

University of Cape Town

Breaking the Stigma
Redefining the Architectural Image of FET Colleges
in South Africa

Design Research Project APG5058S

Submitted in partial fulfilment of the requirements for the degree
Master of Architecture (Professional)

by

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“Last year, the World Economic Forum’s Global Competitiveness Report concluded that the biggest constraint on South Africa’s growth is the state of our education, health and criminal justice systems. We have to release this brake if we are to drive growth and deliver opportunities for all.

Our economy would grow much faster if we had more skilled people. And far more people would get jobs if they had the right skills. This is why we are establishing the Provincial Skills Development Forum in which, through partnerships with other actors in the field, we will design and align skills development programmes to meet the demands of our growing economy.”

- State of the Province address by Helen Zille, Premier of the Western Cape, 18 February 2011

Introduction

OBJECTS OF STUDY

The initial topic of this thesis focused on ways in which architecture can help to bridge the gap between education and employment; a very real need in South Africa's economy of today, as stated in the February 2011 State of the Province Address by Premier of the Western Cape, Helen Zille. My research into this topic soon revealed that there are already existing models in place that aim to close this gap, namely Further Education and Training (FET) College facilities. According to the FET Act of 2006, the aim of these colleges is to provide post-compulsory general education with a focus on vocational training, while preparing students for occupational fields and increasing employment opportunities (Act No. 16 of 2006).

After visiting several of these colleges within the Cape Town area, and interviewing the Campus Managers, it became apparent that the system is currently not working at its full potential. There are many reasons for this, which will be discussed later. One of the most pressing issues, however, is related to the campuses themselves. Many of the colleges have been given old and unused school buildings, or have taken over older college buildings that were designed for different purposes. This has diminished the campus usability and relevance, which has ultimately created a negative image of FET Colleges in general.

Based on this realisation, the thesis topic changed to explore ways in which architecture can aid in redefining the image of FET Colleges in South Africa, and thus break the negative stigma overall. The focus of this thesis is limited to Colleges in Cape Town in particular, but investigations have been carried out in order to determine how Vocational Training Colleges are perceived internationally, and what makes some of these colleges appear to work well.

"We never educate directly, but indirectly by means of the environment. Whether we permit chance environments to do the work, or whether we design environments for the purpose makes a great difference" (Dewey 1933:22).

As the quote above states, the image and design of educational facilities has a marked impact on the usability and relevance of these spaces. If students cannot identify with a college building, its architecture or campus, they will not apply to this college but rather opt to study elsewhere. A college's image creates a first impression that will either draw or repel potential students.

The external facade of a college is not the only element that creates the 'image' with which students can identify. The image is also expressed through the entire campus, how it is used, as well as how it functions both during and after school hours. A set of design principles explore these ideas of transitional spaces, security and safety, student involvement, personalisation, community and territory.

Not only are the spatial qualities important to the overall college image, but the materiality and use of building technologies play a crucial role in the survival of the college in order to achieve the design objectives. The main technological and materiality investigations look into the themes of adaptation, core and flexible spaces with regard to structure, potential growth and issues of maintenance and vandalism.

ACADEMIC CONTEXT

While the college environment in South Africa is struggling to reach its full potential, there appears to be a revival of innovative post-compulsory educational facilities across the globe in recent years which are coining terms such as atrium, hub, learning cafe, and internal street. These are worth exploring as many of South Africa's schools and colleges, particularly in poorer areas, utilize courtyard spaces between blocks of classrooms. These courtyards become monotonous and are underutilised due to the way in which they are designed. This thesis looks at precedent examples of international colleges that utilise some of these new spaces in order to determine their effectiveness and relevance within Cape Town's culture and climate.

The first precedent study looks at the works by Herman Hertzberger of Architectuurstudio HH, as he begins to explore ideas of the social staircase and the internal street within educational environments. Several contemporary colleges by various architects are also explored and analysed according to themes of environmental integration, flexible space, social interaction, innovative design, as well as the way in which they incorporate contemporary pedagogies. Finally the 1973 Berlin Free University in Germany by Candilis-Josic-Woods and Jean Prouvé - while not contemporary - provides technological examples of solutions to the issues of modularity, flexibility and growth.

METHODOLOGY

From the beginning, this thesis has been about investigating the social needs of South Africa, with a focus on Cape Town. It was therefore very important to speak to those currently involved with FET Colleges in order to better understand the issues. The notes from these meetings are included as an appendix, and referred to within the text. Reading the country's economic reports has also been useful with regards to the siting strategy, in order to determine which areas are in the greatest need of economic upliftment through the aid of an FET College facility. Finally, the precedent studies provide insight into current trends, as well as examples from which to work and analyse.

DISSERTATION STRUCTURE

Chapter One explores the issue in context by elaborating on the current situation of FET colleges in South Africa as well as the issues and problems associated with these colleges. The chapter also begins to assess the needs and requirements for new college design that stems from these issues.

Chapter Two provides a summary of the design theory research undertaken during the course of the year. This theory focuses on the links between educational space and developing pedagogies, as well as the importance of the non-verbal communication of educational architecture. Included in this theory research are precedent studies that focus on the importance of design and informal learning spaces.

Chapter Three focuses on the technology and materiality investigations that have run alongside the design theory research. The themes explored here look into concrete as a structural system, concrete cladding systems, as well as modular components.

Chapter Four provides an in-depth site study and analysis from a macro scale to the chosen site. The study looks at the areas that would benefit most from a new college, and therefore job creation, by assessing current unemployment statistics as well as those areas that lack facilities for post-compulsory education.

Chapter Five begins to pull this research and discussion together by exploring potential design concepts that may be useful in the creation of a new architectural image. Design solutions to issues of spatial layout, sizing, security, and the key design principles discussed in Chapter Two will be drawn out.

Chapter Six provides the design development that takes the design exploration from Chapter Five a step further. The architectural solutions are employed within the new architectural image of the proposed FET College on the chosen site.

University of Cape Town



1.1 Northlink College: Belhar Campus



1.2 College of Cape Town: Crawford Campus



1.3 College of Cape Town: Guguletu Campus



1.4 Northlink College: Protea Campus

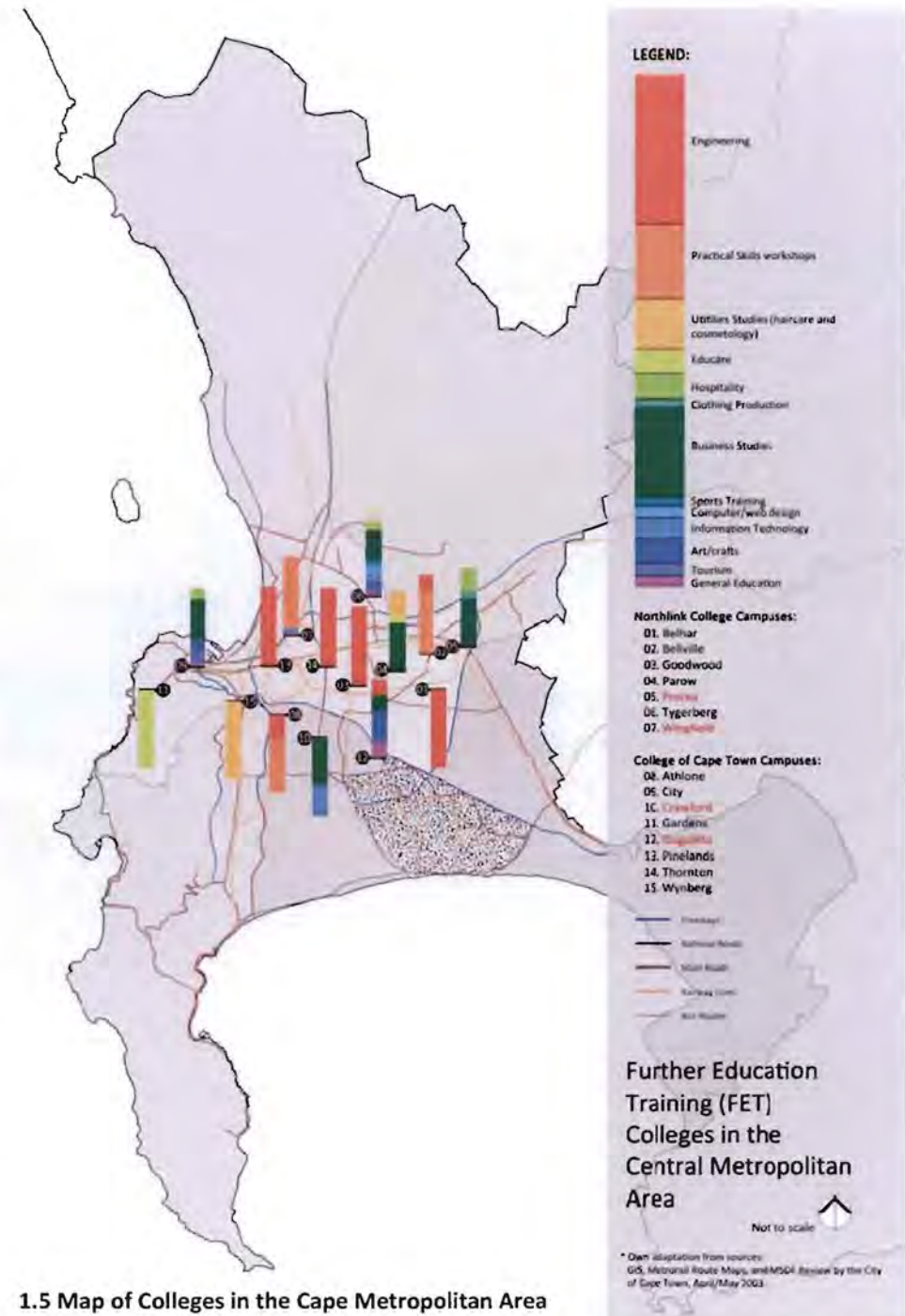
Chapter One: Exploring the Issue in Context

THE CURRENT SITUATION

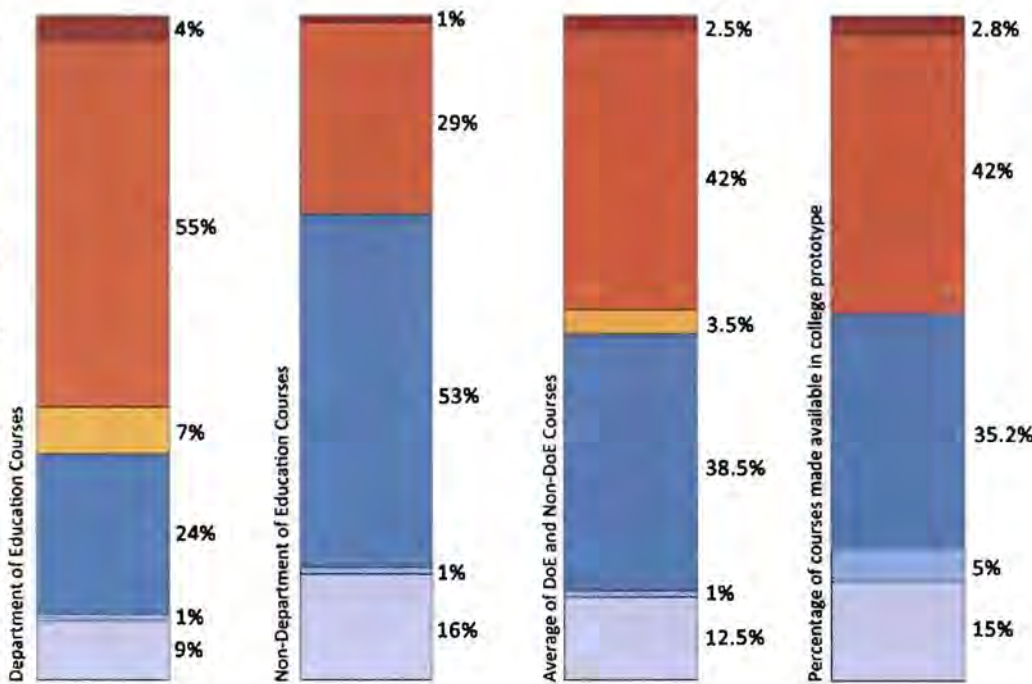
As noted in the introduction, my visits to several of the FET Colleges within Cape Town revealed that many of these buildings were not designed for the programmes that are currently on offer at that specific institution. The College of Cape Town's Crawford campus in Athlone (Fig. 1.2), for example, originally functioned as a nursing college, and now focuses on business studies and computer education. The reason that many of these Colleges have not been renovated to incorporate the needs of the new curriculum is that they are funded by the South African government, thus drastic budget restraints arise. Apart from incoming college fees, each campus has very little funding available for campus upliftment and improvements.

In terms of the courses on offer, it was interesting to note that the majority of courses provided in the Western Cape focus on Engineering and Business Studies (Fig. 1.5 and 1.6). The availability of practical skills training is minimal, most of the colleges focus on theoretical classroom training. In some cases, according to my interviews with the Campus Managers, the provision of practical workshop spaces is simply not an option due to the lack of available appropriate space. Northlink College's Protea Campus on Voortrekker Road (see page 06), for example, provides Hospitality courses. However, they are battling to raise enough funds to convert classrooms into additional kitchen space for the practical training component.

The Further Education and Training Act of 2006 states that "the FET college system has a unique role and identity that is different from that of the school and the university systems" (Act No. 16 of 2006:12). This unique role is difficult to recognise as the colleges currently stand. In some cases, FET colleges are being described as 'glorified high schools' as they simply are not able to do enough to bridge the gap between the education on offer and employment opportunities post-graduation. There have been several attempts to provide business incubators and simulators into some of the campuses; however these seem to have failed and do not provide a workable link between existing businesses and training students.



1.5 Map of Colleges in the Cape Metropolitan Area



Existing Programmes Provided in the Western Cape by Percentage:

- Art and Music (Craft Production, Design, Jewellery Manufacture)
- Business Studies
- Educare and Social Services
- Engineering
- General Education (Adult education and Fundamentals)
- Utility Studies (Hospitality, Travel and Tourism, Clothing Production, Haircare, Beauty Therapy)

1.6 Programmes Provided in the Western Cape

THE ISSUES

One of the main issues regarding these colleges is the underutilisation of campus amenities, as many of the facilities available are not used after hours. The reason for this is that there is a shortage of colleges within the poorer areas of Cape Town necessitating students travelling long distances on public transport to and from the colleges. The students simply cannot afford the luxury of staying on campus after hours to utilise, for example, the computer rooms

There is one college, however, that has been made more accessible to the South East area of Cape Town, the College of Cape Town's Gugulethu campus (See page 05). This campus used to be known as the Sivuyile College, offering hands-on skills training such as furniture making and jewellery design. This campus, however, is a relatively older building, designed to look like a typical township school with single story H-frame blocks and dividing courtyard spaces. The entire campus is surrounded by a fence for security reasons. My interviews revealed that the students of the surrounding areas do not wish to go to this college due to its negative image, and would rather travel great distances to attend a more prestigious college in the city centre. This is a great pity, as there is no reason why the Gugulethu campus could not have been designed to create a positive image, and could have dealt with security issues without the inaccessible surrounding threshold.

This issue of security is another important factor as it limits the ability of the public and surrounding communities to interact with the college. If one of the main objectives of FET colleges is to increase job creation and work experience, the campuses need to be designed to facilitate this. There seems little point in providing internal business simulators without connecting with businesses outside of the college.

College of Cape Town: Guguletu Campus



1.7 Front view of college

1.8 Classroom building

1.9 Front of College

1.10 View of workshops

1.11 Courtyard Space

1.12 External passageways



1.13 Upholstery workshop

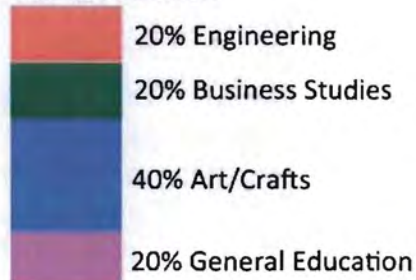
1.14 Woodwork workshop

1.15 Woodwork lessons

1.16 Jewellery workshop

1.17 Jewellery business incubator

Courses on offer:



ISSUES:

- Old school building re-used
- Classroom spaces are inadequate for the classroom sizes
- Admin facilities are too small
- Ground facilities are not being utilised

REQUIREMENTS:

- Bigger classrooms, or lecture rooms
- Specially designed computer rooms and resource centres
- At least 2 business simulators
- Larger, and more comfortable admin wing

Northlink College: Protea Campus



1.18 Front of school



1.19 Admin block



1.20 Reception/admin



1.21 Classroom



1.22 Resource Centre



1.23 Computer Room



1.24 Hallway



1.25 Hall



1.26 Simulated Enterprise



1.27 Clothing Production



1.28 Hospitality Kitchen



1.29 New cafeteria



1.30 Cafeteria



1.31 Cafeteria

Courses on offer:



ISSUES:

- Old school building re-used
- Classroom spaces are inadequate for the classroom sizes
- Admin facilities are too small
- Ground facilities are not being utilised

REQUIREMENTS:

- Bigger classrooms, or lecture rooms
- Specially designed computer rooms and resource centres
- At least 2 business simulators
- Larger, and more comfortable admin wing

LEGEND:

- ADMIN**
 - 01. Office
 - 02. Reception/admin
 - 03. Staff Centre
 - 04. Board room
 - 05. Campus manager
 - 06. Secretary
- CLASSROOMS**
 - 07. Classroom
 - 08. Business Simulated Enterprise
- HOSPITALITY**
 - 09. Restaurant
 - 10. Kitchen
 - 11. Hospitality kitchen
 - 12. Store room
- CLOTHING PRODUCTION**
 - 13. Clothing Production
 - 14. Clothing production classroom
- RECREATION**
 - 15. Hall
 - 16. Cafeteria
 - 17. Cafeteria Kitchen
- RESOURCES**
 - 18. Computer Room
 - 19. Resource Centre
- FACILITIES**
 - 20. W.C.

1.32 Diagrammatic Plan of College



Northlink College: Wingfield Campus

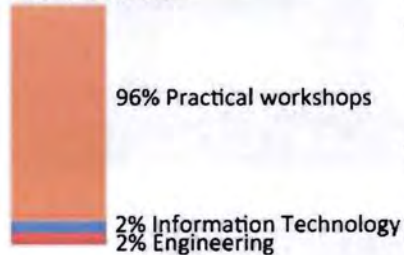


1.33 Front view of college 1.34 Passageway to classrooms 1.35 Admin block 1.36 Side view of FMT1 block 1.37 Cafeteria



1.38 FMT2 block 1.39 Front of school on Vanguard Drive 1.40 Back of FMT1 block

Courses on offer:



ISSUES:

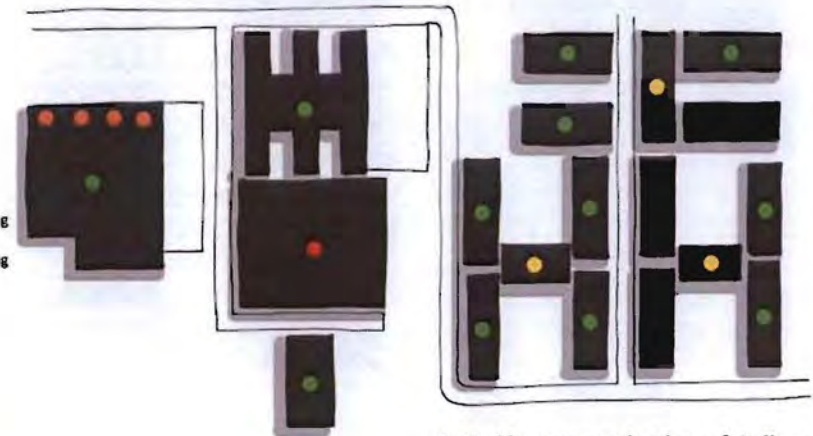
- The Western Cape Education Department has increased the required number of enrollments
- Classroom spaces are inadequate for the classroom sizes, and will get worse due to increased enrollments.
- Lecturers are scarce - required to have adequate experience

REQUIREMENTS:

- Double the size of the workshops and classrooms
- Increase size of admin wing

LEGEND:

- ADMIN
01. Admin block
- CLASSROOMS
02. Theory classrooms
- STORE ROOMS
03. Store Rooms
- PRACTICAL WORKSHOPS
04. Fitting, Machining and Toolmaking (FMT1)
05. Fitting, Machining and Toolmaking (FMT2)
06. Refrigeration
07. Pneumatics/Hydraulics
08. Welding
09. Light Current Electrical
10. Pre-NCOR NCOR
11. Fitting
12. Sheetmetal
13. Navy Building
14. Soldering, Sheetmetal and Fitting



1.41 Diagrammatic Plan of College

THE NEEDS AND REQUIREMENTS

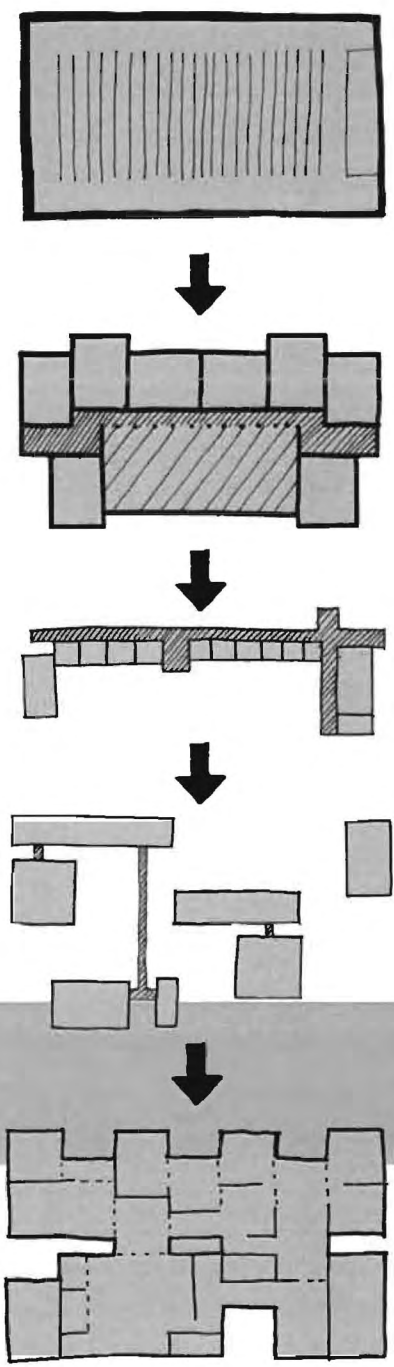
The question at this point is, 'how can architecture step in and demonstrate that these colleges are able to achieve their objectives while creating a positive image that has students clamouring to enrol?'

Firstly, the campus needs to be made more available to the public and the surrounding communities. If students are unable to access the college easily via public transport it presents problems for them to utilise the campus facilities on offer. The architectural design needs to incorporate ways in which the public can play a role in the life of the campus whilst maintaining an overall sense of security and safety.

Secondly, the types of teaching spaces provided need to relate more to practical teaching and reduce the focus on classroom teaching. This will enable more opportunities for job creation as the students will have practical experience before they enter into the working world.

Thirdly, if students are to spend more time on campus, provision needs to be made for spaces of different activities outside of teaching classrooms. As mentioned in the "Academic Context" in the Introduction, there is a current trend to provide social learning cafes, info-centres and resource centres. Apart from a cafeteria, college campuses should provide spaces where informal learning can take place outside of the classroom, within a more social setting.





Chapter Two: Design Theory Investigations

THE NON-VERBAL IMPACT

“The appearance of the campus is, by far, the most influential characteristic during campus visits” (Boyer 1987:17). The physical features of a campus creates the first non-verbal impact; the image. Signals and messages are sent to the user through the physical attributes of the campus. For example, if the administration centre is placed close to the entrance, it sends a message to visitors that the college cares about them enough to have a reception area welcome and guide them through the campus. If, however, the overall maintenance of the building is long overdue, with cracked walls and peeling paint, it sends a message of neglect and lack of pride. As Anderson so aptly puts it, “If one had to say which was telling the truth about school, a speech by the principal or the actual school building, classrooms, and material he or she was responsible for providing, one should believe the building” (Anderson 1971:291).

