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ZEST FOR LIFE

A STUDENT HEALTH AND WELLNESS CENTRE

Previous page
Figure 1: Green blob

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Submitted in partial fulfilment of the requirements for the degree
of Magister in Architecture (Professional) in the faculty of
Engineering, Built Environment and Information Technology,
University of Pretoria, South Africa.
November 2008.

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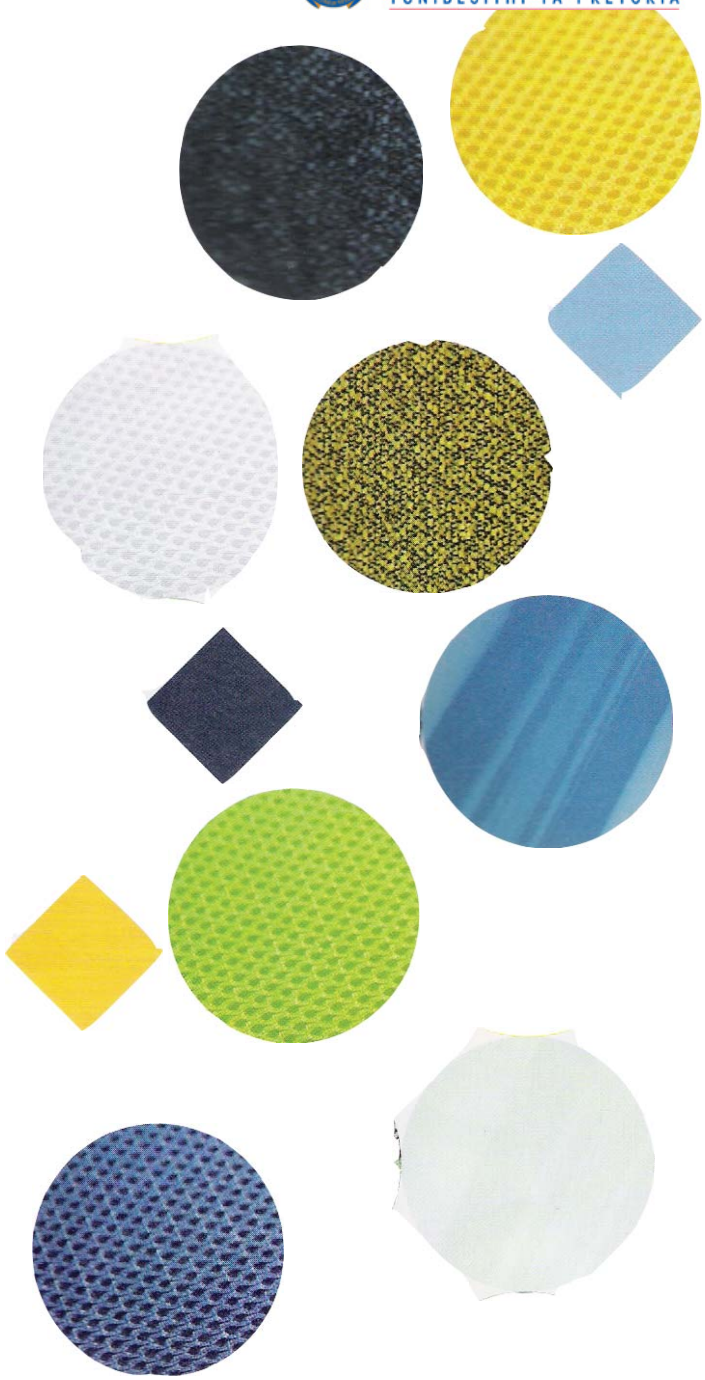
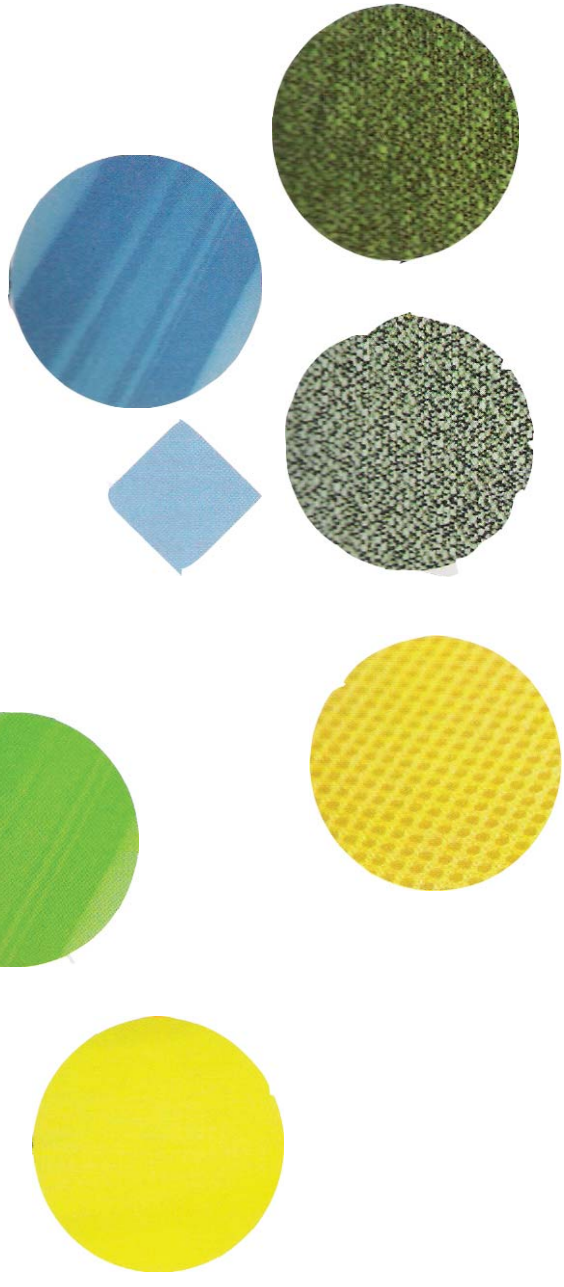
TABLE OF CONTENTS





LIST OF FIGURES

3. Brief

4. Context study

5. The design

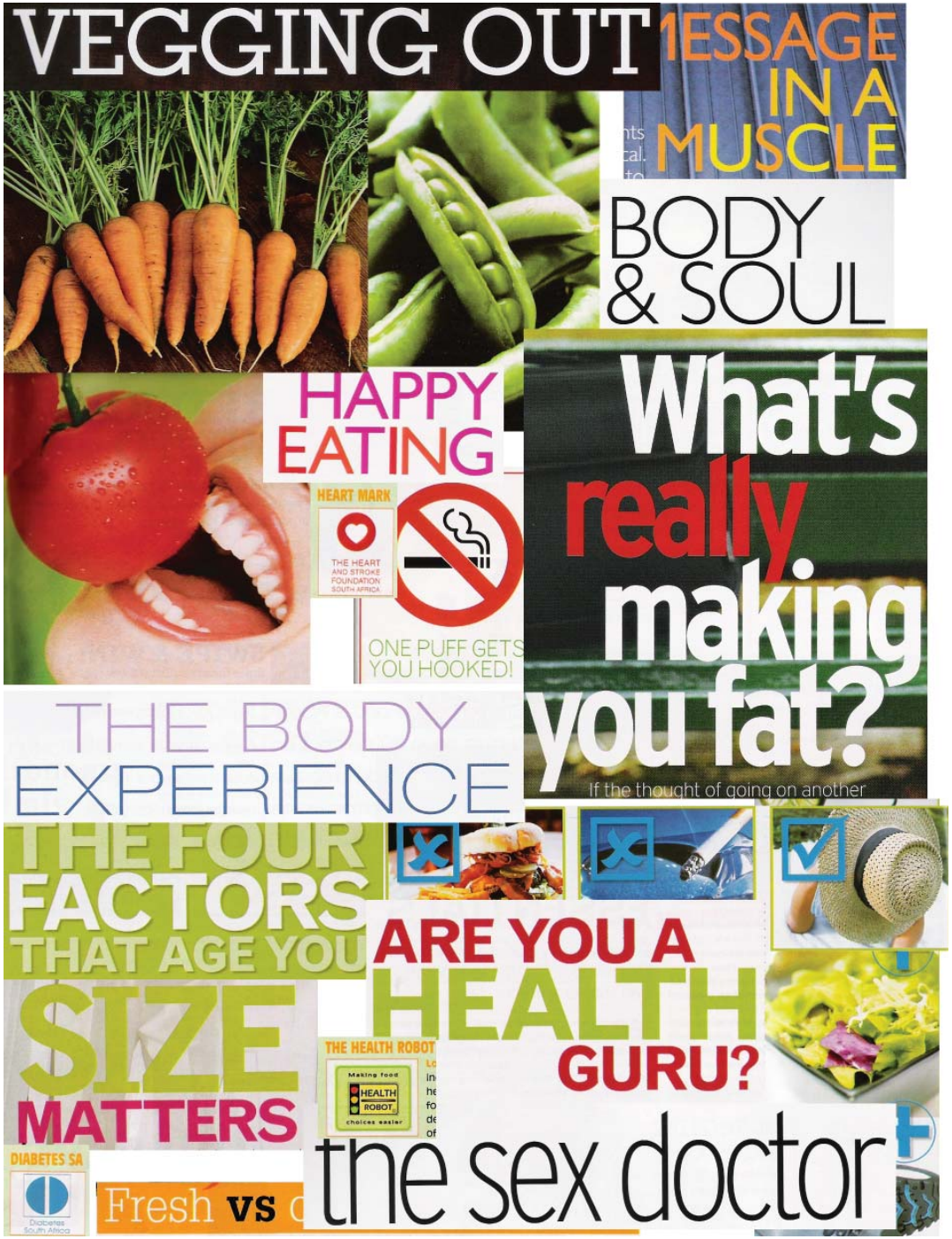
6. Technical investigation

7. Baseline study

8. Conclusion

9. Bibliography

10. Technical drawings



INTRODUCTION

Previous page
Figure 2: Collage indicating the obsession society has developed with physical image.

Figure 3: "All you can eat special".

Health centres like hospitals and clinics tend to be unwelcome, sterile environments. This dissertation is about the making of a conventional and complementary Health Centre that aims to be a place-making building. This intervention will create a sense of place and give identity, which the Modern Movement has so clearly disrupted. The intention would be to emphasise place through sensory experiences. By this the user will be connecting (identify and orientate) to a sense of place and then ultimately to him or herself through the various therapies.

THEORETICAL INVESTIGATION

Introduction

This dissertation will investigate the relationship between man and architecture. The history of man and the development of civilisation have been carried on the shoulders of its architecture. History can be recognised through the buildings people have lived in - a fact that is not coincidental.

The existentialist movement that started with Søren Kierkegaard (1813-1855) and reached its pinnacle in the insights of Martin Heidegger (1889-1976) was instrumental in establishing the invaluable connectedness (and in fact, fluidity) between man as subject and his surroundings as object. Since then, the integral relationship between man and the built environment has been readily accepted and explicated by the likes of theoreticians like Christian Norberg-Schulz (1926-2000) and Juhani Pallasmaa (1936-), who integrated the insights of the existential movement with architectural theory. Their insights will be used to how man and his built environment are inextricably linked.

In contemporary society however, the link between man and his built environment is subjugated to immense pressure. Modern man, especially since the beginning of the 20th century, has inexorably been involved in a process where he is progressively removed from his environment. This alienation has been brought about by a number of factors, in which architectural approaches played a significant role.

These factors and the role that architecture played in the alienation will be commented on. Lastly, suggestions will be made towards restoring man to his rightful place in relationship to his built environment, and helping man regain his sense of belonging that is integral to authentic existence.

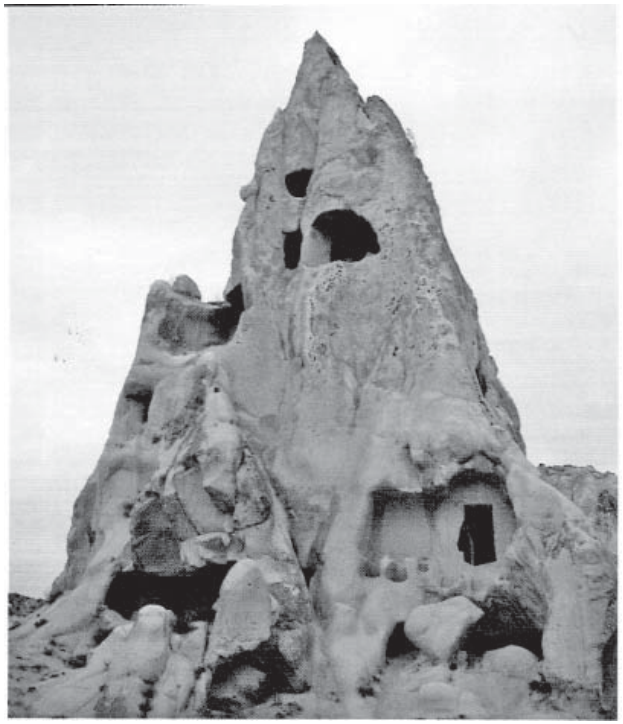


Figure 5: Caves dwellings in Cappadocia, Turkey c. 1000.

Previous page
Figure 4: Collage indicating the role of stress in people's lives.

Identity and meaning

Norberg-Schulz, relying on the works of Heidegger and Gadamer, has written extensively on the relationship between man and his environment. His approach is based on the terms *meaning*, *identification* and *orientation*.

According to Norberg-Schulz (1985:22) *meaning* is found in the relationships in which things stand to one another. The meaning of a roof can be found in the fact that it is connected to a wall, and provides cover to the people underneath it. Without these relations the roof would cease to be a roof. The same can be said for walls and floors.

Meaning is essential for *identity* - the identity of man is determined through the relationships he has with his environment. True identity is only found through meaningful relationships. According to Norberg-Schulz (1980:24) identity is "to have a meaningful relationship".

To find identity is a process in which memory plays an important role. The meaningfulness of a relationship can often only be unlocked by repeated encounters - to know something and to identify something takes time and repetition. Norberg-Schulz (1988:44) states that a building speaks through its environment, the materials it is made of and its form.

When a person responds to what the building says, the possibility of poetic dwelling arises. But since poetry is spoken in images, he can only respond to images that he has a memory of. Therefore, through the interaction between meaning and identity, poetic dwelling takes place. Poetic dwelling can be understood as man's ability to truly exist integrally with his environment. This results in the deliquescence of subject and object and the authentication of existence - a sign that man is orientated in his environment. Thus, *orientation* is the product of the successful interaction between man and his environment.

Caudill (1978:53) states that the built environment has a great psychological effect on people:

- bad buildings contribute to suicide, good buildings help prevent it
- round rooms encourage social intercourse
- old people in nursing homes die sooner in the rooms at the end of halls

Sociologists and psychologists agree that the physical appearance of buildings is fourth in line after motivation, management and policies in the reaching of user satisfaction or - stress. Even in early times Christian and Islamic theologians argued that beautiful buildings have the power to improve us morally and spiritually (De Botton. 2006:117).

People observe and then react towards the built environment, but they also interact. They will modify their environment to suit them: they will paint the walls and put up pictures. But people feel different towards the same space. Therefore it is important for architects to design with as much flexibility, identity and orientation. Because, as Caudill (1978:57) states it, if a building fits someone's physical, emotional and intellectual needs, the person will have a sense of ownership.

A question arises, raised by the likes of De Botton (2006:98) as to the possibility of creating beautiful buildings. How would one know if a building is beautiful, since everyone has a different perspective of beauty?

The question is answered in different ways, all pertaining to the same underlying truth. Norberg-Schulz (1985:67) states that an architect has to give meaning to a place in a specific environment with a specific task at a specific time. These factors all contribute to the concept of a beautiful building.

According to Maurice Merleau-Ponty (Pallasmaa 2000:78) the task of architecture is 'to make visible how the world touches us' and that 'architecture concretises and frames human existence in the flesh of the world'. Pallasmaa (2006:29) holds that architecture should let people experience themselves as absolute embodied and spiritual beings.

Architecture gives meaning and lets people relate, it helps them experience being-in-the-world and strengthens their sense of reality and self. Architecture should address all the senses simultaneously; it should structure people's understanding of the world and their existence.

Therefore, architecture is beautiful when it achieves the objective of giving meaning to a place and helping one towards orientation and identity.

Figure 6: Aboriginal lean-to habitat, Northern Territories, Australia

The arrival of the schism

According to Pallasmaa (2000:79) the modern movement was the main culprit in the alienation process that led to the separation of man from his environment. The process has its origin in the 20th century, when architecture started to adhere to the slogan "*form follows function*". Adherence to the principle form-follows-function led to the loss of meaning and identity as the importance of the relations within architecture were neglected in favour of a functional approach.

This approach resulted in the dominance of characterless environments with inadequate possibilities for human dwelling (Norberg-Schulz. 1988:48). Modern architecture lost its relation to its environmental and cultural context (Pallasmaa 2001:51), which caused man to lose his sense of identity and orientation. An environmental and cultural crisis is looming as a result.

This looming crisis is further aggravated by the westernised capitalist society, according to the Tanner lectures on human values by Axel Honneth (2005:10), in which everything is reduced to potential economic values.

Honneth states that man has been alienated from his fellow men and their feelings, due to the fact that man observes them as mere objects to enhance himself for his own selfish reasons. Man is the centre of his own individual universe, in which he surrounds himself with "objects" that contribute towards his perceived happiness. Since everything is mass produced, no special moments are left.

The westernised capitalist society has thrown out the mystery of life, exchanging mystery with an obsession for facts and figures. This insatiable hunger led to the illusion that 'everything' can be known and discovered, leaving no room for dreams and hopes of things undiscovered (Honneth 2005:27).

Honneth (2005:29) further explains that when man lost sight of the fact that his actions were grounded in his perceiving of the world, he started to put himself outside the context of his actions and started to deny that which was familiar. The consequence was that man lost all emotional connection with his environment.

Figure 7: Pruitt-Igoe Housing, St. Louis. This building was demolished on 15 July 1972. For Charles Jencks (1939-) this was a symbol of the end of modern architecture.

In his explication of the problem Honneth explains the alienation of man from his surroundings by comparing it to the emotional development of a child. During the first nine months after birth a child develops an emotional connection to his psychological parent, a process in which he learns to communicate and interact with his world, even on a subconscious level.

Autistic children however, do not have the ability to identify emotionally with another person, resulting in emotional blindness, and an inability to interact with people on an emotional level. As a result, autistic children struggle to distinguish between the different facial and bodily expressions of people, isolating them from meaningful relationships. According to Honneth (2005:29), this is the social malady underlying to every aspect of modern society.

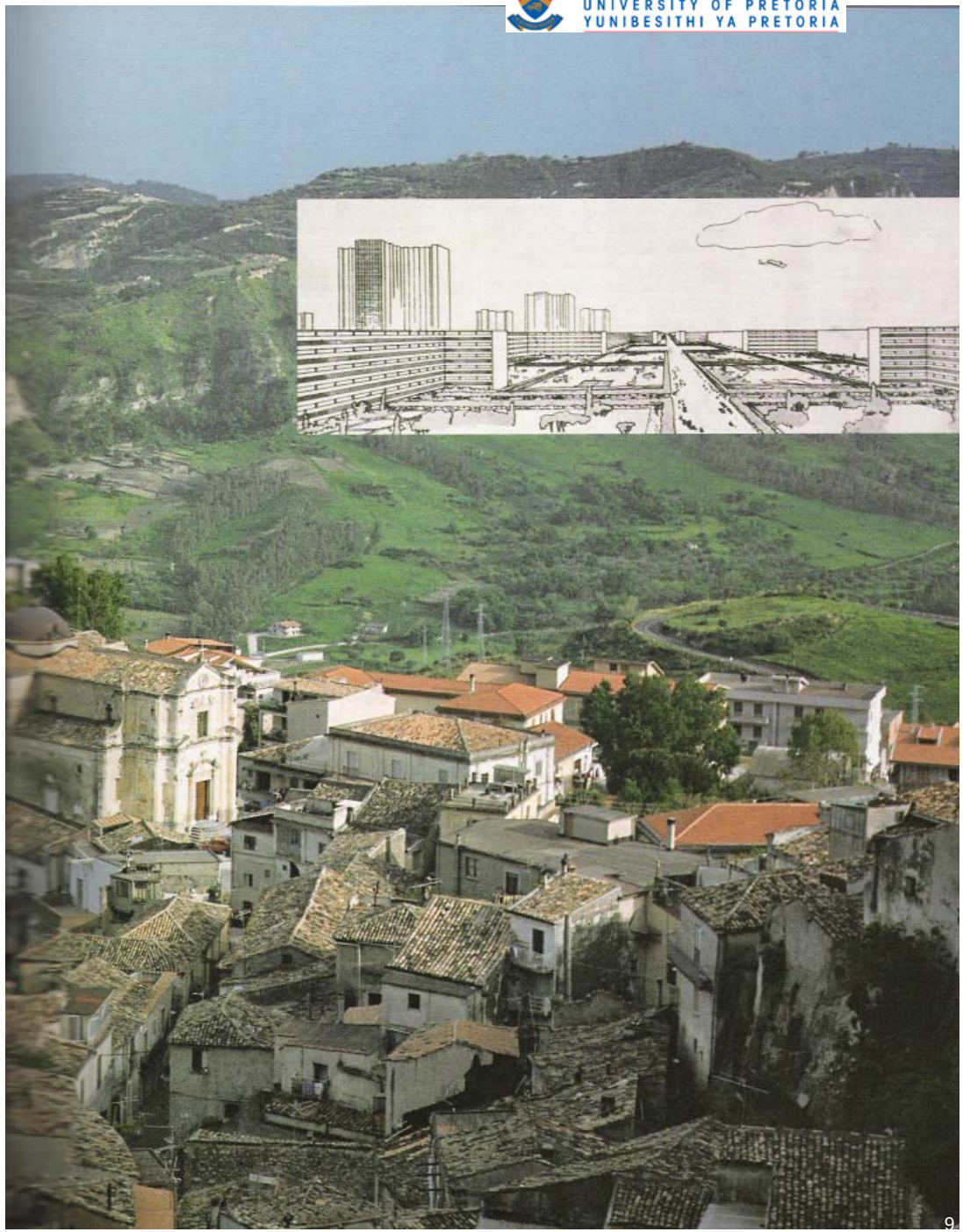


Figure 8: Contrast: A hill town in southern Italy (c. 1400) vs Plan Voisin by Le Corbusier (1887-1965), Paris, France (Project 1925).

Towards a rediscovery of meaning and identity

It is not enough to merely diagnose a problem or malady - once a diagnosis is made, a concerted effort must be made towards finding and implementing the cure for the malady. This is also true of the challenge that contemporary architecture is facing. It has to restore the crucial link between man and the built environment. Only then will man rediscover the meaning and identity of things, a link that seems ever so elusive.

How can this be achieved? The sociological insights of Axel Honneth are invaluable for a re-assessment of the enormous task facing those that conceptualise and design buildings today. According to Honneth (2005:40) the very notion of social interaction presupposes the ability of man to put himself in other people's shoes. Only then can man truly understand another's underlying motivations behind their actions.

In an existential sense, through this process, one can become aware of the other's intentionality towards the environment, even if it remains intuitively. If this does not happen, the relationship between man and man is incomplete and the possibility of true understanding is lost.

Because every individual reacts differently to the objects that surround him, it is vital that man must be able to intuit the intention of the other towards his surroundings. This can only be achieved by identifying with him, by putting oneself in the other person's shoes.

When these insights are applied to the designing of buildings, it becomes clear what is asked of the architect. They need to immerse themselves in the context of a building - in the surroundings, the people that will eventually use it, as well as the spirit of the time. Only through thorough contextualisation can buildings be created that are true to their calling: to give identity and orientation through meaning.

The functional approach to designing needs to be replaced by a relational approach. We need buildings to speak to us, to enhance the mood, not only to do certain things. Once this is said, we find that the characteristics we expect from buildings are the same as we expect from people. The reaction we get from a building resembles the reaction we get from people: a cold shoulder, a warm smile, an inviting face. This is echoed by De Botton (2006:88), who states that what we want in a building is not far from what we want in a friend. Buildings that we identify with and remember fondly have characteristics that we cherish, characteristics achieved through shapes, colours, textures and materials.

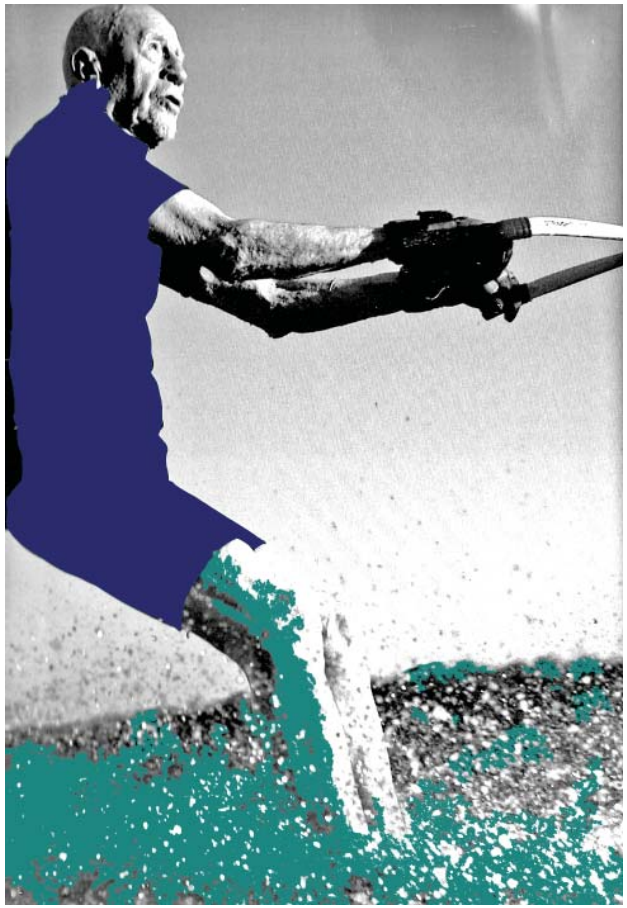
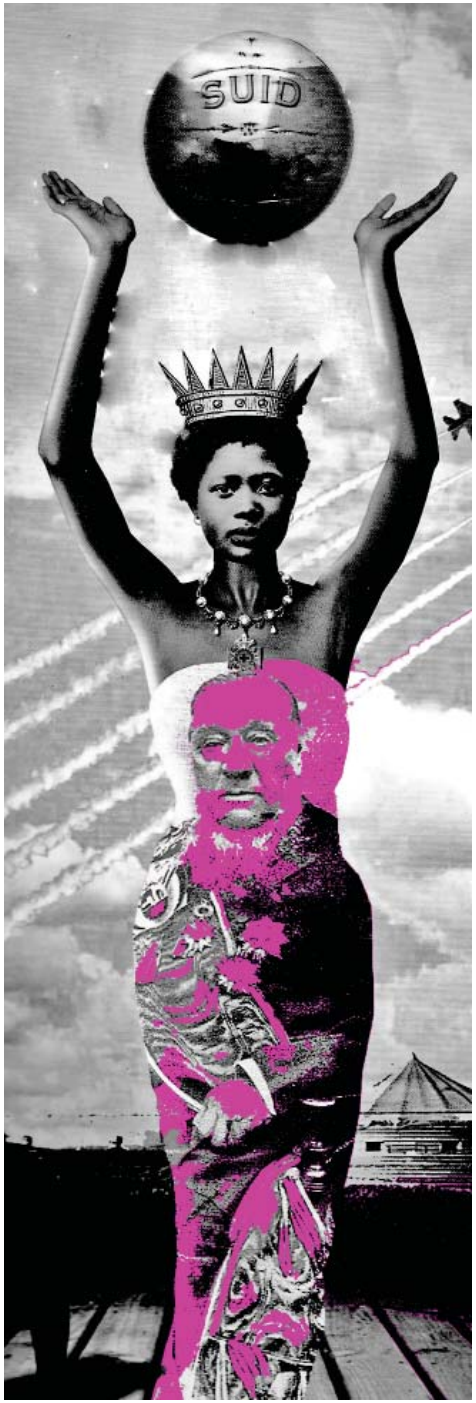


Figure 9: Eighty year old man skiing. What does it take to have a long fulfilled life?



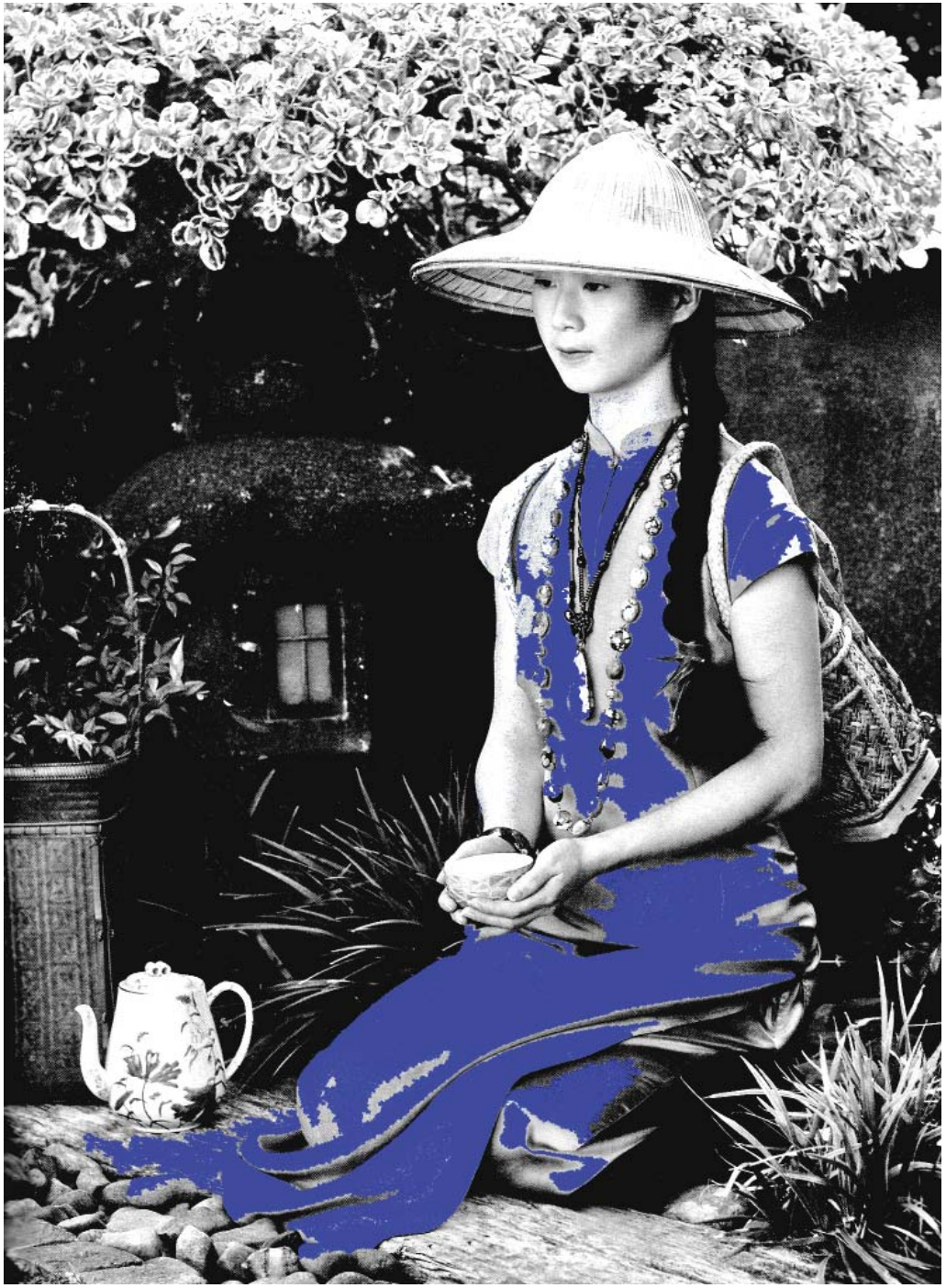
"We do not have architecture, therefore, but rather, a part of us is architecture. Architecture is a way of being, just as science, art, and the other major culture forms are ways of being. So when we come to define the true and deeper functions of architecture, we will not be simply describing the production of a certain type of artefact, but explaining one of the original ways in which we know ourselves" (Abel. 2000: P150).

Figure 10: Woman embracing her surroundings.

