

# REHABILITATE

A SUB-ACUTE FACILITY IN COLLABORATION WITH LOUIS PASTEUR PRIVATE HOSPITAL IN THE PRETORIA CBD





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Site Location - Erf 1/3279, 238 Minnaar Street, Pretoria  
GPS Co-ordinates: 25°45'11.20"S, 28°11'25.81"E  
Proposal - Sub-acute facility linked to Louis  
Pasteur Private Hospital  
Research Field - Environmental Potential  
Theoretical argument - Architecture of therapeutic  
environments

# ABSTRACT

This dissertation investigates the need for a change in popular perception of what an institutional building should and could look and feel like.

This is achieved through the exploration of ways to create a therapeutic environment that houses a sub-acute facility which provides operational after care for patients discharged from Louis Pasteur Private Hospital in the Pretoria CBD.

As well as providing for certain functional requirements, the architectural exploration aims to enrich and encourage the healing process of patients within the city with a rich mixture of stimulating and therapeutic experiences and qualities.

Through the exploration and incorporation of various theories, these aims are set as an end goal not only throughout the design process, but are also used to guide the technical development and solutions that are used within the finalization of the facility.

With a constant concept of creating a space for healing within the city of Pretoria, a *Centre for Healing* is created which holds these ideals at the core of its existence.

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East elevation

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Section B-B

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Detail section A

Detail 1

Detail 2

Detail 3

Detail 4

Detail 5

Detail 6

Typical detail A

Typical detail B



# LIST OF TERMS & ABBREVIATIONS

## **DoH**

Department of Health

## **acute**

Care of conditions that may change within a few hours or days and that require prompt investigation, diagnosis and treatment.

## **acute facility**

A licensed facility (DoH) providing acute care. Hospitals are an example of such a facility.

## **sub-acute**

Inpatient care (adult or paediatric) that follows or forms the latter part of an acute episode in which the patient has been investigated, diagnosed, is in a stable condition and has a treatment plan but requires ongoing specialised nursing or rehabilitative care at a lower cost and for no more than 90 days.

## **sub-acute facility**

A licensed facility (DoH) that provides sub-acute care. These facilities are more commonly known as ‘step-down’ facilities, however the accepted term at the DoH is ‘sub-acute’. The patients at such a facility would normally not have been discharged from hospital unless they are moved to a specialist unit as described above. Medical aids do pay for care in such facilities.

## **frail care unit**

This describes a unit/facility that provides 24 hour care & support services for frail older people. It does not provide specialised nursing or specialised medical services to patients. It must also be noted that medical aids do not pay for frail care unit stays.

## **joint venture**

This describes a unit that delivers health services where public and private sector employees are used jointly to provide services.

## **ambulatory**

This refers to a term used in hospital design to describe patients/users that ‘walk’ into a facility, it does not refer to patients brought in by an ambulance.

## **rehabilitation unit**

These units cater for patients who require physical or psychiatric rehabilitation or interval care. They are staffed by specialist nurses or allied professionals (e.g. physiotherapists). These units may be on or off hospital premises and patients can be discharged from the hospital into such off site units. Such units usually deal with rehabilitating care in audiology, spinal injuries and stroke incidents.

## **therapeutic**

Having or exhibiting healing powers.

## **cardiac rehabilitation**

This type of rehabilitation refers to the process of restoring psychological, physical and social functions to optimal levels in individuals who have had any previous manifestations with regards to heart problems or surgery, as well as incorporating spousal/care giver education.

## **therapeutic environment**

A spatial experience that exhibits healing qualities. It is an environment which acts upon an individual in a suggestive manner through the nervous system. It is therefore, a supportive, constructive environment considered helpful for reprogramming the nervous systems of individuals undergoing treatment.

## **recovery**

A personal journey that may involve developing hope, a secure base and sense of self, supportive relationships, empowerment, social inclusion, coping skills and meaning.

## **inpatient**

A patient that uses a specific facility while staying at that facility.

## **outpatient**

A patient that uses the services of a facility, however they do not stay at the facility, they commute to the facility by their own means when necessary.





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THANK YOU

# CHAPTER

# 1

*We need to give each other the space to grow, to be ourselves, to exercise our diversity. We need to give each other space so that we may both give and receive such beautiful things as ideas, openness, dignity, joy, healing, and inclusion.*  
(De Pree, 1989)



# BACKGROUND & CONTEXT

South Africa is well known around the world for its wide variety of health care services. However, the health care system in South Africa stands far apart from countries like Australia when it comes to the quality of care provided for people once they have been discharged from the hospital that has investigated, diagnosed and treated them.

What happens to these patients once they have had their operations and are no longer allowed to remain a patient in the hospital? Many patients still require ongoing specialised nursing or rehabilitative care after their hospitalization and this generally requires care at a lower cost than a hospital would provide. The patients, medical aids and the hospitals cannot afford to keep patients in the hospital for an extended period of up to three months. The patient cannot afford the high cost of hospitalization, the medical aids are extremely cost conscious (they would save up to 40% on the costs if such facilities were adopted) and hospitals need to have beds available for the next patient who may be having an operation and thus bringing in more money.

Designers of sub-acute facilities therefore need to investigate the current trend occurring around the world (and in the initial stages of discussion in the South African health care industry) of step-down / sub-acute facilities where 'therapeutic environments' are created that the health care profession can utilise. These facilities would allow for a higher quality of professional care & nursing for patients, however at a much lower cost to the patient, medical aids and hospitals.

Until now, South Africa has provided very few 'sub-acute' facilities that care for patients after they have been in hospital and which provide the correct medical care. Old age homes are often found advertising their frail care units as such facilities, however they are not equipped to deal with the medical needs of the patients.

According to Riaan van der Watt, a consultant to the Gauteng DoH, there are a number of registered sub-acute facilities in Pretoria, however few of them comply with the standards as set out in the DoH guidelines, and are more along the lines of frail care facilities and not sub-acute facilities (Van Der Watt, 2010). The DoH is therefore trying to make the requirements for such facilities more available to the public so that better quality sub-acute facilities are designed in South Africa.

Hospitals are often dreary, monotonous places to be in, and for a patient that is not completely mobile, to be 'stuck' in such a facility for up to three months could be unpleasant. Therefore, not only is there a need for a better building typology suited to sub-acute facilities, but also the design of more therapeutic environments which have rich architectural and spatial qualities. This way of thinking should be adopted to avoid the design of yet another 'hospital-like' environment.

A sub-acute facility should be linked to a hospital where the hospital can discharge the patients directly into the care of the sub-acute facility. It is proposed that the sub-acute facility be linked to Louis Pasteur Private Hospital within the Pretoria CBD (see fig. 1.1 & 1.2).

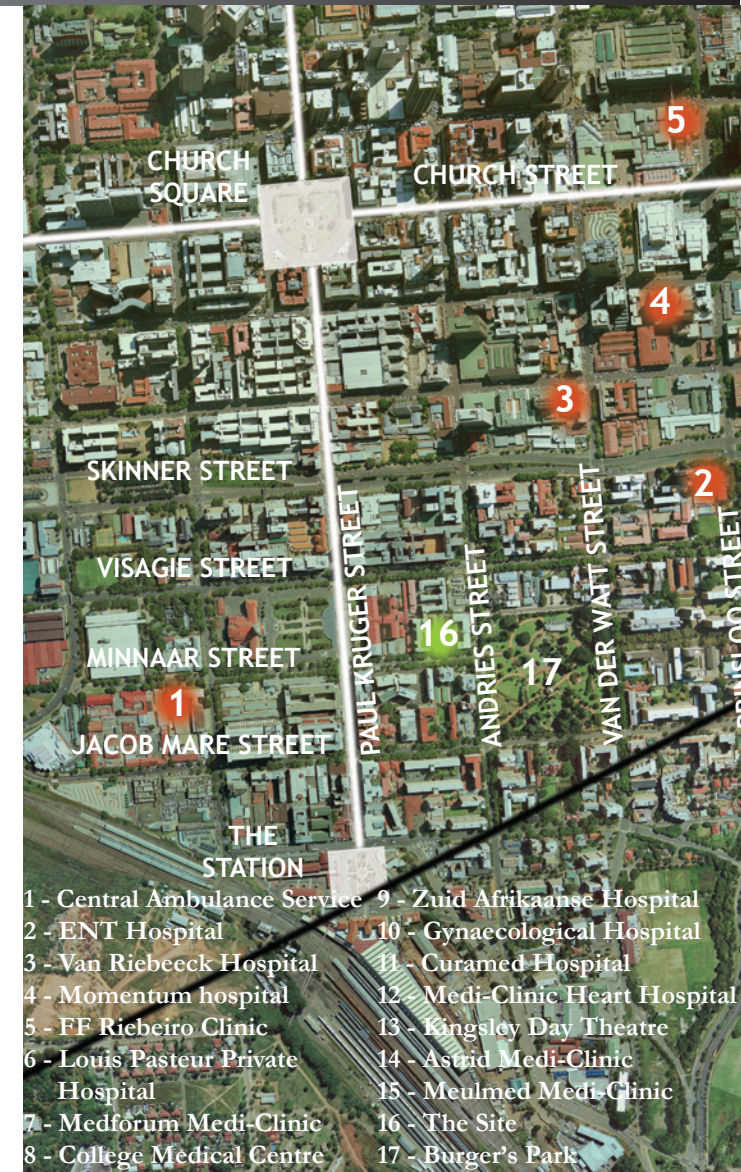


fig. 1.1 Aerial photograph of Pretoria CBD showing the hospitals in the area and site location

fig. 1.2 Aerial photograph of the site



fig. 1.1

Louis Pasteur Private Hospital has a variety of specialties it deals with, however it provides very little rehabilitation after the primary care is given. Due to the fact that the sub-acute facility requires the design of a therapeutic environment, it is necessary to position the facility out of the excessively busy and noisy CBD and rather provide the facility further south in the Burgers Park region of the city. This area is well maintained, readily utilized and plays host to numerous new residential developments as well as receiving continuous efforts to upgrade the streets for both vehicles and pedestrians. The site is close enough to Louis Pasteur Private Hospital where doctors will easily be able to continue their

rounds past the sub-acute facility. It is also well situated only two blocks east of the central ambulance service should any emergencies occur on the premises requiring transport back to Louis Pasteur Private Hospital.

As the site is on the perimeter of Burgers Park, the patients at the sub-acute facility could utilise the park on a daily basis for both relaxation and social gatherings. The site is also in close proximity to the train station and taxi drop-off/pick-up points, which become important for patients at the sub-acute facility who may not be able to drive yet.



fig. 1.2

# AIMS, OBJECTIVES & DESIGN PROBLEMS

## AIMS & OBJECTIVES

The aim of this study is to investigate the design of a therapeutic environment to accommodate the long term care of patients after they have been treated in a hospital, and while they are in the process of a full recovery, and in so doing, create a new architectural typology for sub-acute facilities in South Africa.

The study and design project will promote the therapeutic care of patients, and the creation of such environments and will therefore contribute to the way in which such facilities are designed in the future as well as the level of therapeutic care provided for in the health sector in South Africa.

Sub-acute facilities are a growing need in South Africa, and important facts need to be considered when designing such facilities, as the patients could be there for up to three months away from their homes and comfort zones. The sub-acute facility should therefore:

- Investigate and test new ways to create therapeutic environments.
- Act as a model for the new typology of sub-acute facilities in South Africa.
- Strengthen the spatial legibility within the environment to create an architecture accessible to all.
- Create a hierarchy of spaces in which public, private and semi-private spaces can be established between patients, staff and the public.

## DESIGN PROBLEMS

The development of sub-acute facilities is a fairly new concept in the South African medical field. Often facilities of this nature that house patients for long periods of time end up being lifeless, dull environments that do not accelerate the healing of patients (Carpman & Grant, 1993:4).

Designers need, therefore, to rethink the way in which medical facilities, such as sub-acute facilities, are designed. These designs should incorporate the idea of therapeutic environments that will, at the end of the day create a healthier setting for patients to recover in.

Unfortunately, the few sub-acute facilities that exist in South Africa are, according to the DoH, “not up to standard” (Gauteng Department of Health, 2008:6) and are very hospital-like in appearance. It will be imperative to visit the existing South African sub-acute facilities to investigate how these could become therapeutic environments. Similar facilities in other countries will also need to be studied and then compared to the statutory requirements of the South African DoH.



fig. 1.3



fig. 1.4

# CLIENT, BRIEF & RESEARCH QUESTIONS

## CLIENT

### PRIMARY CLIENT

The main client will be the investors who will pay for the initial building of the facility as well as for its upkeep. In this case, the main client will be the Hospital Board at Louis Pasteur Private Hospital as the facility will become a ‘step-down’ facility directly from their care. The board consists of a joint venture between Bonitas Medical Aid Fund and the doctors and founders of the hospital. The partners share the joint vision to “strive for excellence and to render Service Excellence...with a Smile” (Louis Pasteur Website, 2010), with their slogan being “Quality for you”.

### SECONDARY CLIENT

The secondary client for the sub-acute facility will be the patients and staff that will utilize and run the facility. The target market patients are those within the middle income bracket of the population as well as those of a lower income that may have health plans from working at a government, institutional, or corporate company that provides such health care benefits. The patients, managerial staff, as well as the operational staff will be using the building on a daily basis and care must be taken to provide for their needs and requirements in the facility.

### BRIEF

The provision of a sub-acute facility and therapeutic environment within the city of Pretoria that will be linked to Louis Pasteur Private Hospital. The facility needs to provide 24 hour care as well as cater for daily rounds to

be made by doctors from Louis Pasteur Private Hospital, and therefore should be situated relatively close to the hospital. Accommodation for patients within the facility will need to be provided for. However, no accommodation for the nursing staff will need to be provided for as the area has a rich diversity of residential development. Investigation will need to be done as to whether or not to provide accommodation for patients’ families.

The specific rehabilitation needs of the patients will need to be provided for on various levels. Louis Pasteur Private Hospital is a hospital that caters for various medical and surgical needs for patients in Pretoria as well as for those as far as Mpumalanga, North West and even beyond the borders of South Africa. The hospital however is renowned for their cardio-thoracic, neuro- and orthopaedic surgery and the sub-acute facility should principally cater for these types of recovery.

The ground floor of the facility that opens onto the street will need to incorporate an interactive environment, accessible to both patients and the public who pass by the site and utilise Burgers Park. The creation of more activity on the street edge of the facility is important to create a social interaction between the patients and the community. Burgers Park is to be used as a green open space for the patients as well as the public who currently occupy the park to reiterate the connection between the public and the facility and not to isolate the facility as an island within the city.

## RESEARCH QUESTIONS

With consideration to all that has been expressed up to this point, the following research questions have been posed as a guideline towards the final solution:

- What is a sub-acute facility and what is its relevance in South Africa in 2010?
- What are the South African statutory requirements for a sub-acute facility, and how can we learn from other countries and existing South African models?
- How can an architectural intervention become a therapeutic environment for patients to recover in?
- How can an environment designed to house people with post-operative ailments be created within the city of Pretoria where they will be safe and comfortable to live?
- How can an individual user become part of the architecture and experience & understand the environment on a personal level?



fig. 1.5

# METHODOLOGY, ASSUMPTIONS & DELIMITATIONS

## RESEARCH METHODOLOGY

The research methods used to collect, synthesise, and create architectural solutions from in this study originate from two places:

### 1 - QUANTITATIVE RESEARCH METHODOLOGY

#### a - Data collection

This involves the collection, analysis and further research of relevant statistics, factual documents, statutory requirements and existing frameworks for the research area.

#### b - Context analysis

This consists of time spent at/near the site analyzing the existing state of the site, observing people's behaviour in the area and observing existing scenarios. This is recorded through photographing, drawing and documenting the events or physical features first hand.

#### c - Interviews

This includes personal interviews with architectural professionals who work in similar fields, representatives from the DoH, consultants to the DoH, and individuals that currently work at such facilities, who all provide valuable information to incorporate for the efficient and functional design of such a facility.

#### d - Programme

This involves the research into what type of features are necessary in order to provide for the brief and programme of the building.

#### e - Economic theories

This includes the study of “disruptive innovation” whereby sub-acute facilities are highlighted as a building typology that is readily required in the health care industry.

### 2 - QUALITATIVE RESEARCH METHODOLOGY

#### a - Normative position

This involves the creation of a ‘norm’ that will be focused on throughout the study, that of creating a therapeutic environment for patients in the sub-acute facility.

#### b - Architectural theories

This includes theories related to the creation of therapeutic environments, as well as theories that focus on creating an architecturally rich environment like “Pattern Language”, and finally theories related to the design of institutional settings.

#### c - Precedent studies

This includes buildings as precedents that relate to the theoretical and environmental issues and requirements necessary to create a therapeutic environment and the new building typology. It also includes good and bad existing models of such facilities from South Africa and other countries to be compared as functional precedents.

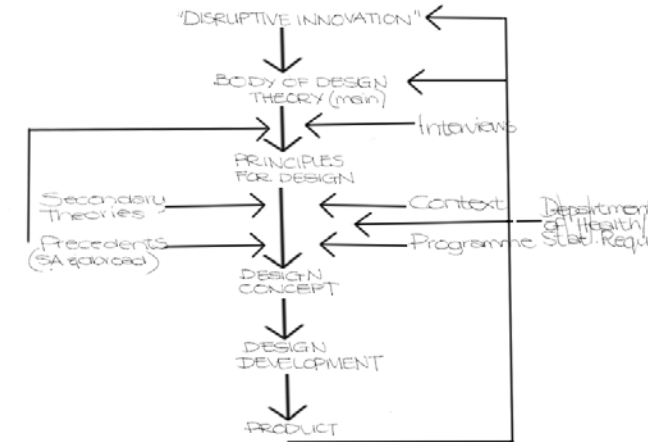


fig. 1.6

## ASSUMPTIONS & DELIMITATIONS

Due to time constraints, the focus of the study and the programme of a sub-acute facility, the following are either assumed or delimited:

1 - It is assumed that the proposals presented in the urban framework are acceptable and applicable.

2 - It is assumed that erf 1/3279, 238 Minnaar Street, Pretoria will be rezoned to allow institutional use of the site.

3 - It is assumed that a license for a sub-acute facility has been awarded in the vicinity of Burgers Park to the primary client from the Gauteng DoH.

4 - The study will be focused on the design of a sub-acute facility for after care from cardio-thoracic, neuro- and orthopaedic surgery.

5 - The study will not have a main focus on psychiatric rehabilitation for mentally challenged individuals; however it will have a focus on the mental well-being of the rehabilitation patients mentioned in point 4.

# STRUCTURE OF THE STUDY

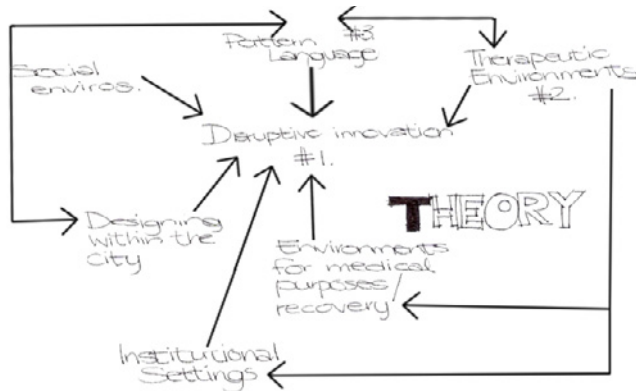


fig. 1.7

## STRUCTURE OF THE STUDY

The study begins by outlining the background and context of the design proposal as well as highlighting the site that will be used. Thereafter, the aims and objectives are further elaborated on as well as the design problems identified. Hereafter, the client and the brief are announced and from this research questions, methodology, assumptions and delimitations are identified to support the above.

In Chapter 2, the theory behind creating a layered therapeutic environment is explored. This is achieved through the research into various theories and literature studies that relate to creating environments of healing and growth.

In Chapter 3, elaboration as to what exactly a sub-acute facility is, its relevance in SA and any statutory requirements for such a facility are expressed to familiarize the

reader with the typology and provide information with regards to the programme of the building. With the above in mind, a site accommodation schedule for the facility is developed.

Chapter 4 focuses on the context that the facility is in. The context is firstly explored on the various scales that affect the facility and is followed by a contextual analysis of the study area around the site. Existing urban design frameworks are then explored and the ideas synthesized to form a new group urban design framework. From here, research and investigation around the site is carried out to explore and identify the design driving influences that are found on the chosen site.

In Chapter 5, the development of an architectural concept relating to the creation of a place that accommodates the healing process is explored and begins to develop into a possible variety of architectural forms.

Chapter 6 explores the design development of the proposal, showing the integration of the items highlighted in the earlier chapters, and showing how all the information has been accumulated to inform the design decisions made throughout the project resulting in a set of sketch plans.

In Chapter 7, the sketch plans mentioned above are further manipulated through technical exploration, highlighting the intentions which have been followed through the entire project. A technical aesthetic is firstly identified which familiarizes the reader with the overall

intentions that the design has identified. Hereafter various technological aspects are identified and the solutions to any queries provided, such as: facility function relating to form, this form being expressed through a specific tectonic solution, use of environmental control and finally any supportive services required in the facility are identified and solutions briefly expressed. All of these eventually leading to the final product of a set of technical drawings.

Finally, in Chapter 8, a conclusion drawing on all the information and exploration throughout the document will be summarized, expressing solutions and recommendations.

It should be noted that each chapter has its own introductory and concluding paragraph which sums up the design intentions and ideas for that particular chapter. The body of the text between these two paragraphs will expand on the ideas highlighted in these sections.

It should also be noted that there is no 'precedents' chapter. This is because all precedents will be located before the conclusion of the relevant chapter where the precedents related to the specific topic will be expressed, indicating its relevance to the solution.



# CHAPTER

# 2

*It is reasonable to expect the doctor to recognize that science may not have all the answers to problems of health and healing.*  
(Cousins, 1979)



# INTRODUCTION

Current perceptions of institutional and rehabilitative facilities have been that of very hospital-like, monotonous environments. This perception needs to be addressed, not only in terms of the physical environment of the facility, but also in the mind set of the patients, staff & visitors. It is believed that the first step to altering this perception is to address the name of such facilities (Carpman Grant, 1993:40). The name ‘*sub-acute*’ brings images to mind of the clinical environments mentioned above, and it is proposed that such facilities should rather be referred to as ‘*centres for healing*’, already bringing a better image to mind and allowing the start of a therapeutic, new building typology to be developed. This idea is further emphasized by Carpman and Grant where they highlight the importance of using familiar and appropriate terms to identify a building (Carpman Grant, 1993:40). Henceforth, the design will be addressed as a ‘*Centre for healing in collaboration with Louis Pasteur Private Hospital*’.

This chapter addresses how the design of a therapeutic, architecturally rich environment, in contrast to typical institutional settings, can alter this mind set and in turn have a positive role to play in the recovery of patients at the *Centre for Healing*, encouraging a healthier environment in which people can heal and grow.

## CONCEPTUALIZATION

A therapeutic environment refers to a spatial experience that exhibits healing qualities (Smith, 2008:2). In order for a patient to be able to heal, they need to go through a journey of recovery, a process of growth rather than

simply the realization of a destination. What is therefore necessary to create such a therapeutic environment? What type of environment and factors are required to facilitate this process of recovery, this process of growth?

As a patient goes through various levels of recovery and growth during their stay at the *Centre for Healing*, so should the building express the idea of these various ‘*layers of healing and growth*’ in order for it to be able to assist in the recovery of the patients that it houses.

One could draw an analogy between a sunflower and the process of healing in a metaphorical manner: as the sun rises in the morning, the flower opens its petals and follows the sun through the course of the day. By midday, the sunflower is at its optimal and idyllic stage, it stands up straight with all its petals open to the sun to draw nutrition from the environment. As the sun starts to set, the sunflower starts to close its petals on the world to maintain the nutrients it has absorbed and it holds every part of itself safe within it.

The building should offer the same ‘daily cycle’ that a sunflower offers. When the sun rises, the building should start to open itself to the world, awakening in a sense, as the staff begin to arrive, the patients wake up and the pedestrians start passing the site. By midday, the building and its patients are at a peak of activity and exposure, everyone is awake and moving around, rehabilitation treatment is taking place, visitors arrive and pedestrians begin to interact with the activities on the

site. At this stage, the building should be at its most inviting state, encouraging interaction between the facility, patients and staff. As the afternoon passes by and the sun begins to set, the building should (like the sunflower) start to close its ‘petals’, encapsulating and protecting the patients within it. This is not to say that the building must close itself off to the outside completely as the sunflower does, but rather that it can allow the filtration of activity into the building where activities are internalized.

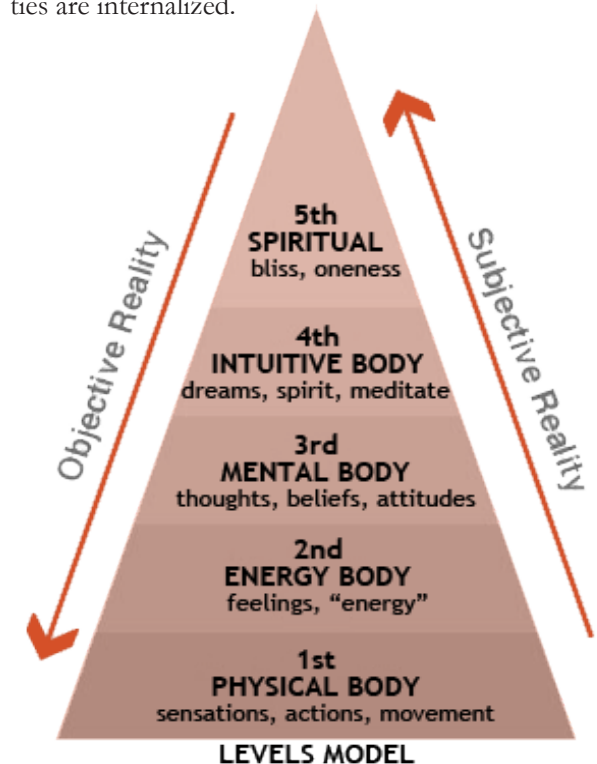


fig. 2.1

fig. 2.2 The 5 senses of the human body

fig. 2.3 Ripple effect of a central core on the surrounding environment

# THEORY 1 - 5 LEVELS OF HEALING

## THEORY 1 - 5 LEVELS OF HEALING

The human body exists within various dimensions at the same time. The physical body exists equally in a realm of invisible bodies which each have their own anatomy and physiology, and a profound interaction between these levels exists (Klinghardt, 2005:1).

Dr. Dietrich Klinghardt believes that patients need appropriate care and interaction on all these levels of their existence in order to fully heal (Klinghardt, 2005:1). By applying the ancient yoga sutras in a practical and contemporary way, he identified a 5 level healing system (see fig. 2.1) that practitioners can follow to achieve the full realm of recovery in patients.

### Level 1: *The physical body*

This is not placed at the bottom of the pyramid because it is of least importance, it is rather referred to as the “foundation upon which everything else rests” (Klinghardt, 2005:1). It is also the one item/level that links the human body directly to the earth and is the body’s physical energy source. This is the realm of human existence that experiences the senses, that which can see, feel, hear, touch and smell, and it’s reach ends at the skin (see fig. 2.2).

#### *Healing:*

Exercise, dietary requirements, balancing of hormones, detoxification, treatment of infections and supplementing the body with missing minerals.

#### *Architectural implication:*

By creating an architecture that reaches out and touches the senses of individuals on various layers, the physical

body can directly be affected by the architecture. This is the foundation of healing, therefore the physical rehabilitation or gym can be seen as the centre of the facility creating energy for the other layers and forming the foundation of the building and the recovery process.

### Level 2: *The energy body*

This level of healing includes the electric and magnetic fields that affect the nervous system from within the body and those that affect the body from outside (Klinghardt, 2005:1). The strength of these fields decreases as the distance from the centre of the body increases until infinity (see fig. 2.3).

#### *Healing:*

Neural therapy, spending time in nature, minimizing electric and magnetic fields from the surroundings.

#### *Architectural implications:*

With the architecture seen as the core of the facility, the functions and energies that occur around this central space can be considered to be the electric or magnetic fields that influence what outcomes are reached within the body. The overall architecture and site can be seen as consisting of a ripple effect of items and activities that are fed by the main core - the architecture (see fig. 2.3).



fig. 2.2

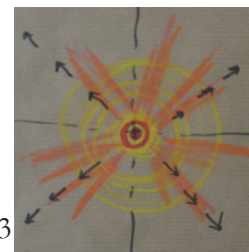


fig. 2.3

### Level 3: *The mental body*

This level of healing extends even further out the body. This is the level where beliefs, attitudes and thoughts form and organise the healing of an individual and can affect the physical body (Geffen, 2006). It consists of the patients’ own mental fields, as well as that which society has agreed upon. These ideas or thoughts may be detrimental to the healing process and should rather be disconnected from the patient in order to achieve the desired results on the physical level (Klinghardt, 2005:2).

#### *Healing:*

Mental field therapy, counselling, therapy with patients and families to address the destructive consensus beliefs.

#### *Architectural implications:*

Address and alter the beliefs, attitudes and thoughts of what people think such a facility should be like. Create an alternative environment to the current perceptions of institutional facilities. The beauty of being human is the ability to adapt and change; the architecture that houses these changes should in the same way be able to adapt and allow change.

### Level 4: *The dream body*

This relates to elements outside the mind of an individual. This is believed to be the highest level at which a physician can assist a patient with recovery.

#### *Healing:*

Family orientated and individual therapy where three types of feelings are addressed; primary, secondary and displaced feelings. The idea on this level is not to directly improve the patient’s symptoms, but to rather

create the idea of love, harmony and respect in the patient.

*Architectural implications:*

The idea of focussing on the meditative state of patients can be harnessed in the architecture. It should allow for intimate, quiet spaces where patients can meditate and reflect on themselves. People also have a primal need for relationships, community, security and connection (Klinghardt, 2005:2). The architecture should therefore not facilitate the centre for healing as an island in the city, it should rather act as an 'oasis' where community interaction and socializing can occur.

**Level 5: The spirit body**

This is a plane of self-healing.

*Healing:*

The healing process on this level relies on the individual relationship between the patients and a deity or spiritual belief and no practitioner can assist in this level of healing (Klinghardt, 2005:3). Any exploration on this level of healing is left to the patient.

*Architectural implications:*

Spaces can be created where spiritual or religious aspects can be focused on by the patients. These are extremely private spaces and should therefore be situated and treated as such in the design of the facility.

As mentioned before, true and lasting healing requires the simultaneous work/therapy on all 5 levels (Harris, 2009). The first three levels belong to the personal realm of the human body, where practitioners can easily aid in the healing process. Layers four and five relate to

the transpersonal realm, where practitioner interference is difficult (Klinghardt, 2005:4).

Each higher level influences the recovery of the levels below it, for example if something is improved on the mental level, it can cause a ripple effect on the energy body or physical body level. This does not, however, work in the opposite direction. For example, a physical recovery alone will not cause a positive effect on the mental state of a patient.

*Healing is the greatest of all the joys. Whenever a client performs the miracle of the inner movement called 'healing', there should be gratefulness and humbleness, not only by the patient but also by the practitioner. When certain unwritten laws are respected, healing occurs much more frequently than otherwise.*

(Klinghardt, 2005:5)

*Conclusion:*

Healing is a journey. One of ups and downs, periods of calm and tumult, and the power of the mind, heart and spirit play a major role in this recovery process. Architecture, as the capsule that houses the recovery process, can either hinder the healing process or it can aid positively towards a growth and transformation of the whole (body, mind, heart and spirit). By addressing the various levels of recovery and applying the same techniques into the architecture created, it will add a valuable layer to the therapeutic environment required for healing to take place.

# THEORY 2 - LAYERS

## THEORY 2 - LAYERS

As mentioned in the previous theory, there are many levels and layers related to the healing and growth process of patients in a centre for healing (Klinghardt, 2005:1). A multi-layered, architecturally rich environment, in which these patients are 'stuck' for an indefinite period, will need to be created. This environment will need to cater for all the layers required in a therapeutic environment - a *Centre for Healing*. This architecture, for public and private use, must incorporate the rich and vibrant patterns present in the city of Tshwane.

Christopher Alexander argues in "*A Pattern Language*" that designers need to create an architectural language built up from various "patterns" to create such an environment (Alexander, 1977:x). Such a language would create a coherent picture of an entire region, and would within it have the ability to create many different forms within the regions. He calls for the designer to choose from the patterns he has set out, and add any of the designers own patterns, to create a language for a smaller part of an environment. However he constantly warns the reader to focus only on those aspects and patterns that they are able to create within their discipline or ability. By overlaying the chosen patterns, the character of the final building will be given to it by the language decided upon (Alexander, 1977:xxxv).

Patterns will be extracted from the book that are relevant to the dissertation (see design development) from the three scales of design provided for in the book (town/community, the building & construction details).

According to Alexander, the 'town and community' patterns can never be designed by an individual person, and they are rather created over time as every individual always helps to create these larger ideas (Alexander, 1977:3). The existing city fabric and patterns will therefore be used as inspiration, adding to this level of the urban design.

The 'building' patterns give shape and a three dimensional field to the architecture and the spaces between them and their neighbours. These aspects are designed and are under the control of designers or small groups of people who can build up a specific area at the same time or under the same ideals (Alexander, 1977:463). Patterns will be overlapped from this section to look at the creation of an architecturally rich environment for the many layers of healing and growth that will occur on the site, as well as using these ideas to create public spaces between the new building and the existing surroundings.

The 'construction detail' patterns refer to the tectonic nature of the design and relate to how the building can be constructed as the designer has envisaged it.

### *Conclusion:*

By addressing all these aspects while overlaying and redefining the building and the spaces around the building; multi-layered, architecturally rich environments will be created that the patients in the *Centre for Healing* can feel comfortable and at home with within the city limits; a place in which "*layers of healing and growth*" can occur.

# THEORY 3 - THERAPEUTIC ENVIRONMENTS

## THEORY 3 - THERAPEUTIC ENVIRONMENTS

According to Sandra and David Canter, in the book, *'Designing for therapeutic environments: A review of research'*, the creation of buildings for therapy can relate back to the need to remove or reduce the number of people that need to spend long periods of time in hospitals (Canter & Canter, 1979:1-26). This optimism, accompanied by improved medical practices, led to a recognition of the inadequacy of buildings, and raised the question of creating buildings that were appropriate to the new therapeutic approaches that the medical profession adopted at the time.

The authors raised the following concerns with regards to buildings for therapy; firstly they ask, what is the role of the physical environment in therapy? Secondly, how can designing a building for therapy make the physical environment more effective? (Canter & Canter, 1979:25)

To be able to design a therapeutic environment, the designer first needs to understand the goals and activities of that particular environment, and then relate these ideas back into the design. Not one aspect can, on its own, produce radically improved services, it is a collection of these goals, activities and eventually the design elements of the environment and how they work together that creates a successful environment. This idea of a successful environment is further emphasized by Cumings and Cumings in saying that the total "environment is (or ought to be) the major therapeutic agent in any therapeutic situation" (Cumings & Cumings, 1964) "Therapy is that which heals"-Canter & Canter, 1979

The location of a building that will provide therapeutic services is important, as is knowing and understanding the functional requirements of the facility to be able to achieve the organisational goals.

There are two main functions for a therapeutic environment (Canter & Canter, 1979:1-26):

1. An environment as the location of therapy, a place where people go.
2. An environment as a therapeutic setting; this is a place that people visit to feel whole/normal again due to the specific spatial qualities that are presented in that environment.

The proposal of the dissertation is to create an environment that provides both of the above. The *Centre for Healing* will therefore be a place where patients can receive therapy in an environment that encourages the healing effects in the spatial qualities it provides.

There are specific elements within an environment that creates the particular ambience required. The surrounding environment can influence the way people in a facility will be involved and affected in the healing process. It is important to highlight these specific elements that have been identified by Ron Smith (Senior associate AIA Academy of Architecture for Health) and Dr. Nicholas Watkins (Director of research and innovation, HOK). The idea is expressed that healthcare facilities are not only designed to support and facilitate state-of-the-art medicine and technology, there are other factors such as patient safety, and quality patient care that need to be taken into account (Smith, 2008). Such

facilities also have the important role to embrace the patient, family and caregivers in an environment psychosocially supportive to all the parties involved. The environment that patients are in affects their outcomes, satisfaction, safety, as well as staff efficiency, satisfaction and organizational outcomes. The effects of an environment are either positive or negative, they are never neutral, and in the design of a therapeutic environment, the following are requirements:

1. The environment should support clinical excellence to receive good results on a physical level.
2. The environment should support the psychosocial and spiritual needs of patients, family and staff.
3. The environment should provide numerous positive effects on the patients' outcomes and staff efficiency.

Smith and Watkins continue to emphasise how hospital environments tend to create stress on a patient. Stress can cause a person's immune system to be suppressed as well as dampen emotional and spiritual resources, which in turn impedes recovery and healing. Patients in hospital environments are often fearful and confused. There are four key factors that can be followed to improve patient outcomes:

1. Reduce environmental stress
2. Provide positive distractions
3. Enable social support
4. Give a sense of control to patients

But, how is an environment created where fearful and confused patients can feel unthreatened, comfortable and stress free? Below is a list of elements that were highlighted as possible solutions to this problem, most of which are items that can be addressed through architectural design (Smith, 2008):

- Familiar & culturally relevant materials
- Cheerful and varied colours and textures
- Natural light or colour-corrected light
- Views of the outdoors (murals of the outdoors if this cannot be provided)
- Access to outdoors
- Bright, open, generously-scaled public spaces
- Meditation rooms/gardens
- Design of a “way-finding process” (Smith, 2008)
- Attention to proportions, scale and detail
- Homelike, intimate scale in patient rooms
- Reduce unwanted noise
- Visual and sound privacy
- Acoustic treatment of passages
- ‘Off-stage’ areas for respite
- Create family zones
- Create social interaction areas
- Accommodation for a family member
- Mini-medical library and computer terminals
- Give patients choices to make with regard to items in their rooms and other areas
- Background music
- Artwork
- Limit medical odours
- Maintain good indoor air quality

It is important that the representation of the organizational role and structure of a facility needs to be shown in the design of the functional spaces of a therapeutic environment (Canter & Canter, 1979:303-341). It has been noticed that “the patient who understands how the organization operates and where people can be found is likely to have a greater potential for active search to find help and care (Canter & Canter, 1979:303-341). Designers need to build up experiences of the individual users in the facility and relate this back to the design of clearly defined activities and experiences.

Canter and Canter continue to establish in their “*individual growth model*” (Canter & Canter, 1979:303-341) that a therapeutic environment is created to enable people to grow to their full potential despite any limitations they may have. This highlights what was said in the first theory of healing being a process rather than the discovery of an outcome. They do however also highlight that contact between the patients and other patients, public, staff and visitors can make an impact on the healing process (along with the environmental influences) and that this interaction is a key player in the healing process.

#### *Conclusion:*

There are no general solutions or a check list in creating a therapeutic, architecturally rich environment. However, it is clear to see from the above information that it is the setting as well as the people who make up the facility that in turn creates a therapeutic environment. Designers need to focus less on the goals and objectives

of such environmental design and focus more on the variety of items within the layers and transition through the healing process and the architecture. Spaces should be created that relate to the experiences and functional requirements of the patients and from this the form will be determined and manipulated.

# THEORY 4 - SENSUOUS ARCHITECTURE

## THEORY 4 - SENSUOUS ARCHITECTURE

Juhani Pallasmaa observes in *The Eyes of the Skin: Architecture and the senses* that there is an increasingly large bias towards vision and a suppression of the other four senses in the way people conceive, teach and criticise architecture, with Le Corbusier even stating that, “I exist in life only if I can see” (Pallasmaa, 2005:29). This one-sided promotion of a sense in architecture allows the user to feel detached and alienated from their architectural experience. The entire body is in actual fact the centre of what we perceive and think and all the senses (with the body as the centre) should be equally moved by architecture. It is believed that any “life-enhancing” (Pallasmaa, 2005:11) architecture should address all five senses simultaneously, fusing the viewers image of self with that of the rest of the world.

Pallasmaa believes that we “see through our skin” (Pallasmaa, 2005:10) with the idea that all the sense specialized organs (eyes, nose, ears, tongue and skin) are specialised skin tissue, making all sensory experiences types of touching. We therefore experience situations through tactility, a sensual experience that has proved to have a higher priority and remembrance in our perceptual and mental systems, and allows human experiences within architecture to be unlocked and accessible to all.

Architecture has the ability to strengthen ones sense of self and belonging in the world. It is able to do this by not just creating images that are visually pleasing, but by creating architecture and spaces that “relates, mediates and projects meanings” (Pallasmaa, 2005:11). The true

meaning of architecture is beyond the building, it is a tool that directs our consciousness towards the world and towards the users sense of self and being in that world. It allows the user to orientate themselves within the world and the specific work of architecture.

It is this merging of sensual experiences through the body as the centre (Bloomer & Moore, 1977:1-5) that contributes to enriching a users experience and orientation within the world and a specific environment.

### *Sight:*

Historically, vision has been regarded as the noblest of the senses, with many references to vision or sight as a metaphor for truth and witnessing (Pallasmaa, 2005:19). Pallasmaa identifies two different types of vision; the first being focused vision, and the second being unfocused vision. Focused vision is that which we see / observe directly, and it is this type of vision that allows the user to engage directly and consciously with the environment. Unfocused vision is peripheral and therefore includes one’s surroundings, which a person is usually subconsciously aware of. This subconscious awareness of the surrounding environment is what is important in creating and enveloping effects, and it is this that eliminates the feeling of alienation from the environment.

Vision may have the ability to include a user in an environment, however it is still directional and renders one a ‘viewer’ in the world. It is the other senses that allow the user to unite and become one with the environment.

### *Touch:*

The second most frequently mentioned sense is the sense of touch. This is the sense experienced through the skin and is the body’s most tactile of the senses, as it is through this membrane/organ that we can ‘feel’ the world, allowing us for a time to be connected to the world and the environment. Rene Descartes described touch as being “more certain and less vulnerable to error than vision” (Pallasmaa, 2005:19).

Touch is an important medium to allow the user to be connected to the world and the surrounding environment because as the hands (or skin) touch, they think, and therefore stimulate the body learning and integrating with the environment.

### *Hearing:*

In the 16th Century, it was believed that vision separated people from the world, however the other senses united them with the world. This was a time of folk tales and story telling and until written culture overpowered the oral word, hearing was the preferred sense of the human body.

Sound is non-directional, it ripples or radiates from the source and therefore affects all the environments around the source. Even if there is not a particular item that is being listened to, the ear absorbs any background noise (or quiet for that matter) allowing the body to perceive what is going on around it. The ears absorb all that is going on around us, not just what we want them to focus on, as is the case with vision. Therefore,



subconsciously, our ears are encompassing our bodies within the full realm of the environment. As Rasmussen points out, most people may highlight that architecture does not produce sound, therefore it cannot be heard. But it can be heard, our ears have the ability to perceive volumes depending on the quality of sound within a space. Therefore it becomes an important space making tool as the ear of a user will notice if the environment is uncomfortable.

#### *Smell:*

Pallasmaa highlights that all the other senses help the eyes remember (Pallasmaa, 2005:41). Smell is one of the human body's most persistent memories of any space, with every place and memory of an environment being related to a specific smell that the body remembers (Bachelard, 1994:5). Certain smells trigger certain memories and associations. Smell has an emotional and associative power with it that a sterile and life less visual image may not encompass. Smell has the ability to project full images of life within a space and should therefore not be neglected when trying to create an environment that all users can feel comfortable and connected to.

#### *Taste:*

Adrian Stokes refers to there being a "hunger of the eyes" (Pallasmaa 2005:59) and John Ruskin says he "should like to eat up this Verona touch by touch" (Pallasmaa 2005:29). There is clearly a connection between taste and all the other senses, as is evident in these two quotes. Certain colours and details that are

seen, touched, smelled or heard can evoke specific tastes in a person's mouth, a phenomenon known as syn-aesthesia. Therefore, the sense of taste should not be forgotten when designing for the human experience of spaces.

#### *Conclusion:*

It is noticeable that no sense should be experienced in isolation. If we keep in mind that all the senses are effected simultaneously, an overlapping and more sensuous architecture is perceived and experienced by the users, allowing them to feel as if they are a part of that experience and environment rather than having the feeling of being a spectator in the world and alienated from it.

As Kent Bloomer and Charles Moore highlight in their book *'Body, Memory and Architecture'* the body has unique perceptual and emotional capacities (Bloomer & Moore, 1977:105-110). The body, as the most fundamental 3-D possession we have, encapsulates all the five senses and their organs. Should the body itself, not then be considered the central concern with regards to understanding architecture and the human connection to the architectural form?

# THEORETICAL PRECEDENTS

## THEORETICAL PRECEDENTS

The precedents found under this chapter are those that demonstrate the successful incorporation of the philosophies and ideas mentioned before into an architectural solution.

### TRENTON BATH HOUSE

Louis Kahn  
 999 Lower Ferry Road, Ewing, New Jersey  
 1955

#### *The history:*

The Trenton Bath House was designed as a portion of a larger plan for the Jewish Community Centre in the Delaware Valley. It was the only portion of the larger plan that was eventually built due to insufficient funding. Ironically, it is not situated in Trenton, neither is it a bath house, it is in actual fact an entrance building and change rooms for the users of an outdoor swimming pool within the community centre (the rest of which was never built) (Ducat, 2009).

#### *The building:*

On plan, the facility is a simple orthodox cross shape with four square concrete block rooms which surround a central atrium (see fig. 2.4 and 2.5). The four “spartan” rooms were the women’s and men’s changing rooms, the “basket” room, and the entrance room leading to the raised pool. Each of these rooms is topped with another simple element, a square pyramid roof cut short at the top to provide a skylight that serves as an oculus (see fig. 2.6 and 2.8). These roofs each rest on four large open square columns (see fig. 2.7, 2.9 and 2.10) with the edge of the roof ending short of the

external wall to allow further external light to enter the building (see fig. 2.9).

#### *Conclusion:*

It is constructed of simple, inexpensive materials, yet the purity of form and monumentality of the building surpasses these materials. The use of simple geometric forms with basic intentions creates an elegant result.

Closer inspection of the building reveals not only the simplistic pure design elegance and aesthetically pleasing qualities of this building, but also highlights Kahn’s ideas of the utilitarian purposes of the various spaces; this being his first design in which he articulated his ideas of spaces that serve versus spaces served.

*From this came a generative force which is recognizable in every building which I have done since.*  
 (Louis I. Kahn, 1957)

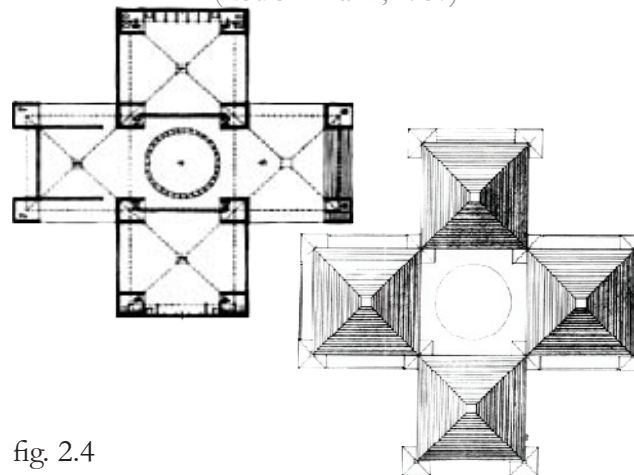


fig. 2.4

#### *The Trenton Bath House today:*

In 2006 the Trenton Bath House changed ownership from the Jewish Community Centre to the Ewing Township as part of a community recreational centre open to all people. Unfortunately, due to lack of maintenance through the years, the Trenton Bath House is very run down and is in need of some work with restoration studies predicting a \$486,000 project to repair and rebuild it (Ducat, 2009).

*I'll never forget the excitement Louis Kahn's Trenton Bath House design evoked in me when I first saw it and I continue to be aware of its significant effect on my work.*  
 (Robert Venturi, 1981)

*I discovered myself after designing that little concrete block bath-house in Trenton.*  
 (Louis I. Kahn, 1970)



fig. 2.5

- fig. 2.6 A model of the roof showing the 'oculus' at the apex
- fig. 2.7 A model of the roof and its supporting structures
- fig. 2.8 Zoomed in view of the 'oculus'
- fig. 2.9 Large open columns support the roof which ends short of the structure

fig. 2.10 External view of the open columns supporting the roof



fig. 2.10



fig. 2.9



fig. 2.8

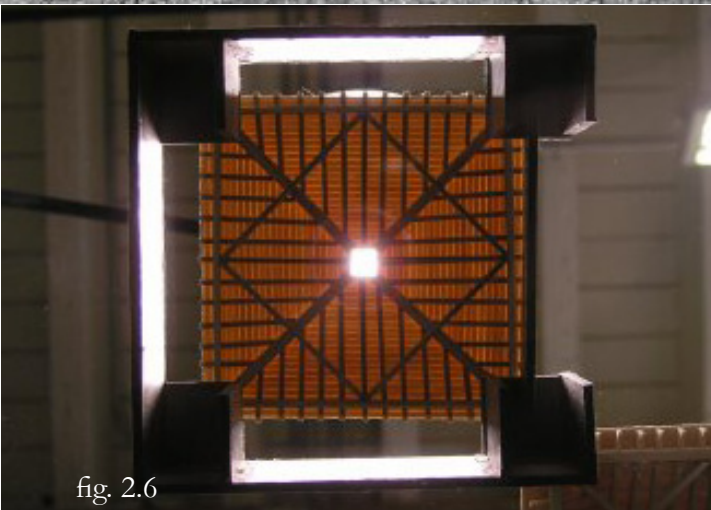


fig. 2.6

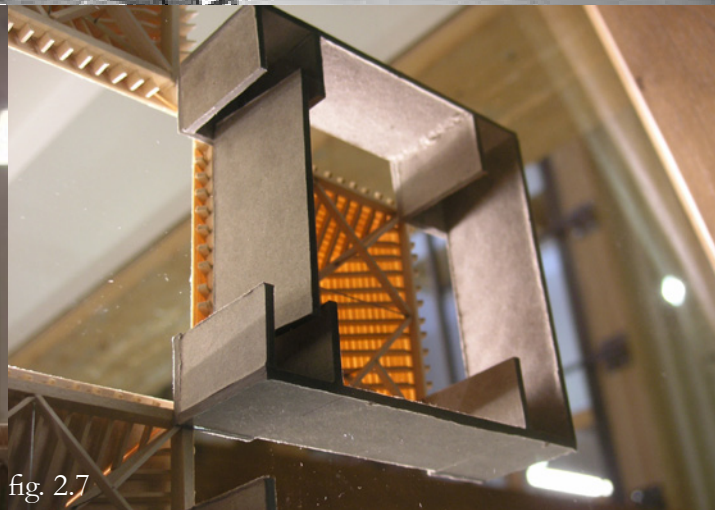


fig. 2.7

**THERMAL BATHS**  
**Peter Zumthor**  
**Vals, Switzerland**  
**1996**

*The history:*

Vals is a village that lies half an hour from Chur, deep in a valley scattered with huts and the sound of cow-bells. Below the village lies a tributary which meets with the Upper Rhine River. Over a century ago, hot natural springs were diverted for use in therapeutic bathing, and in the early 1960's a boutique hotel consisting of three buildings was erected to profit from the natural spa. However, in the 1980's the hotel suffered financial failure and the village commissioned an architectural competition to re-establish thermal bathing as an attraction for tourists. The winner was Peter Zumthor who was commissioned to design the new thermal baths, the building being considered a success in Switzerland and is listed as a protected building (Ryan, 2004:42-49).

*The building:*

From above, the building is almost invisible as it forms a terrace within the sloping countryside (see fig. 2.11). On this terrace (or field) are pieces of translucent glass and down lighters which can be viewed as mechanical sunflowers. The roof protects the building from the meadow alongside as well as from the hotel complex to the north, however it eventually erodes into the landscape to reveal the swimming pool and sunbathing area (see fig. 2.12). From the road below the complex, the building appears to be an embankment, a feature of stone with punctures as openings, appearing more as an

earth work than a building (see fig. 2.13). The concept was to 'dig up' and 'mound up' as the earth does naturally, creating a completely sensuous architecture.

Access to the baths is from the hotel through a sub terrain curved tunnel which is used to disorientate the user from the world outside. When the user reaches the bathing areas, a shadowy corridor echoed with the sounds of trickling water announces your arrival. To the left, a small glimpse of the main internal pool is allowed as well as a large view of the valley below, allowing the user to feel that the baths truly are one with the valley. The walls to the right are simple concrete with small indentations at particular intervals with running water over the surface flowing into a continuous gap between the wall and the floor (Ryan, 2004:42-49).

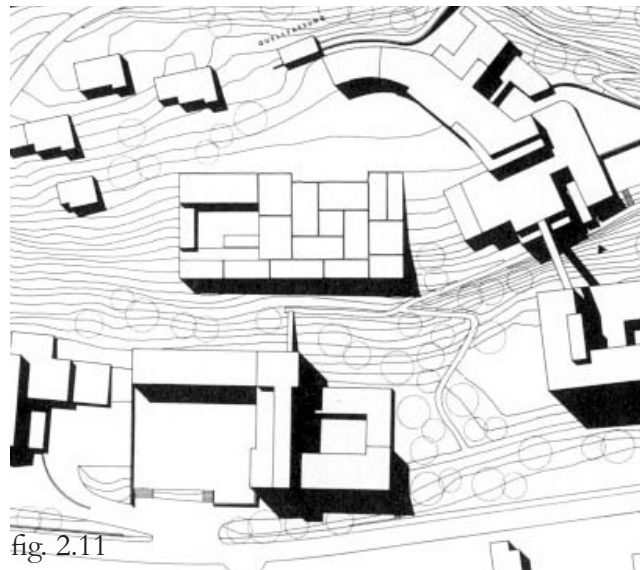


fig. 2.11 Plan of the thermal bath and hotel complex  
fig. 2.12 The roof of the complex erodes into the landscape to reveal the pool and sun bathing area  
2.13 View of the building from the road below the complex

As the user comes towards the pools, they are confronted with a vertical surface of horizontally laid stone broken in five identical places - these are the change rooms, veiled with black leather curtains (see fig. 2.15). Behind each of these curtains are bright red rooms with lockers and chairs which is why the curtains are used, creating a sense of a neutral opening in the wall rather than to reveal the complexities of what lies behind them. Stepping out on the other side of the change rooms, the user finds themselves on a platform above the indoor pool where side facilities are easily forgotten as the users' attention is focused on the glistening surface of the water below (see fig. 2.16), aided by a play of light and the slowly descending stepped ramp that every one must follow (see fig. 2.17). The ramp creates the idea of a ceremony where every user slows down to enjoy and



fig. 2.14 Movement through the building is aided by light, shadows and ceremonial platforms

fig. 2.15 Walls of stone broken by the entrances to the change rooms

fig. 2.16 Glistening water can distract users

experience the environment (Ryan, 2004:42-49).

Above the pool is a gap in the roof which allows a bright strip of natural light onto the area directing the body to the deeper portion of the bathing pool as the user passes through a labyrinth of solids and voids which houses the spring water. Around the entirety of the pool are huge stone shafts that allow sunlight to penetrate the building, above which are bright blue skylights (those mentioned in the outside terrace earlier) allowing the structure to be “washed” with the light (see fig. 2.17).

The section of this building fixes it into the landscape and allows it to become one with the landscape. The plan, however, is one that allows a myriad of possibili-

fig. 2.17 A stepped ramp into the pool directs people into it with blue skylights allowing the natural light to wash the building

fig. 2.18 Use of colour, light, shadow and nooks to intrigue the viewer to see what happens next

ties with viewers craving to discover and experience what lies behind the next bend or in the nooks created (see fig. 2.18). The use of texture, sound, light and shadow is used throughout the architecture to help the user move through the building without the use of blunt signage (see fig. 2.14).

*Conclusion:*

An architecture is created that is truly experiential and encompasses the inclusion of the user throughout the process/ceremony through the building. An architecture where the user feels important and thought of, rather than alienated, as they pass through the ritual of bathing. It is a building full of sensory richness allowing the user to feel an almost primal pleasure in wanting to use the baths.



fig. 2.14

fig. 2.15



fig. 2.16

fig. 2.17

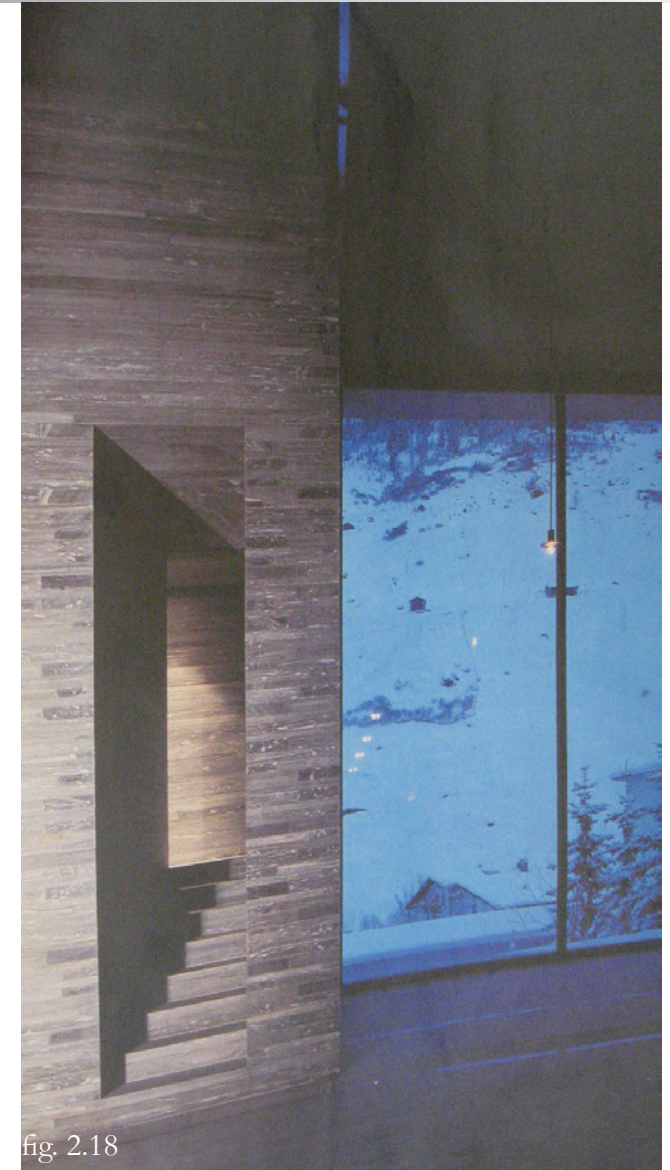


fig. 2.18

**MIT BRAIN AND COGNITIVE SCIENCES COMPLEX**  
**Charles Correa Associates with Goody Clancy**  
**Massachusetts Institute of Technology, Cambridge,**  
**Massachusetts**  
**2005**

*The history:*

In the last 10 years, the Massachusetts Institute of Technology has undergone many transformations, and not since the mid-20th century (Alvar Aalto's Baker House) has the 90 year old campus seen so much adventurous new architecture, the latest being the Brain and Cognitive Sciences Complex (BCSC). This seven storey, 412 000 square foot building is the world's largest centre for neuro science research and is considered a leader in state-of-the-art and new-age laboratory design (Levinson, 2006:138-143).

*The program:*

The design of this building specified about 50 laboratories (housing specialised equipment) as well as communal areas that would support other activities.

The building would also house two extra centres, the McGovern Institute for Brain Research and the Picower Institute for Learning and Memory, which had to have their own appearance and be noticeable within the building.

The triangular site chosen also posed some problems. To the north is a major road, Main Street, that would require the building to act as a gateway to the campus. To the south is an iconic building of the campus, a tough act to follow. The site is also bisected by an active

railway line.

*The building:*

The problems highlighted above were confronted head on by the use of formal and technical ingenuity (Levinson, 2006:138-143).

To accommodate the three departments, the site geometry was carefully manipulated with each Institute being housed in one of the three corners of the site with their own separate entrances (see fig. 2.19 and 2.20) and multi-storeyed lobby areas (see fig. 2.21).

In the centre of the three departments, and the triangle, a five storey glass roofed atrium was created to unite the departments as well as bringing daylight into the centre of the building. The atrium is also used for large social or educational gatherings, allowing interaction between

fig. 2.19 Main entrance to BCSC on the left, the central atrium and the McGovern Institute on the right

fig. 2.20 Entrance to the Picower Institute

the three departments. Other such facilitating environments include the conservatory, a double volume library (see fig. 2.22), seminar rooms and many tearooms.

To accommodate the trains on the site, the building bridges over the railway line, and the supporting piles were driven down to bedrock level to protect the laboratories from any vibrations (see fig. 2.23) (Levinson, 2006:138-143).

*The interior:*

To create interesting facades and spaces outside and inside the building, Correa uses the technique of living the walls and facades by creating large cutouts and bays - what he calls "urban windows" (see fig. 2.24 and 2.25). This allows the users of the building to interact with and see what is happening in the larger, communal areas of the building as well as avoiding the monotonous,



fig. 2.19



fig. 2.20

fig. 2.21 Plans indicating the position of each department in a corner of the site with separate entrances

fig. 2.22 The double volume library at the facility

fig. 2.23 The building bridges over the railway line

fig 2.24 - 2.25 Interior spaces of “urban windows” to break monotony and allow interaction

clinical spaces of labs.

*Conclusion:*

This building proves that facilities do not need to be designed to show the function of the building entirely; and institutional buildings do not have to be clinical, monotonous buildings. It also highlights the fact that elements of design can be utilized to overcome programmatic, functional and site problems creating environments that are pleasant and interactive in nature.

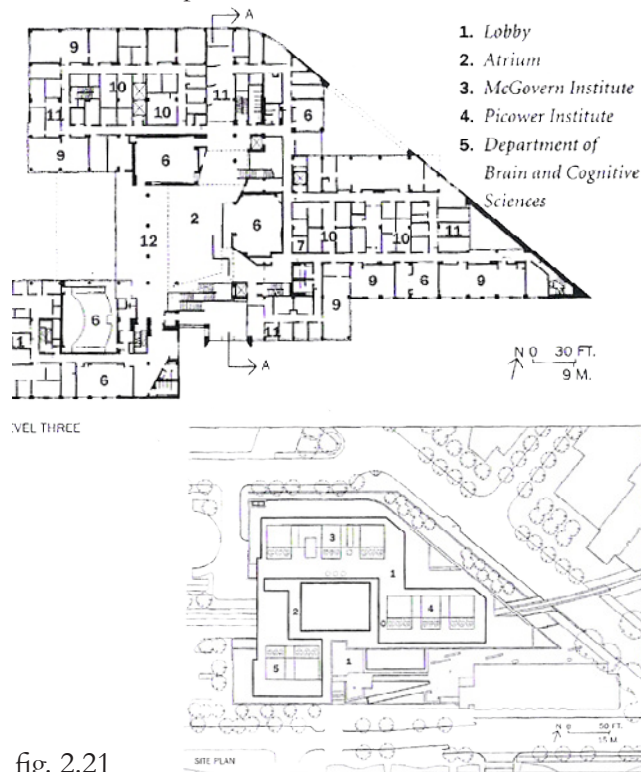


fig. 2.21



fig. 2.22



fig. 2.23



fig. 2.24

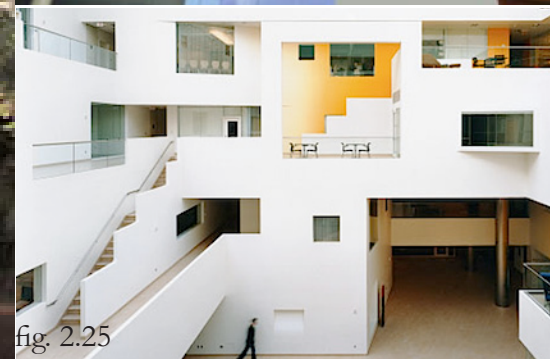


fig. 2.25

## ASSEMBLY COMPLEX

Charles Correa Associate

Bhopal, State of Madhya Pradesh, India  
2005

### *The complex:*

The Assembly Complex for the state of Madhya Pradesh is formed by an amalgamation of elements from history and culture intricately woven together in the context of India.

The building is one that has many important connotations, symbolizing both equality and self containment. It is a building that has found many echoes of Bhopal's history and combines a modern sensibility with themes and devices derived from traditional architecture in a harmonious way (Digby-Jones, 2004:50-55).

This complex, about 400 miles south of Delhi, consciously takes its form from the biggest of its assembly chambers, (the Vidhan Sabha). Viewed from any side of the complex, the building is seen as an impressive element by its light footedness and effervescence.

The building presents an extremely pleasing vision with its powerful curves and straight vertical and horizontal lines (see fig. 2.26 and 2.27). Similar buildings often fall into the trap of purely being a monumental structure, however the extreme simple lines and geometry of the complex allow for an architecture with higher value.

As a break from Modernism and Post-Modernism, Correa has developed a deep cultural understanding of

the Vedic principles of architecture from which he has created a synthesized architecture of tradition and modernity.

This idea is seen in design elements like the main entrance to the Vidhan Bhavan (see fig. 2.28). An entrance to a building is usually associated with a constant buzz of movement, however, traditionally the movement into such a place is that of a slow transition in order to contemplate the sky above. It is also a place to sit and rest whilst admiring the magnificent tribal wall paintings (Digby-Jones, 2004:50-55).

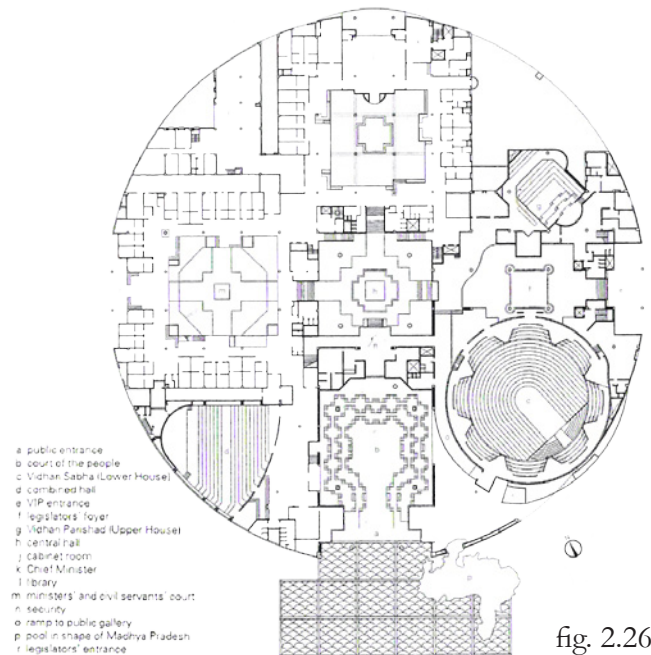


fig. 2.26

fig. 2.26 Plan of the assembly complex divided into 9 squares as is the Navgraha Mandala.

fig. 2.27 Overall view of the complex

fig. 2.28 Main entrance to the complex

fig. 2.29 Navgraha Mandala - the universe & its 9 planets

The Vidhan Bhavan is divided into nine compartments of squares (see fig. 2.26), another traditional elemental reference used in the building, that of Navgraha Mandala (Hindu pattern of 9 squares within a square describing the universe with 9 planets)(see fig. 2.29). Each square here encloses in it a pattern of gardens within gardens. The five middle squares create a hall and courtyards which form gathering points and house the offices of the complex (see fig. 2.30). The four corner squares house specialised functions, and any other non-legislative function which might be organized by the assembly.



fig. 2.27



fig. 2.28

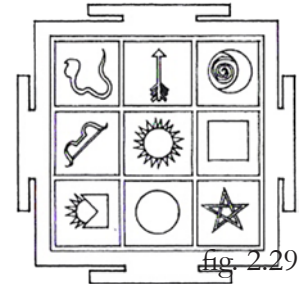


fig. 2.29



fig. 2.30 The main complex courtyard created in the middle square surrounded by offices and halls

fig. 2.31 The three entrance gates into a hallway to the complex

Access and entry to the building is through three main gates (see fig. 2.31), one is for the general public, one is for the members of the legislature and ministers and the third is for the Speaker of the House. There is also a smaller entrance for the Chief Minister and Ministers attending cabinet meetings.

Not only are there traditional symbolic elements in the building, Correa understands and applies various environmental considerations into his designs as well. For instance, in the hot climate of India, it is best for users to be outdoors in the early morning and at night, therefore creating spaces outdoors that can be used for activities at these times of the day (see fig. 2.30). He understands the variations of light and ambient air as one steps from a closed room to a verandah and then to an open courtyard, and his design of the assembly shows this as he creates transitional spaces from the inside to the outside (Digby-Jones, 2004:50-55).

*Conclusion:*

Correa understands and applies various environmental considerations into his designs and uses these to highlight any symbolic meanings that the building may address at the same time. He shows how plays on space can have both an environmental as well as a symbolic meaning for the users of a building.

From the above explanation of the complex it is clear to see how architecture can interpret the many levels on which a human being goes through and interprets life as spaces related to such a life. In a similar way,

architecture should be able to express and address the various levels of healing, growth and needs of the patients in the facility designed.



fig. 2.31



fig. 2.30

**FLEX PHYSICAL THERAPY AND FITNESS CENTRE**  
**Pierluigi Serraino**  
**Oakland, California**  
**2006**

*The history:*

Physical rehabilitation can be a long and arduous process with invigorating and life enhancing end results. Serraino was able to create a functional yet graceful space using vibrant aesthetics in order to highlight the enthusiasm in the building to reach such life enhancing results (Weathersby, 2006:188-193).

*The building:*

The variety of planar geometry and juxtaposition of bright colours envelope this compacted facility to create an ambience that pushes the patients to reach their recovery goals. The main goal of the centre is to “insert joy in the path towards recovery from ailment” and indeed with the elements mentioned above, this goal is clearly seen through the architecture and interior spaces.

Although Serraino had never designed a physical rehab centre before, the architect claimed that the program and the mechanical requirements alone were intriguing elements that he tried to highlight in the design of creating a modern landscape within confined spaces that went beyond these enclosed spaces. The forms and materials used through the design create a visual relationship with each other and the user, and show clearly how they are constructed.

The intention of the design was to create easily under-

standable spaces that users could move through with the aid of visual elements and colour to guide them while creating a procession through the building (and through metaphor, one through the healing process).

Once the users pass through the entrance hall and reception area, they enter an exercise room and massage area (called the land therapy room) that can be used for both group therapy and exercise sessions as well as be closed off for individual treatments (see fig. 2.32). The equipment in this room is not hidden away in a cupboard as you would normally expect, instead the spaces have been designed to highlight the equipment and their mechanical properties (Weathersby, 2006:188-193).

fig. 2.32 The ‘land therapy’ room

fig. 2.33 Change rooms

fig. 2.34-2.35 The above ground therapy pool

From here, the next room has an above ground therapy pool (see fig. 2.34 and 2.35). The pool had to be above ground as the facility is in a leased space, however the idea was welcomed to create interior elevations (almost a mini-architecture) within the confines of the room. In the same way that the exercise equipment was highlighted through the design, the mechanics of the building itself (plumbing etc.) were also used as design elements, exposing the true nature of the building and the spaces.

Colour has clearly been used as a space and plane dividing element throughout this design, however on a second level it also creates theatrical backdrops against which the play of mending the body and spirit is celebrated.



fig. 2.32



fig. 2.34



fig. 2.33



fig. 2.35

- fig. 2.36 The exterior of the building, linked to the outdoors  
 fig. 2.37 As you enter the facility, you pass across a bridge over a waterfall  
 fig. 2.38 The special lower design of elements

**THE WHITE TOP CENTRE**  
**Nicoll Russell Studios**  
**Dundee, South Africa**  
**1994**

*The history:*

The White Top Foundation was established in the 1960s to provide care for persons with physical disabilities. About 10 years ago, a gap in the provision of care for such individuals that were older than 18 was seen, and therefore the foundation commissioned a design competition for such a facility in the Dundee area.

*The building:*

The concept for the new facility was to provide day care, as well as associated medical and therapeutic care, for patients with severe physical disabilities. To enable the patients and users of the facility to experience various environmental activities, the building has been integrated into the surrounding landscape as well as bringing landscape elements into the building (see fig. 2.36). For example, as you enter the facility you pass across a bridge that moves over a waterfall (see fig. 2.37), many planters are found within the facility and at the centre of the building is a courtyard garden.

The concept of the architect was to constantly question the idea and the preconceptions that every one has of “what is normal and appropriate?”. Therefore, from day one certain qualities and functional requirements had to be set out to be able to provide the environment that was desired by the client. It was highlighted that the design should have a sense of place, be a warm,

welcoming and reassuring environment. It was also stated that the building should contain a rich mixture of stimulating and therapeutic experiences throughout.

There needed to be a clearly understandable architecture, ordered by form and having key elements and features to allow orientation and a familiar environment for patients and visitors to read. There needed to be a protective quality to the building, however room needed to be given for some individual growth and movement to aid the healing process. The most important idea that needed to be followed through in the design was the fact that the building should not in any way have an institutional feel and it should rather create a “pleasant, relaxed, light, airy, natural setting with a scale appropriate to the low viewpoint of many of it’s users” (Hunter, 1994:29-36).

Another important element for the centre, as well as the architect, was to create a sensitive integration between the users/patients and the community. Being close to a street, the site allowed this, however a problem came in to create enough private space for the users.

To promote awareness of the centre to the general public and promote activity, a public pedestrian path was created linking the street to a student accommodation alongside (Hunter, 1994:29-36).

*Conclusion:*

Overall, it is believed that this project is a success and the design of such facilities in the future should follow the ideas and beliefs of this centre as a cornerstone to the design of therapeutic and caring institutional buildings.



fig. 2.36



fig. 2.37



fig. 2.38

**LANZERAC HOTEL AND SPA**  
**Christo Wiese**  
**Stellenbosch, Western cape**  
**2005 (renovation)**

*The philosophy:*

‘Wellness’ has become a way of life and at the Lanzerac Spa, the facility prides itself on being able to create an unforgettable experience and not just another day at a spa. Attention is paid to all aspects of personal well-being in a holistic manner with a belief in one-on-one therapeutic procedures, interaction and client care.

*The services provided:*

- 8 Therapy rooms
- Fully equipped personal fitness studio
- Juice Bar
- Ladies & Mens Saunas & steam rooms
- Indoor Heated Swimming Pool
- Heated Indoor Jacuzzi
- Various body therapies and treatments
- Hydrotherapy
- Rejuvenating Skin Care Clinic

*The history:*

Lanzerac is listed amongst the most prestigious luxury hotels in the world and extends a warm local and international welcome to long and short term guests, inviting them to experience the finest hospitality and heritage the Cape has to offer while in a therapeutic setting. The building itself is one of the region’s most distinguished examples of Cape Dutch architecture found on a 300-year old estate. The facility houses many variations in accommodation with all rooms having access and views to the vineyards, mountains and gardens.

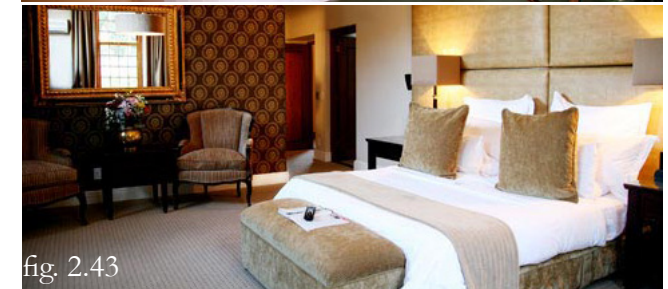
*The interiors:*

The overall internal feeling (and access to the outdoors) of the hotel and spa creates an incredible therapeutic environment in which a person feels rejuvenated just by being there. The rooms and facilities provided for at the spa are very similar in nature to those required for physical rehabilitation at the wellness centre. Therefore, some key aspects in the design of spaces can be taken from such an environment:

- Continuous use of natural light and shadow to orientate people and create a relaxing ambiance (see fig. 2.39).
- Use of ambient lighting at night (see fig. 2.40).
- Access and views to outdoor spaces. (see fig. 2.41)
- Use of fresh rejuvenating colours to minimise the clinical feel of treatment rooms and help with the therapeutic process (see fig. 2.42).
- Background noise or music to emphasise the relaxing ambiance of the facility.
- Creation of home-like accommodation facilities (see fig. 2.43).



fig. 2.39 Use of natural light and shadows  
 fig. 2.40 Use of ambient lighting at night  
 fig. 2.41 Access and views of outdoor spaces  
 fig. 2.42 Use of fresh rejuvenating colours  
 fig. 2.43 Creation of home-like environments



# CONCLUSION

A therapeutic environment is not something that can be created by simply aiming to achieve a set goal. It is a process through which the environment, peoples' mind sets, peoples' wellbeing and facility goals and structure come together to form an environment that meets the requirements and desires of the users.

Such an environment needs to consider and accommodate the healing process of the users, it needs to allow these multiple layers to exist and interact with each other to form environments that contain healing qualities and remove any qualities or elements that may hinder the healing process of an individual. Such an environment should be accessible to all individuals, to be able to experience the total environment with all the human senses, with the body of the users and the building that shelters them the central core from which all healing comes from. Recovery is not a result, it is a process through layers of human healing and growth.

From the textual and precedent studies, one can conclude that the more the built environment elicits multi-sensory responses and interaction with embodied human beings, the more likely it constitutes an environment that enhances well-being.

# CHAPTER

# 3



*The art of healing comes from nature, not from the physician.  
Therefore the physician must start from nature, with an open  
mind.*

(Illich, 1976)

# INTRODUCTION

The process of healing and growth in a patient can be affected by the environment they find themselves in. People have a pre-conceived idea as to what such an environment is like, and a part of changing this preconception is to create a new building typology which can house the healing process.

An environment that facilitates the healing process has many functions and roles that it needs to fulfill. It should be an environment that does not in any way hinder the healing process (see Chapter 2), it must be a safe place and haven for the patients, it must facilitate the healing and growth processes of patients, it must aid in supporting and strengthening patients through their various levels of recovery and it must also fulfill certain functional requirements.

A change from the idea of a sub-acute facility to a *Centre for Healing* is required, however, the *Centre for Healing* still needs to provide the functional requirements of a sub-acute facility in order to provide the necessary medical care.

The idea and use of sub-acute facilities is a relatively new concept adopted in the health care industry world wide and is an even younger idea in South Africa. This chapter will introduce the reader firstly to a short history surrounding sub-acute facilities and then into what exactly a sub-acute facility is and what it should provide to the public as well as the statutory requirements regarding such facilities. Information and theories will be explored that highlight the relevance of such facilities

in general as well as the direct relevance to South Africa in 2010.

## A BRIEF HISTORY OF SUB-ACUTE FACILITIES

As mentioned before, the idea and use of sub-acute facilities from the care of hospitals is a fairly new concept in South Africa as well as in the rest of the world, with popularity growing greater and greater each year with the increase in benefits this type of facility provides.

Sub-acute facilities first became popular in the United States of America in the 1960s as a plea to relieve bed space demands in hospitals. Only in 1994 did American health care plans start to pay for sub-acute care of geriatric patients, and in 1995 they extended this to all non-geriatric patients. In 1996, access into sub-acute facilities was made easier, where patients no longer required a *certificate of need* to be admitted into such facilities.

In 1997, Clayton Christenson coined the phrase “disruptive innovation” to describe innovations that interrupt a commonly accepted idea which, as an outcome, produces an improved product or service. In 2001, the idea of releasing patients from the hospital into sub-acute facilities is explored where patients can receive continued specialised care. In 2002, an increased demand for sub-acute beds was experienced and in 2009, Clayton Christenson along with two doctors applied the idea of “disruptive innovation” to the health care industry describing the sub-acute facility as such an interruption.

## WHAT IS A SUB-ACUTE FACILITY?

According to a definition set out by the South African DoH, a sub-acute facility is a licensed facility with the relevant Provincial DoH in terms of Regulation 158 of the National Health Act which operates 24/7 in accordance with the relevant Certificate of Registration also issued by the Provincial DoH. After meeting a minimum set of criteria and standards, a Practice Number is awarded to the sub-acute facility by the Board of Healthcare Funders of Southern Africa (BHF).

There are four variations of sub-acute facilities that are recognized by the DoH and the BHF, and these should be differentiated from frail care units in old age homes. These four types are:

- General sub-acute facility
- Post-natal sub-acute facility
- Rehabilitation sub-acute facility
- Psychiatric sub-acute facility

Such a facility provides inpatient care (whether it be paediatric or adult care) following, or forming the latter part of a hospital stay/episode in which the patient has already been investigated, diagnosed and is in a stable condition. A treatment plan would have been set out by the hospital or physician which requires ongoing specialised nursing and rehabilitative care at a lower cost and for a period of no more than 90 days.

Such facilities are more commonly known as ‘step-down’ facilities due to the fact that they act as a facility that the hospital can ‘pass down’ the patients into. The

# WHAT IS A SUB-ACUTE FACILITY?

registered term is however ‘sub-acute’ as it is a facility that can also treat patients that are currently being treated at the high cost of an acute facility (hospital). As mentioned before, this dissertation will refer to the facility as a ‘*Centre for Healing*’ as a new building typology.

The patients found within such a facility would normally not have been released from hospital, however due to the fact that the facility has specialised and controlled nursing and rehabilitative services, they are able to be released into the care of the physicians and staff of the sub-acute facility. In the hierarchy of health care in South Africa, sub-acute facilities find themselves between the general hospital ward and the home-based care environment (see fig. 3.1)

Common practice for such facilities in South Africa has been to specialize a portion of the hospital for rehabilitative and sub-acute care. However, through the precedent studies it will become clear that these environments are often still too hospital-like and have the ability to impede recovery in patients. Another common practice is that of old age homes and retirement villages applying for sub-acute licenses within their frail care units. On closer inspection, it has been noticed that

such units still only provide frail care and not sub-acute care to patients. Frail care is simply the ‘care-giving’ and nurturing of older individuals, care that does not necessarily need to be given by nurses. Sub-acute care requires the specialised care of nurses, rehabilitation staff and check ups by doctors on a daily basis. This situation is clearly not ideal as the patients do not receive the correct after care that they require at the frail care facility. According to Riaan van der Watt, it is believed that frail care units apply for the license and the name of a sub-acute facility because medical aids do not pay for frail care stays, however, they do pay for sub-acute stays (van der Watt, 2010). It is believed that the facility is able to allow patients to claim from medical aids on the terms of sub-acute care, while still getting the frail care treatment that they desire.

Clearly, the two scenarios mentioned above as to where a sub-acute facility is housed are not ideal. This dissertation proposes that such facilities be provided off site, however they should still be linked to the care and doctors of a particular hospital. The facility should however be relatively close to the hospital that it is linked to so that patients in uncomfortable conditions do not have to travel far, and so that the doctors who will make their rounds at the facility will not have to travel too much further after being at the hospital.

Some of the rehabilitative services that are commonly provided for at such a facility are:

- Specialised 24 hour nursing care
- Physiotherapy

- Biokineticist
- Occupational therapy
- Speech therapy
- Psychology
- Social worker services
- Gymnasium for physical rehabilitative services

It should be noted that sub-acute care does not relate to the care of individuals undergoing rehabilitative care for substance abuse. Such patients would normally find themselves in a specialised rehabilitation unit for a specific addiction.

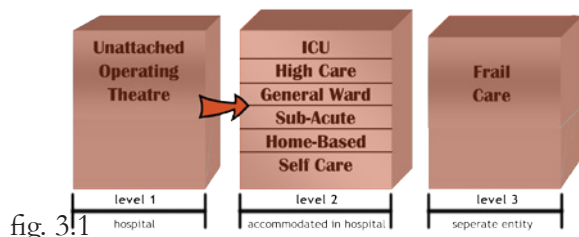


fig. 3.1



# CURRENT & LOCAL RELEVANCE

## NORMATIVE POSITION

Economic changes or influences within any country affect what type of buildings are required. Clayton Christenson talks of a “disruptive innovation” that occurs within various economic fields in the world that forces a shift in the way we think and what we need in today’s society. To be able to achieve new types of architecture to address these changes and needs, we need to assess the influencing patterns that the city currently has that will dictate where and how such a change can occur (Duncan & Wunker, 2009:26-28).

The relevance of sub-acute facilities will firstly relate internationally to the theory of “disruptive innovation” as a world wide phenomenon. After that, the relevance of such a facility in South Africa in 2010 will be addressed and finally the relevance of creating a new building typology for such a facility, that which is different to the current mind set, that of a ‘design that cares’ will be examined.

## INTERNATIONAL RELEVANCE OF SUB-ACUTE FACILITIES - “DISRUPTIVE INNOVATION”

“Disruptive technology” or “disruptive innovation” is a phrase coined by Harvard professor Clayton Christensen in 1997 in his book *“The Innovator’s Dilemma: When New Technologies Cause Great Firms to Fail”*. The phrase refers to a theory that was, and is still, used to describe the impact of new technologies on a variety of fields, explaining how established industry leaders are continuously on a path of sustainable innovations and leave themselves open for disruptive technologies to

bury them. These companies are so fixed on receiving the high profit margins of their current established techniques that they do not see, or do not want to see, that a new technology is emerging, that may not at first yield a high profit because it is new, but that will eventually bury the existing concept. For example, telephones took over telegraphy, plastic is taking over items like metal, wood and glass, light-emitting diodes are taking over ordinary light bulbs, and so forth (Duncan & Wunker, 2009:26-28).

None of the leading companies in these industries saw the shift coming, however the vision that such innovations are out there, that can improve a product or service in ways that the market does not expect, typically by being lower priced or designed for a different set of consumers. The author calls for people to acknowledge these possible shifts.

In 2006, Christenson (along with Jason Hwang (MD) and Jerome Grossman (MD)) applied this theory to the run away health care industry in their book *“Innovator’s Prescription: A Disruptive Solution for Health Care”*. There is a problem with the high cost and inaccessibility of health care, and we need to create a ‘disruption’ within this system to provide services and products that are affordable and easily accessible to all. Christenson’s reason for health care being so expensive and inaccessible is that it has “not yet been disrupted”.

The authors refer to sub-acute facilities in their argument to make the health care industry more affordable

and accessible to individuals and at the end of the day will also yield a higher quality of care. At the moment, medical aids are refusing to pay the exceptionally high rates that hospitals charge after a certain amount of days after a patient’s operation. This is usually to the detriment of the patient as he/she may not be ready to move out of the care of nurses and doctors just yet, but cannot afford to stay on their own account. Medical aid companies are in the process of negotiating with the hospital groups in South Africa for them to create ‘sub-acute’ facilities where patients can go after their original recovery in hospital and where they will still be given the care by nurses and check ups by doctors they require, however at about a 40% lower cost to the medical aid companies and patients. Christenson believes, if we have a precise diagnosis and rules based therapy, this can be possible in the hands of nurses on a day to day basis rather than the very expensive care of doctors.

Christenson also argues that if such facilities exist, the staff there would be more specialised in their type of care giving and therefore would produce better results at the end of the day.

## Conclusion:

Are sub-acute facilities a viable option in South Africa? Should designers be creating architecture for such specific purposes? With all the above information, it is believed that it is viable to create such facilities as it is a relevant issue that the country is facing at the moment, and if someone does not start designing for the ‘disruptive innovation’ in the health care industry, that has been

predicted, it will be too late to quickly throw such a facility together (Stevens-Huffman, 2007:77-78)

*We will not (reduce costs) and improve access to private healthcare by reducing doctors' consulting fees or regulating private hospital tariffs; what we need is a different delivery mechanism)*

(Neville Koopowitz, 2009)

Discovery Health

#### **LOCAL RELEVANCE OF SUB-ACUTE FACILITIES "THE POTENTIAL ROLE OF SUB-ACUTE HOSPITALS AND PUBLIC-PRIVATE PARTNERSHIPS IN THE SOUTH AFRICAN PRIVATE HEALTH SECTOR"**

In a study done by the Council for Medical Schemes it was concluded that the increased cost of private hospital stays in South Africa was the key contributor to medical scheme cost increases (Fourie & Peller, 2008:2-6). Private hospitals in South Africa were found to run against international utilisation patterns due to the following reason: there is a higher ratio of beds to the number of people in the population that are insured; competition between hospitals to attract specialised doctors; market concentration in the private hospital sector; and an increased demand for a higher technological diagnosis and treatment for patients.

The study the Council for Medical Schemes carried out was to investigate the potential role of sub-acute facilities and public-private partnerships in the South African health care sector and to compare this to the escalating high costs of private hospital stays.

In total, there are 41 registered sub-acute facilities in

South Africa with a total number of 838 beds. Most of these facilities that have less than 12 beds are linked to frail care facilities, which effectively reduces the number of 'true' sub-acute beds to about 762 (Fourie Preller 2008:4) due to the fact that such facilities provide more frail care beds rather than true sub-acute beds.