The campus architecture and environment is constantly sending messages to both the inhabitants and outsiders, and it is therefore up to both the designers and the users to ensure that these are good messages. The architectural elements should create a sense of comfort and security by providing way-finding features, and expressing the campus values.

THE PHYSICAL IMPACT OF SPACE: DESIGN PRINCIPLES

There are many college designs that talk about creating formal and informal spaces for learning as a means to provide opportunities for learning outside of the classroom. This can be misunderstood, however, as learning can, in fact, occur everywhere, even between two students discussing a lesson while walking along a path. There is no way to separate spaces for learning into two neat categories. Instead, the design should consider the importance of transitional and liminal spaces to create a richer environment along the spaces in-between thereby providing enough available spaces to enhance the opportunities for learning.

The formal/informal debate has also resulted in a “perceived need for new types of non-hierarchical and flexible classrooms which can both accommodate a greater range of activities and promote movement within the space and enable students control over facilities” (Boys 2011: Kindle Location 540-543). The issue of making flexible spaces has become more complex and difficult than initially thought. If the concept of flexibility refers to the creation of spaces that are available to different teaching methods, then perhaps this is more of an issue regarding the educational methods than the spaces involved. In terms of architectural design, the provision of flexible teaching spaces may not refer mainly to movable partitions, but rather provide a range of types of teaching spaces that can be utilised by different educators according to their preferred teaching methods.

The impact of a sense of safety and security is another important spatial factor in college design. It is possible to design a building to create its own defensible space without surrounding the site with fencing. Strange and Banning discuss defensible space in their book *Educating by Design*, where they note that if a campus looks defended, the potential offenders will assume that action will be taken against them from the inhabitants inside. Defensible space also tends to encourage the inhabitants to create greater awareness and develop closer relationships with one another as territorial feelings are enhanced through the desire to protect their own space (Strange & Banning 2001).

These relationships create a sense of community that is important in prolonging the life and pride of the campus. It is therefore important that the designer provides spaces to enhance communal interaction through group gathering spaces, both internal and external, sitting walls and green areas. Astin states that “students learn from becoming involved” (1985:133), therefore student involvement is an important factor to successful learning and the development of students’ talents and should be made a high priority in the life of the college. It is therefore very important to ensure that there are adequate spaces available which encourage after-hour interaction thus enhancing the total student experience.

13 RELATING SPACE TO DEVELOPING PEDAGOGY

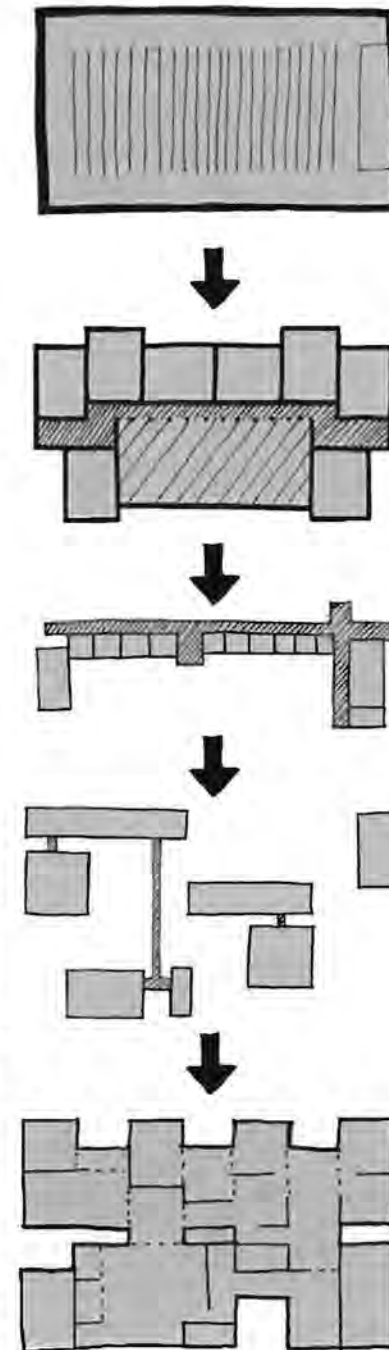
"Schools are not only institutions for instruction, but at the same time visible symbols of educational conceptions of their time. To plan schools then, it is necessary to become acquainted with questions of education and pedagogy" (Otto 1966:9).

Pedagogy is an important aspect in educational design and should be reflected in this design by taking into account all the factors of the educational process, namely enrolment figures, age, student character and forms of teaching. The challenge however, is that enrolment figures, pedagogy and educational development are constantly changing. As a result, educational architecture needs to make allowances for the long-term evolution of the campus (Fig. 2.1), particularly in the FET colleges, as their foundation has yet to be solidified.

A study of the evolution of various educational facilities through history has revealed an interesting link between shifting pedagogies and their relationship to the educational architecture. The nineteenth century board schools of the United Kingdom were designed with all the classrooms surrounding one large hall, where the main teacher could maintain visual access of all classrooms (Fig. 2.2 and 2.3). The early twentieth century schools developed a concern with health issues, and classrooms were soon stretched out along a single, linear corridor to allow for natural ventilation (Fig. 2.4 - 2.7). The post-war school architecture changed further by breaking up the massing into several blocks, eliminating internal circulation altogether (Fig. 2.8 - 2.10). The prefabricated schools of the late 1960's were then developed to increase the ease and speed of construction, allowing for change over time (Fig. 2.11 - 2.13).

In more recent years there has been a further shift in thinking as the formal/informal learning debate has arisen. Many educational facilities are focusing on open-plan teaching spaces and creating informal spaces that focus on social interactive learning.

2.1 Diagrams of school plans, relating to pedagogy



PRECEDENT STUDIES: HERMAN HERTZBERGER

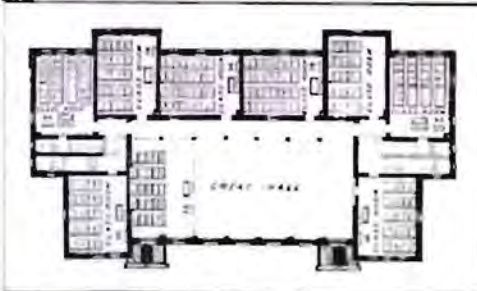
The architectural works by Herman Hertzberger are key precedent studies in this thesis, as he focuses on many of the design principles discussed above. The main issues of these works look at form, function and freedom, while a major theme is the spaces in-between as a development of zones where the public can meet the private and vice versa. Hertzberger also studied the way in which the built environment plays a role in human interaction and communication, and focused on the issues and role of identity:

"...we have to create the possibility for personal interpretation by making things in such a way that they are indeed interpretable ... Not only do we interpret the form, the form simultaneously interprets us; it shows us something of who we are. Thus, user and form begin mutually to interpret each other; each becomes more itself" (Van Bergeijk 1997:10).

19th Century Board Schools:
Johnson Street Board School, 1872

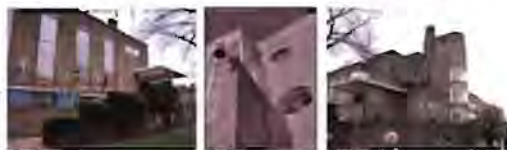


2.2



2.3

Early 20th Century Schools:
Burlington Secondary School, 1935



2.7

Post-War Schools:
Garratt Green School, 1955



2.8



2.9



2.10

Late 1960's Prefabricated Schools:
Prior Weston Primary School, 1968

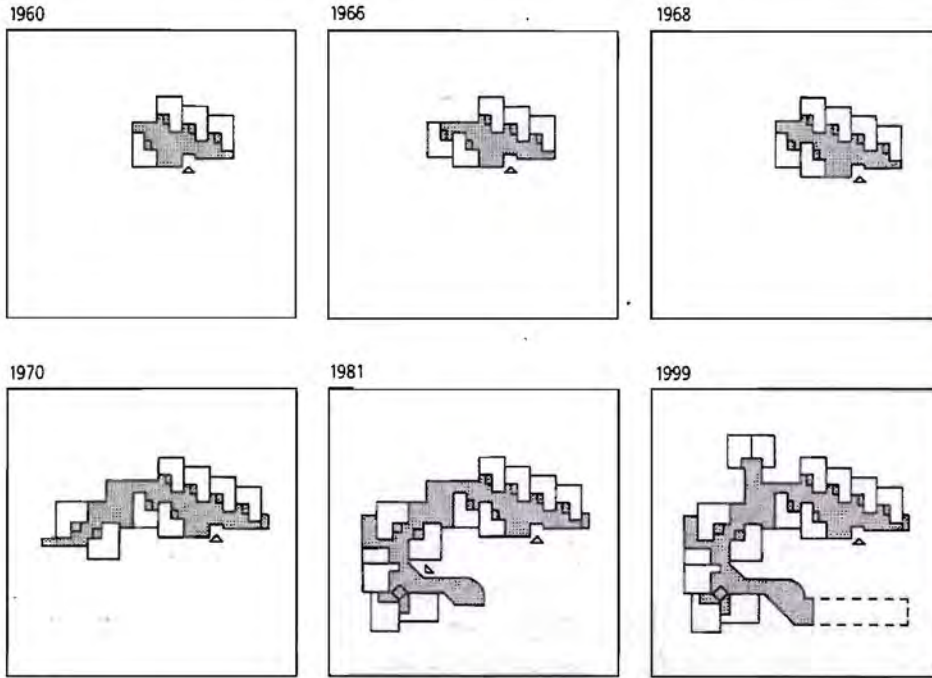


2.11

2.12



2.13



- 2.14**
 Grundriß / Ground floor plan
 1. Zugang zur Schule / School entrance
 2. Toiletten / Restrooms
 3. Zentrale Halle / Central hall
 4. Klassenzimmer / Classroom
 5. Kreative Arbeiten / Arts and crafts
 6. Garderobe / Cloakrooms
 7. Lesetisch / Reading table



2.16



2.18



2.17

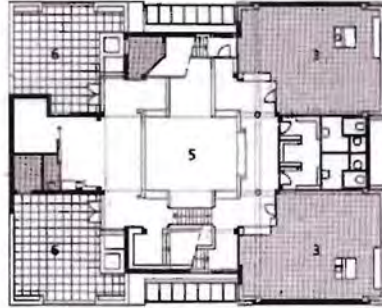
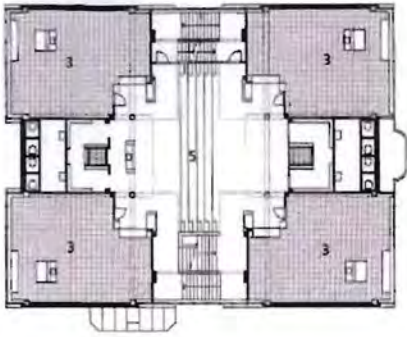


2.19

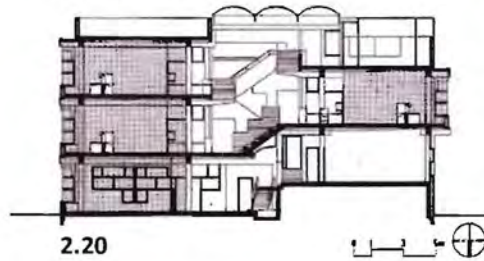
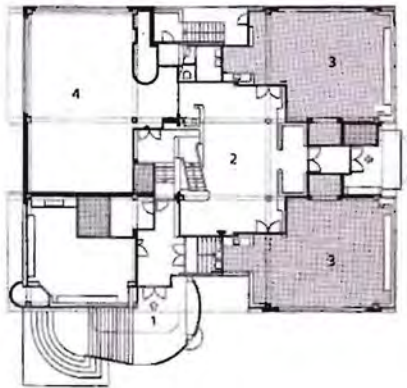
**Delftse Montessori School:
 Delft, (1960-1966, 1968, 1970, 1981)**

The design of this school focused on the role of identity with relation to spatial qualities. The entrance became not just a threshold space, but a transitional area linking the school and the public. Similarly, the corridors were more than through-routes, but spaces to be used in various ways for meeting, learning and playing outside of the classroom.

Another key concept for this school was that of extensions. Hertzberger designed the classrooms in L-shapes that “created a building order that would permit every extension to be complete in itself as well as to complete the whole” (Van Bergeijk 1997:10).



Grundrisse und Schnitte / Floor plans and sections
 1. Eingang / Entrance
 2. Halle Kindergarten / Hall kindergarten
 3. Klassenzimmer / Classroom
 4. Spielraum / Playroom
 5. Zentrale Halle / Central hall
 6. Terrasse / Terrace



2.20



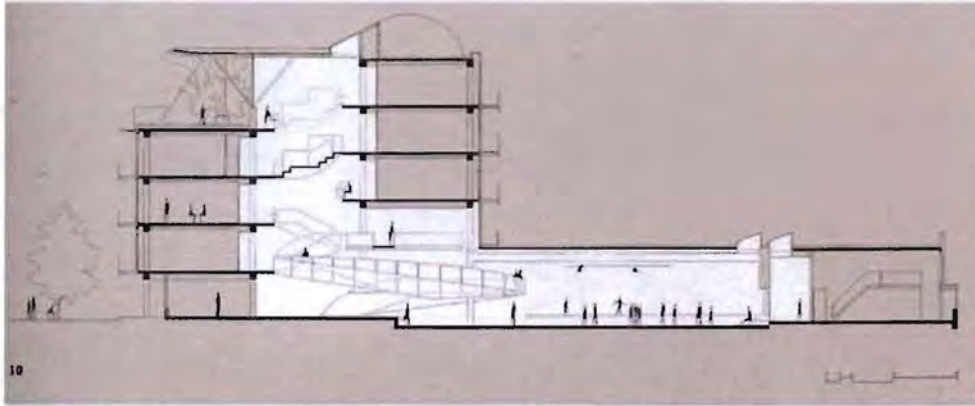
2.21 apollo schools



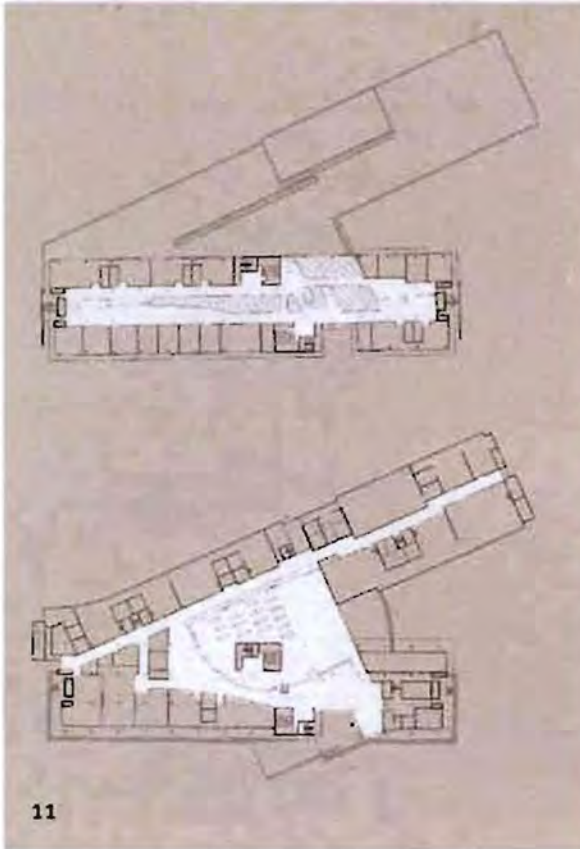
**Apollo Schools:
 Amsterdam, (1980-1983)**

Although the floor plans of these schools appear to be simplified, it is the sections which bring this school to life and create a sense of richness through the use of split-level floors for the classrooms. The range of stairways and landings act as transitional

zones between the classrooms, enhancing this rich environment by creating spaces for various functions such as seats, galleries, places to sit or play, or work privately.



2.22



11



**Montessori College Oost:
Amsterdam, (1999)**

The design of this college is associated with the workings of the city, by creating an internal street. A range of places is provided, allowing for multiple opportunities for students to get together, relax or meet up. The stairs between the levels have been designed to allow space for sitting, creating opportunities for lessons to take place outside of the classroom. These stairways and landings all look onto an open void, creating a full presence of those within the college, while inviting encounters along the route.



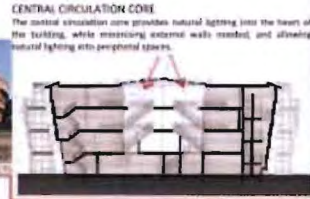
INNOVATIVE COLLEGE DESIGN ELEMENTS

ENVIRONMENTAL INTEGRATION:

- CENTRAL CIRCULATION CORE
- SLICED ATRIA INTO BUILDING



2.23 **WYDE COLLEGE, NETHERLANDS, A&O ARCHITECTS**



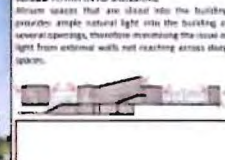
CENTRAL CIRCULATION CORE
The central circulation core provides natural lighting into the heart of the building, while enclosing external walls needed, and allowing natural lighting into program spaces.



2.24 **MUYDE COLLEGE, NETHERLANDS, FREE VAN HORMAAT ARCHITECTS**



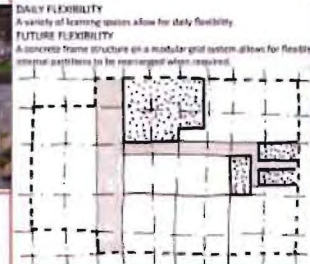
2.25 **WYDE EDUCATIONAL SCHOOL, NETHERLANDS, HERRING LAMM ARCHITECTS**



SLICED ATRIA INTO BUILDING
Atrium spaces that are sliced into the building provides ample natural light into the building at several openings, therefore maximizing the issue of light from external walls not reaching across deep spaces.

FLEXIBLE SPACE:

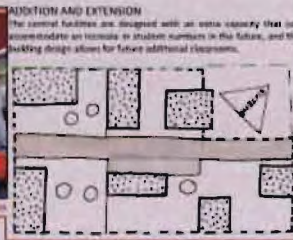
- DAILY FLEXIBILITY
- FUTURE FLEXIBILITY
- ADDITION AND EXTENSION
- ADAPTABLE SPACE



DAILY FLEXIBILITY
A variety of learning spaces allow for daily flexibility.
FUTURE FLEXIBILITY
A concrete frame structure on a modular grid system allows for flexible program patterns to be reorganized when required.



2.26 **CONRAD COLLEGE, NETHERLANDS, BIRCHENHORN**



ADDITION AND EXTENSION
The central hallway was designed with an extra capacity that can accommodate an increase in student numbers in the future, and the building design allows for future additional classrooms.



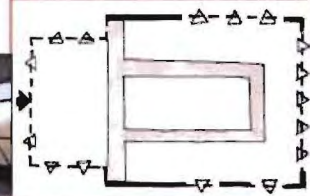
ADAPTABLE SPACE
This college uses dedicated workshop areas, while the learning spaces are more free-plan and informal which allows for adaptation as required.

SOCIAL INTERACTION:

- LINKING EDUCATION AND INDUSTRY
- SHOWCASE WORK TO COMMUNITY
- INDOOR STREET
- BUILDING AS A GATEWAY



2.27 **LINKING EDUCATION AND INDUSTRY**
The college incorporates shops within the building that increase work-life practices.



2.27 **INDOOR STREET**
An internal street runs along shopfronts, cafes and workshops, set in by an internal atrium - incorporating visual connection, transparency and openness.



2.27 **PROFESSION-EXPOSED SPACE, NETHERLANDS, HERRING LAMM ARCHITECTS**



BUILDING AS A GATEWAY
The college links the surrounding suburb to urban spaces and public functions.

INNOVATIVE DESIGN:

- BUILDING DEMONSTRATES FUNCTION
- DYNAMIC SPACES
- INTERNAL INTERACTION
- VISUAL RECOGNITION



2.27 **BUILDING DEMONSTRATES FUNCTION**
The building services are exposed and the industrial aesthetic relates the building to the workshop subjects offered, therefore the building itself becomes a learning tool.



2.27 **DYNAMIC SPACES**
The integral learning, cafe and informal learning area provides dynamic social spaces, while the learning areas spill into the internal street, and the lecture theater pool into visual access to these dynamic spaces.



2.27 **INTERNAL INTERACTION**
Stores and cafes along the internal street provide dynamic spaces for internal interaction among students.



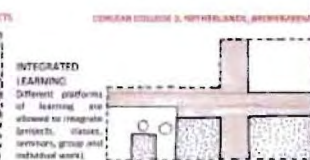
2.27 **VISUAL RECOGNITION**
The window is a beacon for visual recognition.

CONTEMPORARY PEDAGOGIES:

- DYNAMIC TEACHING SPACES
- INTEGRATED LEARNING
- SOCIAL LEARNING
- EXTERNAL LESSONS
- FLEXIBLE LEARNING ENVIRONMENT
- DEPARTMENTAL COLLABORATION



2.27 **DYNAMIC TEACHING SPACES**
The classrooms and workshops are flexible to influence teaching styles and resources.



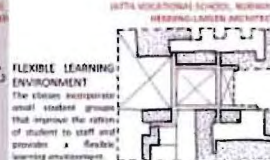
2.27 **INTEGRATED LEARNING**
Different platforms of learning are allowed to integrate (groups, classes, seminars, group and individual work).



2.27 **SOCIAL LEARNING**
Learning not only takes place in classrooms and workshops, but in the social hub of the college as well.



2.27 **EXTERNAL LESSONS**
The college is designed to encourage impromptu meeting places outside of the classroom along the internal street.



2.27 **FLEXIBLE LEARNING ENVIRONMENT**
The classes incorporate small student groups that improve the ratios of student to staff and provides a flexible learning environment.



2.27 **DEPARTMENTAL COLLABORATION**
College students have the flexibility to experiment with the different courses on offer.