According to Pallasmaa (2000:84) architecture should not try to overpower the foreground, but rather be a supportive background for human activities and perceptions. Just as we react negatively towards bombastic and overbearing people, buildings that try to say too much leave us uneasy. What we wish for in buildings is a humbleness, an impression that can grow and develop as we interact with the building. And since nothing in life can be rigidly perfect, we wish our buildings also to have imperfection and irregularities (Pallasmaa. 2000:83).

De Botton (2006:248) states that if architects do not succeed in creating meaningful places, we as a people will not be able to be content in other parts of our lives. Therefore bad architecture is not only a failure of design but also a failure of psychology. We have to care for and respect our environment and have an understanding for it, a predisposition that can only be achieved through an integral connectedness with one's surroundings. In this, architecture plays an invaluable role. Otherwise, as Norberg-Schulz (1985:67) states, we will "forever dwell disorientated in a meaningless world".

Figure 11: Man made object embraced by nature.



PRECEDENTS

International precedent: Theoretical

Paimio Sanatorium, Alvar Aalto (Finland, 1929)

This precedent was chosen since it is a building designed to heal people with a specific illness. This concept would be incorporated by carefully designing each space to its needs.

The Paimio sanatorium was a treatment centre for tuberculosis, but since the discovery of antibiotics, became a general hospital. The building needed to be isolated from pollution and noise of the city and was therefore located in a pine forest. It was believed that tuberculosis could be cured with ample fresh air and sunlight.

The building is functionally-zoned and in respect each wing is carefully placed for the specific demands of sunshine and view for the type of rooms it holds. The patient's wing was specifically orientated south, south-east to catch the full morning sun. The wards have shared sun terraces that overlook the landscape for patients to relax on.

Previous page
Figure 12: Vietnamese girl

While Aalto was designing the building, he himself was ill and took the opportunity to create a building from a patient's point of view. He designed the rooms with particular detail to a lying person's perspective - for example, the ceiling would be painted a darker shade than the walls to minimize the glare and the ceiling light would be mounted out of sight and upwards. The communal areas did not lack the amount of detail - different colour schemes were applied to ease the senses as appropriate in each space.

Aalto designed it in such a way that the outside speaks of what is happening on the inside. For example, the corridors have continuous ribbon windows, where as the patients rooms have individual windows.

Alvar Aalto moved towards a layered and multi-sensory architecture as described in the precedent study. This type of architecture makes the experience of time healing and pleasurable. It accepts the course of time. The Paimio Sanatorium was conceived as an analysis of experiential situations. It is an instrument for healing. The sanatorium is said to be the building in the history of modernity that contains the highest concentration of technical innovations, yet is firmly rooted in human experiential reality. (Pallasmaa. 2000: 80)

This building is in fact 'an organism that responds to its environment'. (Weston 1995:98)

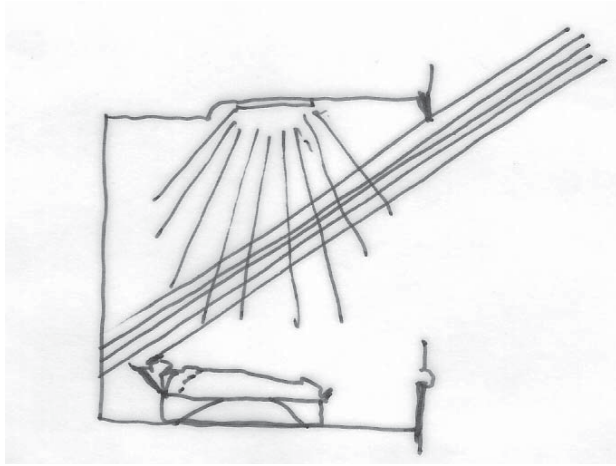


Figure 13: Room detail. Showing rooms specifically designed for patients lying down.

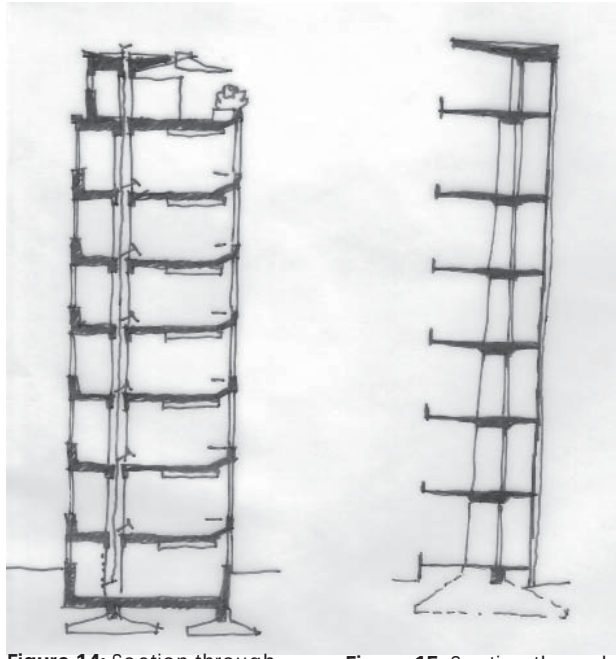


Figure 14: Section through hospital wing.

Figure 15: Section through balconies.

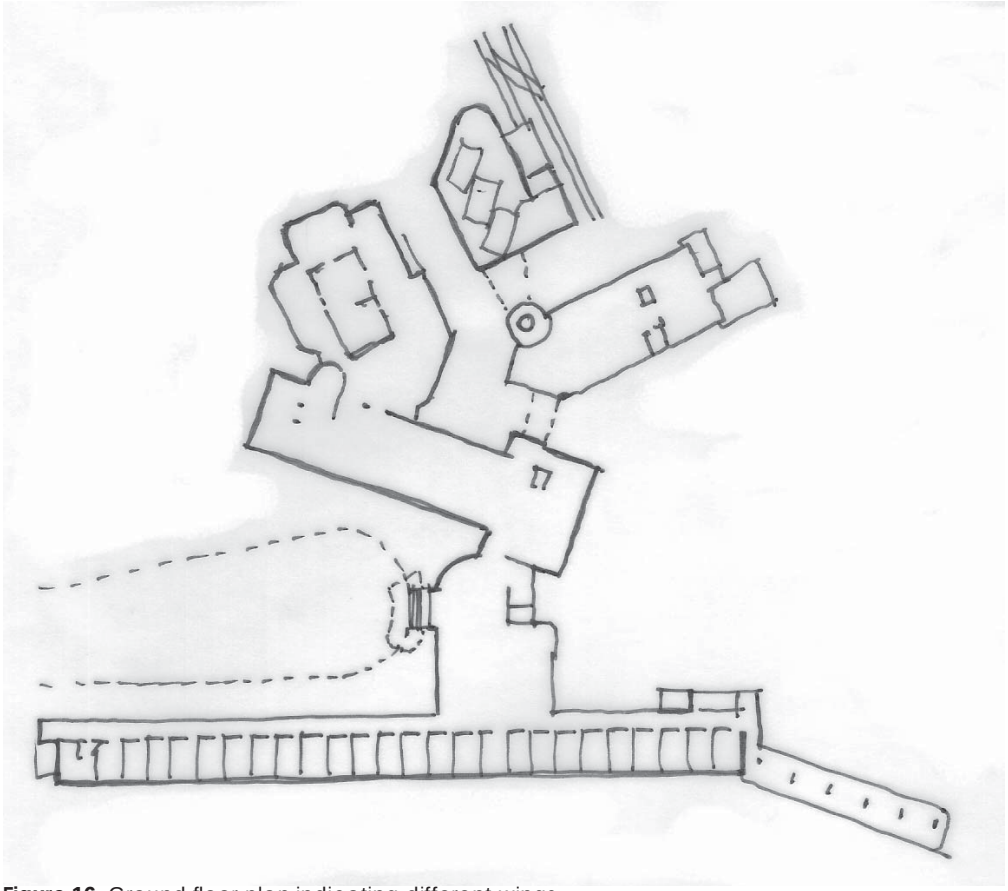


Figure 16: Ground floor plan indicating different wings.

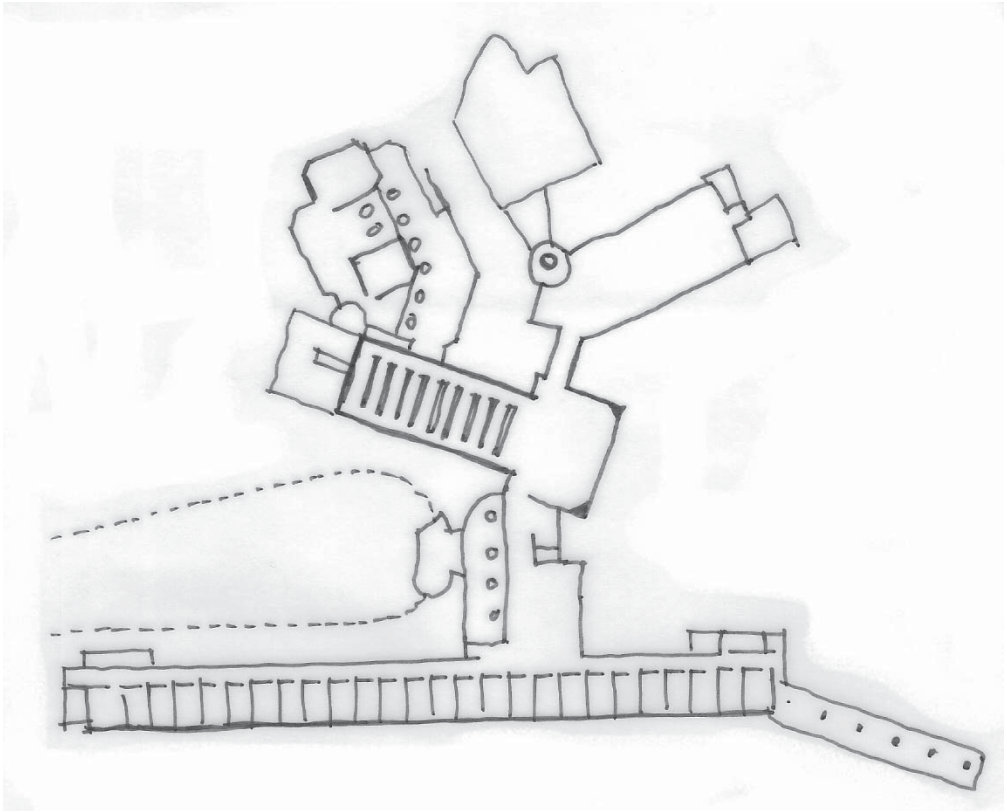


Figure 17: First floor plan.

Local precedents: Typological

Thakaneng Bridge Student Centre, University of the Free State, Roodt Partnership (Bloemfontein, 2003)

This precedent was chosen since it is a multi-purpose complex building on a campus. The way the building fits on its site, being a contemporary building and surrounded by historical buildings, will be applied in the design.

The student centre is literally a bridge over DF Malan drive. The building itself is a circulation route that forms a connection between the eastern and western campuses. It was a necessity that the Sasol library had to be accessible to the rest of the campus. The library and the new pedestrian routes, by architect Bannie Britz, played an important part in the design. (Joubert 2002:44)

It is a mixed use building which speaks a modern architectural language. The bridge with its single monopitch roof accommodates fast food outlets on the ground floor and student offices and support services on the first floor. The eastern flank accommodates a media centre and cafeteria and the western flank a range of commercial facilities. These extensions, perpendicular to the bridge, are covered by a range of monopithes. The architects used parallel walls and beams which echo the structure over the bridge. These then extend outwards to form open public spaces of different sizes for students to gather in. (Raman 2006:26)

It sits quite tight between rigid modernist buildings, but the Thakaneng Bridge gives a new dimension to campus architecture. (Deckler et al. 2006:94)

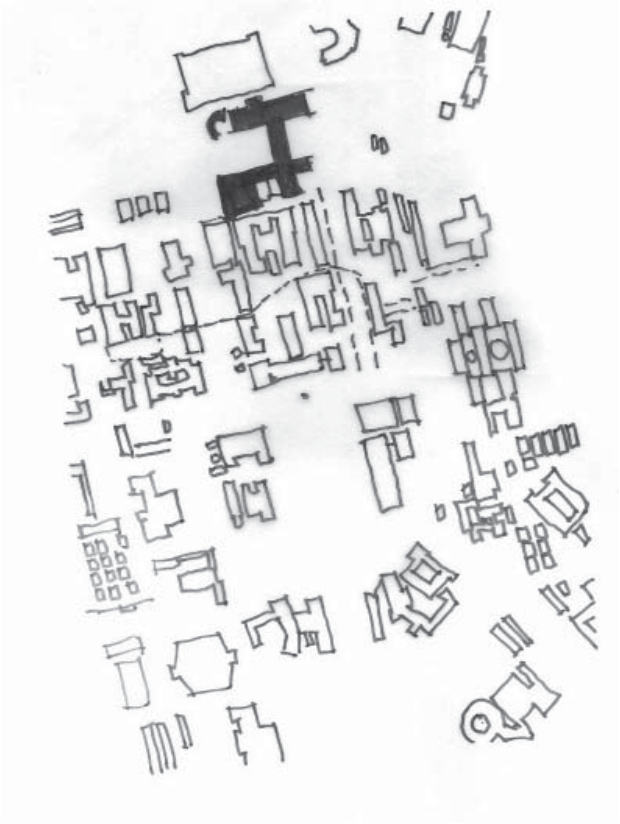


Figure 18: Site plan of University of the Free State.

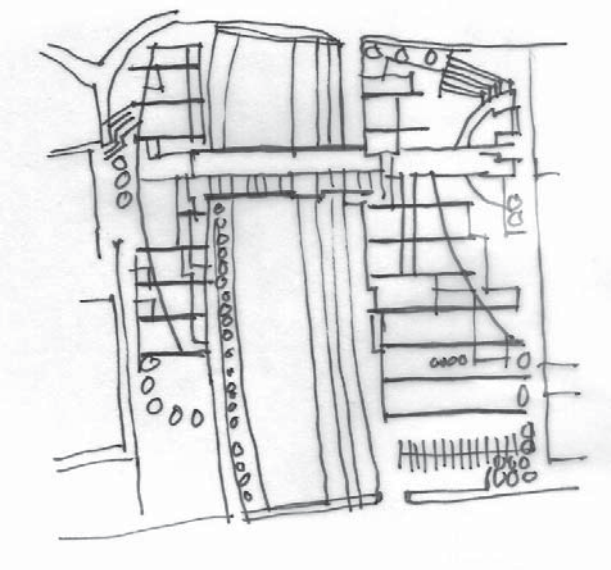


Figure 19: Ground floor plan indicating connection between the east and west campus.

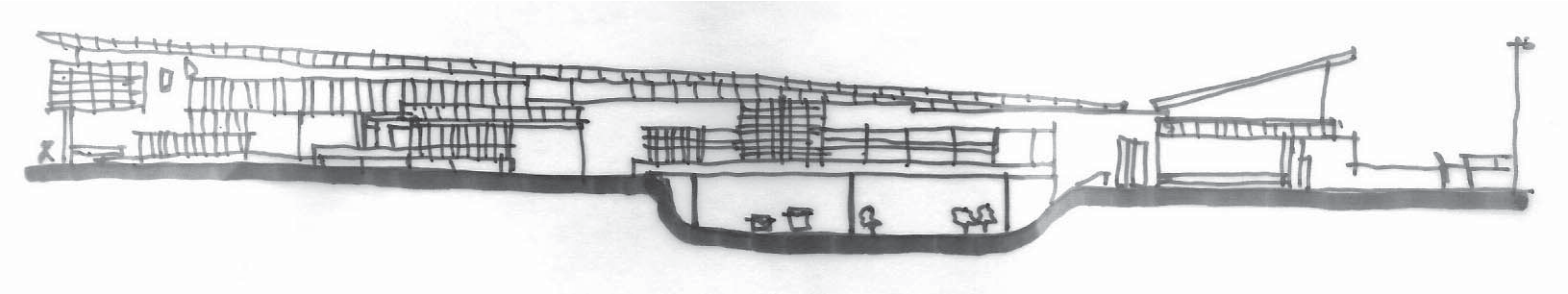


Figure 20: North elevation showing main monopitched roof.

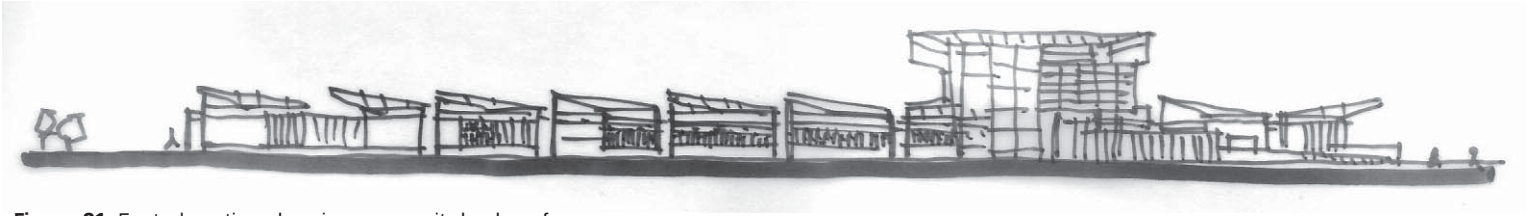


Figure 21: East elevation showing monopitched roofs.

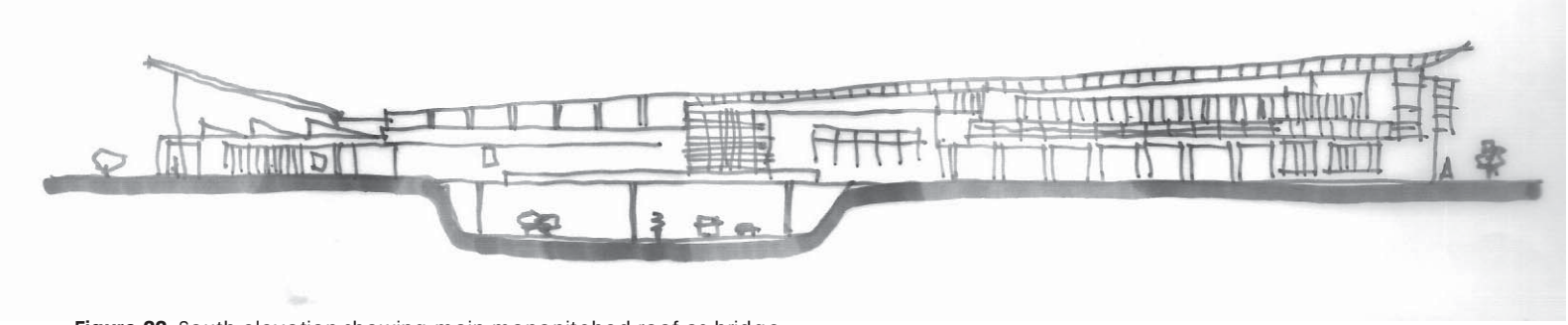


Figure 22: South elevation showing main monopitched roof as bridge.

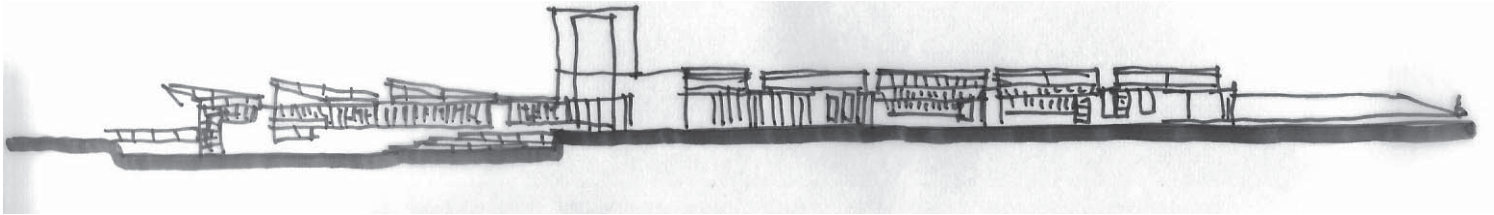


Figure 23: West elevation showing monopitched roofs and central entrance to bridge.

Umkhumbane Community Health Centre, Robert Johnson Architects and Associates (Durban, 2004)

This precedent was chosen since it is dealing with different aspects of health for a specific community. The variety of functions and how it is organised are a theme that can be applied to this project.

The Umkhumbane Community Health Centre forms part of the Cato Manor Special Presidential Development Framework. The design brief stated that the building should be limited to a two to three storey building, the main pedestrian entrance should be on the 'high street' and the separation between client and staff have to be clear.

The design concept developed into a 'place of wellness' where services are based on lifestyle, nutrition, diet, exercise, urban agriculture and different forms of therapy and counselling. All this are available in an atmosphere of learning, teaching and intellectual interchange. (Unknown 2004:38)

The building hosts a range of facilities including operating theatres, X-ray facilities, a dispensary and a community hall. These facilities are interlocked on the main spinal route. This circulation route could be described as a 'shopping mall for health services'. Waiting areas and open air play areas for children alternate on the route between the consulting rooms. The circulation route with its elevated roof allows for plenty of fresh air and sunshine. Tree-shaped columns support the elevated roof. (Saunders 2006:17)

Figure 24: Location plan.

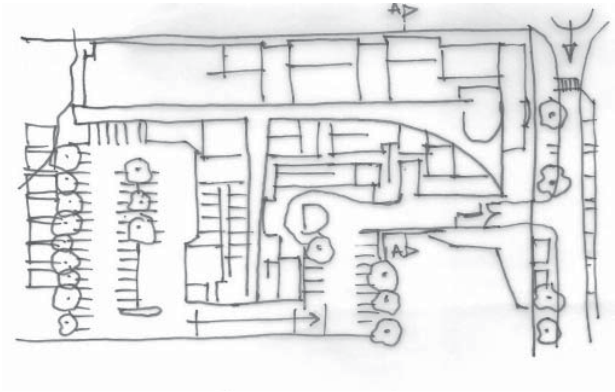


Figure 25: Ground floor plan.

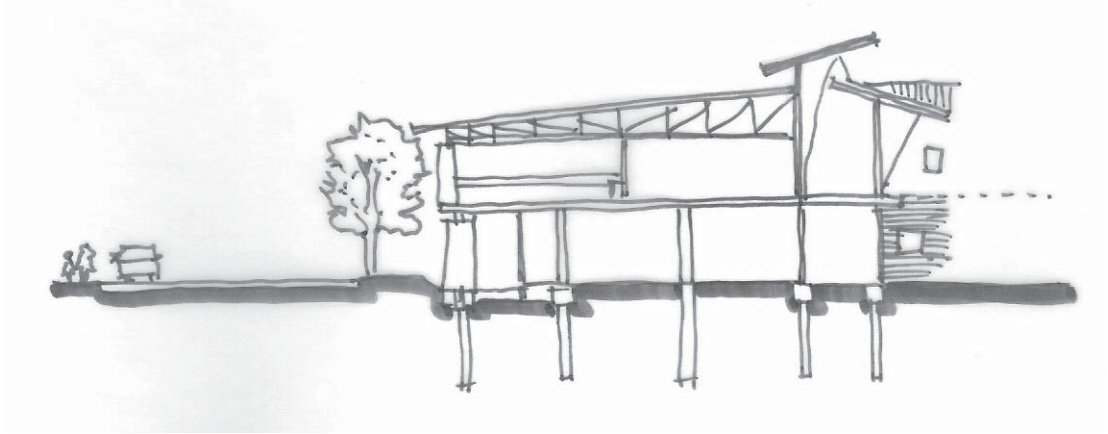


Figure 26: Detail section of main roof structure.

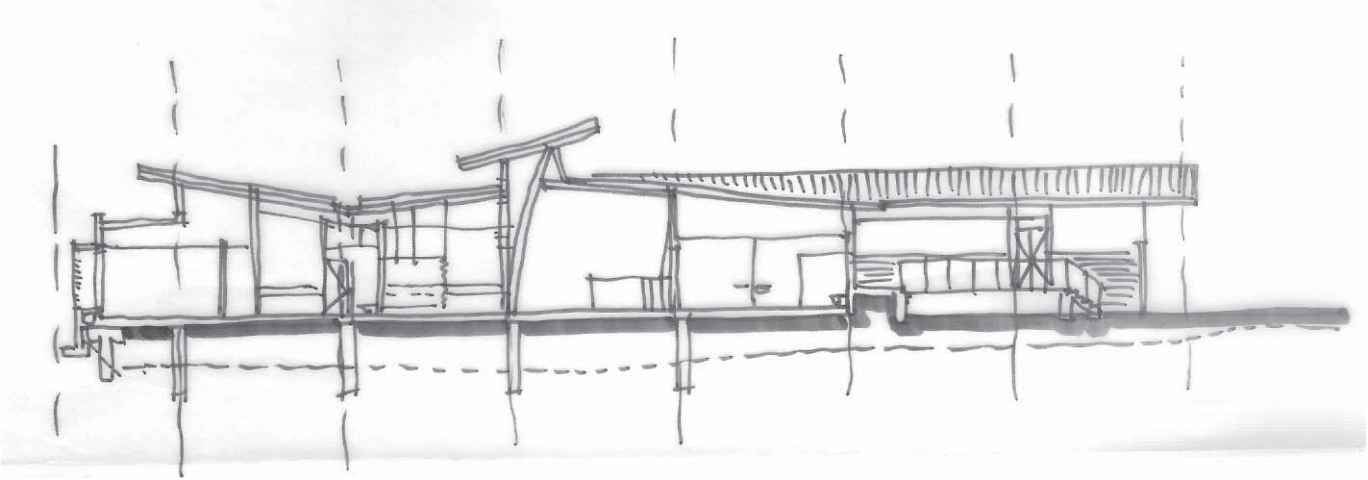


Figure 27: Longitudinal section through building.

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BRIEF

Problem statement

The current TUKS Health Centre at the University of Pretoria provides a basic medical service. The building is a small one storey building, with an uninviting and inaccessible appearance. It is a frightening experience for anyone who already has to cope with some other greater dilemma to visit the building. This is due to the fact that the building does not have a calming, stress-reducing effect on students.

People, animals and plants experience stress. Stress is a means to survival. When a living organism is in danger, its body will switch to stress-mode. In the case of people and animals, the brain releases chemicals and hormones that prepare every organ and system in the body for the danger ahead. (Van Der Merwe 2004:9)

Van Der Merwe (2004:14) differentiates between two types of stress:

- internal stress – it originates from within and reflects the body's ability to handle situations (in students visiting the Health Centre, this could be caused by the knowledge of an illness) and
- external stress – induced by the physical environment, like the appearance of the Health Centre.

At present the Tuks Health Centre contributes to the external stress of students – it is clear that an alternative is needed. A proposed new Health and Wellness Centre would need to address this by providing as much relaxation as possible to those visiting it.

Hypothesis

Traditionally scientists believed that healthy eating, moderate exercising, enough sleep, no smoking and minimum intake of alcohol would reduce stress. Research proved that prevention, control and management of stress to be the solution. (Van Der Merwe 2004:10)

There are two factors that can help reduce stress – stress management and relaxation techniques. (Van Der Merwe 2004:193) In the built environment minimum stress levels can be achieved by:

- Regular and maximum contact with nature;
- Natural ventilation at the work place;
- Maximum natural light;
- Correct ergonomically designed furniture and
- The use of different colours to enhance different emotions.

Previous page
Figure 28: "When will we be truly happy?"

Figure 29: Woman exercising

The architecture explored in this dissertation could play a role in the contribution to the wellness of people. The proposed intervention would be an application of guidelines researched relevant to the topic. The overall aim would be to make a health centre a pleasant place, which can be achieved by:

- Promoting wholesome foods;
- Offering relaxing exercises like yoga and Pilate's method;
- Housing therapies that reduce stress;
- Having access to medical specialists that can monitor one's health and give advice and
- Creating different spaces for meditation and/or being spiritual.

Building type

Proposed is a mixed-used institutional building that promotes healthy living through different treatment practices and healthy architecture by sustainable design. The programme would consist of retail space, offices, outside space(s) and different consulting and treatment rooms.

Client profile

The development would be funded and maintained by the Medical Faculty and Student Affairs of the University of Pretoria. Since the proposed building would accommodate all aspects of medical care (mind, body and soul) conventional and alternative practices will be allowed. Specialists in various disciplines would be able to practice at the centre.

Conventional medical professionals would include a dietician, a general practitioner, a dentist and a psychologist. Alternative therapies would include yoga, Pilate's method, aromatherapy, acupuncture, chromotherapy, herbology, homeopathy, hydrotherapy and reflexology. The medial personnel would be appointed by the university. Retail space would be available to tenants promoting health. This would include health restaurants and eateries, sports shops, bookshops, herbal shops and a pharmacy.

User profile

Students and personnel from the University of Pretoria would be able to use this facility. The facilities available would not be free; however the fees would be in accordance to a student's budget.

Figure 30: Different people

Site selection

It is important that this building should be accessible. Therefore a suitable site for this type of building would be near the Student Centre (a new proposed thesis project by Francois Malan), on route to UP residences. In other words - in the heart of student activities on the campus.

Figure31: Site plan of main campus with proposed site indicated in black.

Figure32: Site plan indicating positive and negative elements of the chosen site.

Accommodation schedule

Ground floor

Climbing centre	**(15x15m)**
Boulder bar	**(8x6m)**
Juice & Salad bar	**(4x5m)**
Kauai Health Food & Juice Co.	**(6x5m)**
Herbal shop and eatery	**(6x5m)**
Sports gear & clothing shop	**(7x5m)**
Pharmacy	**(5x5m)**
Ablution facilities	**2(4x6m)**
Store room	**(5x7m)**
Cleaners' room	**(2x3m)**
Hydrotherapy rooms:	
Sauna	**(3x3m)**
Steam bath	**(3x3m)**
Relaxation baths	**2(2x3m)**
Ablution facilities	**2(2x3m)**
Store room	**(2x2m)**
Reception	**(1x2m)**
Waiting room	**(2x3m)**
Relaxation deck	**(5x5m)**

Figure 33: Different people (ii)

First floor	
Exercise studio	**7x10m**
Treatment rooms	**5(5x5m)**
Consultation rooms	**4(5x5m)**
Waiting room/ reception	**2(4x5m)**
Accounting Department	**(5x5m)**
Meeting room	**(5x5m)**
Kitchen	**2(2x3m)**
Toilets	**2(1x2m)**
Store room	**3(2x3m)**
Second floor	
Meditation area	**(5x5m)**
Herb garden	**(15x15m)**
Treatment room	**(5x5m)**
Store room	**(2x3m)**

Figure 34: Different people (iii)

CONTEXT STUDY

Macro Context

The study area is in Pretoria which falls under the City of Tshwane Metropolitan Municipality. Pretoria is the central business district (CBD) of Tshwane and also the administrative Capitol of South Africa.

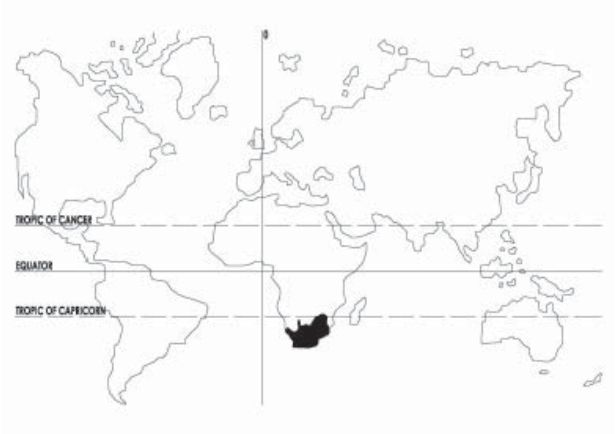

Figure 36: Map of the world.

Figure 37: Map of South Africa.

