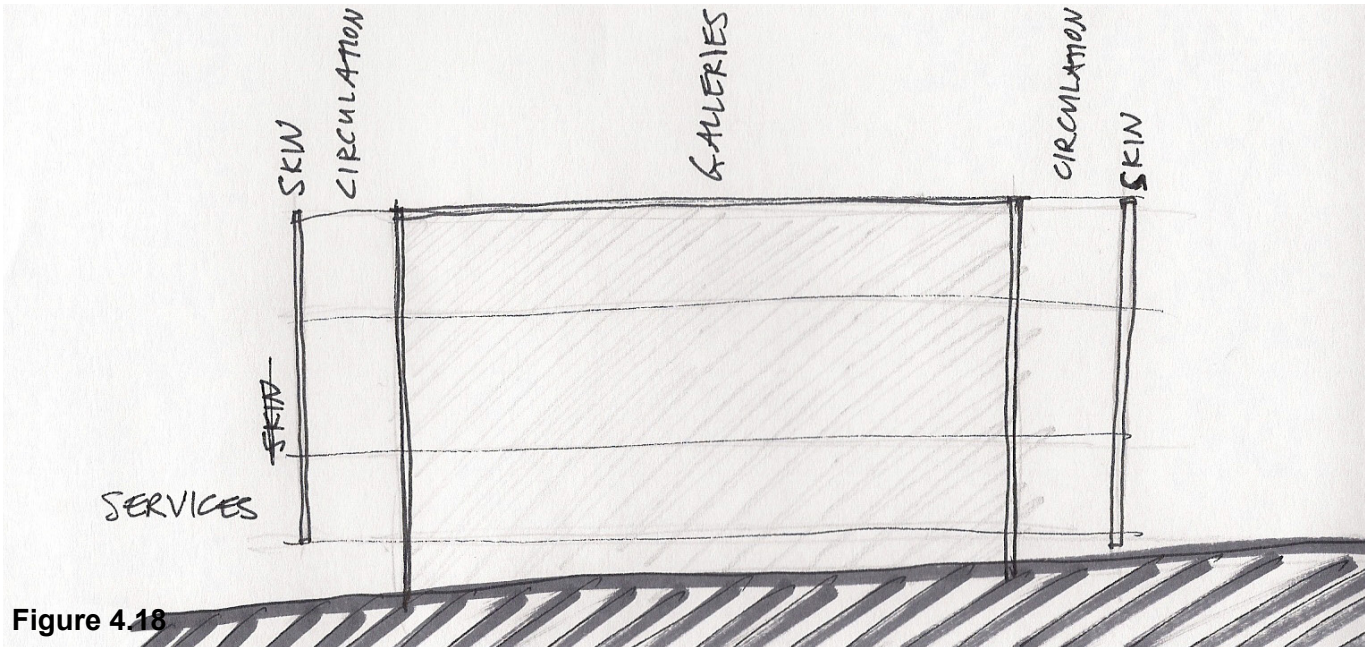


Figure 4.18

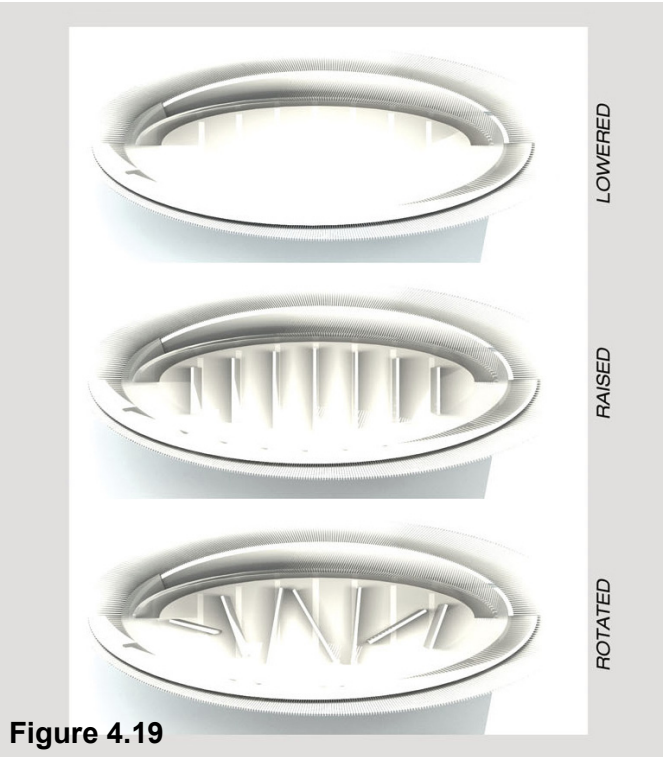


Figure 4.19

The different programmes were accommodated in a building where the architect stripped the interior to expose the old structure (Bennett 2003:146). A service core was inserted in the middle of the building as well as a second floor (fig.4.21) to create a dialogue between the existing elements and the additions (*ibid.*:146, 148).

Accapezzato (*ibid.*:148) stated that they "wanted to be clear about what was new and what was old", a very important quality applied to the dissertation project. The use of steel for the new structural components were also incorporated, as well as "a unified sense of space" and ease of circulation (*ibid.*).

4.7. Storefront for Art and Architecture, New York

By Vito Acconci and Steven Holl, 1993 (fig.4.22 and 4.23)

"Storefront for Art and Architecture is a nonprofit organization committed to the advancement of innovative positions in architecture, art and design" (www.storefrontnews.org). The façade redone by Vito Acconci and Steven Holl, consists of rotating panels that obscure the boundary between the outside and the inside (*ibid.*). This precedent is valuable to the study, because of its small-scale solutions and similar programme as the proposed MINI Space Gallery.

The space is dynamic, being about 30 meters long and from 1 to 6 meters wide (*ibid.*, fig.4.22). It is located on the ground floor level of an existing building (*ibid.*), thus the lightweight panels connect with everyone walking past (fig.4.23). Further aspects are shown in fig.4.22.

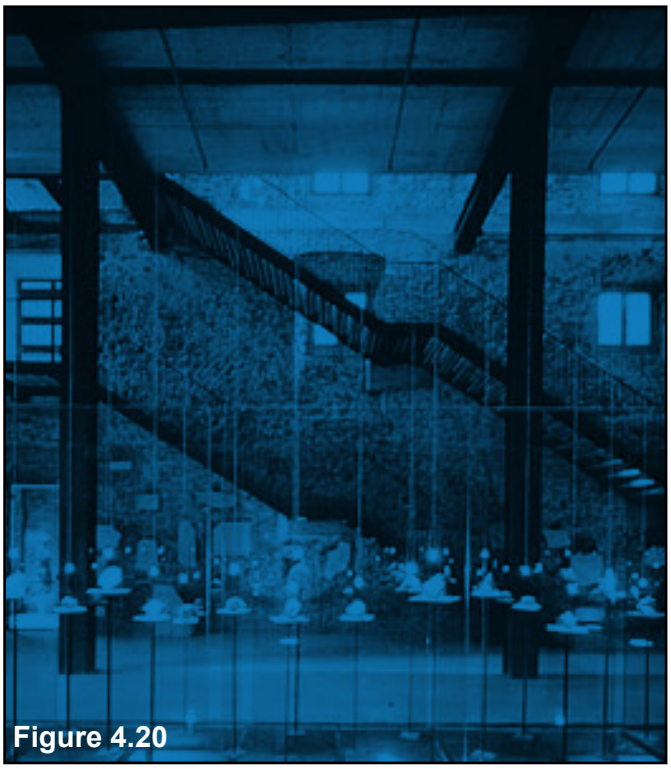


Figure 4.20

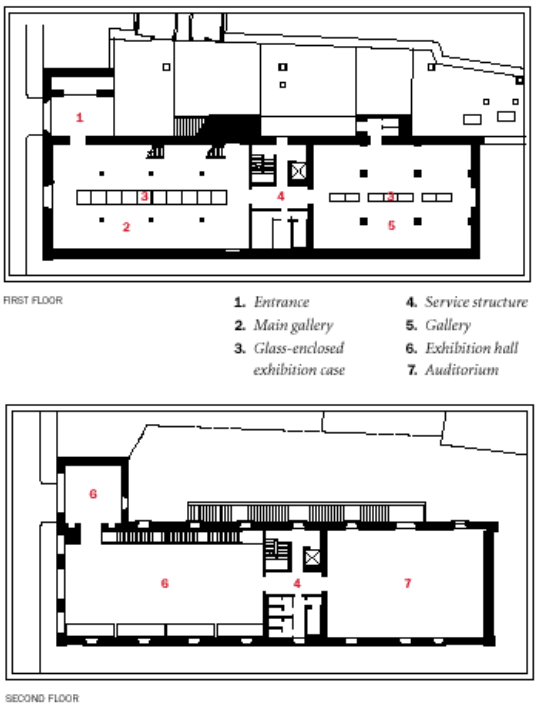


Figure 4.21

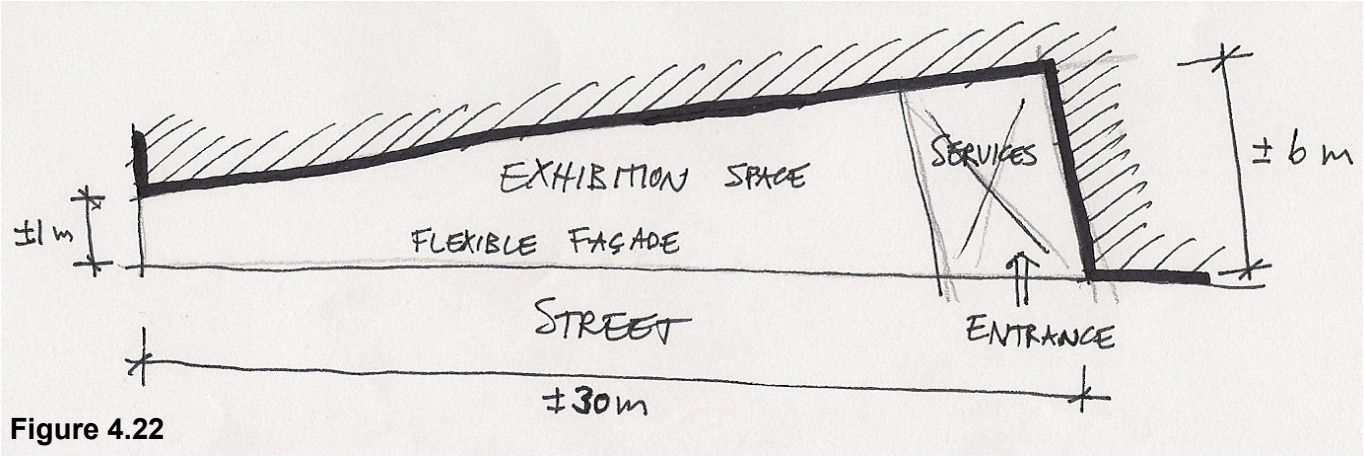


Figure 4.22

The simplicity of the whole design is important to the dissertation, as well as the small yet dynamic form of the exhibition space.

4.8. Conclusion

- The space should flow unhindered from the old to the new, yet this transition should still be experienced.
- All new elements must contrast with the existing ones.
- The proposed gallery is required to 'break out' of the existing structure, enhancing its presence on the street.
- The new spaces should be composed of different layers, with components juxtaposed, intersected and influencing each other.
- Despite the dynamic forms, the MINI Space Gallery needs to be simple, almost minimal, with tranquil spaces aiding in the slow observation of the exhibited objects.

Figure 4.23

Chapter 5

Programme

5.1. Introduction

This chapter focuses on setting out the proposed design limits. All prior research is used to set the parameters and goals for this study.

5.2. First phase: the Site Development

The first phase of the project aims to solve the problems of the primary client, City Property. Each empty floor is divided into new ‘sites’ so that every ‘site’ has (fig.5.1):

- access to natural light;
- direct access to at least one shared open space on the same level; this can either be a larger gathering space or a smaller common area (figs.5.3-5.4);
- its own entrance;

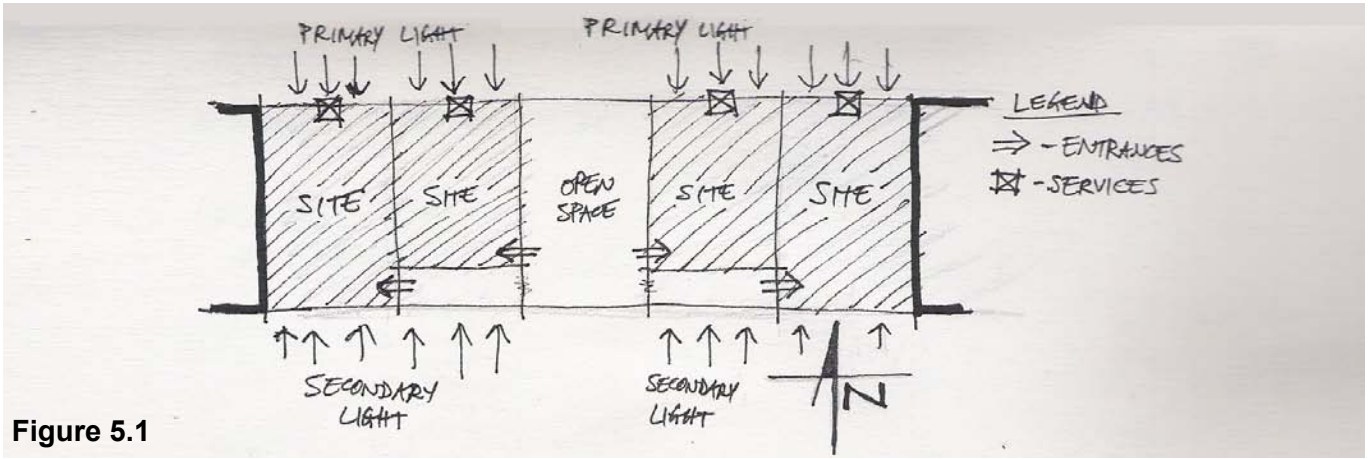


Figure 5.1

- access to all necessary services;
- one parking space per new 'site', even though the buildings under investigation are located within a development zone that does not require parking (*Tshwane Town-planning Scheme* 2008:61-62).

In addition to the above-mentioned aspects, each 'site' is to be zoned in order to address commercial and housing needs within the Pretoria CBD. Existing vertical circulation shafts are adapted to create open, flowing spaces, enhancing movement through them (fig.5.2). New vertical circulation areas for people and private vehicles are added where needed. The main open spaces utilise functions that accommodate recreational purposes that are directly linked to the zoning of the neighbouring 'sites'. The secondary open spaces are to be designed by the new owners and tenants of the 'sites' surrounding them and will be achieved predominantly through the use of furniture and finishes. Open spaces will be maintained by the body corporate and financed by a monthly levy payable by each owner individually. In order to accommodate for change, some of the new elements are to allow adaptability over time.

5.3. Site Development accommodation schedule

See Table 5.1 for the Site Development's detailed aspects. Specific sizes for individual spaces are not given seeing that the existing floors, structure and movement of users determine these.

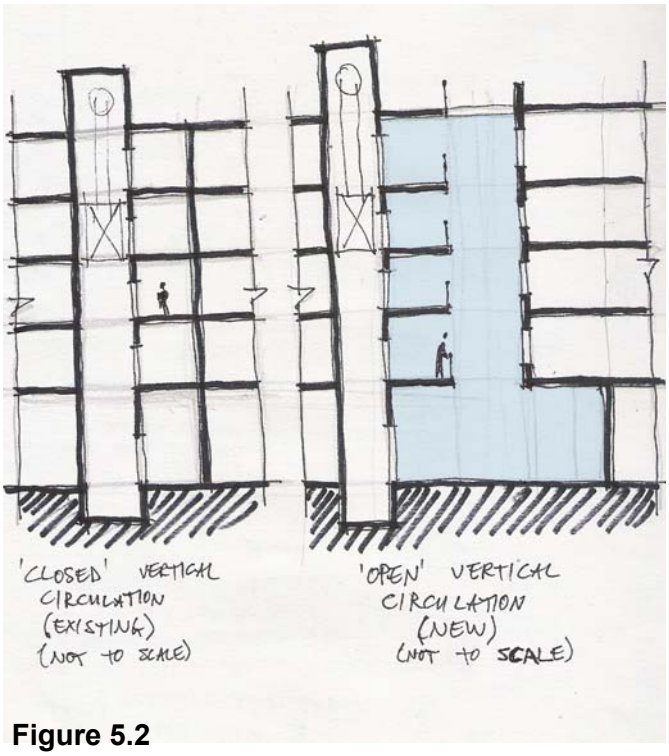


Figure 5.2

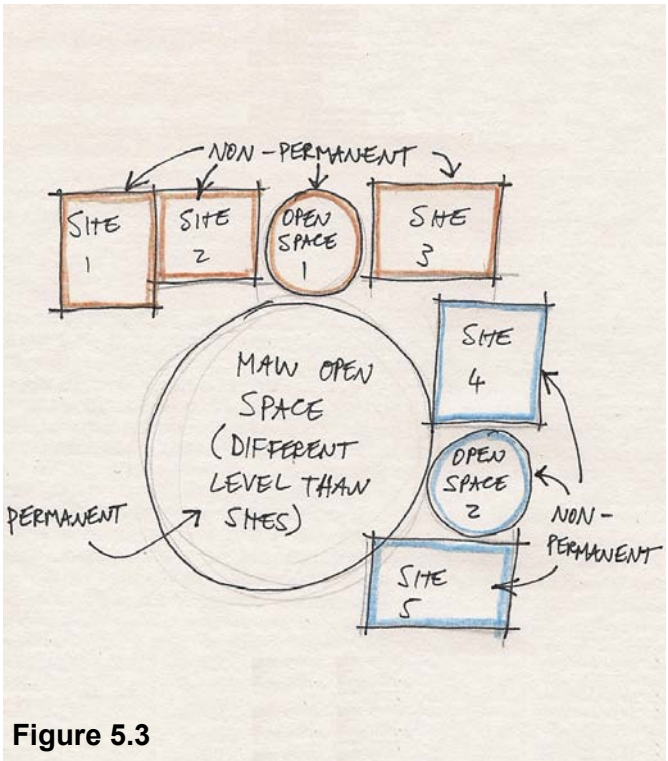


Figure 5.3

Fig.5.1 - Diagram of the aspects of the new 'sites'.
Fig.5.2 - Sectional diagram of the changing of the existing vertical circulation shafts.
Fig.5.3 - Diagram of the relationship between new 'sites' and open spaces.

Site Development Accommodation Schedule				
Site area (existing empty spaces) = 7699,2 m²				
Name	**Total amount**	**Types**	**Amount**	**Functions**
Main open space	3	large	1	relaxation; meeting space for office workers/residents
		medium	2	relaxation; meeting space for office workers
				relaxation; meeting space for residents; children's play area
Secondary open space	12	commercial	8	relaxation; meeting space for office workers; pedestrian movement
		residential	3	relaxation; meeting space for residents; pedestrian movement
		composite	1	relaxation; meeting space for office workers/residents; pedestrian movement
'Site'	39 (3 to 11 per floor)	commercial	27 (3 to 8 per floor)	any commercial function according to new owners'/tenants' requirements
		residential	12 (3 per floor)	living units/apartments
Vertical circulation space	2	people	1	vertical movement of employees and residents (of new owners/tenants)
		private vehicles	1	vertical movement of vehicles of residential sites' new owners/tenants
Parking for new 'sites'	41 (1 for each new 'site'; 2 for existing penthouse)	commercial	27	located in existing parking garage in Die Meent building
		residential	14	provided at each 'site' level

Table 5.1

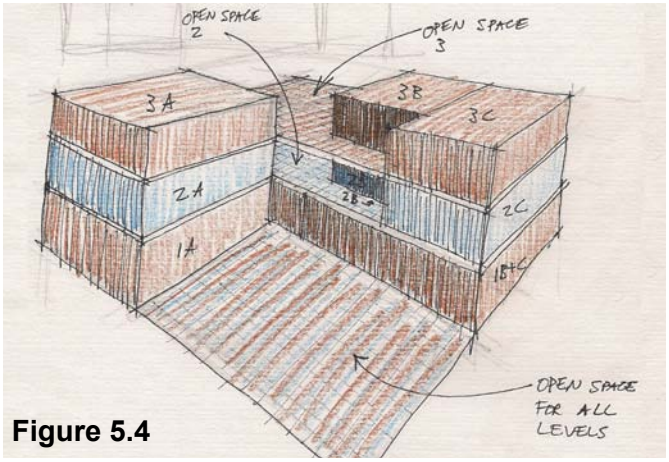


Figure 5.4

Fig.5.4 - Three-dimensional sketch of the relationship between new 'sites' and open spaces.

Fig.5.5 - Perspective indicating 'sites' bought by MINI Space, viewed from Pretorius Street.

5.4. Second phase: the MINI Space Gallery

It is proposed that MINI Space buy 11 of the aforementioned new 'sites' (A303, A401-404, B301-303 and A501-503; fig.5.5). This will provide the client with a consolidated site of 1360,9 m^2.

The primary function of this gallery is the exhibition of any form of art, including architecture, paintings and cars. For this purpose, a large exhibition space is needed, with a secondary exhibition space on a different level to attract more visitors. A coffee shop and MINI-merchandise store is also incorporated.

5.5. MINI Space Gallery accommodation schedule

Table 5.2 lists all the detailed aspects of the proposed gallery. According to the *Metric Handbook* (2005:31/1-2) the exact relationship between the size of a gallery's spaces cannot determined. Therefore, although the area of the site is known, specific sizes of individual spaces are not determined beforehand, but established through the design process. Factors influencing this are the functional layouts, explorations of form and the existing structure and surrounding spaces.

5.6. Conclusion

The detailed information in this chapter provides all the necessary particulars for the design of both phases of the project. Although many of these parameters were discovered and set during the development process of the project, this information serves as the guiding principles in the finalisation and evaluation of the final products.

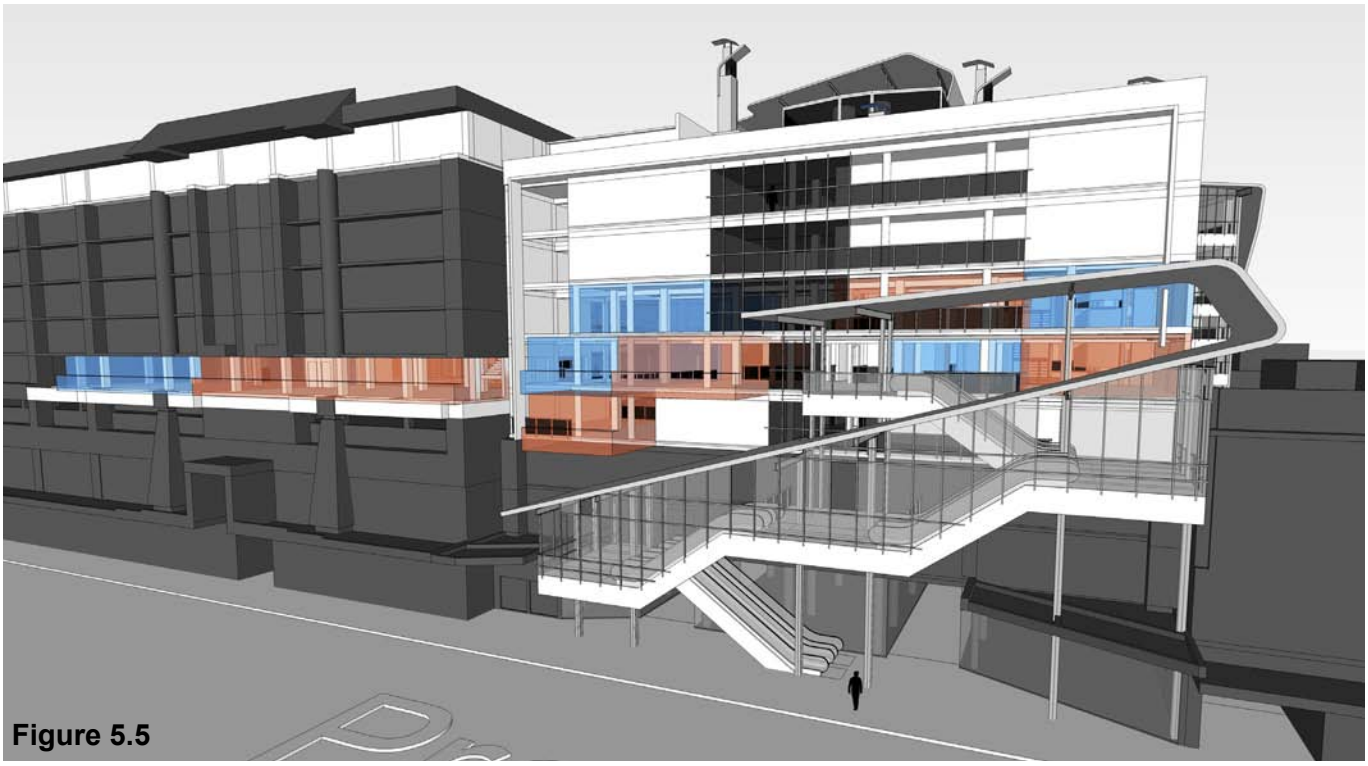


Figure 5.5

MINI Space Development Accommodation Schedule				
Site area (excluding existing open spaces and balconies) = 1360,9 m²				
MINI Space Gallery				
Area of sites A303, A403-404 and B301-303 (for the main gallery) = 843,0 m²				
Area of site A504 (for the secondary exhibition space) = 110,7 m²				
Area of site A303 (for the offices) = 93,3 m²				
Name	**Total amount**	**Types**	**Amount**	**Functions**
Exhibition space	2	primary	1	main exhibitions of art (paintings, sculptures, architecture, cars, graphic design, photography, videography, social events)
		secondary	1	secondary exhibitions (on a different level than the main exhibition space as advertisement to attract more visitors)
Storage	1			space for the storage of unused art and installation components
Reception	1			desk at main entrance to receive visitors
Ablutions	1	ladies'	min. 3 WC pans, 2 washbasins	ablution facilities for the main gallery's visitors and employees; building classification: C2 thus 1 person per 20 m2 therefore 843 / 20 = 42,2 thus 44 people of which 22 ladies and 22 men (SABS 0400-1990 1990:34-35, 124, 126)
		men's	min. 1 WC pan , 2 urinals, 2 washbasins	
Offices	1			open plan office space; 1 desk for curator, 1 for assistant, 1 meeting/ conference table
MINI Store				
Area of sites A401-402 = 150,1 m²				
Name	**Total amount**	**Functions**		
Merchandise display area	1	display area for open to the public; sale counter; merchandise include clothing, fashion accessories, stationary and other miscellaneous items		
Office and storage	1	small space for office-related work and storage of extra merchandise		
MINI Coffee shop				
Area of sites A501-502 = 163,8 m²				
Name	**Total amount**	**Functions**		
Seating area	1	tables and chairs; bar-type counters; small area with couches		
Serving and preperation area	1	self-service sale counter; preparation counter; small washing area		
Office and storage	1	small space for office-related work and storage		

Table 5.2

Chapter 6

Development

6.1. Introduction

How does one solve the problem of redundant space in abandoned buildings? The concept development of the proposed solution to this question, incorporating all previous research, is discussed in this chapter. Preliminary ideas are shown, after which the focus turns to the Site Development and the MINI Space Gallery.

6.2. Initial exploration

At first, the two components of the project were seen as one in that the solution for utilising empty spaces is also the solution for the gallery. In view of the size of the existing structure, a mixed-use development was considered from the beginning (fig.6.1). Other concepts included vehicular

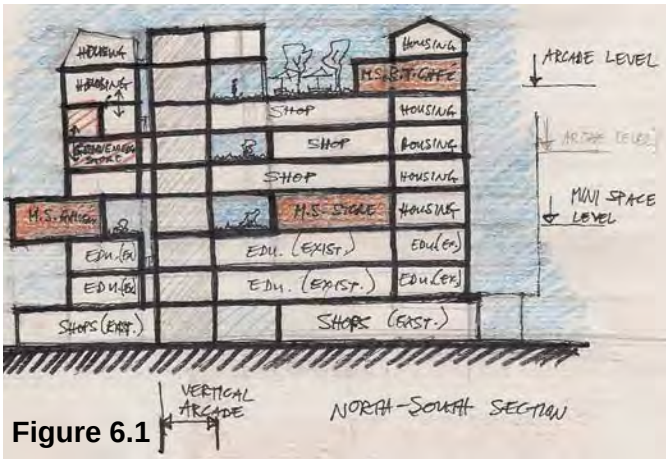


Figure 6.1

exhibition tracks cutting through and wrapping around the building where cars can be displayed as mobile, dynamic works of art (fig.6.3). Different volumes protruding from the façade were explored (figs.6.2 and 6.4), and some included branding elements for the MINI Space Gallery (fig.6.5). The influence of deconstruction on the spatial design was also investigated (figs.6.6-6.7).

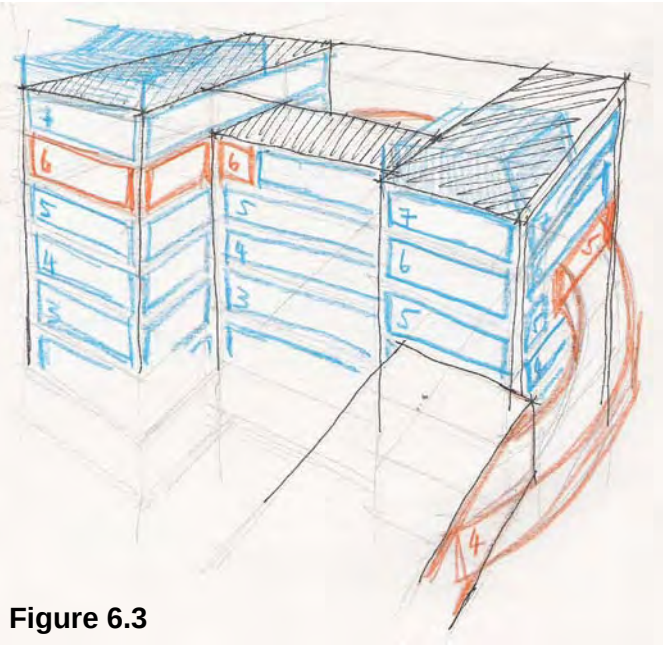


Figure 6.3

6.3. Process toward the Site Development

Redefining the notion of site to include vertical space above the ground plane, new ‘sites’ are established in abandoned spaces within the City Centre building and Die Meent. Using all three x-y-z axes in this manner is not a new concept. The Rockefeller Centre in New York City, consists of a complex of ‘buildings’. Some of the original

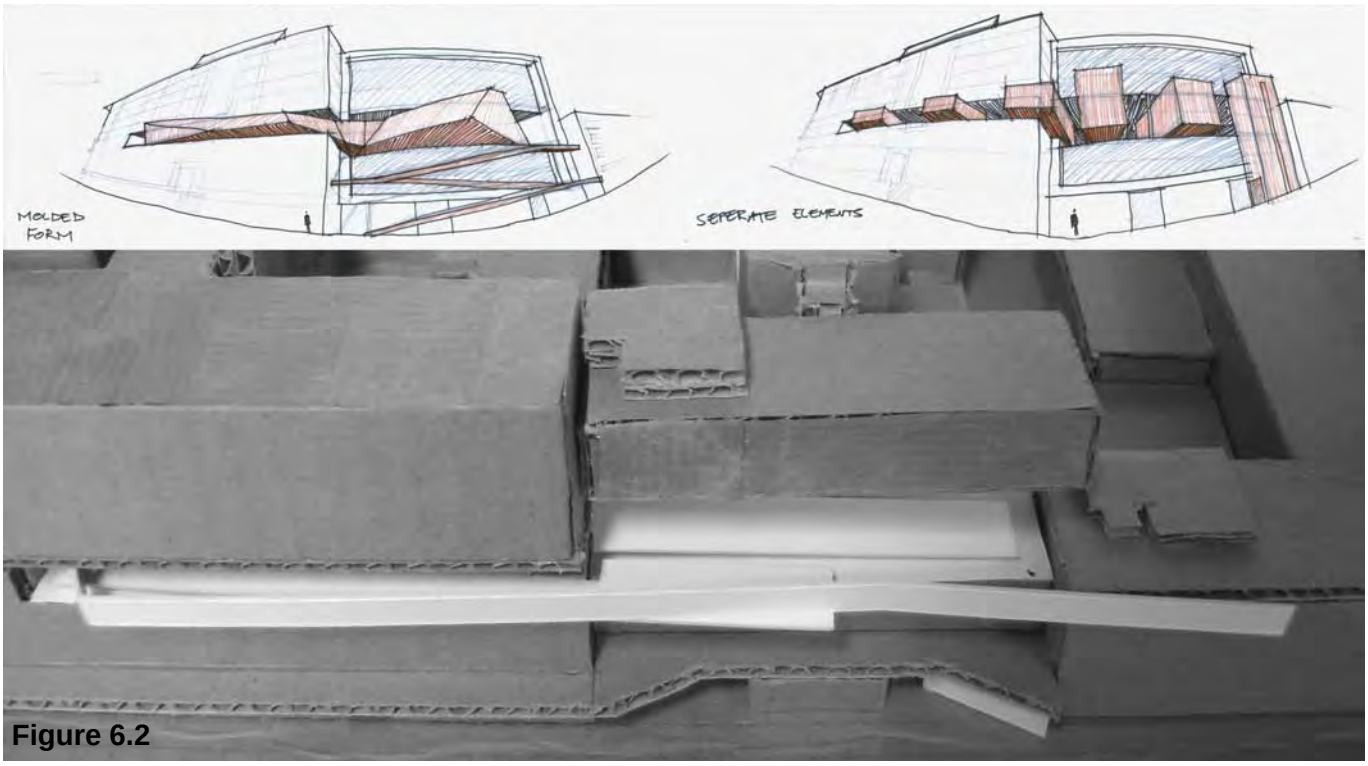


Figure 6.2

Figure 6.4

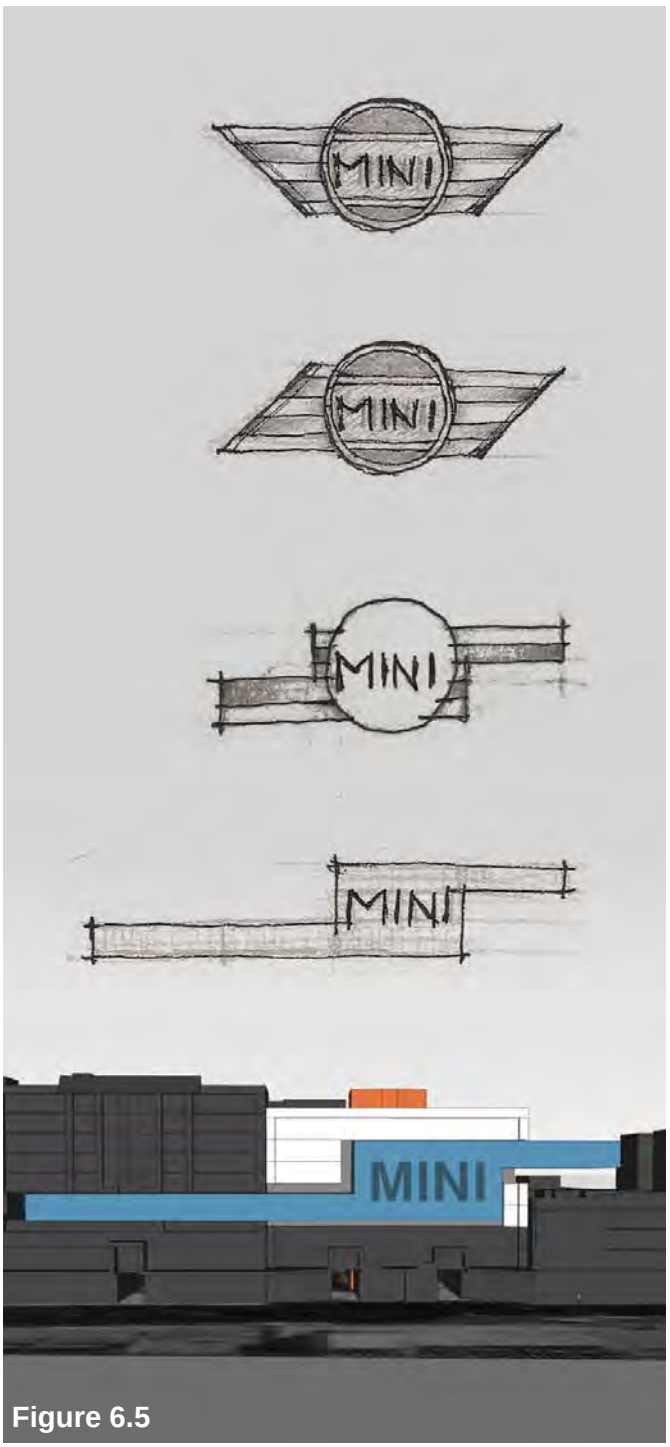


Figure 6.5

Fig.6.1 - Initial sketch of a section through the existing structure, indicating proposed diverse functions.
Fig.6.2 - Exploration of protruding volumes.
Fig.6.3 - Sketch of the existing building with track cutting through (orange).
Fig.6.4 - Sketch of protruding elements shown on multirama view of the existing buildings.
Fig.6.5 - Possible branding: the MINI logo transforming into a building.

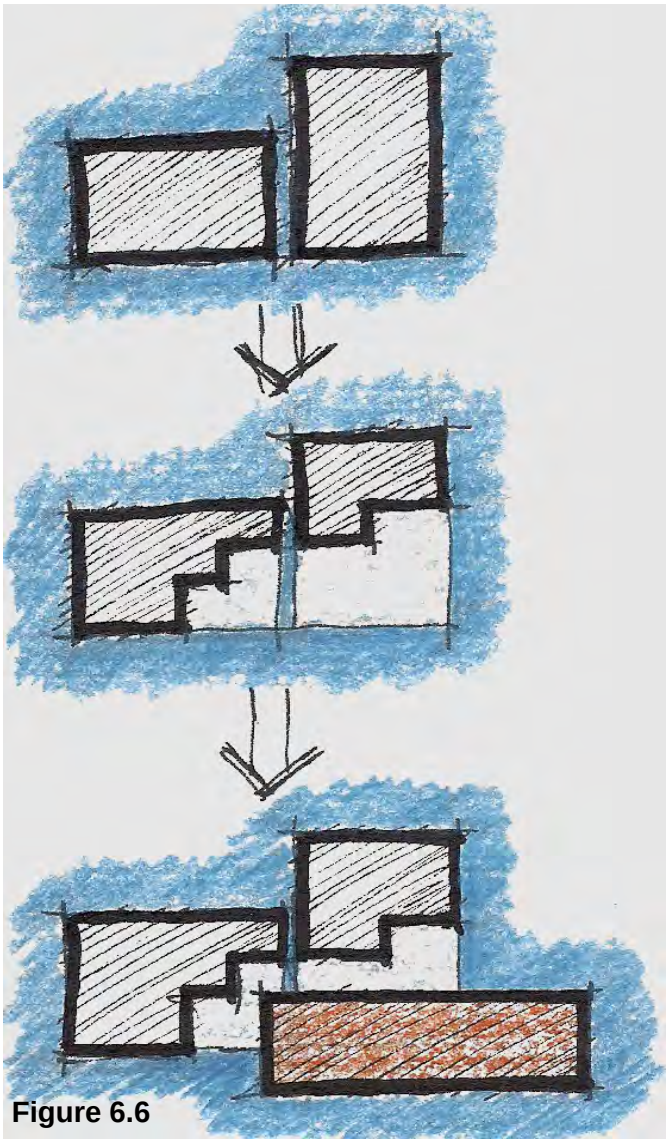


Figure 6.6

design ideas included walkways on higher levels (fig.6.8) and large rooftop gardens; the latter was implemented on some of the structures (fig.6.9). Visions for other parts of New York City illustrate multiple levels for transport (fig.6.10). Many of the recent proposals for the new World Trade Centre also included large gardens and open spaces on higher floors (Czarnecki 2003:35; fig.6.11). Le Corbusier (1931:59-61) suggested that cities should consist of large planes lifted on columns housing residential towers built with social areas on the roofs and connected by bridges; below these decks, all the services would be placed (fig.6.12).

6.3.1. New ‘sites’

Firstly, the empty floors of the City Centre and Die Meent buildings are stripped of everything except

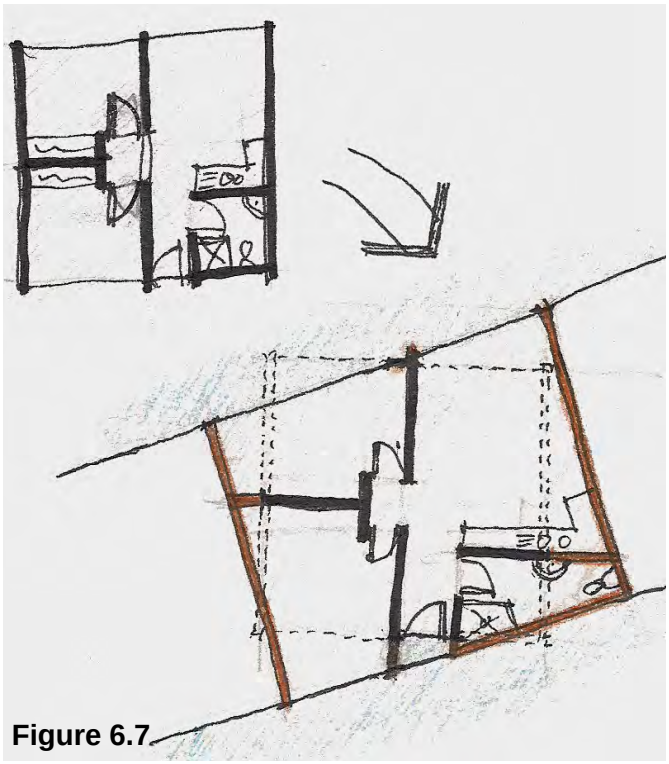


Figure 6.7

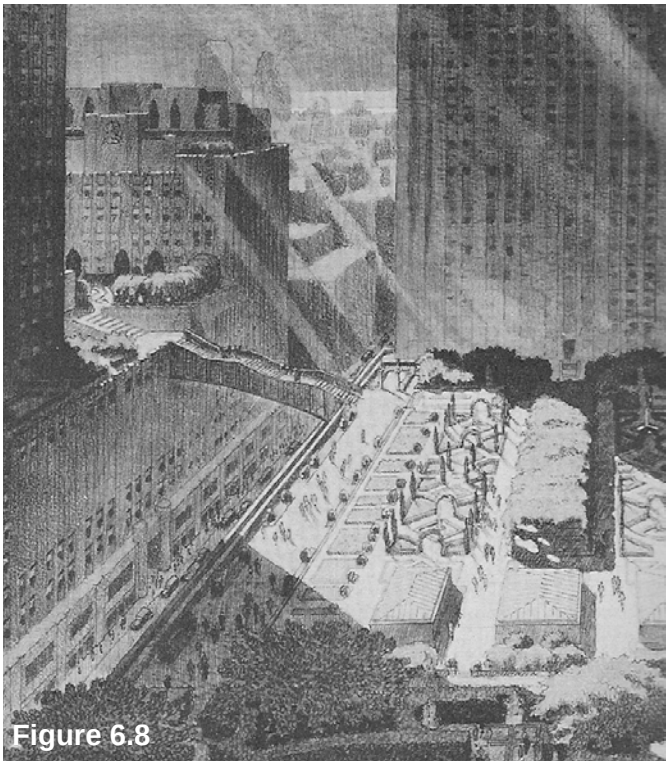


Figure 6.8

Fig.6.6 - Development sketches of the ‘new’ deconstructing the ‘old’.
Fig.6.7 - Development sketches of the ‘old’ deconstructing the ‘new’.
Fig.6.8 - Roof garden proposal for the Rockefeller Center’s Radio City Music Hall, 1932, by J. Wenrich.
Fig.6.9 - Roof gardens on some of the buildings of the Rockefeller Center.
Fig.6.10 - Proposed street system for New York City, c.1925-1930, by H.W. Corbett.
Fig.6.11 - View of the sky garden of the proposal for the new World Trade Center by SOM.


Figure 6.9

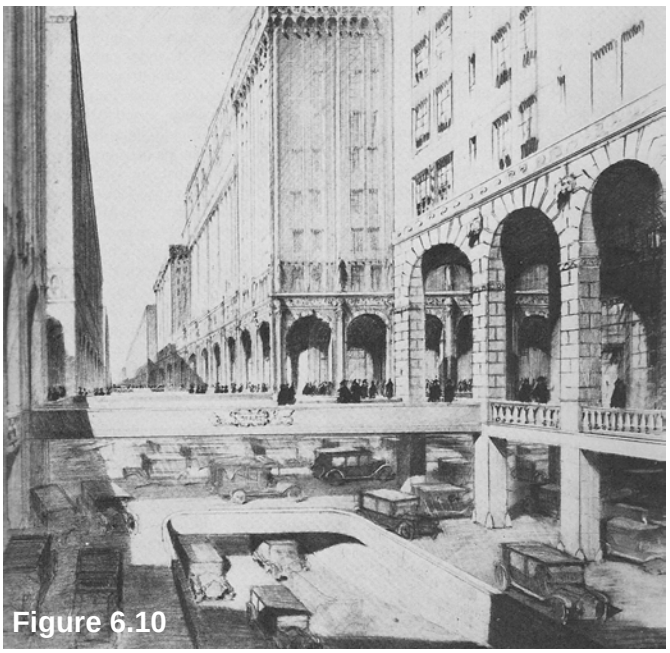


Figure 6.10


Figure 6.11

Fig.6.12 - Section of Le Corbusier's city on columns.
Fig.6.13 - Sketch showing aspects of the new commercial 'sites', in plan.
Fig.6.14 - Sketch showing aspects of the new residential 'sites', in plan.
Fig.6.15 - Perspective with volumes of space highlighted.

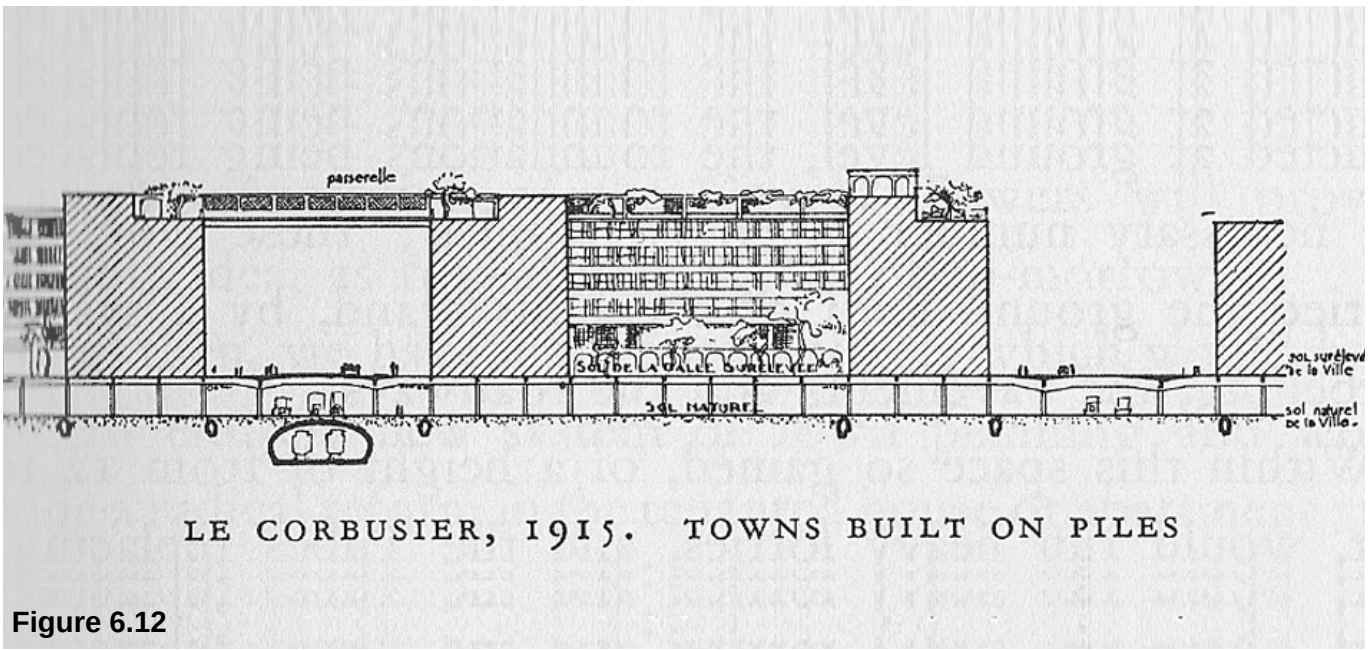


Figure 6.12

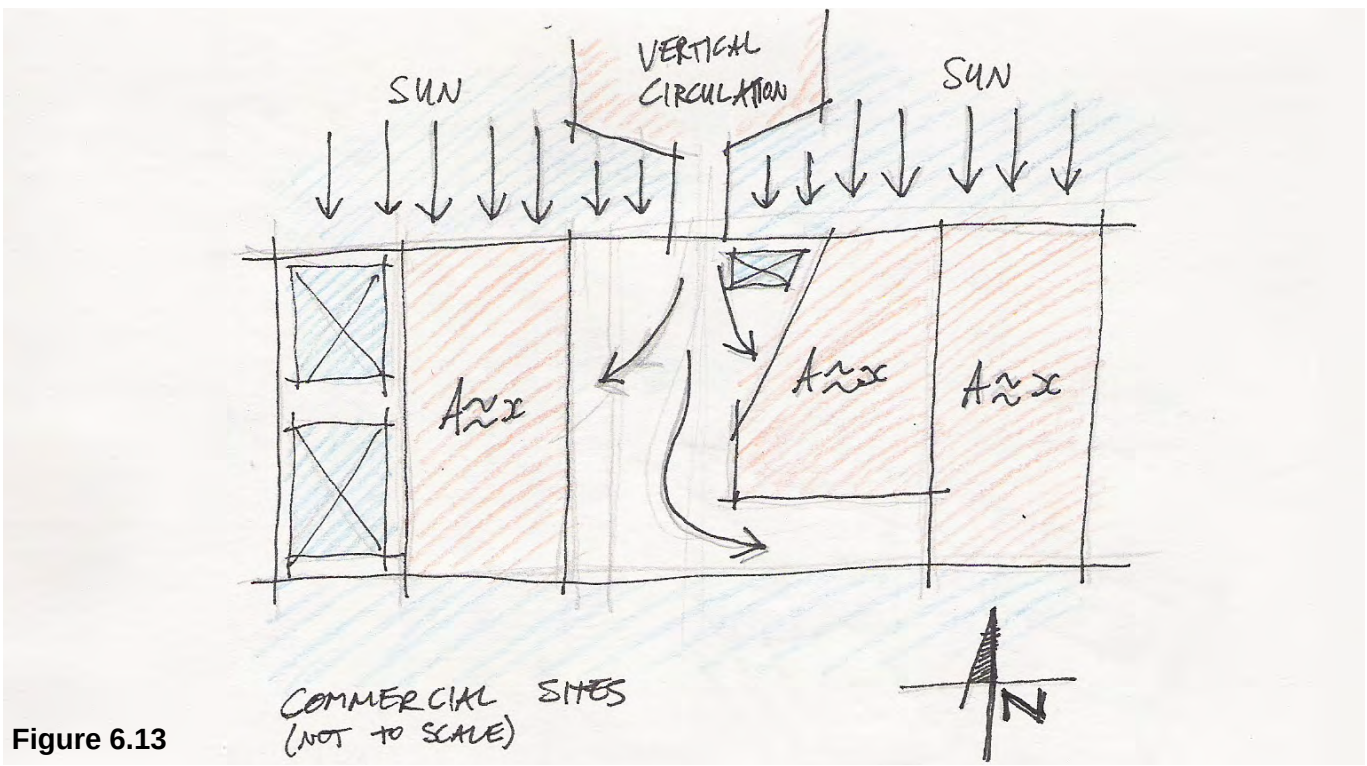


Figure 6.13

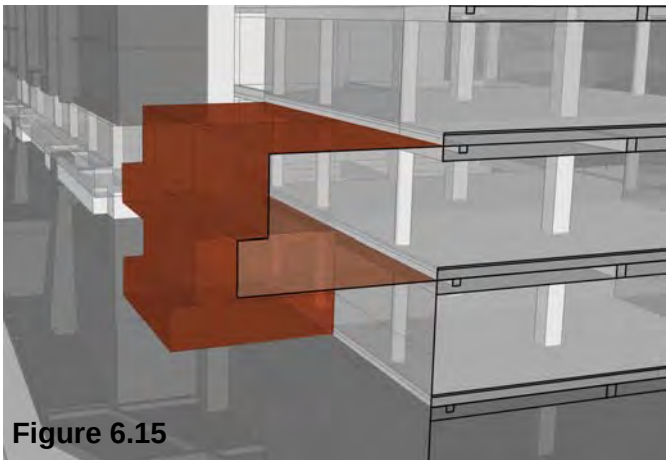


Figure 6.15

structural elements that include concrete columns and slabs, and structural brick walls and then service cores, that consists of vertical circulation spaces, and wet and dry service shafts.

New ‘sites’ are then established within this cleared space. Their layouts and sizes are governed by (fig.6.13-6.14):

- user movement;
- location of existing and new vertical movement spaces;
- size of the existing floors (relative to the size and amount of ‘sites’ on each floor);
- the requirement that every site should be directly linked to an open space;
- balconies for walkways should be located on the southern façade where possible;
- walkways should not lead past more than one site;
- access to natural light.

‘Sites’ on lower levels in the City Centre building are extended up to the erf boundary, to aid in the spatial definition of the urban streetscape of Pretorius Street and to increase the rentable area for commercial space in these sites. A 700 mm balcony, stipulated by the Tshwane Town-planning Scheme (2008:29) has been included. These extensions are currently only volumes of space, which the new owners or tenants can build within in future (fig.6.15).

Floor slabs are also cut open or removed, allowing light to enter into each site and providing more open space. In addition this serves to remove some structural weight, which in turn is replaced by trees and ground cover structural loading in the three main open spaces.

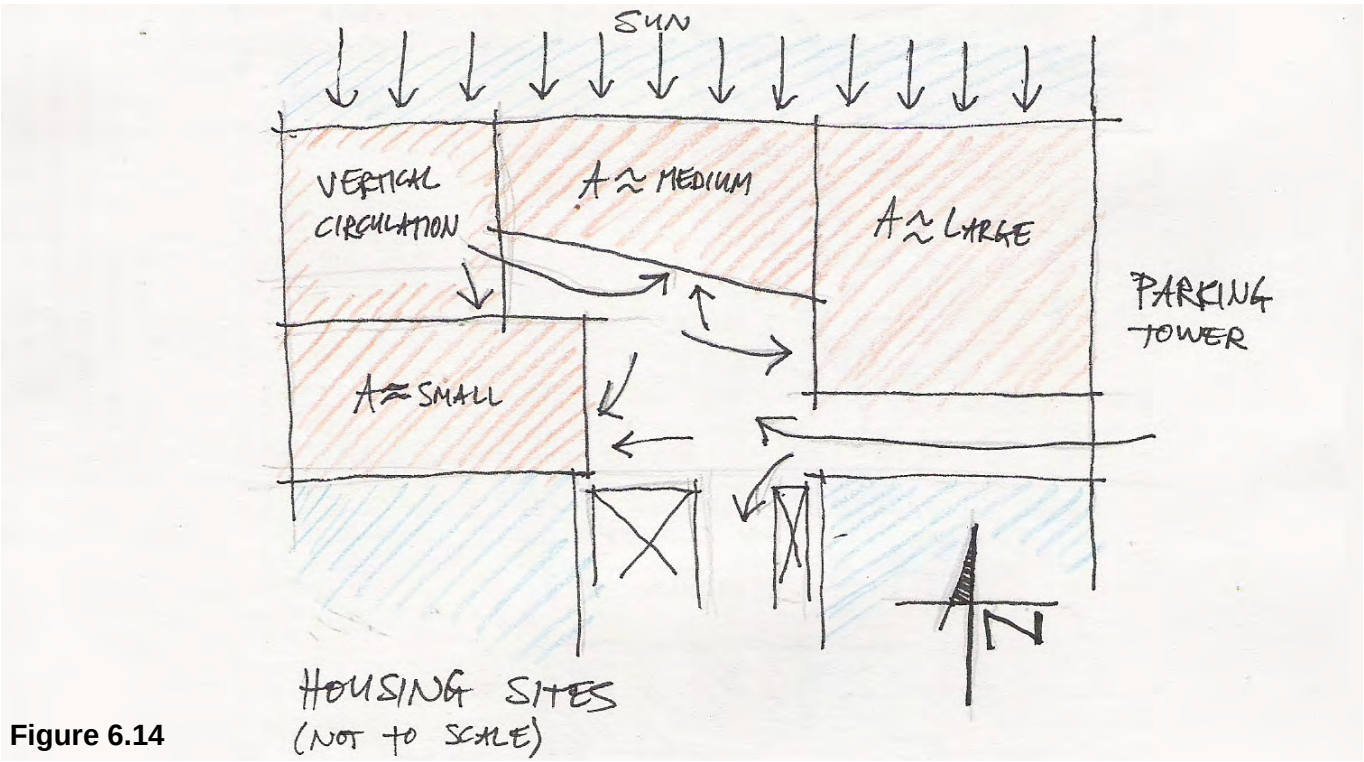


Figure 6.14

Fig.6.16 - Parti-diagram of the Site Development.
Fig.6.17 - Development sketch of the main open space, in plan.
Fig.6.18 - Development sketch of the main open space, indicating movement patterns, in plan.
Fig.6.19 - Development sketch of the main open space, with parti-diagram and movement patterns applied, in plan.

6.3.2. New ‘site’ principles

Principles were set up according to which the development of empty spaces within the Pretoria CBD should be executed. There are two types: the first set are of a city-wide scale, to be used for future developments in other buildings; the second are specific to the City Centre and Die Meent buildings’ Site Development, providing future owners and tenants with rules and regulations about how to develop their own ‘sites’. These are listed in tables 6.1 to 6.2.

Change is allowed for, having been derived from the theory of deconstruction. Although some of the vertical circulation spaces and the roof gardens are more permanent additions, the new ‘sites’ are largely left open, to be adapted to meet the needs of future users. Depending on what these users do with the spaces, future users are also free to change the ‘sites’ by simply connecting to existing services. These connection points are provided only at the edge of each ‘site’, making flexibility within the privately owned or rented areas possible.

6.3.3. Parti-diagram for the Site Development

After sketch plans and design concepts were executed, a parti-diagram was established (fig.6.16). Derived from the theory discourse and concept sketches, the diagram was used to inform the framework according to which the whole Site Development is designed from large-scale to detailed ideas. The deconstructed x-y-z of architecture, as applied in the parti-diagram, are:

- function/programme as the solid block;
- form/beauty as the thin curve;

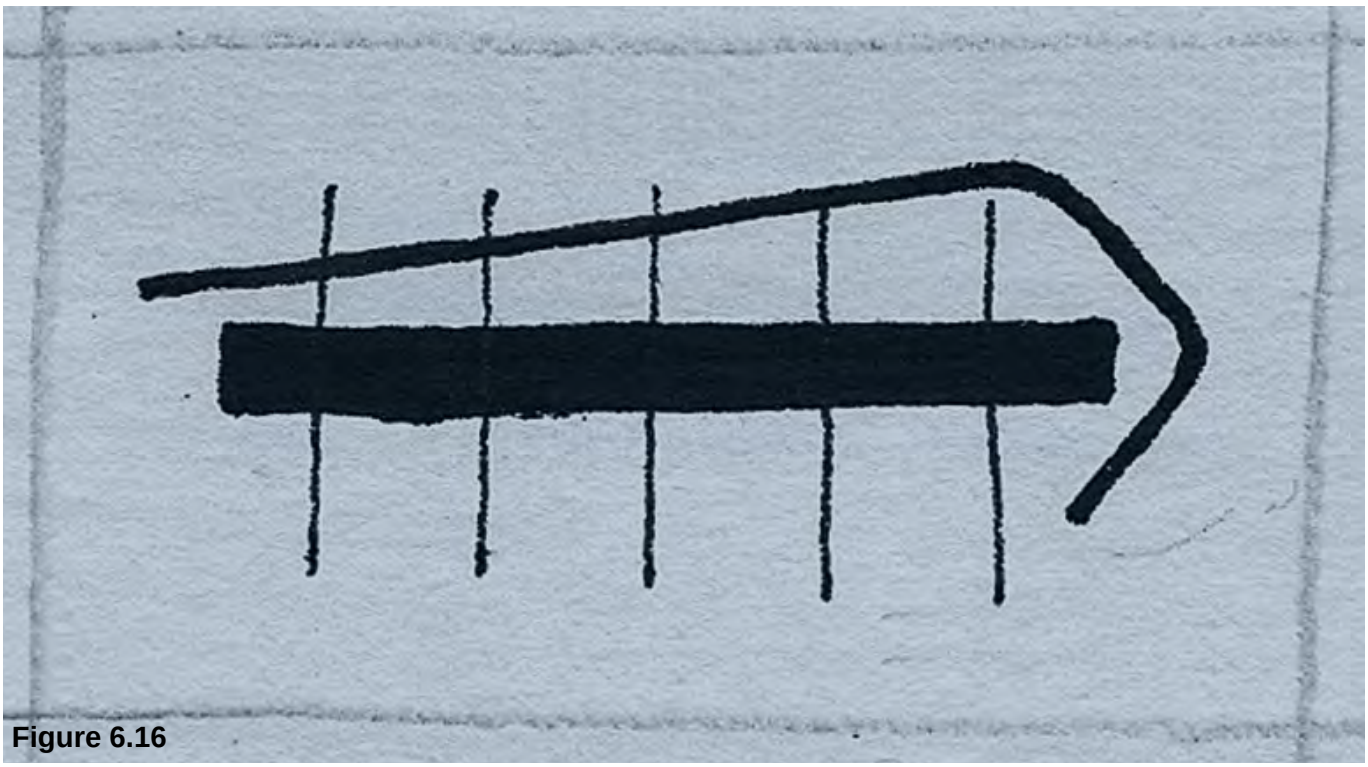


Figure 6.16

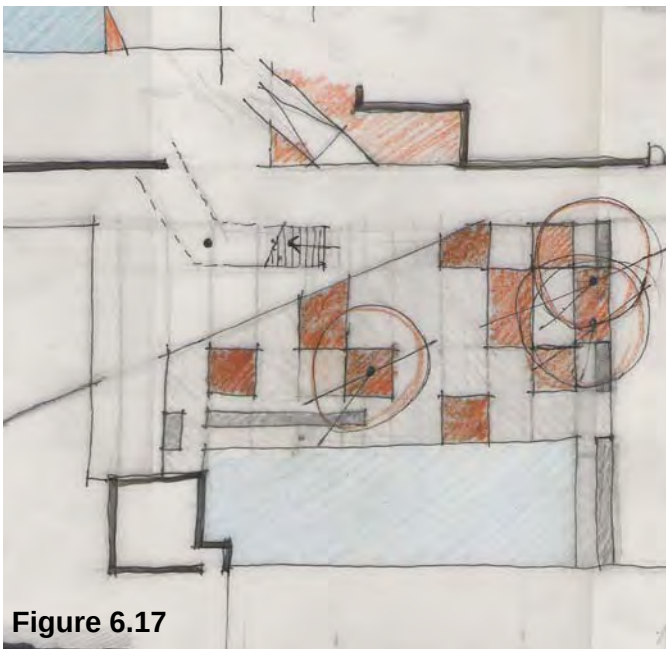


Figure 6.17

- tectonics/structure as lightweight lines between the others.