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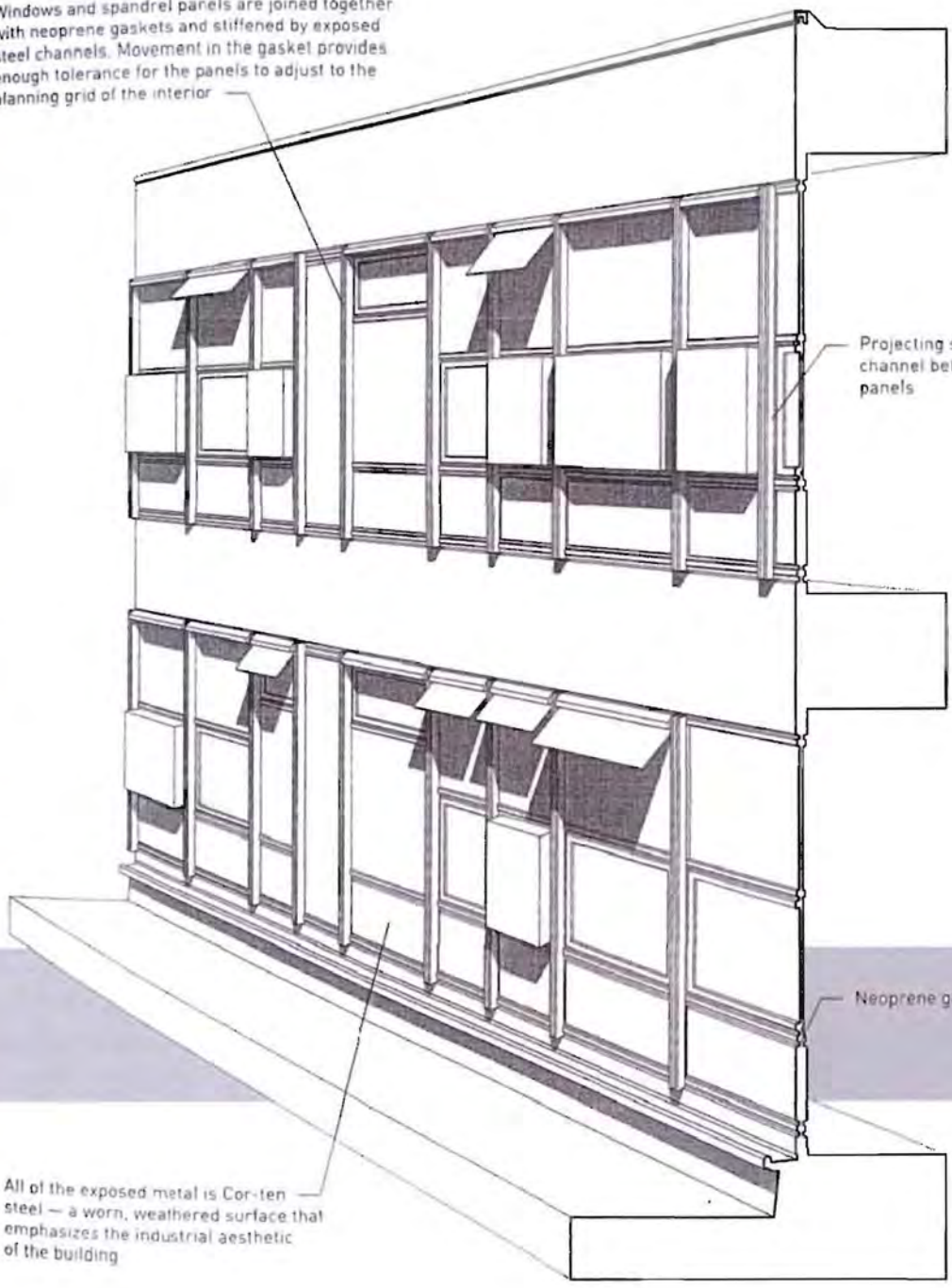


Windows and spandrel panels are joined together with neoprene gaskets and stiffened by exposed steel channels. Movement in the gasket provides enough tolerance for the panels to adjust to the planning grid of the interior

Projecting steel channel between panels

Neoprene gasket

All of the exposed metal is Cor-ten steel — a worn, weathered surface that emphasizes the industrial aesthetic of the building



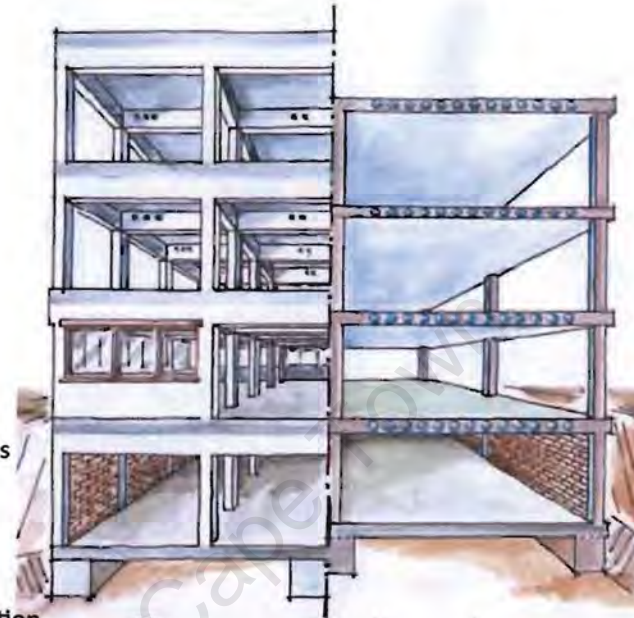
Chapter Three: Technology and Materiality Investigations

KEY TECHNOLOGICAL ISSUES

As stated in the previous chapter, the architectural elements are an integral factor in the success of the college image as they create the non-verbal impact. These elements are determined by the building's technology and materiality, which in turn provide material resolutions to the design principles of identification, security and safety, formal/informal spaces, involvement, personalisation, community and territory discussed in Chapter Two.

Identification is brought about by the use of materiality within the design. When one thinks of an educational facility, red facebrick walls often come to mind. This was a potential choice for the wall material as it requires no maintenance, which is a key factor in the choice of materials. However brick walls tend to be more permanent, and leave little room for future adaptation to the building without a complete renovation. The next thought was to look at prefabricated panels as a means of easy replacement in future alterations. In Cape Town's climate however, lightweight prefabricated panels do not provide adequate thermal properties

conventional system optimized with Cobiax



3.1 Section of concrete systems

3.2 Cobiax System in Construction

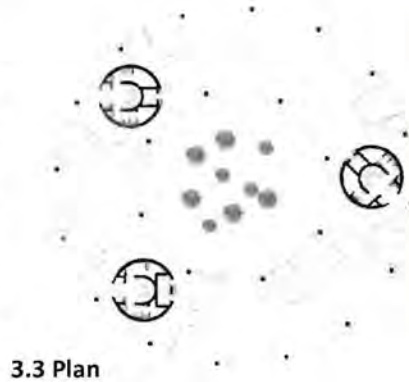


for insulation. The best form of prefabricated panels to use therefore, would be precast concrete panels, as their dense composition provides thermal protection against heat and cold, particularly when paired with insulation and dry walling on the interior. Vandalism and graffiti are deterred by adding a silicone sealant to the concrete mixture, or applied to the panels afterwards. Thus the need for annual repainting is removed, and the college image is left intact.

The formal/informal debate led to the design principle that looks at providing a variety of spaces for learning results. The discussion resulted in the need for three different ranges of teaching spaces: classroom spaces provided by a compartmentalised frame structure, a free plan for social activity provided by an open plan frame structure that does not rely on load-bearing walls and a completely open plan and flexible structure for workshops that does not have obstructing columns. The large spans of the spaces provided within the free open plan are investigated in concrete as a structural material.

CONCRETE AS A STRUCTURAL MATERIAL

In order to reduce the number of columns within the free plan structural system, I researched concrete slabs and concluded that the Cobiax system is the most appropriate solution available for the FET College. This system runs along the principle of reducing the amount of concrete used within the slab, while maintaining the strength and bi-axial load, which reduces the cost as well as CO₂ emissions. This is done by using recycled plastic void formers (Fig. 3.2) within the steel reinforcing that displace the concrete normally required, thus reducing the overall weight of the slab and loads on the foundations. The slab depths range between 200 and 600mm, and with the loss of beams, the overall floor-to-floor height is reduced (Fig. 3.1). The spans between columns can range as far as 20m, which allows for more flexibility and freedom in the design. Finally, the advantage of this system is its use in curved structures. Where coffered slabs are not possible in curved structures due to their rectilinear design, this system allows for curves in any direction due to the nature of the slab.



3.3 Plan



3.4



3.5 Section

3.6 Construction



The UEFA La Clariere Office Building in Nyon, Switzerland, (2009 – 2010) by architects Bassi et Carella has incorporated the Cobiax system in the design (Fig. 3.3-3.6). The main benefit for this is the reduction in weight. The structure consists of circular rings of concrete using the Cobiax system along with post-tensioning. The column spans reach a maximum of 15.7m, with slab thicknesses ranging from 400mm to 600mm. The total concrete reduction due to the use of void formers and the elimination of obstructing beams was 941m³.

CONCRETE AS A CLADDING MATERIAL

Precast concrete cladding panels have many advantages. The design advantages allow for pre-inspection quality control as well as design freedom through a range of architectural expressions due to the plastic nature of the concrete. The functional advantages provide a range of structural capabilities as the panels may be used for support as load-bearing walls, shear walls or permanent form-work. The panels also have good acoustic and thermal properties and can be designed to enhance these attributes. They require little

maintenance and are durable, fire resistant and useful for solar shading. The construction advantages allow for economical erection as labour time is minimised on site, creating easier internal access as the external envelope is completed more quickly. This system can be used in several different ways:

Curtain Wall System

The panels in this system do not carry loads apart from wind loads, and may be removed independently from each other without affecting the structural stability of the remaining panels. The heights are generally from floor to floor, while the width is less than that of the bay width of the structure.

Load-Bearing Units

This is one of the most economical applications of concrete wall panels if designed under the correct conditions. If the units are configured correctly, they are able to carry vertical loads with minimal reinforcement. If the structural layout of the building is efficiently designed, the lateral forces from wind and earthquake loads may be equally distributed. Finally, if the building is designed with

a structural core, the lateral forces are absorbed by this core and carried to the foundations, minimising the load on the panels.

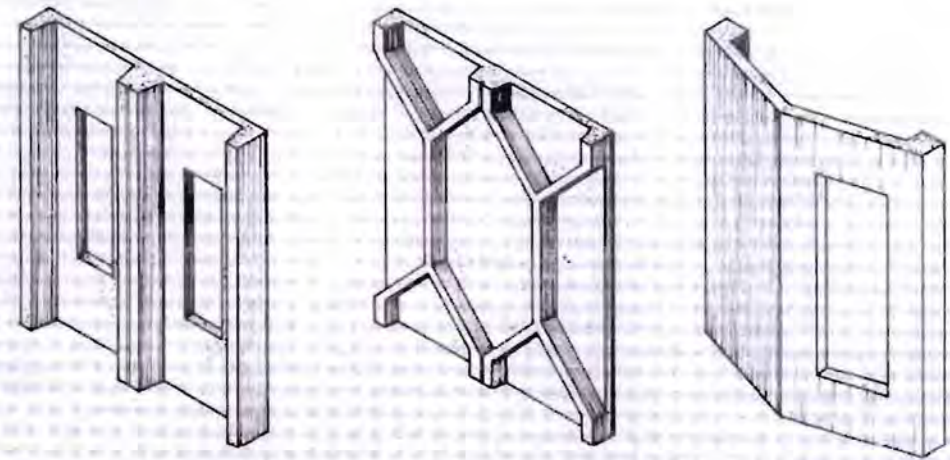
Wall-Supporting Precast Units

When these units are used to provide additional support within walls, they do not carry any loads from floors or roofs. They may however, be stacked to support the floor or roof above. In general, the largest dimension is vertical, and the units span several stories, while the weight is carried by only one floor that has been designed to take the load. This type of system is used in structures where the exterior columns have been set back from the edge of the floor slab.

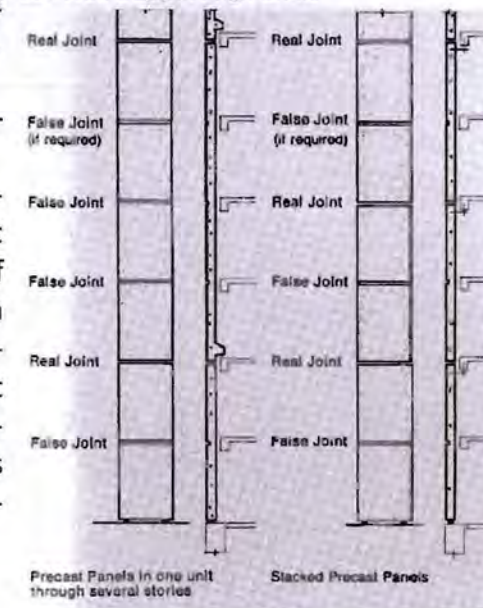
Precast Wall Panels used as Formwork

This system combines both the economic and structural advantages. It is important that the placement of the panels are determined early in the design process in order to ensure there is sufficient reinforcement within the panels. Another advantage of this system is that it provides an economical method of constructing cavity walls.

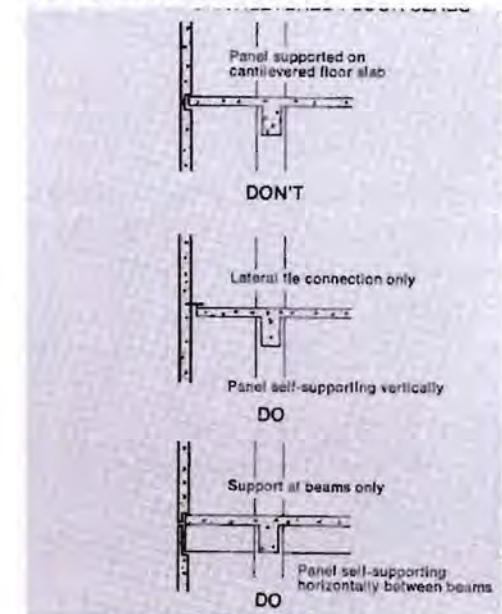
3.7 Typical Load-Bearing Panels



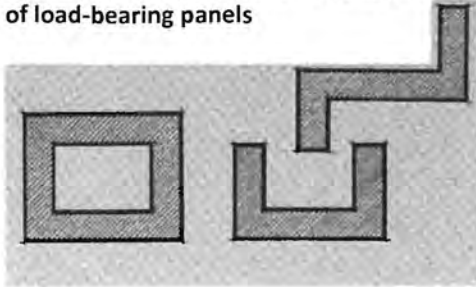
3.8 Wall-Supporting Panels



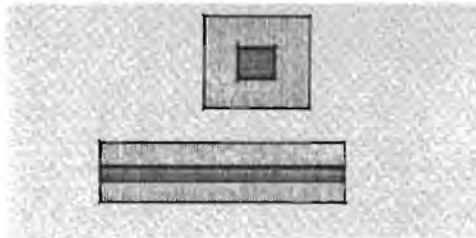
3.9 Precast Units for Buildings with Cantilevered floor slabs



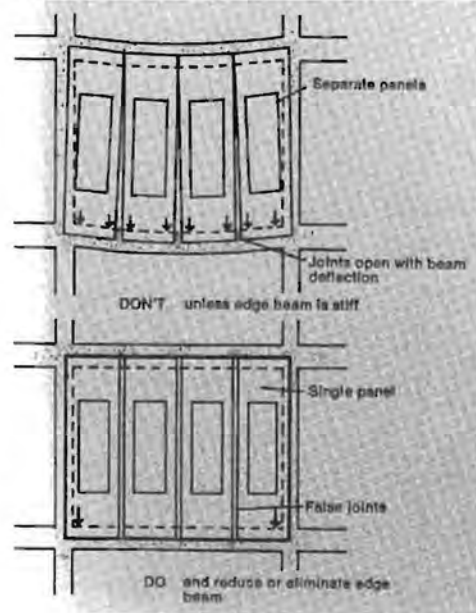
3.10 Building layouts for simple application of load-bearing panels



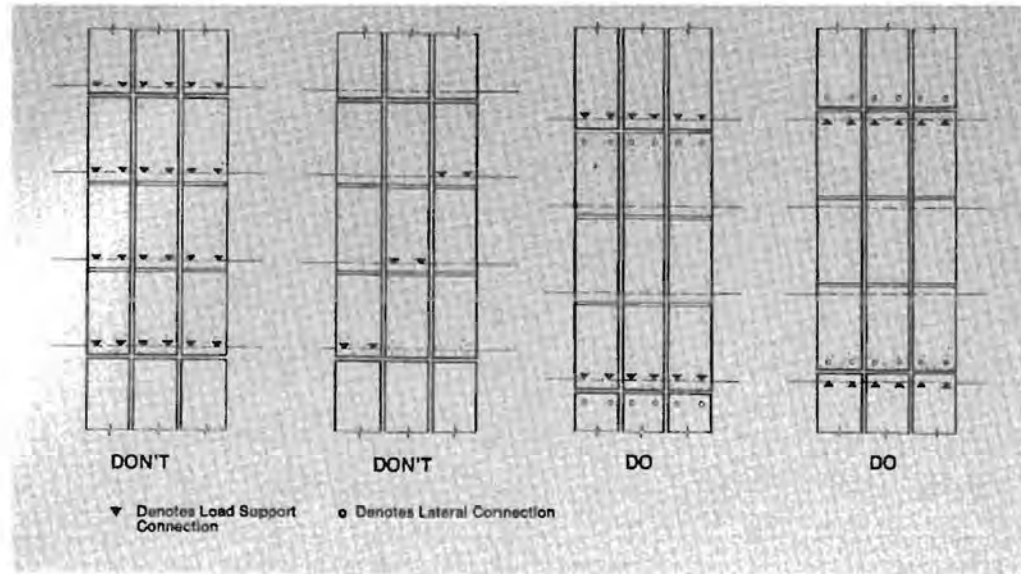
3.11 Buildings with Structural Core Area



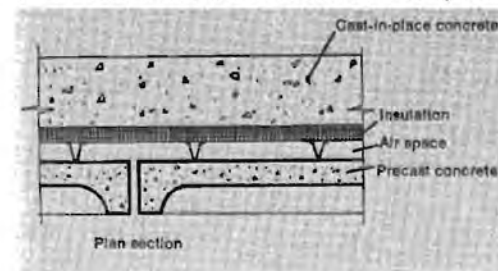
3.12 Precast panels in typical column bay



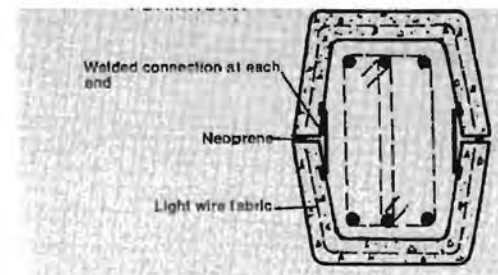
3.13 Connections for wall-supporting pre-cast wall panels



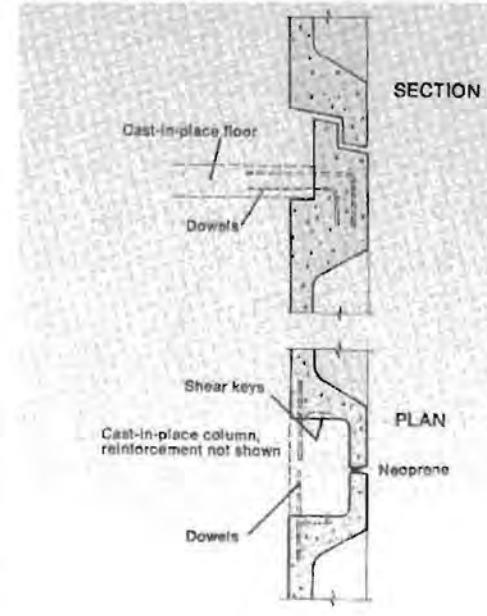
3.14 Precast units as formwork in cavity wall



3.15 Precast column covers as formwork



3.16 Load-bearing panels serving as formwork for columns

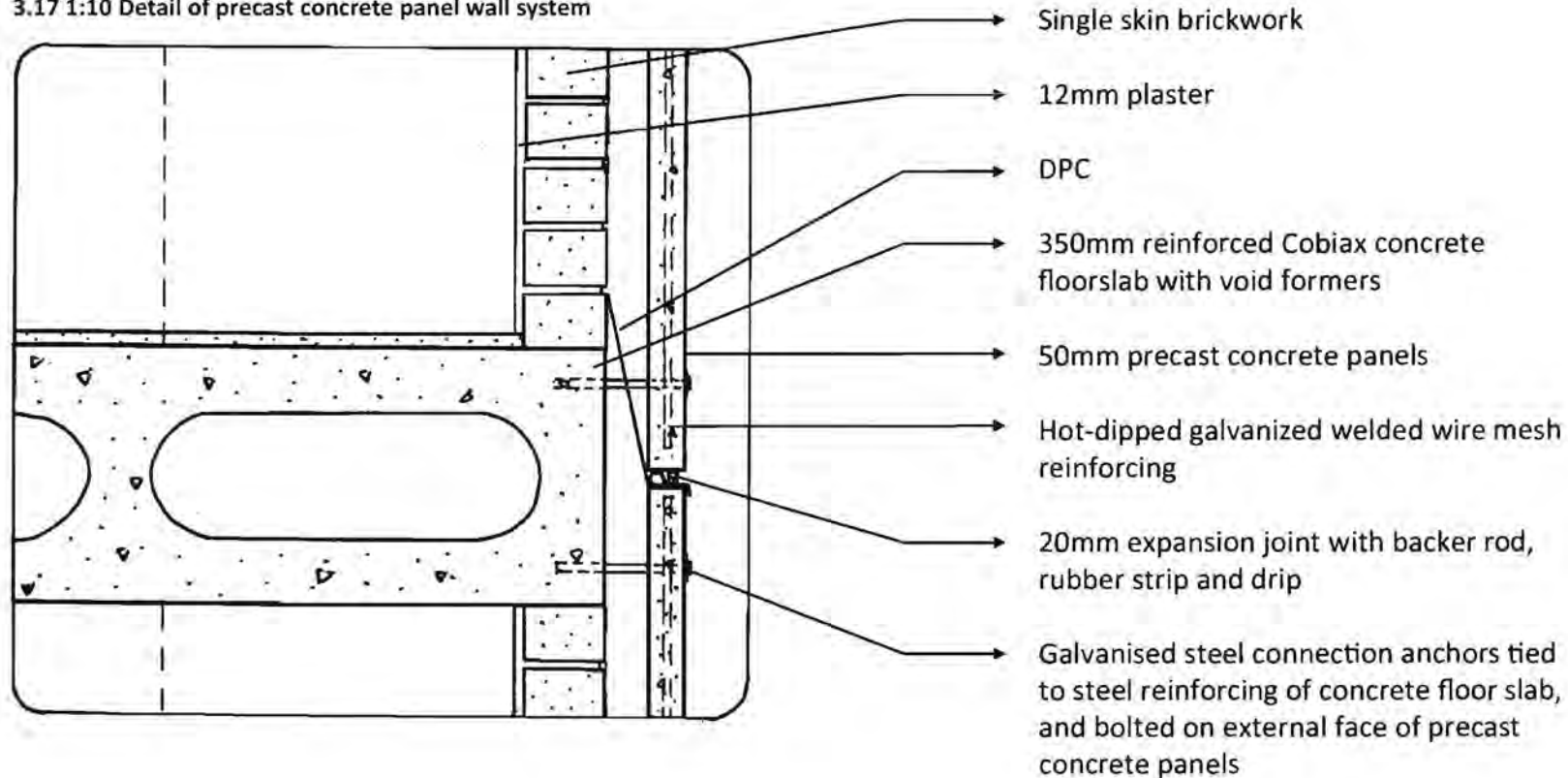


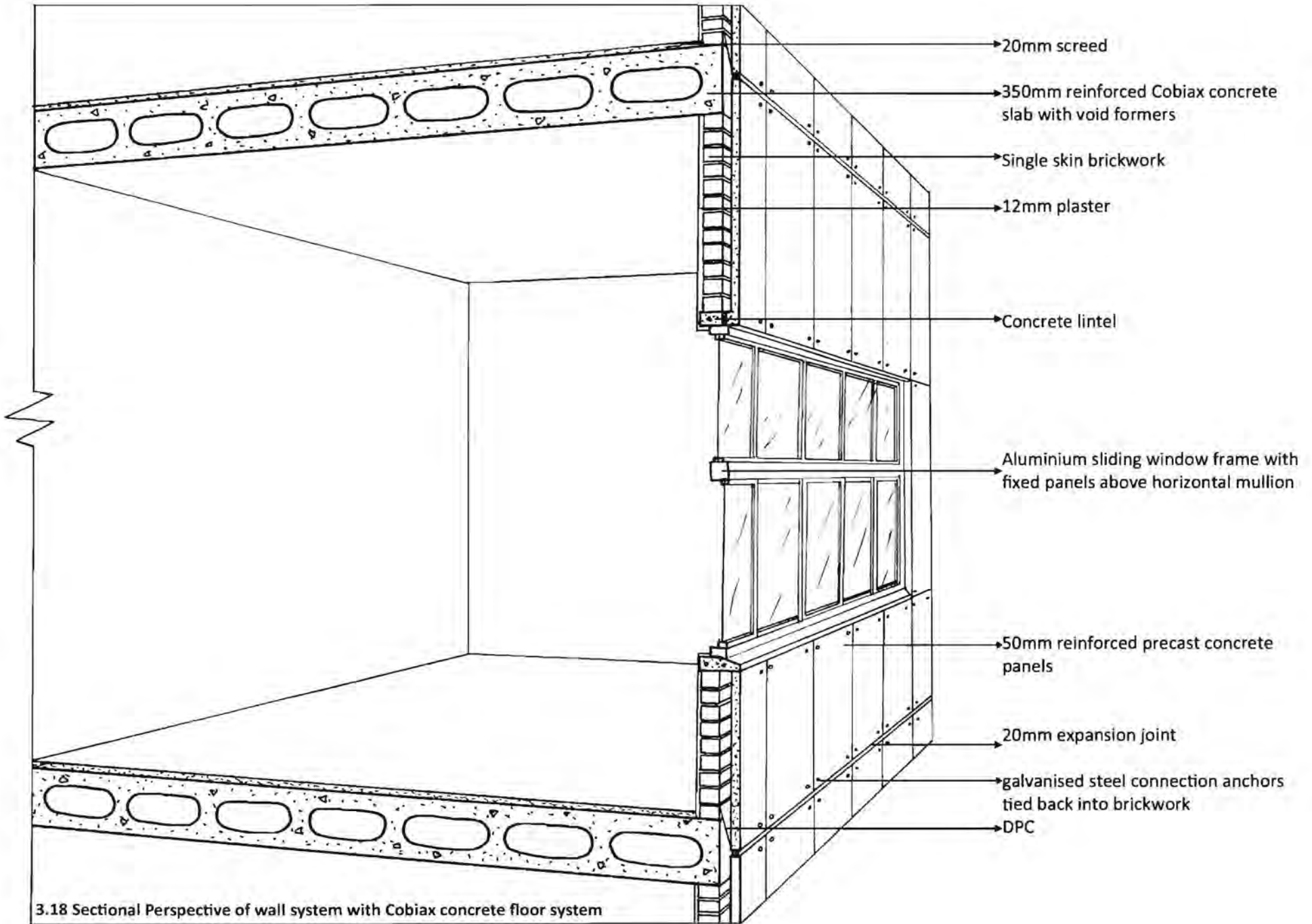
Precast Wall Panels Used as Shear Walls

As shear walls take on horizontal loads, it is important to ensure that the connections are designed to take these lateral forces, while still accommodating thermal movement and deflection. This system may be combined with load-bearing or wall-supporting systems.

