

RECOVERING LIFE THROUGH
ARCHITECTURE

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RECOVERING LIFE THROUGH ARCHITECTURE

AN ADDICTION RECOVERY CENTRE IN HEIDEDAL, BLOEMFONTEIN

This dissertation is submitted in partial fulfillment of the requirements for the degree M.Arch. (Prof).

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Declaration of original authorship

The work contained in this document has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge, this document contains no material previously published or written by another person except where due reference is made.



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ABSTRACT

This dissertation explores how architecture can inform the healing process by not only creating spaces for it, but becoming an integral element where healing takes place. The inner connection we as humans have with our environment takes place on a physical, mental, emotional and spiritual level. This connection creates the atmosphere in which people can thrive in every aspect.

The project questions whether architecture can create spaces which enhance the healing environment and act as a vehicle for personal re-orientation. Exploring the concept of therapeutic architecture and how spaces and structures can be manipulated through environmental factors and promote the healing process. Understanding that addiction is an ever-present reality which is associated with fear. Questioning how essential spatial connections in and around rehabilitation centres are in order to address these negative connotations associated with addiction.

Focuses on personal coping mechanisms within the community rather than, separating the addicts completely, which can lead to a disconnect that might trigger relapses.

While many studies have illustrated the impact of therapies and different elements on those suffering from mental illnesses, few have linked architectural elements and the perception of the built environment with an enhanced healing process. Therefore an understanding of the duality of addiction and the nature of addicts are required in order to ensure a realistic and functional approach to the design.

Ultimately, the research will focus on discovering a new direction and opportunities in the built environment of Heidedal, which addresses and responds to negative perceptions of addiction and rehabilitation centres. This can create a useful approach for this typology.

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INTRODUCTION

+ Motivation: a personal statement and project background

Addiction has become an ever present reality in today's society. This complex mental disorder is increasing at a constant rate. More and more people are seeking means to escape their present reality by using substances which suppress their human qualities and emotions. The urbanized modern context could be playing a bigger part in addiction than what one realizes. People are constantly interacting with the built environment on either a physical, mental or spiritual manner. This connection we have formed with the built environment has a greater subconscious hold on us as humans than what we realizing.

If I ask you to imagine yourself in a hospital, immediately you feel uncertain, vulnerable, distressed and afraid. Essentially one connects negative emotions with this physical experience of losing control of your body and your surrounds. Now if you imagine yourself entering a haunted house, one would normally tense up from the unknown, not necessarily because of the so called 'haunted' part, but the atmosphere associated with the experience. However, these emotions would be the complete opposite if I asked you to imagine yourself at a holiday resort of your choice. This highlights how the perception of the built environment can either evoke calming or distressed emotions

" We shape our buildings and later they shape us"

_ Winston Churchill

Addicts become so focused on the substance that they are addicted to, they tend to become completely disconnected from everything around them. Once they are in this state, everything they experience is on a higher level than normal. For instance if an addict wakes up in a hospital, their initial reaction will be worse than that of a sober person, due to the fact that they have no relation or connection to the spaces around them.

This then raises the question of how can architecture be manipulated in order to provoke these calming emotions within Rehabilitation Centres, and can this create spaces of healing?

I chose to locate my project within the community of Heidedal - Bloemfontein, as opposed from traditional isolated rehabilitation typologies, for two reasons. Firstly, I wished to investigate the role the existing social structure of the community would have on the rehabilitation process and whether it would be easier for a recovering addict to re-enter the community if they technically never left. Secondly, I hoped to create a healing atmosphere within an environment which the addict is familiar with, keeping them stress free through the liminal phase of recovery.

Ultimately creating safe spaces for both the patients and public, easing the fear of addiction and rehabilitation centres within the community.

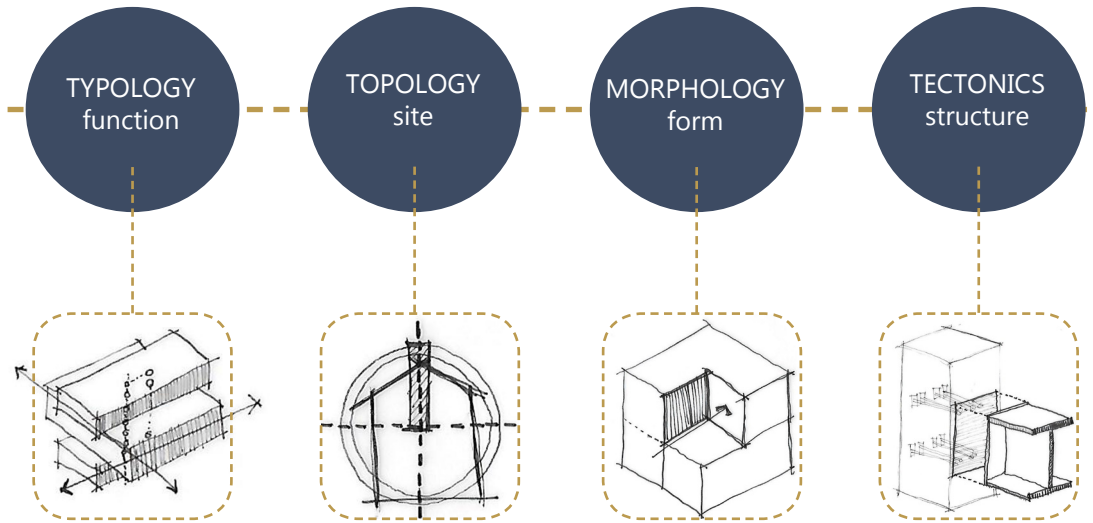


fig. 02
Addiction
(Gammon, 2019: Online)

+ Document Framework

_ A Guide

four main themes

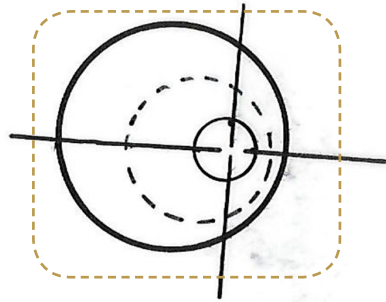


This dissertation investigates the social and spatial requirements of a rehabilitation centre where patients are assisted through the process of recovery and helped to overcome their addictions.

How a rehabilitation centre is perceived within a community becomes the golden thread which runs throughout this investigation; as well as how the architectural elements of the built environment can actually start to positively affect the healing process of the addict and the community around it, while investigating strategies of how to overcome the fear of the typical rehabilitation centre typology.

An in-depth investigation into similar typologies, medical data and how the built environment can affect one's perception of addiction informed these strategies, allowing the design to take on a new methodological approach for an addiction recovery centre. This was achieved through an extensive site investigation, the application of theoretical principles and the formalities of a design strategy in order to address negative perceptions associated with a rehabilitation centre (typology).

PART 01
orientation



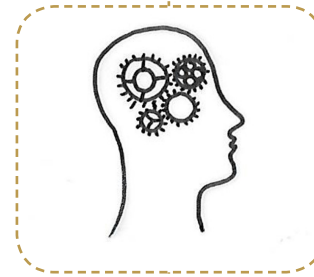
Part 1 - introduces the problem statement and aims which the dissertation proposes to address.

PART 02
investigative
process



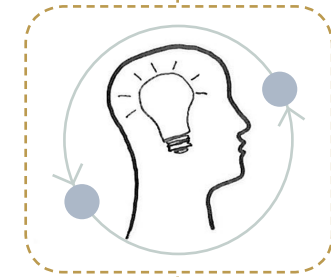
Part 2 - consists of the exploration and grounding research which helps build the parameters for the design process.

PART 03
design
and
technical
synthesis



Part 3 - consists of the design and technical process and how the investigation informed the design

PART 04
personal
refection



Part 4 - contains a reflection and conclusion based on the process of this dissertation. This also addresses if the aim of the dissertation was achieved as well as highlighting the challenges that arose throughout the process.

RESEARCH METHODOLOGY

_ A Method

For the purpose of answering the research question and grounding the dissertation, a comparative analysis with explorative research methods will be done. To initiate the investigation, aims and problem statements will be generated for the four main platforms – typology, topology, morphology and tectonics. The purpose of this is to define the parameters and challenges upon which the design process will be built on. Furthermore, these investigations intend to explore what and who to design for, how the design will influence the community around it and how the form and form-giving will be influenced.

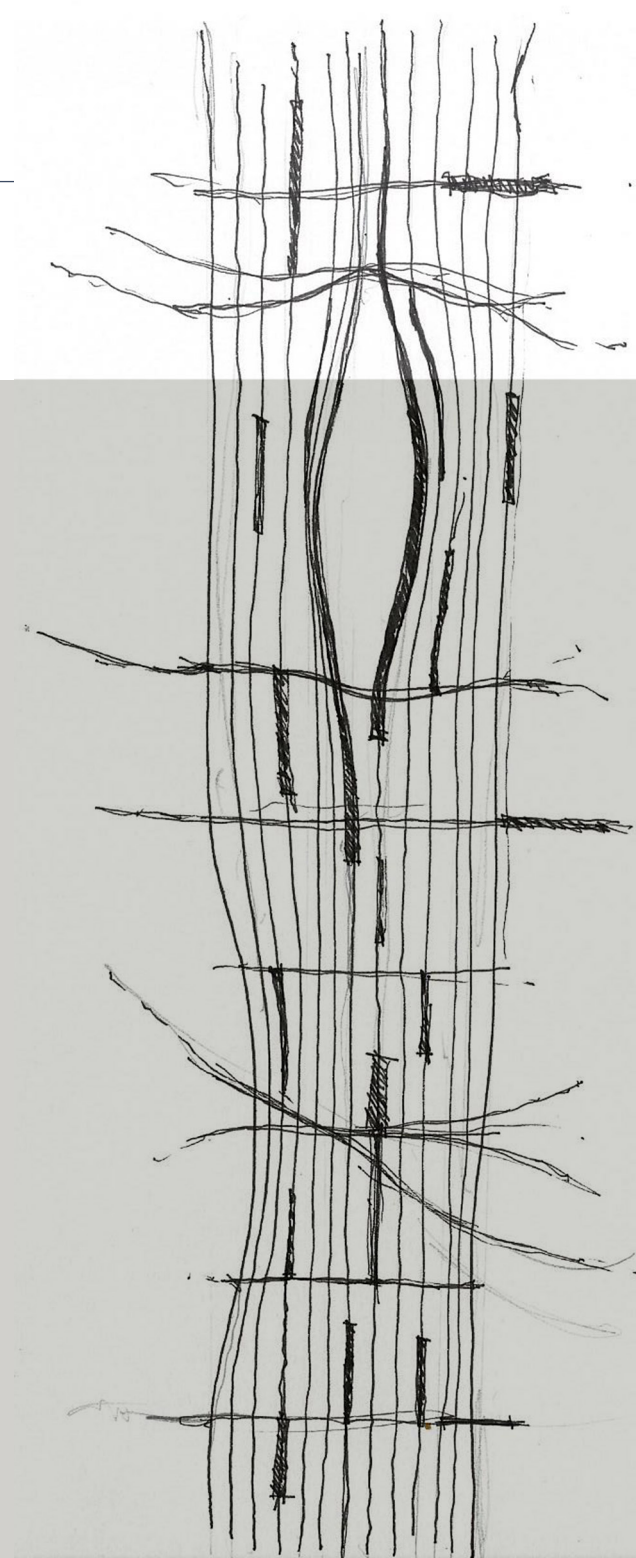
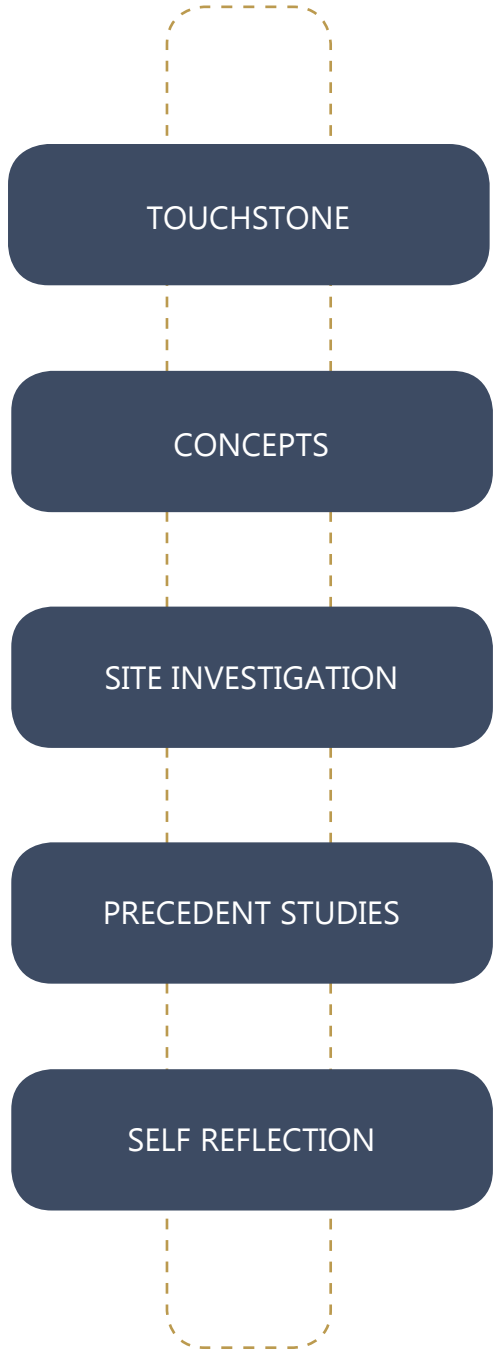


fig. 03
Progression through
research methodology

RESEARCH
METHODOLOGY



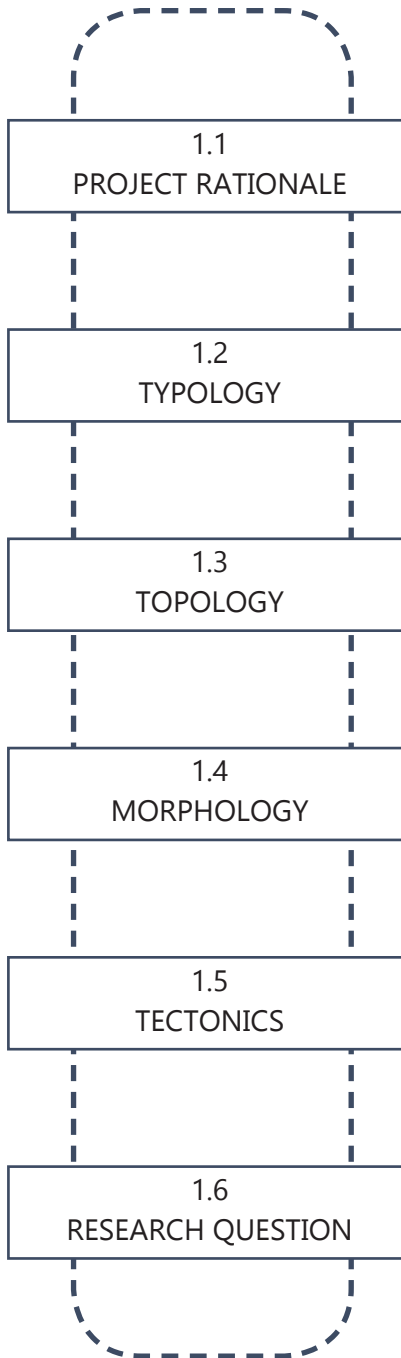


PART

01

PROBLEM STATEMENTS AND AIMS





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+ 1.1

PROJECT RATIONALE

1.1.1. UNDERSTANDING ADDICTION

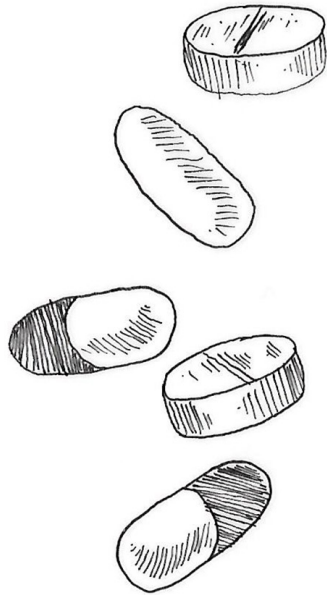


fig. 03
Prescription Pills
type of addiction

Addiction can be described as a complex mental disorder which affects the brain and the body. It is the inability to stop, with the compulsive use of a specific substance or activity that causes physical or psychological harm to the person (Leshner, 1997: 45).

However, by stating this it is important to understand that addiction is difficult to pin down due to the fact that it takes on different forms. Melemis (2019: Online) explains that all humans have the genetic predisposition for addiction, due to the fact of its evolutionary advantage. For example, if an animal eats something it likes, it will associate it with pleasure and will therefore look for it in future. Even humans tend to eat too much of their favourite foods even when knowing it is not good for them. It is apparent that the potential for addiction is hardwired into our brains (Melemis, 2019: Online).

Even though we all have the predisposition genetic for addiction, some people are more prone to it with a higher genetic percentage than others. However, this does not mean that a person with a lower percentage of the gene cannot become an addict. The repetition of an action like substance abuse can actually rewire the brain in thinking it needs it and ending up an addict. With this one should understand that not all people choose the life of addiction however. It can still happen to anyone.

Addiction is not only caused by genetics but also poor coping skills and life choices. If you had to compare addiction to heart disease, which is also 50% genetics and 50% life, choices such as a bad diet and lack of exercise, you would not think any less of the person. Addiction is therefore also seen as a disease that can be overcome and not a personal weakness (Melemis, 2019: Online).

Addictive behaviour is and becoming such a problem because it starts to alter one's perspective of reality and the addict will do anything in his/her power to feed the addiction. Altman explains that, "addiction disrupts regions of the brain that are responsible for reward, motivation, learning, judgement and memory" (Altman, 2012: 19). This explains how and why this disease can actually start damaging various body systems as well as families, relationships, schools, workplaces and neighbourhoods.

1.1.2. TYPES OF ADDICTION

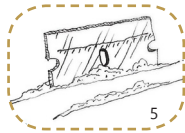
The most common assumption of addiction is that it only refers to a compulsive need for a specific substance. However, it is possible to become addicted to almost anything, which ranges from substances to behaviours and activities. Basically anything that triggers a specific need of pleasure.

With that addiction can be categorised into two types: substance abuse and behaviour addiction. This project, however, focuses more on the substance abuse type of addiction, due to the demand of recovery facilities needed- especially in the Bloemfontein, Heidedal area. The most common and most likely addictions which the rehabilitation centre will cater for are listed below (Altman, 2012: 19).

SUBSTANCE ABUSE



Alcohol



Cocaine



Cannabis



Prescribed medication

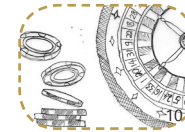


Methamphetamine



Heroin

BEHAVIOURAL ADDICTION



Gambling



Sex



New technologies



Eating disorder



Self-harm

1.1.3. STATISTICS

World Statistics

247 million
people use
drugs

29 million
suffer from
an addiction

but only 1 in 6 people are receiving treatment

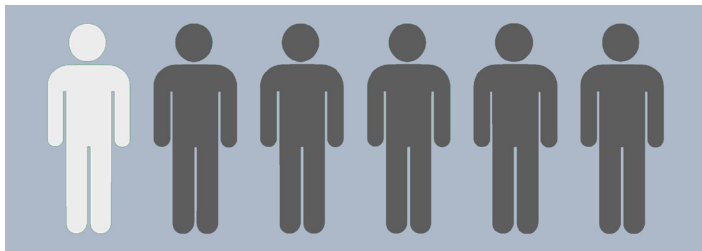


fig. 16
people who receive treatment



fig. 17
world map of drug trade routes
survey done by (World drug Report 2019: Online)

Addiction is a prevalent issue worldwide which stands among the leading contributors of the global burden of diseases (Wu, 2019: 8). If 29 million people (which have been recorded) have an addiction problem and only one in six people receives treatment (as shown in figure 16); it is important to understand how enormous the issue actually is.

The most active drug routes are shown above in figure 17. Most drugs come out of South America which are spread across the world and South Africa is used as one of the main drop-off and layover ports for the smugglers. This creates a gateway for the drugs into South Africa and its communities, which explains why the drug consumption is two times that of the world's norm. According to the South African Community Epidemiology Network on Drug Use (SACENDU) survey, addiction and substance abuse cases in South Africa are increasing each year (SACENDU, 2019: Online). However, figure 19 shows that the amount of rehabilitation centres and programs available are in fact decreasing or staying the same. In retrospect the whole central region, which consists of three provinces, only has 4 registered rehabilitation centres available, despite the high demand.

Survey done by (World Drug Report, 2019: Online)

South African Statistics

We've gone from **8 787** people admitted for drug treatment in 2016 in to **9385** people in 2018

15% of south africans have an addiction problem

Drug consumption is **2x** the world norm

According to South African Police Service **60%** of crimes nationally were related to substance abuse

The rate of fetal alcohol syndrome in South Africa is **5x** that of the United States

Survey done by (SACENDU, 2019: Online)

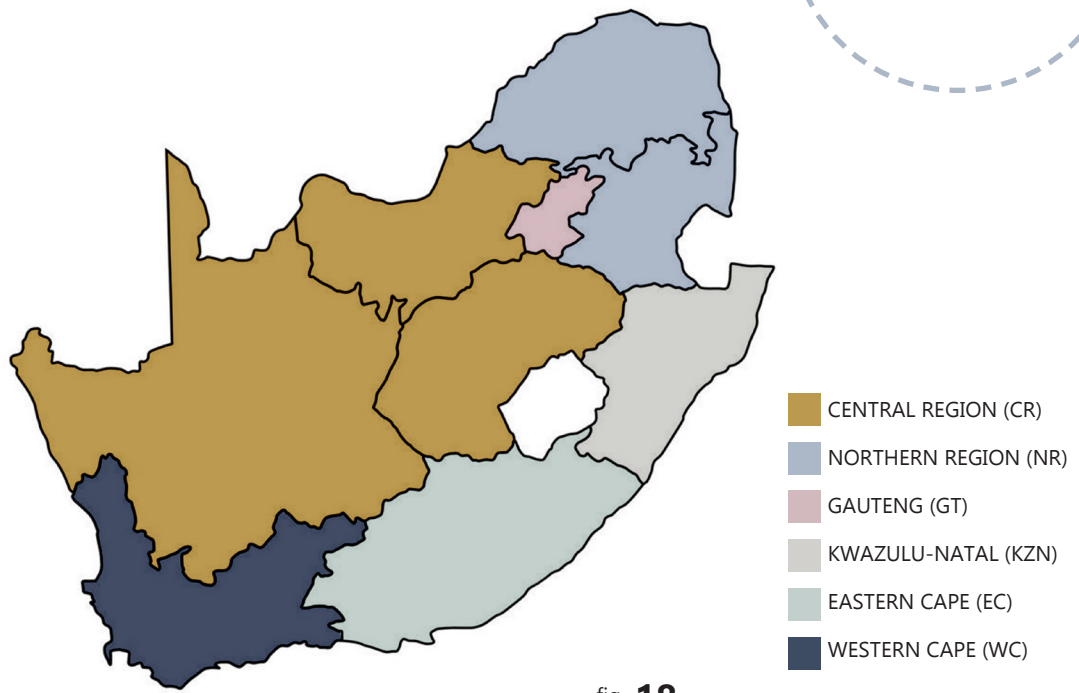


fig. 18 regions in which SACENDU collected data

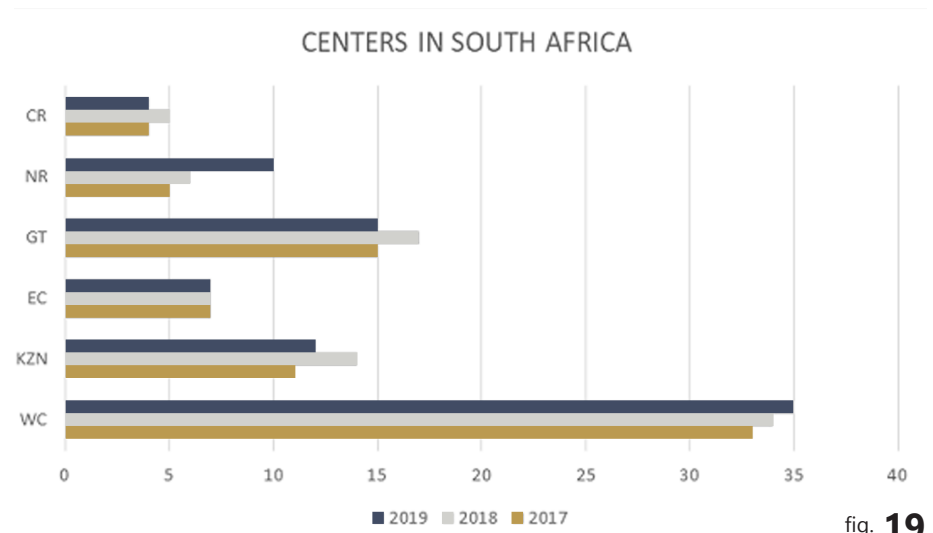


fig. 19 available centers in SA over the last three years

1.1.4. DETOXIFICATION AND TREATMENT METHODS

“Recovery did not open the gates of heaven and let me in. Recovery opened the gates of hell and let me out.”