Thus, the parti-diagram of the Site Development is the tension between form/beauty and function/ programme held together and apart by tectonics/ structure. Together with this, the module of brickwork, rounded off to 230 x 115 x 85 mm, was used to determine all distances and sizes.

6.3.4. Open spaces

The three main open spaces were designed based on the movement of the users through them. For the main lower commercial open space an initial design was investigated (fig.6.17), but it was too form-driven. Subsequent designs were refined to cater for movement patterns (figs.6.18-6.19) and these were overlaid by a parti-diagram.

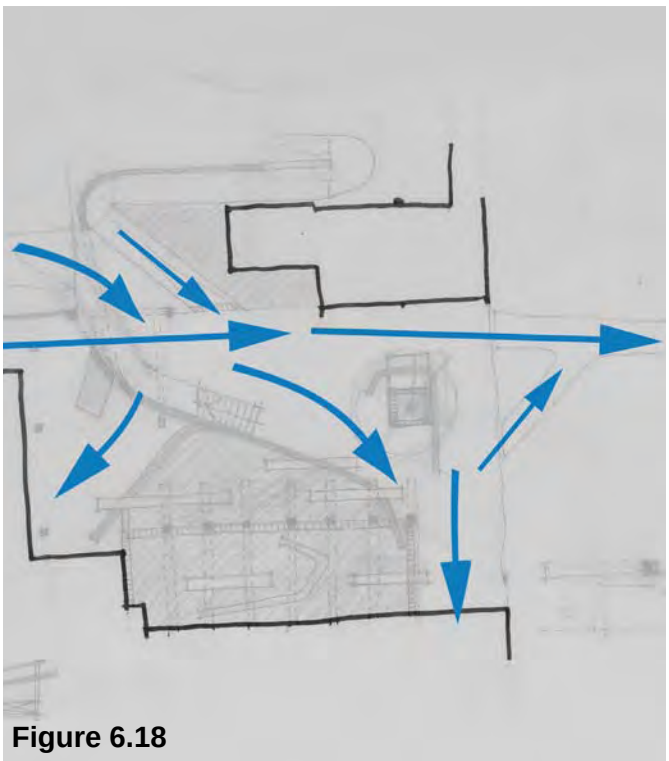


Figure 6.18

Figure 6.19

	No.	Name	Description
City-wide principles	1	Legislation	Legislation and regulations must be changed where necessary. This will include acts affecting sectional title ownership (e.g. how services are distributed and paid for), regulations regarding municipal space above streets (e.g. in the case of proposed pedestrian bridges) and building regulations (e.g. building permission).
	2	Street edge	Any new stands on the first, second, third and/or fourth floor may not protrude more than 700 mm from the ground floor erf boundary between the neighbouring street and the site under question. Any of these protrusions (beyond the ground floor erf boundary) may not be enclosed spaces, i.e. these spaces are restricted to balconies and other similar elements. Stands on higher levels should not protrude beyond the existing structure. It is not allowed to build beyond the other ground floor erf boundaries on any storey.
	3	Costs	Levies must be paid on a monthly basis. This will be used to maintain all shared space, i.e. open space (with finances divided according to the same structure as above), ablutions, vertical circulation areas and other services.
	4	Open space between sites	In the event of one person/company owning two or more stands with a demarcated open space between two or more of them, the owner may construct any structure over this space up to a maximum of 25% of the area on plan, as long as any public pedestrian movement is not restricted in any way (in the case of a thoroughfare). Structures can include walkways (e.g. in double volume open spaces), overhead beams/bulkheads, extensions of interior spaces, etc. Any of these proposals are to be approved by the development's body-corporate.
	5	Horizontal boundaries	New structures may not exceed the given horizontal boundaries (with regard to neighbouring stands below and above); each sites' boundaries with regard to height is restricted from the bottom plane of the structure below and above.
	6	Vertical circulation	New vertical circulation spaces must be provided in such a way that free movement is possible for all users. Where it is possible these spaces should be on the façade of the building, providing direct access at street level. If this is not feasible, existing or new spaces further within the structure should be designed in such a way as to celebrate the connection with the ground plane (e.g. a large open area) and so that these spaces have an open atmosphere (so as not to restrict the movement of users, both physically and psychologically).

Table 6.1

	No.	Name	Description
The City Centre and Die Meent buildings principles	1	Consolidation	Consolidation of sites are allowed up to a maximum of 2000 m^2 for all sites.
	2	Services (for all sites)	All services are to be located just below the floor of each site, i.e. within the ceiling void of the site below.
	3	Services (for nonresidential sites)	Existing services (vertical circulation, ablution facilities, fire escapes) should be used by all new occupants of the nonresidential stands, i.e. services should and need not be supplied by the owners.
	4	Private ablutions (for nonresidential sites)	If a nonresidential site exceeds 1000 m^2 on one continuous level (including open spaces between sites), the owner may construct its own ablution facilities, if he/she wants to, with all water supply and sewage being connected to the provided systems.
	5	Services (for residential sites)	The owners of residential sites should each provide their own ablution facilities, with services connecting to the provided systems. Private vertical circulation and fire escapes should not be implemented, while other services (grey-water, fire-system, telecommunications, electrical) should connect to existing systems.
	6	Grey-water	The use of grey-water (e.g. for water closets) is mandatory.
	7	Air-handling	The use of air-conditioning units is prohibited for nonresidential sites in the City Centre building; passive cooling is supplied by means of a stack ventilation and evaporative cooling system, with air in- and out-takes provided as indicated on each stand's drawing set. For all other sites (including residential), only two types of air-handling systems are allowed: firstly systems without air-conditioning units (passive ventilation, evaporative cooling and similar systems) are highly recommended; secondly small split air-conditioning units are allowed, with the only regulations being that the external components be located in the provided areas or, in the case of nonresidential sites on the top floor, be located on the roof.
	8	Parking	At least one parking space per stand is provided.
	9	Building character	Owners are allowed total freedom in terms of building style, size (within the site boundaries) and finishes. Functional zoning should be followed and no changes to this will be made. All new spaces should relate actively to the adjacent shared open spaces and, if applicable, to the street.
	10	Cleaning service	A single cleaning service will be used for all the new stands and owners will be obliged to use this service and no other. The costs of this service is included in the monthly levy. There will be a space provided for them within the structure for storage.
	11	Levy	The amount of levy to be paid by an owner is determined by the size of his/her stand in relation to the total development.

Table 6.2

Fig.6.20 - Development sketch of the main upper commercial open space, with parti-diagram and movement patterns applied, in plan (not to scale).
Fig.6.21 - Development sketch of the main residential open space, with parti-diagram and movement patterns applied, in plan (not to scale).
Fig.6.22 - Options for the main open spaces' furniture.
Fig.6.23 - Model of the preliminary design for the bridge.
Fig.6.24 - Elevation of the second design for the bridge.
Fig.6.25 - Perspective of the final design for the bridge.

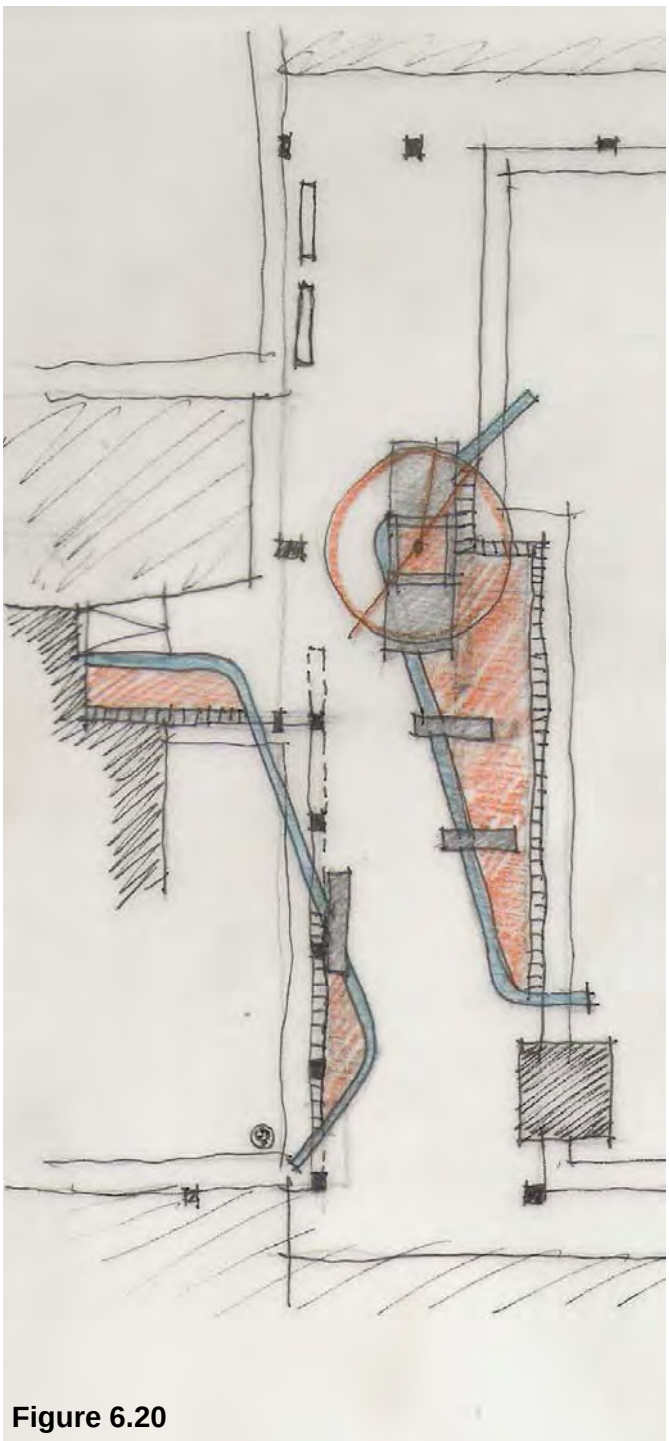


Figure 6.20

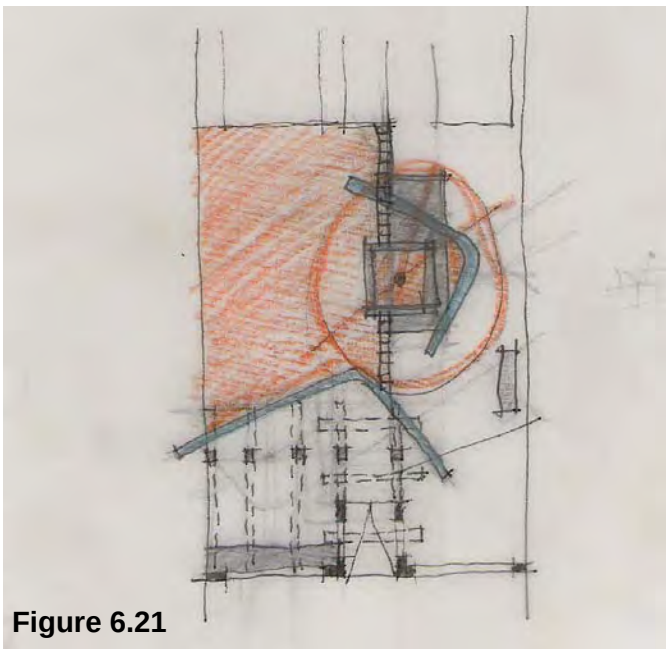


Figure 6.21

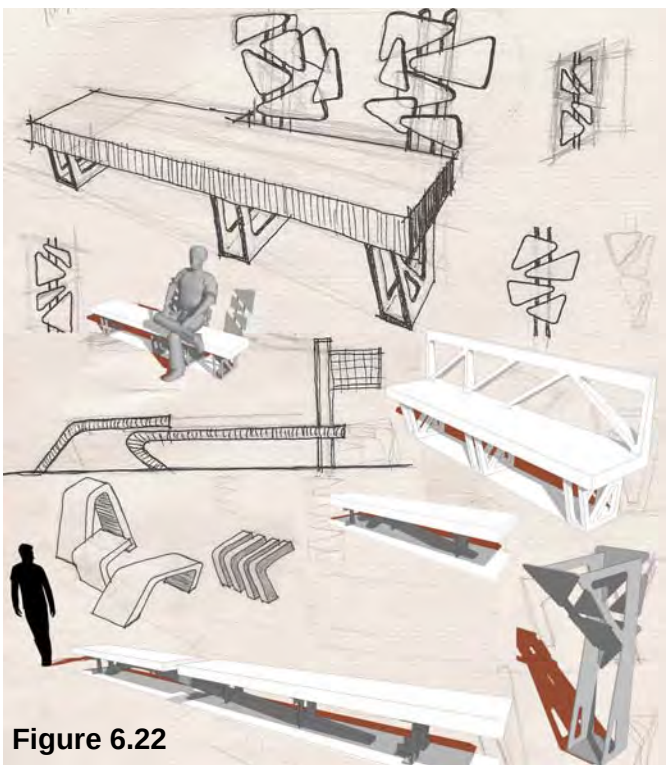


Figure 6.22

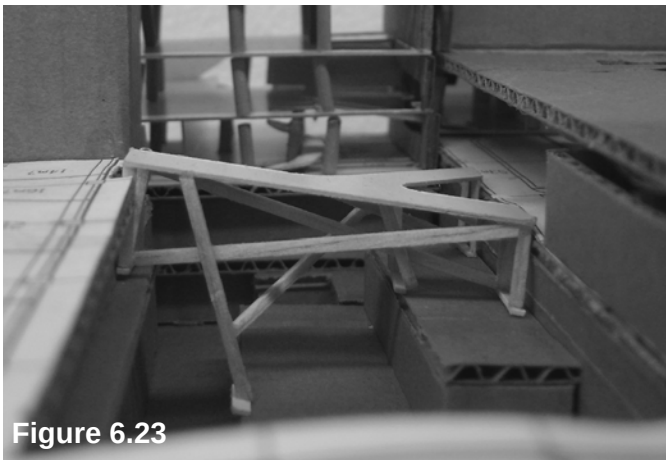


Figure 6.23

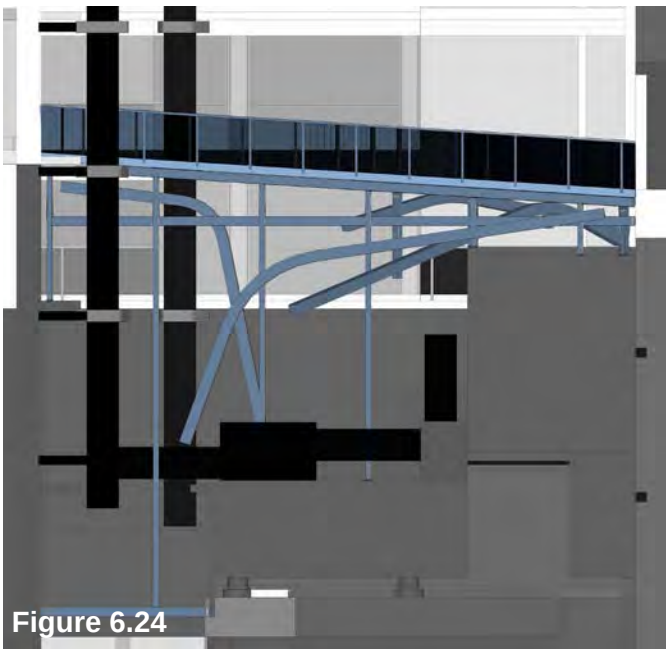


Figure 6.24

The development of the other main open spaces followed similar routes (figs.6.20-6.21).

Furniture, used throughout the main open spaces, is also incorporated with options being shown in fig.6.22.

The bridge that connects the City Centre building with the main lower commercial open space has two components: the plane on which people walk and the structure that carries it. In the former, the design is based on movement patterns of the users (fig.6.18). The latter began with foreign shapes (figs.6.23-6.24) and was gradually adjusted to fit in with the parti-diagram (6.25).

6.3.5. Circulation

One of the main concerns in the design development of this phase of the project, is the

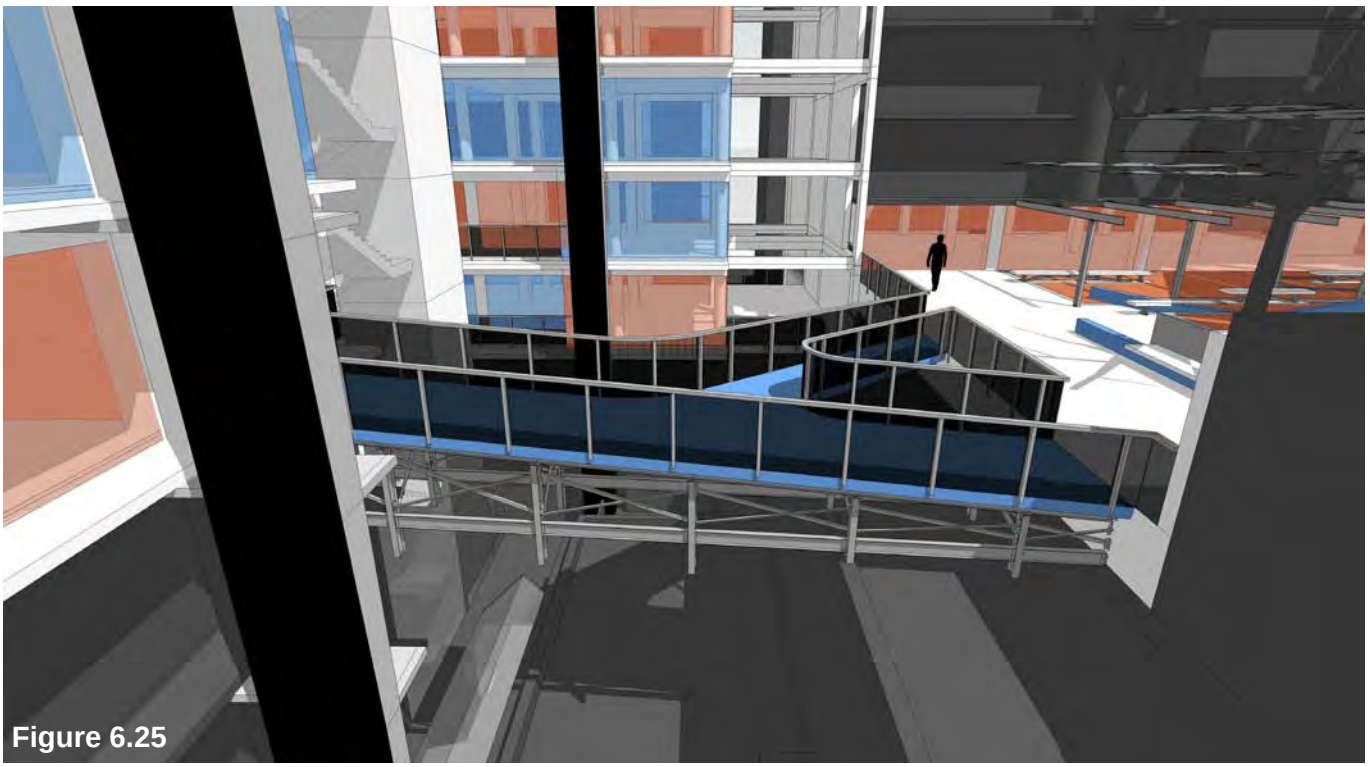


Figure 6.25

Fig.6.26 - Different escalator configurations.
Fig.6.27 - Different roof configurations for the new vertical circulation system.
Fig.6.28 - Diagram indicating existing access and parking behind Central House, in plan.
Fig.6.29 - Sketch indicating vehicular movement in the proposed parking tower.
Fig.6.30 - Perspective with new service shafts indicated, viewed from the northeast.

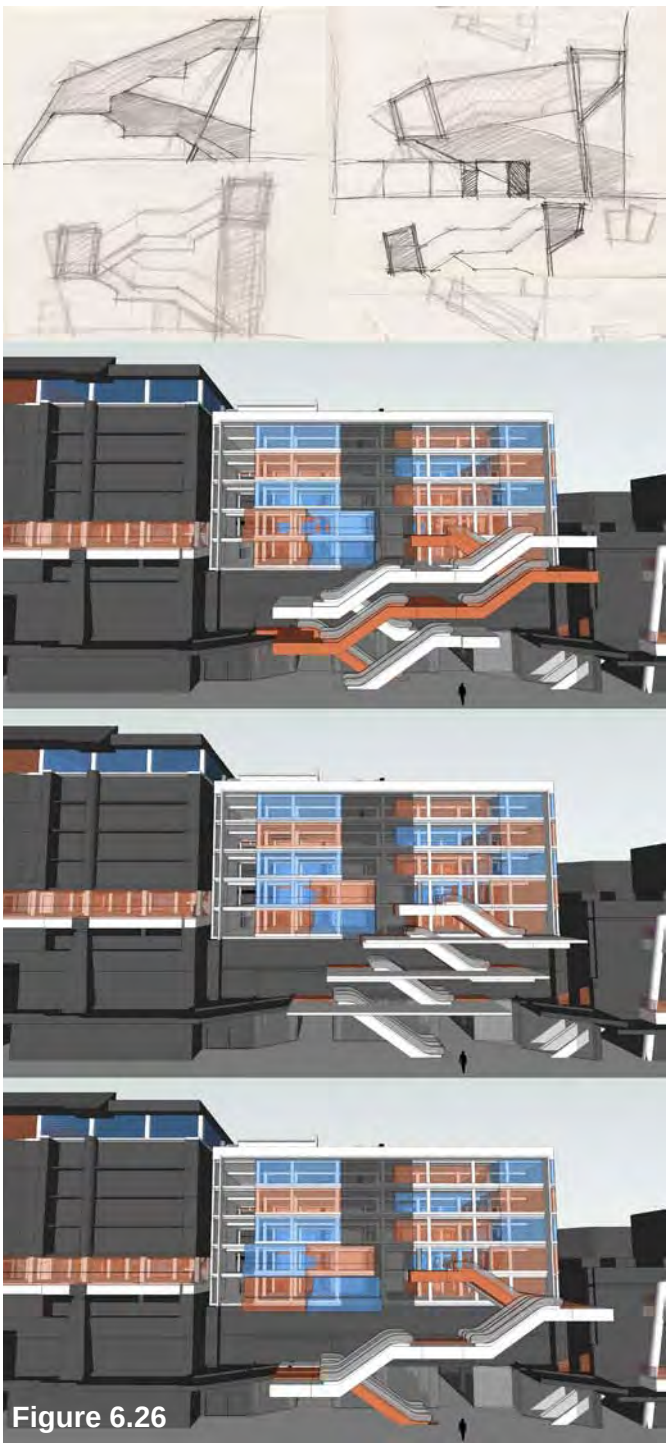


Figure 6.26

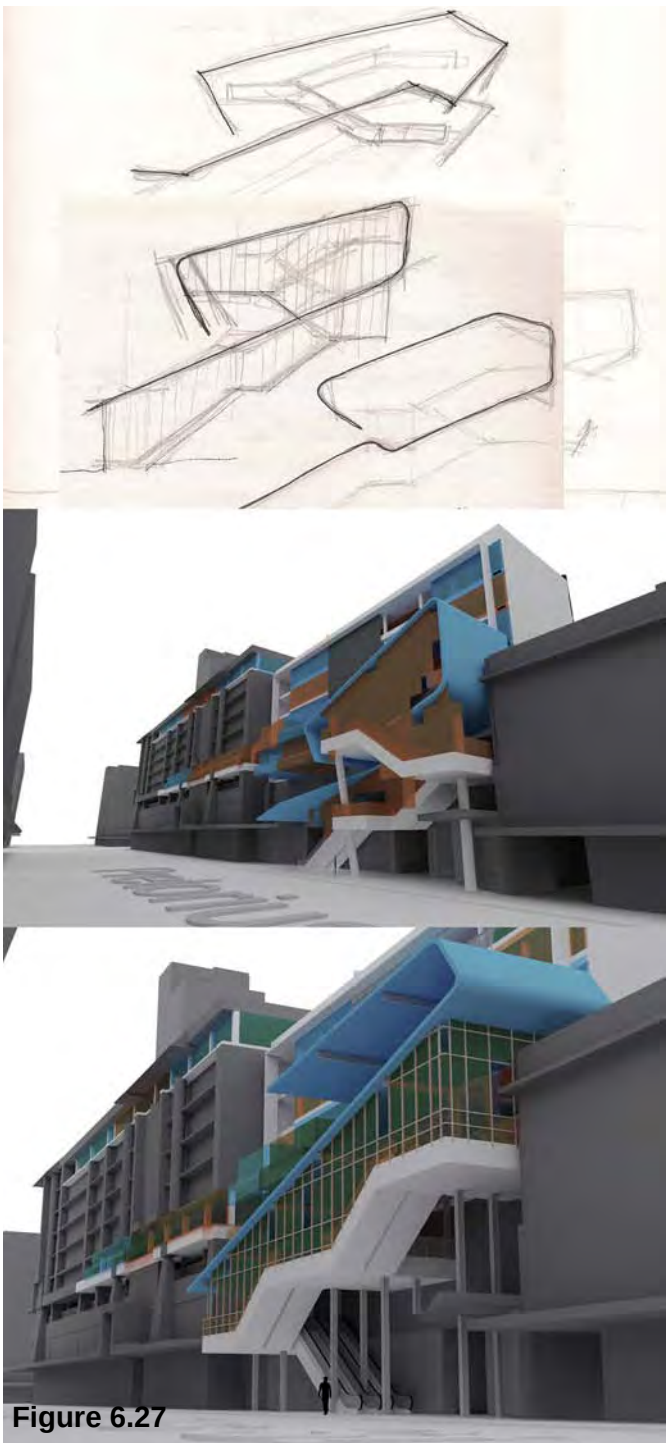


Figure 6.27

connection of the new ‘sites’ with the street. A solution is achieved by the addition of an escalator system to the façade of the City Centre building. This form of vertical movement was chosen because of its ease of use and because of the open and free movement one experiences when travelling along its vertical route. Many different configurations were tested (fig.6.26) together with different roof shapes (fig.6.27). The final resolution provides enough circulation space at the entry and exit points of each escalator.

The vehicular lift’s location is determined by its proximity to the housing ‘sites’ as well as available open space and vehicular access. The neighbouring stand, on which Central House is located, has an existing parking area at the back of the building, thus access and space is sufficient to meet the accommodation requirements (fig.6.28). A vertical

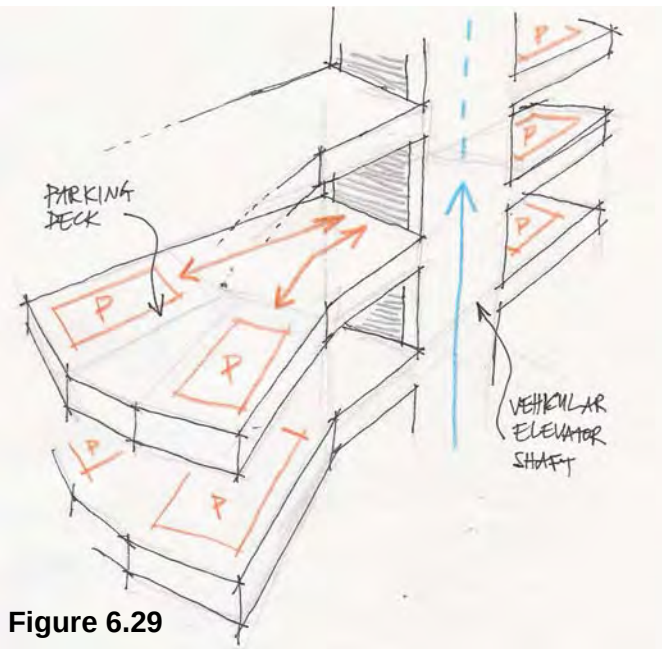


Figure 6.29

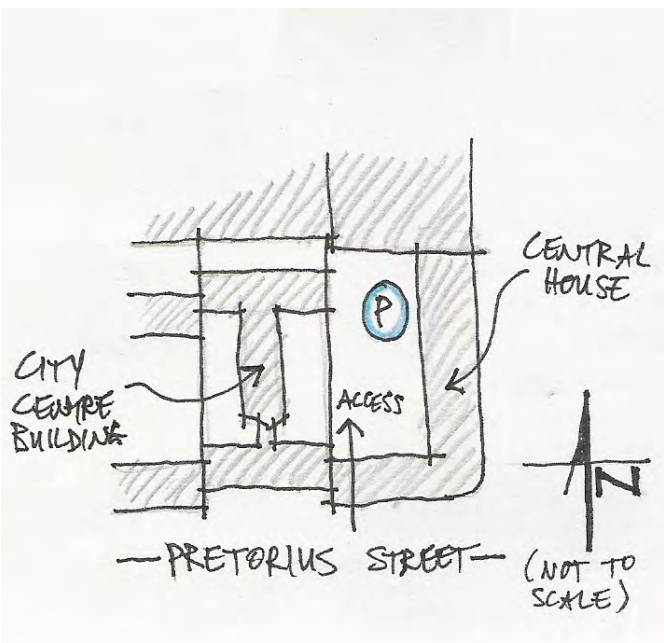


Figure 6.28

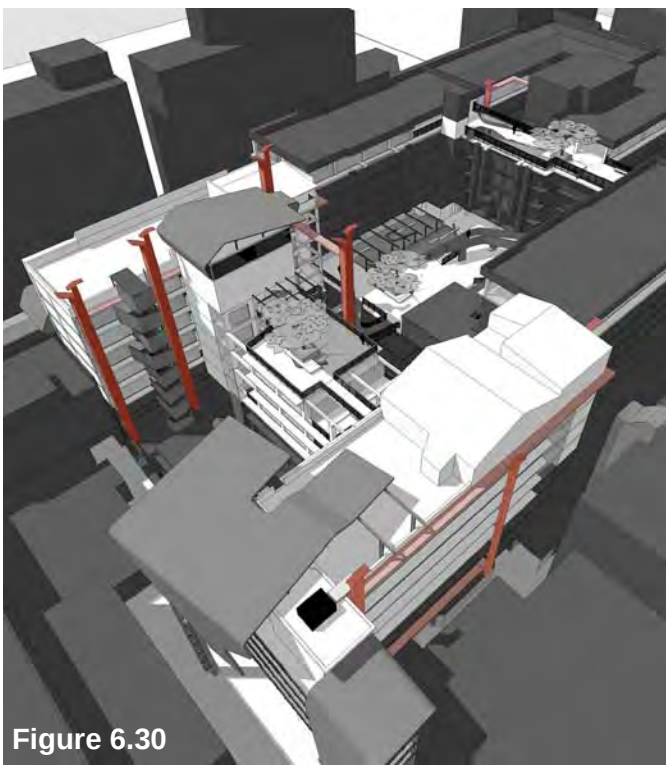


Figure 6.30

Fig.6.31 - Diagrammatic plan indicating locations of the fire escapes.

Fig.6.32 - Parti-diagram of the MINI Space Gallery.

Fig.6.33 - The standard 2009 MINI Cooper, with dimensions shown.

shaft is necessary for the lift and parking decks to be arranged in such a way that cars can easily manoeuvre in and out of the lift and parking spaces (fig.6.29).

6.3.6. Services

External service ducts are added to the existing building (fig.6.30). There are three types of ducts:

- the first contains all services necessary for the commercial 'sites' to function such as water supply, grey-water system, telecommunications, fire-system, stack ventilation and evaporative cooling system;
- the second contains the same as above, but are used for the commercial 'sites' in Die Meent building; because only two floors contain new 'sites', the stack ventilation and evaporative cooling system is not applied in this type of duct (which only works when it serves multiple storeys);
- the third contains all necessary services for residential units including water supply, grey-water system, sewage-system, fire-system and telecommunications. Once again the stack ventilation and evaporative cooling systems are not applied, because the residential units will have closed, compartmentalized spaces, hindering natural ventilation throughout the 'sites'.

Existing electrical services, available at each floor, are to be re-used and adapted. This will include new connection points for each new 'site' and also conduits for additional cabling.

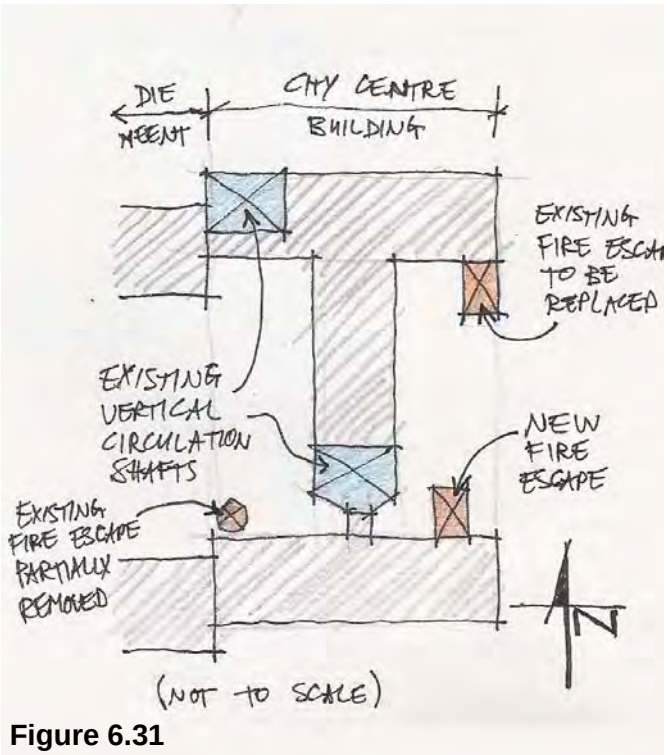


Figure 6.31

The module used for dimensioning the MINI Space Gallery (all in mm)						
Aspect	**Original**	**Multiples**				
		1/2	**1/4**	**1/10**	**1/20**	**1/40**
Length	3699	1850	925	370	185	93
Width	1683	842	421	168	84	42
Height	1407	704	352	141	70	35

Table 6.3

6.3.7. Fire escapes

One new fire escape staircase is added, to provide a second route of escape and also to replace an existing one, which is removed because of the cutting open of floor slabs. A second new fire escape staircase replaces an existing one on floors where new 'sites' are located and complies with current fire escape regulations. See fig.6.31 for a location diagram of these.

Figure 6.33

6.4. Development of the MINI Space Gallery

The parti-diagram (fig.6.32) for this phase of the project is again derived from the x-y-z of architectural design development, as well as the preliminary theoretical ideas. The elements are:

- function/programme as compartmentalized

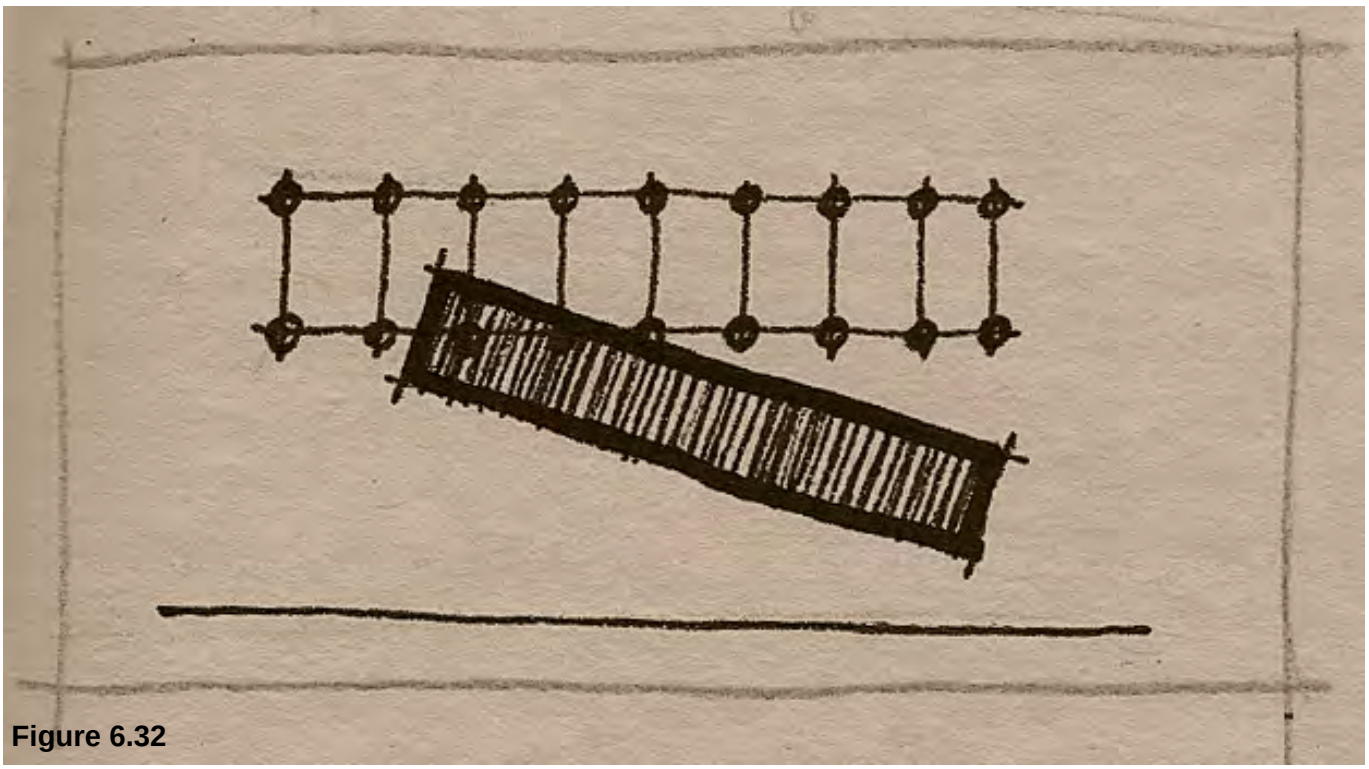


Figure 6.32

Fig.6.34 - Illustration of overlaying of the x-y-z of architecture.
Fig.6.35 - Perspective of the 'box' (orange) in the gallery.
Fig.6.36 - Perspective of the initial 'skin', viewed from the southwest.
Fig.6.37 - Perspective of the plain 'skin', viewed from the southwest.
Fig.6.38 - Model of a preliminary gallery design, with advertisement space highlighted.

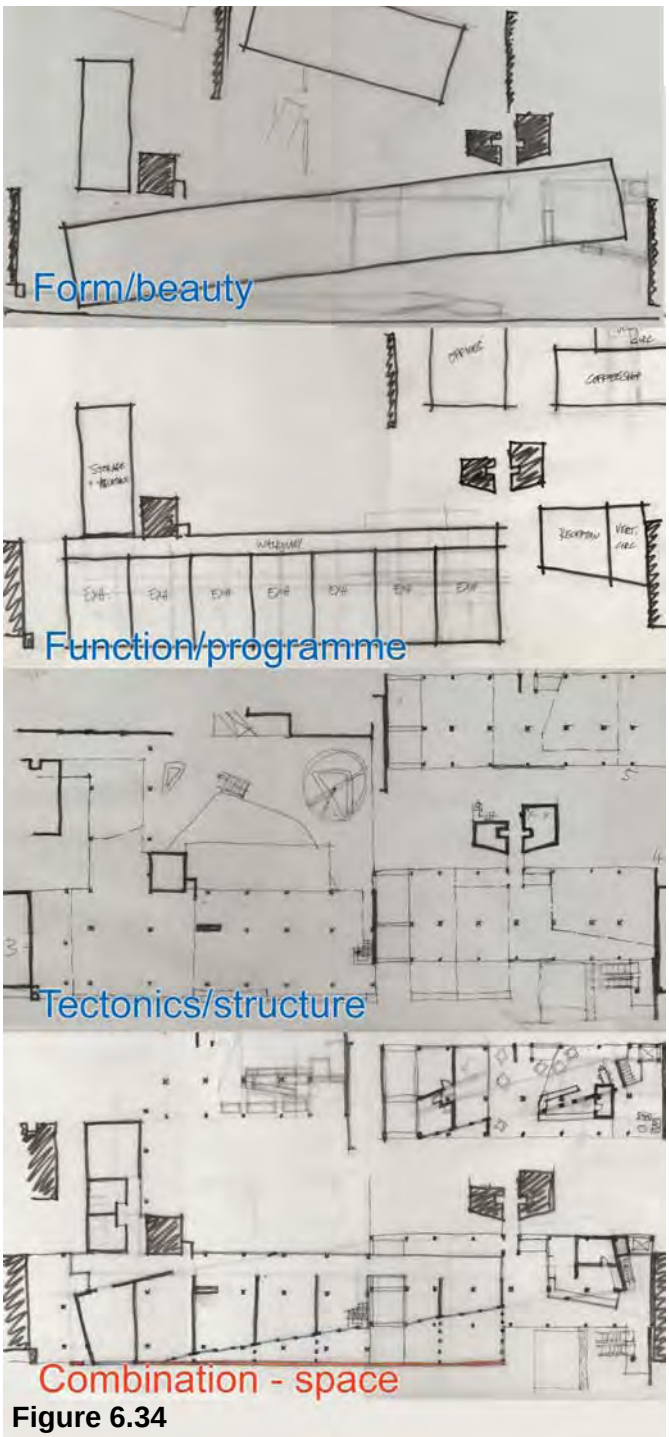


Figure 6.34

block;
- form/beauty as a diagonal, stereotomic 'box' and thin, tectonic 'skin';
- tectonics/structure as black dots or columns at the corners of the function or programme's compartments.

The parti-diagram for the gallery can be summarized as tectonics/structure determining function/programme; these are intersected by the stereotomic form/beauty, set apart from the tectonic form/beauty. The standard new MINI Cooper (2009 model; fig.6.33) was used as guiding principle to determine sizes, each dimension being divided by two, four, ten and combinations thereof (see table 6.1).

To generate the spaces each element in the x-y-z of architecture, was designed separately and then overlaid on each other, each consequently

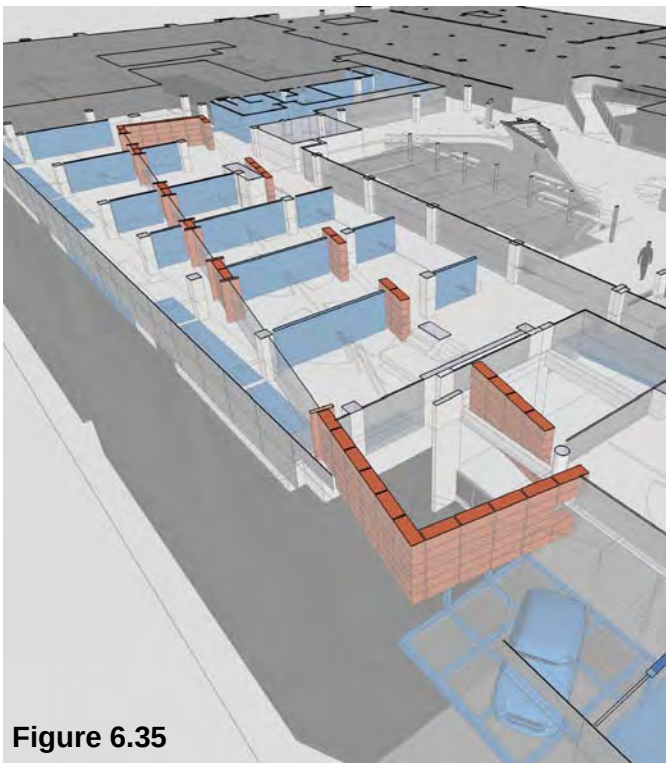


Figure 6.35

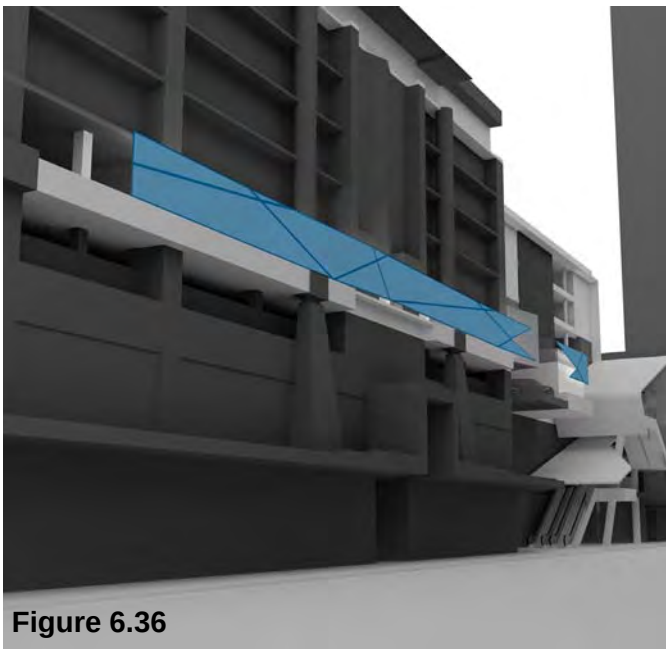


Figure 6.36

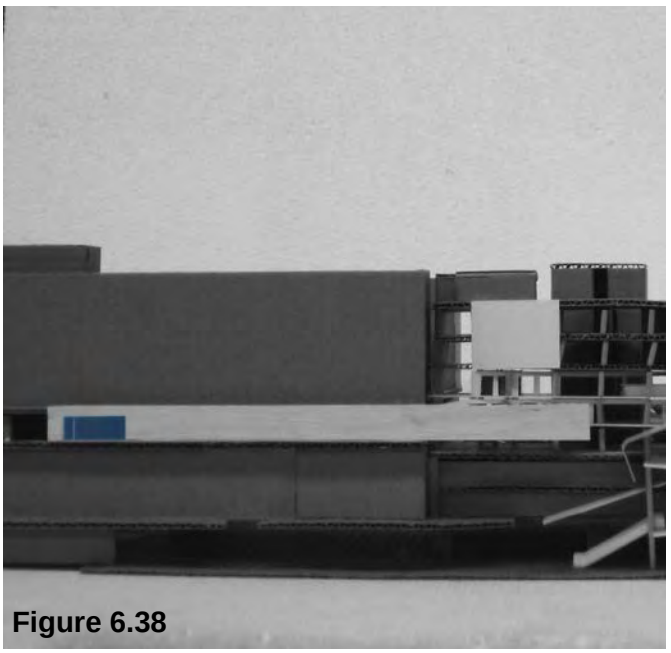


Figure 6.38

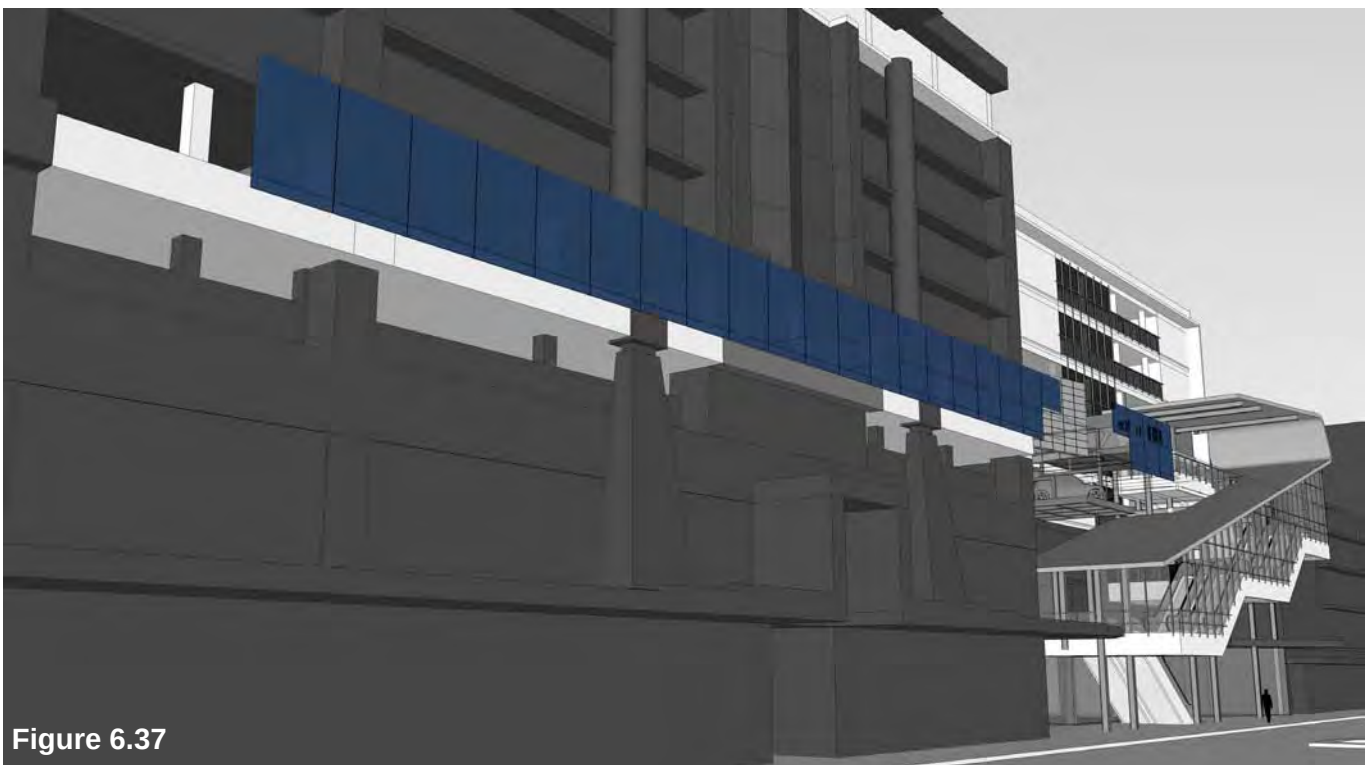


Figure 6.37

Figure 6.41


Figure 6.39

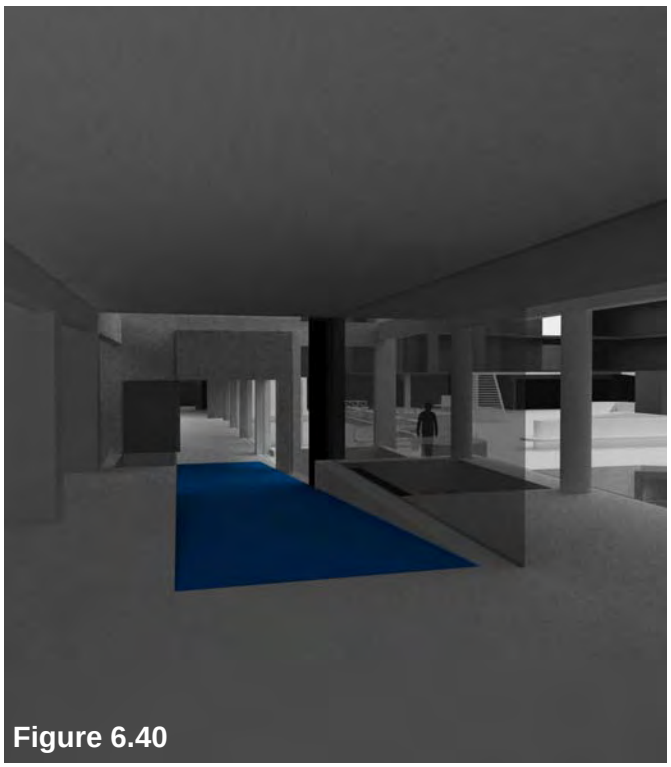


Figure 6.40

Fig.6.39 - Perspective of the gallery viewed from Pretorius Street, with advertisement space highlighted.
Fig.6.40 - Simplified interior rendering of the gallery bridge (blue) viewed from the main entrance.
Fig.6.41 - Development model exploring functional layouts for the gallery and ancillary spaces.
Fig.6.42 - Model of a preliminary gallery design.
Fig.6.43 - Model of a preliminary gallery design.
Fig.6.44 - Sketch with possible vertical circulation between MINI Space areas, in plan.

being adapted to create the gallery space (fig.6.34).

Large open spaces are provided abundantly as exhibition areas, allowing free movement of visitors and any object of art. Glass is used extensively to surround these spaces, providing passers-by with views towards the inside. The ‘box’ is therefore also a large , linear object within the gallery (fig.6.35). This object serves as the stereotomic mass juxtaposed against the tectonic ‘skin’, a principle derived from the precedent study by Piano (see figs.4.2 and 4.4).

The ‘skin’ communicates with the street, thus exposing the gallery to pedestrians and people in vehicles. Initial ideas (fig.6.36) involved complex panels, but this cluttered the existing façade. It was decided therefore to create a plain ‘skin’ (fig.6.37), its simplicity contrasting with the complexity of the existing buildings. This element will also seem to glow at night, attracting even more visitors.

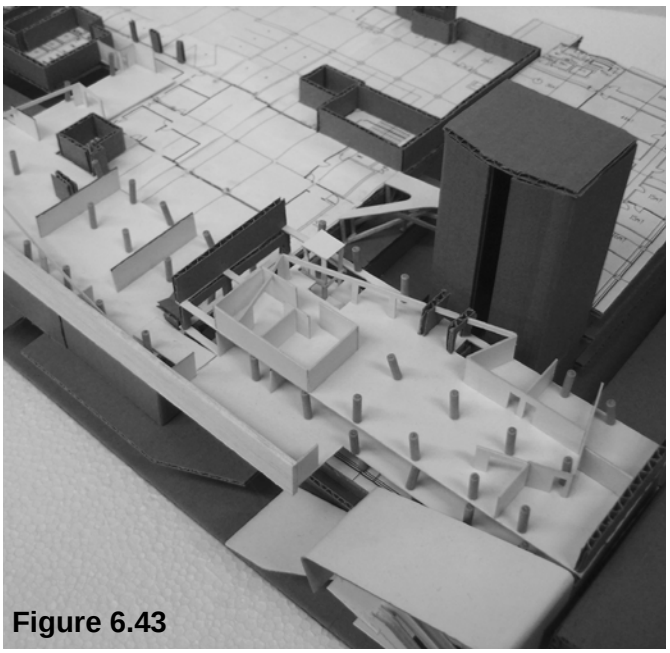


Figure 6.43

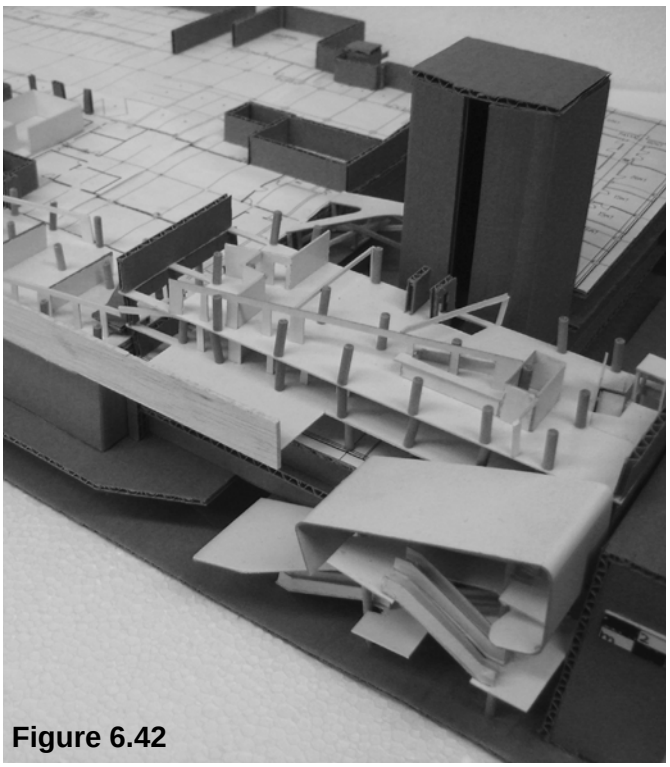


Figure 6.42

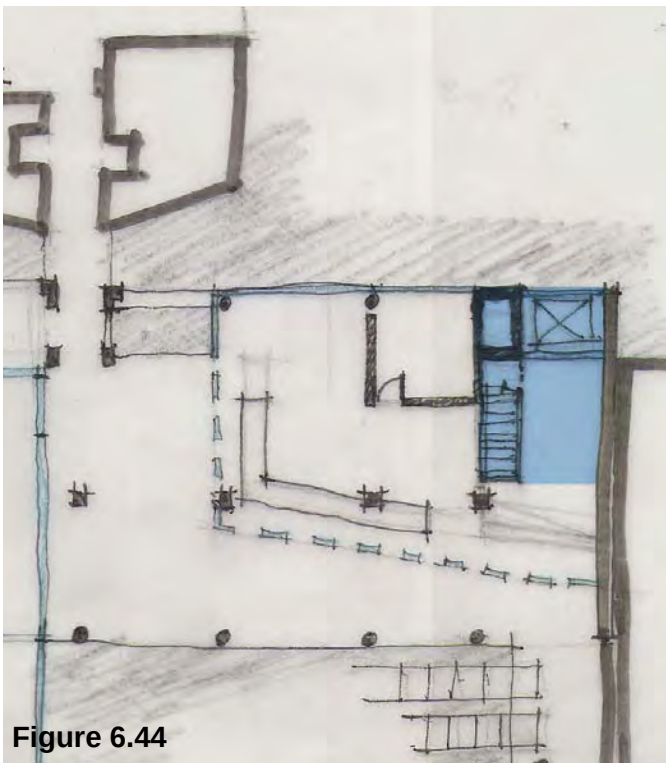


Figure 6.44

Areas of the open spaces after adjustment of the MINI Space owned 'site' boundaries					
Open space location	**Original size in m²**	**Area used in m²**	**Area gained in m²**	**Difference in m² (used minus gained)**	**Total lost open space (max. 25%)**
Lower level	53,1	0,7	0	0,7	1,3%
Main level (City Centre building)	99,7	32,4	14,2	18,2	18,3%
Upper level	102,7	39,1	18,1	21	20,4%

Table 6.4

A cantilevering display floor serves as advertising to the public on the street, showing off the events occurring inside. Different areas for the positioning of this space was looked at (fig.6.38), the final location chosen, is close to the escalator structure, and seems to break through the 'skin' (fig.6.39).

To connect the 'sites' in the City Centre building with those in Die Meent building, a new bridge is inserted (fig.6.40). This walkway is covered and also serves as a ramp between the floors of the two existing buildings.

The design of the MINI store and coffee shop was based on the same principles as above. Different locations of these spaces within the 'site' were investigated by means of concept models (figs.6.41-6.43). A vertical connection between these two spaces was also explored. A direct connection, including an elevator and staircase

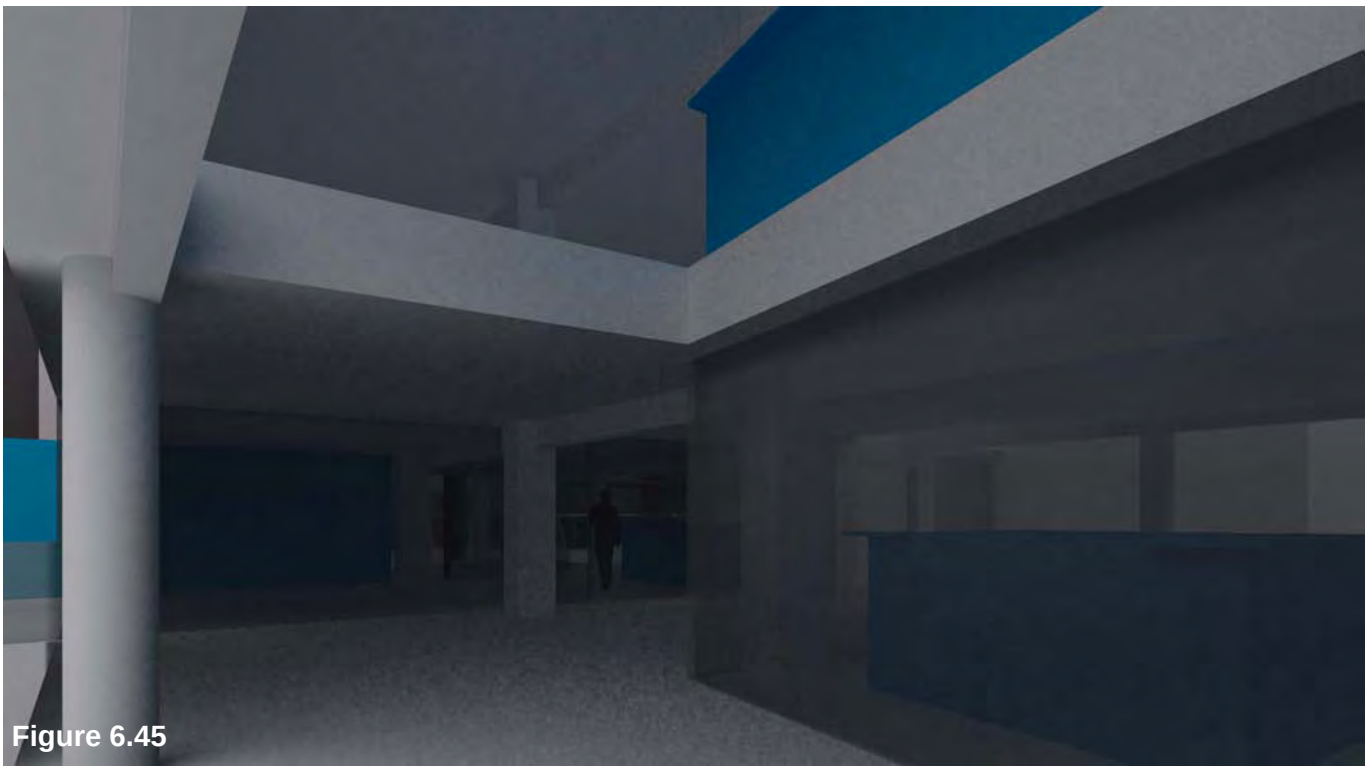


Figure 6.45

Fig.6.45 - Initial interior rendering of the new double volume, viewed from the escalators.
Fig.6.46 - Sketch explaining adjustment of the MINI Space owned 'sites', in plan.

(fig.6.44) was discarded due to the proximity of the entrances to the existing vertical circulation shaft. Thus three bays of the concrete floor in-between these spaces were removed (fig.6.45) to create a spatial link between the gallery, store, coffee shop and the shared open space. This double volume also accentuates the presence of these spaces as one exits the top escalator.

The existing site boundaries were adjusted according to the principles set out in the design guidelines, forming part of the first phase of the project. Open spaces between 'sites' owned by MINI Space can be built upon up to a maximum of 25% of the area on plan. To simplify the spaces, boundaries were thus extended and set back (fig.6.46). Table 6.2 summarises these effects on the open spaces.

Change is designed for, following the applied theory. All new components are fixed to the existing structure with chemical bolts, allowing everything to be easily removed and set up elsewhere. The scars that remain will become part of the history of the 'sites'.

6.5. Conclusion

Many ideas and possible applications were investigated to solve the design problems. This process serves as the basis for final decisions regarding the design of the Site Development and the MINI Space Gallery.