Due to the nature of the cobiax concrete slab system, the lack of beams reduces the options available for precast concrete panel systems (Fig. 3.9). In order to allow for ease of construction of these panels, and to allow for them to be removed and replaced over time, I have opted to use a double-skin system of construction. This includes an internal single-skin brick wall, with a cavity and an external precast concrete skin that may be detached and replaced via galvanised steel connection anchors that tie the concrete panels back to the brick skin and the concrete floor slabs (Fig. 3.17 - 3.18).

3.17 1:10 Detail of precast concrete panel wall system

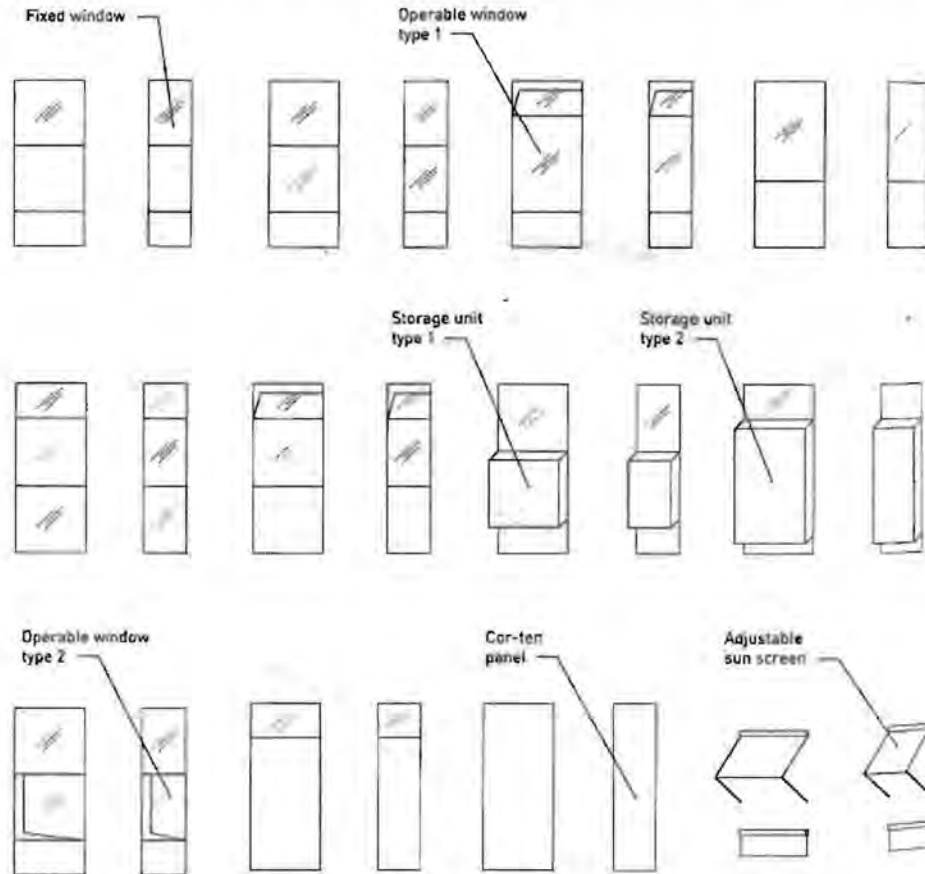




3.18 Sectional Perspective of wall system with Cobiax concrete floor system

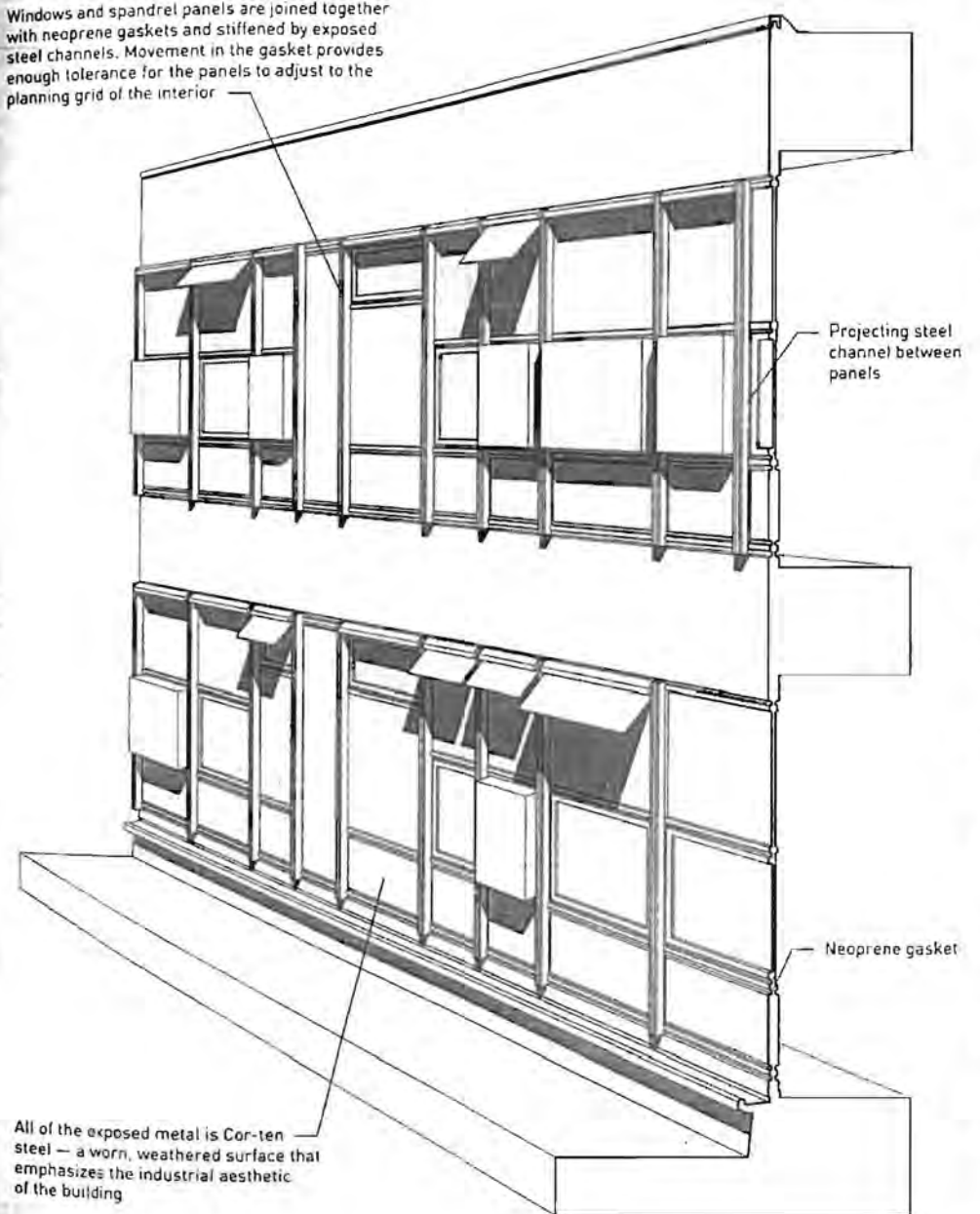
MODULARITY IN THE BERLIN FREE UNIVERSITY

The Free University in Berlin, Germany (1973) by Candilis-Josic-Woods and Jean Prouvé provide a good example of modular panels within an educational building. The University was designed around the need for growth and the possibility for expansion. A series of rigid hierarchies were exchanged for pluralism and tolerance as flexibility is a key concept. The cladding incorporates modular Cor-ten steel and glass panels of different heights and two widths, which are arranged according to the proportions set out by Le Corbusier's Modular system (Fig. 3.21). The panels provide a range of programmatic solutions through the incorporation of fixed and operable windows, storage units and adjustable screens (Fig. 3.19 - 3.20). Thus the facade of the building changes constantly as the skin is reconfigured according to the needs of the users.



3.19

Windows and spandrel panels are joined together with neoprene gaskets and stiffened by exposed steel channels. Movement in the gasket provides enough tolerance for the panels to adjust to the planning grid of the interior



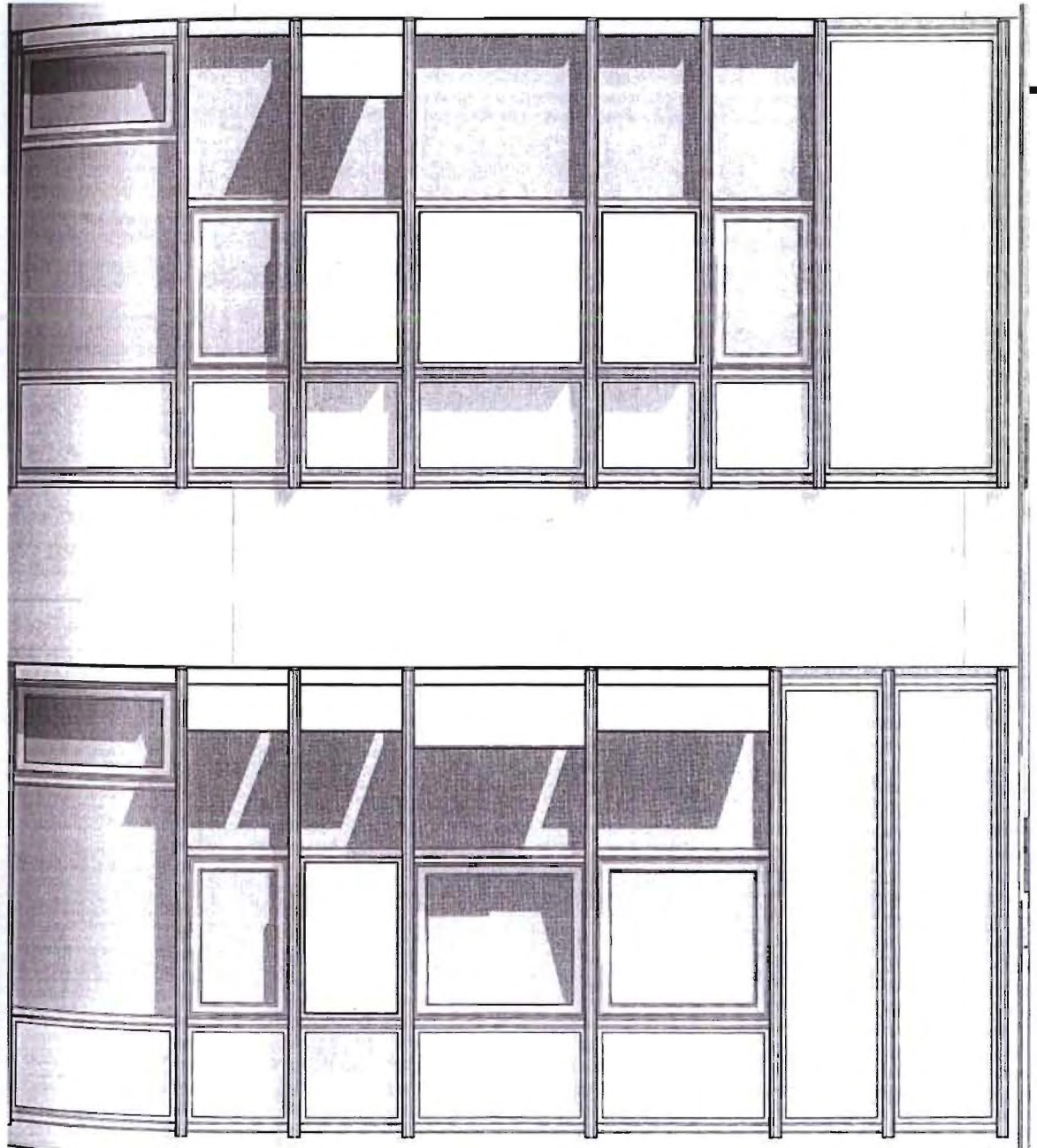
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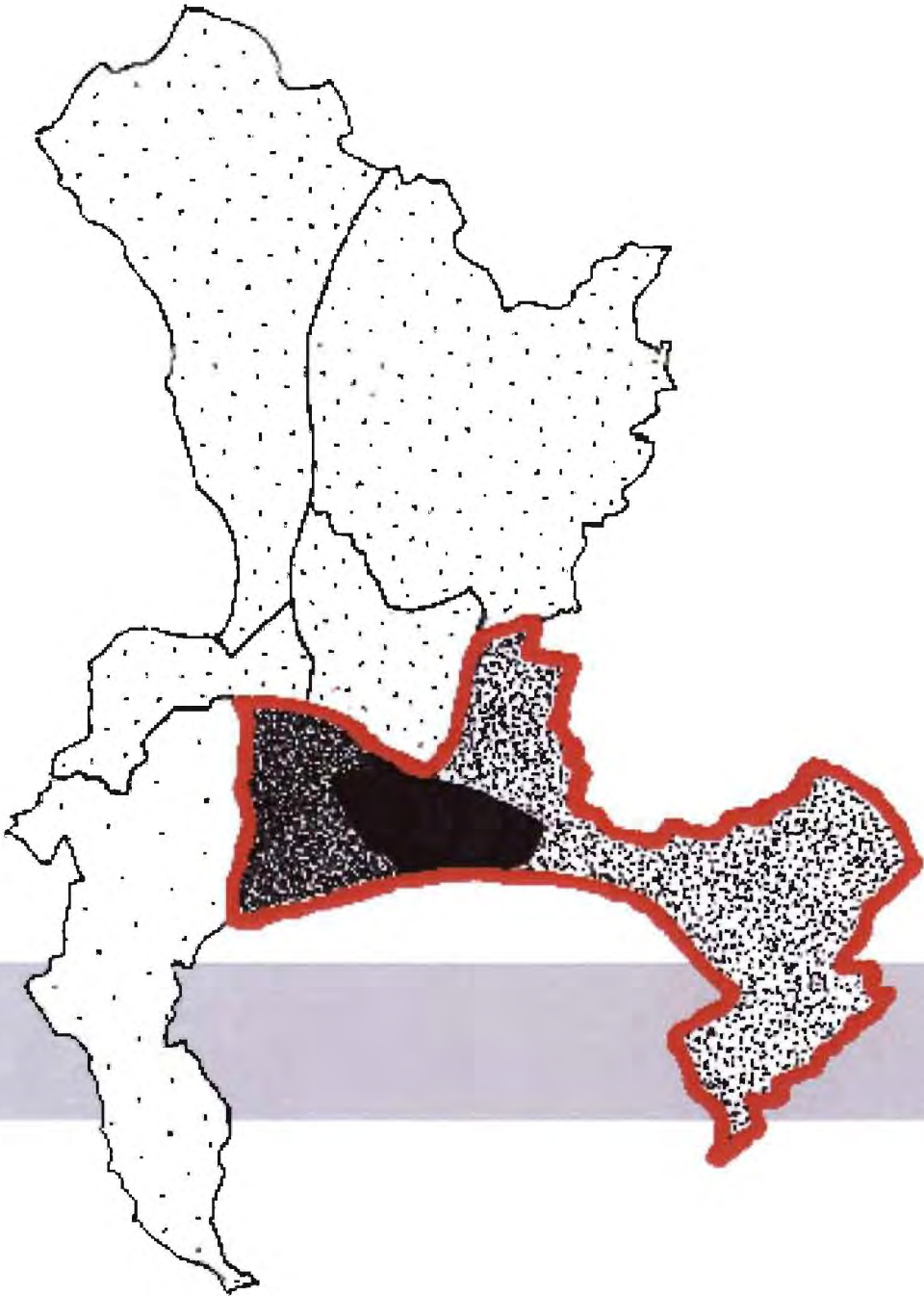
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3.23

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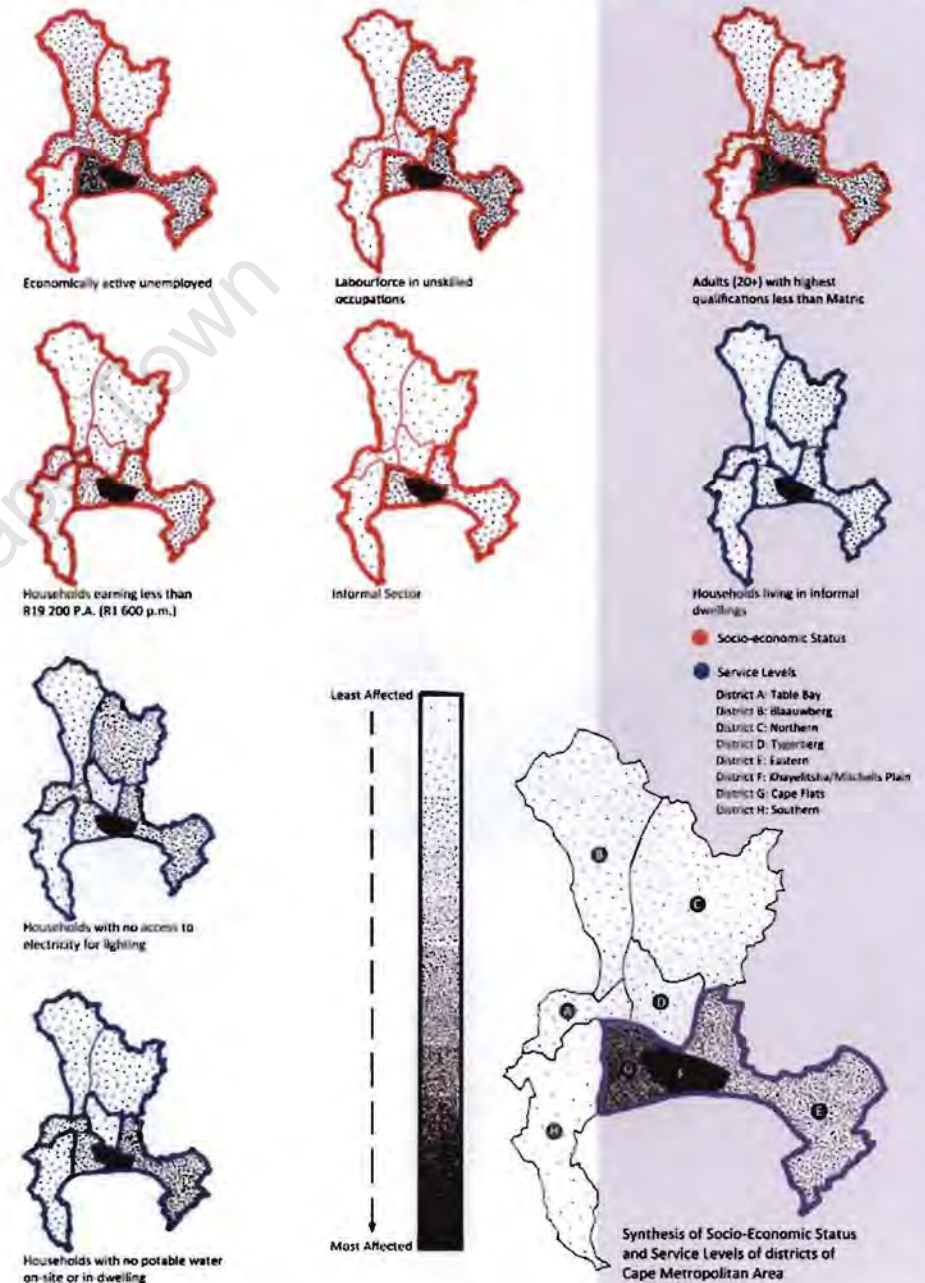
Chapter Four: Site Investigations

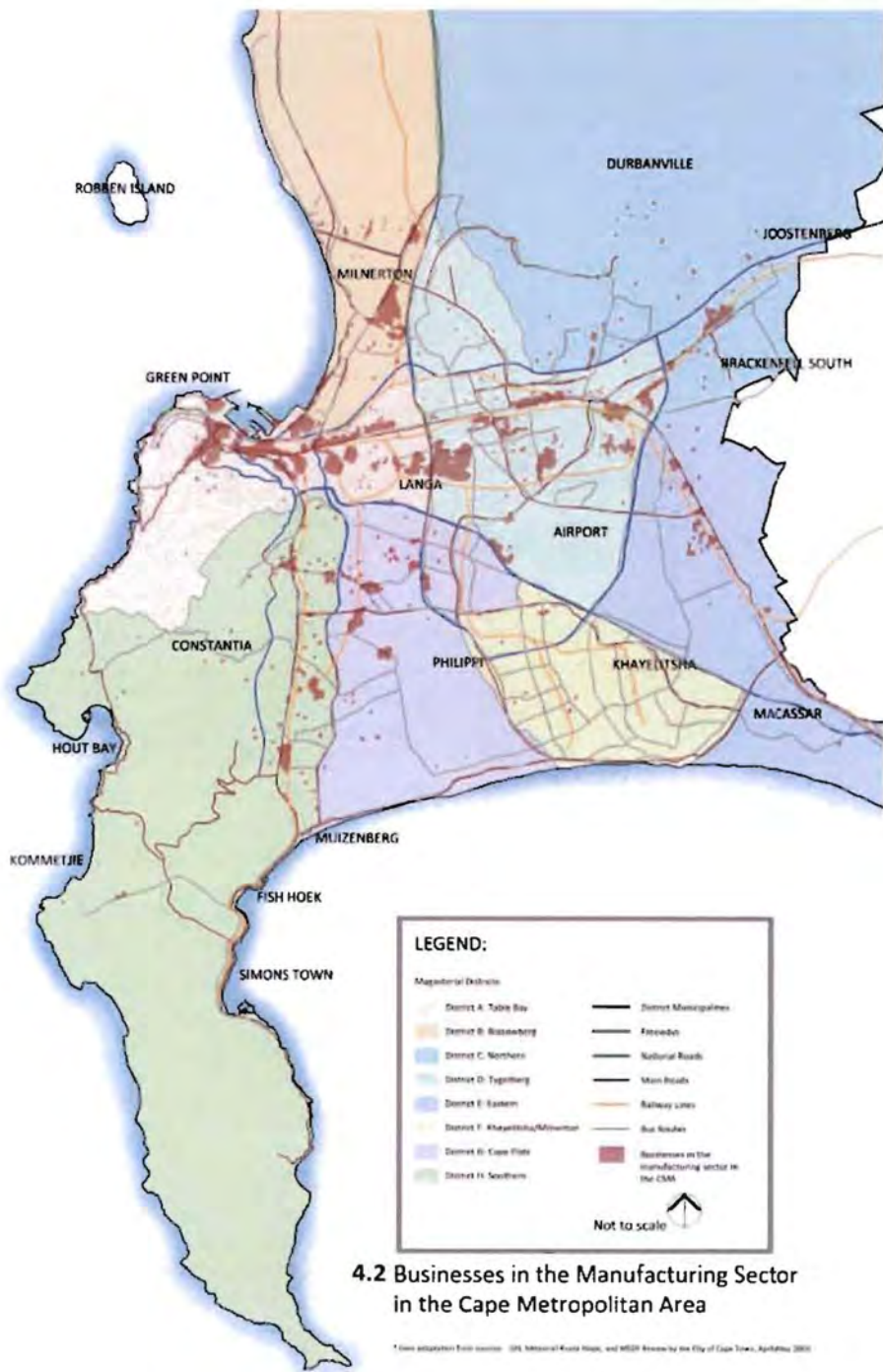
SETTING THE CONTEXT AT A MACRO SCALE

The site investigation began by locating the issues within a macro scale, focusing on the Cape Metropolitan Area (CMA), which is subdivided into eight different districts. A study of each of these districts looked at the issues of unemployment, unskilled labour, educational qualifications and low income earners (Fig. 4.1). After analysing and synthesising these statistics, it became clear that the district with the worst figures is District F; the Khayelitsha/Mitchell's Plain District. The second worse-off area is District G; the Cape Flats District. It soon became clear that these two areas were to become the main focus areas from this point in the study, as the need for economic upliftment is the greatest here. It is also important to note that the Gugulethu Campus mentioned earlier, that does not work to its full potential, is situated within this focus area.