In Gauteng alone, there are 13 237 acute beds and only 442 sub-acute beds. Acute beds cost on average R1003.80 - R1750.00 per day, whereas a sub-acute bed costs about R752.20 - R833.30 per day. This shows the difference in cost of the expensive hospital bed per day versus the cheaper sub-acute bed per day.

There are various problems and challenges that face the incorporation of sub-acute facilities in South Africa:

- The absence of a South African footprint and network of sub-acute facilities to follow.
- Lack of interest in buying into and negotiating the concept by private hospital groups.
- Lack of managerial skills for such a facility.
- Lack of clarity as to where the line should be drawn between sub-acute and frail care units.
- The high capital margins required for set up versus the low margins of profit.

From the above information, it is obvious that medical schemes and patients can save large amounts of money if sub-acute facilities are adopted in the health care industry. It is also obvious that the placement of sub-acute facilities needs to be considered. Gauteng has a 30:1 ratio of acute : sub-acute beds while a province like

the Northern Cape doesn't even have sub-acute beds.

It was the conclusion of the Council for Medical Schemes (and for this dissertation) to recommend that a National Network of sub-acute facilities be developed as soon as possible as a cost effective alternative to long term hospital stays. (Fourie & Peller, 2008:2-6)

# A NEW TYPOLOGY - DESIGN THAT CARES

## A NEW TYPOLOGY - DESIGN THAT CARES

In their book *'Design that cares: Planning Health Facilities for Patients and Visitors'*, Janet Carpman and Myron Grant wanted to create a tool for planning medical settings that would assist and support the healing of patients rather than simply contain the therapeutic process. The book focuses on the consumer and the use of informed support and design, which makes it more relevant today than it was when it was first written in 1951 (Carpman Grant, 1993:1). Competition in the health sector is a detrimental factor to the planning of health care facilities in the sense that highly efficient designs need to be created. However, designers need to look at the quality of design; that of an environment for a better informed, choice-conscious & newly empowered consumer/user.

Health care facilities and the patients that they house have a long and varied relationship. The early European hospitals created environments to accommodate dying rather than those for healing. With a modern age and new way of thinking in the 20th century, came the image of grand hospitals, those of clean, sterile and well-designed spaces which served as a community space for healing. Hereafter came the illusion of health care facilities as elaborate facilities where diagnosis and therapy on a large scale could occur. Through all of these perceptions of what a health care facility is, the user/patients has simply been an object rather than the core for the design of these facilities. Carpman and Grant hope to alter this perception and they call for designers to consider the patients, staff and visitors as

key aspects of the design.

The two emphasize that the idea of considering the patient is important, however, how do designers translate this into the practical applications of design? They state that it is easy for one to expose the importance of sensitivity to the users, but it is quite a different task to come up with practical solutions as to how to achieve this (Carpman Grant, 1993:1-3). They therefore proposed to take the design process of a facility that they were busy with and apply the patients needs and perspectives into the design process as another layer.

The book is separated into three parts. The first part deals with the research into what the current trends are in health care facility design and how these affect the users. The second part of the book focuses on the role that facility design can have on the healing process. The third part of the book focuses on user participation in the design process to allow a final product that addresses the needs of the users.

### “PART 1”

There is a need in the design of health care facilities to create a humanistic, information based design. If designers do not explore the current trends, and highlight the problems that occur within these current trends, they cannot expect to solve the problems and create an architecture that is accessible, comfortable and legible to all. Through this exercise, designers can examine where we have been in terms of design, where we are now, and from that draw conclusions about where we are headed.

It is therefore an important aspect of this dissertation to examine similar health care facilities in South Africa, and abroad, to see what the current trends and problems are with such facilities to be able to draw on what could be improved upon.

Carpman and Grant highlight a few key aspects that could be considered to improve on the design of such facilities:

- “New-age” health care where competition is vital and various facilities need to compete on various levels could create an interesting typology.
- Designs that show a component of high quality care through satisfying demands of new medical technology, flexible spaces and provide for a full range of activities, not just hospital activities and treatments.
- Focus on the design for patients and visitors, not just staff efficiency in terms of way finding, physical comfort, social contact and designing with symbolic meanings in mind.
- Include all user groups in the design process, decision making and design review stages.

*Research is a tool that lets hospitals and other health care organizations know what consumers think and desire*  
(Carpman & Grant, 1993:18)

### “PART 2”

The journey from home to the facility can be complex and unfamiliar for patients and visitors. This includes travelling to the facility, finding parking, locating the

entrance and moving through the building to a destination. As mentioned before (Chapter 2, Theory 3), if a patient feels disoriented, it can hinder the healing process, it is therefore important that we examine the transition through spaces as a patient would move through the building. It is important in design to consider spaces not in isolation but rather as a series of events that the users will eventually read as a journey through the facility (Carpman & Grant, 1993).

To facilitate this journey through the building from arrival to departure, specific elements have been highlighted that can be focused on in the design process to help patients, staff and visitors with orientating themselves within the facility:

- The facility should be clearly identifiable from the outside as well as convey an identity.
- Clearly identified entrances and wayfinding elements (see fig. 3.2) (natural, signage or architectural elements).
- Dedicated, identifiable spaces and a sense of arrival should be created for all users and various transport means.
- Drop-off area with easy & clear access to parking area.
- Easy access for all people, and seating provided at the entrance to allow spaces for people waiting for a lift etc. (see fig. 3.4)
- Clear introduction as you enter the building to the interior wayfinding system.
- Provide ample space & seating in the waiting area to accommodate disorientated or confused people.

- Clearly identify information/reception (see fig. 3.5).
- Admissions to be clearly identifiable and accessible with ample privacy provided.
- Visitor information centre - This should be close to the entrance so that less people need to move through the more private areas of the hospital where patients are housed.
- Provide a wayfinding map for visitors, supported by signage and architectural elements.
- Number floors, wards and rooms in a logical order that anyone can easily understand.
- Use familiar terms, symbols and pictographs to identify and explain.
- Allow features like corridors, windows, stairs, doors, light and shadow, textures, colour and placement of furniture to highlight where one should be moving without having to read signs.
- Avoid long, bland corridors, and where necessary, try to break the monotony with architectural elements.
- Use of carpet in corridors can be a way to soften the harsh clinical environment.
- Lighting to be used to create a specific ambiance as well as a way-finding technique. Do not over light a corridor, shine light into patients eyes, create a tunnel effect with light. Do use light to highlight important spaces and signage.
- Provide handrails and seating with easy access to vertical circulation points.
- Create private spaces along corridors for patients left on a bed (see fig. 3.6)
- Allow for places of patient and family education,

and places for children to play.

- Allow access to the outside world for patients; physical access, telephones, internet access, clocks indicating time, also bring the outdoors inside.
- Refreshment and rest room facilities for patients, visitors and staff are important to consider.
- Treatment areas are often high stress areas and should cater for any special needs of patients, have private dressing rooms, privacy in treatment rooms and between rooms. Try minimise noises and bright lights. Use background therapeutic music, provide comfort for patients, provide distractions and allow for a family member or companion to accompany the patient.
- When it comes to the patient's room, the following should be considered; size, number of occupants in one room, accommodation for privacy as well as interaction when desired (sound and visual), views to the outside, accommodation of visitors, allowance for a personal touch (see fig. 3.7), colour, natural and un-natural lighting, bathrooms and toilets, comfort of the environment.
- Provide for special needs of injured or physically impaired patients, visitors and staff members by highlighting spatial experiences for all the senses.
- Provide for special rooms with special purposes, for example, grieving rooms, emergencies, inpatient lounges, patient and visitor library, food services, chapel, overnight accommodation of family members, child care, hair care.

**“PART 3”**

Going beyond the general guidelines of health care facilities, Carpman and Grant highlight the need for user participation in the design process and evaluation of a facility (see fig. 3.3). The patients, visitors and staff are the individuals who use the facility on a daily basis, and it is therefore imperative to include them and their ideas in the design of such facilities. If the needs of these users are not met, the architecture could be a disaster at the end of the day.

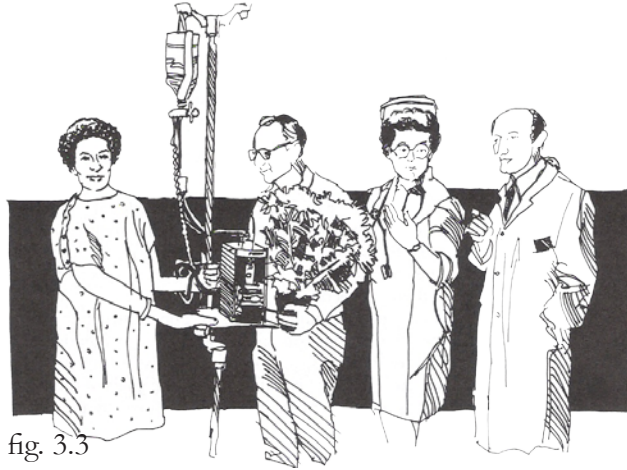


fig. 3.3

- fig. 3.2 Create an easily accessible way finding technique
- fig. 3.3 The user groups: patients, visitors, nurses (staff) and doctors
- fig. 3.4 Seating provided at an easily identified entrance
- fig. 3.5 Clearly identifiable information/ reception

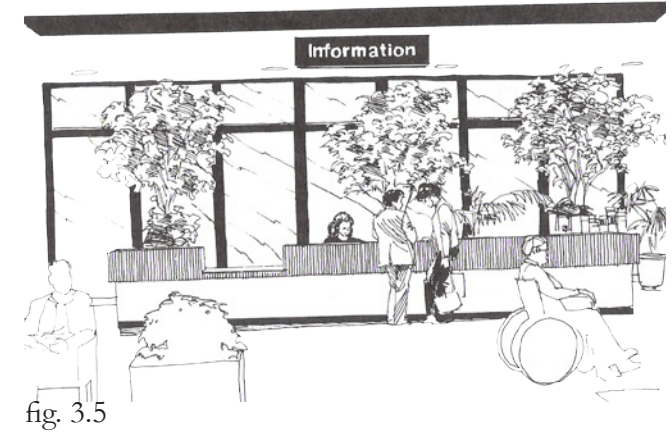


fig. 3.5

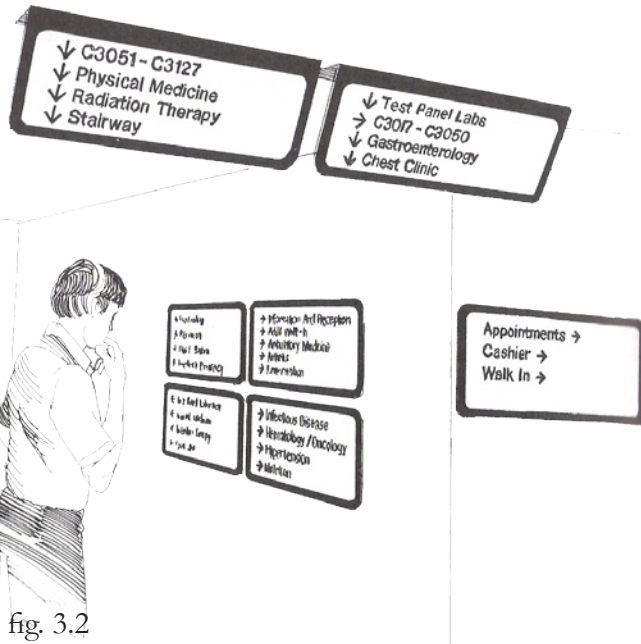


fig. 3.2



fig. 3.4

fig. 3.6 Create private space along corridors for patients on beds  
fig. 3.7 Allow room for the patients' personal touch in their room

# STATUTORY REQUIREMENTS

When it comes to designing a building that facilitates the healing process and houses individuals with post-operative ailments, there are more regulations and statutory requirements that need to be met than the building regulations of South Africa (SABS 0400). It is therefore important to know what these are before the design of the building can be finalized.

## NATIONAL DoH

On a national level, the DoH has specific definitions for what a health care facility of this type should offer. The National Health Facility Definition allows one to identify what type of facility and license will need to be applied for. In the dissertation, the following fully describes the centre for healing that will be designed: *An unsubsidised rehabilitation unit as provided by a joint venture, which provides specialised services for inpatient sub-acute care* (National Department of Health, 2006).

## GAUTENG DoH

As mentioned before, the Provincial DoH is responsible, in terms of Regulation 158 of the National Health Act, to award the relevant Certificate of Registration for the facility specifying its number of beds awarded. Based on the Certificate that has been awarded, plans need to be submitted to this department within one year for approval. This is required before building commences and it is also the responsibility of the Provincial DoH to check that these plans have been followed through to the built form (National Department of Health, 2006).

Provincial DoH which need to be followed in order for the plans to be approved by the department. This is quite an in depth document and states items such as specific rooms that are required, minimum room sizes, patient to staff ratios, patient to ablution facility ratios, engineering services to be provided, infection control, security, patients' rights, and so forth.

## SANS 10400 PART 5

This section from the South African National Standards (SANS) is of high importance in any building that is designed. This section is the one that deals with accessibility and ease of use of buildings for disabled people. It sets out many minimum standards that need to be complied with in regards to the design for disabled people, however, these minimum requirements are usually still quite unfriendly and the items in this section of SANS should be carefully critiqued to be able to create an environment that will, for the majority of the time, house people with physical ailments and difficulties (SABS, 1990)



fig. 3.6

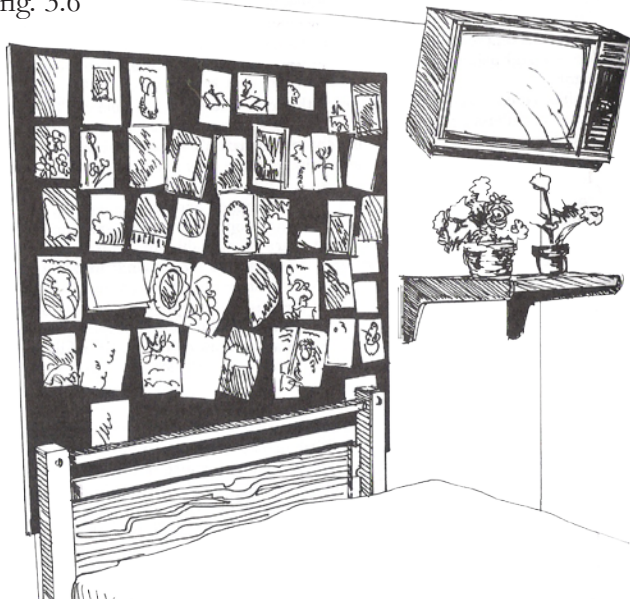


fig. 3.7

There are specific standards and criteria set out by each

# ACCOMMODATION SCHEDULE

## ACCOMMODATION SCHEDULE

With all the above information and functional precedents considered, the table alongside has been compiled to consider the accommodation of individual spaces required within the Centre for Healing. Sizes are a rough indication of minimum sizes required by the R158.

In this thesis however, the use of minimum sizes for design are seen as one of the problems that creates clinical, undesirable environments that are currently produced. These sizes are therefore to be considered as the bare minimum and not the desired amounts.

## NUMBER OF BEDS

To be able to evaluate the number of beds that may or may not be approved by the DoH, there are two methods of calculation that can be considered. The first is to consider the average sized facilities within a specific country of area. In South Africa, the average sub-acute facility houses 20 beds (20 patients at any given time), while a more developed country like the United States of America (USA) and Australia have facilities that average up to 106 beds. This is quite a difference in facility size and accommodation of patients, and as discussed previously, the latter situation is more ideal to achieve the desired results and price cuts for such a facility. Therefore, a facility averaging around about 100 beds is the desired amount.

Another way to consider the amount of beds required (and what may be approved) is to compare the ratio of hospital beds to that of the sub-acute beds in two

facilities which are linked to one another. Hospital:sub-acute beds in Pretoria have a ratio of 1:0.3, whereas a country like USA has a ratio of 1:1.8. As is clear, the South African ratio is extremely low yet again, with the USA ratio being more desirable.

Louis Pasteur Private Hospital has 240 beds. If the above mentioned desired ratio of 1:1.8 is used, the amount of beds required in the sub-acute facility that links to this hospital would be 432. As mentioned before, the South African standard for such a facility only has 20 beds, therefore this number would be too large a leap in the standards and understanding within South Africa at the moment. Due to this, the facility will rather follow the before mentioned number of  $\pm 100$  beds. As Louis Pasteur Private Hospital has 240 beds, a reasonable number to consider would be 50% of the beds at the hospital, which would result in a 120 bed facility to accommodate the post-operative needs and care of patients from this particular hospital. This dissertation will focus on the design of a first phase for the *Centre for Healing* where a new main building (housing the first  $\pm 50$  beds, the administration department and the gymnasium) will be developed that can later be extended into a site or building alongside the facility.

The site chosen for the dissertation will therefore need to accommodate the first phase of development as well as have the potential to facilitate the desired future development of a 120 bed facility.

See figure 3.8 and Chapter 6.

fig. 3.8

ACCOMMODATION SCHEDULE for a 120 bed sub-acute facility			
Site Area = 1143m <sup>2</sup> (for 50-60 beds)			
AREA IN BUILDING	ROOM TYPE	AMOUNT REQUIRED	MINIMUM AREA (m <sup>2</sup> )
WARD UNITS ( $\pm 6$ )	wards + ablutions	60 - 120	10m <sup>2</sup> /ward
	unit manager offices	1/unit = 6	10m <sup>2</sup> /each
	ward kitchen	1/unit = 6	4m <sup>2</sup> /each
	treatment room	1/unit = 6	10m <sup>2</sup> /each
	clean linen	1/unit = 6	4m <sup>2</sup> /each
	sluice, hmc, dirty linen	1/unit = 6	9m <sup>2</sup> /each
	equipment store	1/unit = 6	5m <sup>2</sup> /each
	staff toilet	1/unit = 6	2m <sup>2</sup> /each
	staff rest	1/unit = 6	10m <sup>2</sup> /each
	nurses station	1/unit = 6	10m <sup>2</sup> /each
	sterile store	1/unit = 6	5m <sup>2</sup> /each
	store room	1/unit = 6	4m <sup>2</sup> /each
CONSULT ROOMS	offices	7	10m <sup>2</sup> /each
	dietry testing, exercise testing, blood room, quiet room	4	5m <sup>2</sup> /each
ADMINISTRATION	offices	4	10m <sup>2</sup> /each
	training facilities	1	25m <sup>2</sup> /each
	boardroom	1	25m <sup>2</sup> /each

te facility, 12-36 beds in each unit, therefore ±6 units required

AMOUNT (EACH)	TOTAL AREA REQUIRED	PRIVACY FACTOR	AMBIENCE REQUIRED
1	600-1200m <sup>2</sup> average - 900m <sup>2</sup>	private	homelike, relaxed, personalised
1	60m <sup>2</sup>	semi-public	typical office, meeting spaces, inviting
1	24m <sup>2</sup>	semi-private	
1	60m <sup>2</sup>	private	
1	24m <sup>2</sup>	semi-private	
1	54m <sup>2</sup>	semi-private	
1	30m <sup>2</sup>	private	
1	12m <sup>2</sup>	private	
1	60m <sup>2</sup>	semi-private	
1	60m <sup>2</sup>	public	
1	30m <sup>2</sup>	private	
1	24m <sup>2</sup>	private	
1	70m <sup>2</sup>	semi-private	therapeutic treatment spaces, relaxed
1	20m <sup>2</sup>	private	
1	40m <sup>2</sup>	semi-public	typical office, administration offices
1	25m <sup>2</sup>	semi-public	
1	25m <sup>2</sup>	private	

**ACCOMMODATION SCHEDULE** for a 120 bed sub-acute facility, 12-36 beds in each unit, therefore ±6 units required

Site Area = 1143m<sup>2</sup> (for 50-60 beds)

AREA IN BUILDING	ROOM TYPE	AMOUNT REQUIRED	MINIMUM AREA (EACH)	TOTAL AREA REQUIRED	PRIVACY FACTOR	AMBIENCE REQUIRED
	counselling hall	1	25m <sup>2</sup> /each	25m <sup>2</sup>	private	
	admin & reception	1	150m <sup>2</sup>	150m <sup>2</sup>	public	
GYM/TREATMENT	gym with 6 treatment areas and quiet gym	1	270m <sup>2</sup>	270m <sup>2</sup>	semi-public	
	respiratory room	1	10m <sup>2</sup> /each	10m <sup>2</sup>	private	
PUBLIC FACILITIES	information centre	1	150m <sup>2</sup> /each	150m <sup>2</sup>	public	inviting, open, social interaction, information area
	sports activity area	1	150m <sup>2</sup> /each	150m <sup>2</sup>	public	
	dining area	1	150m <sup>2</sup> /each	150m <sup>2</sup>	semi-public	
	recreational, activity, conference areas	1 (divided)	200m <sup>2</sup>	200m <sup>2</sup>	public	
SERVICES	workshop	1	100m <sup>2</sup> /each	100m <sup>2</sup>	semi-private	
	laundry	1	100m <sup>2</sup> /each	100m <sup>2</sup>	semi-private	
	kitchen	1	100m <sup>2</sup> /each	100m <sup>2</sup>	semi-private	

**TOTAL AREA REQUIRED** = 2923m<sup>2</sup> + 10% = **3215.3m<sup>2</sup>**  
**MINIMUM AREA REQUIRED PER FLOOR (WITH GF + 6 FLOORS)** = 3215.3m<sup>2</sup>/7 = **±460m<sup>2</sup> per floor**  
**POSSIBLE COVERAGE = 0.4**



# FUNCTIONAL PRECEDENTS

## FUNCTIONAL PRECEDENTS

The precedents found under this chapter are those examples of similar facilities in South Africa and around the world that help resolve spatial planning and technical aspects related to the design, however they are also used to highlight the problems that still need to be addressed in the design of a therapeutic architecture.

### MORNINGSIDE MEDI-CLINIC

Meiring van der Lecq Thomas & Ronga (original)

SV Architects (renovations to rehab gym)

Sandton, Johannesburg, South Africa

1984 (original)

2003 (renovations)

#### *The history:*

Morningside Medi-Clinic has, over the many years it has been in practice, received numerous local and international patients. The hospital has a specialised cardio-thoracic and heart catheterization theatre for which a specialised rehabilitation centre has been created within the hospital building.

#### *The building:*

Built in the 1980s this hospital plays host to the specialised rehabilitation unit linked to the hospital. Patients are able to utilise the recently renovated facility while they are still hospitalized as well as after they have been discharged from the hospital.

The rehabilitation unit is conveniently situated on the ground floor near the parking lot to allow easy access for outpatients, while linking on the other side to the hospital corridors so that inpatients also have easy

access to the facility. The rehabilitation area consists of a general rehab gym (visually accessible to the public) with various exercise spaces and a large treadmill, a rehab pool for hydrotherapy, 21 consulting/treatment rooms, change rooms and ablution facilities for both patients and staff, visual and physical access to the gardens around the hospital, a separate reception, waiting area and administration area with offices, a boardroom/conference room and staff rest facilities.

The gym area is situated centrally in the facility with windows around it allowing natural day light in as well as visual access to the outdoors while exercises are being conducted allowing the patients not to feel isolated.



fig. 3.9

fig. 3.9 Plan of Morningside rehabilitation facility  
fig. 3.10 - 3.12 The separate entrance and waiting area facilities at the rehabilitation facility

#### *Conclusion:*

The gym and treatment facilities at Morningside Medi-Clinic are lovely, open, well lit spaces that create a feeling of wellness and recovery. There are however no sub-acute beds at this hospital and most patients that use the rehabilitation unit still have to be hospitalized.



fig. 3.10



fig. 3.11



fig. 3.12

fig. 3.13 Plan of the rehabilitation centre at Muelmed Medi-Clinic

fig. 3.14 Exterior view of Muelmed Medi-Clinic

fig. 3.15-3.16 The rehabilitation gymnasium

## MUELMED MEDI-CLINIC

TW Baker (original architect)

VH Architects (renovations to rehab centre)

Arcadia, Pretoria, South Africa

1984 (original)

2006 (renovations)

### *The history:*

This 222 bed multi-disciplinary hospital is known for having opened the first private trauma unit in Pretoria. Muelmed Medi-Clinic offers a broad spectrum of professional medical services and is well known for its rehabilitation unit - *Just @ Muelmed*

### *The building:*

The hospital building at Muelmed is linked to another hospital just to the south of it - Astrid Medi-Clinic. These two buildings were originally designed to be a hotel in the city of Pretoria and were converted into a hospital many years ago with numerous renovations

being done to both buildings.

The rehabilitation centre is situated in the Astrid building and has provided rehabilitative care and exercise for inpatients and outpatients since 2006 (the hospital having 20 registered sub-acute beds). The following services are provided for at the rehabilitation centre:

- Physiotherapy
- Occupational therapy
- Psychology
- Sexology

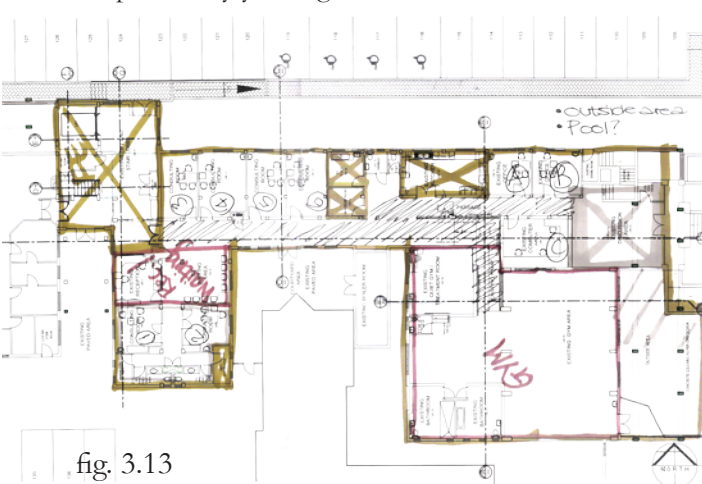
The portion of the building that facilitates the rehab unit is again ideally situated on the ground floor of the building on the eastern side of the block, with its public entrance on a street for easy access for outpatients. Patients that use the rehab facility that stay in the hospital are situated in the Muelmed building which has only

recently had a closed bridge linking it to Astrid creating an indoor access between the two facilities.

The rehabilitation facility has the following accommodations; a large gym area, a quiet gym, separate administration offices, reception and waiting areas, discussion and conference areas, 6 consulting/treatment rooms as well as the required supportive services.

### *Conclusion:*

The new rehabilitation facilities at Muelmed Medi-Clinic are lovely, open spaces that encourage physical development in patients. It does not however hold therapeutic qualities that may be required on a mental level of recovery. The rooms for the patients form a ward within the existing hospital and therefore do not cater for the special long term needs of patients (albeit they do provide medically and spatially).



- fig 3.17 Exterior of Lynnmed Clinic
- fig. 3.18 Typical Lynnmed Clinic ward
- fig. 3.19 Rehabilitation taking place in a patients ward
- fig. 3.20 Balconies from patient wards at Lynnmed Clinic
- fig. 3.21 Entrance hall at Lynnmed Clinic

**LYNNMED CLINIC**  
Pretoria, Gauteng, South Africa

*The facility:*

Lynnmed Clinic believes in adopting a multi-disciplinary team approach when working with a patient. The treating physician on admission will assess each patient, and the necessary therapists will be involved in the treatment plan. Founded in 1992 this 21 bed facility offers:

- Occupational therapy
- Physiotherapy
- Speech therapy
- Wound care

*Conclusion:*

This facility offers a more home-like friendly environment for patients which should be adopted in other facilities of this nature.



fig. 3.17

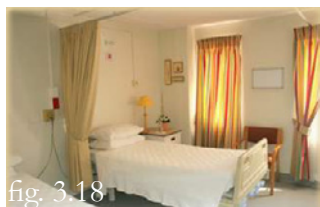


fig. 3.18



fig. 3.19

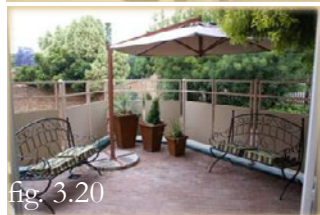


fig. 3.20

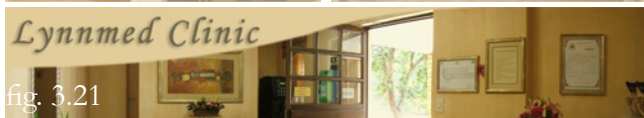


fig. 3.21

fig 3.22 Exterior of Groenkloof retirement village flats

**GROENKLOOF RETIREMENT VILLAGE**  
Groenkloof, Eastern Cape, South Africa

*The facility:*

The Care Unit at the Groenkloof Retirement Village at Great Brak River consists of 22 frail care beds and 28 sub-acute beds. The Care Unit is managed by Southern Healthcare with services provided to the residents at the Groenkloof Retirement Village as well as the general public, which include:

- Short term medical care (after operations)
- Long term frail care
- 24 hour nursing and a resuscitation room
- Doctors on 24-hour standby
- Three meals daily and two tea times
- Laundry and cleaning services
- Lounge and community centre with a library/sitting room and braai facilities
- Physio-, occupational- and speech- therapy
- Specialized wound care
- Hair and nail care

*Conclusion:*

This facility offers a comfortable, homelike environment, however the problem of mixing frail care and sub-acute care together occurs in this situation.



fig. 3.22

- fig 3.23 Exterior of Clayton House
- fig. 3.24 Clayton House rehabilitation gym
- fig. 3.25 Clayton House recreational room
- fig. 3.26 Typical Clayton House ward

**CLAYTON HOUSE**  
Johannesburg, Gauteng, South Africa

*The facility:*

Clayton House is an independent private rehab facility which makes use of a multidisciplinary team approach. This includes the services of physiotherapy, occupational therapy, speech therapy, dietetics, neuropsychology, a social worker and a rehab doctor. The philosophy is aimed at achieving the best outcomes possible within each patient's individual scope of abilities. Clayton House delivers modern medicine, quality nursing care and specialised paramedical services.

*Conclusion:*

This facility is very run-down and hospital-like showing no therapeutic qualities in it's environment.



fig. 3.23



fig. 3.24



fig. 3.25



fig. 3.26

fig. 3.27 Rehabilitation gym at the Victorian Rehab Centre  
 fig. 3.28 Typical patient ward at the Victorian Rehab Centre  
 fig. 3.29 Treatment room at the Victorian Rehab Centre

fig. 3.30 Exterior view of the Physiotherapy Rehab Centre  
 fig. 3.31 Logo for the Physiotherapy Rehab Centre  
 fig. 3.32 Treatment room  
 fig. 3.33 Entrance to the Physiotherapy Rehab Centre

# CONCLUSION

## THE VICTORIAN REHABILITATION CENTRE Glen Waverley, Victoria, Australia

### *The facility:*

The Victorian Rehabilitation Centre has more than 30 years of experience, particularly in the area of trauma. The aim is to create a relaxed, healing environment where patients and visitors can feel at home. The Victorian Rehabilitation Centre is a 82-bed rehabilitation facility that offers a wide range of inpatient and extensive outpatient services.

Specialties include:

- multi-trauma & pain management
- orthopaedics
- stroke & cardiac rehabilitation
- acquired brain injury
- respiratory rehabilitation

### *Conclusion:*

The gymnasium and treatment facilities at this centre are good examples of therapeutic environments, however the rooms are still hospital like, although an effort to make it more home-like is obvious.



## PHYSIOTHERAPY REHABILITATION CENTRE Llanelli, Carmarthenshire, England

### *The facility:*

“Welcome to a part of the world where you can discover ways and means of improving your health, independence and fitness”. The Physiotherapy Rehabilitation Centre is an established physio clinic located in Llanelli. The Physiotherapy Rehabilitation Centre recognizes that each person has an individual level of activity that is occasionally challenged by one’s lifestyle, resulting in injury or illness. The Physiotherapy Rehabilitation Centre aims to help patients overcome these challenges so that they may once again enjoy life to the fullest.

### *Conclusion:*

This facility creates a home-like setting in this smaller environment which provides more one on one care. However, the facility is a bit run down.



## CONCLUSION

The building that facilitates the healing process, provides support for patients and caters for the functional requirements of a sub-acute facility should not be a static structure that assumes all patients are the same and that they are all in the same level of the healing process as the next patient.

Such a facility should in its structure, design and management create support (as columns may support the roof of a building) and protection for the patients. A layered process of structure should be provided for and the patients’ journeys to recovery and control should be highlighted through the architecture and the representation of spaces.

At first, a patient is fragile and intense treatment, stability and support need to be given by healthcare professionals. As the patient stabilizes, so can the supports in the system, until finally the patient only needs minimal support and guidance, and then is eventually released from the facility into the comfort of home care. As the process of recovery occurs in a patient, so should the staff and the physical surroundings adapt and change to accommodate these changes and needs.

# CHAPTER

# 4

*Healing is a matter of time, but it is sometimes also  
a matter of opportunity.*

(Hippocrates, c. 400BC)



# INTRODUCTION

The Pretoria Inner City (PIC) and its Central Business District (CBD) are recognized as important centres in South Africa, both nationally and internationally. As the capital city of South Africa, housing the Union Buildings, Urban Design Proposals have been designed to highlight a vision of creating an “international African capital city of excellence that empowers the community to prosper in a safe and healthy environment” (TICP 2006,1). As it presently stands, the Pretoria CBD does not provide this, however with the ideas of the Tshwane Inner City Plan (TICP) in mind, proposals have been made that will optimize the visions set for the capital city.

In this chapter, various layers of the context are investigated: Country wide - South Africa, Provincial - Gauteng, Municipal - Tshwane, City - Pretoria, Study area and site - Minnaar Street. Previously laid out Urban Design Frameworks as well as the surrounding area and site will be analysed and investigated to provide possible solutions to the problems that the Pretoria CBD currently faces.

The above-mentioned investigation will highlight the strengths, weaknesses, opportunities as well as the threats that face the dissertation proposal and the surrounding area that the design will form a part of. Finally, possible solutions will be synthesized into a Group Urban Design Framework that provides for the highlighted problems.

## SOUTH AFRICA

Located in the southern most region of Africa, South Africa is a unique African country with 3 capital cities (Cape Town - legislative capital, Pretoria - Administrative capital & Bloemfontein - judicial capital) each of which have equal cultural and economic importance.

Originally inhabited by various tribal communities, European populations have slowly been inhabiting the country since 1487 creating a strong cultural diversity within the country which plays host to an integrated, democratic government and 11 official languages.

## GAUTENG

Situated in the heart of the Highveld, Gauteng is the smallest yet most densely populated of the 9 provinces in South Africa. It is considered the economic hub of South Africa contributing heavily to the financial, manufacturing, transport, technology and telecommunication sectors.

Playing host to the administrative capital city of Pretoria, this high altitude, grassland/savannah province is also the only landlocked province in South Africa that is not bordered by another country.



fig. 4.1

fig. 4.2 Original map of the Pretoria CBD designed according to the Roman Cardu Decomanus

### TSHWANE

Located in Northern Gauteng, Tshwane is the metropolitan area in which 13 former city and town municipalities synthesized to form a municipality under one mayoral system. The Pretoria CBD forms the central, main node of the municipality and is surrounded by various competing nodes which include; Atteridgeville, Mamelodi, Menlyn and Centurion, amongst others.

“Tshwane” derives from the Setswana name for the Apies River, which flows through the city of Pretoria forming a barrier to the east of the CBD (See fig. 4.2).

### PRETORIA CBD

Within the heart of the metropolitan area of Tshwane, and located about 60km north of Johannesburg and the OR Tambo International Airport, the Pretoria CBD is the area where all roads, railway lines and other transport routes from Tshwane and the surrounding areas diverge, highlighting this portion as an important and vibrant cultural and economic node.

Designed according to the Roman Cardu Decomanus by A.F Du Toit, Pretoria was based on the Graaff Reinet urban design with Church Square at the centre.

### THE SITE

The site chosen for the dissertation (Erf 1/3279) is a vacant erf within the Pretoria CBD in an area commonly called the Burgers Park District. The site is surrounded by buildings on three sides and by Minnaar Street (Plot number 238) to the south.

Although the surrounding area is rich in historic fabric, the site itself is weak in historical context; to the west is City Hall and the Traansvaal Museum, to the east is Burgers Park, to the North is Church Square, and to the south is Melrose House and the Pretoria Train Station.

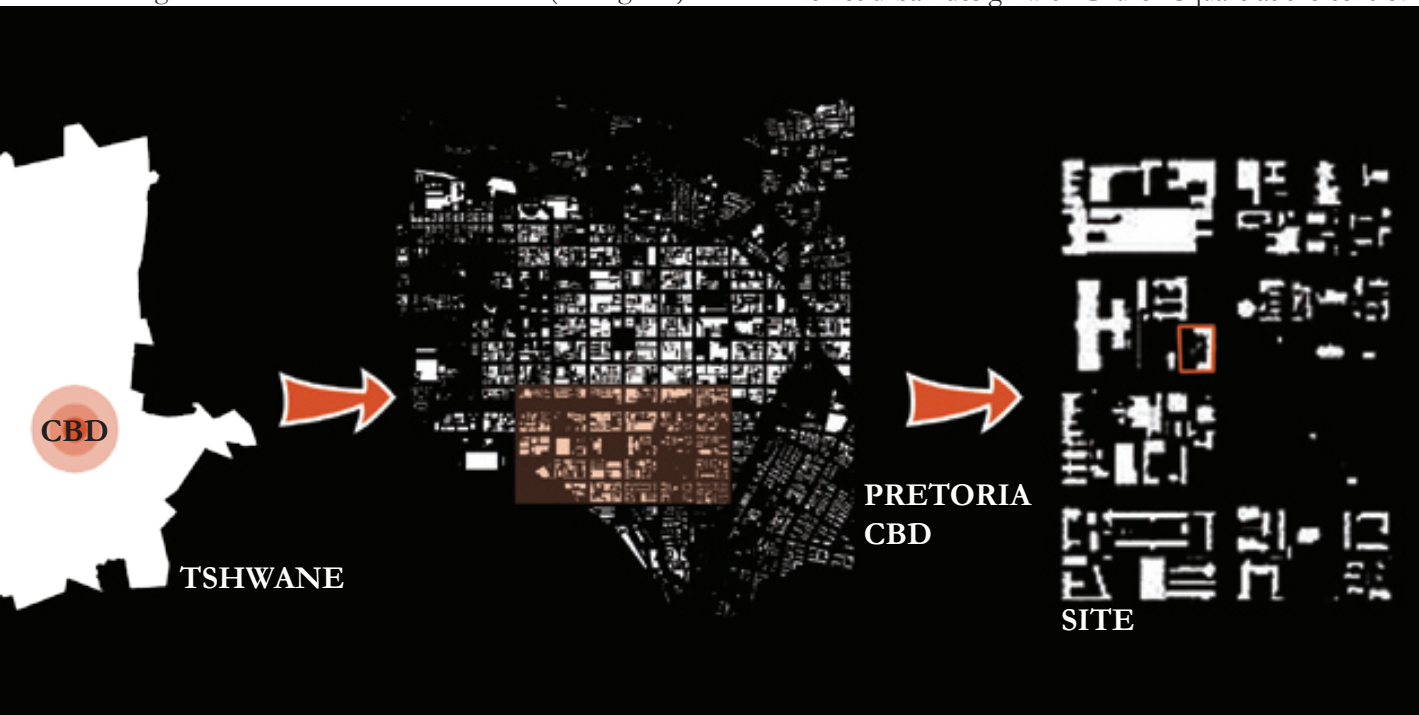


fig. 4.2

fig. 4.3 Table of facts and figures  
 fig. 4.4 Competing nodes, mountains and roads of the Tshwane District

# CONTEXTUAL ANALYSIS - TSHWANE

## TSHWANE - GENERAL

The Pretoria CBD forms the central main node of the municipality of Tshwane and is surrounded by various competing nodes such as; Atteridgeville, Mamelodi, Menly and Centurion (See fig. 4.4).

Main roads, energy and resources come from outer parts of Tshwane and converge on Central Tshwane in the Pretoria CBD (See fig. 4.5)

<b>FACTS &amp; FIGURES</b>	City	Pretoria
	Status	Administrative Capital RSA
	Founding date	16 November 1855
	Location (city centre)	25°45'12"S 28°11'13"E
	Altitude	1350m above sea level
	Population (2007)	2,345,908
	Municipality	City of Tshwane
	Municipal Area	1,644km <sup>2</sup>
	Average annual rainfall	674 mm
	Average temperatures	Summer - 15-28° Winter - 6-23°
	Travelling distances	OR Tambo Int. Airport - 48km
		Johannesburg - 63km
		Durban - 618km
		Cape Town - 1464km
Bloemfontein - 456km Nelspruit - 322km		

fig. 4.3

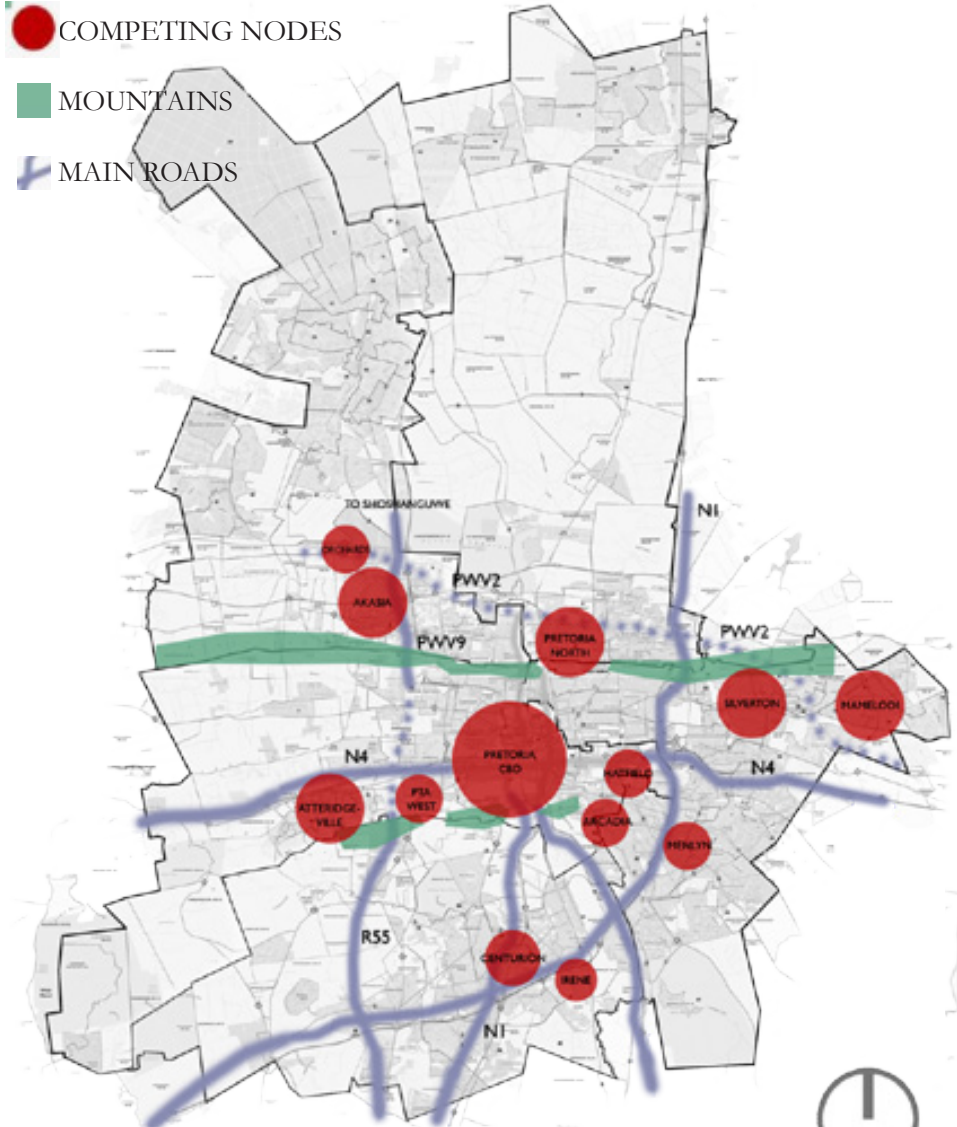


fig. 4.4

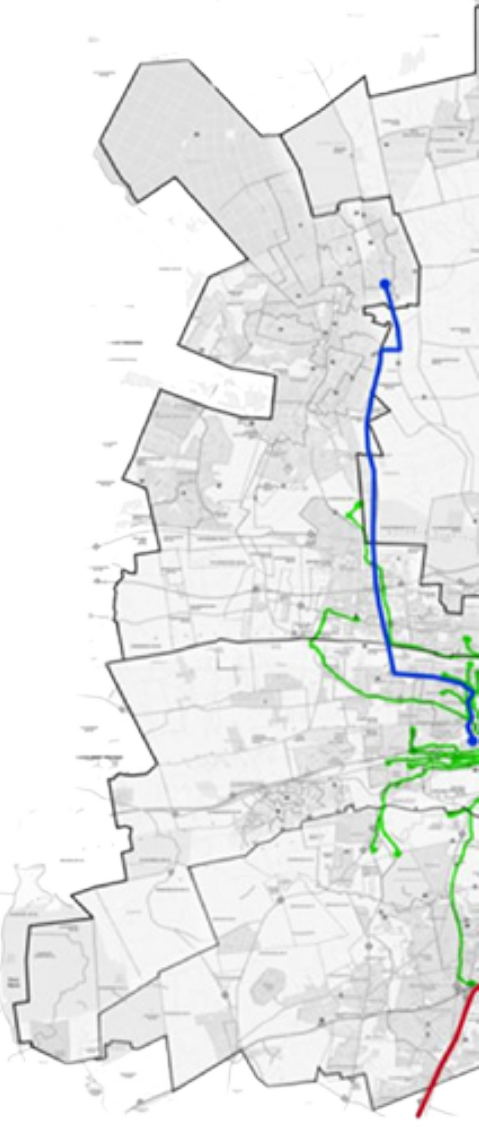


fig. 4.5



fig. 4.5 Converging of all transport routes in the Pretoria CBD

fig. 4.6 Nollie map of the Pretoria CBD



fig. 4.6

fig. 4.7 Partial map of Tshwane showing the urban sprawl of the Pretoria CBD

# CONTEXTUAL ANALYSIS - PRETORIA CBD

## PRETORIA CBD - GENERAL

The first homestead, established in 1840, in the area of Pretoria was the home of J.G.S. Bronkhorst. In 1854, the Boer family residents of Elandspoord proclaimed the village the 'kerkplaas' for central Transvaal, making it the focal point for nagmaals, baptisms and weddings.

On 16 November 1855, the town of Pretoria Philadelphia (the brotherhood of Pretoria) was established, named after Andries Pretorius, victor of the Battle of Blood River. At the time it had a population of about 300 people.

In 1860, Pretoria was declared the official capital of the independent Voortrekker republic of the Transvaal and in 1888 J.D. Cilliers, a resident and avid gardener, imported Jacaranda trees from Rio de Janeiro to plant in his *Myrtle Grove Garden*. The Jacaranda trees flourished in the city and as a result the city is to this day known as the 'Jacaranda City', with about 50 000 Jacarandas.

Historically, Church Square has always been the central hub of Pretoria, being the place where the first church was built, markets were held and where the grid-iron pattern that the city blocks follow was set out from by magistrate A.F DuToit by following the Roman Cardu Decomanus design of the city in 1860.

Pretoria is now established as the administrative capital of South Africa and houses the central government in the Union Buildings, created to match the need of a central political city.

fig. 4.7

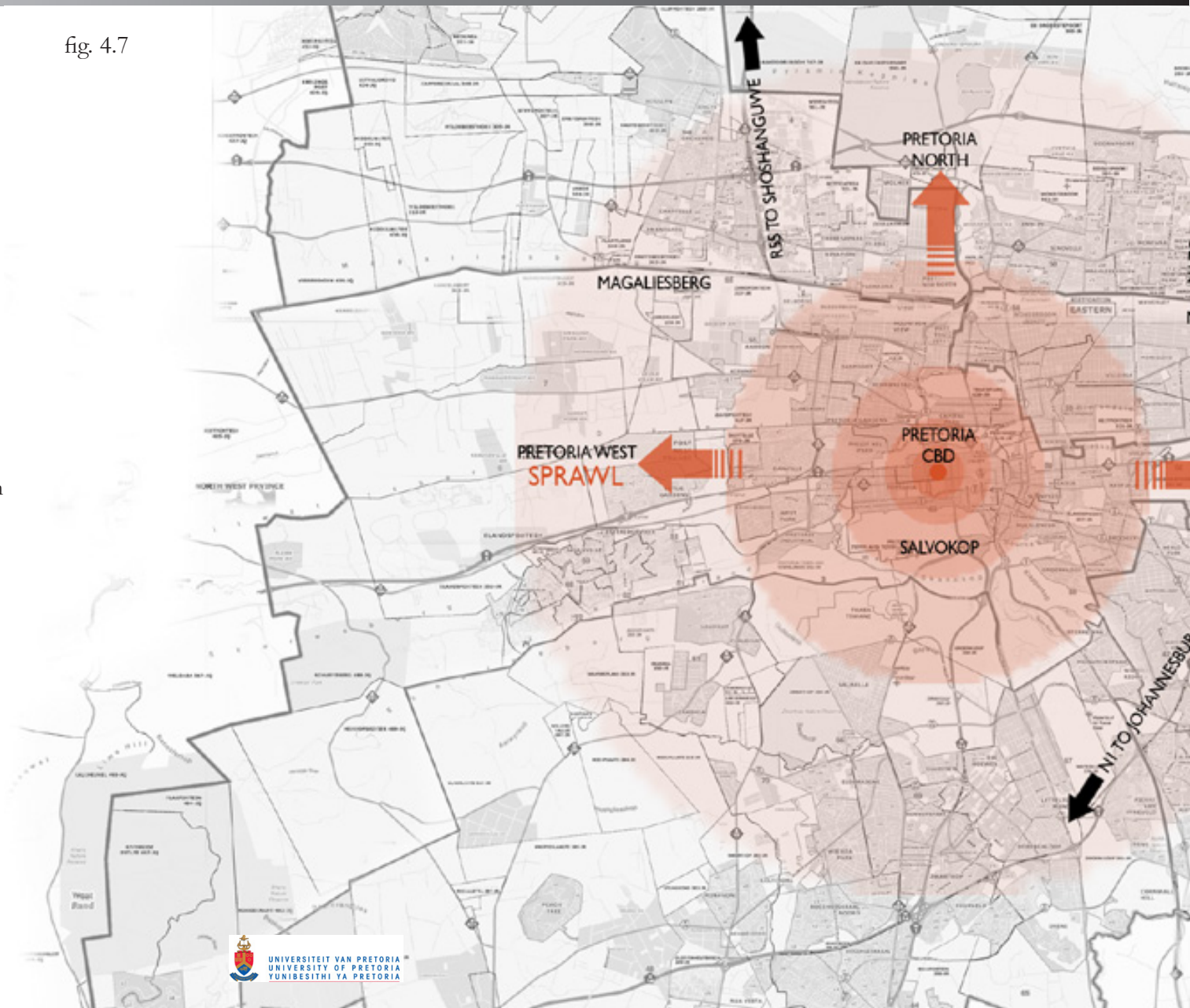
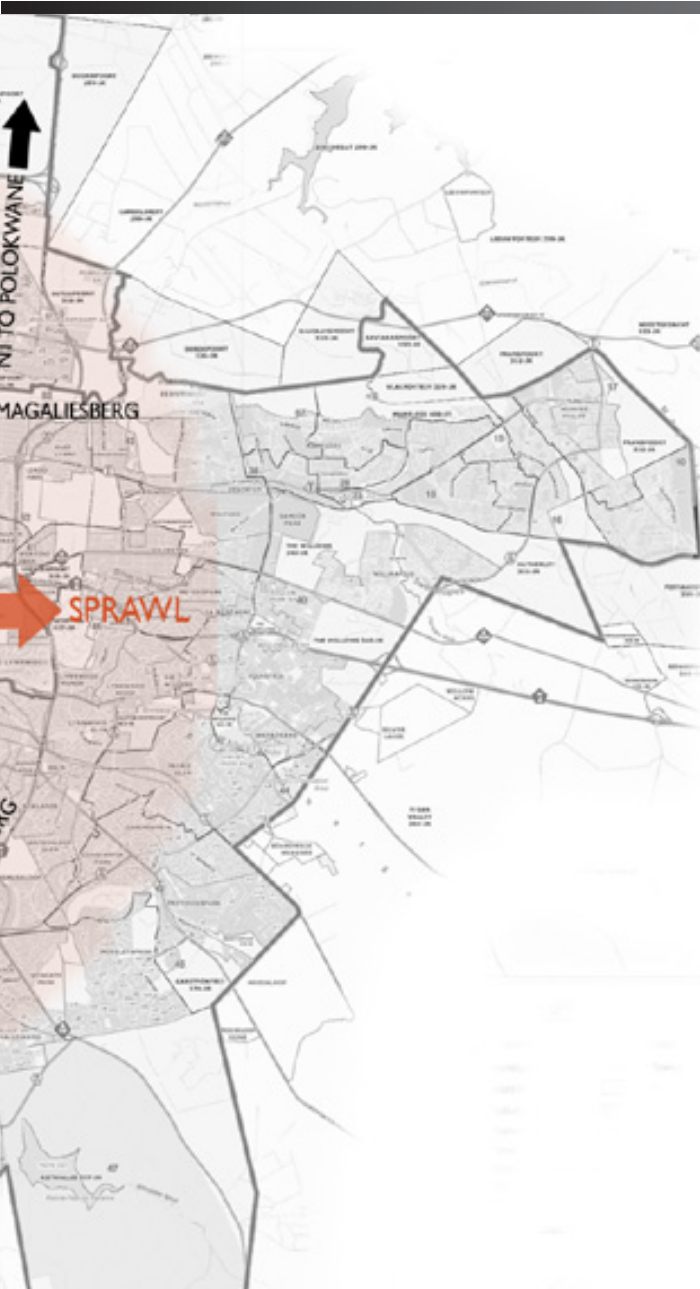


fig. 4.8 Skyline of the Pretoria CBD between the power station and Salvokop

fig. 4.9 Skyline of the Pretoria CBD between Salvokop and Groenkloof



### PRETORIA CBD - TOPOGRAPHY

Historically, Pretoria fell within the natural boundaries of the landscape; to the north and south by the mountain ridges (Magaliesberg and Salvokop), and to the east by the Apies River. Due to the two mountain ridges to the north and south of the CBD, when Pretoria grew in size, expansion occurred mainly on the east-west axis.

The development to the west of the CBD is mainly industrial, with the majority of the eastern side being residential. This has created urban sprawl throughout the city (See fig. 4.7) and has seen the creation of smaller competing commercial nodes in areas that surround the CBD, for example Menlyn and Atteridgeville (See fig. 4.4).



fig. 4.8

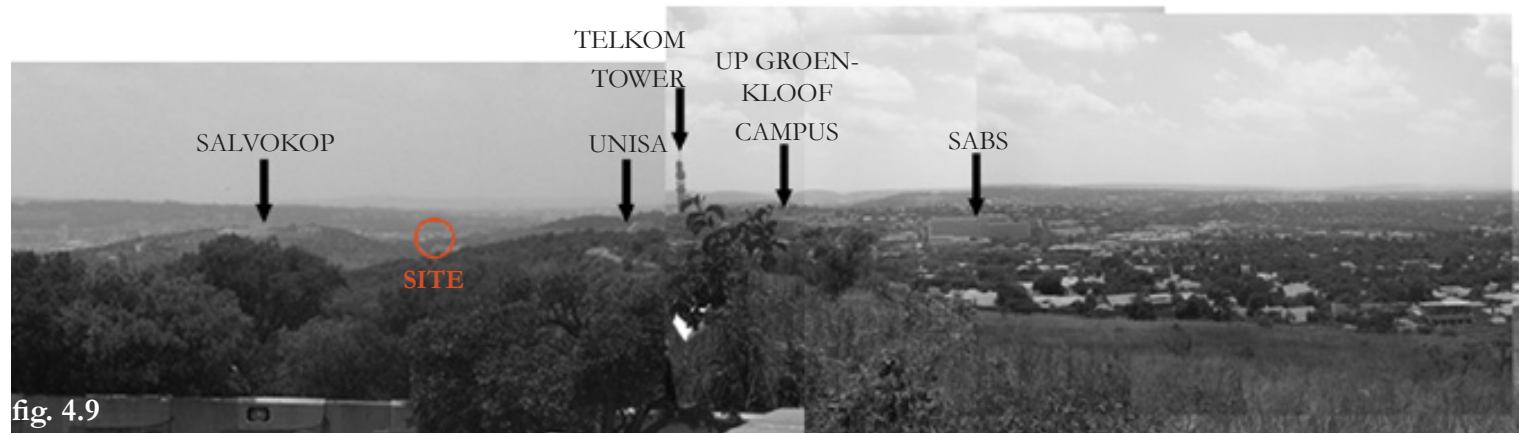


fig. 4.9

fig. 4.10 View of main entrance to Burgers Park from Andries St.

fig. 4.11 The Burgers Park District (study area) with 100m walking circles from the park

# CONTEXTUAL ANALYSIS - STUDY AREA

## STUDY AREA - THE BURGERS PARK DISTRICT

The study area for the framework lies two blocks south of Church Square and ends one block north of the Pretoria Train Station. The study area does not include these two historic elements, however, with Paul Kruger Street running through the middle of the study area; the historic and current link between these two spaces is highlighted. To the east, the study area reaches one block east of Burgers Park and on the west the border lies one block west of Potgieter Road.

## FUTURE DEVELOPMENT - BURGERS PARK DISTRICT

The Burgers Park District of Pretoria has a rich, layered history which dates back to before the city was officially established. The area has an abundance of architectural, military, social and political history.

When developing in this area, these features (physical and metaphysical context) should all be taken into consideration and new layers should be added to this rich history that has encompassed the area in the past 150 years. A design which takes these into account would result in a multi-layered, rich environment which truly responds and reacts to the context on all levels.



fig. 4.10

fig. 4.11

- fig. 4.12 Church Square
- fig. 4.13 Portrait of President Thomas Francois Burgers
- fig. 4.14 Concentration camp during the First Anglo Boer War
- fig. 4.15 Melrose House

- fig. 4.16 The NZASM Pretoria Station buildings
- fig. 4.17 Guards outside Melrose House
- fig. 4.18 The Treaty of Vereeniging
- fig. 4.19 Sir Herbert Baker's Station building
- fig. 4.20 Pretoria City Hall

- fig. 4.21 Entrance to Burgers Park from Andries Street
- fig. 4.22 In 2001, the Pretoria Station building was burnt down by angry commuters
- fig. 4.23 Freedom Park
- fig. 4.24 The Transvaal Museum

**THE DEVELOPMENT OF THE BURGERS PARK DISTRICT Pre-1855**

The site on which Burgers Park currently stands was used as a camping area by the Voortrekkers before the city was established

**1855**  
Pretoria is proclaimed capital of the Transvaal

**1874**  
President Thomas Francois Burgers selects land to establish a Botanical Garden.

**1877**  
Pretoria controlled by British rule

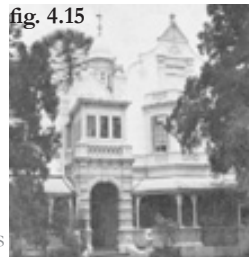
**1880**  
First Anglo Boer War

**1886**  
Gold Rush  
Melrose House, a Victorian mansion on the southern side of Burger's Park, is built by George Heys.

**1892**  
George Heys and botanist James Hunter design and complete the layout of Burgers Park, commissioned with money made in the Gold Rush. The Transvaal Museum is established as the "Staatsmuseum".

**1894**  
Pretoria Station buildings are completed

**1900**  
Melrose house used as headquarters for the British Forces in the 2nd Boer War.



**1902**  
Treaty of Vereeniging signed at Melrose House, ending the Second Boer War

**1904**  
Original caretakers house at Burgers Park is replaced with a small Art Nouveau house.

**1910**  
Kiosk building at Burgers Park is designed by Vivian Sydney Rees-Poole built to coincide with a visit from the Prince of Wales.

**1914**  
Sir Herbert Baker's Station building replaces NZASM station buildings

**1931**  
Pretoria City Hall is built (designed by FG McIntosh) with Pretorius Square in the front to celebrate the achievement of Pretoria's city status.

**1946**  
The sunken garden in front of Pretoria Station is constructed.

**1947**  
Bandstand erected and used by the 24th Regiment of Robert's Heights and for official receptions for Prime Minister General Louis Botha.

**1950**  
Statue of President Burgers created by Moses Kottler, commissioned by the city council, and sponsored by one of his daughters Mrs. Mary Adelene Jorissen.



**1969**  
Scottish Monument on the western side of the park is commissioned to commemorate the South African Scottish Regiment who died in WWI.

**1970**  
Burgers Park Proclaimed a national monument.

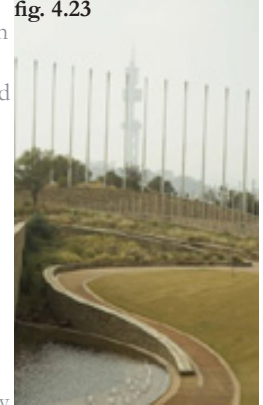
**1999**  
Burgers Park is the national winner of the larger parks category in the Townscape Millennium Open Spaces competition.

Transvaal Museum is amalgamated with the Pretoria-based National Cultural History Museum (African Window) and the South African National Museum for Military History (situated in Johannesburg) on 1 April 1999 to form the Northern Flagship Institution.

**2001**  
Paul Kruger Street Development Framework is established. Freedom Park Development Framework created. Pretoria Station building burnt down by angry commuters.

**2002**  
Pretoria Station re-built. Development of Freedom Park is underway.

**2004**  
Freedom Park reaches completion.



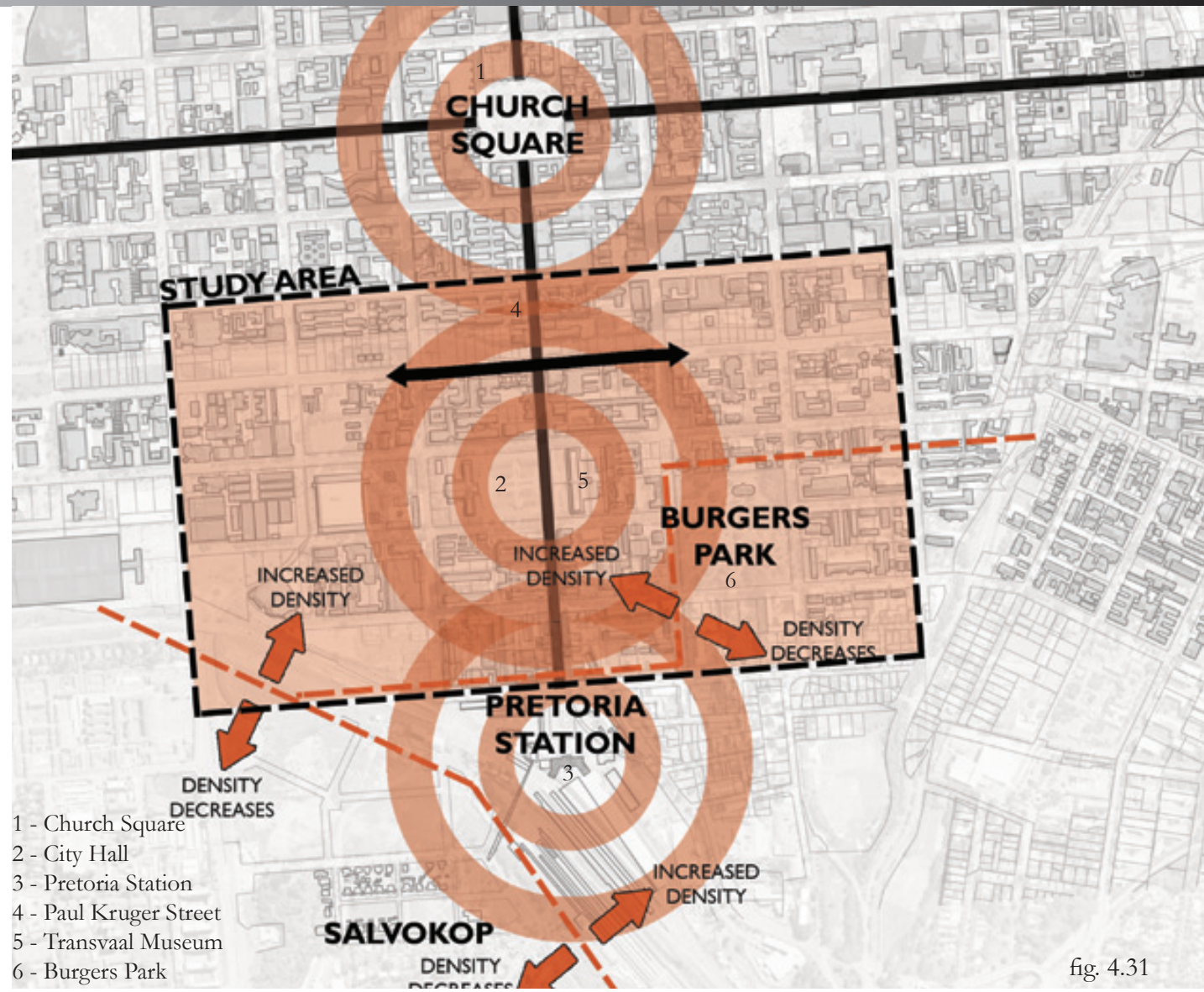
- fig. 4.25 Church Square
- fig. 4.26 City Hall
- fig. 4.27 Pretoria Station
- fig. 4.28 Paul Kruger Street
- fig. 4.29 Transvaal Museum

- fig. 4.30 Burgers Park
- fig. 4.31 Figureground study of the study area showing 100m walking circles from various points down Paul Kruger Street

**STUDY AREA - FIGUREGROUND STUDY**

As seen in the figureground alongside, it is clear to see how the urban fabric of the Pretoria CBD ‘sprawls’ as you move further south and west of Church Square. This has resulted in a decrease in density within the western and southern areas of the CBD with physical barriers and low diversity of land use appearing to be a cause of concern.

The diagram also highlights Paul Kruger Street in the centre of the study area and shows 100m walking circles from various points down the street. The centre of each circle is located at each of the three major public spaces along the route and perhaps more importantly, the locations of the BRT stations.



- 1 - Church Square
- 2 - City Hall
- 3 - Pretoria Station
- 4 - Paul Kruger Street
- 5 - Transvaal Museum
- 6 - Burgers Park

fig. 4.31

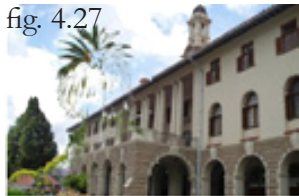


fig. 4.32 Land use and density within the study area

### STUDY AREA - LAND USE & DENSITY

A diverse array of land-use is evident in the Burgers Park District. Paul Kruger Street is rich in commercial activity with much industrial development to the west. Burgers Park is a well utilized and maintained social green space with rich residential development on the outskirts. This variety attracts an assortment of people, creating a rich diversity of individuals in the area, which matches the rich diversity country-wide.

There are however, little/no mixed use buildings and cross-programmed developments within the area, creating spaces that do not function on a 24 hour cycle, resulting in many unsafe and under utilized spaces. There is also a lack of activity on ground floor level with many buildings not responding to their immediate environment, including the streets they open on to and to the pedestrian movement that passes.

Skinner Street is a problem as it creates a barrier within the CBD, splitting it in two. This needs to be addressed to allow more efficient pedestrian movement within the city and encourage development along this busy street.

The railway line to the south of the Burgers Park District creates a physical barrier between the CBD and the developments on Salvokop and Freedom Park, and Nelson Mandela Drive creates a barrier between the CBD and development to the east. These physical barriers result in 'lost space' being created along them with little development happening here and the land therefore not being utilized to its full potential.

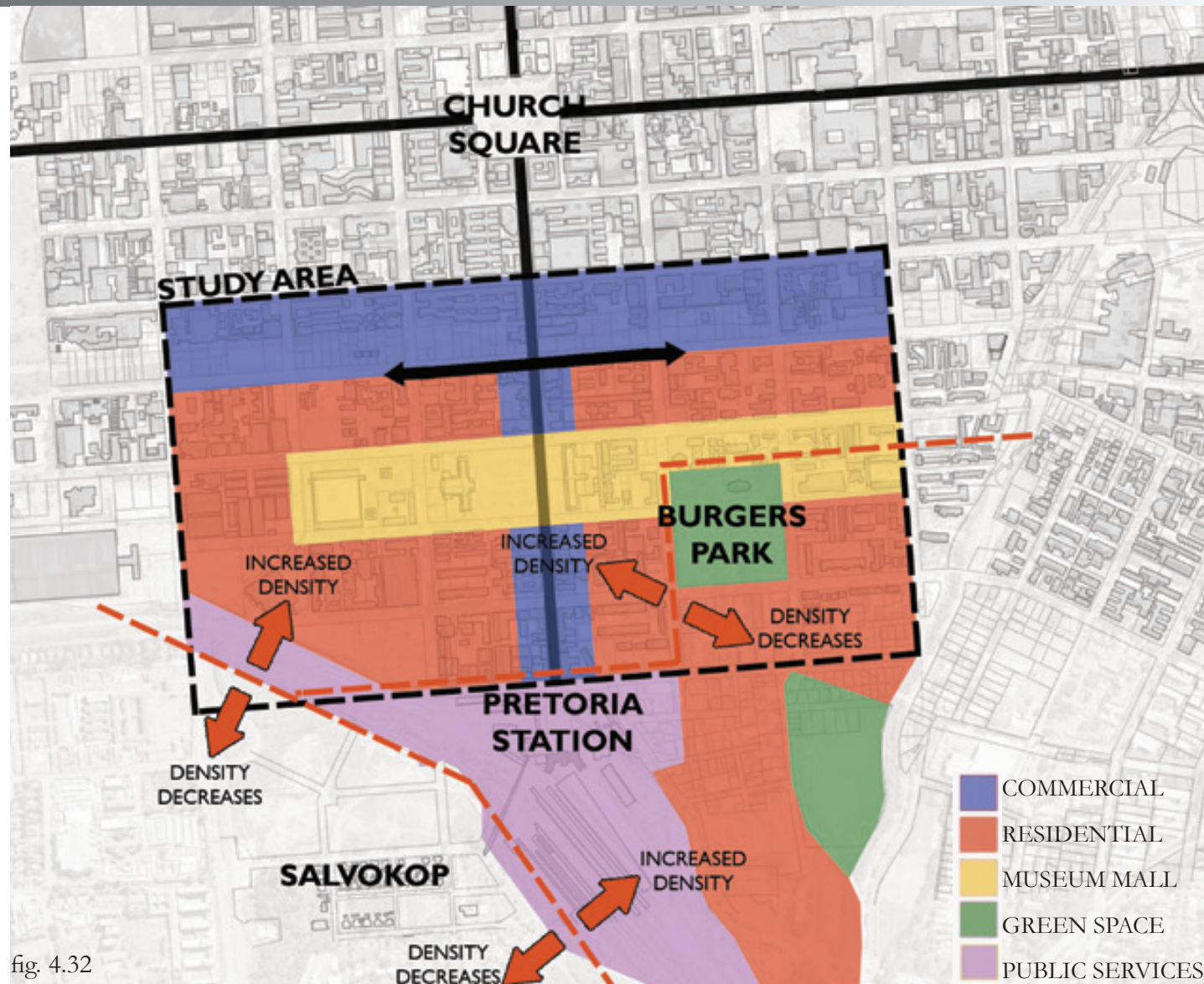


fig. 4.32

fig. 4.33 Various circulation paths within the study area

### STUDY AREA - CIRCULATION

The Burgers Park District is an area easy to access within the Pretoria CBD and is close to all public and private transport nodes and routes to, from and through the city. The Station lies just to the south of the study area where Metro trains, the Gautrain and the BRT routes will coincide. The proposed BRT Route flows along Paul Kruger Street which will allow more pedestrian activity along this street, however it may create a safety concern.

The majority of city streets are unfriendly to pedestrian movement and are predominantly designed for vehicular access/movement.

The flat topography of the CBD allows for easy pedestrian and cyclist movement within the city, and the streets should be designed primarily to accommodate the influx of such pedestrian movement. Minnaar, Visagie and Bosman Streets currently incorporate physical strengths within their design for pedestrian movement, however they are under utilized due to the low density and diversity of activities within the area. It should be noted that informal trading within the city coincides with the major pedestrian paths.

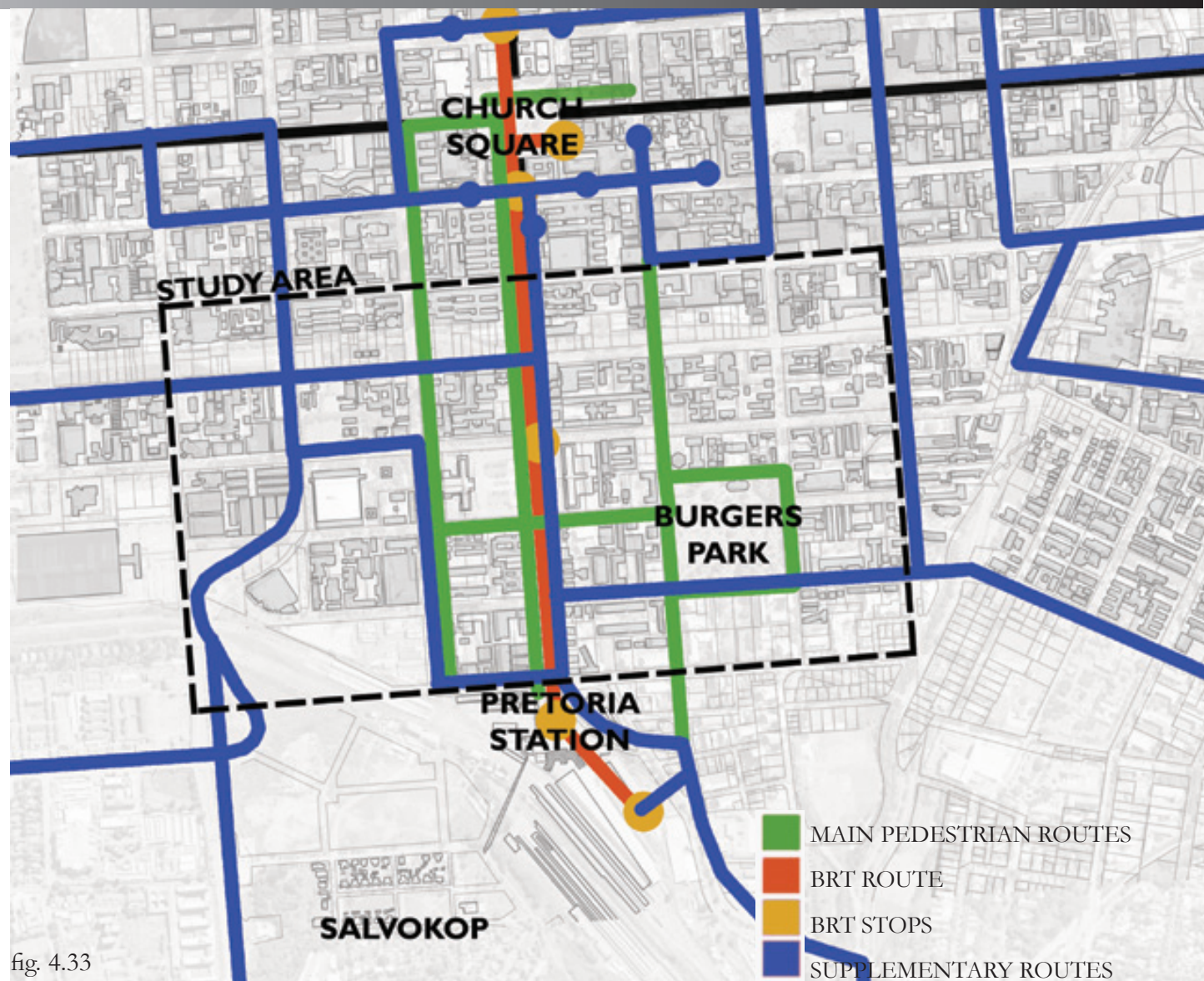


fig. 4.33



fig. 4.34 Visual and physical links within the study area and the surrounds

### STUDY AREA - VISUAL AND PHYSICAL LINKS

There are strong visual as well as physical links within the Burgers Park District.

Visual axes allow for clearly identifying and creating character and legibility within the city. They allow the user to orientate oneself within the city as well as creating a sense of direction and clarity.

Strong visual links within the study area are the links created along Paul Kruger Street (Government Walk) between Church Square and the Pretoria Station as well as views of Salvokop, Freedom Park and Unisa from this point. However, a large signboard has been placed in front of the station which hinders the views.

Historically, clearly defined physical links were created within the Pretoria CBD through the use of the Cardo Decomanus city design of a clearly defined grid iron layout.

Church Square is clearly linked to the Station by the commercial hub of Paul Kruger Street; however there are streets like Scheiding Street which pose an unclear link from east to west. Skinner Street (also an east-west link) poses a clearly defined vehicular route through the city, however it shows problems on a pedestrian level as it is a barrier and unfriendly street for pedestrians to cross.

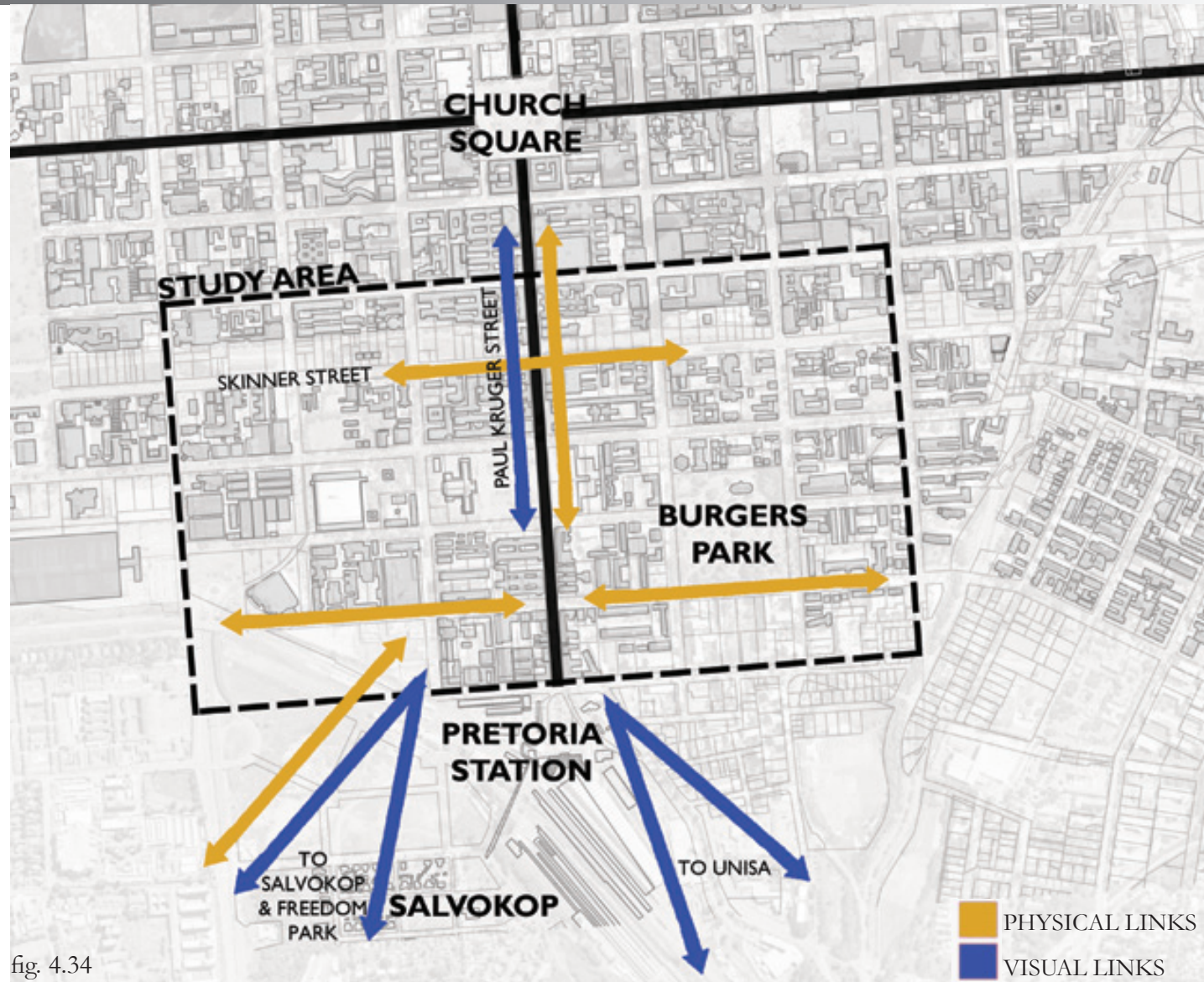


fig. 4.34

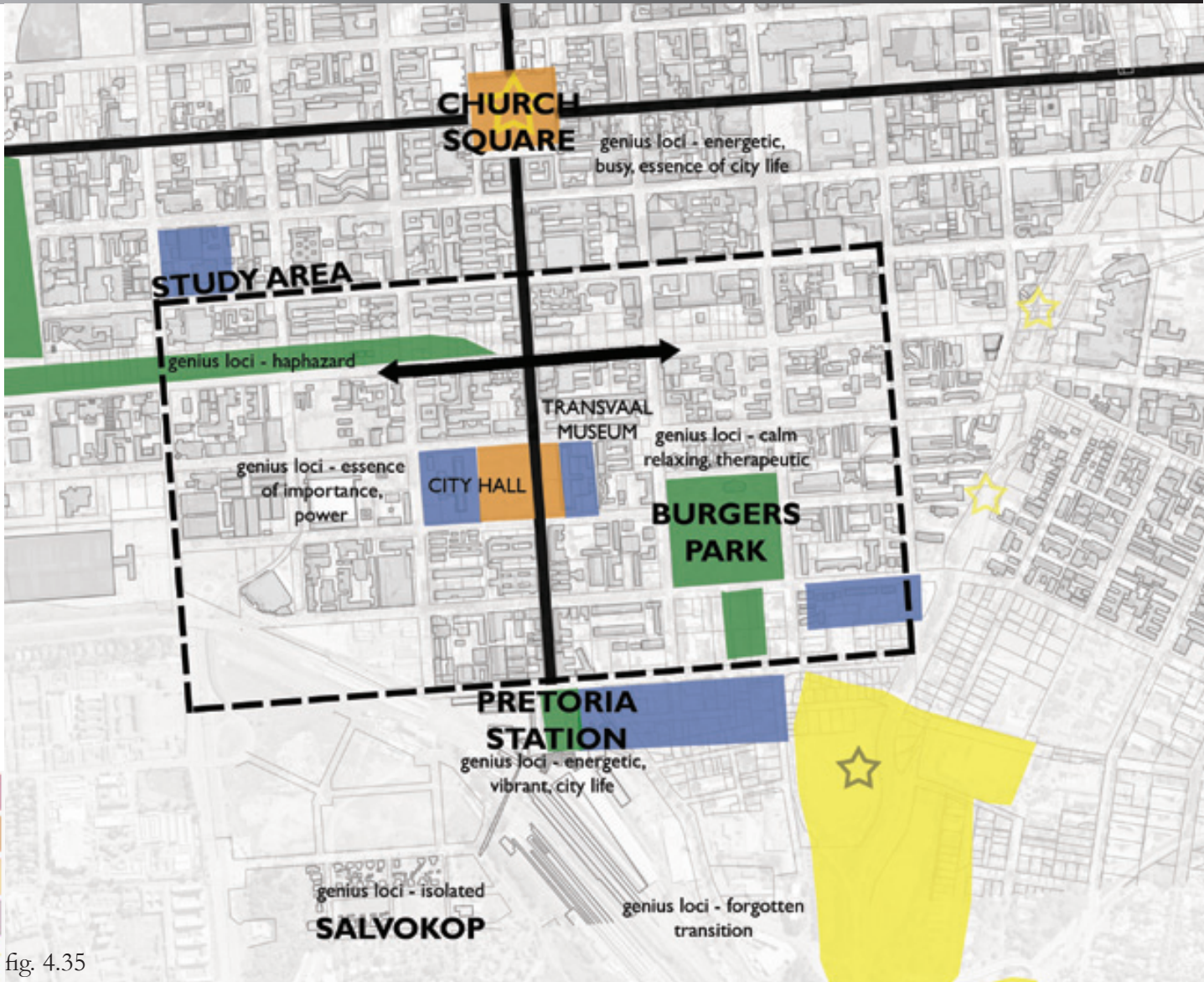
fig. 4.35 Features of significance within and around the study area

**STUDY AREA - FEATURES OF SIGNIFICANCE**

There are a variety of features of significance within the area, ranging from open public spaces to places of historical significance and even places of lush greenery (oases) within the city.

On a social level, there is a rich diversity in interactive and cultural activities with locations that encourage local and tourist activity within the area. “*Museum Mall*” is such an area within the Burgers Park District which most notably houses the Cultural Museum, City Hall and The Transvaal Museum, which attracts a variety of people.

Burgers Park is one of the few well utilized and maintained gardens/green spaces within the CBD allowing a lush, calm and therapeutic experience.



- HISTORICAL OPEN SPACE
- URBAN OPEN SPACE
- INACCESSIBLE OPEN SPACE
- GREEN OPEN SPACE
- MULTI-FUNCTIONAL CULTURAL NODE

fig. 4.35

fig. 4.36 Historic buildings and uses within and around the study area

### STUDY AREA - HISTORIC BUILDINGS & USES

There is a strong heritage component mixed with a diverse range of more current buildings within the area, however, many of the heritage protected buildings in this area are dilapidated and are in need of some attention. These buildings not only cause problems for the overall look and feel of the city, they also cause problems with regards to increasing the density within the CBD. They are often buildings of a lower coverage and height to the density required within the city causing a break in the city fabric and commercial activity of busy streets.

Unfortunately, there is a lack of interest in developing within the Burgers Park District and to the west of the CBD. A lack of money within the city council restricts upgrading or development of the buildings that they currently occupy or own. This is a problem as they own/occupy many buildings in this area.

Some of the well maintained and architecturally rich tourist destinations found in this area are: City Hall, the Transvaal Museum, Pretoria Station, Melrose House, Burgers Park (Pretoria's first botanical gardens housing various historical buildings and monuments).