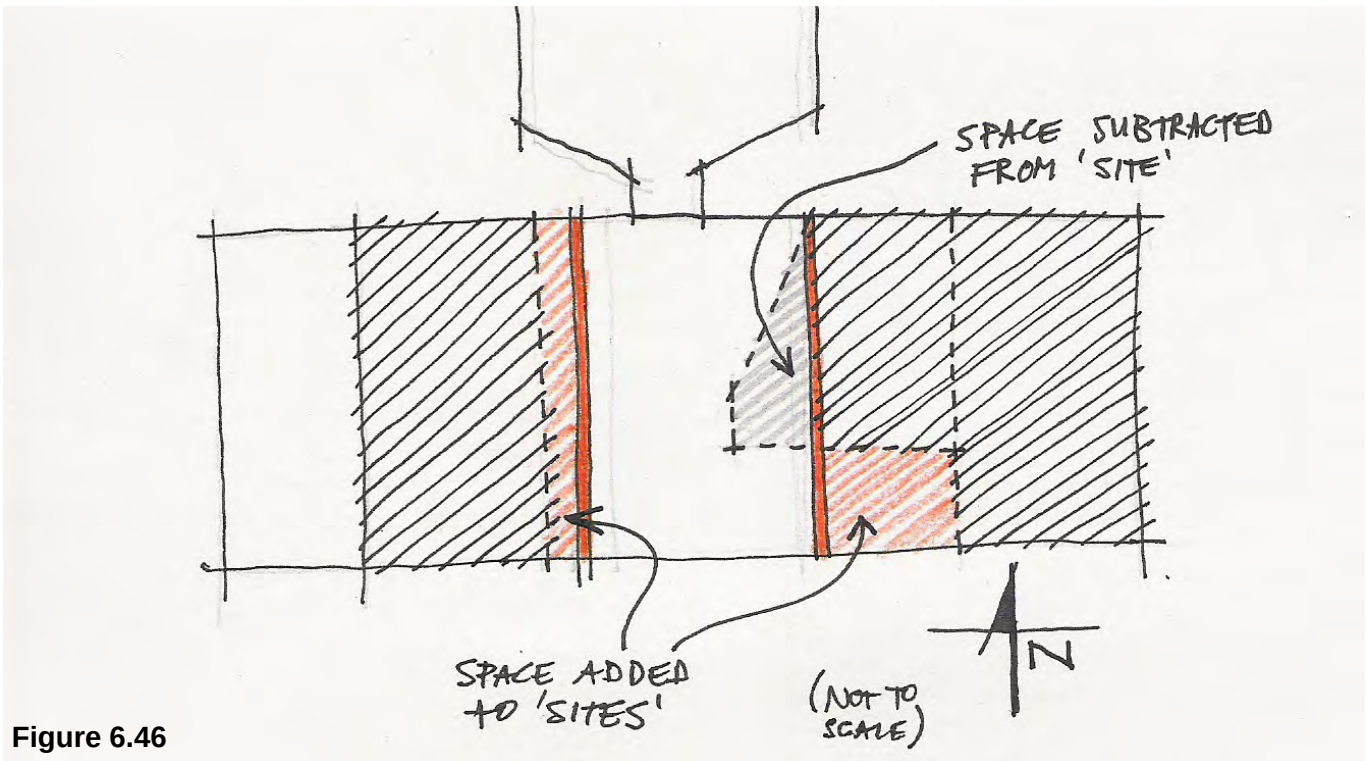


Figure 6.46

Chapter 7

Solution

7.1. Introduction

The finalised design is documented in this chapter. Three-dimensional renderings are shown, as well as detailed descriptions thereof. All colours are diagrammatical. For plans, elevations and sections see Chapter 8.

7.2. First phase: the Site Development

7.2.1. Implementing the Site Development

The process of implementing the final design for the Site Development is explained in Figs.7.1-7.16, while figs.7.1 and 7.2 show the existing buildings. Firstly, all non-structural elements are removed from the empty spaces, followed by the façade of the City Centre building and lastly some

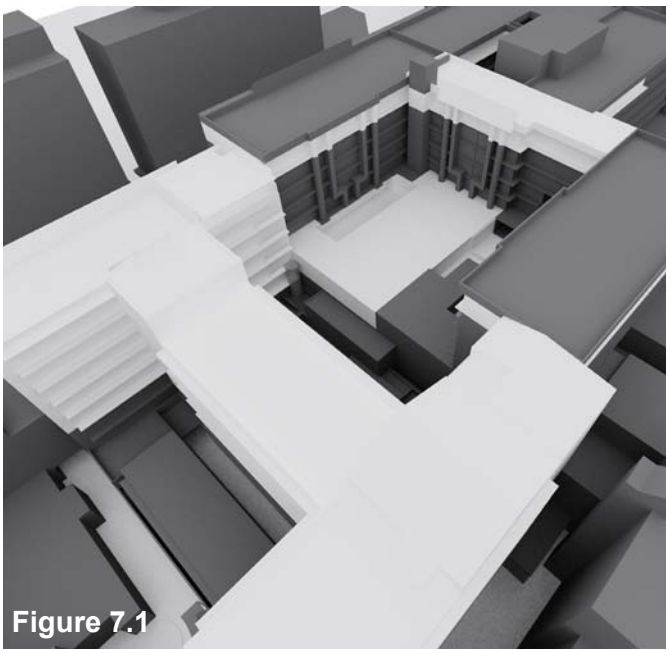


Figure 7.1

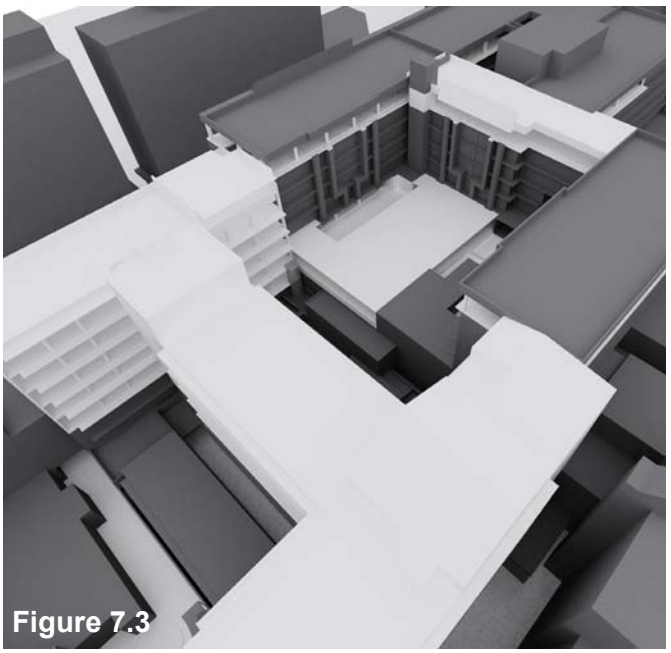


Figure 7.3

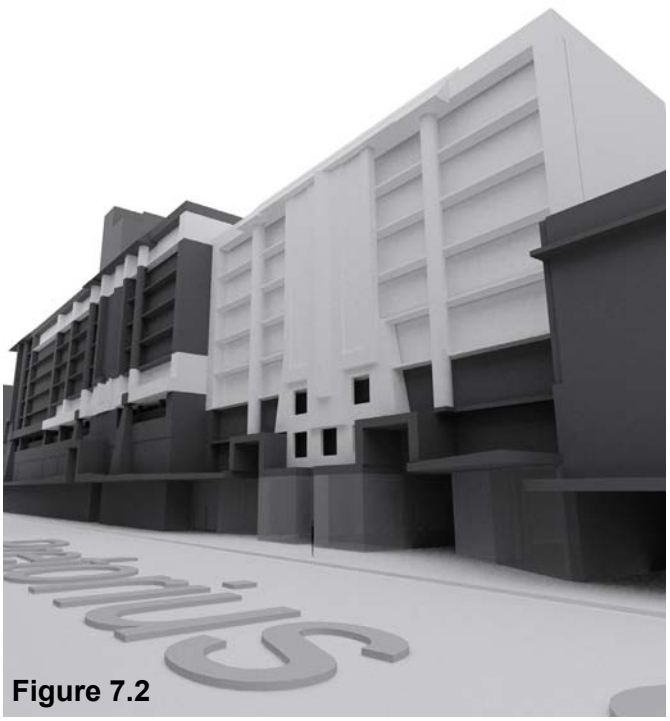


Figure 7.2

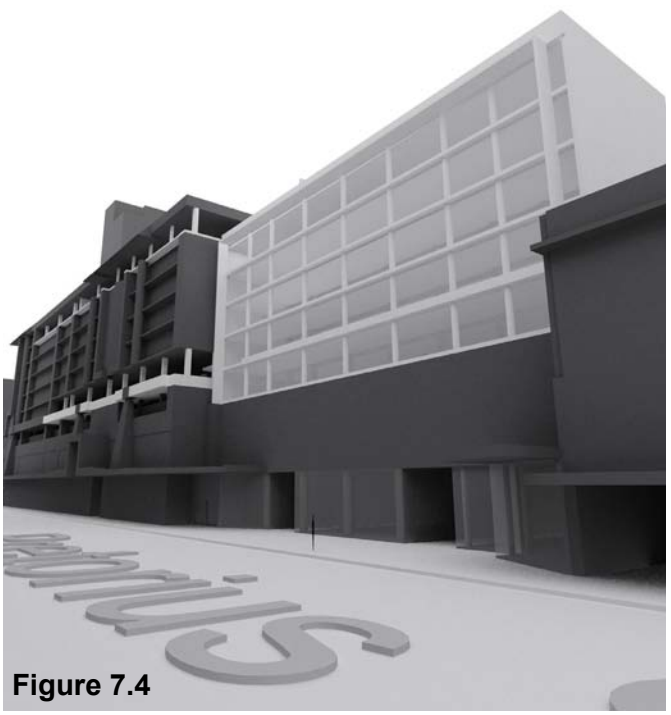


Figure 7.4

Fig.7.1 - Bird's eye view from the north-east of the existing buildings.
Fig.7.2 - View from Pretorius Street of the existing buildings, looking north-west.
Fig.7.3 - Bird's eye view from the north-east of the stripped buildings.
Fig.7.4 - View from Pretorius Street of the stripped buildings, looking north-west.
Fig.7.5 - Bird's eye view from the north-east of the stripped buildings with floors removed.
Fig.7.6 - View from Pretorius Street of the stripped buildings with floors removed, looking north-west.

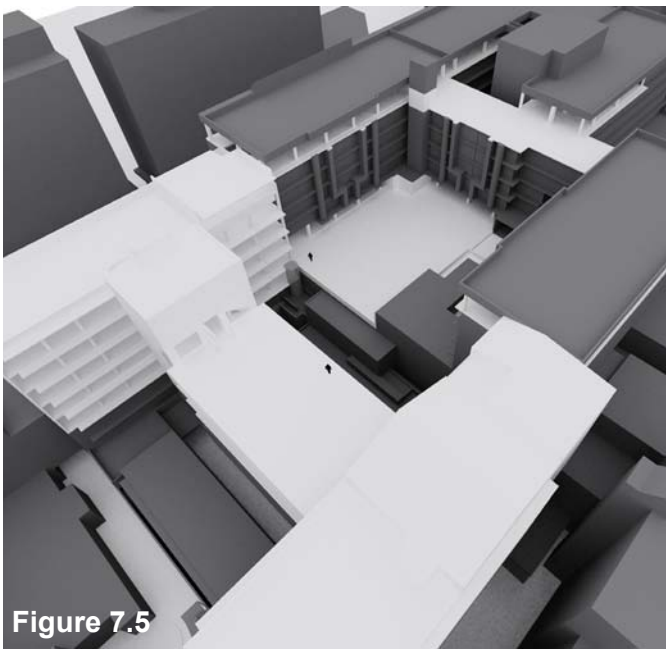


Figure 7.5

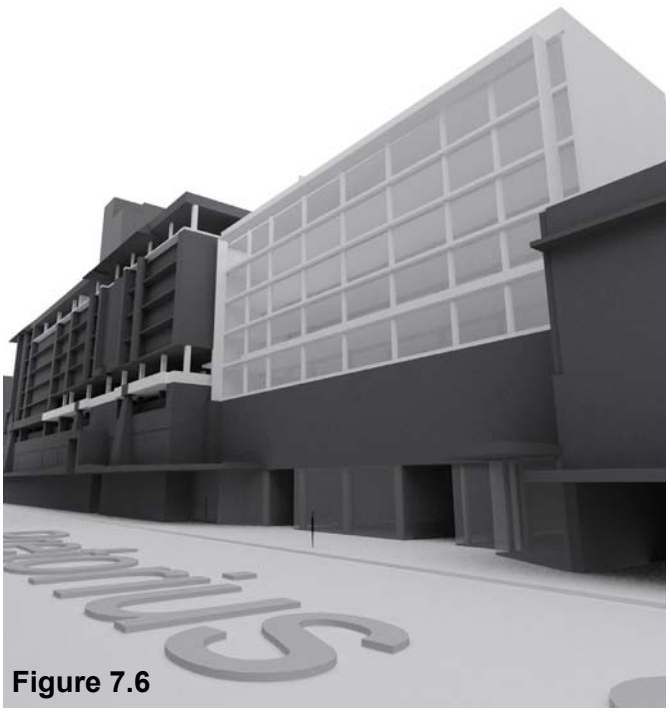


Figure 7.6

of the roofs (figs.7.3-7.6). Secondly, the concrete slabs are cut in certain areas (figs.7.7-7.10). The service shafts are then added (figs.7.11 and 7.12) and new 'sites' are established on each empty floor (figs.7.13 and 7.14). Finally, the new vertical circulation components, main open spaces and fire escapes are constructed to complete the whole Site Development (figs.7.15 and 7.16).

7.2.2. Description of the final Site Development

As one approaches the City Centre and Die Meent buildings from Pretorius Street, the open escalators and curved roof immediately draw attention (figs.7.15, 7.17 and 7.18). The existing building is juxtaposed against a new glass façade as one ascends to the new 'sites' (fig.7.19). Each landing leads to an open space with surrounding

Fig.7.7 - Bird's eye view from the north-east of the site development, with slabs cut open highlighted.

Fig.7.8 - View from Pretorius Street of the site development, with slabs cut open highlighted, looking north-west.

Fig.7.9 - Bird's eye view from the north-east of the site development, with slabs cut open.

Fig.7.10 - View from Pretorius Street of the site development, with slabs cut open, looking north-west.

Fig.7.11 - Bird's eye view from the north-east of the site development, with service shafts.

Fig.7.12 - View from Pretorius Street of the site development, with service shafts, looking north-west.

Fig.7.13 - Bird's eye view from the north-east of the site development, showing the new 'sites' as coloured volumes.

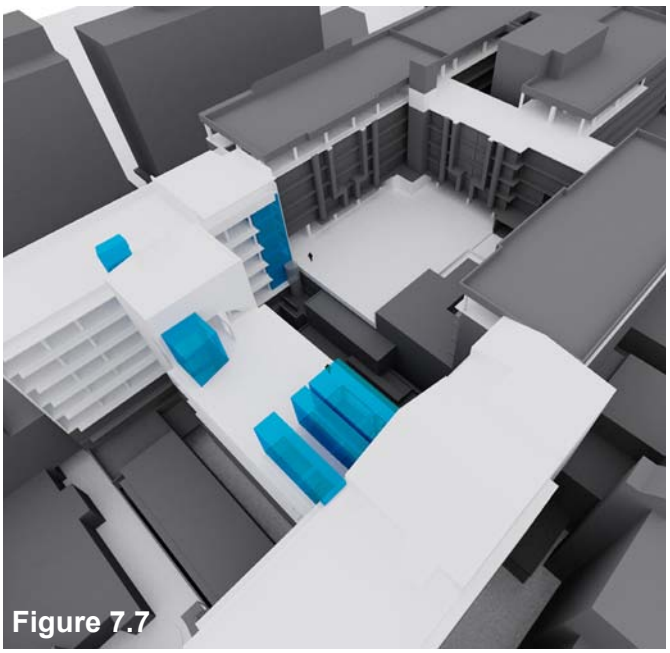


Figure 7.7

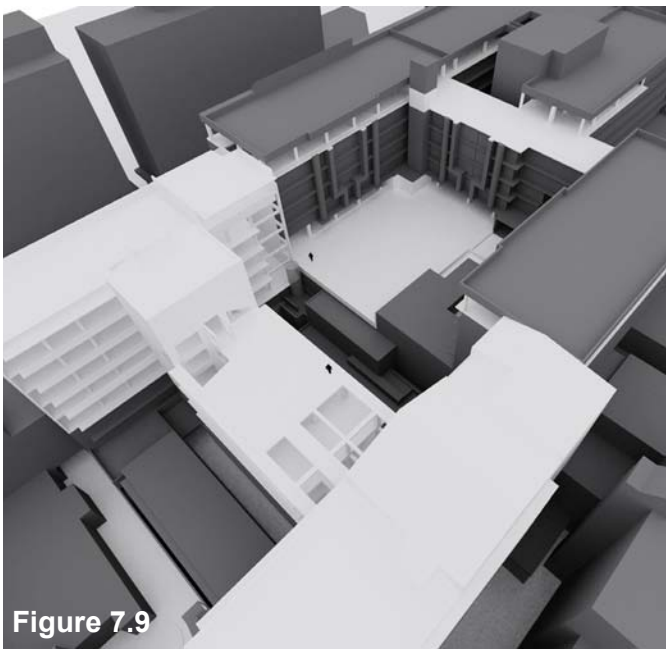


Figure 7.9

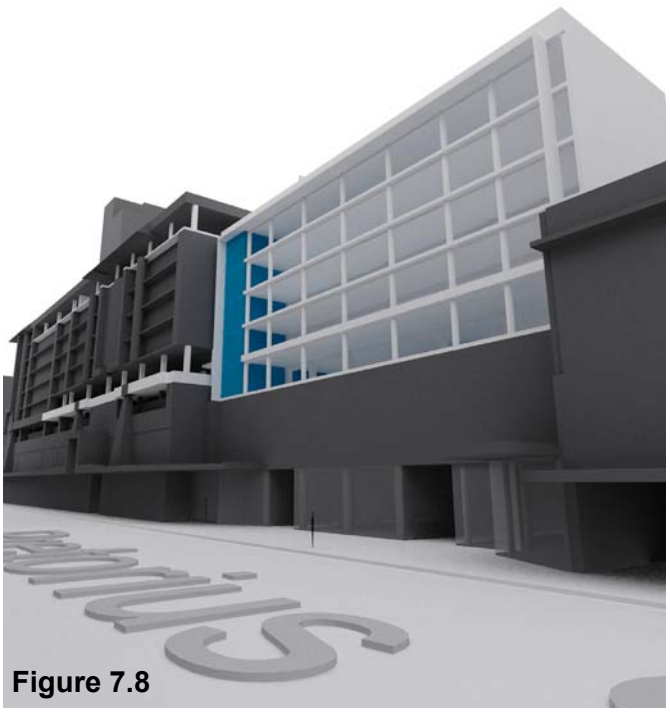


Figure 7.8

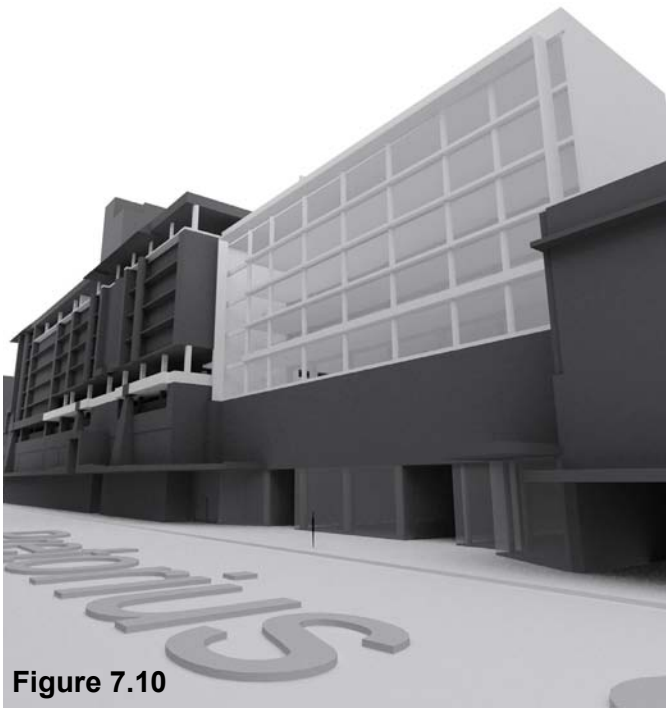


Figure 7.10

Fig.7.14 - View from Pretorius Street of the site development, showing the new ‘sites’ as coloured volumes, looking north-west.

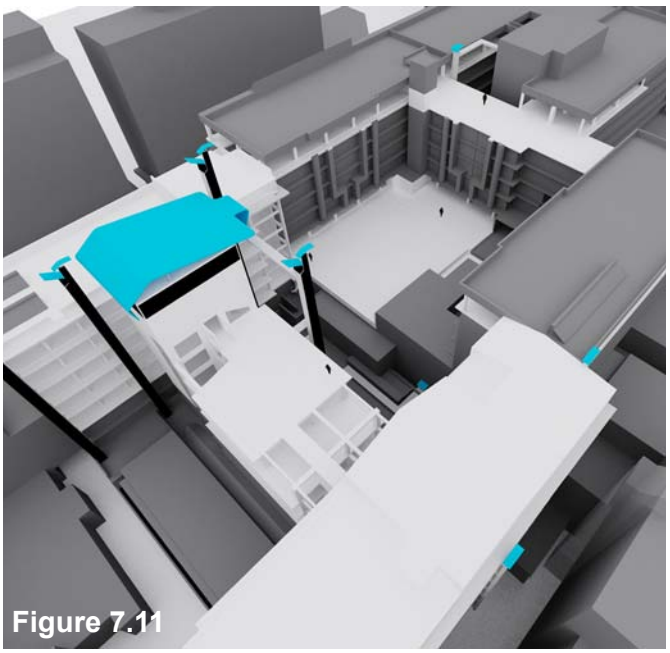


Figure 7.11

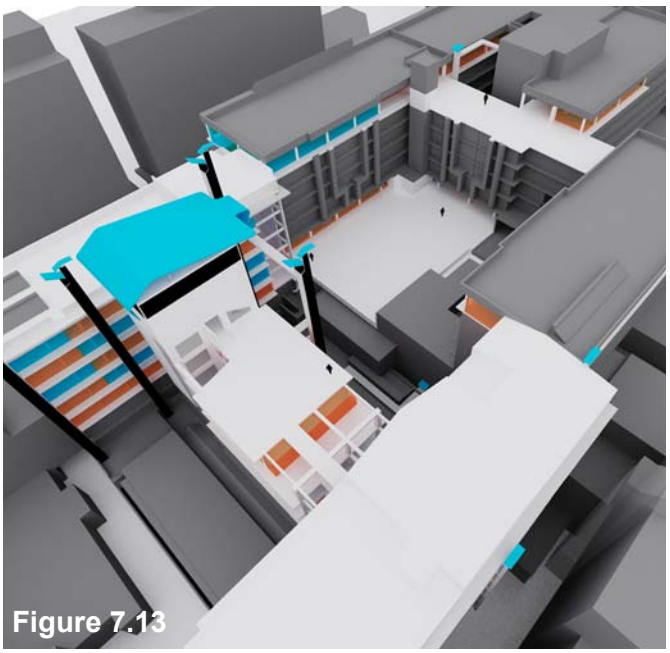


Figure 7.13

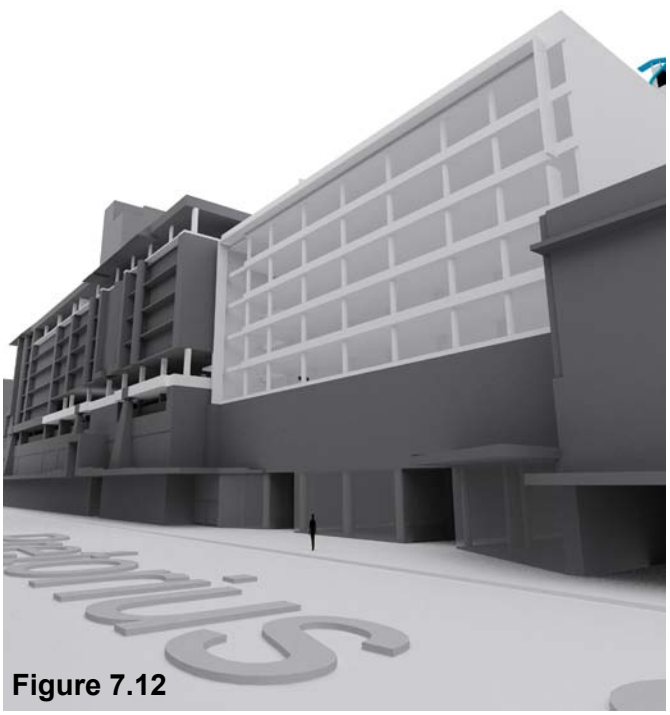


Figure 7.12

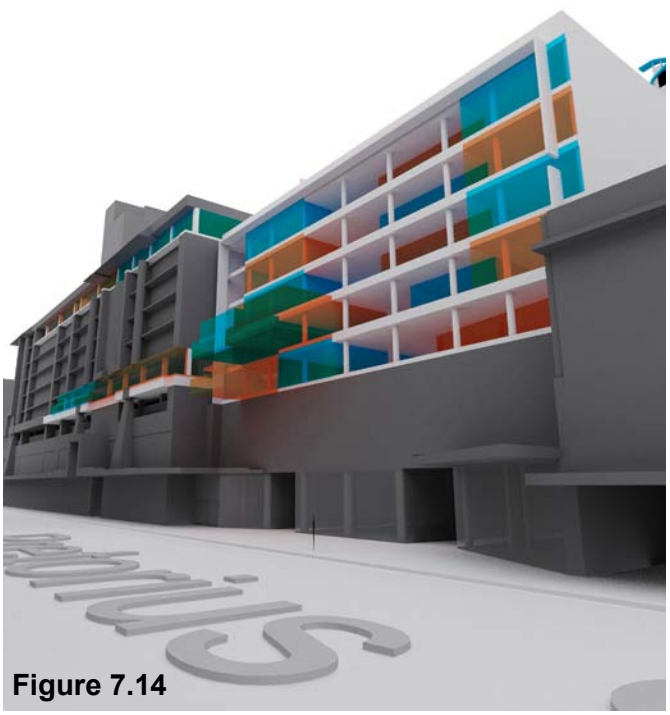


Figure 7.14

Figure 7.15

Fig.7.15 - View from Pretorius Street of the final Site Development, looking north-west.

Fig.7.16 - Bird's eye view from the north-east of the final Site Development.

new 'sites'.

The existing main vertical circulation shaft of the City Centre building is articulated by an open space at ground floor level, with views upwards. On the fourth floor, a bridge (fig.7.20) leads the user over rooftops to the main lower commercial open space (figs.7.21 and 7.22), with seating and planting, where office workers can socialise. Two folded concrete planes enclose a stair and a ramp (fig.7.23), that lead to a higher level, forming a new gateway to the proposed film archive.

When one enters from the existing parking space in Die Meent building, secondary light filters in through the opening, providing a glimpse of the main lower commercial open space (fig.7.24).

The City Centre building's vertical circulation shaft terminates at the main residential open space (fig.7.25). This space provides views of the city and

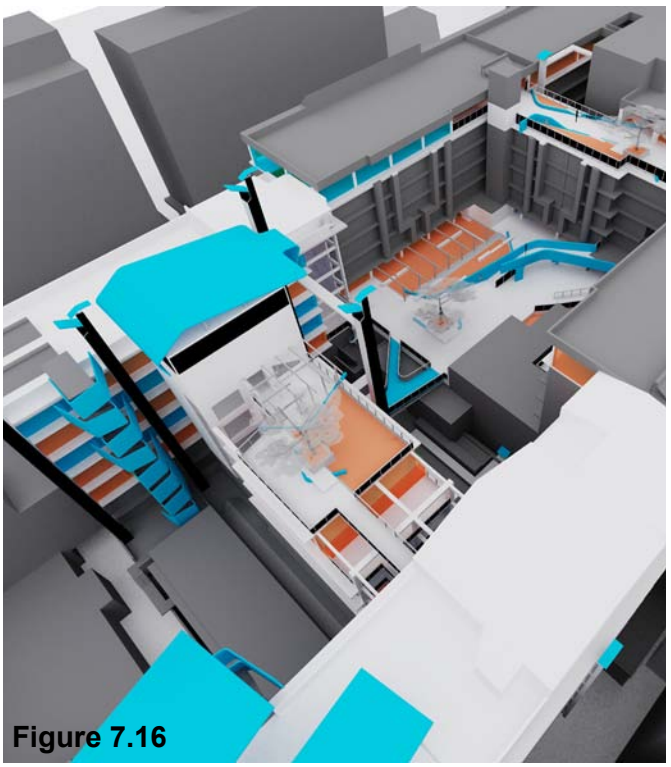
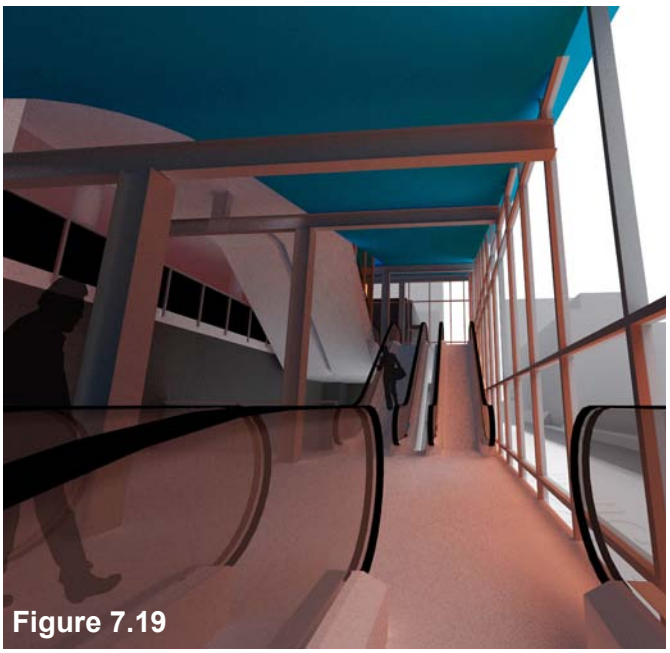


Figure 7.16

Fig.7.17 - View from Pretorius Street of the final Site Development, as seen from the opposite arcade.
Fig.7.18 - View from Pretorius Street of the final Site Development, looking north-east.
Fig.7.19 - Interior perspective rendering of the escalator space.
Fig.7.20 - Perspective rendering of the bridge, viewed from the north.
Fig.7.21 - Perspective rendering of the main lower commercial open space, viewed from the bridge.
Fig.7.22 - Perspective rendering of the main commercial open space, viewed from the south-west.
Fig.7.23 - Perspective rendering of the folded planes in the main commercial open space.

Figure 7.17



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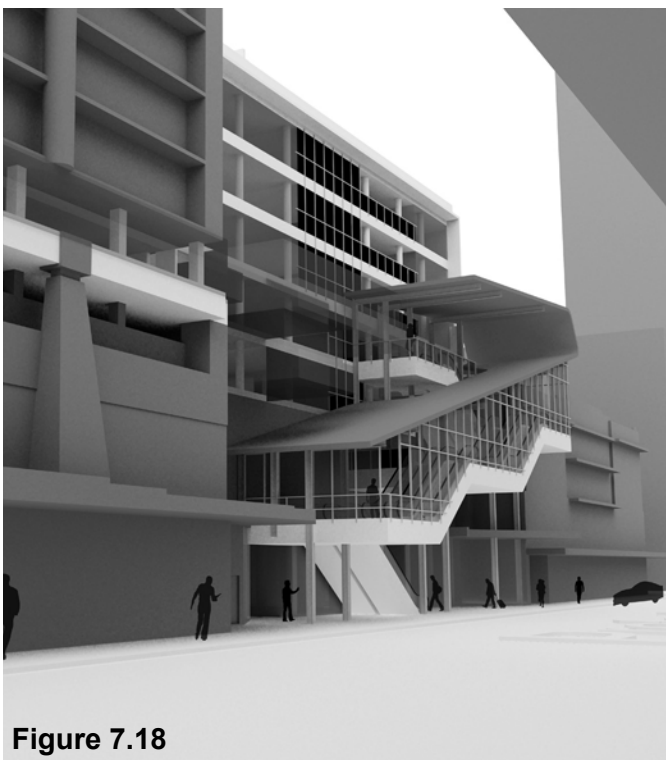


Figure 7.18

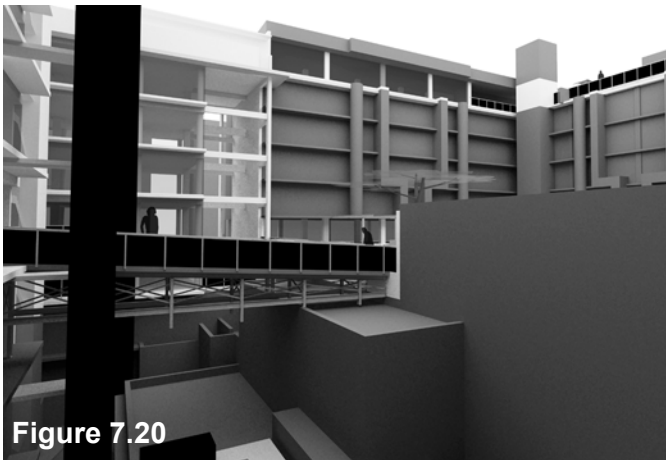


Figure 7.20

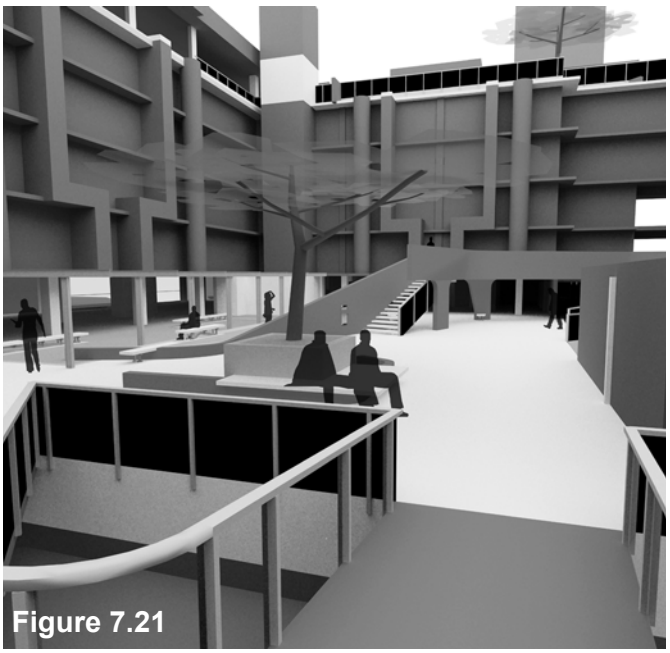


Figure 7.21

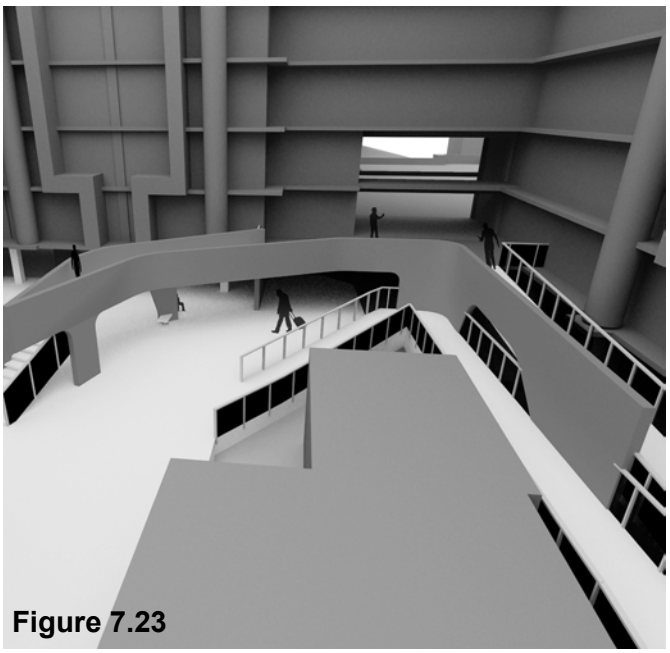


Figure 7.23

Figure 7.22

Fig.7.24 - Perspective rendering of the entrance from the parking to the main commercial open space.
Fig.7.25 - Bird's eye view from the north-east of the main residential open space.
Fig.7.26 - Bird's eye view from the east of the upper main commercial open space.
Fig.7.27 - Perspective of the vehicular lift, viewed from the entrance through Central House.
Fig.7.28 - Perspective of the residential 'sites', viewed from the south-east.

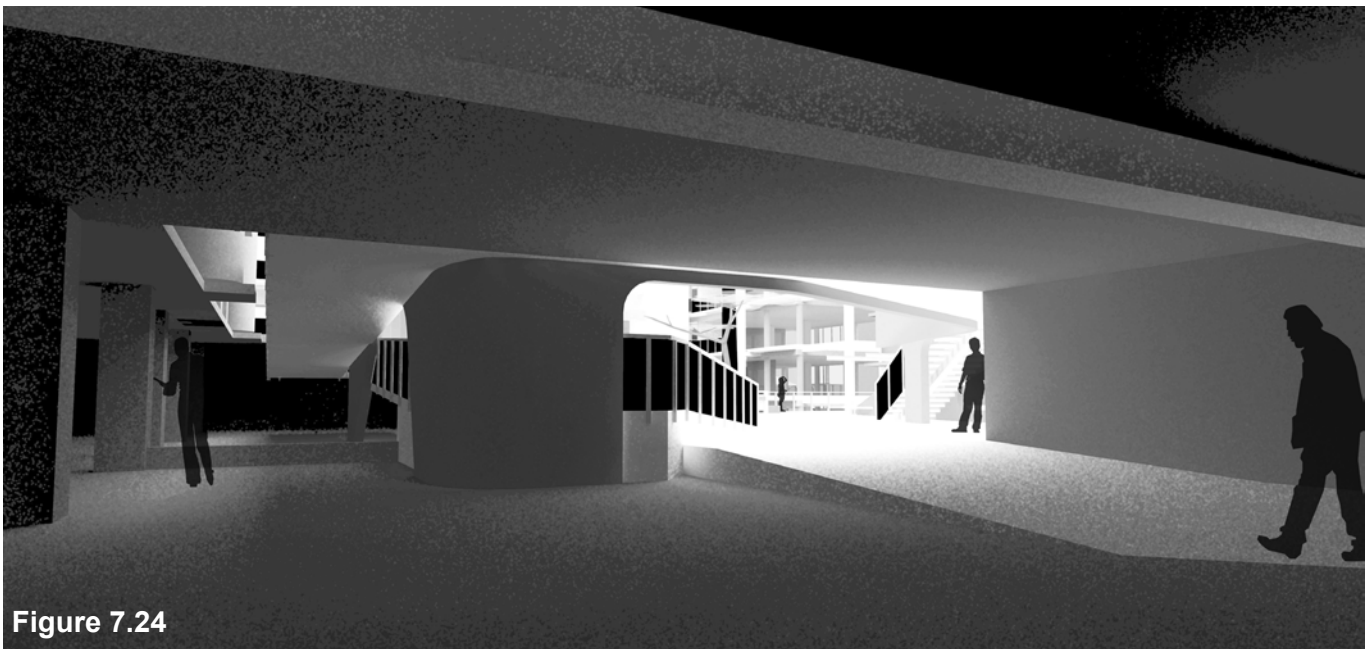


Figure 7.24

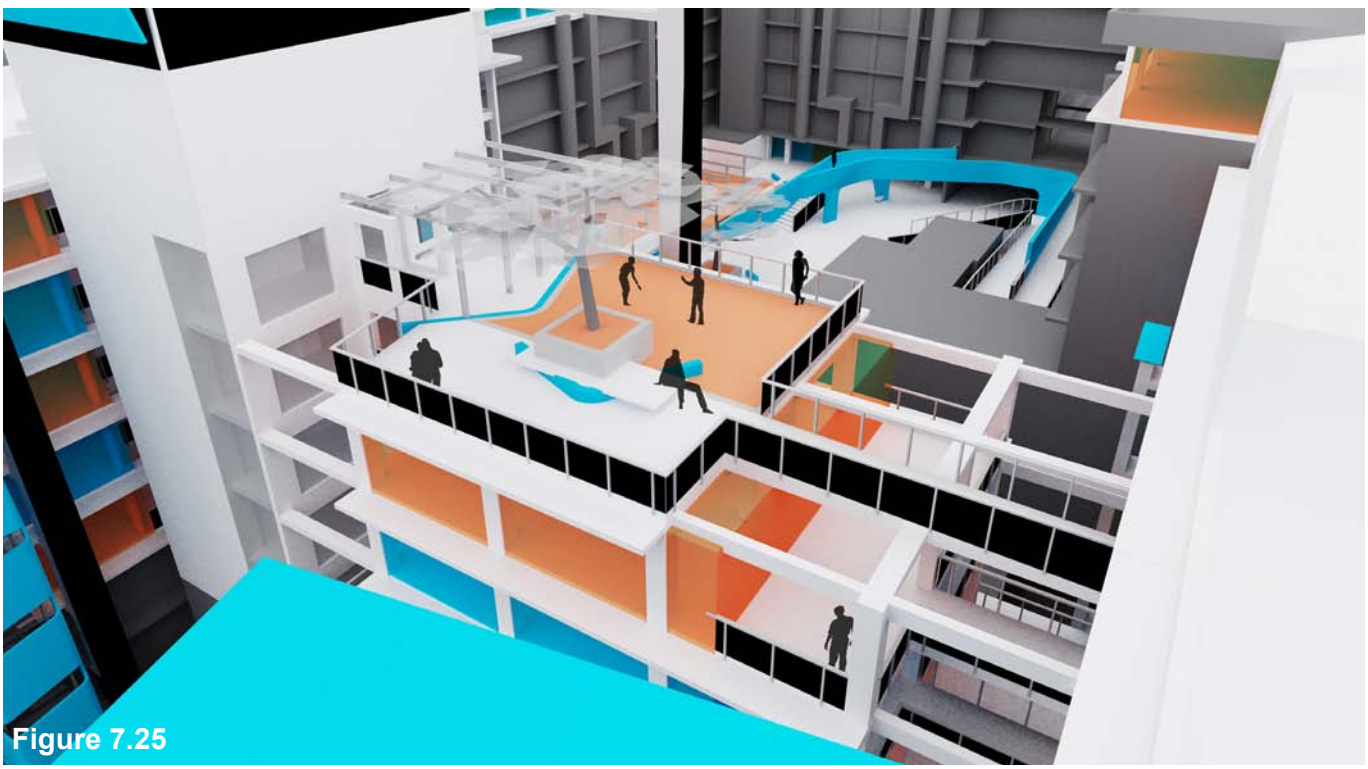


Figure 7.25

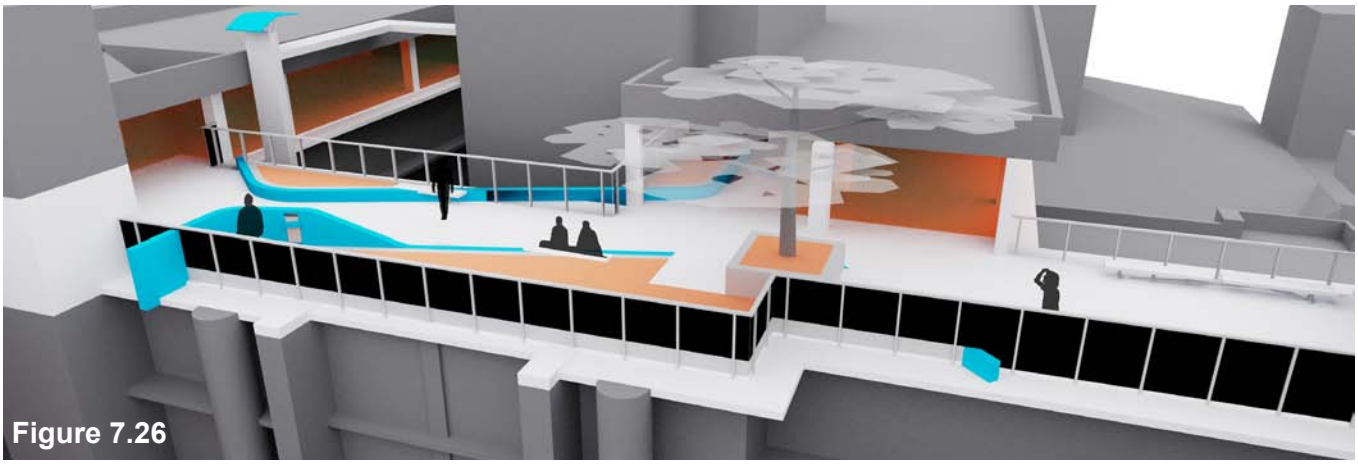


Figure 7.26

Figure 7.27

a lawn for residents.

As one approaches the main upper commercial open space from the vertical circulation shaft of Die Meent Building, the planter and tree comprises the first views of this space. New ‘sites’ are arranged to the left and right of it (fig.7.26).

An opening in the Central House building leads to the vehicular lift for the residential ‘sites’ (fig.7.27). Vehicles move upwards in the concrete lift shaft to open parking decks with views of the city. Residents can walk to their apartments via balconies and secondary open spaces (fig.7.28). Each residential ‘site’ opens out on these shared spaces.

7.3. Second proposed product: the MINI Space Gallery

The ‘skin’ of the gallery contrasts with the

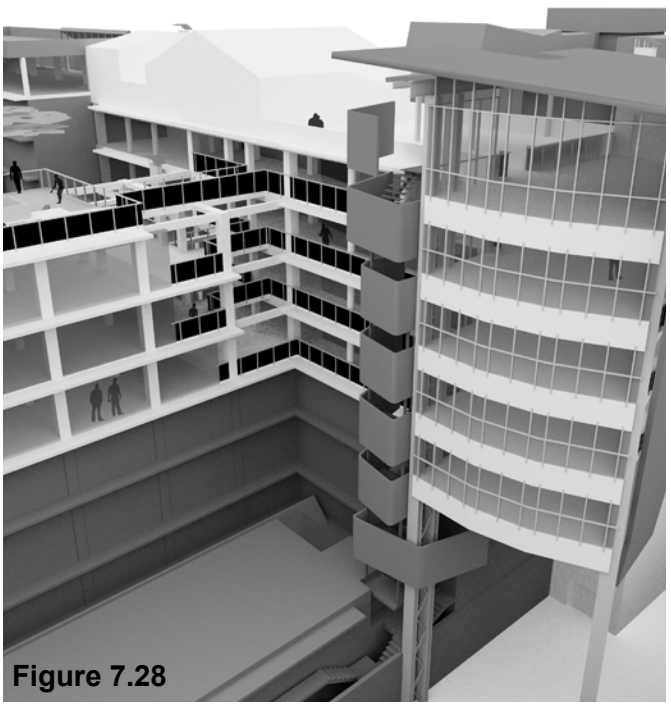


Figure 7.28

Fig.7.29 - View of the MINI Space Gallery from the east of Pretorius street.
Fig.7.30 - Interior view of the double volume at the MINI Space development entrances.
Fig.7.31 - Interior perspective of the main gallery, viewed from the entrance.
Fig.7.32 - Interior perspective of the main gallery, with the 'box' in orange, viewed from the bridge.


Figure 7.29


Figure 7.30

Figure 7.31

surrounding buildings (fig.7.29) as the user approaches it from Pretorius Street. At the top of the escalator lobby one steps into a double volume which announces the entrances of the MINI Space 'sites' (fig.7.30). The main and secondary gallery, together with the store and coffee shop, are visible from this space, providing immediate orientation.

One enters the main gallery (fig.7.31) through a glass door that opens onto a longitudinal space. Passing the interior exhibition panels, the bridge leads to the rest of the gallery, where the stereotomic 'box' lies obliquely in the space (fig.7.32 and 7.33). Within this 'box' the moveable panels are utilised for displaying artworks. The exterior of the 'box' has large glass doors leading to exhibition space outside (fig.7.34). The plexiglass 'skin' screens off the bustle of the street below.

The walkway creates a view of the meeting space between the gallery and existing offices, while the ablutions, storage and service spaces are to the right. All along this pathway, large windows provide views towards the main lower commercial open space.

A staff staircase, located next to the reception counter, leads to the open plan offices below. These look out onto an open space as well as the cantilevering 'box' and the exhibition platform that in turn promote the gallery to the street users (fig.7.35).

The shop's entry is located diagonally opposite the main gallery's entrance. Merchandise display units are placed in rows (fig.7.36) and a room is provided for office and storage space.

On the upper floor, the secondary exhibition space allows for more gallery space. Directly opposite this is the coffee shop, with a bar-counter,

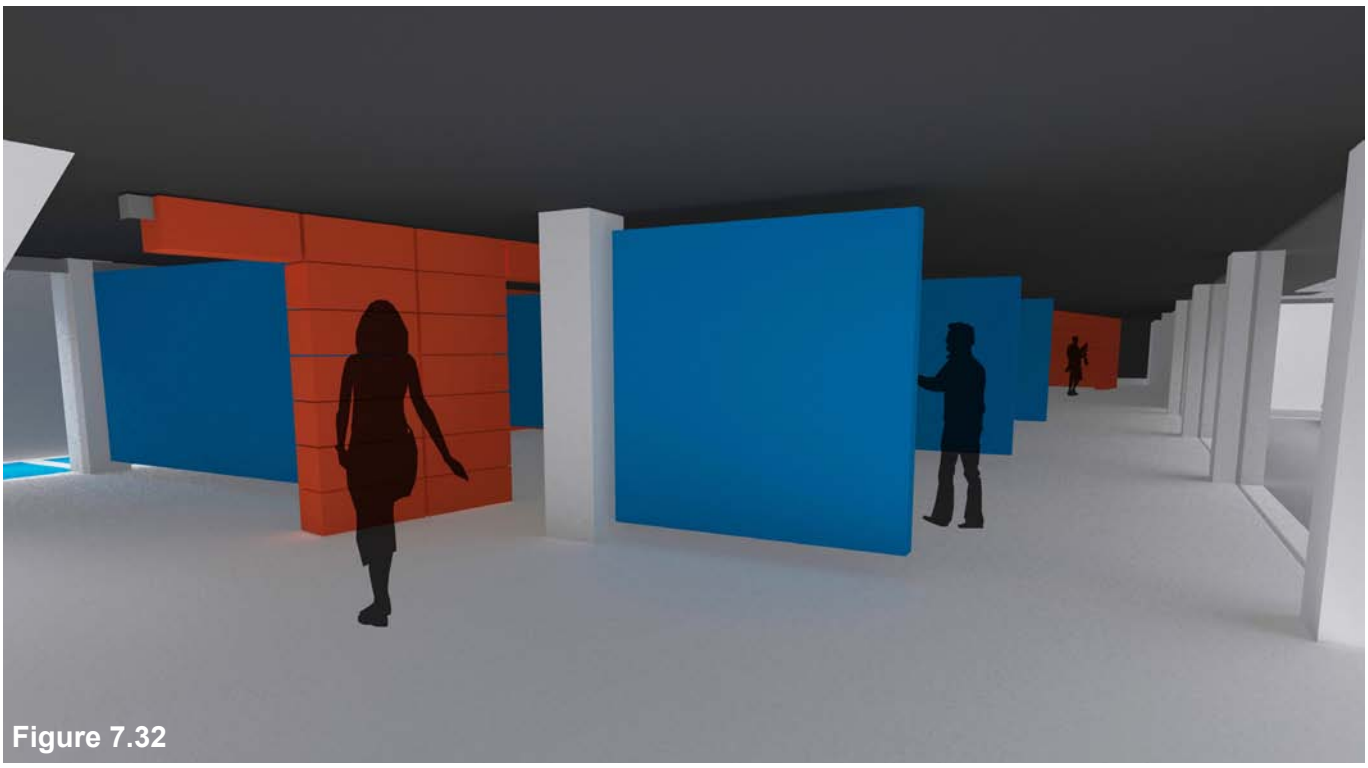


Figure 7.32

Fig.7.33 - Interior perspective of the main gallery, with the ‘box’ in orange, viewed from the west end.
Fig.7.34 - Perspective of the southern outside exhibition space, with the ‘skin’ on the right.
Fig.7.35 - View of the gallery from the opposite arcade.
Fig.7.36 - Interior perspective of the shop, viewed from the double volume.
Fig.7.37 - Interior view towards the coffee shop.

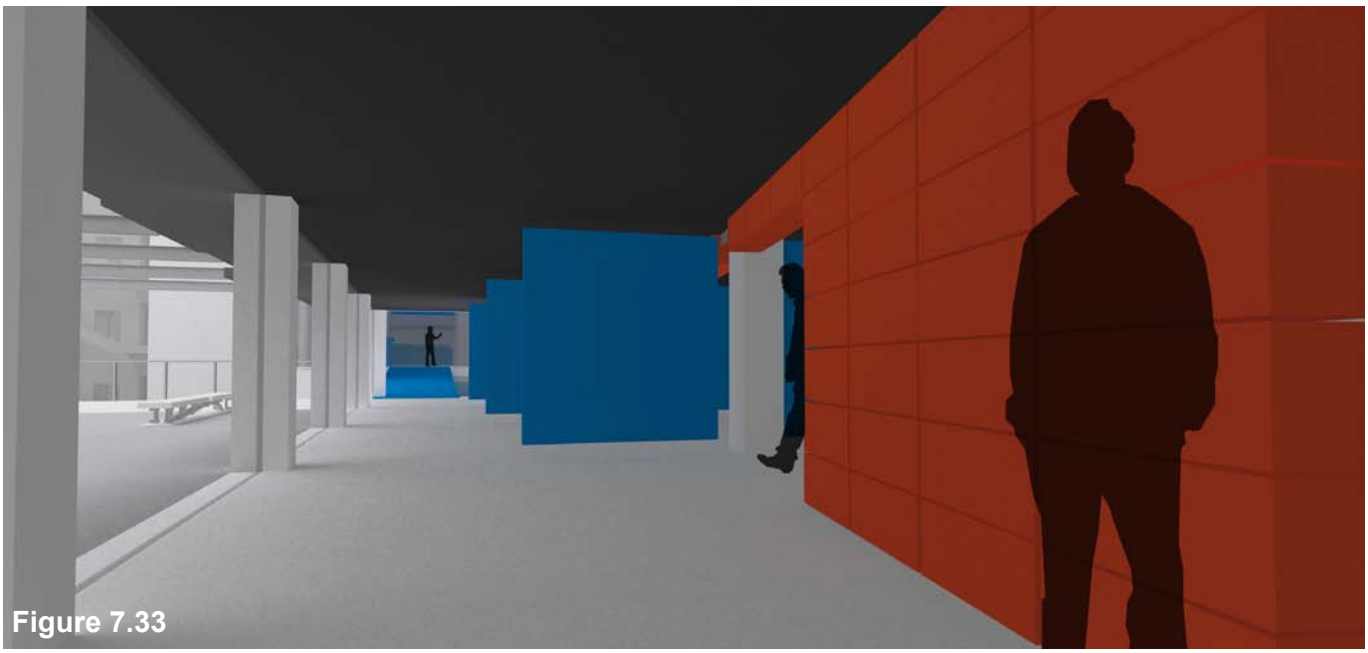


Figure 7.33


Figure 7.34

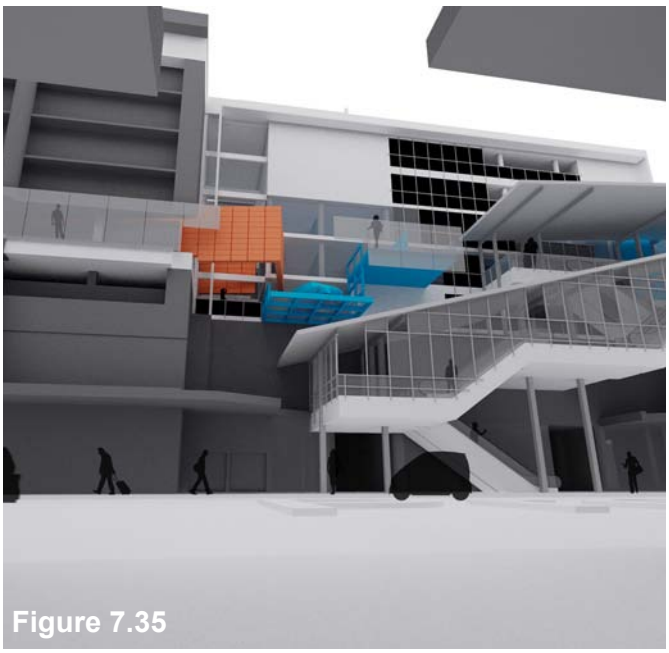


Figure 7.35

some chairs and tables, and a self-service ordering counter (fig.7.37). The seating areas overlook the double volume on the southern side, with views to the vehicular lift on the northern side. Office and storage space are located within a separated area.

7.4. Conclusion

The Site Development consists of many complex additions to the existing structure, with empty ‘sites’ having the potential to promote the creation of rich and diverse cultures.

Art, architecture and design can be exhibited in the MINI Space Gallery in many different ways, providing the Pretoria CBD with a social space in which day and night activities can be hosted.

Figure 7.36

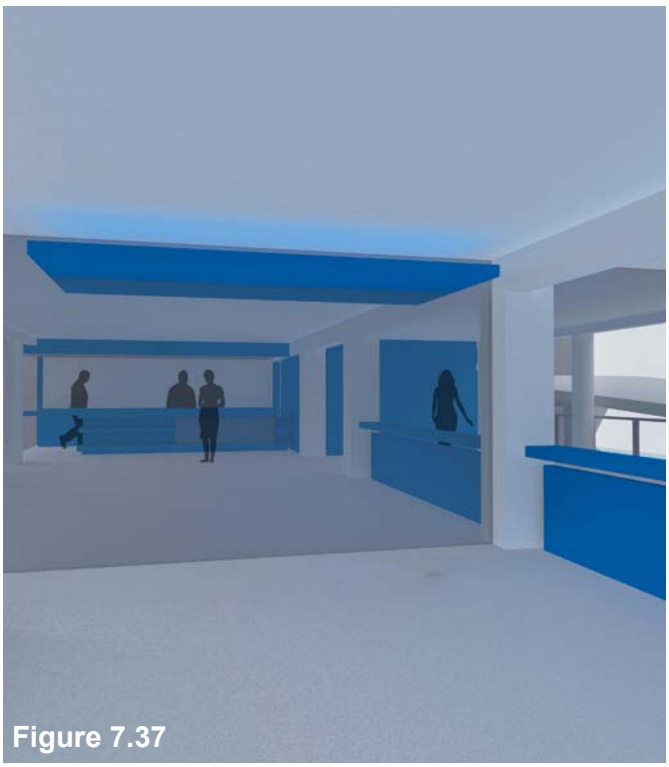


Figure 7.37

Chapter 8

Technical

8.1. Introduction

The technical investigation and the resolution thereof, is the focus of this chapter. Principles guiding the details are discussed, after which each phase of the project is dealt with separately. Initial ideas are examined and then the final products and components are looked at. The chapter includes the technical documentation of all designed elements. (See Appendix C for an SBAT analysis of the MINI Space Gallery).

8.2. Technical principles for both phases

The underlying principle for all the connections of both phases is that no elements should touch. This is derived from:

- the theory, in which the elements of

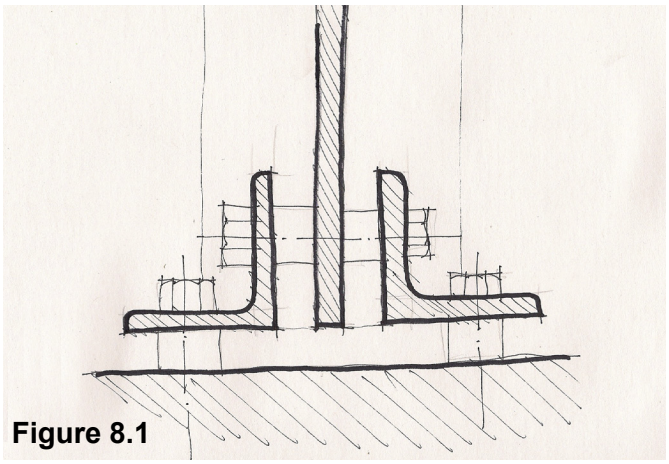


Figure 8.1

Fig.8.1 - Detail sketch of the connection between steel components and the existing structure for the Site Development.
Fig.8.2 - Detail section of the MINI Shop's display units (not to scale).
Fig.8.3 - Parti-diagram of the Site Development compared with the top of a ventilation shaft.
Fig.8.4 - Perspective detail of the glass panels of the MINI Space Gallery and ancillary spaces.

architecture and consequently the project, are deconstructed, so that each part is still individually identifiable in the final product (fig.8.1);

- the precedents, where: Piano separated the stereotomic from the tectonic; Coop Himmelb(l)au created dynamic forms contrasting with the old; Fuksas separated old and new (fig.8.2).
- both parti-diagrams, where the form/beauty, function/programme and tectonics/structure are each created separately before being overlaid to create space (fig.8.3).

This single principle not only reinforces the theory behind the design, but also allows the existing structure to be acknowledged, because new elements are always distinct from it (fig.8.4).

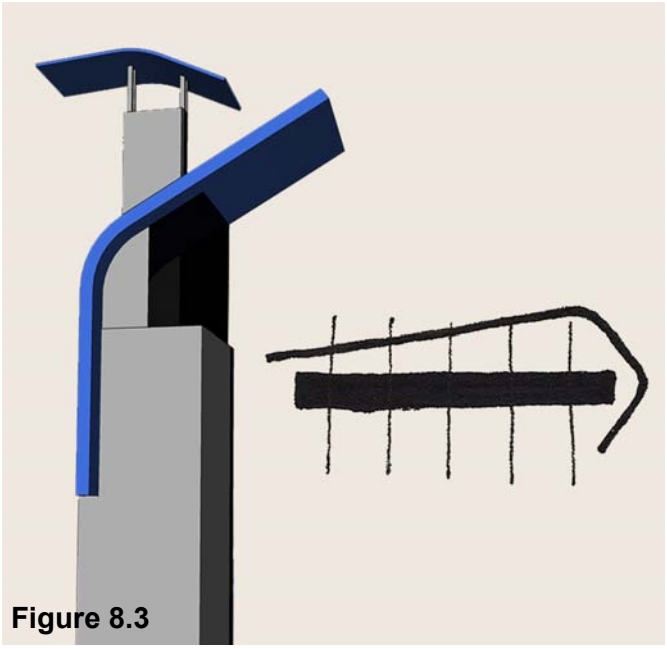


Figure 8.3

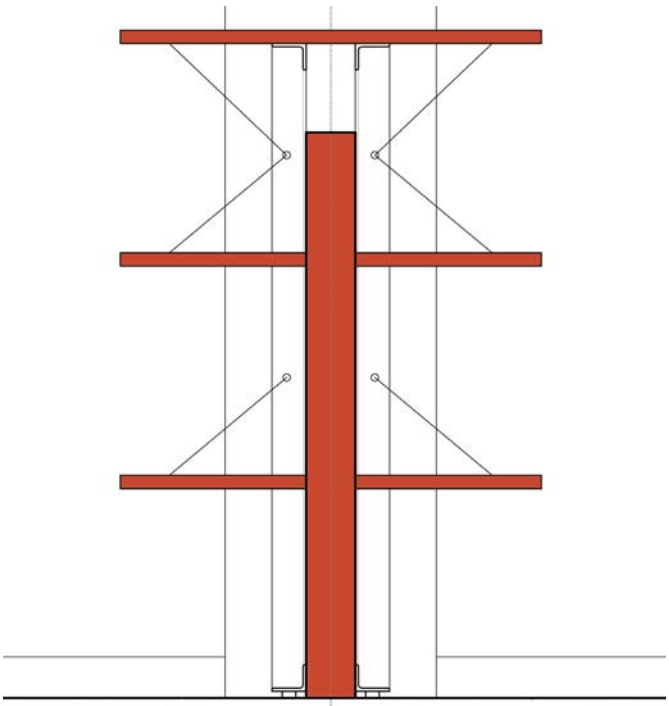


Figure 8.2

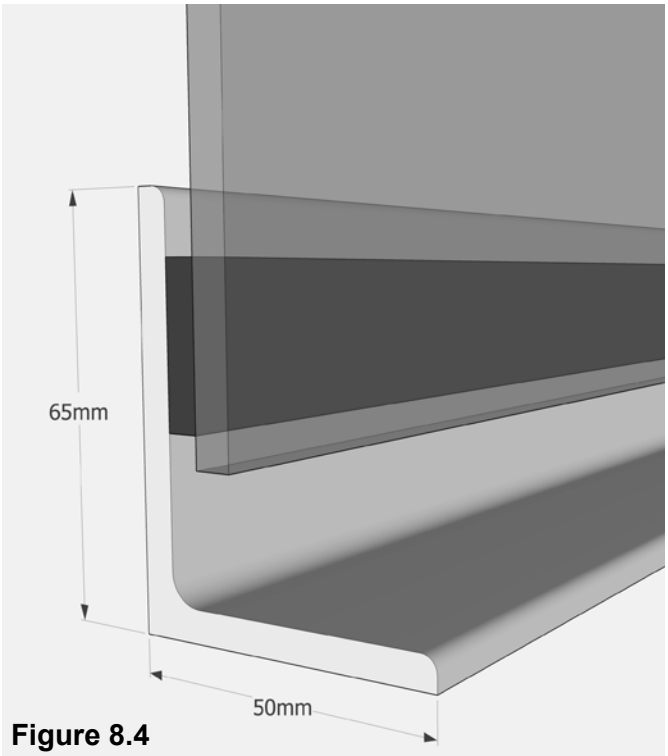


Figure 8.4

Fig.8.5 - Elevation of the Site Development, with x,y and z components highlighted in different colours (not to scale).