The next important step in the siting process was to determine the economic needs of the CMA that might help to determine what types of courses to offer on the new campus. Once the courses are determined, the campus should be situated near existing potential job opportunities in thinking to focus on 'green' technologies and energies. While thinking about potential SMME opportunities for graduates, I decided to incorporate the opportunity for students to learn about local agriculture that may stimulate small businesses that develop their own fresh produce for sale. This is particularly relevant within the Philippi area, as a large portion of the land is devoted to agriculture. The focus area for the site therefore looked at linking the Philippi agricultural land with the Industrial areas.

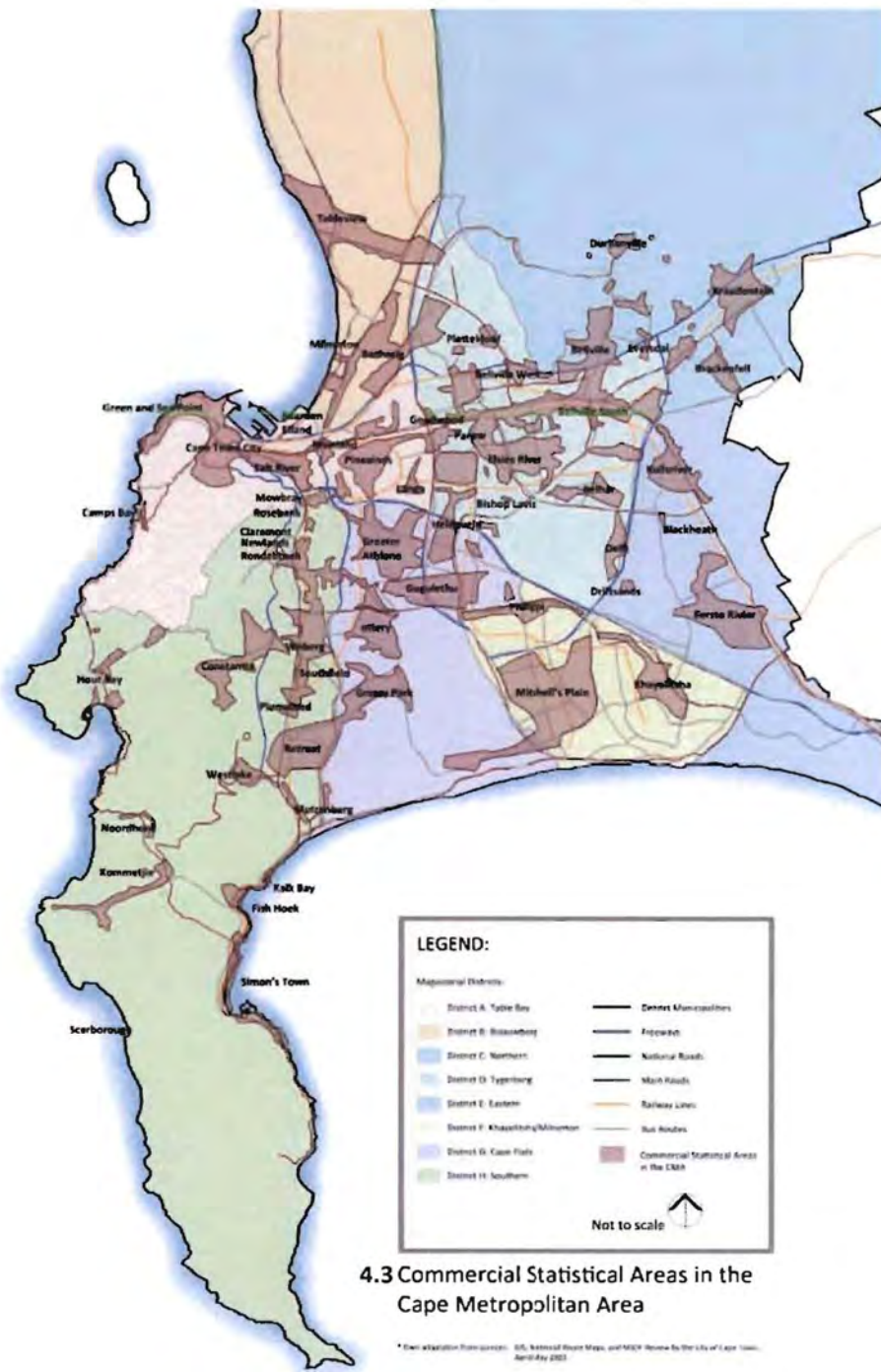
4.1 Cape Metropolitan Area: Current conditions





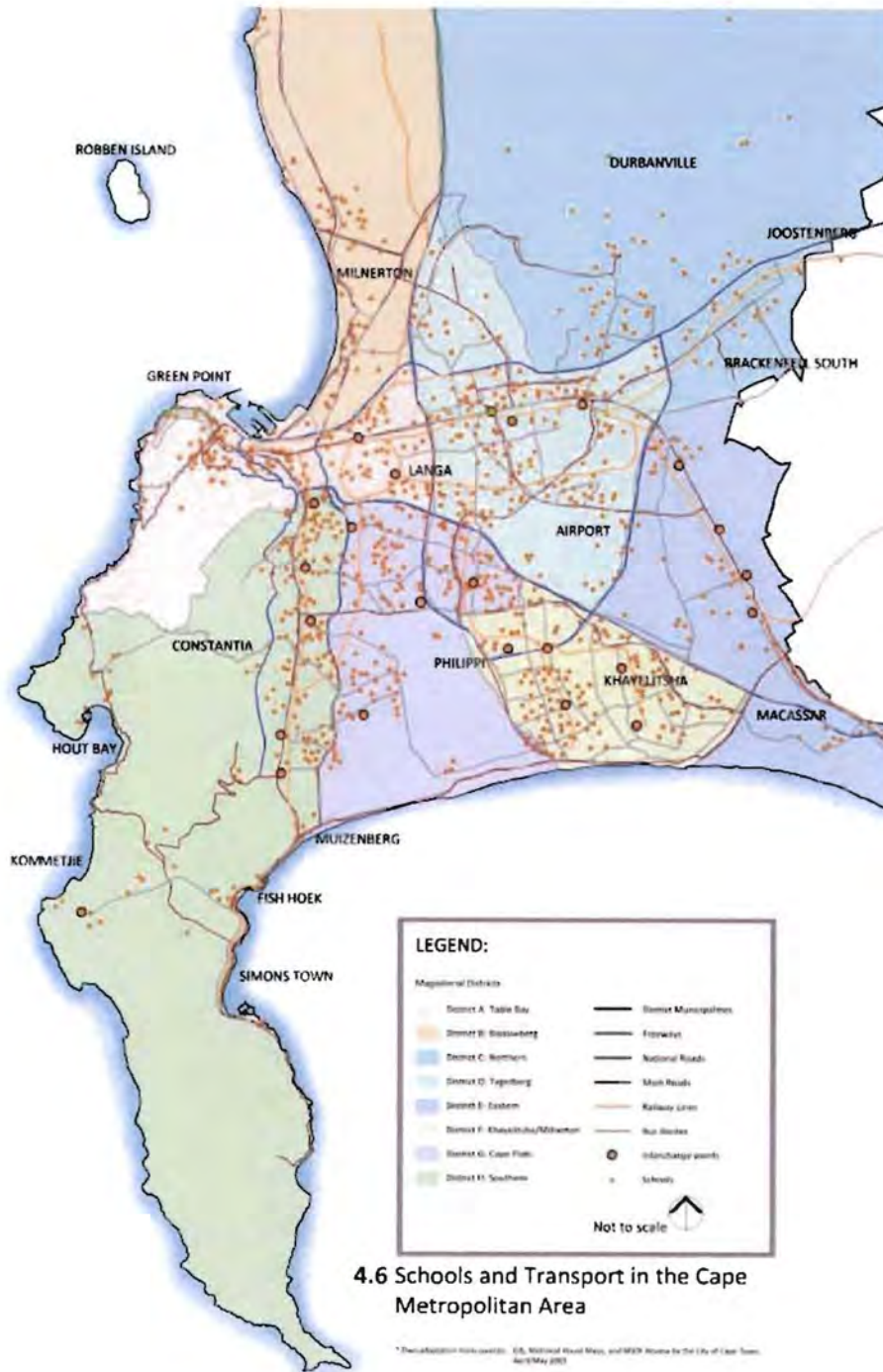
4.2 Businesses in the Manufacturing Sector in the Cape Metropolitan Area

* Data adaptation from sources: GIS, National Route Maps, and MSDP Review by the City of Cape Town, April/May 2003.



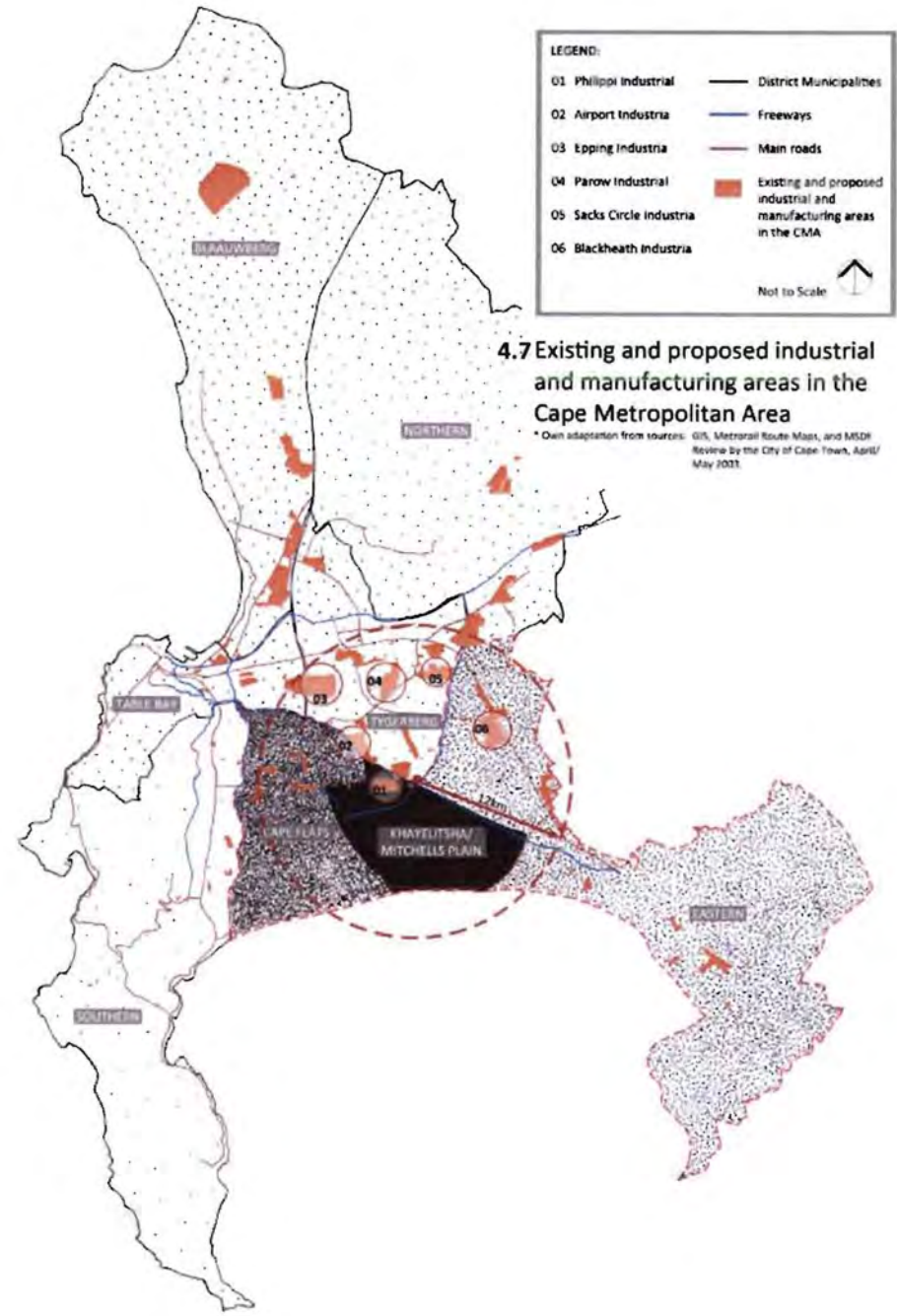
4.3 Commercial Statistical Areas in the Cape Metropolitan Area

* Data adaptation from sources: GIS, National Route Maps, and MSDP Review by the City of Cape Town, April/May 2003.



4.6 Schools and Transport in the Cape Metropolitan Area

* Data adaptation from sources: GIS, Metrorail Route Map, and MSDP Review by the City of Cape Town, April/May 2001.



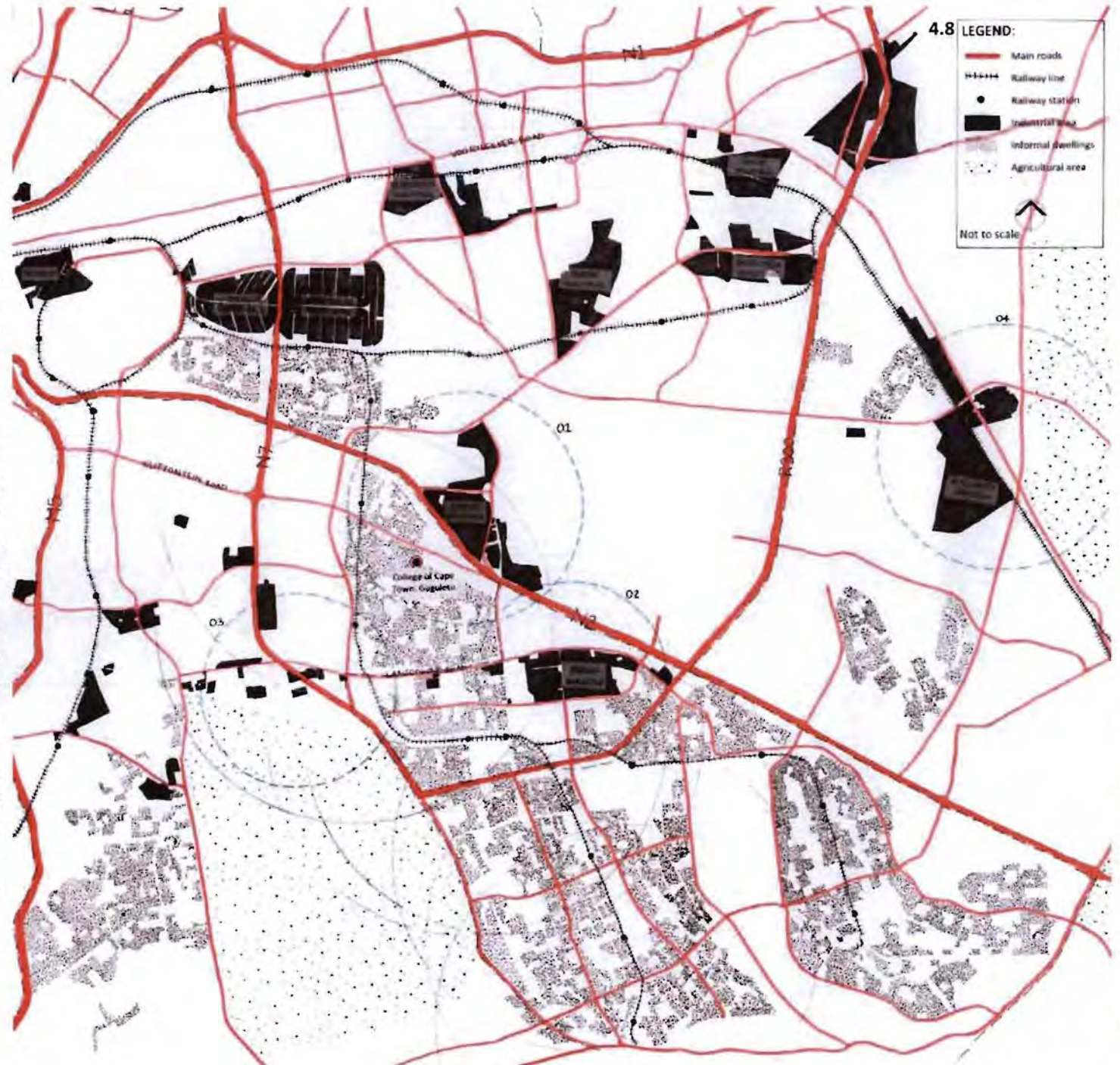
4.7 Existing and proposed industrial and manufacturing areas in the Cape Metropolitan Area

* Data adaptation from sources: GIS, Metrorail Route Map, and MSDP Review by the City of Cape Town, April/May 2001.

ZOOMING IN ON THE FOCUS AREA

As Airport Industria is currently more established than Philippi Industrial, I felt the link should focus on the Airport Industrial area as it will provide more work opportunities in the short term. The hope is that over time, trained workers will migrate to Philippi Industrial and eventually a new campus can open closer to this area.

One of the most crucial steps in the siting strategy is ensuring that there is ease of access via public transport. There is a railway that runs North between Lansdowne Road and the N2 Freeway, with two stations, Heideveld and Nyanga. The main road running along this line, Duinefontein Road, creates a link between the two focus areas. A study of this road revealed that there are currently 6 schools, a police station, a public park, basketball courts, a hospital, a shopping centre and a mosque situated along the road. Pedestrian traffic from these sites will enhance the life of the college if situated along this route. The study of this route led to the final site chosen on the corner of Lansdowne Road and Duinefontein Road.





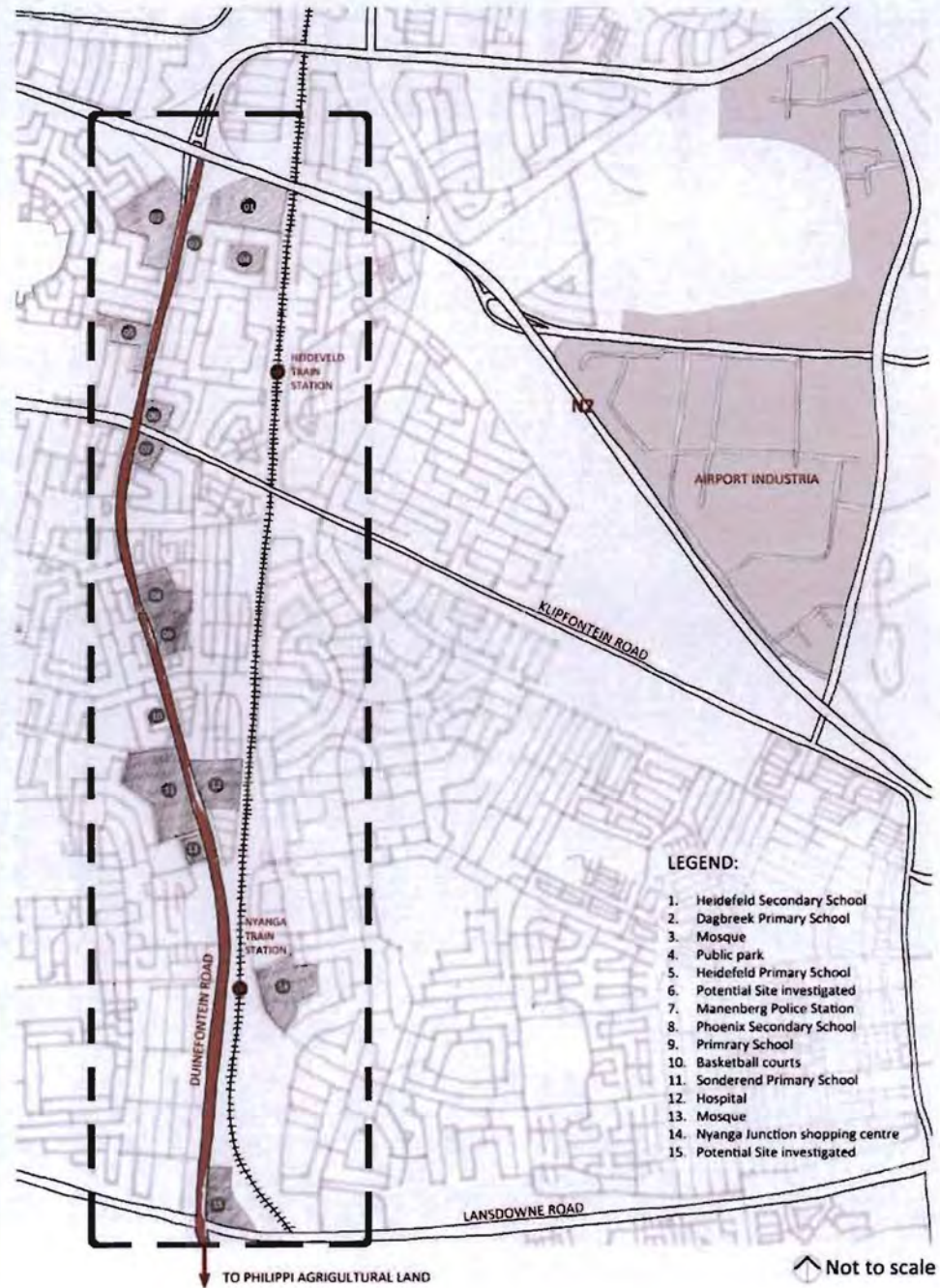
01 Nyanga Station
02 Site

200m





SITE ANALYSIS_LINKING AIRPORT INDUSTRIA TO PHILIPPI AGRICULTURAL PRECINCT
4.10





4.11 View down Lansdowne Road

SITE STUDIES

Not only does the site chosen of the corner of Lansdowne Road and Duinefontein Road allow for interaction with passing pedestrians, but it has an advantage over other sites to highlight the college image and publicity as it is situated on a corner site, near a traffic intersection. This will allow the college to become a beacon and important part of the community, instead of tucking it behind a row of houses on a side road. Another positive of the site is that it is within 1km walking distance from the Nyanga train station and shopping centre.