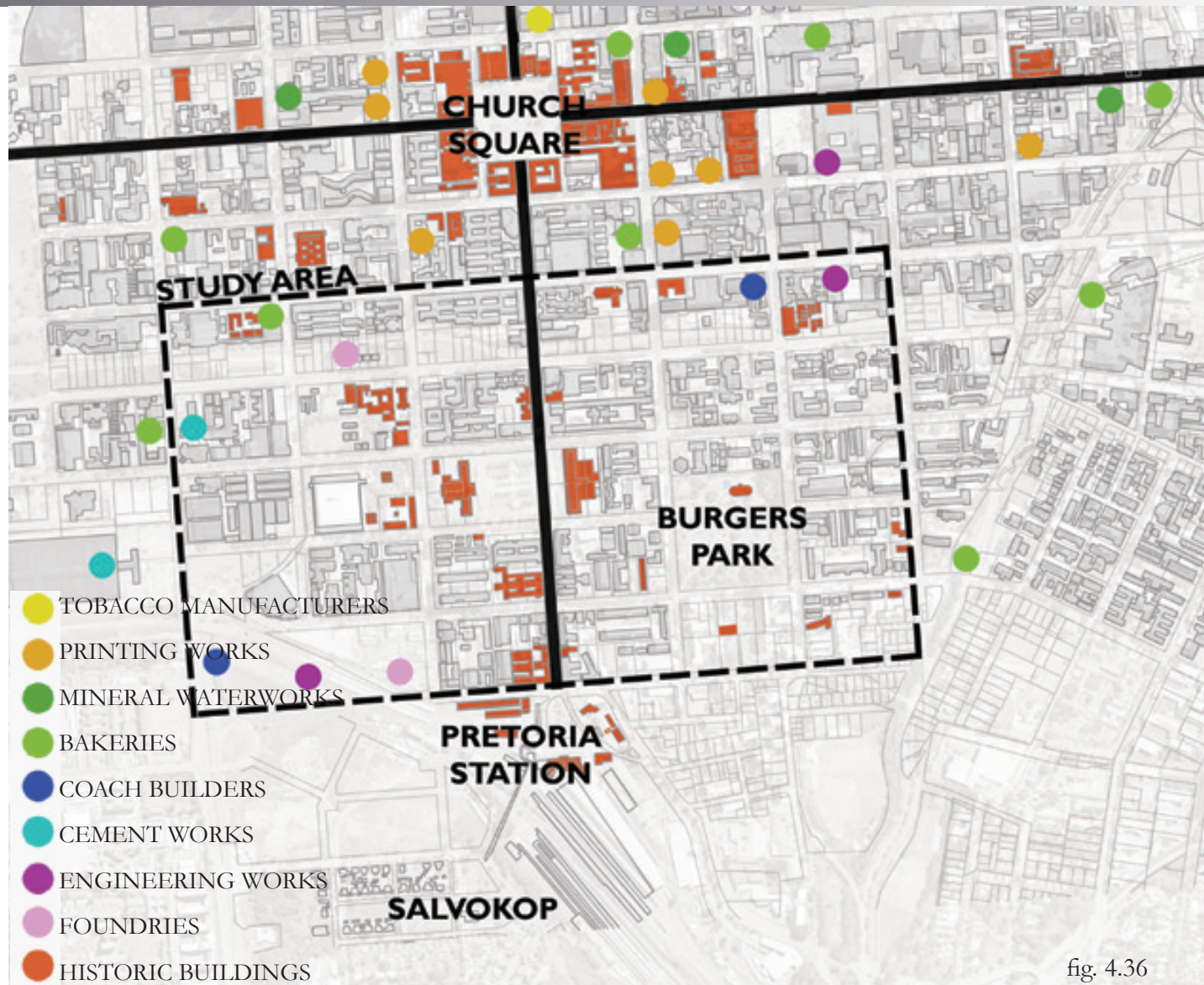


fig. 4.36

fig. 4.37 Various buildings within the Pretoria CBD highlighting the varying rhythm of scale and form in window and door openings

fig. 4.38 The consistent facade demarcations in the study area - 1

**STUDY AREA - SCALE & FORM  
WINDOWS AND DOORS**

There is a variety of scale and form found within the Pretoria CBD. This allows for a multi-layered rich environment that shows and celebrates the various levels of the city.



fig. 4.37

fig. 4.39 The consistent facade demarcations in the study area - 2

fig. 4.40 Existing street section through Paul Kruger Street

fig. 4.41 Existing street section through Minnaar Street

**STUDY AREA - SCALE & FORM  
FACADE DEMARCATIONS**

Although there is a variety of scale and form throughout the city, the facades of the Pretoria CBD allow for a level of consistency with facade demarcations and proportions. As is seen below, floor to floor heights are similar and familiar between the different buildings in the city.

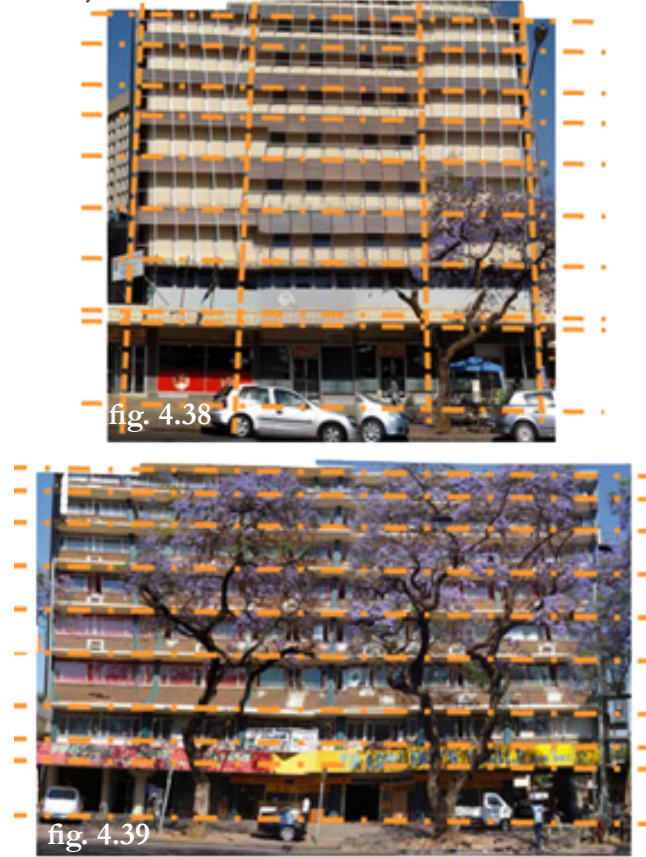


fig. 4.38

fig. 4.39

fig. 4.42 Existing Street section through Skinner Street

**STUDY AREA - SITING  
EXISTING STREET SECTIONS**

At present, the road interface is a harsh environment and is designed mainly for vehicular use. Attention needs to be paid to making the street environment pedestrian friendly and an enjoyable environment to be walking in. Fences around buildings need to be removed to create an interactive street environment with active ground floor interfaces. More green pockets will also have to be created within walking distance of each other along these pedestrian routes.

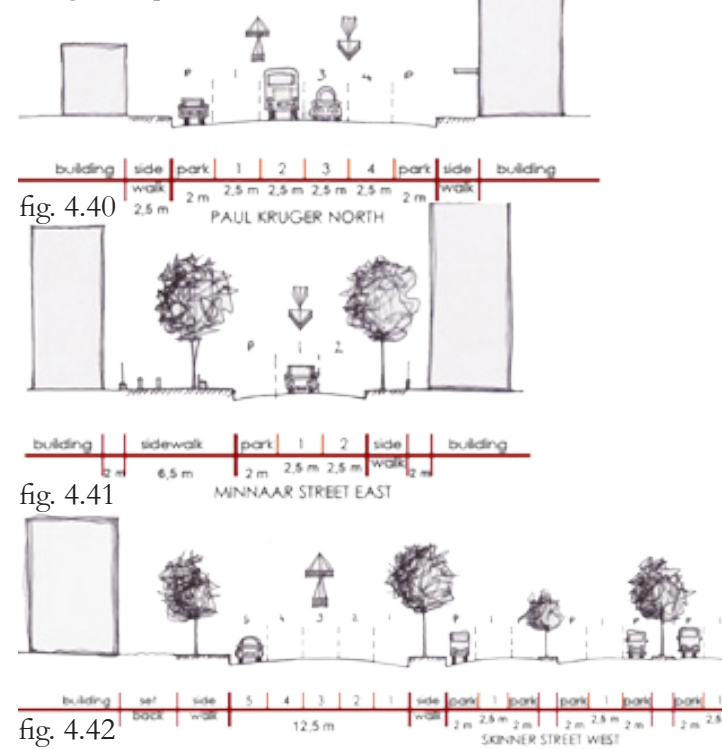


fig. 4.43 Existing section through a typical 4 storey building

fig. 4.44 Existing section through a typical 1 storey building

fig. 4.45 Existing section through a 3 storey building

fig. 4.46 Existing section through a typical 9 storey building

fig. 4.47 Existing section through a high rise building

fig. 4.48 There is a variety of paving materials through out the Pretoria CBD

fig. 4.49 There is a variety of materials, colours and textures through the built fabric of the CBD

## STUDY AREA - SITING

### EXISTING BUILDING SECTIONS

Currently, there is a diverse range of building sections and scales in the study area ranging from single storey to multi-storey buildings. This creates an under utilized density factor within the city that needs to be overcome.



fig. 4.43

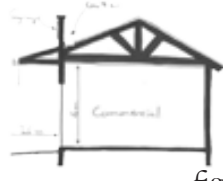


fig. 4.44



fig. 4.46

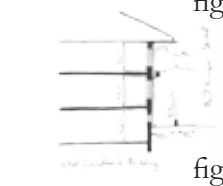


fig. 4.45

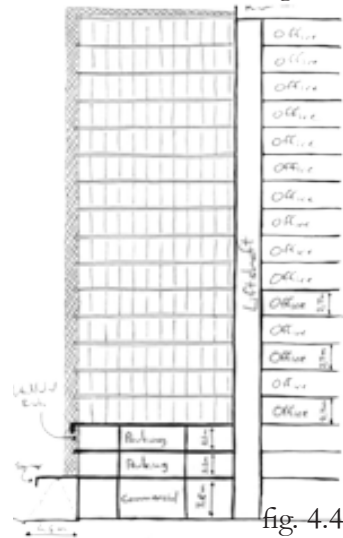


fig. 4.47

## STUDY AREA - SITING

### PAVING

The sidewalk surfaces in the study area range in types and texture. The continuous level changes in the sidewalk makes it an unfriendly environment for pedestrian traffic, however the different paving materials creates a rich tapestry in the city. Minnaar, Visagie and Bosman Streets have physical strengths towards this goal.

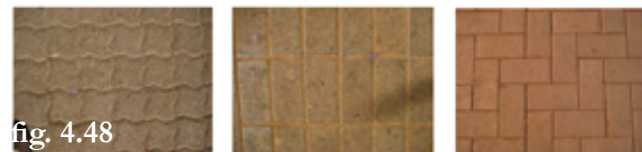


fig. 4.48

## STUDY AREA - SITING

### MATERIALS, COLOURS & TEXTURES

There are a variety of textures, materials and colours within the Pretoria CBD, highlighting the multi-layered, culturally diverse history of Pretoria and South Africa. These materials, textures and colours need to be considered in adding another layer to the city fabric.



fig. 4.49

# URBAN FRAMEWORKS - INTRODUCTION

## URBAN FRAMEWORKS - INTRODUCTION

An urban design framework for the Burgers Park District needs to be set up. A group consisting of Andrea Beckenstrater, Samantha Moolman, Conrad Martin and Christiaan Liebenberg developed a group urban design framework for the “*Southern Precinct*”.

Existing urban design frameworks, developed by various government departments and individuals, were investigated and explored with the result of an urban design framework that built on the ideas and goals set out in these frameworks. The following existing frameworks were analysed: the Tshwane Inner City Project (TICP), Pretoria Integrated Development Plan (PIDP), and the City of Tshwane Compaction and Densification Strategy.

With the above mentioned existing frameworks in mind and analyzed information gathered from the surroundings, a group urban design framework is proposed that consolidates and builds further upon these previous frameworks, and allows further development by other individuals.

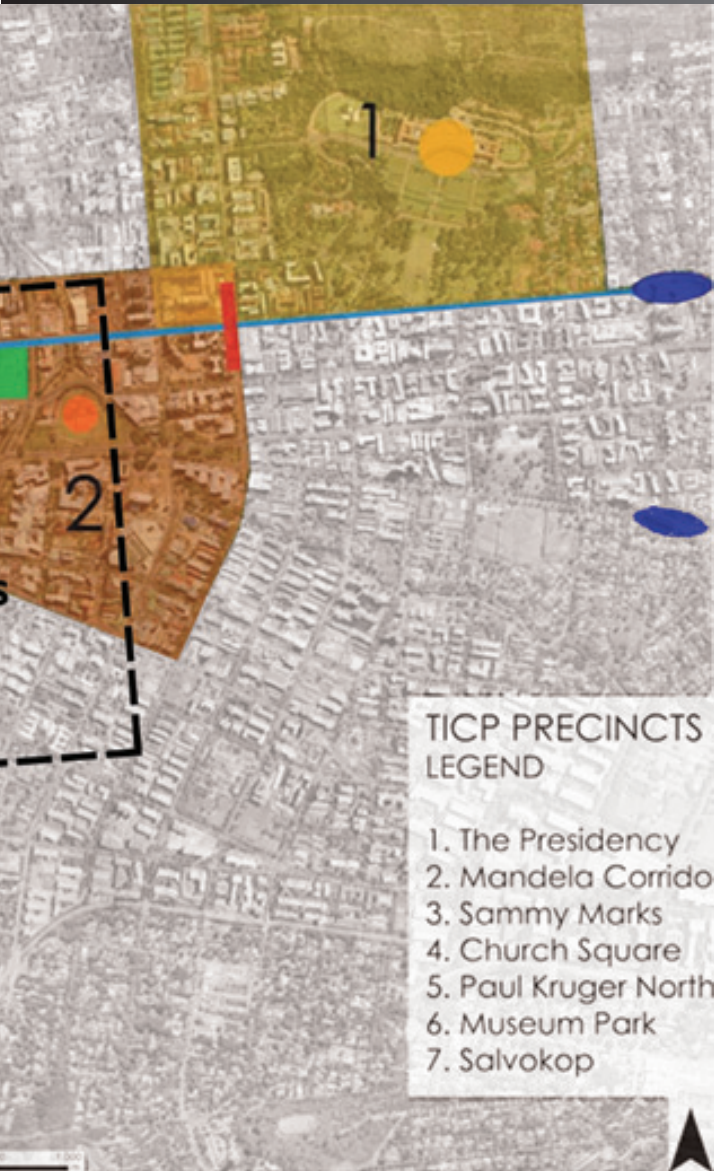


fig. 4.50

fig. 4.50 The precincts as laid out in the TICP

fig. 4.51 The three main corridors as identified in the TICP

# EXISTING FRAMEWORK 1



## EXISTING FRAMEWORK 1 TSHWANE INNER CITY PROJECT

The TICP identifies three strategic corridors:

- 1 - The Church Street Corridor
- 2 - The Paul Kruger Street Corridor
- 3 - The visual corridor between the Union Buildings and Freedom Park.

The TICP also highlights and acknowledges three unique symbolic sites within the Pretoria CBD:

- 1 - Union Buildings (the seat of the Presidency)
- 2 - Church Square (the centre of the City)
- 3 - Freedom Park (a new National Legacy site)

The primary objectives of the TICP are to:

- Link the three symbolic sites mentioned above
- Consolidate infrastructure, pedestrian movement and public transport.
- Consolidate and cluster individual departments in synergistic and functional relationships in the city.
- Integrate urban management.
- Promote Resource Efficient Design (RED).
- Encourage the relocation of the private sector, foreign government offices & institutions to the CBD.

### *Criticism*

The TICP places much responsibility on the government to be the initiator of the urban renewal process which would further influence the private sector to do the same. This means urban renewal will need to become a critical part of the governments' economic policies. Although this is a holistic and noble strategic initiative, it is highly unlikely.



fig. 4.51

fig. 4.52 Plan showing the principles set out in the Pretoria Integrated Development Plan

fig. 4.53 Sections showing that the height of a building is proportional to the distance between two buildings to allow sun to enter.

fig. 4.54 A solid street facade is necessary in terms of creating more dense cities

# EXISTING FRAMEWORK 2

## EXISTING FRAMEWORK 2 PRETORIA INTEGRATED DEVELOPMENT PLAN

The Southern Precinct has many good qualities and high density residential stock, however it is currently suffering serious neglect and decay.

The main intensions of this framework are to develop “Station Square”, “City Hall Square”, “Museum Mall” and the “Skinner Street Crossing”, however it also focuses on many other secondary items listed below:

- Develop the Berea retail, recreational facilities and offices.
- Promote the re-use of the industrial buildings to the west.
- Emphasise the link between Church Square and the Station.
- Develop Skinner Street to break the barrier it forms
- Increase development around Burger’s Park.
- Encourage residential development.
- Propose an alignment for public transport in terms of new transport nodes and hotspots.
- Emphasise and extend the existing *Museum Mall* to the Apies River.
- Develop ‘*Woonerf*’ Street around Burgers Park.
- Develop the Apies River open space.
- Emphasise & pedestrianise the Paul Kruger Street axis.
- Pretoria Station is to house “Station Square”.
- City Hall Square is to become an active civic square.

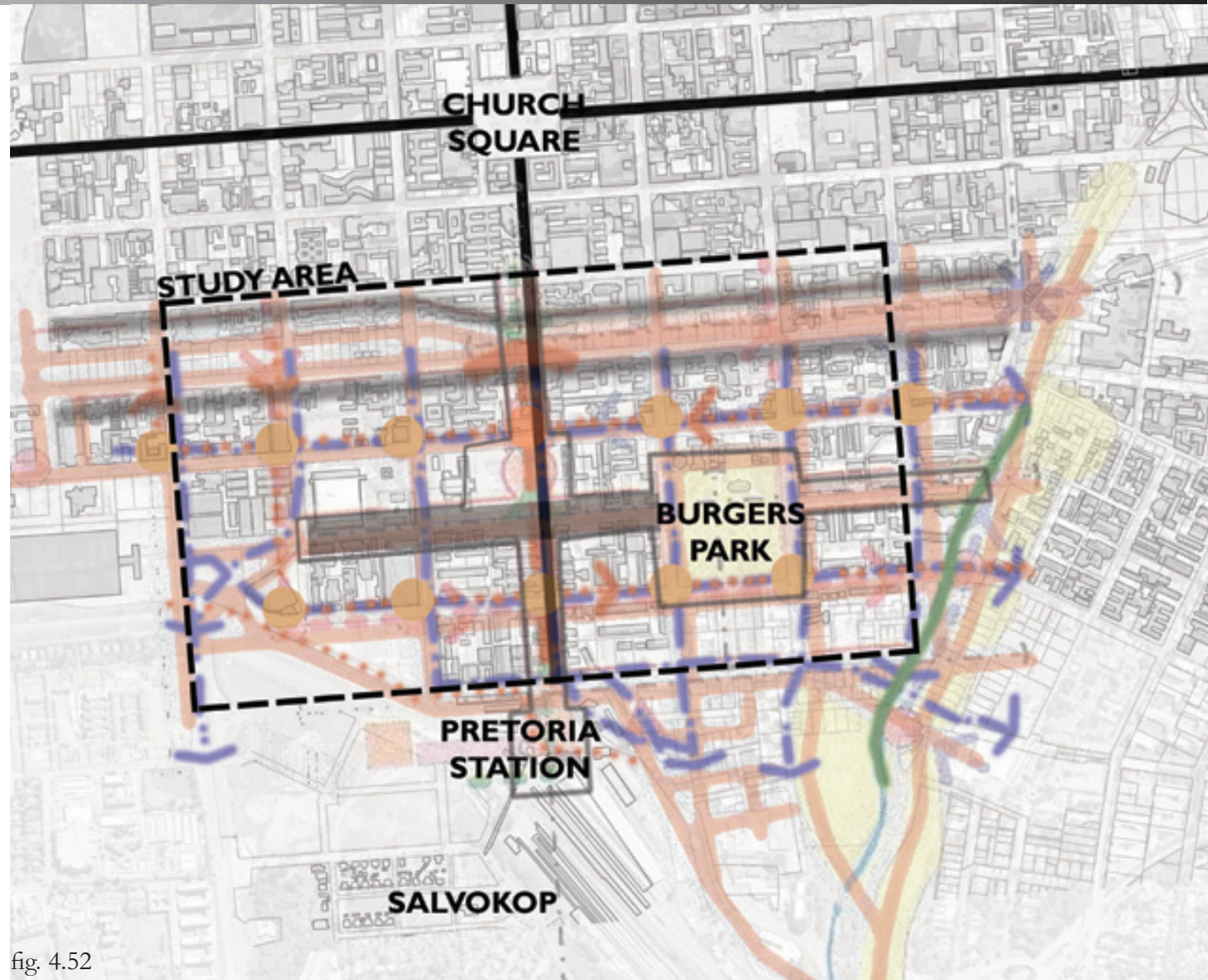


fig. 4.52



- fig. 4.55 Typical section on an active street front
- fig. 4.56 Typical section through a mixed use building
- fig. 4.57 How to create appropriate street edges
- fig. 4.58-4.59 Implemented semi-private courtyards
- fig. 4.60 Create more movement through city blocks

fig. 4.61 Variety of options in terms of parking, garden placements and clustering

# EXISTING FRAMEWORK 3

## EXISTING FRAMEWORK 3 CITY OF TSHWANE COMPACTION AND DENSIFICATION STRATEGY

The City of Tshwane Compaction and Densification Strategy is intended to inform area specific spatial frameworks for the future development of South African cities. South Africa currently has a problem in that cities are not dense enough, with urban sprawl occurring around the city centres. These guidelines propose certain legislative changes and incentives to encourage densification within the city. This strategy also contains design guidelines to ensure that densification does not negatively affect the experience of the users. The diagrams alongside represent a few examples of these design guidelines as set out in the document.

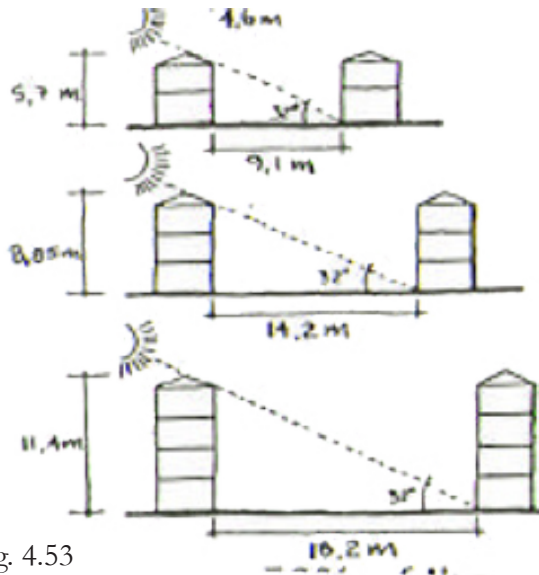


fig. 4.53



fig. 4.54



fig. 4.55

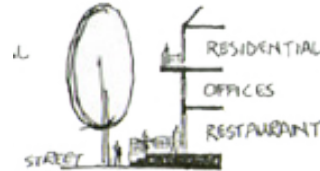


fig. 4.56

fig. 4.57



fig. 4.58



fig. 4.59

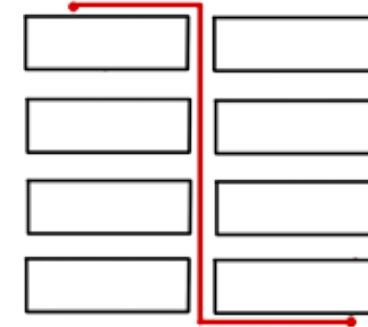


fig. 4.60

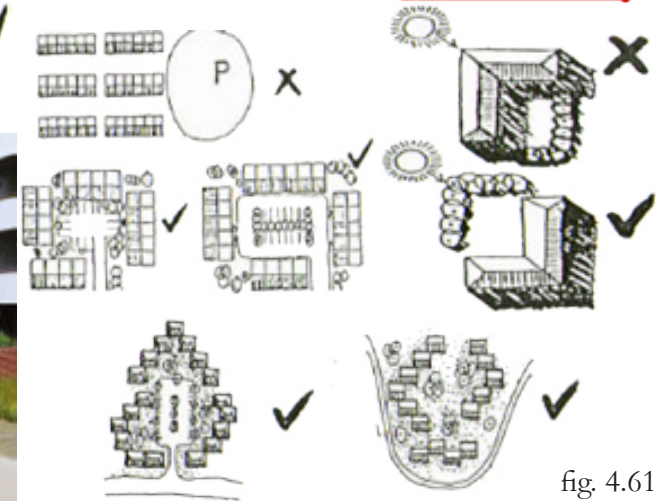


fig. 4.61



# GROUP URBAN DESIGN FRAMEWORK

## GROUP URBAN DESIGN FRAMEWORK

### OBJECTIVES:

The objectives of the group urban design framework set out in this dissertation intends to achieve the following results:

- Create an environment near the Pretoria CBD that will encourage more people to either visit the area more regularly or move into the area.
- Increase the density within the city and provide a wider range of commercial, social and cultural activities that can take place at all times of the day.
- Restore existing buildings within the city, thereby rejuvenating the area and the surrounds.
- Create an environment that is welcoming to residents, visitors and tourists.
- Re-emphasise and highlight the historic link between Church Square and the Pretoria Station.
- Create a more pedestrian and cyclist friendly environment where people can walk through and experience the city rather than simply passing through it.

## WHO SHOULD USE THE FRAMEWORK/GUIDELINES

Any individual/group that intends to develop in the proposed study area.

## WHEN SHOULD THE GUIDELINES BE USED:

When an individual/group intends to develop (on any scale) in the study area proposed.

## WHAT ARE THE GUIDELINES BASED ON:

### SUSAN MCDONALD FILE

When investigating the study area, the following headings were used as guidelines to ensure that the various levels of investigation into the city's fabric were explored.

They are:

- Character
- Scale and form
- Siting
- Materials
- Detailing

## NEGATIVE ELEMENTS IN THE STUDY AREA:

- A lack of cross programming, 24 hour activities and mixed use development.
- There are many dilapidated buildings.
- The social diversity of South Africa is not addressed.
- Fences currently surround public green spaces.
- There are constant breaks in the city fabric.
- There are many run-down industrial developments.
- There is a focus on vehicular movement, rather than on pedestrian movement.
- The sidewalks are harsh and hot with too few trees and shade.

## POSITIVE ELEMENTS IN THE STUDY AREA:

- There is high density residential stock in the area.
- There is easy access to the city and transport routes.
- The area is within walking distance from Church square and other significant sites.
- There are many tourist attractions and museums in the area.
- Burgers Park is well used and readily maintained.
- Improved development is already taking place in Minnaar, Visagie and Bosman Streets.
- There are many historically rich buildings in the surrounding areas giving a rich historic layer to the city fabric in the area.
- The area is rich in social and cultural diversity.

Also see Appendix 1.

### FRAMEWORK - PRECINCTS

After investigating the areas around the Pretoria CBD, it became apparent that specific areas already possess their own specific character. These characters are created due to different land use, building typology, various social activities, amongst other reasons.

Therefore, in this framework, precincts have been identified according to the particular character and programmes of an area as well as from drawing on boundaries set up in previous frameworks.

The majority of the study area chosen falls within the *Southern Precinct*, previously mentioned as the *Burgers Park Precinct*. Another name previously given to this area was the *Museum Precinct* due to the areas rich variety in museums and tourist destinations, as well as playing host to the 'Museum Mall'. However the group did not want to limit the area to housing museums only due to its name, therefore it was deemed necessary to change the name.

The areas directly adjacent to this precinct are the CBD Central - where the majority of businesses are found within the city, the Light Industrial Precinct - currently housing light industrial uses, Salvokop Precinct - a 'koppie' with recent development on it, Station Precinct - the area south of the study area which houses the Pretoria Station as well as the railway lines, and finally the Nelson Mandela Corridor and Sunnyside Precincts bordering to the east.

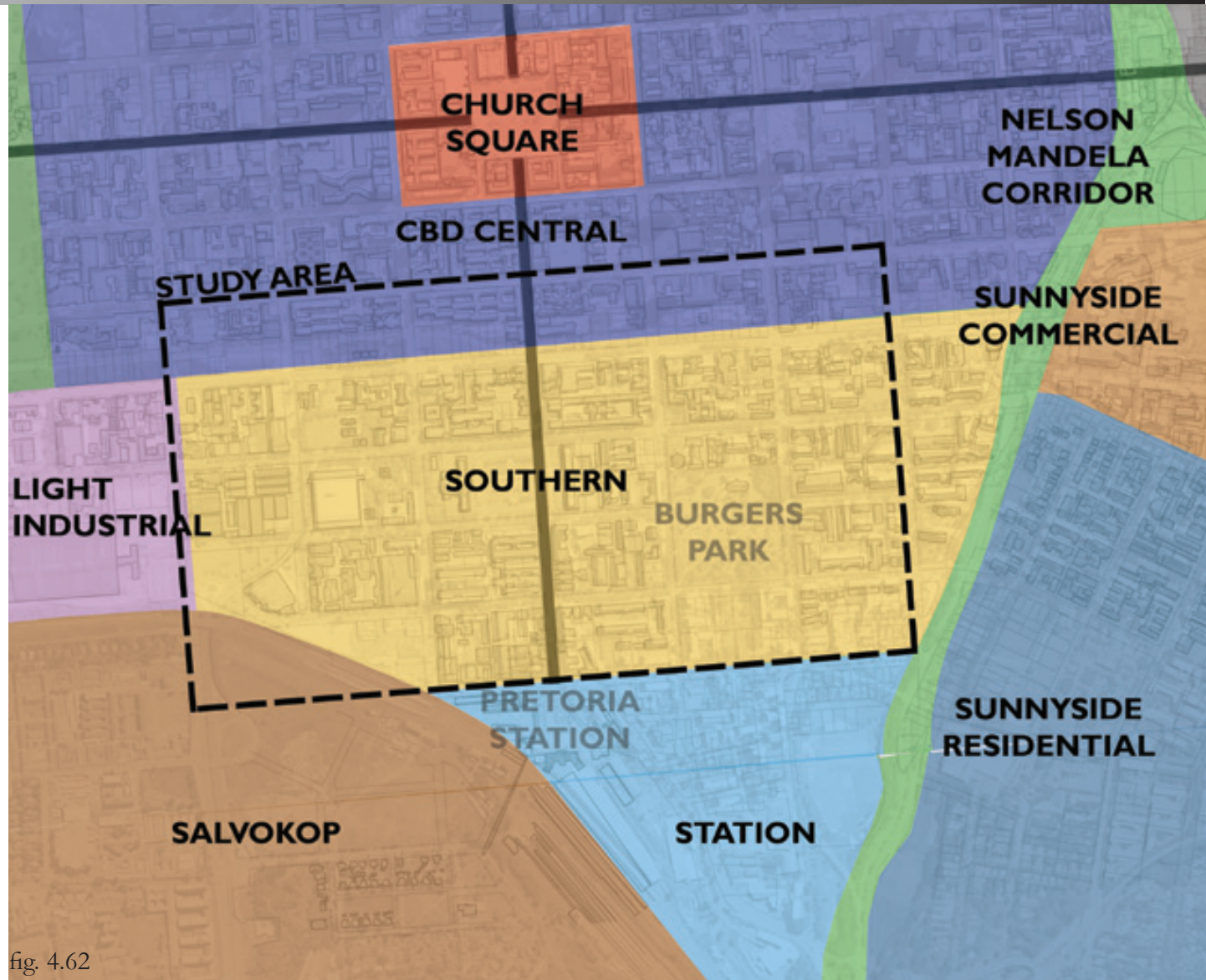


fig. 4.62

fig. 4.63 Group Urban Design Framework land use and height restrictions for the Southern Precinct

### FRAMEWORK - SOUTHERN PRECINCT LAND USE & HEIGHT RESTRICTIONS

In general, there is a concern that the study area is not dense enough, however the opportunity for improvement is evident. Land-use as well as height suggestions have been allocated to various areas within the study area to allow the vicinity to increase in density while still addressing the existing urban environment.

Currently, there is a strong residential component around Burgers Park, this must be maintained, however densities could still be increased.

A commercial hub is to be created along Paul Kruger Street as a catalytic development with economic opportunities for the area. Adaptive re-use and introduction of mixed use development into the area will also help achieve these results.

The idea of *Museum Mall* from previous frameworks is to be extended to the Apies River to allow a cultural link between the CBD and the sprawl and neglect of the east. This will also increase the tourist trade in the area allowing the economic environment of the city to flourish.

This framework also proposes to upgrade and develop historic buildings within the city via adaptive re-use to create functional buildings within the CBD, not simply empty iconic structures.

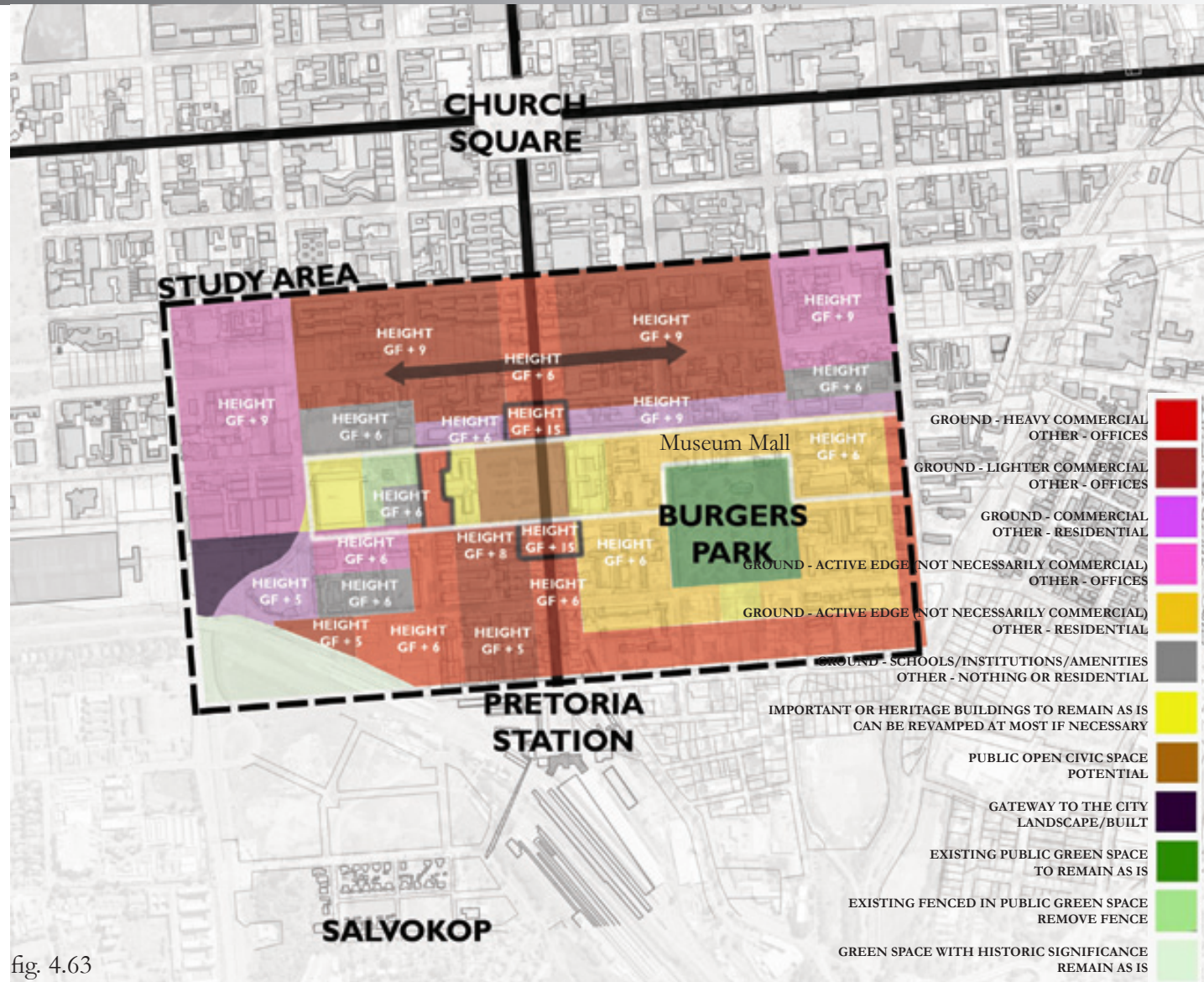


fig. 4.63

### FRAMEWORK - PHASING

The development of the Southern Precinct will be divided into four phases. The first phase will be the interventions along the Paul Kruger Spine. This will act as a catalyst for the development of the entire area and will encourage future development and growth around it as a commercial hub. This first phase will bring more money, and therefore more interest in development, into the area.

The second phase of the framework is to upgrade and develop the areas around the social and political nodes of Burgers Park and City Hall. From here, commercial, social and residential development will continue around these nodes.

The third phase is to upgrade the existing light industrial area west of City Hall. It is anticipated that development and capital input will be injected back into the area and the light industrial buildings will again be utilized. This area will encourage adaptive re-use of these buildings into studio apartments, as well as spaces for exhibitions and social gatherings.

The final phase for the study area is to upgrade the existing commercial strip along Skinner Street. There will be an even larger demand to create a safe pedestrian link between Church Square and the newly developed Southern Precinct, therefore it is proposed to connect these two sides of the CBD as well as creating a continuous commercial street.

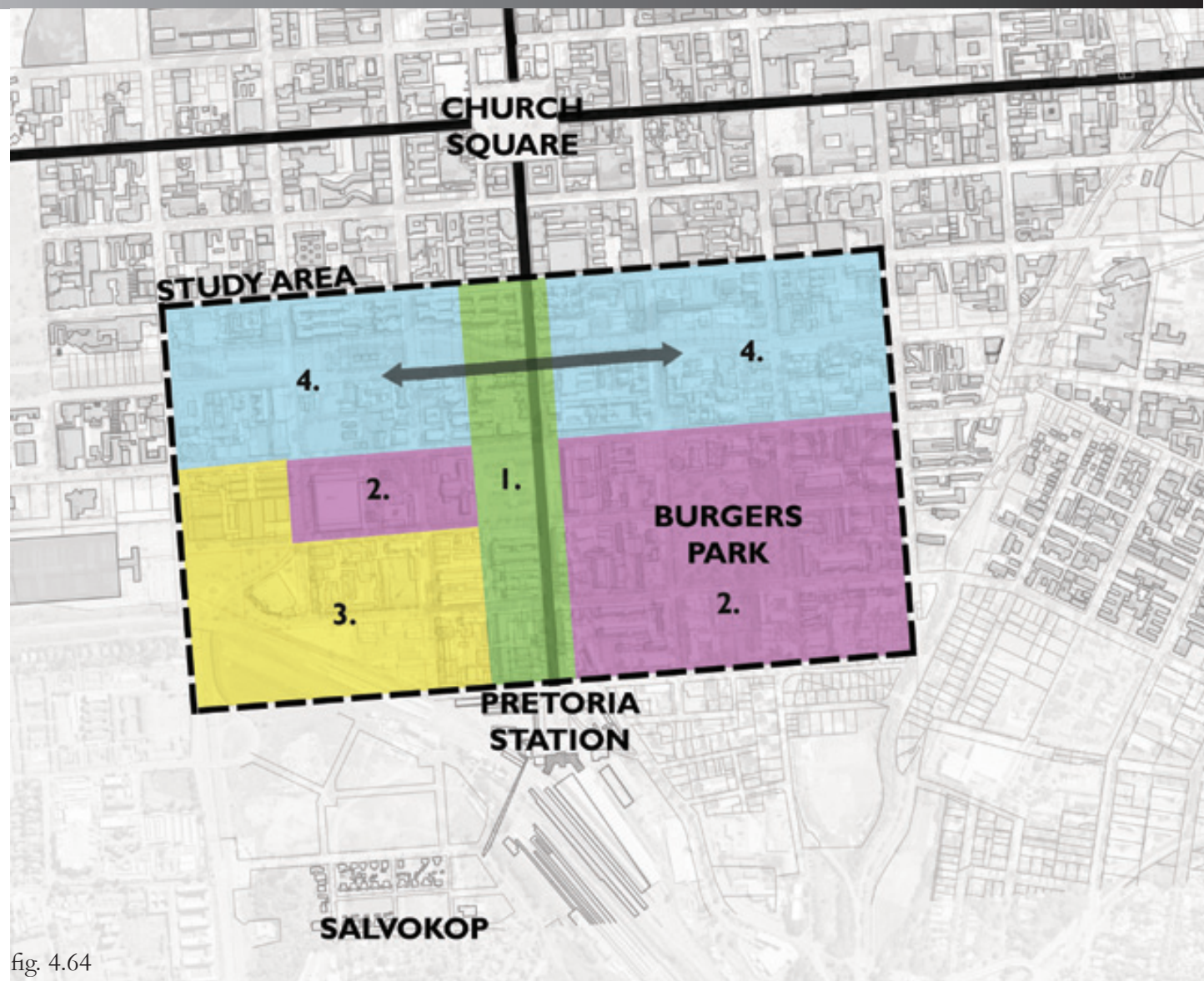


fig. 4.64

fig. 4.65 Group Urban Design Framework active edges and activity nodes

#### FRAMEWORK - ACTIVE EDGES

A wider range of activities and facilities need to be provided within the area to allow social and cultural diversity to enter the CBD. There is a lack of 24 hour activities along the streets of this area, posing unsafe and unfriendly environments. Mixed use buildings with active ground floors and open public spaces need to be introduced to the area to create these 24 hour utilized spaces.

Currently, Burgers Park and the areas around it are well utilized, however the lack of activities and movement around this area at night make it an unsafe area to be in after dark. Twenty-four hour activities and nodes need to be created at specific places around the park to allow for a safe environment. The buildings that form these nodes, therefore need not be bound to the residential zoning in the area, they may vary from this typology to provide such activity nodes.

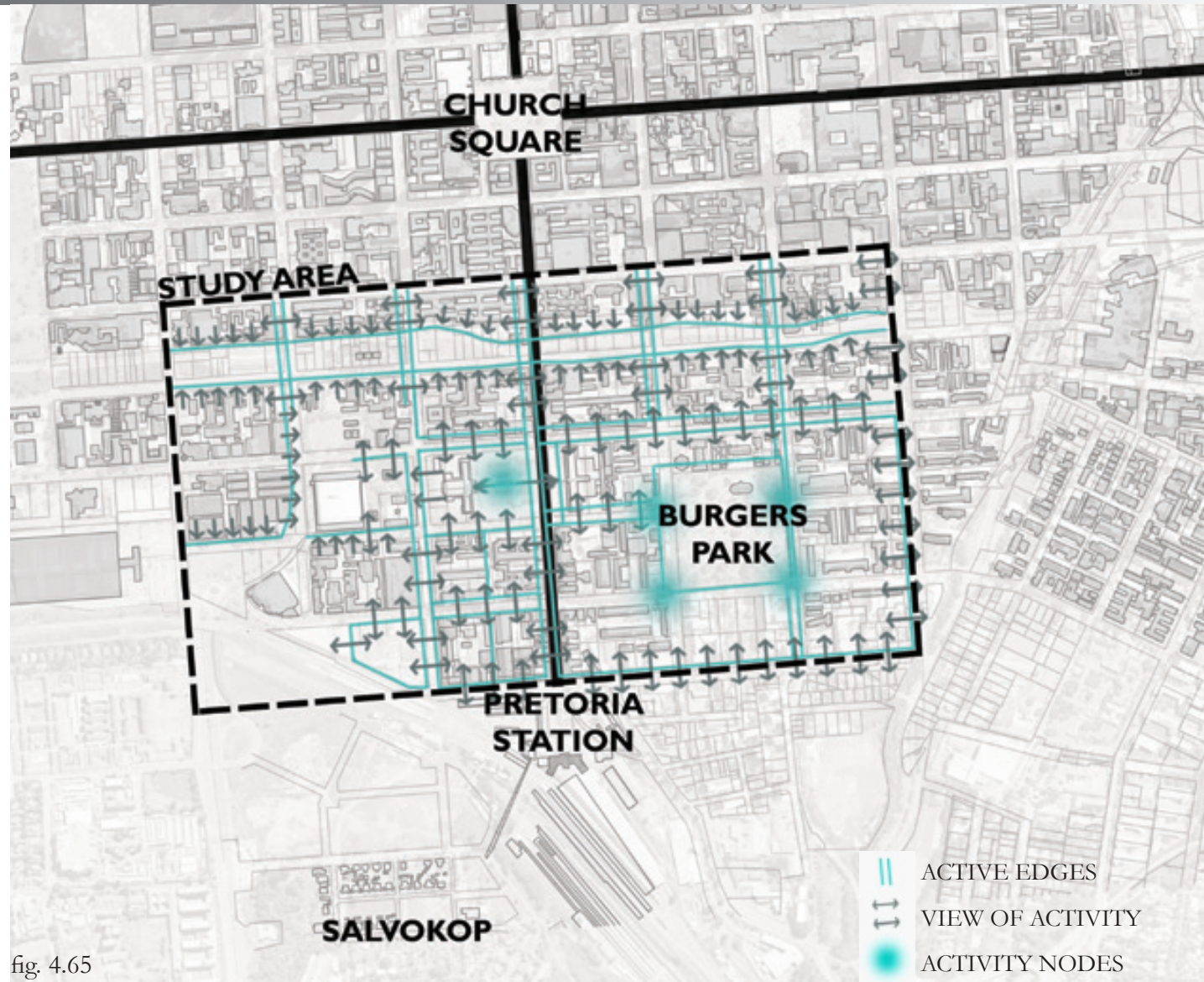


fig. 4.65

fig. 4.66 Group Urban Design Framework visual links and circulation

### FRAMEWORK - VISUAL LINKS & CIRCULATION

- Many historic visual links are currently obstructed and need to be restored:

The view of the Cultural Museum from Schubart Street

The view of the Station from Paul Kruger Street

- Many historic links still exist, however they need to be emphasized:

View between Church Square and the Station via Paul Kruger St.

View of Burgers Park via Minnaar St.

- Many visual links need to be created to enhance clarity in the area:

Create a 'Gateway' to the east of the prison

View of Salvokop from Paul Kruger Street

The current emphasis on the design of the city for cars is to be shifted to that of design for pedestrians in conjunction with public transport, minimizing traffic and vehicular flow to, from and through the city.

Skinner Street, is to be re-designed to allow safe pedestrian movement across it, creating a safe passage through the city. Development on the Skinner Street Island is encouraged to break the current barrier it presents.

The Gautrain Stop at the Station will bring more people to the study area with more economic, cultural and social opportunities. The BRT Route will run down Paul Kruger Street, reducing the need for private transport in this area and creating an environment more welcoming for pedestrians and cyclists, as well as reducing the number of unsightly parking lots and on-street parking.

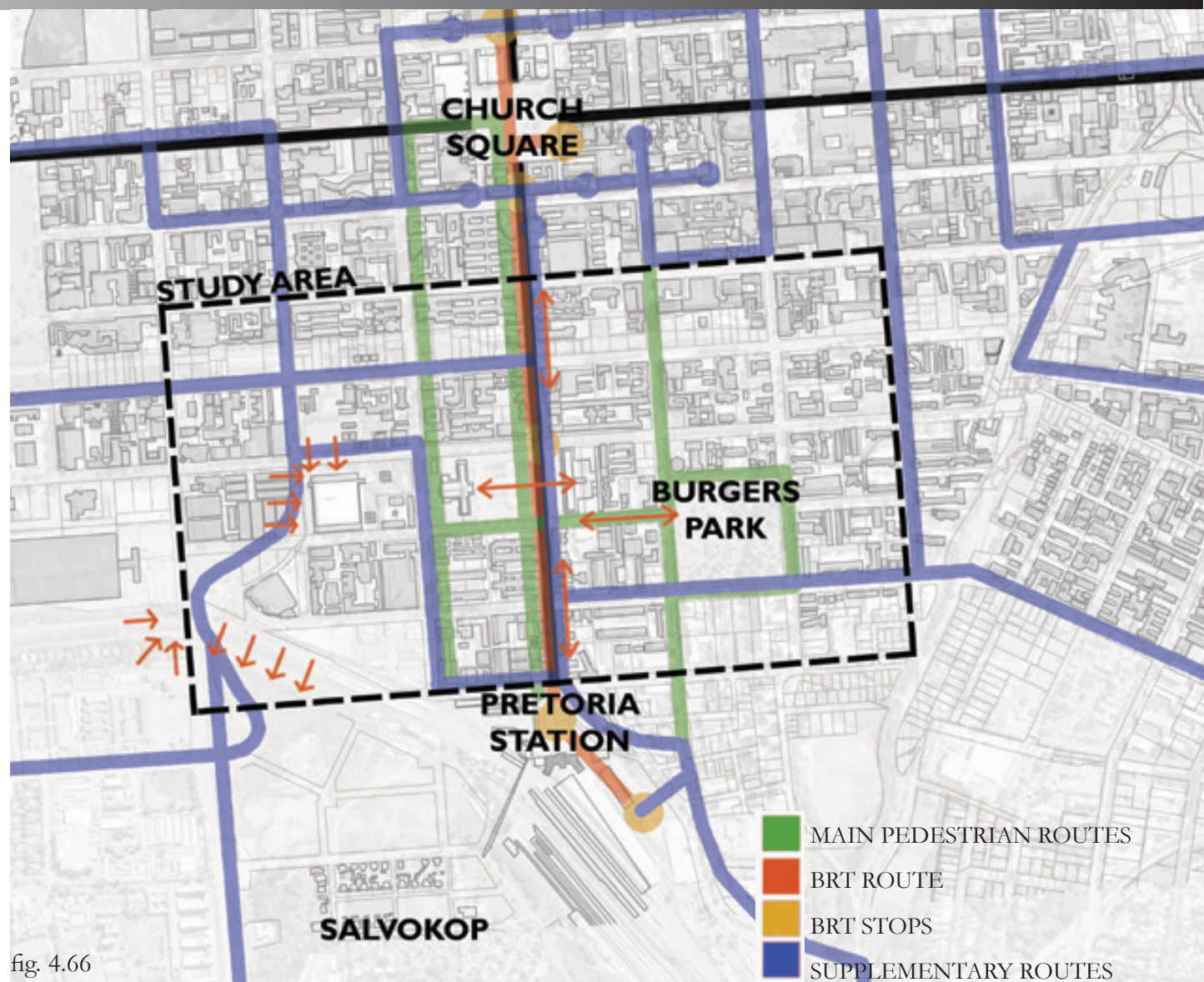


fig. 4.66



fig. 4.67 Group Urban Design Framework street edges and setbacks - section key plan

### FRAMEWORK - STREET EDGES & SETBACKS

There is an existing rich dialogue within the city. New developments in the area should not exclude and ignore this, but rather embrace the diversity and rich layering that is present in the city. Designers should add another layer to this dialogue, not limit it.

Sidewalks and setbacks of buildings need to be created that will encourage the pedestrian movement and interaction through the city. Buildings should not be closed off and only visually accessible to cars passing by. Vibrant, energetic environments need to be created that are democratic and accessible to all.

Building setbacks, paving details, greenery and street furniture all need to work together to create an environment where the pedestrian feels free, unthreatened and able to access and experience the city on all levels.

Various elements have been highlighted in the framework that need to be used on specific street edges to create such environments which can be seen in the sections and details that follow.

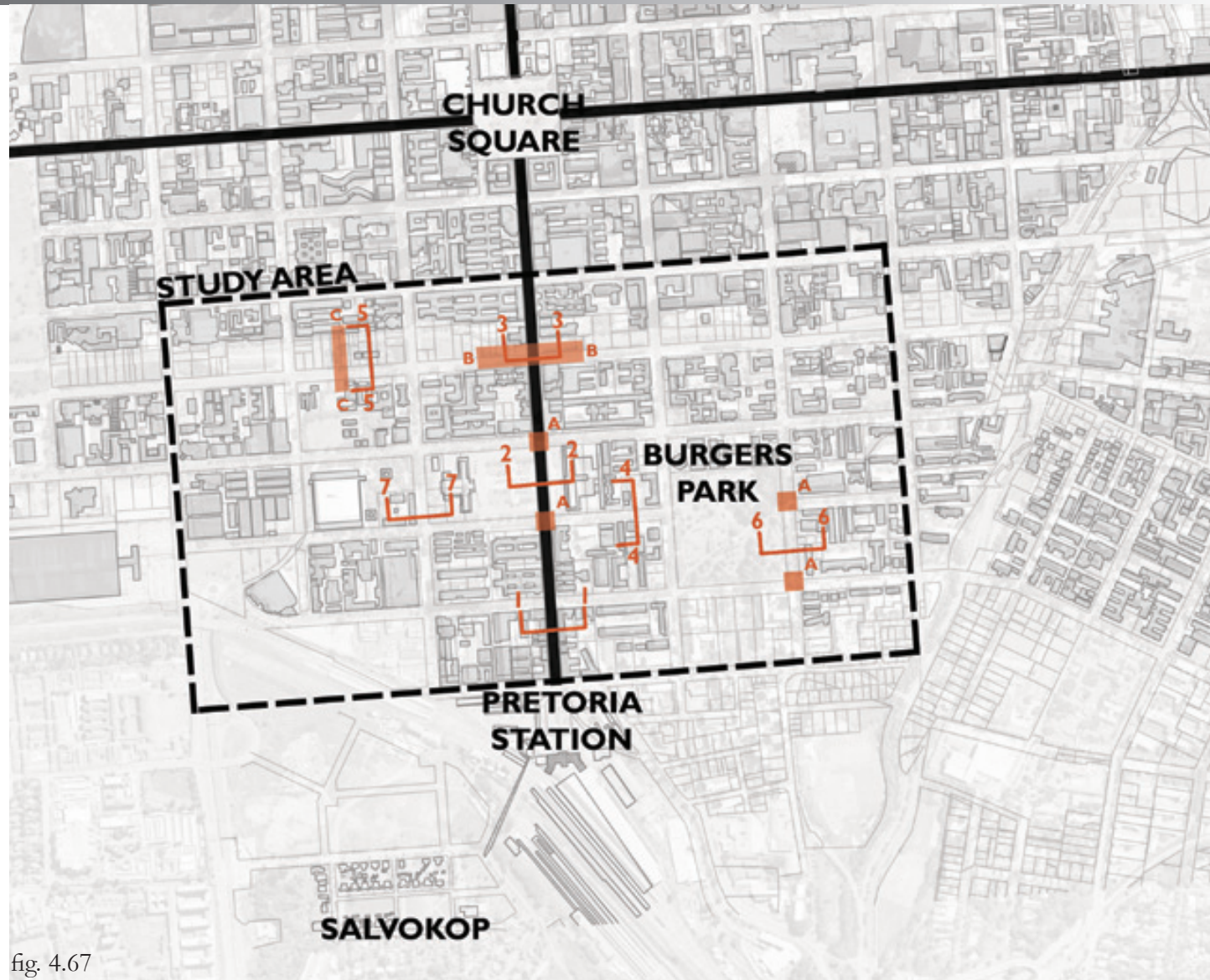


fig. 4.67

## SECTIONS - GENERAL

There are general principles that have been incorporated throughout the framework, they are as follows:

- Soffit heights on ground floor levels should be a minimum of 3,8m and a maximum of 4,5m in height for both commercial & residential use.
- Floors above the ground floor ought to have a minimum soffit height of 3m.
- Buildings that are located on active street edges must be well defined.
- Semi-private areas should be demarcated by items like low walls, however no high fences or walls are to be constructed within the city.

## SECTIONS - PAUL KRUGER STREET

Figure 4.68 is a typical section through Paul Kruger Street which shows the following principles:

- The build-to line is 5.5m from the street kerb. 100% of the ground floor façade must be built to this line. If the building is higher than 6 storeys, like the building on the left, a step back above the third floor of no less than 2m from the build to line applies.
- Pedestrian comfort is taken into consideration through the incorporation of canopies which extend no more than 2.5m over the active street edge. Consideration as to what happens with adjacent buildings when implementing these elements is to be considered.
- Trees are to be incorporated along Paul Kruger Street, also for pedestrian comfort.

Figure 4.69 shows a section through Paul Kruger Street between City Hall and the Transvaal Museum highlighting the following principles:

- The BRT and cycle lanes are indicated in the middle of Paul Kruger Street.
- Street furniture is to be implemented on major routes within the precinct to create a specific identity for the precinct, as well as pause areas for pedestrian comfort.
- The open area in front of City Hall offers an opportunity for an intervention.
- Figure 4.70 illustrates the position of additional lighting within the area for safety reasons.

fig. 4.68 Group Urban Design Framework - Section 1 through Paul Kruger Street

fig. 4.69 Group Urban Design Framework - Section 2 through Paul Kruger Street

fig. 4.70 Section 2 at night

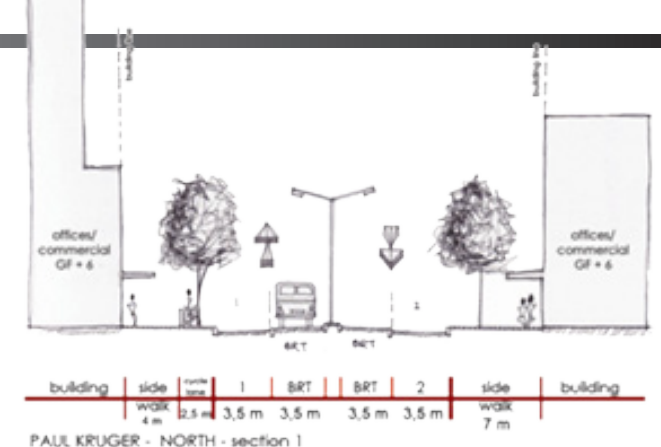


fig. 4.68

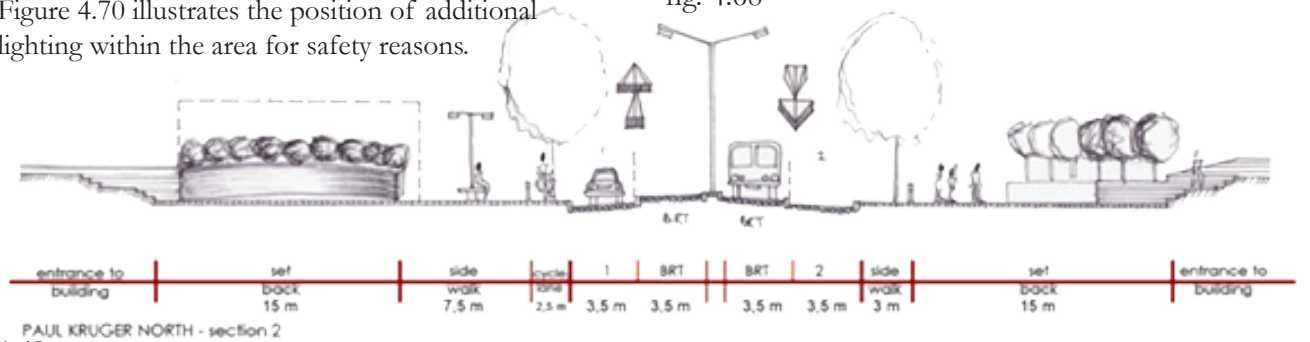


fig. 4.69



fig. 4.70

fig. 4.71 Group Urban Design Framework - Section 3 through the intersection of Paul Kruger and Skinner Streets

fig. 4.72 Section 3 at night

### SECTIONS - PAUL KRUGER & SKINNER STREET CROSSING

Figure 4.71 is a section and intervention through the intersection of Paul Kruger & Skinner Streets which shows the following:

- Active street edges are encouraged along the length of Paul Kruger Street
- To break the harsh environment of the city, vegetation in the form of trees and shrubs have been provided. Not only do they create shade for pedestrians, but they also begin to break the streetscape into a scale appropriate to the users of the city
- BRT and cycle lanes flow continuously down Paul Kruger Street from the Station, past Church Square.
- The most prevalent intervention that is proposed, is the sinking of Skinner Street underneath Paul Kruger Street. This has been proposed to decrease the barrier effect created by Skinner Street and allow pedestrians and cyclists to move more freely in their daily migrations through the city

Figure 4.72 illustrates the position of new lighting in the area. It is important in this framework that sidewalks and cycle lanes be well lit in order to be safe and promote a 24 hour cycle of activity through the city.

fig. 4.71

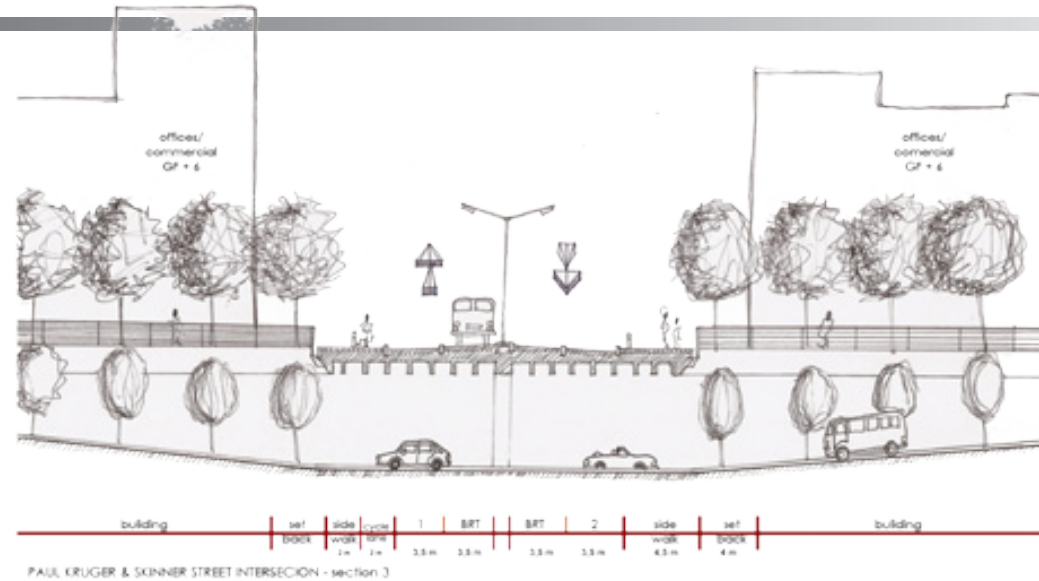


fig. 4.72

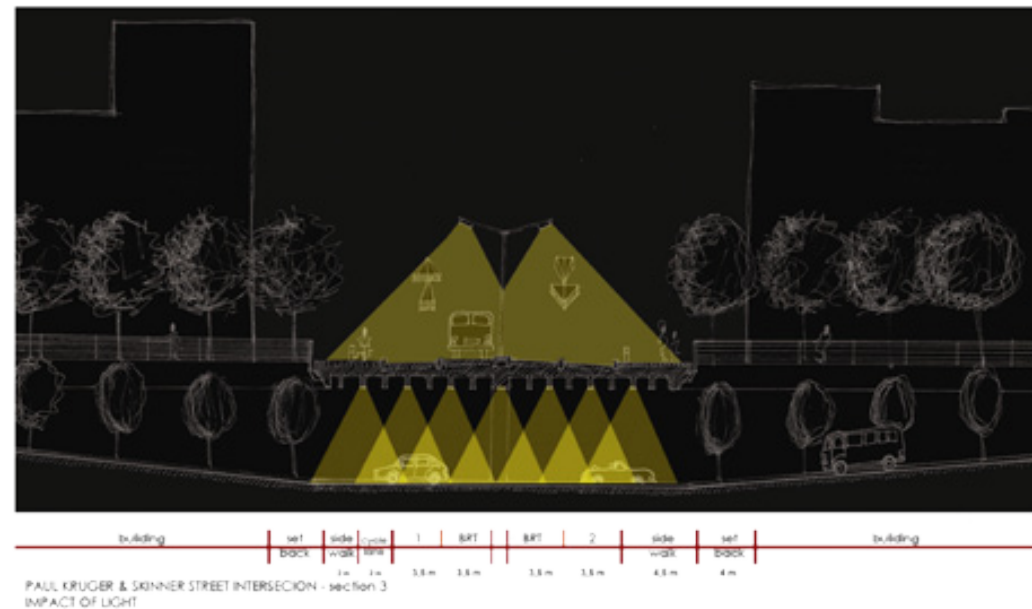


fig. 4.73 Group Urban Design Framework - Section 5 through the Skinner Street intersection  
 fig. 4.74 Framework - Section 4 through Minnaar Street  
 fig. 4.75 Group Urban Design Framework - Section 7 - Typical North/South Street section

### SECTIONS - SKINNER STREET

Figure 4.73 is a section taken through the widest part of Skinner Street, which features the taxi rank in the middle with 4 lanes of traffic on either side which illustrates the following principles:

- A building line of 3m from the street kerb is implemented with 100 % of the ground floor façade to be built to this line.
- BRT lanes are located on either side of the taxi rank island with a dedicated cycle lane to the south of the street.
- Another intervention opportunity has been identified, this time *over* Skinner Street whereby the barrier effect of the disjointed north and south of the city can be brought together.

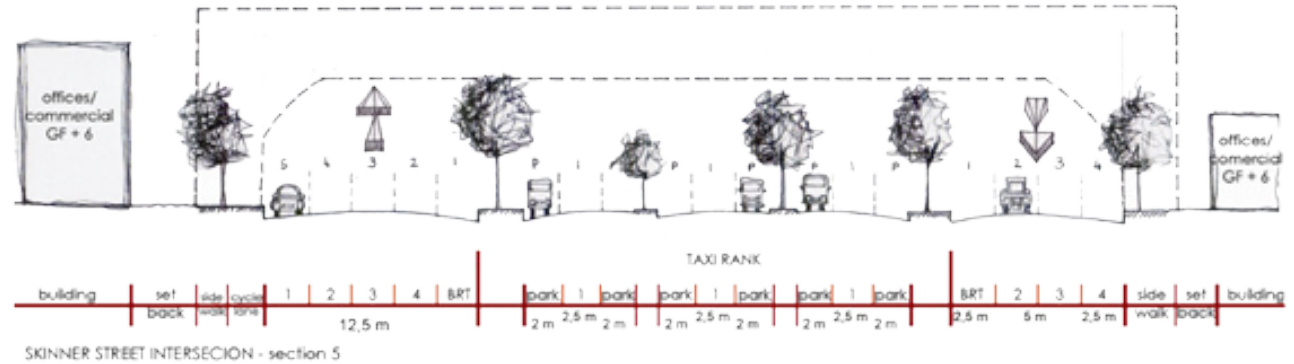


fig. 4.73

### SECTIONS - MINNAAR STREET

- Figure 4.74 shows Minnaar Street to have a build-to line of 5m from the street kerb
- However, if the building has a publicly accessible, active ground floor, this build-to line can be extended to between 2 and 3.5m from the street kerb.

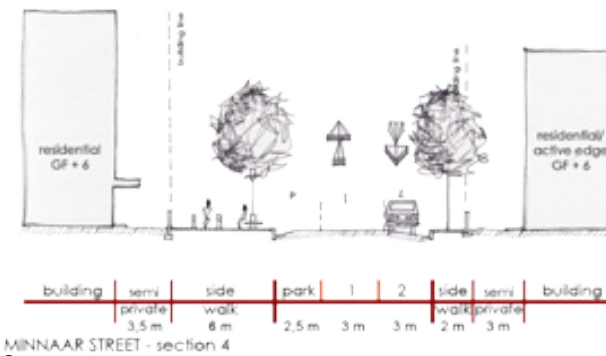


fig. 4.74

### SECTIONS - TYPICAL NORTH/SOUTH STREET

Figure 4.75 indicates a typical North/South Street section within the boundaries of the framework, conveying the following information:

- The build-to-line is 3m from the street kerb with the exception that buildings with publicly accessible ground floors may extend the street façade to 2m from the street kerb.

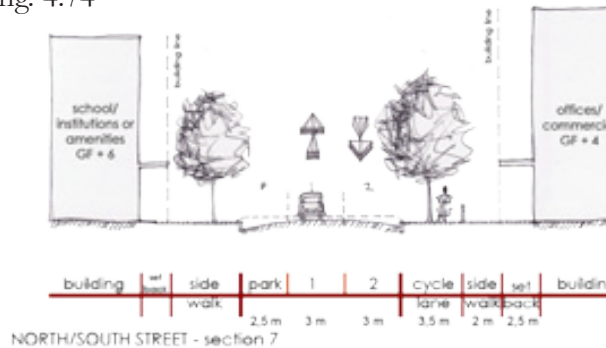


fig. 4.75

### SECTIONS - BURGERS PARK NORTH/SOUTH STREETS

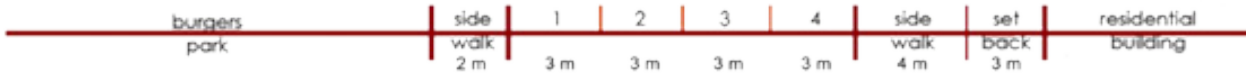
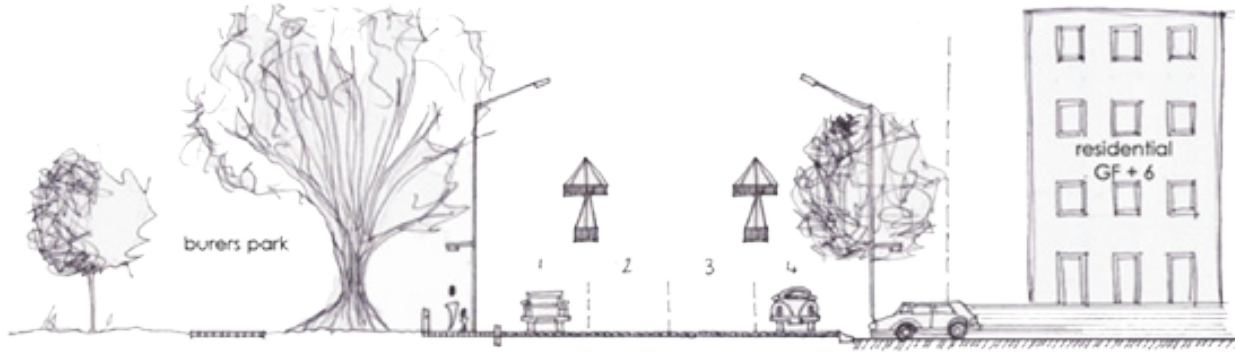
Figure 4.76 illustrates the principles incorporated around the Burgers Park area, which is slightly different to the other north/ south streets due to its unique qualities, however the approaches are similar to that of Minnaar Street:

- The build-to line on the streets around Burgers Park are 5m from the street kerb.
- Once again, there is an exception for buildings that have publicly accessible, active ground floors. Such buildings can extend the build-to line to between 2 and 3.5m from the street kerb.
- Figure 4.77 shows how lighting has been added to Burgers Park and the surrounding streets in order to create a safe 24 hour active zone.

fig. 4.76 Group Urban Design Framework - Section 6 - Typical section through a North/South Street around Burgers Park

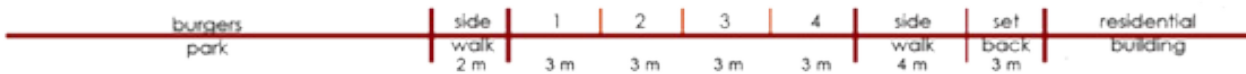
fig. 4.77 Section 6 at night

fig. 4.78 Setting back of street corners at intersections



NORTH/ SOUTH STREET - BURGERS PARK - section 6

fig. 4.76



NORTH/ SOUTH STREET - BURGERS PARK - section 6 IMPACT OF LIGHT

fig. 4.77

### STREET CORNERS

The framework proposes that building lines be set back from corners at street intersections. These setbacks can potentially serve three functions, the first being that it will allow improved line of sight for vehicles at the intersections. The second function is that it will allow spaces for informal trade to take place, which is common in the area, without interrupting the flow of pedestrians. These setbacks can be scaled in relation to the importance or size of the intersection, thus the third function would be to create a hierarchy of spaces along roads, aiding orientation.

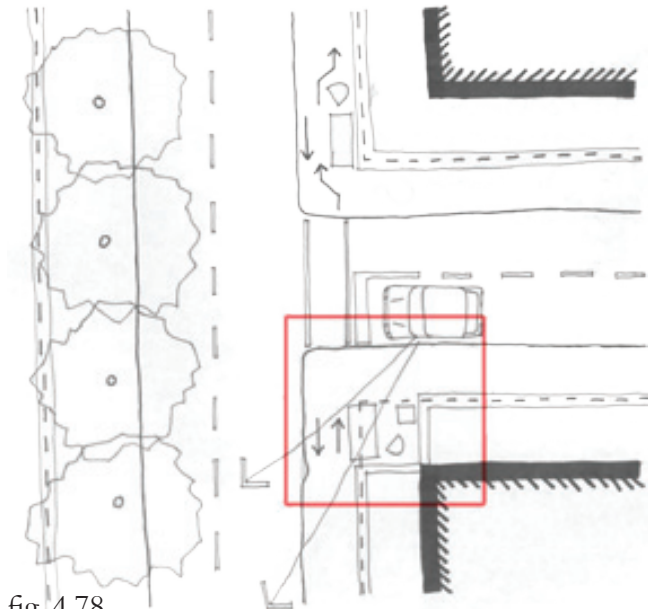


fig. 4.78

# THE SITE

## THE SITE & CHOICE THEREOF

When awarding a license for a particular amount of beds to a specific hospital or facility, the Gauteng DoH has two methods by which they calculate whether or not to allow these beds/licenses in any given area.

These two methods are; firstly the use of *Thiessen Polygons*, and secondly the *Drive Time Method*.

*Thiessen Polygons* (see fig. 4.79) are used whereby borders are drawn around a specific medical facility to show which people in which area will go to a specific hospital. The amount and extent of people in these areas and that are likely to go to that specific hospital is calculated by using the population census for the area.

The *Drive Time Method*, (see fig. 4.80) is used to show that even if a hospital is closer to a particular area as the crow flies, there may be quicker/easier access to another hospital for the people in a specific area. This method is read in collaboration with road maps and census information.

The ideal method of calculation would be to look at these two methods together to determine where the ideal situation for a facility lies. One may place a facility in an open 'gap' in the topography, however this area may not be easily accessible to the many people in the areas around it.

There are some complaints about these calculation methods as the hospitals argue that people will travel

further to use a specific hospital/doctor. The DoH has however argued that for every one that goes to hospital A from area B, one from area A may go to hospital B. These calculation models therefore refer to the average of the population rather than the few exceptions.

The DoH employs the services of a man at MandalaGIS to calculate the *Thiessen Polygons* with reference to the various hospitals and population stats. From here, the polygons are placed onto google satellite images where the population groups are allocated to each hospital.

To determine where a sub-acute facility will ideally be placed, these models need to be considered. The sub-acute facility needs to be placed within the same *Thiessen Polygon* as the hospital that it links to, but due to the fact that these polygons can cover a rather large area, it is important to consider that such a facility should be situated relatively close to the hospital to which it is linked and to which it receives patients from.

The site chosen for the facility that will link to Louis Pasteur Private Hospital, needs to fall within the boundaries of the *Thiessen Polygon* for this hospital. The site also needs to possess therapeutic qualities within itself that can be highlighted and emphasized in the design of the facility. After extensive searching within the area of the *Thiessen Polygon* for Louis Pasteur Private Hospital, a site was chosen only three blocks south and four blocks west of the hospital which possesses therapeutic qualities, making it an ideal situation for such a facility that is confined to the limits of the city.

fig. 4.79 Google map showing Thiessen Polygons for the Tshwane area

fig. 4.80 Map image showing the calculation by the drive time method

The site borders Burgers Park, a more residential, quiet area within the busy CBD of Pretoria. The site, and the area that surrounds it, possesses many healing and therapeutic qualities that are required for the facility to be a place where people will heal and grow. These therapeutic qualities are, amongst others, the quiet area it is housed in, the excessive greenery around and on the site, as well as the good natural light.

As the site is situated just to the west of Burgers Park, the park can be utilized as a part of the healing process of the individuals who are patients for long periods of time at the facility. It will provide open outdoor spaces (and views of such spaces) where patients can go and relax, and have social interaction with the general public (social interaction being necessary in the healing process).

The site is also situated close to all major transport and pedestrian routes to, from, and through the city and is therefore ideally situated so that patients can be mobile rather than be "stuck" at the facility for their entire stay.



fig. 4.81 Map showing the existing hospitals and the Thiessen Polygons for and around the study area

fig. 4.82 Site analysis - 50m walking circles radiating from the centre of the chosen site

- |                                    |                                 |
|------------------------------------|---------------------------------|
| 1 - Central Ambulance Service      | 9 - Zuid Afrikaanse Hospital    |
| 2 - ENT Hospital                   | 10 - Gynaecological Hospital    |
| 3 - Van Riebeeck Hospital          | 11 - Curamed Hospital           |
| 4 - Momentum hospital              | 12 - Medi-Clinic Heart Hospital |
| 5 - FF Riebeiro Clinic             | 13 - Kingsley Day Theatre       |
| 6 - Louis Pasteur Private Hospital | 14 - Astrid Medi-Clinic         |
| 7 - Medforum Medi-Clinic           | 15 - The Site                   |
| 8 - College Medical Centre         | 16 - Burger's Park              |

**SITE ANALYSIS  
50M WALKING CIRCLES**

Figure 4.82 shows 50m walking circles radiating from the centre of the site showing the various activity areas and public spaces easily accessible by the patients at the facility. Some of these places are the Transvaal Museum, Melrose House and Burgers Park.

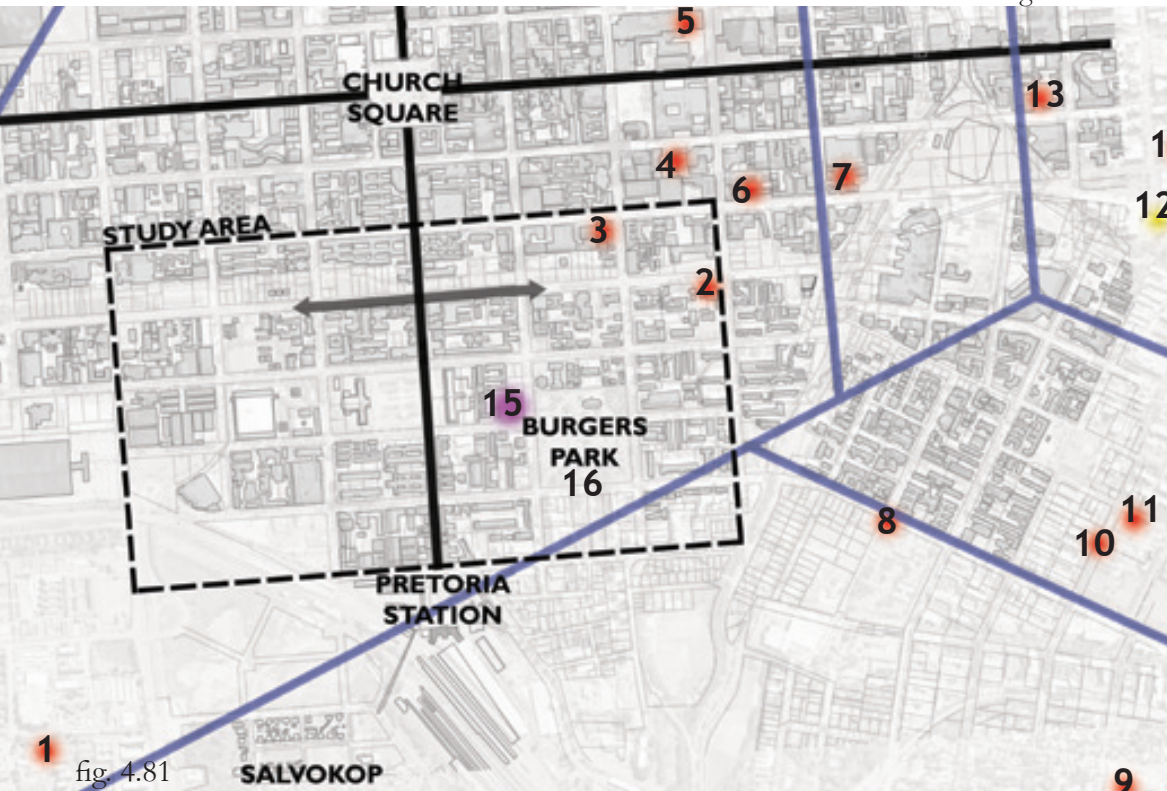


fig. 4.81

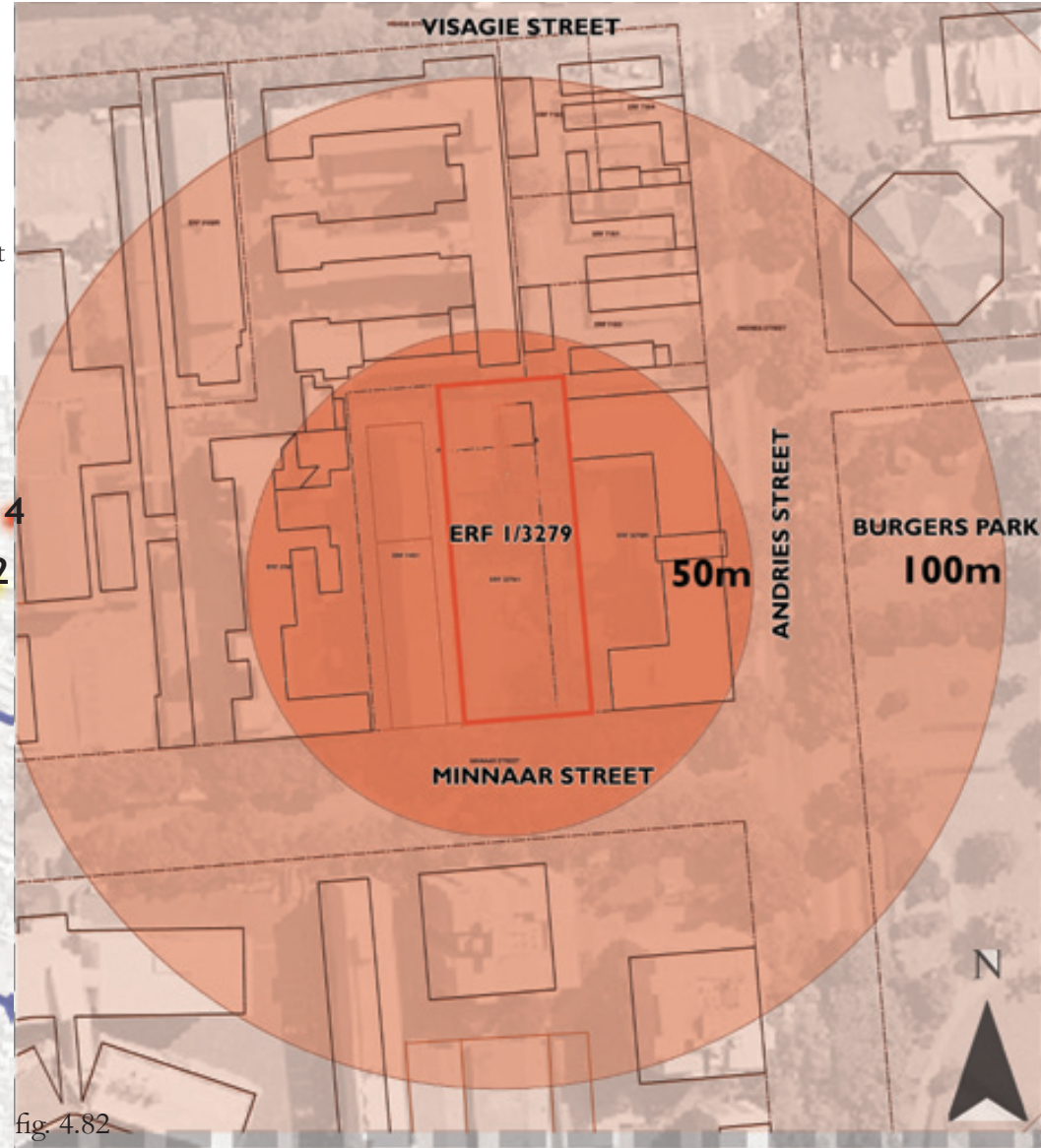


fig. 4.82



fig. 4.83

### SITE ANALYSIS LANDSCAPE VS BUILT

As mentioned previously, the area south of Church Square is under utilized and needs densification. It is clear to see that new developments around the site have begun to increase the density of the city, however more room for improvement is evident.

Due to the fact that Burgers Park is close to the chosen site, there is opportunity to densely occupy the site. However, due to the nature of the theory and design of this dissertation, access and views to exterior green spaces are still required around the building itself.

The exterior spaces around the new building need to be public open spaces (green or paved) to allow a continued interaction between the patients within the facility and the general public. However, patients will also need to be provided with more private, open spaces where they can return to if they do not feel like social interaction with the public.

fig. 4.83 Site analysis - Landscape versus built up areas around the site

fig. 4.84 Site analysis - Plan showing the variety of buildings around the site

### SITE ANALYSIS SURROUNDING BUILDINGS

There is a variety of older to more recent developments in the vicinity of the site. The majority of buildings around Burgers Park are residential developments, creating a calm environment. There is however a problem with this as purely residential developments (this particular strip being called 'Woonerf Street' by previous frameworks) create no 24 hour activity in the vicinity. As mentioned in the Group Urban Design Framework, there needs to be a building in the area that can create such a 24 hour active environment.

By introducing a programme with an active function on the site (however one that will retain the calm, quiet atmosphere), it is believed that the area would become a safer place to be in after dark. The activities that evolve would strengthen those created by the Transvaal Museum and residents, tourists and passers-by will have a safer environment to move through from one destination to another.





fig. 4.85 Building number 1 on fig. 4.84  
 fig. 4.86-4.88 Images of the site at present, taken from the  
 Minnaar Street boundary (number 2 on the fig.4.84)  
 fig. 4.89 Building number 3 on fig. 4.84(CBD Residency)  
 fig. 4.90 Building number 4 on fig. 4.84

fig. 4.91 Building number 5 on fig. 4.84 (Tom's Place)  
 fig. 4.92 Building number 6 on fig. 4.84  
 fig. 4.93 Building number 7 on fig. 4.84  
 fig. 4.94 Building number 8 on fig. 4.84  
 fig. 4.95 Minnaar Street (number 9 on fig. 4.84)

fig. 4.96 Andries Street entrance to Burgers Park (number 10 on  
 fig. 4.84)

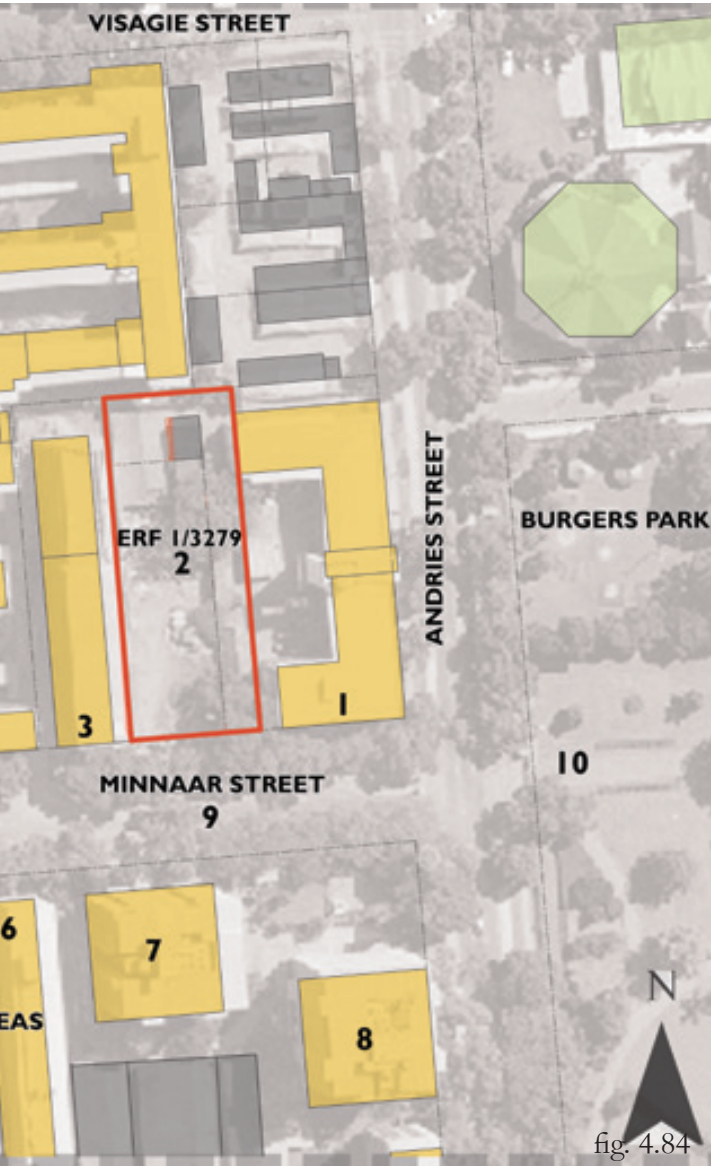


fig. 4.85



fig. 4.89



fig. 4.90



fig. 4.91



fig. 4.86



fig. 4.92



fig. 4.93



fig. 4.94

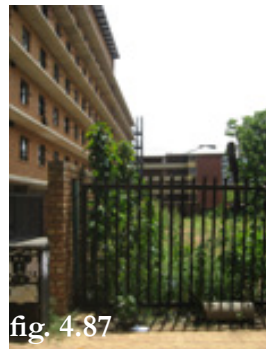


fig. 4.87



fig. 4.88



fig. 4.95



fig. 4.96

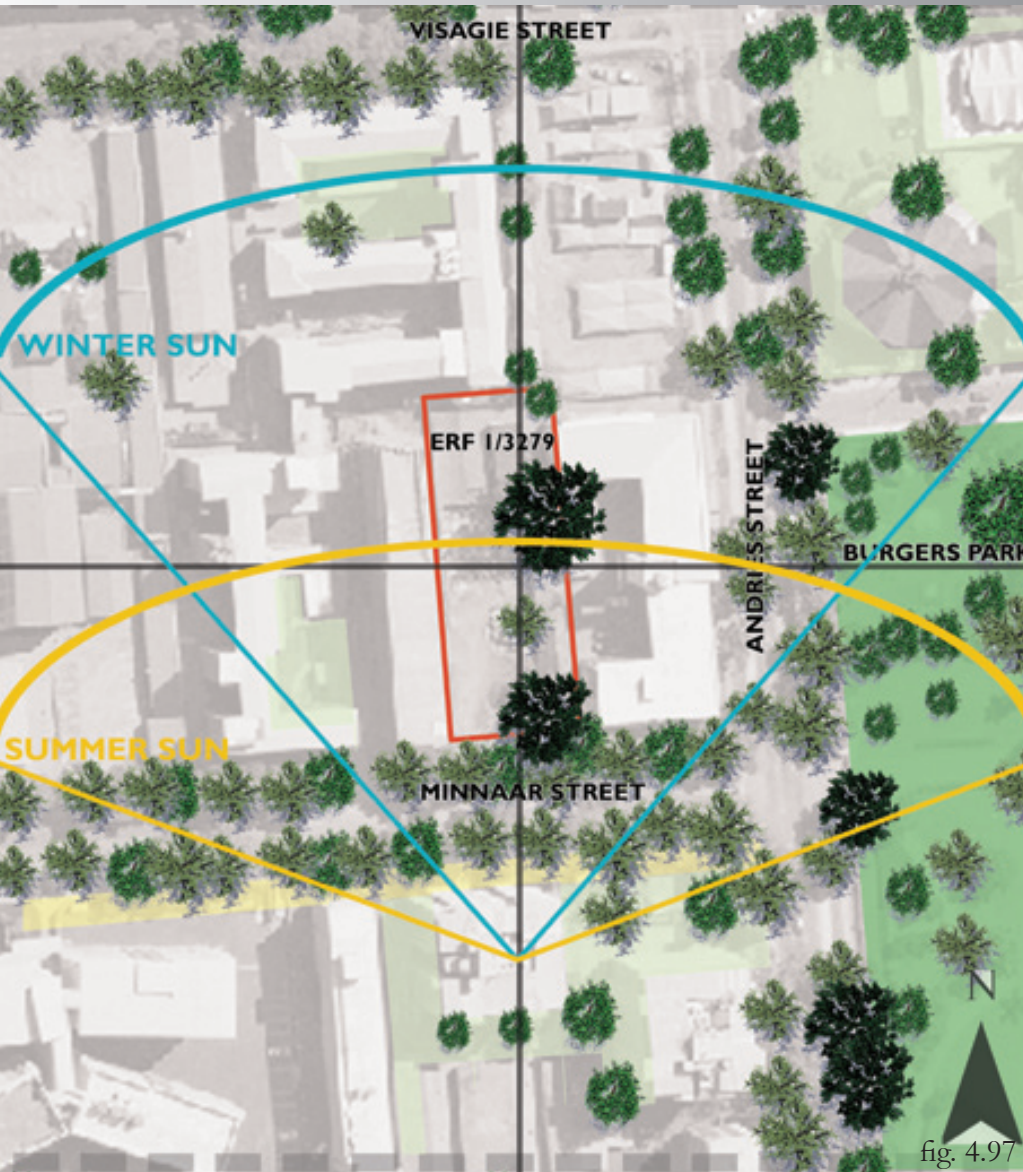


fig. 4.97

### SITE ANALYSIS THERAPEUTIC QUALITIES

The site and the surrounding area currently have many therapeutic qualities and strengths that need to be highlighted and used in the design of a complex that will house the healing process.