Fig.8.6 - Plan of the site layouts of the Site Development, with x,y and z highlighted in different colours (not to scale).

Fig.8.7 - Simplified perspective detail of the steel-to-steel connections for the Site Development.

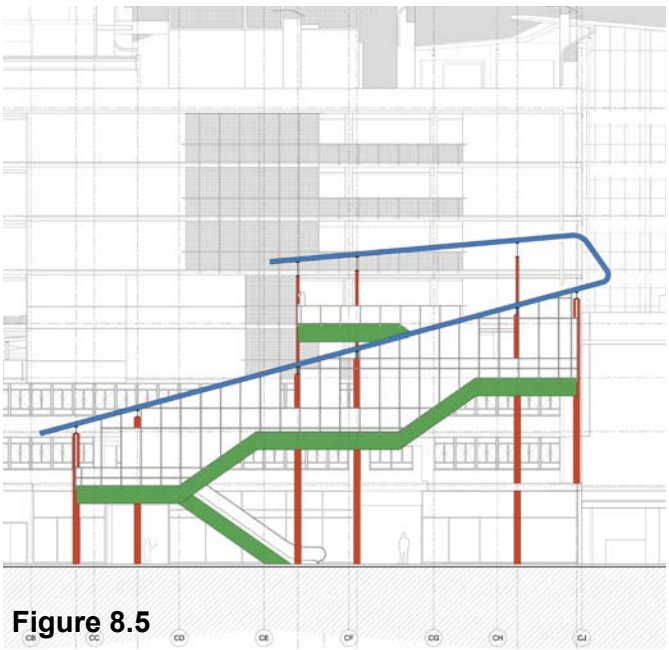


Figure 8.5

8.3. First phase: the Site Development

All plans, elevations, sections and details for this phase of the project are shown in figs.8.8-8.52.

In each detail, whether in section, elevation or plan, the parti-diagram is still perceptible. In some instances this is visually identifiable (fig.8.5), yet in others, it is more theoretical (fig.8.6).

Structural sizes are all based on calculations done according to Orton (1988:22-54; see Appendix B) and were verified by von Geiso (2009).

Standard details were developed that could be repeated throughout this phase of the project. These include steel-to-concrete connections (figs.8.1 and 8.49), steel-to-steel connections (figs.8.7 and 8.50), roof-to-structure details (fig.8.48) and balustrade details (fig.8.53). Further details were designed for specific applications.

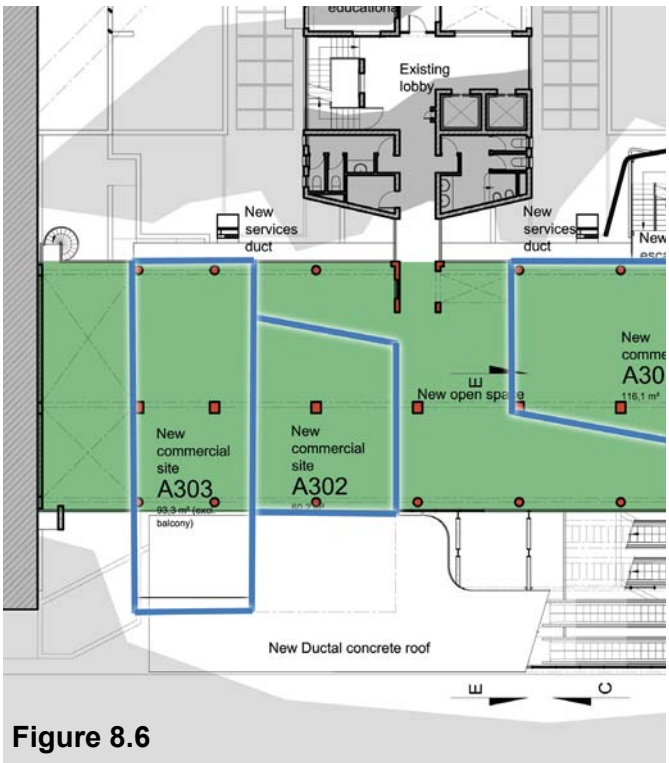


Figure 8.6

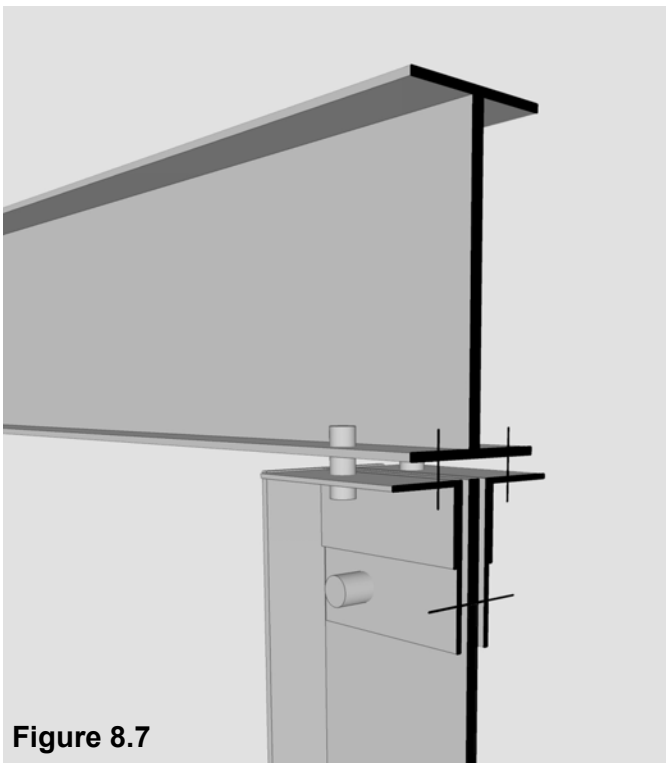
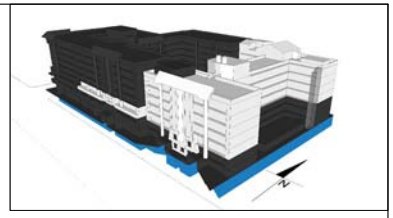
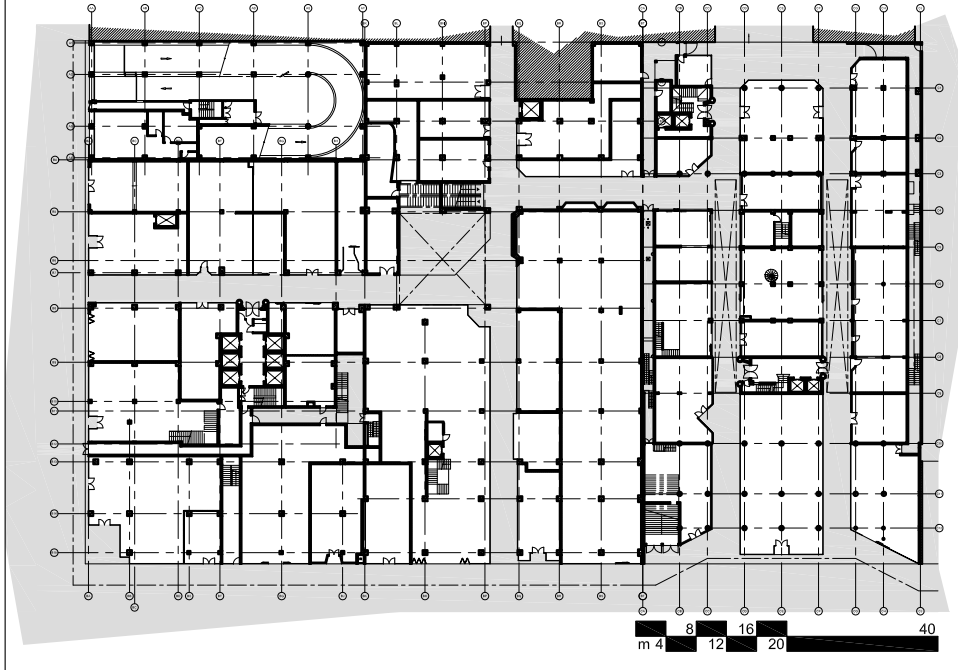


Figure 8.7



Perspective legend

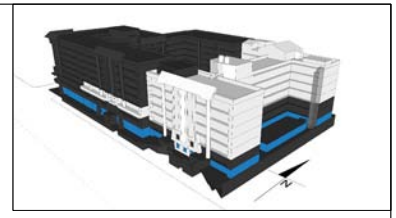


Existing

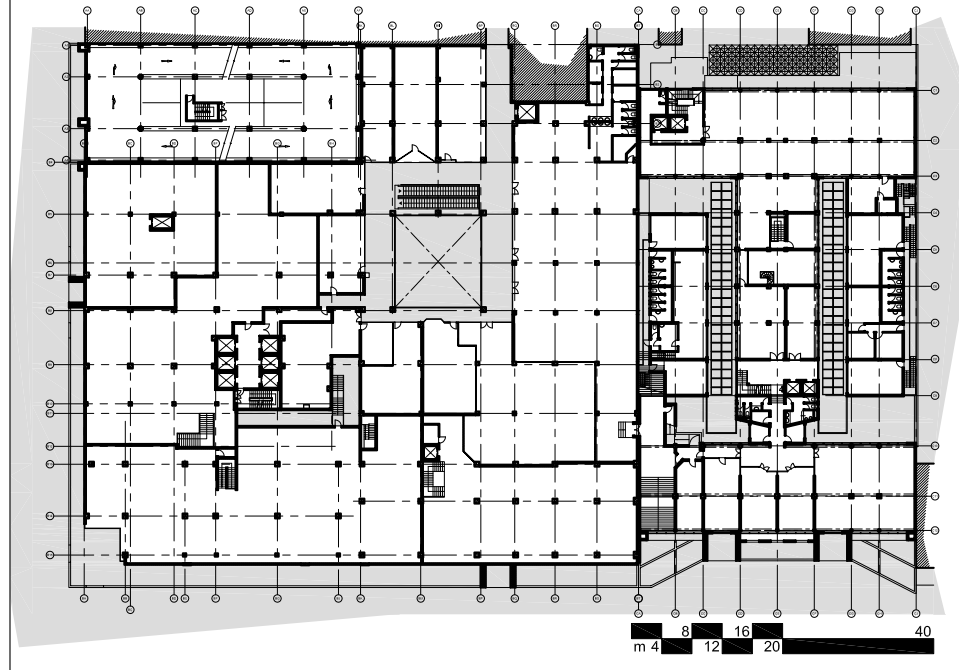
Ground floor plan

Scale as shown

Figure 8.9



Perspective legend

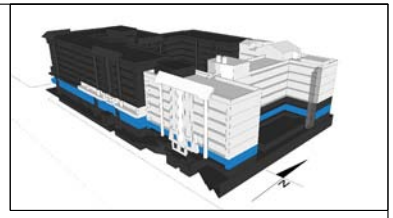


Existing

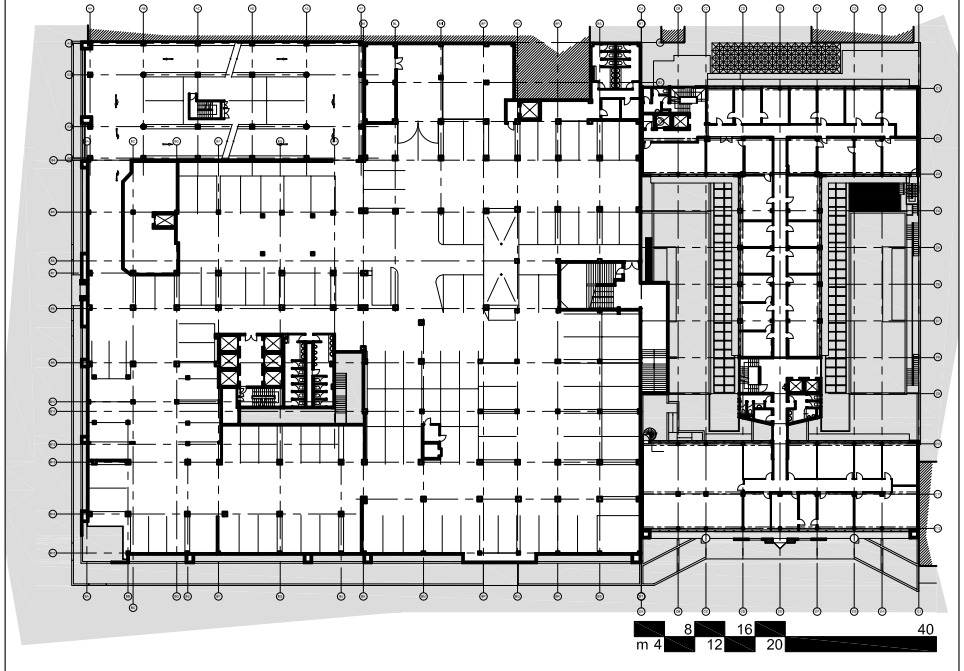
First floor plan

Scale as shown

Figure 8.8



Perspective legend

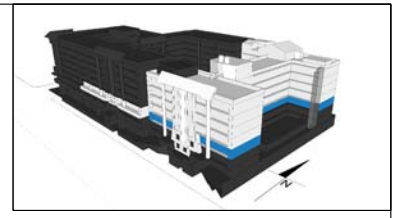


Existing

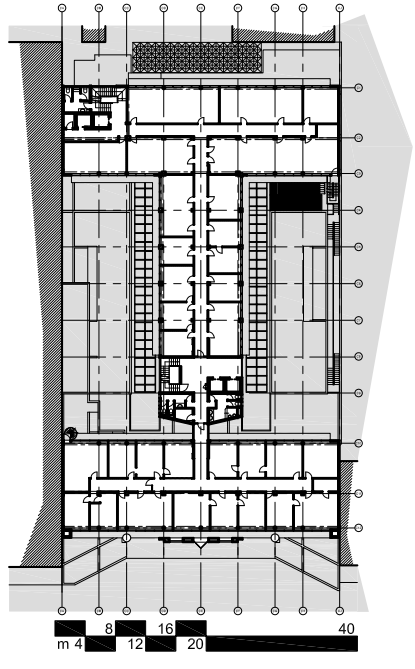
Second floor plan

Scale as shown

Figure 8.11



Perspective legend

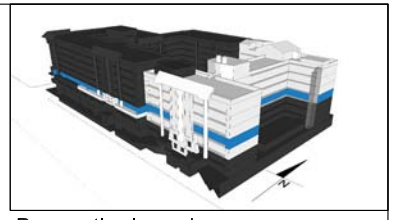


Existing

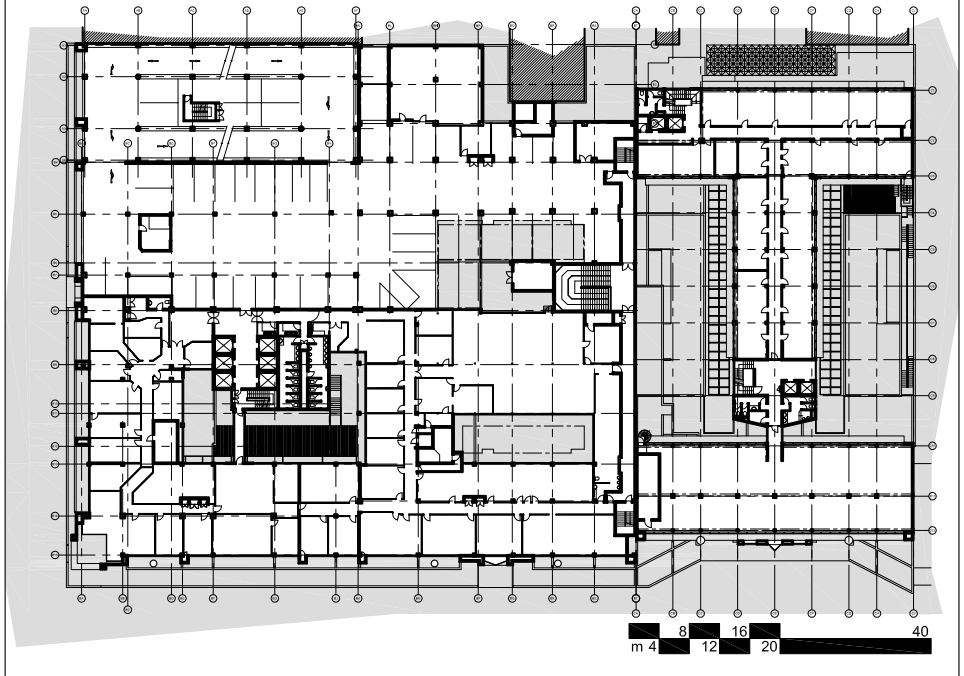
Third (City Centre) floor plan

Scale as shown

Figure 8.10



Perspective legend

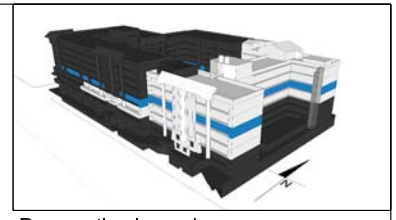


Existing

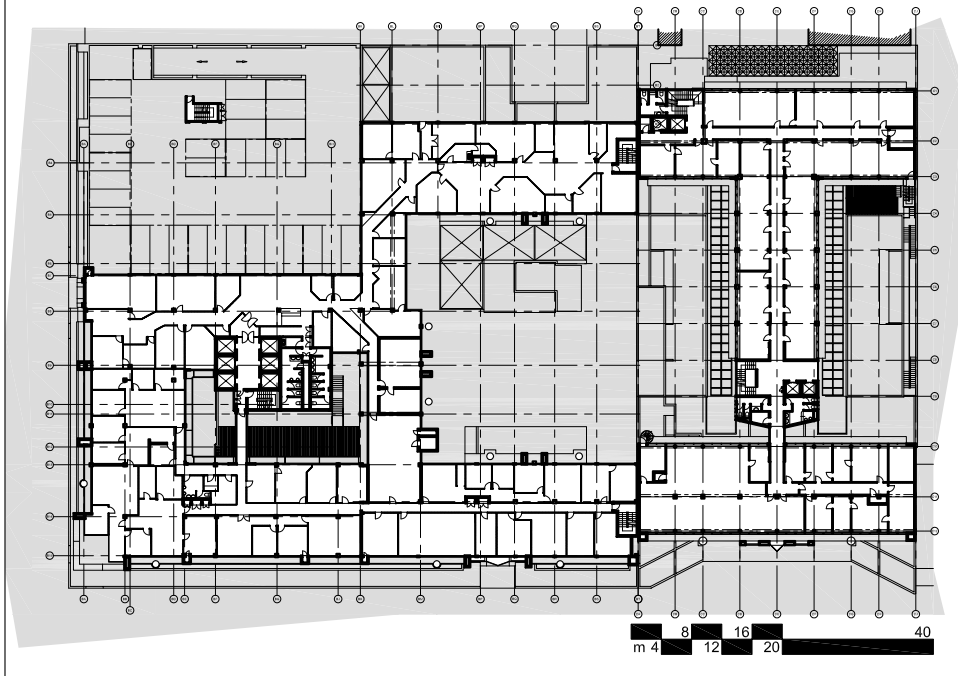
Third (Die Meent) / fourth (City Centre) floor plan

Scale as shown

Figure 8.13



Perspective legend

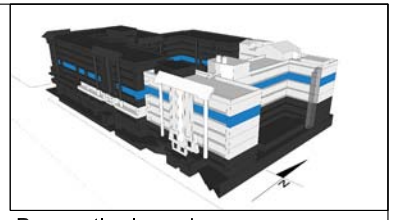


Existing

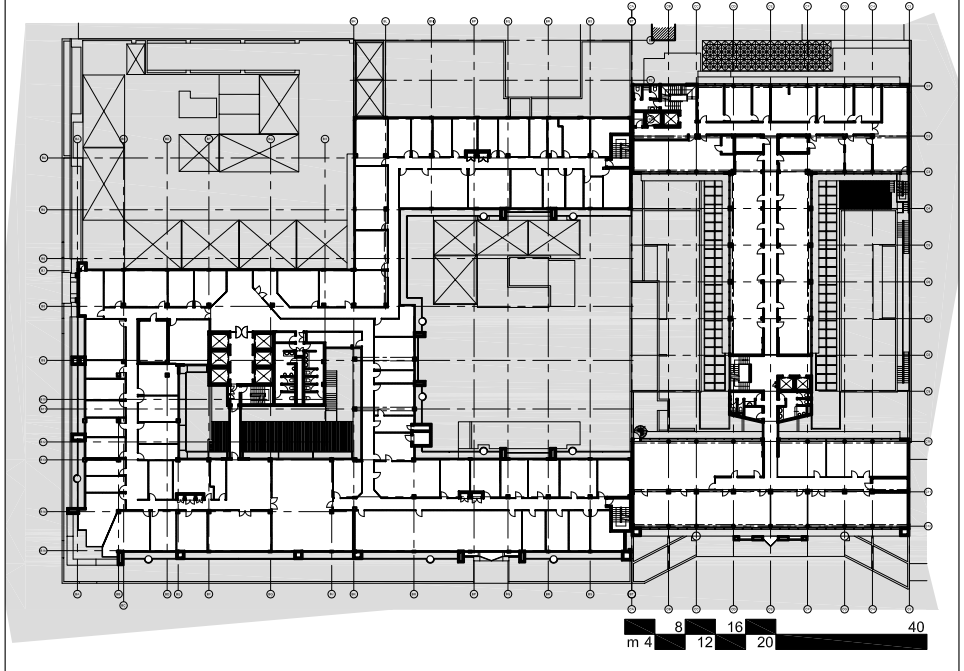
Fourth (Die Meent) / fifth (City Centre) floor plan

Scale as shown

Figure 8.12



Perspective legend

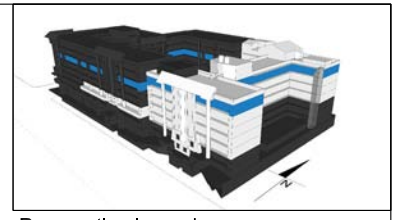


Existing

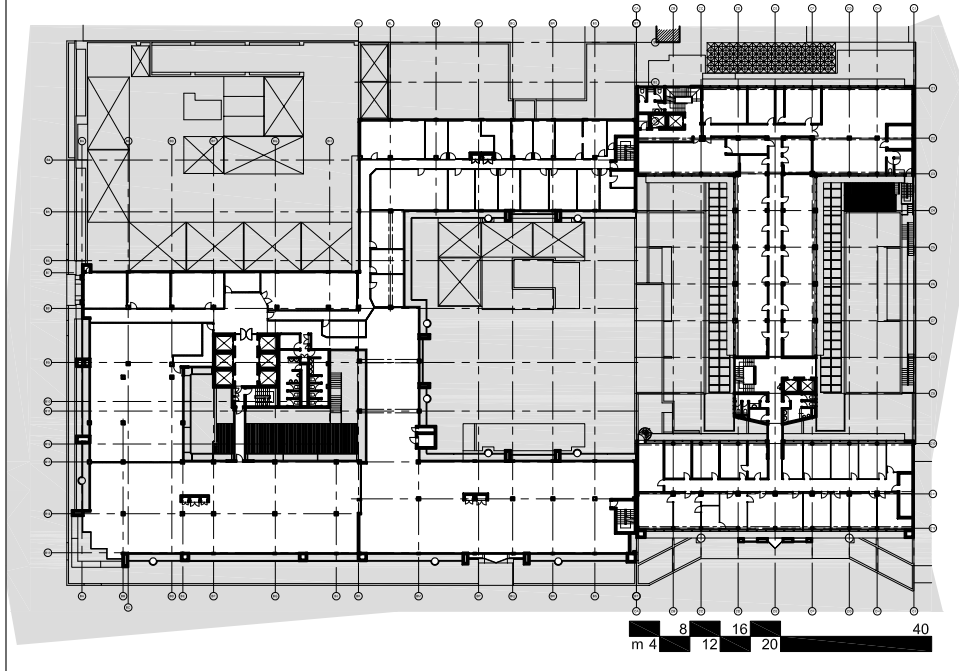
Fifth (Die Meent) / sixth (City Centre) floor plan

Scale as shown

Figure 8.15



Perspective legend

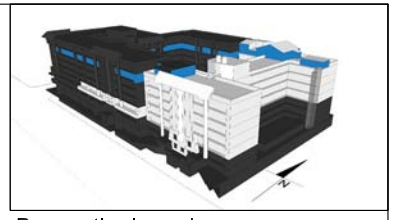


Existing

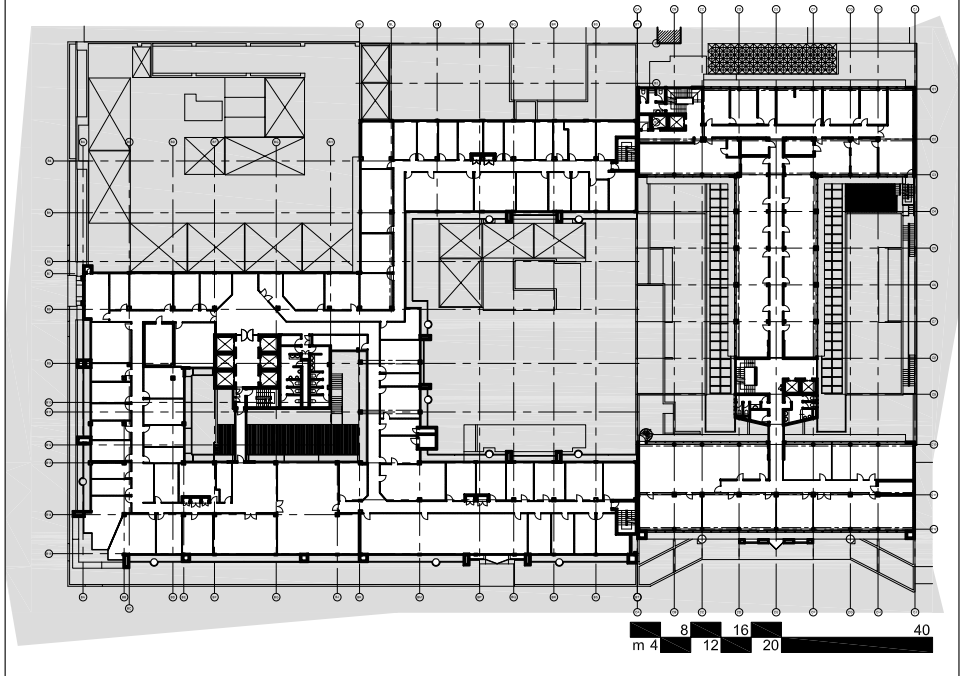
Sixth (Die Meent) / seventh (City Centre) floor plan

Scale as shown

Figure 8.14



Perspective legend

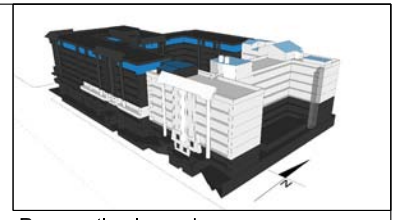


Existing

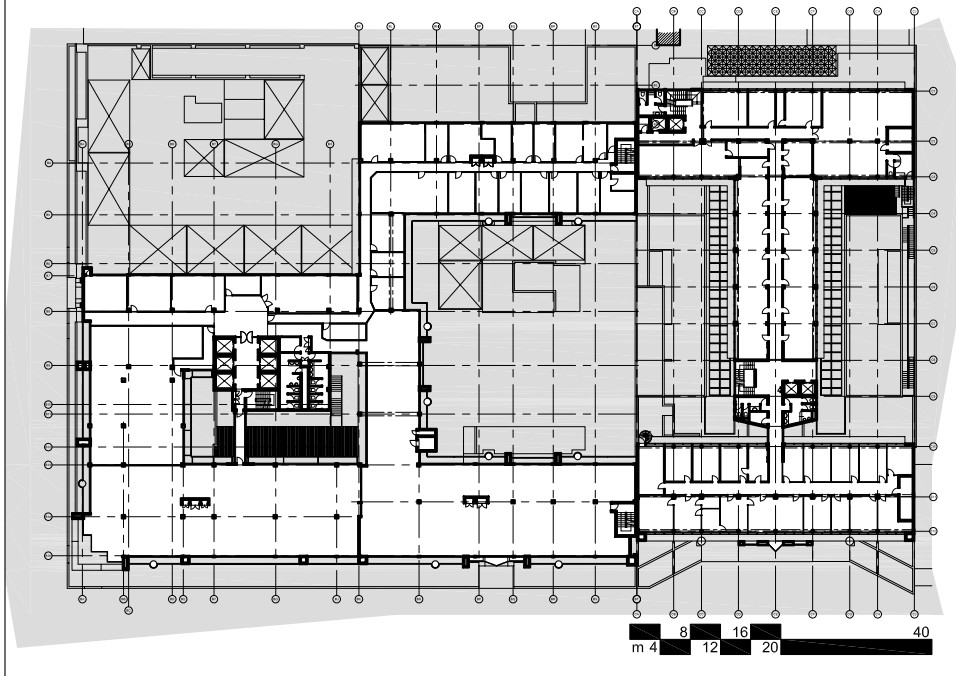
Seventh (Die Meent) / eighth (City Centre) floor plan

Scale as shown

Figure 8.17



Perspective legend

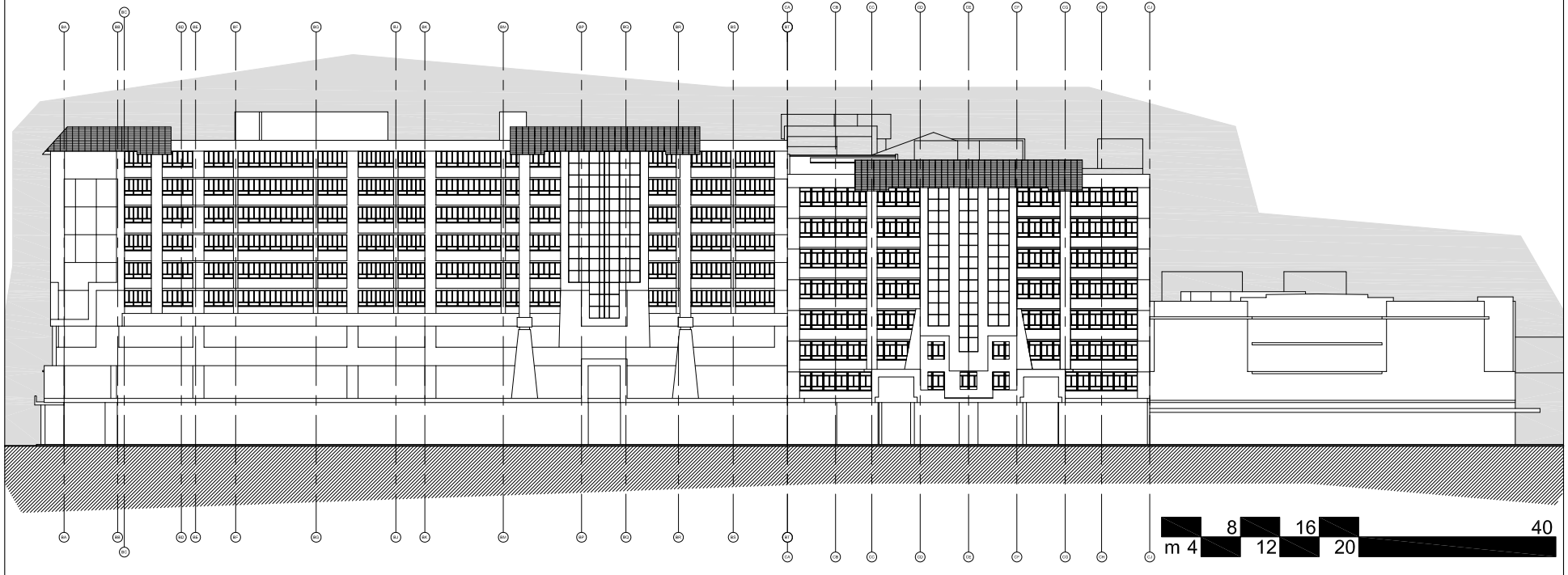


Existing

Eighth floor (Die Meent) / roof (City Centre) plan

Scale as shown

Figure 8.16

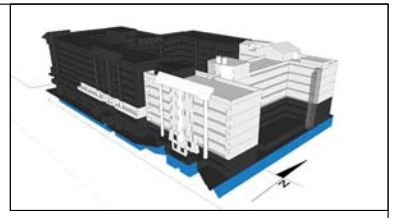


Existing

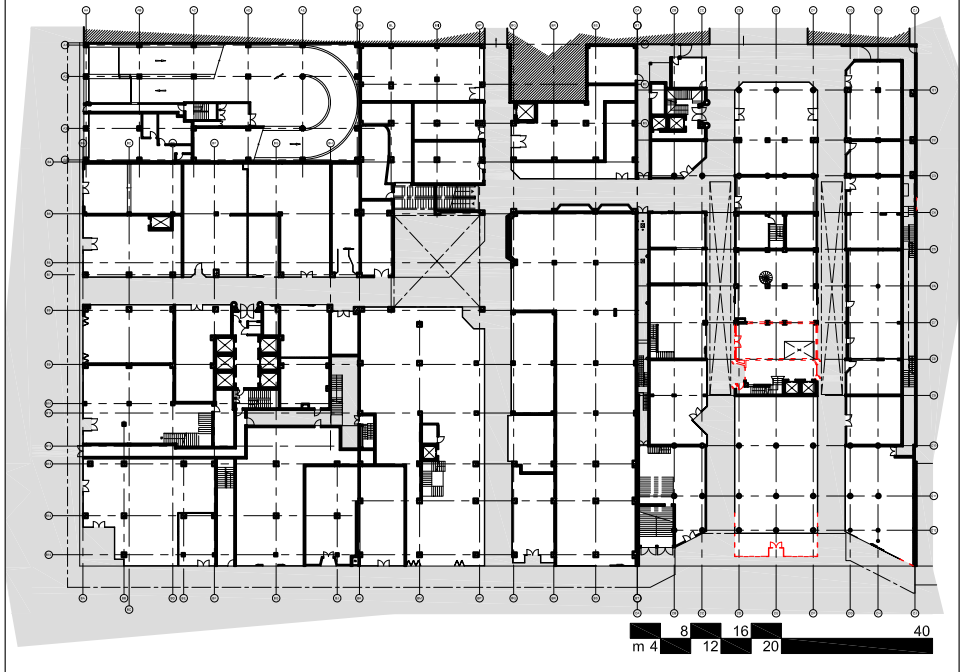
South elevation (Pretorius Street)

Scale as shown

Figure 8.18



Perspective legend

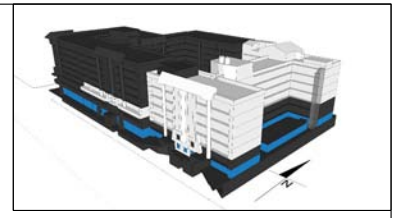


Demolitions

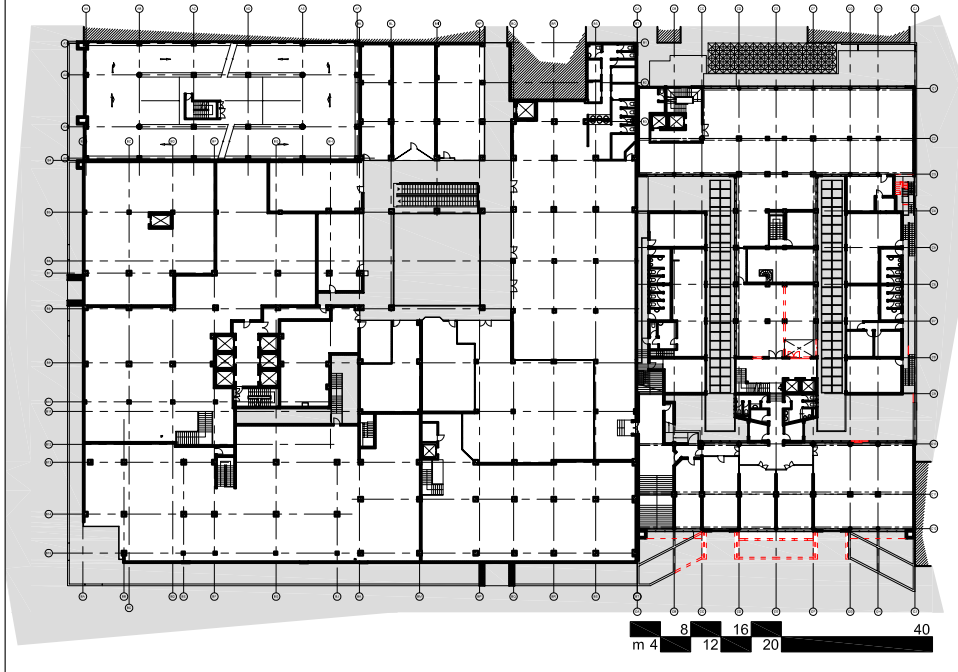
Ground floor plan

Scale as shown

Figure 8.20



Perspective legend

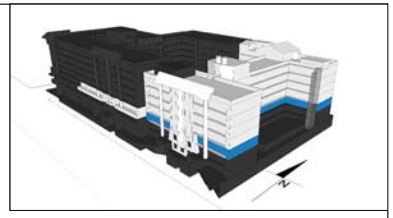


Demolitions

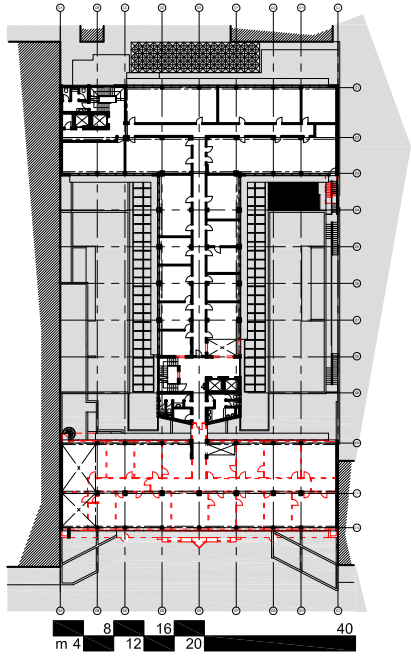
First floor plan

Scale as shown

Figure 8.19



Perspective legend

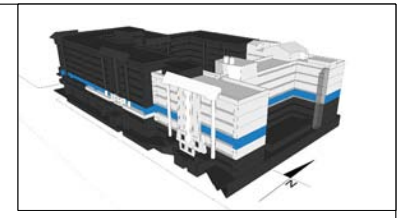


Demolitions

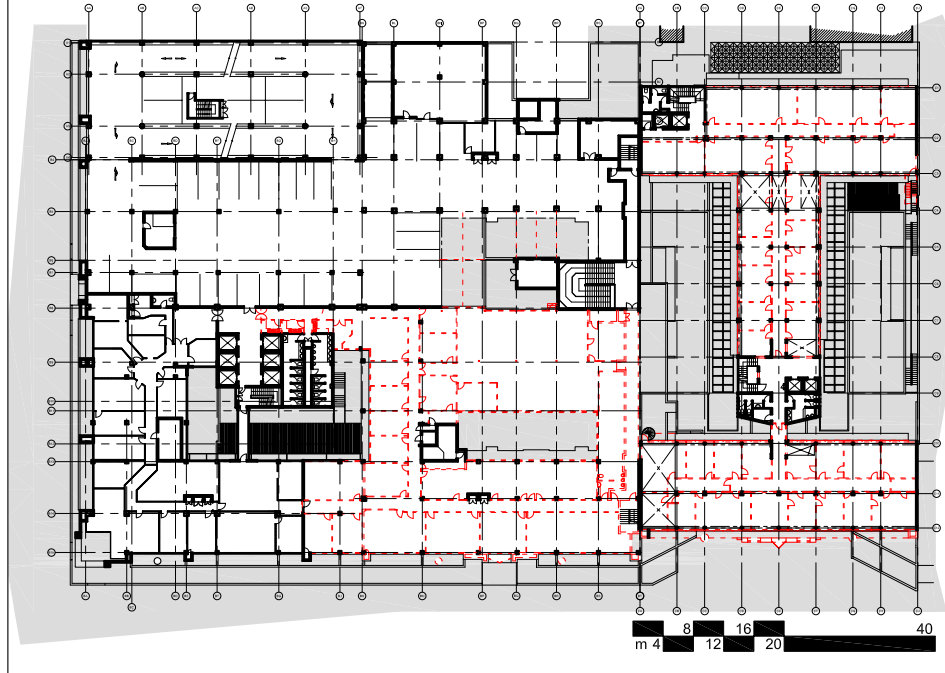
Third (City Centre) floor plan

Scale as shown

Figure 8.22



Perspective legend

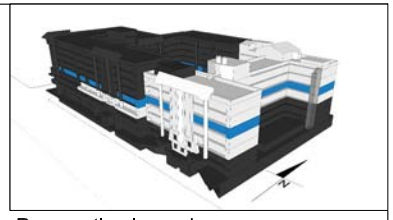


Demolitions

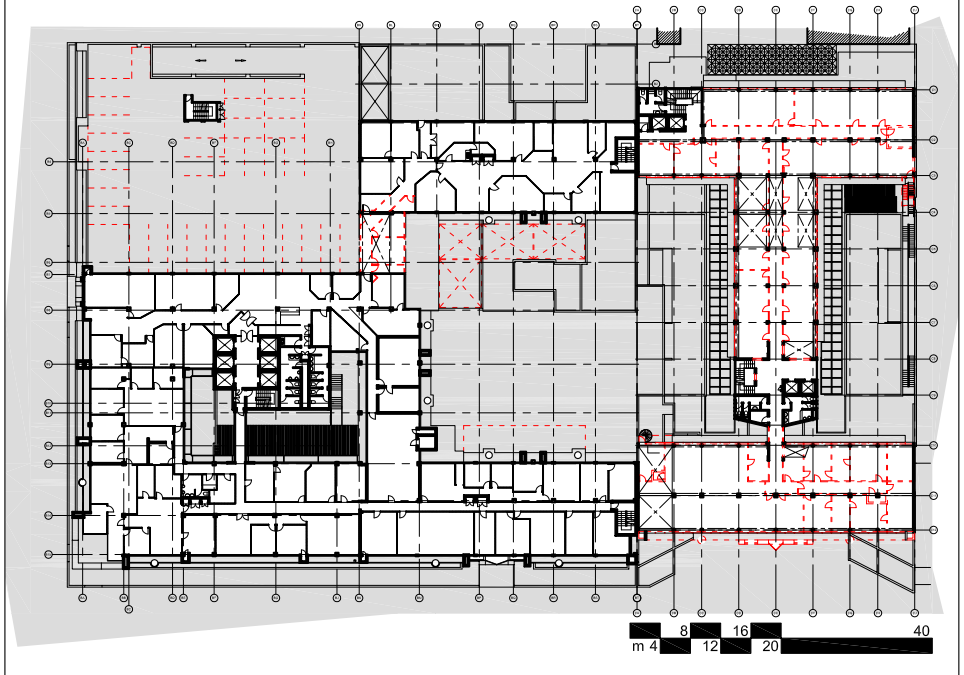
Third (Die Meent) / fourth (City Centre) floor plan

Scale as shown

Figure 8.21



Perspective legend

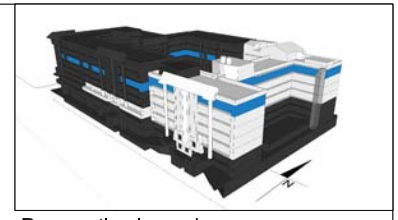


Demolitions

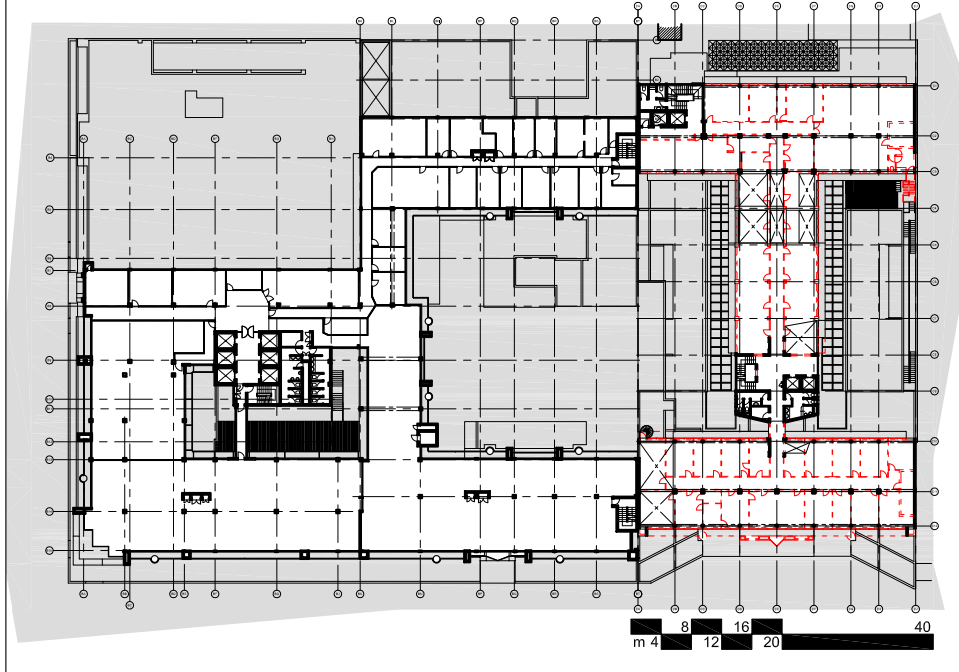
Fourth (Die Meent) / fifth (City Centre) floor plan

Scale as shown

Figure 8.24



Perspective legend

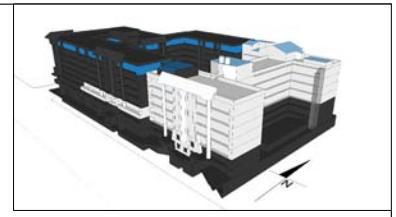


Demolitions

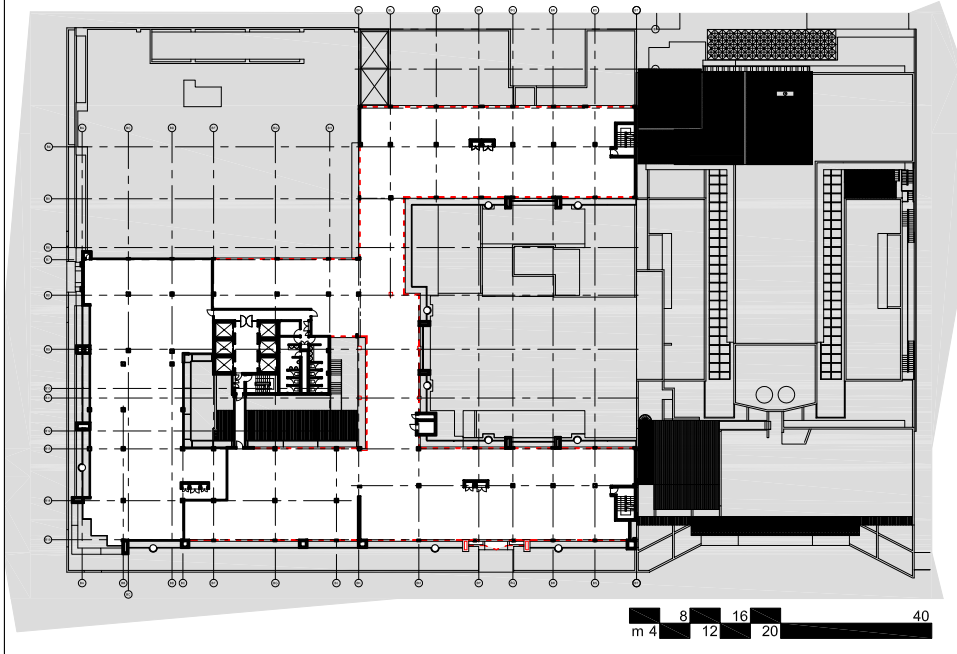
Sixth (Die Meent) / seventh (City Centre) floor plan

Scale as shown

Figure 8.23



Perspective legend



Demolitions

Eighth floor (Die Meent) / roof (City Centre) plan

Scale as shown

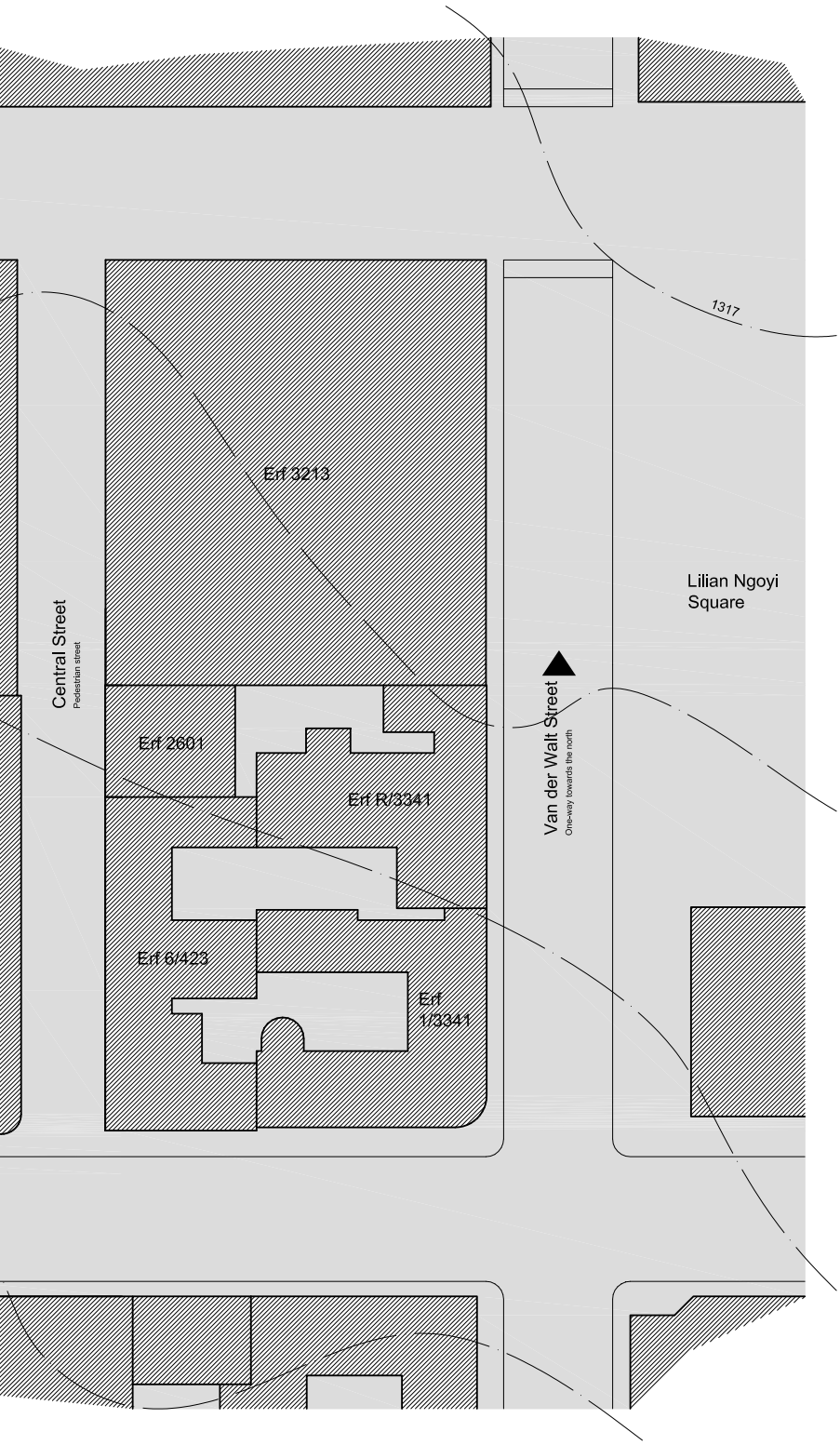
Figure 8.25

Site development

Site plan

Scale as shown

Figure 8.26



Site information

Erf 3364, Pretoria CBD

Area = 7582 m²

Use Zone 6: Business 1

Height Zone 2 = max. height 28m
(Application to be done for relaxation of height restriction)

FAR Zone 2 = 5,5
(Improvements, including alterations, within restriction)

Coverage Zone 2 = 95% to 50%
(Depending on the occupation)

Occupations shown
indicate ground floor use

Legend

Existing buildings/structures

New buildings/structures

Neighbouring buildings/structures

Proposed Film Archive
by J. Bruwer

Open space / pedestrian areas

Existing sewage connection

m10 20 30 40 50 100

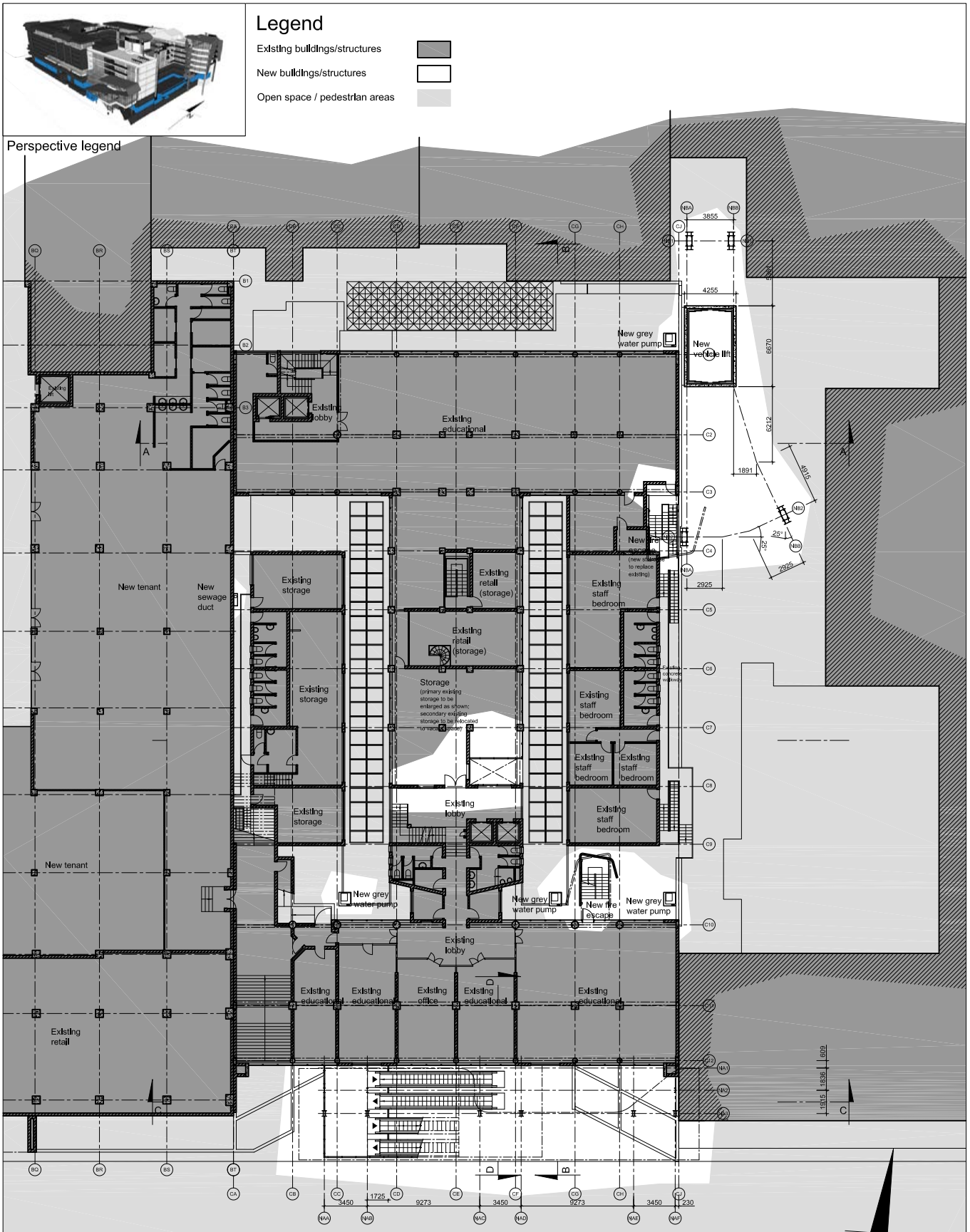
N

Site development

Ground floor plan

Scale as shown

Figure 8.27

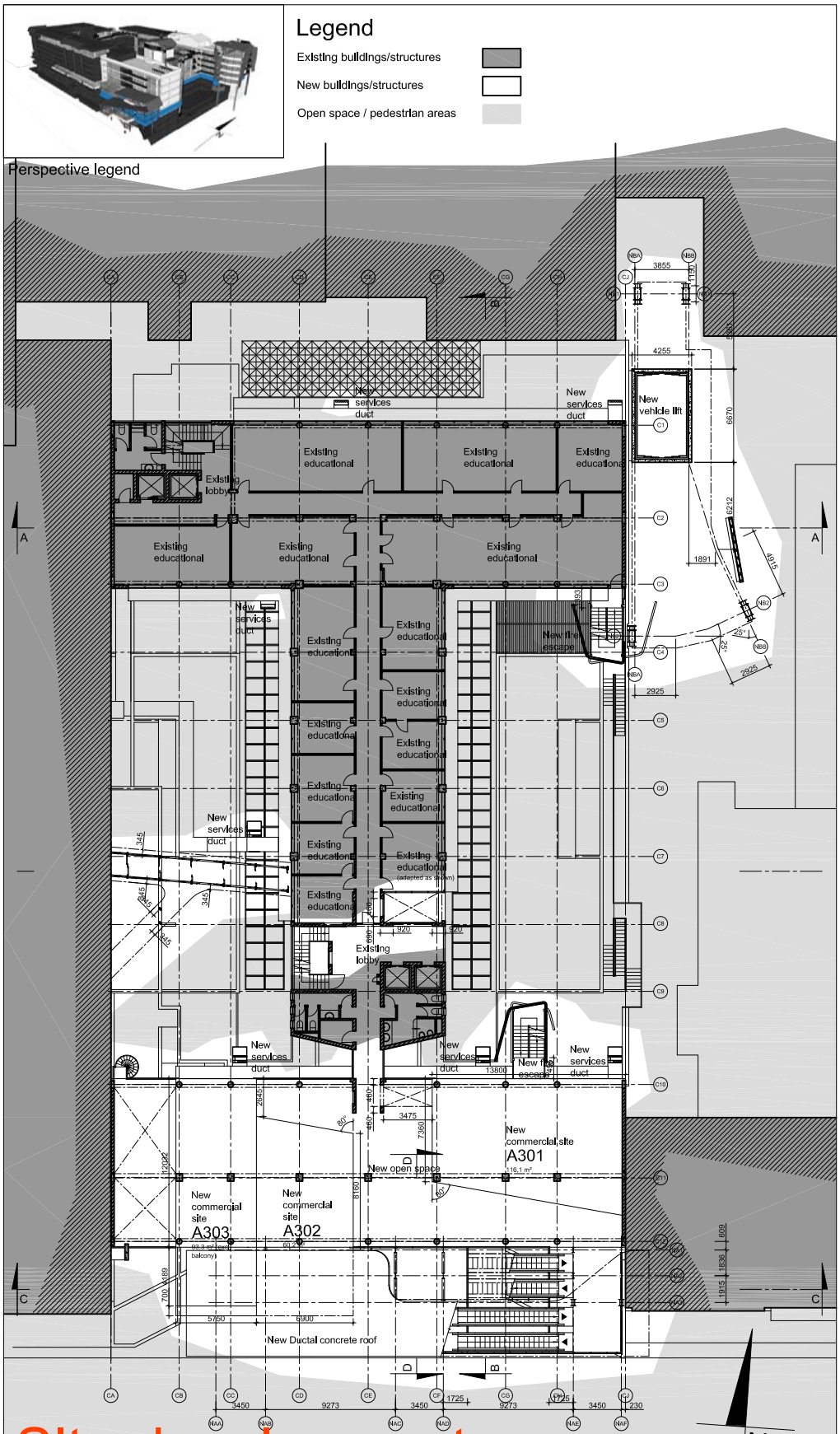


Site development

First floor plan

Scale as shown

Figure 8.28

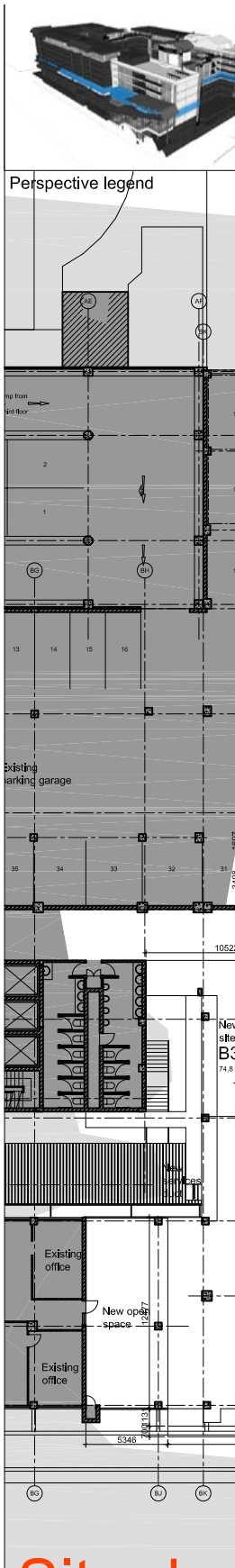


Site development

Third (City Centre) floor plans

Scale as shown

Figure 8.29

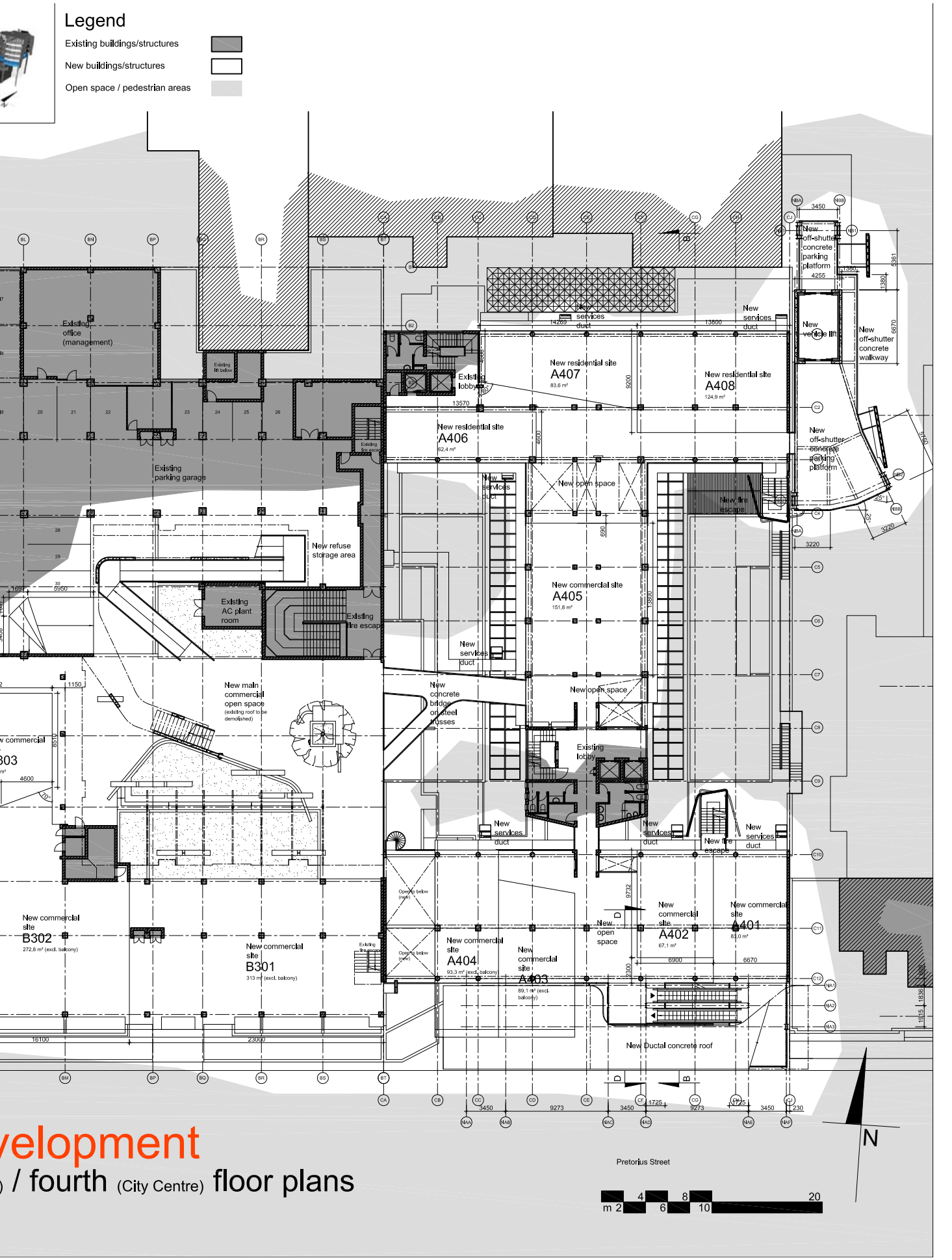


Site dev

Third (Die Meent)

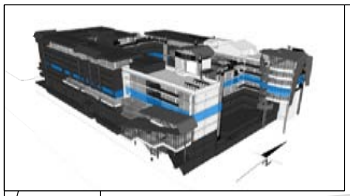
Scale as shown

Figure 8.30



velopment

) / fourth (City Centre) floor plans



Perspective legend

Legend

Existing buildings/structures

New buildings/structures

Open space / pedestrian areas

Notes

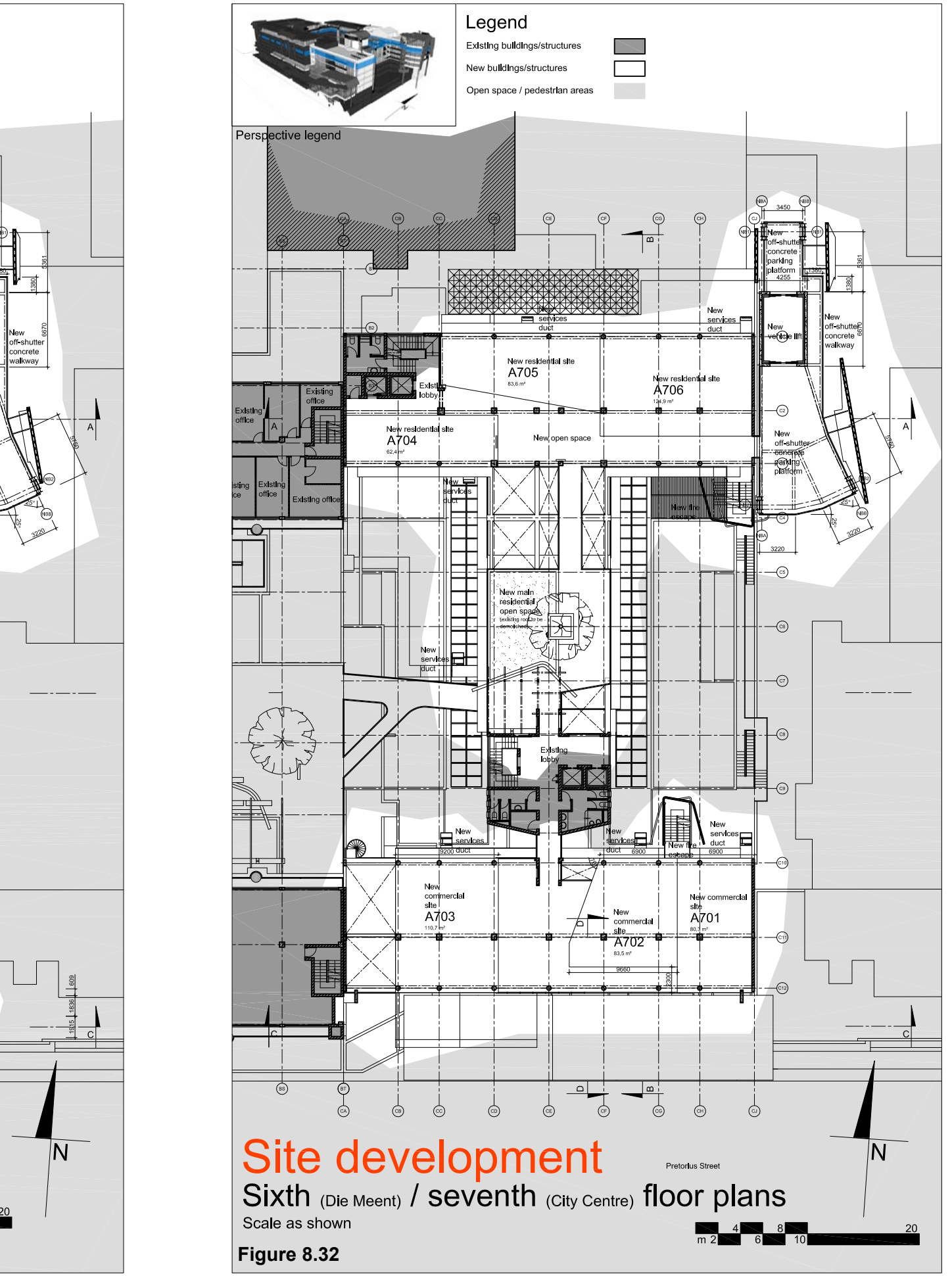
- Floors with residential sites have the same layouts (floors four to seven of the City Centre building).
- Floors five to seven of the City Centre building has the same site layouts for the southern block (sites x01-x03).