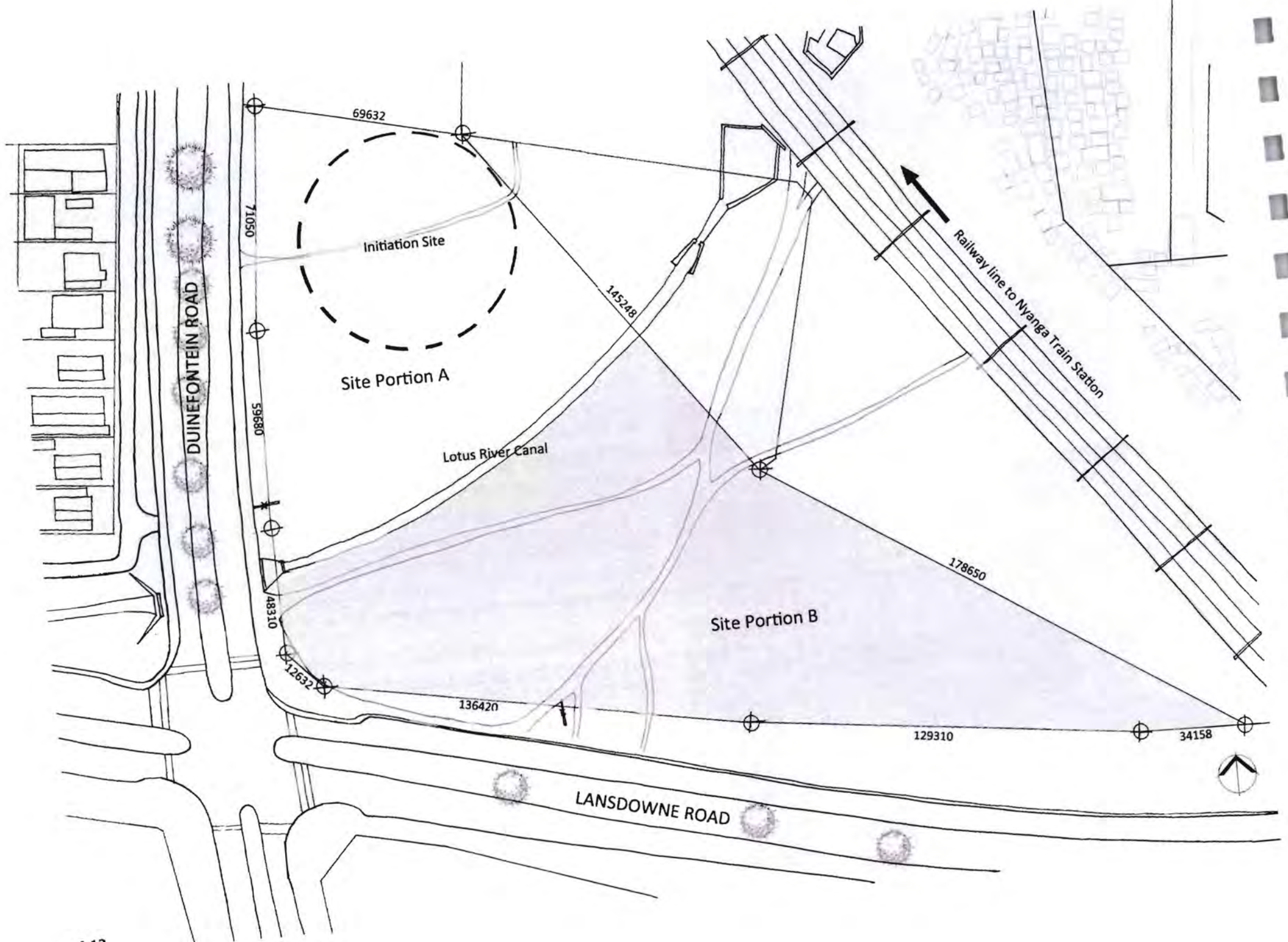
The site is surrounded on the West and South sides by vehicular roads, along the North side by open land that is owned by the shopping centre, and along the East side by the railway line. The Lotus River Canal cuts through the centre of the site, dividing it into two portions (Fig. 4.14). The North portion is currently used as an initiation site, while the South portion is used as a through-route for taxis and pedestrians to the residential area across the railway line. In order to minimise interference with the initiation site, I decided to subdivide the site into these two portions, and include pedestrian through-routes in the design of the college on the South portion in order to include the community on the site.

The total site area is 31 116m²; Portion A (the Northern portion) is 9 888m² and Portion B (the South portion) is 15 716m² (Fig. 4.13). These exclude the 20m 50-year flood line setback from the canal.

The main sound issues are along the South and West of the site, along the traffic routes, and occasionally along the North East side along the railway line. The North side of the site is the best position for activities that need a quiet environment.



4.12 View of the Lotus River Canal at the Duinefontein Road bridge



4.14 View of Lotus River Canal cutting through the site



4.15 View of Lansdowne Road



4.16 View of billboards positioned on the edge of the site along Lansdowne Road



4.17 View of traffic intersection from Lansdowne Road





4.18 View of corner of Lansdowne Road (right) and Duinefontein Road (left)

4.19 West view towards Table Mountain





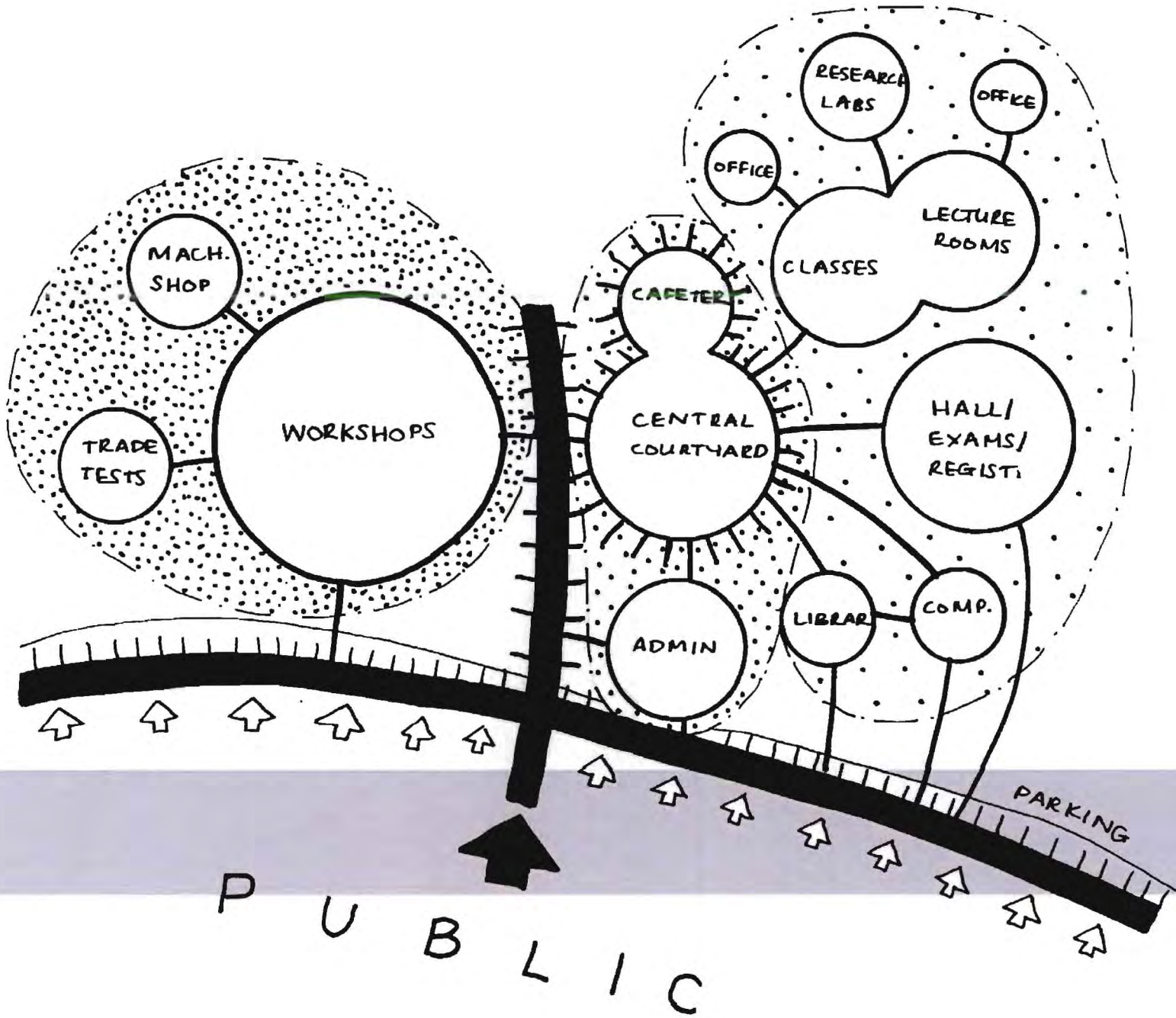
4.20 View down Lansdowne Road bridge towards West, with railway line on the right

4.21 View towards East of the site, along Lansdowne Road



University of Cape Town



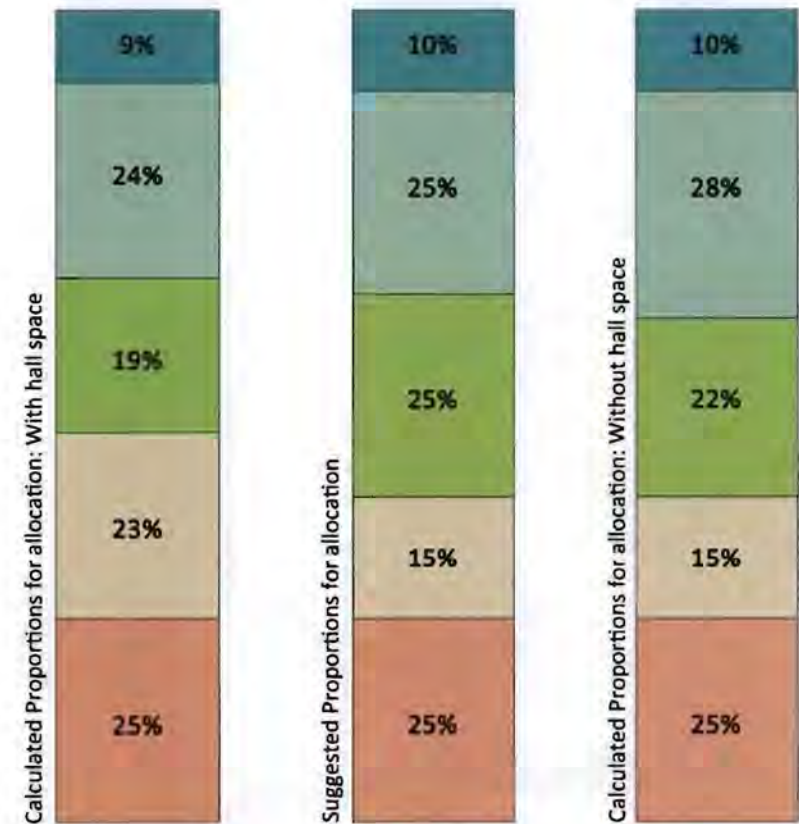


Chapter Five:
Design Explorations

According to *The Architect's Handbook* by Quentin Pickard, the proportions and types of spaces in vocational training colleges should be divided into 10% learning spaces (learning resource centre and computer labs), 25% specialised teaching (workshop spaces), 25% general teaching (classrooms, groupwork rooms, lecture room/s), 15% non-teaching/learning (staff area, admin, communal areas, student services area), and 25% approximate balance (circulation, services, lavatories, storage etc.) (2002: 63). These figures relate to emerging colleges, and allow for less learning spaces, while creating more space for specialised and general teaching. I have used these proportions as a base guideline upon which to work during the design process, re-testing their relevance towards the end (Fig. 5.1).

I then started ordering the types of spaces in terms of their relationship to each other and the public threshold. In accordance with this breakdown of college elements (Fig. 5.2). The administration and student services centre are placed near the entrance to provide information and meeting spaces for visitors. The hall, cafeteria (training restaurant and kitchens), utility trades and workshops are to be made available to the public, while the resource centre (library and computer laboratories), hall and restaurant may run after hours. This layering of use by students, staff and public at different times is an important factor in the placement of each element, in order to ensure the safety of the remaining campus.

As discussed in Chapter Two, an important element in college design is to ensure that there is a sense of community within the campus, which will help to provide a sense of pride and enhance self-maintenance. Looking at geometries that express community, I began to explore the idea of the circle as an architectural geometry that symbolises inclusion and shared space by breaking down the hierarchy of front and back. These spatial diagrams start to look at a circular, communal entry point, from which visitors, students and staff can disperse into ancillary spaces (Fig. 5.5 - 5.6).



5.1 Suggested and Calculated Total Gross Area of Buildings: For a college of 1000 enrolments, and accommodation capacity for 800 students on site

- Learning Spaces (Learning resources centre, computer labs, groupwork)
- Specialised Teaching (Workshop spaces)
- General Teaching (Classrooms, groupwork rooms, lecture room)
- Non-teaching/Learning (Staff area, administration, communal areas, student services area)
- Approximate Balance (Circulation, services, lavatories, storage etc)

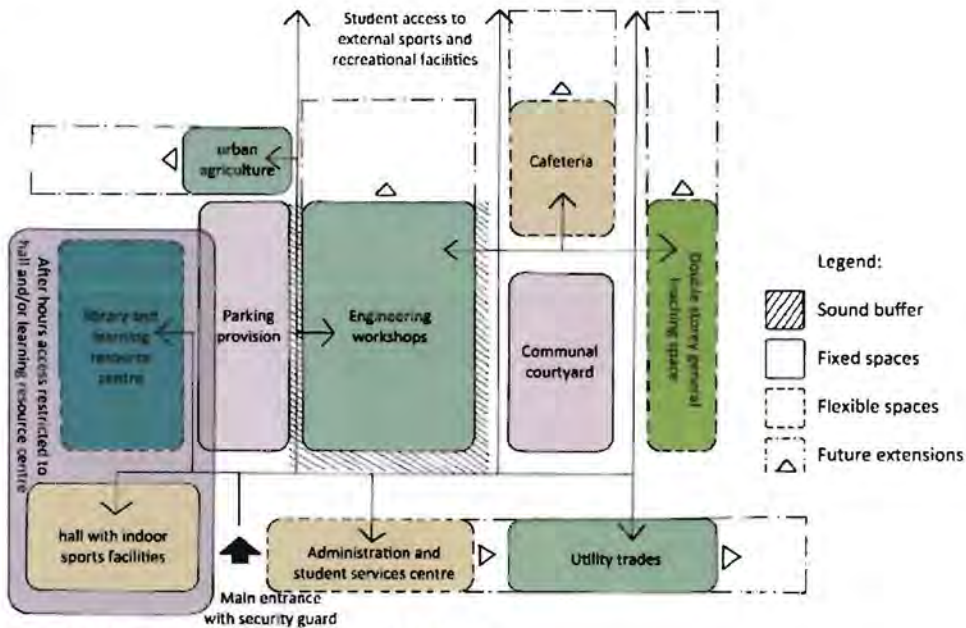
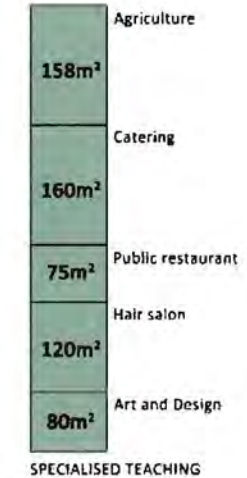
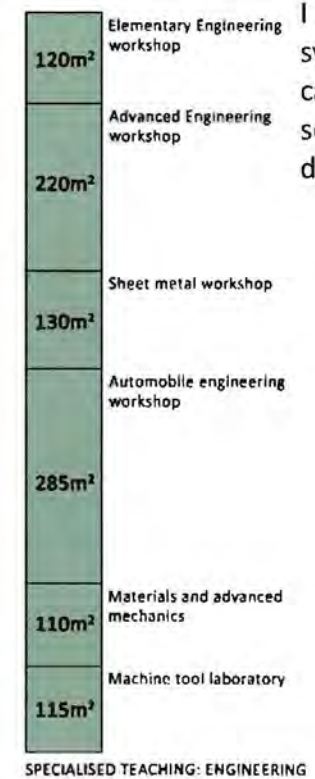
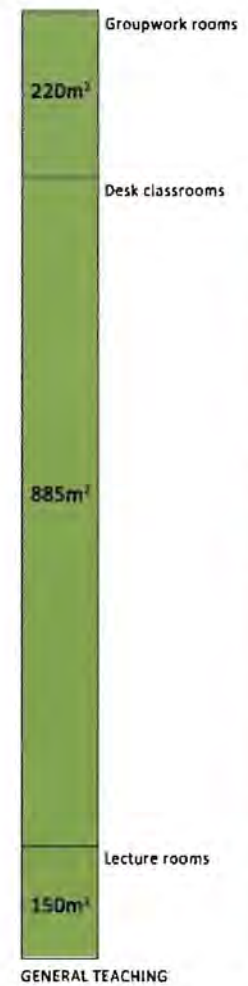
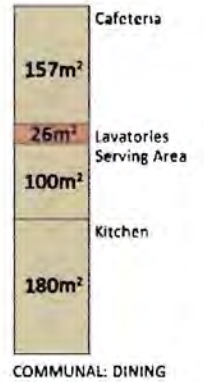
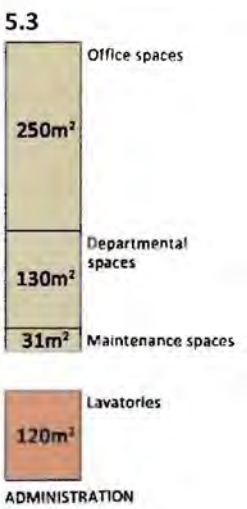
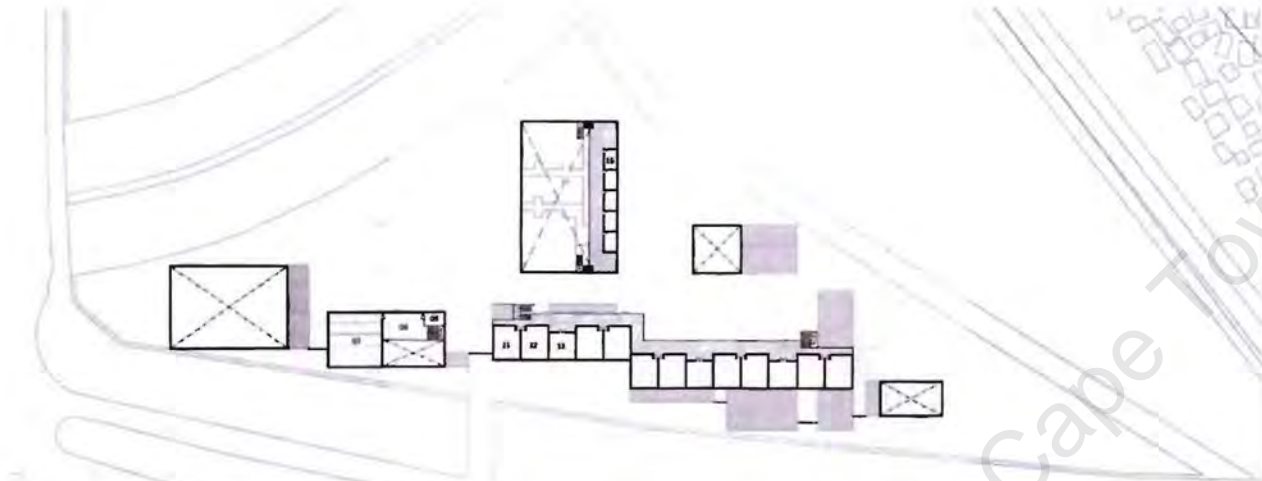


DIAGRAM OF COLLEGE PROTOTYPE LAYOUT 5.2



Another issue in the design exploration stage was determining the look and feel of the facade. I chose to examine the facades of some prestigious university buildings in order to gain an understanding of the elements that create this high-status image. Some of the obvious points seen in these images are the use of symmetry, geometry and modular order. Drawing from these studies, I took the approach of a base symmetry upon the front facade, and chose to develop a series of clean lines and an ordered image.