– Anonymous

The detoxification of a patient usually takes place within a medical facility where the patient can have 24/7 observation by a qualified person. This process can be fatal and can put extreme strain on a person’s body, which is why this process should be done in a fully-equipped medical facility. Once there is no more trace of the substance in the patient’s blood and the worst withdrawals have subsided, the patient is then released and allowed to enter an addiction recovery centre (de Gouveia, 2019: Interview).

There are various types of treatments and programmes for the recovery of an addict with no one-size-fits-all. The two main types of treatment programmes are an in-patient programme and an out-patient programme. An in-patient programme is when a patient is booked into the facility and stays there throughout their treatment, which can vary between 21 days up to 3 months. An out-patient programme offers more or less the same treatments. However, the patient stays at home and comes into the facility every day. This programme is for people who cannot afford the in-patient programme or for a patient that has already been through the in-patient programme and still needs therapy once they have returned to their everyday life (de Gouveia, 2019: Interview).

The types of treatments can be grouped under evidenced based-therapy, supportive therapies and creative therapy, as shown in figure 20. All of these therapy’s work simultaneously together for the best possible outcome.

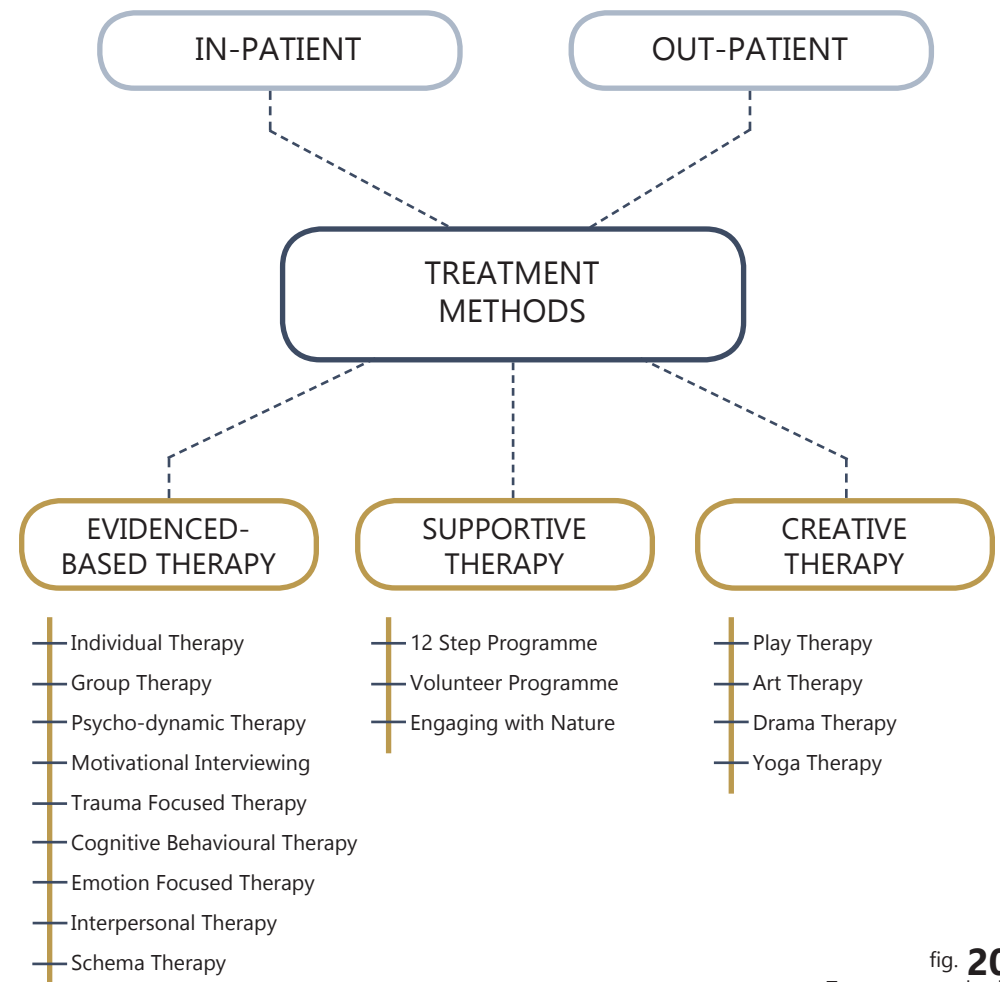


fig. 20
Treatment methods

1.1.5. VICTIMS OF ADDICTIONS STORIES



"The consequences of my eating disorder almost cost me everything. After an 18 year battle, I gave into it completely and nearly lost custody of my daughter, my home and landed myself in debt as a result of quitting my job. After showing signs of heart failure, my family grew desperate and sent me to Oasis. Although I always wished I could live without my eating disorder, I stopped believing years ago that it could ever be a reality for me after trying numerous other methods of treatment, including inpatient therapy. I was therefore extremely sceptical when going to rehab. The rehab team were able to offer me a nurturing but firm foundation upon which to start rebuilding my life and recovery. It was their reasoning and knowledge that equipped me with the tools to learn how to fight for my freedom, both inside and outside of the rehab."

- Kate Anderson (Oasis, 2019: Online)



"One night I came to realise that my life was a crisis and in a mess! I am 23 years and I still do not understand what happened as we all look at a mirror at least daily, but I guess I probably looked into the mirror that night with different eyes and finally realised that I needed help, the person that reflected back at me scared the hell out of me. The person that stared back at me had no normal qualities or self-worth left, i.e. dignity, self-respect, self-esteem, pride, confidence and a non-existent spiritual belief. That moment I reached out to a Power greater than me to save my life."

- Keith Brown (Oasis, 2019: Online)



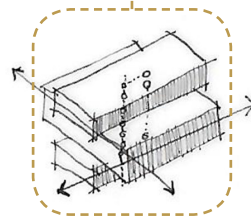
"Once upon a time, I was very down and depressed. I started experimenting with cocaine to help make me feel better, to suppress my appetite and to cope with life. Eight years later, my life had become so unmanageable that I couldn't go a day without a drink or some form of drugs. I checked into an awesome recovery centre and now I'm proud to state that along with the amazing programme, I am fearless and clean!"

- Francois Steyn (Step Away, 2019: Online)

+ 1.2 TYPOLOGY

_problem statement and aims

TPOLOGY
function



1.2.1. CLIENT - Oasis Recovery Centre

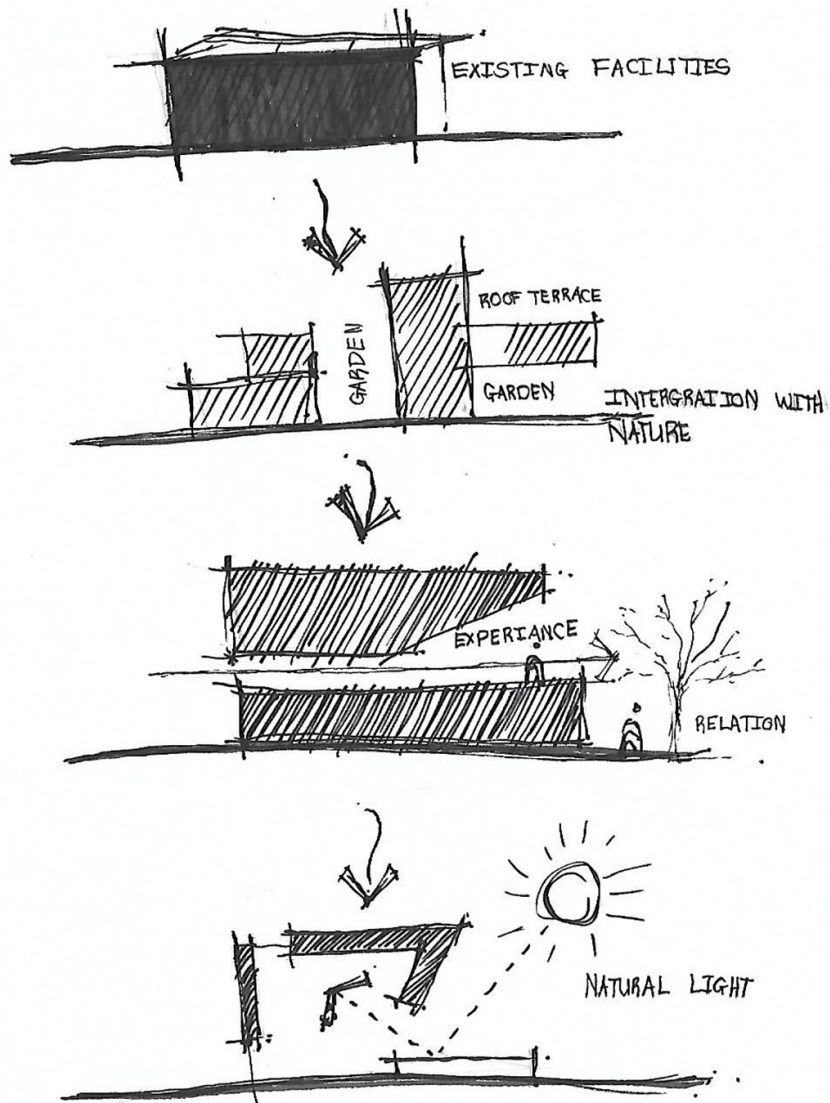
Plettenberg Bay - Western Cape

For this investigation the typology is considered as a rehabilitation centre for addicts. The archetypes of such a typology have very specific functions and spaces that need to be accommodated.

A further investigation of a healing environment and healing architecture will assist with the understanding and needs of the client and the users of the building. The investigation will help identify the aims and problem statements found within this specific typology.

Oasis is originally situated within the heart of the Garden Route, beside the seaside of Plettenberg Bay, Western Cape. It is one of the few registered and trusted rehabilitation centres found in South Africa. With the high demand of treatment facilities needed in the country and especially in the central regions; the new rehabilitation centre will be proposed in the heart of South Africa- Bloemfontein.

Oasis was founded in 2005 and has since been a tranquil sanctuary for recovering addicts. Kathryn and Frank de Gouveia took over Oasis in 2017 and ignited it with new passion and commitment which is still evident today. This facility was carefully chosen for this architectural exploration due to the fact that they are willing to try new medical treatments and processes if it will benefit their patients. Frank de Gouveia, one of the directors, is a recovering addict himself and therefore has first-hand experience and an open mind (de Gouveia, 2019: Interview).



PROBLEM STATEMENT

Typical addiction rehabilitation centres in South Africa are uninspired old residential buildings which are used for boarding the patients and have a simple structure for therapy sessions. These spaces cannot accommodate the needs of the facility since they are not designed for treatments of this nature. Most of these spaces limits the interactive connections between the patients, which are essential for support therapy.

AIM

The aim of this proposal is to develop a design solution which will accommodate the specific functions needed for this facility. The use of architectural elements such as colour, bringing in natural elements, light, materials and supportive spaces as seen in figure 21 will be used throughout the facility to create a healing environment.

fig. 21
architectural elements that could create a healing environment

+ 1.3 TOPOLOGY

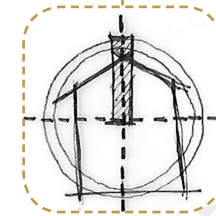
_problem statement and aims

Finding the most suitable location for this architectural intervention was crucial. Initially three sites were considered throughout the city of Bloemfontein.

The first site considered is located on the side of the river in Seven Dams, within the valley of Bloemfontein. It was considered due to its tranquil setting in-between the trees and water. It, however, was rejected due to the fact that it was on the outskirts of Bloemfontein; creating a disconnection between the communities and the facility, which would defeat the purpose of the intervention.

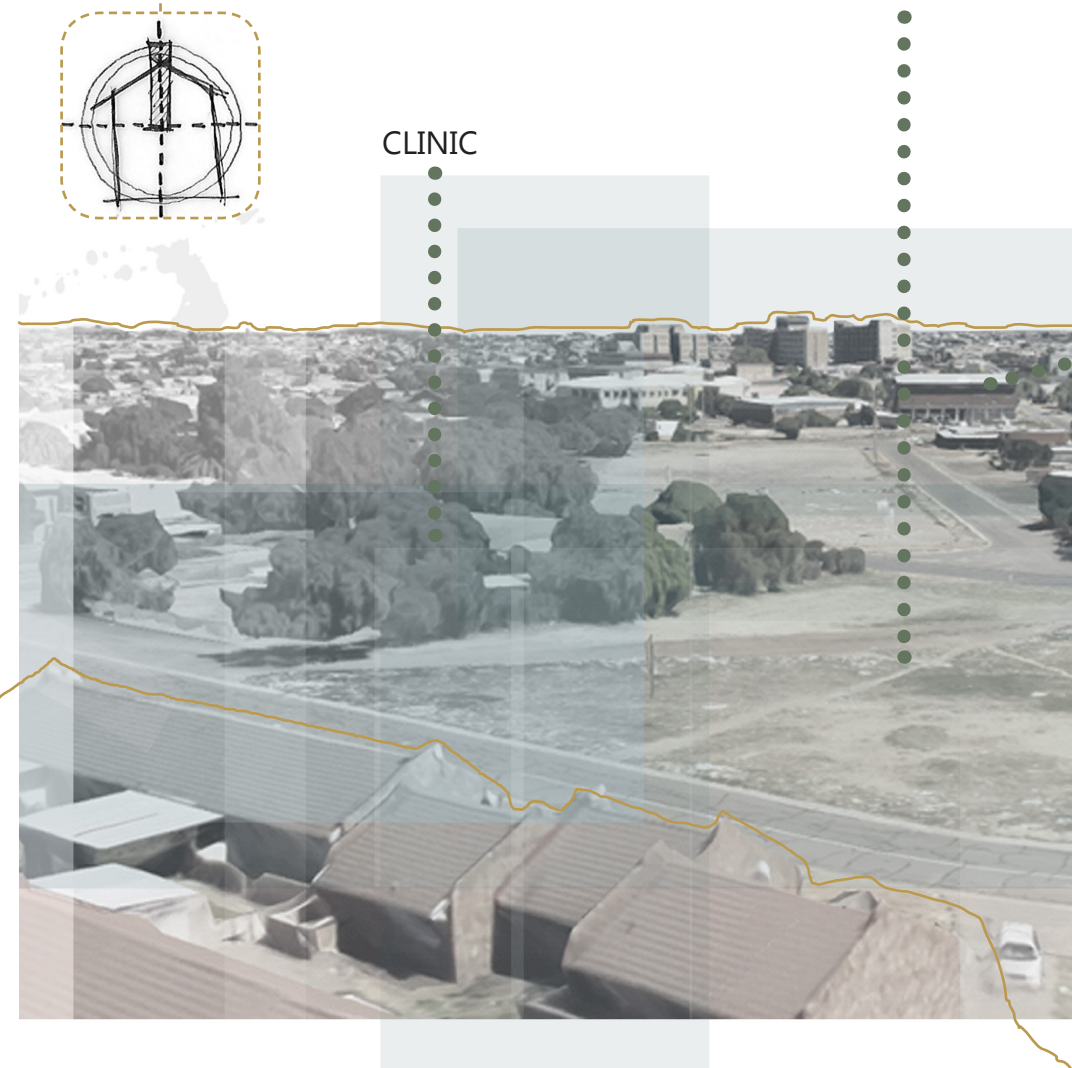
The second site that was considered can be located next to the spruit in Oos-Einde, Bloemfontein. It was considered, due to the fact that it is situated between water and the SPCA where the initial design intervention incorporated animal assisted therapy. This site, however, was rejected due to all the busy roads that surrounded it as well as to the initial animal assisted therapy that fell away.

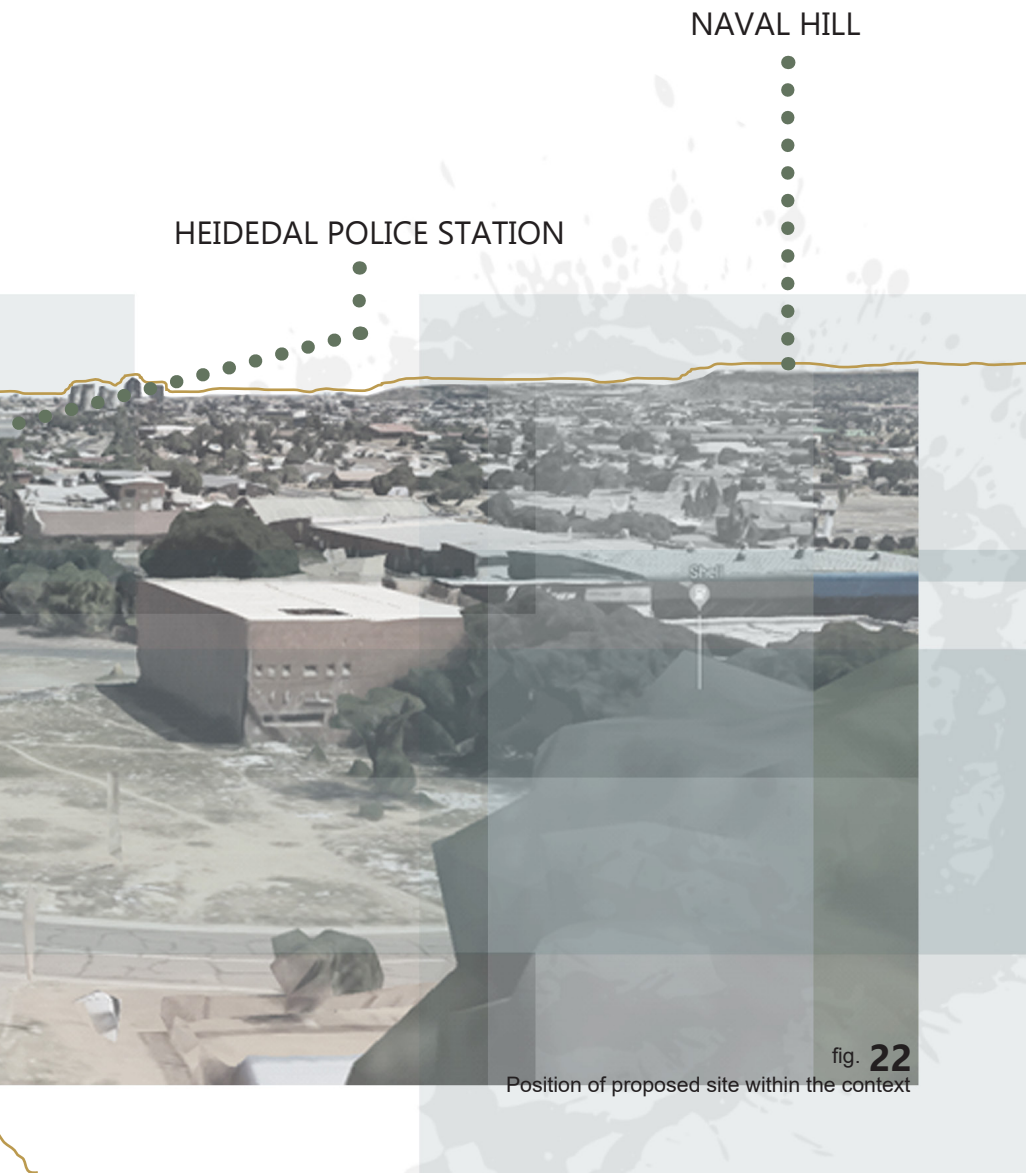
The third and current site can be located in the small community of Heidedal, Bloemfontein. The site is situated within the heart of the community next to the clinic, as seen in figure 22. It was carefully thought through and chosen due to its central location. It is within walking distance for the whole community, allowing easy access for patients as well as family members. The location allows the facility to stay within the real time of the community, which means that the patients can still see and relate to the everyday activities around them. This essentially makes it easier for them to adjust back into the community.



PROPOSED SITE

CLINIC





PROBLEM STATEMENT

Heidedal is a small suburb of Mangaung, Bloemfontein. This is a low density, low scale built environment. The proposed building should not be seen as too big or overpowering, but a place which the community can connect to.

There is an existing clinic on the proposed site which will have to be maintained. The challenge is how to connect these two buildings on a subtle yet comfortable manner, allowing the public to experience the notion of care and healing it aims to be.

AIM

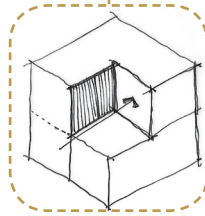
With a more in-depth investigation and analysis of the proposed site, the aim is to motivate the exploration of a design that will serve not only patients, but also the community around it. The aim of the topological approach is to design a place of sanctuary in the busy community of Heidedal. This can be achieved by keeping to the built scale surrounding the proposed site and allowing the patients and the community to dwell and connect to the new spaces provided.

+ 1.4

MORPHOLOGY

_problem statement and aims

MORPHOLOGY
form



The morphology of the architectural intervention will mainly be informed by a theoretical exploration of questioning the norm, which will be discussed and further explored in Part 2. This will create a morphological guide which will contribute to the creation of a meaningful place in the community. The design and form will inherit some of the characteristics of the surrounding context such as the scale, existing paths and industrial typology.

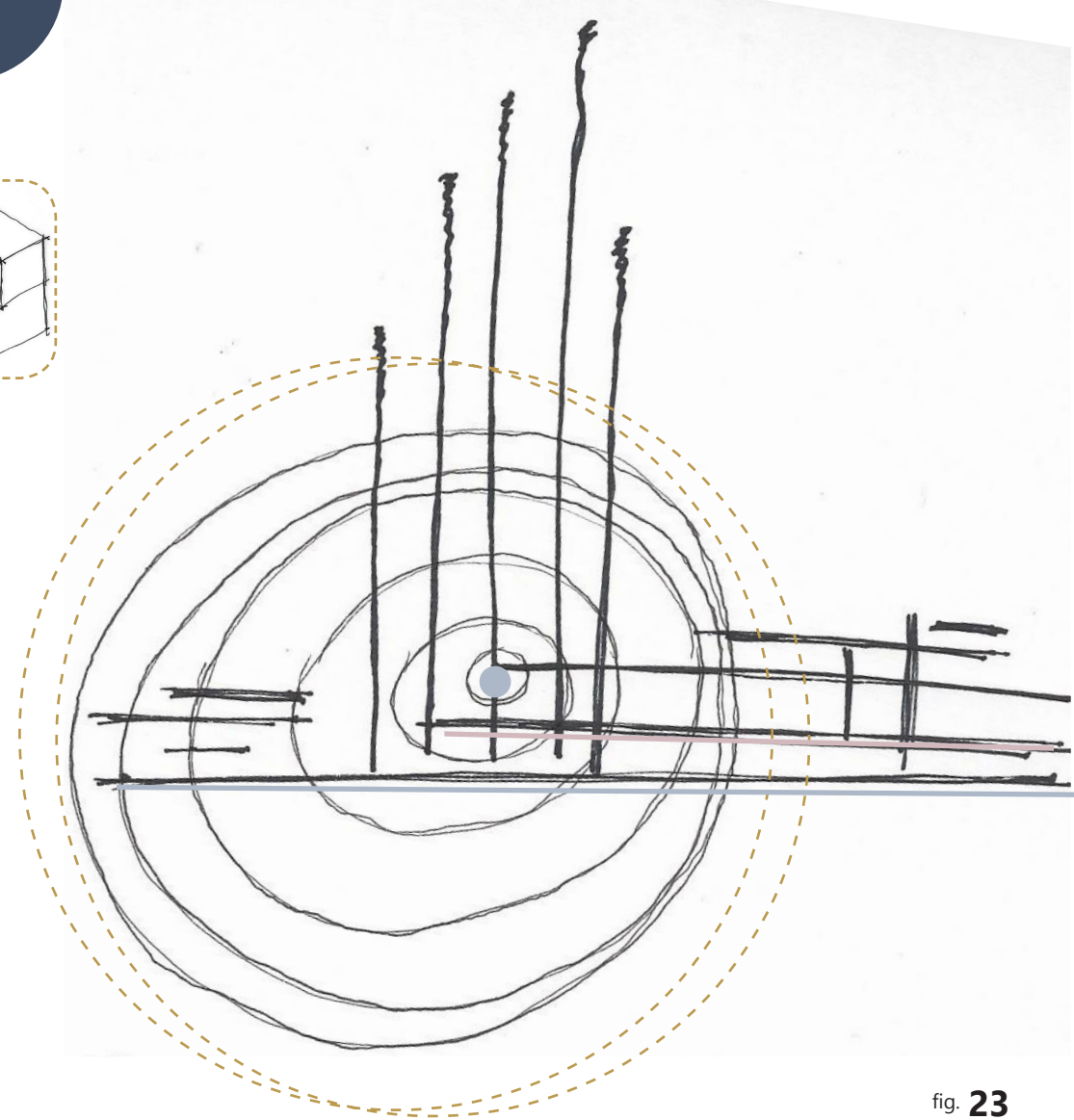


fig. 23
Questioning the norm
sketching alternative methods

PROBLEM STATEMENT

The design methodology and form giving for typical rehabilitation and medical facilities are normally mundane and dull in order to respond to all the rules and regulations of the medical profession. A disconnection between the patients and spaces around them are often created. This can create more stress and decreases the healing process of the mind and body. Architectural elements that give meaning and character to spaces are normally cut to a minimum to save costs and to add more rooms for a larger income.

AIM

The morphological aim for this exploration will be inspired through the theoretical investigation of therapeutic spaces and how that re-defines the spatial qualities of rehabilitation centres. This will allow the architecture to become one of the healing elements and not just a shell for the healing process. Different forms and shapes will be explored as well as the energies they release as seen in figure 24 - 25. This will define the atmospheres for different experiences and creating the right balance between the functions, treatments and social spaces.