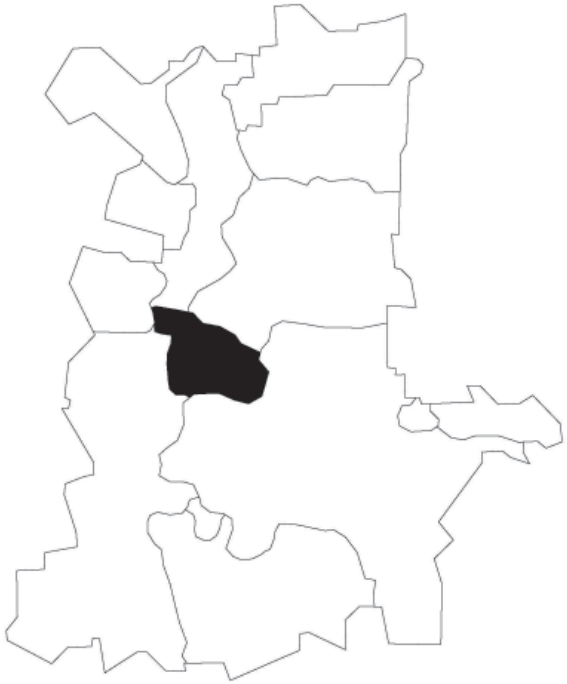

Figure 38: Map of Tswhane.

Previous page
Figure 35: Chinese girl.

Meso Context

Spatial Development Framework

Pretoria

GAPP Architects designed the Nelson Mandela Development Corridor. This area along the Apies River is the division between the eastern suburbs and the CBD.

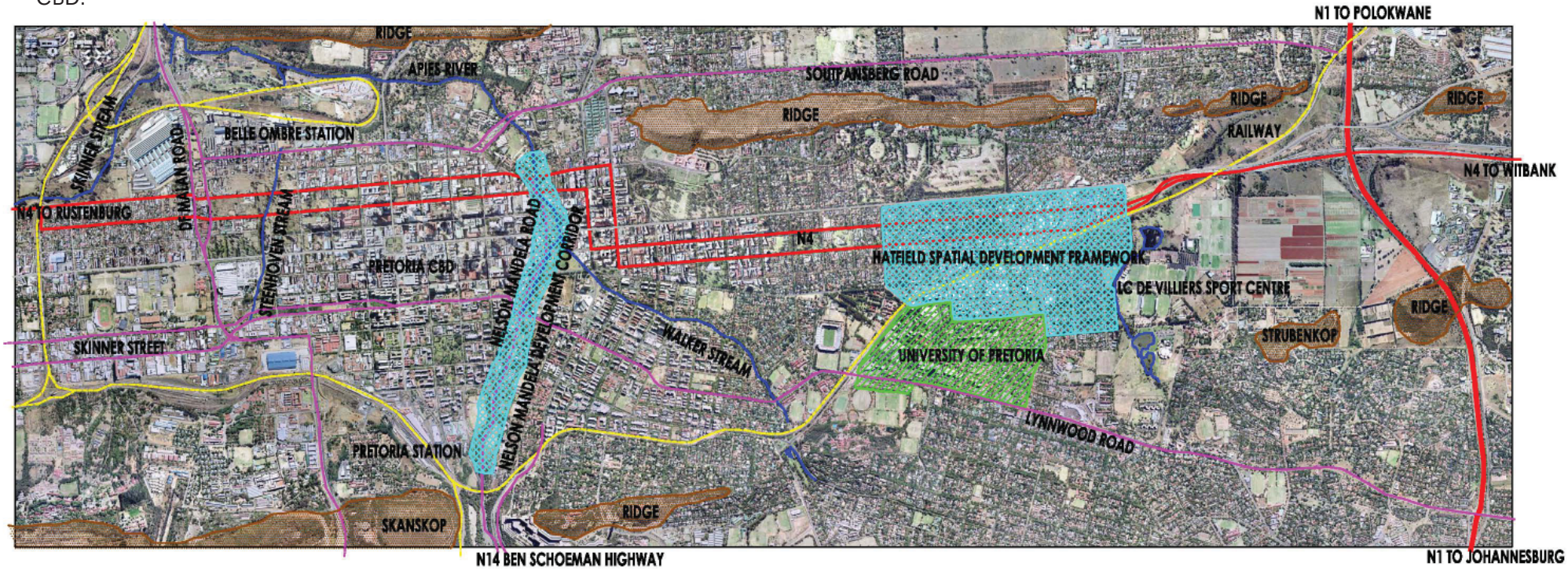

Figure 39: Map of Pretoria.

Hatfield

The City of Tswhane Metropolitan Municipality proposed a development framework for Hatfield, stretching from Lynnwood Road to Church Street. The initiative is to intensify the density this area.

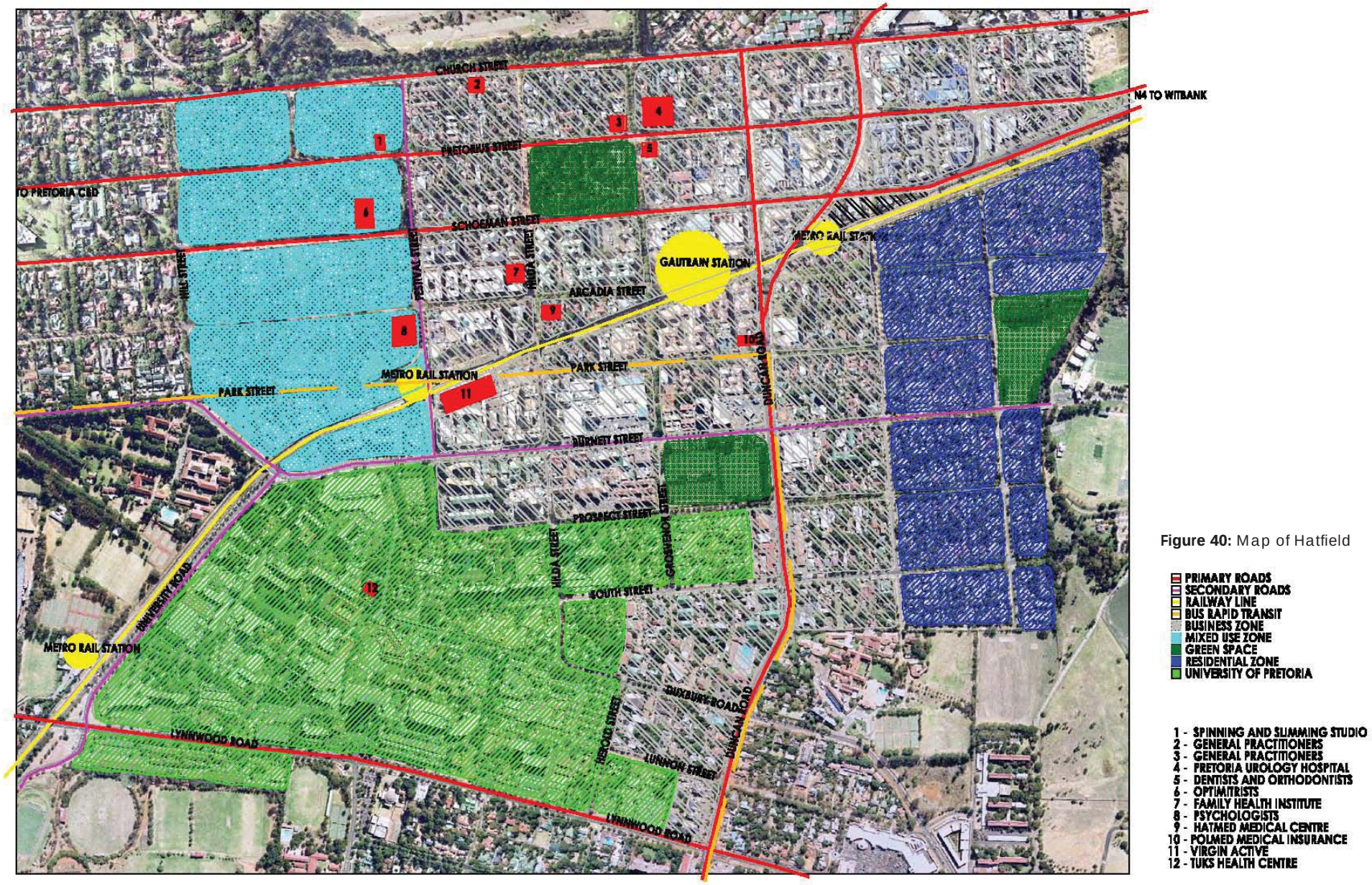

Figure 40: Map of Hatfield

Geomorphology

Gravel, with a clay and silt covering, is mainly found in the Pretoria region.

Hydrology

The Apies River is the main river of Pretoria and flows northwards past the east side of the CBD. Other streams include Walker and Skinner Streams as branches of the Apies River.

Ecology

Tswhane forms part of the Highveld ecological region. It is identified by grasslands and thorn trees. Pretoria is known for its Jacaranda trees, covering the streets with purple flowers during October. These trees dominate the campus.

Topography

Pretoria is geographical situated on the 25'44'S and 28'11'E. It is 1330m above sea level and is nestled between the Magaliesberg, Daspoortridge, Skanskop and Klapperkop. These ridges all run parallel to each other.

Climate

Pretoria falls in the Highveld climatic region. It mainly has dry mild winters and wet warm summers with afternoon thunderstorms during December to February. It has an average of 700mm rainfall per year.

The average daily temperature for winter (March to August) is at a maximum of 22 °C and a minimum of 11 °C and for summer (September to February) a maximum of 27 °C and minimum of 18 °C. Pretoria has east-north-easterly to east-south-easterly winds in the summer and southwest to northeast winds in the winter. The average annual humidity is 59%.

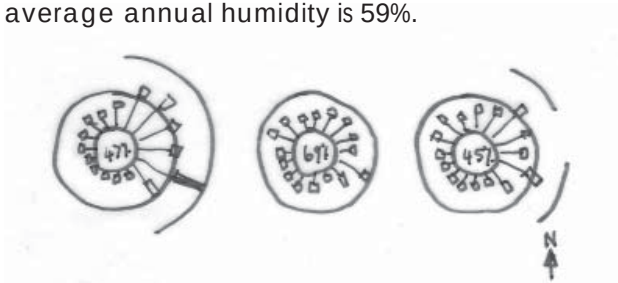

Figure 41: Wind rose indicating wind direction in the Pretoria region.

The solar incidence in Pretoria is 80% maximum sunshine in the summer and 67% minimum sunshine in the winter.

The vertical sun angle at summer solstice (21 March – 23 September) is 64.24° and at winter solstice (22 June) is 40.73°. (Holm 1996)

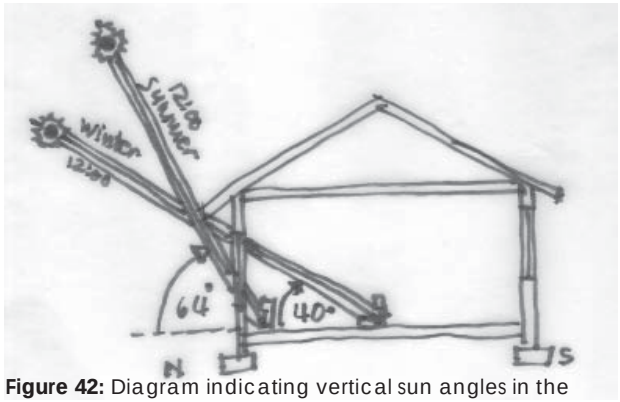

Figure 42: Diagram indicating vertical sun angles in the Pretoria region.

The study area under investigation is bordered by Duncan Road on the east side, Lynnwood road on the south side and Burnett Street on the north side. These roads are also the main arteries feeding the CBD from the eastern suburbs.

The University of Pretoria was founded in 1908, after Jan Smuts proposed a split from the Transvaal University College in Johannesburg. At the time of the founding, Transvaal was a colony of the British Empire. British architects, like Herbert Baker, who worked for the Department of Public Works had great influence on the architecture of the campus. (Fischer 1996:33)

In 1930 the university became an Afrikaans-language institution, after much protest from the staff and students. From then the campus buildings were designed by architects, like Gerhard Moerdyk, who maintained an Afrikaner culture and identity. (Fischer 1996:33)

The university is currently holding more than 50 000 students. The acronym TUC came from its first name Transvaal University College, and therefore a student from this university would be called a 'tukkie'. (www.up.ac.za)

Spatial Development Framework

University of Pretoria Hatfield Campus

Holm Jordaan Group designed a development framework for the main campus.

Figure 43: Map of the campus indicating proposed framework by Holm Jordaan Group. Red building represent new additions to campus.

LIST OF BUILDINGS

OFFICE BUILDINGS
001 - ADMINISTRATION
002 - ENGINEERING TOWER
003 - AGRICULTURE
004 - HOUSE HARTMAN
005 - LOOS

STUDENT AMENITIES
006 - AULA
007 - CLUB HALL
008 - OLD MERENSKY
009 - NEW MERENSKY LIBRARY
010 - KAYA ROSA
011 - STUDENTE CENTRE
012 - TUKKIEWERF
013 - CHAPEL
014 - CLOISTER HALL
015 - HUIS-EN-HAARD

SOUTH CAMPUS
016 - BUILDING 1
017 - BUILDING 2
018 - BUILDING 3
019 - BUILDING 4
020 - BUILDING 5
021 - BUILDING 6
022 - BUILDING 7
023 - BUILDING 8
024 - BUILDING 9

EDUCATIONAL BUILDINGS
025 - VISUAL ARTS
026 - BUILDING SCIENCE
027 - SPEECH THERAPY
028 - DRAMA
029 - BOK en LIER
030 - AGRICULTURE GLASS HOUSE
031 - AGRICULTURE LIBRARY
032 - MASKER THEATER
033 - THERON LECTURE HALL
034 - INFORMATION TECHNOLOGY
035 - HUMANITY SCIENCES
036 - THEOLOGY
037 - TONE MUSIC
038 - MUSAION AND AMFITHEATER
039 - MICRO ELECTRONICS
040 - STORE / TOILETTE
041 - HEAVY MACHINE LABORATORIUM A
042 - HEAVY MACHINE LABORATORIUM B
043 - ELECTRICAL ENGINEERING
044 - OLD LITERATURE
045 - CHANCELLOR'S BUILDING
046 - MARKETING SERVICES
047 - OLD CHEMISTRY
048 - ECONOMIC & MANAGEMENT SCIENCES
049 - CONFERENCE CENTRE
050 - TOURISM HOUSE
051 - PLANT BIOLOGY CENTRE
052 - NEW LAW FACULTY
053 - NEW LECTURE HALLS
054 - ZOOLOGY
055 - GEOGRAPHY
056 - STUDENT SERVICES
057 - NATURAL SCIENCES 2
058 - MINERAL SCIENCES
059 - NATURAL SCIENCES 1
060 - CHEMISTRY
061 - CHEMISTRY STORE
062 - STUDENT HEALTH SERVICES
063 - HOME ECONOMICS
064 - TECHNICAL SERVICES
065 - MATHEMATICS
066 - BOTANY GLASS HOUSE
067 - BOTANY
068 - BATEMAN
069 - VETMANS
070 - STONEMAN
071 - AE DU TOIT
072 - VAN DER GRAAFVERSNELLER

RESIDENTIAL BUILDINGS
073 - JAKARANDA
074 - ROOSMARYN
075 - ERIKA
076 - VERGEET-MY-NIE
077 - ASTERHOF
078 - KLARADYN
079 - JASMYN
080 - MADELIEF
081 - MAGRIETJIE
082 - KINDERGARTEN
083 - TUKKIELAND
084 - PROTEA
085 - CUM LAUDE
086 - THE WERF FLATS
087 - NERINA
088 - GLASS KAS
089 - NERINA HALL
090 - PASTORIE
091 - TUKSDORP HOUSE 1
092 - TUKSDORP HOUSE 2
093 - TUKSDORP HOUSE 3
094 - TUKSDORP HOUSE 4
095 - TUKSDORP HOUSE 5
096 - TUKSDORP HOUSE 6
097 - TUKSDORP HOUSE 7
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114 - TUKSDORP HOUSE 24
115 - TUKSDORP HOUSE 25
116 - TUKSDORP HOUSE 26
117 - TUKSDORP HOUSE 27
118 - TUKSDORP HOUSE 28

EDUCATIONAL
OFFICES
STUDENT AMENETIES
UP RESIDENCES
NON-UNIVERSITY
GREEN SPACES

Figure 44: Map of the campus indicating buildings and building uses.

001 The Administration building was designed by Brian Sandrock and completed in 1968 in the Brazil Modernism style. The nick name of this building is the "skip", because of the distinctive prow-like projection. **Figure 45**

002 The Engineering tower was designed by Brian Sandrock and completed in 1975 in the Neo-Brutalism style. **Figure 46**

003 Agriculture. **Figure 47**

006 The Aula was designed by Karel Jooste (Philip Nel Architects) and completed in 1958 in the Brazil Modernism style. The use of concrete was exploratory for its time. This building was the major venue for operas, ballets and dramas in the city until the State Theatre was completed in 1980. **Figure 49**

007 The Club Hall was designed by Gerard Moerdyk and completed in 1930 in the Neo-Romanesque style. **Figure 48**

008 The Old Merensky Library was designed by Gerard Moerdyk and completed in 1938 in the so-called Boere Deco (Art Deco period) style. The building has many symbols, empowering the Afrikaner Volk. The name derives from the biggest donor of the project, Hans Merensky, a mining and forestry magnate at the time. **Figure 50**

009 The New Merensky Library (currently called the Academic Information Services) was designed by Louw Marais (Marquard & Kuhn Architects) and completed in 1975 in the Neo-Brutalism style. **Figure 51**

010 Kaya Rosa was the first building on the campus. It is designed in a Victorian/ European Eclecticism style. **Figure 52**

011 Student Centre. **Figure 53**

012 Tukkiewerf was completed in 1925 in the Baker School style (Herbert Baker style). The architect of this building is unknown. **Figure 54**

013 The Chapel was completed in 1925 in the Baker School style (Herbert Baker style). The architect of this building is unknown. **Figure 56**

014 The Cloister Hall was designed by Gerald JC Bernhard and built by WL Jones and completed in 1944. **Figure 55**

015 Huis en Haard. **Figure 57**

025 The Visual Arts building (Old L.O. building) was designed by Burg-Lodge and Burg Architects and completed in 1974 in the Pretoria Regionalism style. **Figure 58**

026 The Building Science building was designed by A.L. Meiring and completed in 1960 in the International Style. In 1973 D.S. De Beer made alterations to the building in a Neo-Brutalism style. **Figure 59**

027 The Speech Thearapy building (Old Weather Buro Building) was designed by W.F. Fleischman (Department of Public Works) and completed in the 1930's in the Bauhaus / International Style. This is one of the campus buildings representing Pretoria's brick architecture.

Figure 60

028 The Drama bulding is designed in the Baker School style (Herbert Baker style). **Figure 61**

029 Bok en Lier. **Figure 62**

031 Agriculture Library. **Figure 63**

032 Masker Theatre. **Figure 64**

033 Theron Lecture Hall. **Figure 65**

035 The Humanity Sciences building was designed by Brian Sandrock and completed in 1977 in the Neo-Brutalism style. This was the first Neo-Brutalist building on campus. The nick name for this building is the 'konsertina'. **Figure 67**

034 The Information Technology building (Old Education – Law) was designed by Louw Marais (Marquard & Kuhn Architects) and completed in 1973 in the Neo-Brutalism style. **Figure 66**

036 The Theology building (Old Literature 2) was designed by Burg-Lodge and Burg Architects in the Academic Revivalism style. This building also represents Pretoria's brick architecture. **Figure 68**

038 The Musaion & Amphitheatre was designed by Brian Sandrock and completed in 1961 in the Brazil Modernism style. **Figure 69**

039 Micro Electronics. **Figure 70**

043 The Electrical Engineering building was designed by Steyn & Viljoen in the Neo-Brutalism style. **Figure 71**

044 The Old Arts building was designed by J.S. Cleland and P. Eagle (Department of Public Works) and completed in 1911 in the Baker School style (Herbert Baker Style). **Figure 72**

045 Chancellor's Building. **Figure 73**

047 The Old Chemistry building was designed by J.S. Cleland and P. Eagle (Department of Public Works) and completed in 1911 in the Baker School style (Herbert Baker style). **Figure 74**

048 The Economic & Management Sciences building was designed by Samuel Pauw and completed in the 1980's in the Post-Modernism style. This building also represents Pretoria's brick architecture and was the first Post-Modern building on campus. This building brought the scale of the Humanities building down to a more appropriate campus feeling.

Figure 75

049 The Conference Centre was designed by Samuel Pauw in the Post-Modernism style.

Figure 76

052 New Law Faculty was designed by Kruger Roos Architects and completed in 2002. The building has won numerous national architectural prizes.

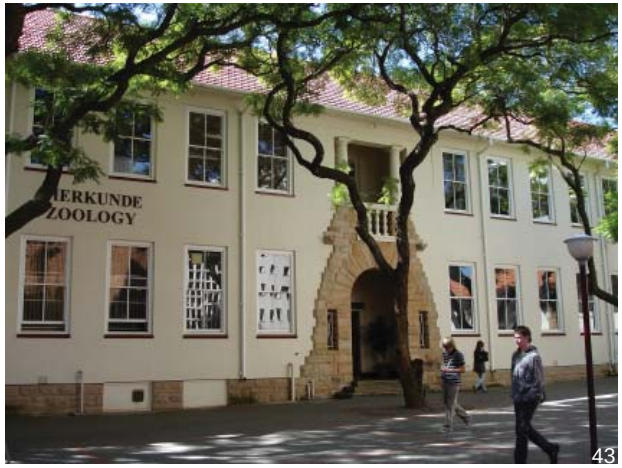
Figure 77

053 New Lecture Halls was designed by Earthworld Architects and is currently under construction.

Figure 78

054 The Zoology building was designed in the Baker school style (Herbert Baker style).

Figure 79



055 The Geography building was designed by Brian Sandrock in the Dutch Modernism style (brick building). **Figure 80**

056 The Student services building (Old Kollege Residence) was designed by the Department of Public Works and completed in 1915 in the Neo-Romanesque style. **Figure 81**

057 The first Natural Sciences building was designed by Steyn & Viljoen Architects in the Neo-Brutalism style. **Figure 82**

059 The second Natural Sciences was designed by A.L. Meiring & P.R. Nel and completed in 1955 in the Brazil Modernism style. **Figure 83**

058 The Mineral Sciences building was designed by A.L. Meiring and P.R. Nel and completed in 1955 in the Brazil Modernism style. **Figure 84**

060 The Chemistry building was designed by Moerdyk & Watson Architects and completed in 1943 in the Dutch Modernism style. This building also represents Pretoria's brick architecture. **Figure 85**

062 Student Health Services. **Figure 86**

063 The Home Economics building (Old Agriculture) was designed by J.B. Dey (Department of Public Works) and completed in 1920 in the Baker School and Cape Dutch Revival styles. This was the first brick building that represented Pretoria's brick architecture. **Figure 87**

064 The Technical Services building was designed by Tectura and completed in 1975 in the Neo-Brutalism style. **Figure 88**

065 The Mathematics buildings (Old Administration) was designed by Gordon Leith and completed in 1931 in the Mannered Neo-Classicism style. **Figure 89** (Fischer 1996)

Vehicular and pedestrian routes

The campus aims to be pedestrian friendly, by minimising vehicular traffic. All students have to park outside the campus, but this tends to be a security issue. A number of proposed car parks will solve this problem. A series of taxi and bus stops surrounds the campus, making it easier for students and staff to travel. A shuttle service from the residences to the campus has also been put into place and is used to its full potential. A rapid bus service between the eastern suburbs and the CBD also gives opportunity for trouble-free commuting.

The Gautrain Rapid Rail station in Hatfield, currently under construction, will give accessibility to the campus for students travelling from Johannesburg.

Legal Regulations

The UP campus has a permissible floor area ratio of 2.5 and a height restriction of 6 storeys (+/- 18m).

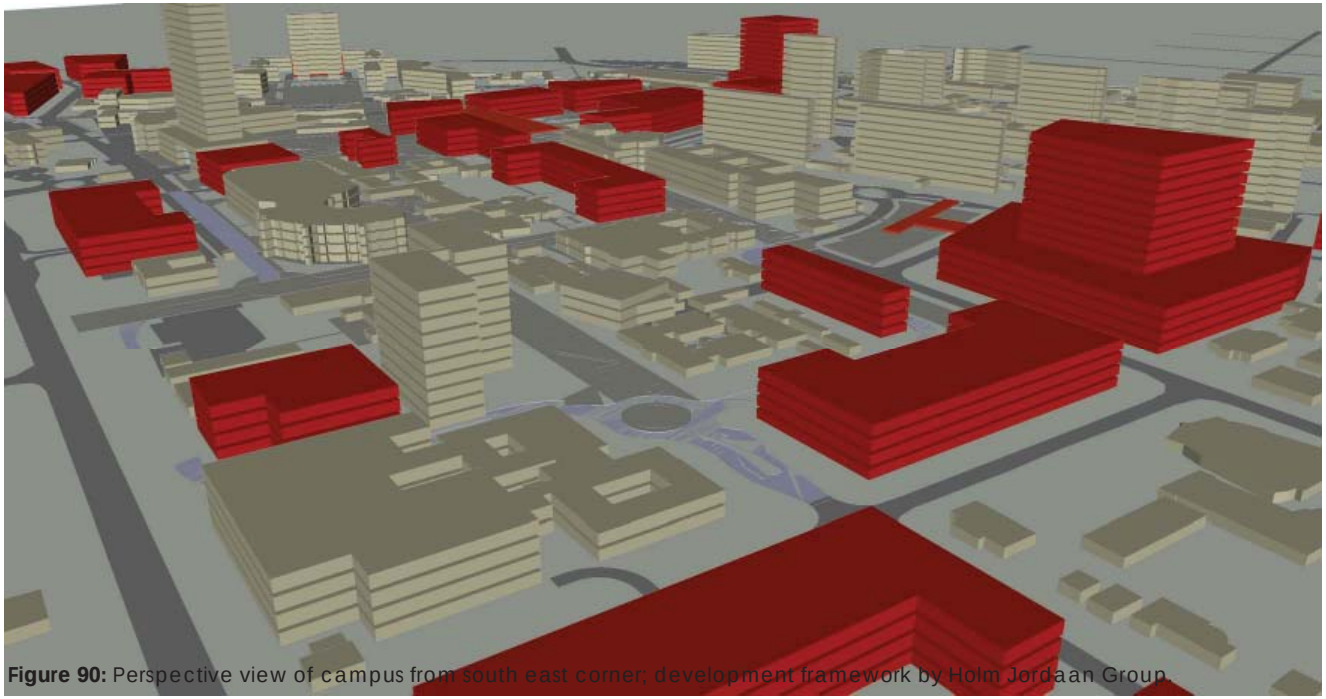


Figure 90: Perspective view of campus from south east corner, development framework by Holm Jordaan Group.

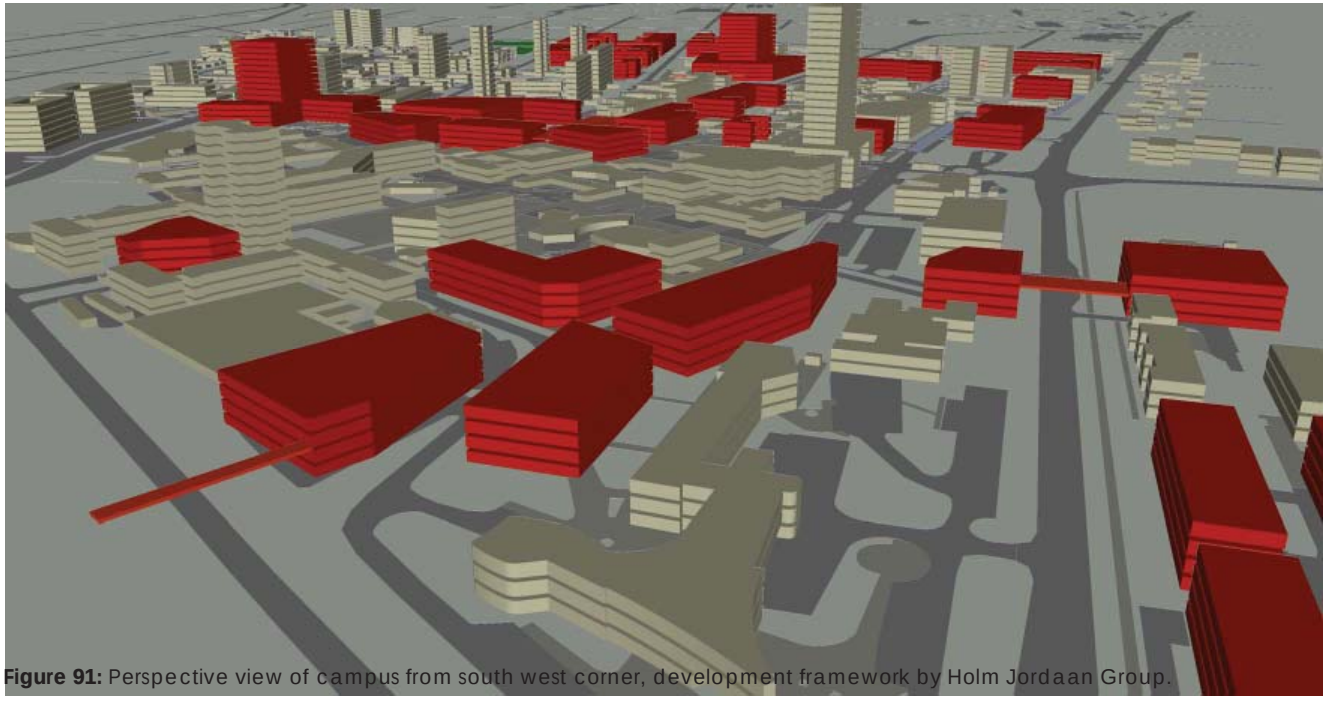


Figure 91: Perspective view of campus from south west corner, development framework by Holm Jordaan Group.

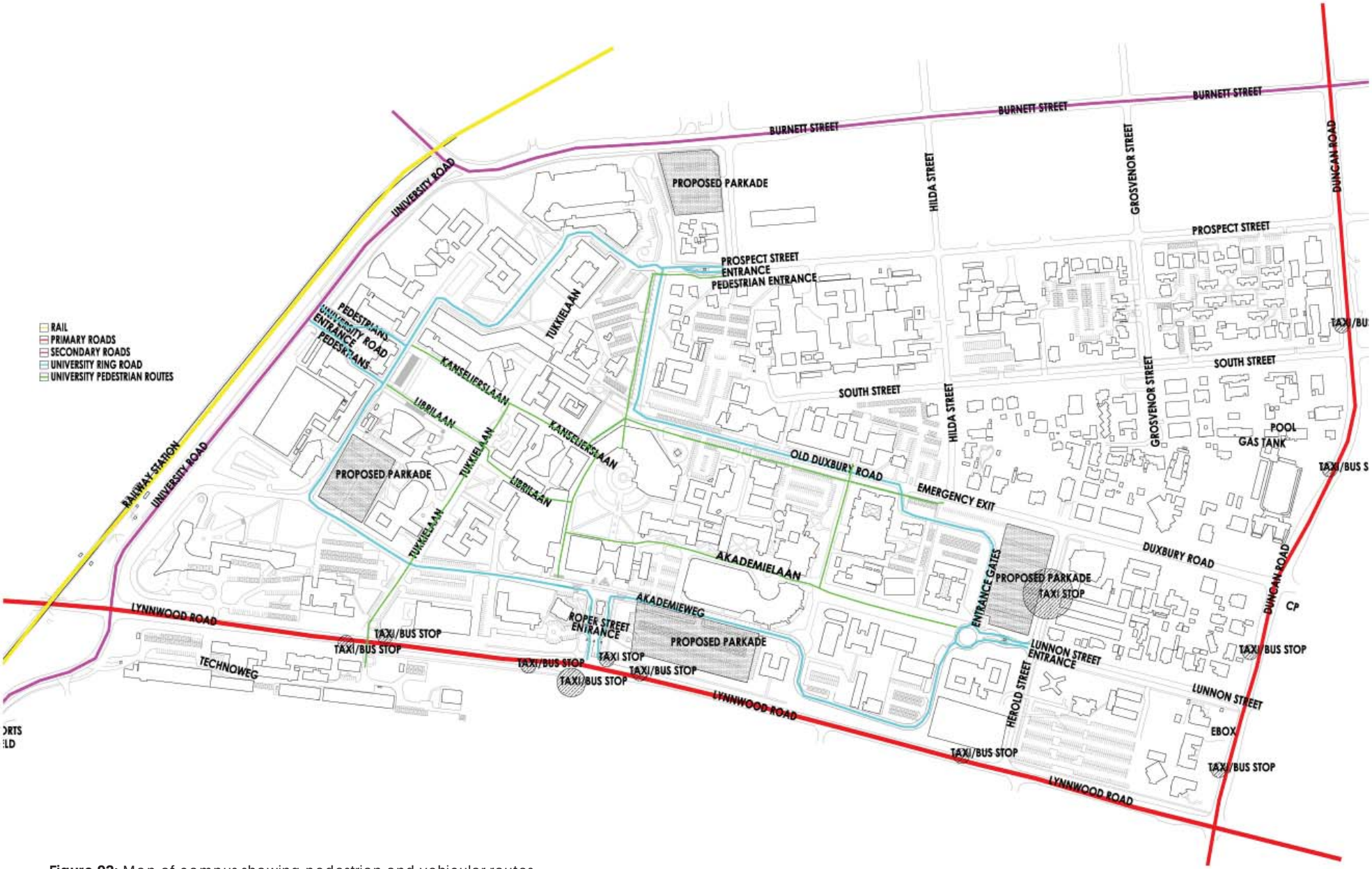


Figure 92: Map of campus showing pedestrian and vehicular routes.