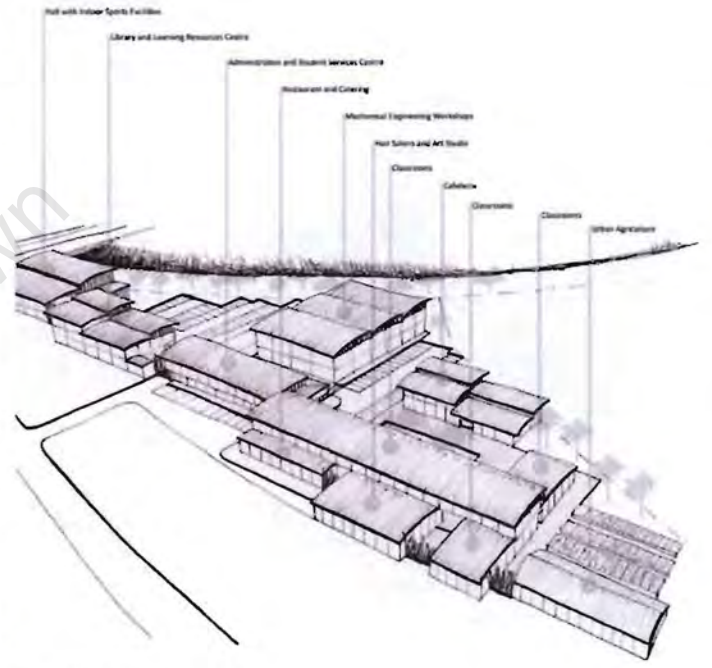
FIRST FLOOR PLAN



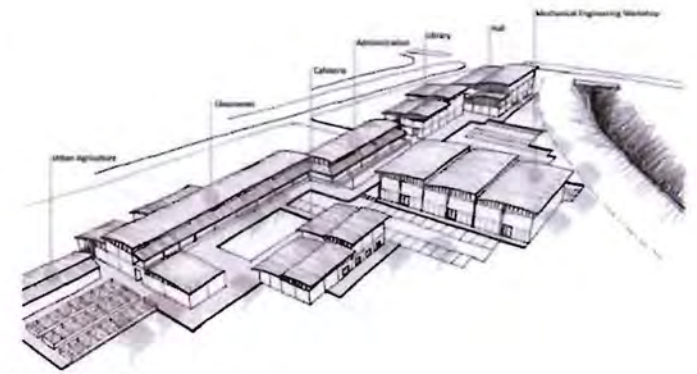
GROUND FLOOR PLAN

SCALE 1:500

5.4



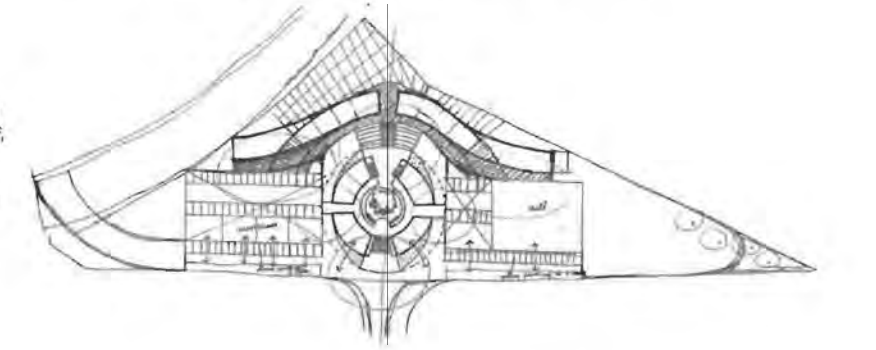
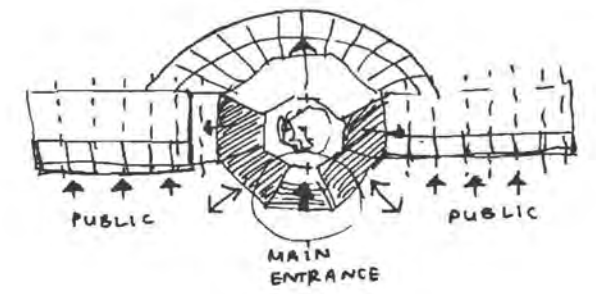
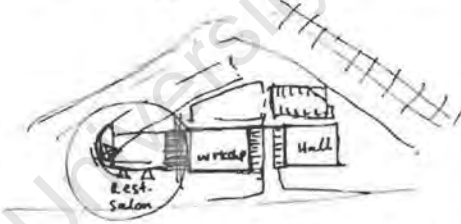
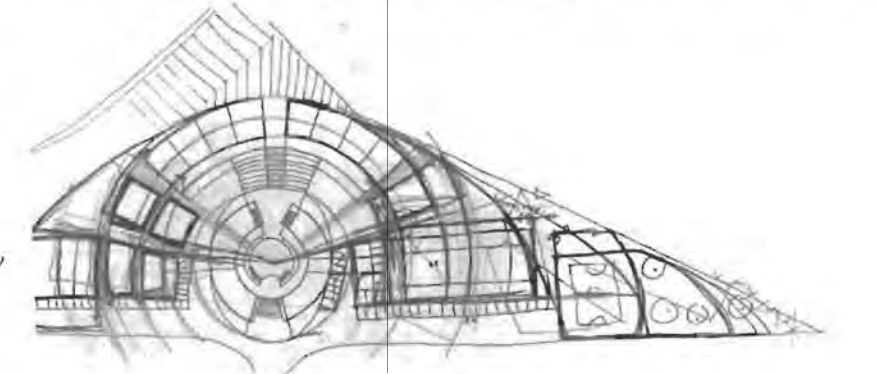
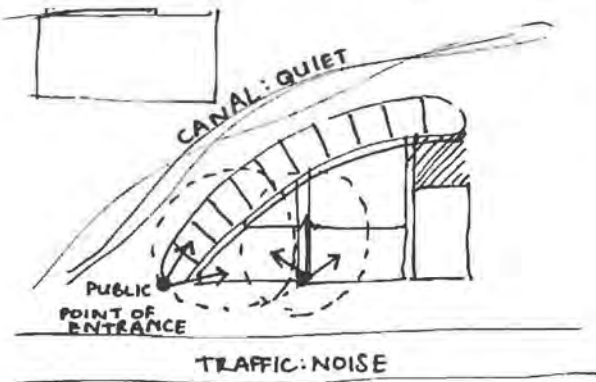
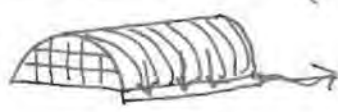
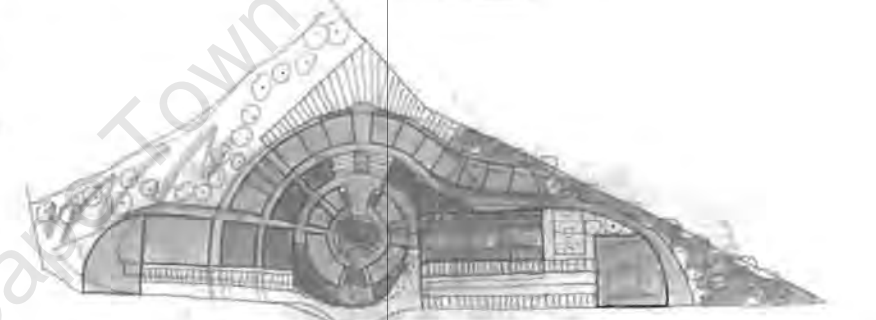
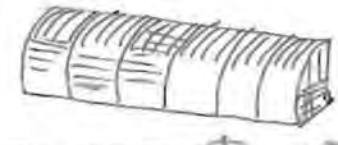
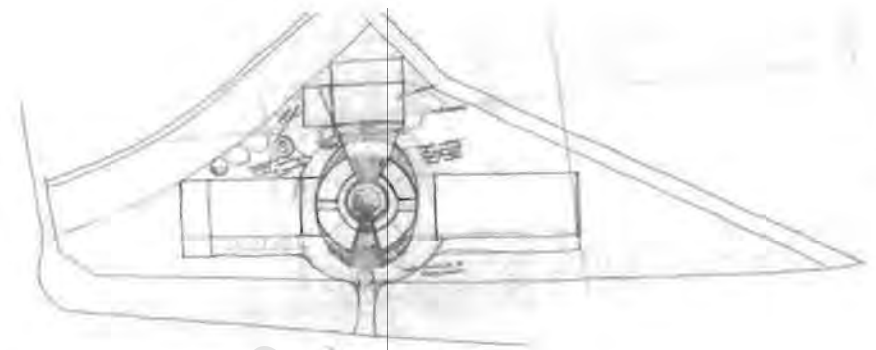
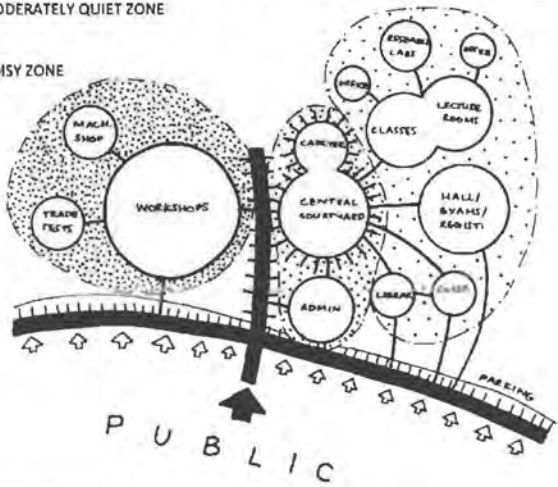
3D Image from Lansdowne Road



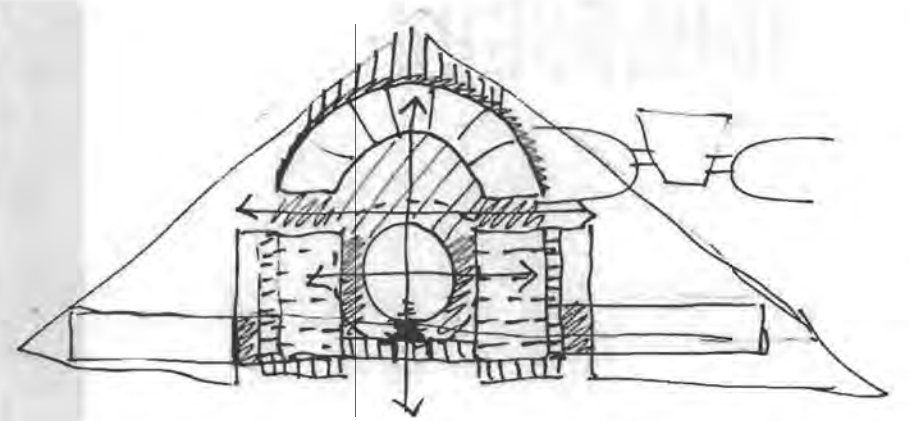
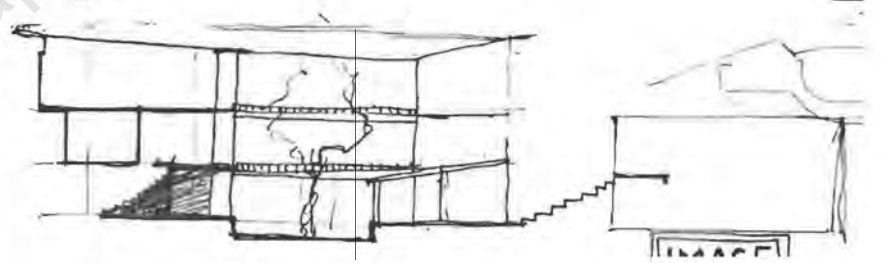
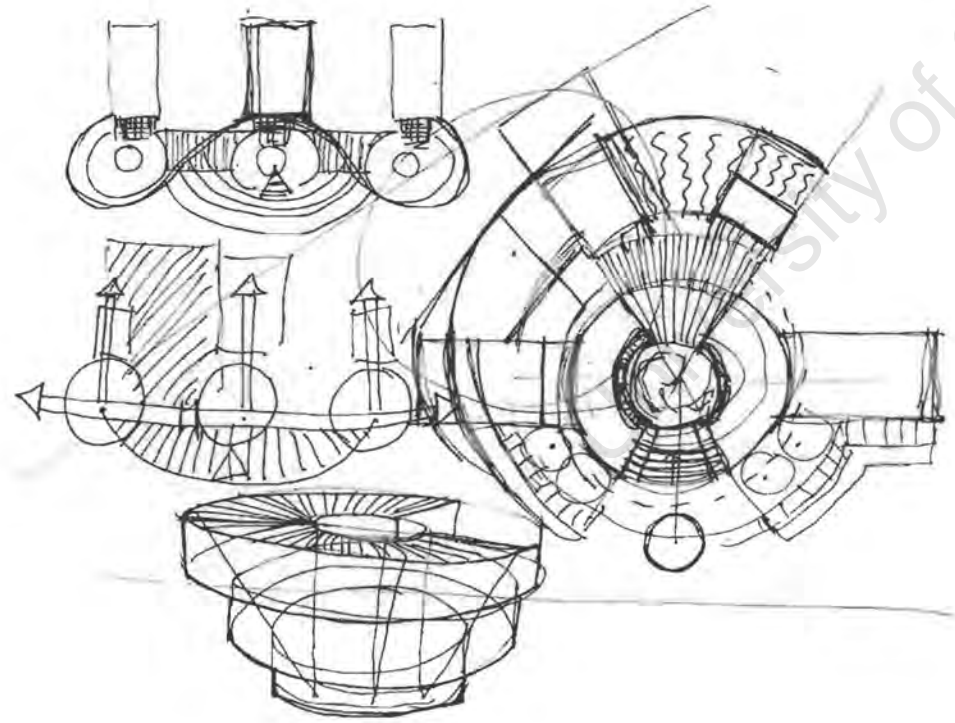
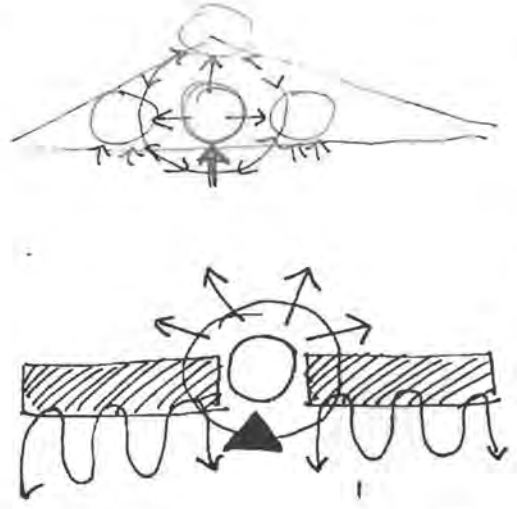
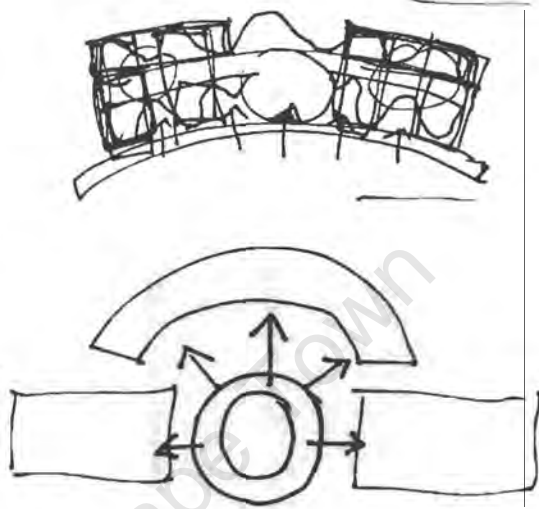
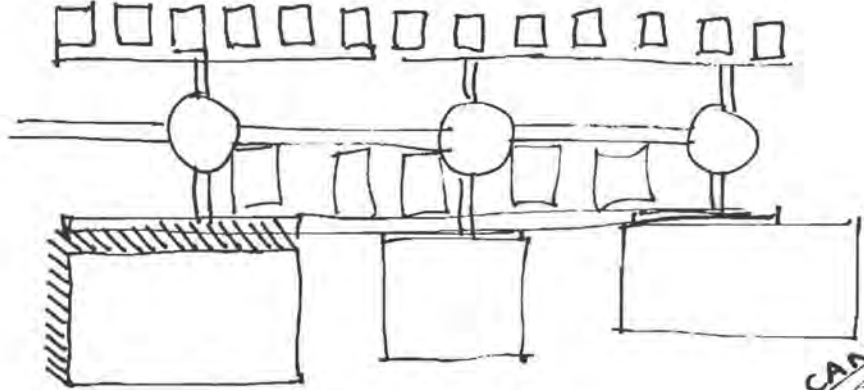
3D Image towards Lansdowne Road

- QUIET ZONE
- MODERATELY QUIET ZONE
- NOISY ZONE

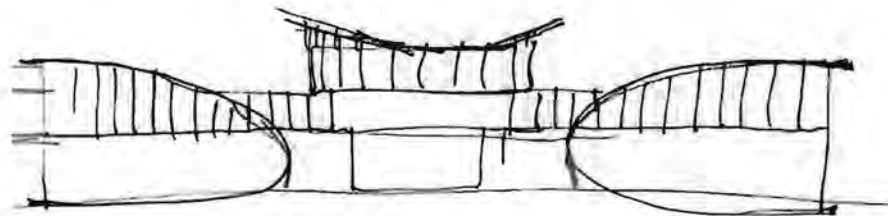
SPACE RELATION DIAGRAM



5.6 Exploring layout and relationships



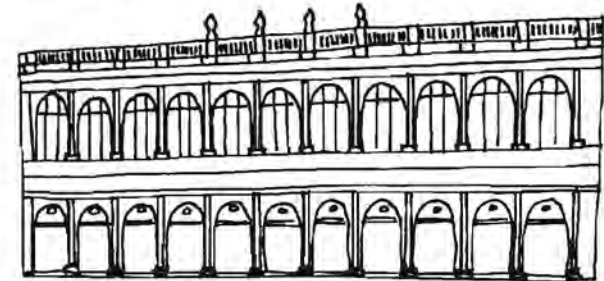
5.7 Exploring facade image types that relate to existing educational images



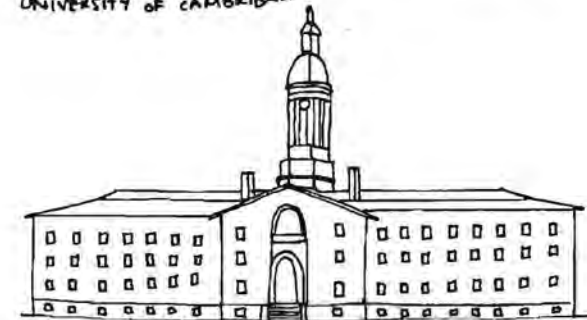
UNIVERSITY OF GRAZ



LAW LIBRARY, COLUMBIA UNIVERSITY



WREN LIBRARY, TRINITY COLLEGE,
UNIVERSITY OF CAMBRIDGE



NASSAU HALL, PRINCETON UNIVERSITY

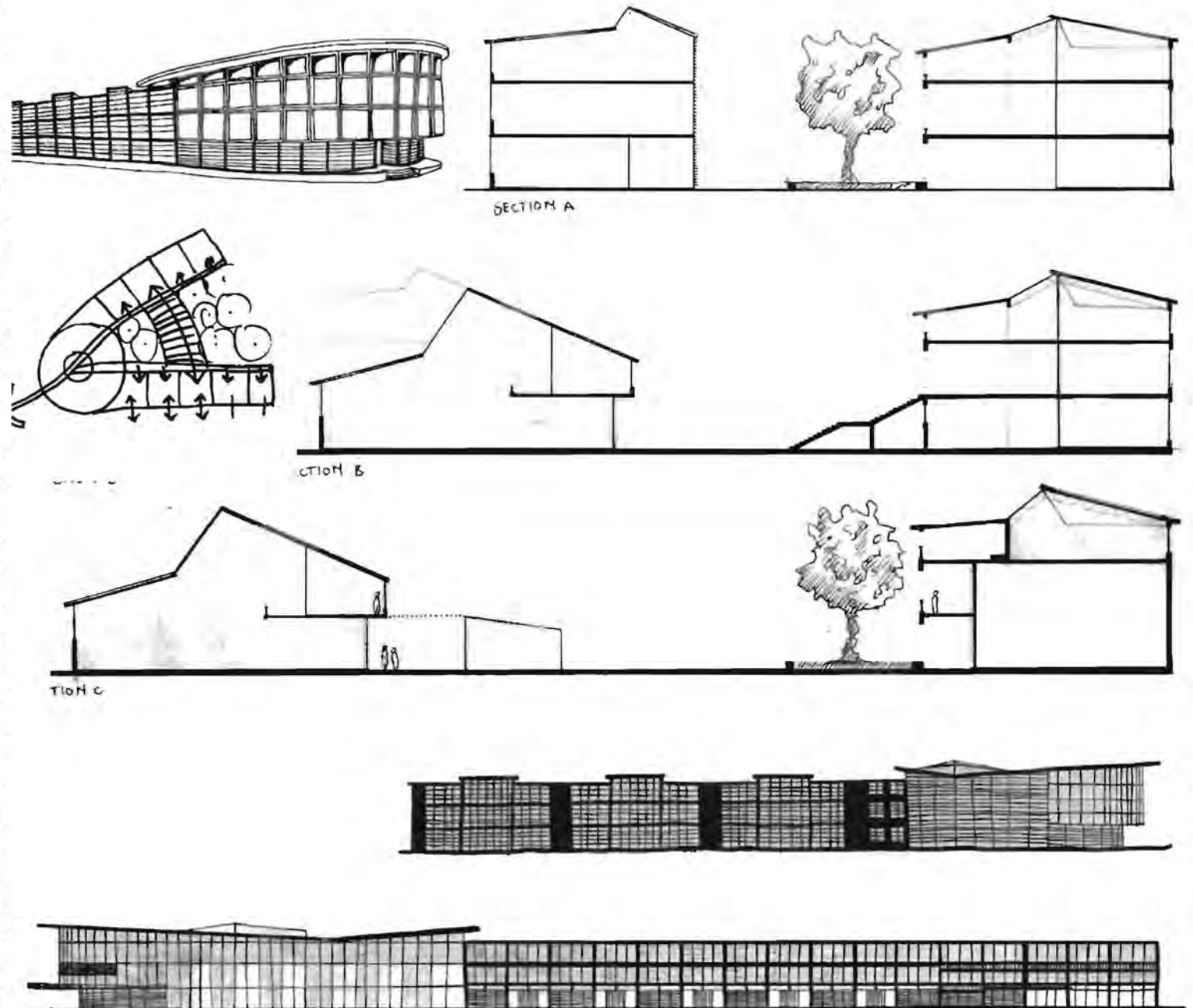




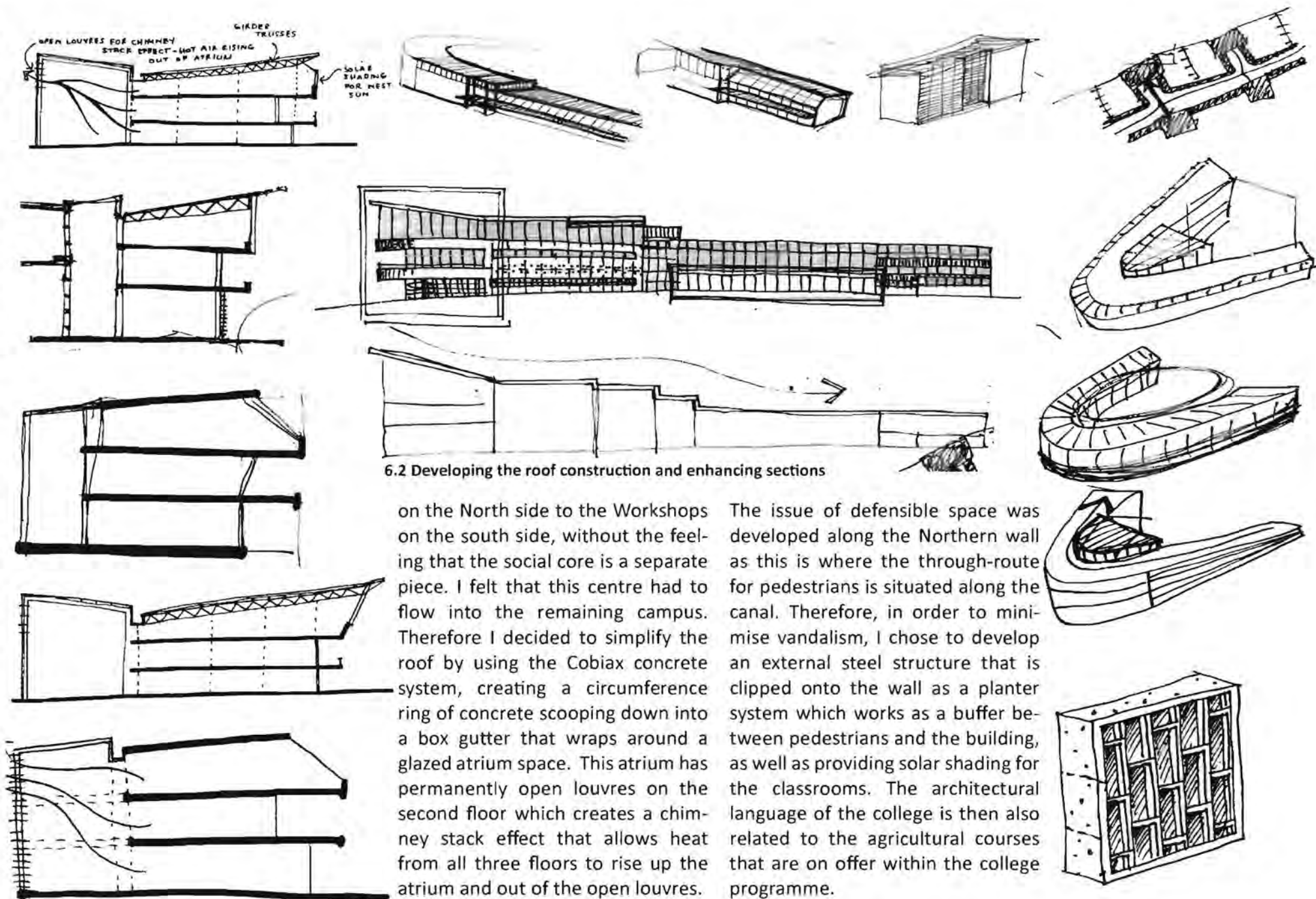
Chapter Six:
Design Development

I soon developed the design further by focusing the entrance on the South West corner of the site in order to enhance the public interaction with the college, as well as maximise the College's image as a beacon in the area. The spatial order explored earlier was maintained, with a circular/curved entrance incorporating social spaces that branch out into the two wings of classrooms and workshops. The architectural works by Richard Meier were helpful to determine how to combine the geometries of rectangles and circles, along with a modularised facade.