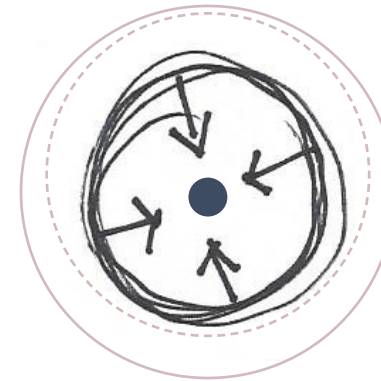


fig. 24
circular energies radiating towards the core

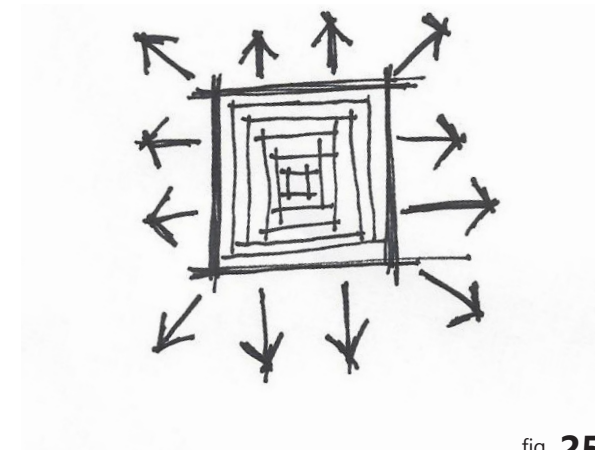
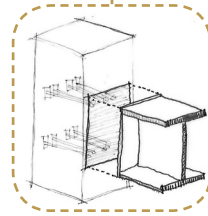


fig. 25
geometric energies radiating outwards

+1.5 TECTONICS

_problem statement and aims

TECTONICS
structure



Tectonics refers to the art and science of construction. The existing Heidedal building culture consist of a framed structure with a brick in-full and a steel sheeting roof system. These systems are cheap and cost effective to maintain. With that the tectonic approach will stay true to the surrounding context yet still draw an influence from the conceptual and theoretical approach of the overall intervention as represented in the conceptual drawing in figure 24.



fig. 24

Conceptual representation of the light vs heavy

PROBLEM STATEMENT

Typical Addiction recovery centres often use a closed link of heavy structures to keep the public out and the patients in, which could have a 'jail-like' feel to it. This isolated 'jail-like' characteristic intimidates the public as well as the users of the spaces by creating a subconscious fear of the whole system. People typical do not like what they do not know.

AIM

The driving factor and aim in terms of the structure will be a constant play between the light public structure and the closed-off private sections while staying true to the Heidedal building culture which is shown in figure 25 - 27. This will be explored and executed through the topological and morphological exploration.



fig. 25 - 27

Pictures of Heidedal indicating the industrial building culture

+ 1.6

RESEARCH QUESTION

How can architecture create a healing environment and act as a vehicle for personal re-orientation within a social-economic depressed environment?

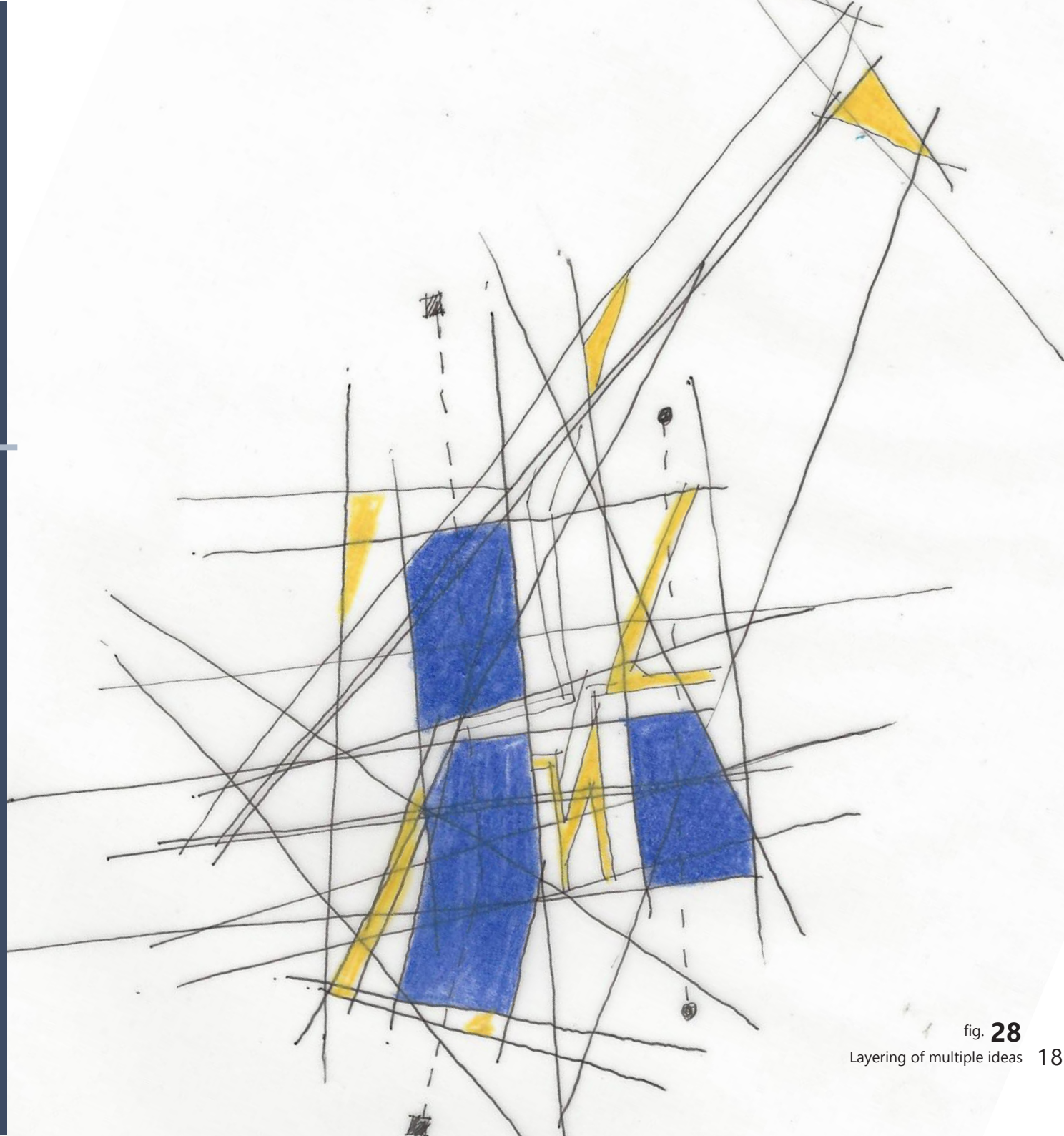


fig. 28
Layering of multiple ideas 18



PART

02

EXPLORATION AND GROUNDING



(Stalder, 2013: Online)



| | |
|-------------------------------|--|
| 2.1 CONCEPTUAL DEVELOPMENT | 2.1.1. Touchstone pg. 24-25 2.1.2. Design concepts pg. 35-32 |
| 2.2 TYPOLOGY | 2.2.1. Client Profile pg. 33-35 2.2.2. User Profile pg. 35-36 2.2.3. Precedent Studies pg. 37-44 2.2.5. Accommodation List pg. 45-46 |
| 2.3 TOPOLOGY | 2.3.1. Macro analysis pg. 47-50 2.3.2. Meso analysis pg. 51-54 2.3.3. Micro analysis pg. 55-58 |
| 2.4 MORPHOLOGY | 2.4.1. Overview pg. 59-62 2.4.3. Spirituality pg. 63-64 2.4.4. Liminal space pg. 65-66 2.4.5. Healing spaces pg. 67-69 2.4.6. Conclusion pg. 70 |
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2.1

CONCEPTUAL DEVELOPMENT

_capturing the essence

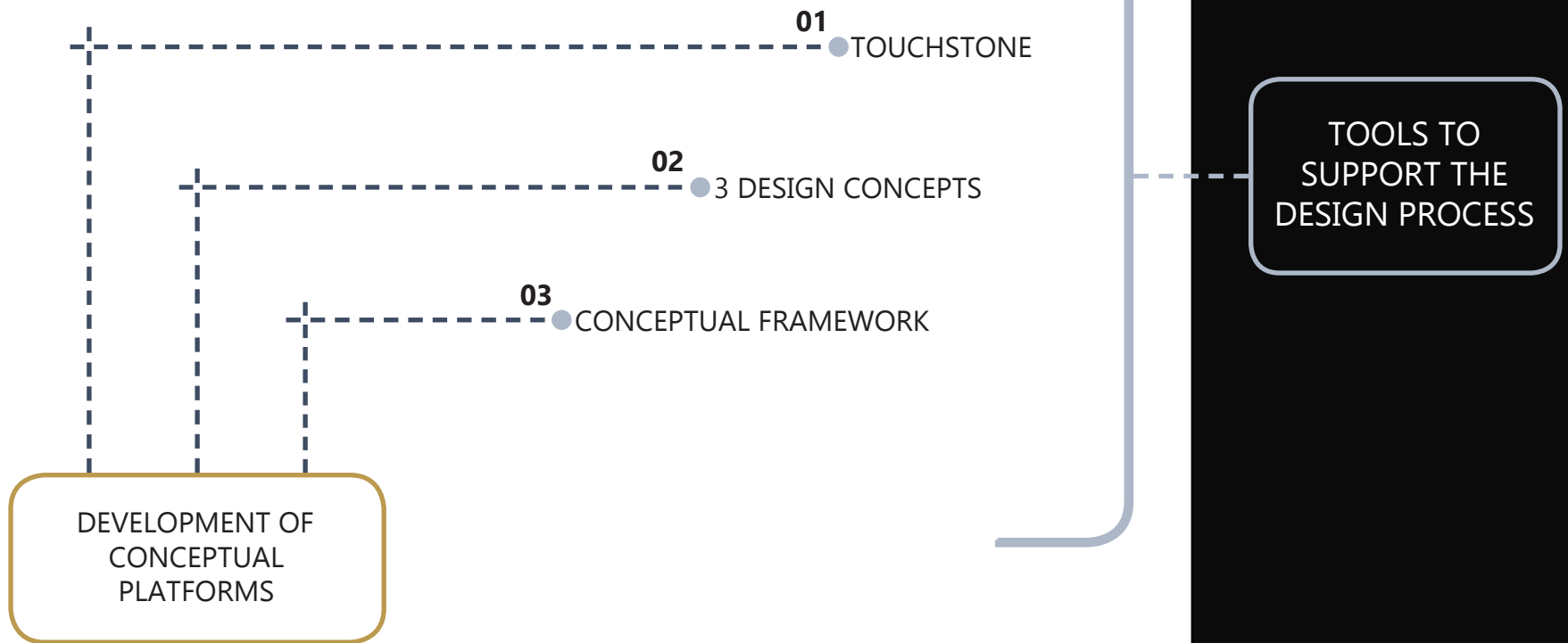




fig. 29

Trapped in Addiction
(Adi, 2019: Online)

*"Addiction is the only prison where the locks are on
the inside"*

_Unknown

2.1.1

THE TOUCHSTONE

_understanding the perspective

The aim of the touchstone was to represent how an alternative treatment of an object can usher someone's understanding and perspective of it.

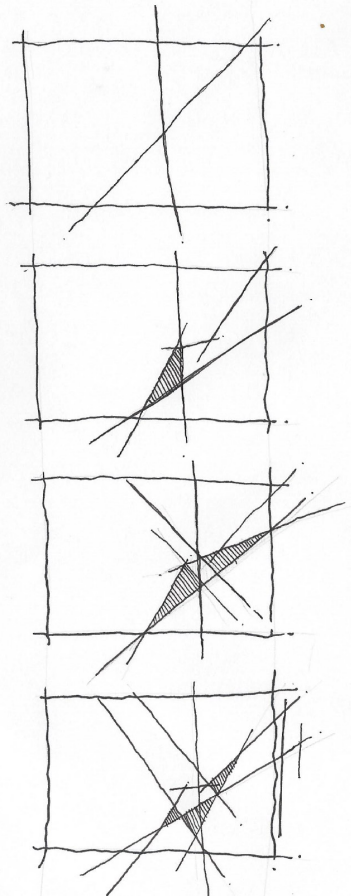


fig. 30
Parti Sketch
disjointed lines creating a whole

The touchstone is an abstracted conceptual representation and platform on which the essence of the dissertation is grounded. This touchstone was derived from the initial exploration of perspectives and how objects and situations can be preserved differently from alternative angles. The initial parti sketches in figure 30 were an exploration of random individual lines which happened at intersecting points. The lines were only given a purpose once the perspective of the individual lines changed by highlighting the shapes found between the intersections.

The first exploration to the touchstone consisted of a box with different slots of thread winded between points as seen in figure 31. From most angles this would look like the interweaving was completely random, However, if one looks at a specific point the different layers would create an abstract picture.

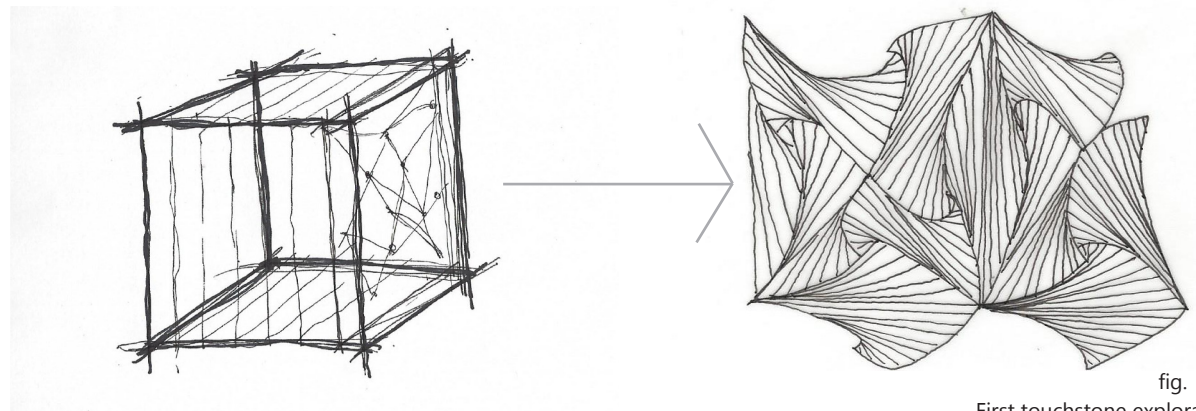
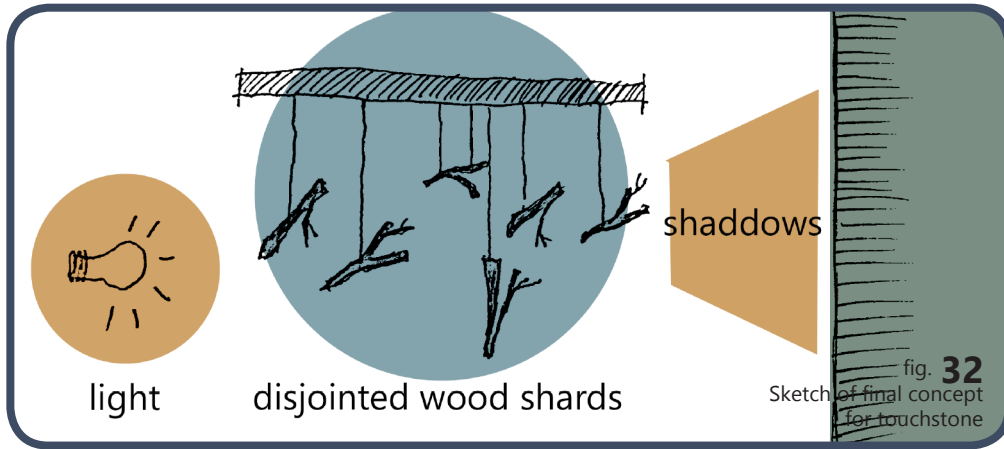


fig. 31
First touchstone exploration
entwined thread



The final touchstone carried on with the idea of disjointed segments going through an alternative process to create a whole. If someone looked at the touchstone, all they would see were shards of wood that are randomly hanging from the ceiling. This represented the disjointed and alienation effects addiction has on a person.

However, once a light was switched on and shone onto the random shards of wood, a pattern started to appear in the shadows as shown in figure 33. This represents the fact that no matter how different an object is or in what position it is placed in, if the perspective and understanding changed, it will form an important part of the outcome.



fig. 33
Images of final touchstone

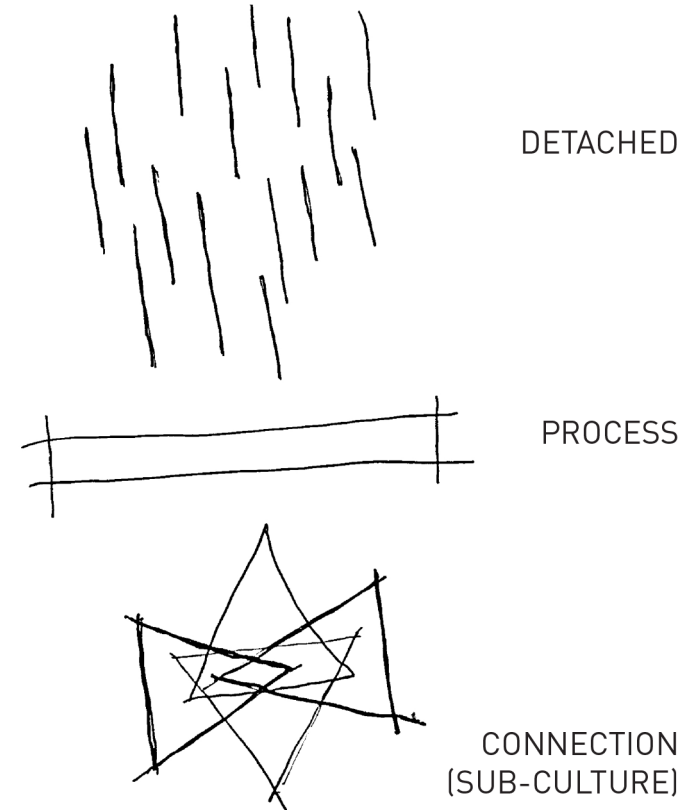


fig. 34
conceptual sketch of touchstone 24



2.1.2

DESIGN CONCEPTS

_tools for space making

From the touchstone and the ideas which were generated from it, three main design concepts were deduced, serving as a tool in the conceptual design process. These concepts explore the theoretical and spatial visions of the overall architectural intervention. Parts of all three concepts will be extracted and used in the theoretical investigation which is discussed in part 2.4.

CONFINEMENT
VS
OPENNESS

REAL TIME

LINEAR
FRAGMENTA-
TION

(Stalder, 2013: Online)



DESIGN CONCEPT

01



fig. 35

Water colour painting

Abstract representation of confinement vs openness

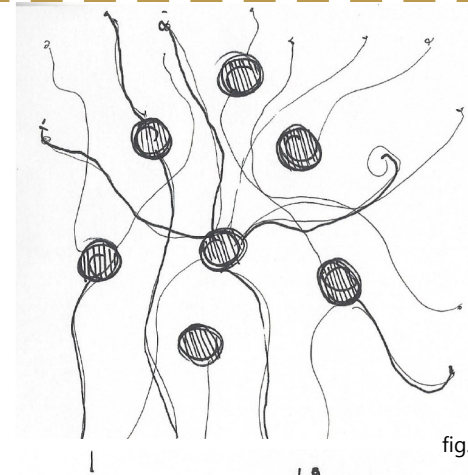


fig. 36

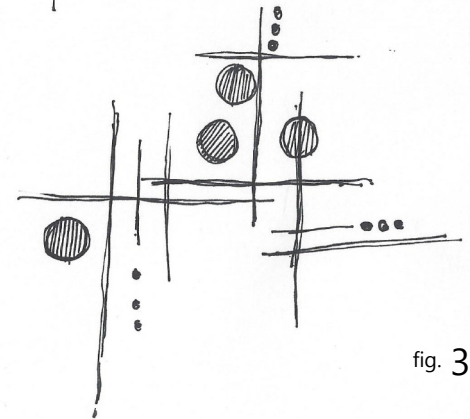


fig. 37



fig. 38

initial conceptual sketches
of confinement vs openness

CONFINEMENT VS OPENNESS

The initial idea for the design concept of confinement vs openness derived from the unique recovery process of addiction. There is a constant play between private and individual recovery and the public and supportive recovery; where spaces of asylum and spaces for the community collide yet stay separate. The initial conceptual sketches and how the concept developed can be seen in figure 36 - 38, exploring how architecture can be used as a tool to sculpt these spaces.

Figure 35 was the first abstract representation of a simple closed shape, living in harmony while articulated by open-ended linear lines. This was reflected in loose linear threads which started to sculpt the open blank page as seen in figure 40. These threads then start to move through and articulate a confined closed shape by knitting the spaces together.