- These therapeutic qualities are:
- The excessive greenery in the area which ‘bleeds’ into the site.
  - The site is an open erf that allows much daylight to fall within its limits (this also poses a challenge as the site mainly faces east and west).
  - The building to the north of the site is a low rise building and allows northern sun to access the site at all times of the day.
  - The area has a calm, quiet atmosphere.
  - There is much open space with gardens and parks directly adjacent to the site and in the surrounding areas.
  - The site is close and accessible to and from many public social spaces

fig. 4.97 Site analysis - therapeutic qualities that already exist on and around the site

fig. 4.98 Site analysis - Access, circulation and movement to, from and through the site and the surroundings

### SITE ANALYSIS ACCESS, CIRCULATION, MOVEMENT

The site is ideally situated close to all public and private transport routes to, from and through the city.

Minnaar Street, a quiet one way avenue, borders the site to the south allowing both pedestrian and vehicular access from this side. There is an access servitude between the site and the building to the east of it, which is currently used to access a parking lot on the east. It is however proposed that “the centre for healing” does not have any cars moving through it, and that this space be designed for pedestrian circulation and social gatherings. Another access servitude to the north of the site allows access to the site, as well as to the buildings to the east and west. This servitude is accessed from Andries Street, a major two way transport route through the city which allows for easy access and good visibility of the facility.



# CONCLUSION

## CONCLUSION

With regards to the context, numerous elements on various layers and scales need to be considered in the design of the *Centre for Healing* within the confines and public realm of a Pretoria city block.

The scales that need to be considered when designing such a facility are: Country wide - SA, Provincial - Gauteng, Municipal - Tshwane, City - Pretoria, and finally, the study area and site. These multiple layers of understanding and consideration will create an architecture not only suitable to its surroundings, but also make it a relevant design in South Africa in the year 2010.

The following main principles are highlighted in the dissertation from the above studies:

- Consider the existing urban environment
- Create pedestrian friendly sidewalks and environments
- Create active edges and 24 hour eyes on the street facade, especially around Burgers Park
- Design a public building that can still incorporate the private needs of patients
- Incorporate and enhance existing therapeutic qualities
- Create a visual and physical link to Burgers Park
- Add another layer to the history and environment of the surroundings
- Climatic and geographical factors need to be considered
- Create an identity for the facility and the area through the architecture, making this a destination not only for patients, but a building that the general public will also want to visit.

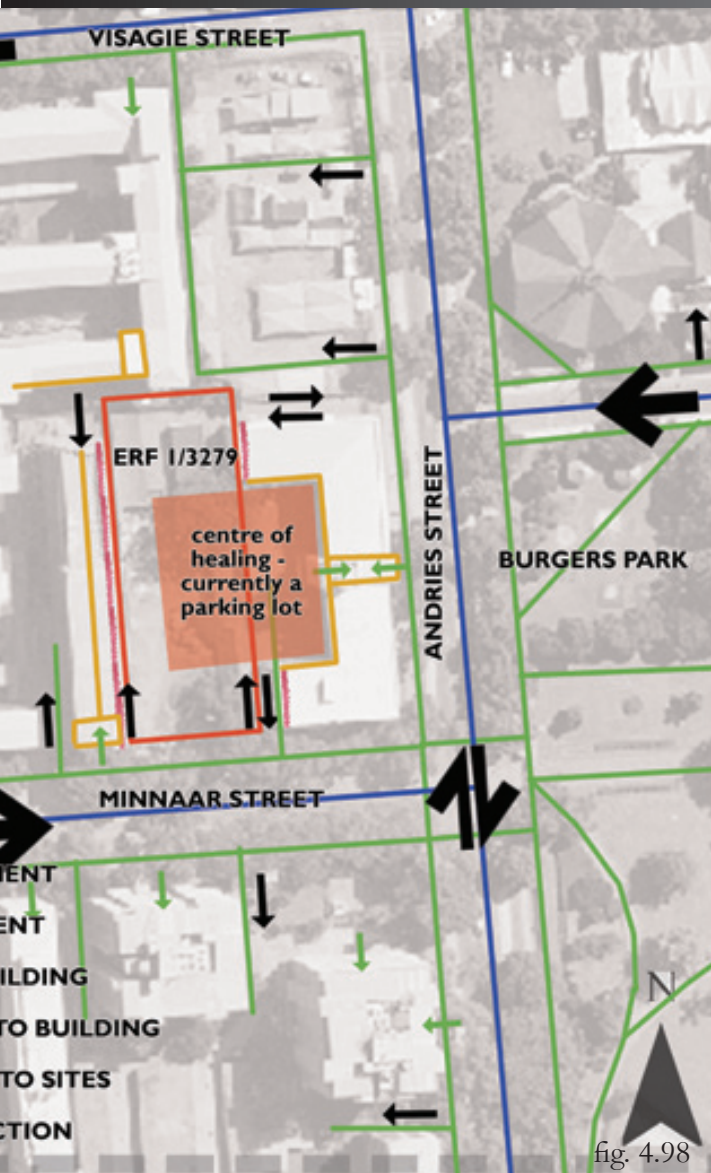


fig. 4.98

# CHAPTER

# 5



*'Healing,' Papa would tell me, 'is not a science, but the intuitive art of wooing nature.'*  
(Auden, 1930)

# INTRODUCTION

## INTRODUCTION

There are many problems and dilemmas with the current design situation of centres that accommodate the healing process. These problems, as well as the physical context and the creation of a new perception of such centres for healing, are vitally important to consider and address when designing such a facility.

At present, such facilities are environments that are often found to be institutional-like in nature; they are monotonous, clinical places, which show no healing properties and they in no way aid the healing process. Most of the time, such facilities impede the healing process (Carpman & Grant, 1993:1-3).

This chapter highlights the ideal situation of such facilities which should aid the healing process, and form a safe haven/space where healing and recovery can take place. Such facilities should support the patients through the physical and mental healing process and should allow interaction on a social level between patients and the public, rather than isolating these patients.

The aim of the design process is to create healing spaces, as described above, through the collection and interpretation of various healing theories and by using architectural elements to aid and highlight the healing of patients. The architectural intention of the design process is to create therapeutic/poetic spaces that possess healing qualities and that can therefore aid the healing process. A sensuous architecture needs to be created so that the users of the facility can feel a connection to,

rather than feel separated and isolated from the *Centre for Healing*. Layers within the design should be used, not only to show a new layer of the building in the city and its contextual qualities, but they should also be used to show the layers of the healing process of the patients that will use the facility. Throughout the process, the functional requirements of the facility are kept in mind and tested against spaces with these specific architectural intentions in mind. This is to make sure the poetic architecture created is not purely sculptural and that it will still form a functional building.

With the above information in mind throughout the design process, a new typology for centres that house the healing process will begin to emerge, one that can aid the healing process and therefore serve the users and patients within the facility.

# ARCHITECTURAL CONCEPT

## ARCHITECTURAL CONCEPT

*Layers Of Healing And Growth Housed In A Building For Recovery and Therapy Within A Therapeutic City Block*

How do you create layers of healing and growth within the busy environment of the city?

How do you create such an environment within the confines and public of the city?

Answer - By choosing a site to develop on that already, within itself, possesses such therapeutic qualities which can be enhanced.

## CONCEPT INTENTIONS TO ARCHITECTURAL FORM

To achieve the desired architectural intentions, the following theory items should be emphasized within the design and translated into appropriate forms (Also see Chapter 2):

- a) Five levels of healing in a human body.
- b) Personal growth through the healing process.
- c) Create various layers within the project.
- d) Focus on elements that create therapeutic environments.
- e) Choose a site with existing therapeutic qualities and enhance these qualities i.e. trees/vegetation, sunlight, calm and quiet atmosphere.

fig. 5.1 Triangle of the five levels of healing as per theory number 1, chapter 2, showing the increase of subjective and objective healing

fig. 5.2 A circular interpretation of the 5 levels of healing, with the physical body as the centre of healing  
fig. 5.3 The ripple effect of healing, starting at the physical body

at the centre reaching to the spiritual  
fig. 5.4 Various architectural form interpretations of the 5 levels of healing theory

# CONCEPT INTENSIONS TO ARCHITECTURAL FORM

## A - "5 LEVELS OF HEALING"

- The body is seen as the centre/core of healing.
- All healing comes from the physical body and evolves from here.
- Healing occurs from the central core out.
- Central energy body
- Refer to Chapter 2 - Theory 1 - 5 levels of healing

## CONCEPT INTENTIONS...

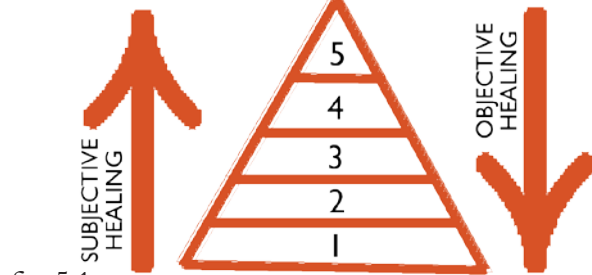


fig. 5.1

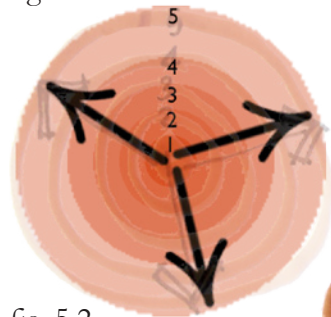


fig. 5.2

1. Physical
2. Energy
3. Mental
4. Intuitive
5. Spiritual

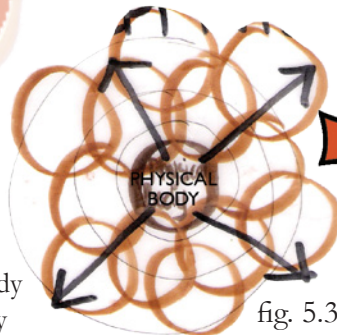


fig. 5.3

Ripple effect of healing; starts with the physical body at the centre of all energy

## ...TO ARCHITECTURAL FORM

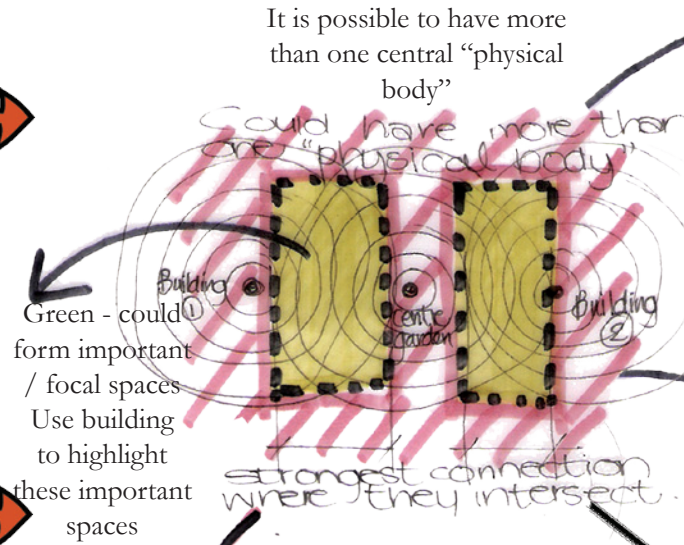


fig. 5.4

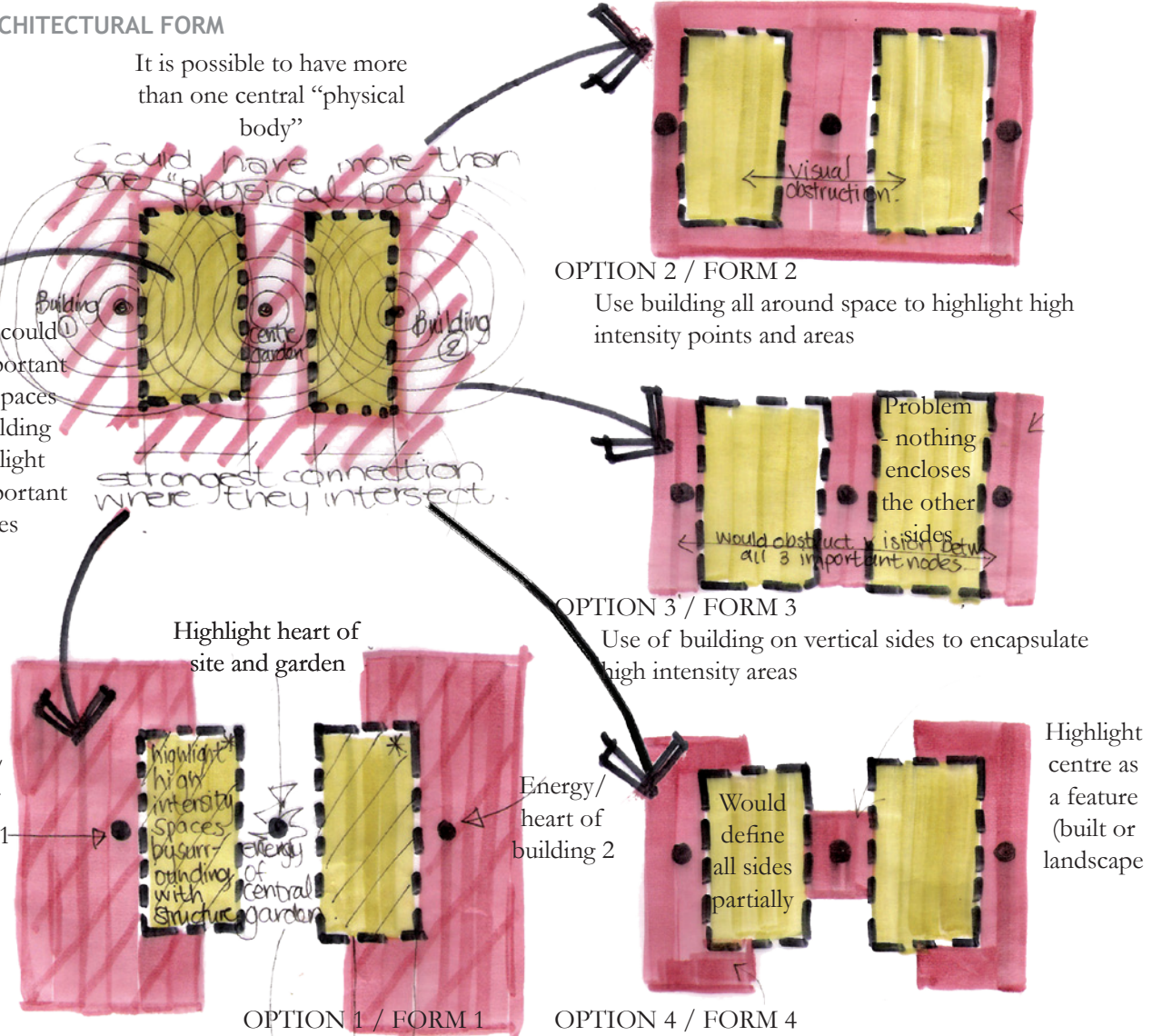


fig. 5.5 Health and recovery is indirectly proportional to the amount of support required on different levels of healing  
 fig. 5.6 The life cycle of a patient within the facility from high support and care to independence

**B - "GROWTH"**

- The support required by patients is indirectly proportional to the healing process.
- Stability and support are required less as patients' health improves.

**CONCEPT INTENTIONS... HOME HOSPITAL**



fig. 5.5 **HOSPITAL HOME**  
 LIFE CYCLE OF A PATIENT IN THE FACILITY - High support, care structure to INDEPENDENCE

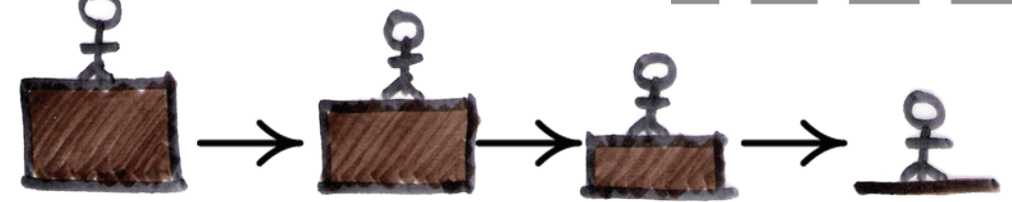


fig. 5.6

fig. 5.7 The daily cycle of the sunflower  
 fig. 5.8 The possible daily cycle of a building related to the daily cycle of the sunflower  
 fig. 5.9 As a patient's health increases, so the support and structure that houses them can decrease

**...TO ARCHITECTURAL FORM**

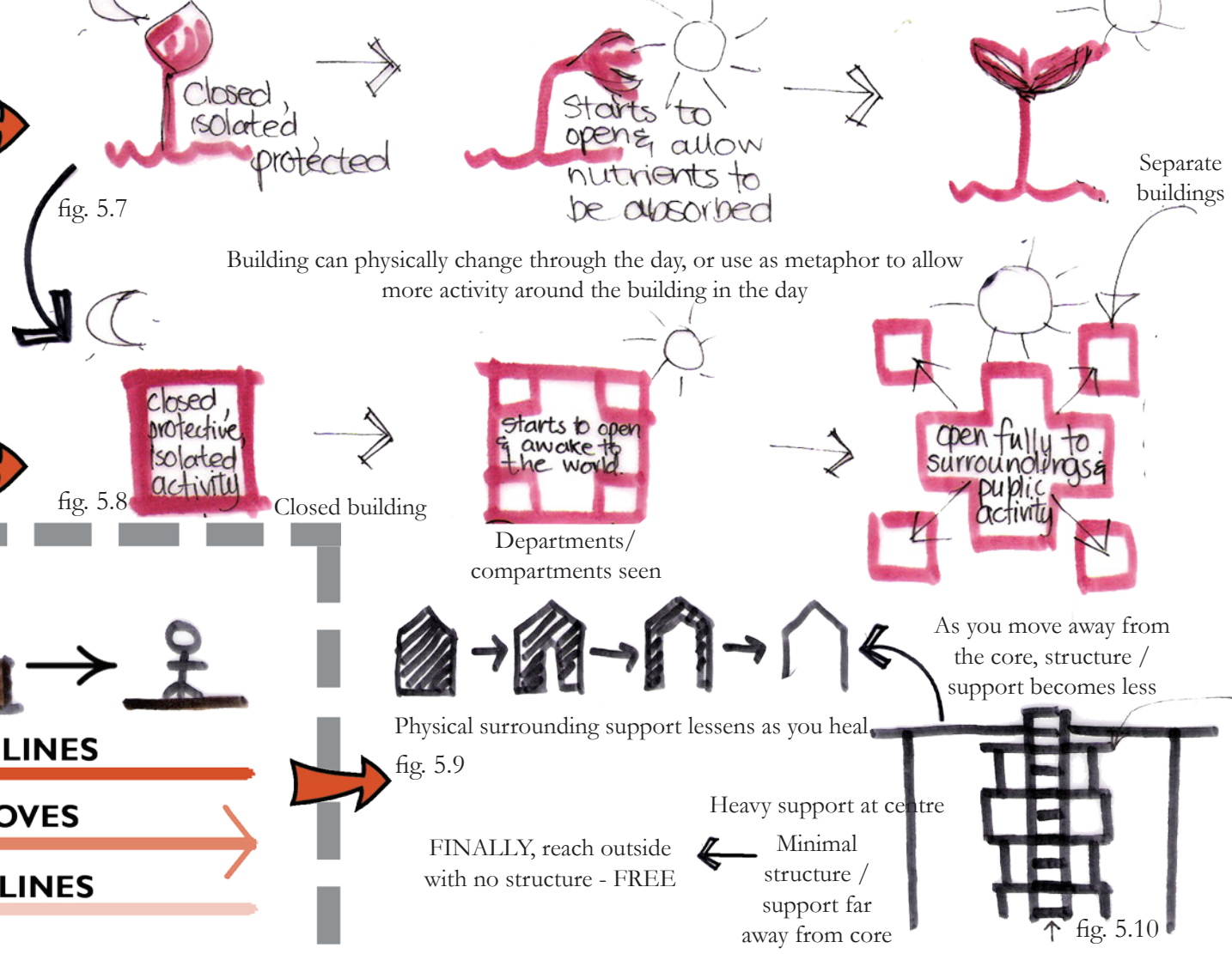




fig. 5.11 Layers can be used on both plan and section to create levels of privacy throughout a building

fig. 5.12 On plan, various levels of privacy can be created (from north to south, from east to west, and by the use of courtyard spaces)

fig. 5.13 On section, the height or level that items are placed on can be used to create levels of privacy

fig. 5.14 A circular interpretation of the 5 levels of healing, with the physical body as the centre of healing

fig. 5.15 The circular energy field of healing can be encapsulated by built or landscaped form

fig. 5.16 To architecturally represent the circular form of the levels of healing, boundaries can be created with built form or landscaped form

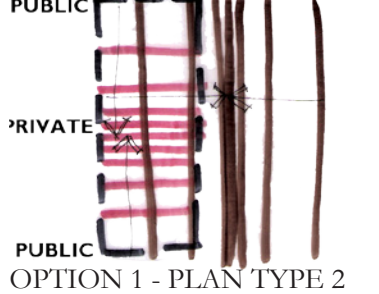
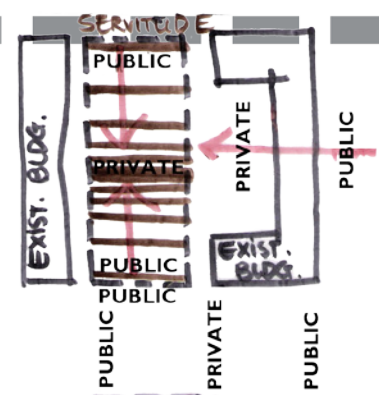
**C - "LAYERS"**

Various layers to consider:

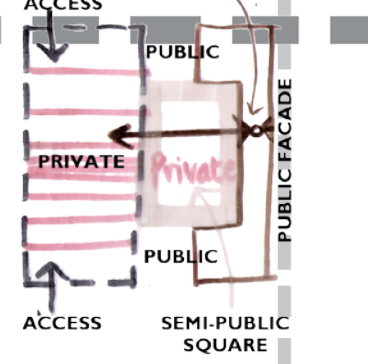
- healing & growth
- privacy vs public
- social interaction
- use / function
- meanings / connotations
- transitions
- facade treatment

...TO ARCHITECTURAL FORM

**OPTION 1 - PLAN TYPE 1**



**OPTION 1 - PLAN TYPE 3**



The transition between public and private is vital on both plan and section

fig. 5.12

**CONCEPT INTENTIONS...  
OPTION 1 - LAYERS ON PLAN AND SECTION**

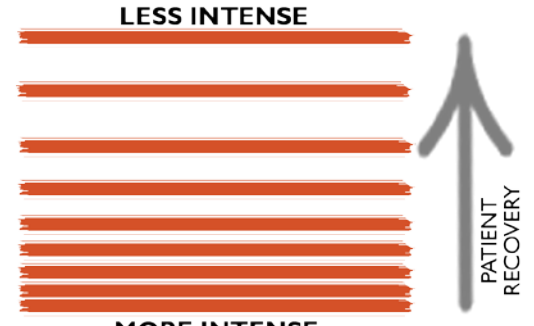
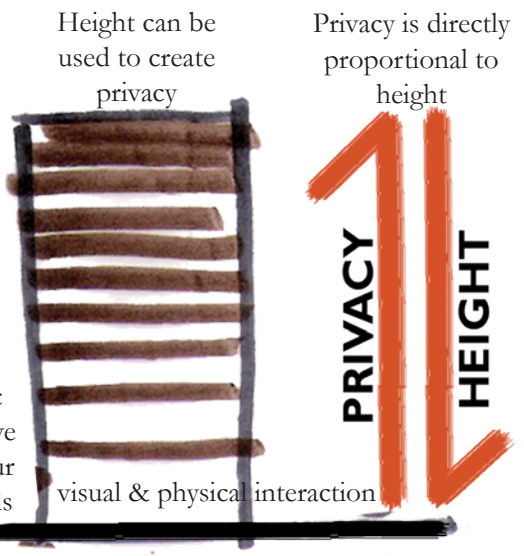


fig. 5.11



**OPTION 4 - SECTION**

fig. 5.13

**OPTION 2 - RIPPLED ENERGY LEVELS**

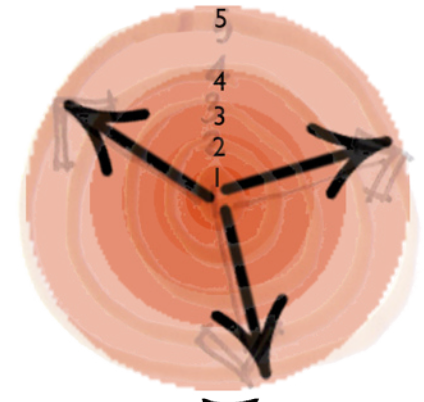


fig. 5.14

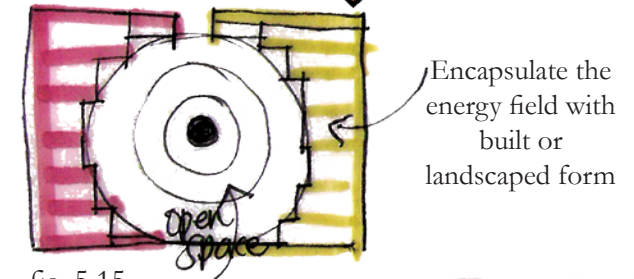


fig. 5.15

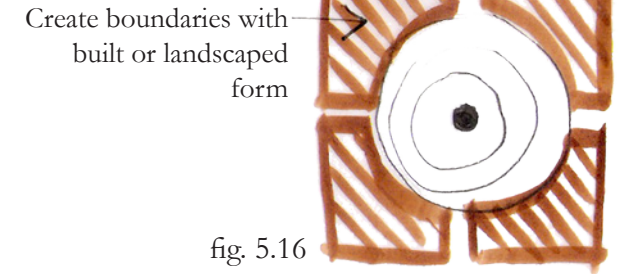


fig. 5.16

fig. 5.17 Layers can be created around a solid core

fig. 5.18 A possible formal/architectural interpretation of creating layers around a central solid core

OPTION 3 - LAYERS AROUND CENTRAL CORE

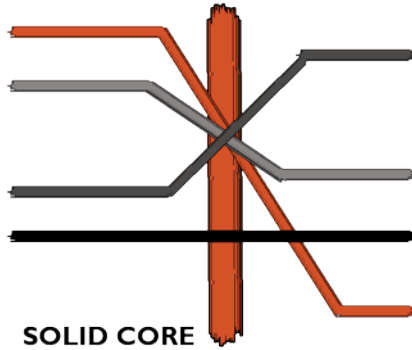


fig. 5.17

Layers and levels to cross and interact with one another around a central solid core

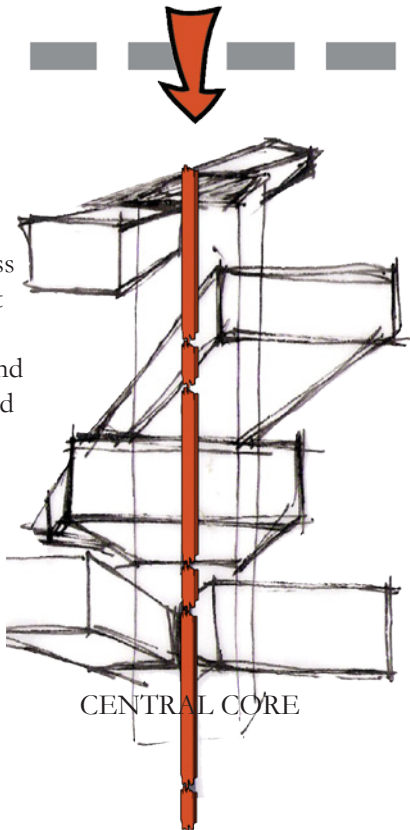


fig. 5.18

fig. 5.19 The building should step into nature

fig. 5.20 By creating layers in a vertical direction, the building moulds into the landscape

fig. 5.21 Creating open spaces between buildings can create an open vulnerable layer within the landscape

OPTION 4 - STEPPING / LAYERS OF NATURE

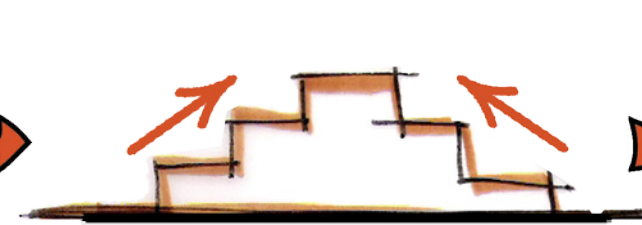


fig. 5.19

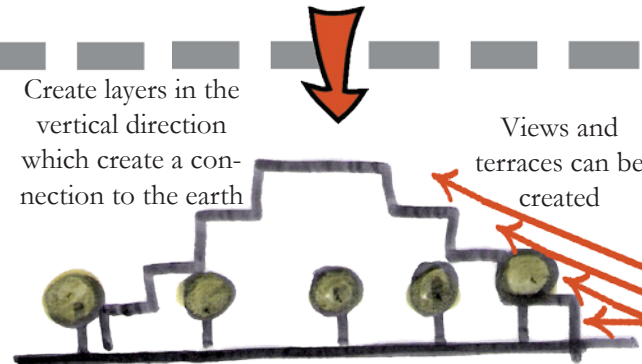


fig. 5.20

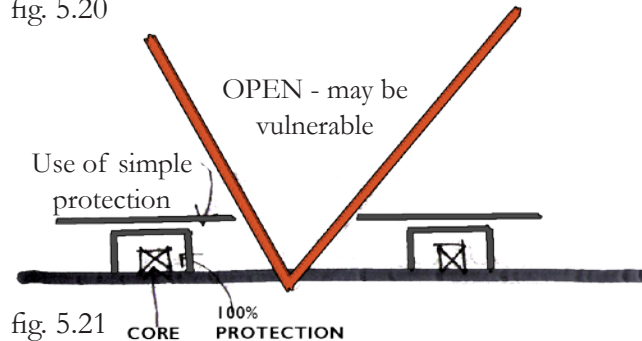


fig. 5.21

fig. 5.22 Movement and transitional spaces can be used to highlight various layers of privacy and access through the building

fig. 5.23 By creating a hierarchy in circulation patterns, the ideas in fig. 5.22 are brought to fruition

OPTION 5 - MOVEMENT/TRANSITIONS

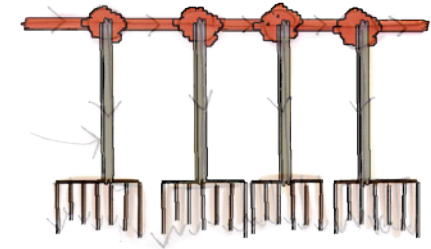


fig. 5.22

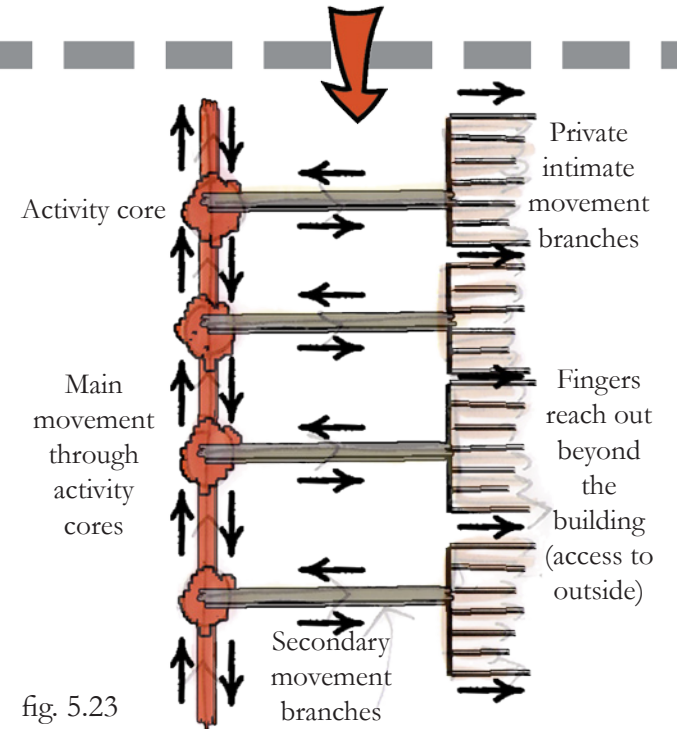


fig. 5.23

fig. 5.24 In theory 4 (therapeutic environments) various elements are highlighted that can improve the therapeutic qualities of spaces

**D - "THERAPEUTIC ENVIRONMENTS" CONCEPT INTENTIONS...**

The following should be addressed when creating therapeutic environments:

**REDUCE ENVIRONMENTAL STRESS**

Familiar materials; Cheerful, varied colours; Natural light; Outdoors - views and access; Meditation rooms/gardens; Background music and art; Easy wayfinding process; Attention to proportions, scale, colour, detail; Bright, open public spaces; Noise reduction; No medical odours; Good indoor air; Play on light and shadow.

**PROVIDE POSITIVE DISTRACTIONS**

Cheerful, varied colours; Outdoors - views and access; Meditation rooms/gardens; Music / artwork; Offstage areas of respite; Play of light and shadow; Features; Library; Community centre; Information Centre.

**ENABLE SOCIAL SUPPORT**

Outdoors - views, access, activities; Large, open, active social gatherings / spaces; Bright open public spaces; Privacy; Family zones; Accommodation for family members.

**GIVE A SENSE OF CONTROL TO THE PATIENT**

Familiar materials; Colour corrected light where natural light is not possible; Control over views and access to outdoors; Changes allowed in rooms; Easy wayfinding; Design on human scale; Homelike, intimate environments; Areas of respite; Privacy; Medical library.

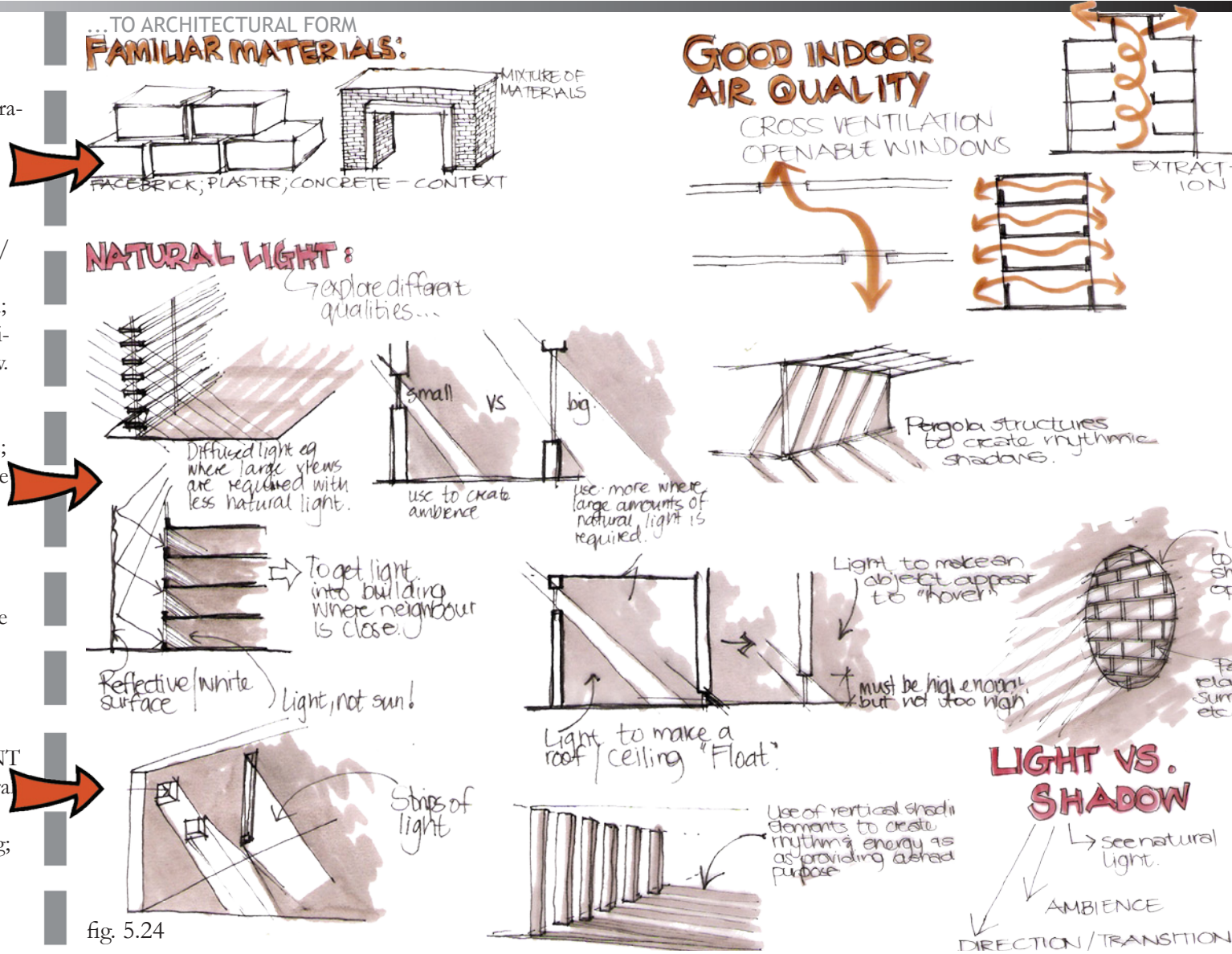
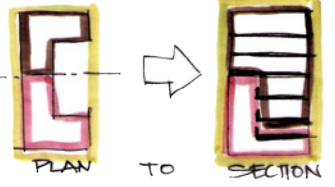


fig. 5.24

# PROPORTIONS, COLOUR, SCALE, DETAIL

CONTEXT, PLAN, SECTION, SURROUNDING BLDGS.



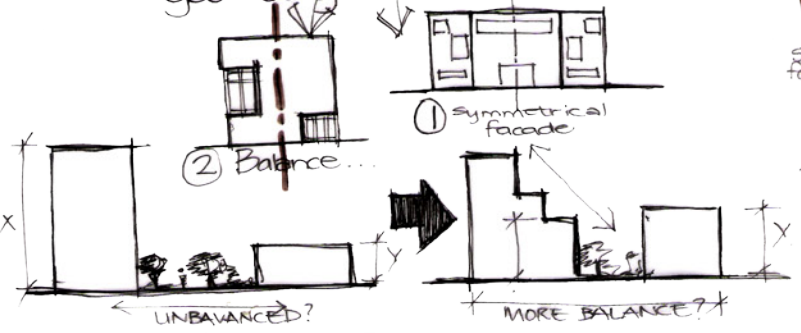
Subtle = calm  
Bright = vibrant/energetic  
Colour connotations

Symmetry/Balance



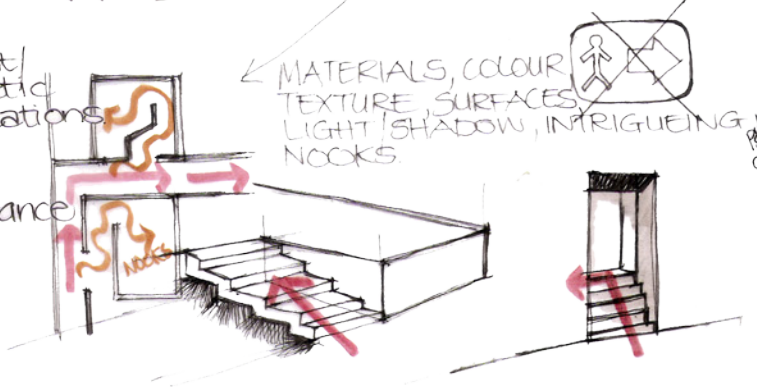
GRID... geometry

Balance

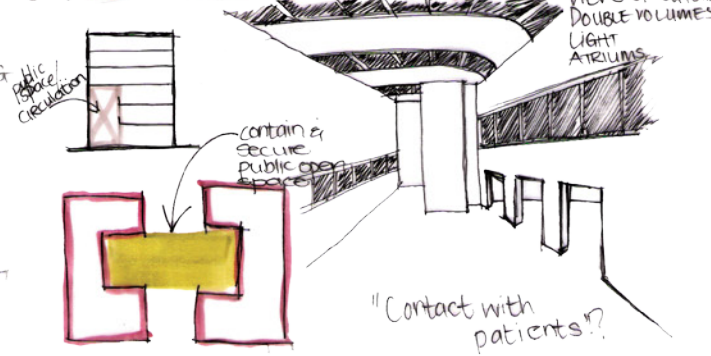


# WAYFINDING

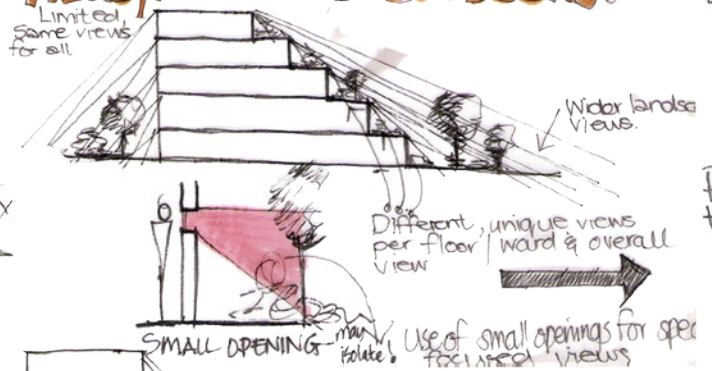
MATERIALS, COLOUR, TEXTURE, SURFACES, LIGHT, SHADOW, INTRIGUING NOOKS



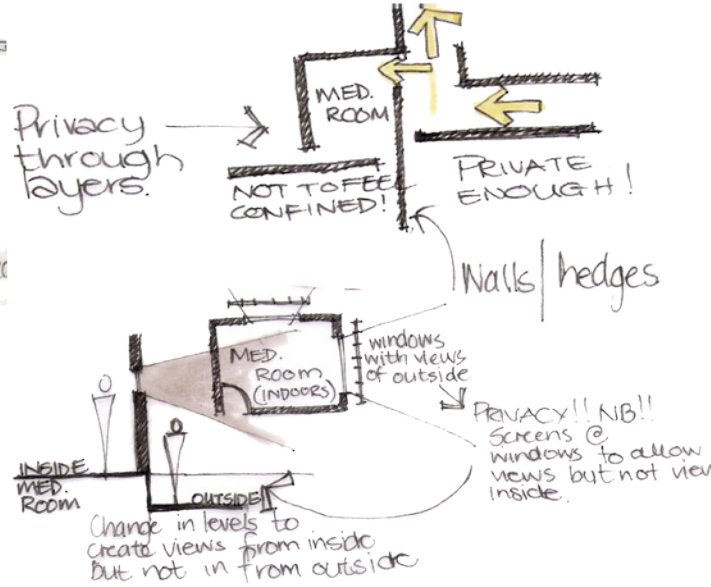
# BRIGHT, OPEN PUBLIC SPACES



# VIENS/ACCESS TO OUTDOORS:



# MEDITATION ROOMS/GARDENS



# NOISE & VISUAL PRIVACY



fig. 5.25 Line drawing of the blocks around Minnaar Street showing how the greenery of the area dissolves into the site  
 fig. 5.26 Sketch showing the existing greenery that dissolves into the site from Minnaar and Andries Streets

fig. 5.27 Plan showing how the existing therapeutic elements on the site could be used within the building design  
 fig. 5.28 Section illustrating how the existing therapeutic qualities of the site can be used in the architecture

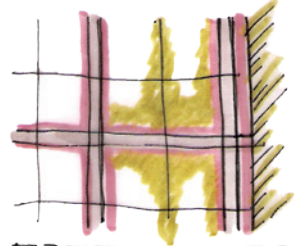
fig. 5.29 Various plan forms of how the building can step to utilise the most northern light  
 fig. 5.30 Possible architectural sections to determine the spaces that should be created between buildings

**E - "A SITE WITH THERAPEUTIC QUALITIES"**

It was imperative that a site be chosen that already possessed therapeutic qualities that could be emphasized through the design of this dissertation. The following therapeutic qualities are already present on the site:

- TREES - around and on the site
- SUN - open, well lit site, how to harness northern light?
- OPEN SPACE - gardens, Burgers Park
- QUIET - calm and inviting atmosphere
- PUBLIC ACCESS - for social interaction

**CONCEPT INTENTIONS...**



The greenery in the area moves onto and dissolves within the site

fig. 5.25

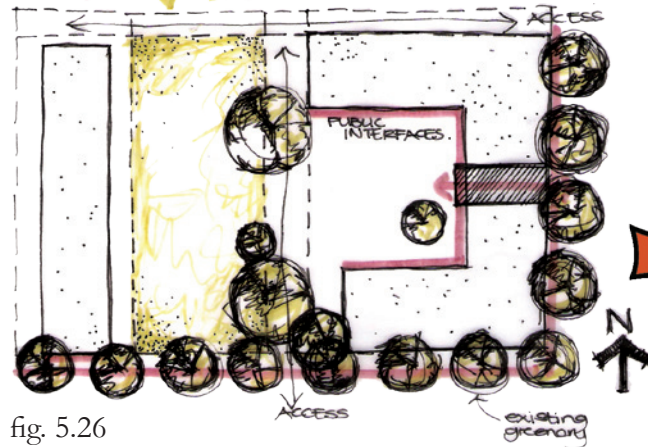


fig. 5.26

**...TO ARCHITECTURAL FORM**

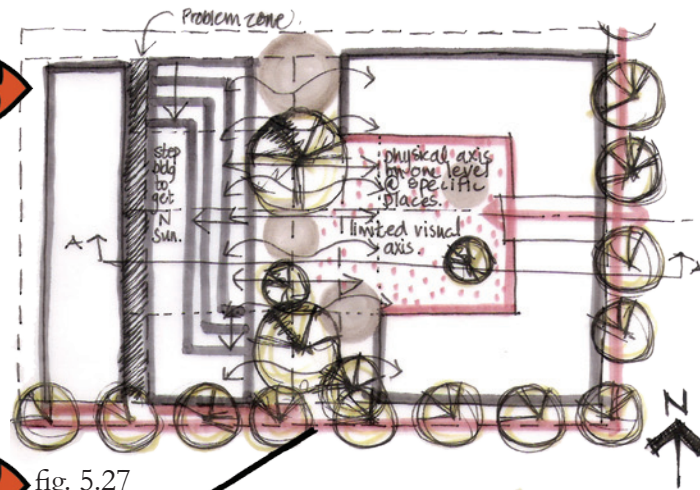


fig. 5.27

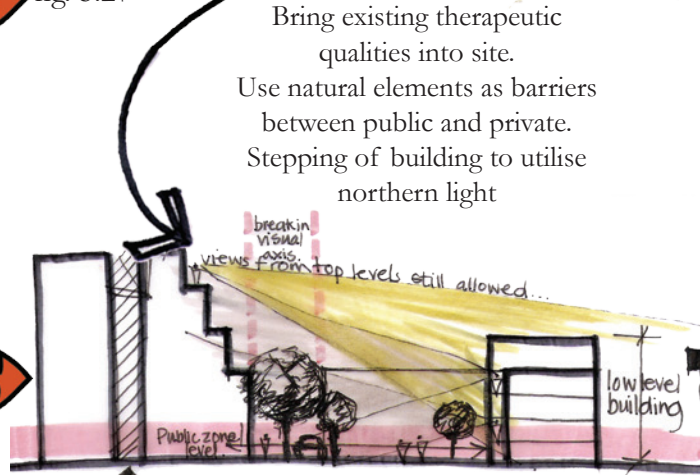


fig. 5.28

**PROBLEM ZONE:**  
 No light  
 No privacy  
 Dead space

Bring existing therapeutic qualities into site.  
 Use natural elements as barriers between public and private.  
 Stepping of building to utilise northern light

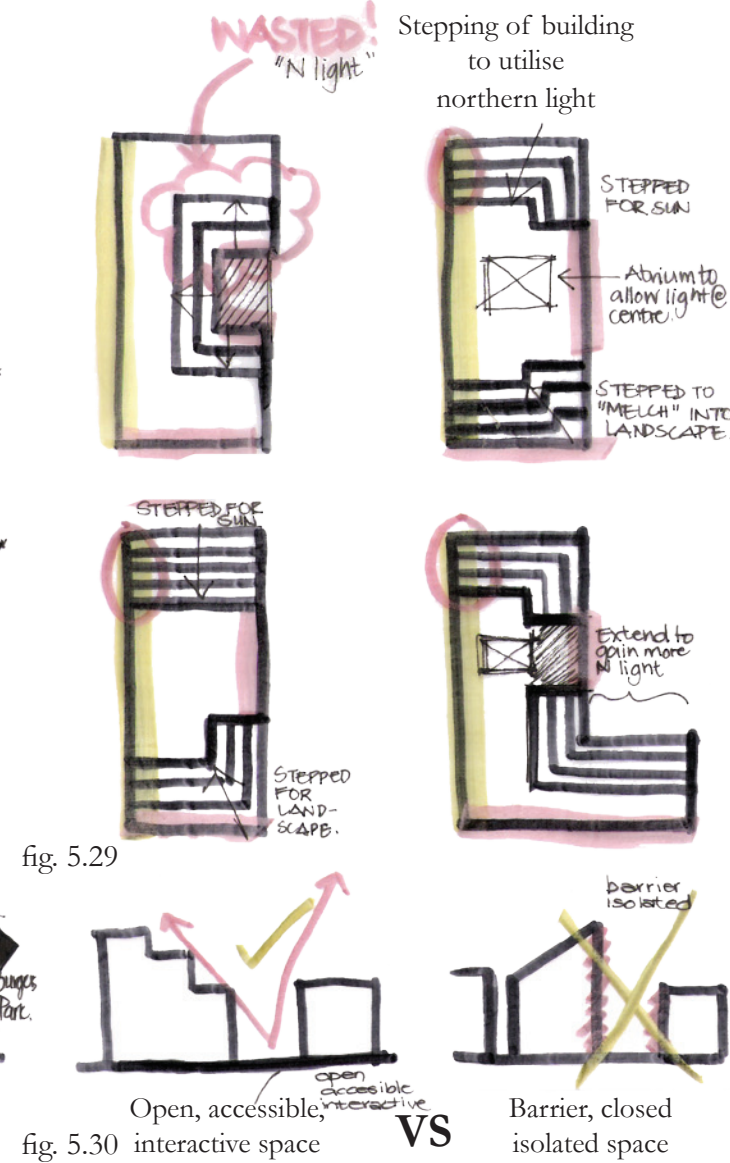


fig. 5.29

fig. 5.30

# CONCLUSION

## CONCLUSION

As is evident in this chapter, many different aspects and conceptual ideas need to be considered throughout the design process for this dissertation in order to achieve the desired results of a facility that possesses *layers of healing and growth...for recovery within a therapeutic city block.*

Only when all of these problems and solutions are considered, can such an environment be developed, and thereby aid the healing of patients that may use such a facility, as well as become a safe haven and social activity area for both patients and the general public to enjoy.

# CHAPTER

# 6



*The art of healing comes from nature, not from the physician.  
Therefore the physician must start from nature, with an open  
mind.*

(Paracelsus, 1656)

# INTRODUCTION & BUILDING FORM OPTIONS

## INTRODUCTION

When designing architectural form, a process of continuous change and exploration is followed where ideas are invited, explored and either used or rejected to suit the goals set out at the beginning of the project.

There are many different areas of investigation that need to be explored throughout the design process to create the desired result that will meet the goals and objectives set out in the beginning of the process (see Chapter 1). In order to create a therapeutic environment that houses the healing of patients, and which will allow a certain amount of social interaction between them and the general public, certain criteria need to be addressed.

This dissertation highlights two main restraints/criteria addressed constantly throughout the design process, and which have influenced the final architectural result. The first item that needs to be addressed throughout the design process is that of creating an environment that allows patients to heal and grow. There are three ways that such an environment can be created (see Chapter 5); through environmental considerations (use of natural light, access to outdoors, creating views to the outdoors etc.), through spatial design (design of varied volumes in space and creating an interesting poetic play on these volumes etc.), and through the creation of social spaces (social interaction with the public is vital in the healing process, however consideration needs to be taken to create enough privacy for patients. This can also be manipulated through the treatment of public

and private circulation and by creating various gathering spaces).

The second restraint/criteria that is addressed throughout this dissertation is the consideration to the site and the existing surroundings. There are therapeutic qualities that exist on and around the site that need to be drawn into the design of the facility. These items are: access to natural light and open spaces, access and views of green spaces, a quiet and calm atmosphere, and the easy accessibility. (See Chapters 4 and 5).

This chapter expresses the extensive design process that has been followed throughout this dissertation with the aim of expressing and substantiating the decisions made during this process, as well as providing insight into the final architectural design.

## BUILDING FORM OPTIONS

By considering the various items highlighted in the previous chapters as being important in the design process, (theory, programme, urban framework, site) various building forms have been explored on the chosen site that may create the desired result of a therapeutic architecture.

It should be noted that the building forms are presented in the order that they were considered in the design process with each having a short description of the form and its origins. For each form, positive and negative points are highlighted to explain why the form has or has not been developed any further. It is also noticeable that some of the earlier forms are revisited (although they are explored in a slightly different way later on in the process) highlighting the non-linear manner that the design process follows.



fig. 6.1 Model of building form option 1a

fig. 6.2 Model of building form option 1b

# BUILDING FORM OPTIONS 1a & 1b



## BUILDING FORM OPTION 1a

Due to the fact that the site is extremely narrow, it was highlighted early in the design process that any intervention would need to have a high coverage to be able to use the site efficiently and to accommodate all the functions required for the *Centre for Healing*.

### POSITIVES

- The site may be narrow, but it is long, allowing the building to cover a large area on the site.

### NEGATIVES

- Due to the east-west orientation of the site, there will be little access to northern light in a building of this form.
- A harsh boundary between the new building and the one that borders it to the west is created.
- There is no consideration to the form of surrounding buildings.

## BUILDING FORM OPTION 1b

With a growing concern that form 1a cannot provide enough northern light into the building, option 1b was created. Here, 'arms' project from the long form presented in option 1a, allowing more parts of the building to have access to the desired northern light.

### POSITIVES

- The site coverage is still utilised to its full potential.
- More built area is available.
- More northern light enters the building.
- A courtyard social space is created.

### NEGATIVES

- The majority of the building still faces east/west.
- There is still a harsh, shadowed boundary with the building to the west.
- The access servitude between the site and the site on the east is built over.

fig. 6.3 Model of building form option 2a

fig. 6.4 Model of building form option 2b

# BUILDING FORM OPTIONS 2a & 2b



## BUILDING FORM OPTION 2a

In order to allow more of the building to have access to the much needed northern light, option 2a is explored where three 'arms' project from the *spine* of the building. The *spine* of the building is narrowed to allow more of the building to have access to northern light. An atrium is added to the central 'arm' to increase the amount of this light entering the building.

### POSITIVES

- More northern light accesses the building.
- The 'arms' can be used as sections or wards.
- The access servitude can now be retained and used.

### NEGATIVES

- The high central 'arm' will cast shadows over the 'arm' to the south.
- The harsh boundary to the west is still a problem.

## BUILDING FORM OPTION 2b

To explore another way of gaining more northern light into the middle 'arm' of the building, the wards are placed around three sides of an open courtyard allowing access to the much needed northern light on all floors.

### POSITIVES

- More northern light can access the building.
- The 'arms' can be used as sections or wards.
- The access servitude can be retained and used.
- More courtyard spaces are created.

### NEGATIVES

- The high central 'arm' will still cast a shadow on the southern 'arm'.
- The harsh boundary to the west is still a problem.
- There is less built area to be utilised for wards.

fig. 6.5 Model of building form option 3

fig. 6.6 Model of building form option 4

# BUILDING FORM OPTIONS 3 & 4

## BUILDING FORM OPTION 3

To further explore the architectural forms from the previous options, while still allowing northern light to access the 'arms' and not cast a shadow over the 'arms' to the south, the following option is presented. The three 'arms' are kept, however the height steps from the lowest point on the north up to the south, allowing less shadow to be cast while allowing maximum access to northern light in the building.

### POSITIVES

- All three 'arms' have access to northern light.
- An entrance is highlighted on Minnaar Street.
- Less shadows are cast on the 'arms'.

### NEGATIVES

- The form is out of proportion to the massing in the area.
- The harsh boundary to the west is not addressed.



fig. 6.5

## BUILDING FORM OPTION 4

In order to create a form that better suites the urban fabric of the area, option 4 is considered. A large central atrium is created, enclosed on all four sides by portions of the building. Exploration into using the roof space as a social space begins, with environmental factors influencing forms.

### POSITIVES

- The atrium will create a social gathering space.
- The street facade creates a continuous urban edge.

### NEGATIVES

- This form closes the new building off from the courtyard to the east rather than embracing it.
- The majority of the building faces east & west rather than allowing access to northern light.
- There is less building area to accommodate the functional requirements.

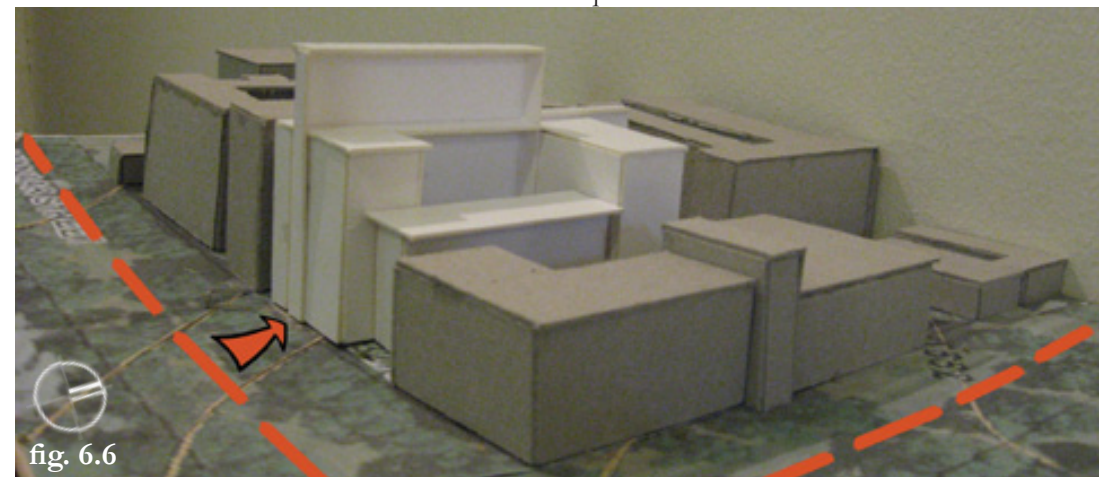


fig. 6.6

# BUILDING FORM OPTIONS 5 & 6

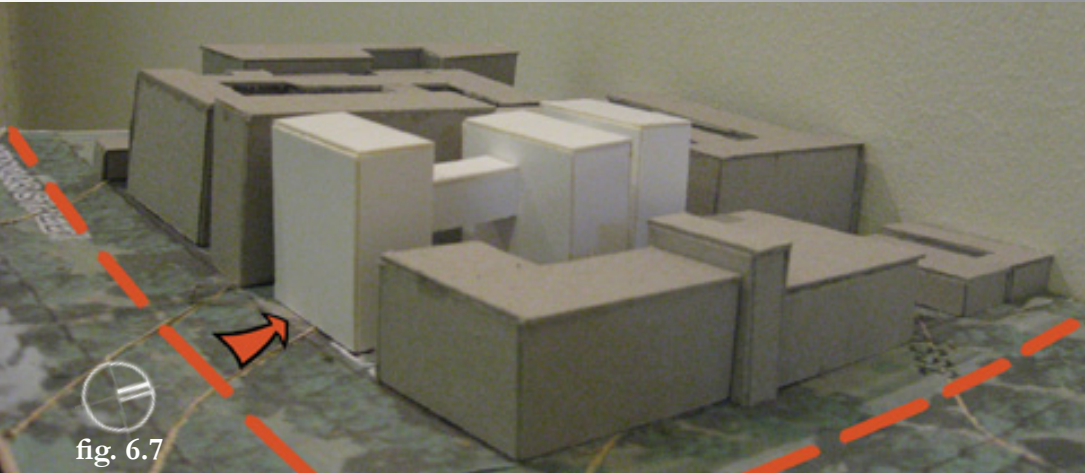


fig. 6.7

## BUILDING FORM OPTION 5

Embracing the ideas set out in options 2a and 2b, this form is considered where the sections or ward blocks are created as free standing elements that are linked via passages on various levels.

### POSITIVES

- Each block has access to northern light.
- Various interactive spaces can be created on the ground floor level between the structures.

### NEGATIVES

- Harsh shadows will be cast on the two structures to the south.
- Access is not possible between the various sections on all levels, creating divided structures which will limit social interaction.
- The courtyard space of the building to the east is not embraced.



fig. 6.8

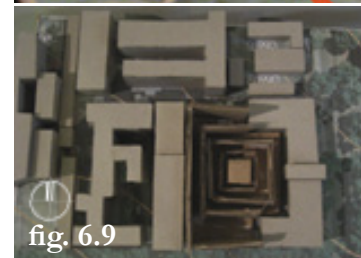


fig. 6.9



fig. 6.10



fig. 6.11

## BUILDING FORM OPTION 6

By exploring the idea that there is a central healing force that is the core of all strength required for the healing process, option 6 evolved. It explores the idea that the new building be designed around a central healing core (the courtyard between the site and the eastern building)

### POSITIVES

- The courtyard to the east is explored.
- The theories of *layers* and the *5 levels of healing* are explored.
- The height of the building to the west slowly steps down to the lower scale of the building to the east.

### NEGATIVES

- As a building, this may be difficult to implement.
- The harsh barrier to the west is still not addressed
- The street facade on Minnaar Street forms a barrier rather than allowing filtration into the site.

# BUILDING FORM OPTIONS 7a & 7b

## BUILDING FORM OPTION 7a

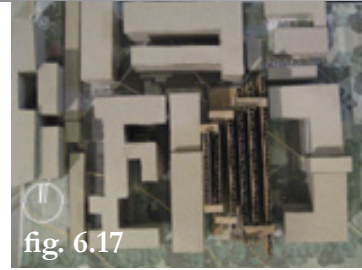
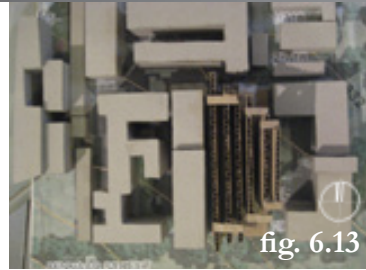
To address the use of layering in the design of architecture, option 7a was developed. The intention is that various layers be created within the building that allow a transition through the building revealing different aspects and experiences on each layer.

### POSITIVES

- Transitional spaces through the building are created.
- Levels of privacy can be addressed and created with the varying layers.

### NEGATIVES

- The stepping up of the building towards the courtyard invades this space.
- The layers created with this form are one dimensional. No consideration to dealing with layers from the south to the north of the site have been considered.



## BUILDING FORM OPTION 7b

To overcome the problem created in option 7a where the courtyard space feels overpowered by the new building, option 7b was developed whereby the layers were inverted. Here, the highest layer is found on the west of the building and slowly lowers to the scale of the courtyard. This now creates a transitional space on two dimensions (east to west and top to bottom).

### POSITIVES

- Transitional spaces along the east-west axis and in terms of height are created.
- Levels of privacy can be created along many layers.

### NEGATIVES

- The edge along the courtyard needs to be broken.
- There is little northern light accessing the building, the east-west axis appears to be more important.



# BUILDING FORM OPTIONS 8 & 9

## BUILDING FORM OPTION 8

To explore the idea of layers in more than one dimension, option 8 is developed. Layers are created from east to west, from north to south and from the ground up. This three dimensional layering system will create an environment that will utilise the entire site rather than only focus on portions of it.

### POSITIVES

- Transitional spaces and privacy levels can be created along a three dimensional barrier, allowing more interaction with the public and the site.
- By orientating elements to face the north, more of the building is exposed to the ideal northern light.
- The courtyard edge is better dealt with.

### NEGATIVES

- Harsh shadows will be cast on the southern parts of the building.



fig. 6.21



fig. 6.22



fig. 6.23



fig. 6.25



fig. 6.26



fig. 6.27

## BUILDING FORM OPTION 9

Based on the idea created in form option 5, this option allows the use of 'arms' which can form sections or wards. However, by introducing another 'arm' reaching into the courtyard space, it provides a more interactive and responsive environment.

### POSITIVES

- Each block has access to northern light.
- Various interactive spaces can be created on the ground floor between the structures.
- There is interaction and consideration to what happens in the courtyard to the east.

### NEGATIVES

- Shadows will be cast on the southern structures.
- Access is not possible between the various sections on all levels, creating divided structures which will limit social interaction.

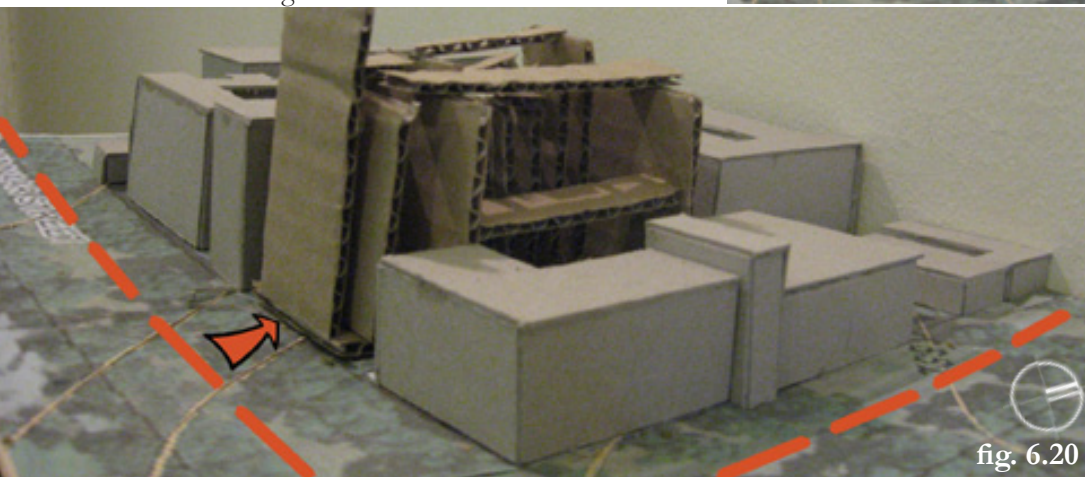


fig. 6.20



fig. 6.24

fig. 6.28-6.31 Model of building form option 10a

fig. 6.32-6.35 Model of building form option 10b

# BUILDING FORM OPTIONS 10a & 10b

## BUILDING FORM OPTION 10a

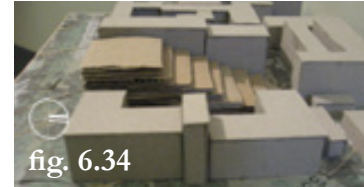
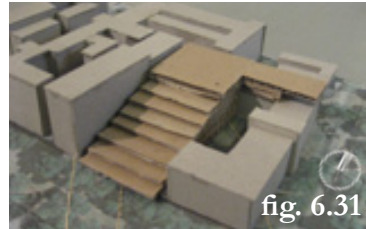
To create a structure that develops and grows out of the site, the idea of stepping the building up from the lower levels of the environment, was considered.

### POSITIVES

- The building appears to grow out of the site and the environment.
- The building is visually accessible to the public, however enough privacy is created with height.

### NEGATIVES

- The terraces are all south facing.
- The patients may not want to be visually vulnerable and accessible to the public.
- The buildings and conditions on the east & west sides are ignored.
- There are limited parts of the building that will have access to northern light.



## BUILDING FORM OPTION 10b

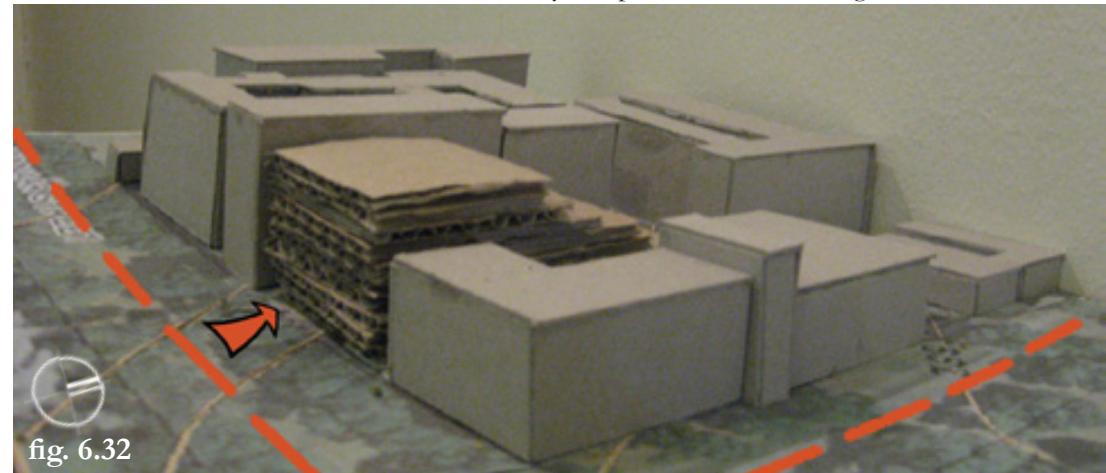
The ideas from 10a were re-assessed to create a form that still steps into/from the landscape, however, this time the building steps down to the north where each level is given access to the much desired northern light.

### POSITIVES

- More of the building has access to northern light
- Terraces with greenery can be created on the roof with access on various levels for different people.
- This form allows social interaction but also allows enough private space/views for patients.

### NEGATIVES

- There will still be dark parts of the building that cannot access the outdoors and natural light.
- The buildings and conditions on the east & west sides are still ignored.
- The courtyard space to the east is neglected.



# BUILDING FORM OPTIONS 11a & 11b

## BUILDING FORM OPTION 11a

To address the fact that the two previous models did not create an interactive/responsive design to the courtyard, option 11a was explored whereby the building is rather stepped down towards the courtyard.

### POSITIVES

- There is a better response to the courtyard.
- The narrower 'arms' of the building allows more northern light into the building.
- There are terraces created on various levels.

### NEGATIVES

- The east-west axis is again seen as the more important axis.
- The courtyard space created is too large.
- The stepping of the building occurs in one dimension only.
- There is little northern light entering the building.



fig. 6.37

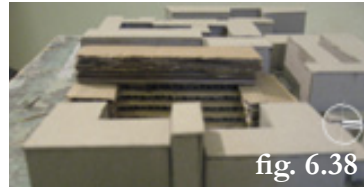


fig. 6.38

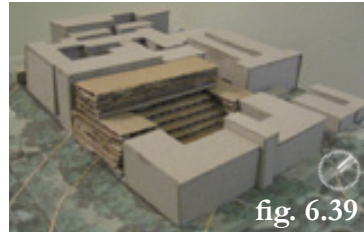


fig. 6.39

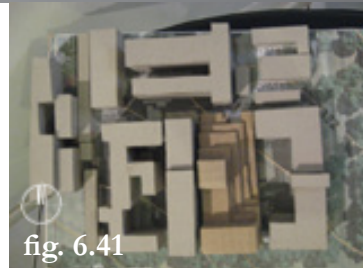


fig. 6.41

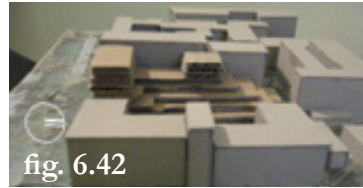


fig. 6.42

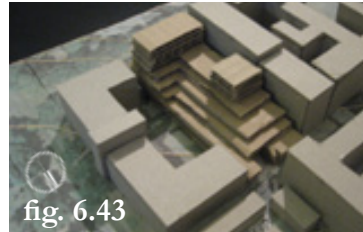


fig. 6.43

## BUILDING FORM OPTION 11b

By combining options 10b and 11a, option 11b was developed. This form incorporates the stepping of the building in both the east-west and north-south directions. This allows for a design that gets the most northern light into all parts of the building and creates the desired response to the courtyard.

### POSITIVES

- More northern light reaches into the building.
- There is more built area.
- The building steps into/from the landscape.
- Terraces of gardens are created on various levels.
- The building steps between the scales of the bordering buildings effectively.

### NEGATIVES

- Built area is limited.
- The courtyard is still too large.

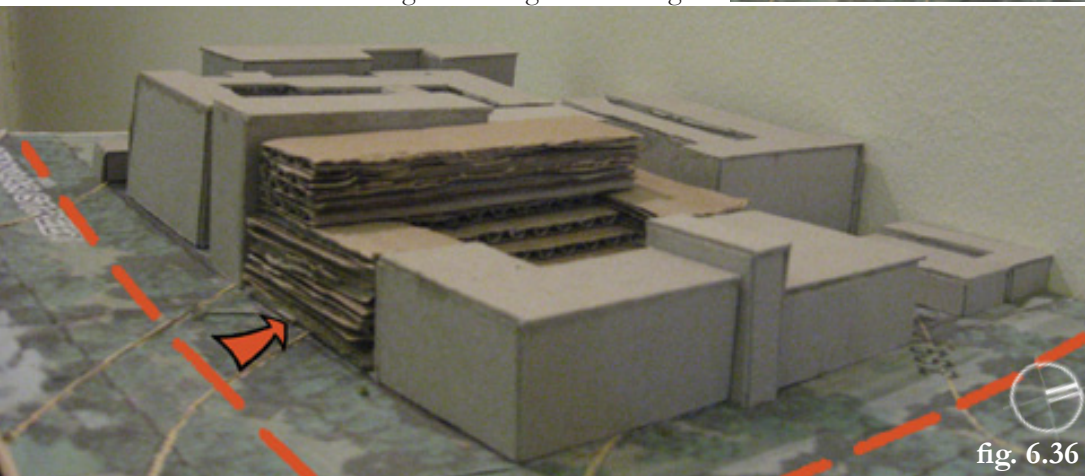


fig. 6.36



fig. 6.40



# BUILDING FORM OPTIONS 12a & 12b



fig. 6.44



fig. 6.48

## BUILDING FORM OPTION 12a

During the design development, it became evident that a ramp may need to be incorporated into the building due to the functional nature of the facility. After developing the building outline, a ramp was added that will allow access throughout the new building but also allow a link to the building on the east.

### POSITIVES

- Patients can access all levels with ease.
- Interaction and linking is encouraged between the new building and the existing one to the east.
- The terracing of the building allows maximum access to northern light and addresses the courtyard.
- Gardens can be created along the ramps.

### NEGATIVES

- Shadows will be cast by the ramp on the building.
- There is not enough built area for wards.



fig. 6.45



fig. 6.46



fig. 6.47

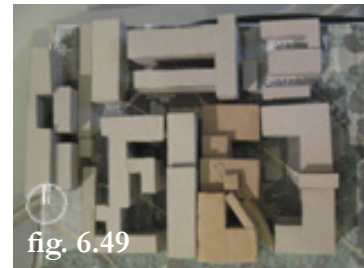


fig. 6.49

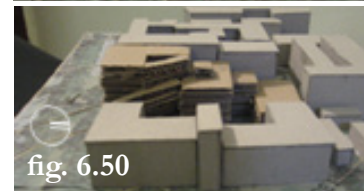


fig. 6.50



fig. 6.51

## BUILDING FORM OPTION 12b

Elaborating on the ideas set out in option 12a, form option 12b is developed to allow more built area for wards and creates less shadows cast by the ramp.

### POSITIVES

- Patients will be able to access all levels.
- Interaction will be encouraged between the new building and the existing one to the east.
- Future development to link the two buildings is encouraged.
- The terracing of the building is better developed from option 12a, allowing more access to northern light and more built area for wards.
- Gardens can be created along the ramps.

### NEGATIVES

- Harsh shadows will still be cast by the ramp.
- The access servitude will need to be reconsidered.

# BUILDING FORM OPTIONS 13 & 14

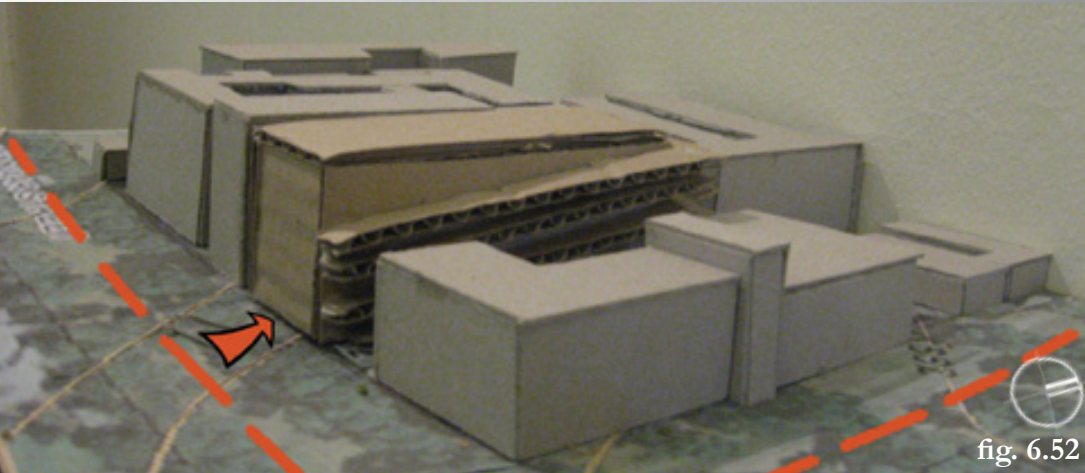


fig. 6.52



fig. 6.56

## BUILDING FORM OPTION 13

By considering variations as to how a ramp could be incorporated, this option was explored whereby the ramp becomes a continuous garden space around the outside of the building.

### POSITIVES

- Gardens are created on every level of the building.
- The active side of the new building coincides with the existing active side of the building to the east.

### NEGATIVES

- Limited northern light reaches the depths of the building.
- The ramp will create less privacy on all the levels of the facility.
- The ramp is extremely long and to get from one level to another would take time.
- The ramp will cast shadows along the building.



fig. 6.53



fig. 6.57



fig. 6.54



fig. 6.58



fig. 6.55



fig. 6.59

## BUILDING FORM OPTION 14

Another exploration of a ramp idea is developed in option 14. This option was developed with the basic form of option 12b, yet has an alternative ramp. Here, the ramp circles around the central 'core' of the building, highlighting this interactive space as the area for *healing and growth*.

### POSITIVES

- The ramp clearly identifies the area for healing and growth in the facility.
- Patients can access all levels of the building.

### NEGATIVES

- Harsh shadows will be cast over the wards by the ramp, and it will also limit any light entering the central 'arm' of the building.
- The ramp would need to be suspended for many floors to reach the roof level.

fig. 6.60 Model of building form option 15a  
 fig. 6.61-6.66 Model of building form option 15b

# BUILDING FORM OPTIONS 15a & 15b

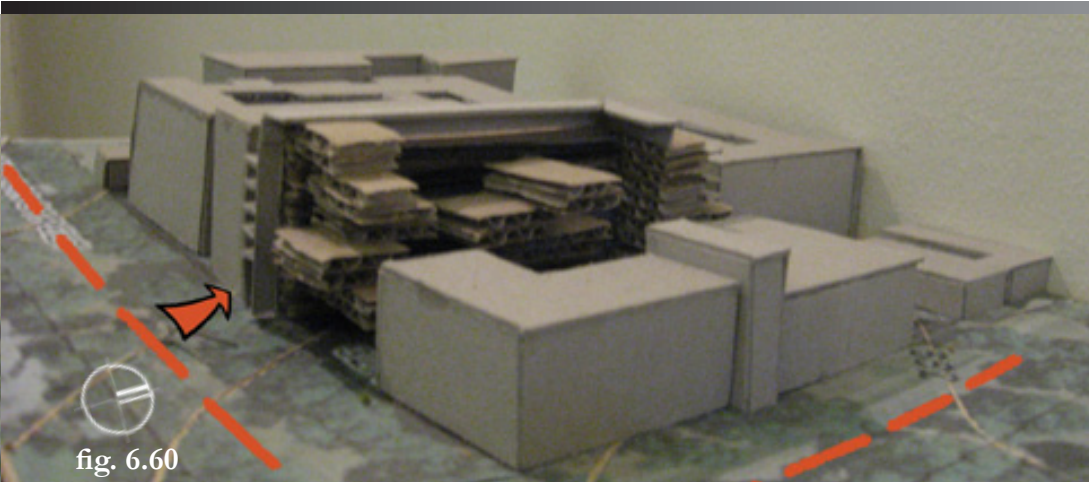


fig. 6.60



fig. 6.61

## BUILDING FORM OPTIONS 15a & 15b

Another idea used to highlight the *central core* of the facility as being the central point for healing and growth is explored in options 15a and 15b. Here the ramp forms the solid core of the facility with the wards being placed around this social and interactive space. 15b (fig. 6.60) explores the spacial qualities that can be created through this idea and begins to highlight a monumental entrance for the facility to draw people into the site. In figure 6.61, a portion of the building is lifted and set back slightly on the front facade. It is believed that the trees of Minnaar Street create a solid street facade in this area, and therefore, the building could vary from the building line slightly, allowing people to be drawn into the site and into the courtyard space. Within the central courtyard space (which expresses the core of healing and growth of the patients), it is intended that each level has a different feel to it, representing the various changes that occur in the patients as they stay at the

facility.

## POSITIVES

- Each block has access to northern light.
- Interactive spaces can be created on the ground floor between and underneath the structures.
- The ramp becomes a social interactive space.
- The courtyard represents the levels of healing and growth in the recovery of the human body.
- Gardens are created on various levels.
- Green walls/panels create nicer environments along harsh edges (as on the western side - see fig. 6.65).
- A monumental entrance is explored.
- The western edge of the building is finally dealt with to some degree.
- Interaction between patients and public is allowed, but privacy is also considered.
- Visual access to Burgers Park is given to patients on higher levels of the building.



fig. 6.62

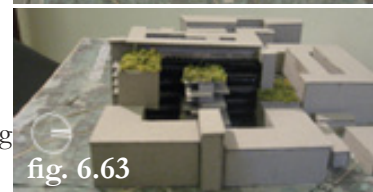


fig. 6.63



fig. 6.64

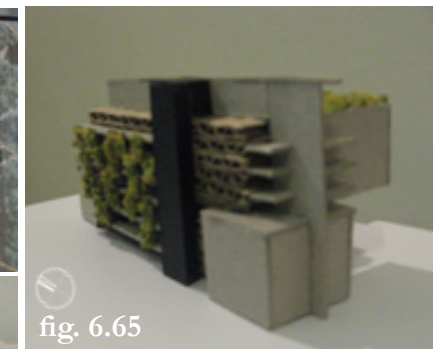


fig. 6.65

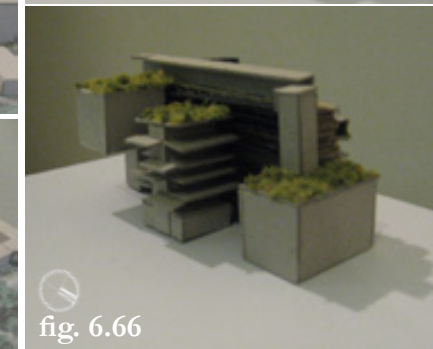


fig. 6.66

# BUILDING FORM OPTION 16

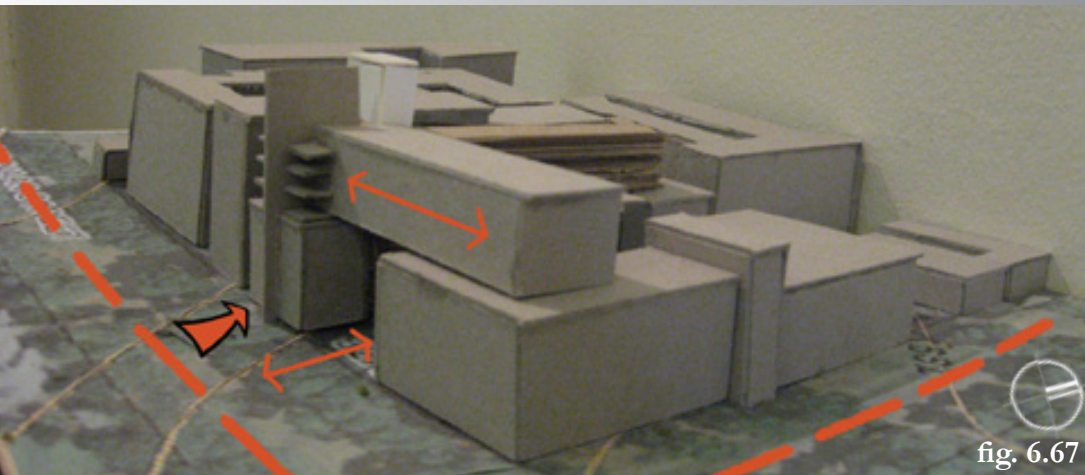


fig. 6.67

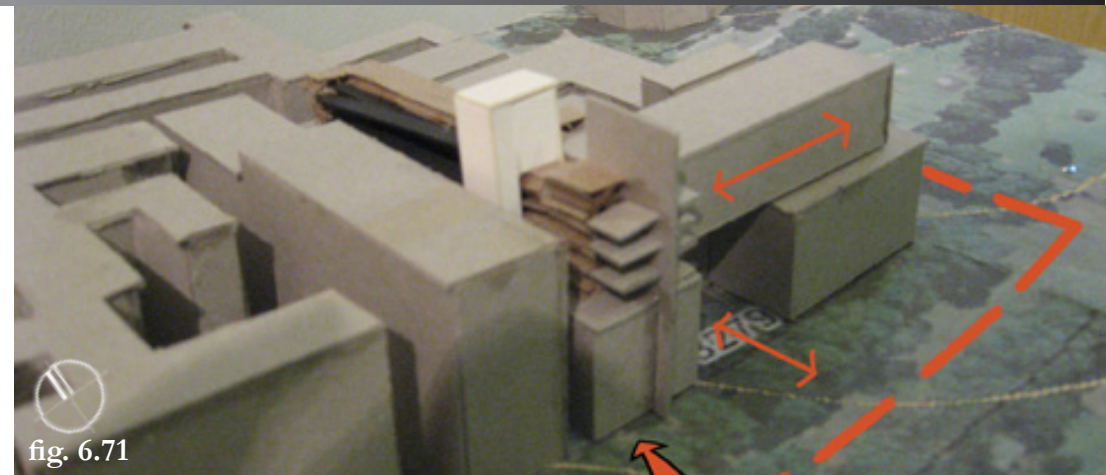


fig. 6.71

## BUILDING FORM OPTION 16

Building form option 16 was created to explore the possibility of extending the new building (as seen in option 15b) over the existing building to the east which would link the two structures and allow access to Burgers Park.