Site analysis

The proposed site under investigation is located on the northern edge of the campus ring road. This section of road used to be part of Duxbury road, connecting the student centre with Duncan road with a vehicular access road. The road has been closed since then, for security reasons, but is still used by students walking or cycling from the university residences. It is one of the main pedestrian arteries feeding the campus from Hatfield.

The site is surrounded by a collection of old and new buildings, some currently under construction. The cloister complex (consisting of the chapel, Tukswerf building and the cloister hall), student centre and new lecture halls.

The Student Centre, being the western border of the site, serves as the main gateway to student activities. Unfortunately this building has proven not to respond to the context or student requirements. Students even have to walk past the delivery yard to enter the centre. A new student centre as thesis project (2008) is proposed by Francois Malan.

The function of the cloister complex has changed to a mini-student centre since 1984. It accommodates the Student Council, the Central Rag Committee, the Bureau for Student Development and the Perdeby (the Rag news paper). The chapel is used for student weddings and probation sermons by prospective ministers. The cloister hall is used for socials, performances by the drama students and partially as a cafeteria. (Clarke 2008) The functions held in these buildings compliment and give motivation for the proposed health and wellness centre.

The new lecture halls, currently under construction, across the road on the northern edge of the campus, creates a square between itself, the chapel and the cloister hall; introducing the walkway leading towards the south, anew.

From this analysis a language for the proposed building has been derived. Brick buildings and Brazil Modernism dominates the campus and can be used in an appropriate contemporary way, as can be seen from the new Law faculty and in-the-making lecture halls.

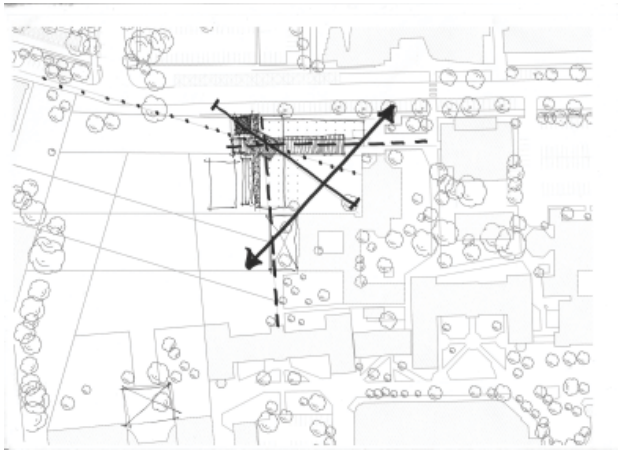


Figure 93: Identifying existing routes on proposed site.

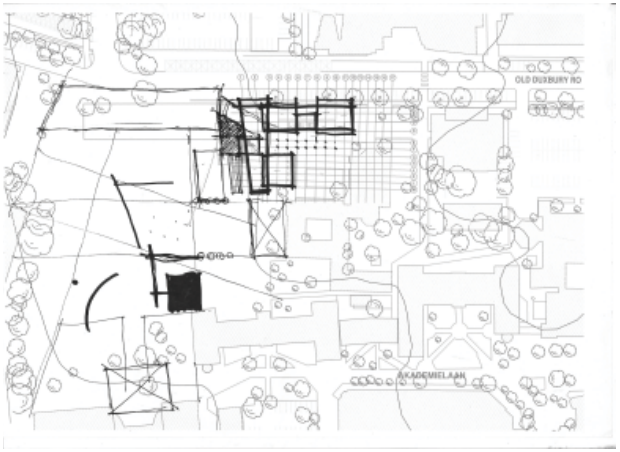


Figure 94: Identifying possible form and volume for proposed building.

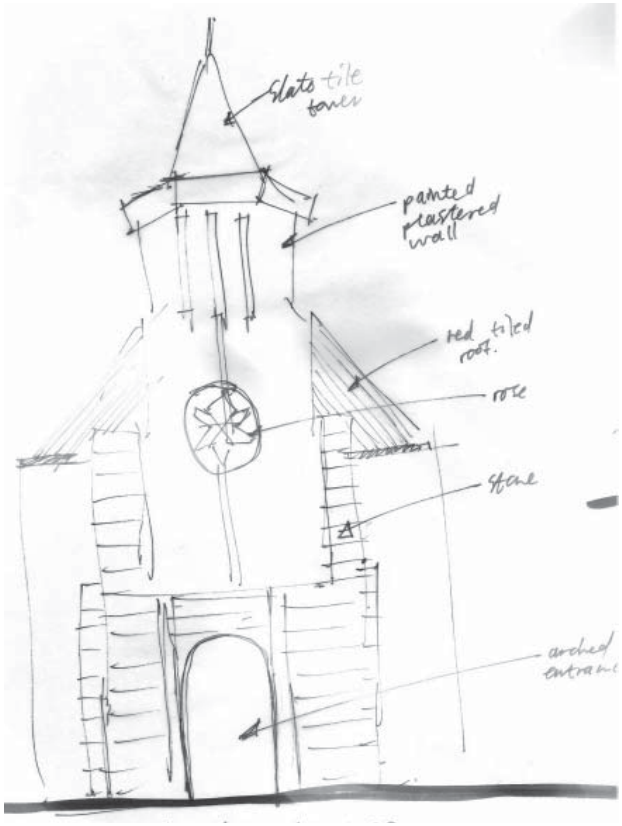


Figure 95: North elevation of the chapel.

Figure 98: Three dimensional sketch of the chapel.

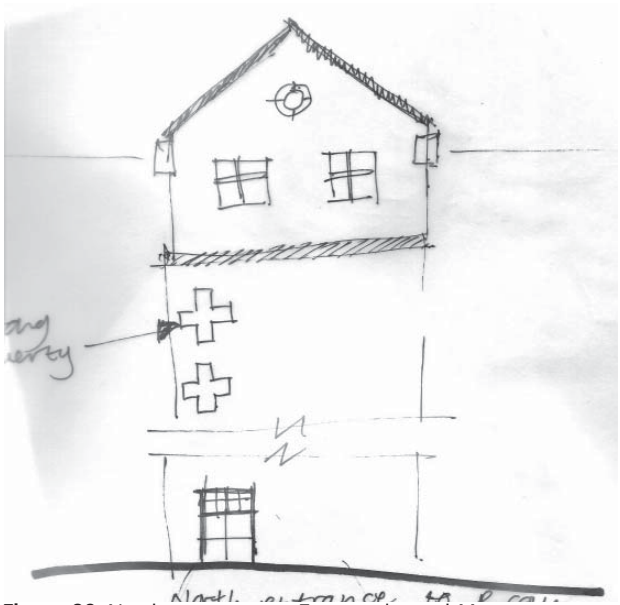


Figure 96: North entrance to Economic and Management Sciences building.

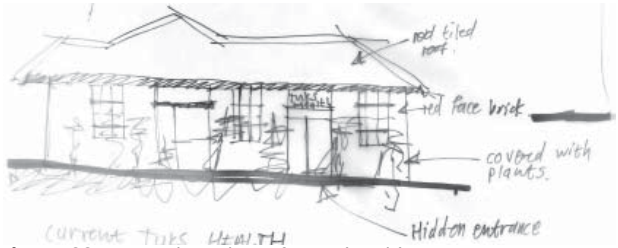


Figure 99: Front elevation of TUKS health.

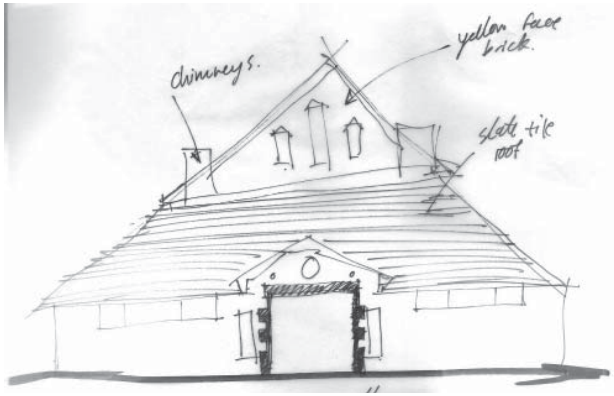


Figure 101: West elevation and entrance to cloister hall.

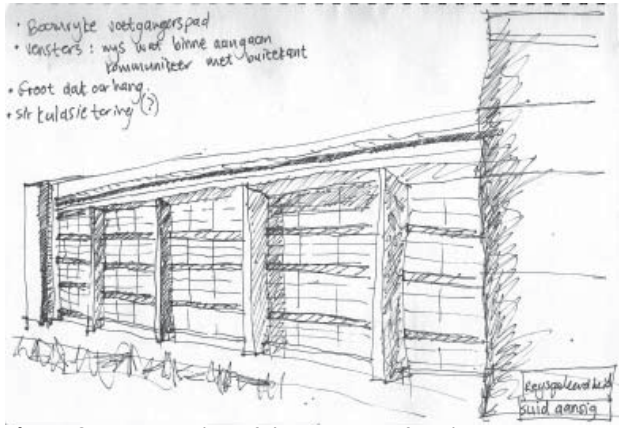


Figure 97: Perspective of the new Law faculty.

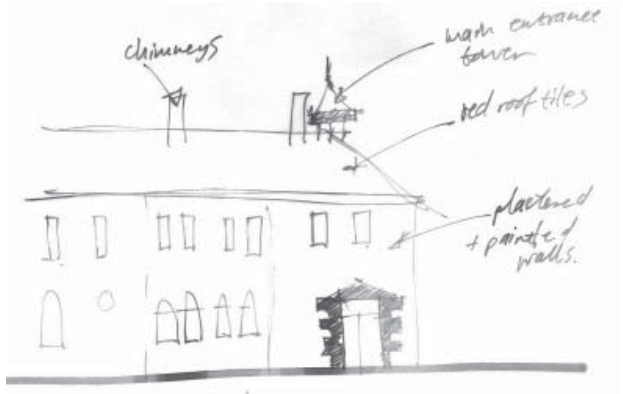


Figure 100: North elevation of TUKSwerf.

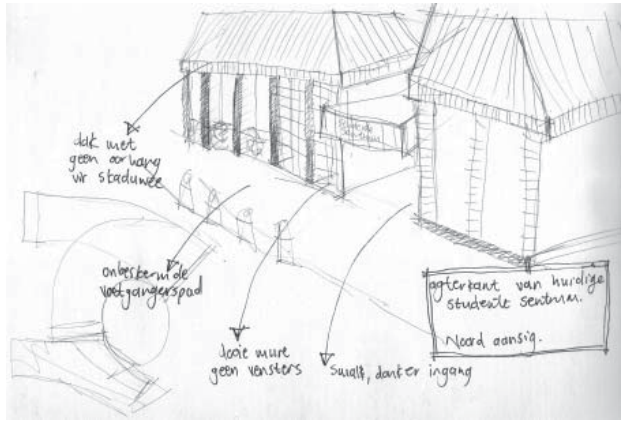
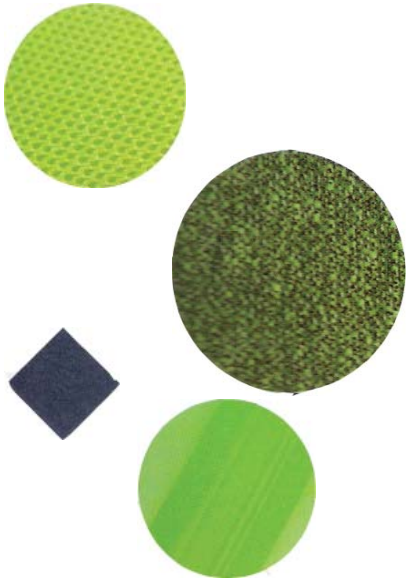


Figure 102: Perspective of existing student centre.



THE DESIGN

Previous page
Figure 103: A couple in development.

Development

Touch Stone

The touch stone project helped the students to create a metaphor for a conceptual design. In this instance a white ice-cream tub, representing a clinical, sterile health building, was used to create an artwork with different colours and textures. This artwork shows that something dull could be transformed into something exciting and inspiring.

A number of criteria had to be kept in mind in creating a building on the chosen site:

- the scale of the new building could not overshadow that of the other buildings (the Chapel and Tukswerf) on the surrounding sites;
- the existing movement patterns of pedestrians had to have an influence on the form of the building;
- Design dependant on the choice between the concept of keeping the existing Student Centre in mind or with the proposed new Student Centre of the class project framework.

Figure 104: Touch stone project.

Concept 1

The first option was to work with the existing Student Centre, since it proved to be a constant element, in the ever changing design process.

An arcade was identified as a secondary route parallel to the sidewalk, with multiple functions in mind. This arcade would go alongside a circulation tower and curve back to the sidewalk passing the service entrance of the Student Centre. The circulation tower would mimic the tower of the chapel and the Economic and Management Sciences building and close off the formed triangle.

After much consideration, it was decided to work with the class framework with a new student centre instead. The existing Student Centre proves to be unsuccessful in relation to the context and would have caused more problems than solutions for this thesis.

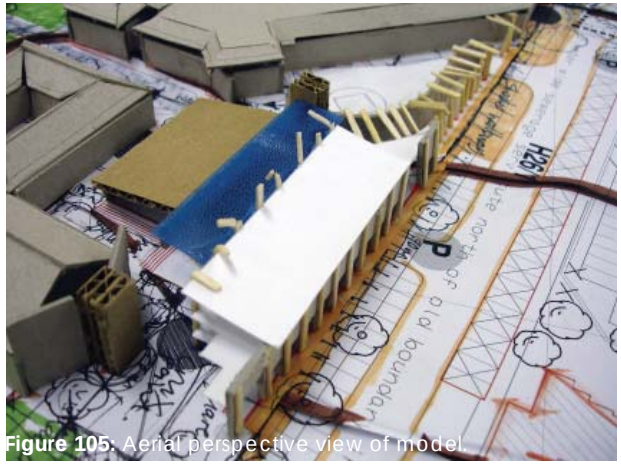


Figure 105: Aerial perspective view of model.

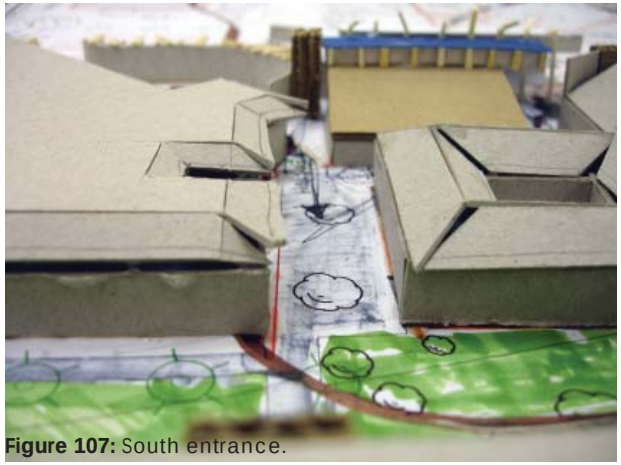


Figure 107: South entrance.

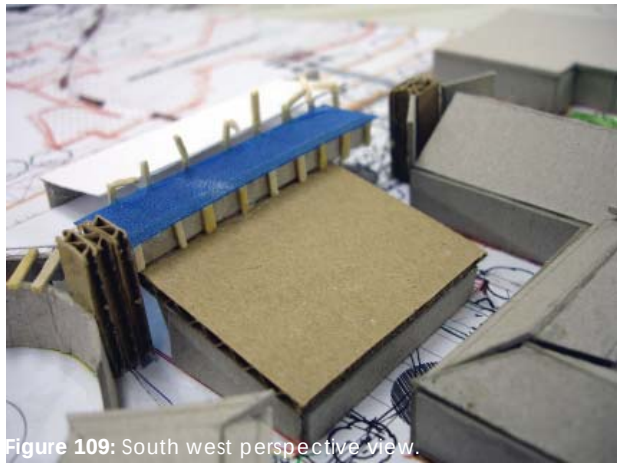


Figure 109: South west perspective view.

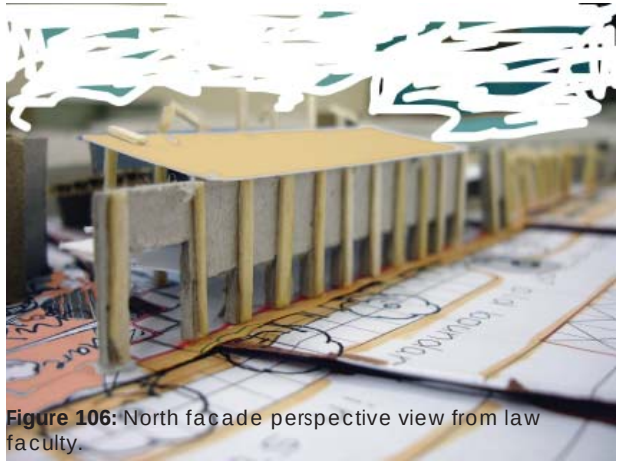


Figure 106: North facade perspective view from law faculty.

Figure 108: North facade perspective view from student centre

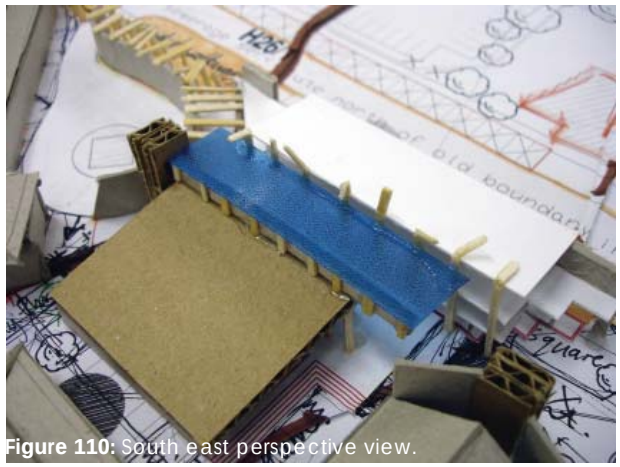


Figure 110: South east perspective view.

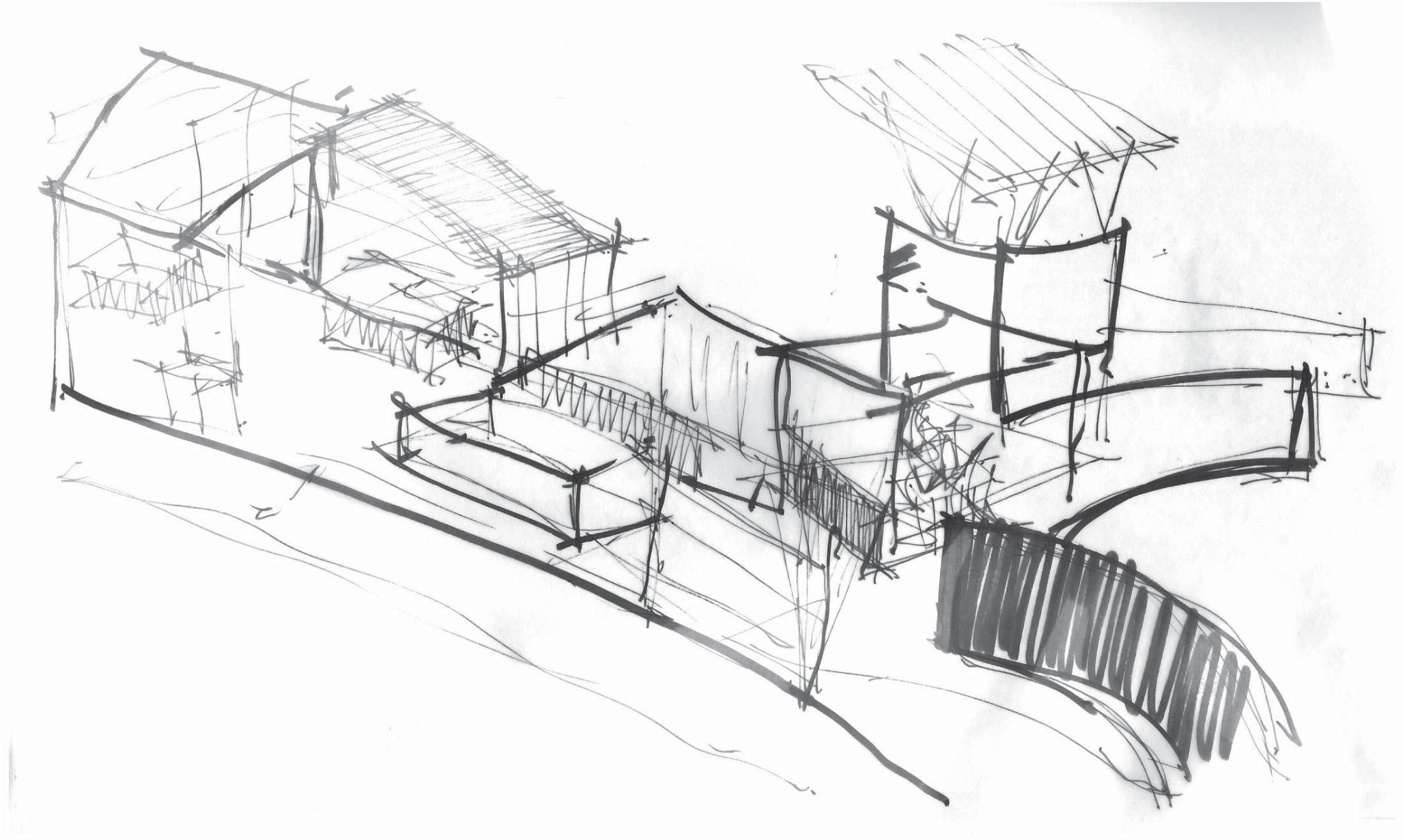


Figure 111: Perspective drawing.

Concept 2

The arcaded route was pulled straight through to spill out into the new proposed Student Centre. The volume on the south was pulled back to create a public square between the new building, the Chapel and Tukswerf. The circulation tower became the centre point of the building. A tree-like structure was experimental in the planning of the main roof.

After critical inspection, the circulation tower proved to have no important function. It stood in the way of smooth circulation and was therefore not needed.

Figure 112: Perspective view of court yard.

Figure 113: Perspective view of north west corner.

Figure 114: Perspective view of internal walkway.

Figure 115: Perspective view of east facade.

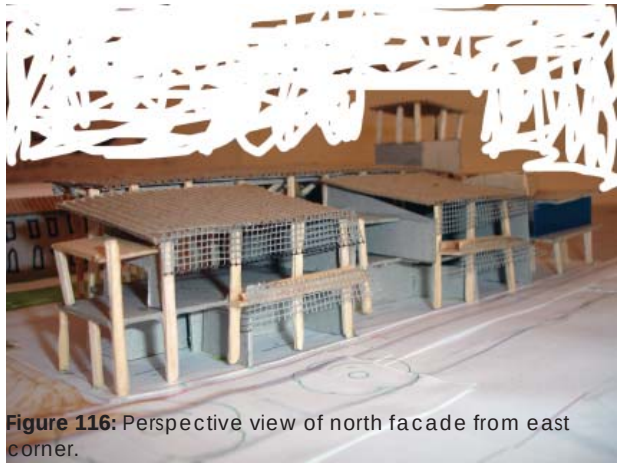


Figure 116: Perspective view of north facade from east corner.

Figure 117: Perspective view of west facade.

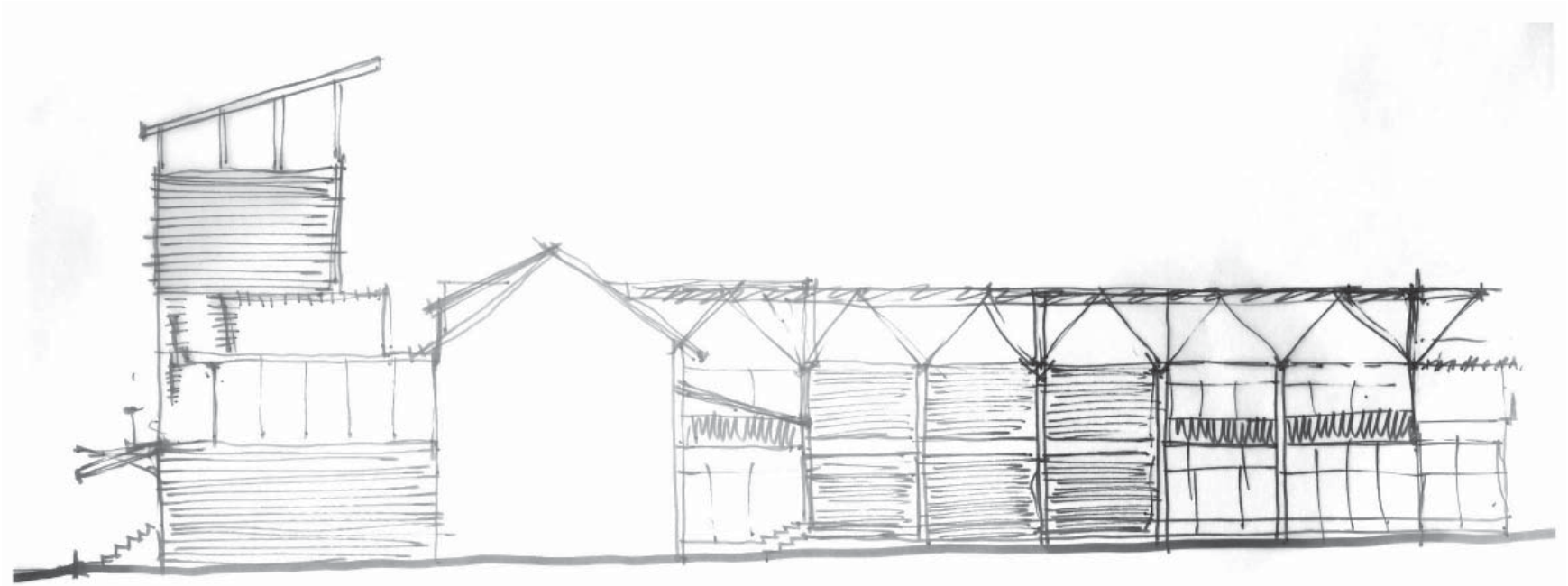


Figure 118: Proposed south elevation.

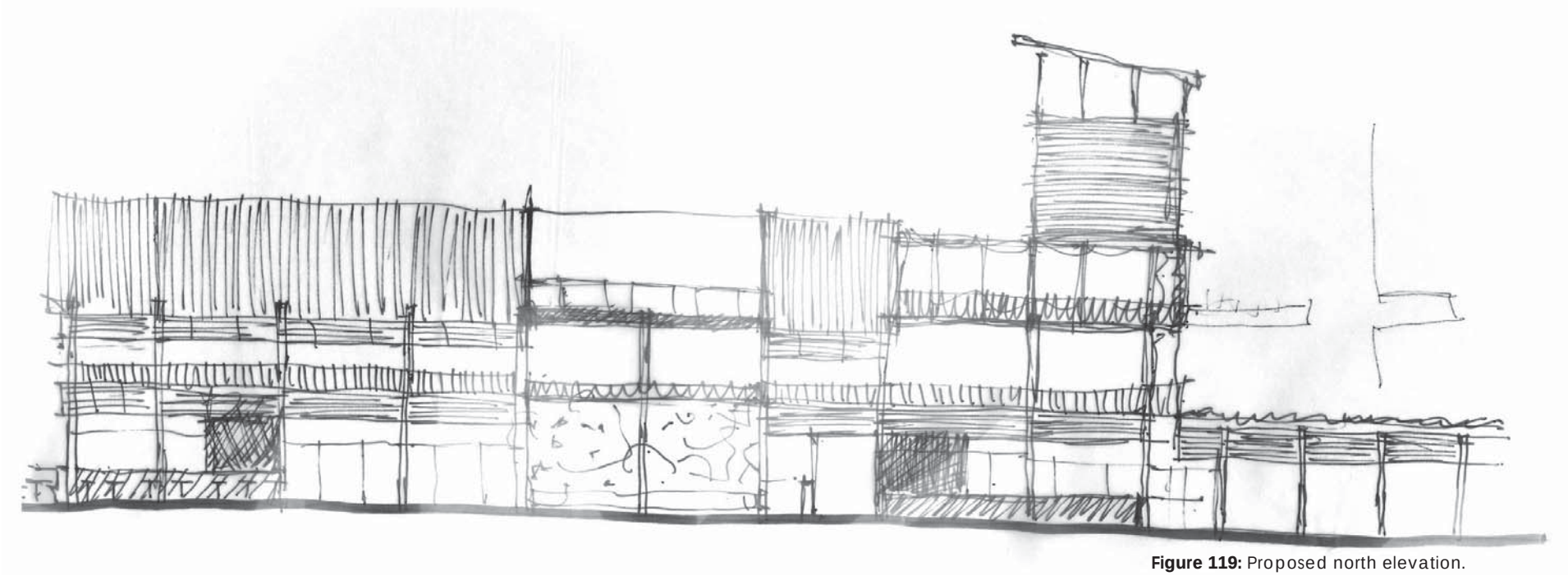


Figure 119: Proposed north elevation.

Concept 3

The third concept of the design consisted of a long smooth roof, with an L-shaped building underneath. The building framed the square formed between it and the existing buildings. The circulation route was now set back to emphasise a smooth walkway.

The L-shaped building was divided into two parts:

- the north-south leg would speak of conventional healing and this would also be the public entrance;
- The east-west leg would speak of alternative healing where more private functions could take place.

This concept has a few flaws:

- the floating articulated roof seemed to be 'the building', while it only held a walkway;
- this walkway would also end up to be a cold and draughty wind tunnel, since Pretoria has mainly south-easterly winds;
- the other issue was to create a service entry for the restaurants on ground floor, since it was accessible from both sides;
- Up till now the building did not have an entrance.

Figure 120: Perspective view of west facade.

Figure 122: Perspective view of east facade.

Figure 124: Perspective view of south west corner.

Figure 121: Perspective view of north facade.

Figure 123: Aerial view.

Figure 125: Perspective view of courth yard.

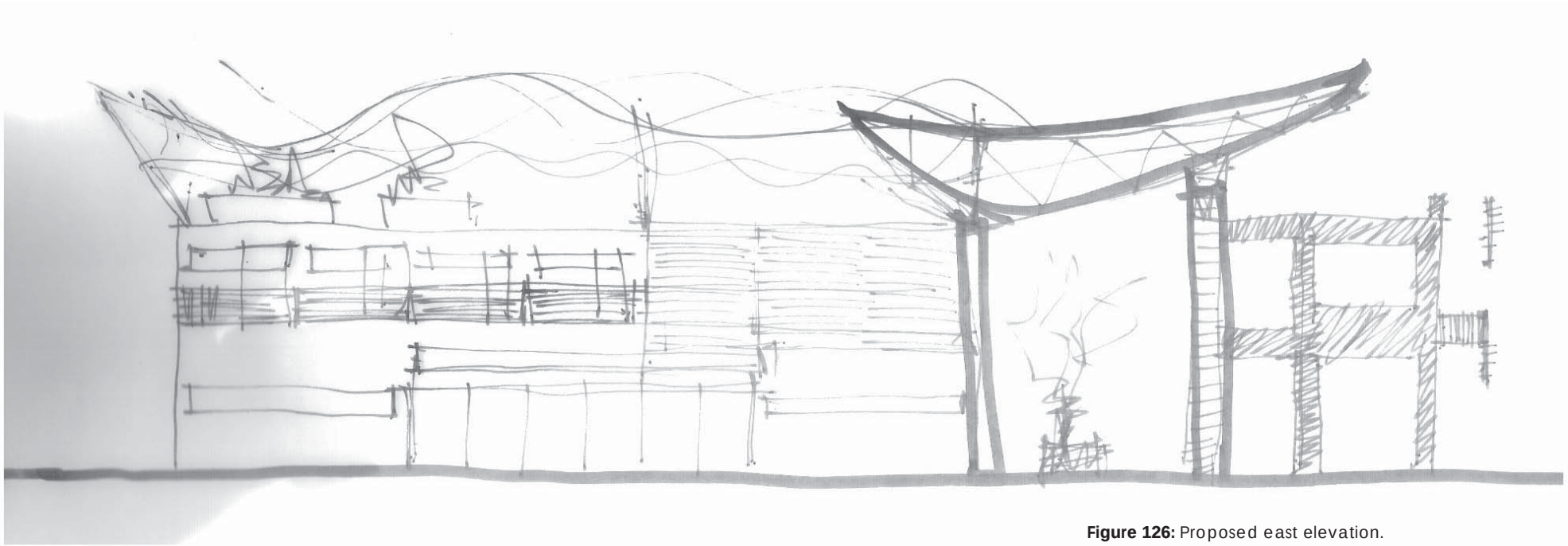


Figure 126: Proposed east elevation.