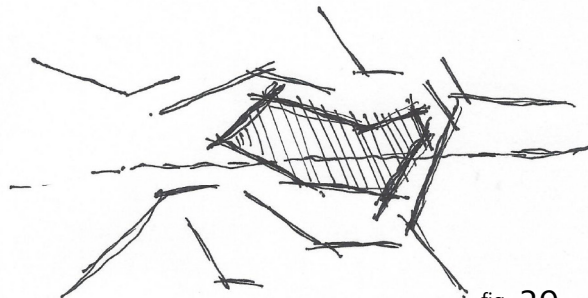


fig. 39

Sketch of final idea of confinement vs openness

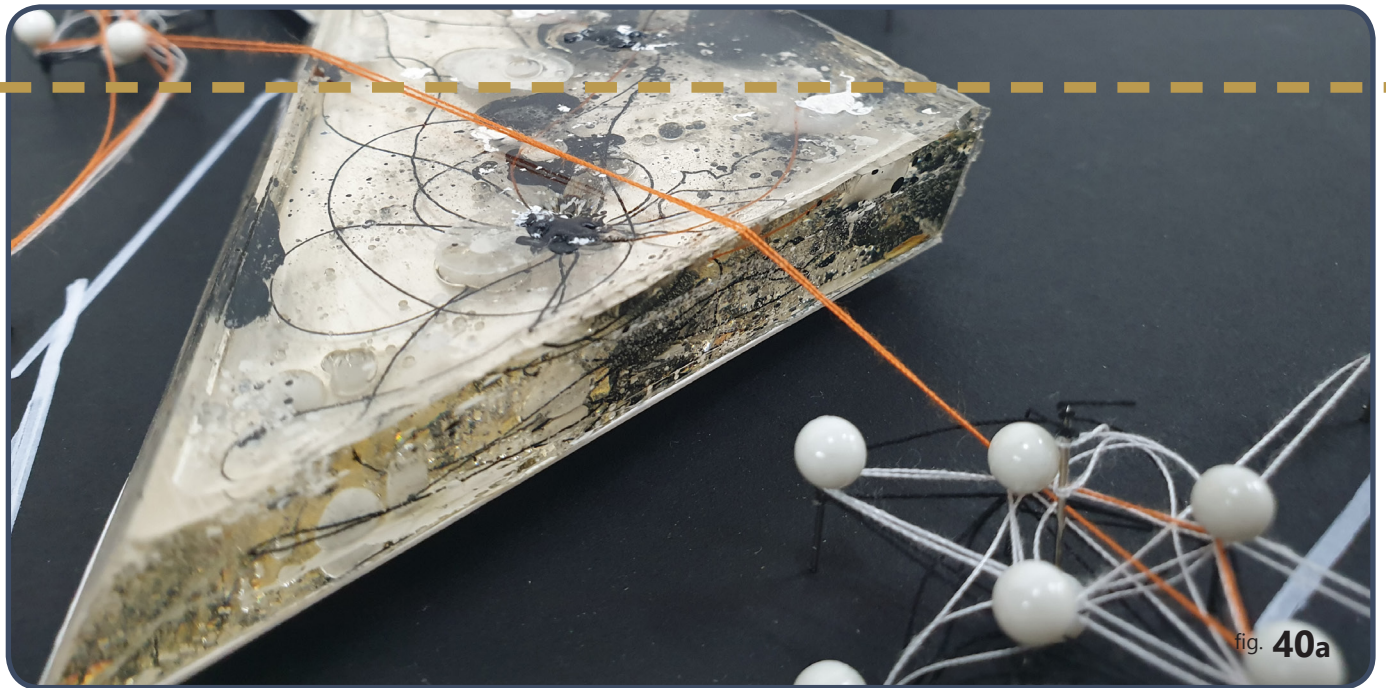


fig. 40a

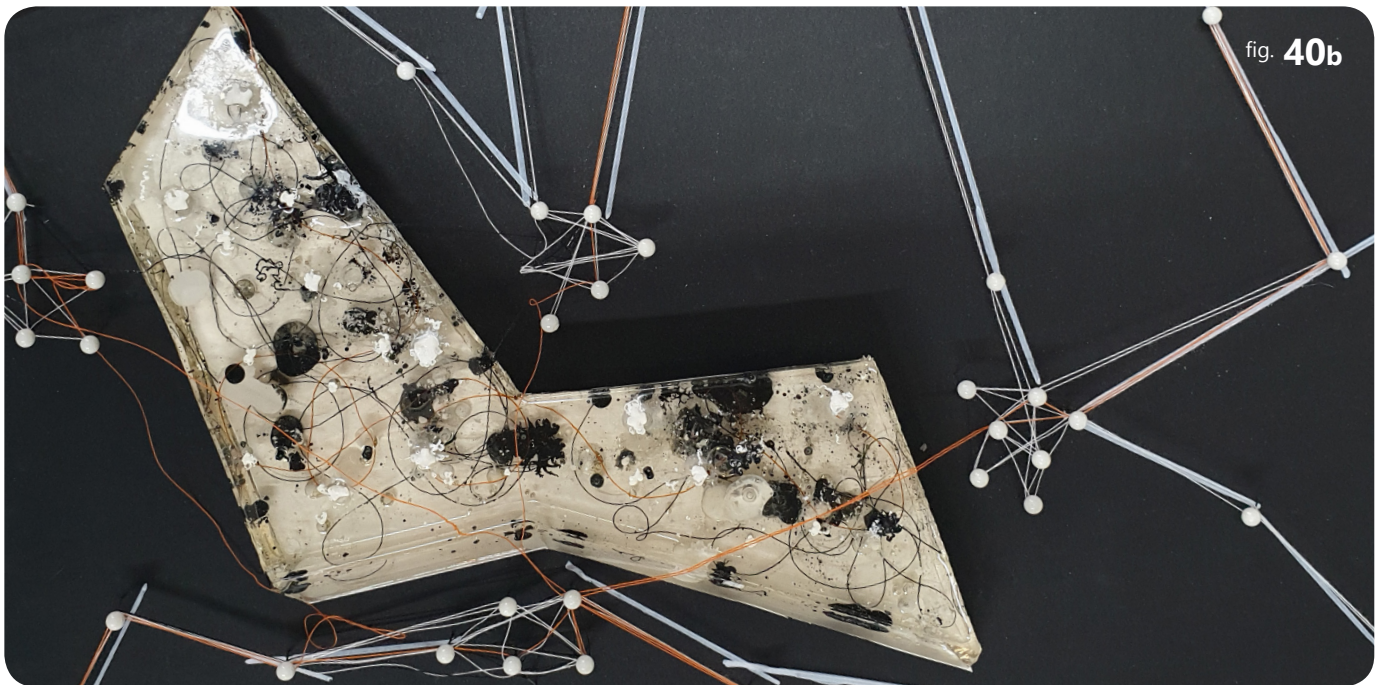


fig. 40b

fig. 40

Conceptual exploration 01

DESIGN CONCEPT

02

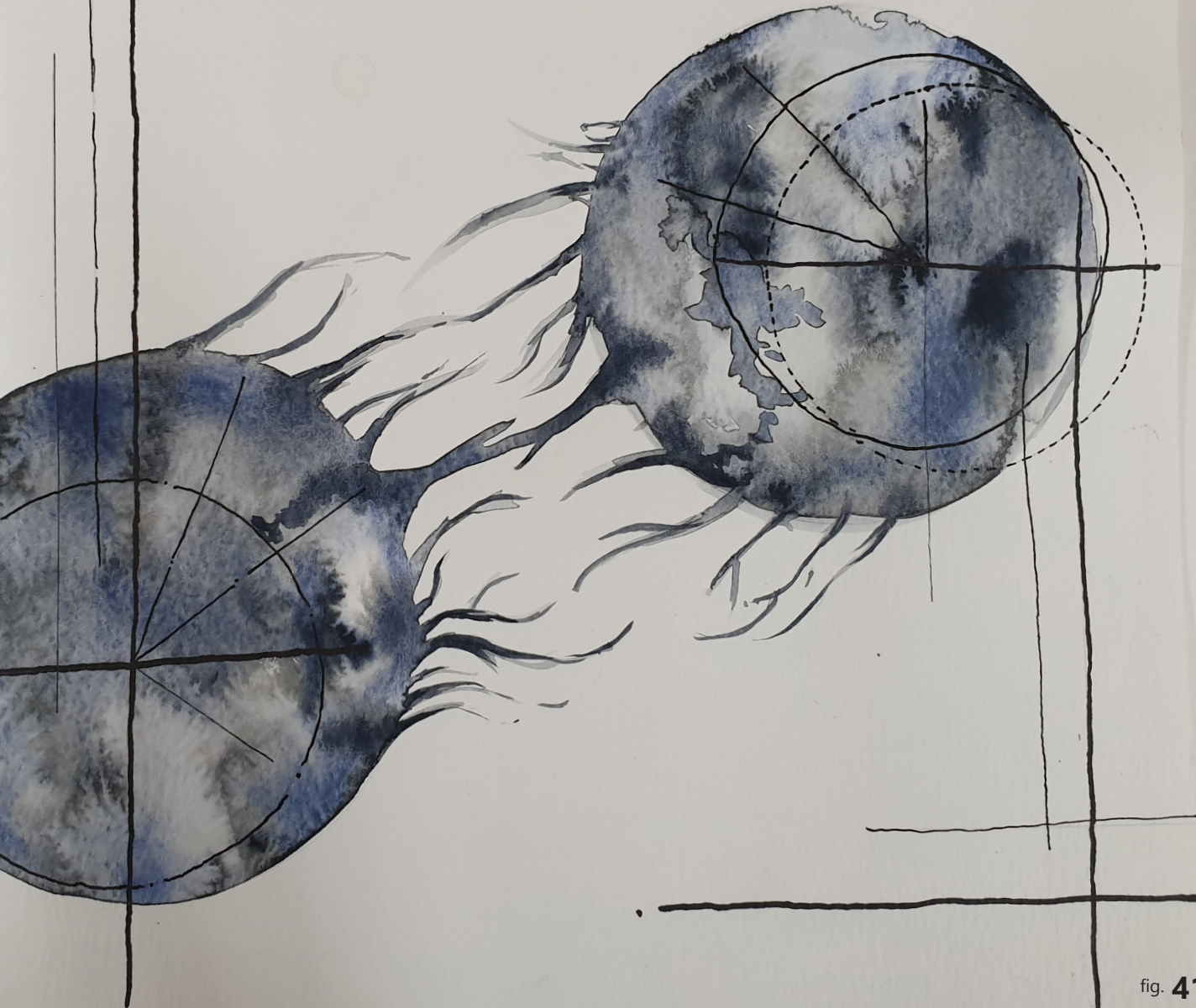


fig. 41

Water colour painting
Abstract representation of constant tension

REAL TIME

A real-time system has been described as one which "controls an environment by receiving data, processing them, and returning the results sufficiently quickly to affect the environment at that time" (Lui & Sathaye, 1993: 6). The design concept of real time originated from the constant tension between alienation and belonging as seen in the initial sketches in figure 42 - 43. How addicts get alienated and shunned to the outskirts of the community. The concept of real time proposes to keep the proposed rehabilitation centre within the community, allowing the users to keep track and stay within the happenings of familiar surroundings; by not necessary creating something new, but creating something that can make a difference by creating a beacon of hope.

Figure 41 was the first abstract representation of the constant tension of what was and what can be. Addiction can be seen as a type of ruin, where the history can't be rebuilt but the imperfections can be appreciated. This was represented in a transparent tower as seen in figure 44, which becomes a beacon of hope within the community. The transparency represents the real time and how the centre should be transparent both ways, enhancing a sense of belonging. The flowers (found on site) and threads represent how the authenticity of the community needs to stay the core and the roots for the beacon of hope.

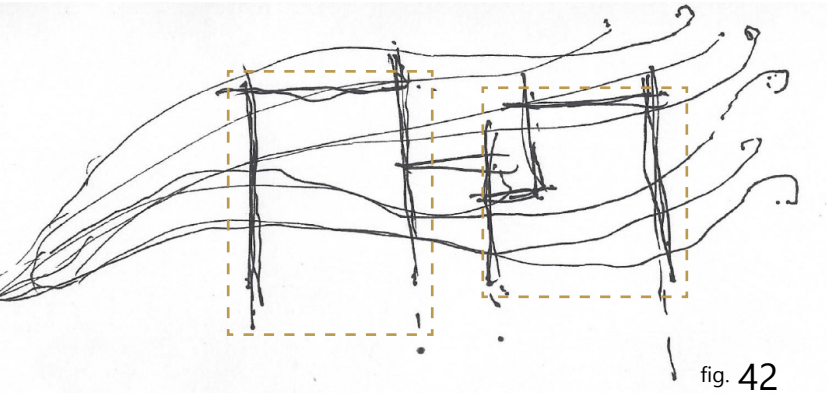


fig. 42

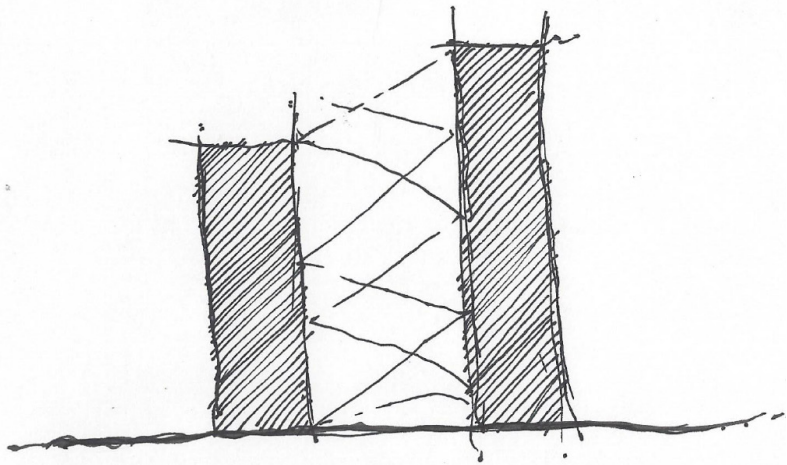


fig. 43
initial conceptual
sketches of real time



fig. 44
Conceptual exploration 02

DESIGN CONCEPT

01

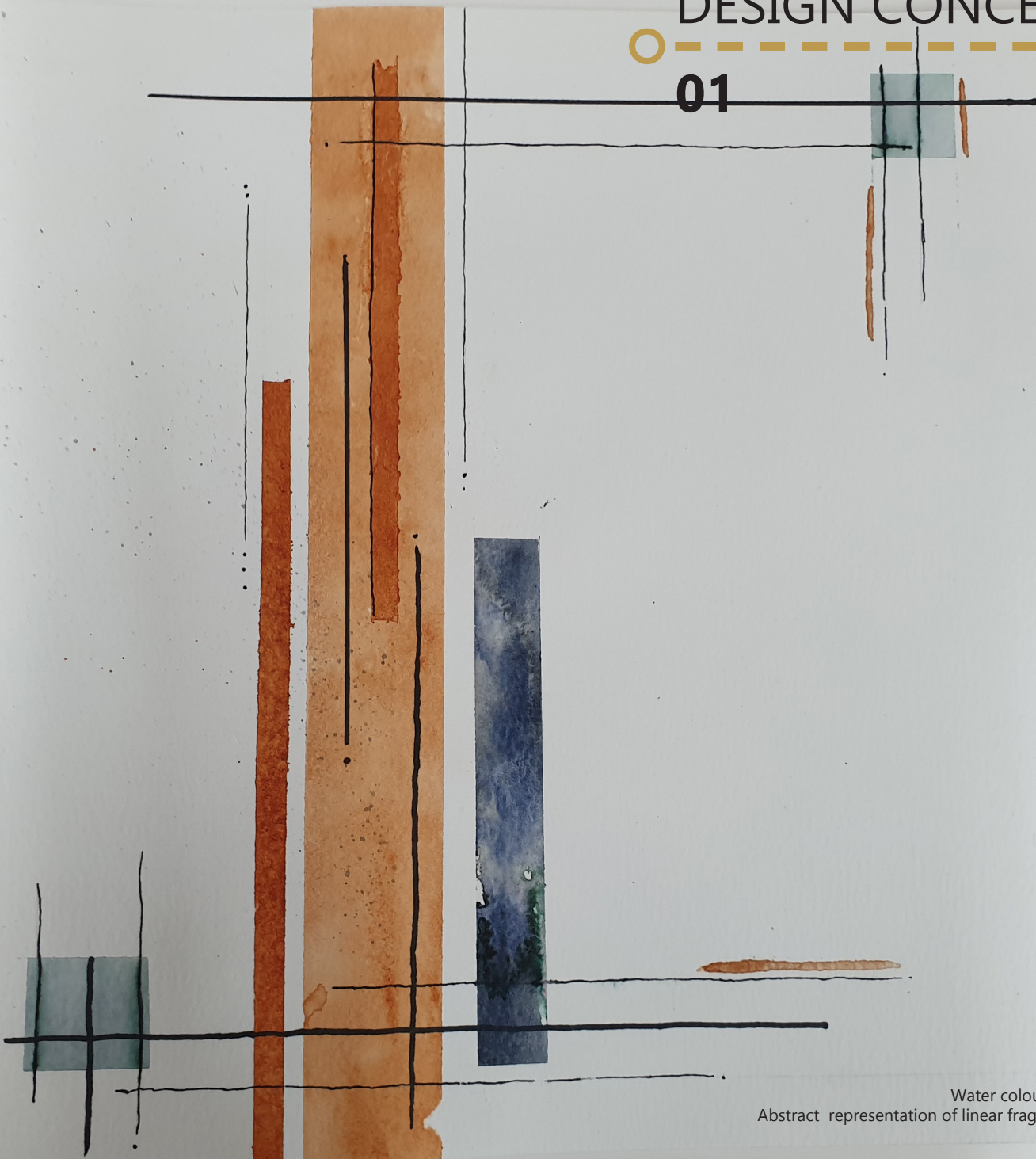
LINEAR FRAGMENTATION

The third and final design concept is based on the theoretical stance of liminality and thresholds. How the actual recovery process becomes the in-between of addiction and recovery. It is about having a starting point and an end point, but focusing on the fragments of the process. Each individual has their own unique journey which they go through, however, experiencing parallel journeys with people on a similar path, thus creating a subculture or a new community within the bigger community.

The first abstract representation of linear fragments that creates its thresholds but not barriers can be seen in figure 45, allowing the transcending of boundaries and indicating that freedom is connected to the intangible. This was then translated into an exploration of fragmented elements that are not necessarily connected on a physical level, yet on a spatial level (seen in figure 47). Thus highlighting how the architecture should guide the process of the in-between rather than creating obstacles for it.

fig. 45

Water colour painting
Abstract representation of linear fragmentation



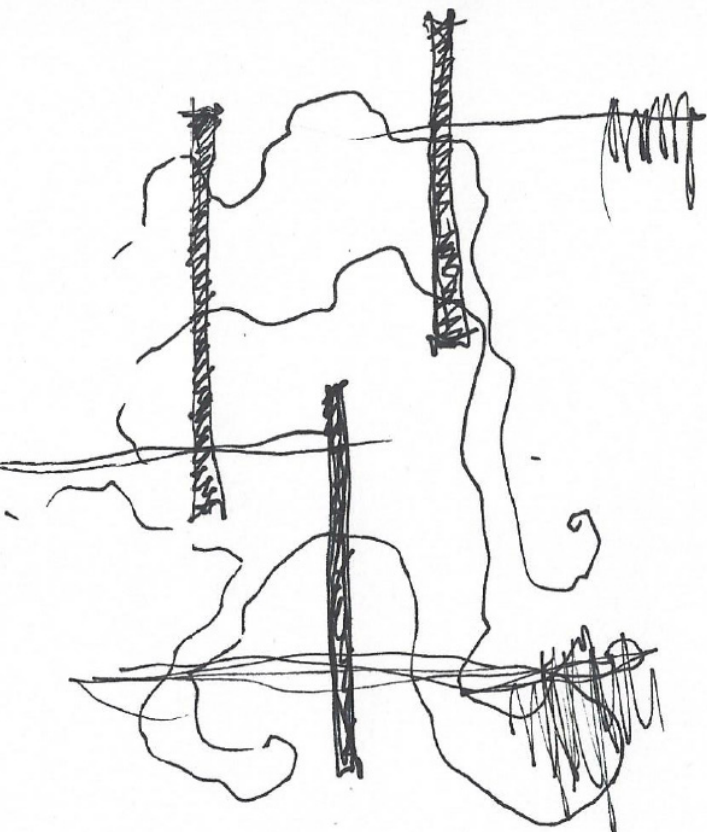


fig. 46
Initial sketch of linear fragmentation



fig. 47a



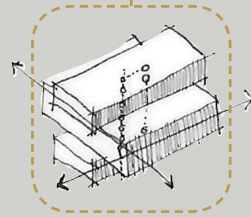
fig. 47b



2.2 Typology

_ An Overview and
explorative study

TYPOLOGY
function

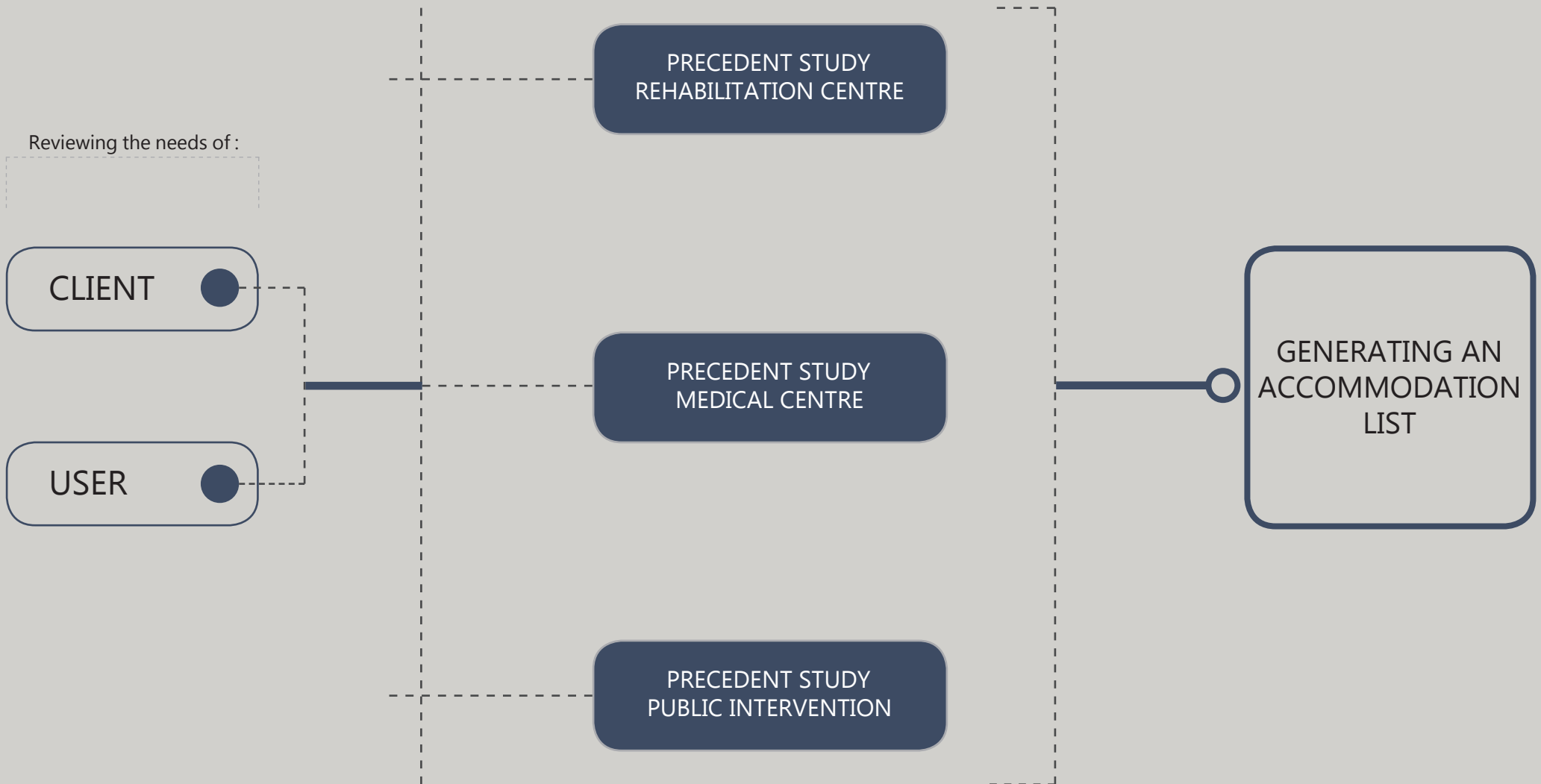


In order to generate an accommodation list that is viable for this intervention, the needs of the client as well as the users must be identified. In addition similar building typologies will be investigated in order to further develop the needs and requirements of the client and users.



fig. 48

Conceptual representation of
addiction



2.2.1 CLIENT PROFILE

As discussed in part 1, the client, The Oasis Recovery centre is one of the few registered and trusted rehabilitations centres found in South Africa. The aim of his centre is to identify the root of the clients' addiction and guide them in developing new ways of coping and communicating. This organization also focuses on sharing and developing the knowledge and skills necessary for working with addiction. By studying the organizations aims, missions, objectives and needs, certain typological deductions can be made to assist in the typological programme of the intervention, refer to figures 49 - 51. A further insight of the needs and requirements of the building and users will be investigated through several precedent studies.



2.2.2. User Profile - Reviewing the needs

GENERAL PUBLIC

- + VISITORS TO THE IN-PATIENTS
- + OUT-PATIENTS AND POTENTIAL PATIENTS
- + RELATIONSHIPS BETWEEN MEMBERS OF THE 'UN-ADDICTED PUBLIC' AND PATIENTS
- + CAFE USERS

THE ADDICT

- + PERSON WITH ADDICTION = PATIENT
- + RECOVERY PROCESS
- + RECONNECTION BETWEEN MIND AND BODY
- + REINTEGRATION INTO THE COMMUNITY OF HEIDEDAL

STAFF

- + ASSISTING THE ADDICT IN RE-ESTABLISHING THEMSELVES WITHIN THE COMMUNITY
- + THEIR ROLE IS TO UNDERSTAND THE NATURE AND EFFECT OF ADDICTION
- + CURATING THE EXPERIENCE OF HEALING

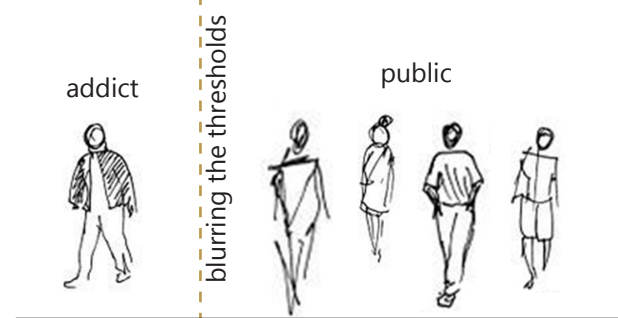
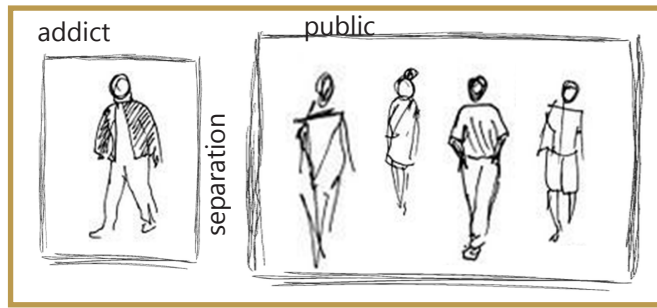


fig. 49
public vs patients - blurring the thresholds



fig. 50
the addicts recovery process
(Prades, 2018: Online)

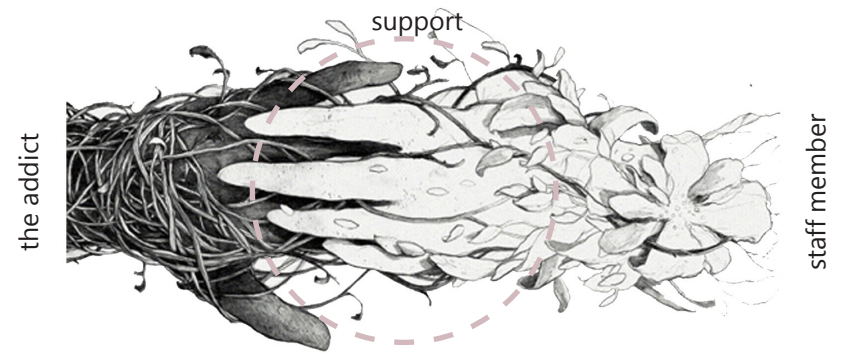


fig. 51
staff and the support needed
(Prades, 2018: Online)

EXTRACTING THE NEEDS FROM EACH USER OF THE BUILDING

2.2.3

PRECEDENT STUDY

01 Public Intervention

MFO-Park

- Architect : Burckhardt + Partner Architekten
- Place : Zürich, Switzerland
- Project year : 2002