### POSITIVES

- Room for future development is explored.
- A longer 'arm' is developed where more wards and patients can be accommodated.
- Direct link to Burgers Park is created.
- More views of Burgers Park are created.
- There is no longer a large cantilevered part of the building with no structure below as in form 15b.
- More access to northern light is created.
- The courtyard still represents the area of healing and growth in the patients at the facility.



fig. 6.68



fig. 6.69



fig. 6.70

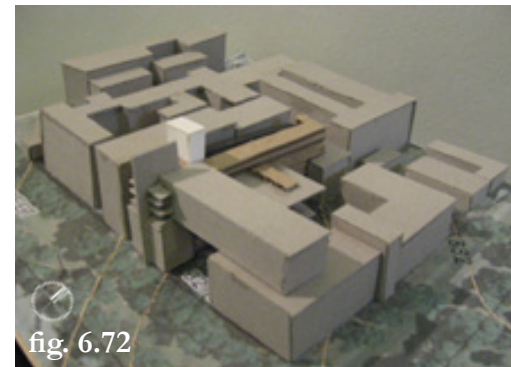


fig. 6.72



fig. 6.73

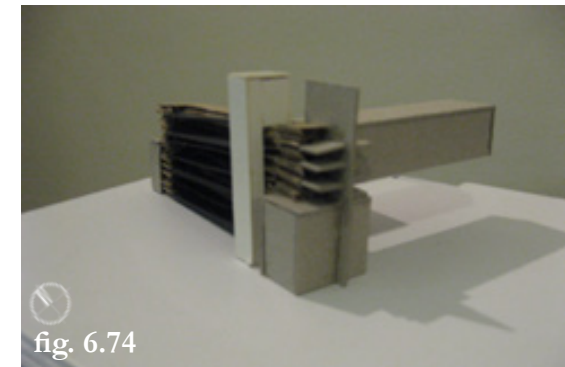


fig. 6.74

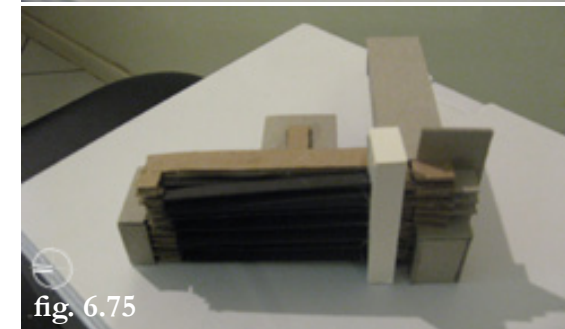


fig. 6.75

# BUILDING FORM OPTION 17

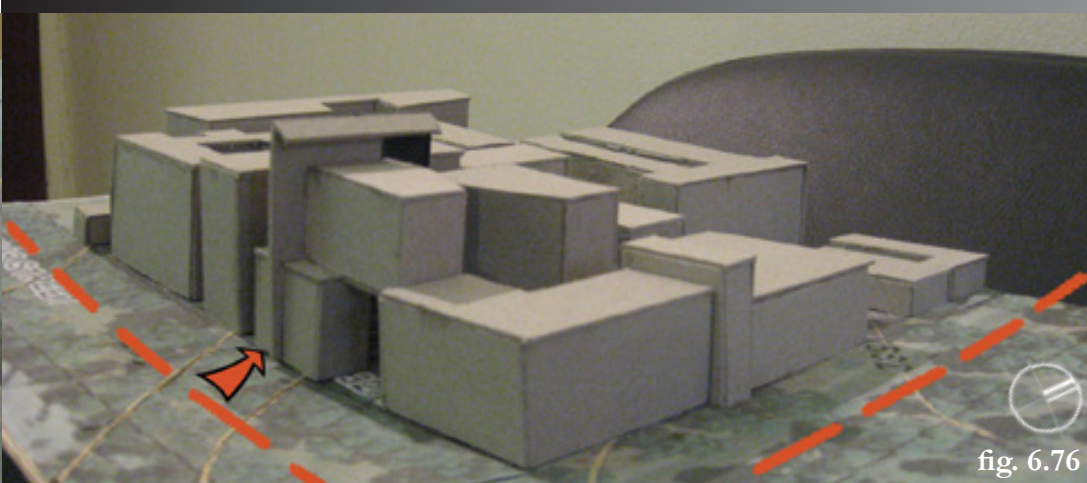


fig. 6.76



fig. 6.77

## BUILDING FORM OPTION 17

To break the monotony of the ward blocks created thus far, it was believed necessary to manipulate the building form to allow for more interaction between the building and the site.

### POSITIVES

- By cutting away or adding to the built structure at angles, it allows more northern light to enter the courtyard spaces created and allows the landscape to *bleed* into these spaces, resulting in a building which forms part of the environment.
- Interactive spaces open onto the central area for healing. Experiences can vary from level to level.
- Gardens are created on various levels.
- The monumental facility entrance from form option 15b is maintained.
- The ramp is removed due to the fact that it takes up too much valuable and limited space on the site

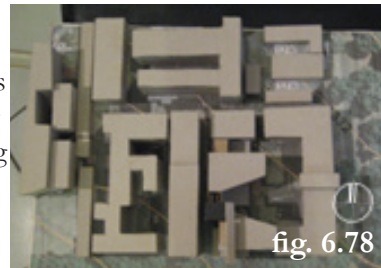


fig. 6.78



fig. 6.79

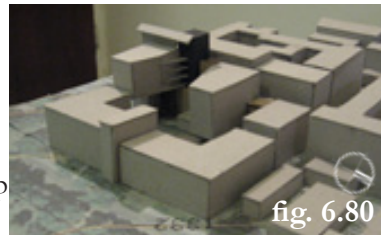


fig. 6.80

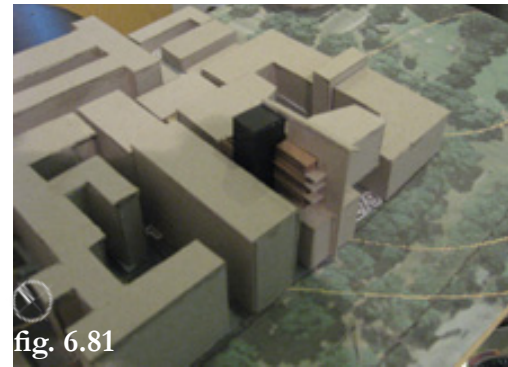


fig. 6.81

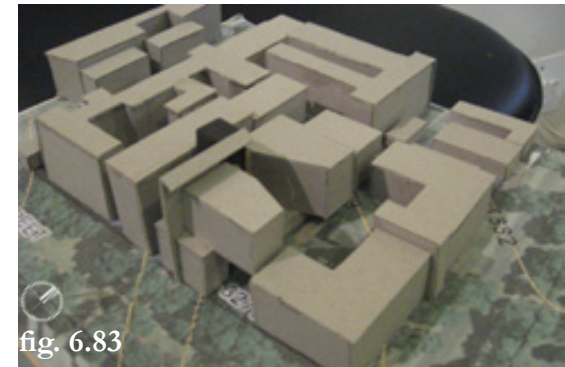


fig. 6.83

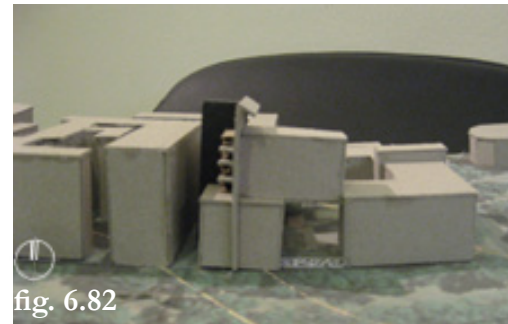


fig. 6.82



fig. 6.84

# BUILDING FORM CONCLUSION

## BUILDING FORM CONCLUSION

After exploring and investigating many building forms that relate to various issues with the design of the *Centre for Healing*, it is believed that form option 17 is the best suited to effectively address these various issues.

A public open space has been created between the new building and the one to the east of it. This has been broken down into smaller, more intimate courtyard spaces as a result of the placement of the 'arms' of the building, where social interaction is encouraged between the patients and the public. The defined edges that are created around these courtyards will become active edges which will encourage heightened interaction and activity in the area.

The continuation of the solid street edge on Minnaar Street has been broken in option 17, however the entire length of Minnaar Street is lined with large lush trees which are the *true* urban edge of the street front. The street edge is therefore already being continued, even with the empty site as it is now, creating the effect of a solid, continuous street edge which does not appear broken. It is however necessary to create a monumental/poetic feature at the entrance to the facility and highlight the courtyard as a public space, welcome to all, rather than appearing to be an exclusive space purely for use by the patients in the facility.

Movement into, through and around the building has been a primary concern throughout the design process. Not only must it be clear to the public that they are

welcome in the building and the courtyard, the circulation should lead the users (no matter who they are) to their desired locations while easily orientating them within the given context.

It is important that the central 'arm' of the building be highlighted as the central core around which healing occurs. Each level of the building is to have a different experience around this core, representing the various levels of healing and growth that the patients are experiencing. The spaces around this area should emphasize the epitome of healing spaces that should be experienced throughout the entire building. Within these spaces, the built form and the landscape should fade into one another where people inside the building will be drawn out, and people outside the building will be drawn in.

There are however a few challenges that still face this chosen basic form and site layout. They are:

- The large amount of east-west orientation of the building is not favorable.
- There is limited access to the northern most part of the site.
- Should a more direct link be created between the site and Burgers Park?

# PROGRAMME & PLANNING DEVELOPMENT

## PROGRAMME & PLANNING DEVELOPMENT

With this basic form in mind, space planning needs to be considered to decide where it would be best suited to place various activities within the building and on the site. To be able to conceptualise the spatial arrangement for the *Centre for Healing*, a good understanding of the necessary functions (see Chapter 3) as well as the genius loci that needs to be created in such a facility needs to be undertaken (see Chapter 2).

Not only do functional/practical requirements like privacy, access to the public, circulation (vertical and horizontal), size requirements, lighting requirements and so forth need to be considered when placing facilities on the site, but the position of activities and rooms need to be considered in terms of the theory laid out earlier in the dissertation. For example, the central 'arm' of the building can house the majority of the ward blocks as they are the areas within the building where people will heal, and this is meant to be the central core around which all healing in the facility takes place. This area therefore needs to possess a specific therapeutic quality within its environment expressing these ideas while still maintaining its functional role.

The following section expresses the spatial requirements relating to one another as well as to the outside areas that lie beyond their edges. This interaction is important to determine whether or not the spaces can function where they are. Chapter 2 did after all highlight architecture as an art form that should be experienced as a series of events/movement rather than simply being

viewed from a distance as an object that is inaccessible.

The following images (see fig. 6.85 - fig. 6.90) show the proposed spatial planning related to building form option 17. Not only will the spaces be shown in relation to one another in the form of bubble diagrams, but the interaction between them and the outside will also be shown with the type of atmosphere that will be developed for the particular areas being expressed.

fig. 6.85 Ground floor spatial planning bubble diagram

fig. 6.86 First floor spatial planning bubble diagram

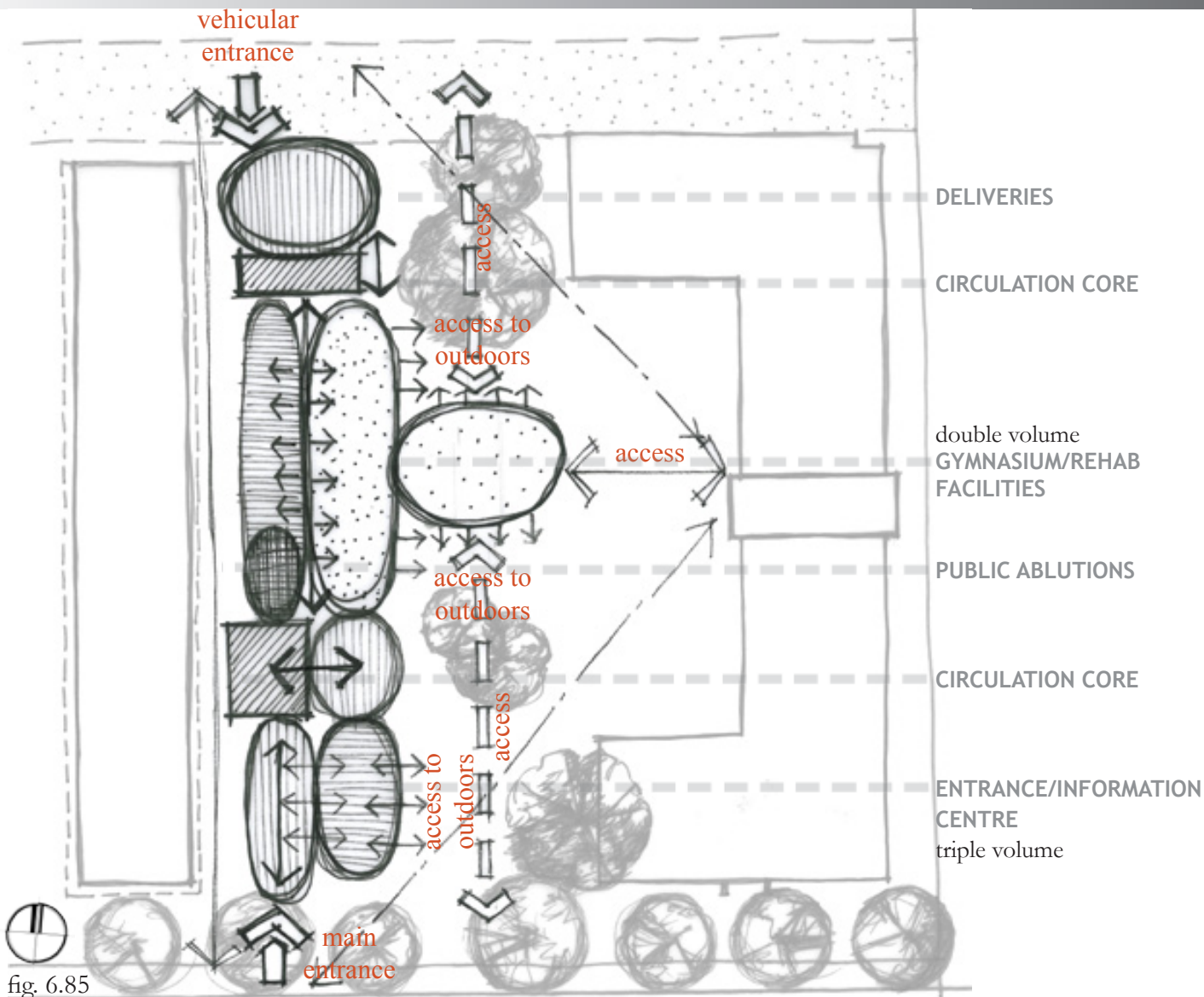


fig. 6.85

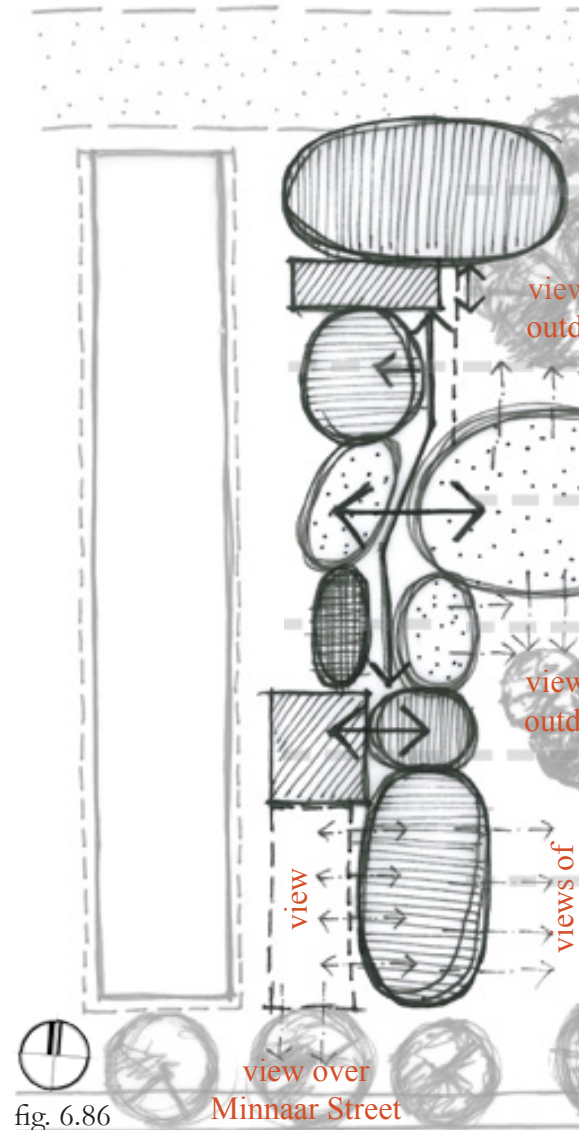


fig. 6.86



fig. 6.87 Second floor spatial planning bubble diagram

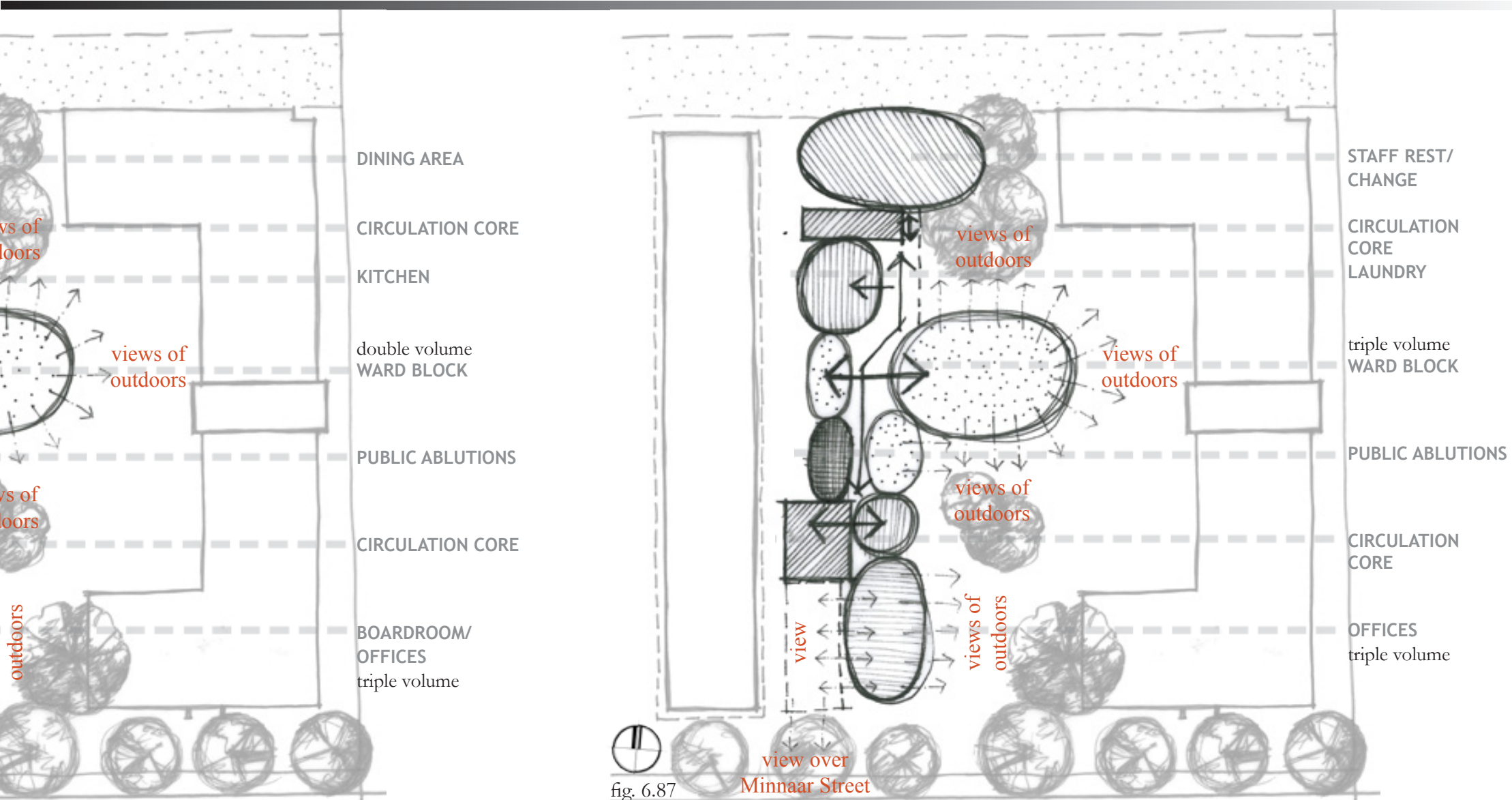


fig. 6.87

fig. 6.88 Third & fourth floor spatial planning bubble diagram

fig. 6.89 Fifth & sixth floor spatial planning bubble diagram

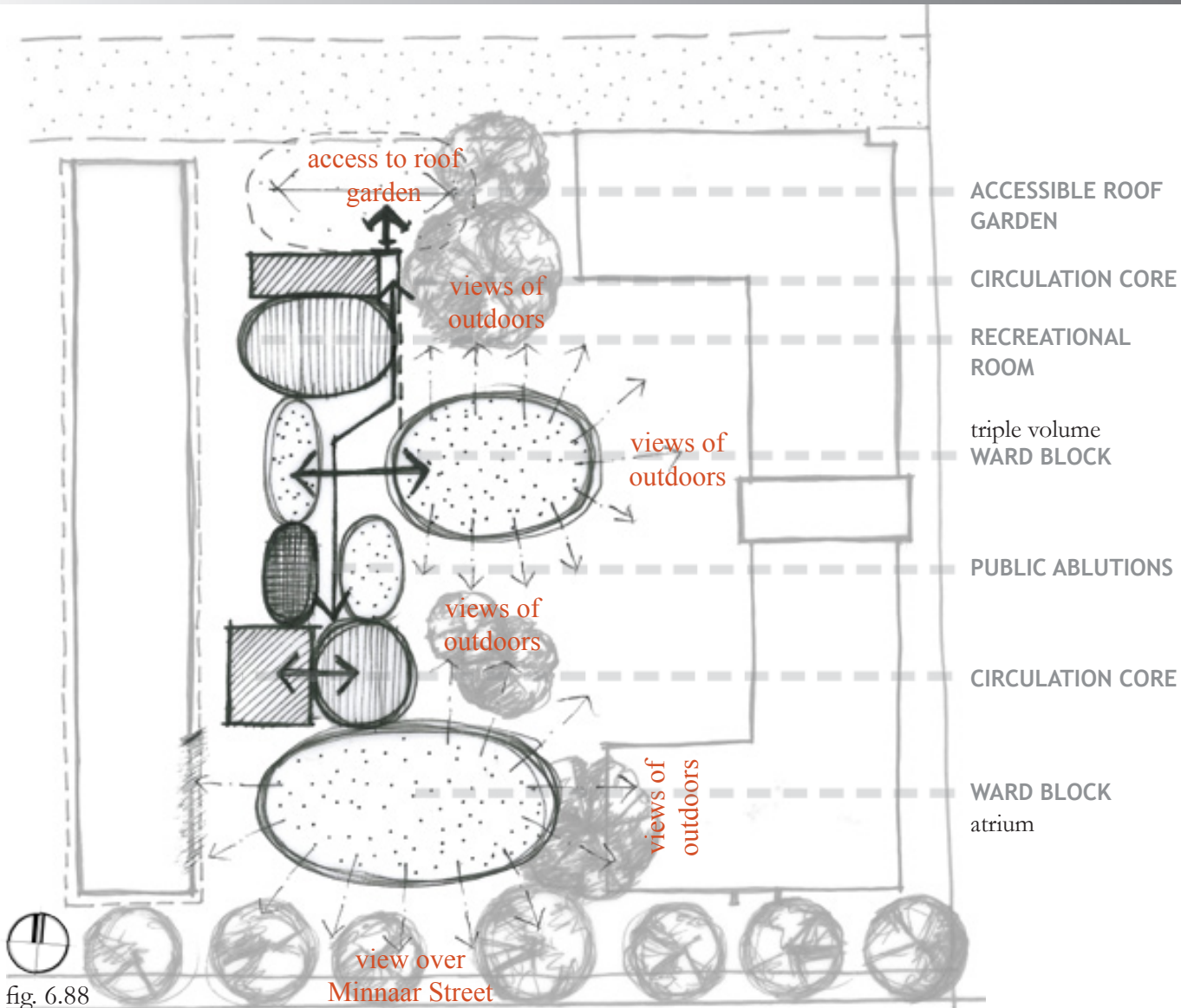


fig. 6.88

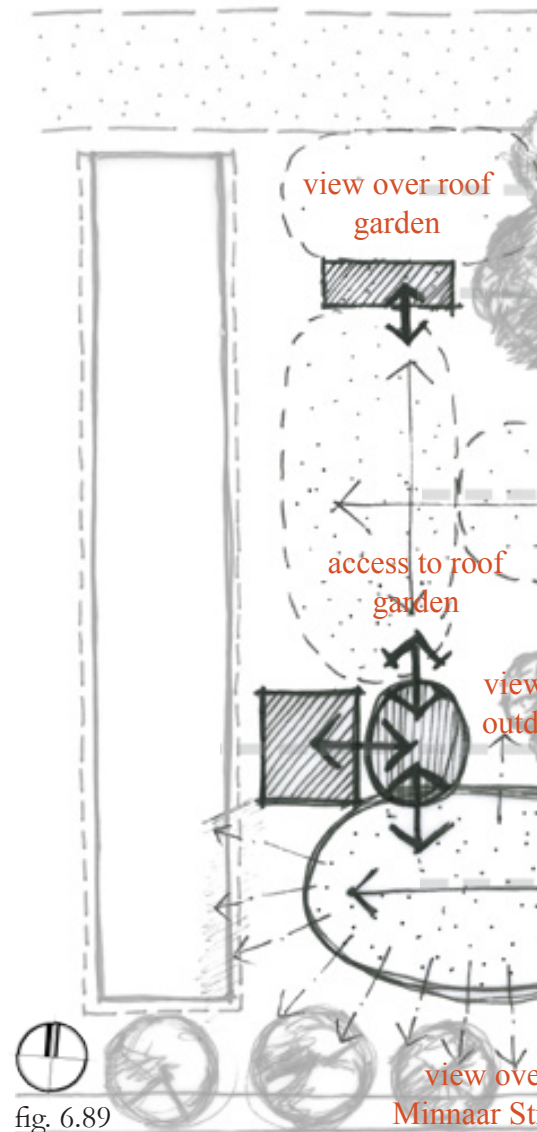


fig. 6.89

fig. 6.90 Roof spatial planning bubble diagram

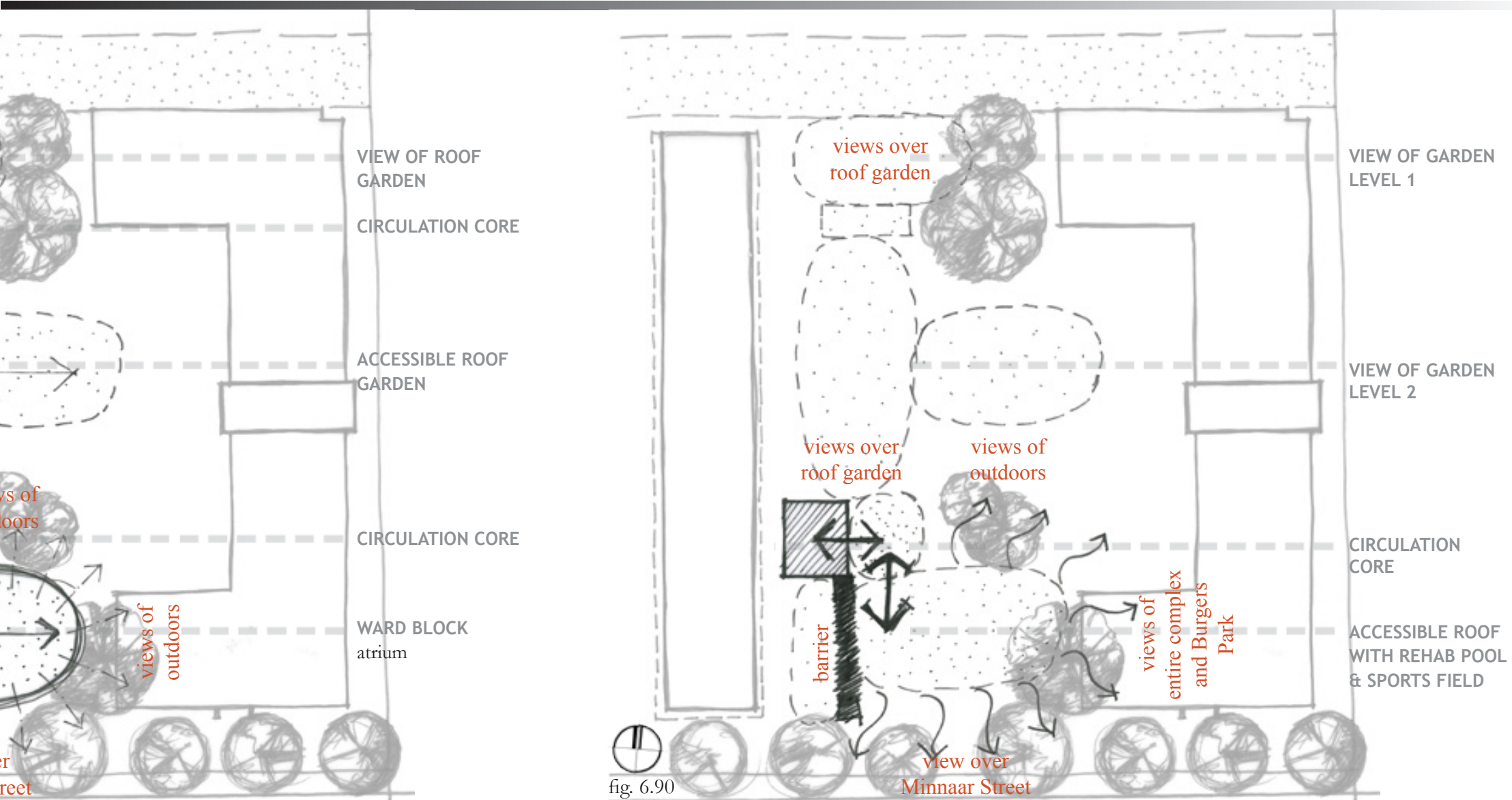


fig. 6.90

# SITE DEVELOPMENT

## SITE DEVELOPMENT

Based on the spatial planning illustrated in the previous bubble diagrams, it became essential that the site be considered as part of the design of the building and not as an isolated island, seen in figure 6.91. It was highlighted previously that the landscape should be brought into the building (see fig. 6.92) and that the building be brought out into the landscape. The images alongside show the development of achieving this intention.

It was not only necessary to bring the landscape into the facility for healing purposes, but it was also identified to be used as a linking factor between the facility and Burgers Park. The rough proposal for the landscaping around the facility therefore started to continue the distinctive circular patterns from Burgers Park into the landscape around the facility (see fig. 6.93-6.95), creating pathways and elements that honour the memory of Burgers Park, but that also inevitably lead the users of the facility and the landscape around it to the park itself.

This was however further developed to create a multi-layered landscape that more discretely honours Burgers Park with its monumental use of lush trees by using these elements (as well as level changes) to create various levels of private/public outdoor spaces for both the public and patients to enjoy (see fig. 6.96).



fig. 6.91

fig. 6.91 Early site planning development with provision for a ramp between the new building and the one to the east

fig. 6.92 Sketch of how to open up the 'arms' of the building to bring the landscape into the facility



fig. 6.93

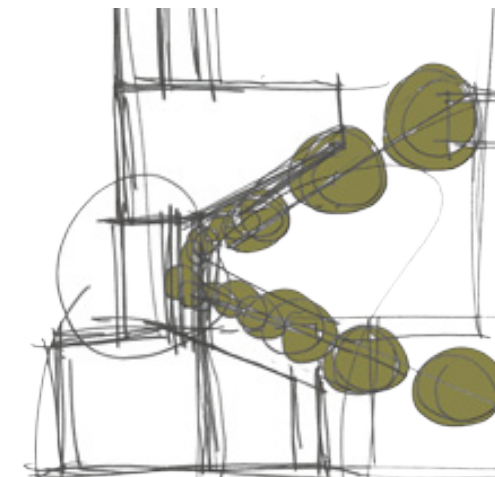


fig. 6.92

fig. 6.93-6.95 Sketches reflecting a rough proposal for the landscape around the facility on the eastern side which honour the circular patterns of Burgers Park  
 fig. 6.96 Sketch indicating final intentions for the landscape around the facility

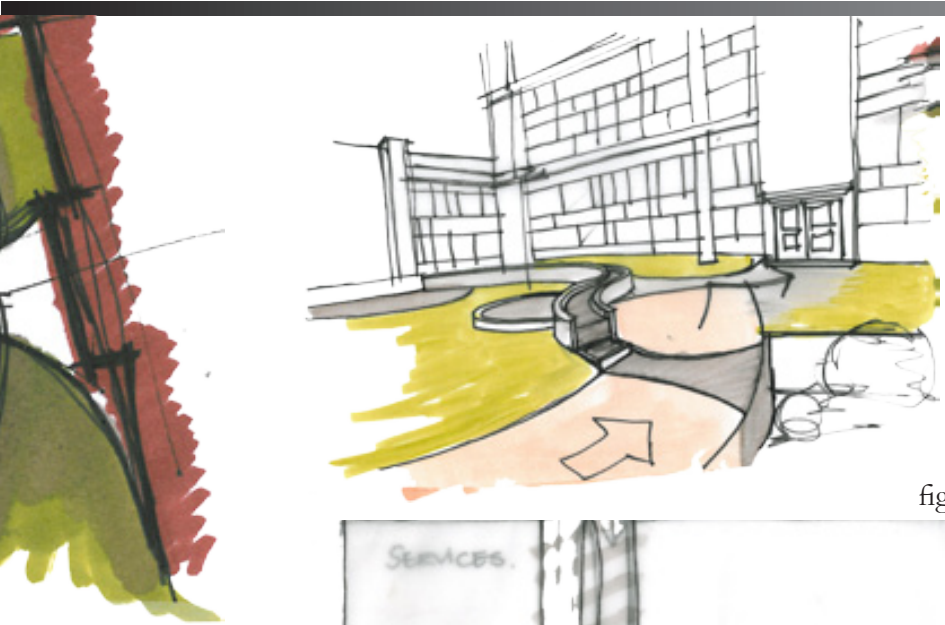


fig. 6.94

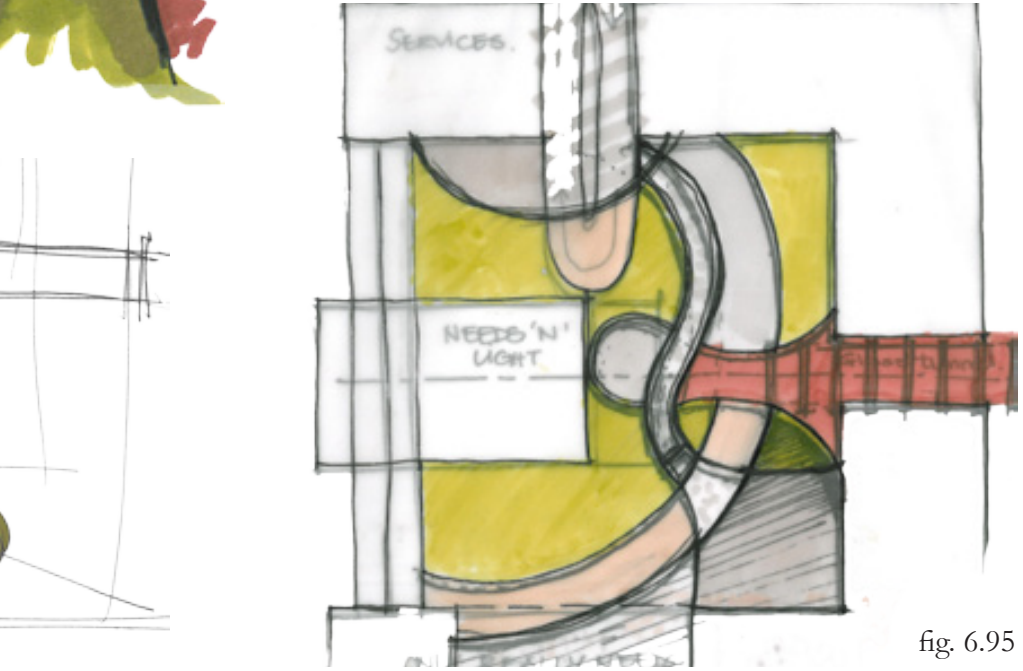


fig. 6.95

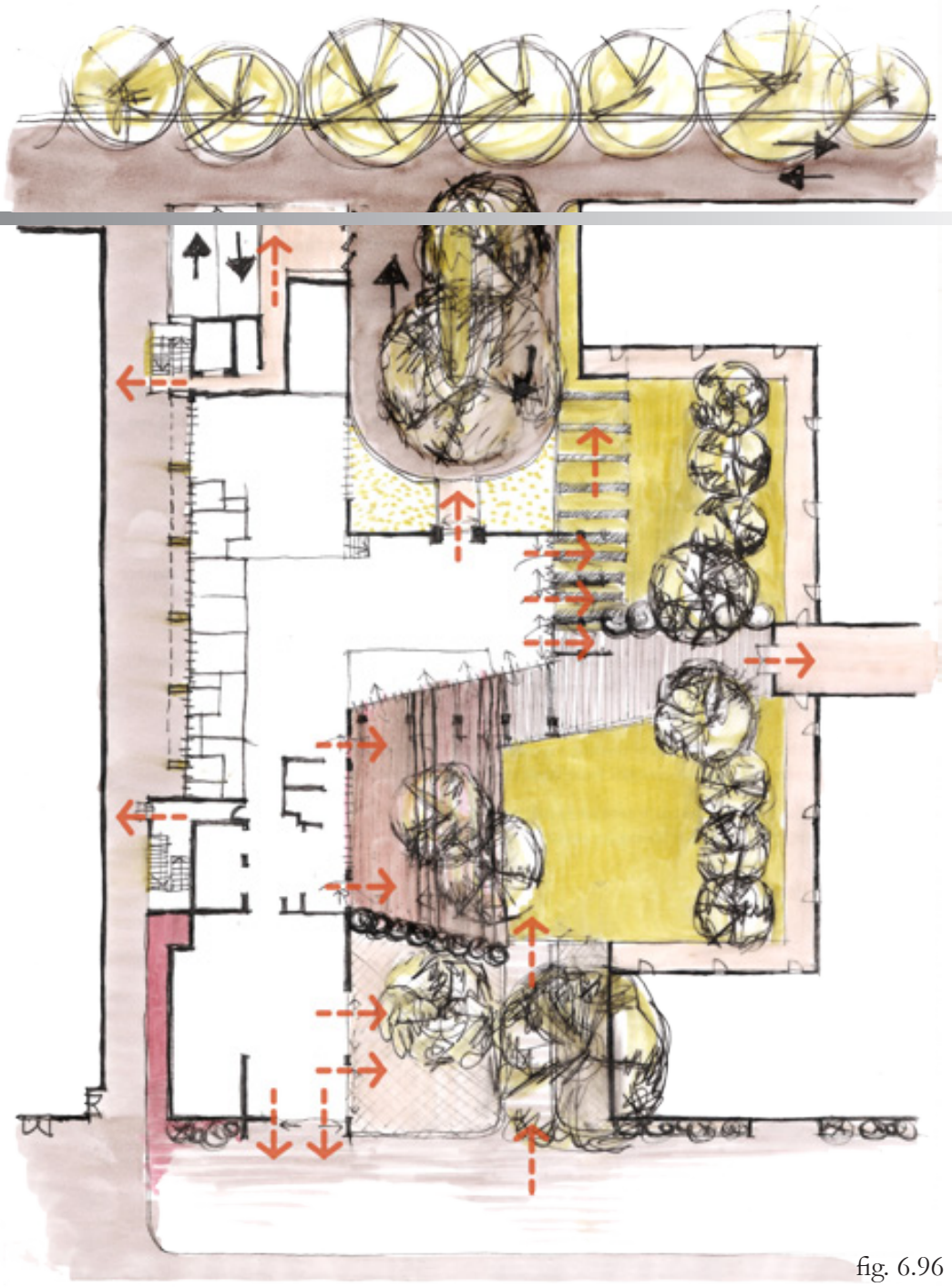


fig. 6.96

# LEVEL ACCOMMODATION

## LEVEL ACCOMMODATION

In Chapter 3, an accommodation schedule was set up that described the various rooms and functions necessary to make the *Centre for Healing* a functional 120 bed facility. Alongside is a table with a level accommodation schedule for the first phase of the development that divides the rooms and functions required for this phase into the specific levels of the building that they will be placed on as well as the overall area that these functions will occupy (see fig. 6.97). It should be noted, the table relates back to the bubble diagrams presented previously which will then further be developed to present appropriate sketchplans.

<b>BASEMENT</b>		
PARKING	parking	490m <sup>2</sup>
	road circulation	810m <sup>2</sup>
PLANT ROOMS	HT room - hospital	7m <sup>2</sup>
	HT room - council	7m <sup>2</sup>
	standby generators	40m <sup>2</sup>
	PABX/IT server	7m <sup>2</sup>
	LT switch room	14m <sup>2</sup>
STORES	store/workshop	25m <sup>2</sup>
		<b>TOTAL ±1400m<sup>2</sup></b>
<b>GROUND FLOOR</b>		
RECEPTION	info/security	50m <sup>2</sup>
	waiting area	25m <sup>2</sup>
INFORMATION CENTRE	floor area	70m <sup>2</sup>
CIRCULATION	lift lobby 1	80m <sup>2</sup>
	lift lobby 2	45m <sup>2</sup>
	passages	15m <sup>2</sup>
ABLUTIONS	male public	15m <sup>2</sup>
	female public	15m <sup>2</sup>
	bathrooms/wc	25m <sup>2</sup>
SUPPORT SERVICES	staff rest	10m <sup>2</sup>
	offices	10m <sup>2</sup>
GYMNASIUMS	gymnasium 1 + physio	265m <sup>2</sup>
	gymnasium 2	100m <sup>2</sup>
DELIVERIES	floor area	30m <sup>2</sup>

fig. 6.96

		<b>TOTAL ±755m<sup>2</sup></b>
<b>FIRST FLOOR</b>		
CONFERENCE	administration	70m <sup>2</sup>
	training	45m <sup>2</sup>
CIRCULATION	lift lobby 1	95m <sup>2</sup>
	lift lobby 2	35m <sup>2</sup>
	passages	145m <sup>2</sup>
ABLUTIONS	male public	15m <sup>2</sup>
	female public	15m <sup>2</sup>
	bathrooms/wcs	30m <sup>2</sup>
SUPPORT SERVICES	nurses station	15m <sup>2</sup>
	play area	5m <sup>2</sup>
	sluice/hmc/dirty linen	9m <sup>2</sup>
WARDS	floor area	140m <sup>2</sup>
KITCHEN	floor area	45m <sup>2</sup>
DINING AREA	floor area	150m <sup>2</sup>
BALCONIES	floor area	210m <sup>2</sup>
STORE	floor area	10m <sup>2</sup>
		<b>TOTAL ±1035m<sup>2</sup></b>
<b>SECOND FLOOR</b>		
ADMINISTRATION	offices	85m <sup>2</sup>
	manager	10m <sup>2</sup>
CIRCULATION	lift lobby 1	95m <sup>2</sup>
	lift lobby 2	35m <sup>2</sup>
	passages	145m <sup>2</sup>

ABLUTIONS	male public	15m <sup>2</sup>
	female public	15m <sup>2</sup>
	bathrooms/wcs	30m <sup>2</sup>
SUPPORT SERVICES	nurses station	10m <sup>2</sup>
	office	10m <sup>2</sup>
	sluice/hmc/dirty linen	9m <sup>2</sup>
WARDS	floor area	140m <sup>2</sup>
LAUNDRY	floor area	45m <sup>2</sup>
STAFF FACILITIES	staff rest	65m <sup>2</sup>
	staff change	45m <sup>2</sup>
	staff dining	30m <sup>2</sup>
BALCONIES	floor area	110m <sup>2</sup>
STORE	floor area	10m <sup>2</sup>
		<b>TOTAL ±905m<sup>2</sup></b>
<b>THIRD FLOOR</b>		
CIRCULATION	lift lobby 1	100m <sup>2</sup>
	lift lobby 2	30m <sup>2</sup>
	passages	170m <sup>2</sup>
ABLUTIONS	male public	15m <sup>2</sup>
	female public	15m <sup>2</sup>
	bathrooms/wcs	70m <sup>2</sup>
SUPPORT SERVICES	nurses stations	20m <sup>2</sup>
	offices	15m <sup>2</sup>
	sluice/hmc/dirty linens	18m <sup>2</sup>
WARDS	floor area	210m <sup>2</sup>

RECREATIONAL ROOM	floor area	75m <sup>2</sup>
BALCONIES	floor area	350m <sup>2</sup>
STORES	floor area	20m <sup>2</sup>
		<b>TOTAL 1108m<sup>2</sup></b>
<b>FOURTH FLOOR</b>		
CIRCULATION	lift lobby 1	100m <sup>2</sup>
	lift lobby 2	30m <sup>2</sup>
	passages	170m <sup>2</sup>
ABLUTIONS	male public	15m <sup>2</sup>
	female public	15m <sup>2</sup>
	bathrooms/wcs	70m <sup>2</sup>
SUPPORT SERVICES	nurses stations	20m <sup>2</sup>
	offices	15m <sup>2</sup>
	sluice/hmc/dirty linens	18m <sup>2</sup>
WARDS	floor area	210m <sup>2</sup>
RECREATIONAL ROOM	floor area	75m <sup>2</sup>
BALCONIES	floor area	130m <sup>2</sup>
STORES	floor area	20m <sup>2</sup>
		<b>TOTAL 890m<sup>2</sup></b>
<b>FIFTH FLOOR</b>		
CIRCULATION	lift lobby 1	115m <sup>2</sup>
	passages	70m <sup>2</sup>

ABLUTIONS	bathrooms/wcs	35m <sup>2</sup>
SUPPORT SERVICES	nurses station	10m <sup>2</sup>
	office	10m <sup>2</sup>
	sluice/hmc	9m <sup>2</sup>
WARDS	floor area	80m <sup>2</sup>
BALCONIES	floor area	530m <sup>2</sup>
STORES	floor area	20m <sup>2</sup>
		<b>TOTAL 880m<sup>2</sup></b>
<b>SIXTH FLOOR</b>		
CIRCULATION	lift lobby 1	115m <sup>2</sup>
	passages	70m <sup>2</sup>
ABLUTIONS	bathrooms/wcs	35m <sup>2</sup>
SUPPORT SERVICES	nurses station	10m <sup>2</sup>
	office	10m <sup>2</sup>
	sluice/hmc	9m <sup>2</sup>
WARDS	floor area	80m <sup>2</sup>
BALCONIES	floor area	50m <sup>2</sup>
STORES	floor area	20m <sup>2</sup>
		<b>TOTAL 400m<sup>2</sup></b>
<b>ROOF</b>		
REHAB POOL & SPORTS FACILITIES		<b>TOTAL 365m<sup>2</sup></b>

# SKETCH PLAN DEVELOPMENT

## SKETCH PLAN DEVELOPMENT - BASEMENT

Figure 6.98 shows important concept ideas that relate to the basement plan of the *Centre for Healing*. They are:

1. Only lift 1 and 2 reach to basement level forming a portion of the solid core that supports the entire facility. (Lift 3 does not go to the basement level for cost and functional reasons - see chapter 7).
2. Only one basement level is created due to the fact that adding another basement with the benefit of only 40 parkings seemed impractical and overly expensive when weighed against these minimal benefits.
3. Access to the basement parking is from the northern side of the site via the existing access servitude on that side of the site.
4. Natural ventilation is created in the basement through the use of high level louvres which access fresh air and discharge stale air to the open ground floor above. This also allows the basement level to not be entirely isolated (as is often the case with basements) with a small level of visual and environmental interaction allowed between the ground floor surface and the recessed basement surface.
5. Due to the nature of the facility, it was deemed necessary to allow for a larger number of disabled parkings within the limits of the facility than is required according to the SABS, therefore a total of 6 out of 40 parkings are provided.

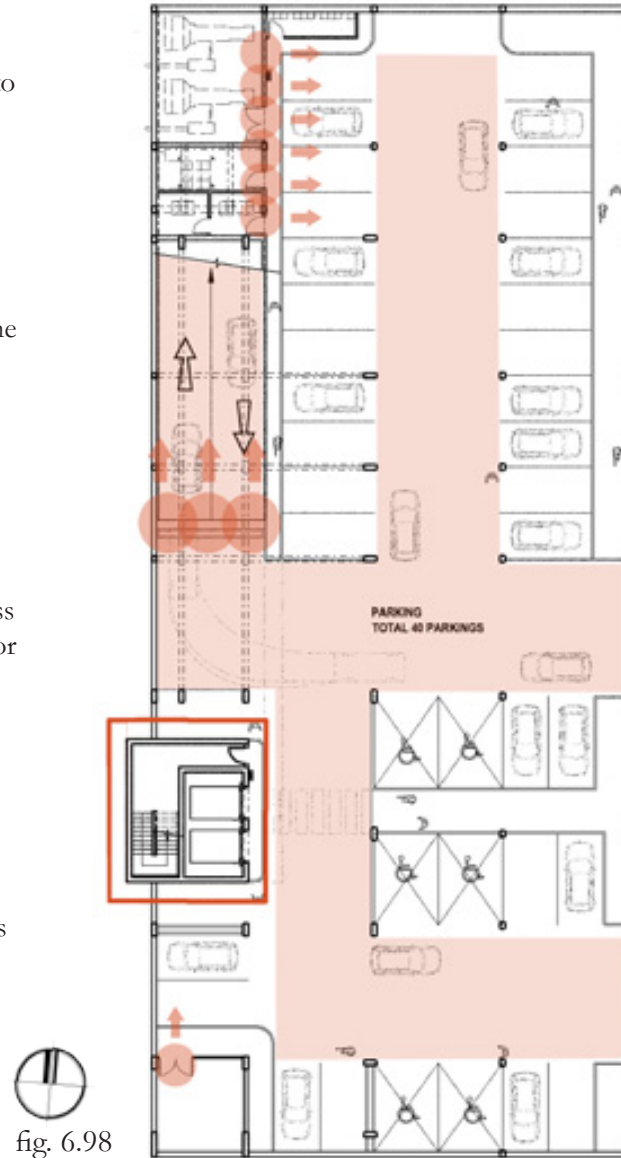


fig. 6.98

## SKETCH PLAN DEVELOPMENT - GROUND FLOOR

Figure 6.99 shows important concept ideas that relate to the ground floor plan of the *Centre for Healing*. They are:

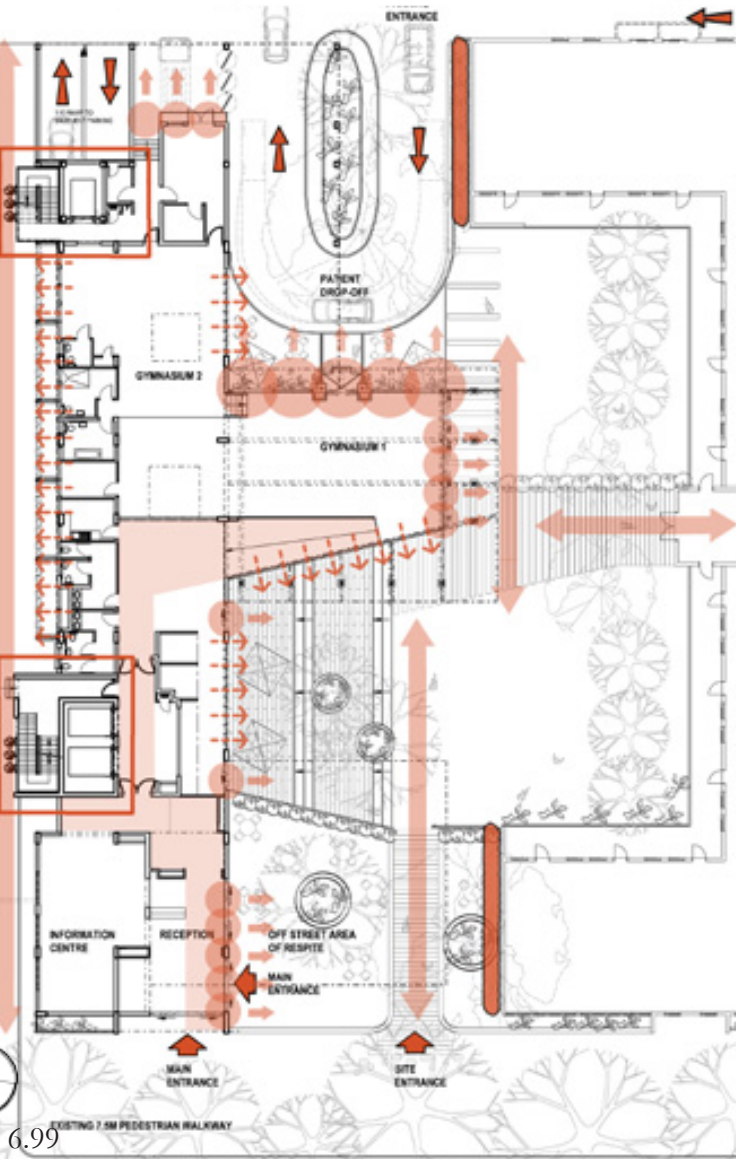
1. The long east-west spine of the building acts as the central core from which all activity within the facility occurs, also allowing for an easy way finding process for users to follow.
2. The gymnasium is located on this level, symbolising the idea that all healing begins, and is supported by, the physical body. The gym is the facility within the building that focuses on the healing of the physical body and is the beginning and facilitator of all healing in the facility and is thus at the 'base' of the building.
3. The gymnasium is also seen as the central energy body from where all healing occurs and is thus (on plan) placed centrally in the building from where all healing fields can radiate.
4. Layers of privacy are created on plan through the specific positioning of functions and rooms throughout the ground floor of the facility. Layers of privacy also vary with the height of the building, the highest part hosting the most private functions.
5. Ample access to the outdoors and natural light in the facility are provided for.
6. Bright, open public spaces highlight areas as places of social gathering and interaction.
7. The addition of an information centre allows patients and the public to become more informed.
8. Public access to all ground floor activities allows for social interaction, with patients having the choice to socialize or withdraw as they desire.

fig.



fig. 6.99 Ground floor sketchplan (not to scale)

fig. 6.100 First floor sketchplan (not to scale)



### SKETCH PLAN DEVELOPMENT - FIRST FLOOR

Figure 6.100 shows important concept ideas that relate to the first floor plan of the *Centre for Healing*. They are:

1. The east-west spine of the building acts as the central core from which all activity originates, allowing for easy way finding.
2. Services are placed close to lift 3 (the service lift) for ease of access for deliveries and distribution.
3. The ward block radiates from the central solid core of the facility, relying on that portion of the building to remain standing, symbolizing the support that the nurses will pass onto the patients that are housed within these wards.
4. Layers of privacy are designed through the creation of smaller passages leading to rooms off larger more public passages.
5. The use of balconies all around the ward block allows patients to either connect with society or withdraw to their rooms when desired.
6. There is ample access to outdoor views and natural light from all occupied rooms in the facility.
7. Double volumes are created with access to natural light, creating central, social spaces which link public circulation routes with the private ward passages.
8. The boardroom/office facilities are placed on this lower level as a more public and accessible function within the facility.
9. Access to northern light is created through the arms which form the ward block.
10. Views to the west need to be created.

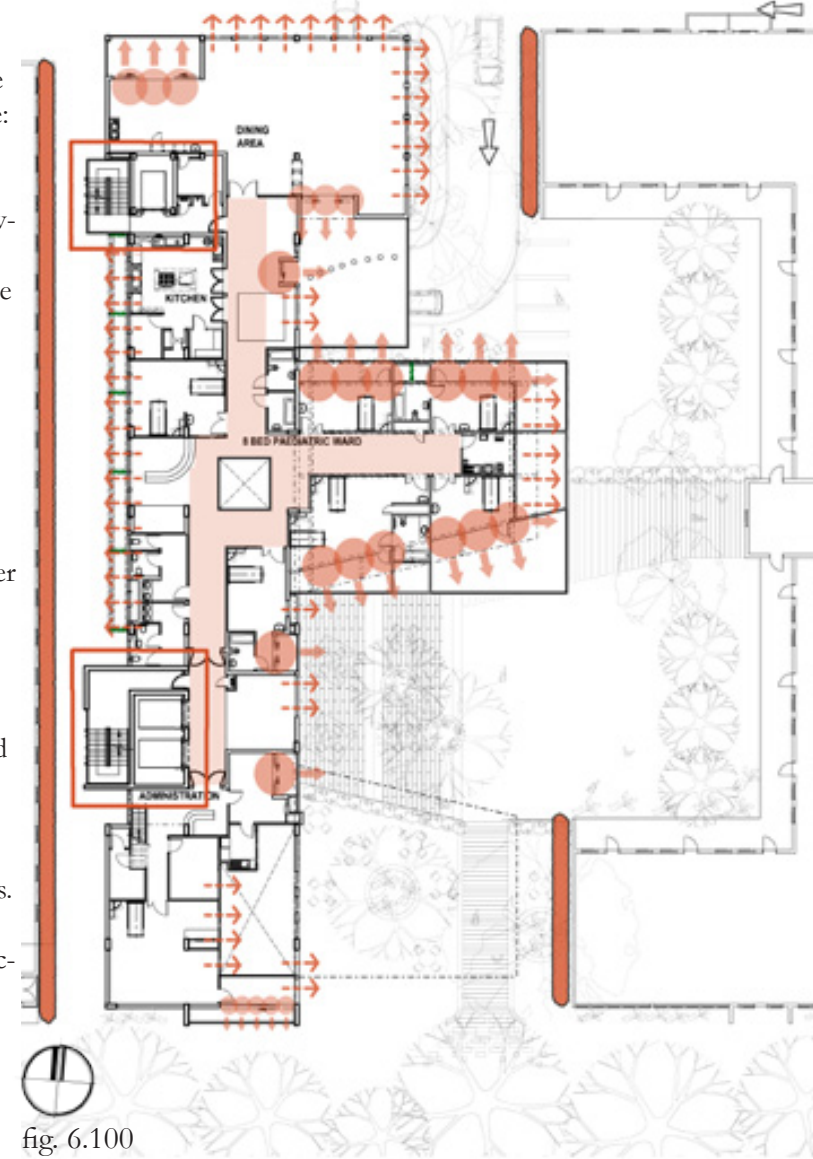


fig. 6.100

fig. 6.101 Second floor sketchplan (not to scale)

### SKETCH PLAN DEVELOPMENT - SECOND FLOOR

Figure 6.101 shows important concept ideas relating to the second floor plan of the *Centre for Healing*. They are:

1. The east-west spine of the building acts as the central core from which all activity originates, allowing for easy way finding.
2. Services are placed close to lift 3 (the service lift) for ease of access for deliveries and distribution.
3. The ward block radiates from the central solid core of the facility, relying on that portion of the building to remain standing, symbolizing the support that the nurses will pass on to the patients that are housed within these wards.
4. Layers of privacy are designed through the creation of smaller passages leading to rooms off larger more public passages.
5. The use of balconies all around the ward block allow patients to either connect with the outside or withdraw to their rooms as desired.
6. There is ample access to outdoor views and natural light from all occupied rooms in the facility.
7. Double volumes are created with access to natural light, creating central, social spaces which link public circulation routes with the private ward passages.
8. The offices form a double volume with the level below to situate the more public functions of the facility on lower interconnecting levels.
9. Access to northern light is created through the arm which forms the ward block.
10. Views to the west need to be created.
11. Access to north light for the staff is created.

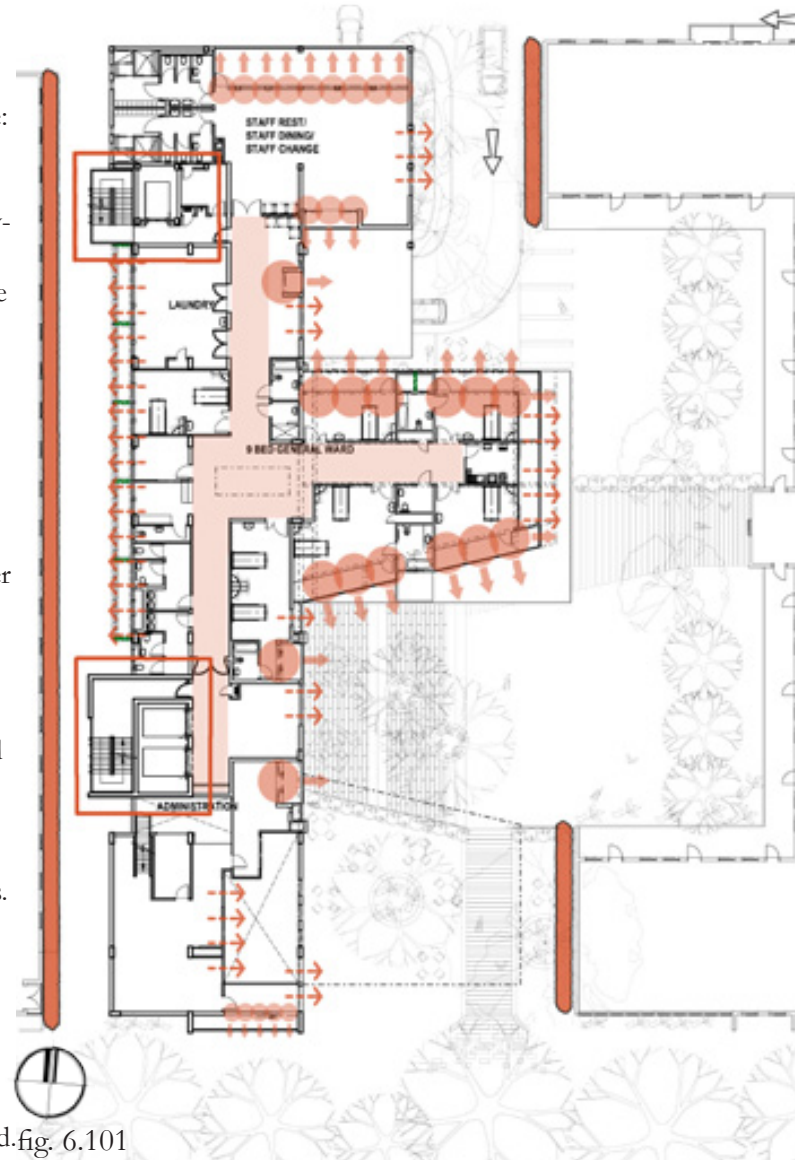


fig. 6.101

### SKETCH PLAN DEVELOPMENT - THIRD FLOOR

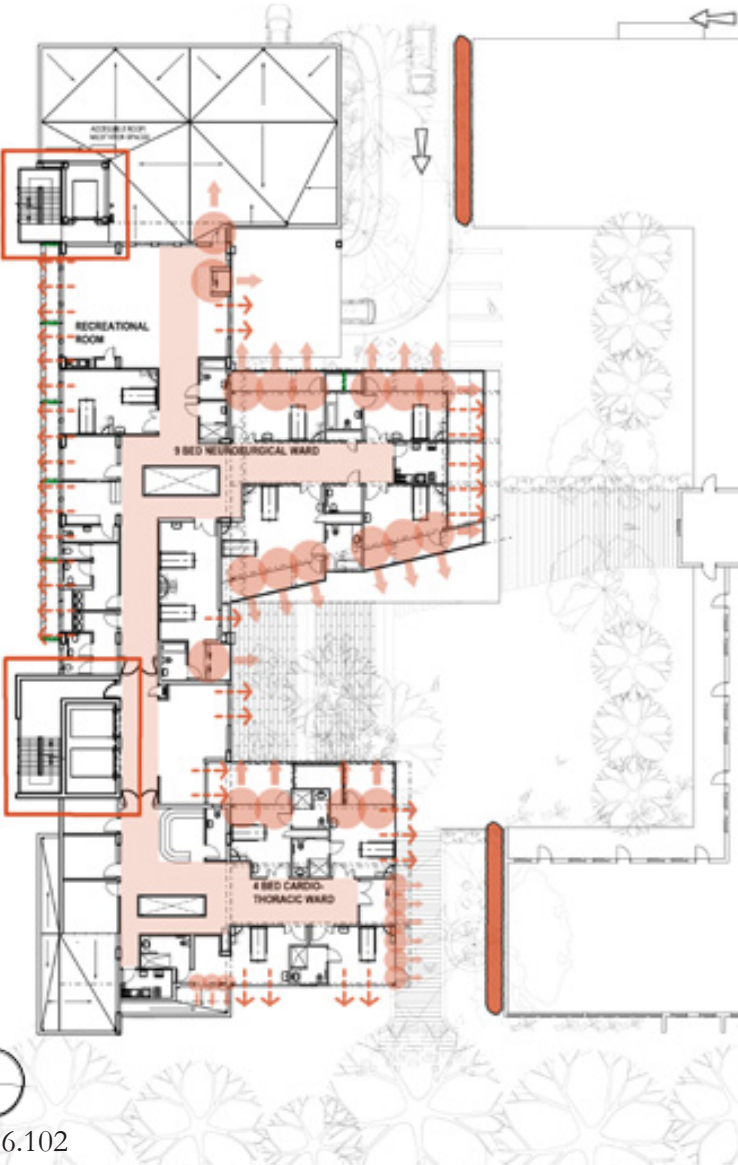
Figure 6.102 shows important concept ideas that relate to the third floor plan of the *Centre for Healing*. They are:

1. The east-west spine of the building acts as the central core from which all activity originates.
2. A second ward block “arm” is introduced that floats over the entrance to the site. This ward block (as well as the other one that reaches to ground level) radiates from the central solid core of the facility, relying on that portion of the building to remain standing, symbolizing the support that the nurses will pass on to the patients that are housed within these wards.
3. Layers of privacy are designed through the creation of smaller passages leading to rooms off larger more public passages.
4. The use of balconies all around the ward blocks allow patients to either connect with the outside or withdraw to their rooms as desired.
5. There is ample access to outdoor views and natural light from all occupied rooms in the facility.
6. Double volumes are created with access to natural light, creating central, social spaces which link public circulation routes with the private ward passages.
7. Views over the street from the ward blocks allow the patients to feel connected with the environment around them rather than isolated.
8. Ample access to northern light is created.
9. Views to the west need to be created.
10. Access to a roof garden on the north allows a more private, intimate garden/meditation space for patients to visit away from the buzz of the public below.

fig.

fig. 6.102 Third floor sketchplan (not to scale)

fig. 6.103 Fourth floor sketchplan (not to scale)



6.102

#### SKETCH PLAN DEVELOPMENT - FOURTH FLOOR

Figure 6.103 shows important concept ideas relating to the fourth floor plan of the *Centre for Healing*. They are:

1. The east-west spine of the building acts as the central core from which all activity originates.
2. The two ward block “arms” radiate from the central solid core of the facility, relying on that portion of the building to remain standing, symbolizing the support that the nurses will pass on to the patients that are housed within these wards.
3. Layers of privacy are designed through the creation of smaller passages leading to rooms off larger more public passages.
4. The use of balconies all around the ward blocks allow patients to either connect with the outside or withdraw to their rooms as desired.
5. There is ample access to outdoor views and natural light from all occupied rooms in the facility.
6. Double volumes are created with access to natural light, creating central, social spaces which link public circulation routes with the private ward passages.
7. Views over the street from the ward blocks allow the patients to feel connected with the environment around them rather than isolated.
8. Views to the west need to be created.
9. Views over the roof garden on the north allows another dimension to the views/access to outdoors that is required through the healing process.

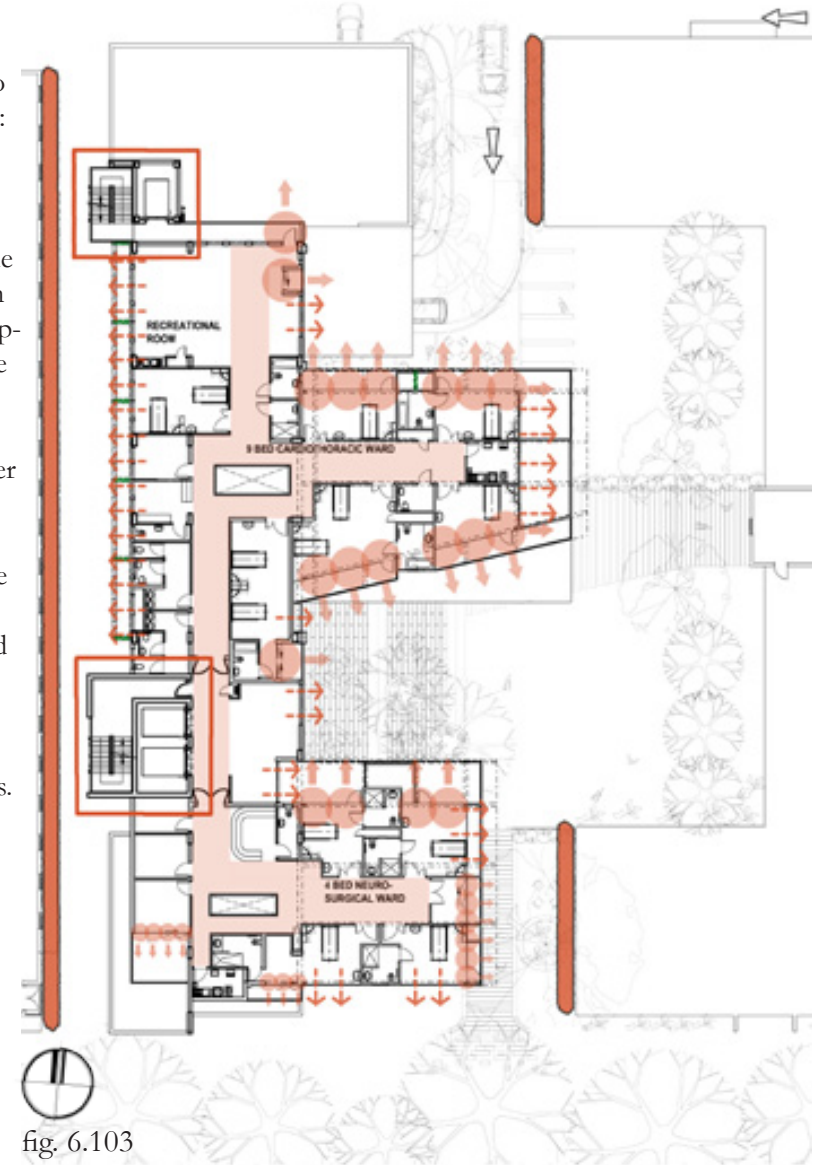


fig. 6.103

### SKETCH PLAN DEVELOPMENT - FIFTH FLOOR

Figure 6.104 shows important concept ideas that relate to the fifth floor plan of the *Centre for Healing*. They are:

1. The east-west spine of the building still acts as the central core from which all activity originates.
2. The ward block “arm” radiates from the central solid core of the facility, relying on that portion of the building to remain standing, symbolizing the support that the nurses will pass on to the patients that are housed within these wards.
3. Layers of privacy are designed through the creation of smaller passages leading to rooms off a central lift lobby.
4. The use of balconies all around the ward block allows patients to either connect with the outside or withdraw to their rooms as desired.
5. There is ample access to outdoor views (especially of Burgers Park at this level) and natural light from all occupied rooms in the facility.
6. Double volumes are created with access to natural light, creating central, social spaces which link public circulation routes with the private ward passages.
7. Views over the street from the ward block allows the patients to feel connected with the environment around them rather than isolated.
8. Views to the west need to be created.
9. Access to another roof garden at the centre of the facility allows for an even more private, intimate garden/meditation space for patients to visit away from the buzz of the public below (and even more private than the one on the far north)

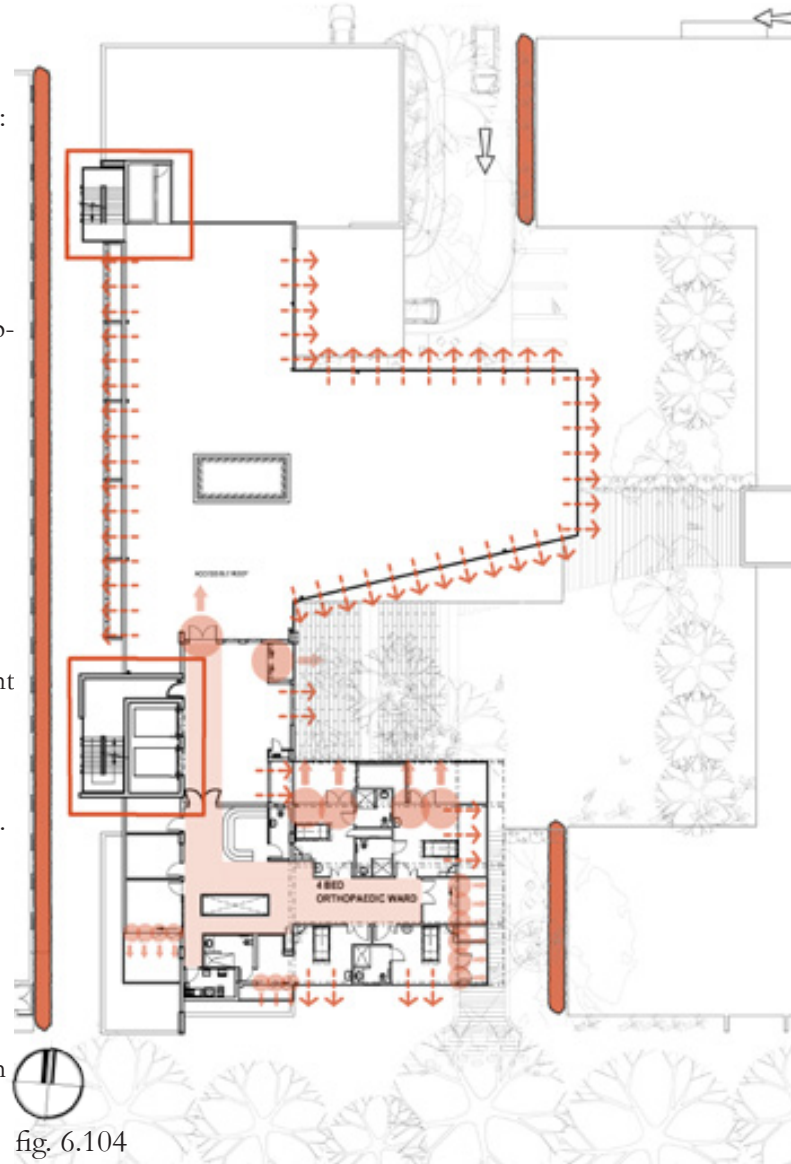


fig. 6.104

### SKETCH PLAN DEVELOPMENT - SIXTH FLOOR

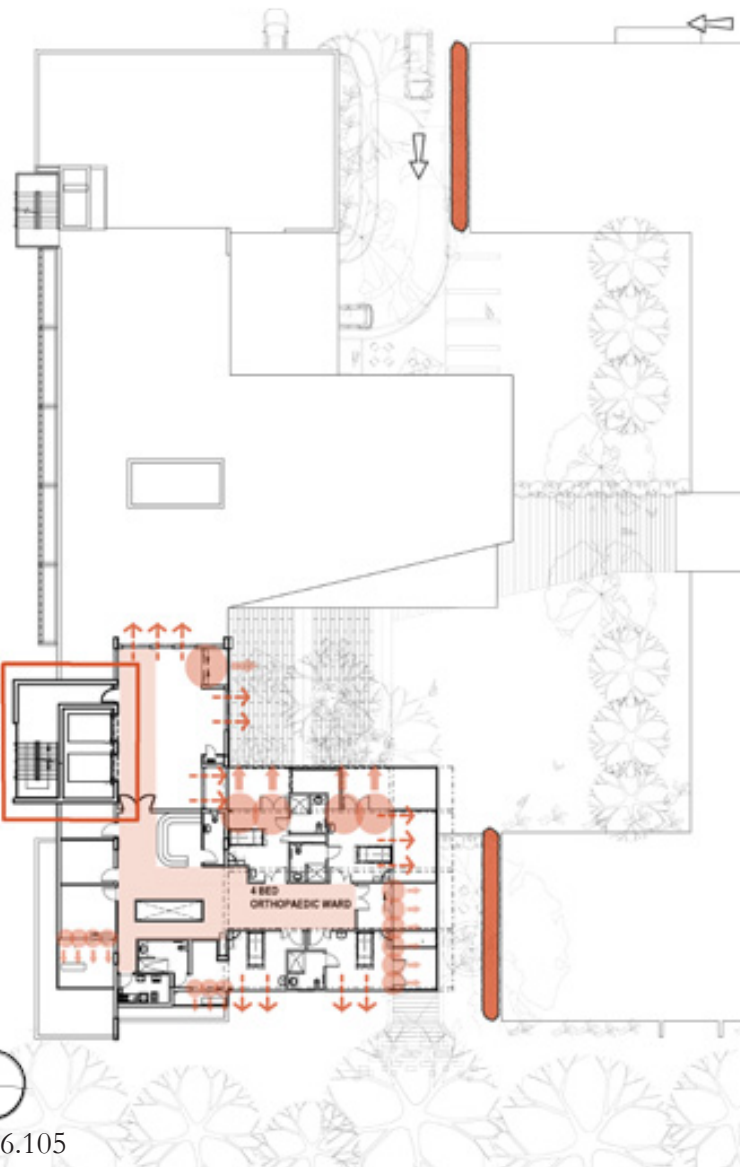
Figure 6.105 shows important concept ideas that relate to the sixth floor plan of the *Centre for Healing*. They are:

1. The east-west spine of the building still acts as the central core from which all activity originates.
2. The ward block “arm” radiates from the central solid core of the facility, relying on that portion of the building to remain standing, symbolizing the support that the nurses will pass on to the patients that are housed within these wards.
3. Layers of privacy are designed through the creation of smaller passages leading to rooms off a central lift lobby.
4. The use of balconies all around the ward block allows patients to either connect with the outside or withdraw to their rooms as desired.
5. There is ample access to outdoor views (especially of Burgers Park at this level) and natural light from all occupied rooms in the facility.
6. Double volumes are created with levels below with access to natural light, creating central, social spaces which link public circulation routes with the private ward passages.
7. Views over the street from the ward block allow the patients to feel connected with the environment around them rather than isolated.
9. Views are created over another roof garden at the centre of the facility allowing for an even more varied/layered view of the outdoors.

fig.

fig. 6.105 Sixth floor sketchplan (not to scale)

fig. 6.106 Roof sketchplan (not to scale)



### SKETCH PLAN DEVELOPMENT - ROOF

Figure 6.106 shows important concept ideas that relate to the roof of the *Centre for Healing*. They are:

1. The east-west spine of the building still acts as the central core from which all activity originates.

2. The ward block “arm” radiates from the central solid core of the facility, relying on that portion of the building to remain standing, symbolizing the support that the nurses will pass on to the patients that are housed within these wards. The roof space over the ward block houses the rehab pool and sports field where other forms of healing can occur.

3. A level of privacy is created between the roof space and the building to the west by a concrete barrier wall which also acts as a shading device for the roof space.

4. Access to an even more private roof space is created which only patients, staff and selected visitors would be aware of.

5. Not only does this roof space offer ample access to the outdoors, it also allows a clear view of Burgers Park to the east.