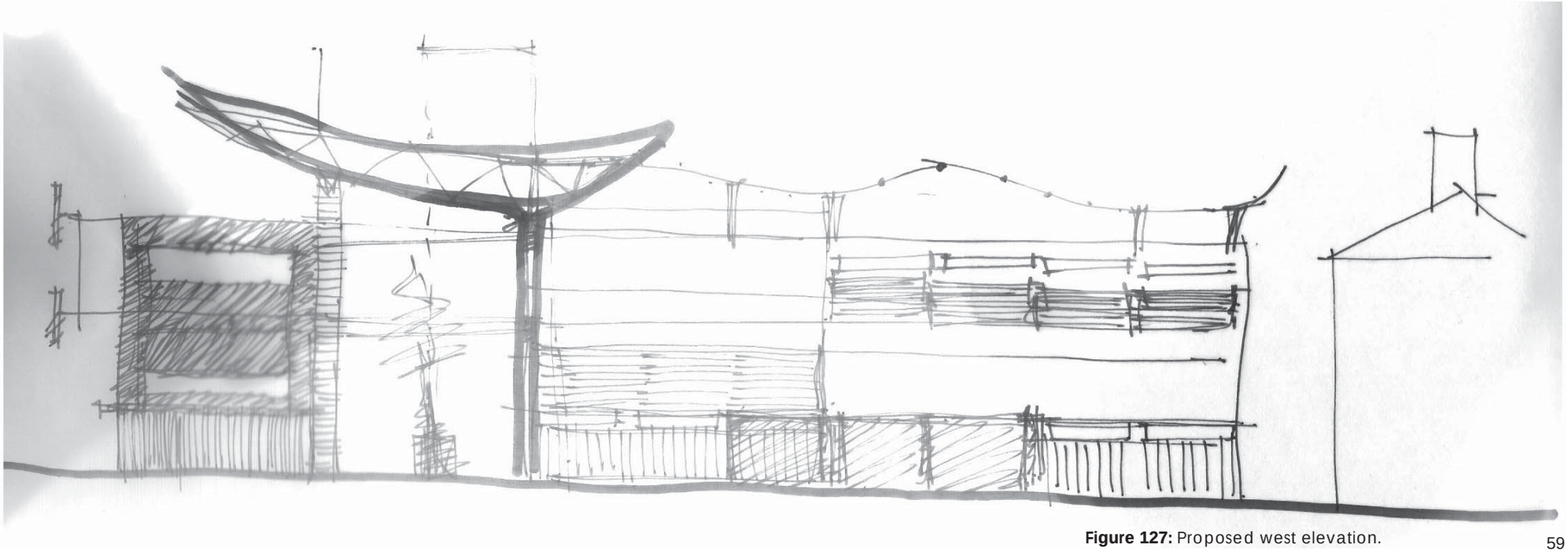


Figure 127: Proposed west elevation.

Concept 4

A major change had to be made to the design, since the main feature was taken away. The north-south wing was extended to form a secondary square on the west with the new proposed Student Centre. The main walkway was reinstated as a pedestrian sidewalk passing the front of the building. A proposed Language Hub across the street (thesis by Roald Meyer) necessitated the planning of a front entrance.

The nature of the building and the slope of the site called for different levels on the outside and inside of the building. In this concept the need for a function as main feature was identified. Therefore a rock climbing and bouldering centre was used to form the entrance to attract people to the inside of the centre.

The only problem left to be solved was that of the roof. It had to be planned for the three sections of the building.

Figure 128: Perspective view of north east corner.

Figure 129: Aerial perspective view.

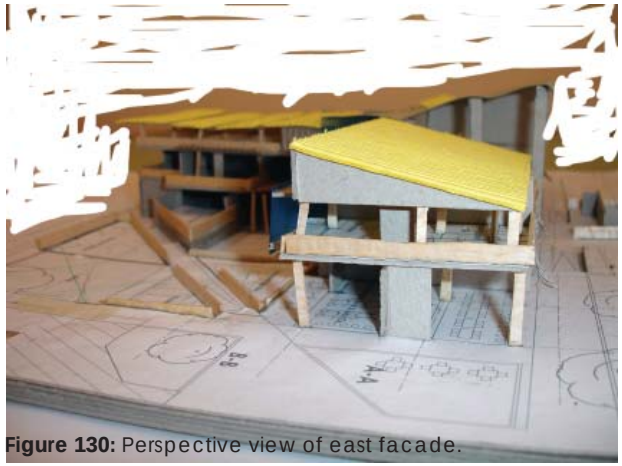


Figure 130: Perspective view of east facade.

Figure 131: Perspective view of north facade.

Figure 132: Perspective view of courth yard.

Figure 133: Perspective view from north west corner.

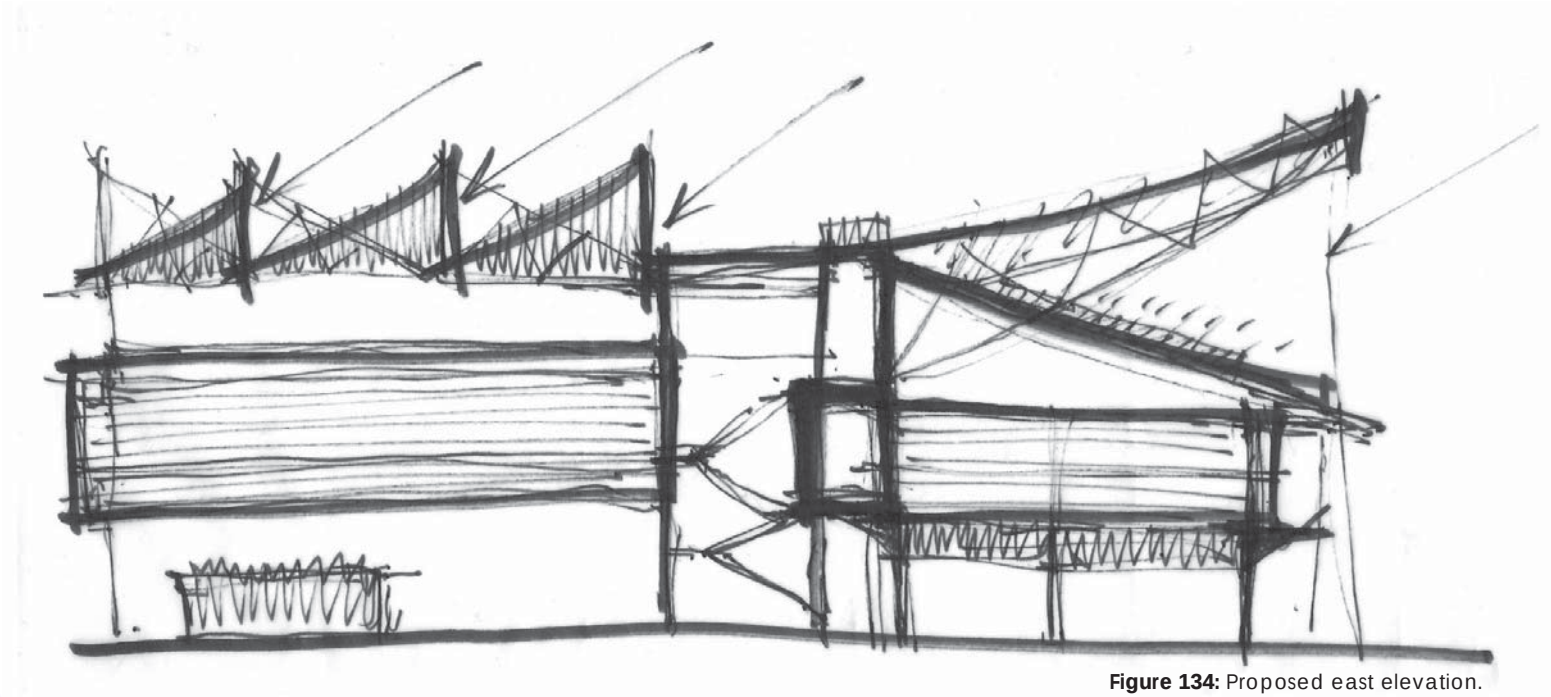


Figure 134: Proposed east elevation.

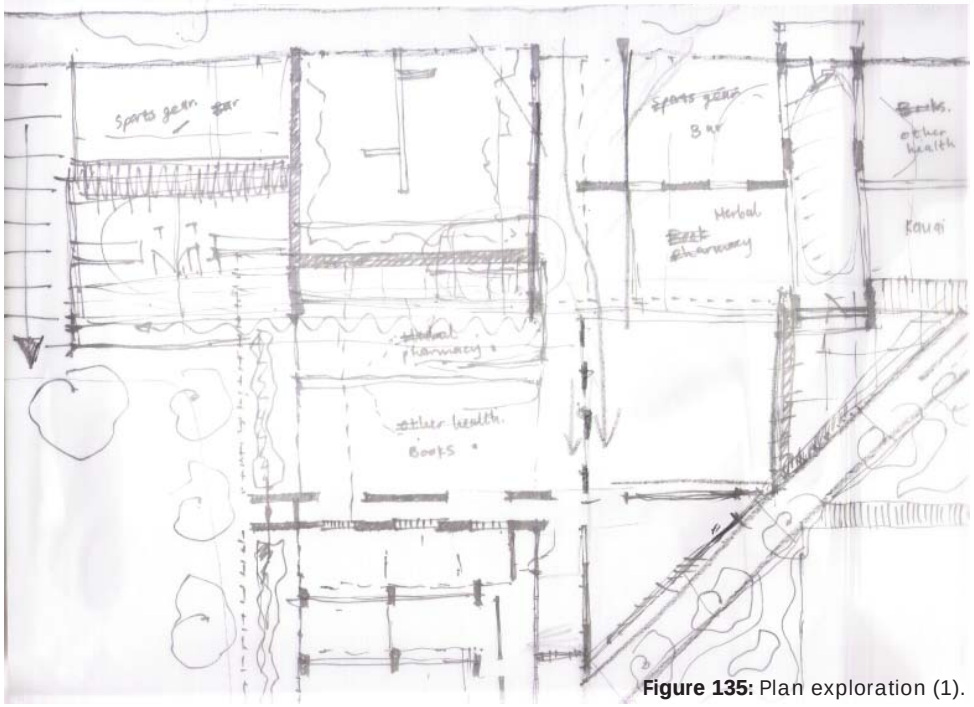


Figure 135: Plan exploration (1).

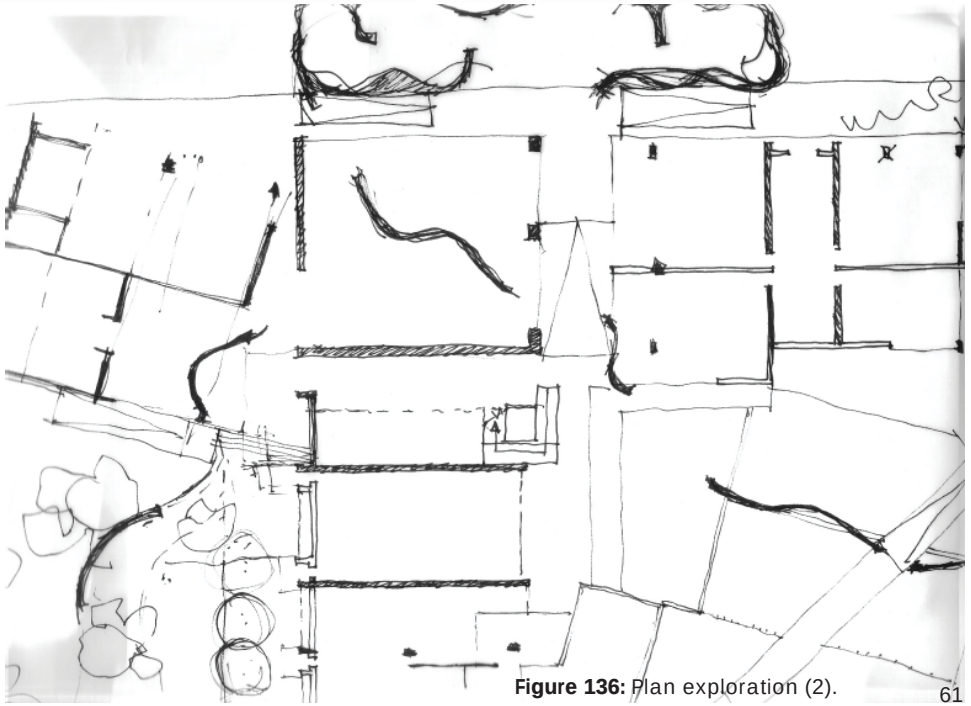


Figure 136: Plan exploration (2).

Proposal

Curves

A bold step was taken in planning a roof to compliment the building. Three large curved roofs enfold the building. These curves are repeated on smaller scale throughout the building:

- the herb garden has a protective curve that shields off the late afternoon sun;
- the court yard gardens has several small curved structures serving as seating;
- the bouldering walls are flowing curved concrete walls;
- The meditation space on the second floor has curved timber screens and a curved balcony balustrade that holds planters.

These organic curves symbolises the interaction between man and the natural and built environment. The curves also give opportunity for physical interaction. People can climb on the walls, sit on circular stones and move the screens.

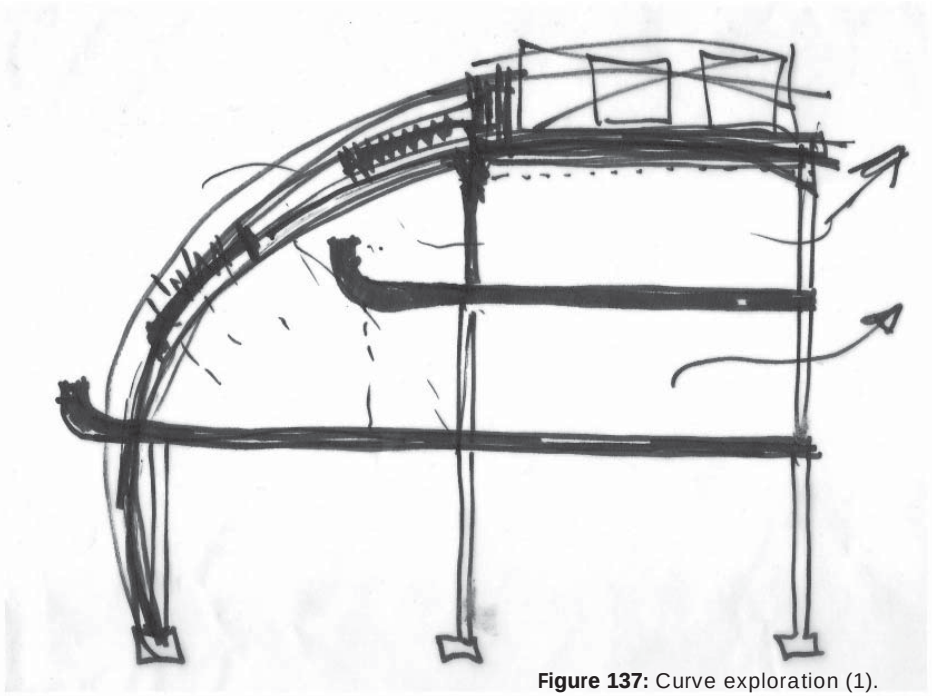


Figure 137: Curve exploration (1).

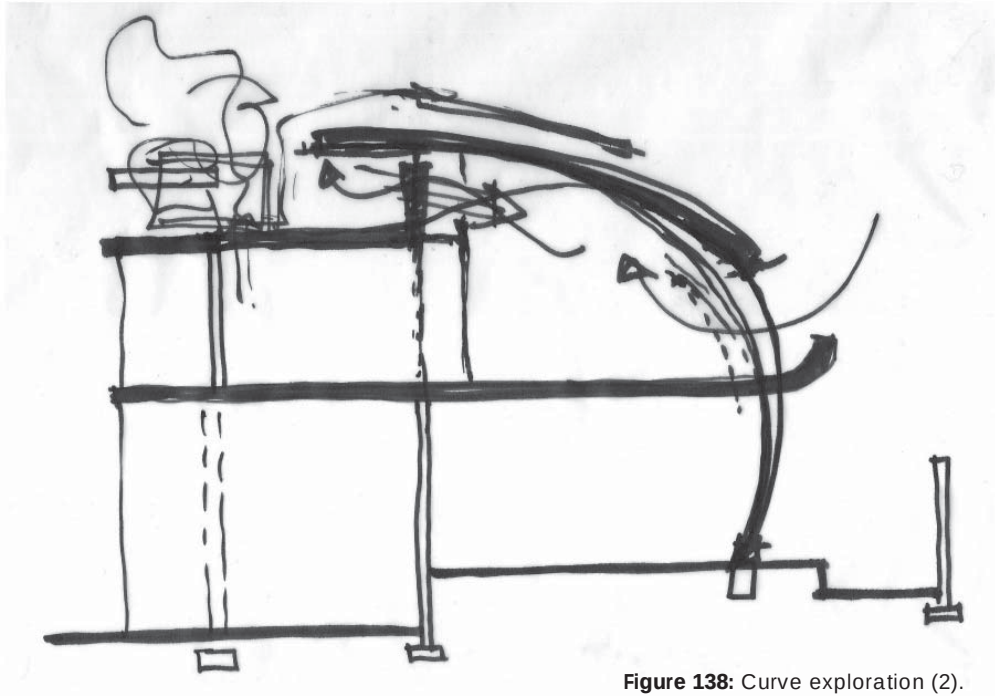


Figure 138: Curve exploration (2).

Movement

The existing movement patterns on the site gave indication for the form of the building. The slope of the site and the nature of the building resulted in creating different levels. On each level, different garden areas were designed. These areas lend itself to different functions, like socialising and meditation.

It was a priority to create the same concept but on a bigger scale inside the building. The different levels on the ground floor houses different functions and levels of publicness. The circulation core is central to the building and serves as a connection between the three wings. A ramp overlooks the court yard leads to the conventional healing centre on the first floor.

Throughout the interior and exterior of the building different surface materials were used to indicate change and continuity of the levels.

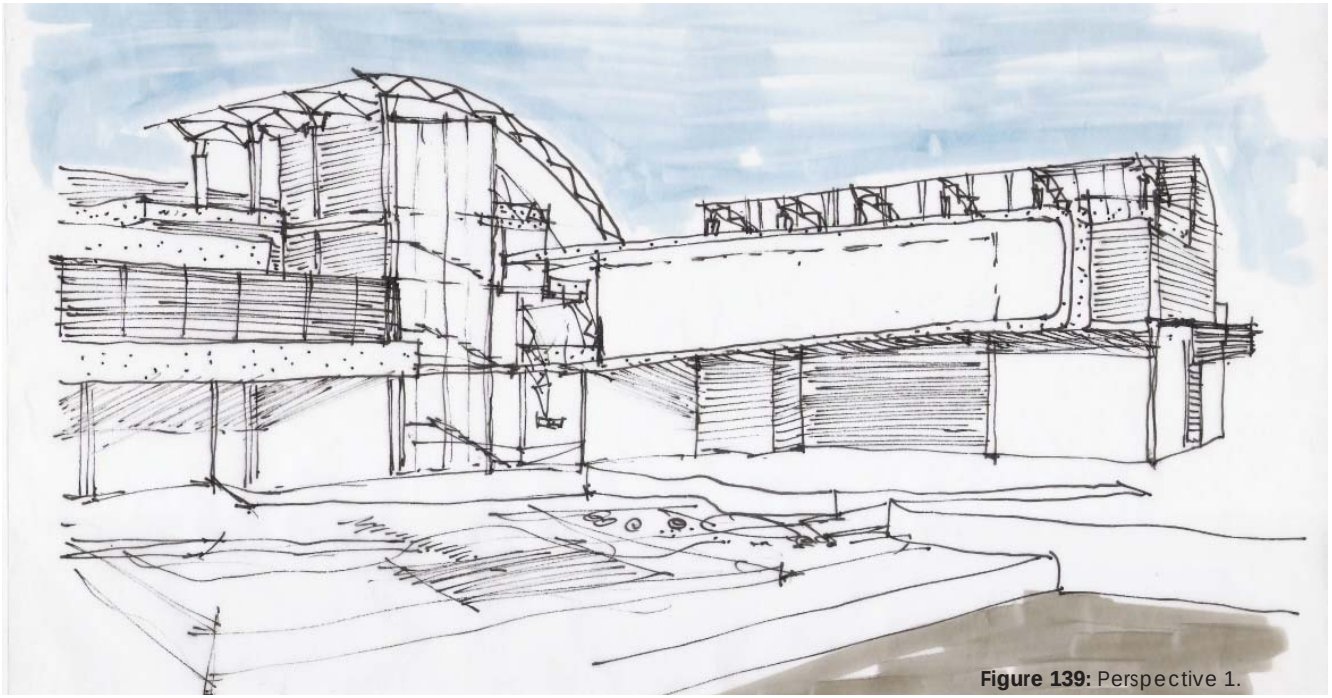


Figure 139: Perspective 1.

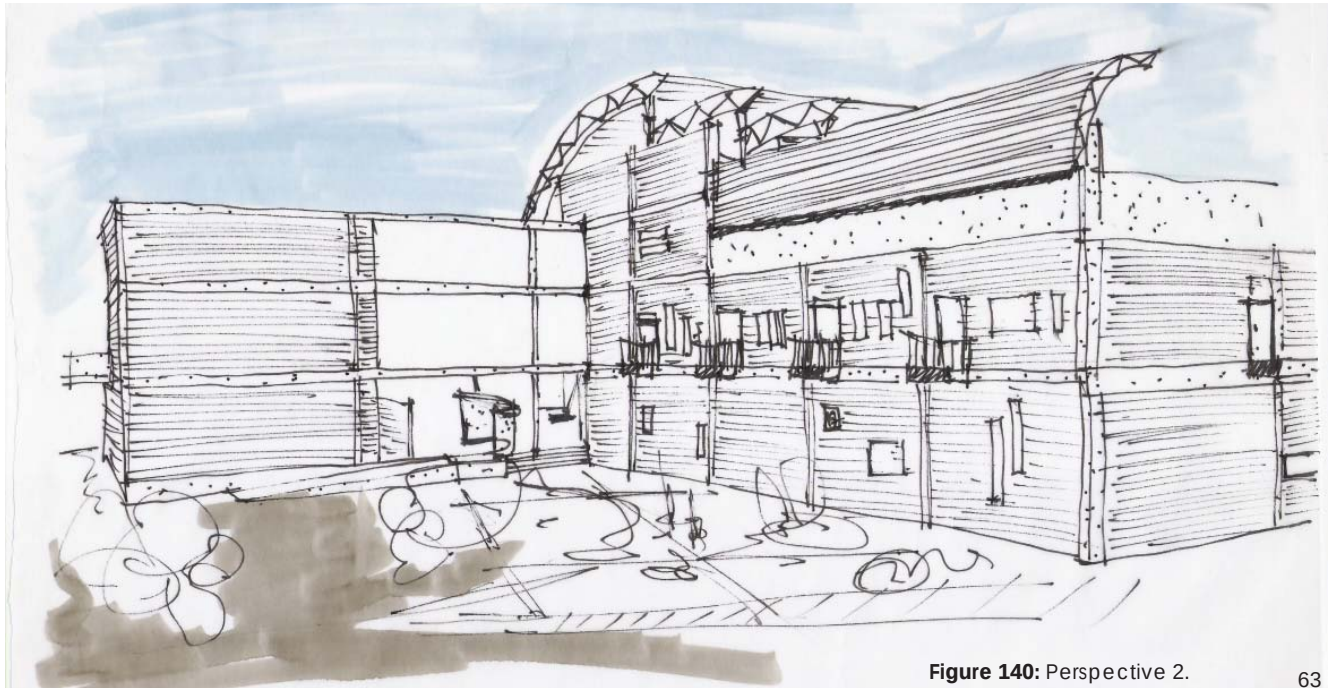


Figure 140: Perspective 2.

Legibility

The building has different layers of publicness in the design of the different functions. The most public functions, like the restaurants, shops, rock climbing and bouldering centre and the public ablutions face the street front. The building becomes more private the deeper one goes into it. The hydrotherapy rooms, being in the back of the building, have a more private feel to it than the restaurant on the same level.

The treatment en consultation rooms are on the first floor, being more semi public spaces. The conventional practices and exercise studio front north, towards the street. The curved roofs covering these two spaces are treated differently. The roof over the consultation rooms acts as a roof covering and solar shading device. The exercise studio only has a solar shading device to give shade over the balcony. The alternative practices face east and west, towards the various gardens and are covered by timber louvered screens. These three elevations speak of the different functions on the inside.

The herb garden and the meditation area are on the second floor, being the most private functions. The herb garden is the study of the herbalist and only authorised people would be able to enter this space. The meditation space is set back from the street front to give people the opportunity to be in a quiet private space.

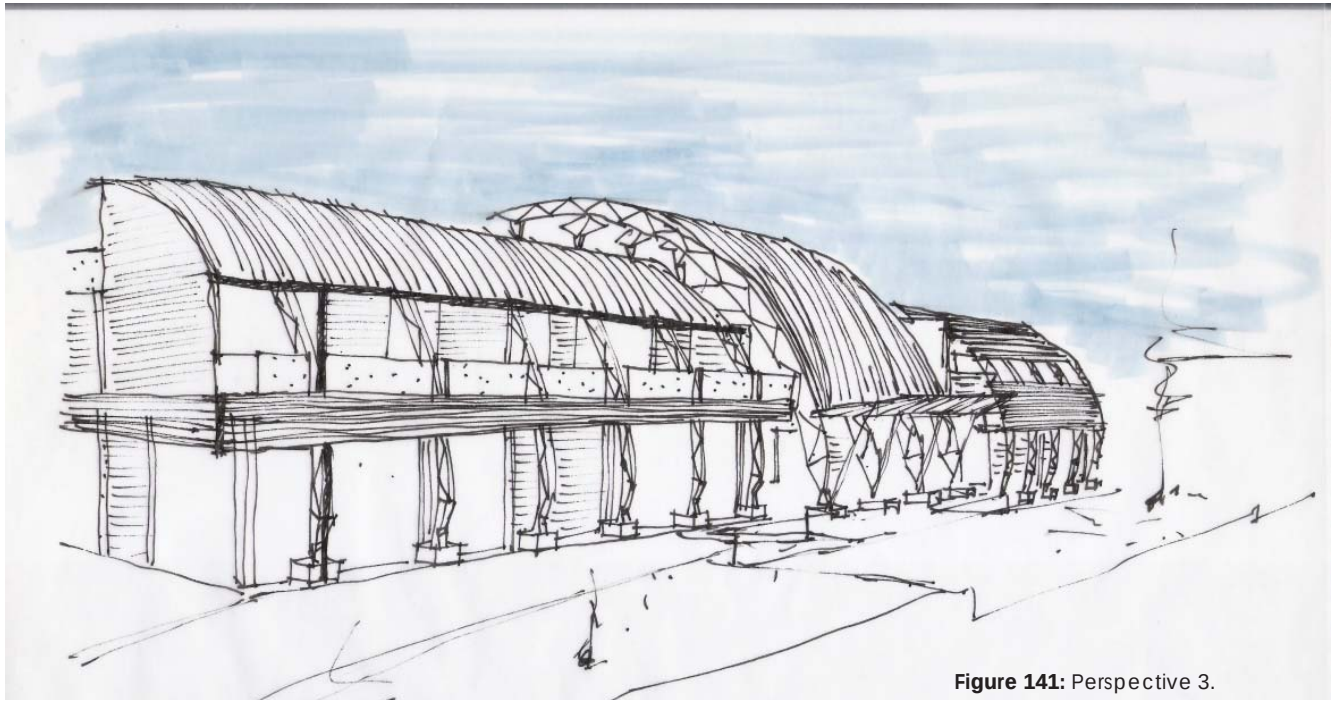


Figure 141: Perspective 3.

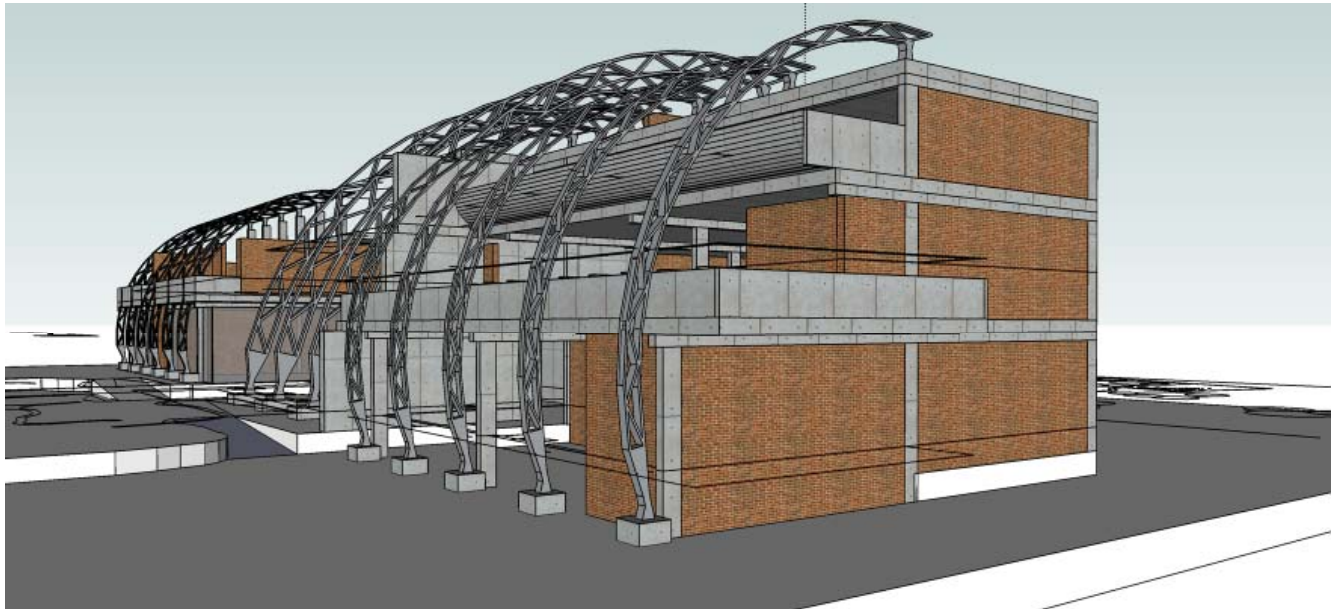


Figure 142: Perspective 4.

The climbing and bouldering walls

As feature in entrance:

The rock climbing and bouldering centre, at the core of the building, serves as the main focal point and entrance to the building. The entrance links up with a pedestrian route across the street, leading past the proposed Language Hub (by Roald Meyer) to a north exit of the campus. The clear way into the building is interrupted by the staircase that moves into the entrance area and allows the user the choice of movement direction.

As playground:

The user is already confronted with possible interaction by only passing the building. Bouldering walls, curving between the sidewalk and road, make the user instantly aware of an activity and might even make him feel part of it. In passing this area the pedestrian is covered by the extended louvered canopy of the climbing centre while he has a clear view of the inside. The curving walls next to the sidewalk crawl to the inside and escapes to the back and into the secondary court yard. These ever changing walls create a playfulness suitable to the context.