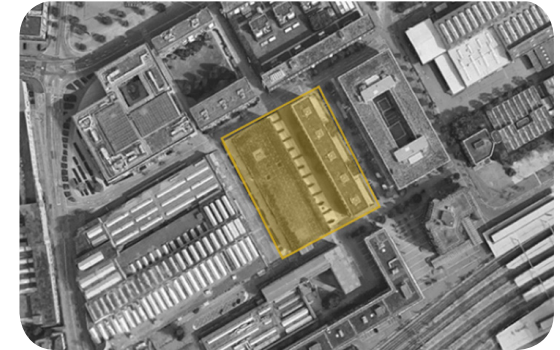


fig. 52
location of MFO-Park

Functions extracted

- + using plants as a place making tool
- + changing the atmosphere of an industrial area



fig. 54



fig. 55



fig. 56

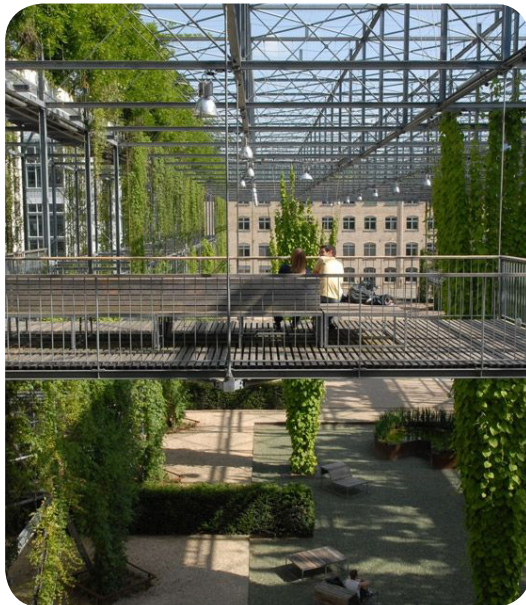
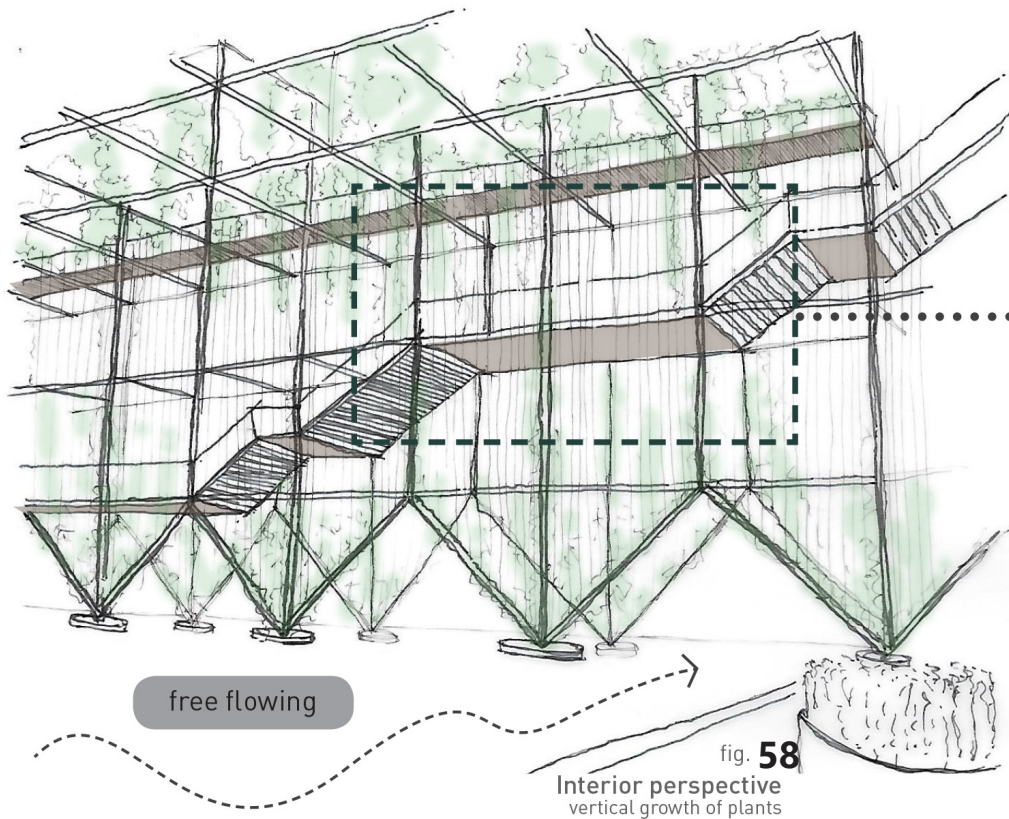


fig. 53

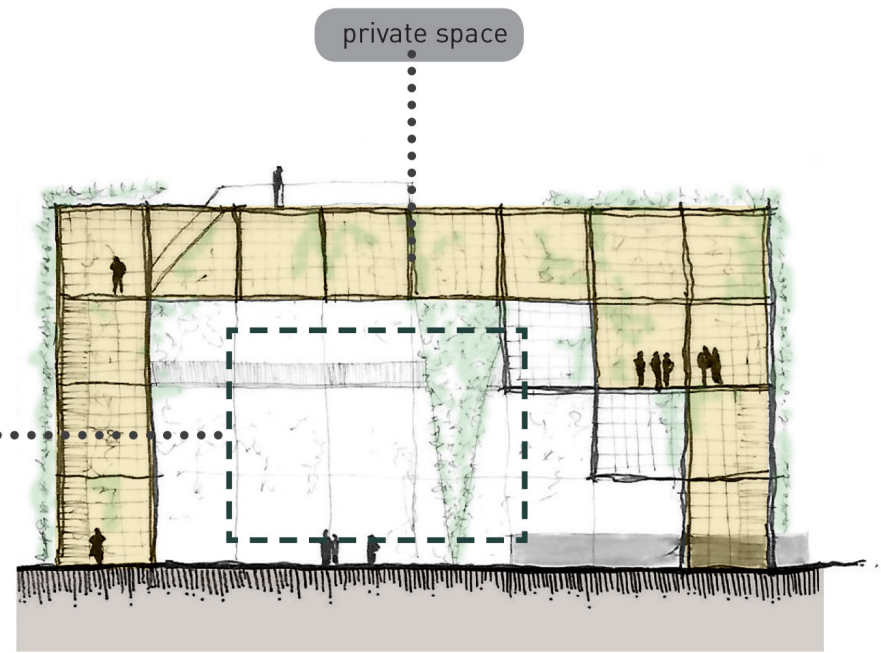
The MFO-park is situated within an industrial area of Zürich, which at that stage was being redeveloped as well as introducing residential areas to it as seen in figure 52. The aim of the park was to provide a solution to the problem of the contrasting high-rise buildings and parks located on ground floor (Hoory, 2017: online). Instead of designing a typical park between two streets, the architect used the existing skeleton of the old weapons production and testing factory, which seamlessly fits into its surroundings of multi-levelled buildings, to create a new vertical park (Hoory, 2017: online). This multi-tiered vine park combines the history of an industrial zone while the beauty of nature aims to create a more inviting and living atmosphere to the area, as seen in figures 53 - 57.

fig. 53 -57
all images from (Hoory, 2017: Online)



walkways

public space



The MFO-Park is used as a precedent for its regeneration of space and atmosphere within an industrial topology. It uses nature to create a more livable atmosphere within an industrial environment. Figure 59 indicates how the structure was designed in a way that the more private spaces encompass the public spaces on a higher level, define the importance of the public intervention. Vines which have become woven into the structures were used as a temporal element of constant change as seen in figure 58. Allowing the architecture to blur the line between inside and out, building and park (Hoory, 2017: Online).



fig. 57

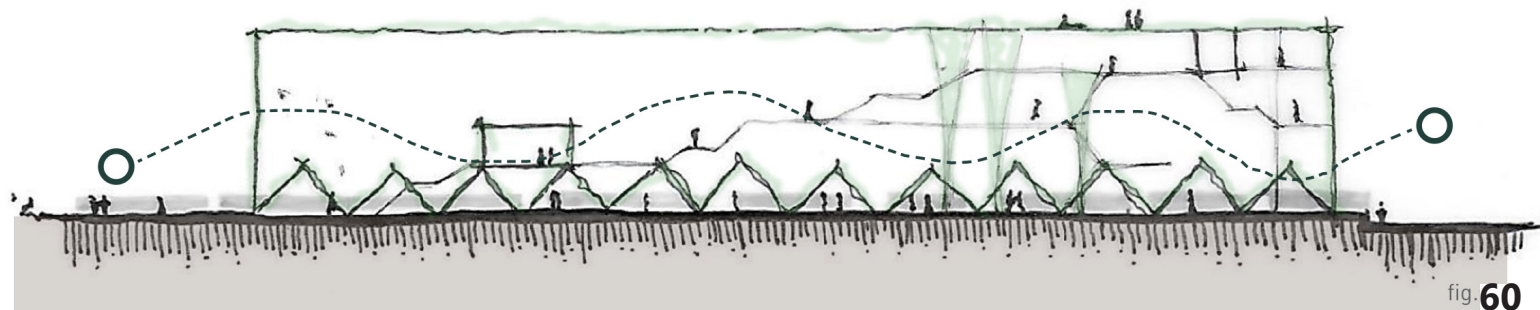


fig. 60
Longitudinal section
Visual connection throughout

PRECEDENT STUDY

02 Rehabilitation Centre

Groot Klimmendaal

- Architect : Koen van Velsen
- Place : The Netherlands
- Project year : 2010

Functions extracted

- + organization of functions
- + inviting the outside in
- + allowing the building and patients become part of the community
- + constant natural light



fig. 62

Interior perspective
meandering facade of restaurant



fig. 63



fig. 61

location of Groot Klimmendaal

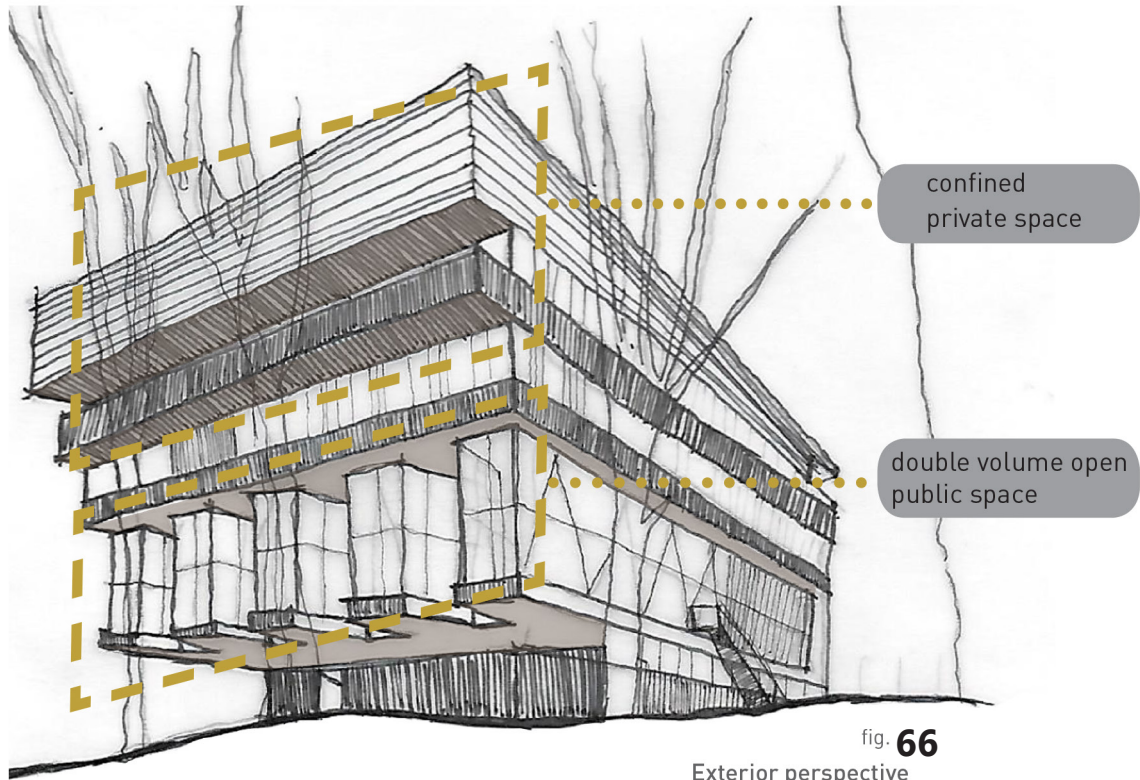


fig. 64

The Groot Klimmendaal rehabilitation centre can be found on the outskirts of the small town of Arnhem. It was used as a precedent for the concerns of creating positive and stimulating environments to increase the well-being and recovery process of patients. Skylights are found throughout, allowing the maximum amount of natural light as possible, seen in figure 67. Full height glazing was used along the central space which allow different levels and functions of the interior to connect, as well as blurring the boundaries of inside and outside throughout the building and its functions. With that nature has a strong visual and tangible presence throughout the building, allowing the user to revalidate whilst walking (Archdaily,2011: Online). The restaurant adds to this concept of inviting nature in by creating a meandering façade as seen in figure 62, which created more semi-private nodes for the public to interact with the patients. This rehabilitation centre is a prime example of how to successfully integrate a private facility with the community. The ground level becomes a double volume that facilitates for the patients as well as the public through a café, group meeting rooms and sports facilities, however becoming more private to the upper levels.

fig. 63-64

all images from (ArchDaily. 2011: online)

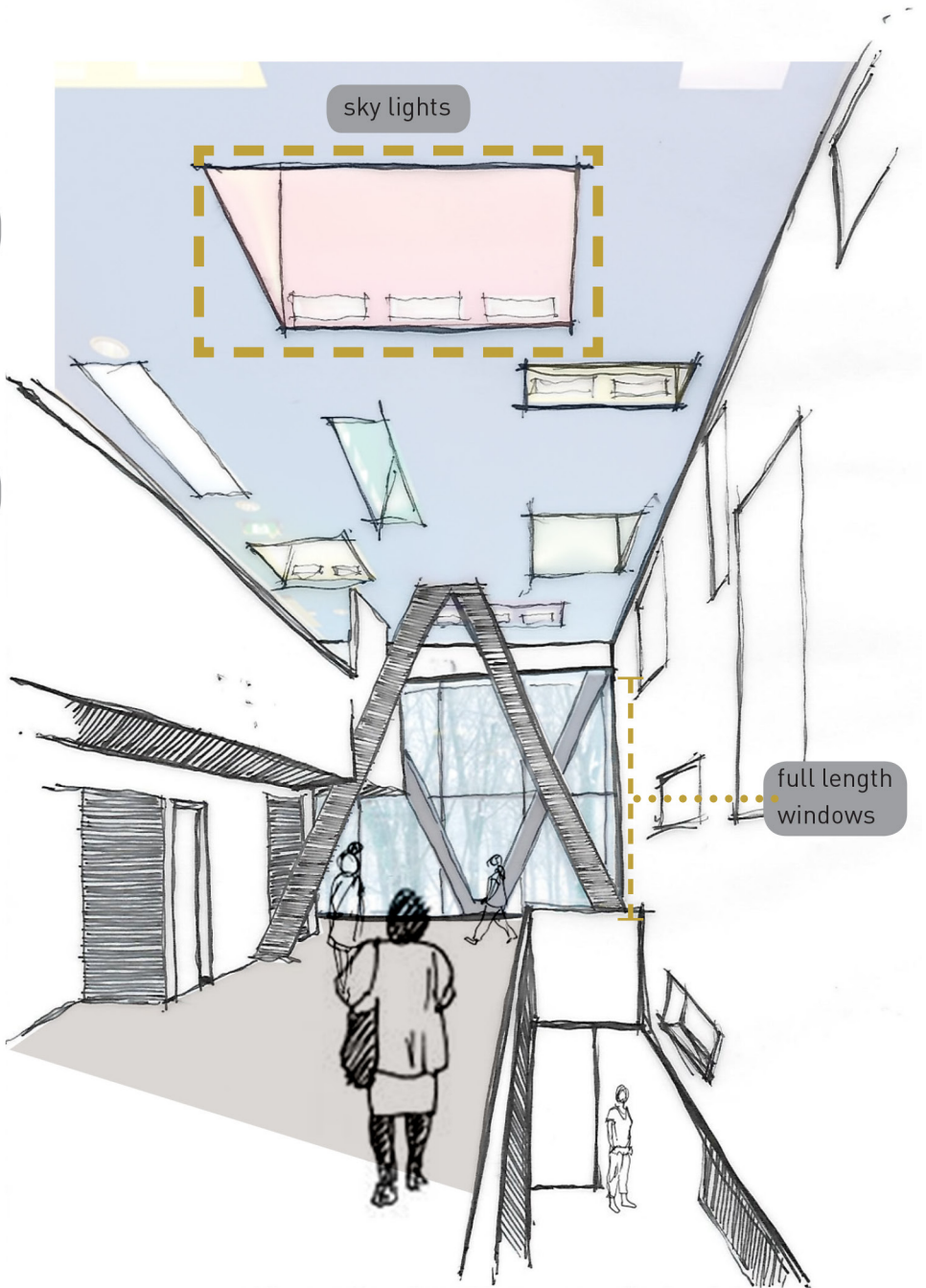


confined private space

double volume open public space

fig. 66

Exterior perspective
double volume public spaces vs private spaces



sky lights

full length windows

fig. 67

Interior perspective
constant natural light

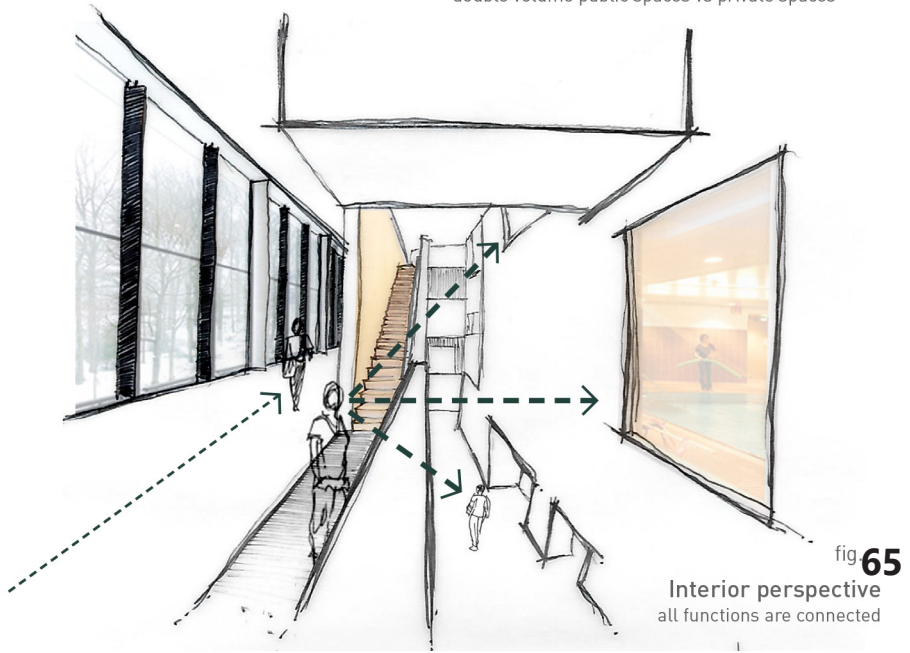


fig. 65

Interior perspective
all functions are connected

PRECEDENT STUDY

03 Rehabilitation Center

Rehab Basel

- Centre for spinal cord and brain injuries
- Architect : Herzog & de Meuron
- Place : Basel, Switzerland
- Project year : 2002



fig. 68
location of Rehab Basel

Functions extracted

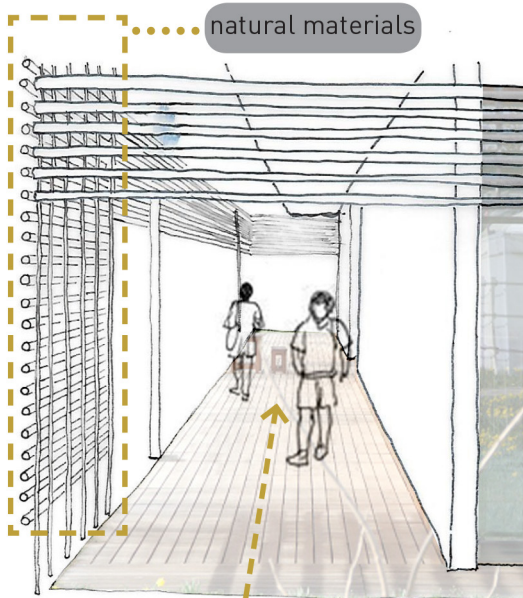
- + layout of functions
- + entrance lobby
- + different courtyards
- + natural light and ventilation
- + workshops
- + use of natural materials



fig. 70



fig. 71



natural materials

fig. 69

Exterior perspective
walkways on exterior of building

REHAB Basel is a highly specialized clinic for rehabilitation and parapsychology. However, from the beginning of the project the clients main wish was that this building should not follow the typical typology and feel of a hospital or rehab centres (Blankenbeler, 2015: Online). The purpose of this precedent study was to investigate the needs and functions of a rehabilitation centre as well as the organization of functions within the building. The entrance lobby can be found through a central court yard which becomes an important central link to the rest of the facility as seen in figure 78. The functions are designed around different courtyards allowing most of the spaces to have direct access to them. Each court yard has its own characteristic such as size, decor and function, keeping the building interesting around each corner as seen in figure 77. This allows natural light and ventilation to flow through the most important parts of the building. Light shafts were also designed for the patient's rooms, allowing them to see the stars at night and emphasizing the natural light during the day (figure 70). Natural materials were used as cladding mechanisms to help the patients feel at ease, increasing the healing process. All the passages are situated on the outside of the building or around the courtyard which connects back to the concept of "not-a-hospital-Feel".

fig. 70-76

all images from (Blankenbeler, 2015: online)

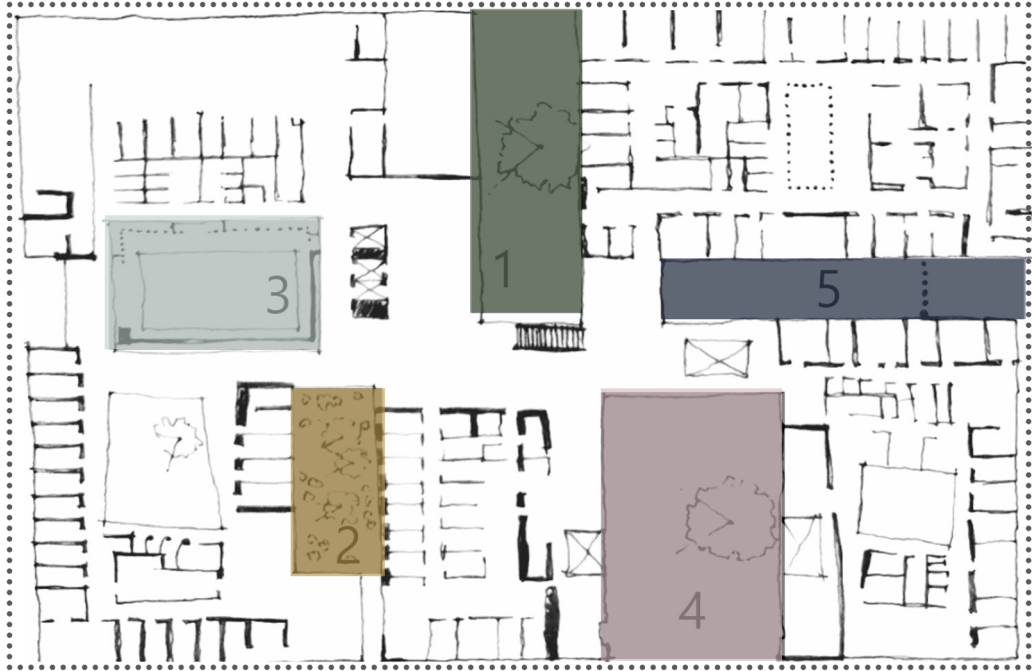


fig. 77
Ground Floor Plan
different courtyards



fig. 72



fig. 73

- [1] outdoor green space
- [2] sculptural garden
- [3] indoor pool
- [4] entrance courtyard
- [5] pond



fig. 74

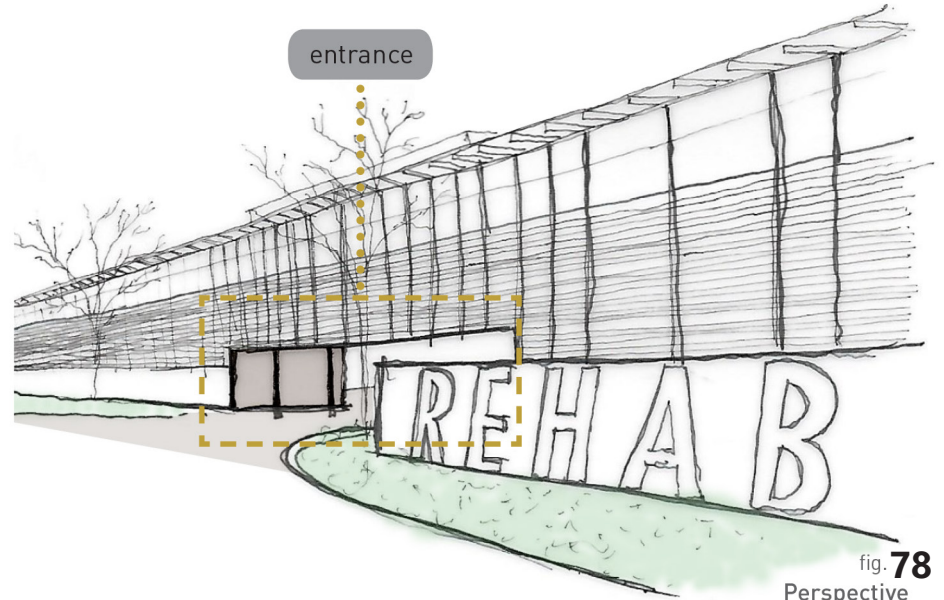


fig. 78
Perspective
entrance through a courtyard

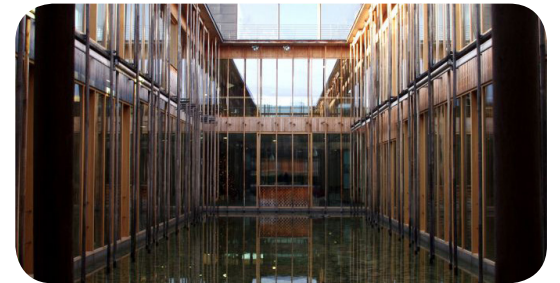


fig. 76



fig. 75

PRECEDENT STUDY

04 Medical Centre

Wilgers Medical Centre

- Architect : Marguerite Pienaar
- Place : Pretoria, South Africa
- Project year : 2015