This curved front facade and juxtaposed geometries created several technological issues with the roof design. One of the main issues was that every time one area of the roof system was adjusted, it would affect every other roof system, as the building flows together. I began to explore several ways to resolve these issues. One way was to design a steel roof that spanned the length of the curved social space, incorporating 3-dimensional girder trusses. This would either be a single span roof or a butterfly roof with a box gutter in the centre. After playing with the look and feel of the form, I decided to enhance the curve that wrapped around the front, and ensure that the roof expressed this stretched nose from the classrooms



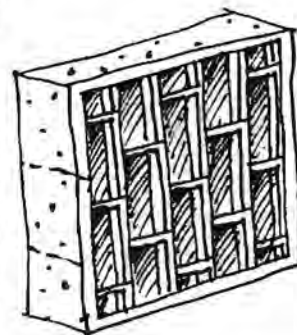
6.1 Developing spatial relationships and image

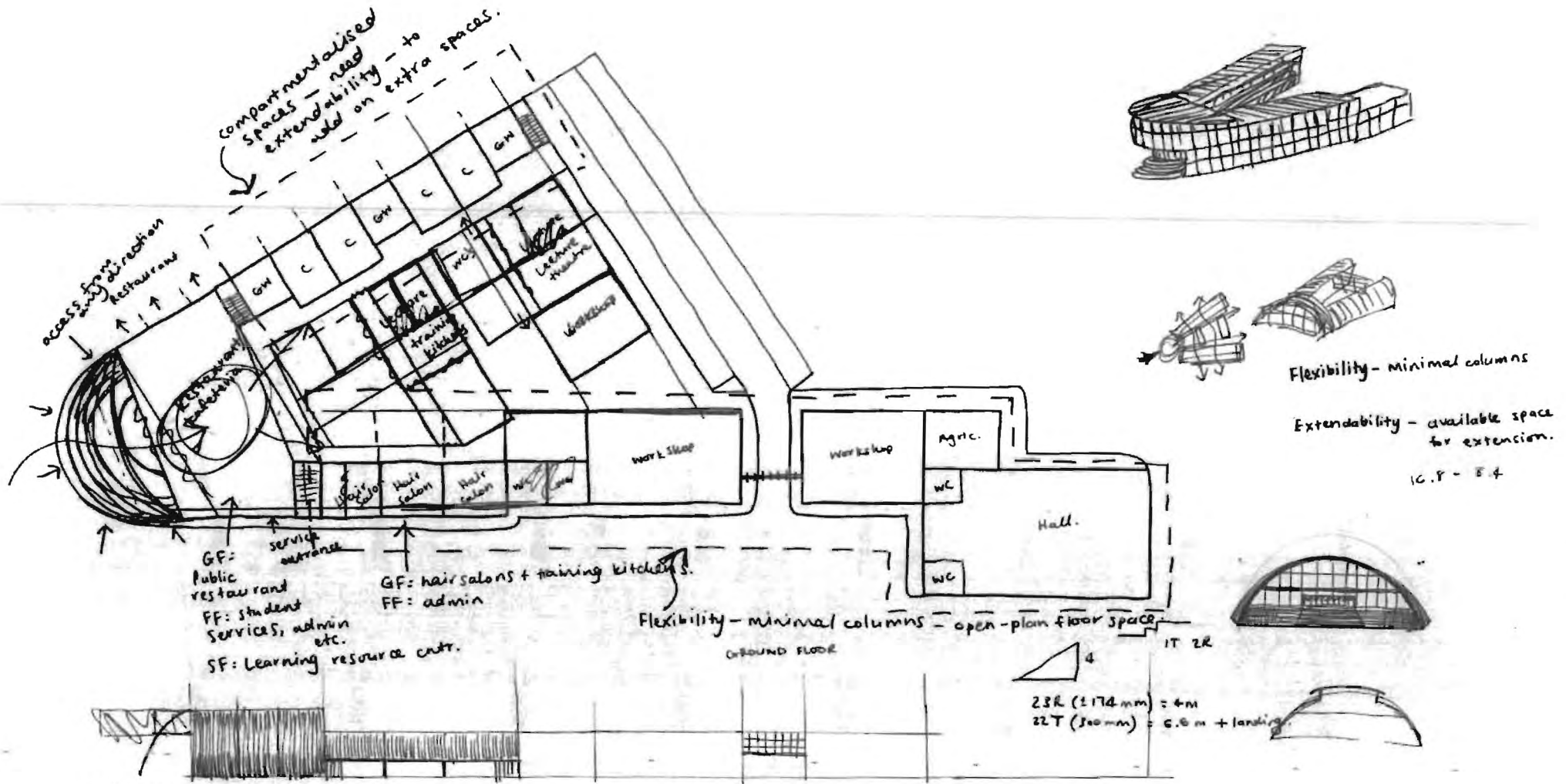


6.2 Developing the roof construction and enhancing sections

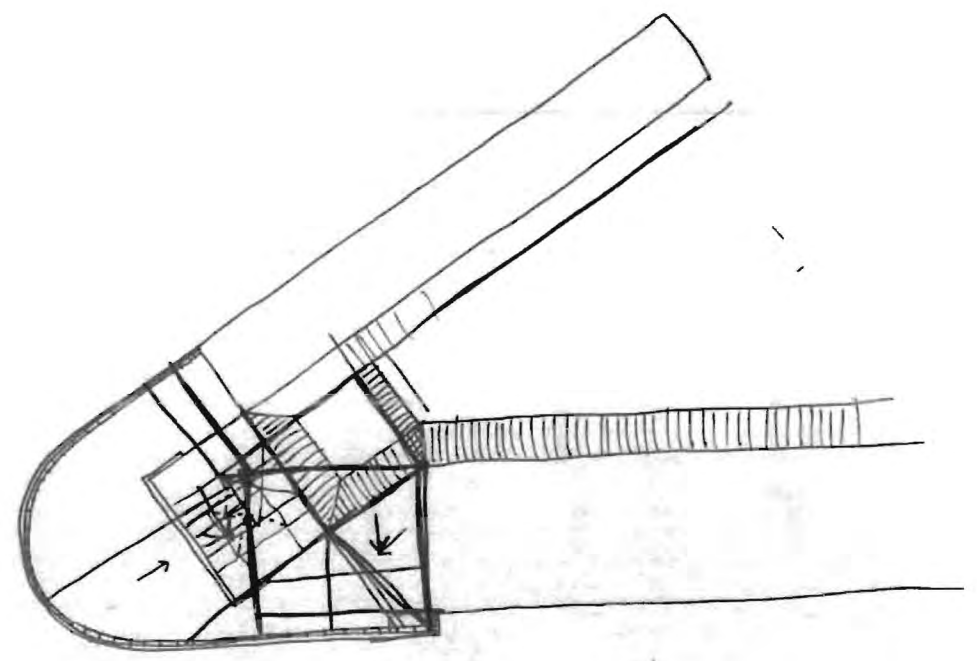
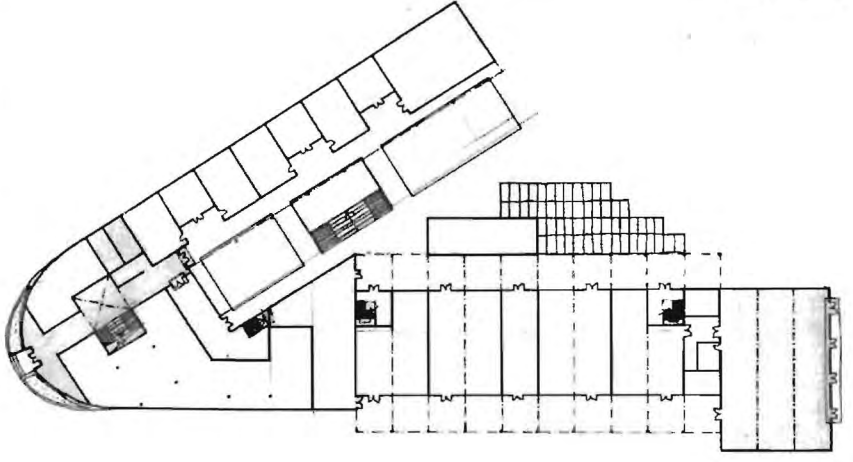
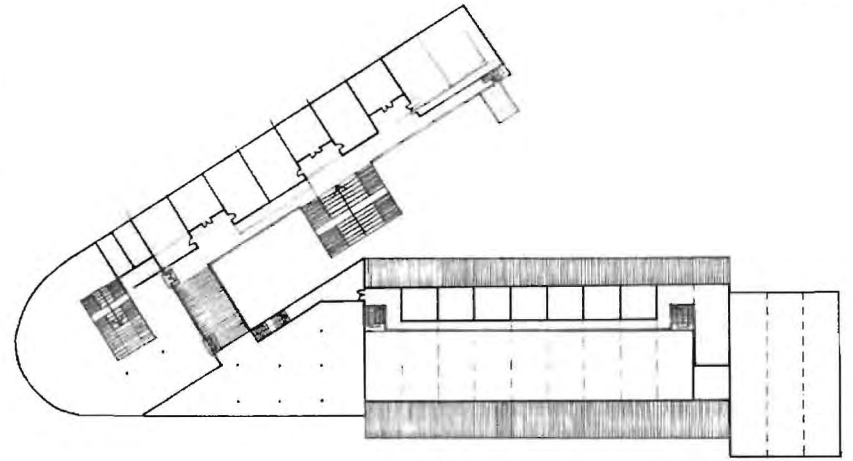
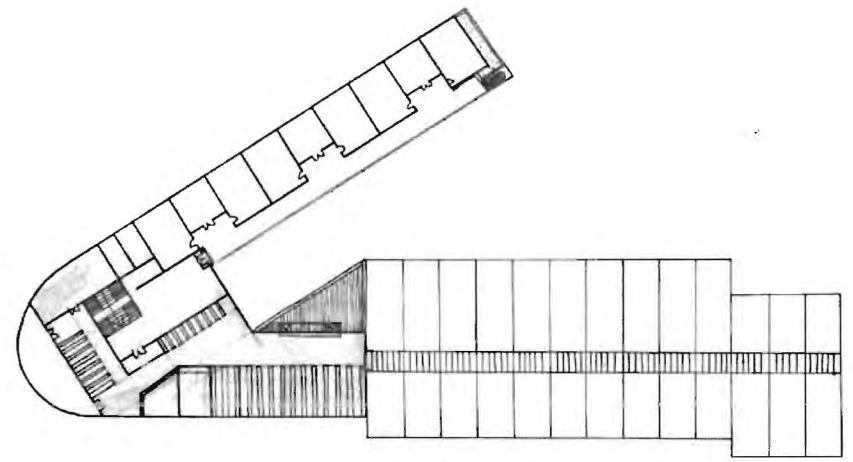
on the North side to the Workshops on the south side, without the feeling that the social core is a separate piece. I felt that this centre had to flow into the remaining campus. Therefore I decided to simplify the roof by using the Cobiax concrete system, creating a circumference ring of concrete scooping down into a box gutter that wraps around a glazed atrium space. This atrium has permanently open louvres on the second floor which creates a chimney stack effect that allows heat from all three floors to rise up the atrium and out of the open louvres.

The issue of defensible space was developed along the Northern wall as this is where the through-route for pedestrians is situated along the canal. Therefore, in order to minimise vandalism, I chose to develop an external steel structure that is clipped onto the wall as a planter system which works as a buffer between pedestrians and the building, as well as providing solar shading for the classrooms. The architectural language of the college is then also related to the agricultural courses that are on offer within the college programme.

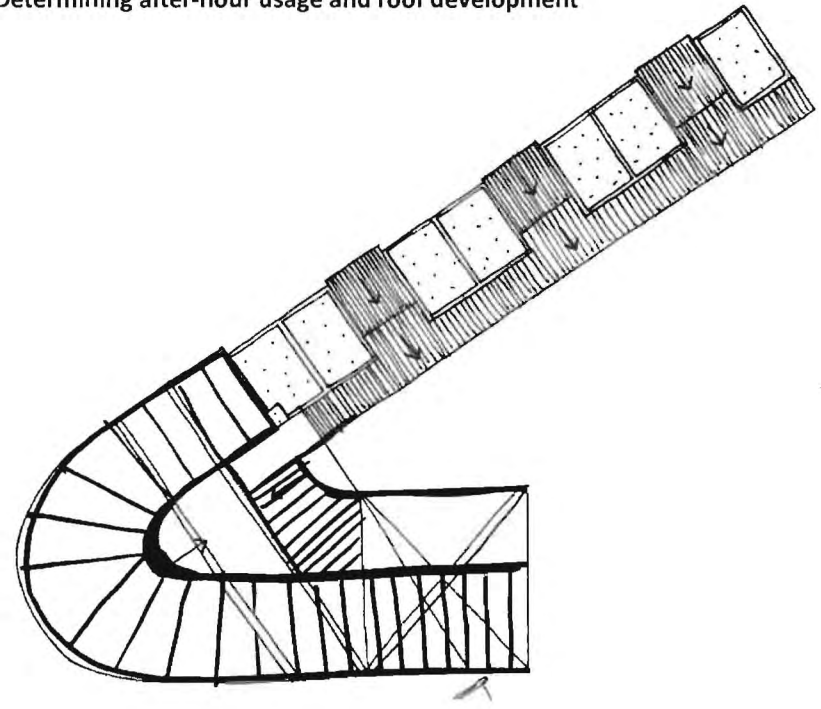




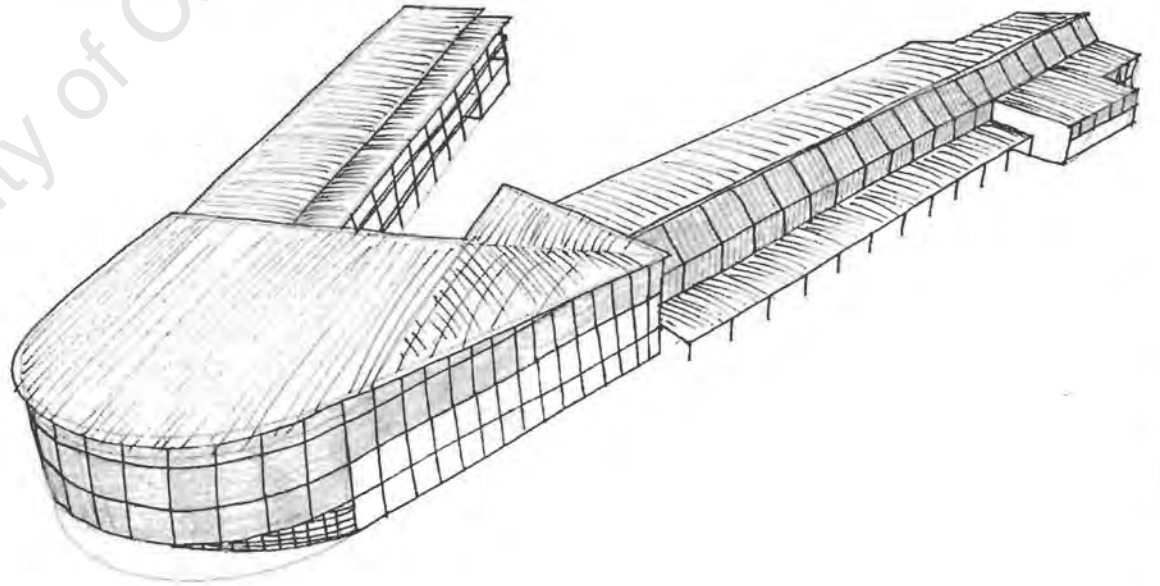
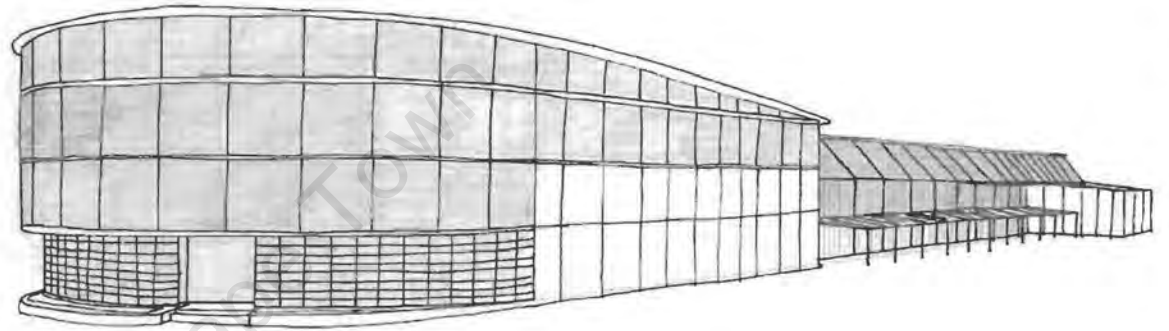
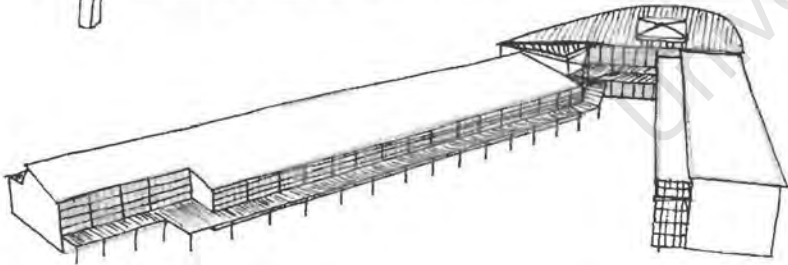
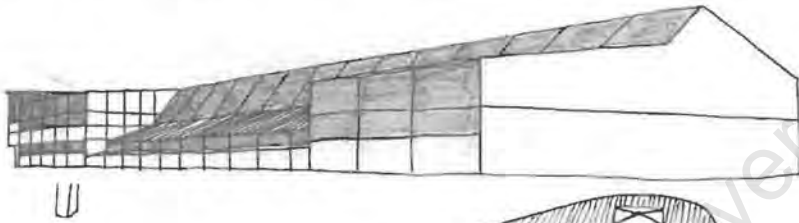
6.3 Organising spatial layout



6.4 Determining after-hour usage and roof development



6.5 Developing the image



Conclusion

In conclusion, this thesis explored the current situation of FET colleges in South Africa, focusing on those in Cape Town, and several issues were highlighted during the investigation. Some of the improvements needed for these colleges include greater public interaction, more appropriate teaching spaces, better siting strategies for student access, and enhanced social facilities on campus. Architecture plays a vital role in resolving these issues by providing the appropriate facilities, a positive architectural image, and spatial qualities to achieve an optimal educational experience.

The design theory research looked at the links between educational space and developing pedagogies, as well as a set of design principles for campus design such as security and safety, defensible space, community, territoriality, image and identification, and involvement.

The technology studies focused on ways to enhance these design principles through the materiality and construction, and looked at concrete as a structural system as well as concrete cladding systems and modularity. The site study strategy took the economic issues into account by analysing the needs of the various districts from a macro scale. The site was then chosen according to the area that would benefit most from a new college, while linking it to potential industrial and agricultural work opportunities.

The exploration of the design then began to explore ways to interpret this research into a design by sketching diagrams for spatial layouts and ways to deal with defensibility and the architectural image. The roofing systems were a challenge, but added to the richness of the design investigation.

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Meeting with Albin Bowler, senior manager of FET colleges [Crawford Campus]

Wednesday, 16 March 2011

6 14:00

- The FET colleges are working within extreme budget constraints
- They need a new way of thinking
- The Western Cape is the only province with support for innovative thinkers
- Most FET colleges are given places to utilize (no new places are built for them)
- Most of their funding comes from the government
- FET colleges and SETA together received R8 billion in this year's budget
- The "FET Act" paints a picture for a vibrant college system, that is responsive to the needs of the economy, and incorporate partnerships with businesses.
- A few years ago, the Business Studies component had "Business Simulators".
- The National department of education needed to increase their numbers of enrollment (to 1 million students), which resulted in Business Simulators as luxuries of space, and were subdivided into classrooms.
- in 5 of the provinces, the majority of FET teachers are unqualified - "It's all a numbers game".
- FET comes from a history of theory: the department of education is more concerned with theoretical learning than practical.
- The NBI (National Business Initiative) was incorporated in the system about 12 years ago.
- FET focus is on pre-tertiary tradesmen and post-matric (max 2 years post-matric course) e.g. Electrical technician.
- Varsity --> Post-matric --> Tradesmen
- In the old curriculum (pre 2007) the workshop components were not compulsory.
- In the post 2007 curriculum, it is required to have workshop facilities.
- However Umalusi says that business studies do not need practical workshop spaces.
- The only business simulators are in the Western Cape (3 of them, with Guguletu campus as 1)
- The majority of business studies don't do practicals.
- Job shadowing has been incorporated (however it is not part of the curriculum)
- They are only allowed 15 learners per facilitator, however due to the lack of qualified facilitators, and the department's demand for more enrollments, they push it to 20-25 learners per facilitator.
- The new programme started in 2007.
- The system is currently only focused on the number of passes - not employability.
- They are therefore encouraging job shadowing as a means to employability. However this is not enough.
- To revamp colleges: they need practical spaces for business studies.
- Small business developments need incubators, but there are not enough facilitators or funding.
- FET colleges act and look like a high school.
- They need less subjects, not to have Umalusi so highly involved, and more hours devoted to practical workshops.
- SETA - Sectoral Education and Training Activities:
- Up until now, they worked with the labour department
- They work on a part-time training/part-time working basis
- Their curriculum is written by business people
- From now, SETA is going to fall under the college system/curriculum, but it should be the other way around.
- SETA has different departments, with training in each sector.
- In FET colleges, lecturers generally don't have practical experience, but with SETA, their lecturers are required to have a minimum of 2 years experience in their given field before they can lecture.
- Most of the SETA programmes are only offered by private colleges, and there needs to be a shift in focus to offer these programmes more broadly in public FET colleges.
- The Gardens campus works well with the Education course, as they have a creche on site that the students work in - practical experience through an incubator approach.
- A business incubator practical room would take about 30 people per venue.
- It is estimated that the Athlone campus would need 4 business incubators to meet the needs of the students
- The Rustenberg campus in the North West province is a good example of a business incubator that is working well as they have funding from the platinum mines, for jewellery design.
- The FET colleges need interventions from external sources.
- There are about 1000 students doing business studies on the Athlone campus.
- Guguletu campus used to have a business incubator in the upholstery field, with signed contracts from companies to manufacture furniture for them.

Meeting with Nolan Kearns, Campus Manager of Northlink College, Protea Campus
Thursday, 17 March
09:30 am

- The majority of students at the Protea Campus are enrolled in Business Studies (about 75%) while the other 25% are in Hospitality and Clothing.
- The campus has about 900-1000 students in total.
- The Business Studies programme utilises mainly classrooms, with only one simulated enterprise room: They need more space for simulated rooms.
- The majority of the courses offered are FET, pre-tertiary NC(V) courses, while a small percentage are higher education programmes.
- The Business Studies in the higher education programmes don't go through simulated enterprises, but work for 18 months once they have completed 3 certificates, and then qualify for a national diploma.
- They currently do not have any placement structures for the students to obtain jobs.
- The NC(V) National Certificate (Vocational) system was introduced to give an alternative to the school programme. The minimum entrance requirement is grade 9.
- The clothing production on campus is only run as a tertiary programme, as previously clothing was not seen as "scarce skills" nationally (even though it is predominantly a Western Cape skill), and therefore it is not part of the NC(V).
- Northlink in general has 8 campuses in the CMA: some offer skills programmes that are not necessarily NC(V) recognised.
- SETA and some individual businesses fund some of the learnership and skills training programmes, however the main funding comes from government – for NC(V) and tertiary programmes.
- Protea Campus: Only skills course is cookery (accredited by SETA).
- Before the colleges merged, each college had its own speciality. Since this merger, they have rationalised across the campuses which courses are necessary at which campus. E.g. The Protea campus' tertiary business courses are moving to Tygerberg campus next year. Tygerberg will be the main tertiary Northlink institution, while the other 7 campuses will focus on NC(V) and skills training.
- Because the campus used to be a school campus, the classroom sizes are inadequate – they only accommodate 25 people, while the actual classes are

- between 30-40 students.
 - The cookery class was converted from the old home economics room.
 - The woodwork rooms were converted to clothing production.
 - The old science labs were converted into classrooms and computer rooms.
 - They also have a resource centre.
- What would you like to see at your college?
- Lecture theatre rooms are needed more than old-style classrooms (this saves on required teaching staff, which are a major expense in salaries)
 - Computer rooms need to be specifically designed.
 - They need at least 2 business simulator enterprise rooms to be designed adequately
 - Admin wing: more comfortable, and larger in terms of the functions that have to be performed (offices etc)
 - Need a proper library/media centre
 - The current grounds are not being utilized (e.g. tennis courts)
 - Would like to have a multipurpose sports hall: Central – registration area, exams, exhibitions, ceremonies, sports, hiring)
 - Soccer is the greatest interest, and the students have asked for a gym.
 - Students travel from all over the CMA, including Mitchells Plain, all areas of the Northern Suburbs, townships etc. Mostly by public transport. Therefore they are not on campus after hours, and unable to utilize computer facilities.
 - Would like a combination of innovative areas, as well as institutional areas (such as lecture rooms)
 - Need offices for senior staff members
 - Store rooms for 5 years of records and portfolios
 - Mr. Kearns believes that Northlink is one of the leading public FET college in the Western Cape, and that the certificates are well-received in the work-place.
 - They have to turn a lot of students away due to limited space.
 - They tend to struggle to get the students they want: they generally get the students that the schools don't want – it's not a first choice institution.
 - Still has a stigma attached to it: technical college for non-academic students.