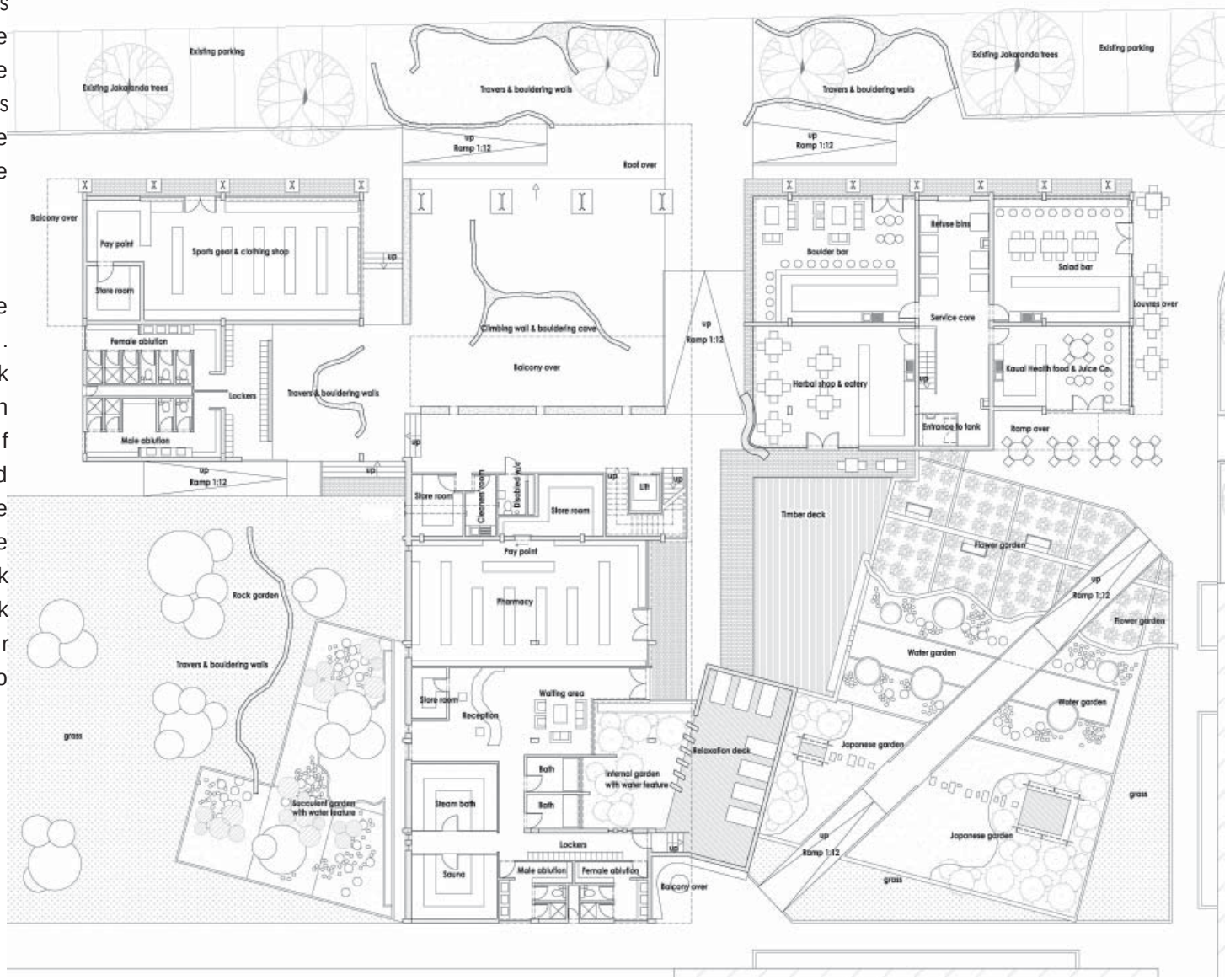


Figure 143: Ground floor plan.

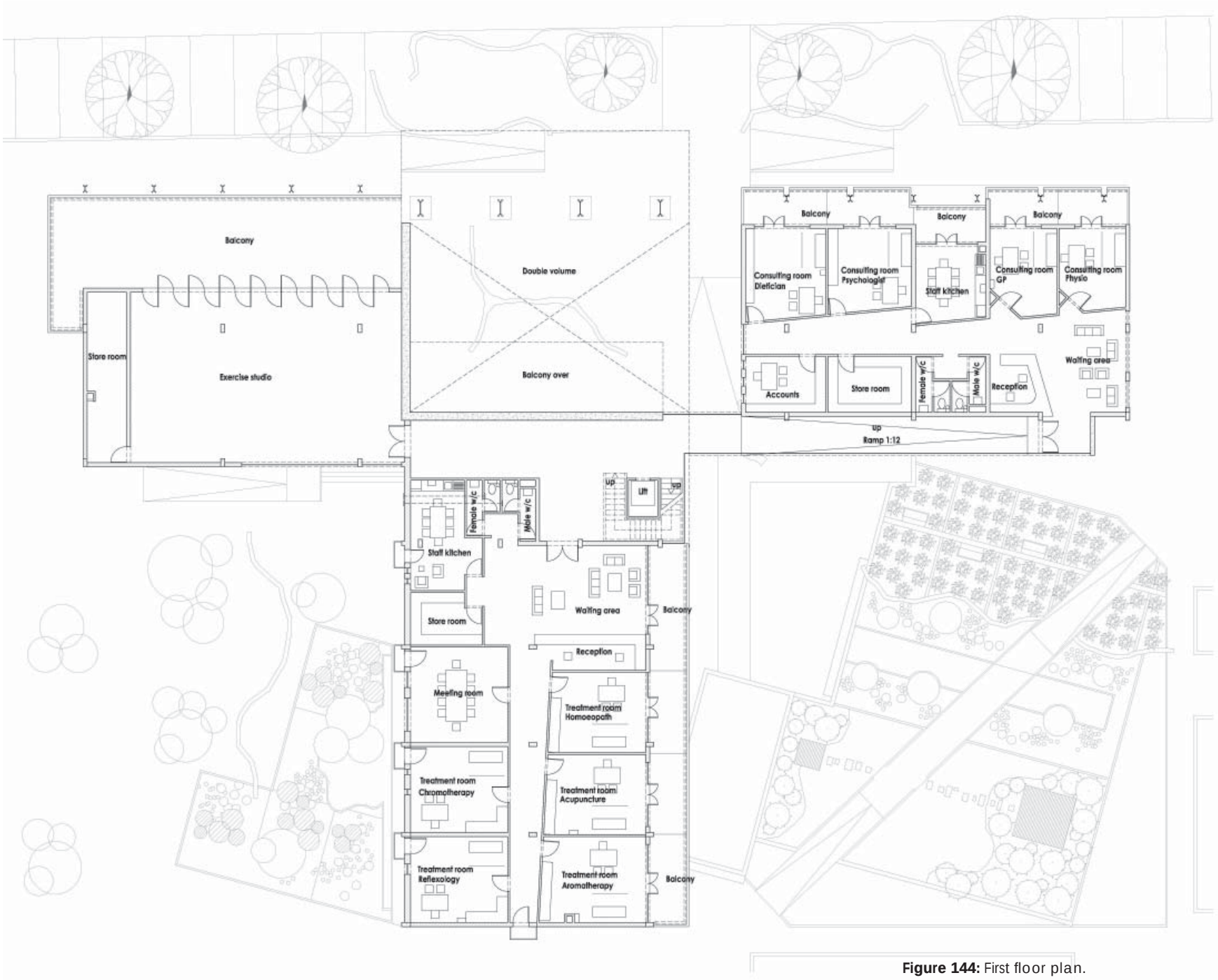


Figure 144: First floor plan.

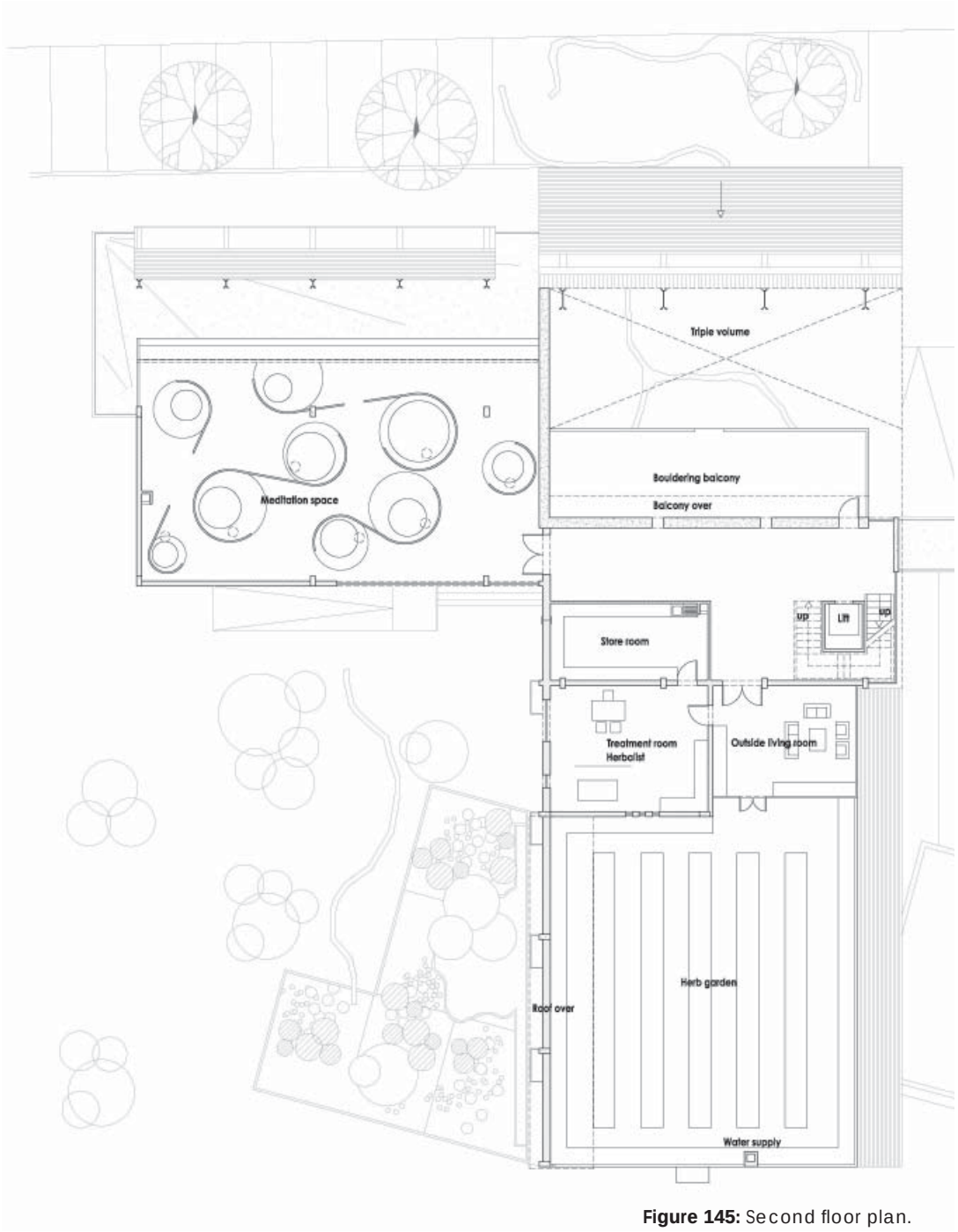


Figure 145: Second floor plan.

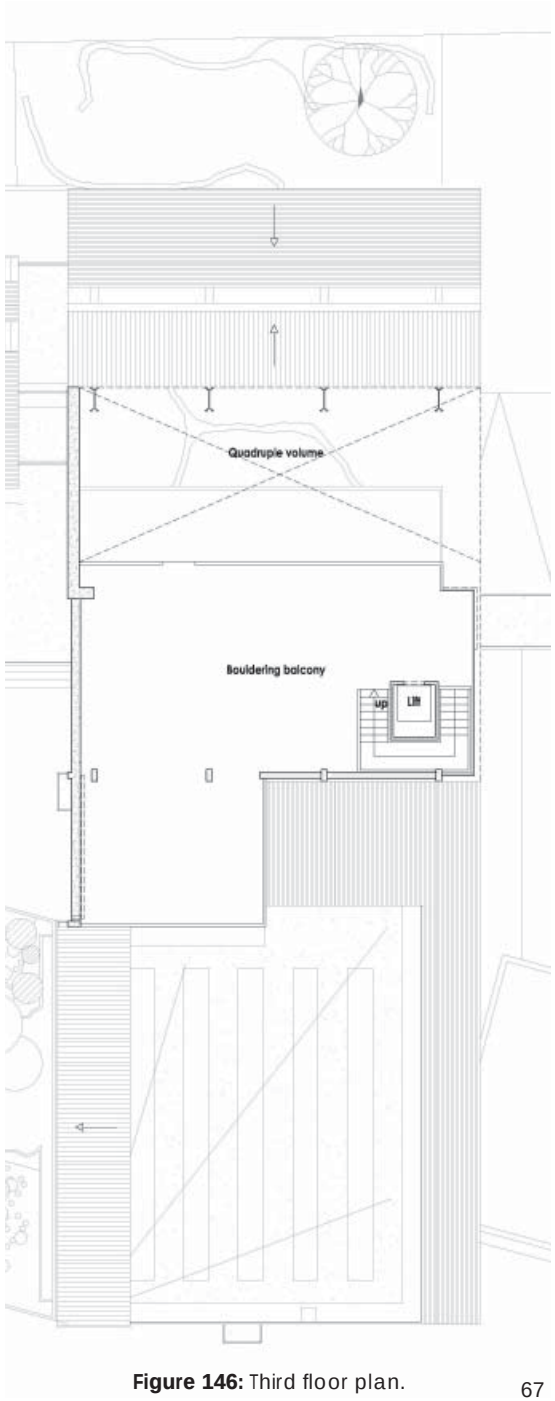
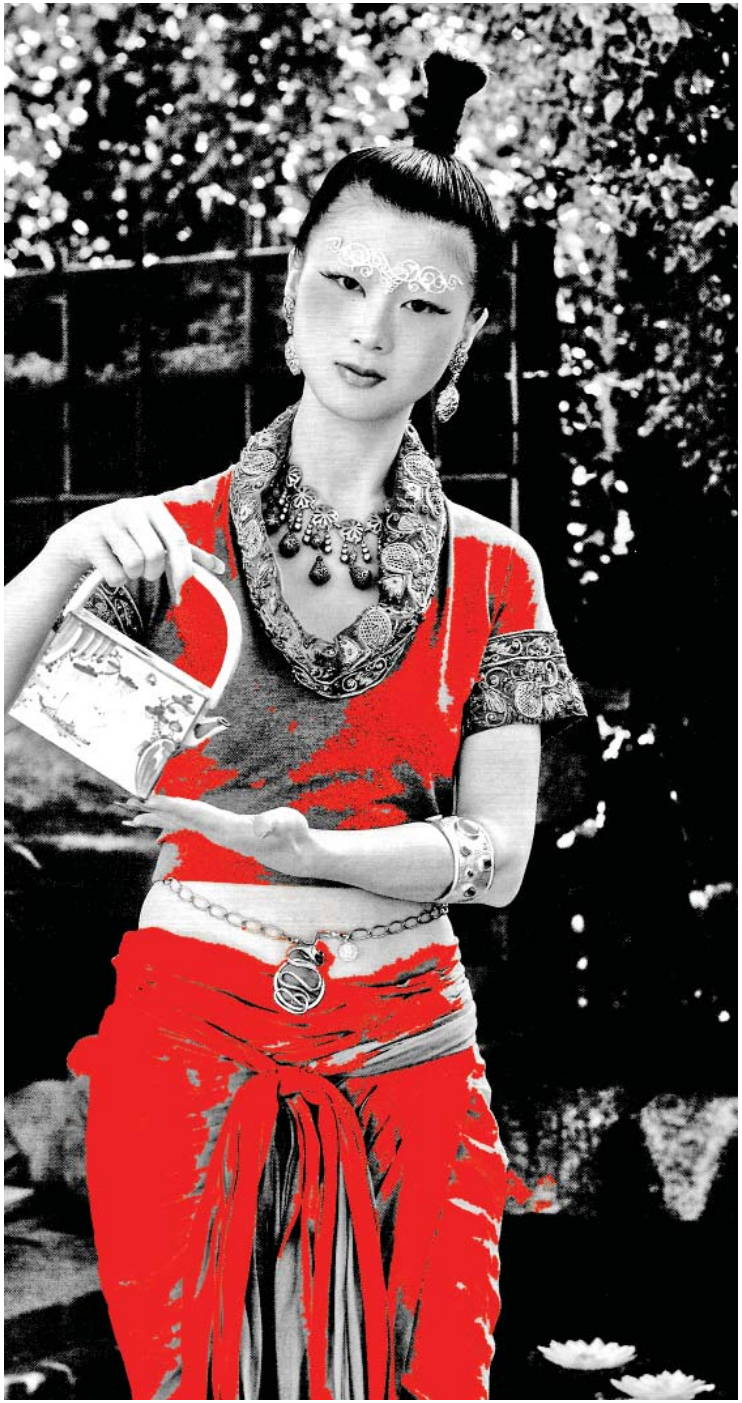
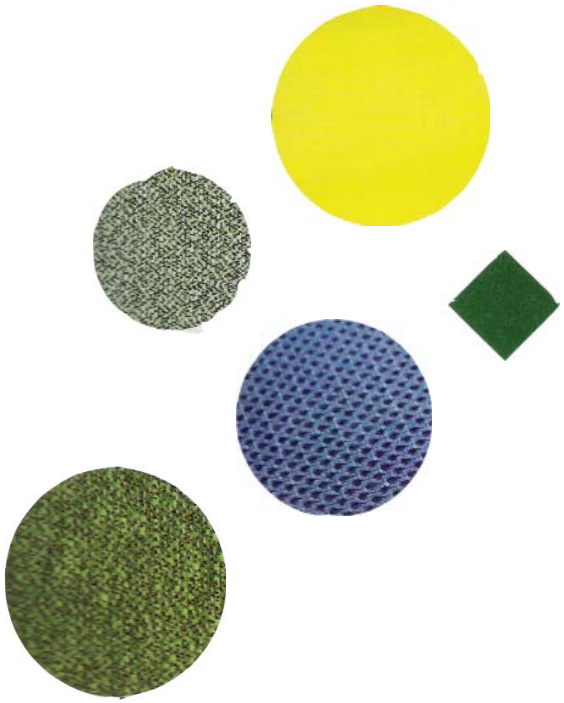


Figure 146: Third floor plan.





TECHNICAL INVESTIGATION

Stereotomic

Structure

The columns are 230x460mm in-situ cast, reinforced concrete columns.

The in-situ cast beams are 510mm thick and span in a north-south direction on the north section of the building and in an east-west direction on the south section of the building.

The slab is a 340mm thick in-situ cast, one way reinforced, solid concrete slab. It can host a roof garden and has space for services on the top level.

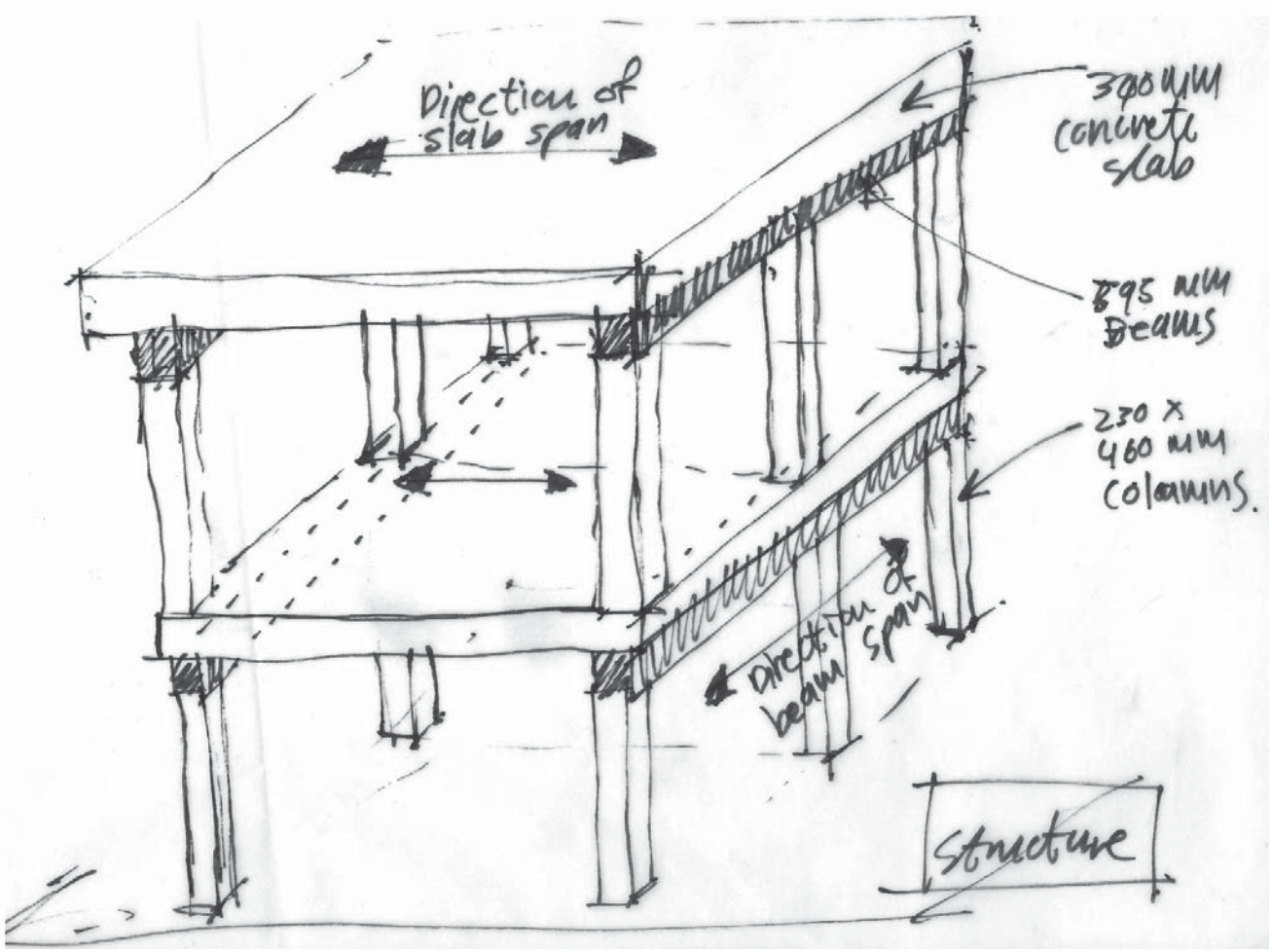


Figure 148: Structure.

Previous page
Figure 147: Singaporean girl

The building consists of different levels on the ground floor to emphasise the slope of the contours, but also contribute to the playful atmosphere and organic touch of the building.

Figure 149: Plan indicating different levels.

Technical Precedents:

School of dramatic Art, TEN Architects (Mexico City, 1994)

This building's main element is the large tubular metal roof. As seen from the images, the tubular beam is bolted into a concrete slab at the bottom and is supported by a column at the top. Beneath this are a series of seemingly arbitrary volumes and planes, containing and defining their own function. (Cerver 2000:326)

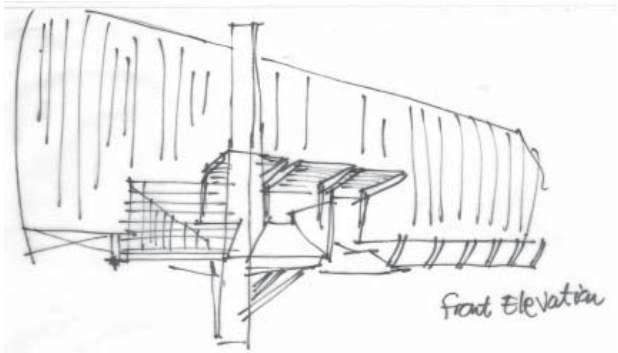


Figure 150: Front elevation.

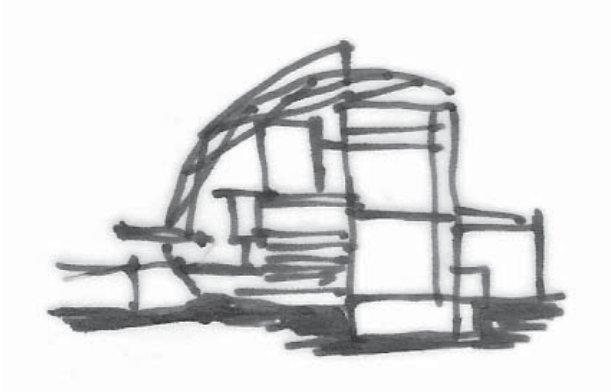


Figure 151: Cross section showing roof structure.

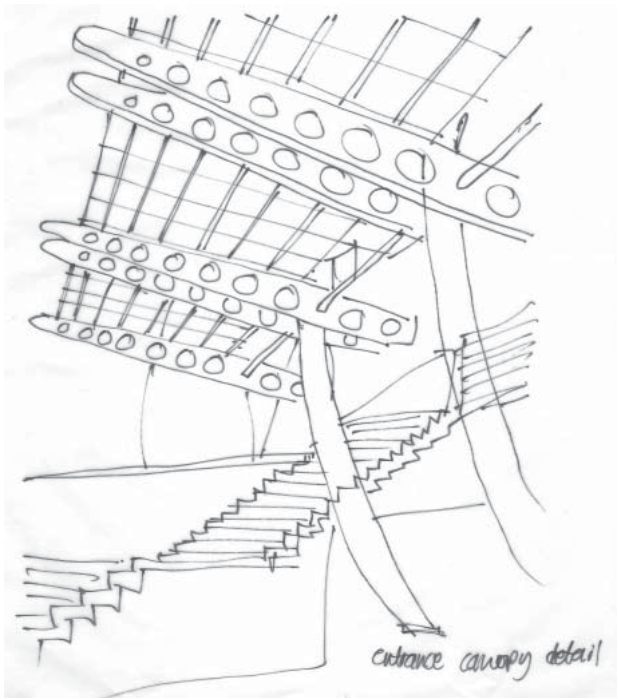


Figure 152: Perspective detail of entrance canopy.

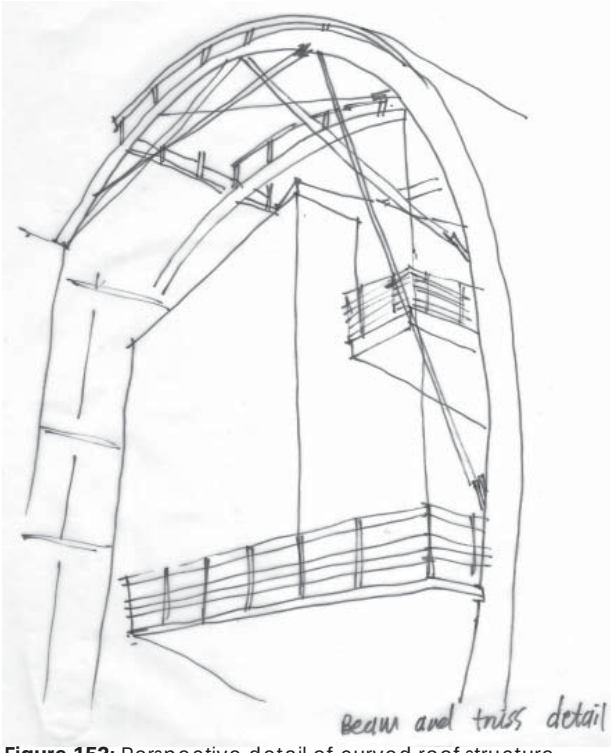


Figure 153: Perspective detail of curved roof structure.

Stratford's Guesthouse, Al Stratford (East London)

This building has a stress skin composite roof/ wall solution. It has no internal framing, but is supported between the floors and the ridge. It has drywall and paper tube insulation on the inside. Since the roof has no rafters, the metal roof sheeting resulted being 'rolled-over' at the ends into gutters. (Unknown 2006:35)

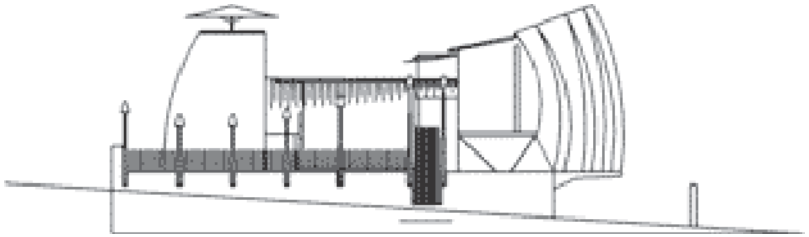


Figure 154: Side elevation indicating curved walls.

Figure 155: Perspective view of vehicular entrance to guesthouse.

Figure 156: Aerial view of guest house.

The roof:

The mentioned precedents inspired the design of the roof. The roof is divided into three arched sections:

- it helps in regulating the air flow;
- creates a big volume for holding many functions;
- It also has an organic feel to it, which complements the theme and function of the building.

The arch contributes to the tension in the climbing centre. The main arch over the climbing centre is constructed of 950mm deep mild steel beams with 150x100mm purlins and covered with corrugated metal roof sheeting.

The second arch on the east side has a dual function. It acts as a roof and a sun shading device. The arch on the west side acts only as a sun shading device. These two arches are both constructed of 400mm deep mild steel beams with 76x52mm purlins. Aluminium louvers and corrugated metal roof sheeting are fixed with galvanised screws where specified.

There are different volume profiles within the roof, some of which can be seen and experienced from the outside. On the east side the building pulls up close to the arch and users and passers-by are in direct contact with the inside, whereas on the west side, the building on the upper levels pulls away from the arch and only the user has a clear feel of the interior.

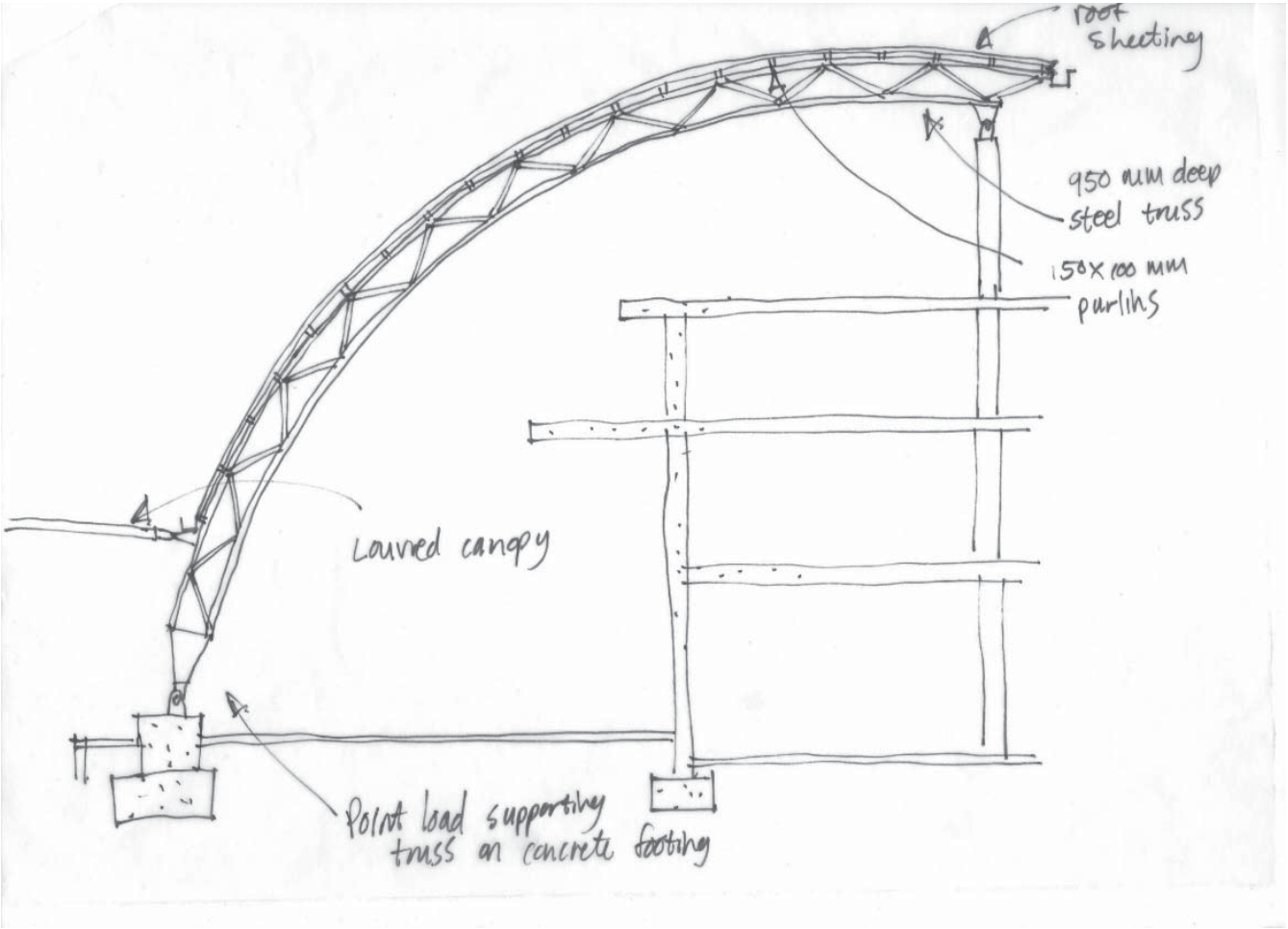


Figure 157: Sketch of proposed roof structure.