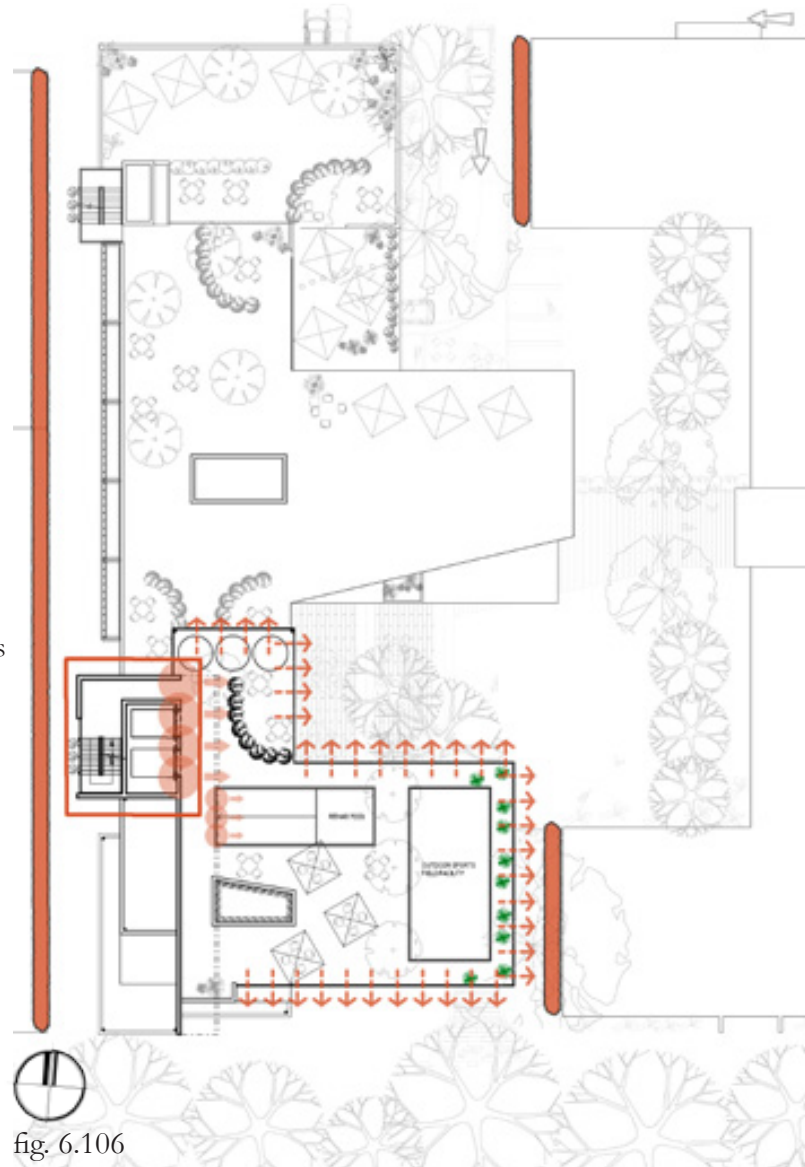


fig. 6.107 Early development sketch of section a-a; highlighting the need to create atrium spaces

fig. 6.108 Three dimensional development of fig. 6.107 indicating the level accommodation in terms of creating privacy through placement of functions

# DEVELOPMENT OF THE SECTIONS

## DEVELOPMENT OF SECTION A-A

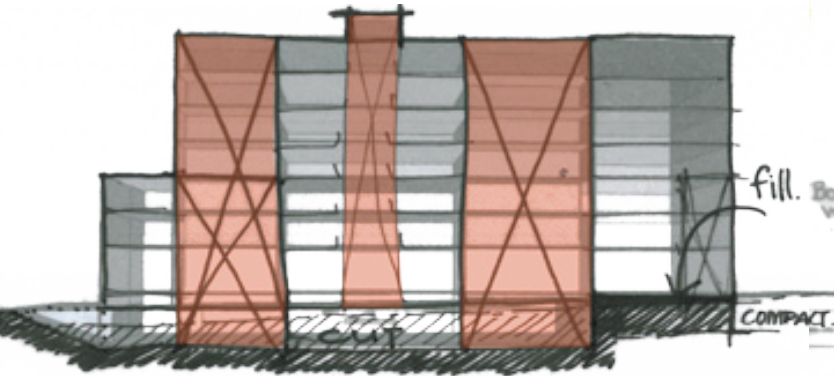


fig. 6.107

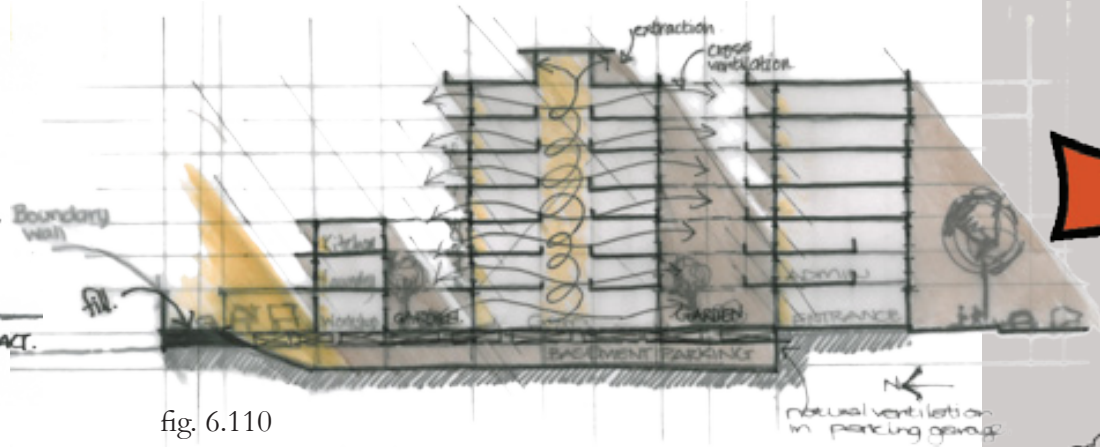


fig. 6.110

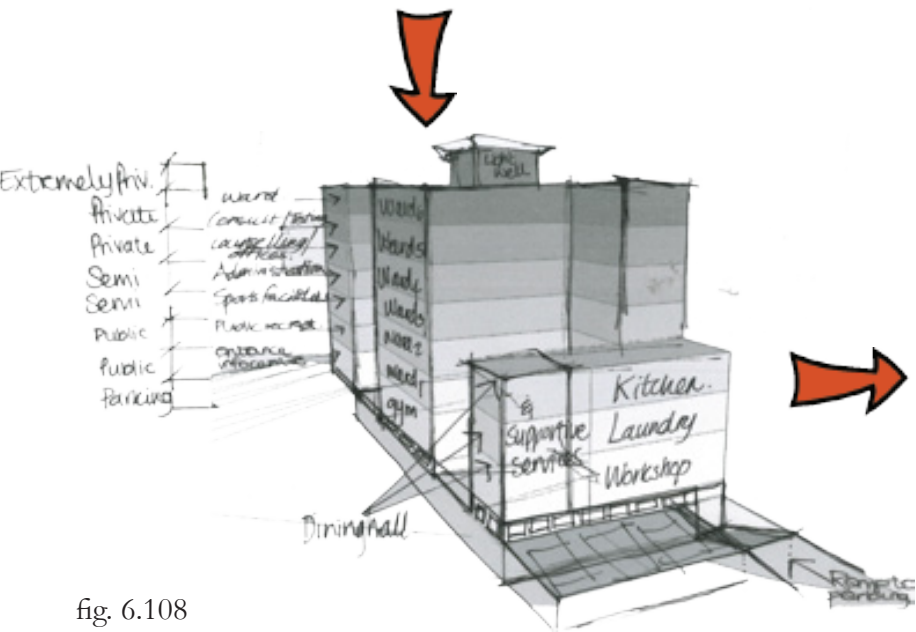


fig. 6.108

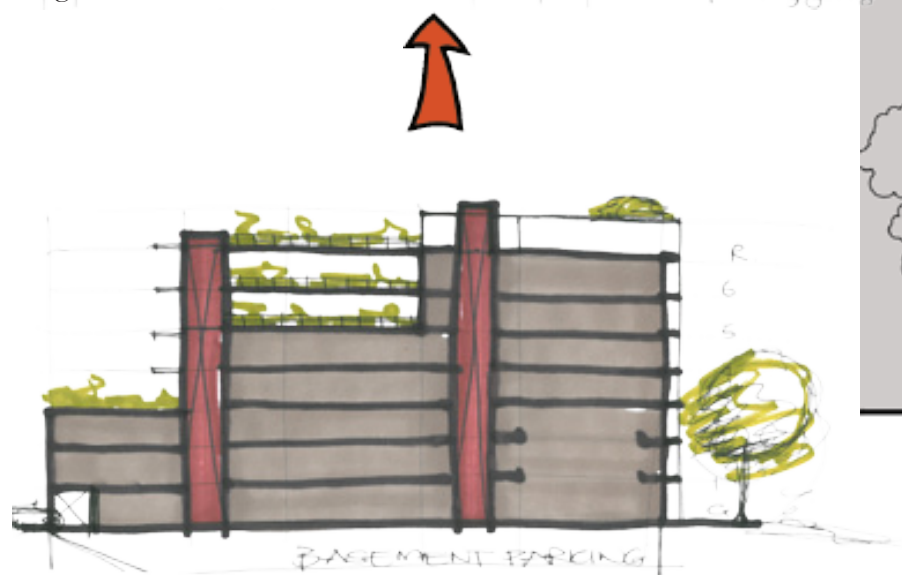


fig. 6.109



fig. 6.111

fig. 6.109 Concept sketch of section a-a; showing vertical circulation cores and stepping of the building down to the north

fig. 6.110 Concept sketch of section a-a showing various environmental factors taken into account

fig. 6.111 Developed section a-a (not to scale); notice the vertical circulation cores that lead off the main solid core, the 'floating' portions of the building that house the wards, the natural light that enters the facility, and the atrium spaces

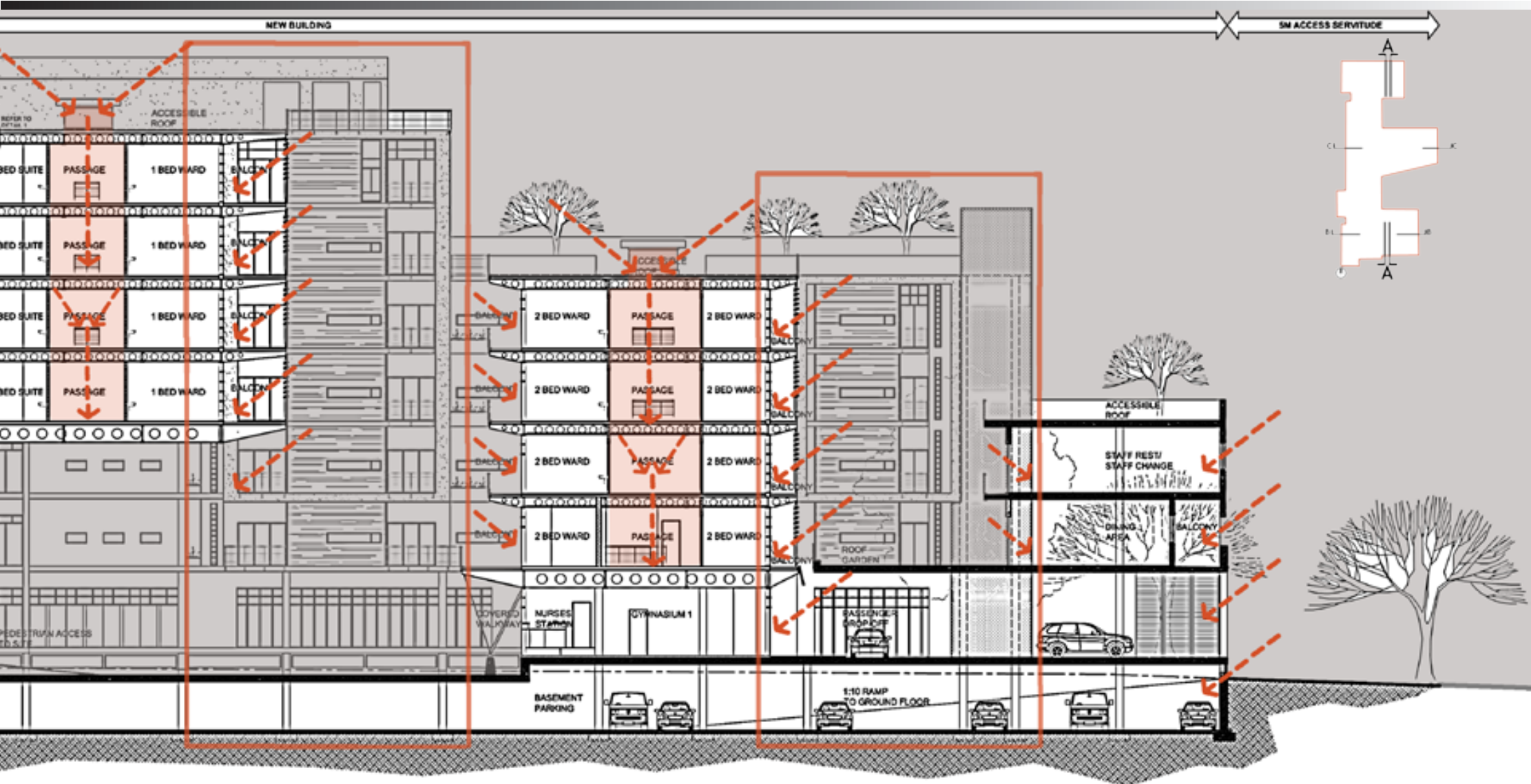


fig. 6.112 Concept sketch of a solid core that supports various parts of a building

fig. 6.115 Preliminary sketch of section b-b (2)

fig. 6.113 Concept sketch of a solid core that has activities radiating from it

fig. 6.114 Preliminary sketch of section b-b (1)

## DEVELOPMENT OF SECTION B-B

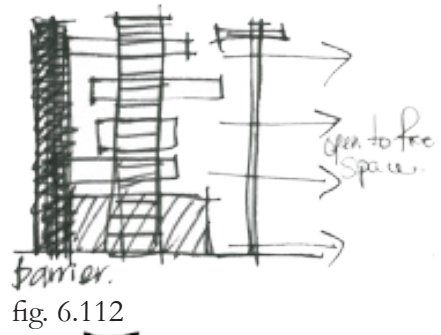


fig. 6.112

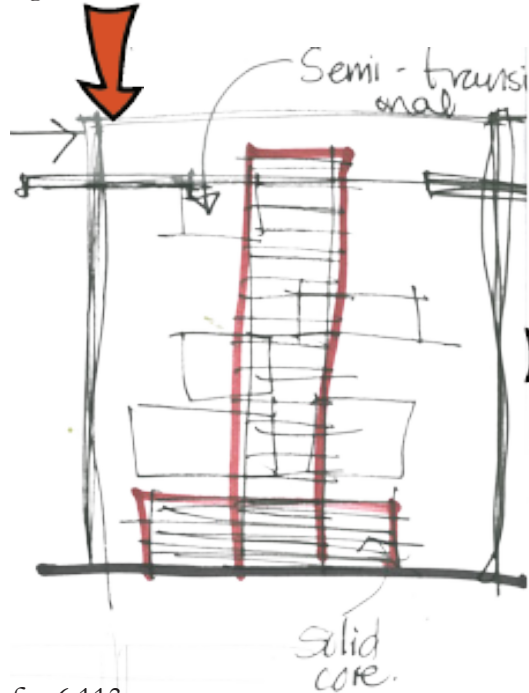


fig. 6.113

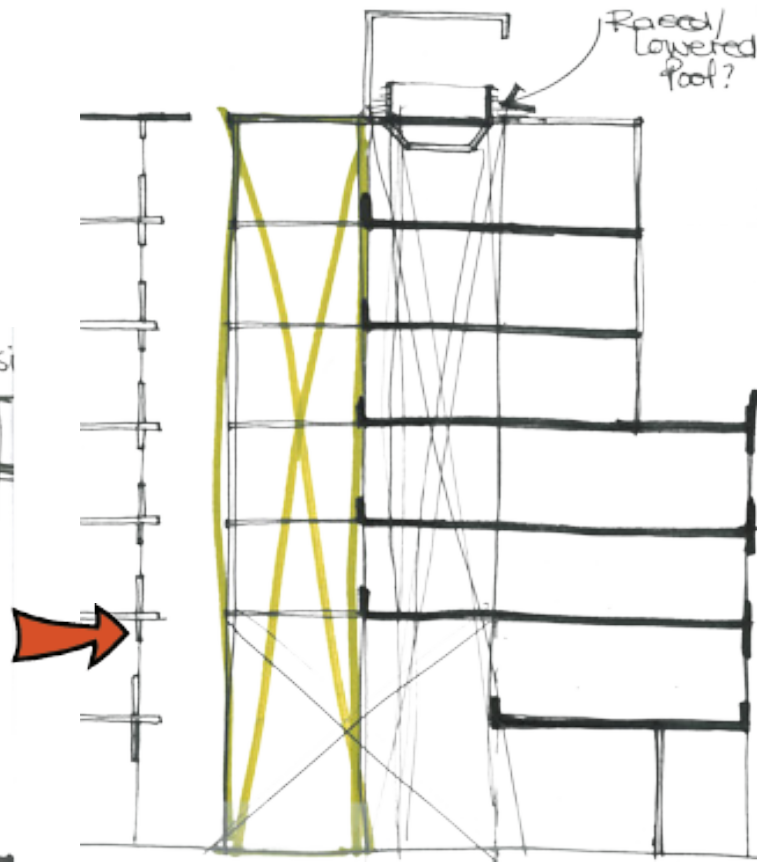


fig. 6.114

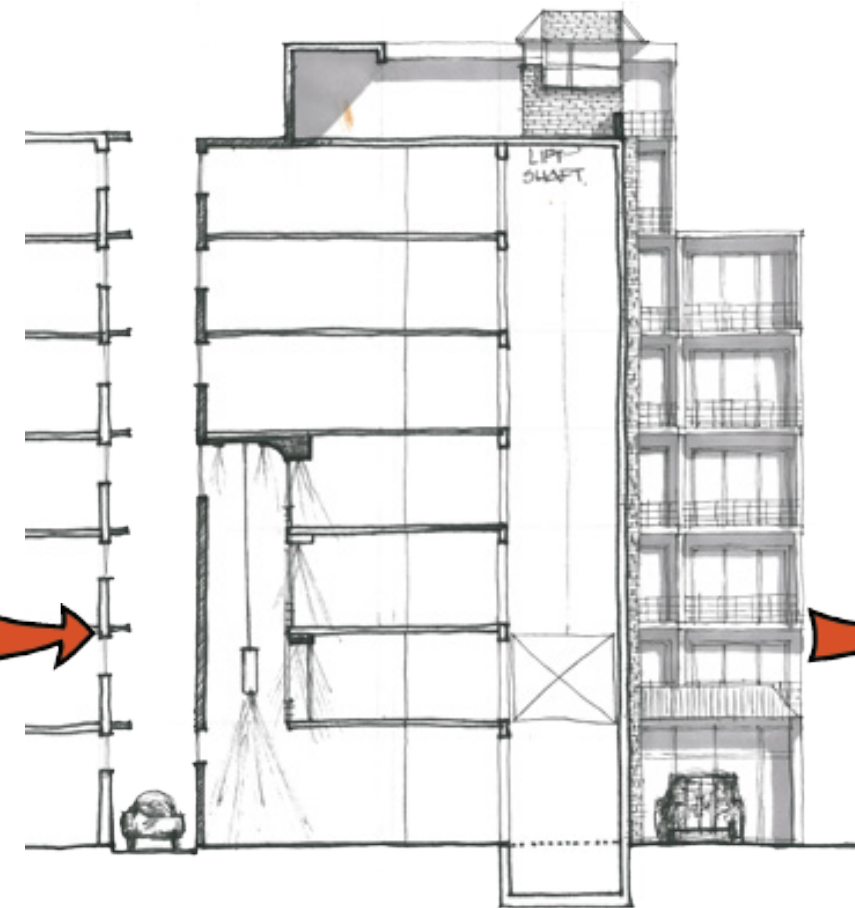


fig. 6.115



fig. 6.116 Preliminary sketch of section b-b (3)

fig. 6.117 Developed section b-b (not to scale); notice the main solid structural core, the 'floating' portion of the building that house the southern ward, the natural light that enters the facility and the balconies

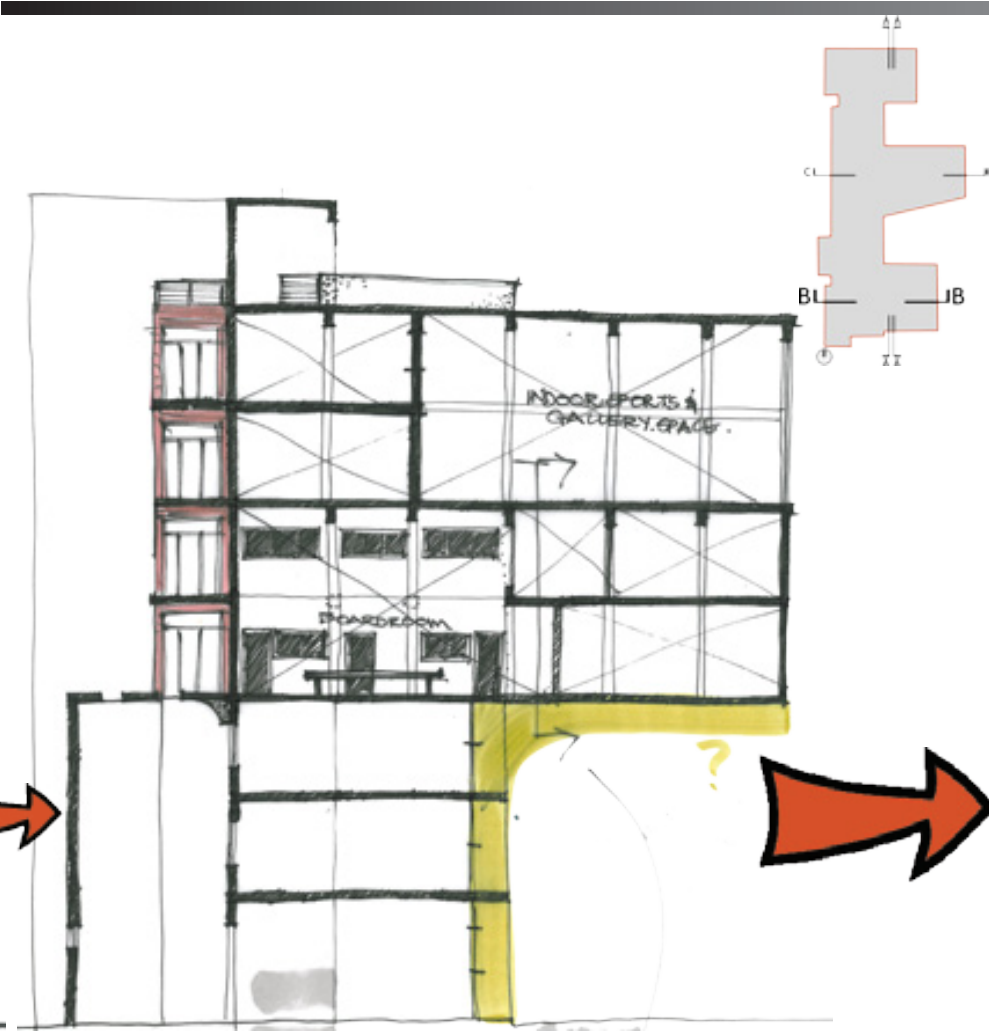


fig. 6.116



fig. 6.117

fig. 6.118 Concept sketch of having living green walls up the eastern side of the building in the form of accessible gardens  
 fig. 6.119 Concept sketch of creating varied platform spaces that lead off the main central core

DEVELOPMENT OF SECTION C-C

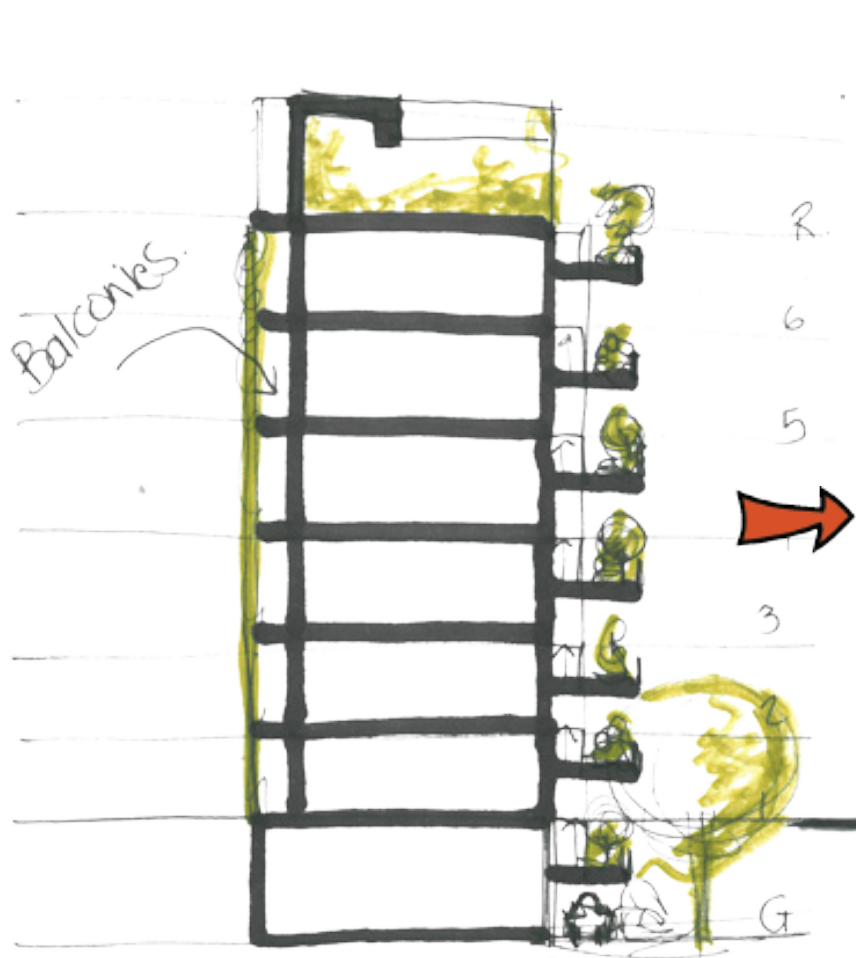


fig. 6.118

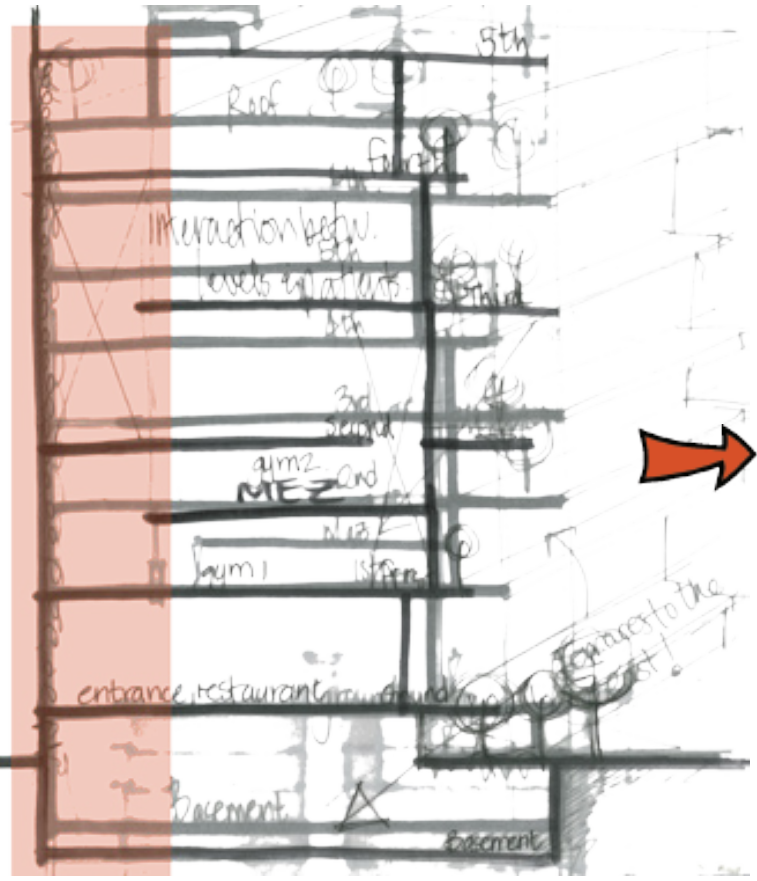


fig. 6.119



fig. 6.120

fig. 6.120 Preliminary sketch of section c-c

fig. 6.121 Developed section c-c (not to scale); notice the main solid core, the light weight central 'arm' of the building that houses wards, the natural light that enters the facility, and the balconies

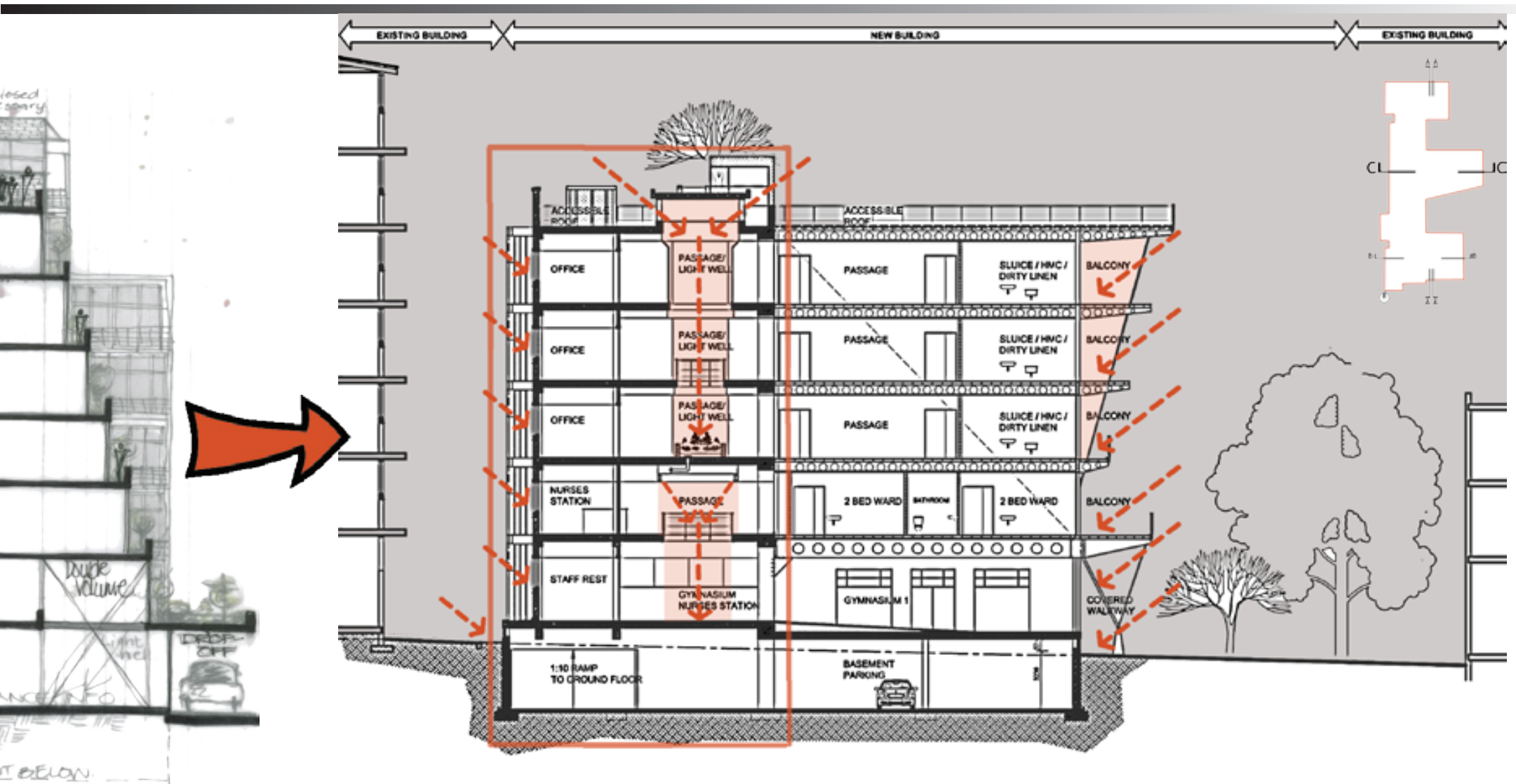


fig. 6.121

fig. 6.122 Spatial quality of light required in the gymnasium on the ground floor of the facility

fig. 6.123 Spatial quality of the volumes required in the entrance foyer of the facility

# DEVELOPMENT OF SPATIAL QUALITIES

## DEVELOPMENT OF SPACIAL QUALITIES

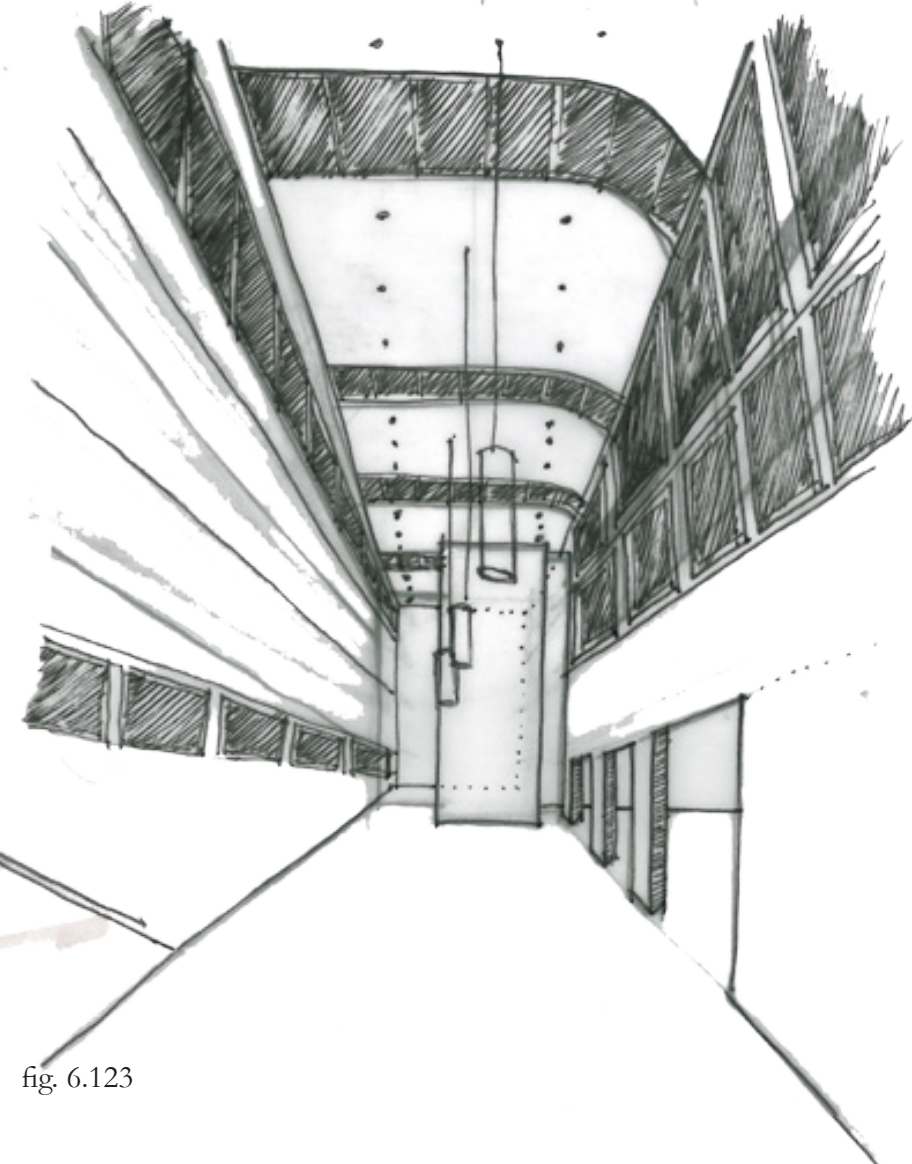
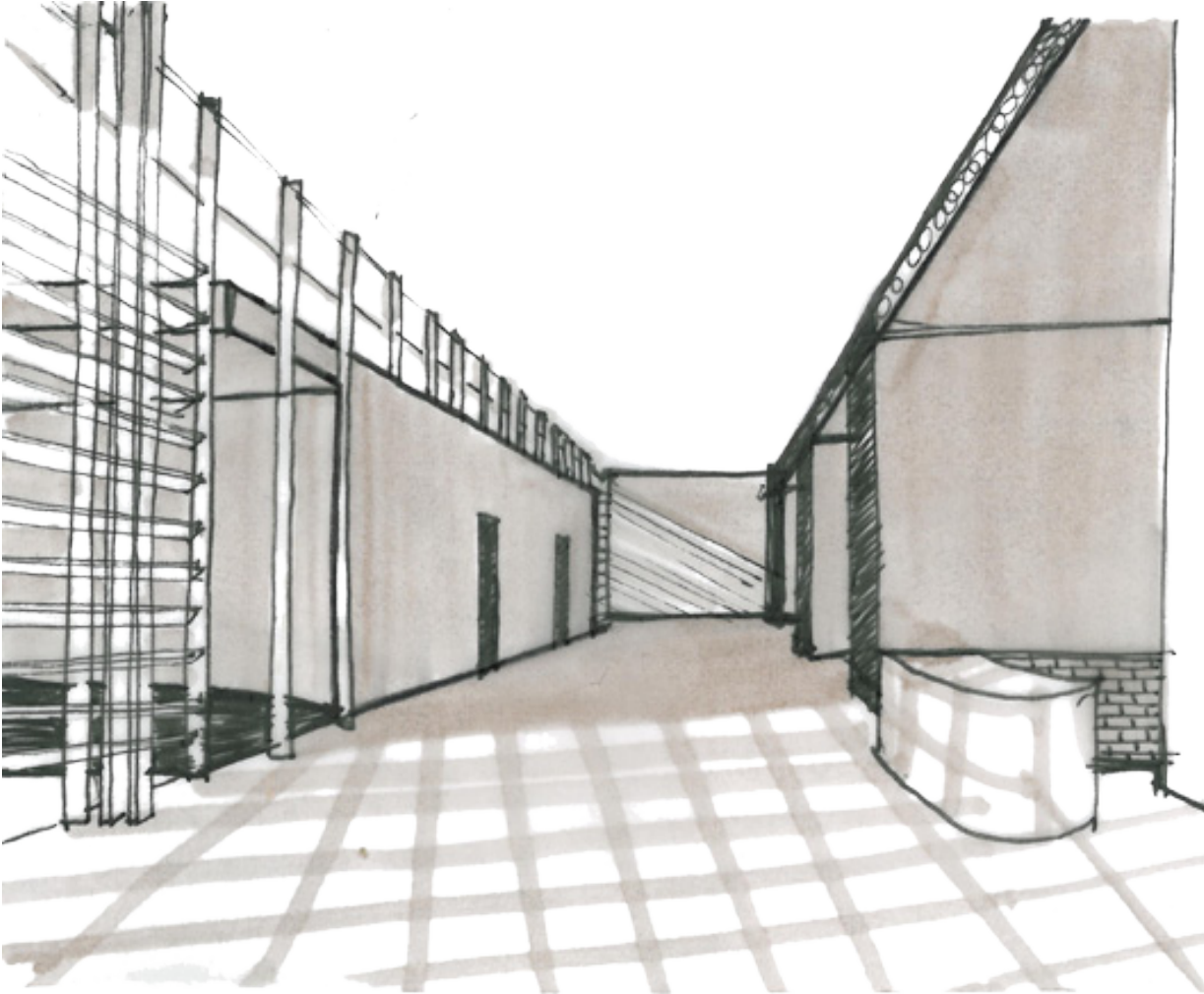


fig. 6.122

fig. 6.123

fig. 6.124 Spatial quality of atrium spaces between ward passages, bringing light and vegetation into the facility

fig. 6.125 Sketch plan illustrating the ideas illustrated in fig. 6.124

fig. 6.126 Spatial quality required at nurses stations within wards



fig. 6.124

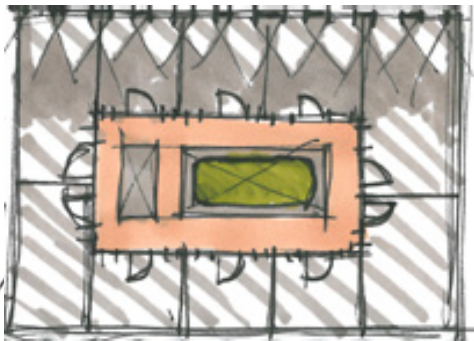


fig. 6.125



fig. 6.126

fig. 6.127 Spatial quality required in the boardroom/office spaces  
- double volume spaces

fig. 6.128 Sketch section showing the intentions of fig. 6.127  
where structure and infill both become visible parts of the architecture

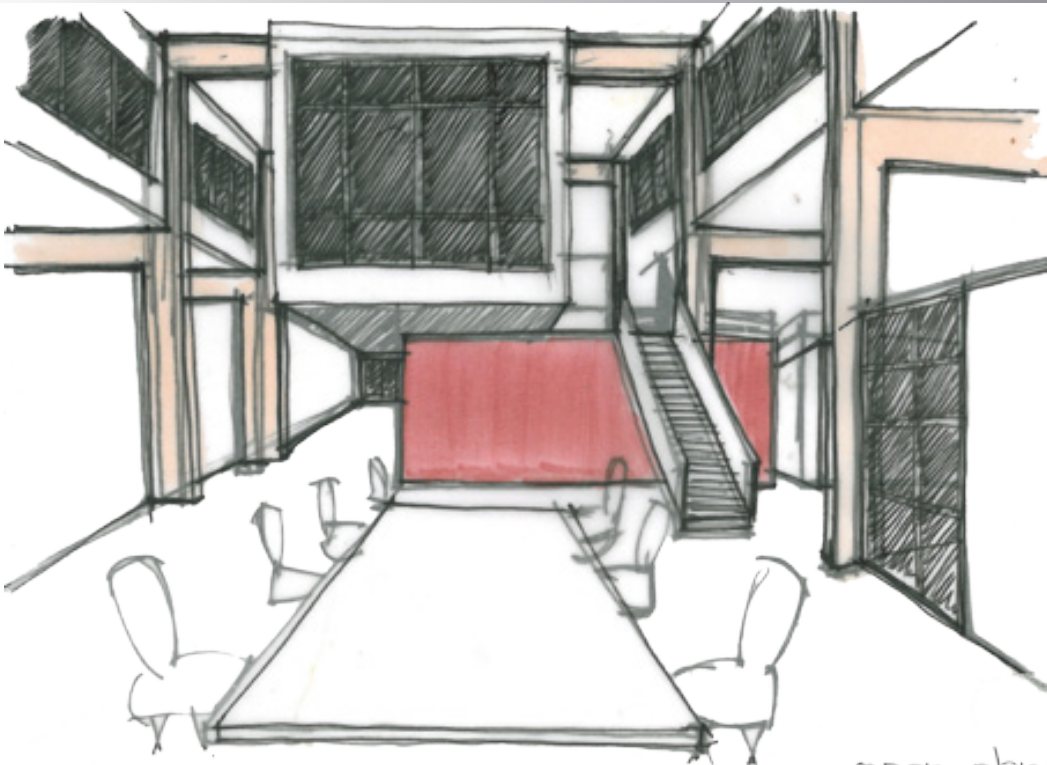


fig. 6.127

fig. 6.128

open plan  
office on  
side

fig. 6.129

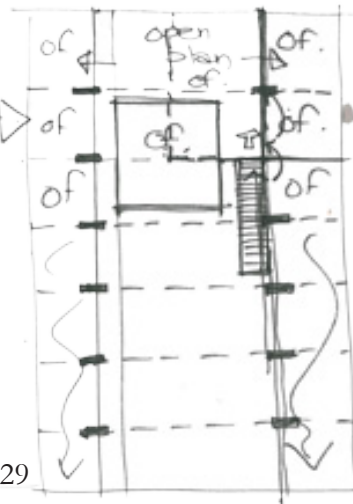


fig. 6.129 Sketch plan showing the structural need to achieve the intentions set out in fig. 6.127-6.128

fig. 6.130-6.133 Diagrammatic sections of possible spatial and lighting qualities for the gymnasium

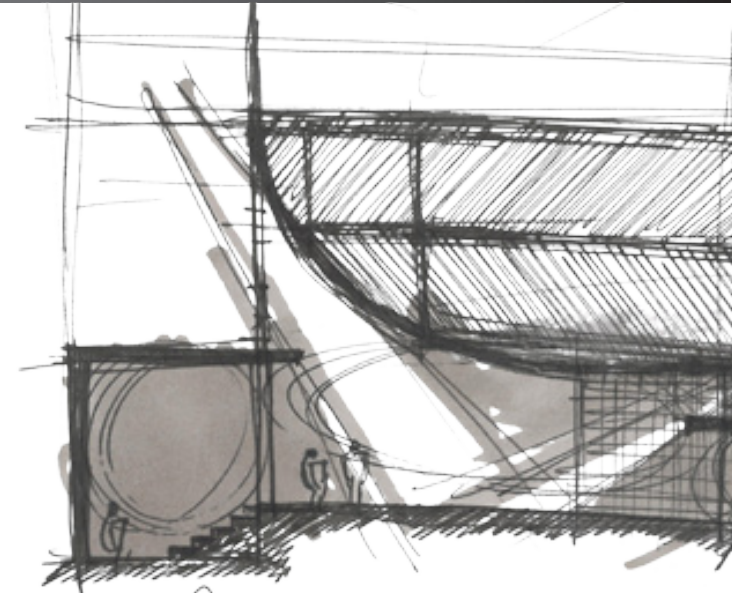


fig. 6.131

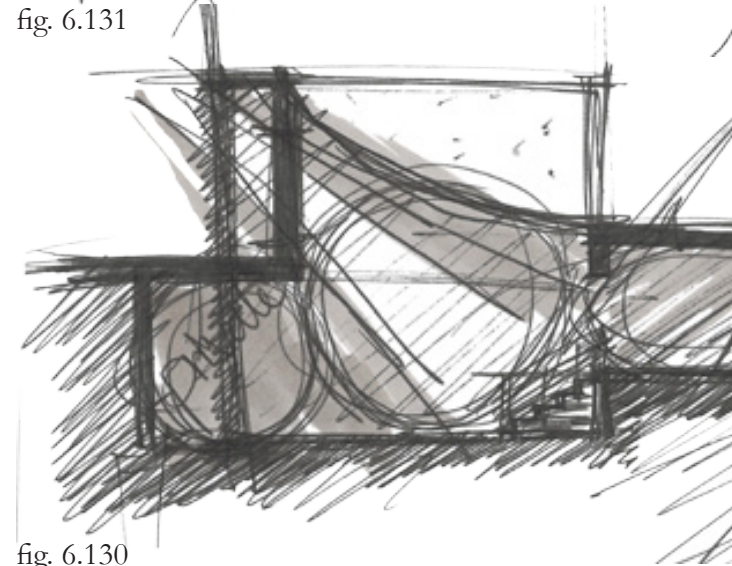


fig. 6.130

fig. 6.134 Sketches showing the possibilities of bringing more vegetation into the design of spaces where limited views are allowed (western side) and creating these as the more public/circulation portions of the building

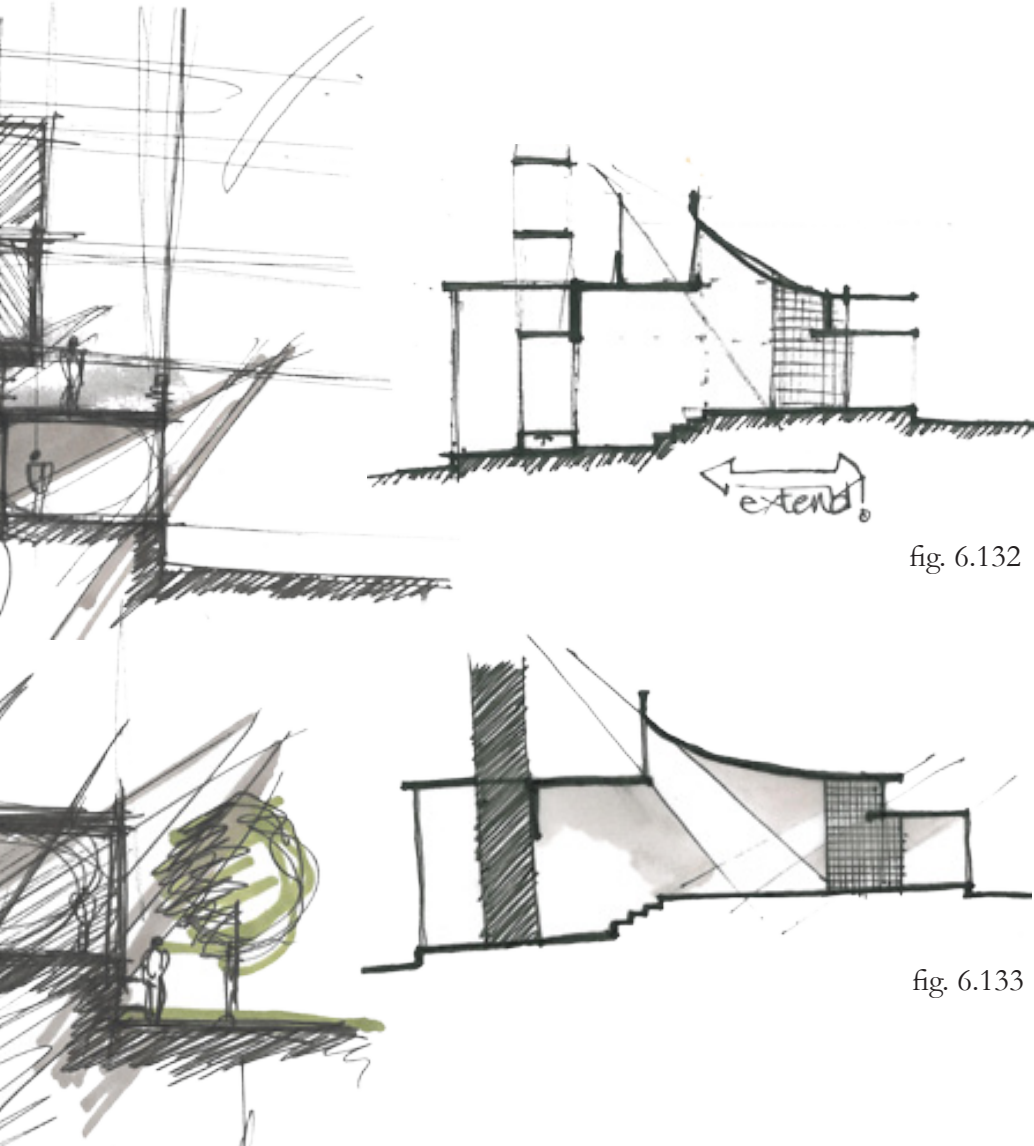


fig. 6.132

fig. 6.133

fig. 6.135 Sketch illustrating the possibility of using varied layers attached to the building for environmental purposes but also to achieve the desired interior lighting condition

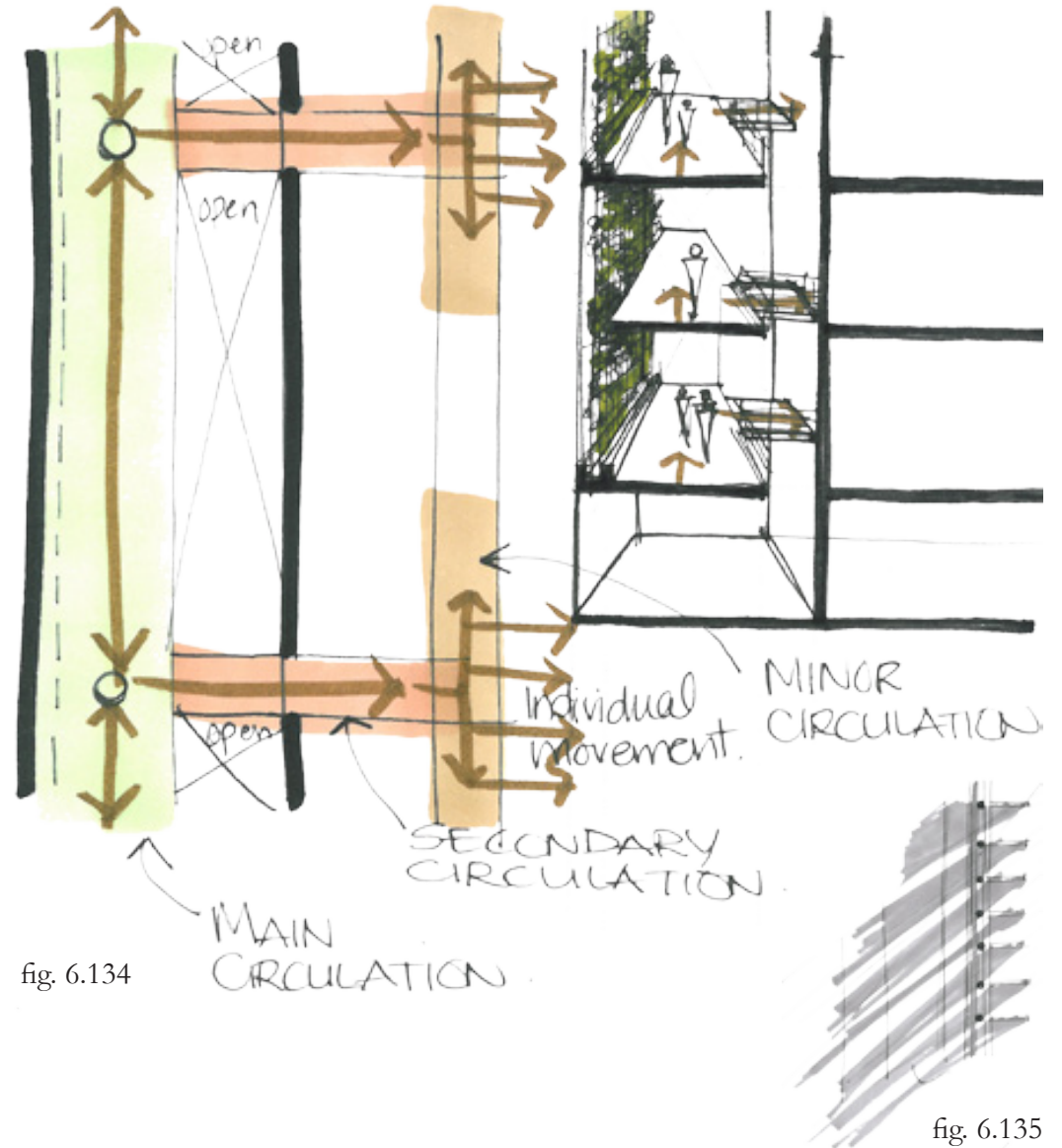


fig. 6.134

fig. 6.135

fig. 6.136 Preliminary southern elevation  
fig 6.137 Three dimensional developed south eastern elevation

fig. 6.138 Conceptual massing sketch of the south eastern elevation

# DEVELOPMENT OF THE ELEVATIONS

## DEVELOPMENT OF THE SOUTHERN ELEVATION

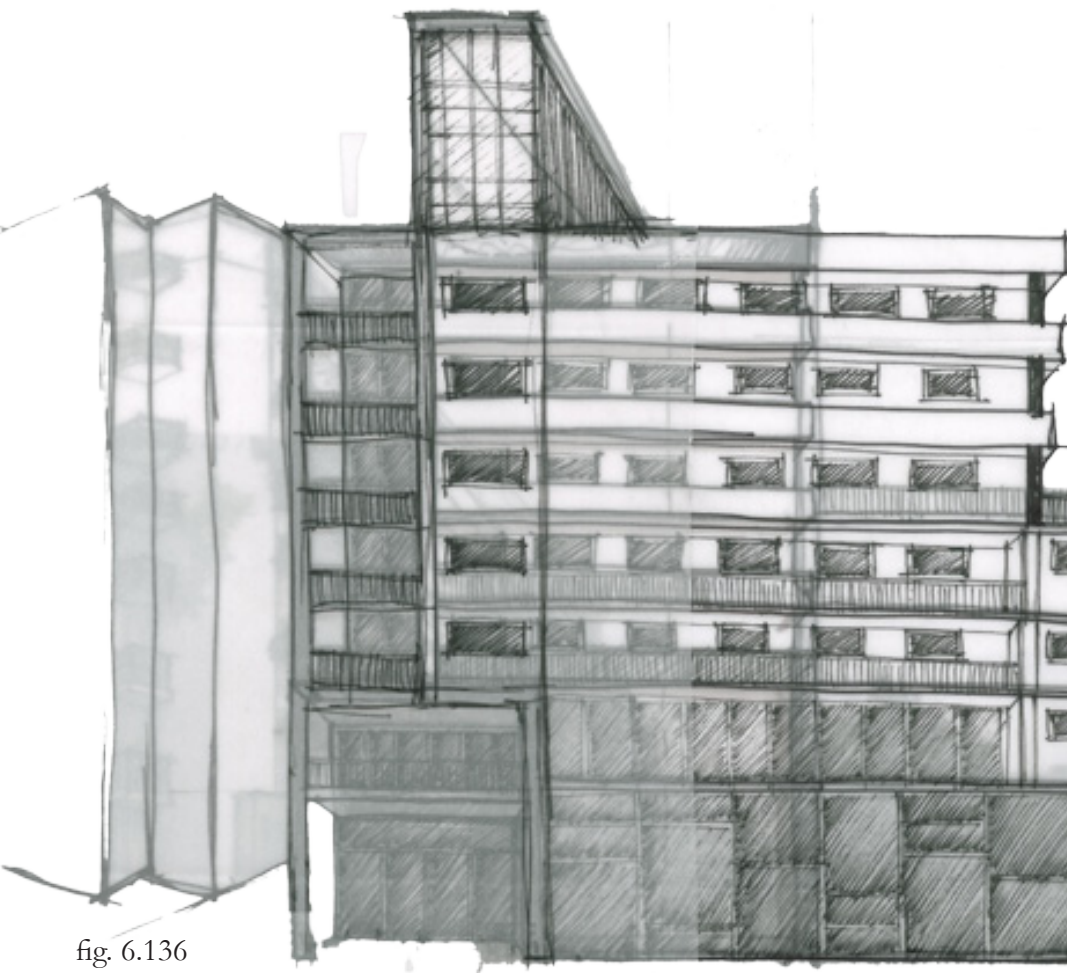


fig. 6.136

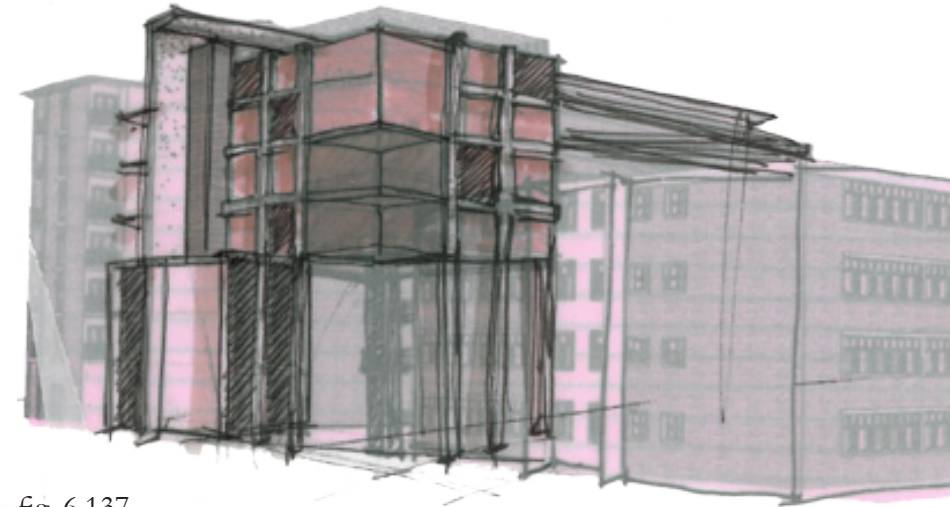


fig. 6.137

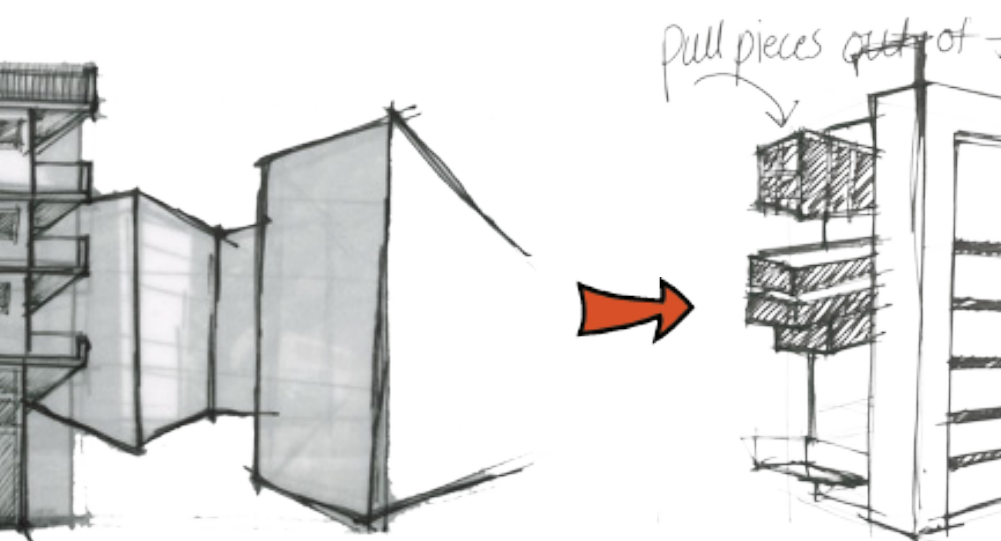




fig. 6.139 Developed southern elevation (not to scale); notice the main solid core, the 'floating arm' of the building, the distinct entrance to the facility, the variation in construction materials, and the activity spaces on ground floor level



fig. 6.138



fig. 6.139

fig. 6.140 Preliminary western elevation  
fig. 6.141 Three dimensional preliminary south western elevation (1)  
fig. 6.142 Three dimensional preliminary south western elevation (2)

## DEVELOPMENT OF THE WESTERN ELEVATION

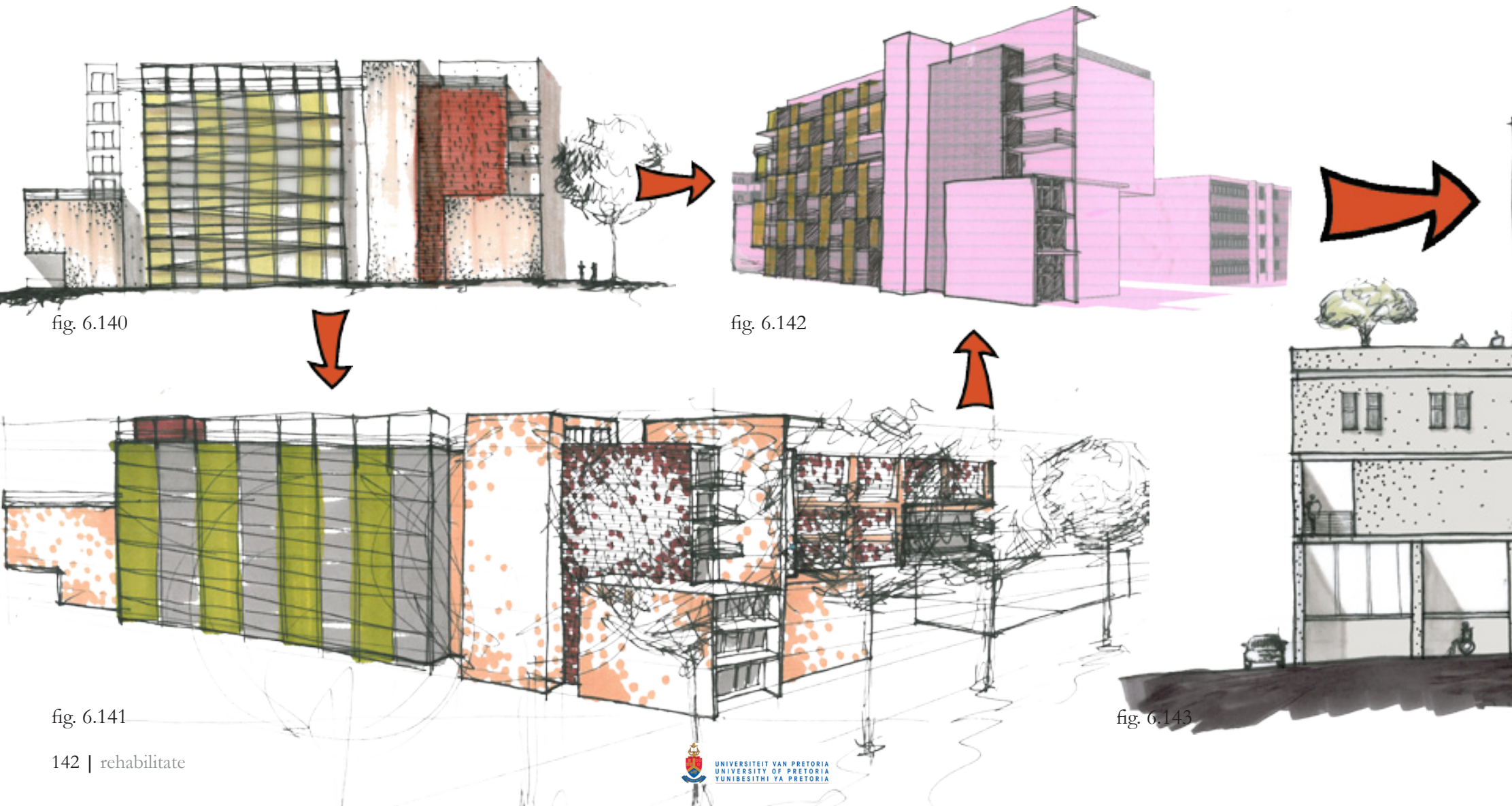
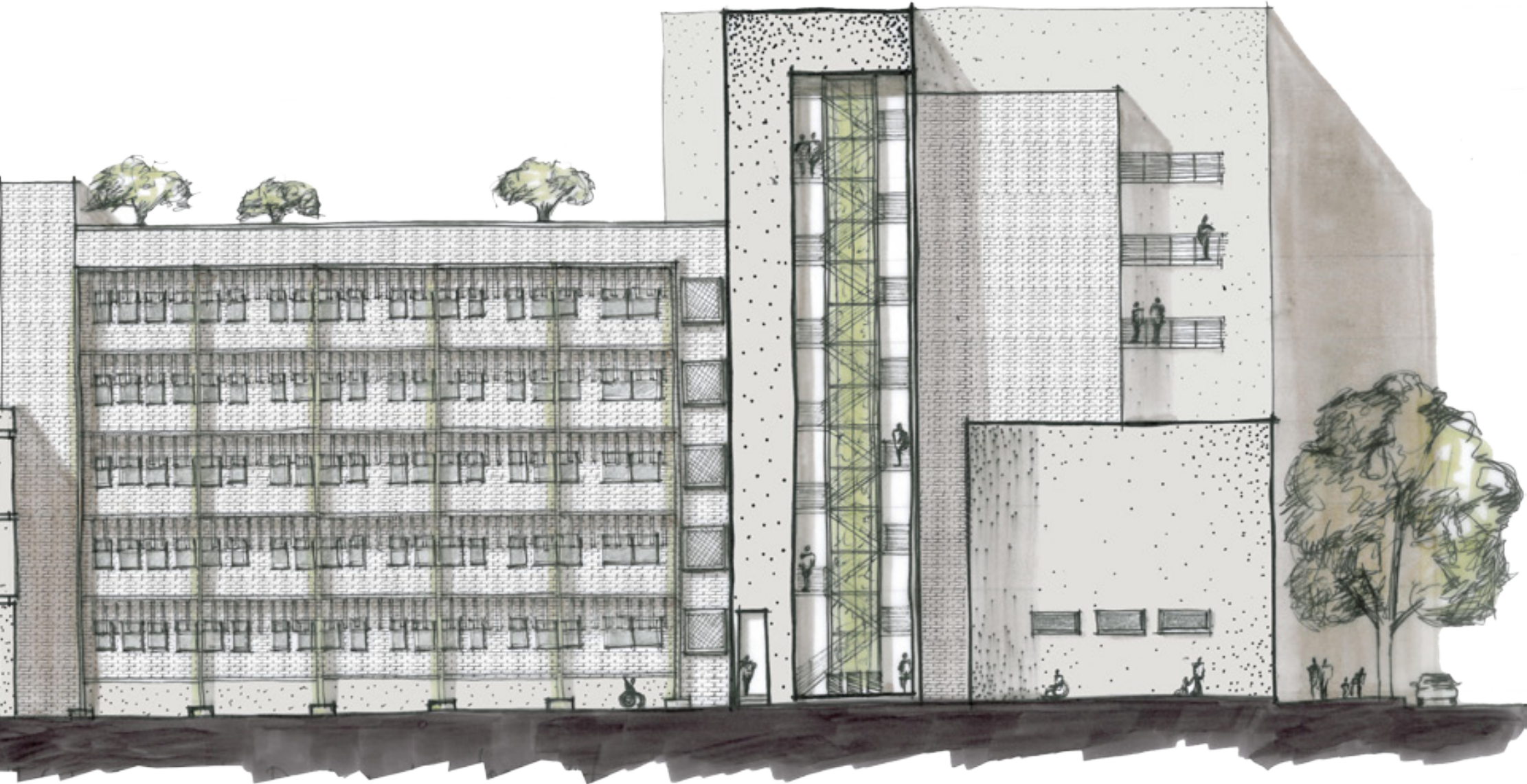


fig. 6.143 Developed western elevation (not to scale); notice the stepping of the building to the north, the material response to the environment, the planted screens and sun louvres, and the open air fire escape stairs with planted screens



DEVELOPMENT OF THE NORTHERN ELEVATION



fig. 6.144

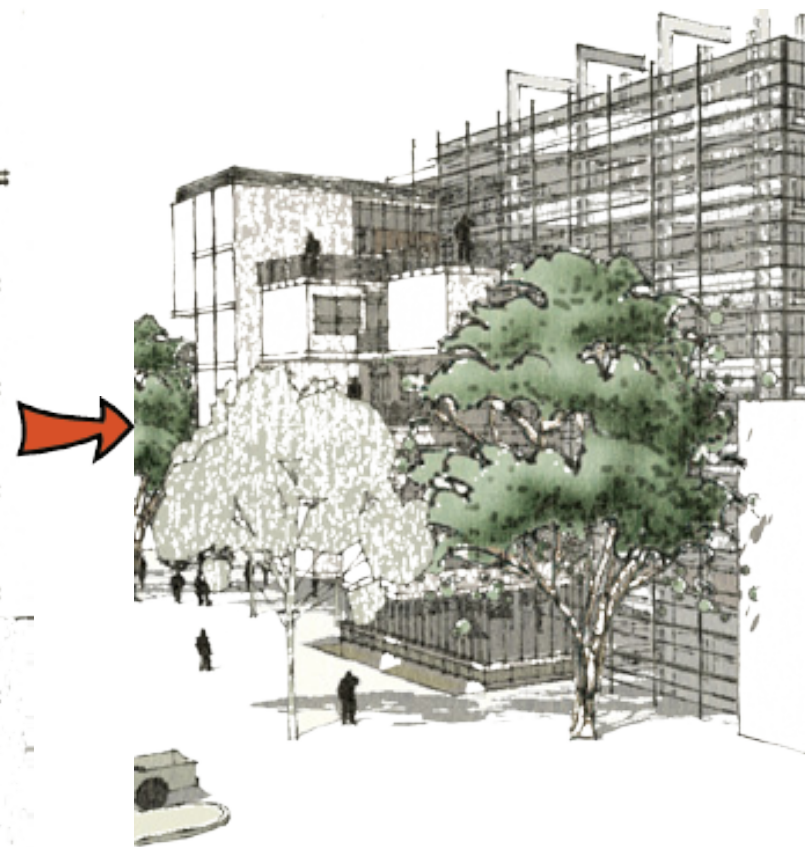


fig. 6.145

fig. 6.146 Developed northern elevation (not to scale); notice the stepping of the building up to the south, the main solid core, the ward 'arms' of the building, the variation in construction materials, and the open air fire escape stairs with planted screens

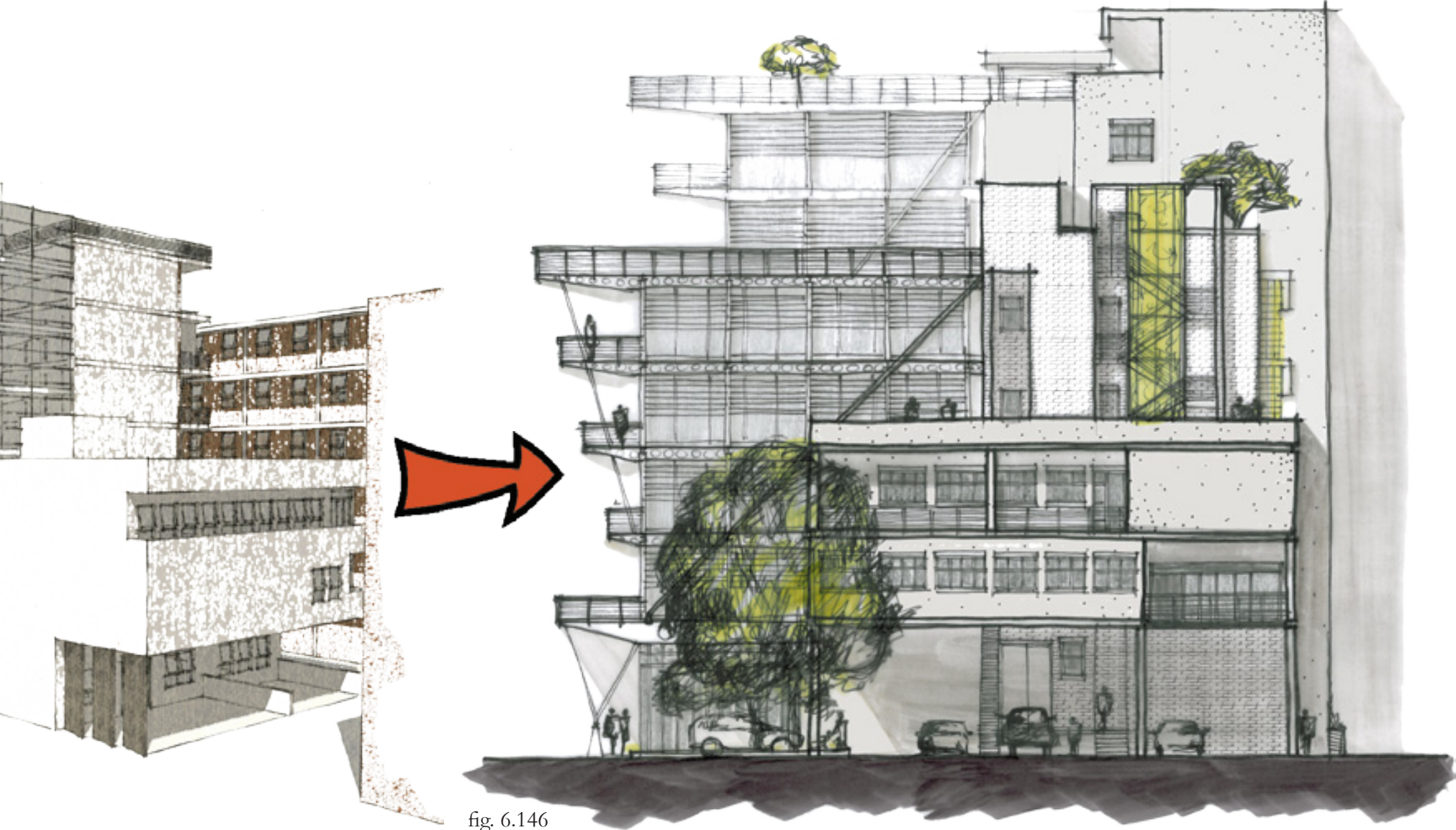


fig. 6.146

fig. 6.147 Three dimensional preliminary south eastern elevation (1)  
 fig. 6.148 Three dimensional south eastern elevation (2)  
 fig 6.149 Three dimensional preliminary south eastern elevation (3)

fig. 6.150 Concept sketch of ideas related to the eastern elevation

DEVELOPMENT OF THE EASTERN ELEVATION

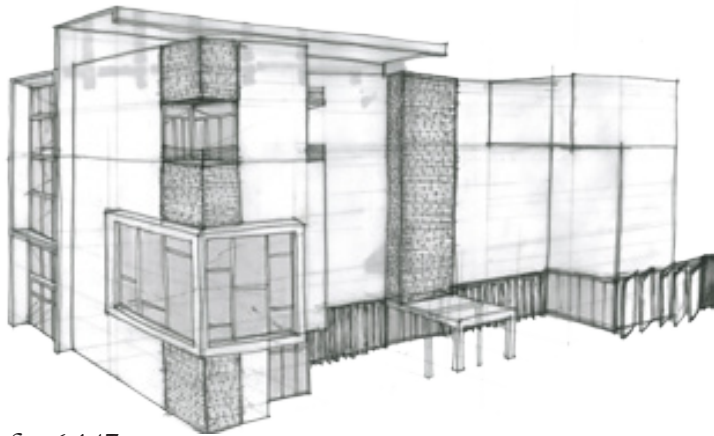


fig. 6.147

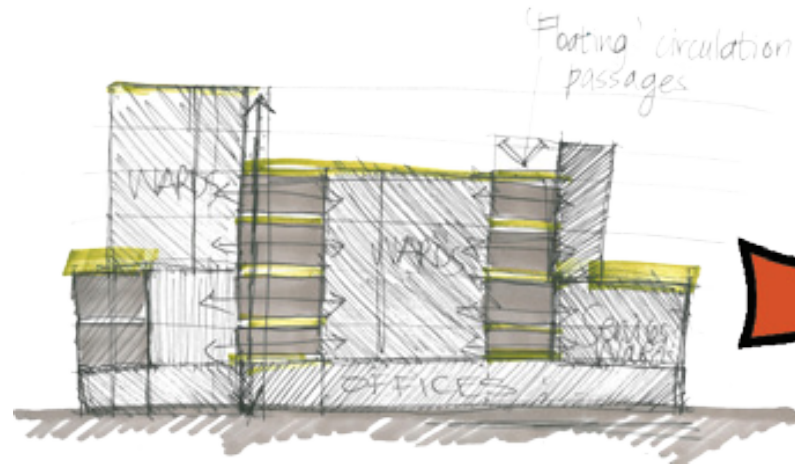


fig. 6.150

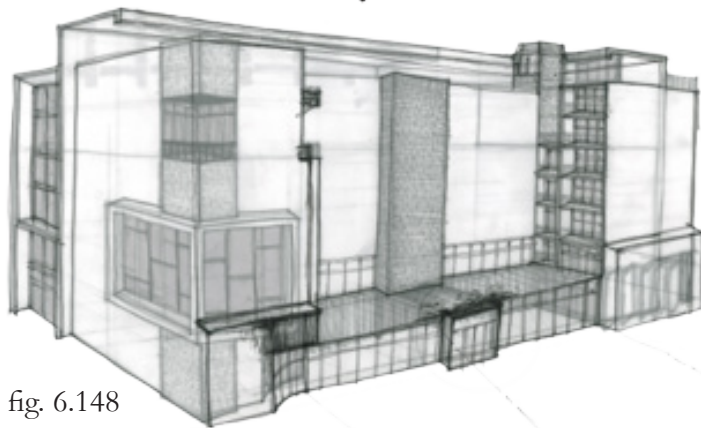


fig. 6.148

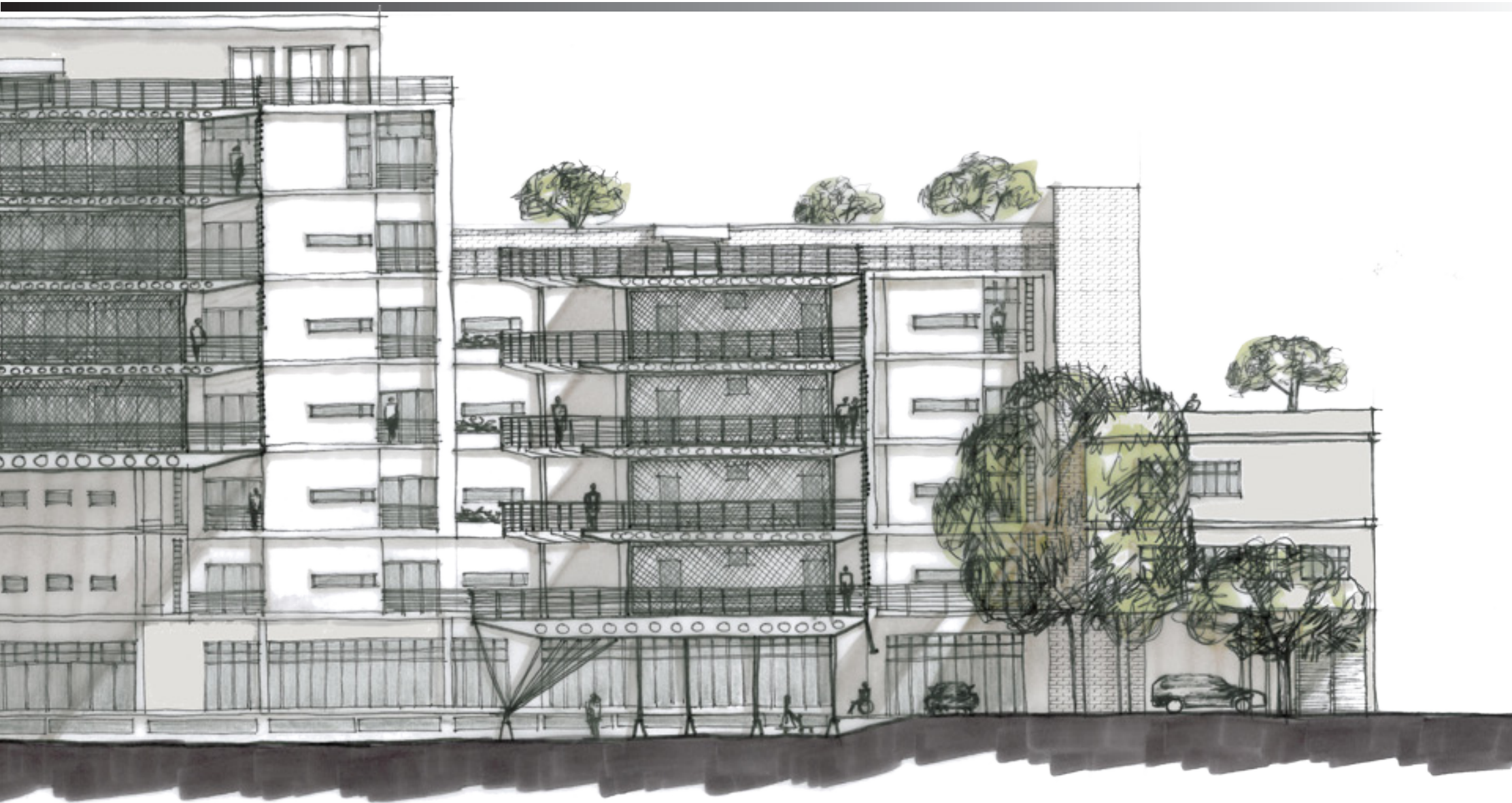


fig. 6.149



fig. 6.151

fig. 6.151 Developed eastern elevation (not to scale); notice the stepping of the building up to the south, the main solid core at the back, the ward 'arms' of the building reaching into the eastern courtyard space, and the variation in construction materials



# DIAGRAMMATIC ANALYSIS

fig. 6.152 Parti diagram for the project  
fig. 6.153 The geometry of the building's plan  
fig. 6.154 The hierarchy of form evident in the plan  
fig. 6.155 The hierarchy of function evident in the plan

PARTI

GEOMETRY

HIERARCHY OF FORM

HIERARCHY OF FUNCTION

MASSING

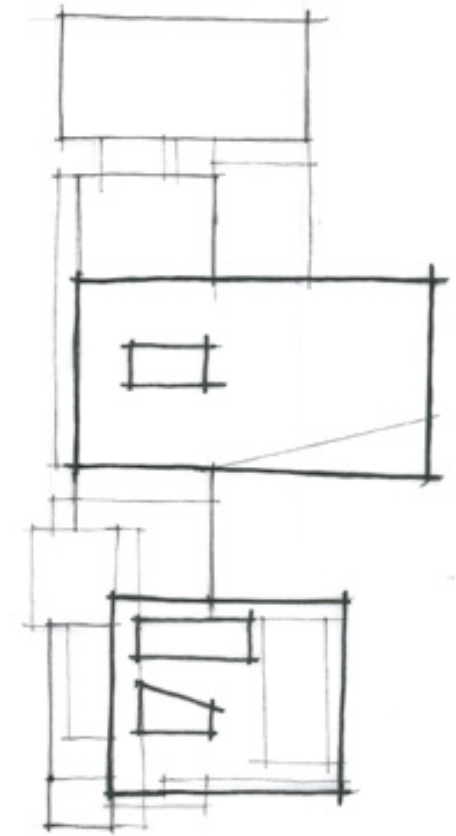
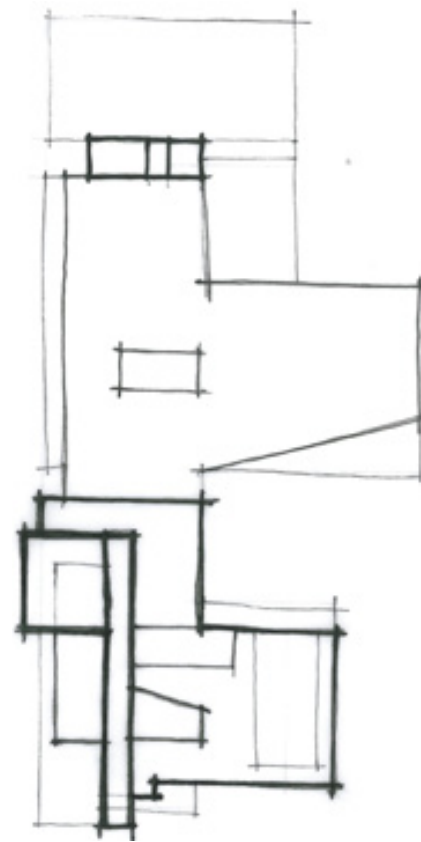
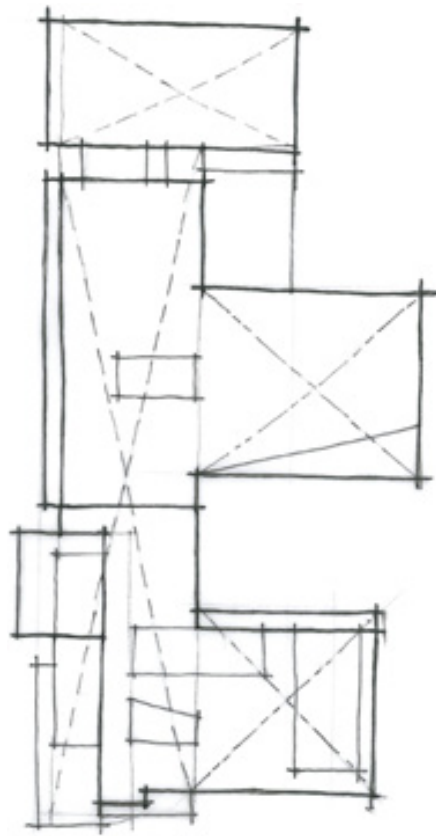
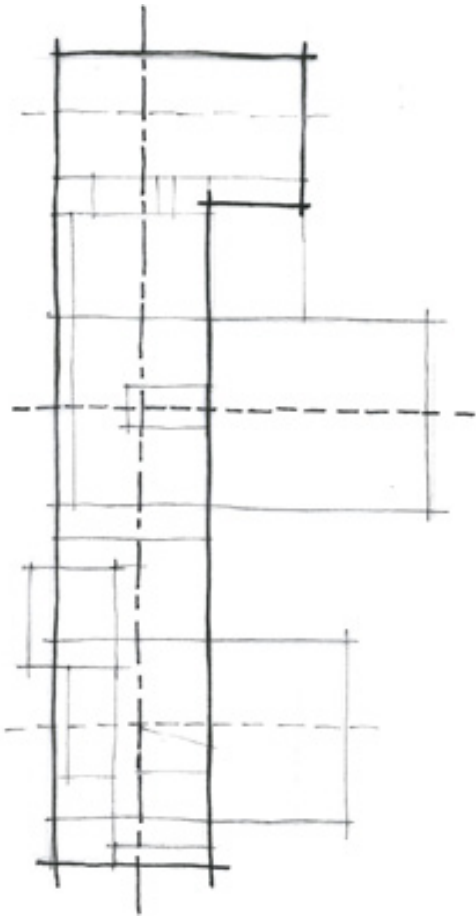


fig. 6.152

fig. 6.153

fig. 6.154

fig. 6.155

fig. 6.1

STRUC

fig. 6.1



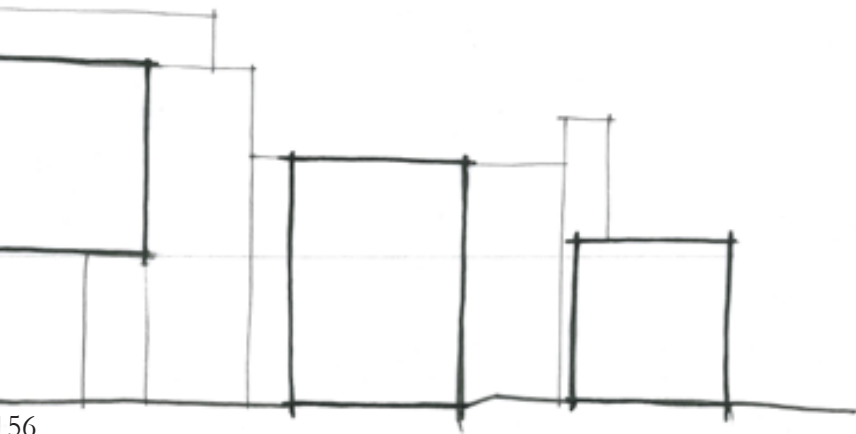
fig. 6.156 The massing of the building in elevation

fig. 6.157 The structural system of the building in plan

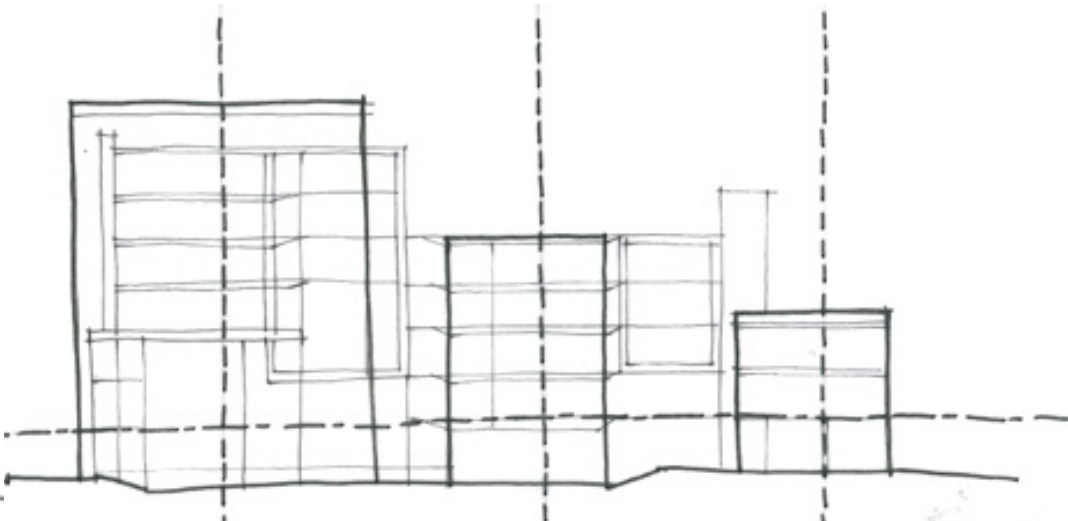
fig. 6.158 Plan and elevation showing the use of symmetry and balance in the design solution

NG

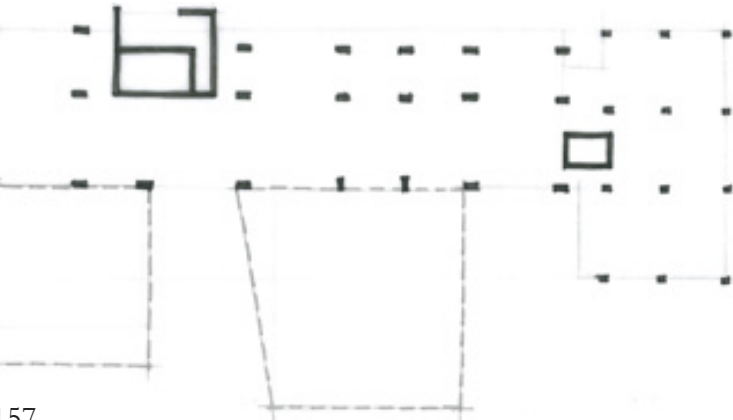
## SYMMETRY & BALANCE



56



TURE



57

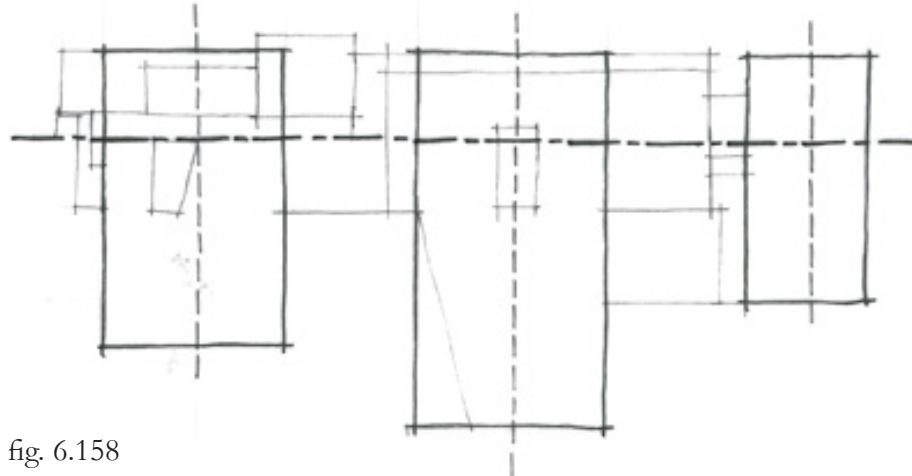


fig. 6.158

fig. 6.159 Plan and section illustrating the reticulation of vertical and horizontal circulation

fig. 6.160 The use of solids and voids on various levels; illustrated on the plan

fig. 6.161 Section showing the access to natural light within the building

fig. 6.162 Section showing the use of natural cross ventilation through the 'arms' of the building

## CIRCULATION

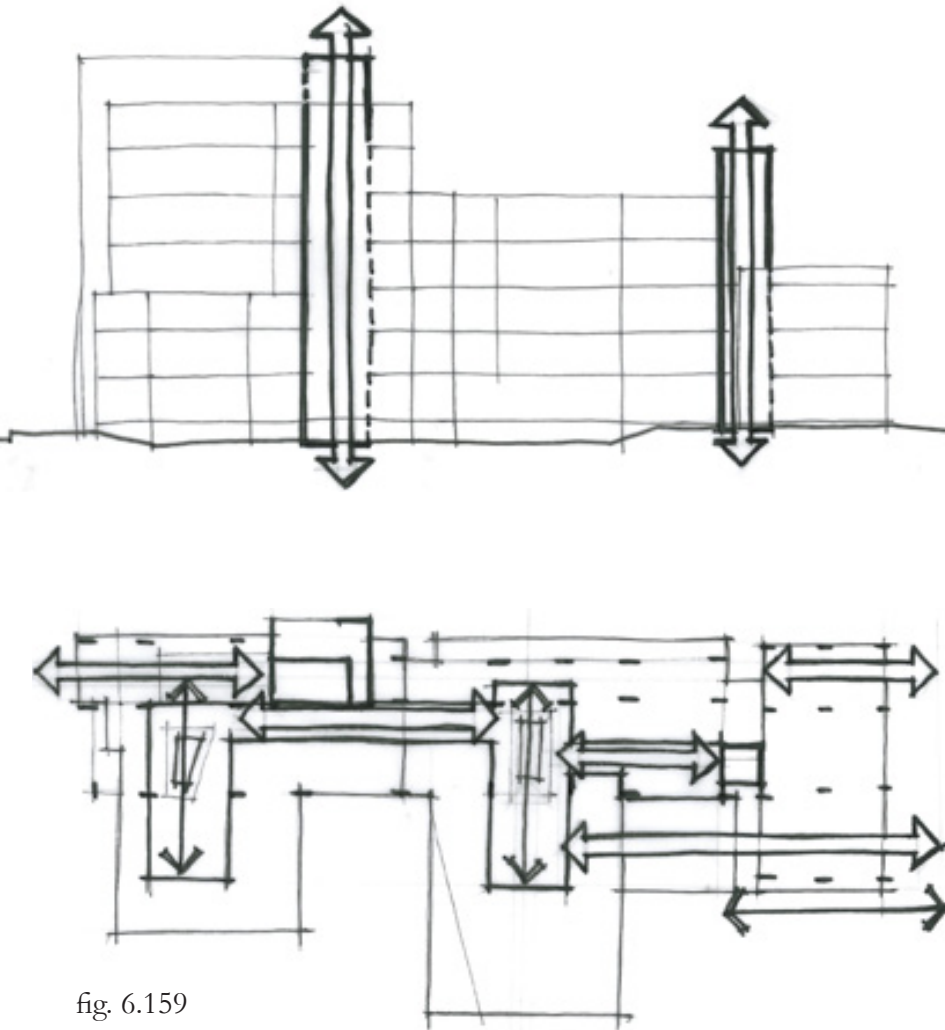


fig. 6.159

## SOLIDS & VOIDS

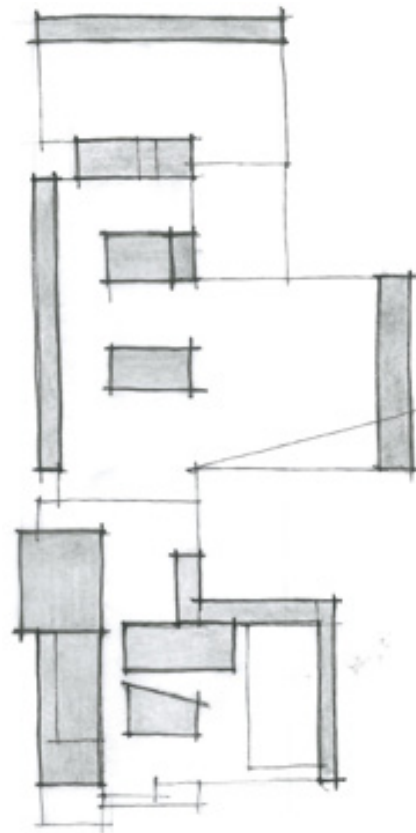


fig. 6.160

## NATURAL LIGHT

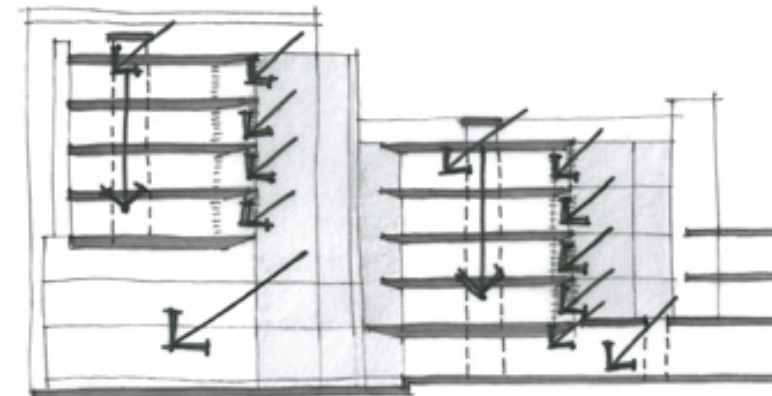


fig. 6.161

## NATURAL VENTILATION

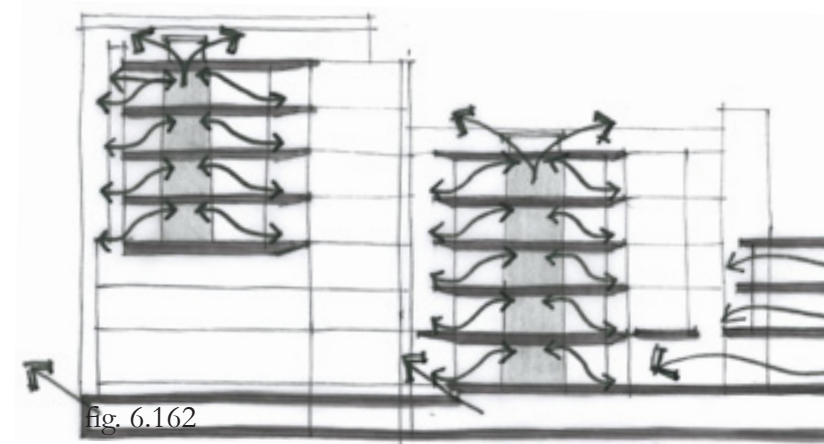
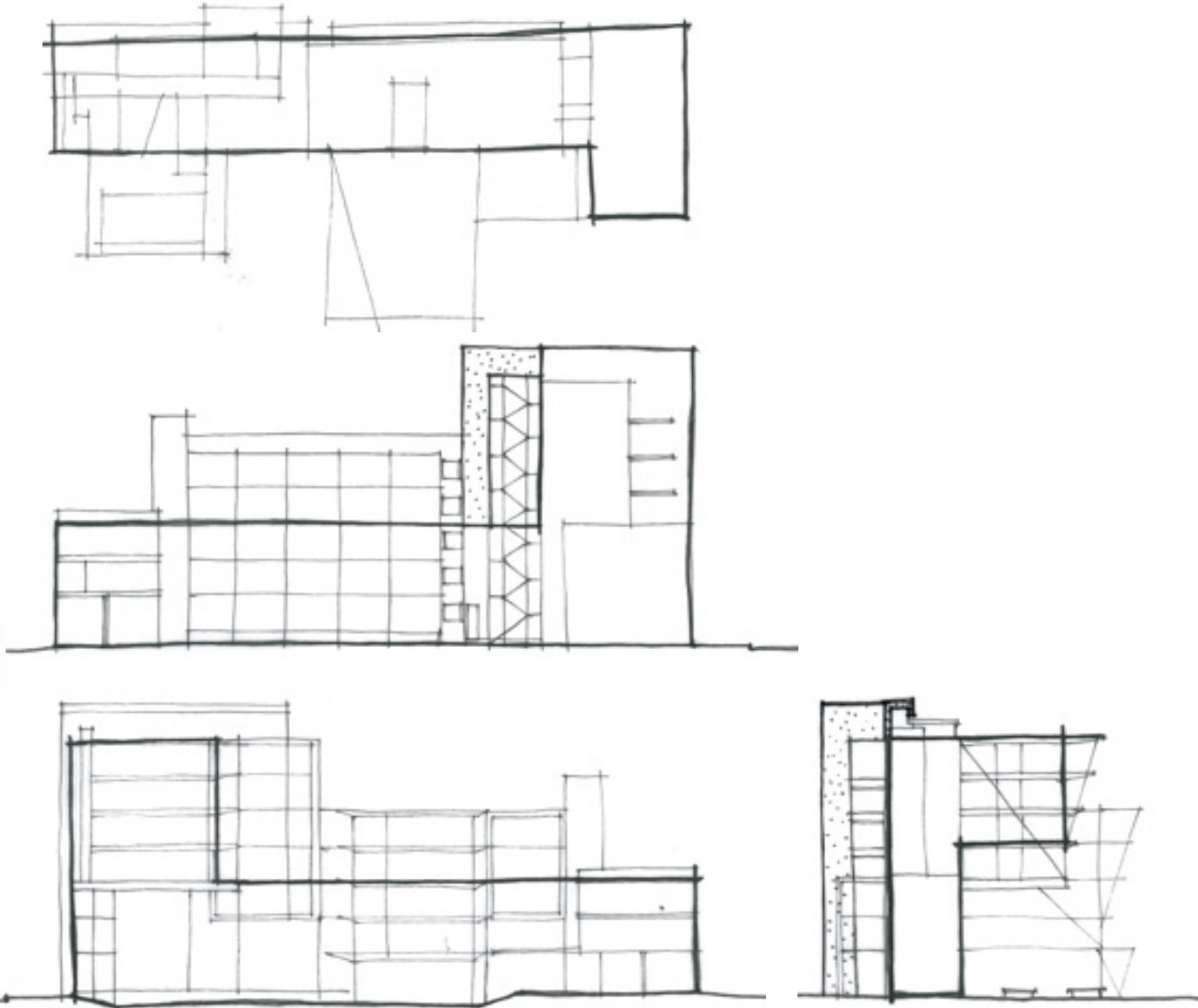


fig. 6.162

fig. 6.163 Massing diagrams illustrating the connection in form and reticulation between the plans, sections and elevations that have been developed

# CONCLUSION

## PLAN TO ELEVATION/SECTION



## CONCLUSION

As is seen from this experimental process, architectural design is a process of continuous change and exploration where ideas that are invited to the design proposal are explored in various ways and then either used or rejected to suit the goals set out at the beginning of the project.