Site development

Fourth (Die Meent) / fifth (City Centre) floor plans

Scale as shown

Figure 8.31



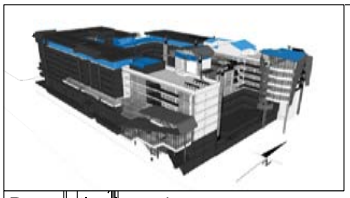
Site development

Sixth (Die Meent) / seventh (City Centre) floor plans

Scale as shown

m 2 4 6 8 10 20

Figure 8.32



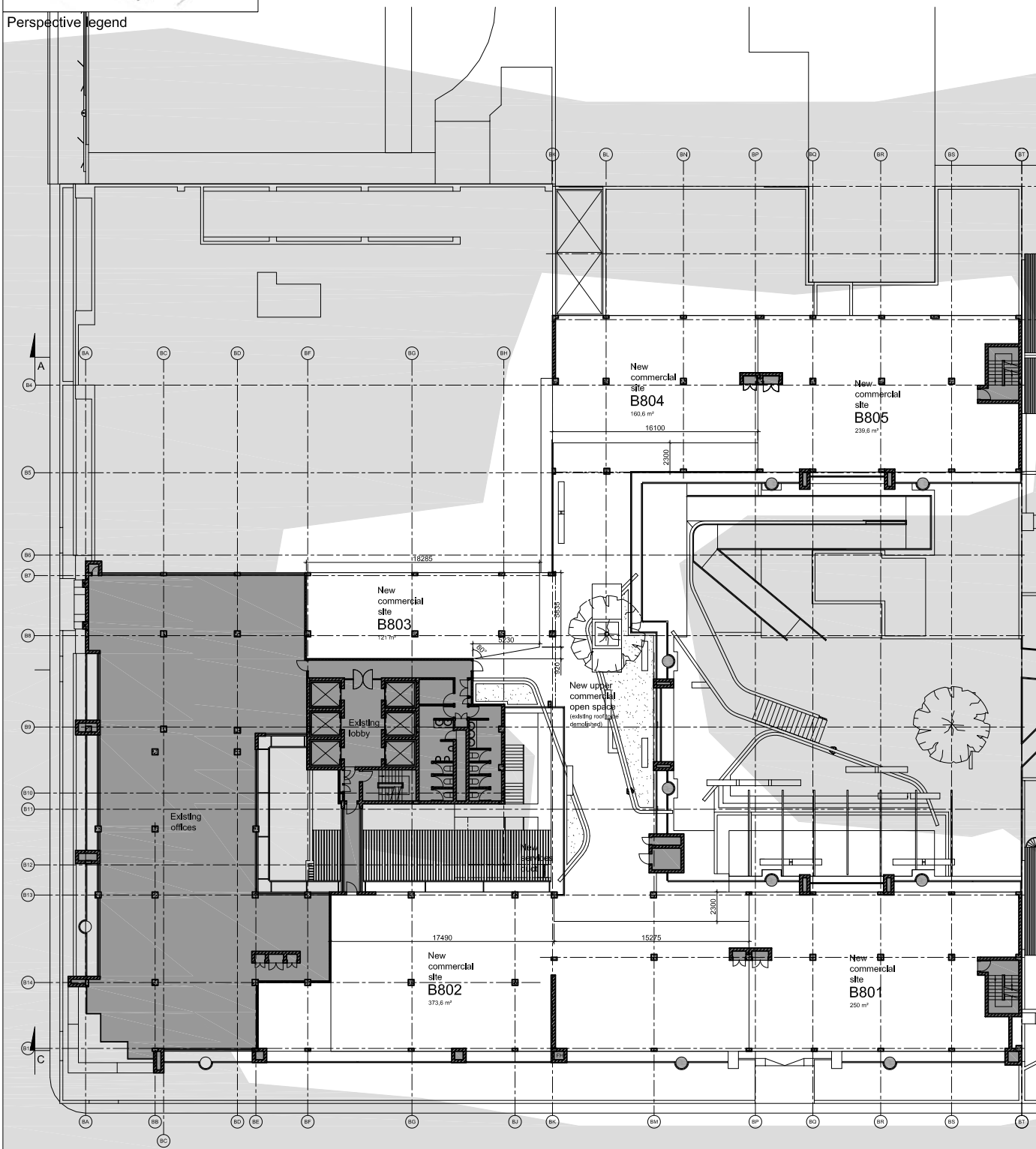
Perspective legend

Legend

Existing buildings/structures

New buildings/structures

Open space / pedestrian areas

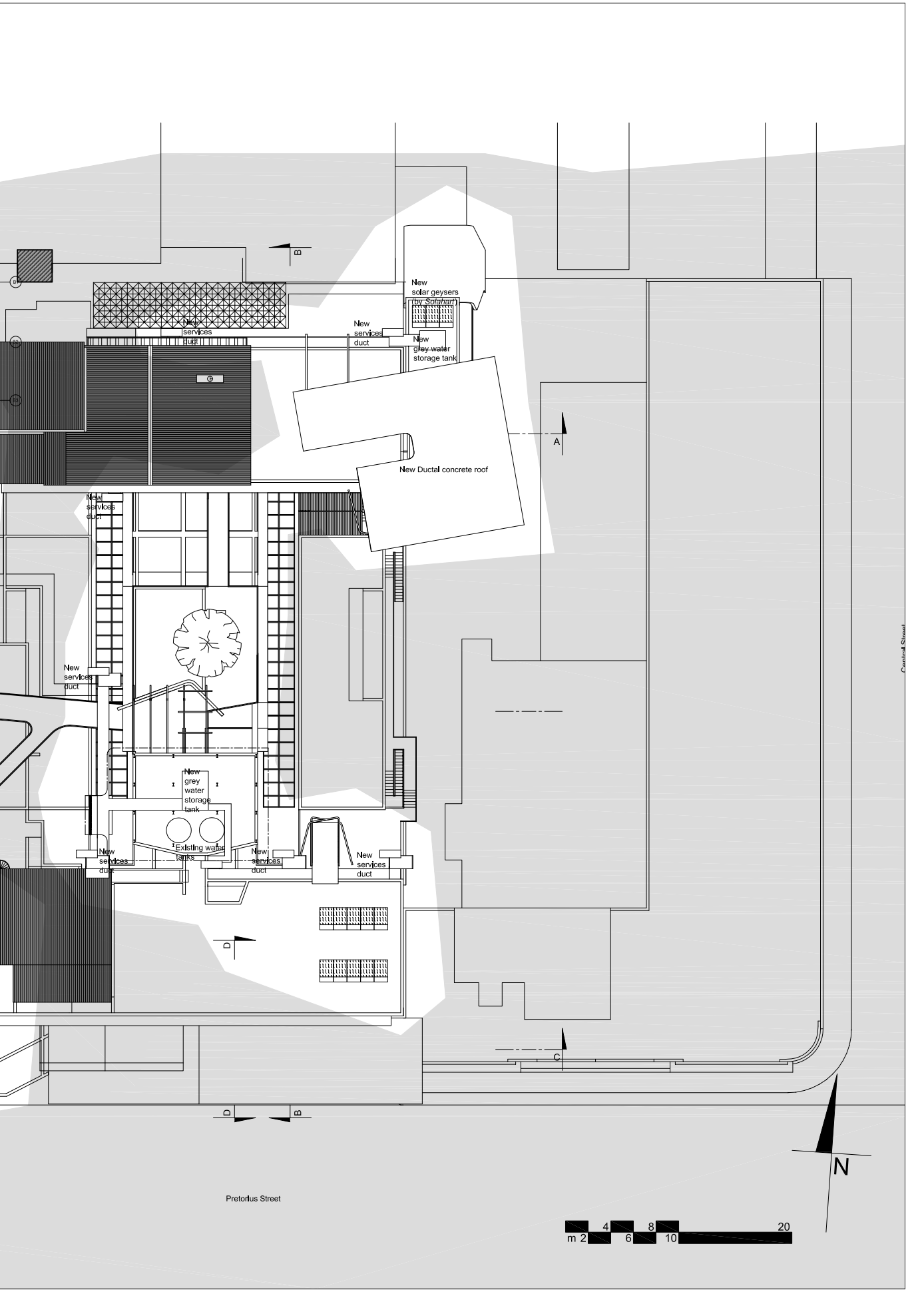


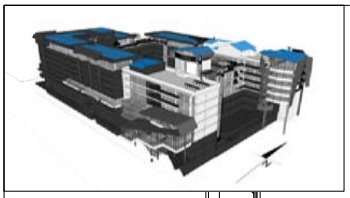
Site development

Eighth floor (Die Meent) / roof (City Centre) plans

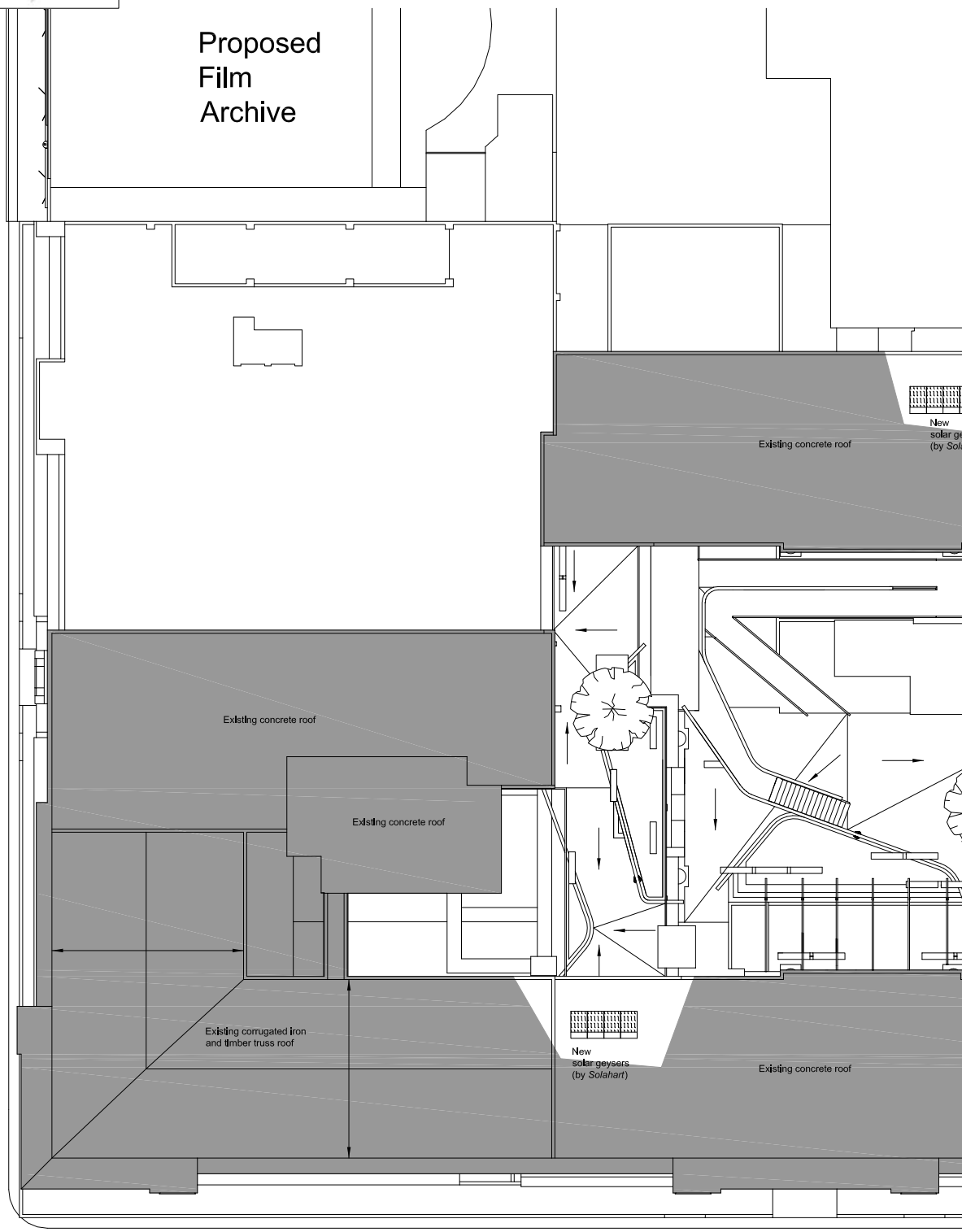
Scale as shown

Figure 8.33





Perspective legend

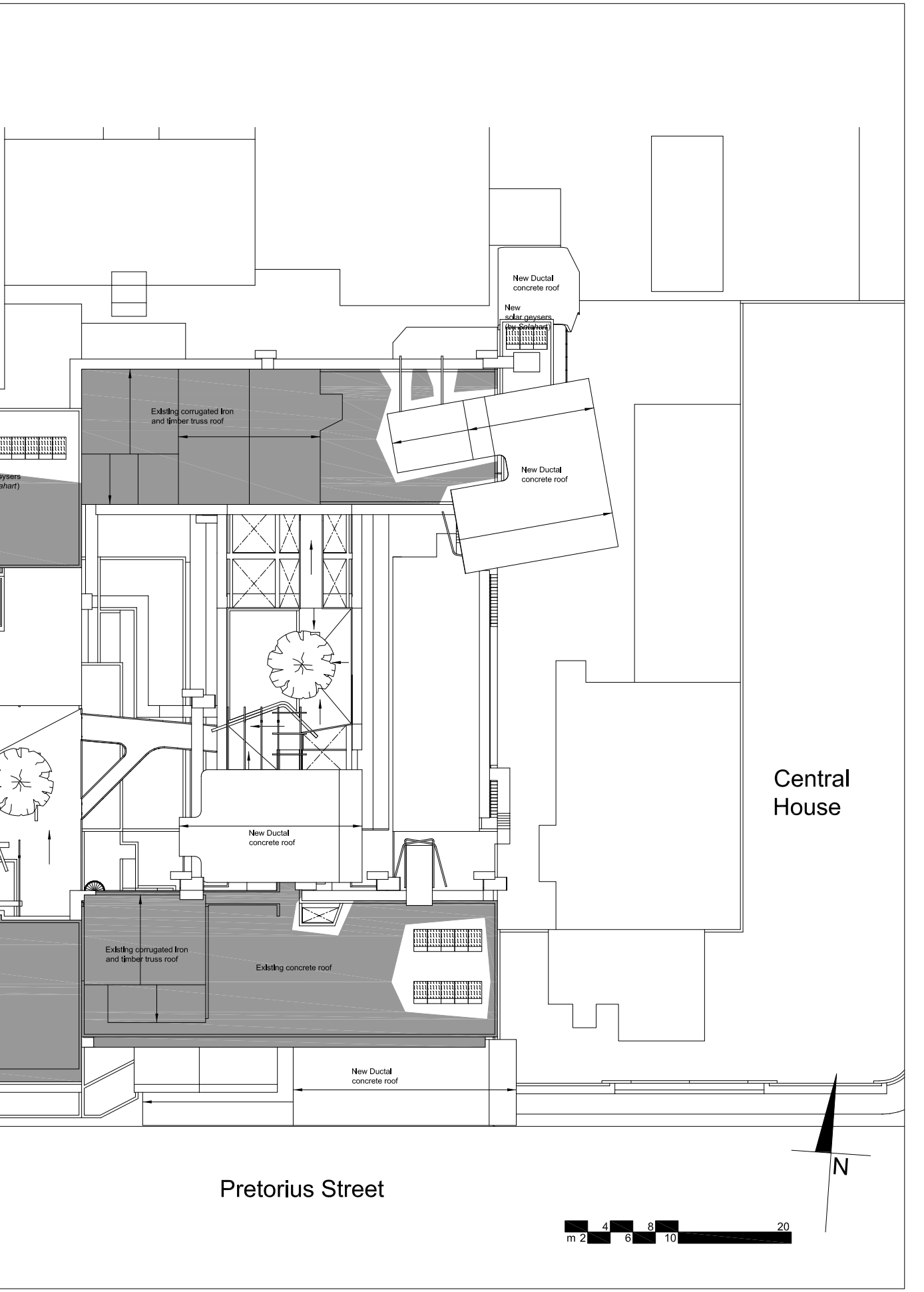


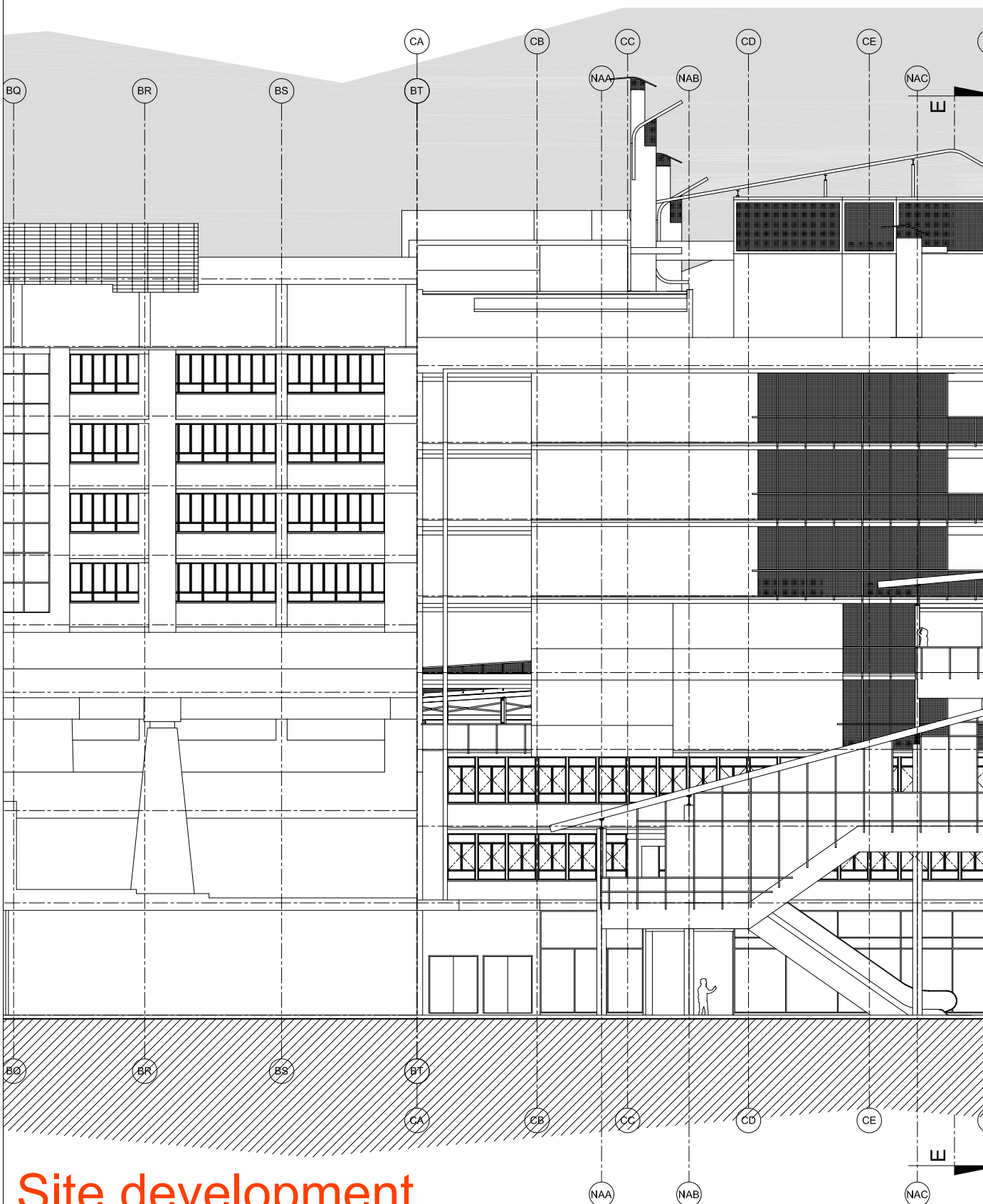
Site development

Roof plan

Scale as shown

Figure 8.34



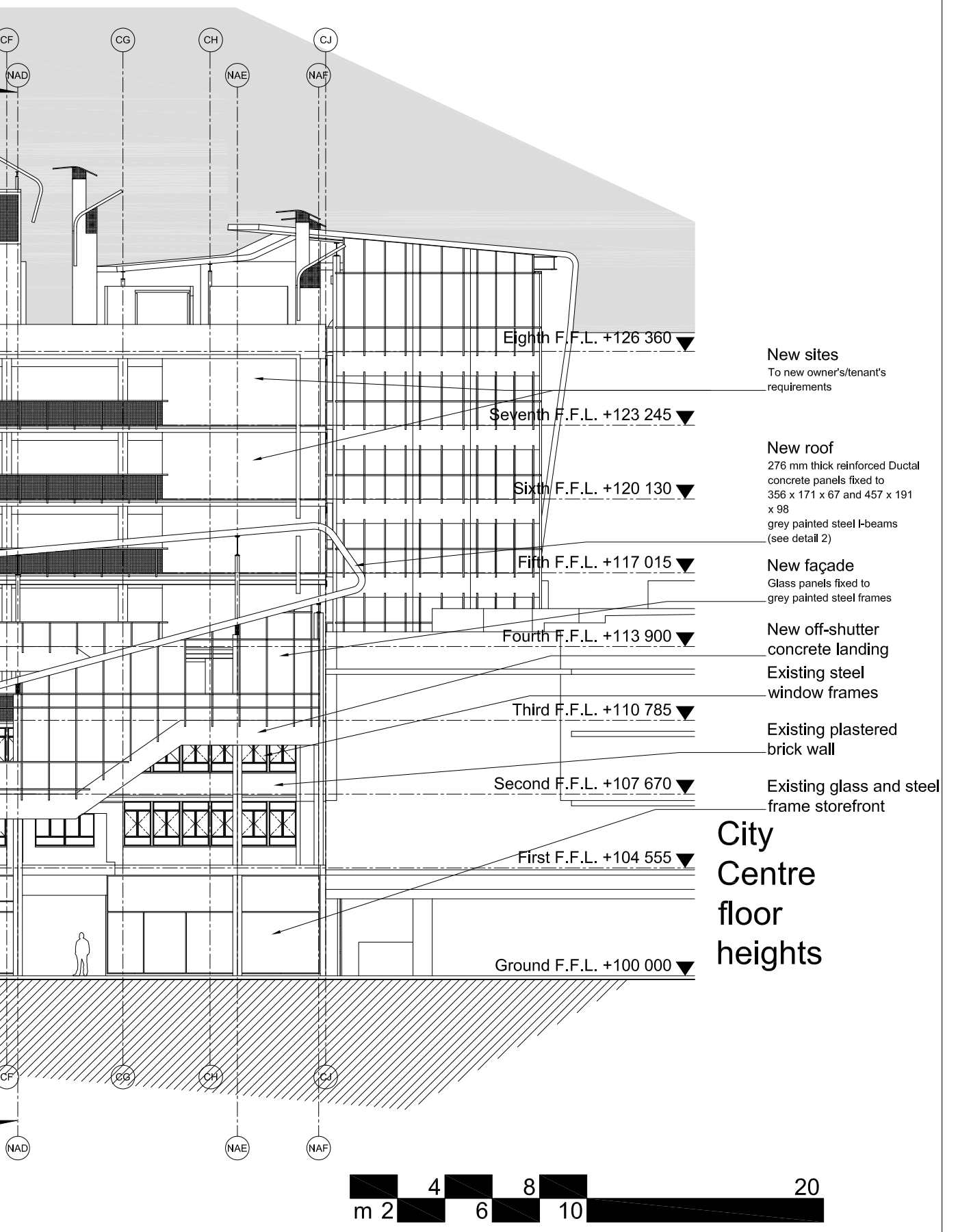


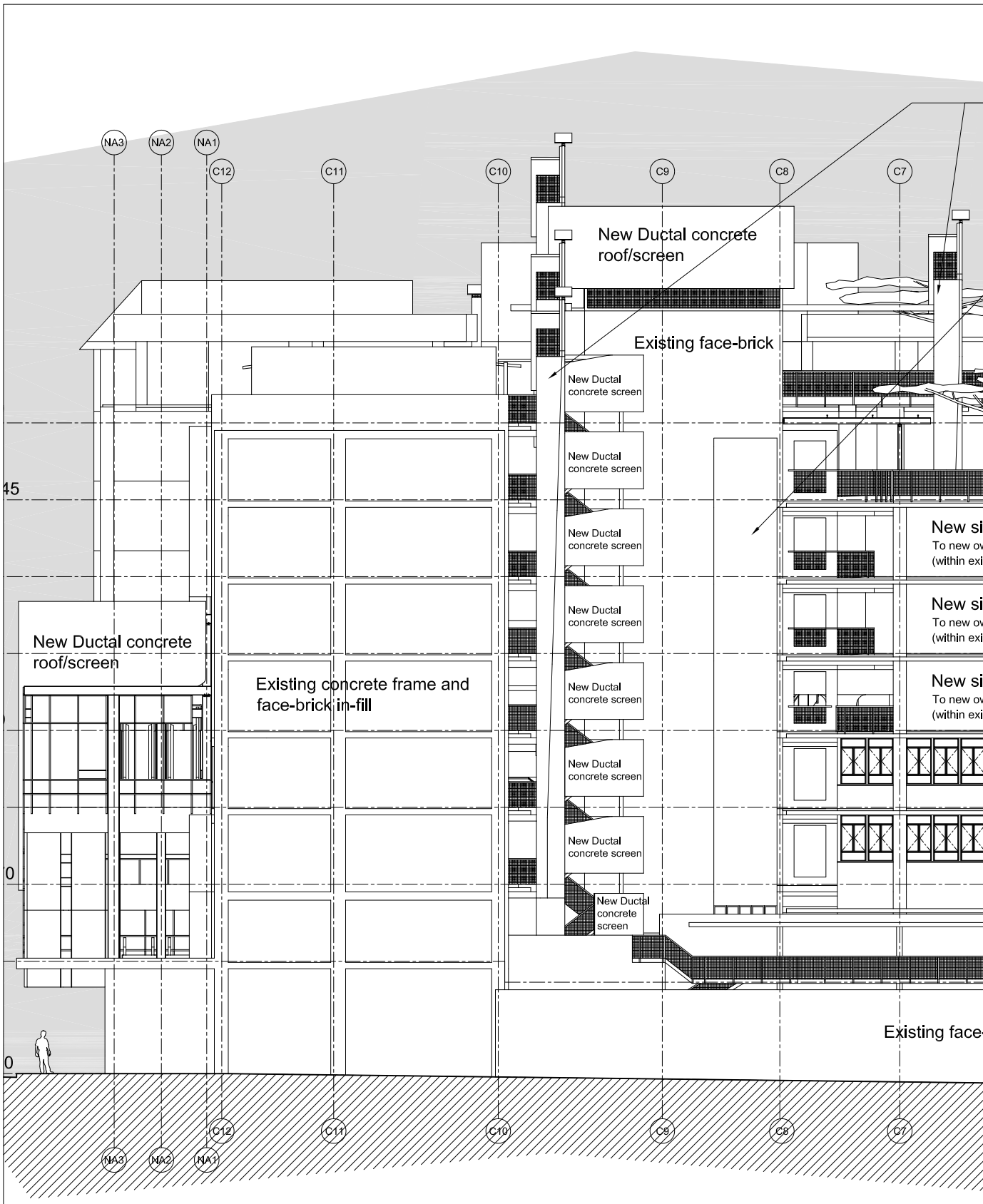
Site development

South elevation

Scale as shown

Figure 8.35



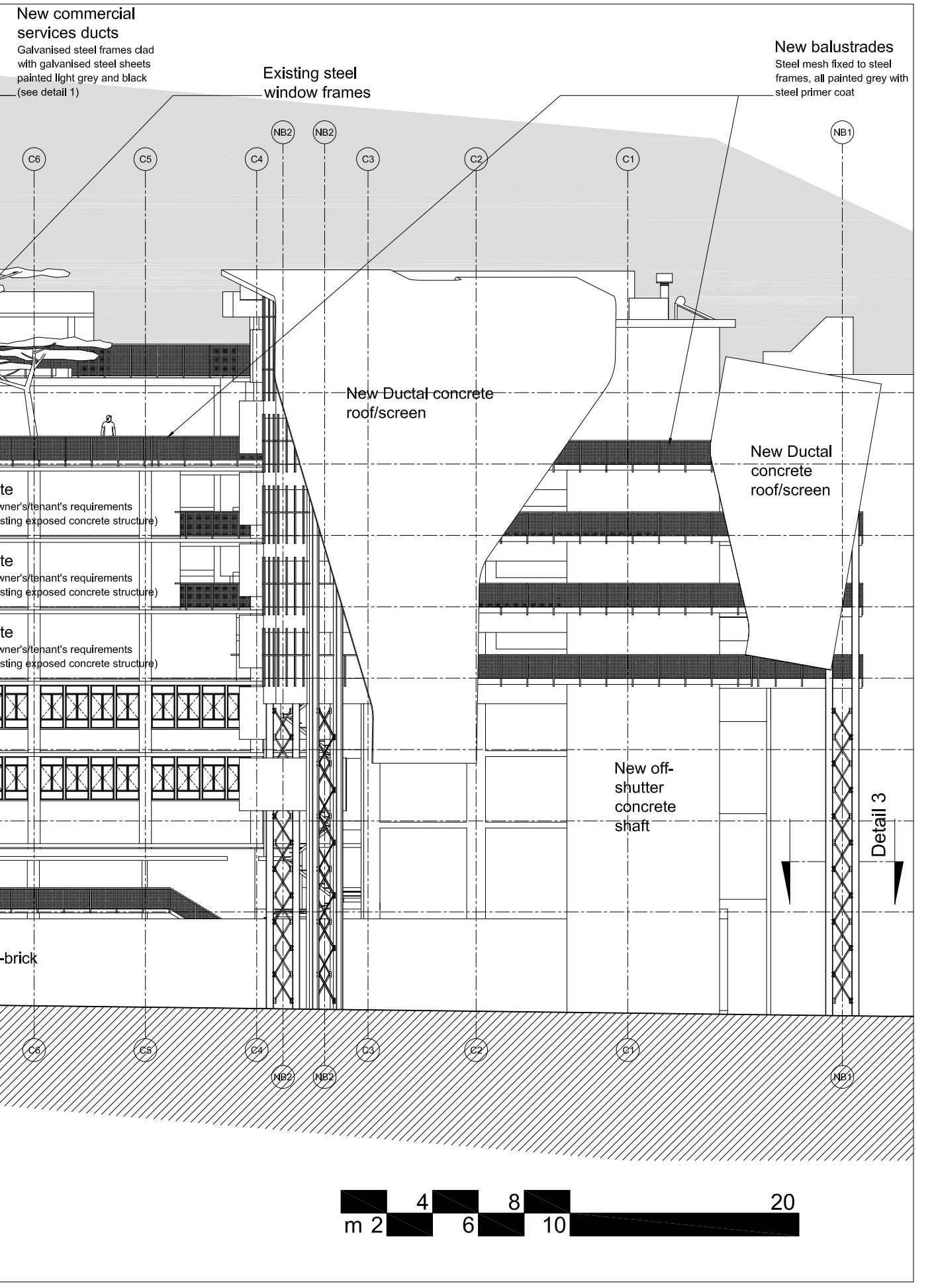


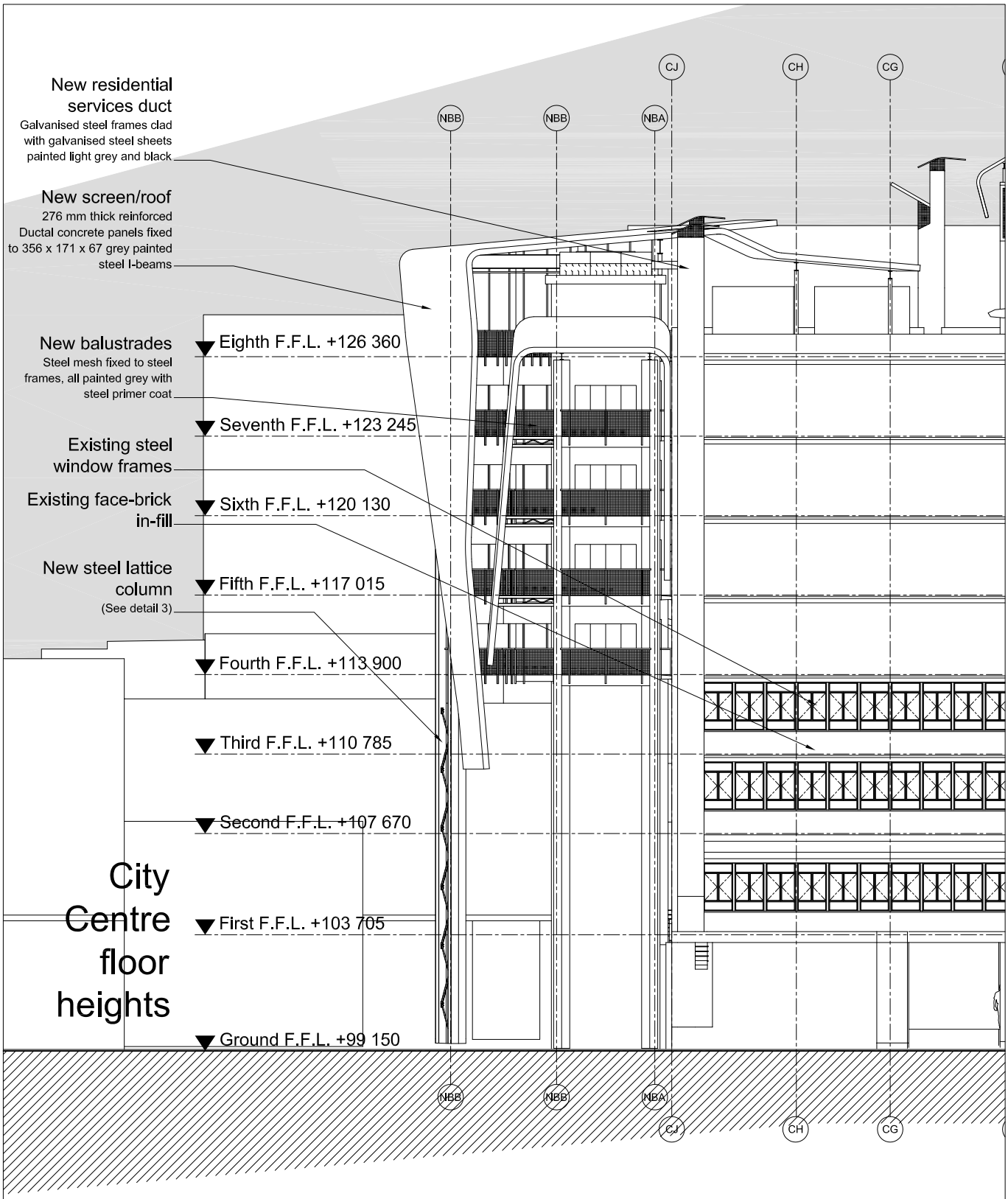
Site development

East elevation

Scale as shown

Figure 8.36





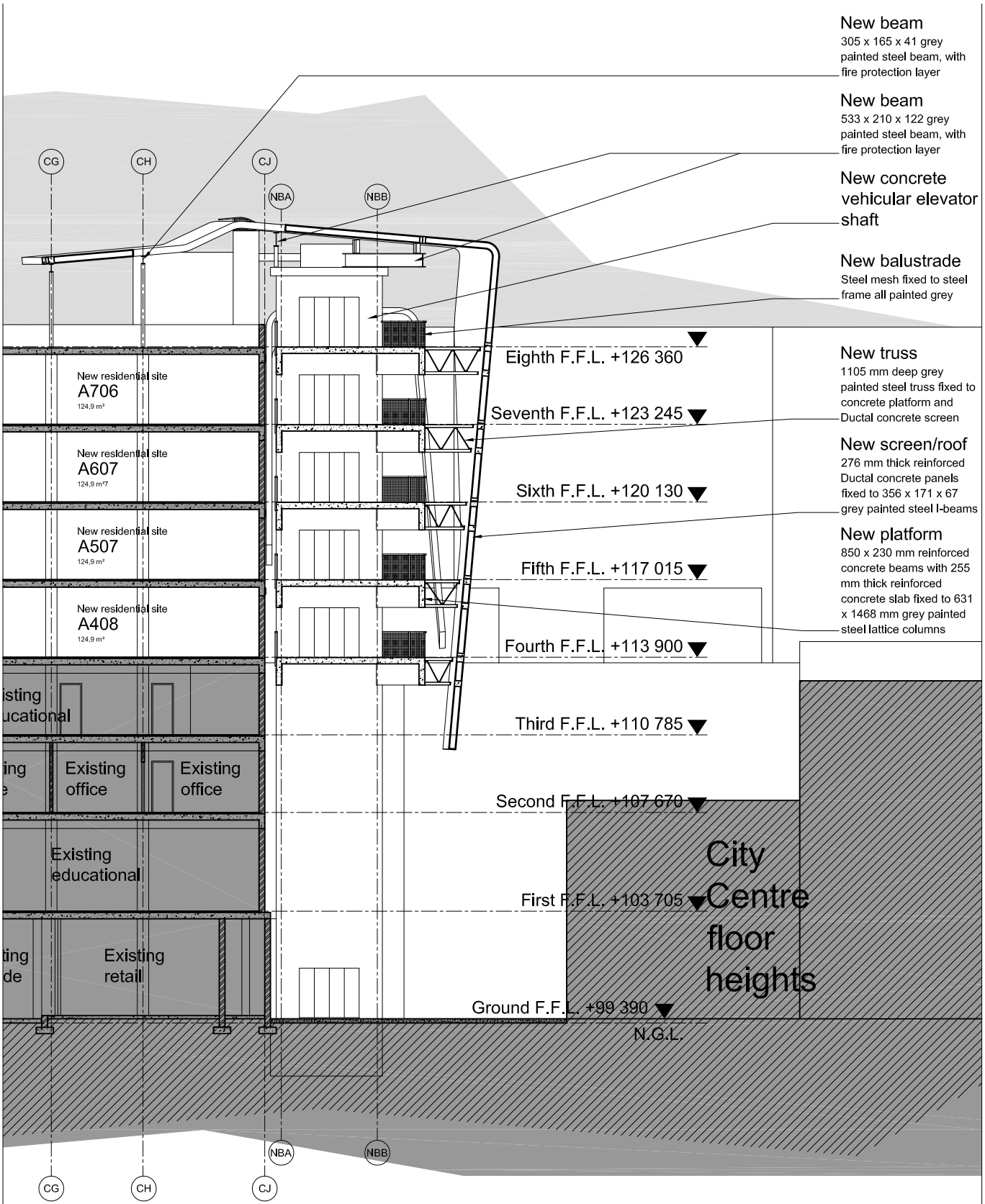
Site development

North elevation

Scale as shown

m 2 4 6 8 10 20

Figure 8.37



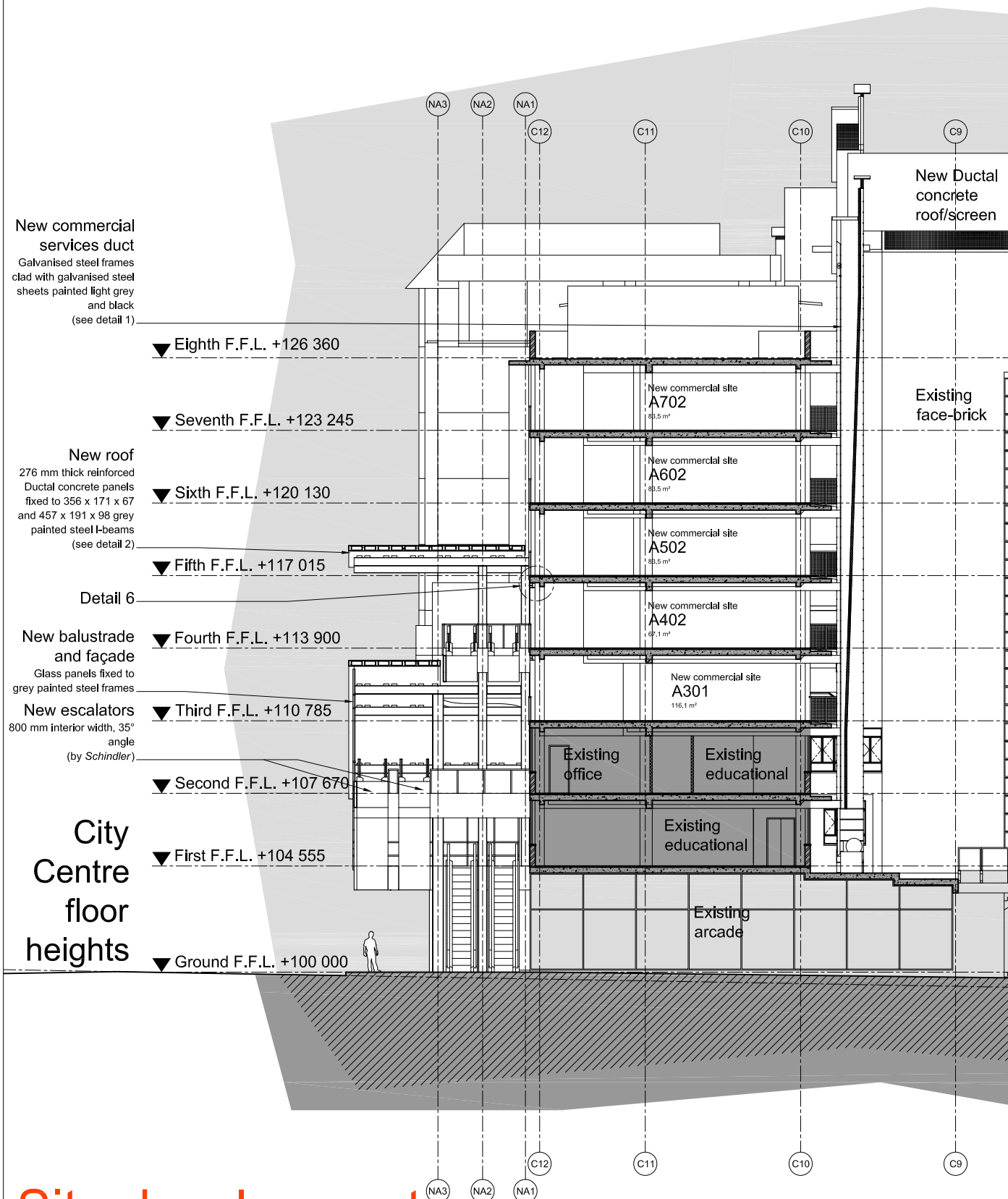
Site development

Section A-A

Scale as shown

m 2 4 6 8 10 20

Figure 8.38

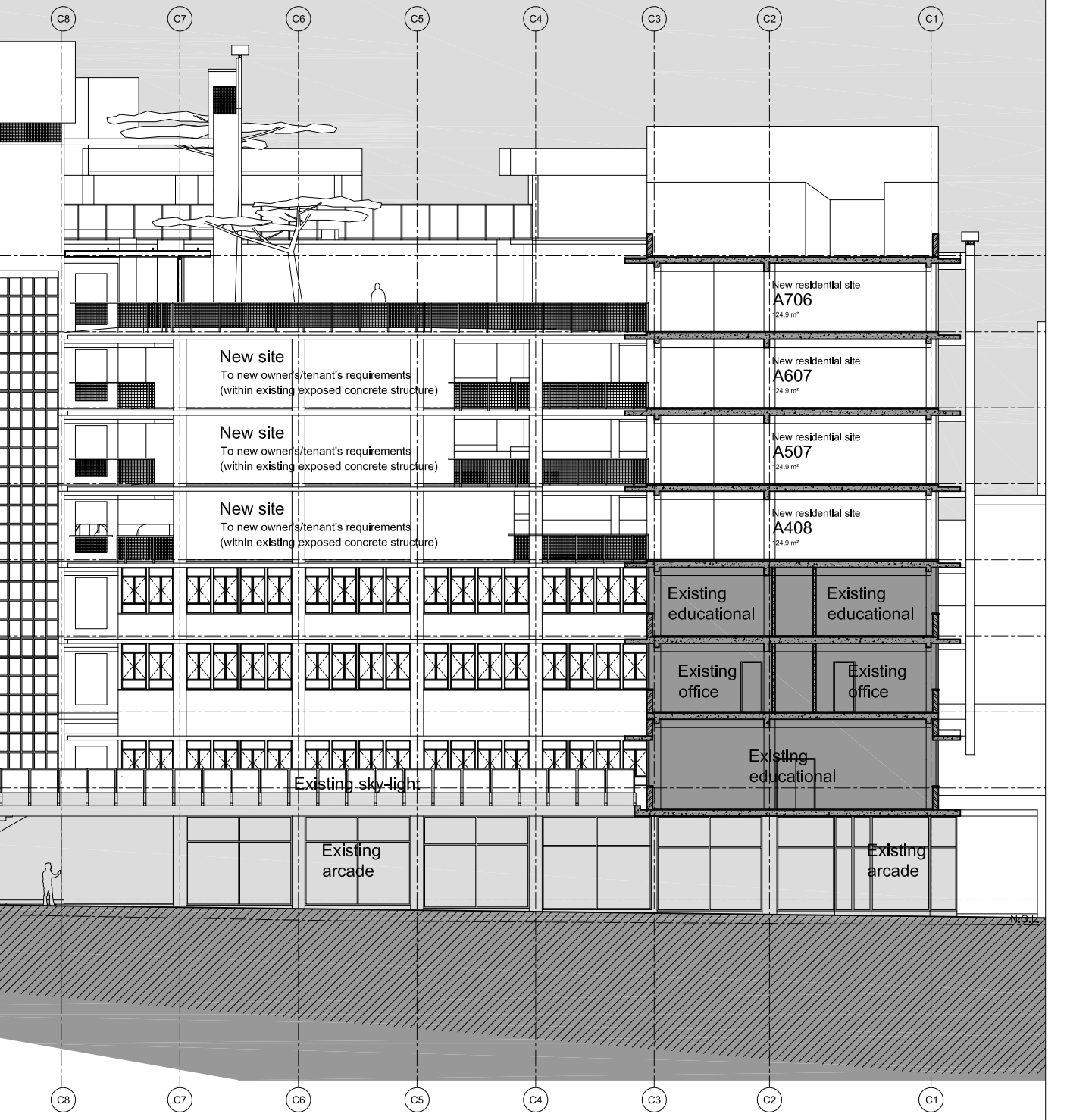


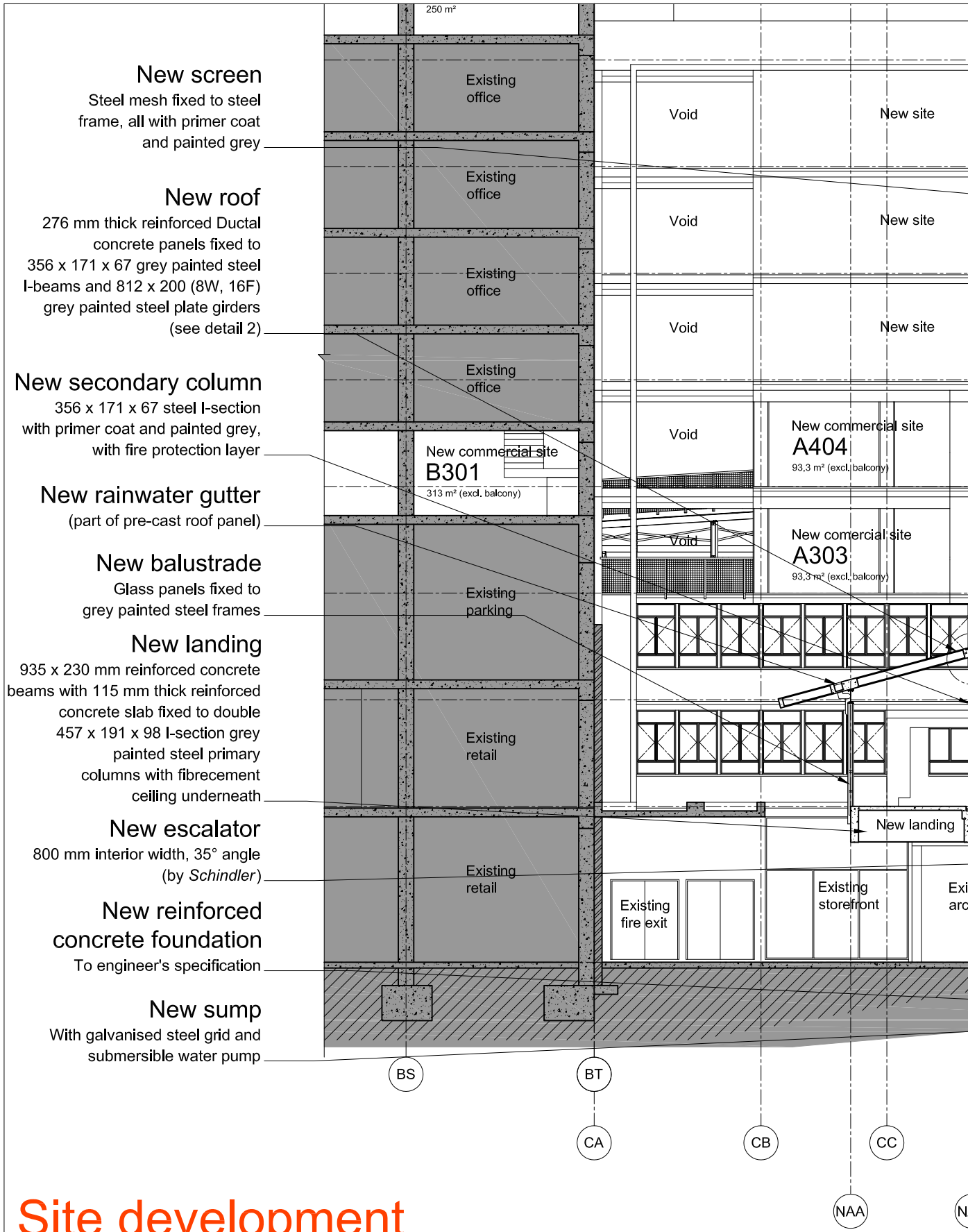
Site development

Section B-B

Scale as shown

Figure 8.39



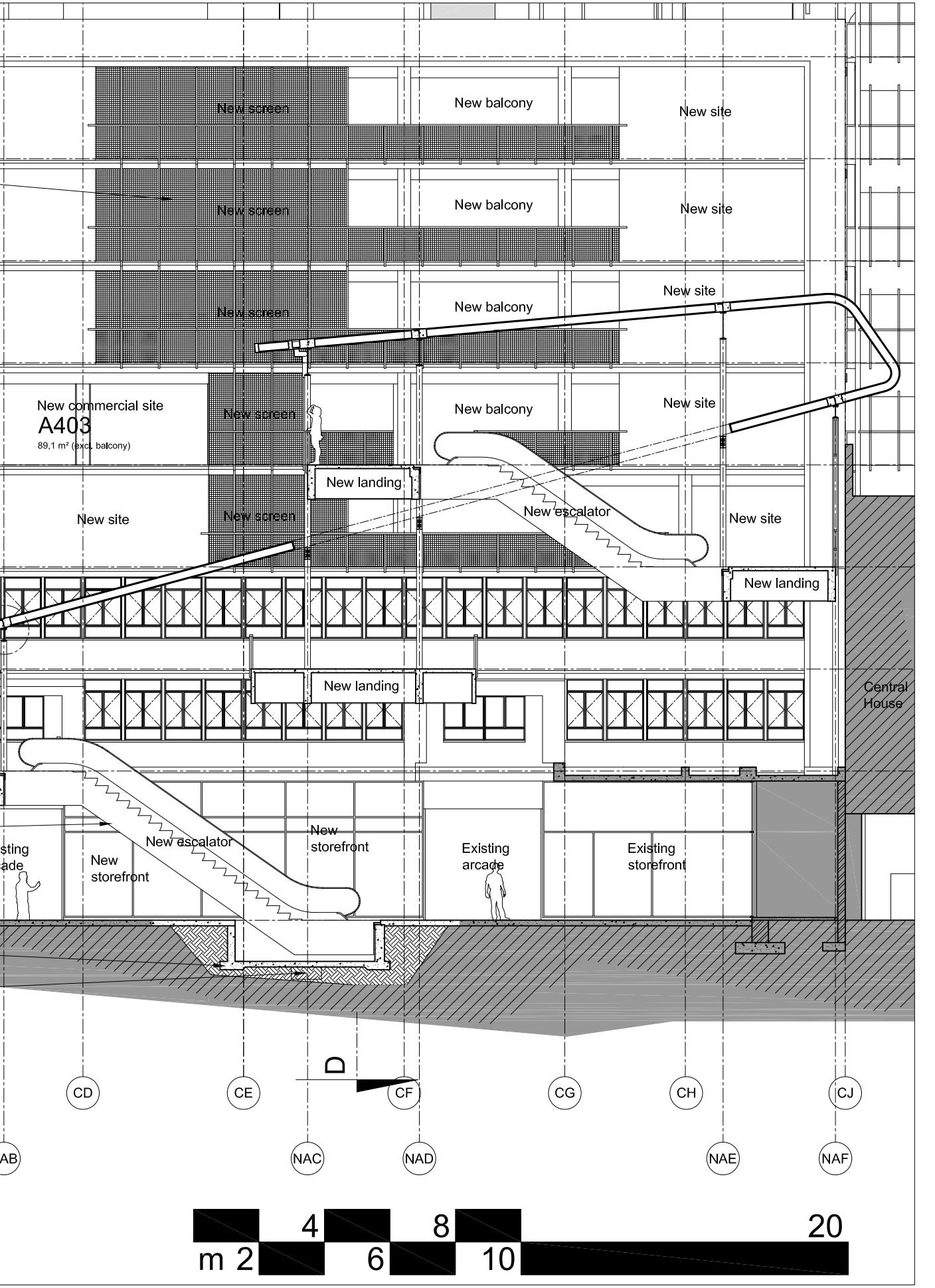


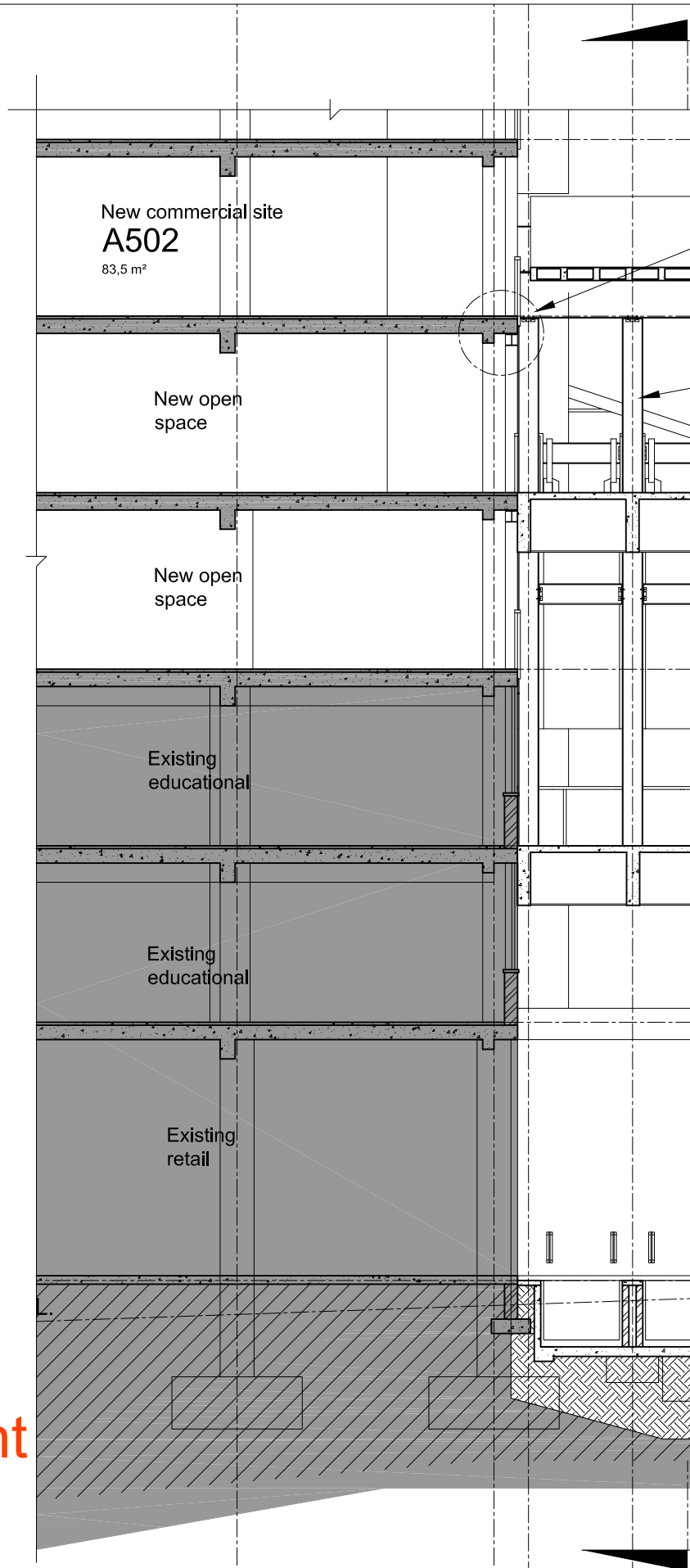
Site development

Section C-C

Scale as shown

Figure 8.40



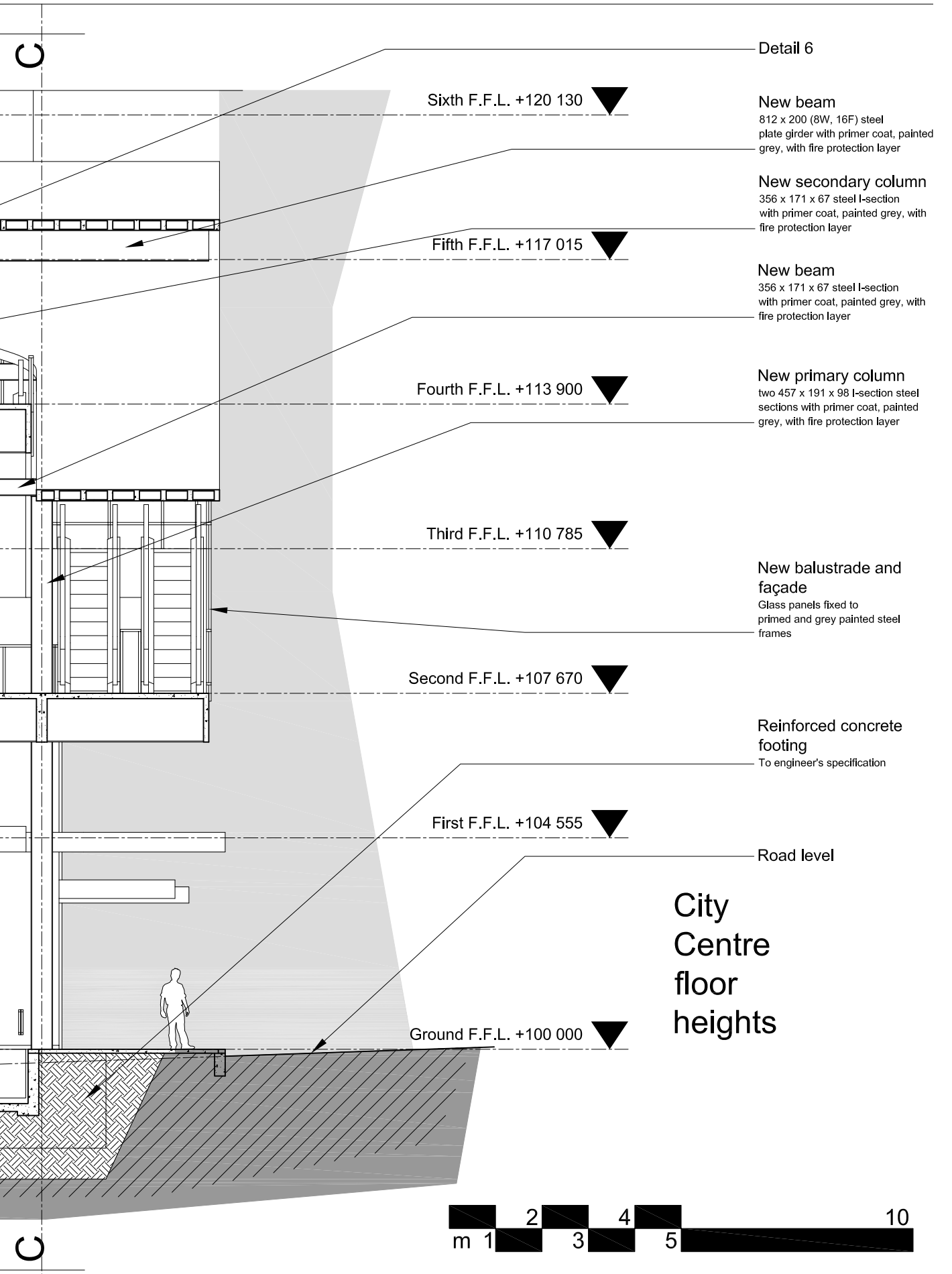


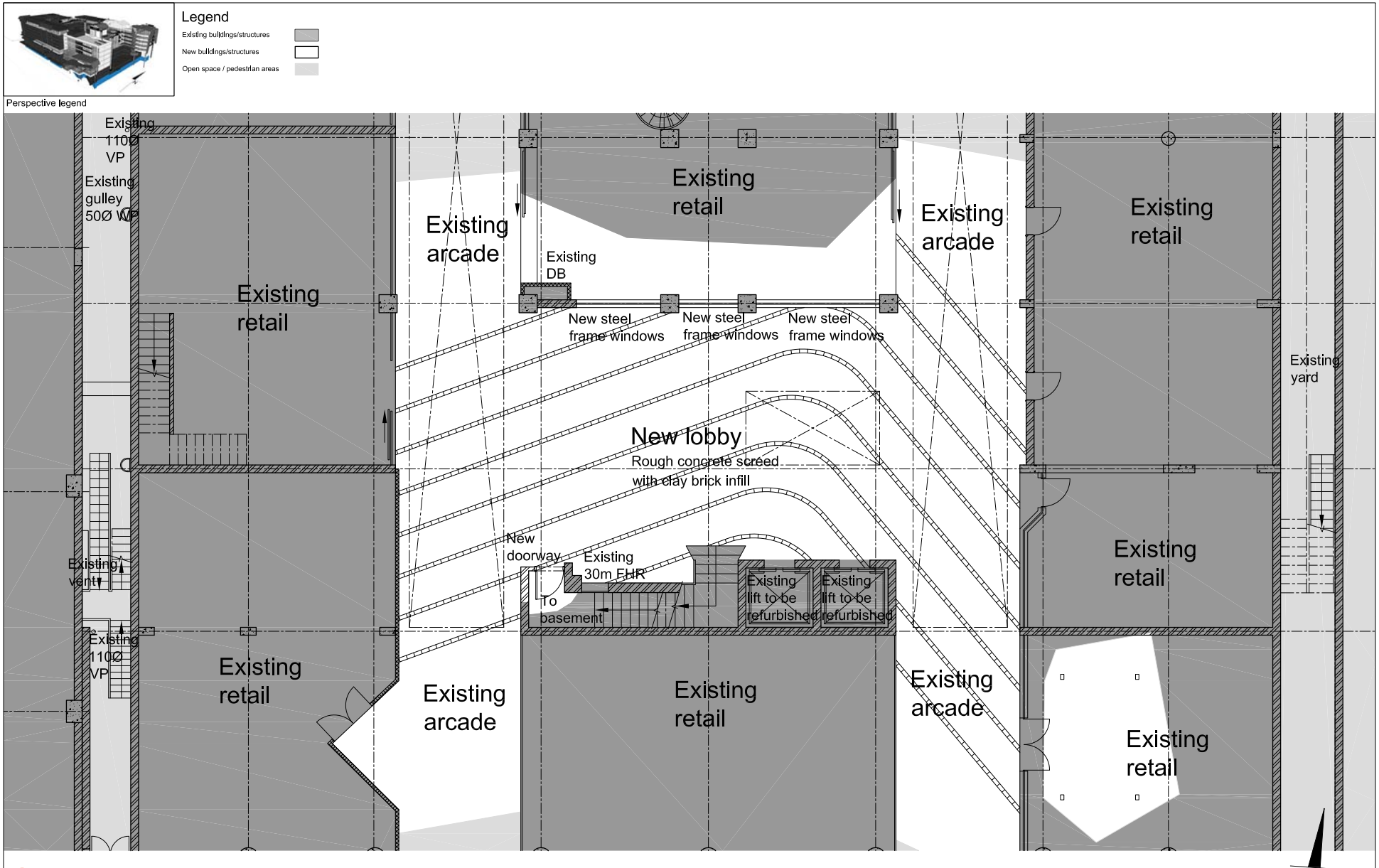
Site development

Section D-D

Scale as shown

Figure 8.41



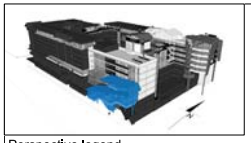


Site development

Lobby - ground floor plan

Scale as indicated

Figure 8.42



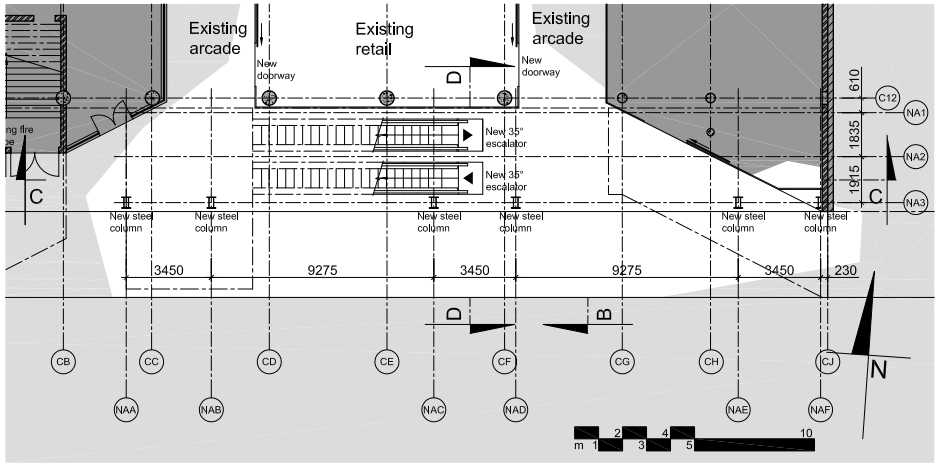
Perspective legend

Legend

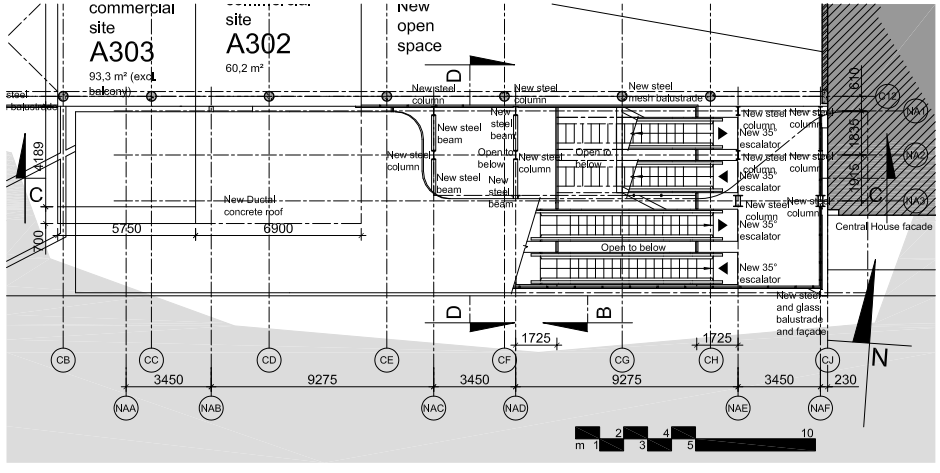
Existing buildings/structures

New buildings/structures

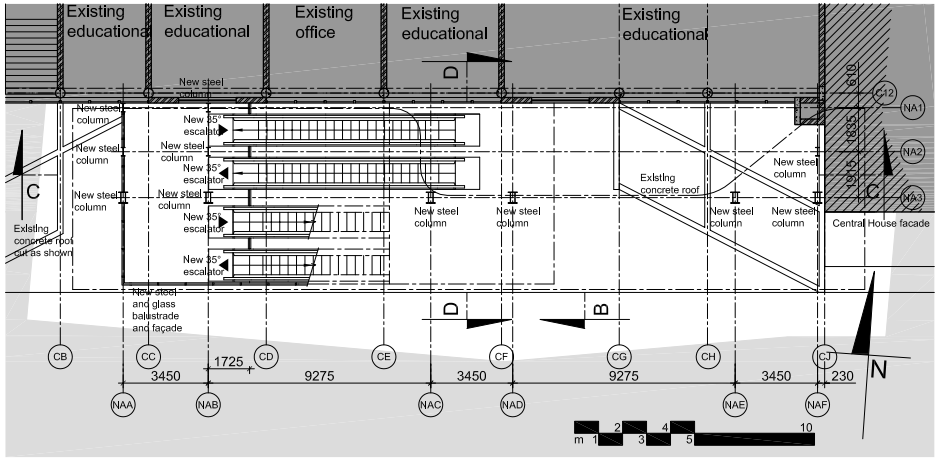
Open space / pedestrian areas



Ground floor plan



Third floor plan



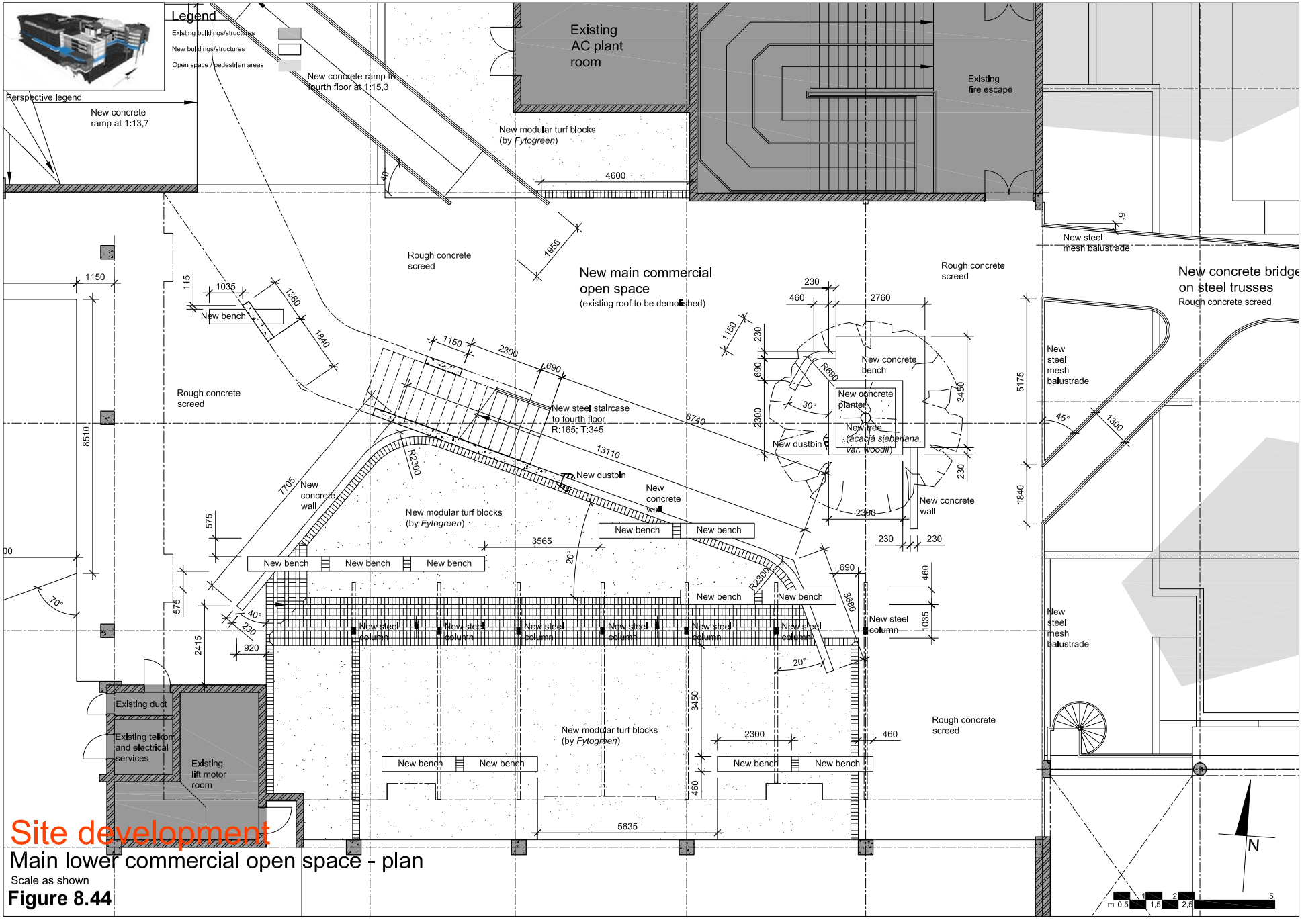
First floor plan

Site development

New vertical circulation space

Scale as indicated

Figure 8.43

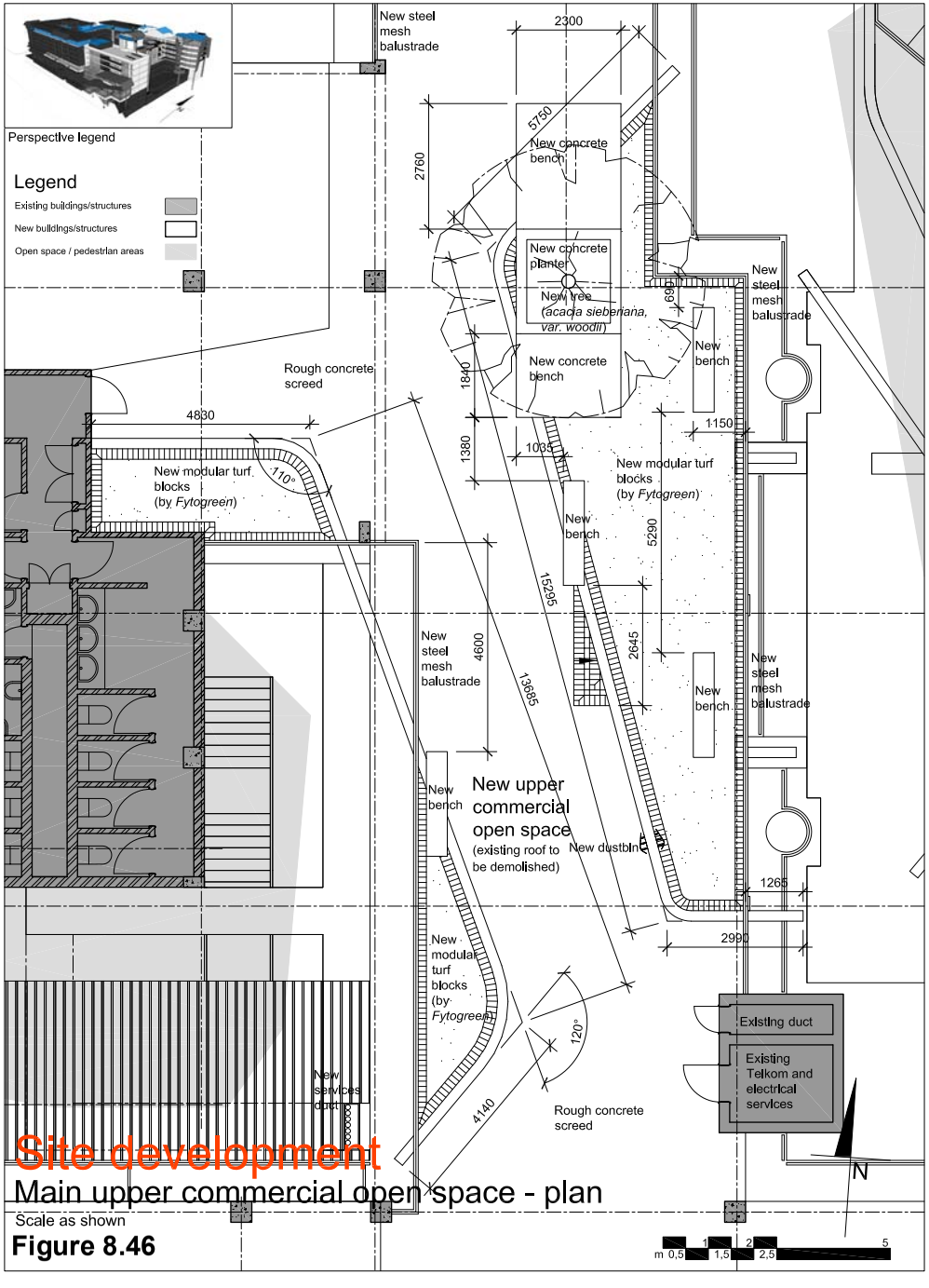


Site development

Main lower commercial open space - plan

Scale as shown

Figure 8.44

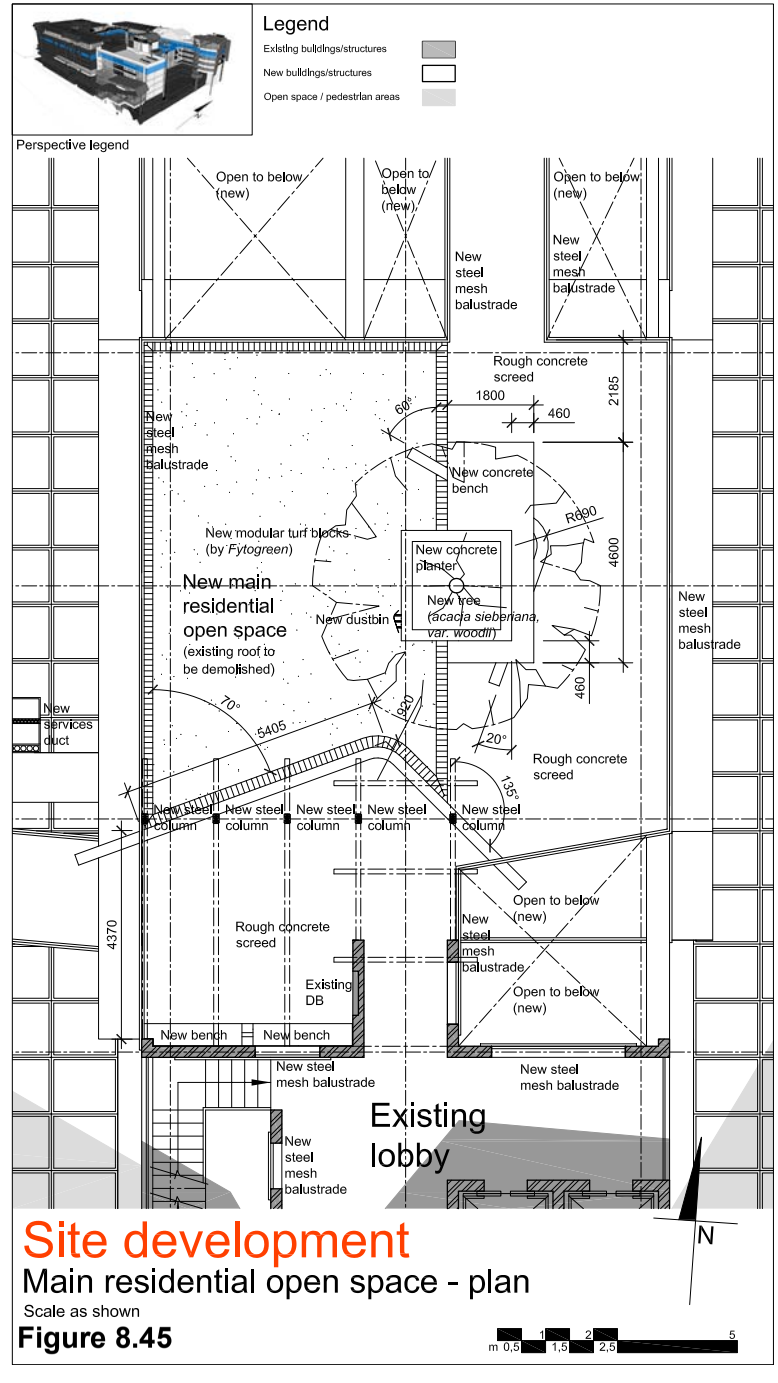


Site development

Main upper commercial open space - plan

Scale as shown

Figure 8.46

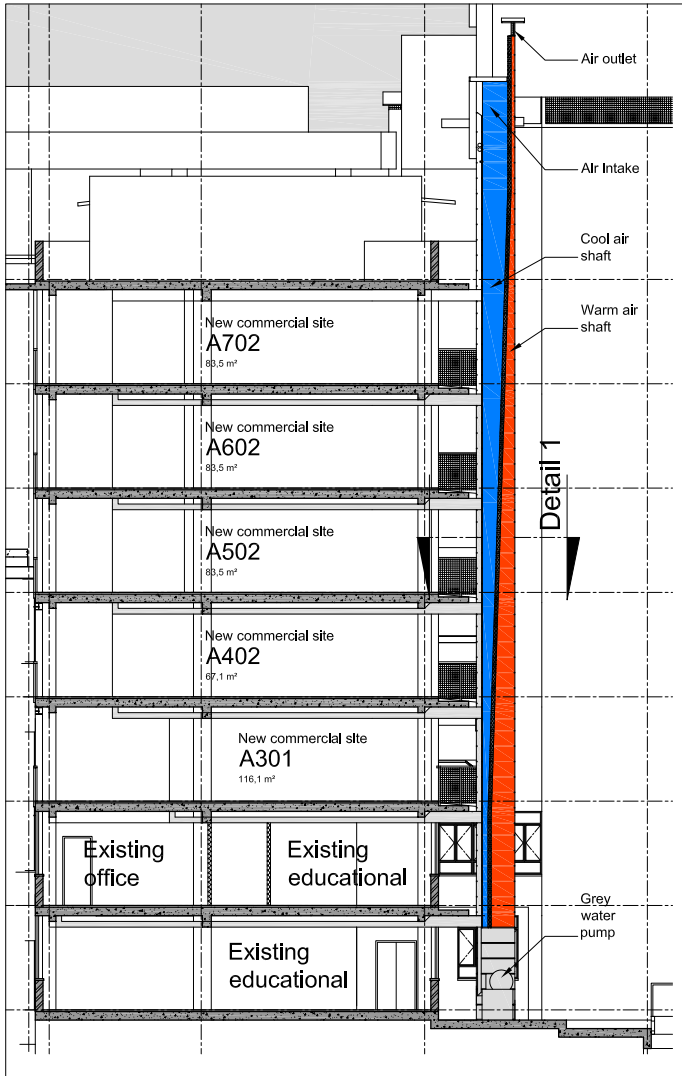


Site development

Main residential open space - plan

Scale as shown

Figure 8.45



Calculations for the ventilation duct size

Energy/m² · area of space = Total Energy
Air change rate: 60 to 80 l/s/kW
Total energy · Air change rate = Volume of air
Max air speed in shaft: 8 m/s

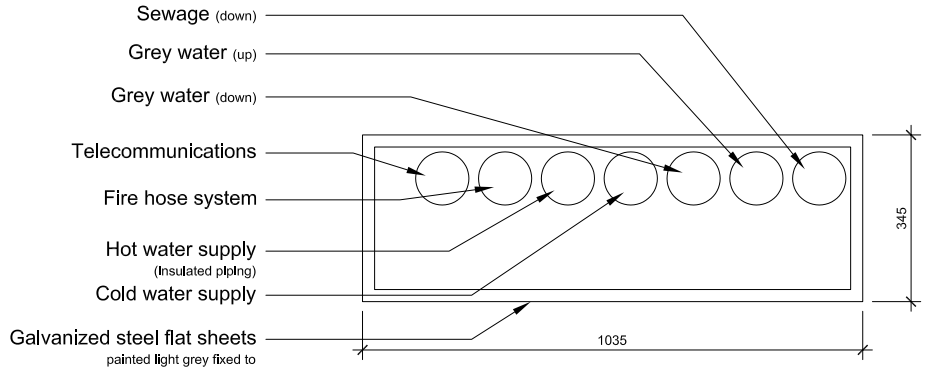
Q = v · A
where Q = Air volume
v = Speed
A = Area of shaft (in plan)
Thus:

180 W/m² · 190 m² = 34200 W
= 34,2 kW

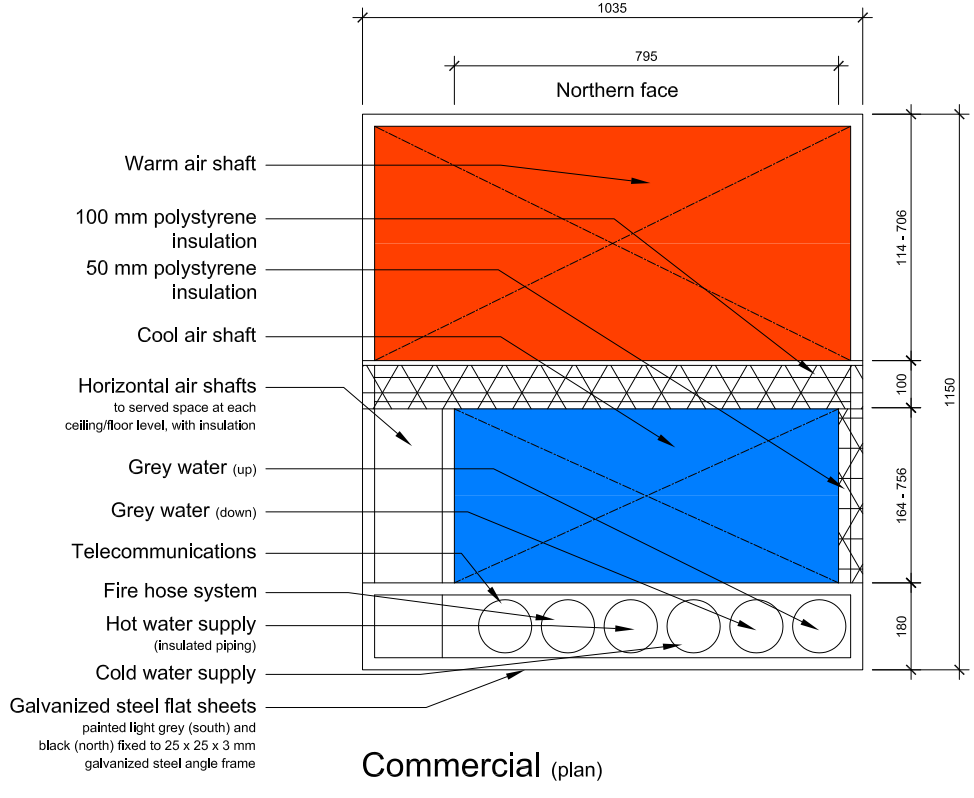
80 l/s/kW · 34.2kW = 2736 l/s
=2,736 m³/s

Q	=	v ·	A
2,736 m³/s	=	8 m/s ·	A
A	=	0,342 m²	

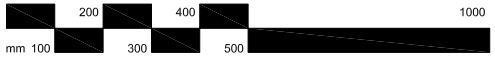
Section B-B (with new service duct highlighted)
Not to scale



Residential (plan)



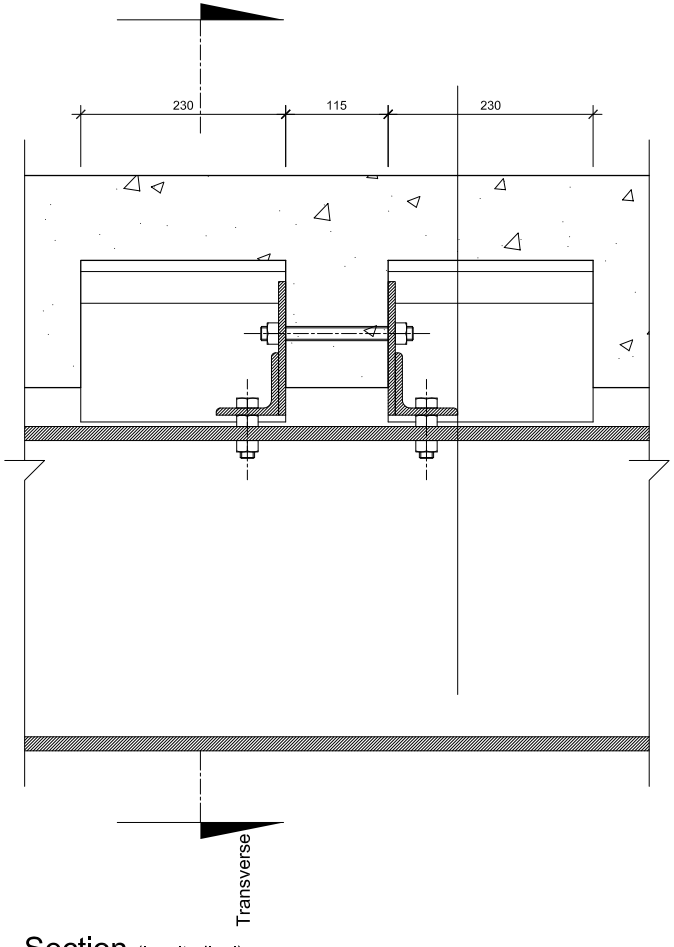
Commercial (plan)



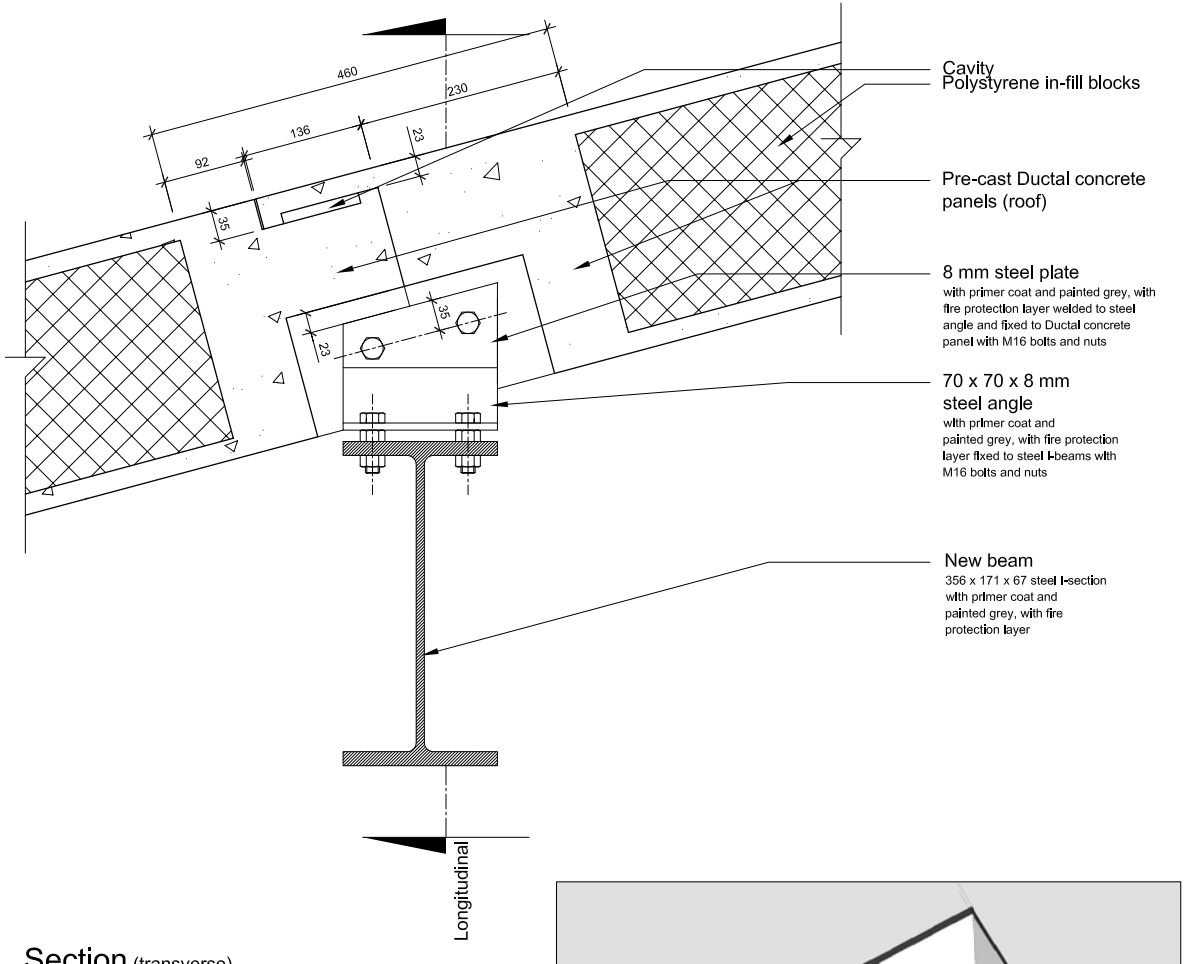
Site development

Detail 1 (new service ducts)
Scale as shown

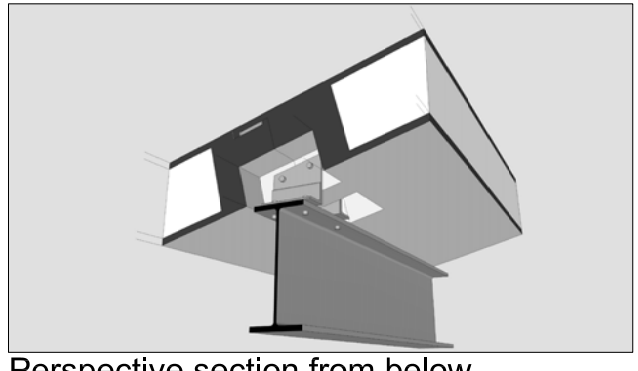
Figure 8.47



Section (longitudinal)



Section (transverse)



Perspective section from below

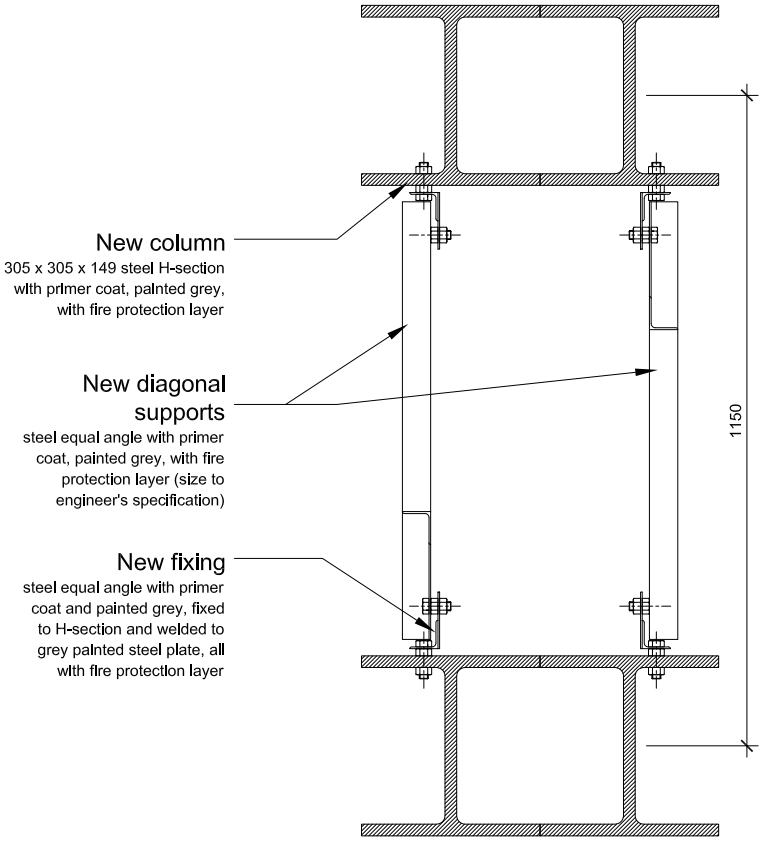
Site development

Detail 2 (façade roof)

Scale as shown

mm 50 100 150 200 250 500

Figure 8.48

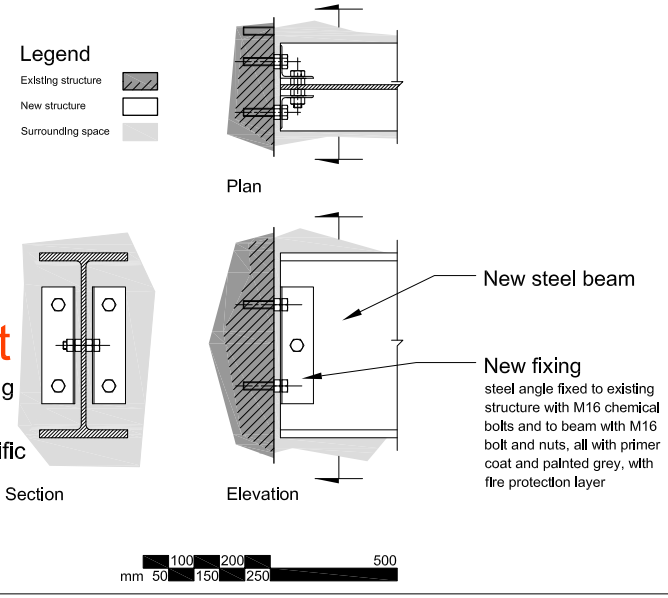


Site development

Detail 3 (steel lattice column)

Scale as shown

Figure 8.51

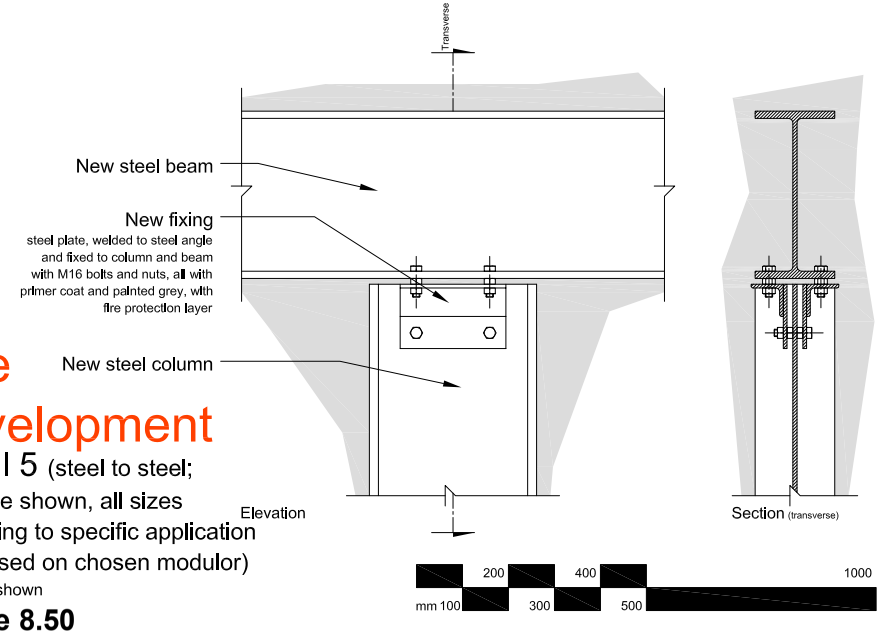


Site development

Detail 4 (steel to existing structure; principle shown, all sizes according to specific application and based on chosen modulor)

Scale as shown

Figure 8.49



Site development

Detail 5 (steel to steel; principle shown, all sizes according to specific application and based on chosen modulor)

Scale as shown

Figure 8.50

8.3.1. Site development function/programme

Reinforced concrete is used in most cases to illustrate the function/programme. This corresponds to the bulk mass of the function/programme in the parti-diagram and fits easily with the cantilevering landings of the escalator spaces and beam-and-slab structure of the parking levels.

8.3.2. Site development form/beauty

For the form/beauty elements, a light, yet strong material was needed. Although a composite structure, consisting of a steel frame and cladding, was considered, the construction and waterproofing joints proved too complex. Therefore Ductal Concrete was chosen, “a cementitious material consisting of cement, sand, silica fume, silica flour, superplastisizer and water” (Cavill and Chirgwin). The product is manufactured by Lafarge and thus available in Gauteng (www.lafarge.co.za). Steel fibres are added to the mixture to create a material, which is six to eight times stronger in compression and has ten times more flexural strength than conventional concrete (Lamarre 2009:3). It is also waterproof (Vosloo 2009), nullifying the need for an additional layer. The span:depth ratio (s/d) was determined by looking at two built examples:

- Road bridge (fig.8.54), Shepherd’s Gully Creek, designer unknown, consists of

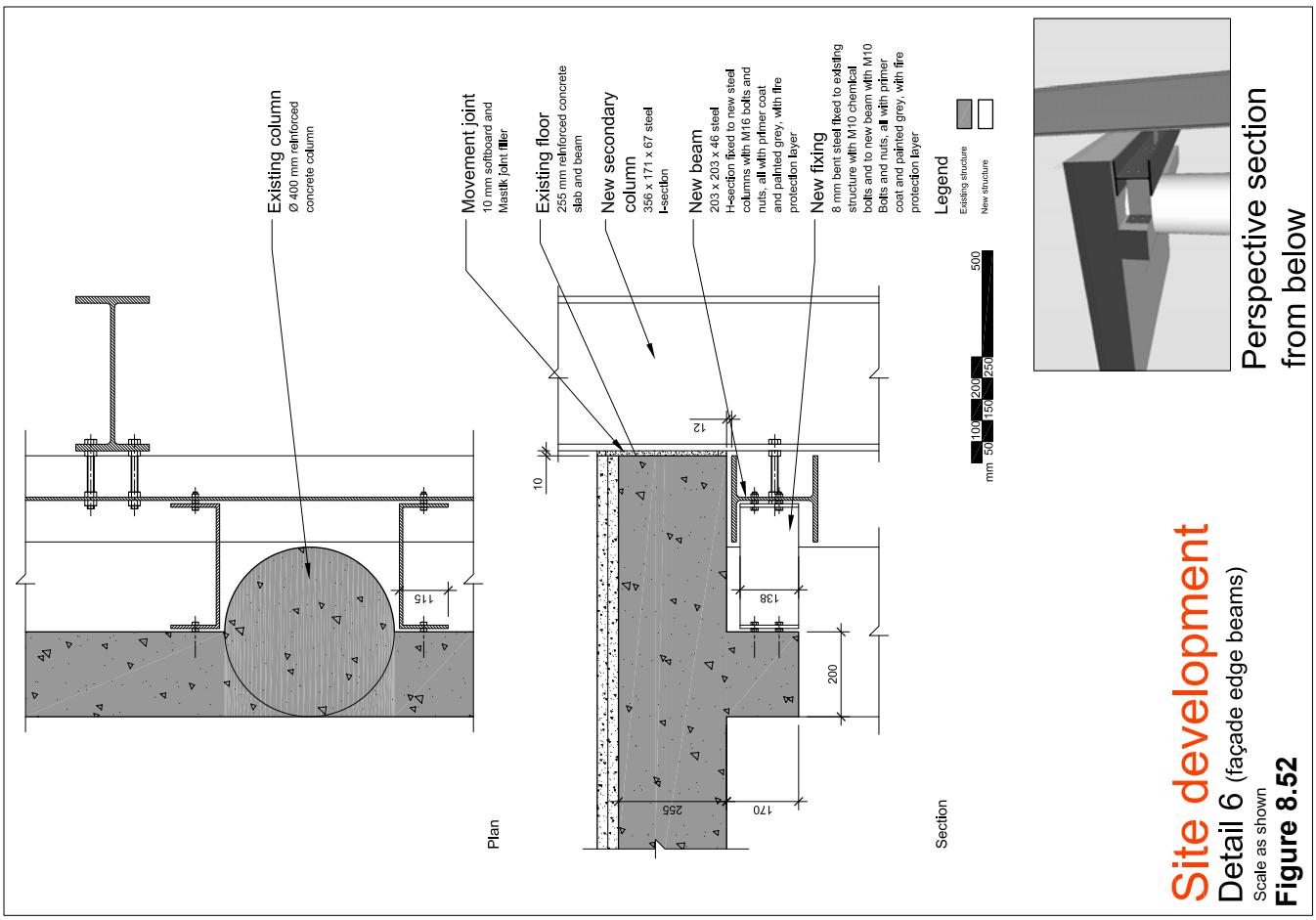


Fig.8.53 - Sketch of the Site Development balustrade detail.
Fig.8.54 - Partial section of the road bridge at Shepherd's Gully.
Fig.8.55 - Photograph of Villa Navarra.

a single 15 m spanning structure with pretensioned beams of 600 mm depth (Cavill and Chirgwin), thus:
15000 / 600 = 25 s/d
and formwork panels with a depth of 25 mm and a span of 1100 mm, carrying a 170mm thick reinforced concrete slab, thus:
1100 / 25 = 44 s/d;
- Villa Navarra (fig.8.55), Provence, by Rudy Ricciotti, which has a roof that cantilevers for 7390 mm with ribs having a depth of 515 mm (Lamarre), thus:
7390 / 515 = 14,3
14,3 x 3 (for cantilever to span) = 42,9 s/d;
Therefore, the average s/d is:
(25 + 44 + 42,9) / 3 = 37,3 s/d
The longest span for the roof over the escalators is 9582 mm, thus:
9582 / 37,3 = 256,9 mm

rounded up to 276 mm thick ribs according to the chosen module (230 + 46). A 23 mm thick skin is structurally sufficient (based on the thickness of the formwork panels used for the above mentioned bridge) and corresponds to the module. Precast panels were consequently designed for assembly with the steel supports on site (fig.8.48). All other applications of Ductal concrete were designed using the same principles.

8.3.3. Site development tectonics/structure

Steel is used throughout the project, as the tectonics/structure component, because of the slenderness ratio and ease of connection to an existing structure. Most of these are mechanically fixed, increasing the robustness of the components to be re-used on other structures if the need arises in the future. All steel is painted grey, including a

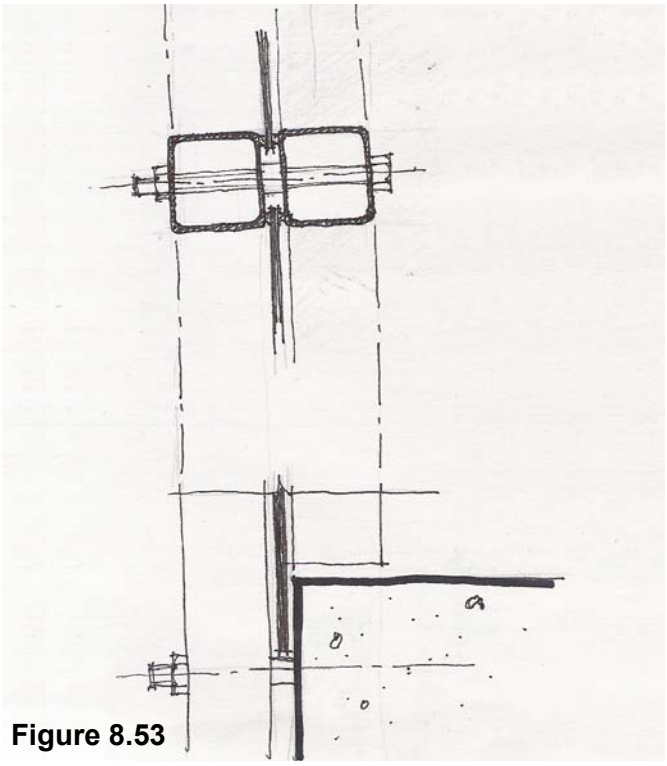


Figure 8.53

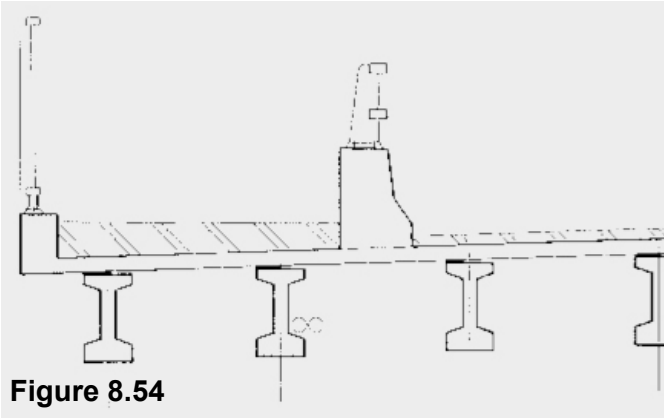


Figure 8.54

fire protection layer. Iscor distributes the steel, being sourced from their production facility in Vanderbijlpark (www.iscor.co.za).

8.3.4. Circulation elements

The escalators are 35˚ Schindler units with 800 mm wide steps. Details are provided by the manufacturing company (www.schindlerdraw.com).

The vehicular elevator's size is based on those available from Wöhr, a German company that specializes in parking solutions (www.woehr.de).

8.3.5. Service ducts

The services ducts (fig.8.47; also see section 6.3.6) contain all necessary piping and ventilation ducts. They are composed of steel angle frames fixed to the existing structure with chemical bolts and clad with 1 mm thick galvanized steel sheets. Most are located on the northern façades of the building.

The ventilation system was designed after consultation with Vosloo (2009), Scheepers (2009) and Vos (2009). It works on the following mechanisms (fig.8.55):

- air in the warm-air duct moves upward to pull stale air out of the interior spaces at ceiling level;
- cool air is then pulled into these spaces, because of negative pressure;
- this air is pulled through a cool-air duct before entering the space;
- air in the cool-air duct moves downward, to push fresh air into the space.

Upwards movement of the air in the warm-air ducts is achieved by applying the following

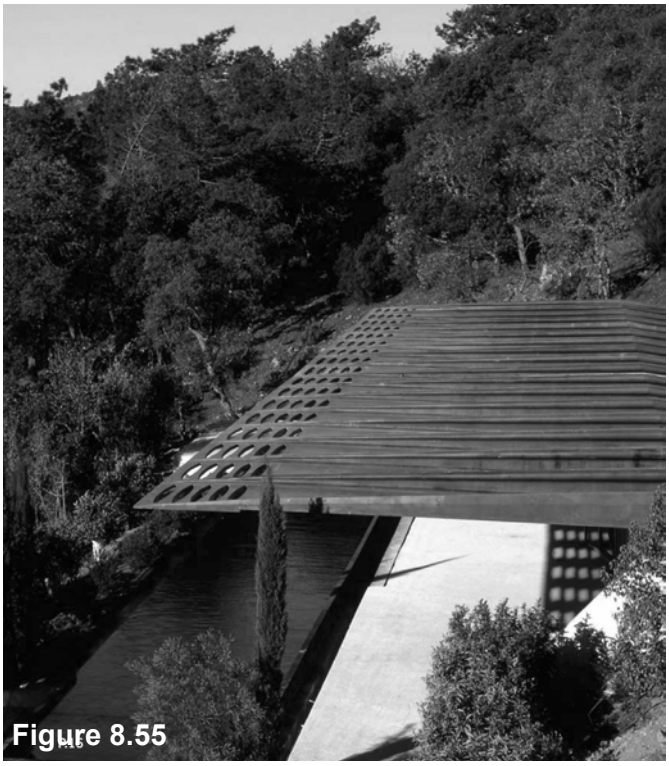


Figure 8.55

measures:

- these ducts are positioned in the northern part of the service ducts, so as to be heated by the sun;
- the galvanized steel sheet cladding is painted matt black on the exterior surfaces where it covers these shafts to increase heat absorption;
- the ducts taper towards the top to increase the upward air speed (based on the Venturi-effect; www.spiritus-temporis.com);
- precast Ductal concrete panels on top of the outlets are aligned to the main wind directions for summer to create negative pressure beneath them, thus pulling the warm air out.

The downward movement of the air in the cool-air ducts is attained by implementing the following measures:

- the ducts are positioned in the southern part of the service ducts to be shielded from the sun;
- the ducts taper towards the bottom to increase the downward air speed (based on the Venturi-effect; *ibid.*);
- water mist is sprayed into the ducts at the top to decrease the temperature;
- precast Ductal concrete units are positioned at the top facing east (according to the main wind direction during summer), 'scooping' air into the cool-air ducts and forcing it down.

The cool-air duct is insulated from the city climate by means of:

- a 100 mm polystyrene insulation layer which is inserted between the warm-air and cool-air duct;
- the area dedicated to piping serves as a second insulation layer on the southern side

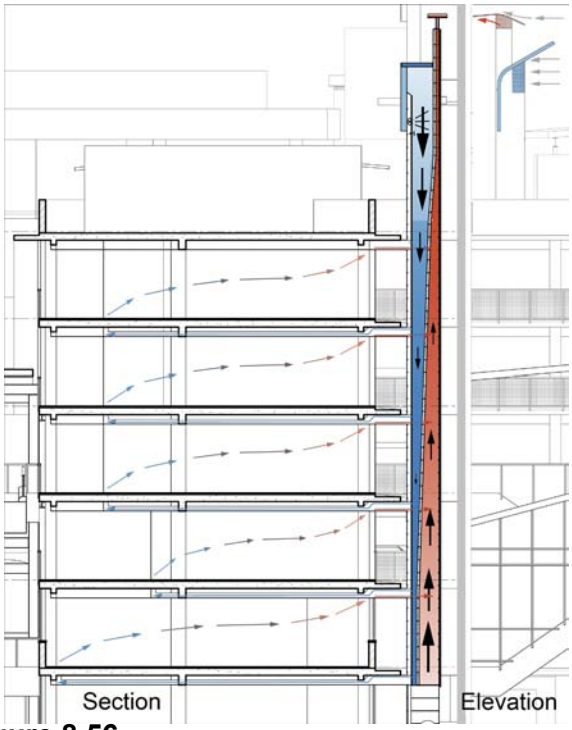


Figure 8.56

Figure 8.57

of the cool-air duct;
- the side has a double layer of galvanized steel cladding, with a 50 mm polystyrene layer in-between.

An ultraviolet lighting unit is installed just beneath the water mist sprayer to prevent any bacteria from entering the new 'sites'.

8.3.6. Vegetation

Modular turf (fig.8.57) is used for the main open spaces' grassed areas, a lightweight growing medium manufactured by Fytogreen, an Australian company (www.fytogreen.com.au). It consists of an aminoplast resin foam, laid on top of geo-fabric, a Fytonop drainage cell layer and a Low Density Plastic liner (fig.8.58; *ibid.*). Irrigation pipes are placed between the panels and an LM-lawn layer is added onto this.

Paper bark thorn trees (*Acacia sieberiana var. woodii*, fig.8.59) were chosen for the main open spaces for their wide canopies, providing shade for the users of the existing and new spaces. Their placement coincides with existing column positions on the floor below, negating the addition of structural supports. Each is planted within a Ductal concrete planter box, since the material strength creates less loading than conventional structures.

8.4. Second phase: the MINI Space Gallery

Figs.8.60-8.75 show all plans, elevations, sections and details for this phase of the project.

Again, the parti-diagram was used as the guiding principle for solving the design and final details.

Structural sizes are all based on calculations from Orton (1988:22-54; see Appendix B), as with the previous phase.