Skin

Face brick extras are used as main external wall material. The internal walls are non-face plastered bricks. The ground floor retail areas have aluminium shopfronts at a general height of 2550mm.

Services

Service cores:

There are three service ducts running the full height of the building, providing entry for sewer pipes and water supply. The building has one central staircase and a passenger lift giving access to all floors.

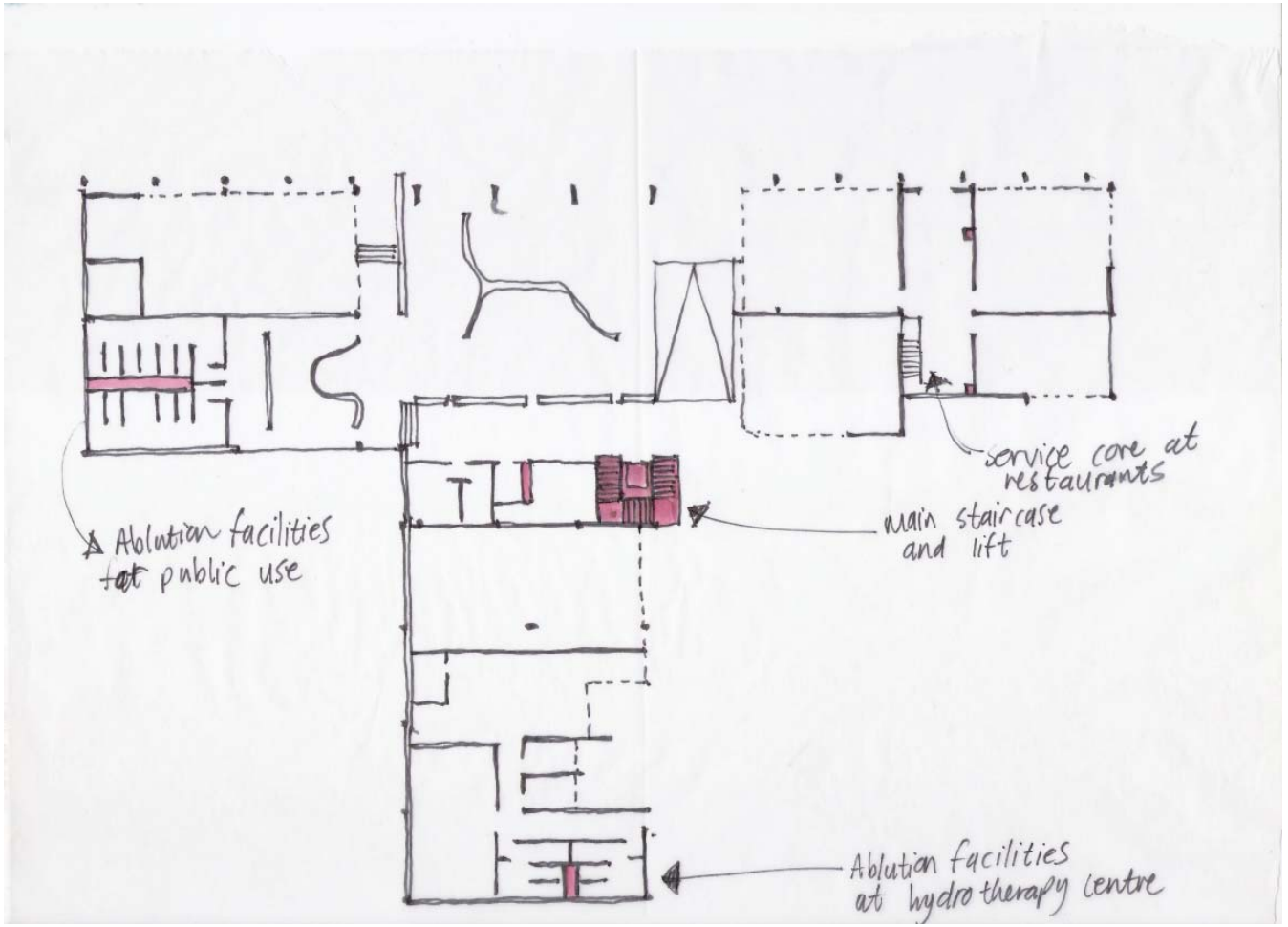


Figure 158: Plan indicating services.

Rain and storm water:

Rain water is harvested from all the roof areas and stored in a 980 000L underground water tank. The water is available for irrigation purposes for the herb garden, semi internal garden and court yard gardens. The rain water is guided through 100mm Ø downpipes along the façade and then underground towards the tank as shown on the drawings.

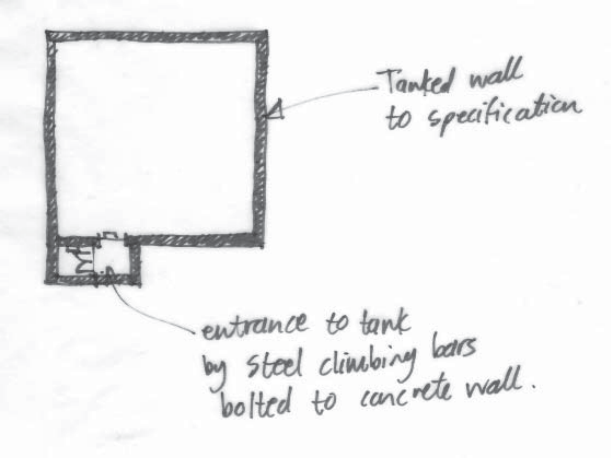


Figure 159: Plan of underground water tank.

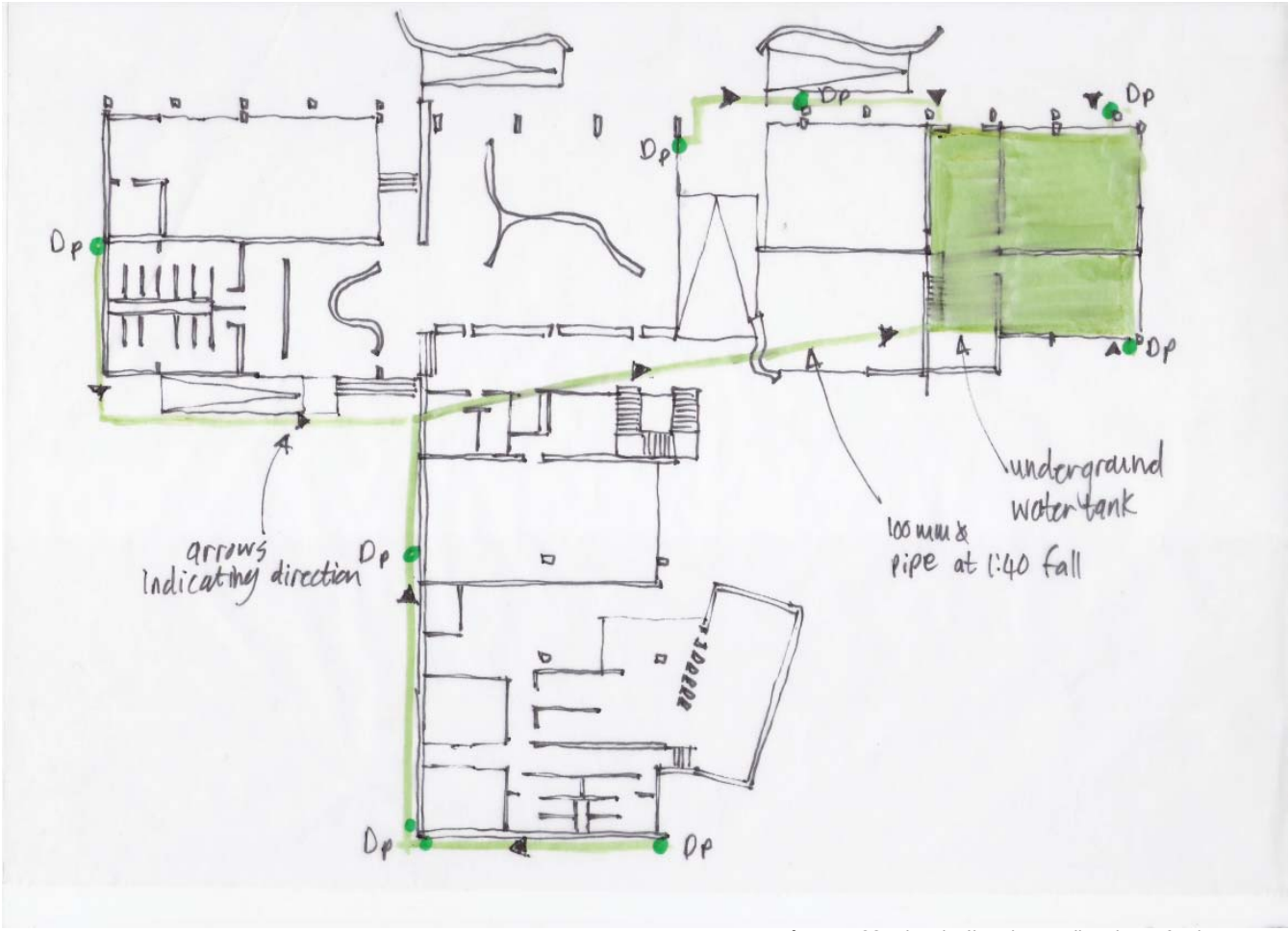


Figure 160: Plan indicating collection of rain water.

Solar shading:

The north façade is shaded by fixed aluminium louvers as described under structure. The east façade has timber slats as sun shading louvers, only on a smaller scale. The west façade consists of a 340mm brick wall with minimum window openings for light and ventilation.

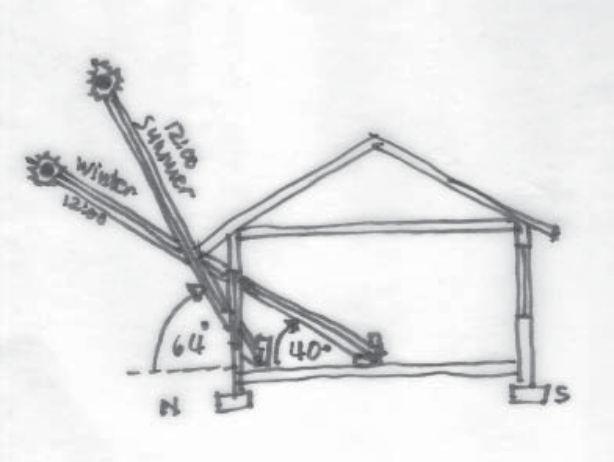


Figure 161: Diagram indicating sun angles in the Pretoria region.

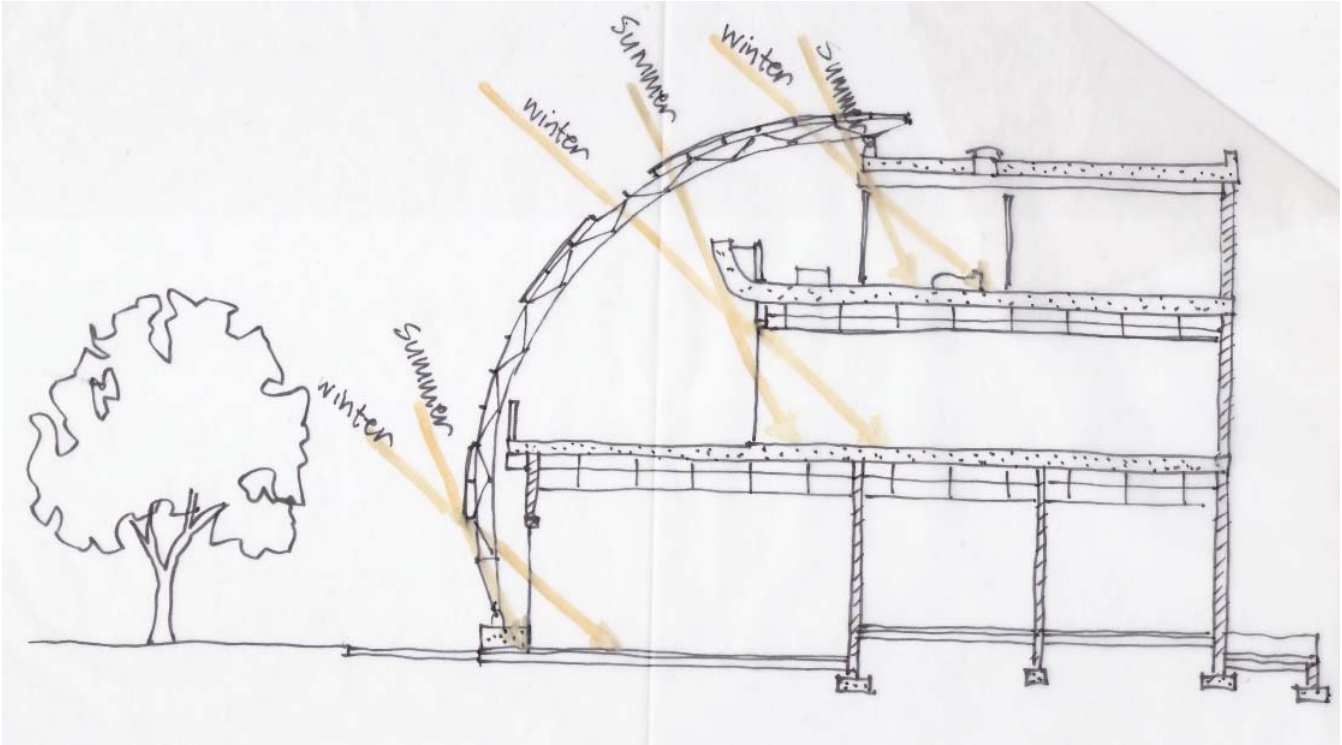


Figure 162: Cross section through proposed building indicating solar shading and control.

Ventilation:

Pretoria has north-east to south-east winds, therefore maximum use through evaporative cooling has been made to use these winds for cross ventilation.

- A semi internal court yard with water feature cools down the wind;
- a funnel, created by the overhanging balcony forces it through the building;
- A fan sucks out the heated air to the outside.

The climbing centre, although situated in a north-south direction, have cross ventilation. The canopy, acting as a funnel, forces in cold air, while heated air escapes at the top opening at the other end.

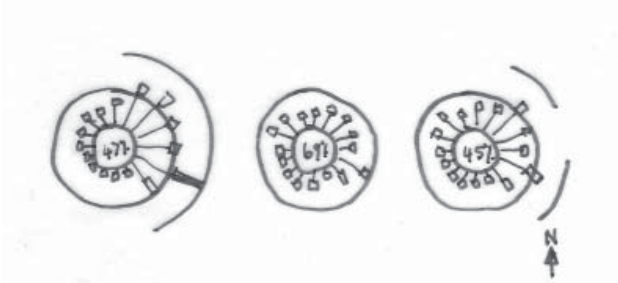


Figure 163: Diagram indicating mainly south-easterly winds in the Pretoria region.

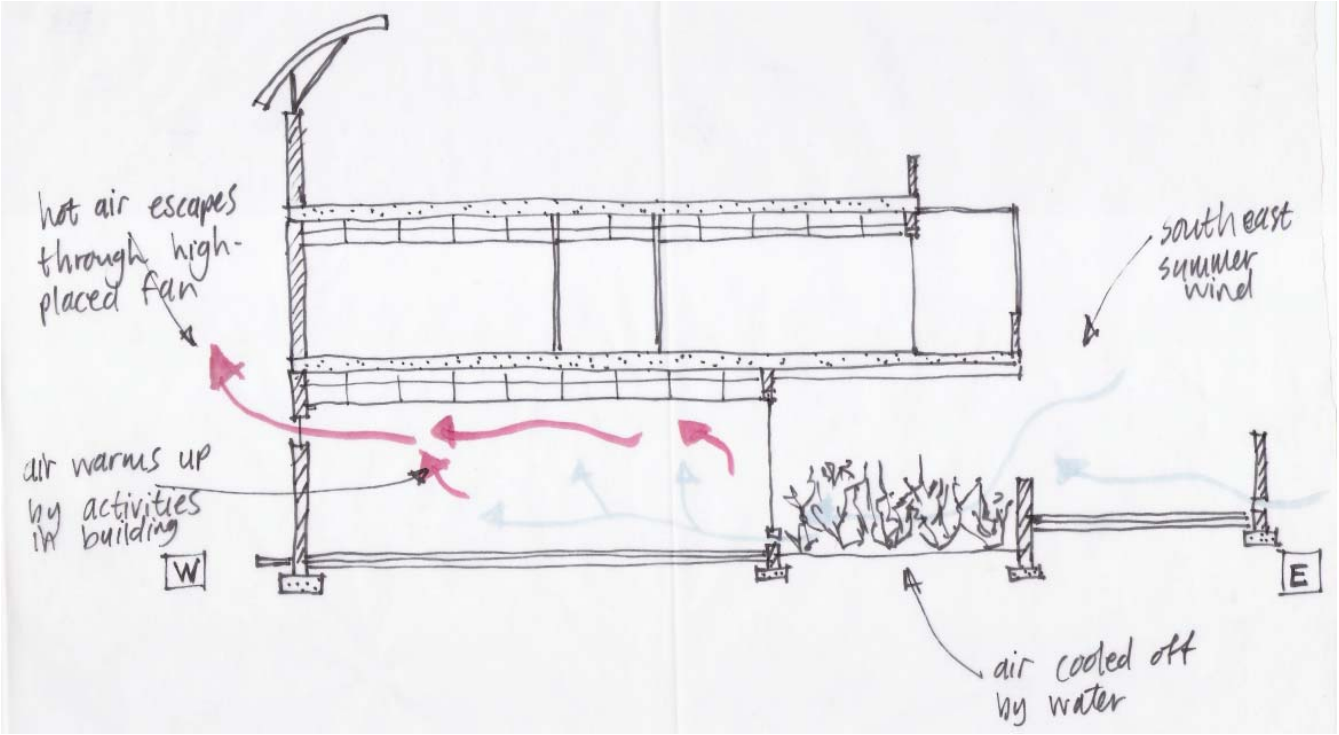


Figure 164: Cross section through proposed building indicating ventilation and air flow control through evaporative cooling.

Tectonic

Point loads

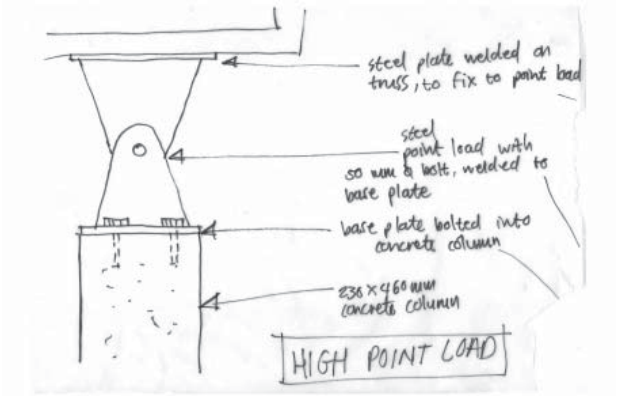


Figure 165: High point load detail - side elevation. Fixing truss to column.

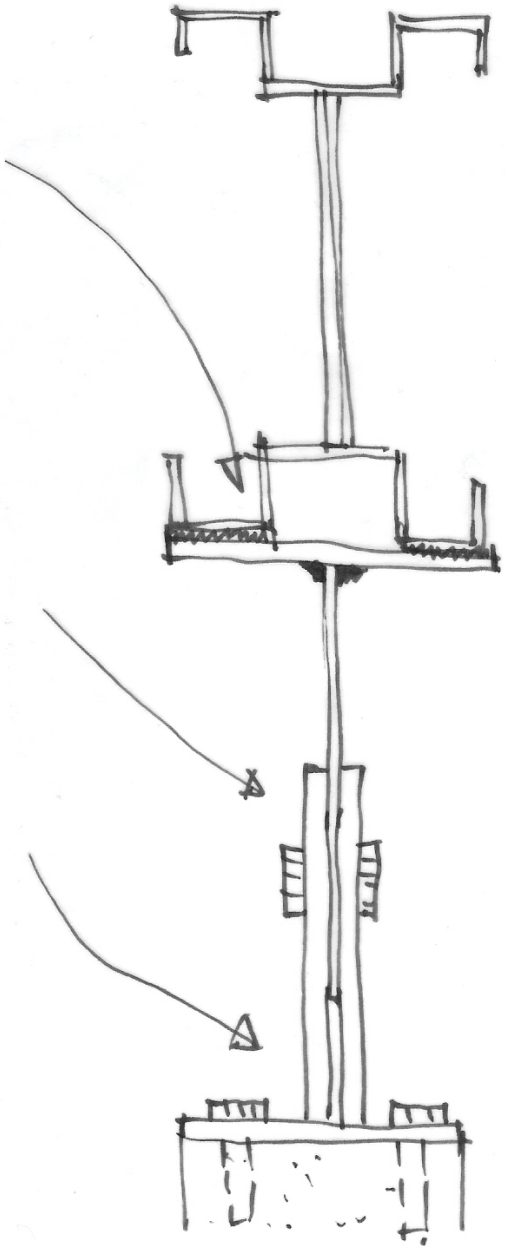


Figure 166: High point load detail - front elevation. Fixing truss to column.

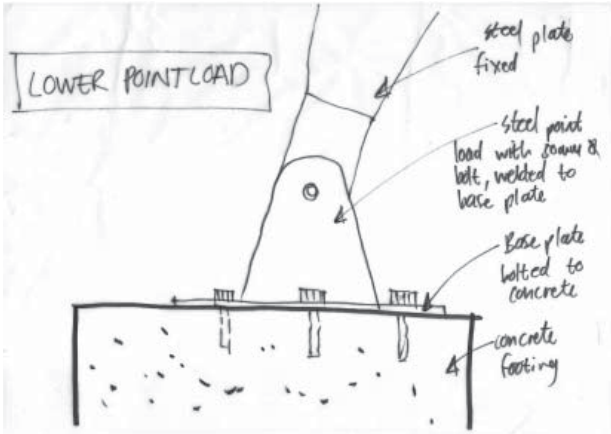


Figure 167: Lower point load detail - side elevation. Fixing truss to concrete footing.

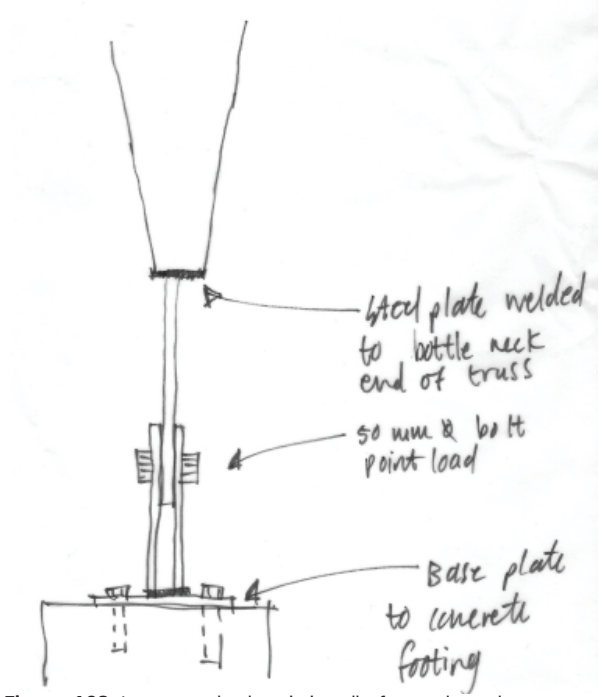


Figure 168: Lower point load detail - front elevation. Fixing truss to concrete footing.

Gutters

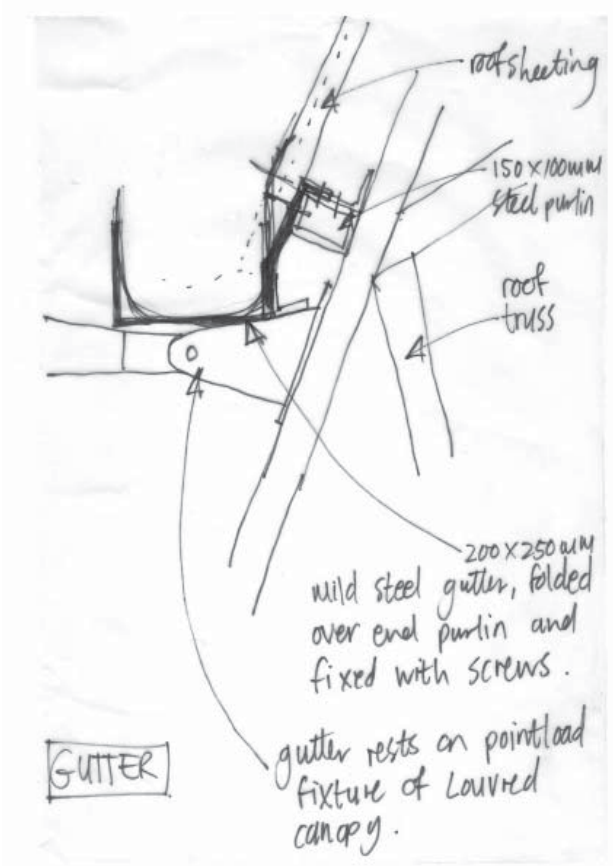


Figure 169: Gutter detail indicating gutter folded over and screwed to end purlin.

Downpipes

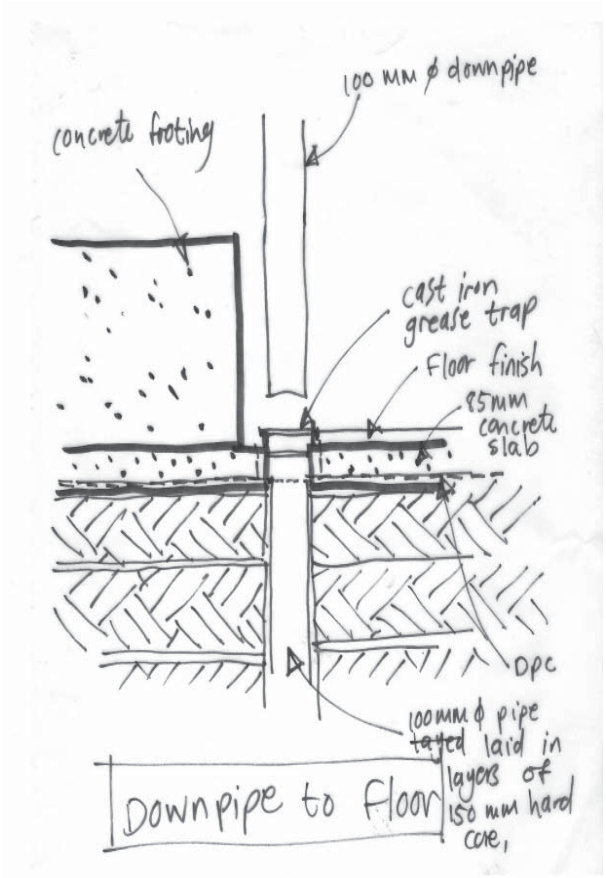


Figure 170: Rain water catchment in concrete floor.

Full-bore outlets

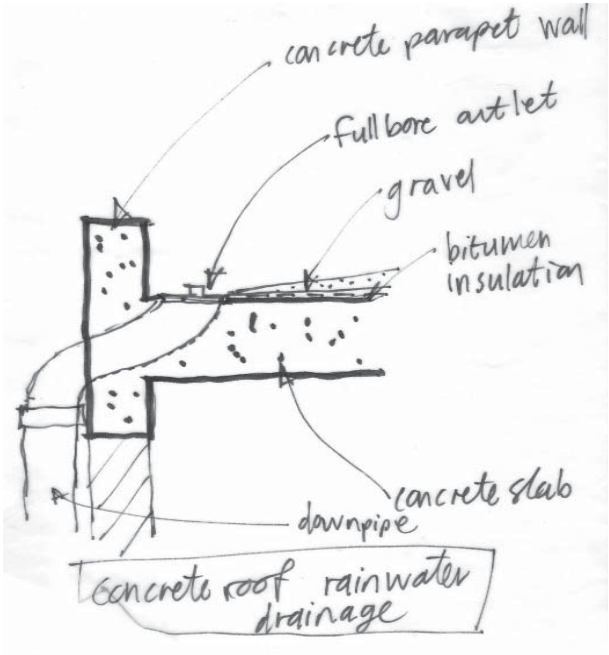


Figure 171: Fullbore outlet from concrete roof.

Ceiling insulation

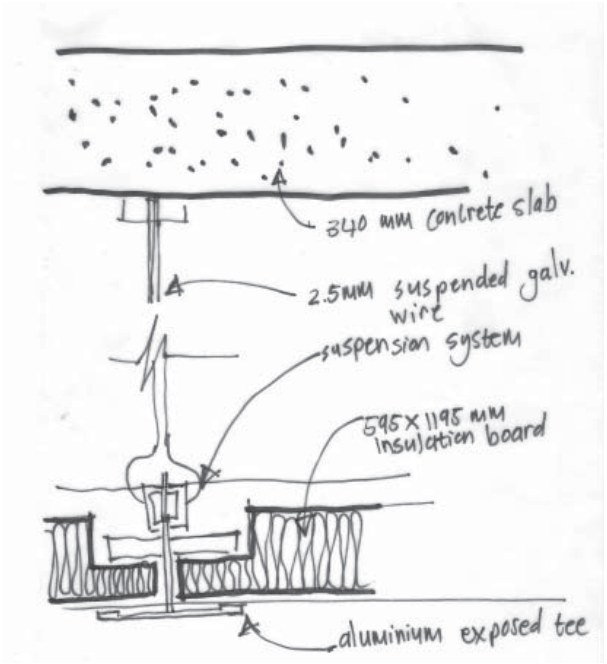


Figure 172: Suspended ceiling detail.

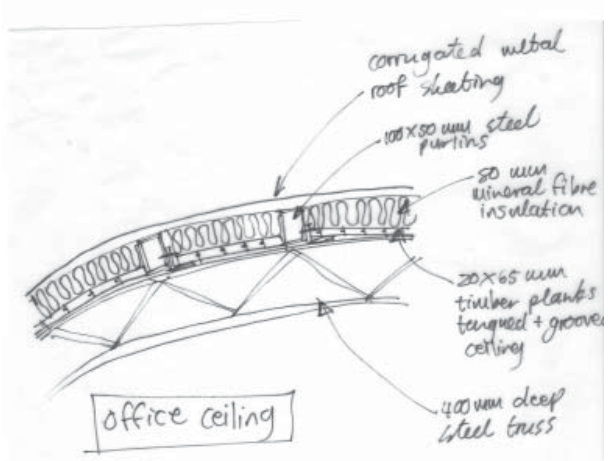


Figure 173: Timber ceiling detail to curved roofed consulting rooms.