Functions extracted

- + layout of functions
- + hidden foyer
- + simplicity and flexibility
- + plans as screen
- + roof structure
- + privacy for patients
- + thresholds



fig. 79

location of Wilgers Medical Centre



fig. 81



fig. 82



fig. 80

interior perspective
abundance of natural light

The Wilgers medical pavilion is a centre for allergies opposite the Wilgers hospital in Pretoria. It was used as a South African precedent due to its goal of creating an open, light and fresh atmosphere for a medical facility. All the spaces and openings were carefully crafted in order to respect the patient's privacy, while still allowing natural light and ventilation into the building (Barker, 2016: 37). In the linking passages the windows can be found at floor level which hides the patient's entry into the consulting rooms, as seen in figure 85 (Barker, 2016: 37). This focus on privacy can also be seen on the recessed northern façade, which is screened off by a perforated steel panel that will eventually be covered with creepers, to assist with the summer sun control (figure 84). The rooftop terrace is screened and softens the hard road and connecting parking lot. The architect used the function of the typical Pretoria house with a 'stoep' encompassed by a pergola, allowing the patients to relate to the building to enhance the healing process (Barker, 2016: 37).

fig. 81-82

all images from (Barker, 2016: Online)

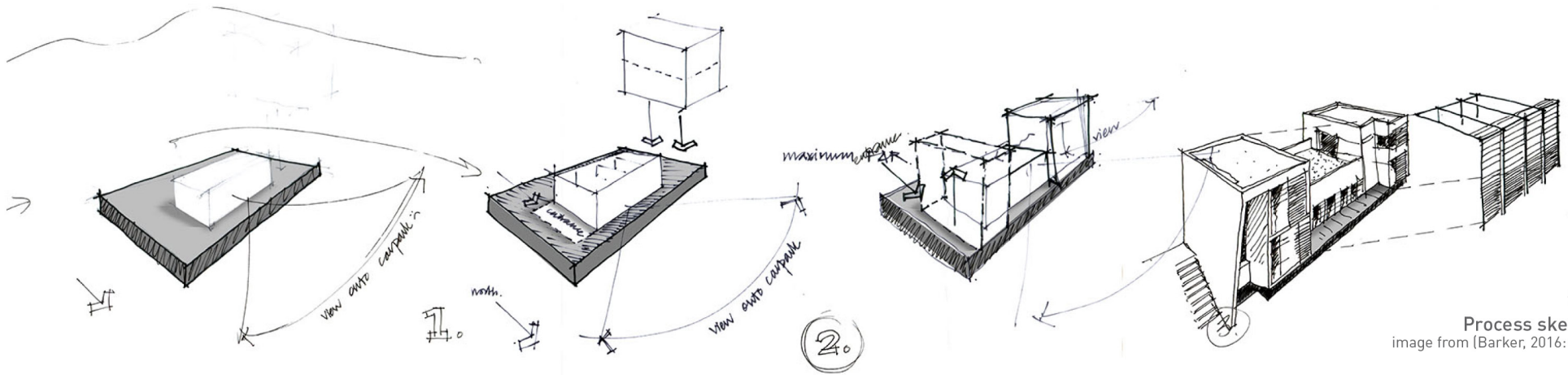


fig. 83
Process sketches
image from (Barker, 2016: online)

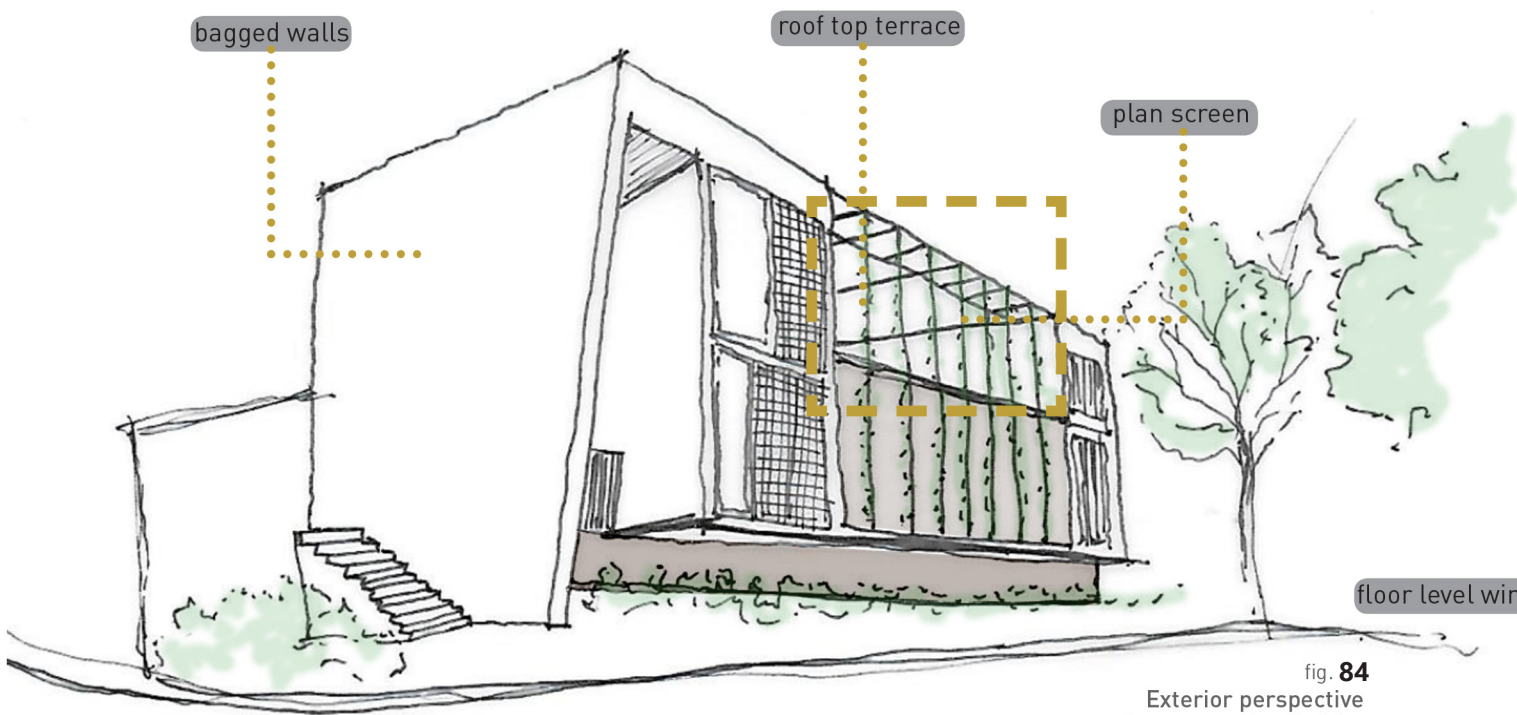


fig. 84
Exterior perspective
walkways on exterior of building



fig. 85
Exterior perspective
walkways on exterior of building

2.2.4

Accommodation List

Accommodation list generator

PUBLIC

- + Out-patients Foyer
- + Cafe
- + Out-Patients courtyard
- + Public bathrooms
- + Visitors parking
- + In-patients Foyer
- + Emergency staircase
- + Security check point
- + Delivery's
- + Refuge area

SEMI-PUBLIC

- + Out-patients group therapy
- + Staff room
- + Admin offices
- + Boardroom
- + Courtyards / gardens
- + In-patient circulation
- + Reception filing room
- + Nurses quarter
- + In-patients group therapy
- + Waiting area
- + Visitors lounge
- + Exhibition space
- + Coffee Lounges

SEMI-PRIVATE

- + Physical evaluation
- + Psychiatric evaluation
- + Reading pods
- + Individual therapy pods
- + Art workshop
- + Pottery workshop
- + Wood workshop
- + Kitchen
- + Dining
- + Sun room / Reading room

PRIVATE

- + Housing units
- + Consultation rooms
- + Sanitary facilities
- + Storage
- + Laundry

Out-patients

In-patients

Ground Floor

- + Cafe
- Service yard 9m²
- Kitchen 20m²
- Coffee Shop 65,6m²
- + Male toilets 19m²
- + Female toilets 22m²
- + Group therapy 40m²
- + Reception 40m²
- + Admin storage 5m²
- + Office x2 8,4m²

First Floor

- + Waiting area 24m²
- + Therapy room x4 31m²
- + Roof Terrace 46m²

Ground Floor

- + Reception 31m²
- + Security Check 16,8m²
- + Admin storage 9,3m²
- + Staff room 01 13,6m²
- + Boardroom 22m²
- + Office x 2 11m²
- + Exhibition space 62m²
- + Visitors lounge 86m²
- + Visitors courtyard 86m²
- + Reading pods 47m²
- + Examination x2 31m²
- + Lounge 01 68m²
- + Dining 75m²
- + Kitchen 108m²
- + Staff Lockers 16m²
- + Grounds keeper 7m²
- + Yoga studio 80m²
- + Coffee Station 20m²
- + Group therapy x2 32m²
- + Lounge 02 67m²
- + Social courtyard 106m²
- + Braai area 92m²
- + Individual therapy 10m²
- + Staff room 02 21m²
- + Workshops x3 35m²

First Floor

- + Staff Room 03 60m²
- + Nurses station 22m²
- + Medical storage 11m²
- + Medication Storage 10m²
- + Bedroom 01 34m²
- + Bedroom 02 34m²
- + Bedroom 03 34m²
- + Bedroom 04 34m²
- + Bedroom 05 23m²
- + Bedroom 06 23m²
- + Bedroom 07 35m²
- + Bedroom 08 35m²
- + Bedroom 09 35m²
- + Roof Garden 01 40m²
- + Laundry 51m²
- + Roof Garden 02 82m²
- + Tv Room 70m²
- + Sun Lounge 95m²
- + Roof Garden 03 110m²

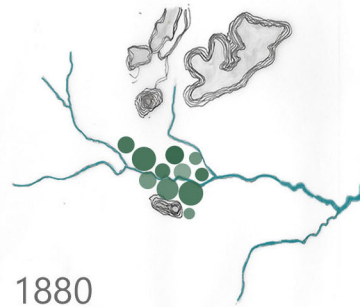
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TOPOLOGY

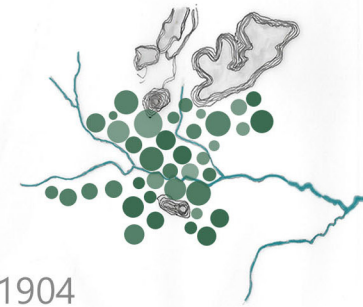
History of site
+
Site Selection
+
Problem Statement



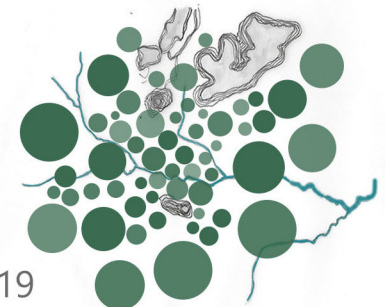
1848



1880



1904



2019

Development of Bloemfontein

History of Heidedal Bloemfontein

Heidedal was once a thriving community bordering Batho and Bochabela. It welcomed people from different backgrounds and cultures where they could find their home within its borders. It had a growing local economy and a very active civil society and could be called a well-developed suburb (Delpont, 2017: Online). However over the years there has been a lack of investment in Heidedal by the local and provincial government, leaving this little community to fall apart and to rather grow in poverty. This has allowed for the drug trade to get a foot in the door and has now grown exponentially over the years (Delpont, 2017: Online). This problem has over taken the community of Heidedal like a plague. A site in the centre of the community was therefore chosen to allow the community to have easy access to the centre.

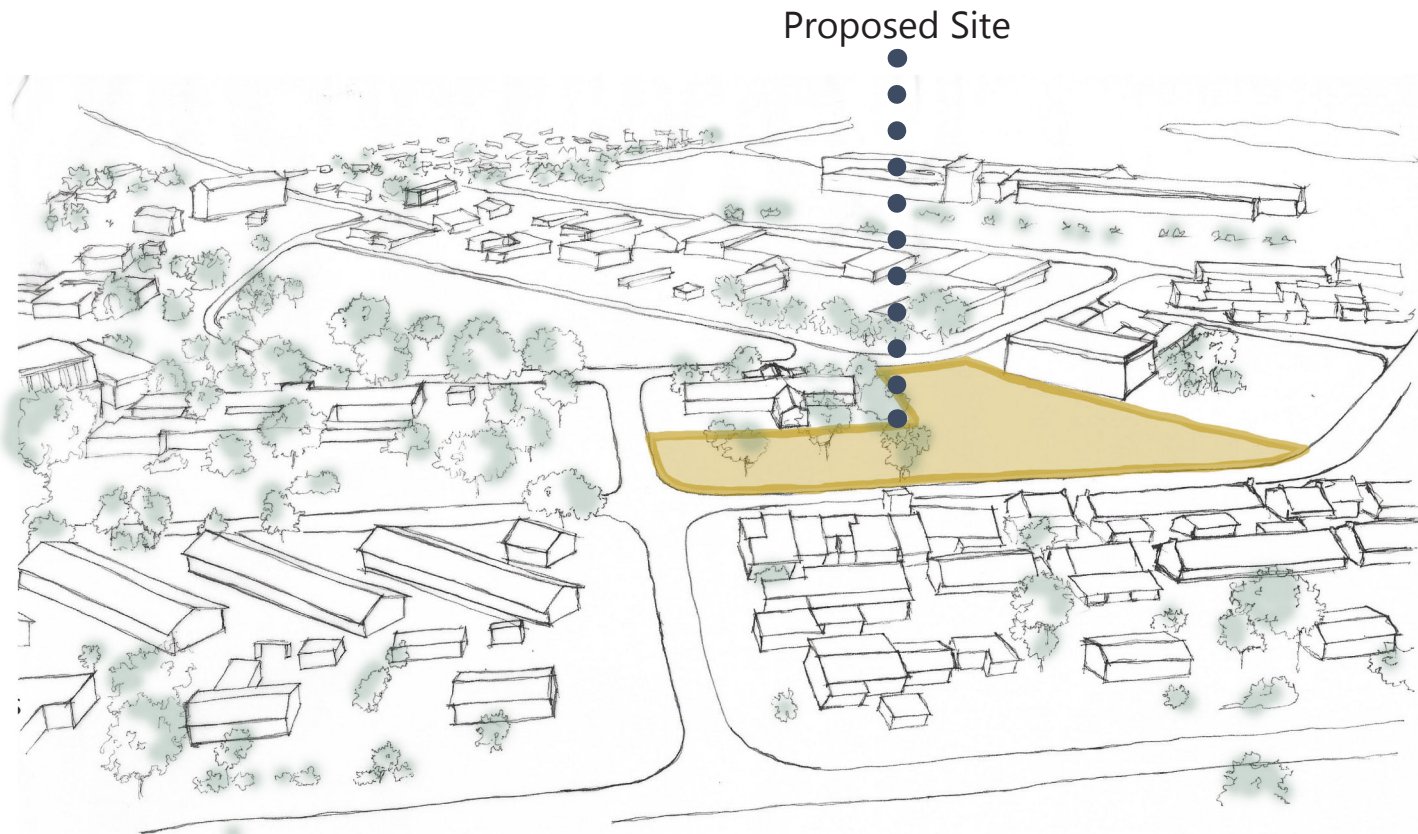




fig. 87

+ 1.1

TOPOLOGY

_Site Analysis

+ 01 MACRO ANALYSIS

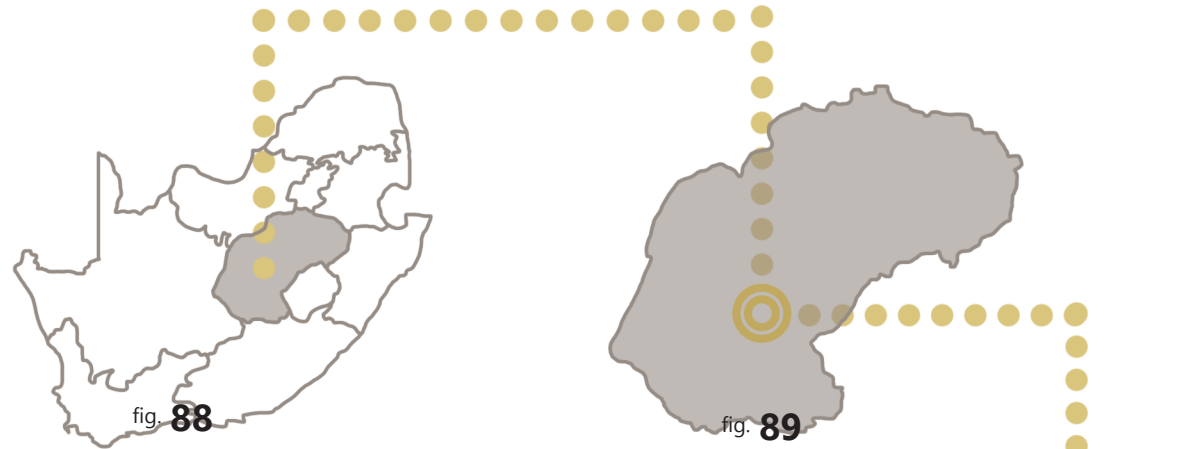
SITE ANALYSIS BREAKDOWN

01 Macro Analysis _Heidedal as a whole

02 Meso Analysis _The Immediate Context

03 Micro Analysis _The Site

This section is an exploration of the broader context of the topology. An analysis that helps one to understand where the site fits into to broad context of Bloemfontein. Starting at figure 88 which represents the South African map is further zoomed in until figure 92 which gives a broad locality plan of the proposed site. Allowing for a Holistic understanding of the site and its context.