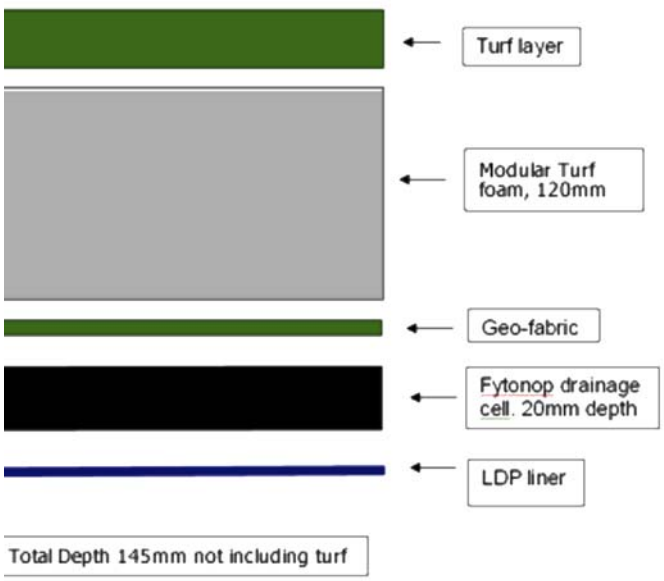
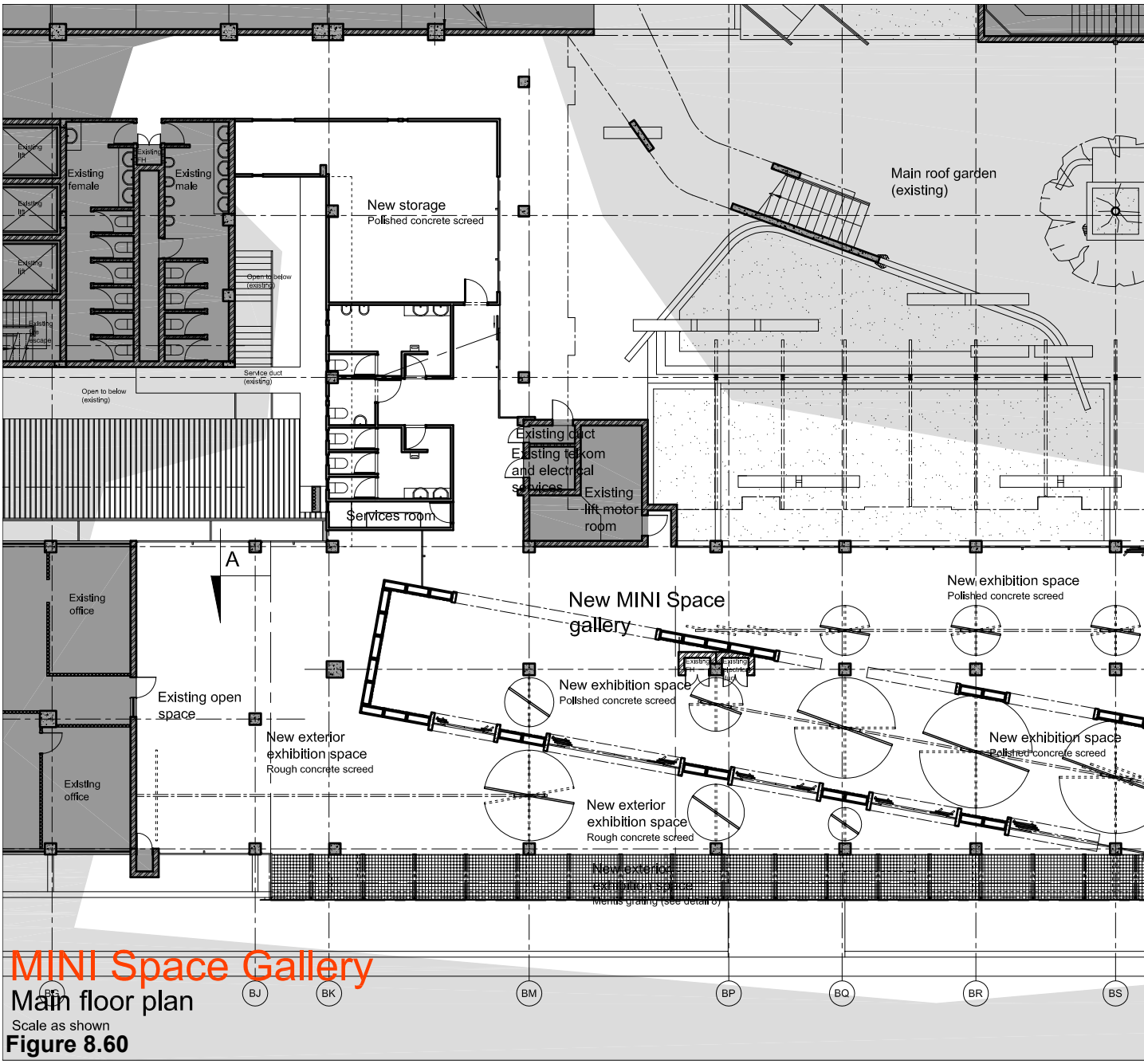


Figure 8.58

Figure 8.59

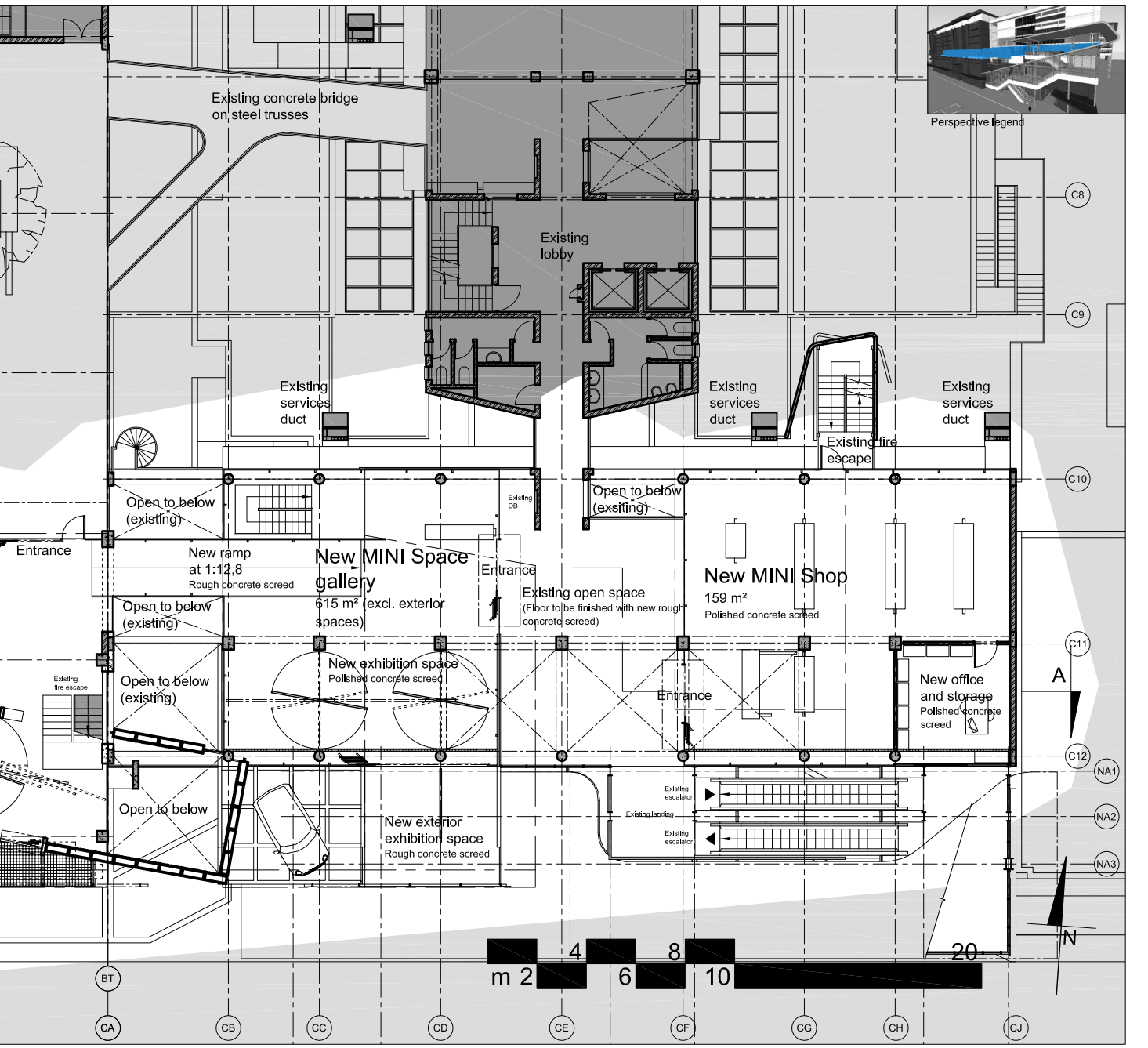


MINI Space Gallery

Main floor plan

Scale as shown

Figure 8.60



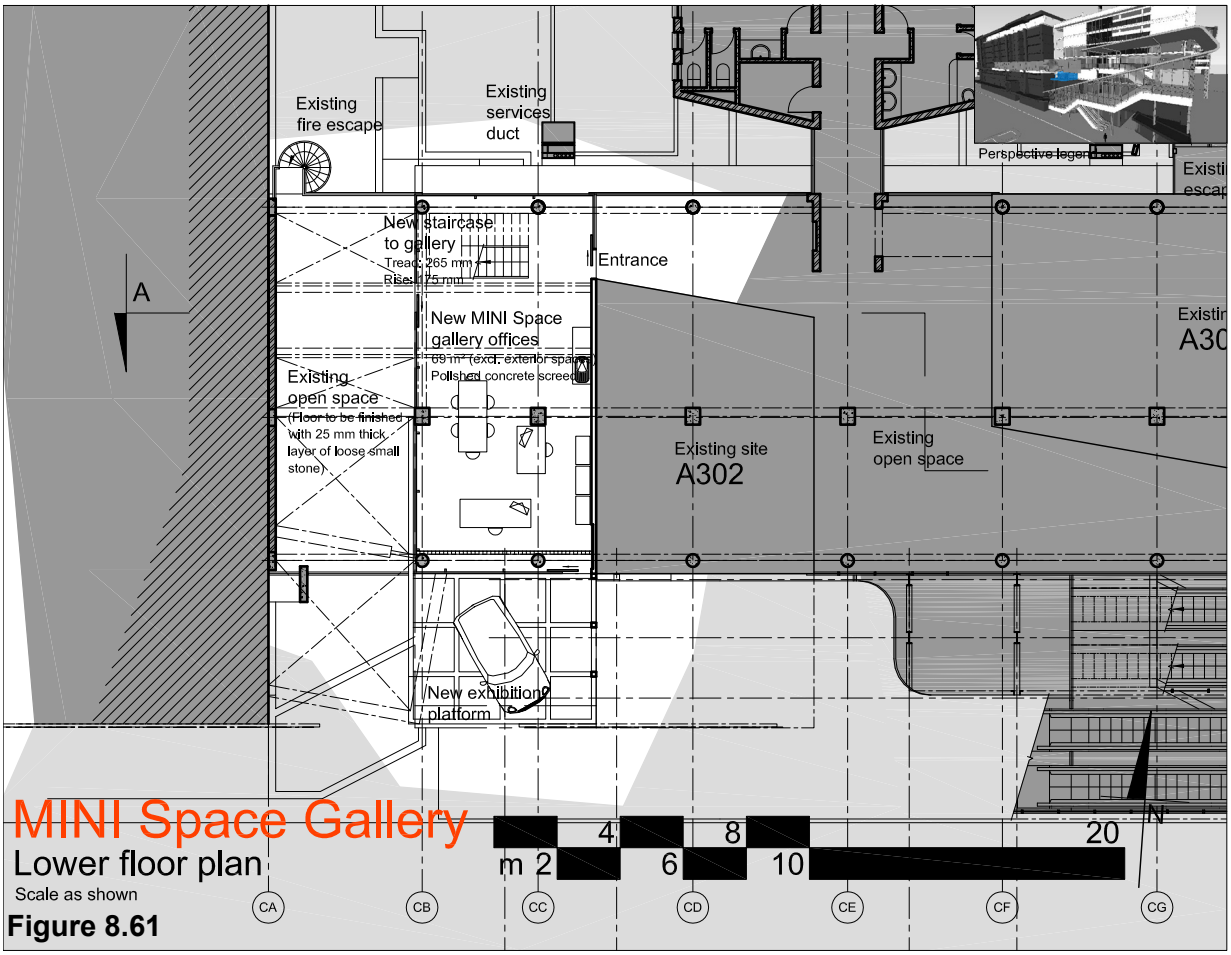


Figure 8.61

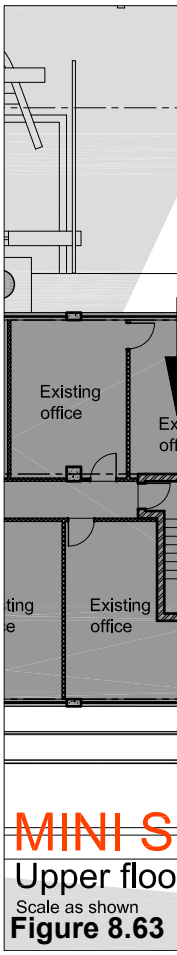
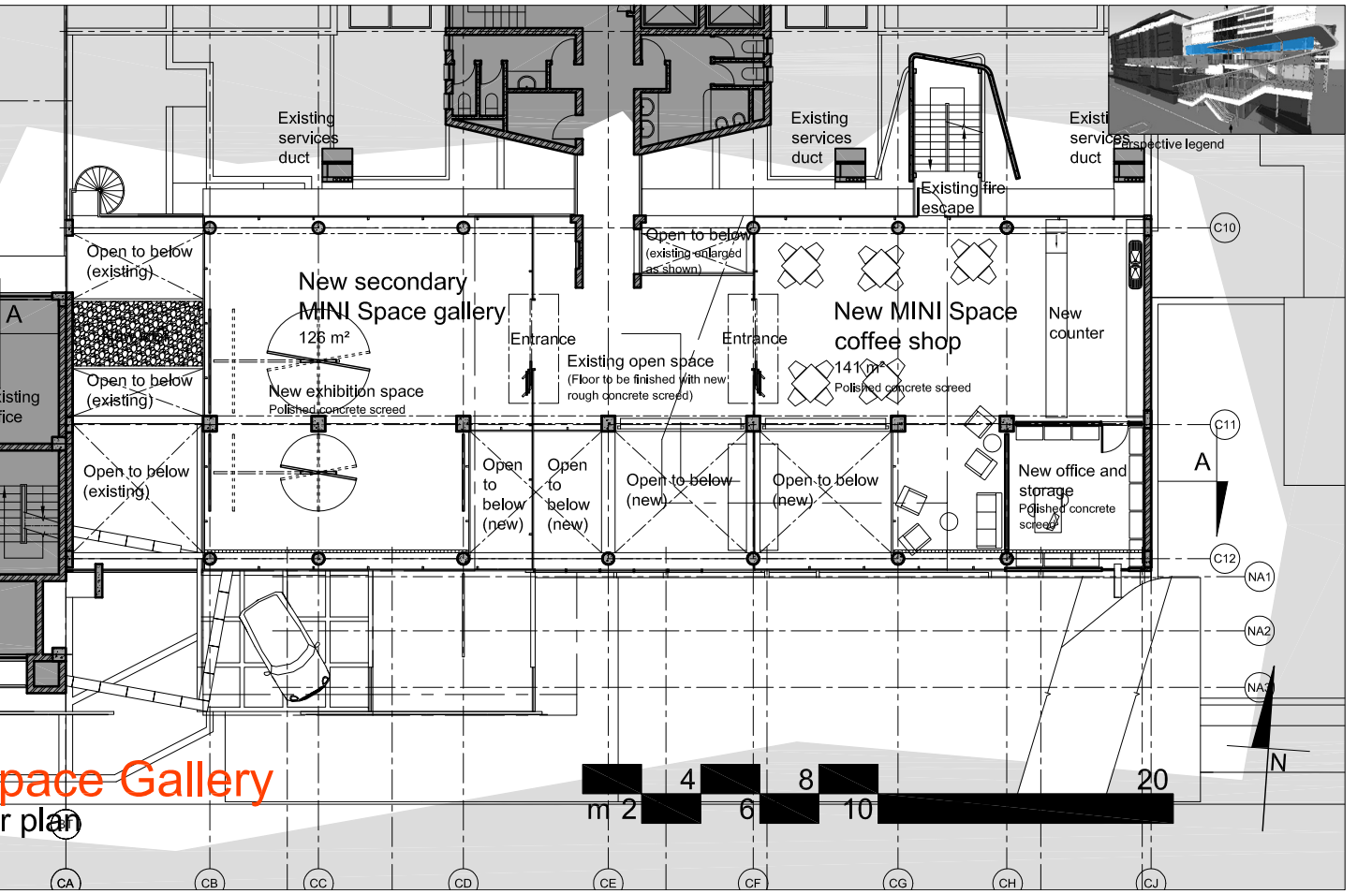
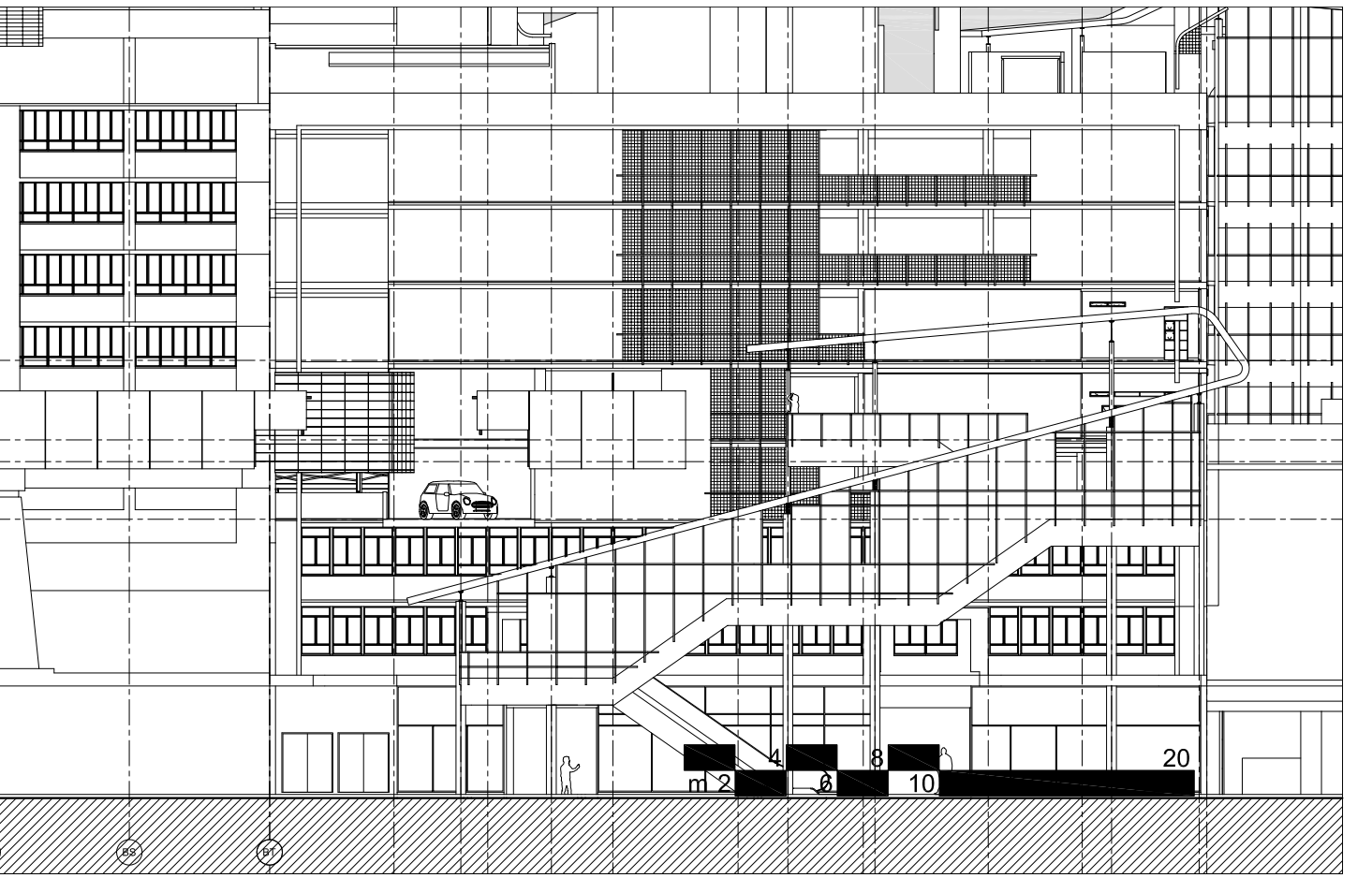


Figure 8.63

Figure 8.62



pace Gallery
r plan



Legend

CJ

CH

3699 x 1983 x 93 mm
100 x 50 x 4 mm
and

New entrance canopy
3606 x 1983 x 93 mm pre-cast reinforced concrete panel on 100 x 50 x 4 mm galvanised steel rectangular columns and fixed to galvanised steel frame fixed to existing concrete slab (see detail 2)

10 mm tempe
structural
65 x 50 x 6

New walls
galvanised steel frames clad with 9 mm fibre cement panels painted white

New windows
3 mm glass in dark grey painted steel window frames

New office and storage

New office and storage

Upper floor FFL +103 115

Main floor A FFL +100 000

Main floor B FFL +99 150

Lower floor FFL +96 885

Existing floors
255 mm reinforced concrete slabs with new 50 mm polished screeds

New display unit
pre-cast reinforced concrete unit with galvanised steel fittings and plexi-glass shelves

New sale cou
Pre-cast reinforced concrete uni
galvanised steel

CJ

CH

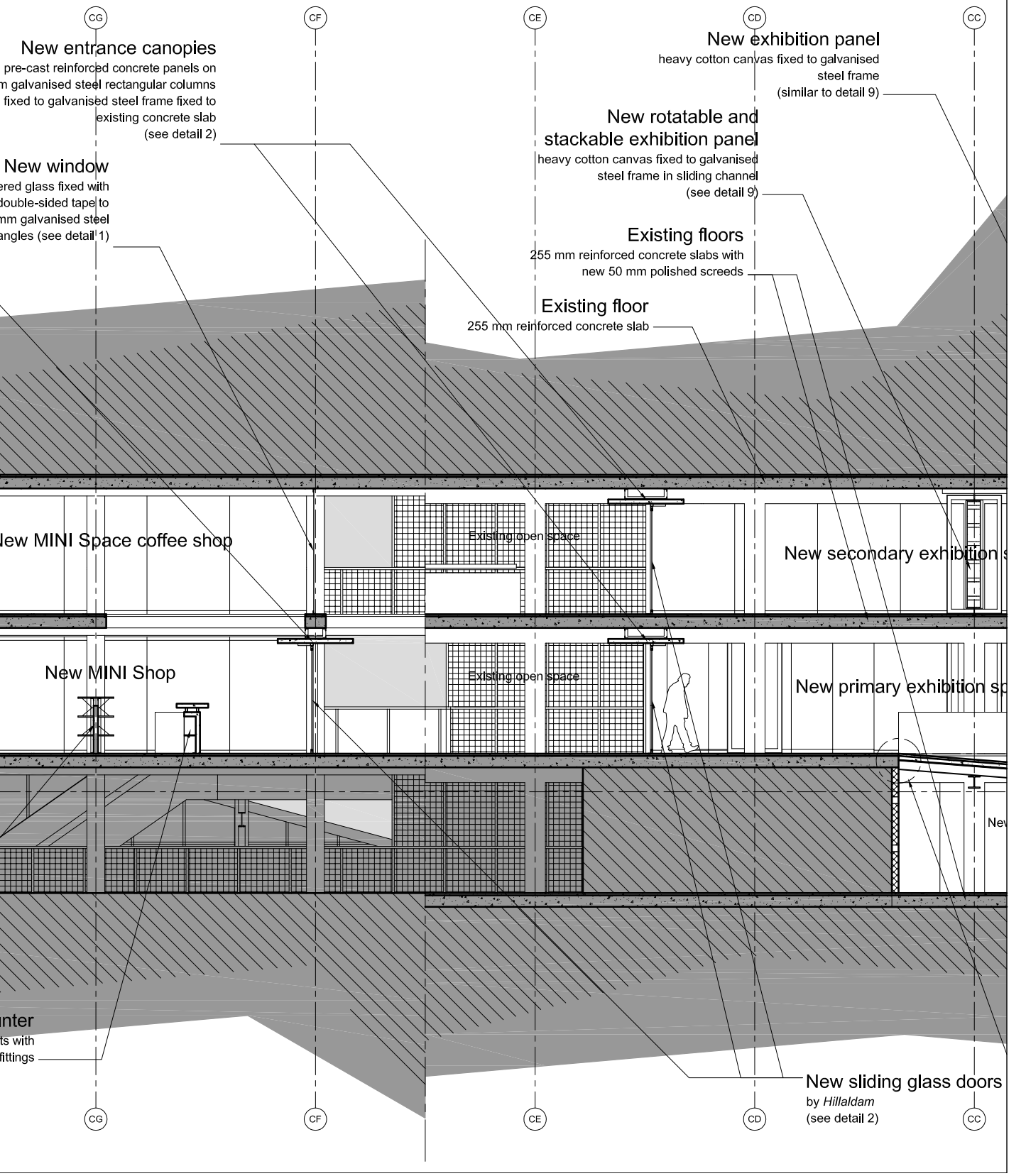
MINI Space Gallery

Section A-A

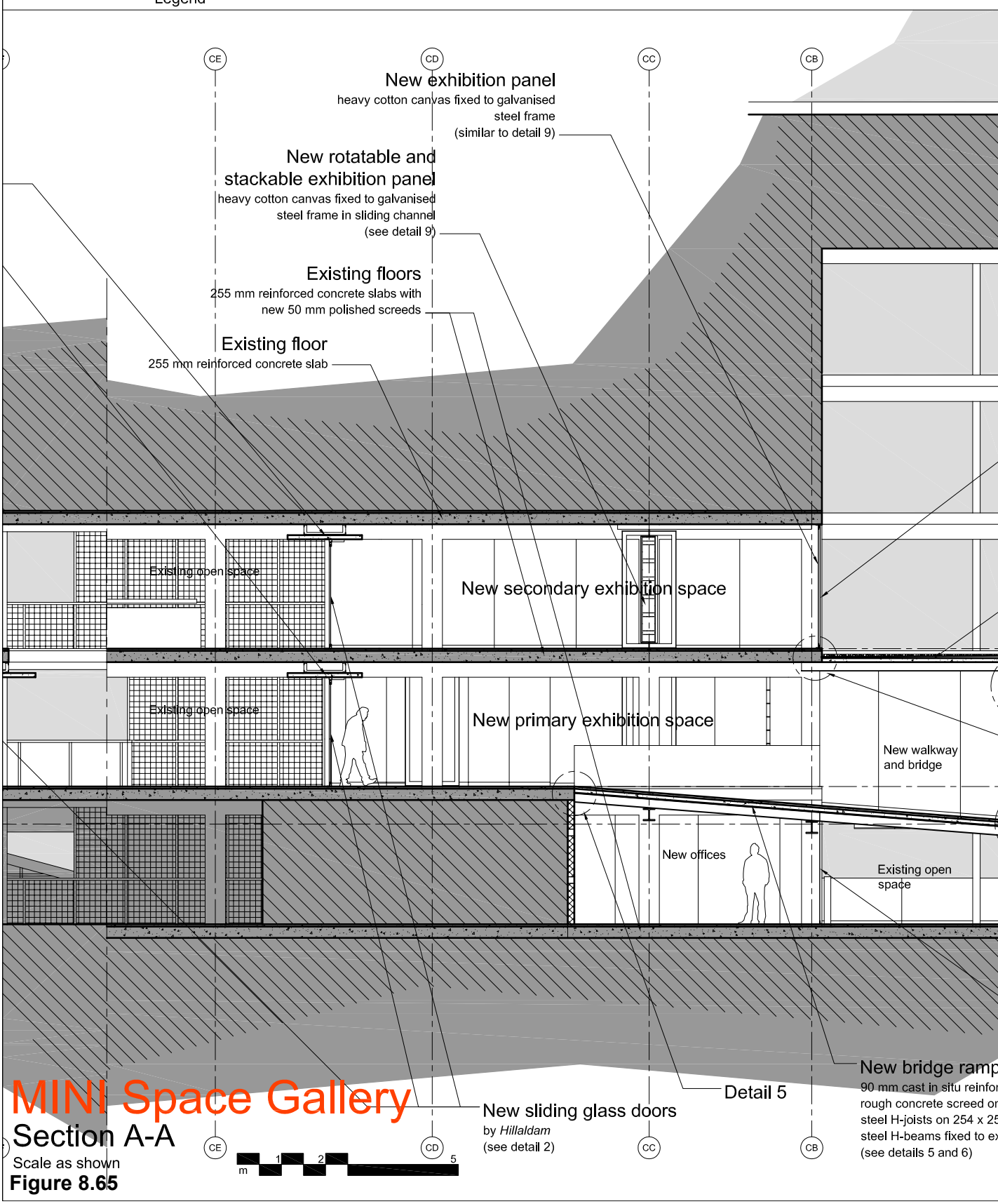
Scale as shown

m 1 2 5

Figure 8.64



Legend

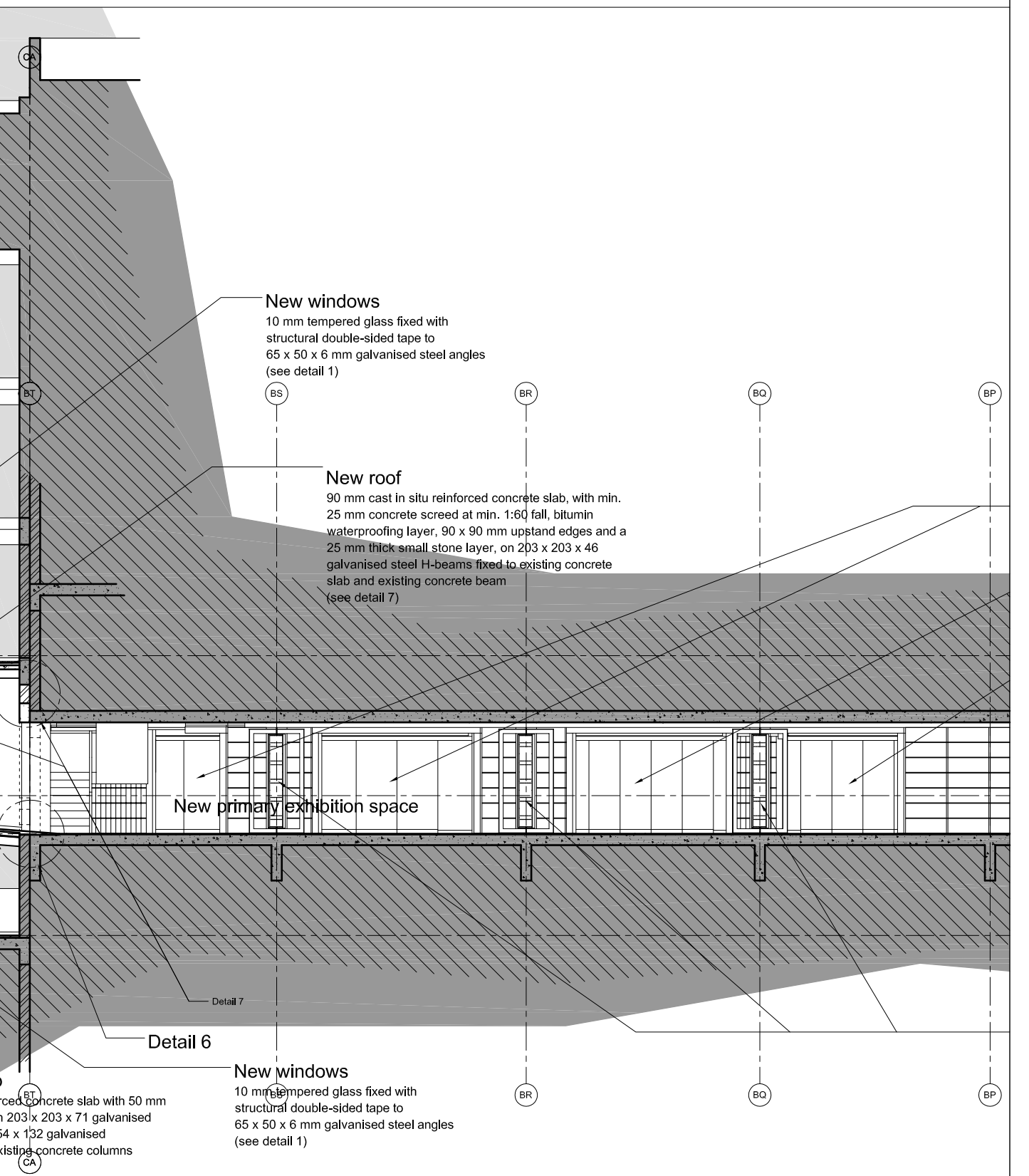


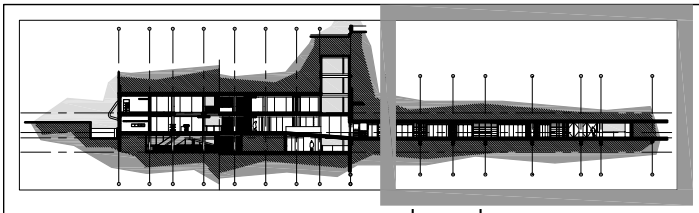
MINI Space Gallery

Section A-A

Scale as shown

Figure 8.65


CA
BT
BS
BR
BQ
BP
New windows
10 mm tempered glass fixed with
structural double-sided tape to
65 x 50 x 6 mm galvanised steel angles
(see detail 1)
New roof
90 mm cast in situ reinforced concrete slab, with min.
25 mm concrete screed at min. 1:60 fall, bitumin
waterproofing layer, 90 x 90 mm upstand edges and a
25 mm thick small stone layer, on 203 x 203 x 46
galvanised steel H-beams fixed to existing concrete
slab and existing concrete beam
(see detail 7)
New primary exhibition space
Detail 7
Detail 6
New windows
10 mm tempered glass fixed with
structural double-sided tape to
65 x 50 x 6 mm galvanised steel angles
(see detail 1)
rced concrete slab with 50 mm
n 203 x 203 x 71 galvanised
54 x 132 galvanised
xisting concrete columns



Legend

indows
npered glass fixed with
double-sided tape to
6 mm galvanised steel angles
1)

New roof
90 mm cast in situ reinforced concrete slab, with min.
25 mm concrete screed at min. 1:60 fall, bitumin
waterproofing layer, 90 x 90 mm upstand edges and a
25 mm thick small stone layer, on 203 x 203 x 46
galvanised steel H-beams fixed to existing concrete
slab and existing concrete beam
(see detail 7)

BR BQ BP BM

bition space

New primary exhib

New rotatable and stackable exhibitio
Heavy cotton canvas fixed to galvanised
steel frame in sliding channel
(see detail 9)

ows
d glass fixed with
e-sided tape to
galvanised steel angles

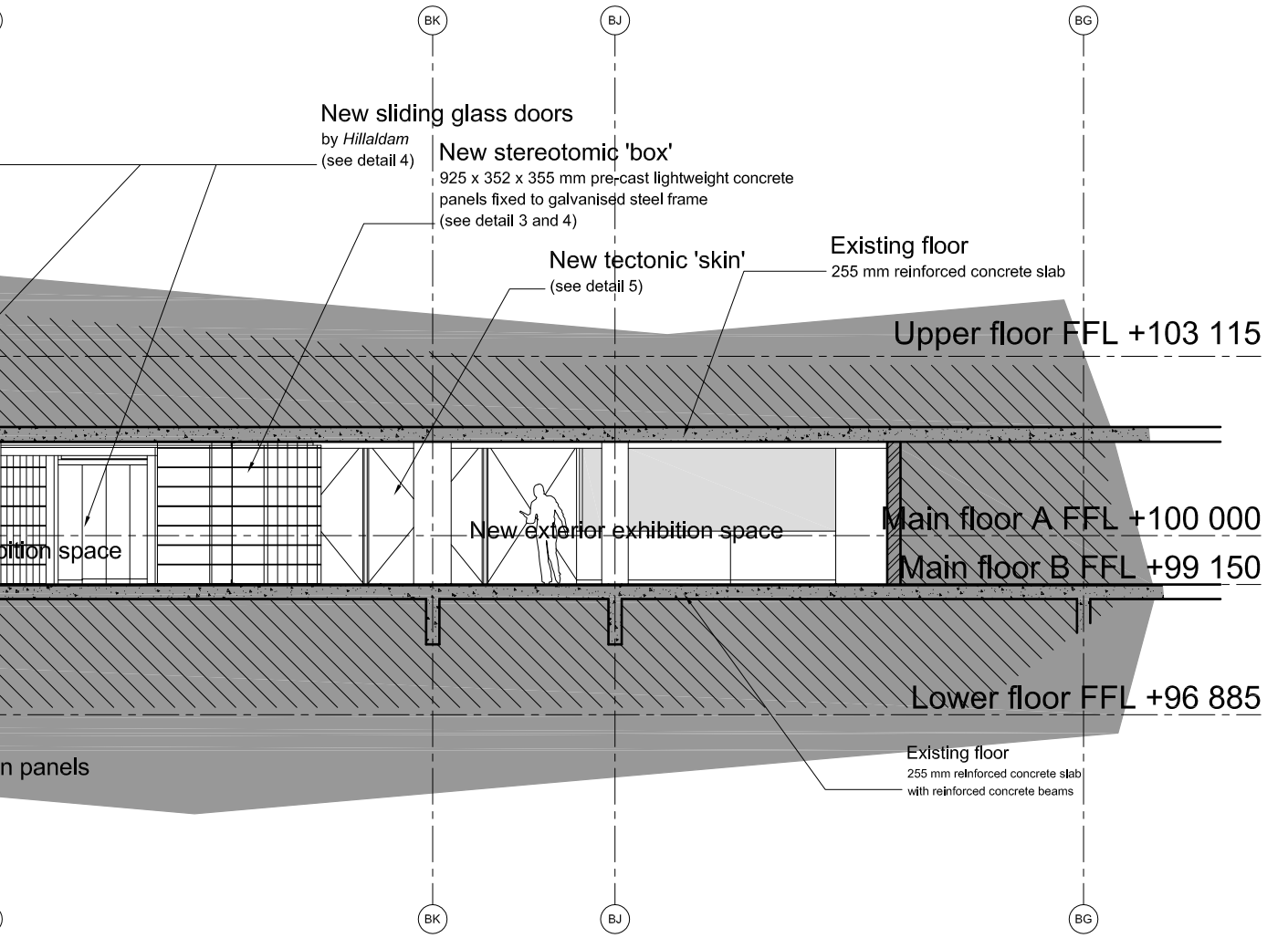
BR BQ BP BM

Section A-A

Scale as shown

m 1 2 5

Figure 8.66


BK
BJ
BG
New sliding glass doors
by Hillaldam
(see detail 4)
New stereotomic 'box'
925 x 352 x 355 mm pre-cast lightweight concrete
panels fixed to galvanised steel frame
(see detail 3 and 4)
New tectonic 'skin'
(see detail 5)
Existing floor
255 mm reinforced concrete slab
Upper floor FFL +103 115
New exterior exhibition space
Main floor A FFL +100 000
Main floor B FFL +99 150
Lower floor FFL +96 885
Existing floor
255 mm reinforced concrete slab
with reinforced concrete beams
BK
BJ
BG

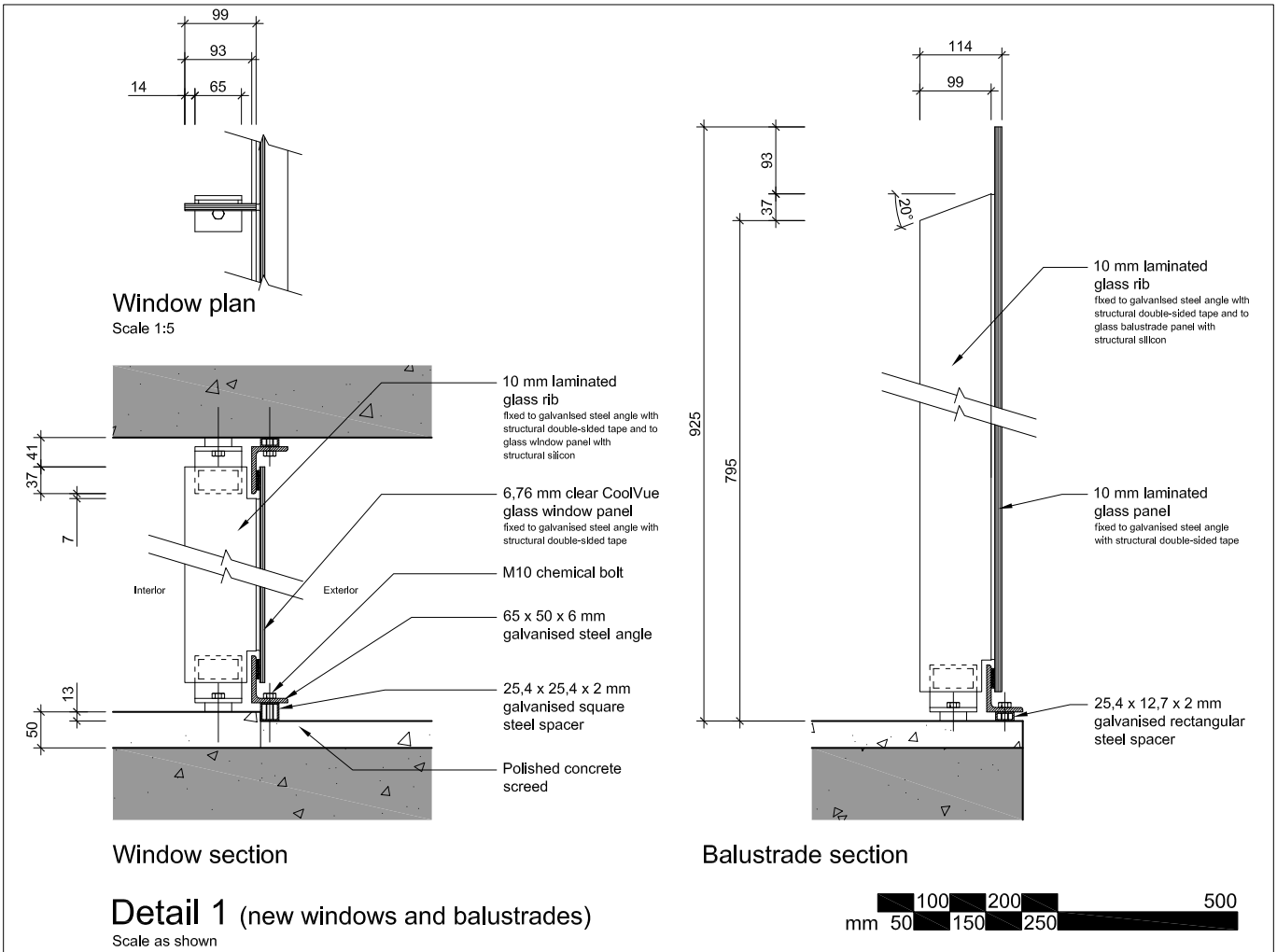


Figure 8.67

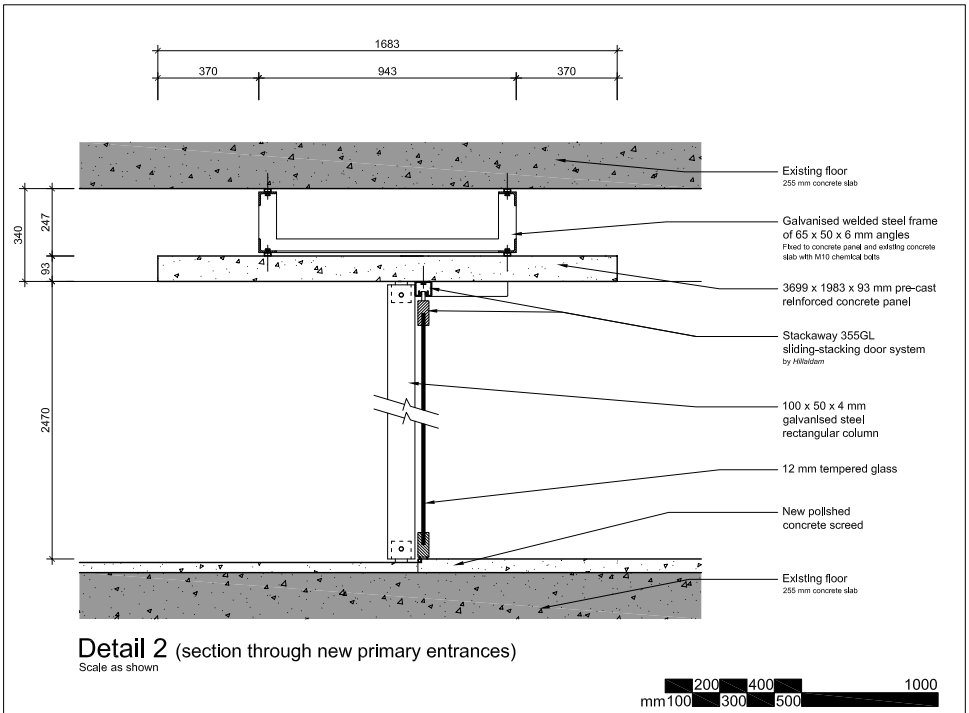
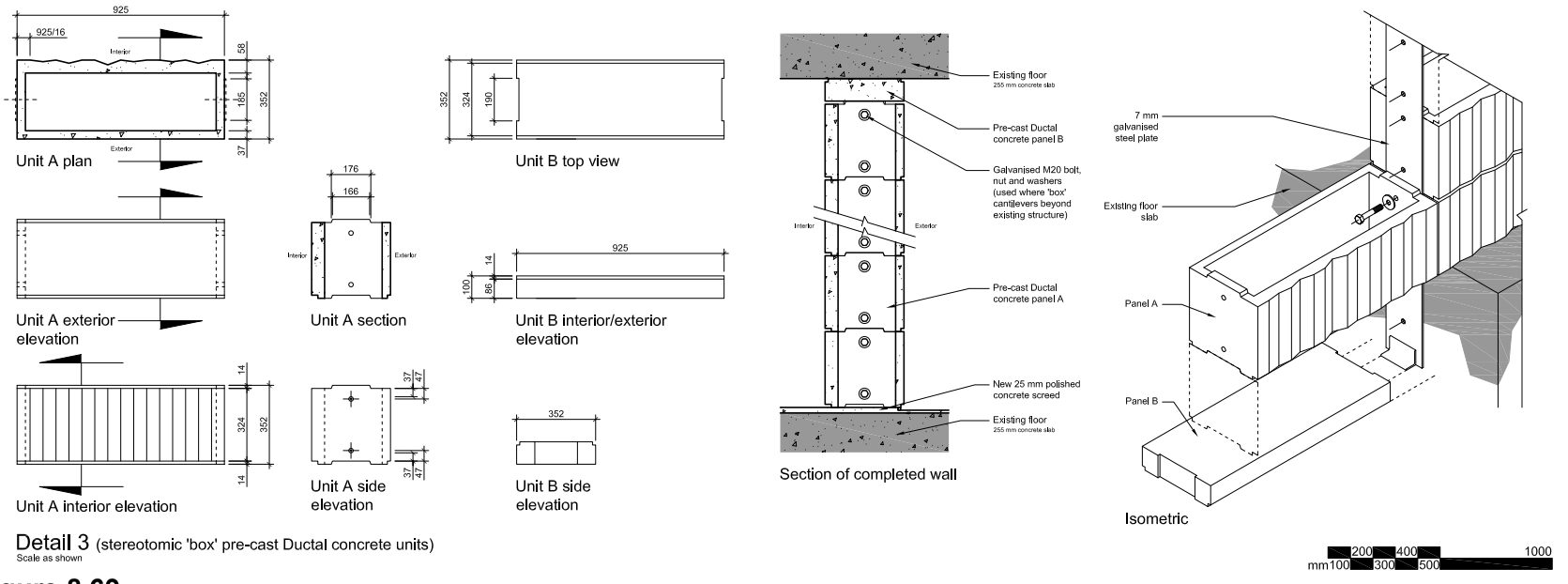
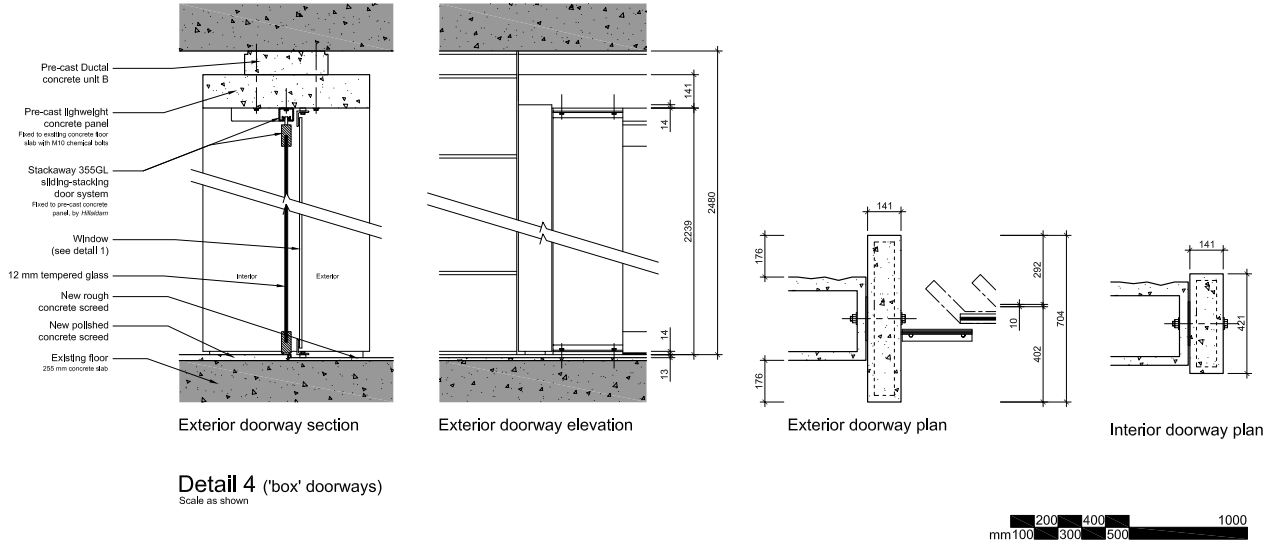


Figure 8.68



Detail 3 (stereotomic 'box' pre-cast Ductal concrete units)
Scale as shown

Figure 8.69



Detail 4 ('box' doorways)
Scale as shown

Figure 8.70

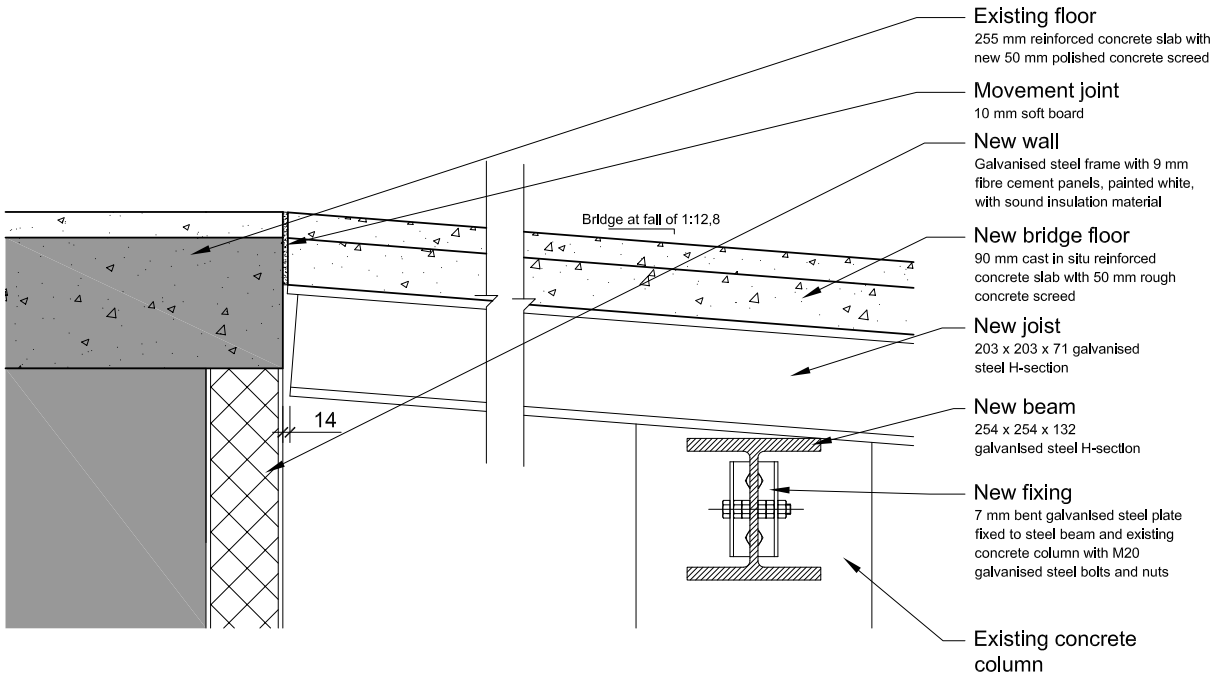


Figure 8.71

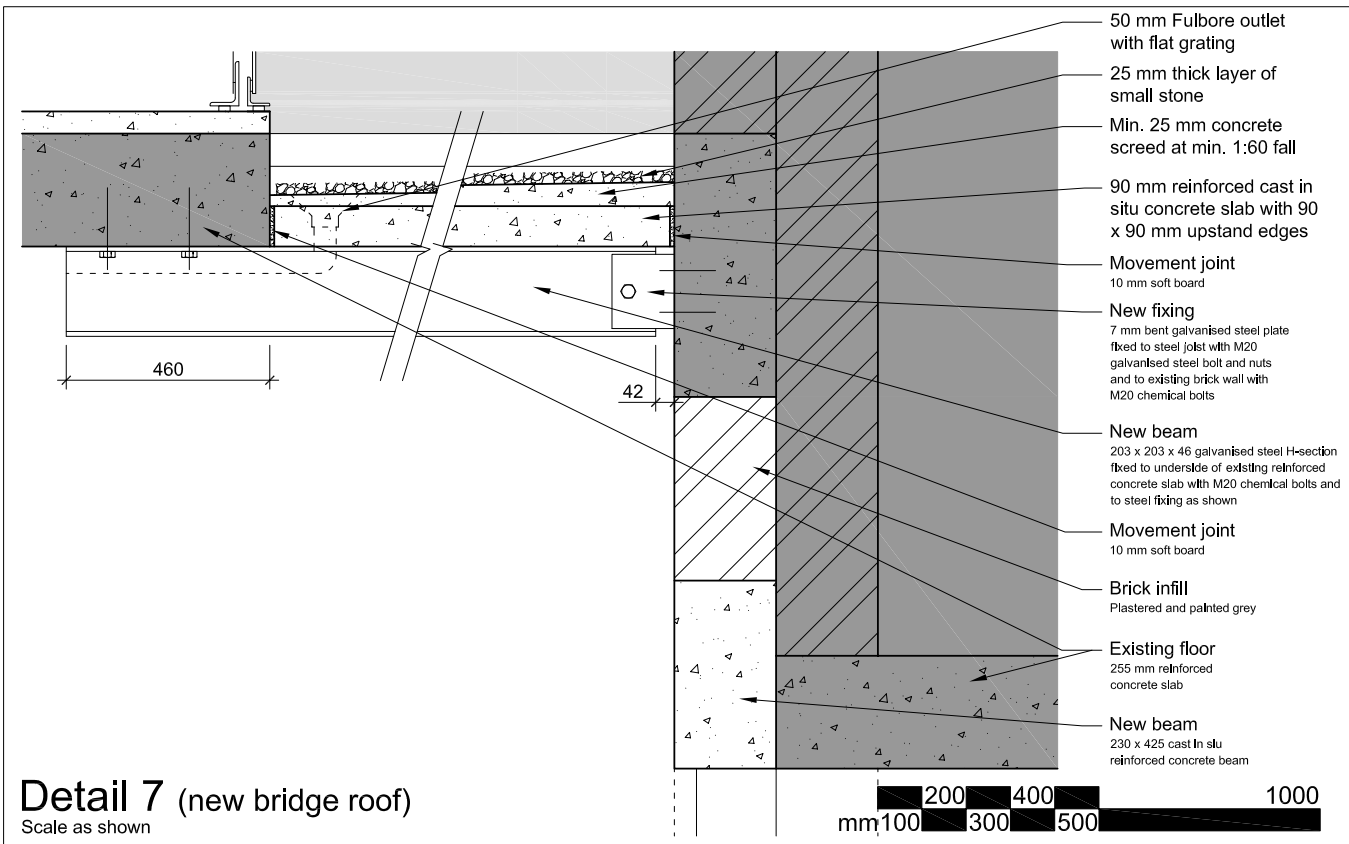


Figure 8.72

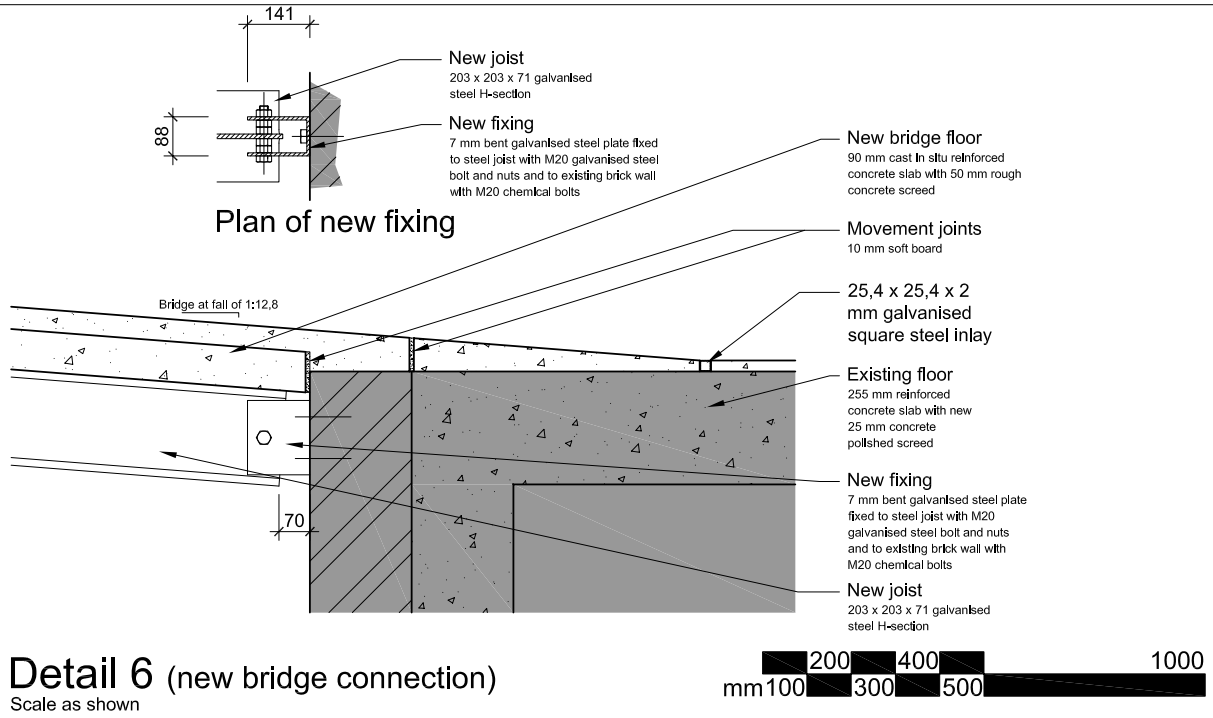


Figure 8.73

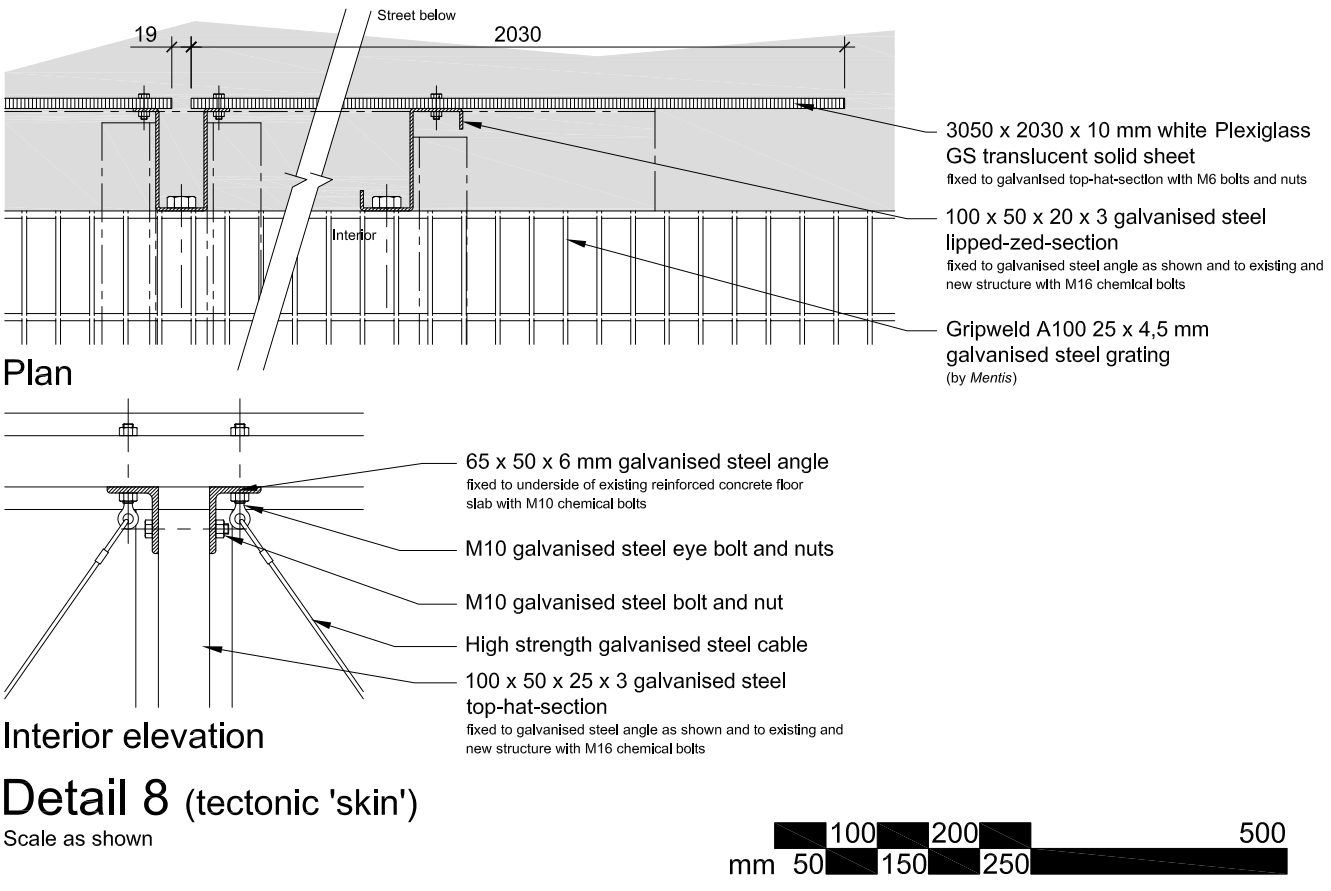
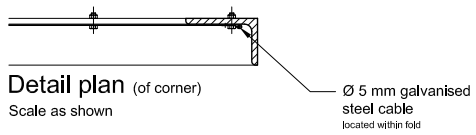


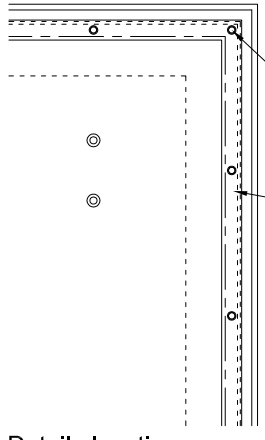
Figure 8.74

Figure 8.75



Detail plan (of corner)
Scale as shown

Ø 5 mm galvanised steel cable
located within fold

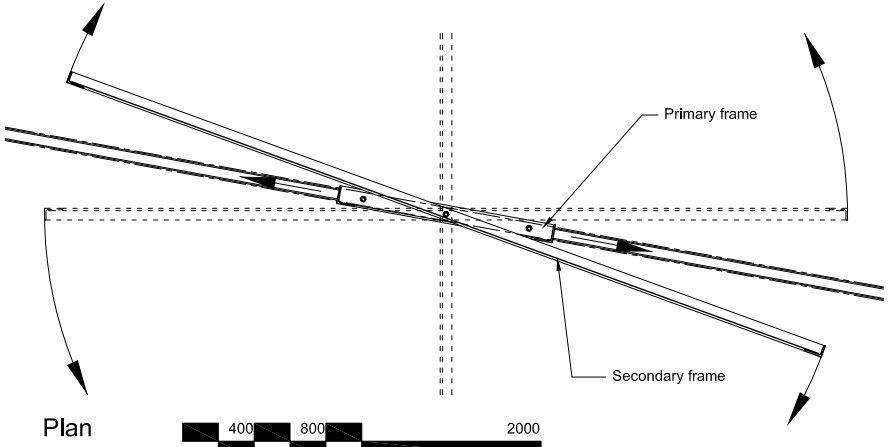


M6 bolt, nut and washer
through white painted steel grommit

Canvas folded over and stitched

Detail elevation (of corner)
Scale as shown

mm 50 100 150 200 250 500

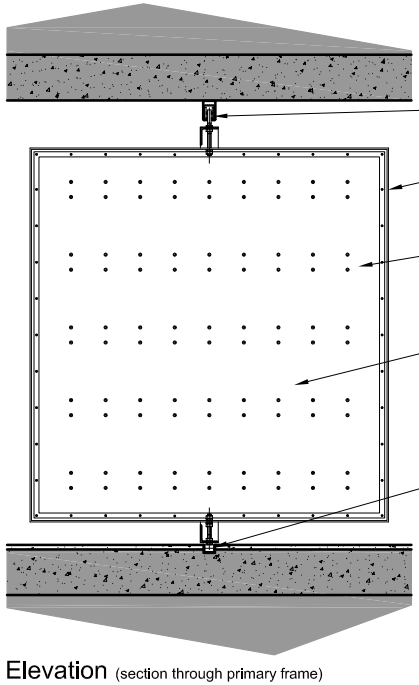


Primary frame

Secondary frame

Plan
Scale as shown

mm 200 400 600 800 1000 2000



Straightaway 1000S top sliding hardware
by *Hilladam*

100 x 100 x 8 galvanised steel angle primary frame

100 x 65 x 8 galvanised steel angle secondary frame
fixed to primary galvanised steel frame with M20 bolts and nuts

White heavy cotton canvas
with white painted steel grommits spaced as shown and fixed to secondary galvanised steel frame with M6 bolts and nuts

Straightaway 1000S bottom guide hardware
by *Hilladam*

Elevation (section through primary frame)
Scale as shown

mm 200 400 600 800 1000 2000

Detail 9 (rotatable and stackable exhibition panels)
Scale as indicated

Fig.8.76 - Development sketches of the window details.
Fig.8.77 - Development sketches of the 'box' details.

8.4.1. Gallery function/programme

The function/programme is determined by the existing structure, thus the division of the large exhibition space was laid out according to the existing column spacing (fig.8.60). Spaces were extended according to the module discussed previously. These spaces are primarily defined by clear CoolVue glass planes, fixed as to create the illusion that they are floating above the floor (figs.8.4, 8.67 and 8.76). This product, supplied by SmartGlass, transmits "more than 70% of visible light while blocking more than 50% of solar heat" and "also reduces sound transmission, increases safety and security, and filters up to 99.5% of damaging short-wave UV radiation" (www.smartglass.co.za).

8.4.2. Gallery form/beauty

The stereotomic 'box', one of the form/beauty components, is composed of precast Ductal concrete blocks, to emphasise mass, and which are then bolted to each other with a steel plate spacer in-between (figs.8.69 and 8.77). These blocks are used structurally, to support the 'box' cantilevering over the display platform. Their interior is completely different from their exterior, enhancing the difference between being outside the 'box' and being inside.