In order to create the desired result many items have been selected to enhance the design intentions and others have been thoughtfully rejected in an attempt to achieve the goals set out previously in the dissertation. Ideas were also chosen that will further enhance the theoretical ideas and substance that the dissertation grounds itself upon.

The design intentions and ideas that have been chosen to finalise the design project will now be further developed on a technical level to achieve the ultimate goal - a fully comprehensive design that creates a facility that can house and emphasise the healing process.

fig. 6.163

# CHAPTER

# 7

*There are so many ways to heal. Arrogance may have a place in technology, but not in healing. I need to get out of my own way if I am to heal.*

(Schaefer, 1995)



# INTRODUCTION & TECHNOLOGICAL AESTHETIC

## INTRODUCTION

The following chapter expresses the technical investigation explored for the dissertation with the previous theories and design in mind (see fig. 7.1). The technological aesthetic is firstly expressed through diagrams which show the concept intentions as related to the technological aspect of the project that will be expressed and followed.

From here, various three dimensional technical aspects are explored whereby the reader can engage fully with the building and its construction.

Relevant precedents are explored which have been inspirational and can be used to express and highlight the ideas set out in the dissertation thus far.

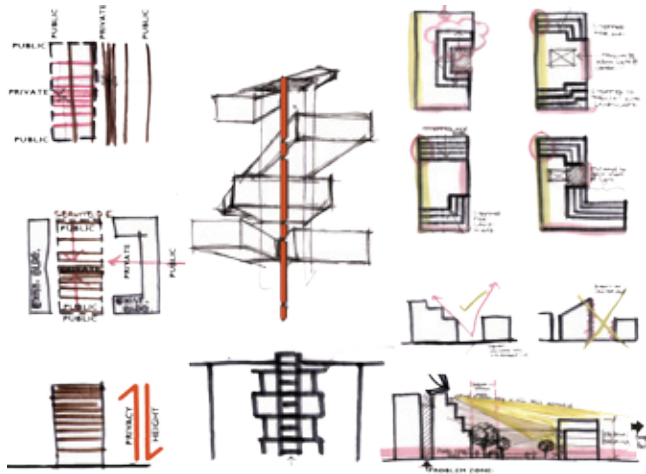


fig. 7.1

## TECHNOLOGICAL AESTHETIC

A building can mediate between tectonic and stereotomic technological aesthetics, as described by Frampton. Issues of siting, spatial definition, construction and environmental responses create results which usually lie in the middle of these two aesthetics where all aspects of a building are addressed.

## TECHNICAL PRINCIPLES EMPLOYED

The technical development and responses for this dissertation were guided by the theoretical argument so as to relate back to, and strengthen, the design decisions made. The experiential aspects of the design provide the basis for all technological decisions made.

It has been highlighted throughout the dissertation that the *Centre for Healing* should be a facility where layers of healing and growth can occur in a building that encourages recovery within an existing therapeutic city block. These ideas need to be taken into account when making any decision with regards to the technological aesthetic of the building.

The facility is firstly to be seen as a stable structure that supports the patients that are housed at the facility and thus, the technology used that makes up such a facility should highlight and express this as an important aspect. However, the facility is to also be seen as a building that houses the healing process, a process that relies on this stable structure. It was therefore concluded that the facility should clearly show both these aspects of its nature and how the one relies on the other to any user

or passer by (see fig. 7.4-7.5). These aspects should be shown on all the various levels of technology that relate to the construction of the building, from the structure, to the infill, circulation, services, material choice, junctions of materials and even to issues of sustainability.

It was also found necessary to design the various experiences through the building on a human scale to allow the user to become aware of the materiality, spatiality, massing and light quality within the building, however still allowing a monumental feel to the facility entrance

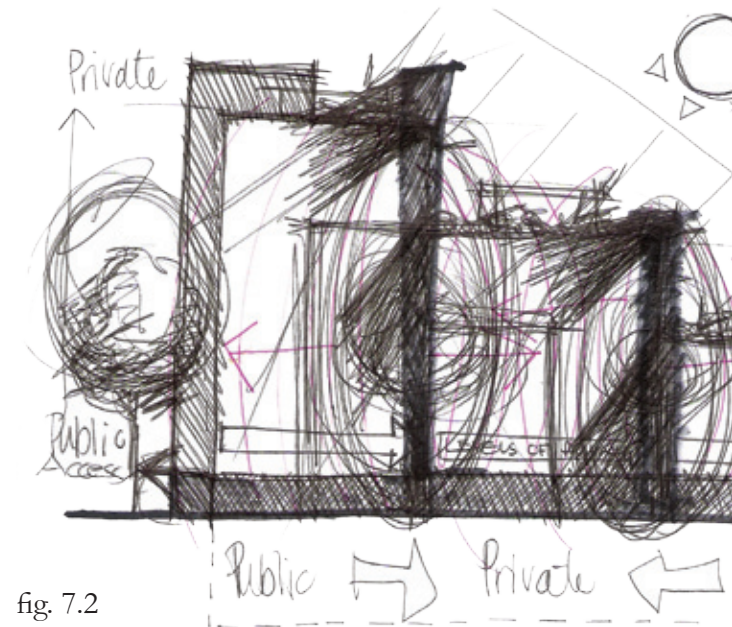


fig. 7.2

fig. 7.1 Summary sketch of the concept architectural intentions from chapter 5

fig. 7.2 Technological aesthetic intentions (1)

fig. 7.3 Technological aesthetic intentions (2); highlighting technological and environmental aspects

to highlight it's importance in the community it serves.

The result is that the technological aesthetic adopted through the resolution of the building should not only follow the conceptual approach followed through the design of the facility, but it should also consider practical issues such as construction techniques and availability of materials, cost and environmental requirements necessary to make the project a success.

fig. 7.4 Technological aesthetic intentions (3); highlighting the creation of a solid core from which the healing arms of the building radiate

fig. 7.5 Developed section showing the aesthetic intentions highlighted in fig. 7.4

Figures 7.2-7.5 show a summarized technological response to the concept and items highlighted above that were used as a basis for all decision making in terms of upholding the technological aesthetic required within the facility.

These technical aspects are identified and each explained in more detail throughout this chapter . They are: the structural system, circulation, services, sustainability and materiality.

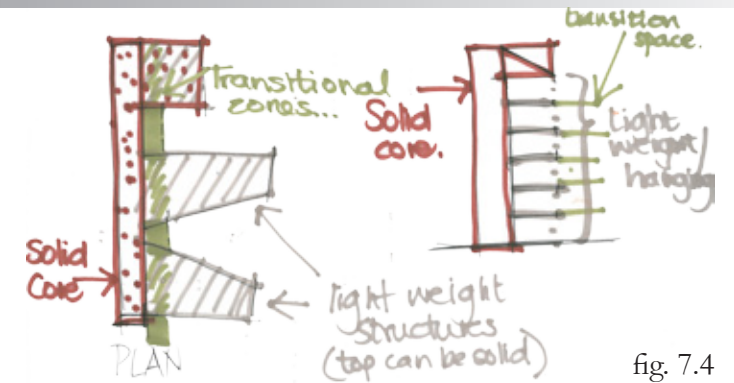


fig. 7.4

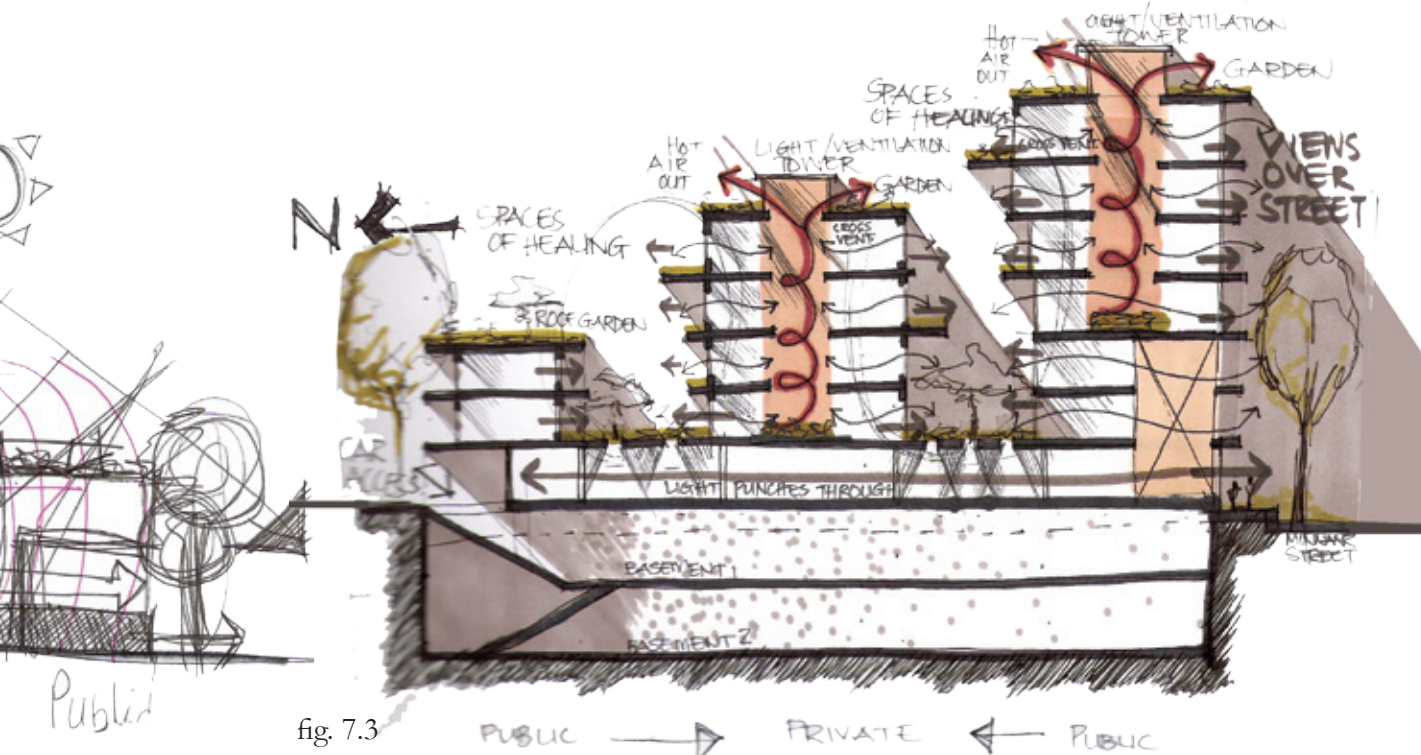


fig. 7.3

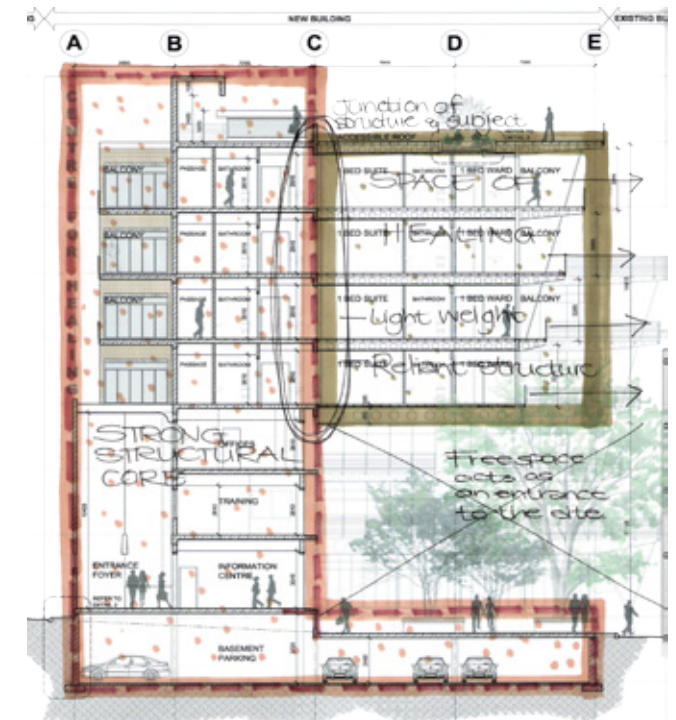


fig. 7.5

# STRUCTURAL SYSTEM

## STRUCTURAL SYSTEM

The primary, secondary and tertiary structural systems employed within the facility highlight the concept intentions laid out earlier in the dissertation, with the primary structure acting as a stage from which all activities occur through the facility. It should be noted that both the primary and secondary structures were designed by the author in consultation with a structural engineer - Mr. Dudley deKlerk of ARQ Consulting Engineers.

### PRIMARY STRUCTURAL SYSTEM (red & grey)

A concrete slab, column and beam configuration is used along the main “spine” of building (see fig. 7.6-7.7). This represents the solid structure/core of the facility and the platform from which healing can occur and from which the secondary structure of the building can rely on, as the patients rely on the structural support of the nursing staff at the facility (see fig. 7.8-7.10).

### SECONDARY STRUCTURAL SYSTEM (green)

The secondary structural system of the facility consists of a steel cellular beam construction hung in tension from the primary structure by means of high tensile steel cables (see fig. 7.8-7.10). This portion of the building represents the area of healing within the facility. It is the portion of the building that relies on the primary structure for support, as the patients at the facility lean on and rely upon the staff at the *Centre for Healing*.



fig. 7.6

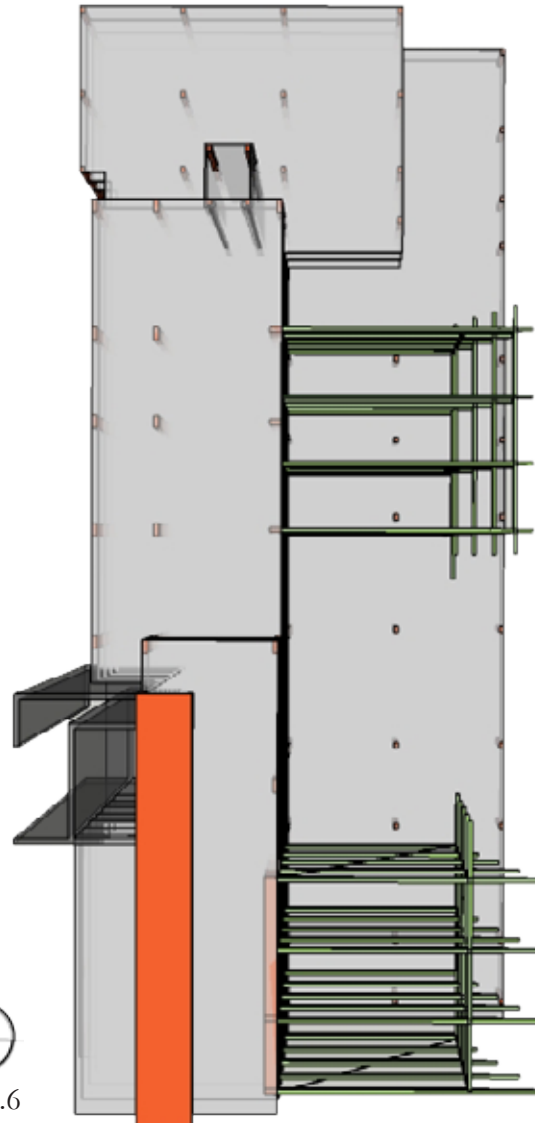


fig. 7.6 Aerial view showing the various structural systems  
fig. 7.7 Three dimensional view from the west showing the primary structural system (red)

## TERTIARY STRUCTURAL SYSTEM

The tertiary structure for the facility is the non-structural building infill of the entire building. The building infill for each of the two sections (primary and secondary structural systems) should reflect the ideas that are highlighted by the choice of structure employed. For example, the infill for the primary structure (the solid core of the building) will mainly have solid infill materials such as brickwork and concrete. The secondary structural portion of the building needs to be seen as a light weight ‘floating’ item. The infill for this portion therefore, needs to be light weight materials such as steel, Nutec board, glass and GKD mesh.

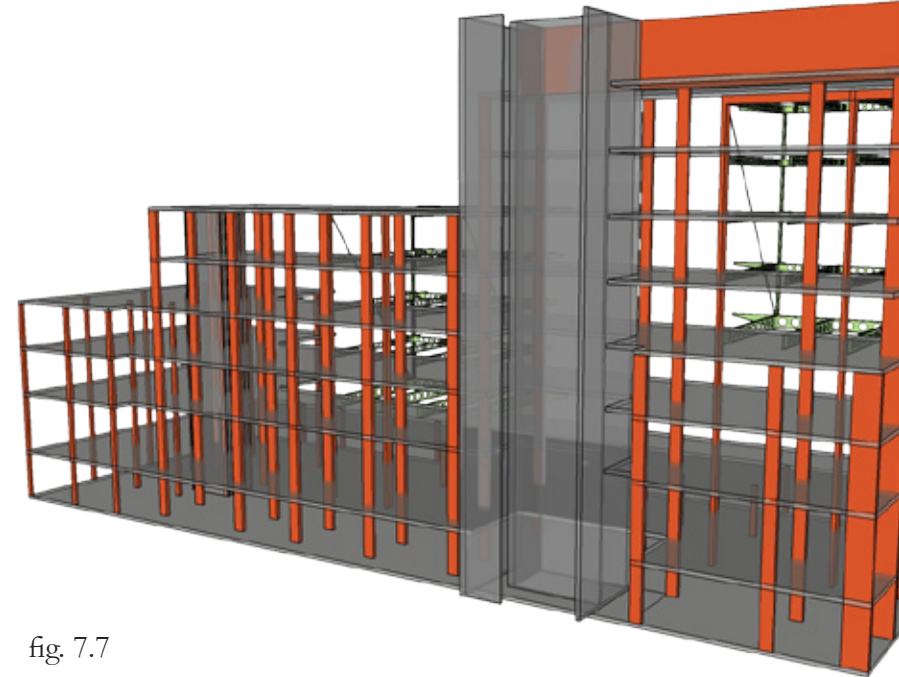


fig. 7.7

fig. 7.8 Three dimensional view from the south east showing the primary (red) and secondary (green) structural systems

fig. 7.9 Three dimensional view from the north east showing the primary and secondary systems

### STRUCTURAL GRID

To ensure the minimum use of concrete columns in the primary structure, a structural grid is created along which the slab, column and beam configurations evolved. The secondary structure starts along this grid due to the fact that the high tensile cables need to connect to the concrete columns, however it varies off this grid the further away from the primary structure it reaches. This represents the idea of a patient venturing further away from the structure and stability of the staff (and in turn the primary structure) at the facility during the healing process.

fig. 7.10 Concept sketch indicating how the secondary structural systems relies on and is connected to the primary structural system

The spacing of the columns was designed in such a way so that the basement below could be used for parking with intervals varying between 5m and 7.5m and maintaining a structural rhythm of 5;7.5;5;... in the north-south span. The size of the primary structural columns are determined by the maximum force that they will need to transfer to the ground from the high tensile cables that support the secondary structure. As discussed with Dudley deKlerk, a column to the equivalent size of a 0.5m<sup>2</sup> circular column should be efficient to distribute the load appropriately. It was however decided to design the

structural system with rectangular columns to allow them to form part of the walls in this portion of the building. It was also decided to not only make the columns that transfer the high tensile load larger columns, but rather to make all the columns along this grid the same size for ease of construction, with the only variation being to make the columns in the northern most block of the facility smaller (330x270mm). This was due to the fact that this is a low rise portion of the building and can function as it's own structural element, thus lowering costs and rendering the facility more sustainable.

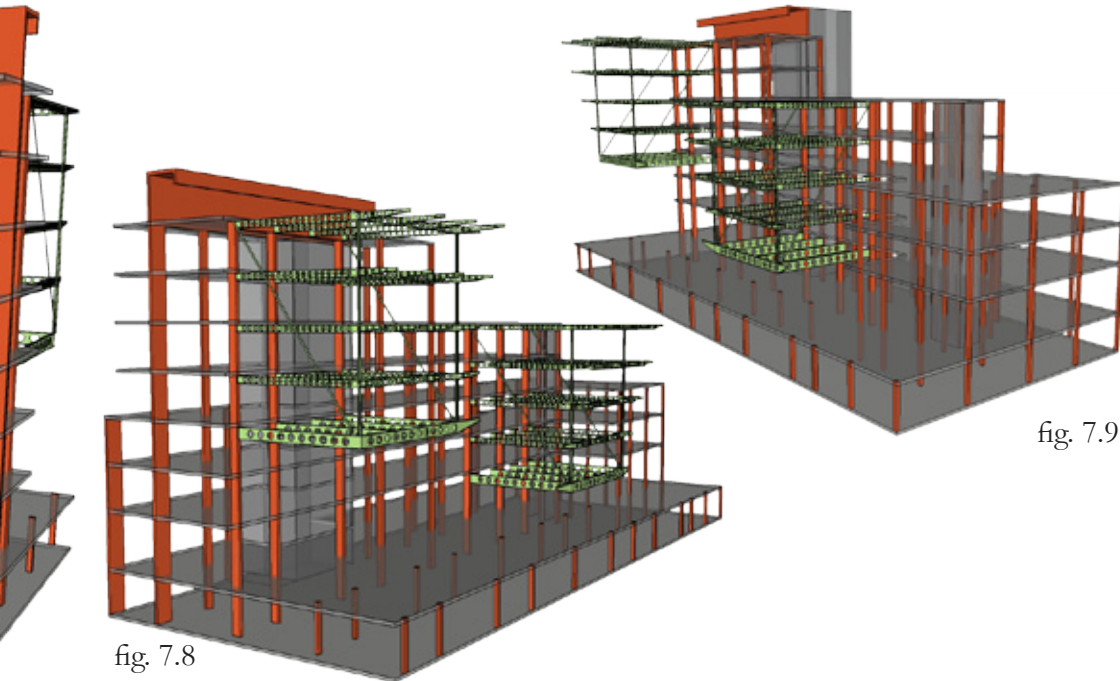


fig. 7.8

fig. 7.9

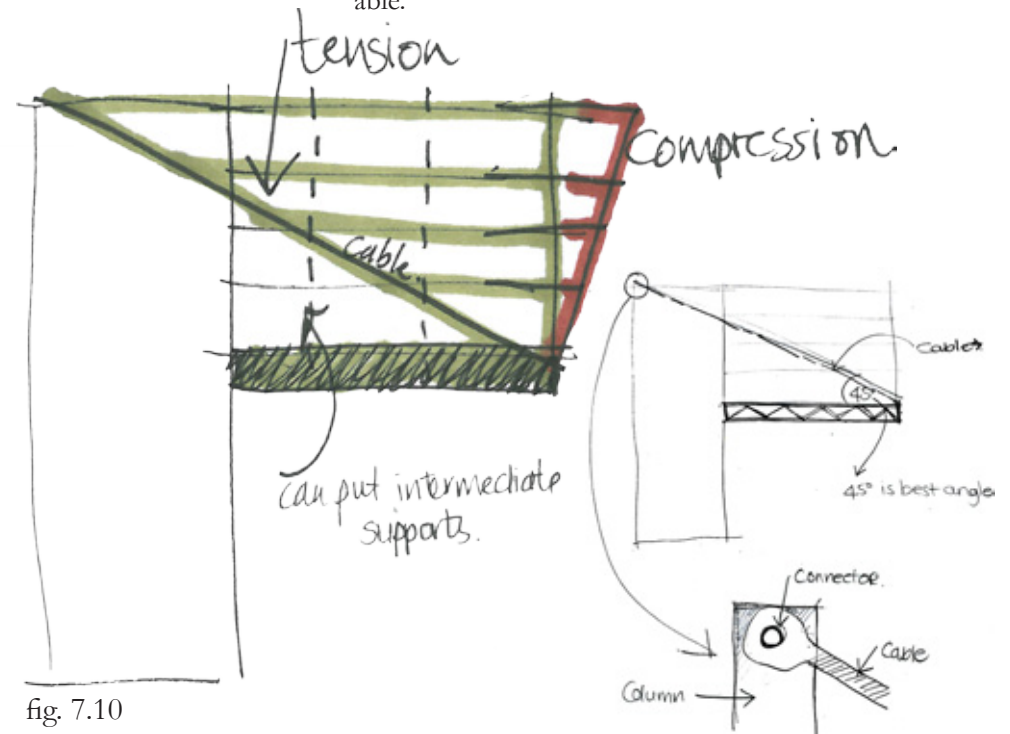


fig. 7.10



# CIRCULATION

## CIRCULATION

A consistent circulation path is created through the vertical and horizontal axes of the facility. This has been done as a way of developing a wayfinding path through the building that does not involve the use of blunt signage.

## VERTICAL CIRCULATION

Due to the length of the site, two vertical circulation cores are designed with lifts and stairs; one on the southern and one on the northern side of the facility (see fig. 7.11-7.13). A ramp was included earlier in the project, however, it became overpowering and was removed, with only a simple ramp remaining in the gym.

As the majority of the patients at the facility will not be fully mobile, it was found necessary to provide three lifts within the facility due to the fact that they are the primary form of vertical circulation within the building. The lifts will also be the only means of escape in the event of a fire for many of the patients due to this fact, therefore lift cores are made into separate fire compartments, ensuring a two hour fire safe area.

It should be noted that lift 3 does not go to the basement level. This is because this particular lift is to be primarily used for deliveries and services. Due to the fact that deliveries occur on the ground floor and the functions that it services are on the levels above, it did not need to go to the basement level. This decision was further confirmed by the fact that more parking bays could be accommodated in the basement level.

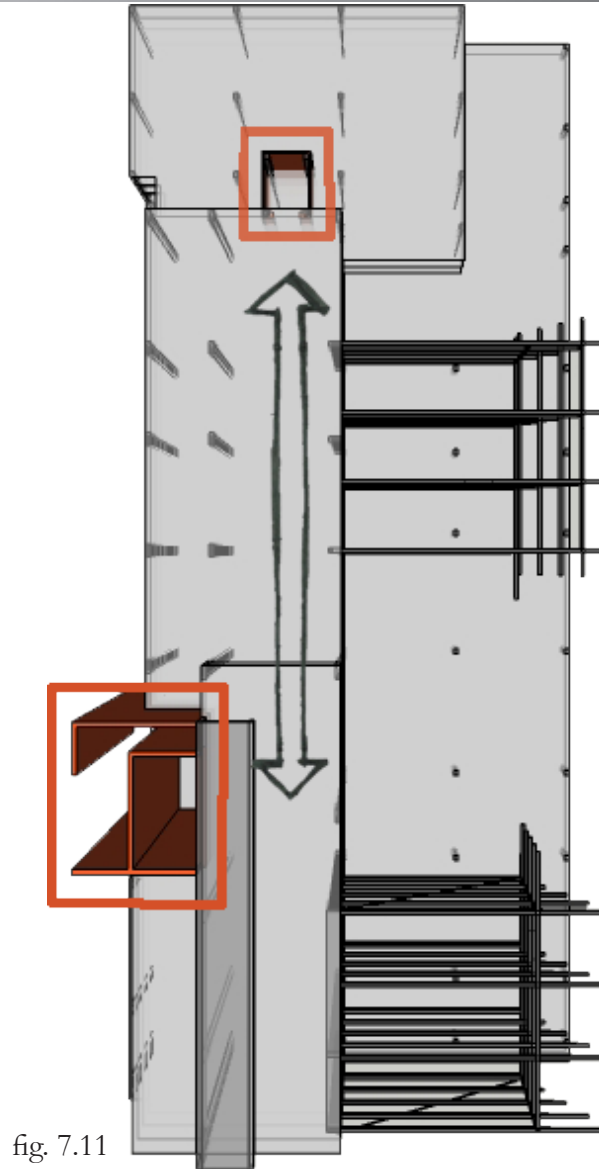


fig. 7.11

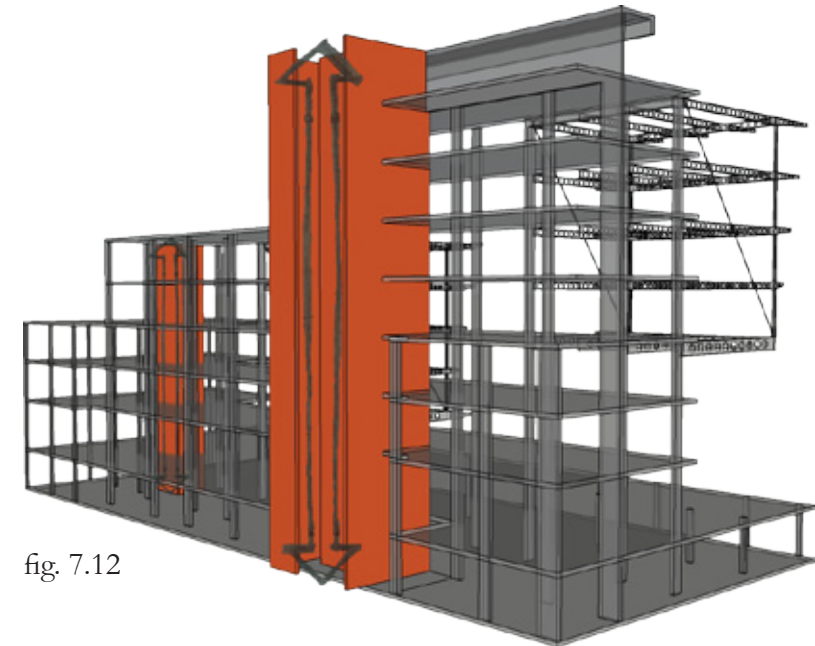


fig. 7.12

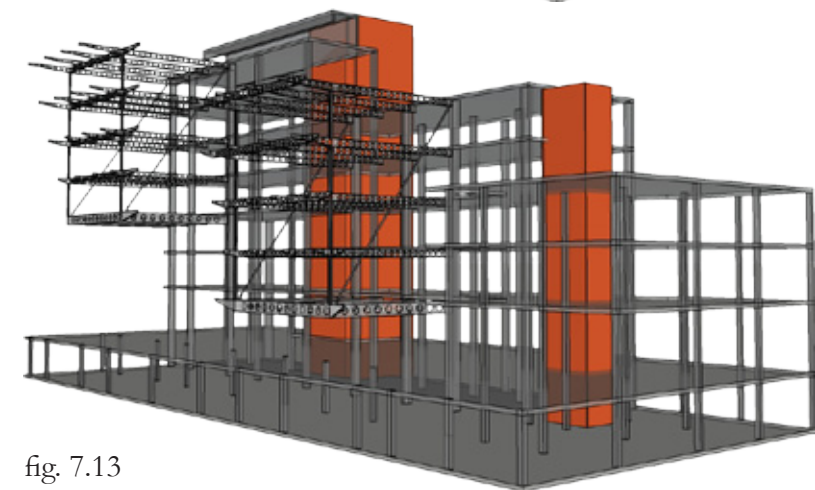


fig. 7.13

fig. 7.11 Aerial view of the facility structure showing the vertical and horizontal circulation paths  
fig. 7.12-7.13 Three dimensional view from the south west and north east showing the vertical circulation cores

fig. 7.14 Typical ward block plan; highlighting the horizontal circulation

fig. 7.15 Sketch indicating services moving through the cell openings of cellular beams

# SERVICES

## HORIZONTAL CIRCULATION

The main horizontal circulation through the facility moves through the primary structure of the building running from south to north (see fig. 7.11). This emphasizes the idea that this is the solid core and continuously familiar portion of the building which aids orientation and thus healing within the facility.

## WARD CIRCULATION

Each ward is designed around a central atrium with a passage around it to encourage interaction between patients and to allow more natural light to enter the building (see fig. 7.14). These atriums are placed along the main horizontal circulation path of the building and the ward circulation passages branch towards the east from here. Services have been situated within the ceilings of these secondary circulation passages to allow easy access in the event that they need to be serviced.

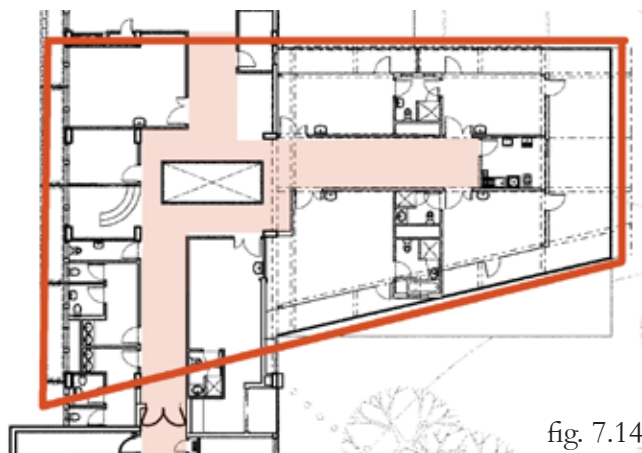


fig. 7.14

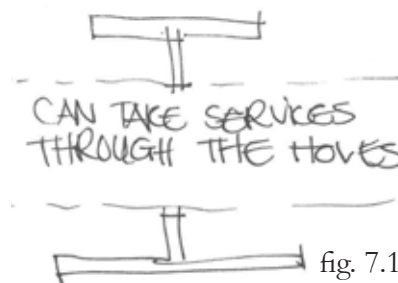


fig. 7.15

## SERVICES

Creating a clean environment is the first step to creating a safe, therapeutic environment for people to heal and grow in. This means that specific services need to be considered and provided for in the *Centre for Healing*. It also needs to be considered that these services listed below need to work together properly within a medical facility in order to create such an environment.

Due to the fact that the building is eight storeys high, it became important that services be easily accessible from each level of the facility. It is also imperative that services can be switched off/isolated per floor to allow servicing on one floor without having to affect the services on other levels during this time. Vertical service ducts have been placed within the facility that lie on top of one another and only step where extremely necessary (eg. where the south portion of the building does not have a ground floor to third floor level). It should be noted that these service ducts are all accessible from passages on each floor and not from the inside of any patient facilities or rooms.

Horizontally, services are reticulated in one of two ways. They either move in the ceiling void (in the ceiling space or through the cells of the cellular beam construction - see fig. 7.15) or they are chased into walls (or placed in the drywall cavity where applicable)

The main services considered in the design of the *Centre for Healing* are: fire, drainage, water, medical gases, medical waste, light, ventilation/environmental control.

fig. 7.16 Typical detail of a fire hose reel cupboard and its contents

## FIRE

According to the SABS0400, part TT, a facility such as the *Centre for Healing*, and its supporting services, (kitchen, laundry and workshop) are classified as an occupancy class E2. There are however some areas within the building that are specifically placed under a different occupancy class due to the nature of their functions; such as the administration and conference facilities (these are to fall under the G1 occupancy class).

According to the NBR TT 16.2, a building with more than 3 storeys needs to be furnished with two unobstructed escape routes in the event of a fire, therefore two fire escape cores have been created in the building; one on the northern side of the facility, and one on the southern side of the facility. The travel distance between any point of the building and a fire escape is never more than 45m and all fire escape routes are easily identified. Each of these two cores consist of an external fire escape staircase, a lift/s, a fire hydrant and a fire hose reel with a reach of 30m each (see fig. 7.16).

Due to the fact that no ramp has been provided for in the building, it was imperative that these two cores be designed in such a way as to allow the lifts to be used as a vertical escape alternative to the external stairs in the event of a fire. These cores have therefore been made into separate two hour fire compartments surrounded by 220mm thick walls and accessible via fire doors held open by magnets in a normal situation which are connected to a fire alarm which closes the doors when a fire occurs (opening in the direction of fire escape).

Each ward has been made into a separate fire compartment (maximum of 1225m<sup>2</sup>) to be able to compartmentalise a fire should one occur (see fig. 7.17). Due to the fact that the laundry and kitchen are high fire risk areas, they have also been made into separate fire compartments, however because there will always be people moving in and out of these areas, the fire doors to these facilities are not on the fire alarm magnet system mentioned previously. The access door to these rooms is rather a fire door that will be held open during the day by a cabin hook and locked at night.

All steel members (cellular beams included) are to be painted with intumescent paint to provide two hour fire protection.

A drencher system has been used at certain parts of the building where fire protection is required, however the design called for glass to be used. These drenchers are linked to a fire alarm system where in the event of a fire (through smoke detection) the drenchers will be set off to allow water to flow over these glass openings forming a safe zone around them.

There is a loop system placed around the entire site which provides continuous water supply for the three fire hydrants placed around the site. These fire hydrants have been placed in areas where they will be easily accessible by fire trucks. Boosters connected to this loop system have been placed at the two fire cores of the facility to allow water to be passed to the fire hydrants and fire hose reels on the various levels of the facility.

A booster connection is also provided for at the southern fire core of the building to provide water for the sprinkler system on each level of the building. Only one booster for the sprinkler system has been provided for because the water for this can be boosted up on one side, and the water circulated on each floor in the ceiling void (a cheaper alternative).

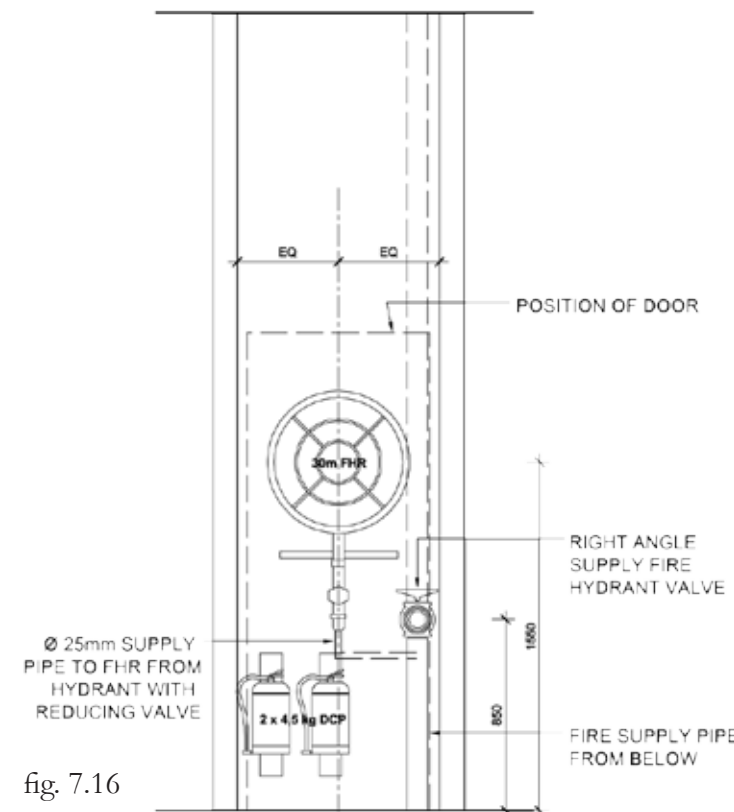


fig. 7.16

fig. 7.17 Typical fire plan; notice the lift lobbies as separate fire compartments

fig. 7.18 Typical drainage plans showing reticulation through ceiling voids

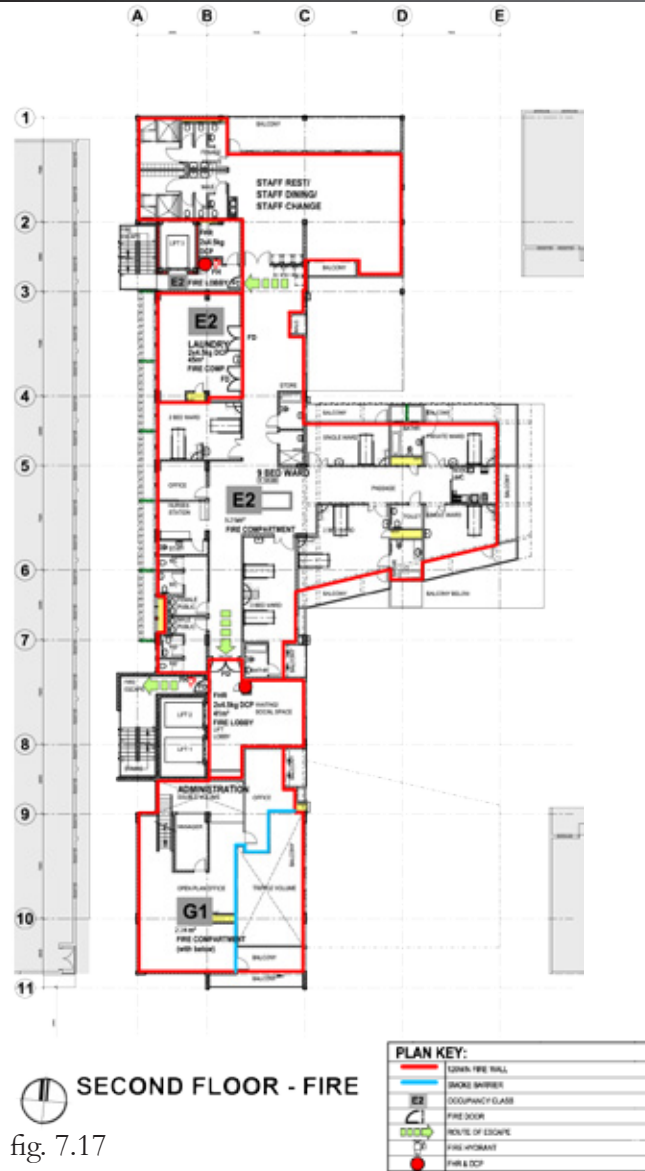


fig. 7.17

**DRAINAGE**

The following are minimum requirements for ablution facilities provided for within such a building as per the R158:

- Number of toilets - 1 toilet per every 8 beds
- Number of medical basins - 1 medical basin per every ward
- Number of wc basins - 1 basin per every 8 beds
- Number of baths/showers - 1 bath/shower per every 12 beds
- Number of disabled toilets - 1 disabled toilet per floor
- Number of assisted bathrooms/showers - no minimum, however after extensive research, it was found that a minimum of one per facility is acceptable. Due to the nature of the *Centre for Healing*, however, it was found necessary to provide more.

The following are minimum requirements for ablution facilities within such a building as per the SABS 0400:

- Number of public toilets - 3(male)+4(urinals)+6(female)
- Number of public toilet basins - 4(male)+4(female)

See appendix 3 for total number of ablution facilities.

Sanitary fittings have been provided for within 6m of the vertical service ducts due to the fact that no drain or waste pipe should travel more than 6m before linking up to the appropriate vertical connection.

From each sanitary fitting, a drain or waste pipe either connects to a collection pipe that runs in the ceiling void below which collects various drainage points and

then connects to the vertical stack situated within the service duct, or they connect directly to this stack. These pipes either run in the ceiling void in the primary structural portion of the building or through the cells of the cellular beams in the secondary structural portion (see fig. 7.18).

From these stacks, the drainage runs down to the lowest level of the system (collecting sewerage from other levels on the way) where it then moves horizontally (at a fall of 1:60) to connect to the existing sewerage line on the western side of the building.



fig. 7.18

## WATER

At every point where sanitary fittings are situated, water points need to be provided. As mentioned previously, all sanitary fittings have been placed within 6m of the vertical service ducts. These ducts have been made large enough to be able to house not only the drainage (mentioned before), but also the vertical water and medical gas reticulations (see next heading and fig. 7.19).

A water supply connection is created linking the building water supply to the municipal water supply along Minnaar Street. The water is dispersed vertically through a booster system within the service ducts and then circulates to the various water supply points on each floor through the ceiling void (see fig. 7.19). Again, the water supply pipes run in the ceiling void in the primary structural portion of the building, and run through the cells of the cellular beams in the secondary structural portion of the facility (the same as the drainage). Please note, for sound insulation, Sisalation is to be used above the ceiling boards and a plywood is used as an insulation below the wooden floor boards in the secondary structural system areas.

Where water needs to move down from the ceiling void to the sanitary fitting, the water pipes will either be chased down in the wall or placed in the void between two layers of drywalling until they reach the tap points. Please note, all pipes are to be wrapped in building paper where chased into walls and all hot water pipes are to be insulated.

Geysers will be placed in lowered ceiling spaces (650mm ceiling void required) throughout the primary structural system of the building or between cellular beams from where all hot water will be distributed as described above. Water temperature will also be regulated (at a maximum of 60 degrees celsius) from each geyser for various uses and distribution purposes.

Water for fire hydrants and fire hose reels within the building is provided for as described in the 'fire' section mentioned previously, however it should be noted that the swimming pool on the roof is to be used as an emergency fire water supply.

Water runoff from the roofs of the facility will be channeled to fullbore outlets on the roofs and into down pipes which lead to water storage tanks placed around the facility (5000l tanks). This water will primarily be used to water the gardens around the facility.

According to the R158, a facility of this nature has to have a protocol for 24-hour emergency water supply to the building in the event of main water supply failure. Water tanks are therefore placed on the roof of the facility whereby water is constantly filtered through to be used in the event mentioned above. According to Brian Woolls-King of BWK Engineering, the SABS requires a minimum of 450l of water per bed per day, therefore, for a facility of 56 beds, 25200l of emergency water will need to be provided. To distribute the load over the area of the roof allocated for these tanks, three 10000l tanks will be used with a diameter of 2.2m and a height

of 3.040m. The extra water is to accommodate the use of the public toilets as well as the ablution facilities linked to the offices.

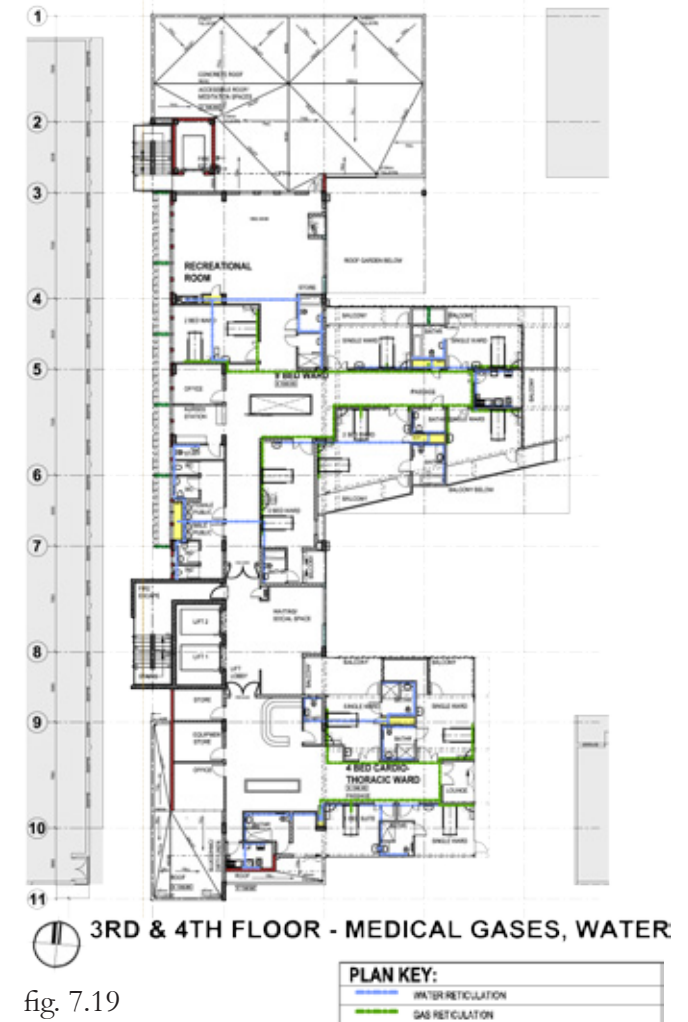


fig. 7.19

fig. 7.20 Medical gas bottle labels are colour coded to clearly identify the various medical gases supplied

fig. 7.21 Summary diagram of where what type of medical gas is required in a hospital

## MEDICAL GASES

Although the patients at the *Centre for Healing* are in a stable condition, provision needs to be made for various medical gases that may need to be used in the interest of the patients. According to Brian Woolls-King, these gasses are: oxygen, nitrous oxide, nitrogen, carbon dioxide and medical air vacuum.

Medical gasses need to be provided for at every bed headboard within the facility (see fig. 7.21). Therefore they are only circulated vertically through the building in the ducts that are provided in the secondary structural portion of the facility.

Once on the correct floor, the medical gases are circulated through the cells of the cellular beams in the ceiling space above the passages (see fig. 7.19). From the passage, branches are created (in the ceiling void) to each room (1 per bed) with the gas being lowered to the bed headboard height at each bed. Please note, each gas branch per level and per room should be able to be isolated in the event of servicing.

Oxygen - green

Medical Air - Yellow

Vacuum - White

Nitrous Oxide - Blue

Nitrogen - Black

Carbon Dioxide - Gray

WAGD - Purple



fig. 7.20

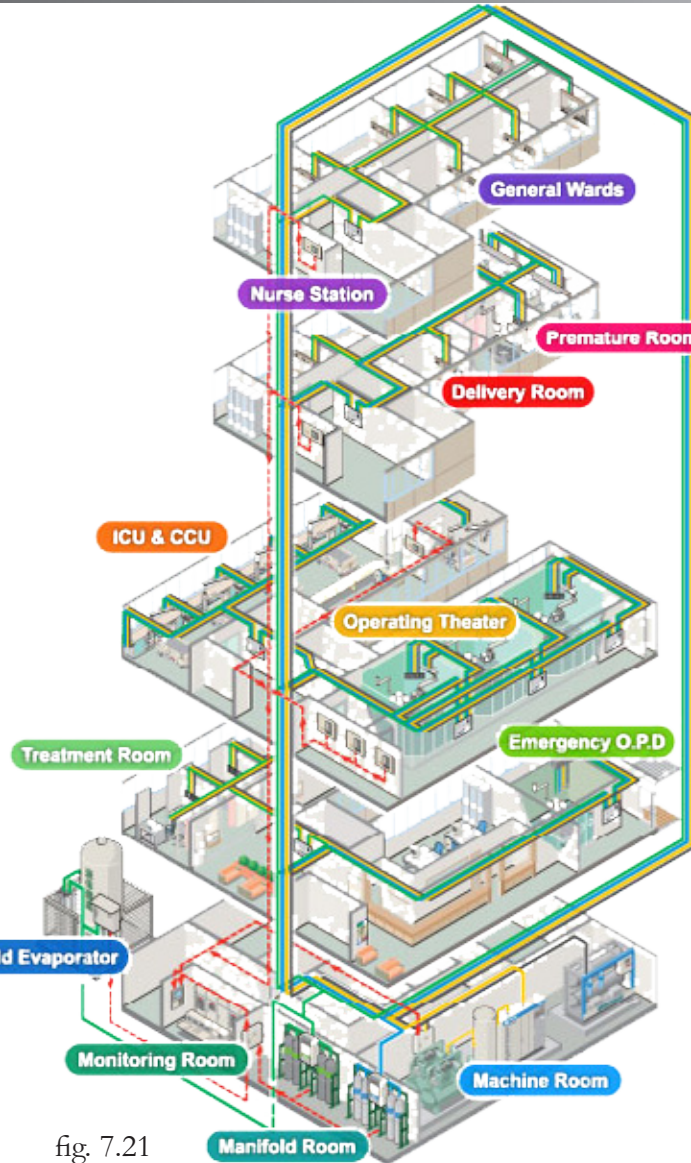


fig. 7.21

## MEDICAL WASTE

Due to the fact that the patients at the *Centre for Healing* are in a stable condition, no major medical waste will be created at the facility. However, minor medical waste accommodation needs to be created for within the facility for items related to wound care, such as gauze. To provide for this, a sluice has been created in every ward where minor medical waste items can be disposed of or stored until taken away by the correct authorities and where supportive instruments can be disposed of/cleaned, this room having a minimum area of 5m<sup>2</sup>.

This room can (according to the R158) be housed with the house maids closet (HMC) and the dirty linen rooms for each ward, however then the minimum size for such a room is 9m<sup>2</sup>. In this dissertation, it was deemed necessary to provide all three of these functions within one room to utilise less space within the ward, therefore, the minimum size used is 9m<sup>2</sup> and such rooms have the following sanitary fittings as required by the R158: a wash hand basin, a wash trough, a single sink, a slopopper and a macerator. It should be noted, a macerator is a more environmentally friendly alternative to a bedpan washer (which is what most medical facilities use) because a bedpan washer uses plastic bedpans, while a macerator uses recyclable bedpans that the machine is able to recycle.

fig. 7.22 Table indicating minimum average illuminance and glare index productivity values for different types of rooms in the facility

fig. 7.23 Diagram showing how sunlight is used to power fibre optic daylighting within a building

fig. 7.24 An example of the use of fibre optic daylighting

fig. 7.25 A variety of light fittings are available for fibre optic daylighting

## LIGHT

Throughout the entire dissertation, increasing the amount of northern light that accesses the building has been an important design aspect.

There are however certain light intensity/quality requirements that need to be provided for through artificial means within the facility - see figure 7.22 which lists the illuminance and glare index productivity values required according to the SA Building System Ass.

Atriums are provided within each ward to create a central socializing space as well as bring natural light into the building. Due to the fact that the building is eight storeys high, a single atrium could not be created at the desired width to allow natural light to the bottom floors. Two double volume atriums have therefore been provided where the lower one is illuminated from above a bulkhead using fibre optic daylighting that are able to draw energy from the natural daylight outside and transfer it inside the building through a light fitting (see fig. 7.23-7.24). The light created through the fitting is in every way like natural light, the only difference (and benefit) is that the fibre optics do not pass through the harmful UV rays that natural sunlight emits.

The higher level atrium has a skylight that protrudes on the roof top allowing natural light into the atrium space. These two situations allow for natural light to enter the building and therefore allow for a sufficient environment which plants can grow in within the building using limited maintenance and servicing.

ROOMS	ILLUMINANCE AND GLARE INDEX PRODUCTIVITY VALUES (min. average)
LOUNGES	150 lux
KITCHENS	500 lux
STORE ROOMS	150 lux
COUNTERS	300 lux
PASSAGES & LOBBIES	150 lux
RECEPTIONS	200 lux
STAIRS & RAMPS	150 lux
INTERIORS OF LIFTS	100 lux
READING ROOMS	500 lux
WORKSHOPS	400 lux
COMPUTER ROOMS	500 lux
LECTURE ROOMS	500 lux
ROOMS	150 lux

fig. 7.22



fig. 7.24

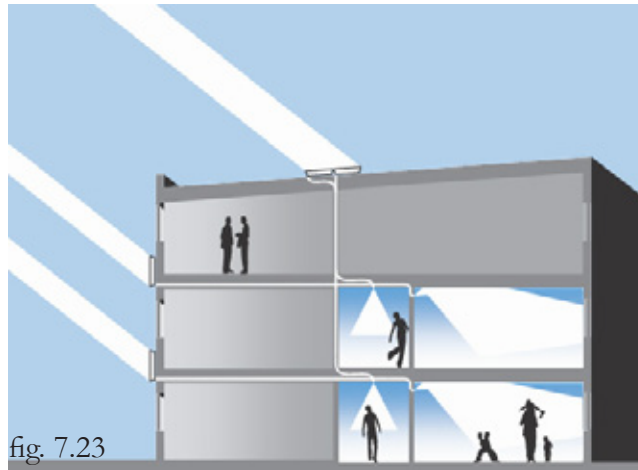


fig. 7.23

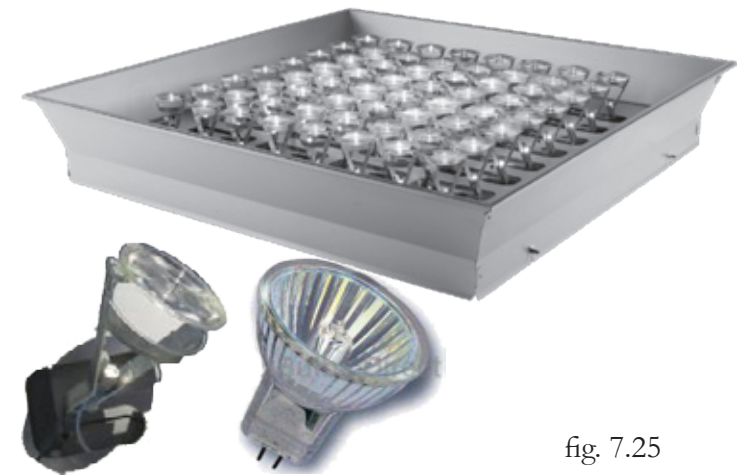


fig. 7.25

## VENTILATION / ENVIRONMENTAL CONTROL

In order to create a healthy environment in which healing can occur, sufficient ventilation and environmental control needs to be considered in the design of such a facility. Mechanical ventilation is used as little as possible within the facility with only the atrium spaces and selective isolation rooms/wards being mechanically ventilated with an air conditioning system (see fig. 7.26-7.27).

Where only the atriums are mechanically ventilated, ward blocks have been designed as narrow as possible around these spaces with windows to the outside and fan lights between the rooms so that these spaces can allow for sufficient cross ventilation which will allow fresh air conditioned air in and force older stale air out. This is not the case in isolation wards/rooms for infection purposes.

All habitable rooms have been designed to have access to openable windows to allow this cross ventilation (as well as allow natural light into the building) to occur, however a few bathrooms have not been able to follow this system, and will therefore have to have air mechanically extracted from them into the service ducts that border them. Such extractors will be connected to the light switch so that if the bathroom light is on (and therefore in use) the extraction fan will operate, and when the light is off (and therefore not in use) the extraction fan will be off, saving electricity consumption as much as possible.



# SUSTAINABILITY

## SUSTAINABILITY

It is essential that buildings are designed to respond to issues of sustainability. The following have been considered throughout the duration of the dissertation as methods of increasing the sustainability of the building:

- services (see pages 159-166)
- passive design measures (see below)
- material choices (see pages 167-171)

## PASSIVE DESIGN MEASURES

Various passive design measures were considered to ensure a comfortable and healthy climate within the facility that responds to the SA climate and the surrounding environment effectively.

The following items have been considered (see fig. 7.26-7.27)

- building orientation; north facing arms have been created on a largely east-west facing site
- materials chosen - see pages 167-171
- overhangs; to shade large glazed surfaces on the northern facades
- window sizes and orientation
- use of sun screens and louvres; horizontal on north, vertical on east and west
- vegetation as shading devices; large succulent trees and planted shading devices

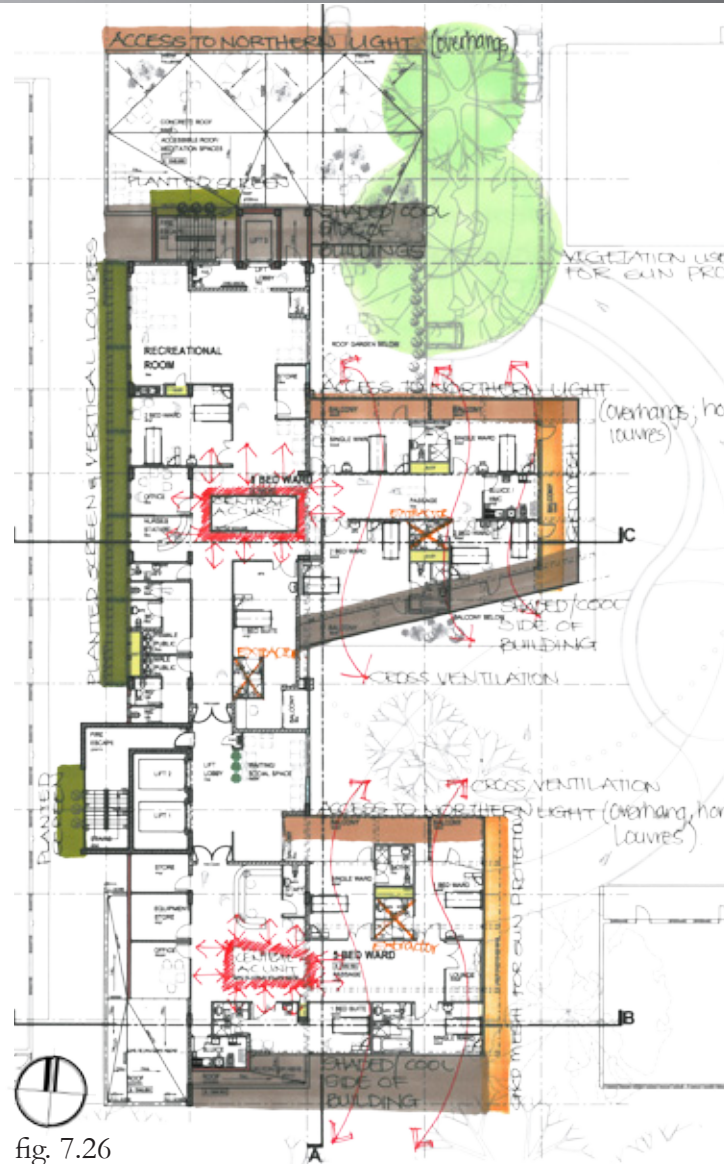


fig. 7.26

fig. 7.26 Sketch plan identifying the various passive design measures addressed in the facility

fig. 7.27 Sketch section identifying the various passive design measures addressed in the facility



fig. 7.27

fig. 7.28 Plan and 3-D image of a concrete column

fig. 7.29-7.30 Photos of the existing building to the west of the site illustrating the varied use of concrete in the area

fig. 7.31-7.33 Photos of various buildings in the area showing the variation of facebrick used

# MATERIALITY

## MATERIALITY

Appropriate technologies within any environment may express the current technologies, materials and skills in a particular area. They may however also introduce new technologies, materials and skills transfer by the introduction of a new way of construction.

The following materials and building technologies are believed to be appropriate for the development of the ideas set out in the dissertation thus far.

## EXISTING BUILDING TECHNOLOGIES IN THE AREA

- Concrete column, beam and slab construction
- Structural brickwork and concrete slab construction

## CRITERIA FOR MATERIAL CHOICE

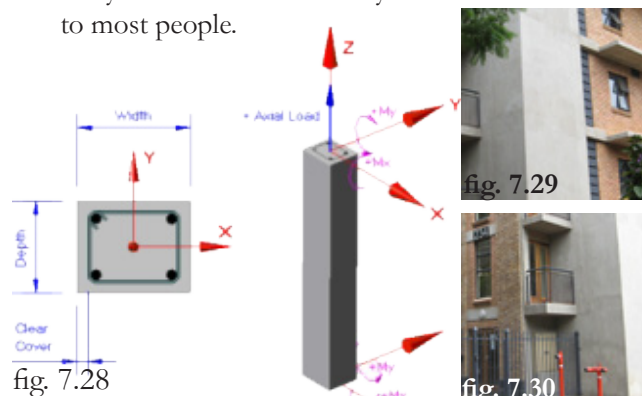
- Materials that are currently used in the surrounding area (familiar materials).
- Availability of materials in Pretoria.
- Labour intensity of construction.
- On-site assembly and erection of various parts.
- Economic viability of materials/products.
- Possibility of simple, clean connection methods.
- Environmental factors of materials.
- Cleanliness/clinical nature of materials.
- Requirements in terms of the specific facility needs.
- Natural sunlight requirements within the building.
- Use of the existing items provided for on site, eg. shade of large trees.
- Ease of maintenance.
- Use of varied materials to express the different ideas set out in the theory part of the dissertation.

## CONCRETE

Reinforced concrete is used as the main structural material within the primary structure of the facility in the form of columns, beams and slabs. Only two column sizes are used throughout the entire building (270x500mm and 270x330mm) to minimise the different shuttering required for on-site casting. Solid reinforced concrete slabs (255mm thick) are used throughout this portion of the building with a variety of upstand, downstand and inlaid beams where necessary.

Main advantages:

- Material is used widely in the area (familiar).
- Easily available.
- Cost-effective and timeous to construct.
- On-site erection of shuttering.
- Concrete slabs can be sealed to not soak in any medical waste if this becomes a problem.
- Low maintenance.
- Represents a solid structural material as is the primary structure of the facility - familiar association to most people.



## FACEBRICK

There is a variety of facebrick used in the area, the most common appearing to be the *Country Classic Travertine*, a red, semi-smooth facebrick. These are to be used on the primary structural side of the facility as a more solid infill for the building and forcing the design of the facility to be in accordance with brick courses throughout to create clean, neat openings and joints. The facebrick is to have a flush joint every 5th brick course for aesthetic and functional purposes.

Main advantages:

- This is a widely used material in the area (familiar).
- Corobrik produces large amounts of facebrick in the Pretoria area.
- Minimal labour intensity for installation.
- Economically viable - initial costs cheaper as no plaster or paint is required and maintenance is therefore also cheaper.
- Helps force a constant height of openings following brick coarse calculations.
- Environmental factors of material are favourable
- Cleanliness of product fine for outside, but would need to be plastered on inside to avoid dust collection.
- “Solid” material with minimal openings to express the strong, solid core of the facility.

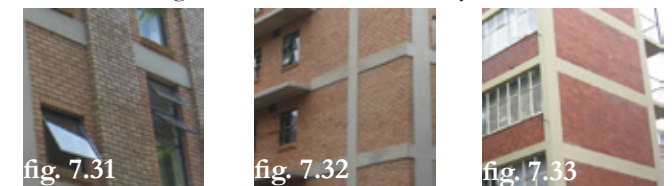


fig. 7.34 Diagram showing a plaster and paint wall construction  
 fig. 7.35-7.36 Photos of existing plaster and paint building construction in the area  
 fig. 7.37 Diagram showing how a cellular beam is made

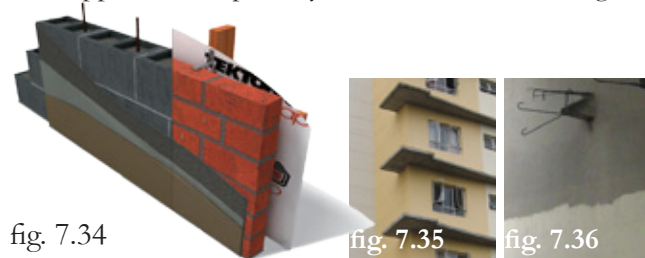
fig. 7.38 Photo of a laser cutter manufacturing cellular beams  
 fig. 7.39 Photo of cellular beam roof construction  
 fig. 7.40 Photos of cellular beam construction with services being reticulated through the cell openings

### PLASTER & PAINTED BRICKWORK

To create an architectural typology that would suit the area, plaster and paint was used to continue the language present in the area. Earthy colours will be used to create a warmer feel to the medical building rather than the use of clinical cold colours such as white.

Main advantages:

- Plaster and painted brickwork is widely used in the area in conjunction with concrete and facebrick.
- Easily available in a wide variety.
- Average labour intensity at construction, with maintenance only having to be carried out every 10 years
- Economically viable.
- Can create simple clean lines on the building walls, or patterns/textures can be created where wanted.
- Favourable environmental control factors.
- Clean and dust free finish for interior and exterior of the building.
- Variety in terms of colour throughout the facility can be created at any time with relative ease.
- Lighter paint colours can create reflective surfaces where natural light may be limited.
- Solid, yet smooth material to highlight the solid support of the primary structure of the building.



### STEEL CELLULAR BEAMS

Steel cellular beams are the modern version of the traditional 'castellated' beam which has resulted in a beam  $\pm 40-60\%$  deeper than the parent section and having a depth:length ratio of 1:25. Manufactured from steel i-beams, the final depth, cell diameter and cell spacings are flexible and is up to 2.5 times stronger than the parent section and is used to create efficient, large, unsupported spans in construction. Cellular floor beams are also used for their ability to integrate structure and services, minimizing overall construction height.

Main advantages:

- Steel would be a new unique material to the area.
- Easily available in Pretoria in various sizes (purpose made).
- Minimal labour intensity.
- On-site assembly and erection possible.
- Simple, clean connections allowed for.
- More sustainable product - less raw steel used to cover further distances.
- When painted with intumescent paint, the steel has a 120min fire rating.
- Lighter weight construction to highlight the reliant, light weight feel required in the secondary structure of the facility.
- Natural light can enter the building through the cells on the edge (sealed with glass).
- Economically viable - 12-20m clear spans can be built at the same depth and cost as short spans.
- Allowance for service integration - ducts/services can run through the cells of the cellular beam.

- More shallow overall floor depth and thus construction height.
- Allows for a more flexible layout as there are no intermediate column supports necessary.
- Aesthetic qualities unique to this product.
- A light weight construction is produced that will require less high tensile support (and primary support) to hang the structure.

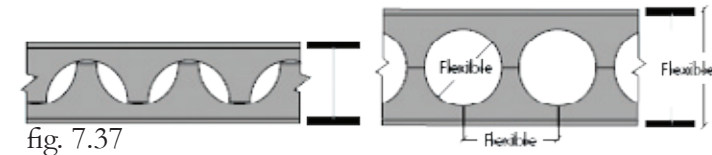


fig. 7.41 Diagram showing a cantilevered high tensile structure held up by its primary structure  
 fig. 7.42 Photo of a turn buckle which is used to connect the high tensile cable to the structure it supports or is supported by

### HIGH TENSILE STEEL CABLE

A 120mm diameter high tensile steel cable will be used on either side of the two 'hanging arms' where the wards are housed within the facility (size and number confirmed by Dudley deKlerk. These cables will be fixed on one end by a steel turn buckle attached to the deepest cellular beam (850mm deep), and on the other side to the concrete column that will distribute the load of the overall structure. During construction, the 850mm deep cellular beam will be propped up by supports until the high tensile cable can support the beam. From here, steel H-columns will be erected above carrying the load from the storeys above to the main cellular beam and then into the high tensile cable and finally to the solid concrete structure.

Main advantages:

- Steel would be a new unique material to the area.
- Easily available material and fixings.
- Medium labour intensity of initial erection.
- On-site assembly and erection possible.
- Simple clean connections via use of turn buckles.
- Will allow portions of the building to 'float' rather than read as objects in compression as the primary structure of the building reads - allows for a contrasting architectural language to be developed within the building.

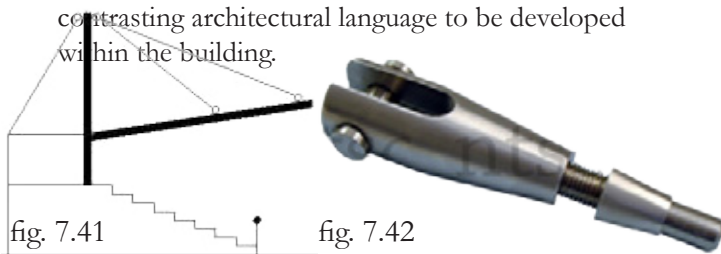


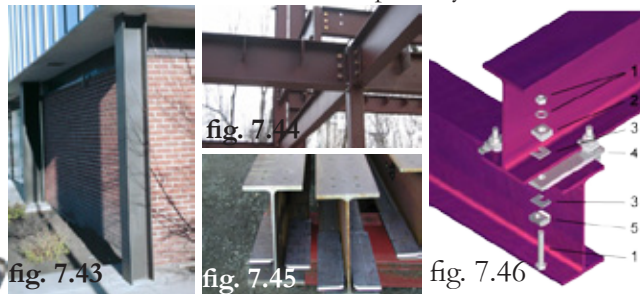
fig. 7.43 Photo of steel H-columns in use  
 fig. 7.44-7.45 Photos of steel I-beam construction  
 fig. 7.46 Diagram showing the connection of two steel I-beams

### STEEL I-BEAMS AND H-COLUMNS

Steel I-beams work well as horizontal support structures and are therefore being utilized as the main flooring structural material (a variety of 100x55mm and 120x64mm sections). Steel H-sections work well in compression and are therefore being used as the columns (200x200mm sections) between the floors where cellular beams are being used to transfer the loads from above to the main cellular beam structure below (which then gets transferred to the primary structure of the building through the high tensile cables).

Main advantages:

- Steel would be a new unique material to the area.
- Easily available material and fixing methods.
- Minimal labour intensity at construction.
- On-site assembly and erection possible.
- Minimal machinery required for erection.
- Mechanical joints possible.
- Easy maintenance.
- This light weight structural infill allows this portion of the building to read as a contrasting architectural language of light weight construction versus the heavier construction of the primary structure.



### GLAZING

Large amounts of surfaces are glazed in the secondary structure portion of the building, it was therefore important to choose a glass that would allow the necessary light to enter the facility, while still allowing for a comfortable environment within the building. It should be noted that the majority of this glazing on the eastern and northern sides have also been protected by solar shading devices. Smartglass Coolvue has been used in the facility placed in powder coated aluminium frames. This glass has a 5,8 (W/m<sup>2</sup>).k U value and a 35 ISO noise control rating.

Main advantages:

- Smartglass is readily available in Pretoria.
- On-site assembly and erection of parts is possible.
- With a 5,8 (W/m<sup>2</sup>).k U value, this glass can control the climate inside the building to some degree.
- A 35 ISO sound rating allows minimal sound to travel to the balconies as well as between floors.
- The appropriate amount of light will be allowed into the facility to aid the healing process.
- Existing trees/vegetation and new solar shading devices will allow the required amount of light in the building, but still create a comfortable environment within the building.
- All glass panes are accessible from balconies, making maintenance easy.

fig. 7.47 Diagram of GKD mesh with supports  
 fig. 7.48 Diagram of Nutec drywall system  
 fig. 7.49 Photo of a building that was constructed with the Nutec drywall system  
 fig. 7.50 Photo of possible planted screens to utilise

fig. 7.51 Sketch indicating the use of solid planted walls  
 fig. 7.52 Photo of possible planted screens to be utilised

**GKD MESH**

Sunscreens are designed on the eastern side of the facility to shelter the large glazed facades of the wards. An AISI Type 316 stainless steel GKD metal fabric in the Ombre range has been used. The ends of the mesh are folded and fixed between a steel flat bar and a steel angle bar that is then fixed to a steel support frame which is attached to the structure of the building.

Main advantages:

- Steel mesh would be a new unique material to the area.
- Available with a 6 week waiting period.
- On-site assembly and erection possible.
- New skills in workmanship are introduced to the area.
- Economically viable alternative to standard vertical/horizontal sun louvres.
- The mesh will stop direct sunlight from entering the building but will still allow light through.
- Will not only provide shading for the facility but also a visual barrier to screen the patients from the public.

**NUTEC DRYWALL SYSTEM**

This lightweight alternative to brickwork will be used in the secondary structure area of the building. Rhinoboard drywalling is used for interior cladding while Nutec board is used for external cladding for environmental purposes. Both are to be sanded and painted as desired. Thermal and sound insulation will be applied to all drywalls for privacy and environmental control purposes.

Main advantages:

- This material is a lighter alternative to brickwork, allowing the structure that supports it to also be lighter and therefore less expensive.
- Readily available in Pretoria.
- Minimal labour intensity and ease of installation - also, less wet works within the facility making construction time faster.
- On-site assembly and erection.
- With insulation, this drywall system provides the necessary insulation for the facility.
- Clean smooth finish, collecting no dust inside.
- Can easily be removed and a new internal layout can be designed whenever required with relative ease.

**VEGETATION**

Due to the fact that the existing vegetation around the site is one of the main reasons for wanting to develop in the area, it was important that the vegetation not only be preserved, but that it also be enhanced through the use of plants inside the building and as shading devices. The most noticeable are the planted shading devices on the western and northern facades of the facility as inspired by fig. 7.50 - fig. 7.52.

Main advantages:

- Use of vegetation in the design of the building emphasizes the reasons that the particular site was chosen.
- A variety of creepers/plants can be used whether to create shade all year round or whether only to create shade in summer and let sun through in winter.
- The steel supports require little labour and allows for on-site assembly.
- Economically viable alternative to traditional sun louvres.
- Will not only provide shade but also cool the area around the windows they shade.
- Access to vegetation is an important healing tool.



fig. 7.47



fig. 7.48



fig. 7.49



fig. 7.50



fig. 7.51



fig. 7.52

fig. 7.53-7.55 Photos of various vertical and horizontal sun  
louvers

fig. 7.56 Fibre optic daylight light fitting

fig. 7.57 Interconnecting wooden floor boards

## SUN LOUVRES

On the western and eastern sides of the building, vertical sun louvers are used where necessary to create shaded areas over large glazed portions of the building. On the northern facade, horizontal sun louvers are used to provide the same shade. There is no need for the southern facade to be shaded with sun louvers as there is no direct sunlight threat. This indirect light would rather be a good source of dispersed light into the building.

Main advantages:

- Sun louvers would add another layer to the building, one of protection against natural elements.
- The sun louvers specified are all custom made from steel/aluminium sections and can be assembled on site with relative ease.
- Custom made solar shaders of sheet metal are relatively cheaper than standard solar shading devices as produced by companies like Hunter Douglas.
- Shading will be provided for where necessary in the correct way allowing the desired amount of sunlight to enter the building to aid the healing process.
- Not too many solar shading devices are required due to the large amount of shade provided by the large trees that are on the site.

## FIBRE OPTIC DAYLIGHTS

Fibre optic daylights take natural daylight to darker portions of a building and can be used as an alternative to normal electric light fittings. Optical lenses are placed on exterior-mounted solar panels on the building facade that capture sunlight and channel it through thin, flexible, fiber-optic cables to luminaires placed in interior rooms, recreating the feeling & experience of sunlight. This has been used for the lower atrium spaces to create the effect that daylight is in fact being accessed through the atrium (where it is not possible for daylight to reach).

Main advantages:

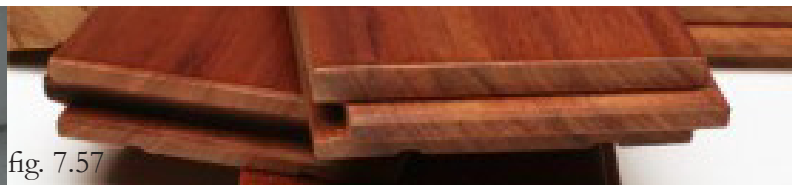
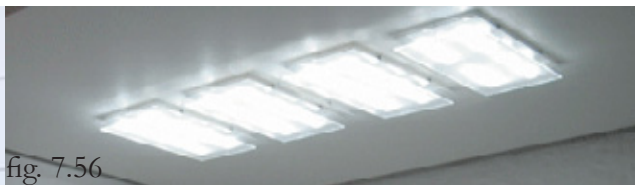
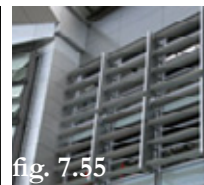
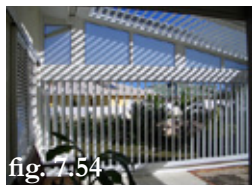
- Available in South Africa.
- Harmful UV rays are not transmitted through the fibre optic cables.
- There are a variety of luminaires available.
- Can be turned to normal electrical light when the sun is not shining/energy stored.
- Can lower electricity use by 20-25%.
- Lower the greenhouse gas emission from a building by 10-15%.
- Can allow the effect of daylight within a building where it is not always possible to get direct sunlight.

## WOODEN FLOORING

The main flooring type (the others being vinyl, carpet and tiles) of the facility is wooden flooring. Wooden flooring is good to use in rehab facilities as it is not as harsh on the bodies that are trying to heal compared to other floor finishes. The wooden flooring finds itself at the top of a layered floor system. The steel cellular beams act as the main supports for the entire system with ceiling boards and insulation placed between the cellular beams for practical reasons such as sound insulation. On top of the cellular beams are 100x55mm steel I-beam floor joists that then support a 20mm thick plywood sub-base on which the wooden floor is placed. The plywood adds extra support as well as extra sound and thermal insulation between the floors.