Images of proposed site

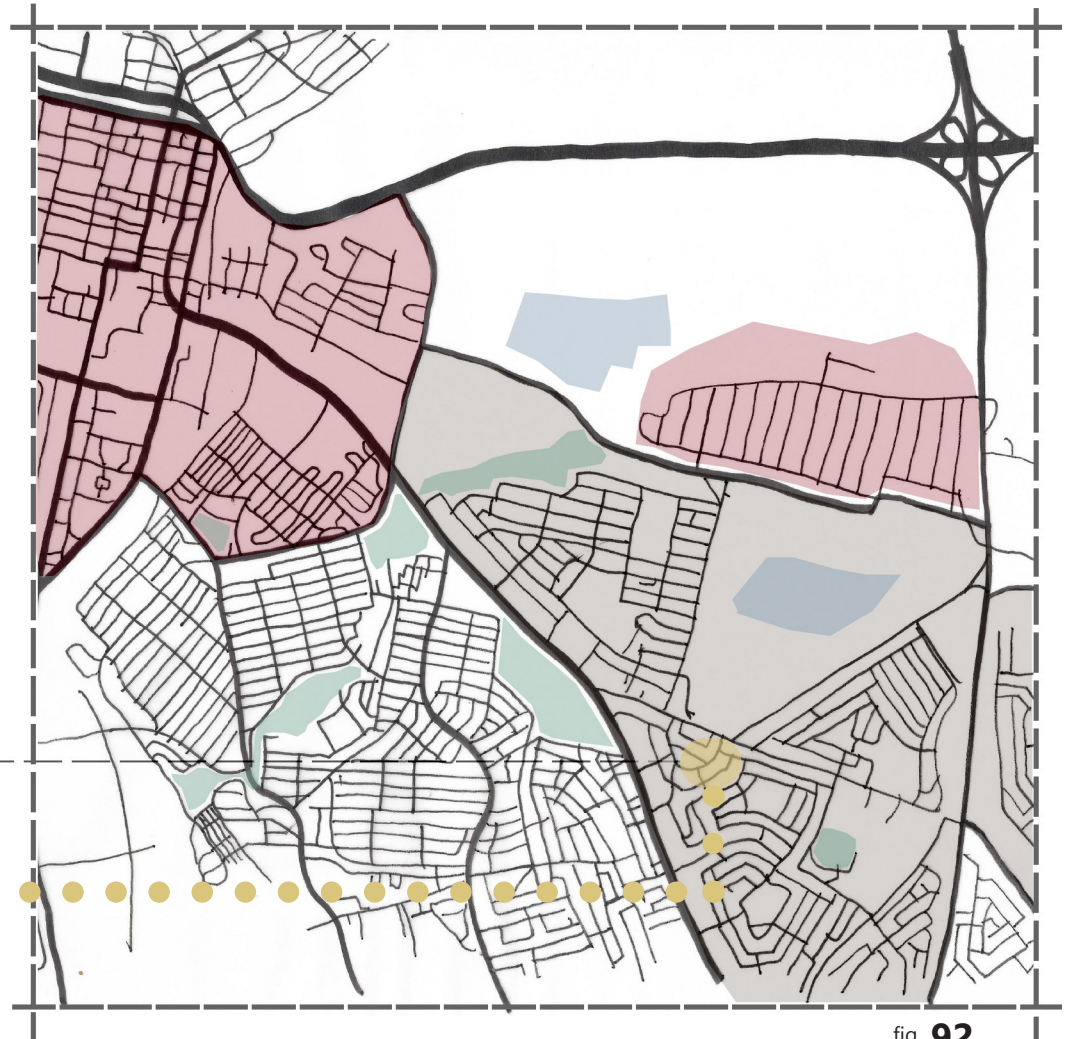


fig. 92

Heidedal
not to scale

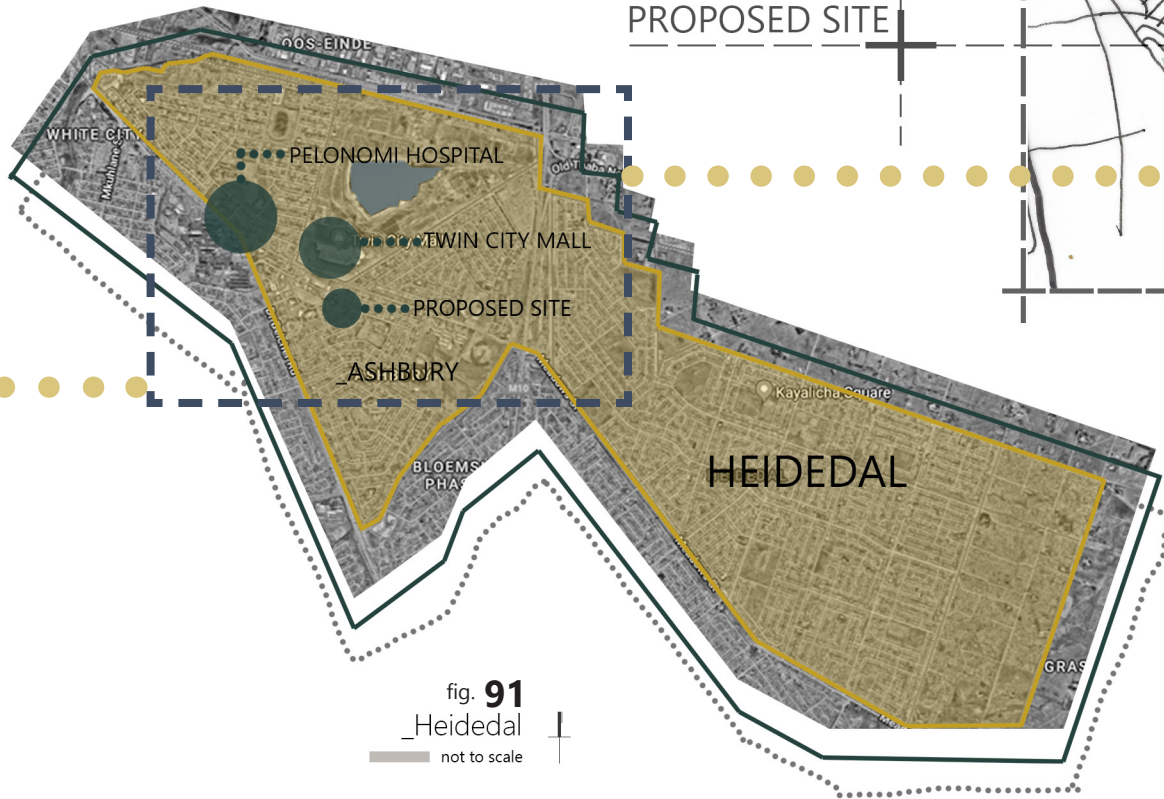


fig. 91

Heidedal
not to scale

- WATER BODIES
- HEIDEDAL
- GREEN AREAS
- INDUSTRIAL
- PROPOSED SITE

MAPPING OF HEIDEDAL

_The context as a whole

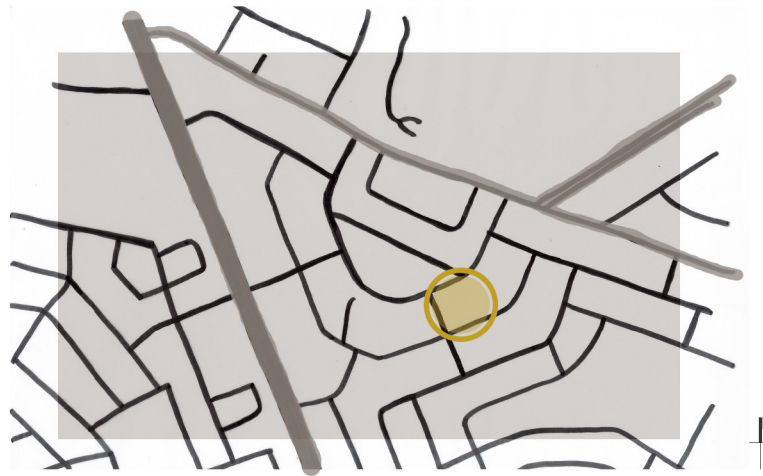


fig. 95

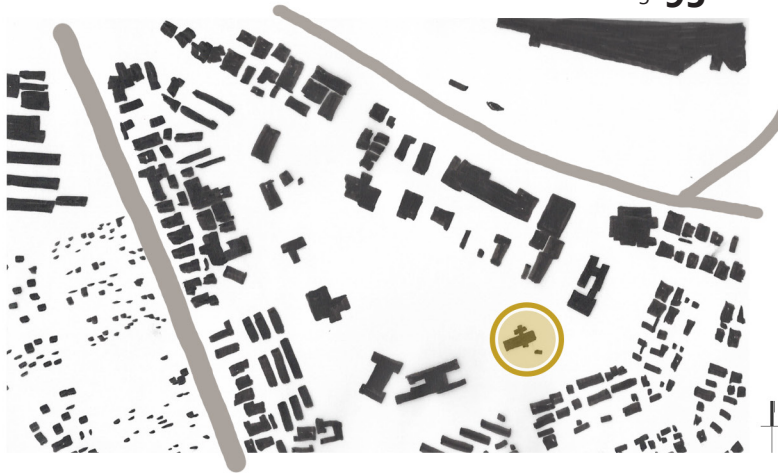


fig. 96



fig. 97

Primary grid

- proposed site
- main roads

Density and the Built Form

- proposed site
- main roads

Main roads and Interchanges

- proposed site
- main roads
- secondary roads
- interchanges

Site within its context

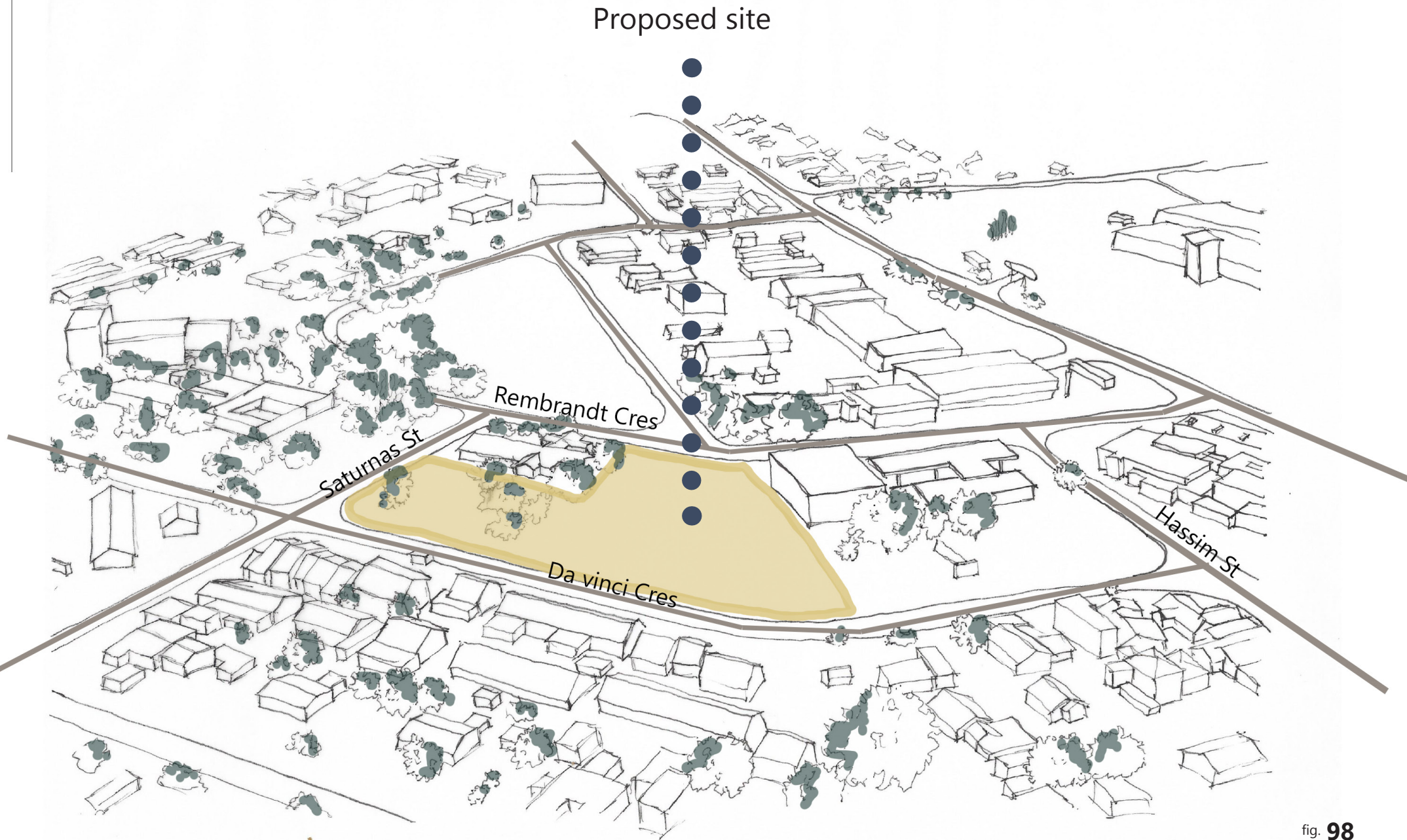
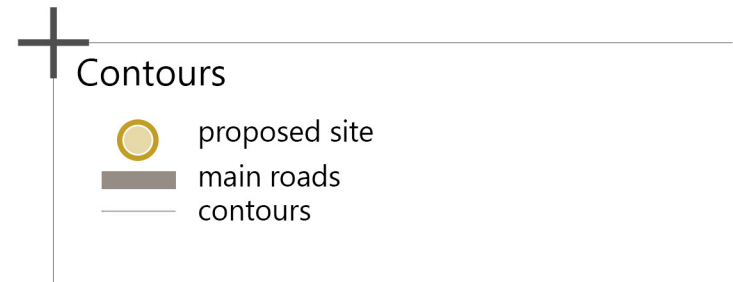
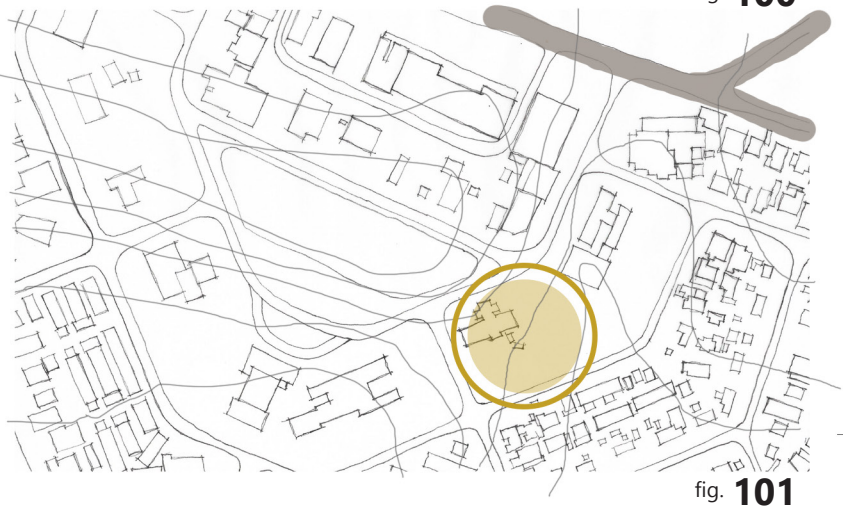
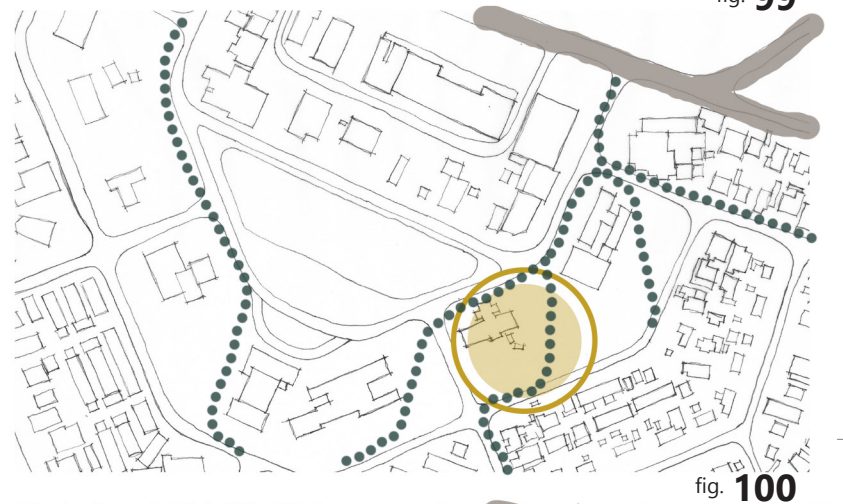
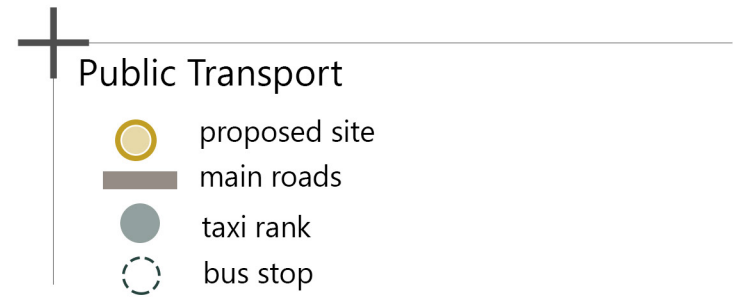
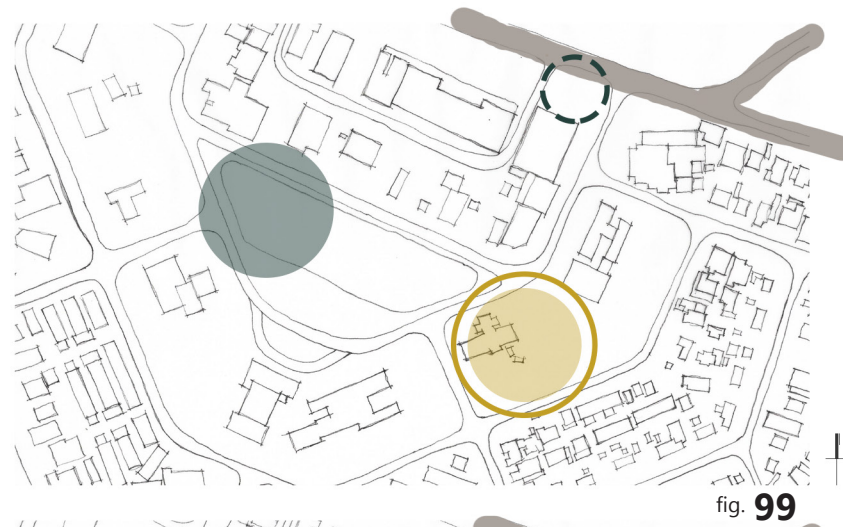


fig. 98
site within the context

MAPPING OF HEIDEDAL

_The context as a whole



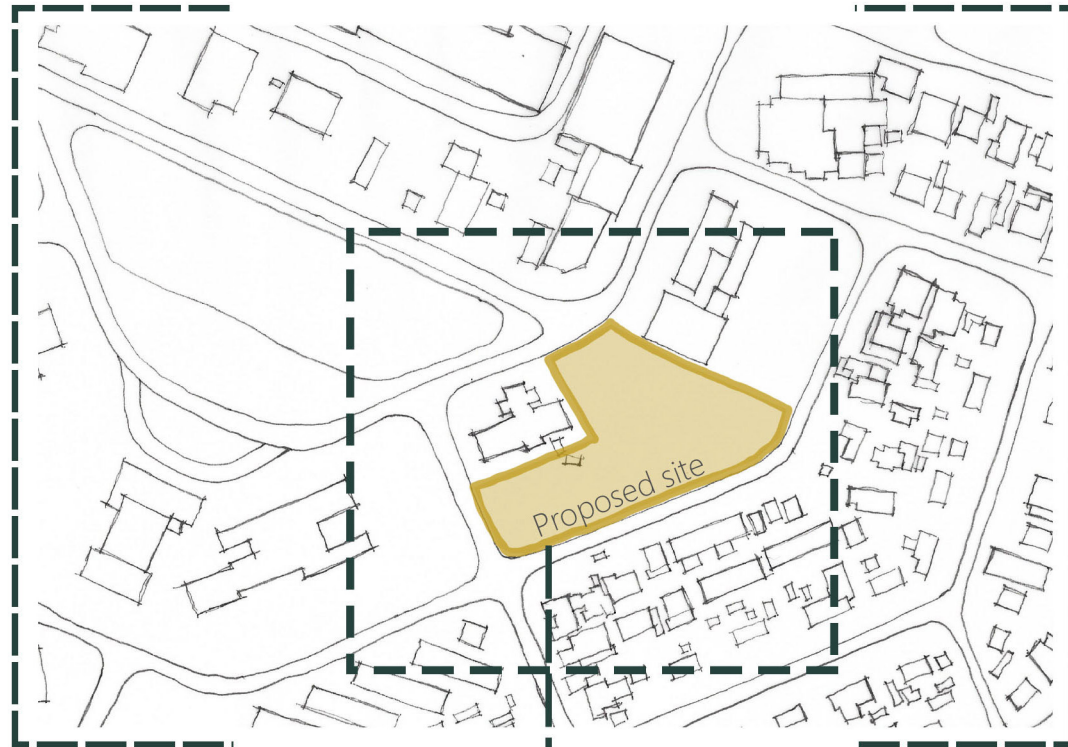
+
1.2

TOPOLOGY

_Site Analysis

+
02
MESO ANALYSIS

A meso analysis is an analysis of the direct context surrounding the proposed site. This analysis will help the reader to understand how the proposed building will relate to the context. Elements such as the buildings scale, vegetation, pedestrian movement and nodes found around the site (Figures 104 - 110) set a foundation of site specific influences which will have a significant influence on the design process.



Block Perimeter

fig. 102

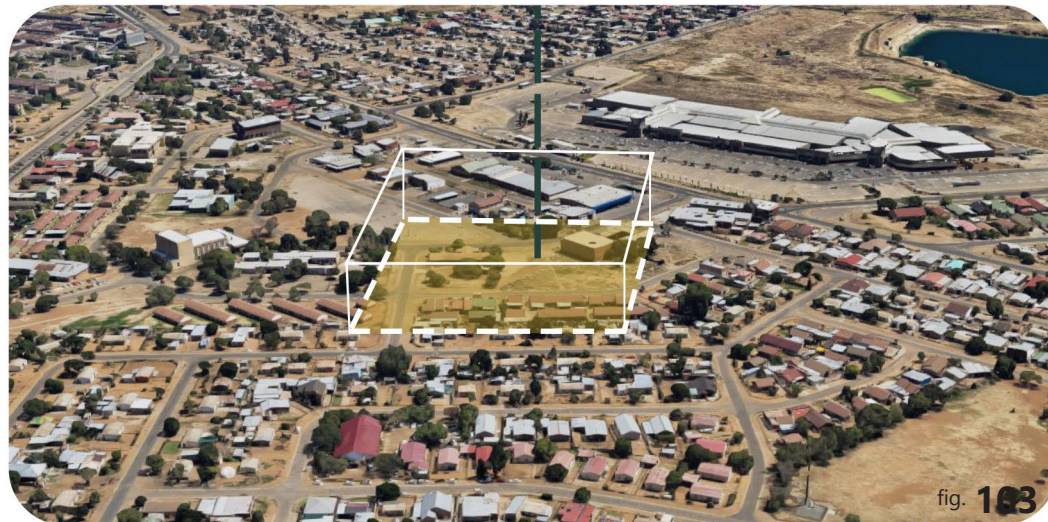
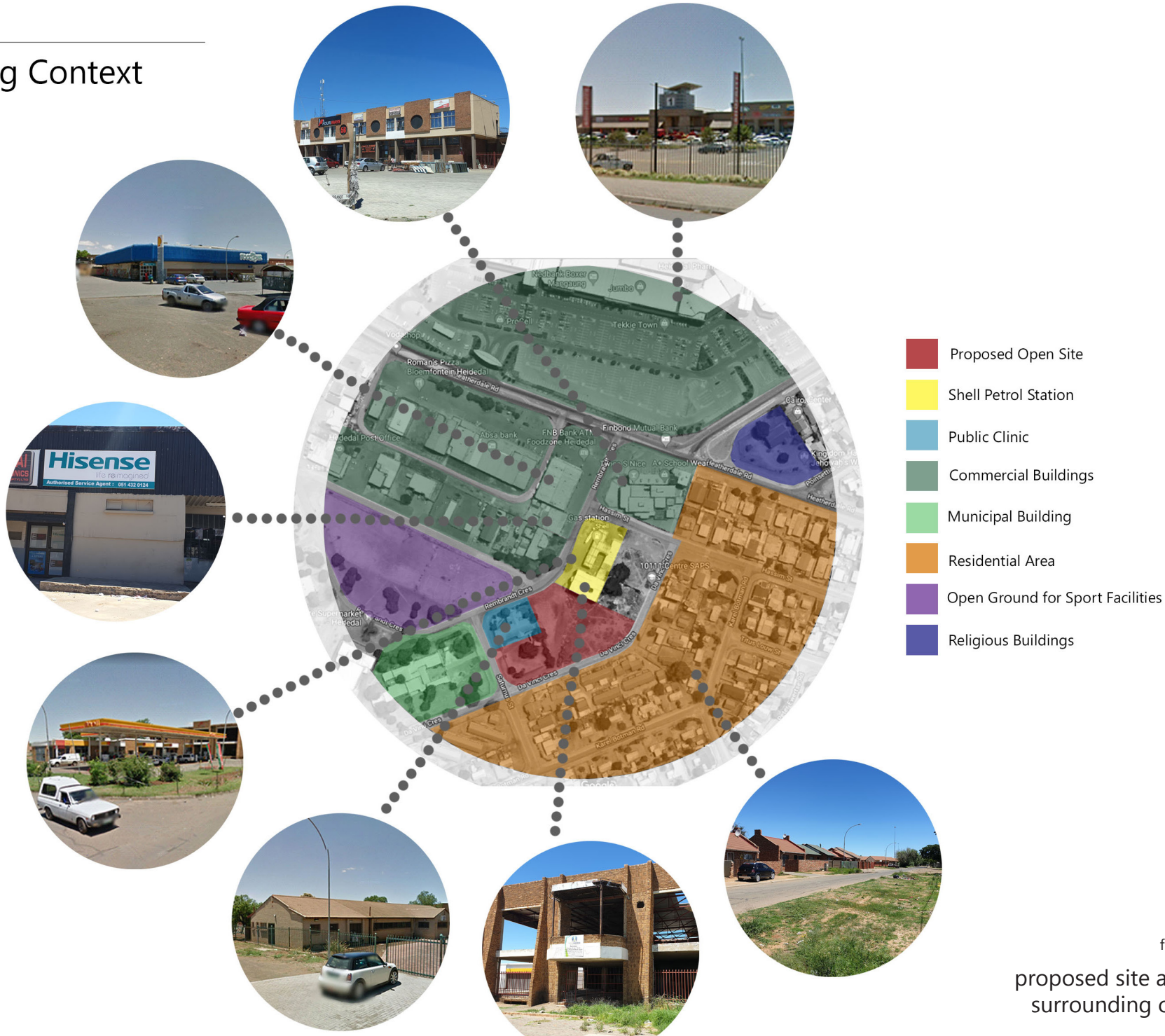


fig. 103

Surrounding Context



- Proposed Open Site
- Shell Petrol Station
- Public Clinic
- Commercial Buildings
- Municipal Building
- Residential Area
- Open Ground for Sport Facilities
- Religious Buildings