Skylights

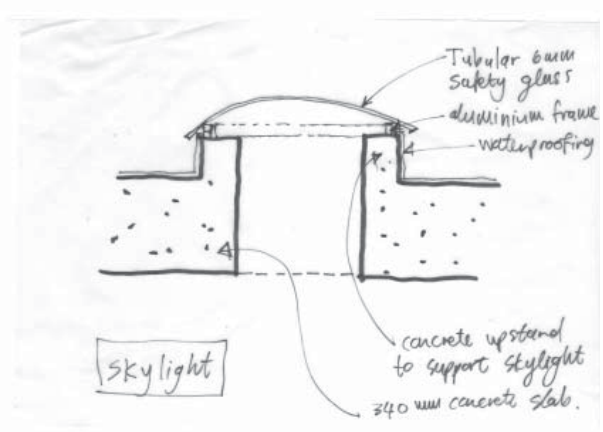


Figure 174: Skylight detail on concrete roof with upstands.

Louvers

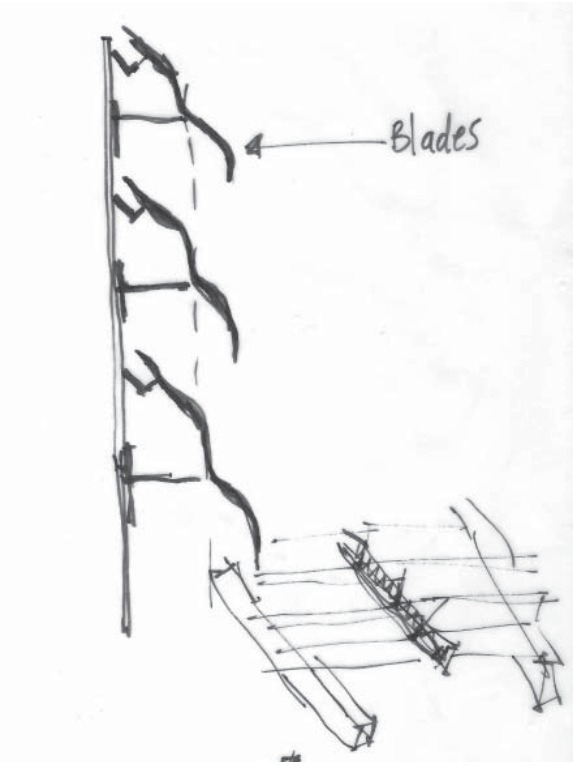


Figure 175: Louvre detail.

Materials

Concrete

Concrete is used for the main structural system and in the climbing centre as wall material. The concrete will have an off-shutter finish.

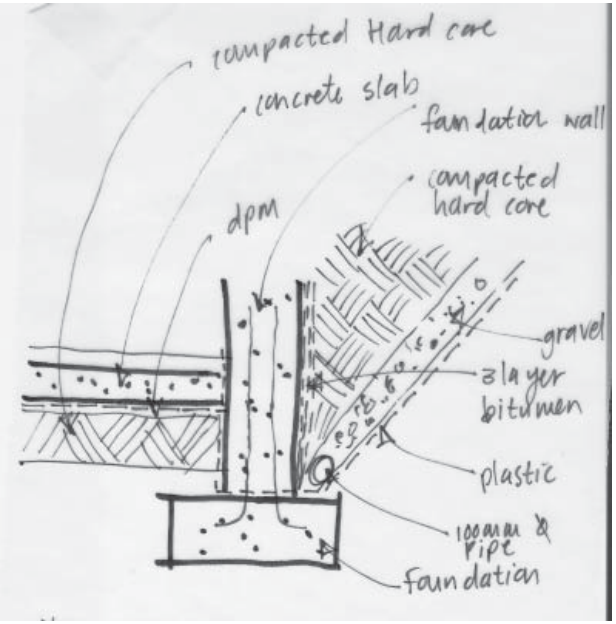


Figure 176: Under ground tanking detail.

Brickwork

All exterior walls will be face brick extras with flush joints. All interior walls will be non-face plastered bricks with 15mm cement plaster and painted.

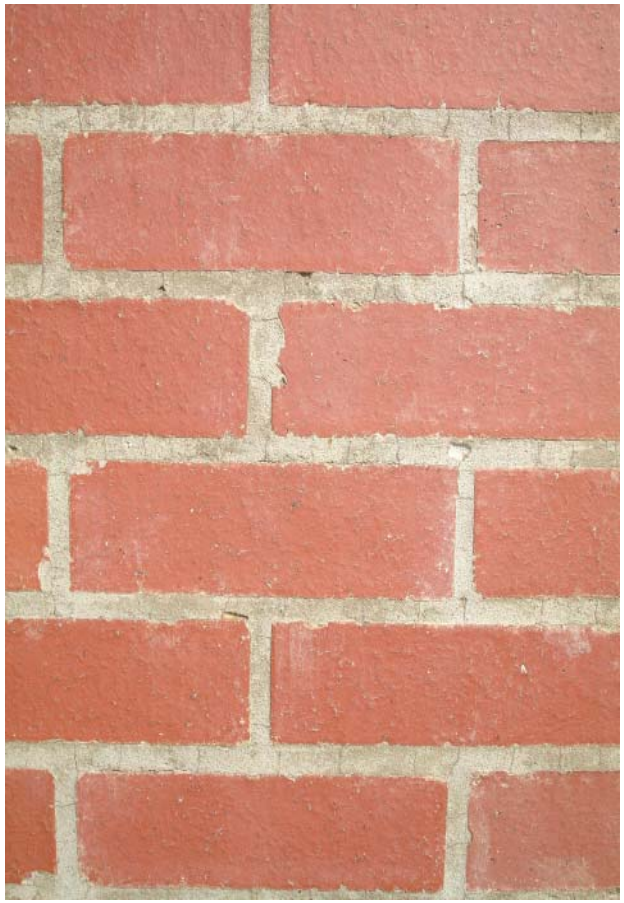


Figure 177: Brick wall with flush joints.

Natural Stone

Stone is used as garden wall material.

Figure 178: Stone wall.

Steel

Steel is used for the roof structure.

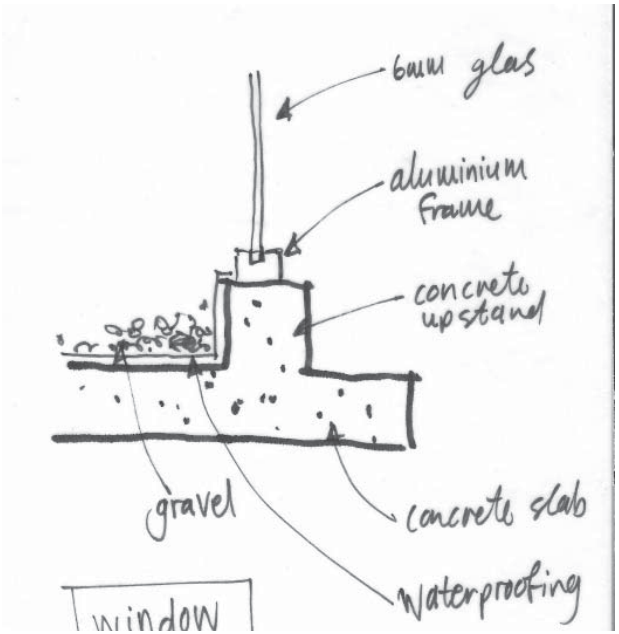


Figure 179: Aluminium framed window fixed to concrete upstand on roof.

Glass

Glass is used as skin infill to let in light and control natural ventilation. The main staircase is enfolded by a green tinted glass skin.

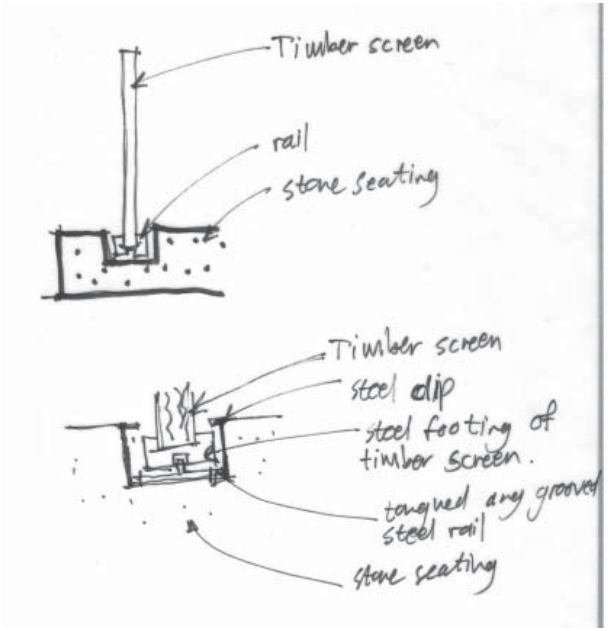


Figure 180: Timber screens fixed with steel railing to stone.

Timber

A timber screen shades the treatment rooms facing the courtyard to the east. These timber slats are laid horizontally to emphasize the horizontal movement behind it.

Recycled timber slats are used as screens on balconies between consulting rooms. Recycled timber slat are also used in the meditation space as screens to create different corners for privacy.

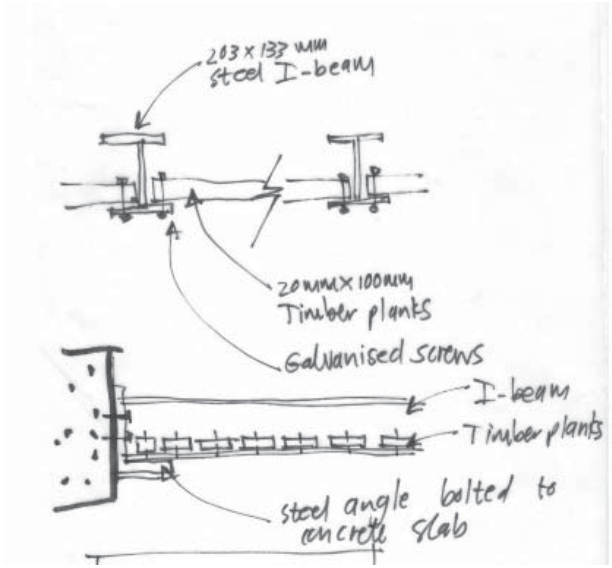


Figure 181: Timber louvres fixed with steel angle to concrete beam.

Surfaces

Different floor surfaces are used to indicate layering of movement. Main pedestrian routes are paved with standard concrete pavers. Sections closer to the building are paved with smaller pigmented clay pavers.

The retail spaces, climbing centre and service cores have a seamless epoxy mortar finish in different colours.

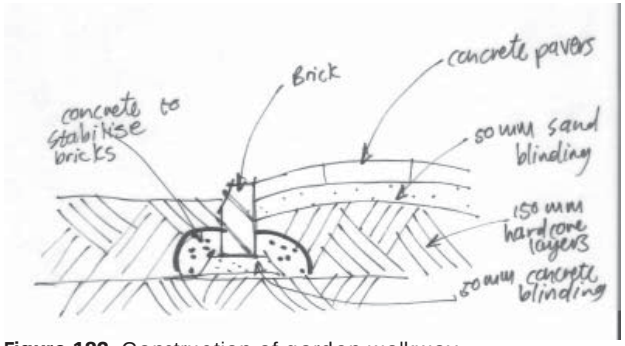


Figure 182: Construction of garden walkway.

Figure 183: Existing surface detailing found on site.

The climbing centre has a 150mm foam rubber mattress onto of the epoxy finished floor, to give falling climbers a 'softer' landing.

The treatment and consulting rooms on the first floor have carpet as a floor finish to create a more welcoming atmosphere.

Figure 184: Existing surface detailing found on site. (2)

Figure 185: Existing surface detailing found on site. (3)

The meditation area gives the opportunity for different floor finishes. The private corners are finished with hard wood plank, glued directly onto the concrete floor, whereas the areas of movement are tiled with a variety of natural stone and mosaic tiles.

Figure 186: Mosaic pattern to be used in meditation space.

Vegetation

Flower garden:

The flower garden has a variety of plant with colourful and fragrant flowers. There is a narrow line of stepping stones that lead to benches in between the flowers, giving the opportunity to hide behind a wave of colour.

Semi-internal court yard at Hydrotherapy Centre:

Since these plants would receive minimum sun, foliage plants would suit this area best.

Figure 187: Sterlitzia to be planted in flower garden.

Figure 188: Typical plants to be planted in flower garden.

Figure 189: Yesterday, today and tomorrow.

Figure 190: Peach blossoms

Figure 191: Bouganvillia.

Figure 192: Typical plants to be planted in flower garden 2.

Figure 193: Succulent with pink flowers.

Water garden:

Next to the flower garden is the water garden. A strip of water flows underneath the walkway and then through the openings in the wall separating the lower level timber deck from the upper level gardens, creating a small waterfall. The sound of falling water creates a tranquil atmosphere to the users and passers-by.

The surface of the garden is covered with gravel and a variety of size and coloured stones. Bigger flat stones serve as seating areas. These seating stones have curved sliding timber screens fixed with a steel railing in a channel that is cut into the stone. The seated can slide the screen to give shade or privacy and still has a view of the flowing water.

Figure 194: Water

Figure 195: Existing use of materials on site

Figure 196: Proposed walkway border detailing.

Figure 197: Existing curved brick wall on site.

Figure 198: Existing surface detailing on site.

Japanese garden:

This garden next to the water garden has the traditional elements of a Japanese garden: water symbolised by pebbles, rocks, a pavilion, vegetation, stepping stones and an enclosure. The pavilions on both ends provide a space to sit underneath a low curved roof. The pavilion is raised from the ground on a timber deck. The seating area and roof supports are all constructed of timber elements. The roof covering is corrugated metal roof sheeting to provide a solid cover. The plants used here would predominantly be foliage plants.

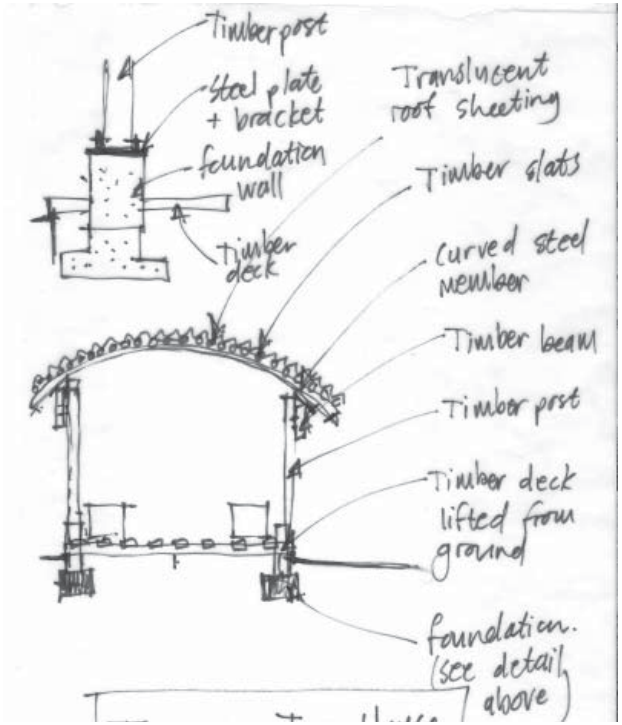


Figure 200: Detailing of proposed japanese tea house.

Figure 202: Typical surface detailing in water garden.

Figure 199: Water 2.

Figure 201: Typical creepers to be used in gardens.

Figure 203: Wild jasmine creeping on timber screen.

Succulent garden:

The succulent garden is on the west side of the building and will constitute to a desert landscape. The climbing centre spills out on this end and big boulders rule this landscape that pushes into the succulent garden. The surface is bordered off with a single row of bricks and the rest is covered with sand. The composition of different sized rock, succulents and cacti is softened with a single stream of water which thickens as it comes closer to the boulders. A fountain pump is used to push the water up and over the rocks.

The use of different gardens symbolises the variety of landscapes found in South Africa. The choice of gardens was selected to enlighten the senses and mood of the users and passers-by.

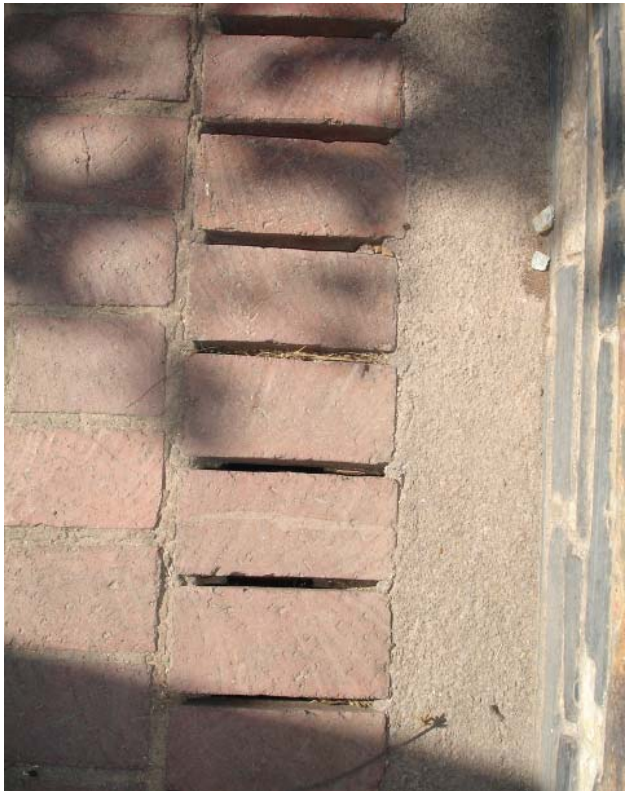


Figure 205: Surface detailing in succulent garden.

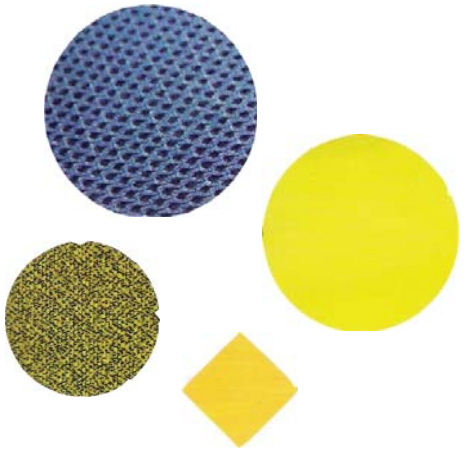
Figure 207: Surface detailing in succulent garden (2).

Figure 208: Typical succulents planted in succulent garden (3).

Figure 204: Typical succulents planted in succulent garden (1).

Figure 206: Typical succulents planted in succulent garden (2).

Figure 209: Typical succulents planted in succulent garden (4).



BASELINE STUDY

CRITERIA	TARGET SET	DESIGN PERFORMANCE	MEASUREMENT
Social Issues			
1. Occupant Comfort			**5.0**
Lighting	All work and living environments are well naturally lit. Day lighting control and glare minimised. No spaces require constant electrical lighting.	All public spaces and offices are naturally lit, although some of the service cores are reliable on artificial lighting.	1.0
Ventilation	Required ventilation provided by natural means. No mechanical ventilation used in building other than in toilets and kitchens.	All spaces are naturally ventilated, mechanical ventilation only used at central toilets.	1.0
Noise	Noise levels limited in work and living environments are to acceptable levels.	The campus is a pedestrian friendly environment with limited vehicular traffic. No noise, except for the usual building work in this up and coming area.	1.0
Views	All living and work areas have access to a view out. All users located in 6m or less from a window.	The building is designed for maximum views and natural sunlight.	1.0
Access to green outside	Access to green outside spaces.	Green space all over campus.	1.0
2. Inclusive Environments			**5.0**
Public Transport	Building is located within 100m to disabled accessible public transport.	Bus and taxi stops on campus periphery.	1.0
Routes	All routes between and within buildings are of a smooth and even surface.	The different levels are all wheelchair friendly.	1.0
Changes in level	No changes in level between or within buildings or, all changes in level catered for with appropriate ramps of 1:12 fall, or lifts.	Sufficient ramps and lifts are provided as required.	1.0
Edges	All edges are clearly distinguished through the use of contrasting colour.	Edges are treated in appropriate way.	1.0
Toilets	Required number of toilets for the disabled is provided.	Toilet for the disabled are provided.	1.0

Previous page
Figure 210: Japanese girl.

3. Access to Facilities			**5.0**
Childcare	Childcare is provided in building or within 3km.	Hatfield, Hillcrest and the university have childcare facilities.	1.0
Banking	Banking services are provided in building or within 3km.	Hatfield and new proposed student centre holds banking services especially for students.	1.0
Retail	Groceries or items required on a daily basis are available in the building or within 3km.	Hatfield and new proposed Student Centre have ample retail stores to choose from.	1.0
Communication	Postal, telephone or email facilities are provided in the building or within 3km.	Hatfield and new proposed student centre are catering for students who need these facilities frequently.	1.0
Residential	Home, for occupants of the building is within 12km.	UP residences and private lodgings are available in Brooklyn, Hatfield, Sunnyside and Arcadia.	1.0

4. Participation & Control			**5.0**
Environmental control	Users of buildings have reasonable control over their environmental conditions.	Office and retail spaces have openable windows.	1.0
User adaptation	Furniture and fittings designed or specified to allow for arrangement by user. Provision are made for personalisation of spaces if desired.	Offices are designed for user adaptation.	1.0
Social spaces	Designed for easy informal/formal social interaction.	Office areas have tea rooms for staff, outside seating areas for students.	1.0
Amenity	Provide easy access to refreshment facilities and WCs for all users of the building.	These facilities are readily available for users.	1.0
Community involvement	Spaces or services shared or made available to local community.	The exercise studio is available for any student gathering and for public use if organised with building management.	1.0

5. Education, Health and Safety			**5.0**
Education	Access to support for learning provided.	The study area is on the campus of the University of Pretoria.	1.0

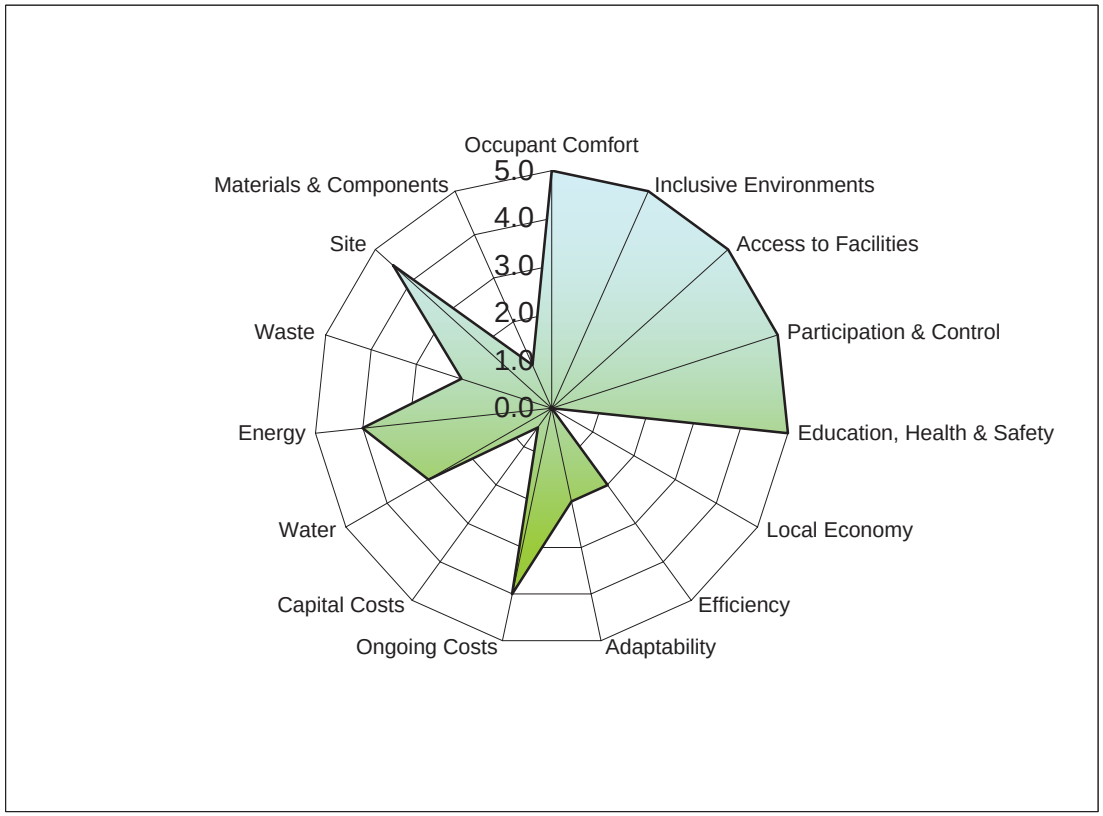
Security	Measures taken to ensure that areas of the buildings and routes to and from the building are safe and feel safe.	All walkways are overlooked by the offices and retail spaces. Movement routes within the building are visible from the outside.	1.0
Health	First aid kit provided in a central location. Information readily available on health, education and career development issues.	A Health building is proposed to be added on the university campus.	1.0
Smoking	No smoking in public spaces.	No smoking is allowed in public spaces by law.	1.0
Safety	Building complies with all health and safety requirements.	Fire regulations and provision for the disabled are part of the design requirements.	1.0
Economic Issues			
6. Local Economy			**0.0**
Local contractors	80% of the construction has been carried out by contractors based within 40km of the building/refurbishment.	N.A.	0.0
Local building material supply	80% of construction materials; cement, sand, bricks etc produced within 200km of site.	N.A.	0.0
Local component manufacturer	80% of building components produced within 200km.	N.A.	0.0
Outsource opportunities	Opportunities created and provided for small emerging businesses.	N.A.	0.0
Repairs and maintenance	All repairs and maintenance required by the building can be carried out by contractors within 200km of site.	N.A.	0.0
7. Efficiency of Use			**2.0**
Useable space	Non useable space such as plant, WCs and circulation does not make up more than 20% of total area.	Services are designed to the minimum.	1.0
Occupancy	Building and all working/living spaces are occupied for an average equivalent minimum of 30 hours per week.	The building would be in use for more than 40 hours per week.	1.0

Space use	Use of space intensified through space management approach and policy such as shared work spaces.	N.A.	0.0
Use of technology	Communication and information technologies used to reduce space requirements.	N.A.	0.0
Space management	Policy to ensure that space is well used.	N.A.	0.0
8. Adaptability and Flexibility			**3.0**
Vertical dimension	Structural dimension minimum of 3m	The minimum floor to underside of slab dimension is 3060mm.	1.0
Internal partitions	Internal partitions between living/work spaces are non-load bearing and can be 'knocked out' relatively easily.	The building has a concrete structure and all brickwork can be knocked out.	1.0
Services	Easy access provided electrical and communication services and HVAC in each useable space.	Easy access to all services available.	1.0
9. Ongoing Costs			**4.0**
Maintenance	Specification and material specification for low maintenance and/or low cost maintenance.	The building operates mainly through passive systems, therefor minimum maintenance is needed.	1.0
Cleaning	Measures taken to limit requirement for cleaning.	Floor finishes are limited to hard wood planks, epoxy finish and tiles. The offices have carpet as floor finish. Windows easily accessible.	1.0
Security / care taking	Measures taken to limit the requirement and costs of security.	The campus has 24 hour private security.	1.0
Insurance / water / energy / sewerage	Costs of insurance, water, energy and sewerage monitored.	N.A.	0.0
Disruption and 'downtime'	Electrical and communication services, HVAC and plant located where they can be easily accessed with a minimum of disruption to occupants of building.	All services are easily accessible. No air conditioning.	1.0

10. Capital Costs			**0.5**
Consultant fees	Consultant fees not just calculated on total project cost basis. Incentives provided to consultants to reduce capital cost and ongoing costs.	N.A.	0.0
Build-ability	Building designed to be easily and cheaply built. Building form simple. Replication of elements and components.	The structure and infill of the building have a simple form. The curved roof might be more complicated to build.	0.5
Construction	Construction approach designed to reduce initial capital cost of building. Building undertaken in a series of phases. Building built as shell first with finishes to be added later.	N.A.	0.0
Shared costs	Cost of building shared with other users.	N.A.	0.0
Sharing arrangements	Size and quantity of buildings reduced through arrangements to use existing spaces and buildings.	N.A.	0.0
Environmental Issues			
11. Water			**3.0**
Rainwater	Rainwater is harvested, stored and used.	This is a major feature of the design.	1.0
Water use	Water efficient devices.	N.A.	0.0
Grey water	Grey water recycled.	N.A.	0.0
Runoff	Run off reduced by using pervious or absorbent surfaces. Hard landscaping minimised, previous surfaces specified for car parking and paths.	Green spaces have been designed to the maximum, with minimum hard surfaces.	1.0
Planting	Plants has low water requirement.	The various gardens hold succulents and plant species indigenous to South Africa.	1.0
12. Energy			**4.0**

Location	Building located within 400m of public transport.	Public transport is available on the campus periphery.	1.0
Ventilation System	Passive ventilation system.	All spaces have cross ventilation.	1.0
Heating and Cooling System	Passive environmental control system use.	Evaporative cooling is part of the design.	1.0
Appliances and Fittings	Energy efficient fittings and devices specified. 80% of light fittings are fluorescent/low energy consumption.	N.A.	0.0
Renewable Energy	Building uses electricity generated from renewable sources.	Possibility for sun solar panels on curved roofs.	1.0
13. Recycling and Reuse			**2.0**
Toxic waste	Arrangements made for the safe disposal / recycling of toxic/harmful substances.	N.A.	0.0
Inorganic waste	Arrangements for sorting, storage and pick up of recycable waste.	To be arranged by tenants.	0.5
Organic waste	Recycled on site i.e. compost.	To be arranged by tenants.	0.5
Sewerage	Contribution to main sewerage from toilet minimised through use of compost toilets, and other 'local' systems.	N.A.	0.0
Construction waste	Construction waste minimised through careful management of construction practices.	All dimensions to brick sizes to minimise waste.	1.0
14. Site			**4.5**
Brownfield site	Building constructed on a site previously built on.	The building is erected on an existing car park.	1.0
Neighbouring buildings	Building does not have a harmful effect on neighbouring buildings.	Special care has been taken not to overshadow the surrounding old buildings.	1.0
Vegetation	Site has extensive vegetation. Opportunities have been taken to plant in car parking areas and in and around buildings.	Vegetation is a main feature of the design.	1.0
Habitat	Site has provided habitats for animals.	Due to the high pedestrian number, it would be unlikely that animals would live on the site.	0.0

Landscape inputs	Landscape does not require heavy artificial input.	Plants include succulents and other indigenous plants.	0.5
15. Materials and Components			**1.0**
Embodied energy	80% of the building materials and components made from materials and components with low embodied energy.	Local timber and bricks are used, as well as concrete. Steel would be the only material with a higher embodied energy.	1.0
Material / component sources	90% of materials and resources from renewable resources.	N.A.	0.0
Manufacturing processes	Environmental damage limited during product component development. No green house gases released, no pollution caused.	N.A.	0.0
Recycled / reused materials and components	10% of building materials and components are reused or from recycled sources.	N.A.	0.0
Construction processes	Building and construction process designed to minimally impact the environment. Requirement for large scale vegetation clearing and earth movement minimised.	N.A.	0.0



1. Occupant Comfort	5.0
2. Inclusive Environments	5.0
3. Access to Facilities	5.0
4. Participation & Control	5.0
5. Education, Health and Safety	5.0
6. Local Economy	0.0
7. Efficiency of Use	2.0
8. Adaptability and Flexibility	3.0
9. Ongoing Costs	4.0
10. Capital Costs	0.5
11. Water	3.0
12. Energy	4.0
13. Recycling and Reuse	2.0
14. Site	3.5
15. Materials and Components	1.0

Social	**5.0**
Economic	**1.7**
Environmental	**2.9**
Overall	**3.2**

Figure 211

Conclusion

The Sustainable Building Assessment Tool (SBAT) is specifically designed for buildings, such as schools, offices and residential buildings that have just been completed. If used in other stages, some of the criteria might not be relevant, as noted in this instance. Therefore the economical and some of the environmental aspects of this tool have shown to perform unsatisfactory. (Gibbert, J. 2004 CSIR)

CONCLUSION

Previous page
Figure 212: Bohemian girl

There has always been an intricate relationship between man and architecture. This design has attempted to establish a renewed awareness of place, through identity and orientation. The intervention acts as a secondary boundary through which a student has to go, before reaching his primary destination. In other words a student has to clear his mind, body and soul from obstacles, before being able to continue with his responsibilities.

Architecture is the physical manifestation of how people perceive their environment. It is the duty of architects to influence the views of people regarding architecture to create a healthy, positive environment.

Figure 213: Vegetables in the city.

Figure 214: Golden face mask

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