Plexiglas GS white (10 mm thick, translucent) panels are implemented for the tectonic 'skin', the other form or beauty component. These lightweight units, used in the standard size of 3050 x 2030 mm (www.plexiglas.net), are bolted to galvanized steel top-hat-sections, which in turn are fixed to the existing structure via galvanized steel angles

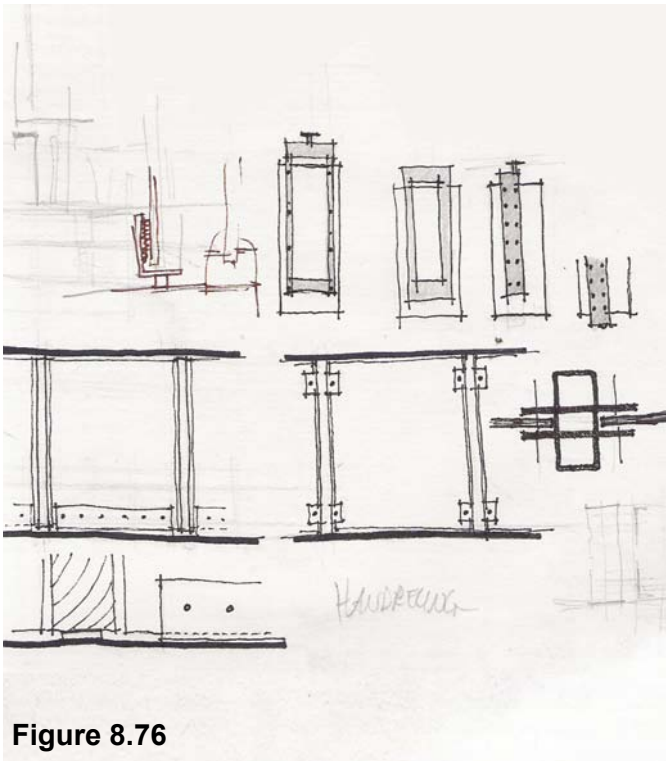


Figure 8.76

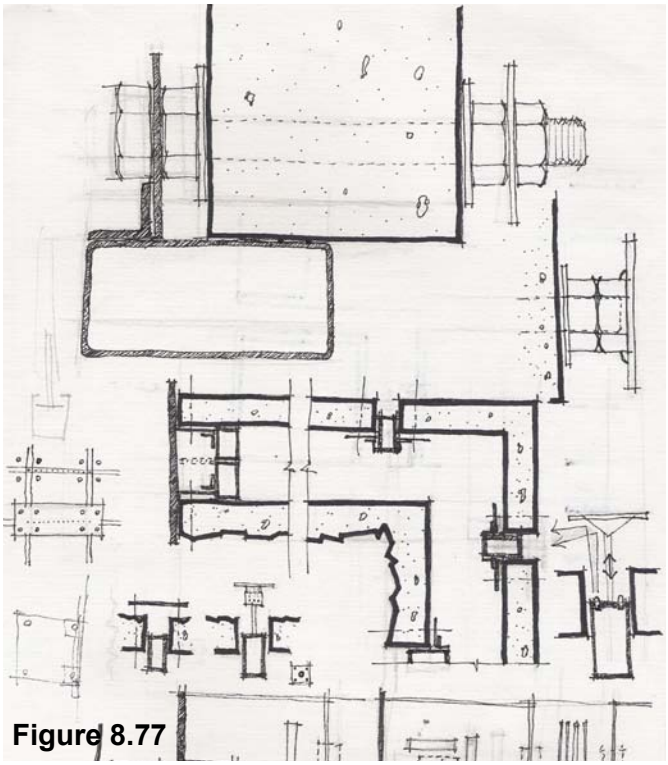


Figure 8.77

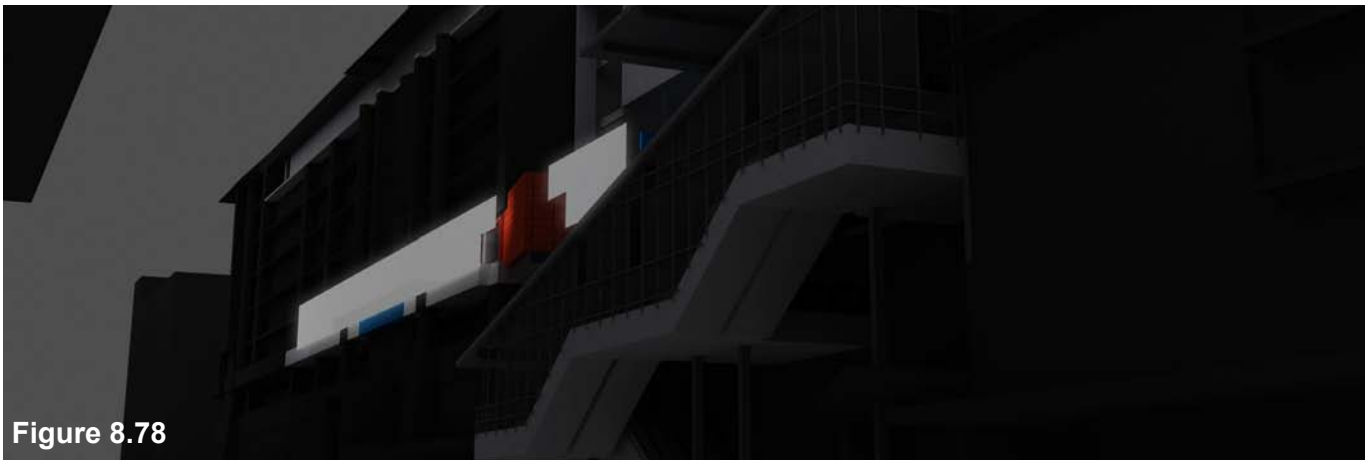


Figure 8.78

(fig.8.74). Cross-bracing steel cables strengthen the steel frame. This element is lit from within at night, its glowing appearance promoting the gallery to pedestrians and vehicular traffic below (fig.8.78).

8.4.3. Gallery tectonics/structure

Existing columns are treated as the tectonics/ structure components of this phase of the project. None of the new elements ever quite touch these supports, except where necessary and then only lightly (fig.8.60).

8.4.4. Environmental control

Electrical duct work is fixed to the underside of the existing overhead concrete floor slabs (fig.8.79). All these services are exposed, and galvanized steel conduits are used.

The ventilation system designed for the previous phase of the project is implemented for the spaces in the City Centre building. For the gallery spaces in Die Meent building copper pipes are fixed to the underside of the overhead concrete structure (fig.8.81). Water is cooled by means of a chiller unit and then sent through these pipes. This causes the air at the top of the interior spaces to cool down and gradually fall, providing comfortable levels of air temperature. Large glass doors are provided for natural ventilation of these spaces.

8.4.5. Other components

The new bridge connecting the spaces of the two existing buildings is composed of a steel beam and girder frame on which a reinforced concrete slab is

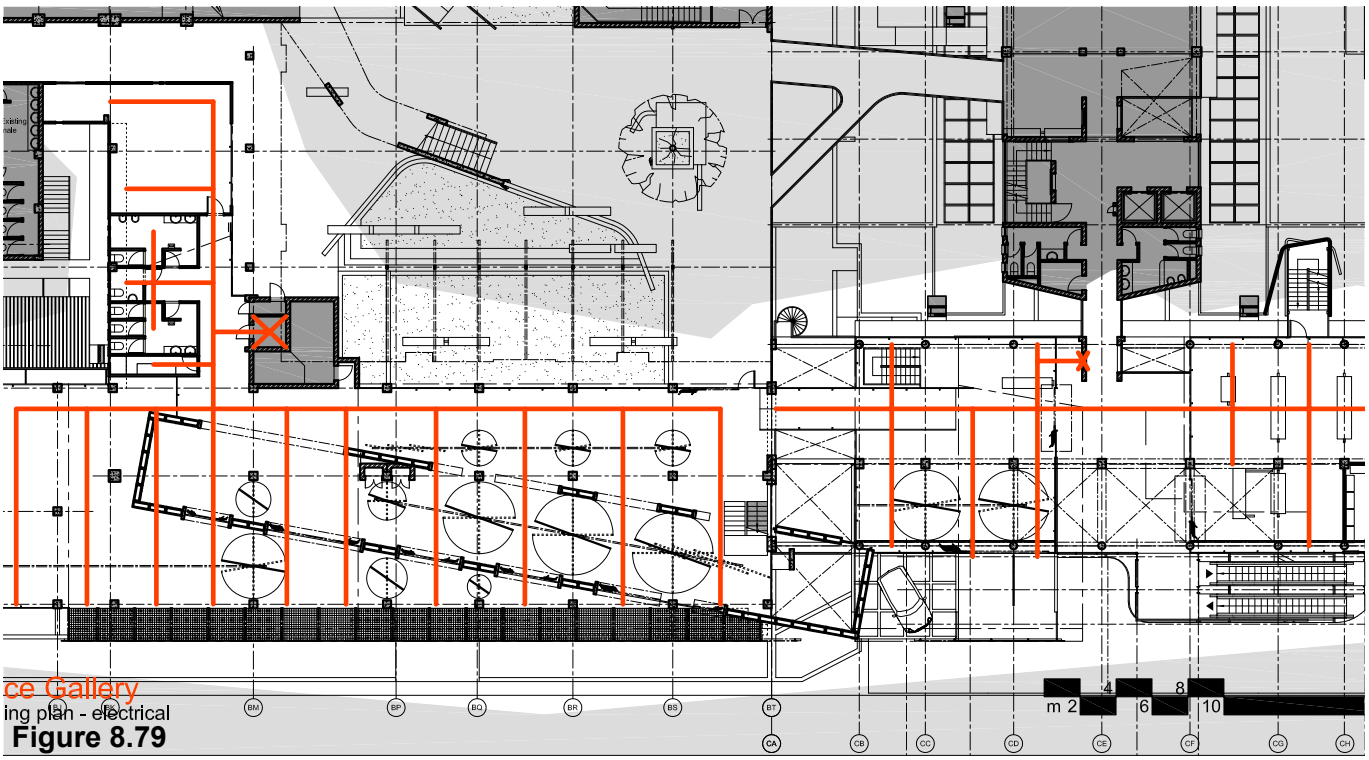


Figure 8.79

Figure 8.80

Fig.8.78 - Perspective of the gallery at night, viewed from Pretorius Street.
Fig.8.79 - Ceiling plan of the gallery's main floor, with the electrical system highlighted.
Fig.8.80 - Canvas panel precedent.
Fig.8.81 - Ceiling plan of the gallery's main floor, with the cooling and ventialtion system highlighted
west: new chilled beam system
east: existing stack ventilation and evaporative cooling.

cast (figs.8.71 and 8.73). The roof over this has a similar construction method (fig.8.72).

All new walls are made of galvanized steel rectangular studs clad with fibre cement boards and painted white. The cladding material was chosen for its durability and its ability to be used on interior and exterior surfaces. These walls are fixed to galvanized steel top-hat-sections on the top and bottom, emphasising the connection between new and old. A lightweight construction method was chosen for two reasons:

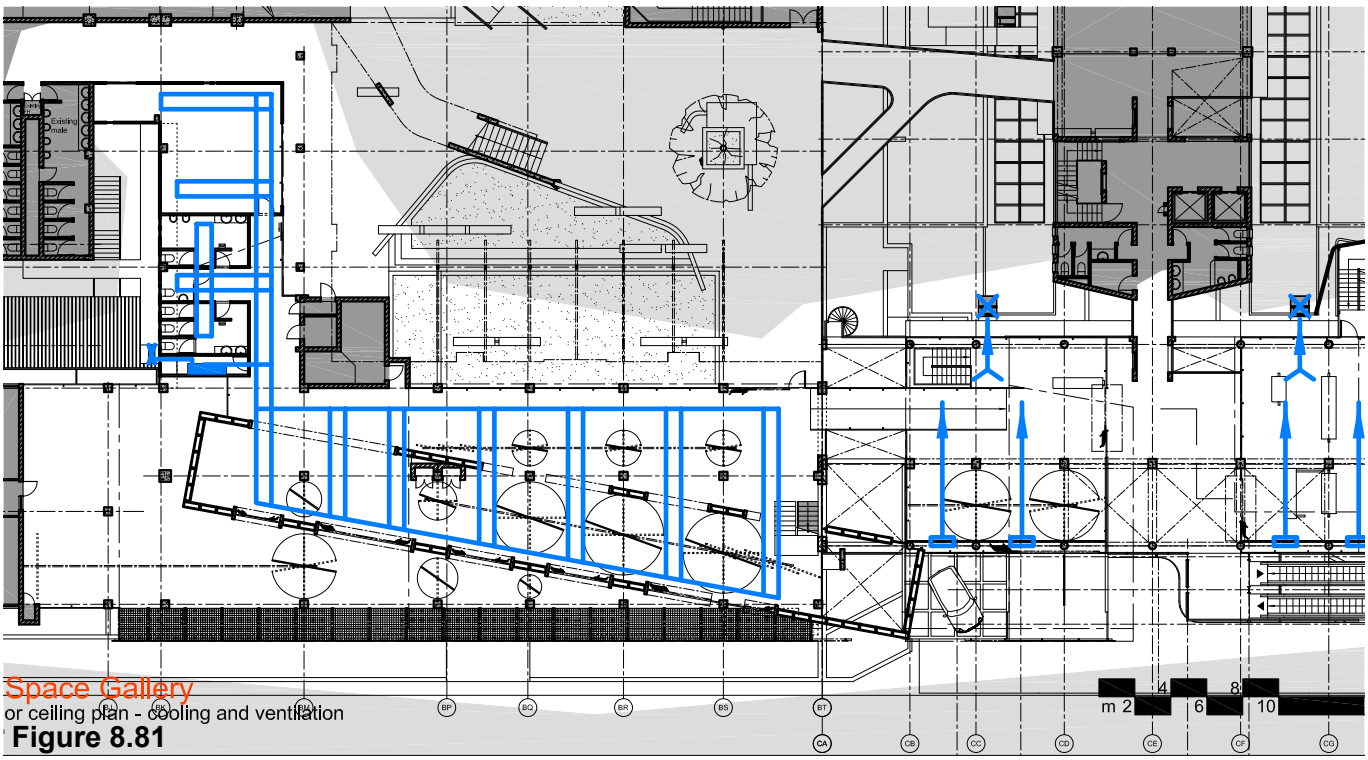
- these components are easily removed, thus allowing for future change;
- services, especially waste water pipes, can be hidden within the walls.

Steel frame windows are used in walls, with custom sizes based on the chosen module. Standard sections are used and the frames are finished with dark grey enamel paint.

There are three types of exhibition panels, all based on a design by Pasanella + Klein Stolzman + Berg Architects (fig.8.80): the first can be rotated and stacked away according to the curator's needs (fig.8.75); the second can only be rotated; the third is fixed. All consist of white heavy cotton canvas, with white painted brass grommets for hanging art, stretched in an unequal angle galvanized steel frame. The difference is that in the first, the frame can be rotated within a primary equal angle galvanized steel frame, which is fixed to Hillaldam Straightaway 1000S sliding hardware.

Main entrances through the glass panels are highlighted by means of a precast Ductal concrete panel 'floating' over the Hillaldam Stackaway 355GL doors (fig.8.68).

The components for the coffee shop and the



or ceiling plan - cooling and ventilation
Figure 8.81

Fig.8.82 - Detailed rendering of the gallery's exterior exhibition space, looking towards the east.
Fig.8.83 - Detailed rendering of the gallery's interior exhibition space, viewed from the west end.

store are all designed using the same materials as above, making reference to the gallery design and therefore creating a harmonious whole. These elements include the sales counter, merchandise display units and the bar-counter.

8.5. Conclusion

The technical resolution of both phases of the dissertation project is grounded in the theory of deconstruction and consequent parti-diagrams. New and conventional construction methods are applied to create dynamic spaces.


Figure 8.83


Figure 8.82

Chapter 9

Conclusion

9.1. Introduction

How does one solve the urban challenge of abandoned city space and derelict buildings? This chapter serves to conclude the dissertation, with a brief examination of the architectural products designed to solve the above question.

9.2. The Site Development

The Site Development proposes a new spatial system for utilising redundant empty spaces within the Pretoria CBD - a solution that is not a mere reproduction of the past. By using the x, y and z axes, a new way of creating usable space in the city is proposed. This model calls for a change in the way that architects, and the building industry, define the notion of site, in order to solve current and future problems to save lost space in the built

Fig.9.1 - Final collage of new and old.

environment. This system promotes the creation and maintenance of culturally rich and vibrant cities, consisting of multiple levels of living, working and playing, and generating new communities that provide individuals with their own, unique space.

9.3. The MINI Space Gallery

The need for the promotion of architecture, art and design, is achieved under the ambit of the MINI Space Gallery. A simple yet dynamic space in the Pretoria CBD is created, where people can rediscover and support the multiple forms of art and design. Together with similar current and future spaces in other areas of the city, a new culture of architectural interventions in the urban fabric is likely to grow and nurture a hopeful belief in our cities.

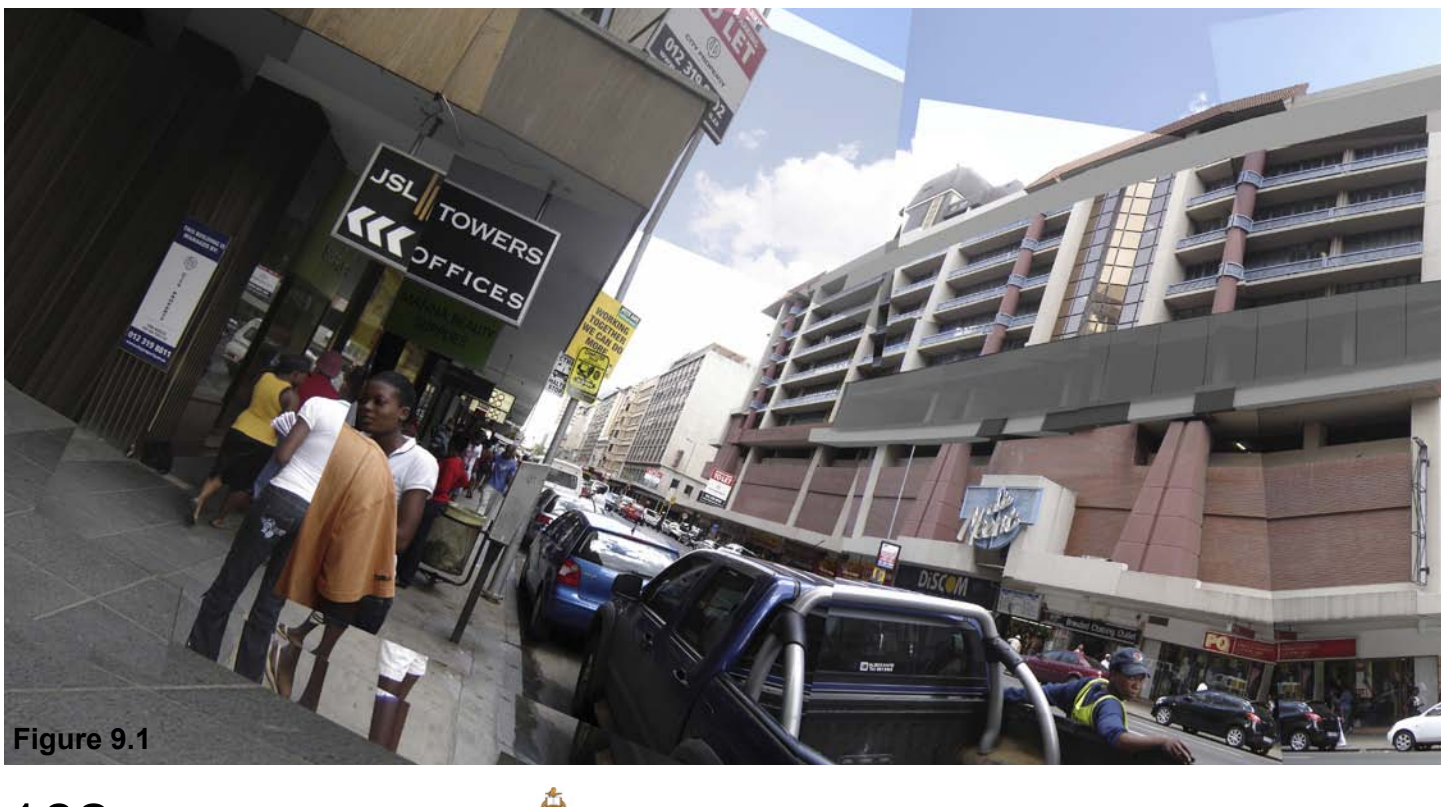


Figure 9.1

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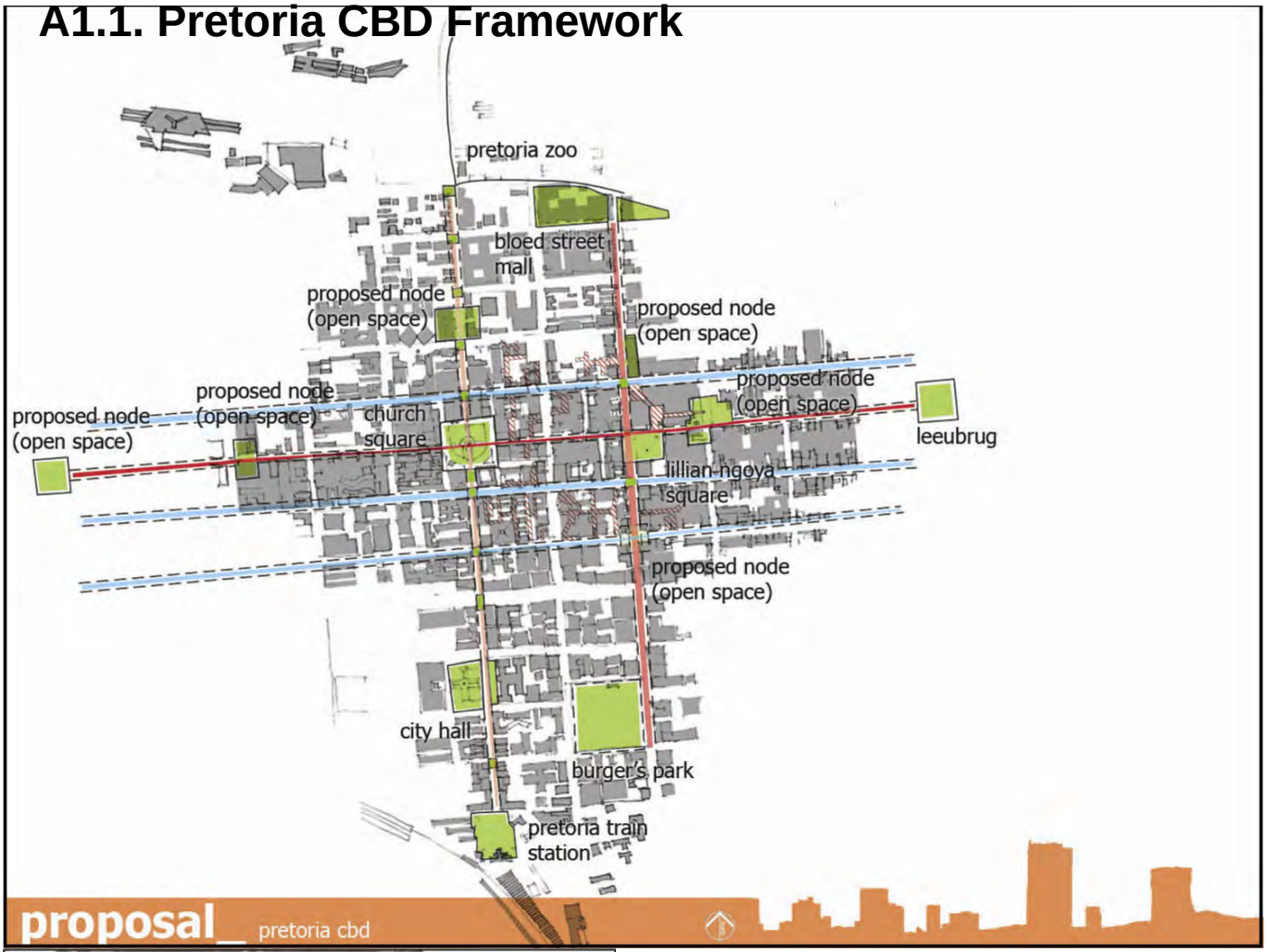
Introduction

This appendix summarises the two main frameworks used for the dissertation project (the Pretoria CBD Framework and the city block framework).

Appendix A

Frameworks

A1.1. Pretoria CBD Framework



- react to existing arcades
- relate to specific character of the street
- main orientation towards the street, unveiling elements of surprise
- high activity around open spaces
- create interactive facades at street level
- intersect movement spines with pause areas

Original framework by:
A. Allers, L. Cloete, P. du Toit, A. Seabrook, C. Theart, R. van der Walt, A. Verster.

framework principles

A1.2. Block Framework

Two interventions:

- **P. du Toit**: City Centre and Die Meent redevelopment
- **J. Bruwer**: Archive Cinema Complex

Current problems of the Pretoria CBD:

- Existing Infrastructure (why expand?) :
- under-utilised empty buildings in the CBD
- CBD deterioration
- urban sprawl unnecessary
- Lack of Social Framework (Jordaan:2009) :
- little or no nightlife in CBD
- monotonous urban activities
- public space can be improved

Block Framework

Theory

Prix, in his essay "b5 2 c6: Public Space" (2003:18), states that in Western cities (also Tshwane) public authorities do not have the ability to fund urban projects, thus private investors develop land for financial gain. He goes further by saying that "the master plan is dead" (ibid.) - transformations in the urban fabric has caused the individual 'figures' (i.e. buildings) to be the main influence of urban space (ibid.). Pasquarelli (2003:24) agrees when he suggests that small actions within cities should be favoured above large-scale principles. Therefore, the City Block Framework proposes specific interventions to enhance the inner city public realm.

Framework Components

- Gentrification
- inject new life into the city
- Densification
- vertical expansion and more effective use of existing built fabric
- Sustainability
- "urban-recycling"

Framework Guidelines (City Centre and Die Meent redevelopment, and Archive Cinema Complex)

"The model of the building as object is replaced by the idea of an urban transistor – an architecture that is capable of amplifying the urban spaces adjoining it through its own transistor like spatial organization". (Prix, 2003 : p 18)

Transistor definition - a semiconductor device with three connections, capable of amplification in addition to rectification (Oxford dictionary).

Amplify definition: cause to become more marked or intense (Oxford dictionary).

Rectify definition: put (something) right; correct (Oxford dictionary).

- "To create public space through architecture." (Prix, 2003 : p 18)
- Utilise disused spaces in the city, creating more public space
- Public space no longer on a master plan level, but on an architectural scale – smaller interventions related to the context rather than large-scale solutions.
- Contribute to the public domain of the Pretoria CBD (add more public space and rectify existing)
- Create new interaction level in city (roofscapes, empty interior spaces and arcades)
- Three-dimensional use of space
- Create energy between two interventions that would act as a catalyst for development for adjacent buildings

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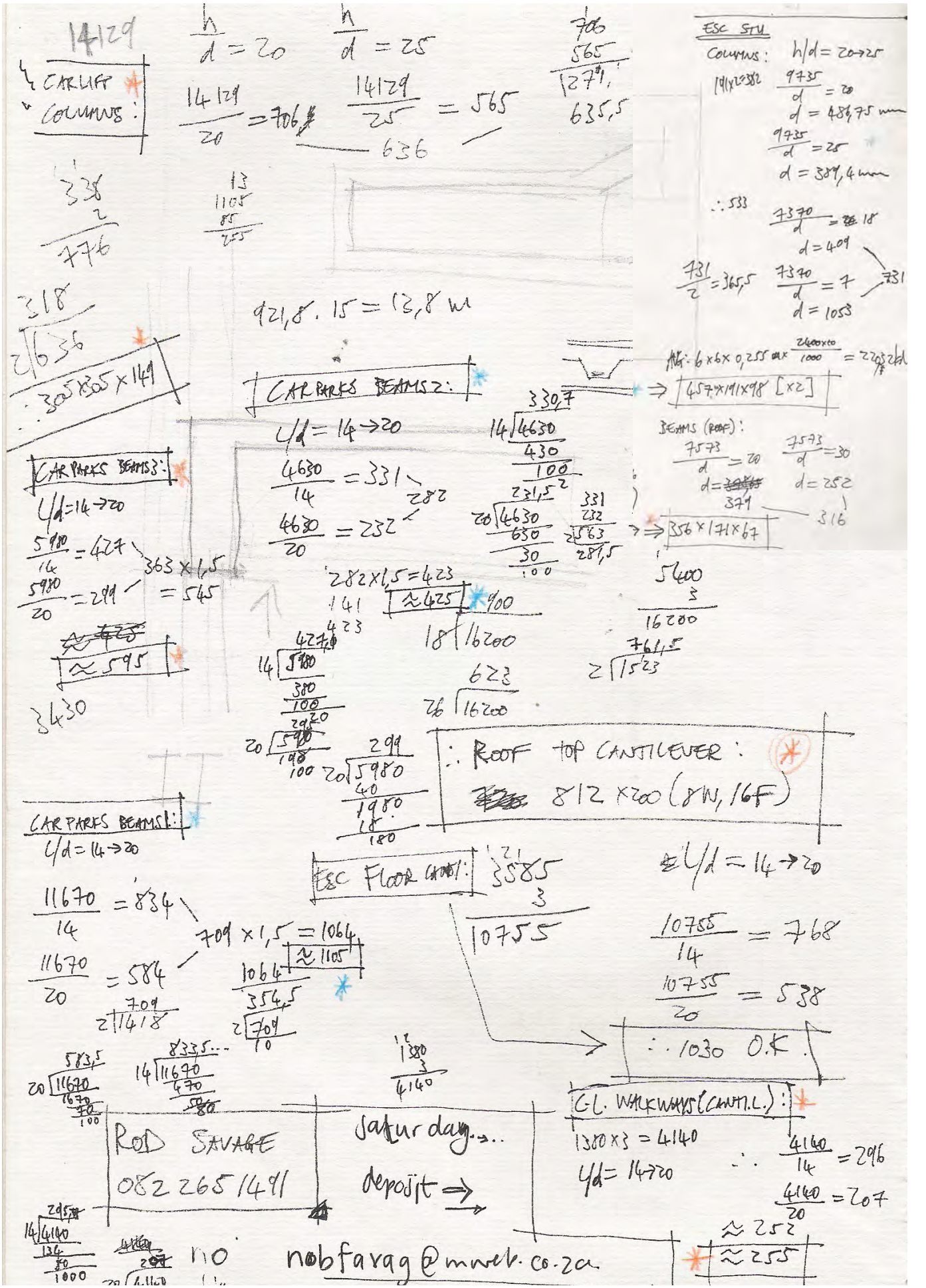
Introduction

All structural calculations for the project are documented in this appendix (all by Author).

Appendix B

Calculations



M (CONTINUED)

C.L. ROOF BEAMS 1:

L/d = 18 → 26

$\therefore \frac{11970}{18} = 665$ ↘ 563

$\frac{11970}{26} = 460$ ↗

$\therefore$ 533 x 210 x 122

C.L. ROOF BEAM 2:

L/d = 18 → 26

$\frac{4630}{18} = 257$ ↘ 218

$\frac{4630}{26} = 178$ ↗

$\therefore$ 254 x 146 x 31

C.L. SIDE BEAMS 1:

L = 2300

L/d = 18-26

$\therefore \frac{2300}{18} = 128$ ↘ 108

$\frac{2300}{26} = 88$ ↗

$\therefore$ IPE M 120

MINI

L: 3699 (1850; 925)

W: 1683 (842; 421)

H: 1407 (704; 352)

$\frac{L}{16} = 231,2$ mm

$\frac{W}{16} = 105,2$ mm

$\frac{H}{16} = 87,9$ mm

$16 = 4^2$

MAINGES PERG:

C: L = 2453

$\frac{L}{d} = 22,5$

$\therefore \frac{2453}{22,5} = 109$

$\therefore$ 203 x 133 x 31

S: L = 6497

$\frac{L}{d} = 22$

$\therefore \frac{6497}{22} = 295,3$

$\therefore$ 305 x 102 x 25

MSGLR CANTL. 1.1

L = 3264 x 3 = 9792

$\frac{L}{d} = \frac{8 \to 15}{4 \to 12}$ OR

$\frac{8}{15} \geq 11,5$ $\frac{4}{12} \geq 8$

$\therefore \frac{9792}{11,5} = 851$

$\frac{9792}{8} = 1224$

$\therefore$ 1075 O.K. / 1380 O.K.

FORCES: 851 x 1,5 = 1277

MSGLR CANTL. 1.2.

L = 1557 x 3 = 4671

$\frac{L}{d} = 18 \to 28$

= 23

$\therefore \frac{4671}{23} = 203$

$\therefore$ 305 O.K.

GLASS

0,925

0,012

x2,1

0,02331 m³

@ 2400 kg/m³ → 56 kg

~~DCC4~~

~~CHECK PROJECT DISCRIPTION (WIENER MINISGLR NIE)~~ — MULTIRAMA APPENDIX

~~LAS WIND RIGTINGS VAN PTA STAN BY~~

92

BRIDGE

$L_1 = 12890$

$\frac{L_1}{d} = 8 \to 15$

$\therefore \frac{12890}{8} = 1611$ — 1235

$\frac{12890}{15} = 859$ — 1611,2 / 8|12890 / 8 / 4890 / 90 / 10 / 20

859,3 / 15|12890 / 120 / 890 / 75 / 140 / 135 / 5

6:90 7:105 8:120 9:135

$L_2 = 9273$

$\frac{9273}{8} = 1159$ — 8859

$\frac{9273}{15} = 618$ — 1159,1 / 8|9273 / 1273 / 473 / 73 / 10

1611 / 859 / 2|2470 / 1235

1709 / 28|4786 / 28 / 198 / 196 / 20

618,2 / 15|9273 / 273 / 123 / 3

1159 / 618 / 2|1777 / 888,5

27 SEPTEMBER 0.L. 9:00

4 OKTOBER 9:00

BRIDGE B

$L_1 = 4786$

$\frac{4786}{18} = 266$ — 219

$\frac{4786}{28} = 171$

266 / 171 / 2|437 / 218,5

$\frac{L}{d} = 18 \to 28$

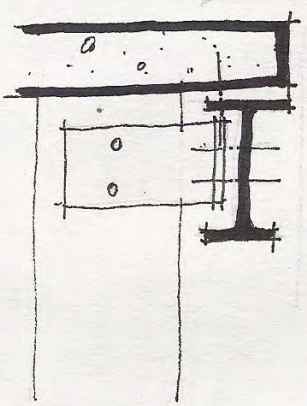
265,1

1: 28 2: 56 3: 84 4: 112 5: 140 6: 168 7: 196 8: 224 9: 252

18|4786 / 36 / 1186 / 1008 / 106 / 90 / 160 / 144 / 16

EDGE H-BEAM

$\to 203 \times 203 \times 46$



VLOER SE OP

COLUMNS:

$L = 3110$

$\frac{L}{d} = 20 \to 25$

$\frac{3110}{20} = 156$ — 140

$\frac{3110}{25} = 124$

$\therefore$ 254 x 146 x 31

1555 / 2|3110 / 111 / 11 / 1244

25|3110 / 610 / 110 / 100

156 / 124 / 280

PERGOLA TOP:

$L = 4645$

$\frac{L}{d} \simeq 22$

$\therefore \frac{4645}{22} = 211$

$\therefore$ 254 x 146 x 31

COLUMNS:

$L = 2895$

$\frac{L}{d} = 25 \to 20$

$\therefore 22{,}5$

$\therefore \frac{2895}{22{,}5} = 129$

$\therefore$ 152 x 152 x 23

PENTH. BEAM

$L = 6302$

$\frac{L}{d} = 18 \to 26$

$\therefore 22$

$\therefore \frac{6302}{22} = 286$

$\therefore$ 305 x 165 x 40

286,4 / 22|6302 / 44 / 190 / 176 / 142 / 100

22 44 66 88 5|110 6|132 7|154 8|176 9|198

218,1 / 22|4645 / 245 / 25 / 30

PTOP B

$L = 1970$

$\frac{L}{d} \simeq 22$

89,5 / 22|1970 / 210 / 148 / 100

$\therefore$ IPE AA 180

Introduction

An SBAT analysis was done on the MINI Space Gallery. The outcome is documented in this appendix.

Explanation

Two SBAT analyses were done. For the first zero points were recorded for any aspect outside of the architectural scope (e.g. management). A second was consequently done with 50% awarded for each of the aforementioned categories, which is an indication of a possible higher green rating.

Appendix C

Green rating

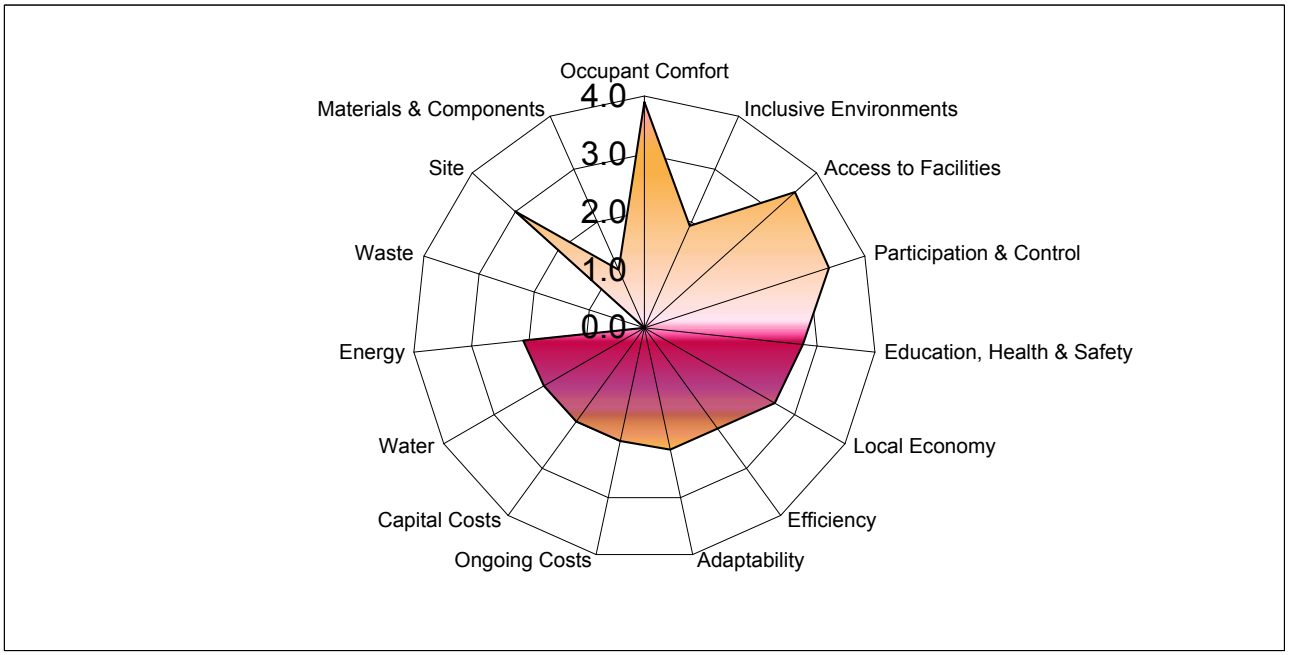
First SBAT Analysis:

(0 points for categories outside the scope of architecture)

Green rating: Average (2-3)

SUSTAINABLE BUILDING ASSESSMENT TOOL (SBAT- P) V1

PROJECT		ASSESSMENT	
Project title:	MINI Space Gallery	Date:	07-Oct-09
Location:	Pretoria CBD	Undertaken by:	P. du Toit
Building type:	Gallery	Company / organisation:	
Internal area (m2):	1360,9	Telephone:	Fax:
Number of users:	70	Email:	



Social	3.1	Economic	2.2	Environmental	1.6
Overall	2.3	Classification			

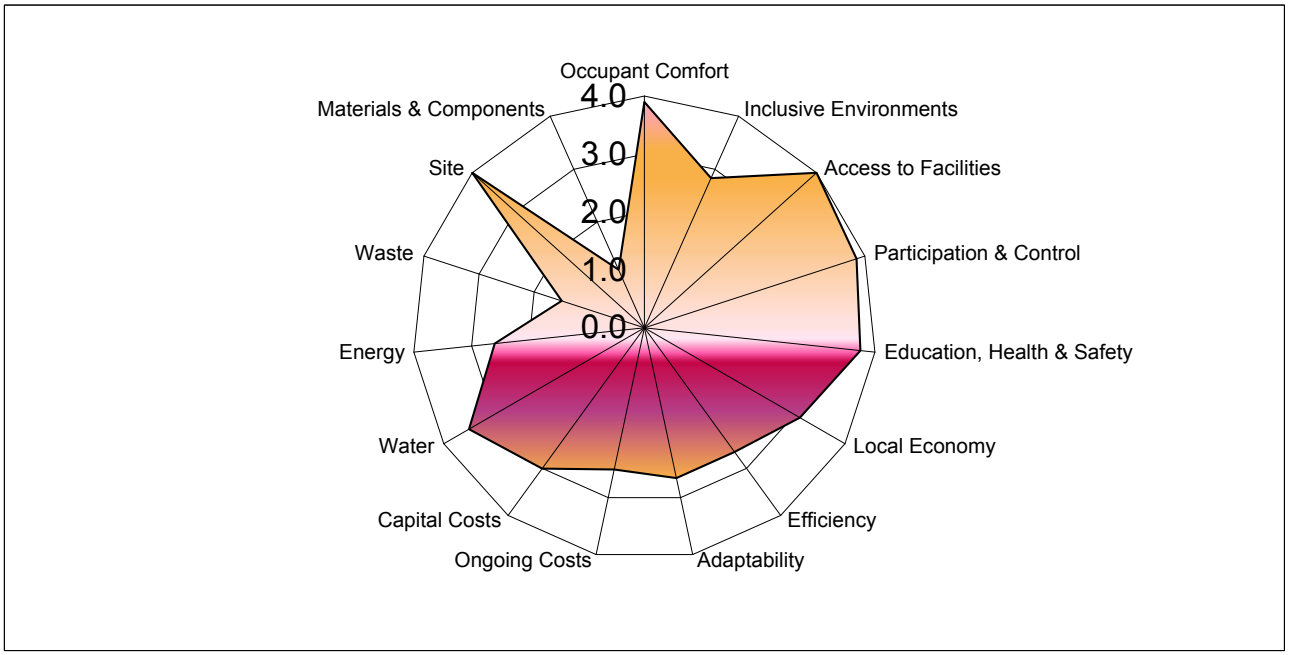
Second SBAT Analysis:

(50% points for categories outside the scope of architecture)

Green rating: Good (3-4)

SUSTAINABLE BUILDING ASSESSMENT TOOL (SBAT- P) V1

PROJECT		ASSESSMENT	
Project title:	MINI Space Gallery	Date:	07-Oct-09
Location:	Pretoria CBD	Undertaken by:	P. du Toit
Building type:	Gallery	Company / organisation:	
Internal area (m2):	1360,9	Telephone:	Fax:
Number of users:	70	Email:	



Social	3.7	Economic	2.8	Environmental	2.5
Overall	3.0	Classification			

Introduction

This appendix consists of an article written for *Architecture South Africa*, an academically accredited journal. C. Karusseit acted as co-author. It was submitted to the editor (J. Cooke) on 28 September 2009; Cooke stated that the article will be considered for a future issue.

Appendix D

Article

PROBING THE NOTION OF SITE: RE-USE OF ABANDONED BUILDINGS IN PRETORIA'S CENTRAL BUSINESS DISTRICT

BY PHILIP DU TOIT, WITH CATHERINE KARUSSEIT AS CO-AUTHOR

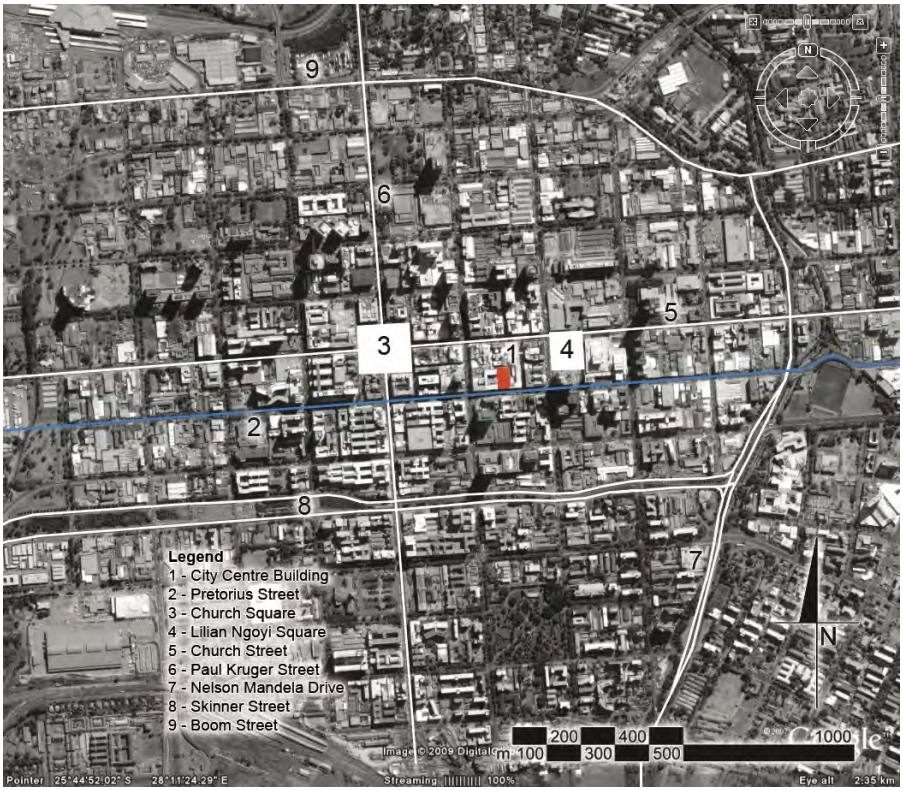


Figure 1: Aerial photograph of Pretoria CBD (Google Earth image (12 February 2009, edited by du Toit)

"We don't need new cities; we need to reuse and make better use of our existing urban areas." – Robert A.M. Stern[1].

"Architecture must remain experimental and open to new ideas and aspirations in the face of conservative forces that constantly push it toward the already proven, already built, and already thought." – Steven Holl[2].

The presence of disused buildings in the city of Pretoria is a contributing factor in the deterioration of the integrity of the existing urban fabric. This phenomenon is not unique and subsists in cities world-wide, thereby warranting innovative design intervention. The need to address this trend is further compounded by ideals of sustainability, both ecologically and socially, which is currently a global concern, as well as the rapidly diminishing availability of greenfield sites in cities. It is evident that the notion of site, as it is traditionally held, is central to this problem and needs to be reconsidered.

This article, the outcome of a study conducted as part of a Masters in Architecture (Professional) degree, University of Pretoria, proposes that the very problem may in itself be the solution. That these morose, derelict buildings that typify Pretoria's CBD are in themselves 'new' sites, with the potential for re-interpretation and re-use. Furthermore, by investigating two critically chosen and adjacent 'sites' in the CBD this article endeavours to propose a design approach that can be applied to similar sites elsewhere.

METHODOLOGY

A background study for further research has been established through a literature review, which formed part of the Masters dissertation. In addition, the two chosen sites are critically assessed against the context of Pretoria's CBD and in and of themselves. Thereafter, notion of site is re-defined, with reference to the literature and specific precedents. Finally, a design approach particular to the re-defined notion of site is proposed.

CONTEXT

Pretoria, established in 1855[3], is a relatively young city nevertheless a significant number of buildings in the

Figure 2: Multirama view of Die Meent (left) and City Centre building (right) (du Toit 2009)

Figure 3: Rendering of the case study buildings' current occupation (du Toit 2009)

Figure 4: Photograph of the old Town Hall with the City Centre building unbuilt (Pretoria News, 19 March 1954).

Figure 5: Photograph of the old Town Hall with the City Centre building in the background (Pretoria News, 15 March 1957).

CBD are largely disused. In many of these buildings, while still occupied on ground floor with retail tenants, the floors above are deserted. These abandoned spaces, once offices, are in a state of disrepair; they are no longer relevant to needs of today's business or city-dweller. The City Centre building, Pretorius Street ('1' in fig.1; also fig. 2) is an example of such a building and has been chosen as the site for this study. This building currently houses retail space at ground level (most of which is occupied) and educational facilities on the first, second and part of the third floor. Barring the caretaker's penthouse, on the eighth floor, the remaining four floors are derelict. Two arcades run through the ground floor, connecting it with two neighbouring buildings. One of them, Die Meent building, has two partially empty floors and forms the second 'site' in this study (fig.3).

The City Centre building was originally built between 1954 and 1957, as deduced from old newspaper photographs of the Old Town Hall (figs.4 and 5). Die Meent building was constructed on the Old Town Hall site in the 1970's, originally up to three storeys[4] (fig.6), and later extended to its current size. Renovations were done on both buildings in the 1990's by Louis Peens Architects, rendering the façade consistent across both buildings along Pretorius Street. This façade consists of a combination of plastered and painted surfaces, face brick elements and steel decorations. This design theme is repeated on the façades facing the elevated courtyard at the back of Die Meent building (fig. 7), but the City Centre building's façades remained unchanged, except for the addition of the same steel decorations.

Currently, City Property, the company managing both buildings, is in the process of renovating the empty interior spaces, after which they plan to rent them out[5].

It is not exactly clear why the buildings under investigation came to be partially abandoned, the current owners having acquired the property only three years ago, but one of the building managers suggested[6] that they ran empty as standards of maintenance deteriorated. The lack of parking might also be a factor, although this could be mitigated by using parking facilities provided in a neighbouring building. The company currently controlling the buildings is employing an architectural firm to aid in the renovation, but this course of action will merely involve surface treatments and maintain the existing office space, with the focus on financial profit[7]. Thus the buildings will simply become an up to date version of what they have always been, without actually addressing the problem.

Q:XYZ – NOTION OF SITE RE-DEFINED

The re-development of the World Trade Centre in New York City deals with the term 'ground zero'[8] (fig. 8), which is used to describe the site where the original buildings were destroyed[9]. However, this term was never questioned directly during the process of designing the proposed new buildings. If the concept of "ground zero", created as the result of the destruction of a building, is equal to the notion of 'site', which is conventionally thought of as a "ground plane"[10], then should the scope of 'site' not be widened to include the vertical space above

Figure 6: Photograph of Die Meent building (Pretoria News, 8 July 1988).

Figure 7: Multirama view of Die Meent 's main courtyard (centrally & to the right) & the City Centre building (to the left) (du Toit 2009)

Figure 8: Aerial photograph of 'Ground Zero', New York City (http://en.wikipedia.org/wiki/File:Wtc-photo.jpg, 19 August 2009)

Figure 9: Sketch of new 'buildings' intersecting each other three-dimensionally (du Toit 2009)

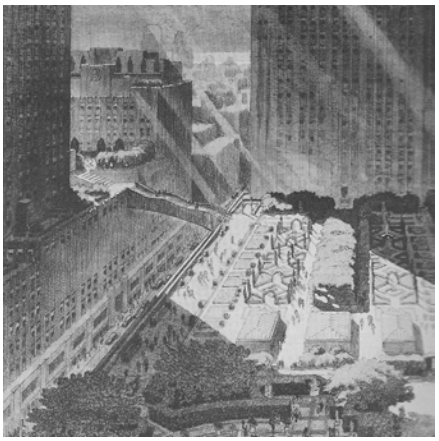


Figure 10: Roof garden proposal for the Rockefeller Center's Radio City Music Hall, 1932, by J. Wenrich (published in Rockefeller Center, 1978, by C.H. Krinsky).

ground plane, where the building once existed or where empty storeys stand disused?

In architecture, the term 'site' traditionally refers to topography, history, climate, transport, setting[11] and "the ground plane", which implies the natural ground or soil. However, when reconsidering this notion one must consider the x-y-z axes of positioning. Typically cities in South Africa grow and develop horizontally, thus only the x- and y- dimensions are considered when new developments are planned. However, open space or greenfield sites are fast disappearing, especially in central business districts. Moreover, urban sprawl, the result of the relentless search for greenfield sites, causes many secondary problems, for example high volumes of traffic.

It is evident that the re-use of existing structures is inescapable and in the light of the above argument these abandoned buildings may rightfully be defined as 'sites' for architecture. Thus, it is proposed that the third dimension, the vertical or 'z', be added to the system. In this way 'ground zero' is shifted to upper, disused floors of such buildings. Several or each disused floor of the building becomes a new 'site'.

In this way, when floors or spaces run empty the owners are able to re-sell (or rent) them as new 'sites'. Furthermore, developers and architects are provided with specific design regulations and provisions and in this way cities can truly be developed three-dimensionally. As these new 'sites' are re-developed, new 'buildings' are created, which may intersect other 'buildings' along all three axes, x-y-z (fig.9). This system would require changes on many levels, including building legislation and regulations.

PRECEDENTS

Using all three axes, x-y-z, is not entirely new; similar ideas have been developed in projects or concepts by other architects. The Rockefeller Centre, New York City, consists of a complex of 'buildings'. Some of the original design ideas included walkways on higher levels (fig.10) and even large rooftop gardens; the latter was implemented on some of the Rockefeller Centre structures (fig.11). Visions for other parts of New York City illustrate multiple levels for transport (fig.12).

Many of the recent proposals for the new World Trade Centre also included large gardens and open spaces on higher floors[12] (fig.13). Le Corbusier[13] suggested that cities should consist of large planes lifted on columns, below which all the services would be placed, while on top of which residential towers would be built with the social areas on the roofs connected by bridges (fig.14).

DESIGN PROPOSAL

If the notion of site is re-defined to include the vertical space above the ground plane and that this may include an existing structure, then 'sites' can be identified in disused sections of the City Centre and Die Meent buildings. Thus, it is proposed that the empty floors of these two buildings be stripped of everything except the structure and certain service cores. Thereafter, the 'site' is divided into sectional title stands, which in turn may be rented out or, preferably, re-sold (fig.15). This division is done according to specifically formulated design principles. These principles are divided into two categories: the first

Figure 11: Roof gardens on some of the buildings of the Rockefeller Center (http://en.wikipedia.org/wiki/File:Rockefeller_Center_Rooftop_Gardens_2_by_David_Shankbone.JPG, 5 June 2009)

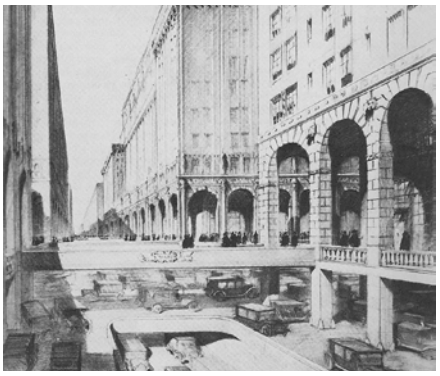


Figure 12: Proposed street system for New York City, c.1925-1930, by H.W. Corbett (published in Rockefeller Center, 1978, by C.H. Krinsky).

Figure 13: View of the sky garden of the proposal for the new World Trade Center by SOM (http://www.renewnyc.com/images_WMS/signature/SOM-sky-garden-view-2.jpg)

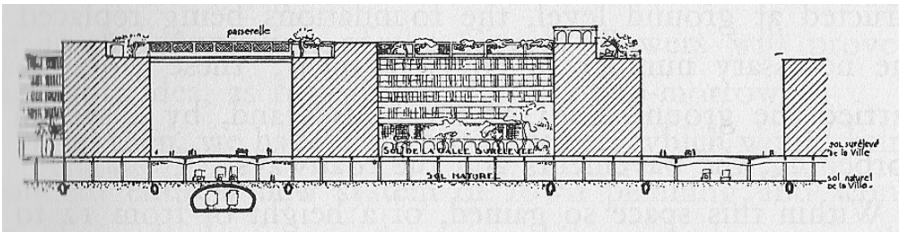


Figure 14: Sketch of Le Corbusier's city on columns (published in Towards a New Architecture, 1923, by Le Corbusier).

are city-wide, according to which all other abandoned buildings can be adapted; the second is building-specific, providing the new owners/tenants with certain rules according to which the new 'sites' can be developed.

The division of the floors into 'sites' is done in such a way that each 'site' will have access to a small open space on the same level and a large open space, which may be on any level and is accessible to all the users of the surrounding structures (figs.16 & 17). These open spaces will be transformed into green spaces, which will be maintained by the body corporate and financed by a monthly levy payable by each owner individually. Floor slabs are also cut open or removed, allowing light to enter into each site and providing more open space. In addition this serves to remove some of the structural weight, which in turn is replaced by roof gardens. In the case of the smaller open spaces where the structure does not allow for this, these spaces could be designed and developed at a later stage (when the new owners/tenants have finished their construction activities). This will predominantly be done with furniture and finishes.

Functionally, the City Centre and Die Meent buildings are zoned into two parts: a northern residential block and a central to southern business zone. A new vertical circulation structure, consisting of a system of escalators, is added to the southern, Pretorius Street façade, thereby establishing a clear link between the upper floors and the street (fig.18). Furthermore, an elevator for motorcars and bikes is constructed against the eastern edge of the northern residential block, providing direct access to the housing sites (each new resident can park their motorcar or bike on the same level as their unit).

As a result of the implementation of this proposed model for creating 'sites', 'new buildings' will be constructed on the separate floors above the retail space on the ground floor. The consolidation of sites will be allowed only up to a pre-defined area.

In terms of style, with specific reference to City Centre and Die Meent buildings, it is proposed that new owners be given total freedom regarding building styles (within the site boundaries), creating a truly South African mix of forms, textures and colours.

Finally, it is proposed that the arcade system at ground level be adapted to be consistent with the new 'three-dimensional city' above. A link is established between the City Centre and Die Meent buildings, but on a higher floor than ground level. This link provides the users with access to both buildings and the option to share the large open spaces.

CONCLUSION

Instead of simply renovating the interiors and creating a contemporary reproduction of the past, this model proposes a means of solving the problem of disused and vacant buildings by setting forth a new typology of site and building. Thus the integrity of Pretoria's urban fabric is maintained, by continually reinventing and renewing usable space within the city. An x, y and z notion of site allows for an efficient and innovative use of existing space. Finally, it has the ability to encourage the creation and maintenance of

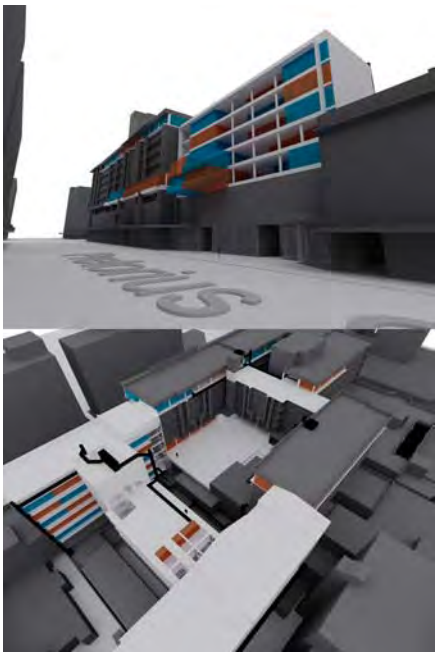


Figure 15: Renderings of the new sites, the coloured volumes (du Toit 2009)

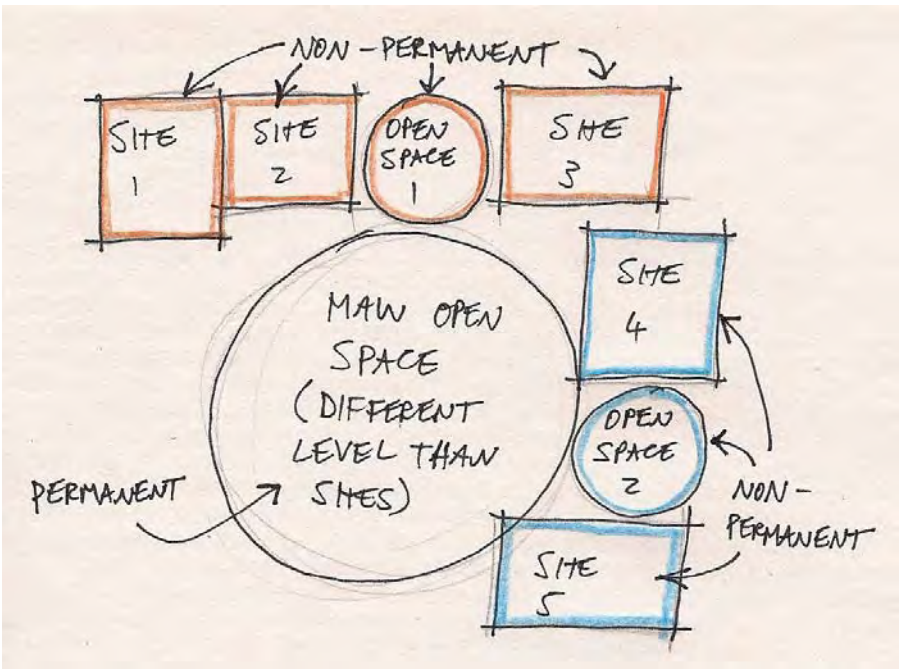


Figure 16: Diagrammatic sketch of the relationship between open spaces (du Toit 2009)

culturally rich and vibrant cities, with multiple levels of living, working and playing, forming new communities yet providing each individual with their own, unique space.

ENDNOTES

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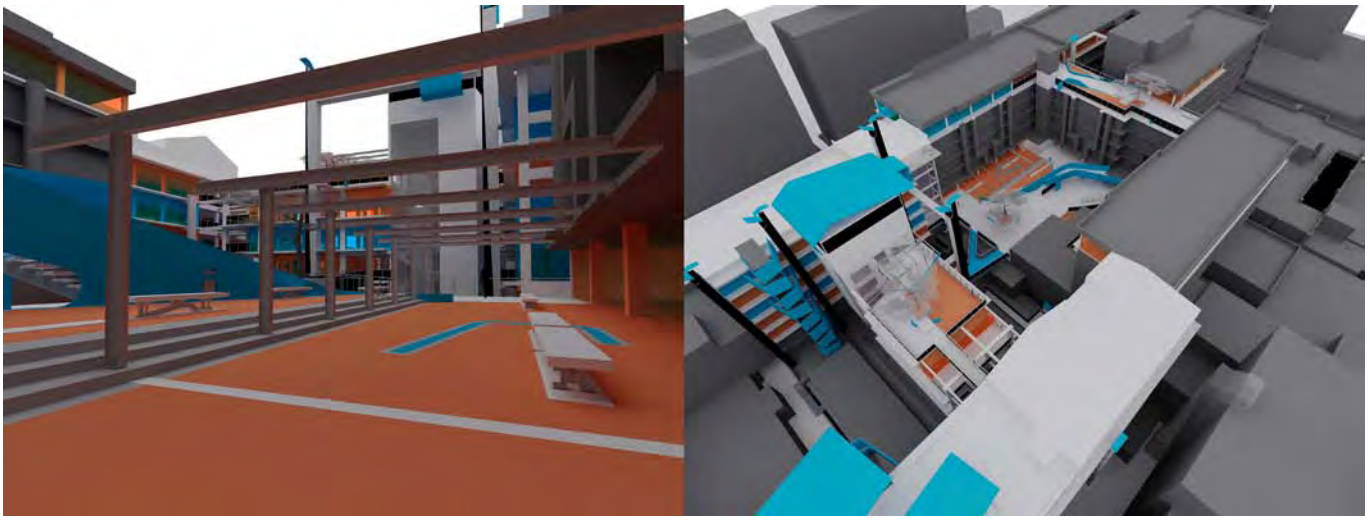

Figure 17: Renderings showing the new main open spaces (du Toit 2009)

Figure 18: Renderings showing the new vertical circulation area (left) & car elevator (right) (du Toit 2009)