Main advantages:

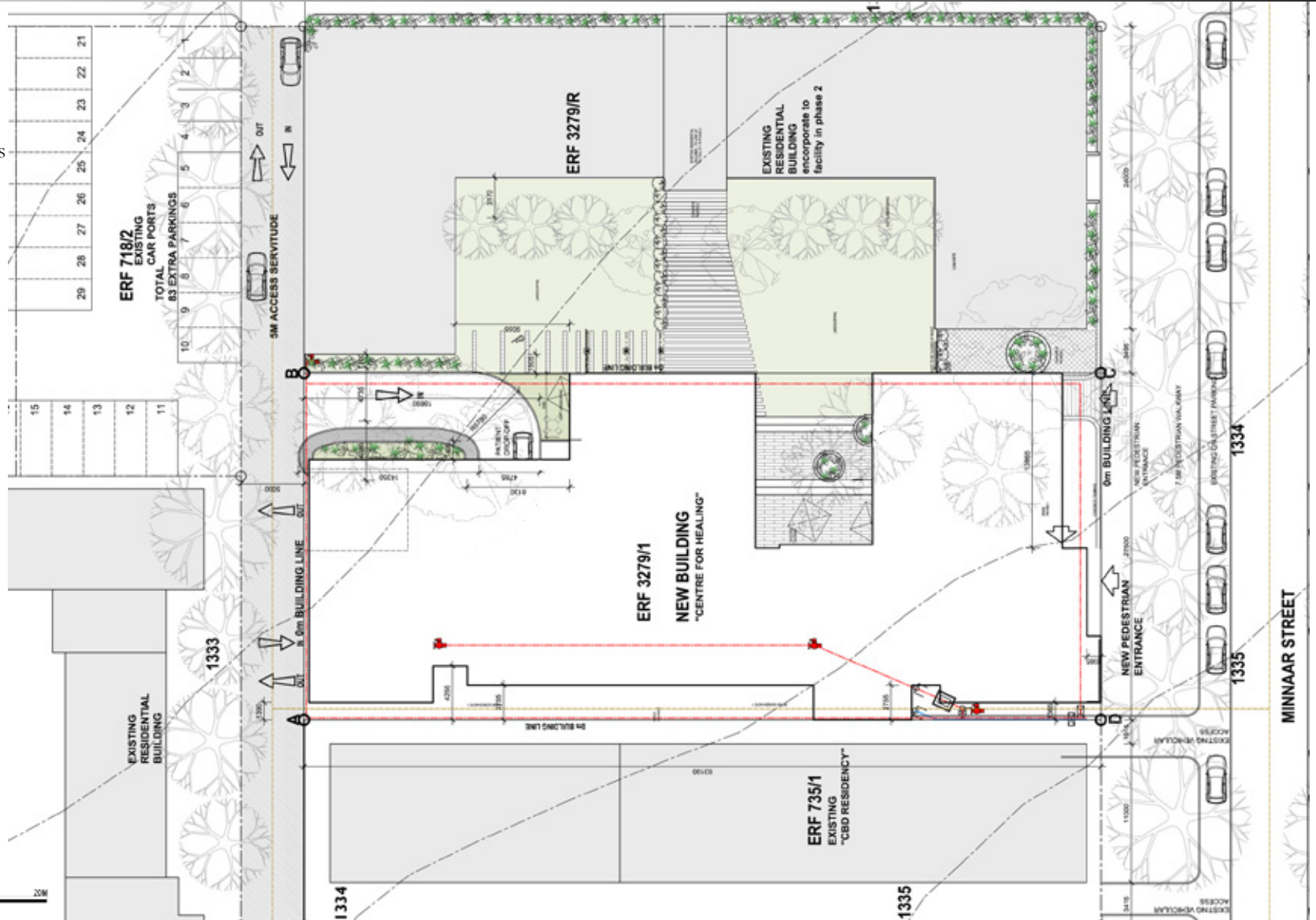
- Wood has a better quality feel to it for rehab patients.
- Readily available (treated).
- An engineered board provides ample support and allows the steel I-beams to be spaced further apart, therefore using less steel members.
- Provides a warmer feel to a ward in the facility and is more hygienic than carpets.
- The engineered board provides extra insulation, and with the insulation in the ceiling void, even more.



# TECHNICAL DRAWINGS

## TECHNOLOGY

With the implementation of the above mentioned concepts, systems and materials in place, the following plans, elevations, sections and details resulted showing how the various influences and ideas converged to create the desired results.



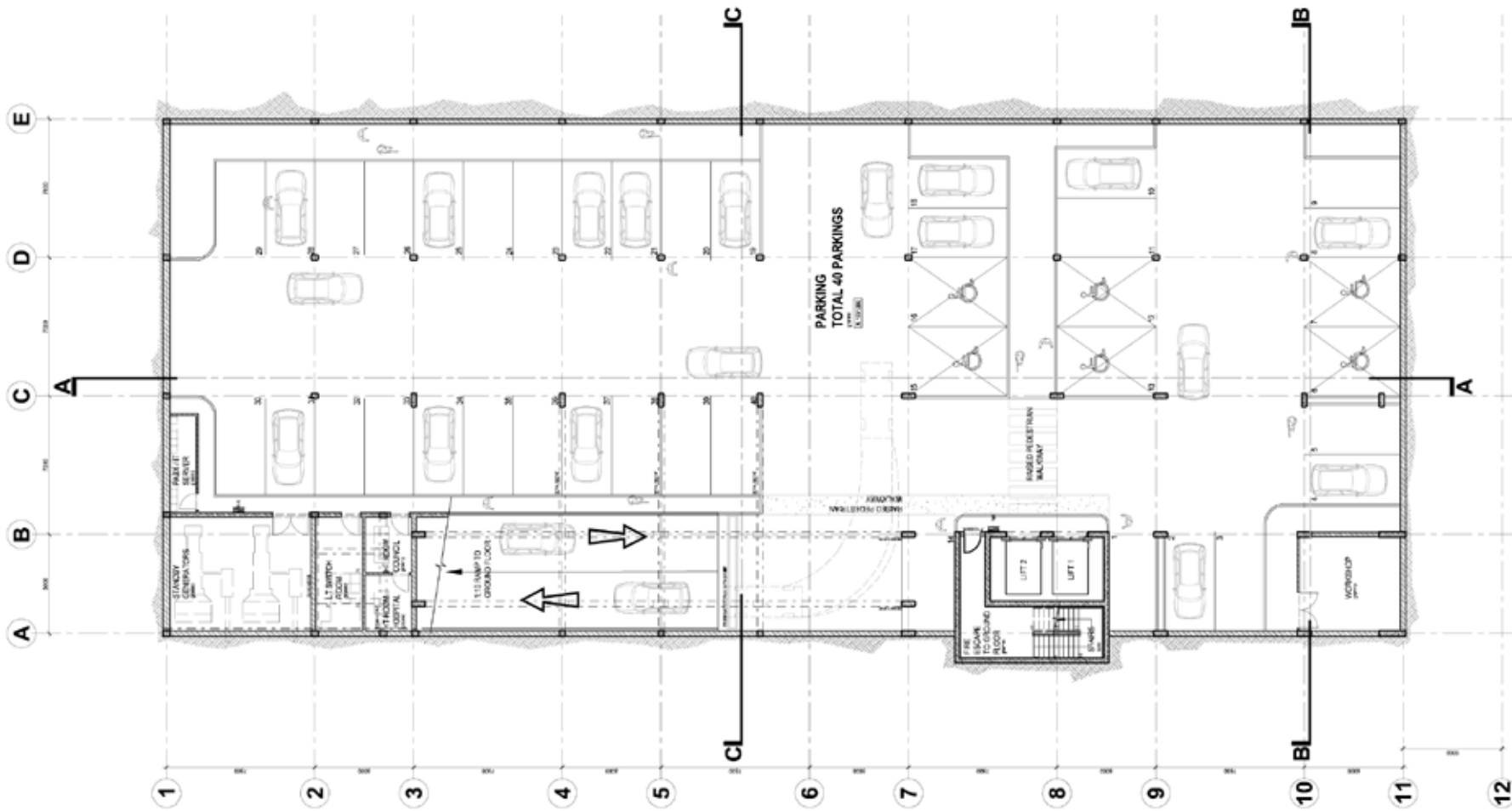
SITE PLAN

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# BASEMENT PLAN

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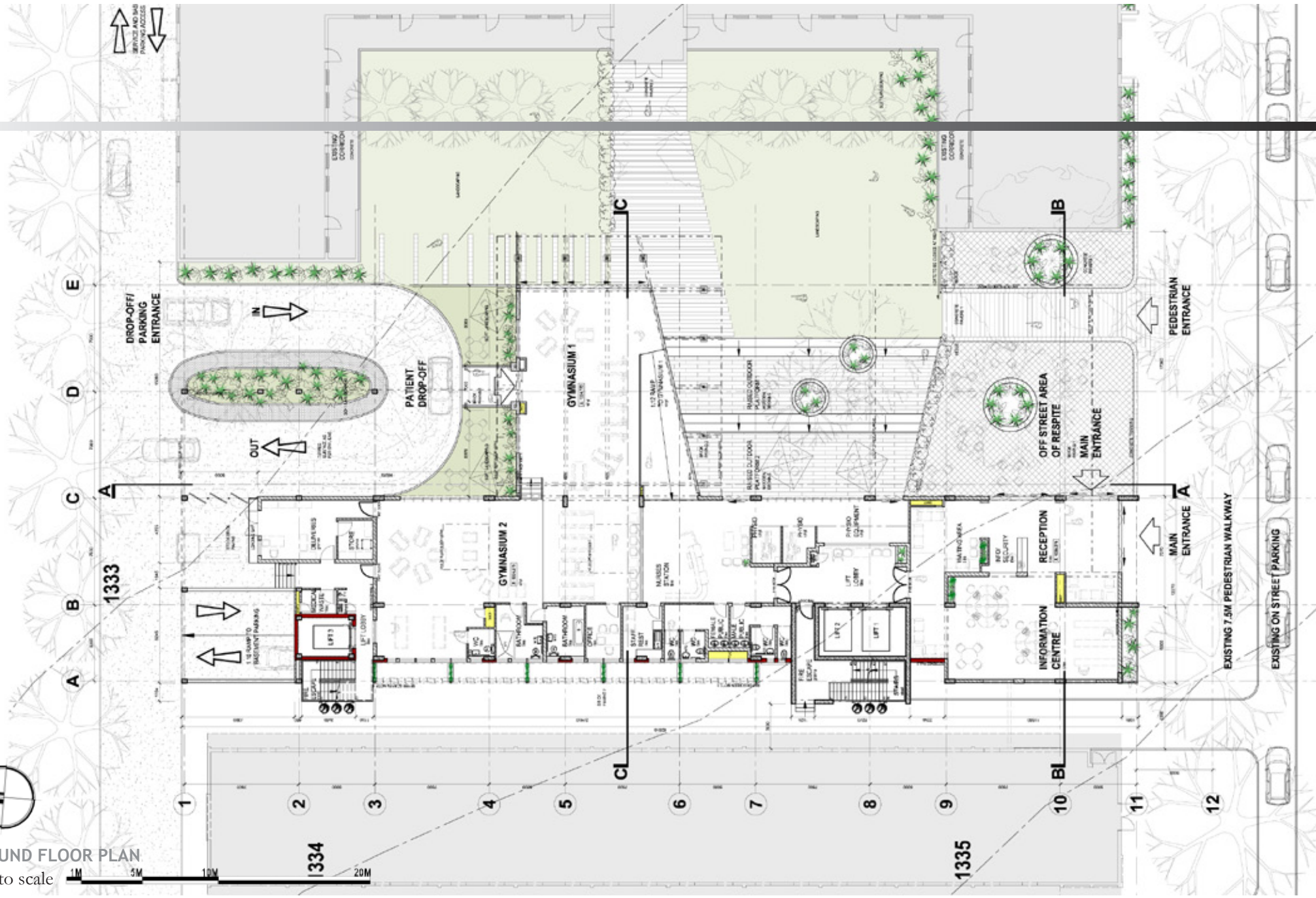






# GROUND FLOOR PLAN

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FIRST FLOOR PLAN

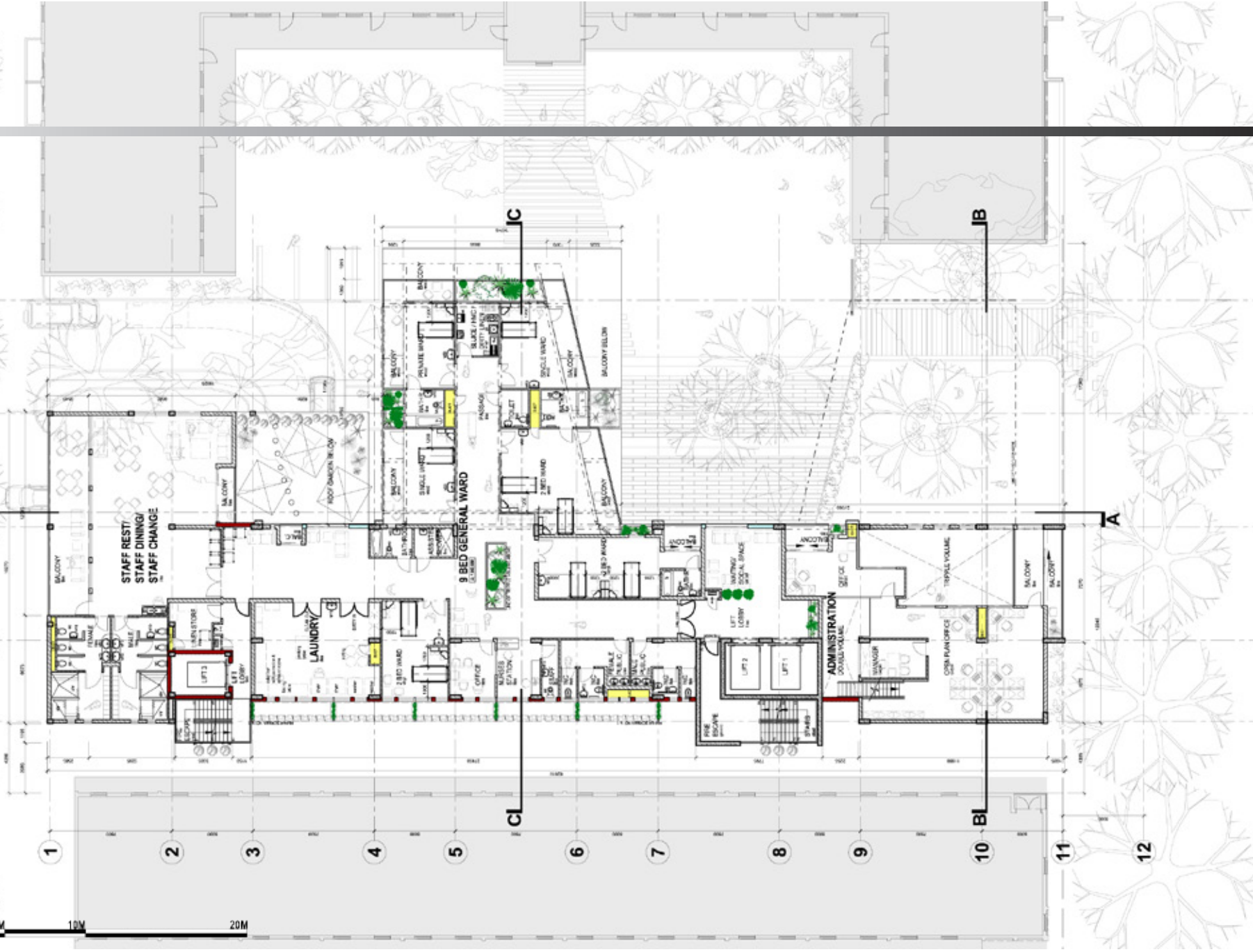
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# SECOND FLOOR PLAN

Not to scale 1M 5M 10M 20M





THIRD FLOOR PLAN

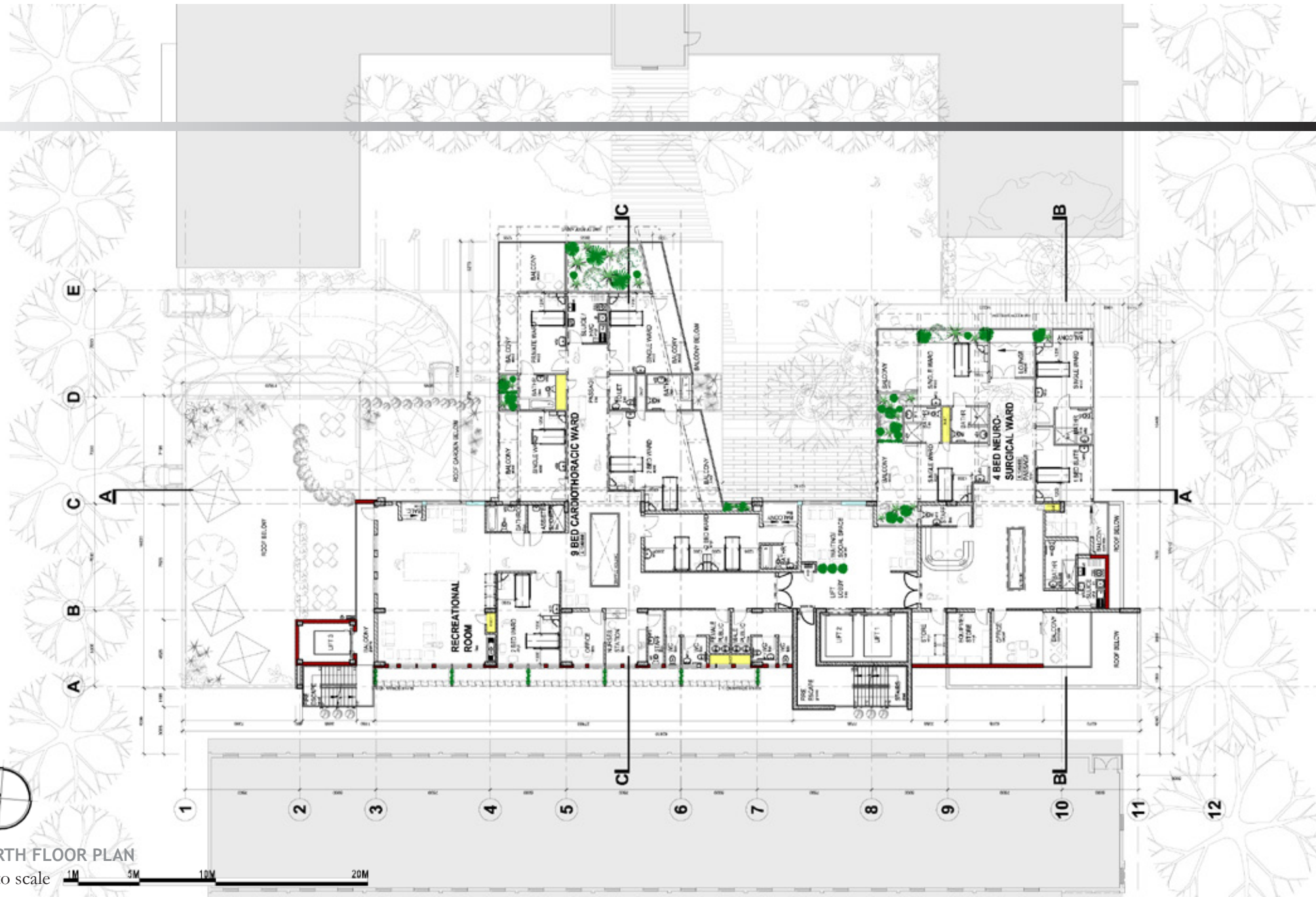
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# FOURTH FLOOR PLAN

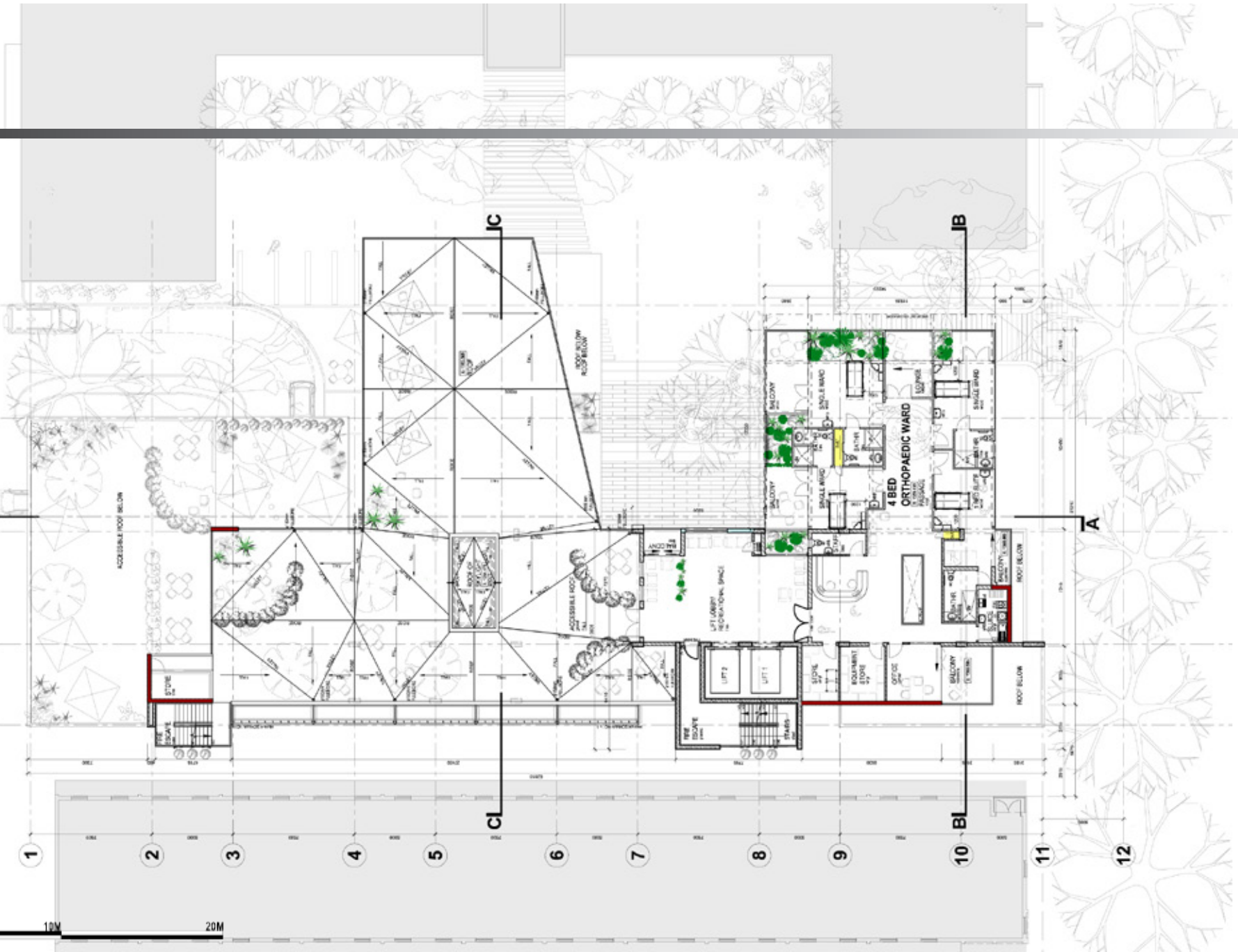
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# FIFTH FLOOR PLAN

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### SIXTH FLOOR PLAN

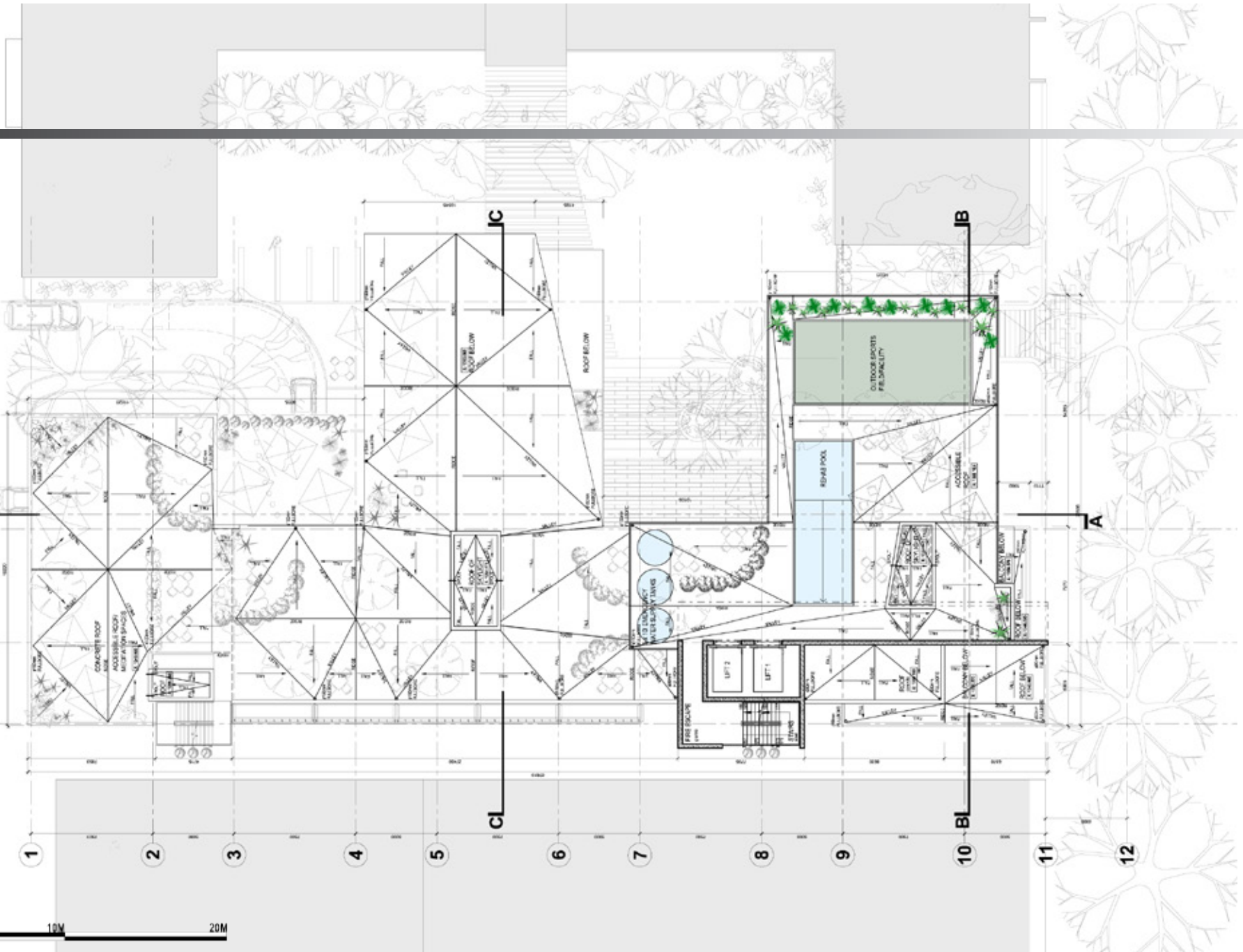
Not to scale 1M 3M 12M 20M



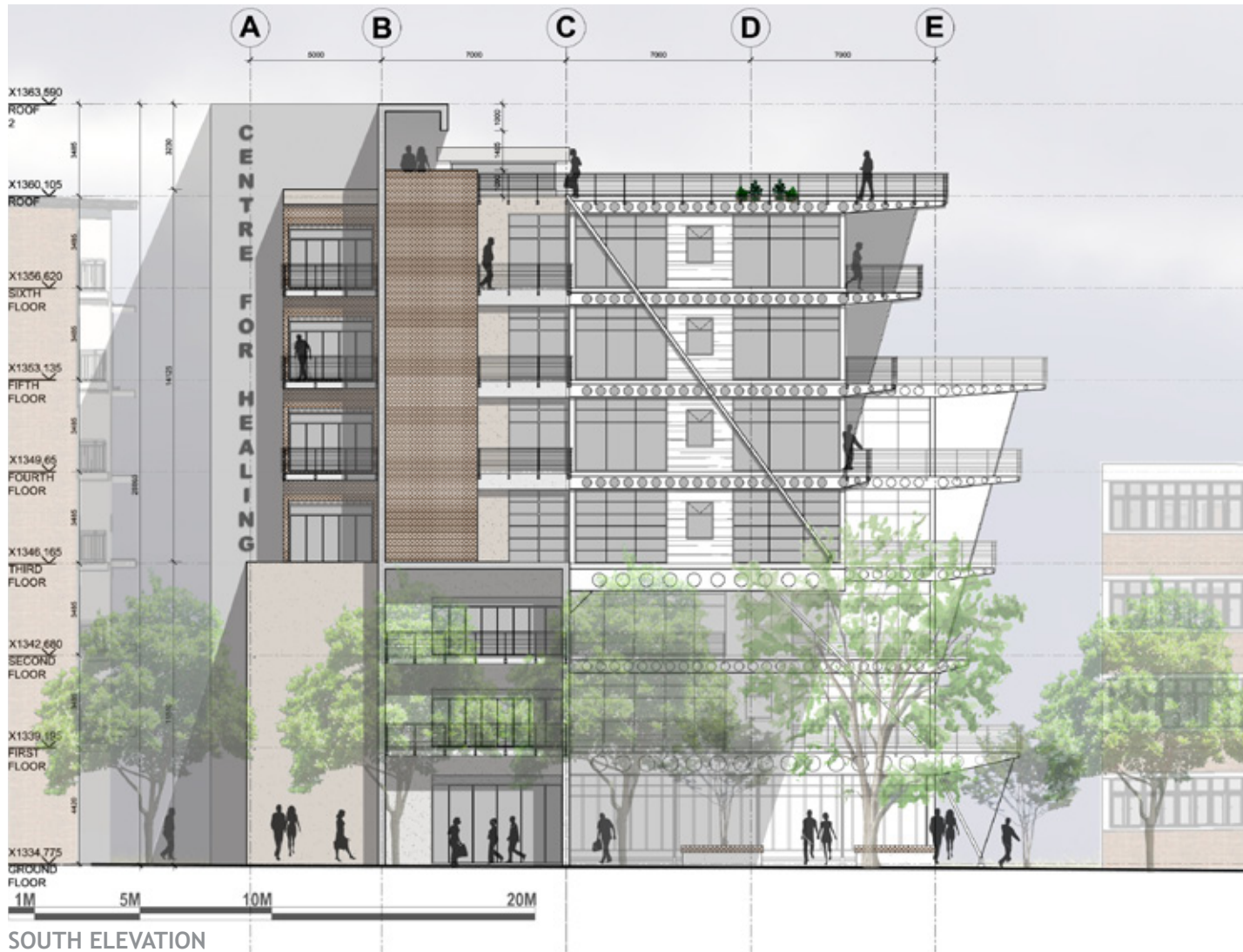


# ROOF FLOOR PLAN

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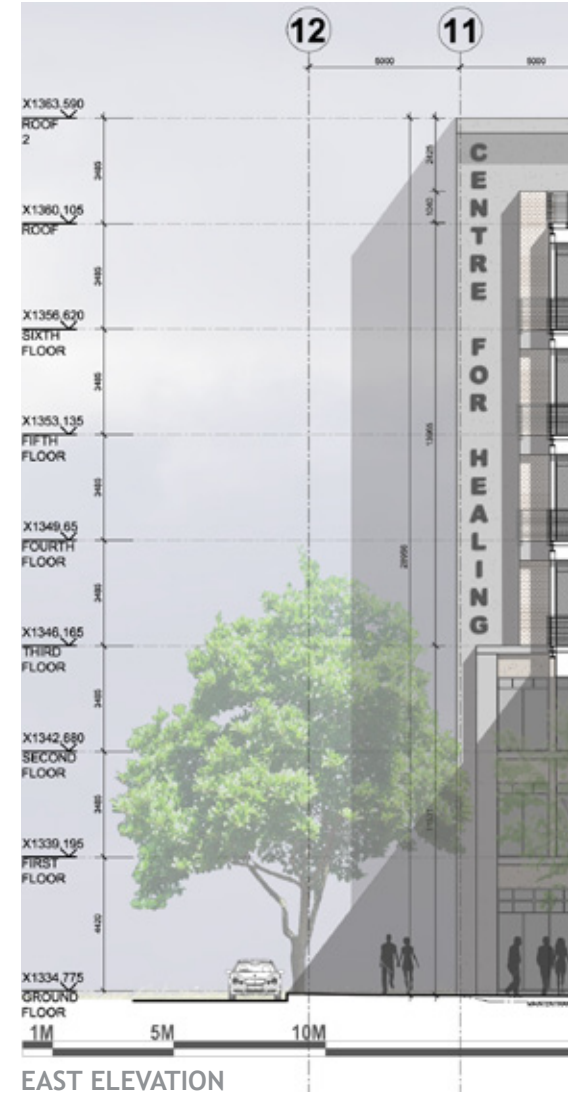






SOUTH ELEVATION

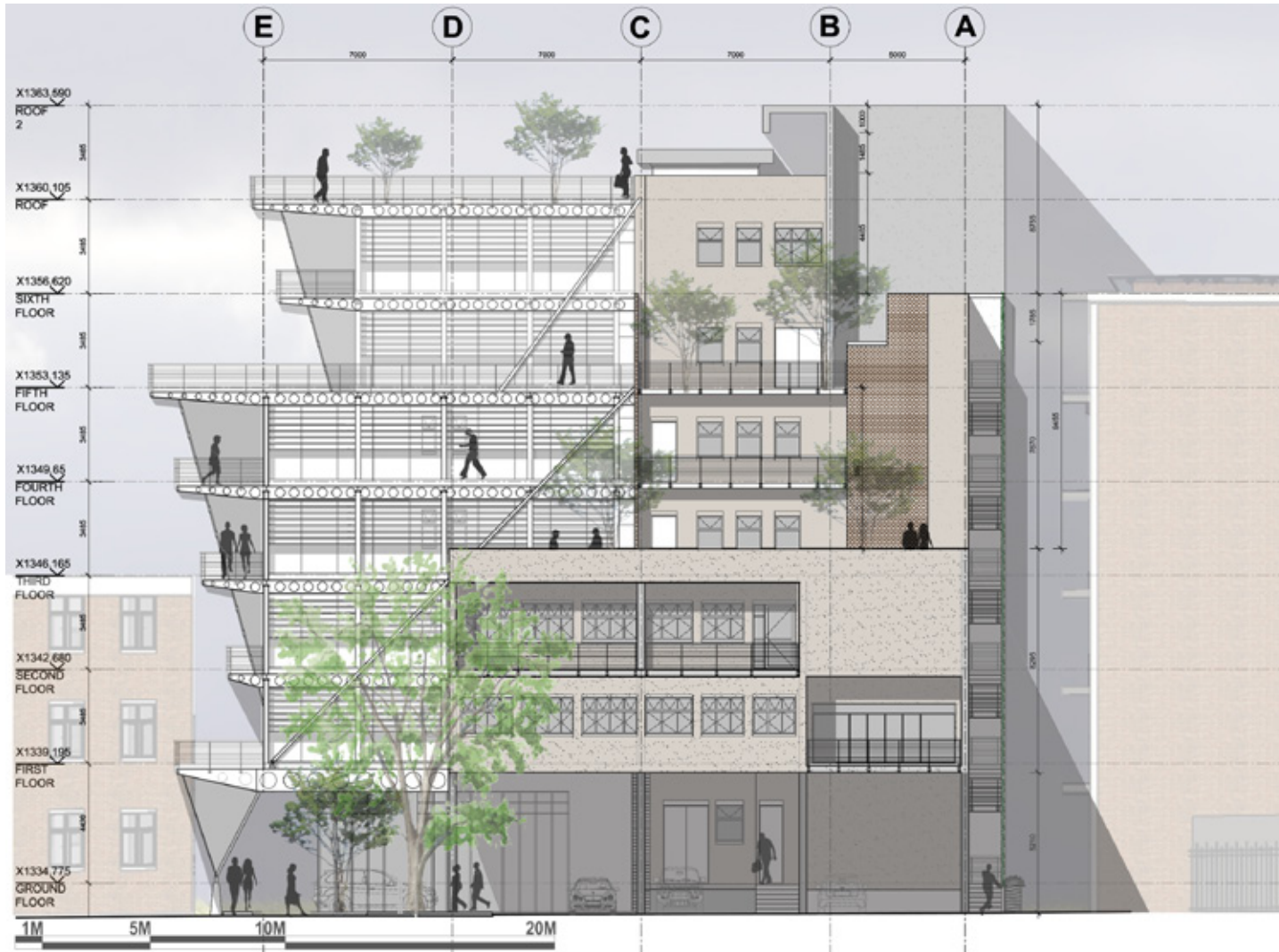
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EAST ELEVATION

Not to scale





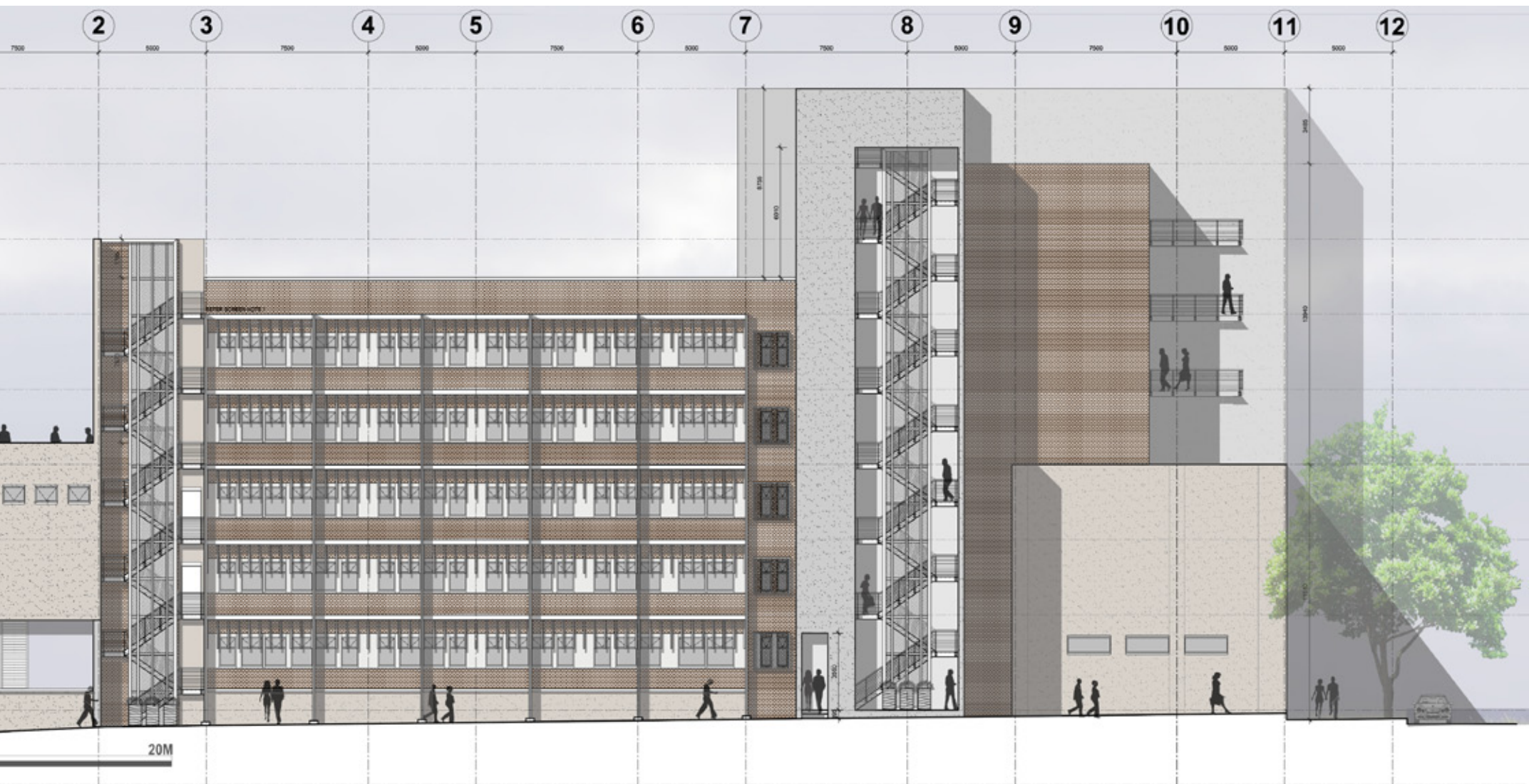
NORTH ELEVATION

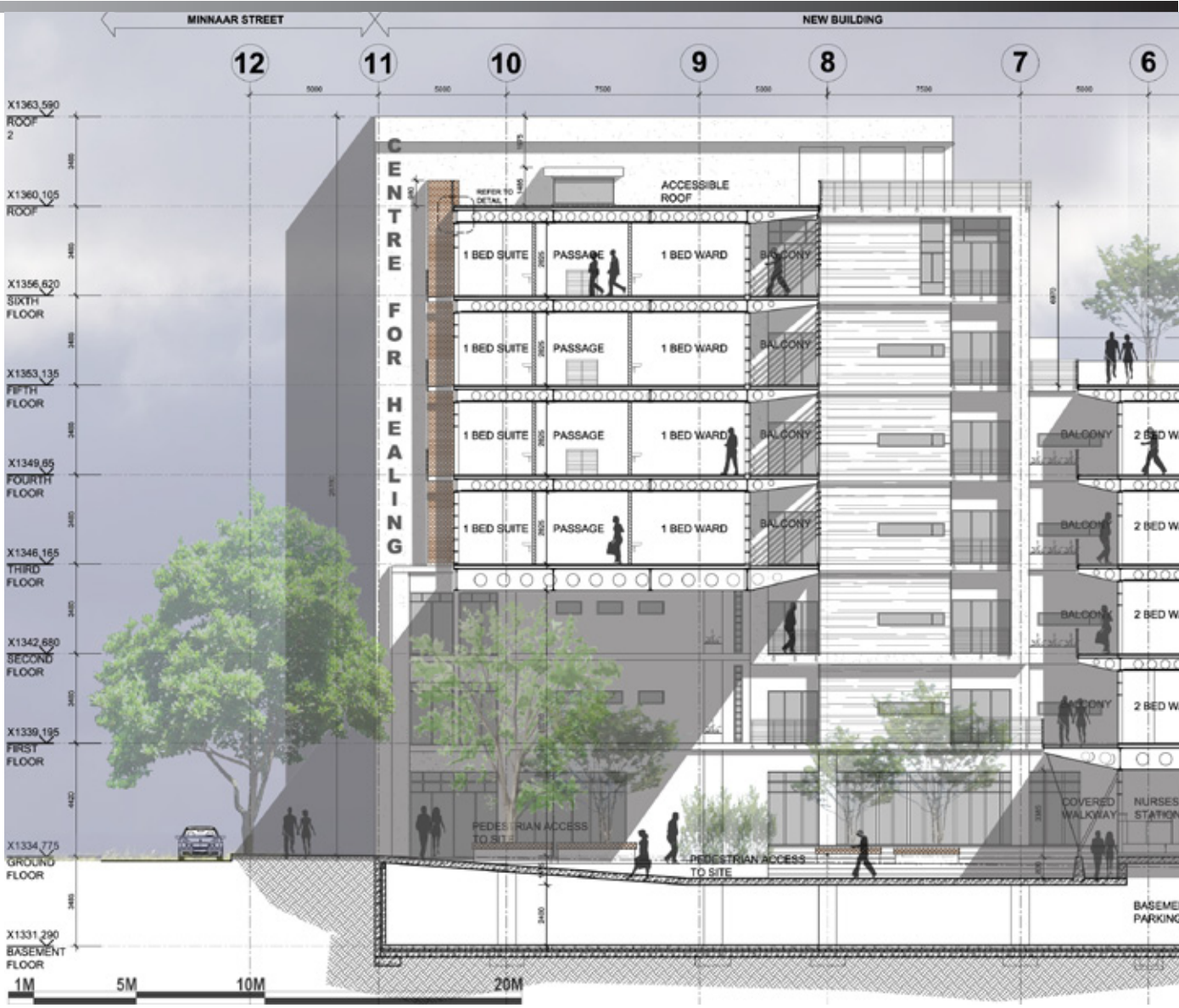
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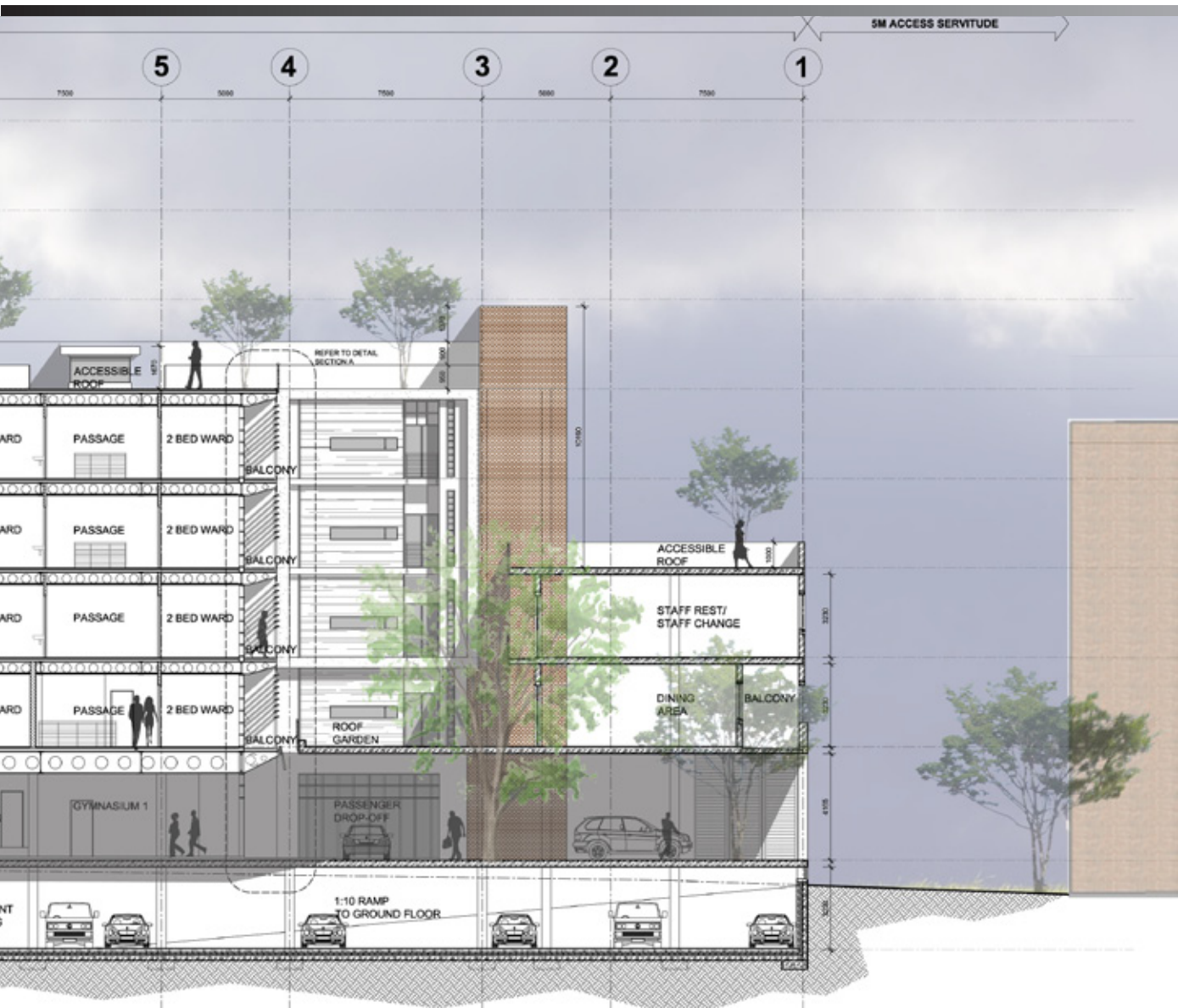
WEST ELEVATION

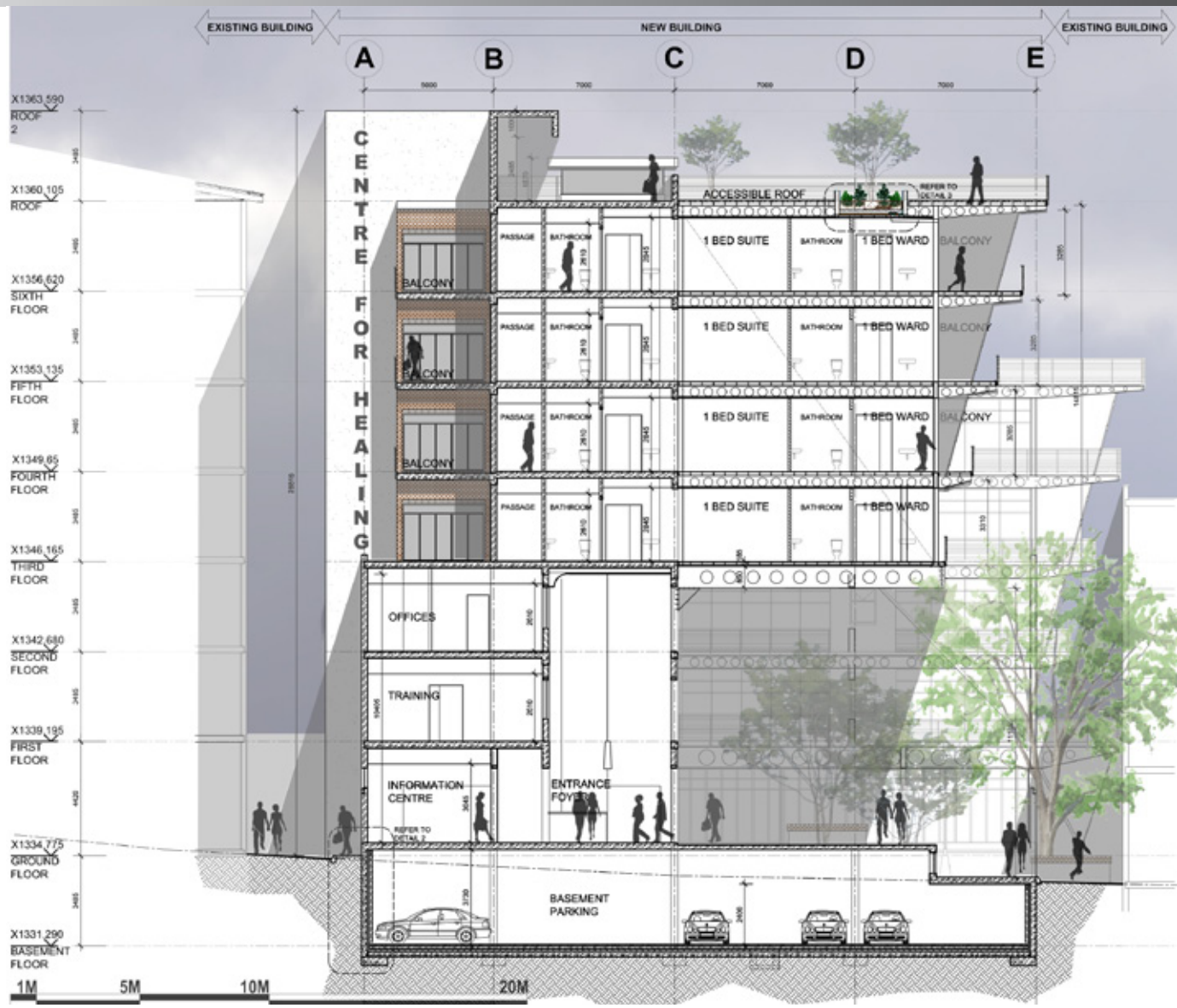
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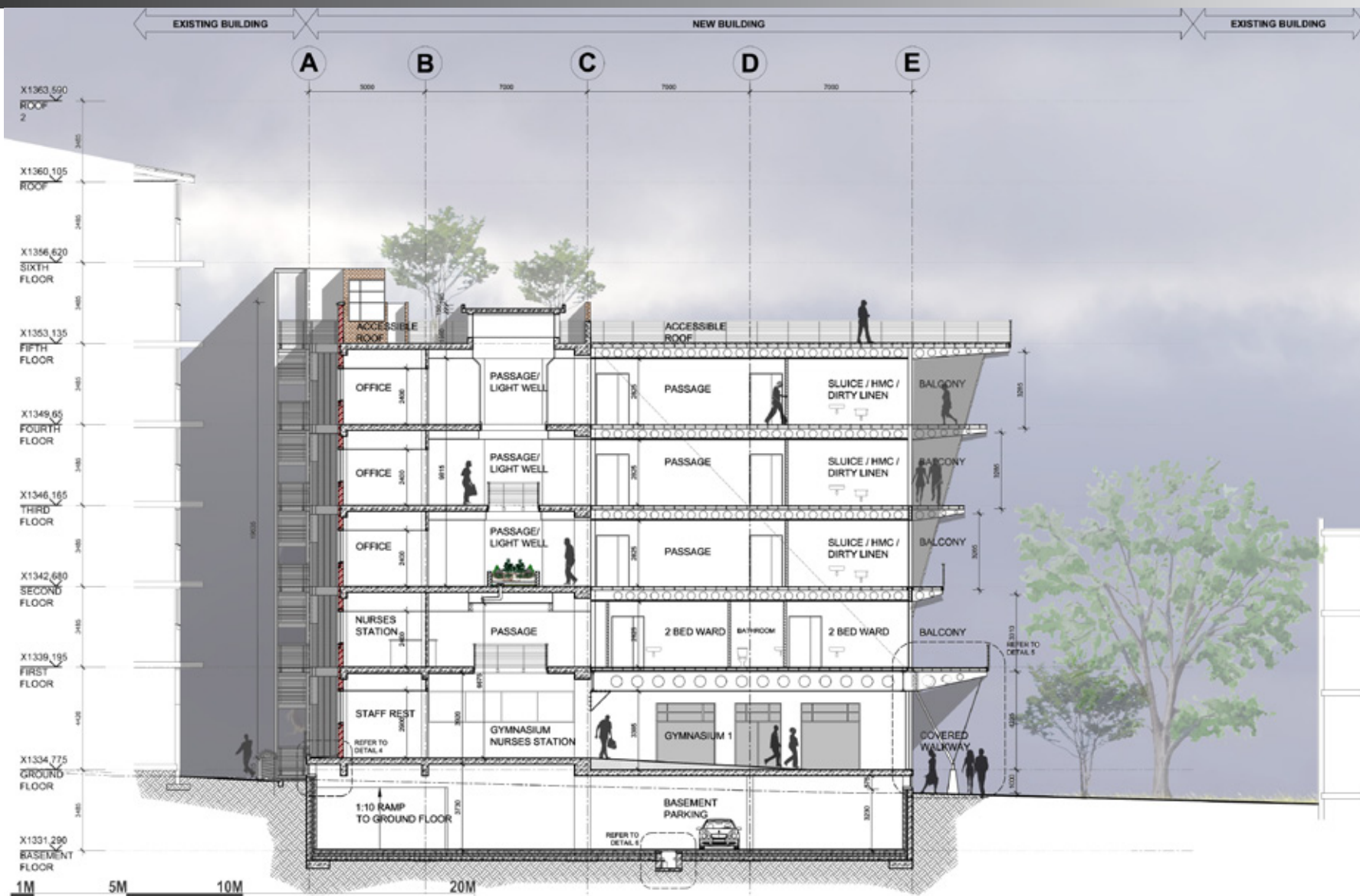


SECTION A-A  
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SECTION B-B  
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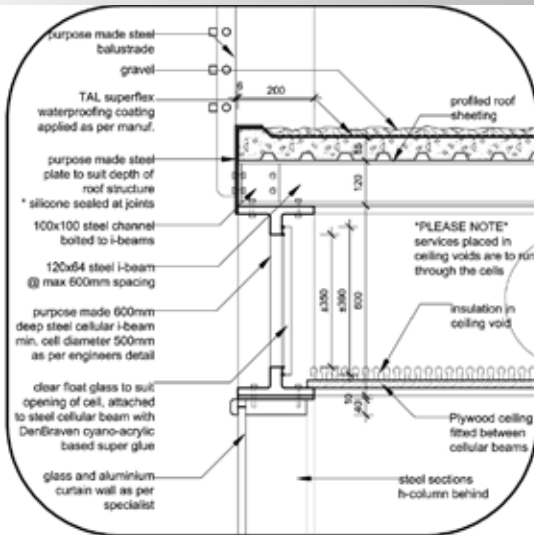


SECTION C-C  
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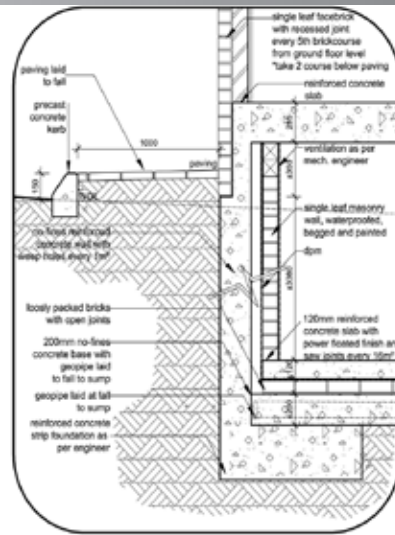




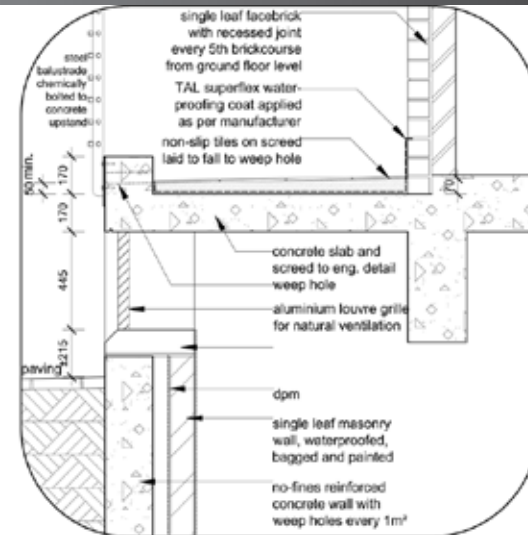




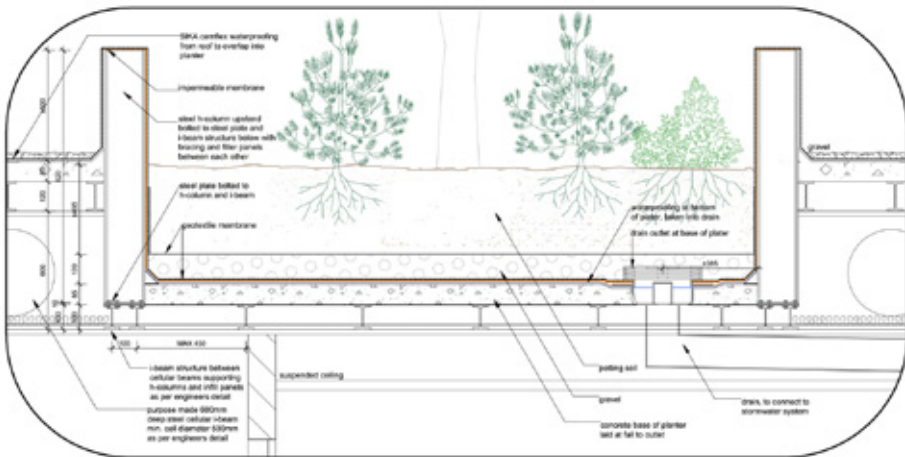
DETAIL 1  
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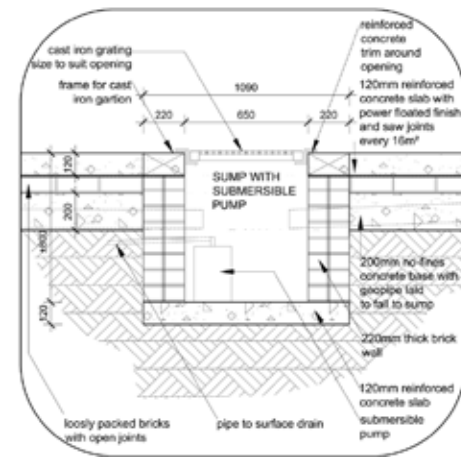
DETAIL 2  
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DETAIL 4  
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DETAIL 3  
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DETAIL 6  
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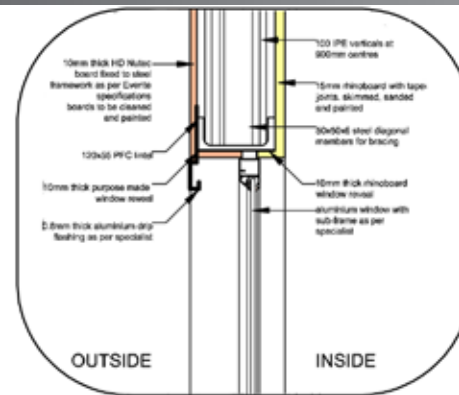
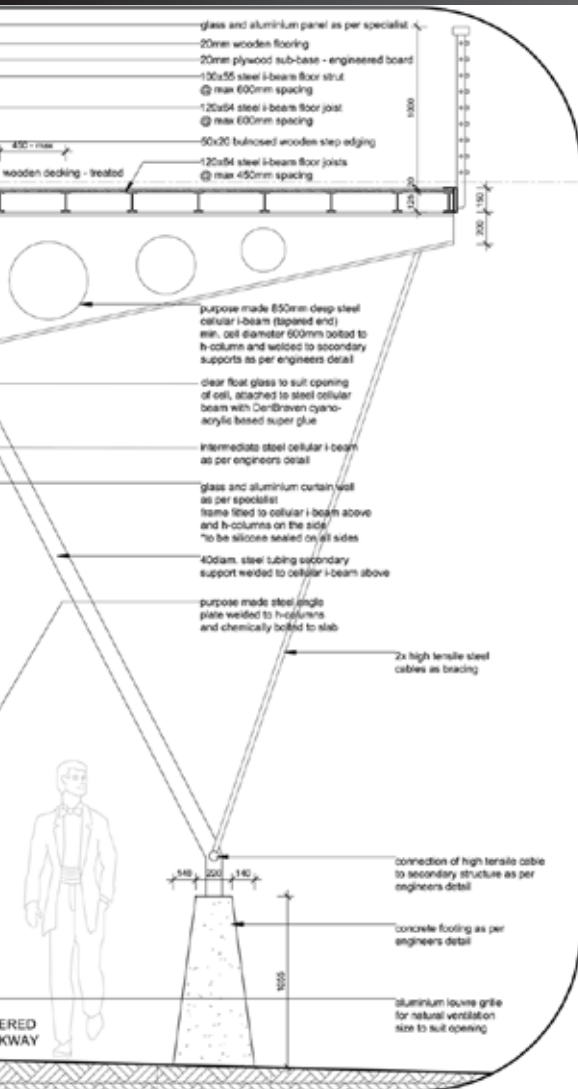
DETAIL 5  
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# CONCLUSION

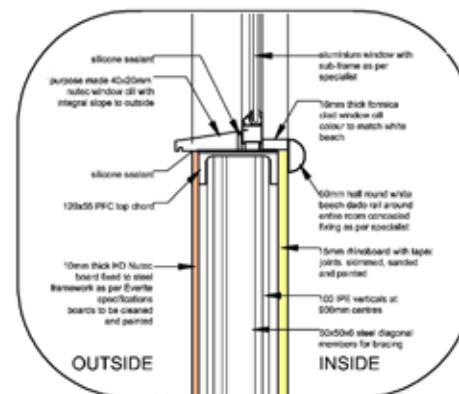
## CONCLUSION

With the implementation of the above mentioned concepts, systems and materials in place, a technical resolution has been created that shows and highlights how the various influences and ideas throughout the dissertation have converged to create the desired results.

By viewing these various items in different ways, the three dimensional technical aspects of the entire building are explored and expressed whereby the reader can engage fully with the building and its make up and understand how the combination of new and conventional construction methods are applied to highlight the concept intentions of the dissertation as well as used to create a dynamic play on spaces.



TYPICAL DETAIL A  
Nutec drywall lintol  
Not to scale



TYPICAL DETAIL B  
Nutec drywall window cill  
Not to scale

# CHAPTER

# 8



*I just refer to myself as being Spirit, Mind and Body like everybody else and working toward the mastery of my natural divinity and the healing of my emotional mind.*  
(Orr, 1998)

# CONCLUSION

## CONCLUSION

The aim of this study was to investigate the design possibilities of creating a therapeutic environment for the long-term care of patients after they have been treated at the Louis Pasteur Private Hospital.

The design of a therapeutic environment is inherently a highly complex exercise. It is a process through which the environment, peoples' mind sets, patients' wellbeing and the aims, goals and organizational structure of the specific facility come together to form an environment that meets the requirements and desires of all the users. Therefore, care has been taken to keep the focus on the therapeutic nature of the environment throughout the design process highlighted through the choice of theories explored, forming a solid architectural concept of creating *layers of healing and growth for recovery within a therapeutic city block*. This concept informed the decision-making processes in the design of the facility in terms of programme, function, aesthetics and technical resolutions, while attempting to create a precedent for the way in which such facilities can be designed in the future as well as the way in which people would regard such medical facilities as an increasingly desired and necessary facet of medical care programmes in South Africa.

Such an environment should be meaningful to the patients, visitors as well as the medical personnel, allowing the healing, spatial qualities of the facility to be experienced through different individual users and by all the five senses of the human body; the body being the

central core from which all healing occurs.

Choosing a site with existing therapeutic qualities was necessary to create a sheltered environment where patients can heal and recover.

*Recovery is not a result, it is a process through layers of human healing and growth (Burney, 1995)*

The building can be regarded as the host or platform for the different stages of healing that occur in patients in a quantitative and qualitative meaningful manner. Not all patients are similar as they are all in different levels of the healing process and they should therefore not all be housed in the same sterile way. The architecture should therefore allow for these differences in the healing process.

Such a facility should in its structure, design and management create support (as columns may support a building) and protection for the patients. A multi-faceted/layered result should therefore be provided for, highlighting the patients' journey to recovery and control, mediated by the architecture and its spatial qualities.

At first, a patient is fragile and intense treatment, stability and support need to be provided by healthcare professionals. As a patient recovers, the intensity of necessary support decreases until the patient only needs minimal support and guidance. Finally, the patient is discharged from the facility into the comfort of home

care.

As this process of recovery progresses, so the need for intense support from the staff lessens. However, less intensive support does not mean a reduced level of quality in the physical or psychological environment that the facility provides.

The following principles have been highlighted and utilized as design tools throughout this dissertation to ensure the quality of the physical surroundings are not compromised:

- Consider the existing urban setting.
- Develop pedestrian friendly sidewalks and environments within the city.
- Provide active street edges and 24 hour observation on the street for safety.
- Design a public building that still incorporates the privacy needs of patients.
- Incorporate and enhance any existing therapeutic qualities of the surroundings.
- Create a visual connection between the facility and Burgers Park.
- Design a building that adds another layer to the history and rich environment surrounding it.
- Climatic and geographic factors need to be considered and incorporated in the design process.
- The architecture of this facility should articulate its identity within its specific context.
- Make all individuals feel welcome in the facility and not just a destination for patients.
- Relate the technological aesthetic adopted to the

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ideas and intentions set out.

With the implementation of the above mentioned principles and intentions, a final solution in the form of a new mind set and architecture has been created through this dissertation. By viewing these principles and intentions in a variety of ways, the three dimensional conceptual, design and technical aspects of the entire facility were explored and expressed in such a way that persons can engage fully with the building, with its dynamic play on spaces. It is believed that by doing this, an environment has been created that aids the healing of patients at the facility, as well as becoming a safe haven and social space for both patients and the general public to interact.

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*Healing yourself is connected with healing others*  
(Ono, 2004)



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# APPENDIX

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*Healing may not be so much about getting better, as about letting go of everything that isn't you - all of the expectations, all of the beliefs - and becoming who you are.*  
(Remen, 2000)

# APPENDIX 1

APPENDIX 1 - SOUTHERN PRECINCT SWOT ANALYSIS					
STUDY FIELD	STRENGTH	WEAKNESS	OPPORTUNITY	THREAT	FRAMEWORK APPLIC.
PHYSICAL CONTEXT	<ul style="list-style-type: none"> <li>•High density residential stock</li> <li>•Easy access to the city &amp; other public/private transport routes to other areas (eg. JHB)</li> <li>•Central to Tshwane area</li> <li>•Tourist attractions</li> <li>•City boundaries are contained by the mountains</li> </ul>	<ul style="list-style-type: none"> <li>•Lack of activity on ground floor levels</li> <li>•Buildings do not respond to the sidewalks and activities</li> <li>•No cross programming</li> <li>•Many dilapidated buildings</li> <li>•Semi-private open spaces in need of attention</li> <li>•Clay in area makes construction expensive</li> </ul>	<ul style="list-style-type: none"> <li>•We can increase the density of sites by building higher</li> <li>•Increase the number of residential buildings</li> <li>•Restore buildings &amp; bring life to them</li> <li>•Adaptive re-use of ground floors</li> <li>•Create a commercial 'hub' within the city</li> </ul>	<ul style="list-style-type: none"> <li>•Buy in from the social and private sector is minimal, every one wants to move east of the CBD</li> </ul>	<ul style="list-style-type: none"> <li>•Proposing higher buildings</li> <li>•Increased residential zoning</li> <li>•Restoration and re-use of industrial buildings to the west</li> <li>•Increase of commercial activities on ground floor level</li> </ul>
SOCIAL CONTEXT	<ul style="list-style-type: none"> <li>•Social &amp; cultural diversity</li> <li>•Variety of income levels</li> <li>•Tourists in the area</li> <li>•Museum mall</li> </ul>	<ul style="list-style-type: none"> <li>•The social diversity is not utilized to its full potential</li> <li>•No 24 hour activities</li> <li>•Commercial activities along Paul Kruger street are interrupted</li> </ul>	<ul style="list-style-type: none"> <li>•Economic opportunities</li> <li>•Extending Museum mall to the Apies River</li> <li>•Make the most of tourist trade</li> <li>•Providing facilities/activities for a wider range of income levels</li> <li>•Creating 24 hour activities</li> </ul>	<ul style="list-style-type: none"> <li>•Government policies and</li> <li>•Bureaucracy</li> </ul>	<ul style="list-style-type: none"> <li>•Improved infrastructure</li> <li>•Allowance made for various income and social groups</li> <li>•Mixed use development where 24 hour eyes will be on the street</li> <li>•Extension of Museum Mall</li> </ul>
STAKE HOLDERS	<ul style="list-style-type: none"> <li>•Government has a vested interest in uplifting the area</li> <li>•Strong residential development</li> <li>•Influx of people into the Burgers Park vicinity as a residential area</li> </ul>	<ul style="list-style-type: none"> <li>•Council has no money to maintain buildings</li> <li>•Owners do not want to spend money fixing up buildings to the west</li> <li>•There is little/no interest in occupying the west</li> </ul>	<ul style="list-style-type: none"> <li>•Create catalytic activities to promote development and economic growth in the area</li> <li>•Bringing a wider range of users into the area</li> </ul>	<ul style="list-style-type: none"> <li>•Buy in from the social and private sector is minimal, every one wants to move east of the CBD</li> <li>•Financial</li> <li>•Threat of lower income groups being 'pushed out'</li> </ul>	<ul style="list-style-type: none"> <li>•Increased/improved residential facilities</li> <li>•Maintaining Burger's Park as a utilised open green space</li> <li>•Increase activities in the area to encourage people to move here</li> </ul>
HERITAGE	<ul style="list-style-type: none"> <li>•Strong heritage component in the area: Modern buildings, synagogue, city hall etc.</li> </ul>	<ul style="list-style-type: none"> <li>•Many heritage buildings are run down and dilapidated, but are still protected</li> <li>•Break in city fabric due to these buildings having lower densities</li> </ul>	<ul style="list-style-type: none"> <li>•Tourism opportunities</li> <li>•Upgrade heritage buildings into functional uses – adaptive re-use</li> <li>•Create and promote cultural heritage in Pretoria</li> </ul>	<ul style="list-style-type: none"> <li>•Some heritage buildings hinder new/positive development due to protection</li> <li>•Structural decay</li> <li>•Creation of superficial environments</li> </ul>	<ul style="list-style-type: none"> <li>•Museum Mall</li> <li>•Upgrading of heritage buildings with adaptive re-use</li> </ul>
CURRENT USES	<ul style="list-style-type: none"> <li>•Paul Kruger Street is rich in commercial activity</li> </ul>	<ul style="list-style-type: none"> <li>•Little/no mixed use development</li> </ul>	<ul style="list-style-type: none"> <li>•Adaptive re-use</li> </ul>	<ul style="list-style-type: none"> <li>•Zoning can conflict with heritage</li> </ul>	<ul style="list-style-type: none"> <li>•Highlight Paul Kruger Street as an interactive commercial node</li> </ul>

	<ul style="list-style-type: none"> <li>•Burger's Park is well utilised and maintained</li> <li>•Variety of uses in the area, which attracts different people</li> </ul>	<ul style="list-style-type: none"> <li>•Most buildings are not utilized to their full potential</li> <li>•Industrial buildings to the west are not utilised</li> <li>•Skinner Street island is a dead space</li> </ul>	<ul style="list-style-type: none"> <li>•Encourage further commercial activity on ground floor level</li> <li>•Create mixed use buildings</li> <li>•Focus on activities to improve economic growth and increase density</li> </ul>	<ul style="list-style-type: none"> <li>•Existing zoning is one dimensional</li> <li>•Current zoning hinders commercial activity</li> </ul>	<ul style="list-style-type: none"> <li>•Maintaining Burger's Park</li> <li>•Increased mixed use development</li> <li>•Upgrading and adaptive re-use of industrial buildings to the west</li> <li>•Intervention to cross Skinner Street safely</li> </ul>
AXES	<ul style="list-style-type: none"> <li>•Paul Kruger Street (government walk) in the centre of the study area</li> </ul>	<ul style="list-style-type: none"> <li>•Skinner Street is a barrier, not an axis</li> </ul>	<ul style="list-style-type: none"> <li>•Emphasize the link between the Station and Church Square</li> </ul>	<ul style="list-style-type: none"> <li>•Skinner street</li> </ul>	<ul style="list-style-type: none"> <li>•Paul Kruger emphasised as a strong pedestrian and commercial route/axis</li> <li>•Allow for safe crossing of Skinner Street</li> </ul>
VISUAL LINKS	<ul style="list-style-type: none"> <li>•Freedom Park</li> <li>•Church Square</li> </ul>	<ul style="list-style-type: none"> <li>•Sign board outside the station limits views</li> </ul>	<ul style="list-style-type: none"> <li>•Re-emphasise the visual link between the Station and Church Square and Freedom Park</li> </ul>	<ul style="list-style-type: none"> <li>•Views from ground floor level is limited</li> </ul>	<ul style="list-style-type: none"> <li>•Emphasise the link between Church Square and the Station</li> <li>•Remove sign board outside the station</li> <li>•Other visual links also emphasised</li> </ul>
TOPOGRAPHY	<ul style="list-style-type: none"> <li>•Flat topography allows easy pedestrian movement</li> </ul>	<ul style="list-style-type: none"> <li>•Limited opportunities for views</li> </ul>	<ul style="list-style-type: none"> <li>•Create more pedestrian friendly streets</li> </ul>	<ul style="list-style-type: none"> <li>•We can't change the topography, therefore views will always be hindered</li> </ul>	<ul style="list-style-type: none"> <li>•Increase pedestrian movements through the city</li> </ul>
PEDESTRIAN ROUTES	<ul style="list-style-type: none"> <li>•Minnaar, Visagie and Bosman Streets have physical strengths</li> </ul>	<ul style="list-style-type: none"> <li>•Minnaar Street is under utilised</li> <li>•Skinner Street does not allow for pedestrian use</li> <li>•All streets are unfriendly to pedestrians</li> </ul>	<ul style="list-style-type: none"> <li>•Create pedestrian friendly side walks to encourage walking</li> <li>•Create safe pedestrian crossings etc. at Skinner Street</li> <li>•Development on the island at Skinner Street</li> </ul>	<ul style="list-style-type: none"> <li>•Skinner Street will likely always be a fast vehicular route through the city</li> </ul>	<ul style="list-style-type: none"> <li>•Improvement of existing pavements and pedestrian routes</li> <li>•Strengths of Minnaar, Visagie and Bosman streets emphasised</li> <li>•Intervention to allow safe pedestrian crossing of Skinner Street</li> </ul>
VEHICULAR/TRAIN ROUTES	<ul style="list-style-type: none"> <li>•Proposed BRT system</li> <li>•Easy access to transport nodes</li> <li>•Gautrain</li> </ul>	<ul style="list-style-type: none"> <li>•The city is predominantly designed for vehicles and not pedestrians</li> </ul>	<ul style="list-style-type: none"> <li>•Gautrain will make Paul Kruger etc. a main tourist area</li> <li>•BRT route could reduce the need for private transport and increase pedestrian movement</li> <li>•Reduce number of parking lots</li> <li>•Create bicycle friendly lanes</li> </ul>	<ul style="list-style-type: none"> <li>•There is no immediate solution, you cannot design a city with no cars, only try and manage them</li> </ul>	<ul style="list-style-type: none"> <li>•Allowance made for the BRT</li> <li>•Station emphasised as an important transport node</li> <li>•Design for fewer cars and slowing down traffic, however not the forced removal of cars</li> <li>•Off street parking limited and parking lots removed</li> </ul>

SCALE & PROPORTION	<ul style="list-style-type: none"> <li>•Variety of scale along Paul Kruger Street</li> <li>•Proportions of city blocks (N/S acceptable)</li> </ul>	<ul style="list-style-type: none"> <li>•Some streets do not utilise the correct heights</li> <li>•Too many 1 storey buildings between 5-6 storey buildings</li> <li>•City blocks are too long in E/W direction</li> </ul>	<ul style="list-style-type: none"> <li>•Increasing of densities due to open pieces of land and current height of buildings</li> <li>•Arcades could reduce dimension of blocks in the E/W direction</li> </ul>	<ul style="list-style-type: none"> <li>•Heritage buildings are of a much lower scale than the density required</li> </ul>	<ul style="list-style-type: none"> <li>•New buildings to relate to the existing scales and proportions of their neighbours</li> <li>•Create walkways through the blocks to limit the E/W length of blocks</li> <li>•Increase heights of lower buildings where allowed</li> </ul>
MATERIALS & TEXTURES	<ul style="list-style-type: none"> <li>•Variety of materials &amp; textures in the area</li> </ul>	<ul style="list-style-type: none"> <li>•Road surface harsh</li> <li>•Sidewalks need attention , except in Minnaar Street</li> </ul>	<ul style="list-style-type: none"> <li>•There is a rich dialogue in which we can take part</li> <li>•Sidewalks to be improved and easily accessible</li> </ul>	<ul style="list-style-type: none"> <li>•Lack of context analyses</li> </ul>	<ul style="list-style-type: none"> <li>•Try to refer to the rich dialogue of textures and colours that make up the city</li> </ul>
ASPATIAL	<ul style="list-style-type: none"> <li>•Minnaar street – flush, enjoyable walk</li> <li>•Residential area still has many trees</li> <li>•Paul Kruger is vibrant</li> </ul>	<ul style="list-style-type: none"> <li>•Skinner Street – dead, inaccessible space to pedestrians</li> </ul>	<ul style="list-style-type: none"> <li>•To create vibrant, energetic environments which are accessible and democratic</li> </ul>	<ul style="list-style-type: none"> <li>•Decay &amp; litter</li> <li>•Excessive allowance for private car use</li> </ul>	<ul style="list-style-type: none"> <li>•Commercial activity/buzz created</li> <li>•Creation of 24 hour activity environments</li> </ul>
LEGISLATION	<ul style="list-style-type: none"> <li>•60 year protection of historically rich buildings</li> <li>•Zoning of the area allows for increased density</li> </ul>	<ul style="list-style-type: none"> <li>•Too many frameworks exist that do not link the area as a whole</li> <li>•The frameworks that exist are too vague in their solutions</li> </ul>	<ul style="list-style-type: none"> <li>•Government will provide incentives to occupy this part of the city (eg. Tax breaks)</li> <li>•Increase density</li> <li>•Create one framework for all people to follow rather than having many different ones</li> </ul>	<ul style="list-style-type: none"> <li>•Municipalities are unwilling to make and implement bold decisions</li> </ul>	<ul style="list-style-type: none"> <li>•Rezoning to allow increased densities</li> </ul>
LANDSCAPING	<ul style="list-style-type: none"> <li>•Minnaar Street has lovely vegetation leading to Burger's Park</li> </ul>	<ul style="list-style-type: none"> <li>•No trees in Paul Kruger makes for a harsh &amp; hot environment</li> <li>•Fences around public green spaces make areas inaccessible</li> <li>•Not enough green pockets within walking distance to one another</li> </ul>	<ul style="list-style-type: none"> <li>•City Hall Square</li> <li>•Opening up public gardens to the public</li> <li>•Take advantage of the good qualities at Burgers park</li> <li>•Increase green spaces within the city</li> </ul>	<ul style="list-style-type: none"> <li>•The fact that you can't plant new Jacaranda trees in the Jacaranda city</li> </ul>	<ul style="list-style-type: none"> <li>•Increased number of trees on pavements etc.</li> <li>•Fences around public and semi-private zones to be removed and not allowed</li> <li>•Development of city hall square</li> </ul>

# APPENDIX 2

APPENDIX 2 - PARKING CALCULATIONS				
	PARKING RATIO	NUMBER OF BEDS / AREA	PARKINGS REQUIRED	PARKINGS PROVIDED
PARKINGS REQUIRED:				
SUB-ACUTE FACILITY	1 PARKING/BED	51	51	
CONSULTING ROOMS	6 PARKINGS /100m <sup>2</sup>	405m <sup>2</sup>	24	
OFFICES	6 PARKINGS / 100m <sup>2</sup>	230m <sup>2</sup>	14	
<b>TOTAL PARKINGS REQUIRED</b>			<b>89</b>	
PARKINGS PROVIDED:				
BASEMENT PARKING				40
OFF-STREET PARKING				5
ON NEIGHBOURING SITE				83
<b>TOTAL PARKINGS PROVIDED</b>				<b>173</b>
<b>CONCLUSION</b>	There are more parkings provided than what are required by the Tshwane Council, this allows for the proposed future extension of the facility into the building that borders it on the eastern side.			

# APPENDIX 3

APPENDIX 3 - TOTAL NUMBER OF SANITARY FITTINGS PROVIDED					
SANITARY FITTING	NUMBER OF BEDS	NUMBER OF WARDS/ROOMS	MINIMUM RATIO REQUIRED	TOTAL PROVIDED	RATIO PROVIDED
<b>ACCORDING TO R158</b>					
<b>GROUND FLOOR - GYM</b>					
	0	0			
PATIENT TOILETS			1 WC/8 BEDS	3	NA
PATIENT TOILET WHB			1 WHB/8 BEDS	3	NA
WARD WHB			1 WHB/1 WARD	0	NA
BATHS / SHOWERS			1 B/SHR / 12 BEDS	2	NA
<b>FIRST FLOOR - PAEDIATRIC WARD</b>					
	8	6			
PATIENT TOILETS			1 WC/8 BEDS	4	1 WC / 2 BEDS
PATIENT TOILET WHB			1 WHB/8 BEDS	5	1 WHB / 1.6 BEDS
WARD WHB			1 WHB/1 WARD	6	1 WHB / 1 WARD
BATHS / SHOWERS			1 B/SHR / 12 BEDS	5	1 B/SHR / 1.2 BEDS
<b>SECOND FLOOR - GENERAL WARD</b>					
	9	6			
PATIENT TOILETS			1 WC/8 BEDS	5	1 WC / 1.8 BEDS
PATIENT TOILET WHB			1 WHB/8 BEDS	6	1 WHB / 1.5 BEDS
WARD WHB			1 WHB/1 WARD	6	1 WHB / 1 WARD
BATHS / SHOWERS			1 B/SHR / 12 BEDS	5	1 B/SHR / 1.8 BEDS
<b>THIRD FLOOR - NEUROSURGICAL WARD</b>					
	9	6			
PATIENT TOILETS			1 WC/8 BEDS	5	1 WC / 1.8 BEDS
PATIENT TOILET WHB			1 WHB/8 BEDS	6	1 WHB / 1.5 BEDS
WARD WHB			1 WHB/1 WARD	6	1 WHB / 1 WARD
BATHS / SHOWERS			1 B/SHR / 12 BEDS	5	1 B/SHR / 1.8 BEDS
<b>THIRD FLOOR - CARDIO-THORACIC WARD</b>					
	4	4			
PATIENT TOILETS			1 WC/8 BEDS	4	1 WC / 1 BEDS
PATIENT TOILET WHB			1 WHB/8 BEDS	4	1 WHB / 1 BEDS
WARD WHB			1 WHB/1 WARD	4	1 WHB / 1 WARD



SANITARY FITTING	NUMBER OF BEDS	NUMBER OF WARDS/ROOMS	MINIMUM RATIO REQUIRED	TOTAL PROVIDED	RATIO PROVIDED
BATHS / SHOWERS			1 B/SHR / 12 BEDS	4	1 B/SHR / 1 BEDS
<b>FOURTH FLOOR - CARDIO-THORACIC WARD</b>	9	6			
PATIENT TOILETS			1 WC/8 BEDS	5	1 WC / 1.8 BEDS
PATIENT TOILET WHB			1 WHB/8 BEDS	6	1 WHB / 1.5 BEDS
WARD WHB			1 WHB/1 WARD	6	1 WHB / 1 WARD
BATHS / SHOWERS			1 B/SHR / 12 BEDS	5	1 B/SHR / 1.8 BEDS
<b>FOURTH FLOOR - NEUROSURGICAL WARD</b>	4	4			
PATIENT TOILETS			1 WC/8 BEDS	4	1 WC / 1 BEDS
PATIENT TOILET WHB			1 WHB/8 BEDS	4	1 WHB / 1 BEDS
WARD WHB			1 WHB/1 WARD	4	1 WHB / 1 WARD
BATHS / SHOWERS			1 B/SHR / 12 BEDS	4	1 B/SHR / 1 BEDS
<b>FIFTH FLOOR - ORTHOPAEDIC WARD</b>	4	4			
PATIENT TOILETS			1 WC/8 BEDS	4	1 WC / 1 BEDS
PATIENT TOILET WHB			1 WHB/8 BEDS	4	1 WHB / 1 BEDS
WARD WHB			1 WHB/1 WARD	4	1 WHB / 1 WARD
BATHS / SHOWERS			1 B/SHR / 12 BEDS	4	1 B/SHR / 1 BEDS
<b>SIXTH FLOOR - ORTHOPAEDIC WARD</b>	4	4			
PATIENT TOILETS			1 WC/8 BEDS	4	1 WC / 1 BEDS
PATIENT TOILET WHB			1 WHB/8 BEDS	4	1 WHB / 1 BEDS
WARD WHB			1 WHB/1 WARD	4	1 WHB / 1 WARD
BATHS / SHOWERS			1 B/SHR / 12 BEDS	4	1 B/SHR / 1 BEDS
<b>ACCORDING TO SABS</b>					
PUBLIC TOILETS (MALE)	NA	NA	3(wc)+4(urinal)	10	3 extra provided
PUBLIC TOILET WHB (MALE)	NA	NA	4	15	9 extra provided
PUBLIC TOILET (FEMALE)	NA	NA	6	10	4 extra provided
PUBLIC TOILET WHB (FEMALE)	NA	NA	4	15	9 extra provided

# APPENDIX 4

## APPENDIX 4 - 3D MODEL PERSPECTIVES





new up minnaar street



main entrance on minnaar street



off street area of respite



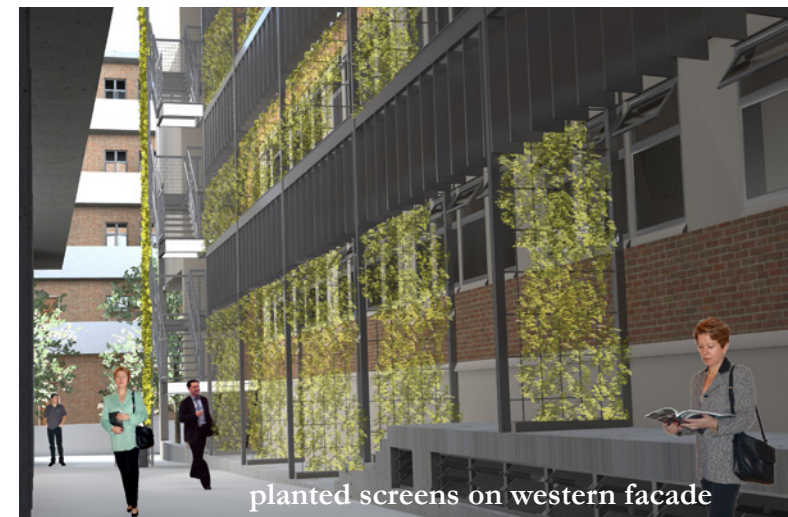
main entrance on minnaar street



gymnasium entrance



aerial view of facility from north east



planted screens on western facade

# APPENDIX 5

## APPENDIX 5 - FINAL MODEL



overall view of model - photo taken from north east



aerial view - photo taken from south east



view of the facility from the east



view of the facility from the north



facility entrance



facility entrance



western facade



eastern facade



overall view of model - from the east