fig. 104
proposed site and the
surrounding context

MAPPING OF PROPOSED SITE

The immediate context



fig. 105

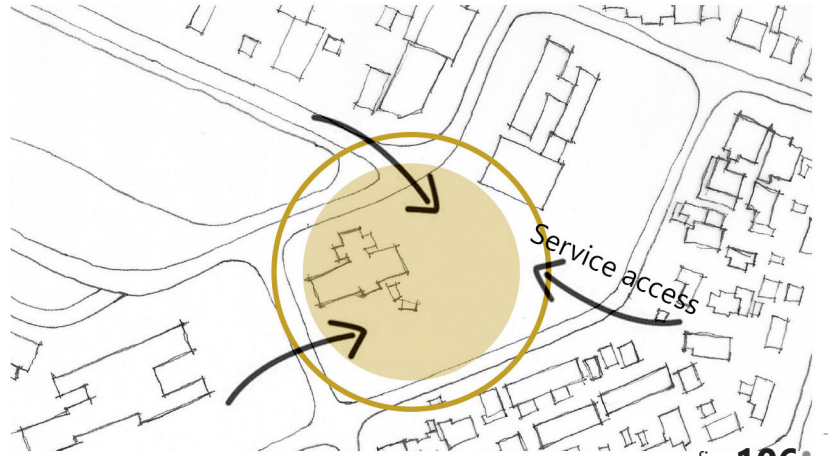


fig. 106

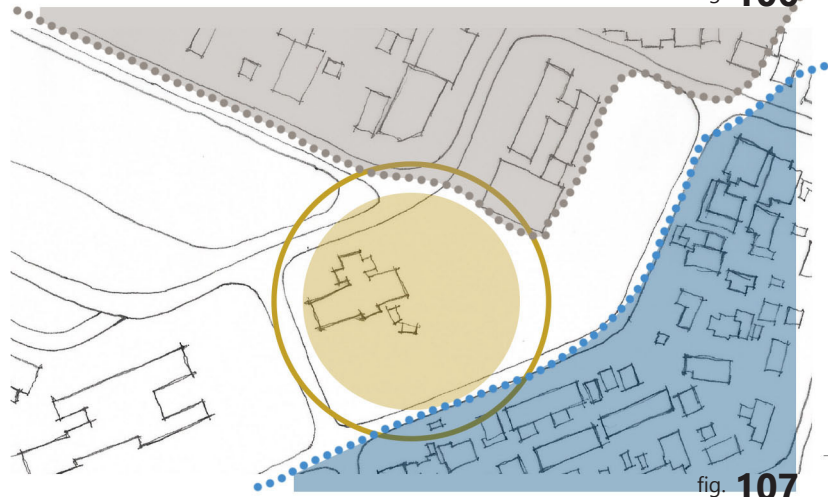







fig. 107




Vegetation

-  proposed site
-  main roads
-  Vegetation

Access to site

-  proposed site
-  main roads

Commercial and Residential Nodes

-  proposed site
-  commercial
-  residential





MAPPING OF PROPOSED SITE

The immediate context



fig. 108

Pedestrian movement across site

-  proposed site
-  main roads
-  main routes
-  secondary routes

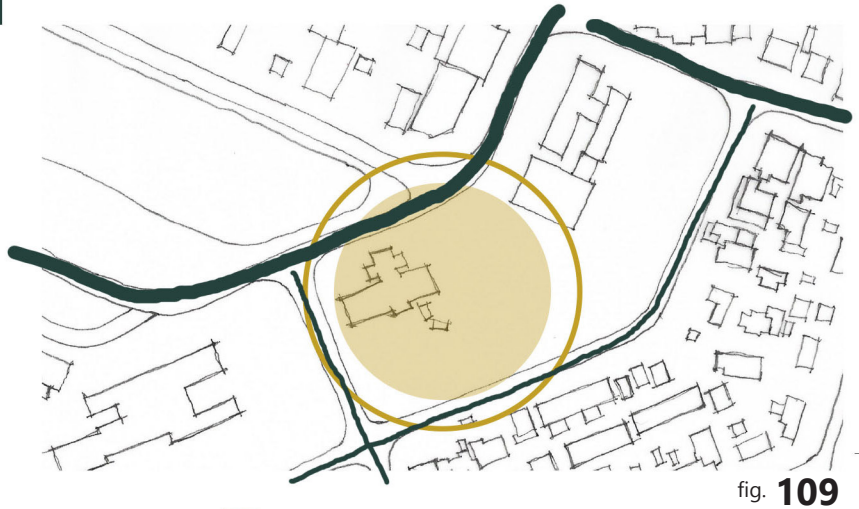






fig. 109

Vehicle Movement

-  proposed site
-  main roads
-  high vehicle movement
-  low vehicle movement

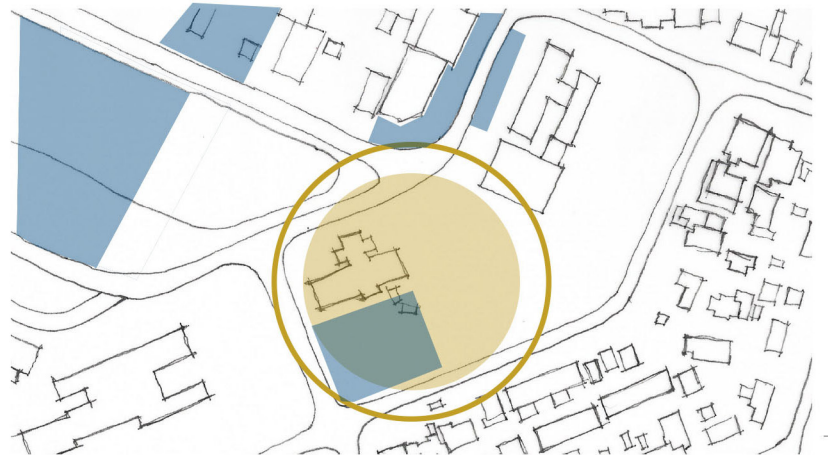





fig. 110

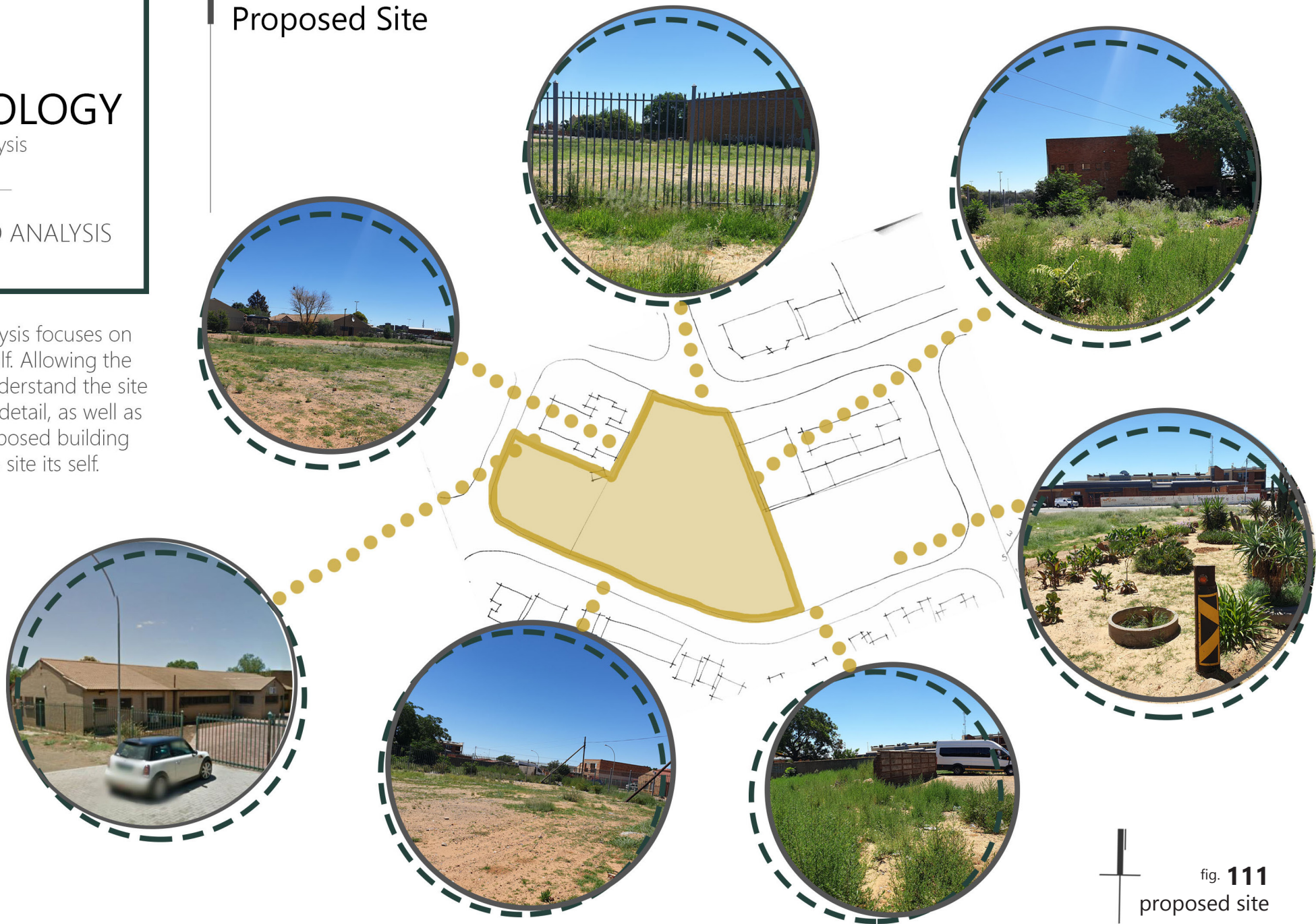
Current Parking

-  proposed site
-  commercial
-  existing parking

+ 1.2
TOPOLOGY
_Site Analysis
+ 03
MICRO ANALYSIS

+ Proposed Site

A micro analysis focuses on the site its self. Allowing the reader to understand the site to the finest detail, as well as how the proposed building will fit on the site its self.



+ fig. 111
proposed site

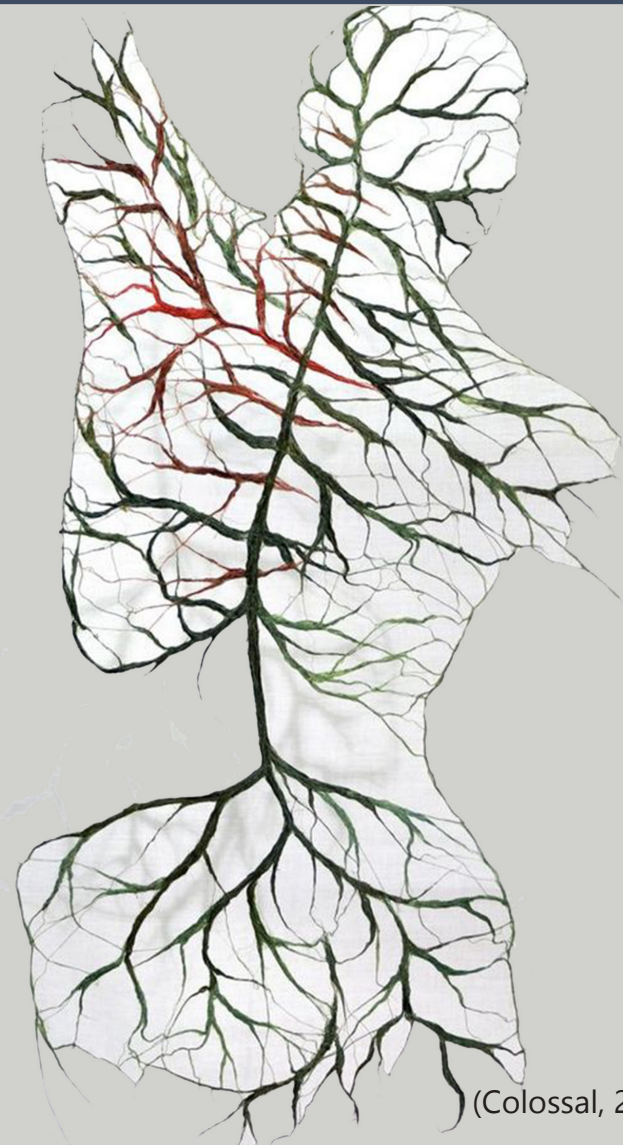


2.4

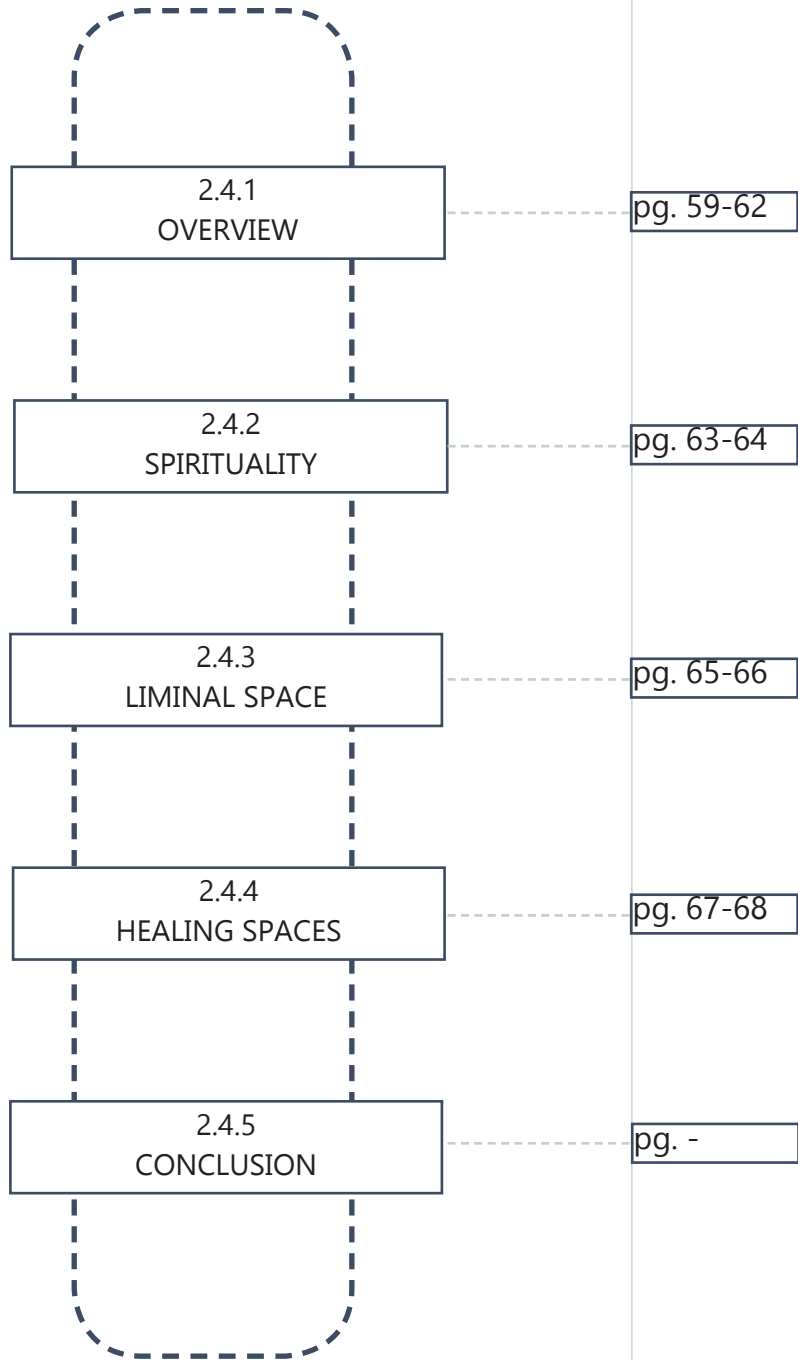
Morphology

_theoretical investigation

EXPLORATION AND GROUNDING



(Colossal, 2019: Online)



Morphology

_theoretical investigation

How can architecture create a healing environment and act as a vehicle for personal re-orientation within a social-economic depressed environment?

2.4.1. OVERVIEW

In the Alcohol Anonymous (AA) program, addiction is seen as a 'spiritual disease' which starts to erode all aspects of the addicts life, such as their self-esteem, family structures and eventually the community around them. Once a person takes a step back and looks at the whole picture of addiction, it is essential to understand that the disease encompasses both the mind and the body (Rouche, 2014: 2). Thus in order to determine a rational approach to a more effective design methodology, an exploration of liminality and spirituality will be undertaken to investigate how the spatial composition of a building can help the healing process of both the mind and the body.

Norberg-Schulz explains the concept of dwelling as a special composition that can be experienced on a philosophical and physical manner (Norberg-Schulz, 1983: 62). Dwelling as a stationary reality refers to the spatial composition of an environment and how it becomes meaningful to the user. Whereas the actual experience of dwelling becomes a dynamic element of orientation and identification which creates ones connection to place (Wolford, 2008: iii). This sense of orientation and identification is deeply lacking within an addicts mind, creating this disconnection between the individual and the built environment. This disconnection can be addressed through the shaping of buildings and therapy's.

In Dr Brene Brown's Shame Resilience theory, she explains that shame is an intense fear of disconnection, which is the result of excruciating vulnerability within a certain place, which is the core of most social issues, including addiction (Brown, 2007: 25). She further explains that this disconnection contributes to the lack of love and sense of belonging which normally gives life meaning and worth (Brown, 2007: 25). It is essential to create spaces through architectural explorations for recovering addicts to help re-orientate themselves in a familiar environment. This can be achieved with a sense of place-making, focusing on how the building becomes the in-between framework of a healing spaces within the built community.

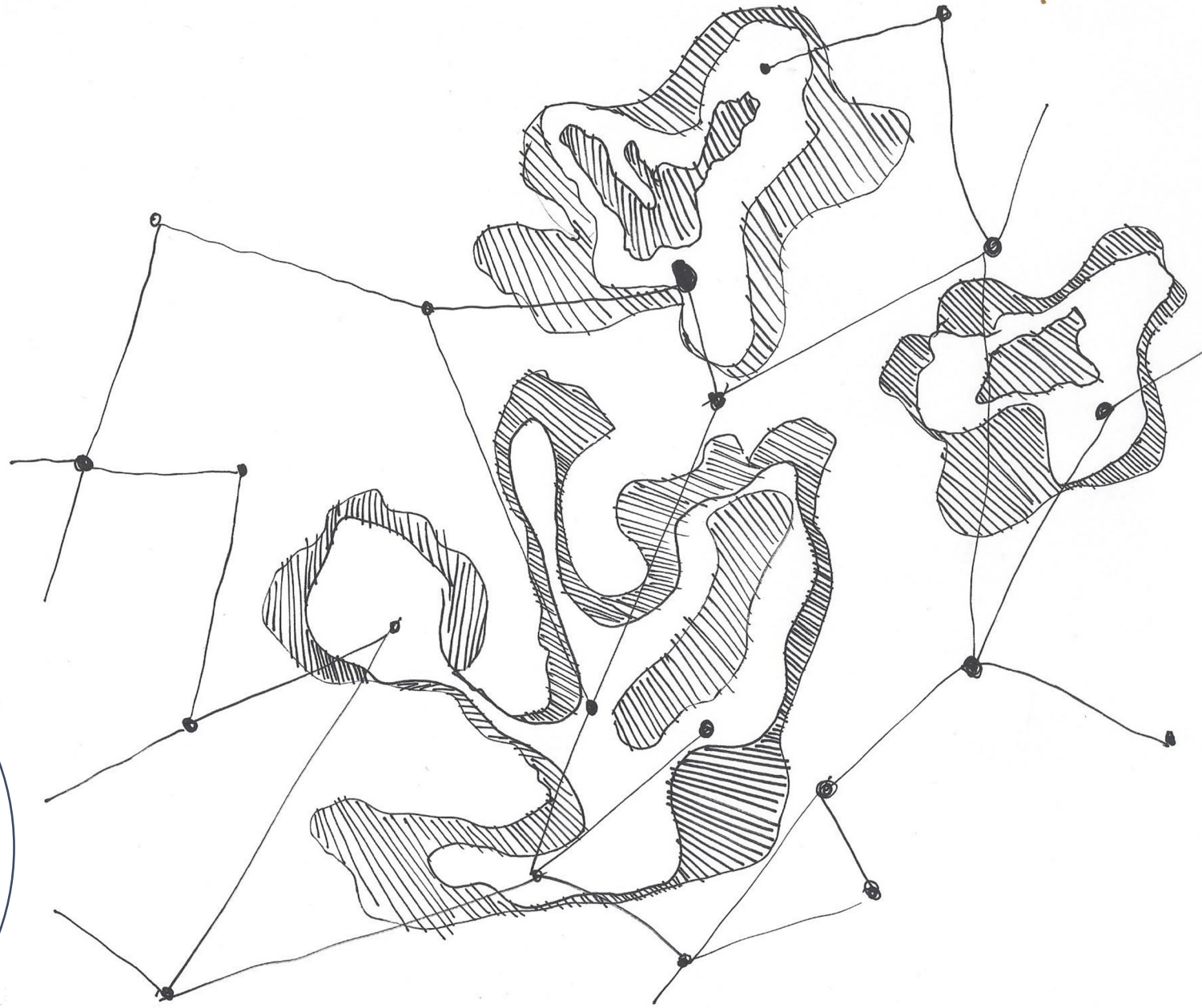
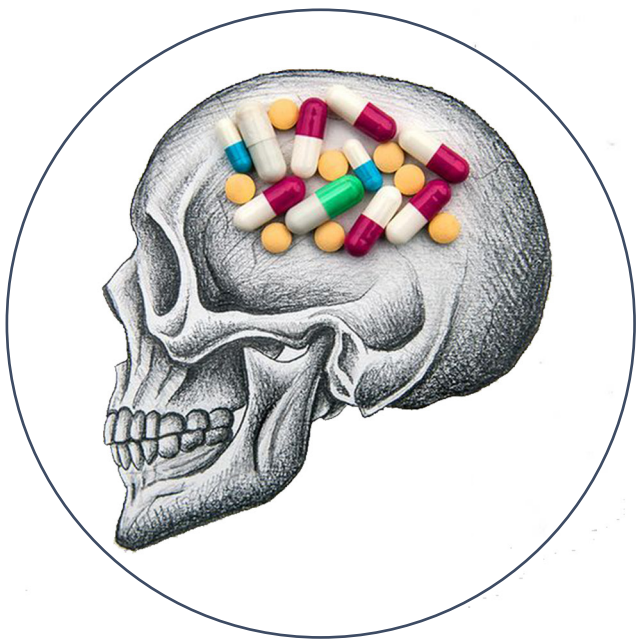


fig. 112
Addiction creating a disconnection

2.4.2. MIND AND BODY

In the case of addiction a person tries to minimize the negative and maximize the positive with the use of a substance to experience a sense of pleasure (Rouche, 2014: 16). Once this state is achieved an addict will do anything in his/ her power to maintain it, eventually having no control over this 'need'. This state of pleasure can be explained as a liminal phase between the heights of the mind and the lowest of the body. The constant seeking of this state of pleasure creates a separation between the mind and the body, allowing the body to suffer the consequences of keeping the mind at a high with a specific substance.

This separation can also be seen within contemporary urban design in the western society. The primary focus lies on the basic needs and functions of a person while the higher order needs are being neglected or not sufficiently designed for (Birch & Sinclair, 2013: 80). Taking the Twin City Mall (which is located to the north of the proposed site) as an example, the locals now buy their goods from the mall, which replaced the market spaces of the community. On approach the mall is immediately separated from the community by a vast parking lot and faced with high walls of the building with entrances on either side as seen in figure 113-114. This design approach maximizes efficiency, allowing the user to quickly find what they are looking for and leave. This however takes away from the social interaction and connections which were once built in places like the market environment. There is no spiritual atmosphere of engaging with individuals, such as creating spaces and means for contemplation, curiosity and exploration (Birch & Sinclair, 2013: 80). Hussain (2015: 45) explains that, "we as human being have an inner connection with our environment by physical, mental, emotional and spiritual means, creating the dynamic connection of life."

As discussed in the example of the mall, a few of these connections are missing in contemporary built environments. These connections formed between a person and the environment are essential to create a sense of familiarity and security within a community.



fig. 113
Twin City Mall entrance (du Preez, 2019: Online)



fig. 114
Twin City Mall (du Preez, 2019: Online)

The more these connections fade, the more addicts become lost in the system of society (Rouche, 2014: iv). This in turn fuels the 'need' for that liminal pleasure state of mind of an addict, giving them the only thing to relate to and rely on.

Through the design of an addiction rehabilitation centre it is important to focus on creating spaces that allow the user to connect to the surroundings through a physical, mental and spiritual manner (AbdelHay & Dewidar, 2016: 2). The user should experience a sense of familiarity and security within the building. The fear of disconnect can be broken while maximizing the healing process. Bringing light down from the heavens as well as drawing the nature up from the ground into this in-between realm in which we live, and start to create this interpretation and ambiance of a safe and spiritual experience. Allowing the users to find their liminal pleasure state of mind within real time, reconnecting the mind and body once again.

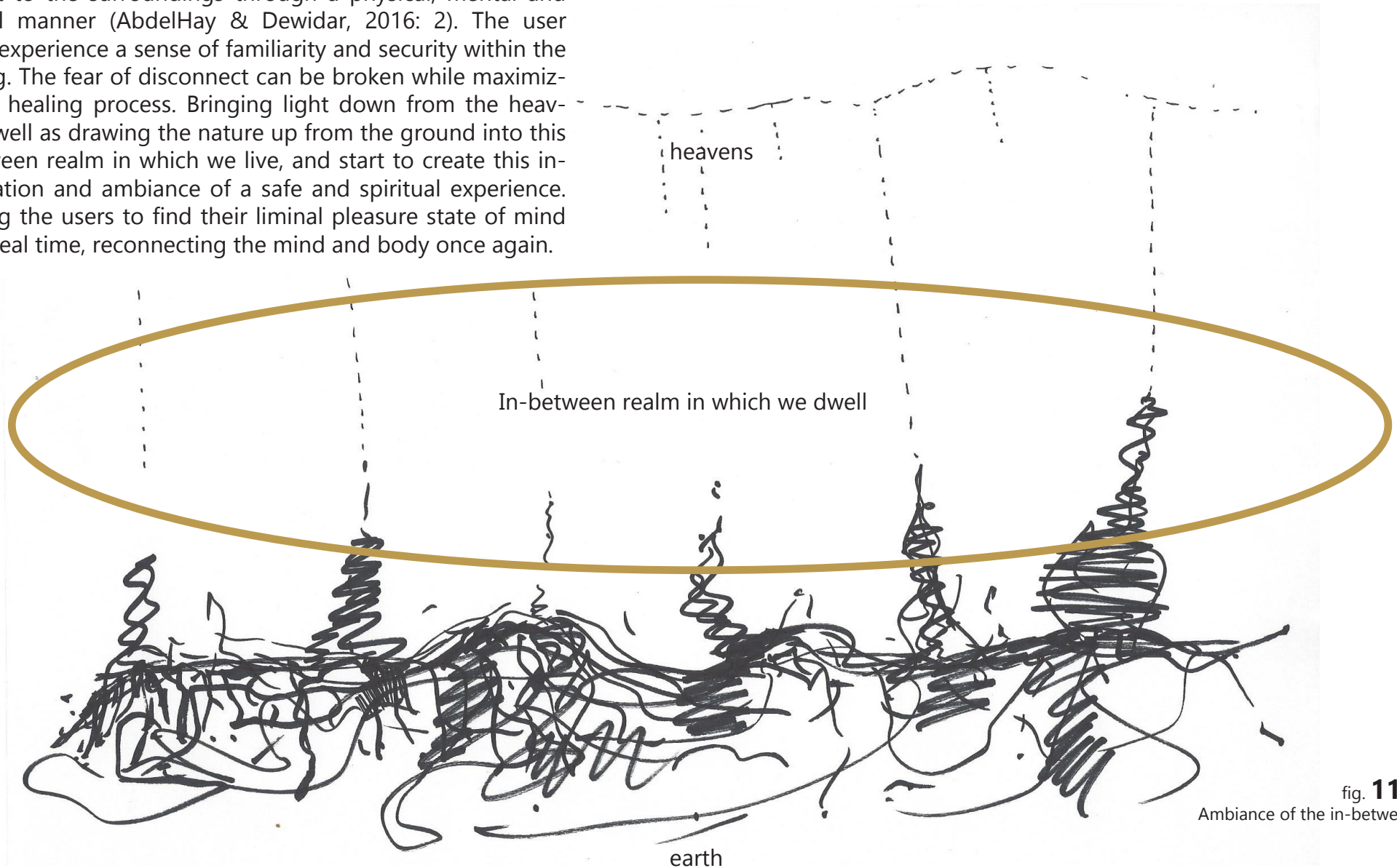


fig. 115
Ambiance of the in-between 64

2.4.2. LIMINALITY

According to Veronica Ng and Jia-Pey Lim (2018), the simplest meaning of liminality is “an intermediate stage or transition between two states or conditions”. The process of recovery could therefore be seen as a liminal state of being in-between addiction and sobriety. With that the architecture of the rehabilitation centre becomes a liminal space and would have to become an active participant within this process of healing and not just a shell where healing takes place.

Hussain (2015: 46) explains that, “we often interact with building themselves without realizing the great influence the built environment holds.” Therefore, the liminal space should hold a spatial quality which is found in-between two contrasting thresholds which creates a spatial experience and could be explained as therapeutic architecture.

Thresholds become the porous bounds to the in-between transitional points that take in as well as let out, with no ridged border while controlling the space (Kite, 2013: 178). This allows the users to still feel a sense of freedom within a safe and controlled environment. Strenerberg (2009: 2) states that, “if illness and health are nouns, then healing is a verb. It is the movement in a desired direction- a journey that takes you from illness to health.” This emphasises how important this liminal space of a rehabilitation centre becomes and how it needs to be a space of sanctuary and healing.

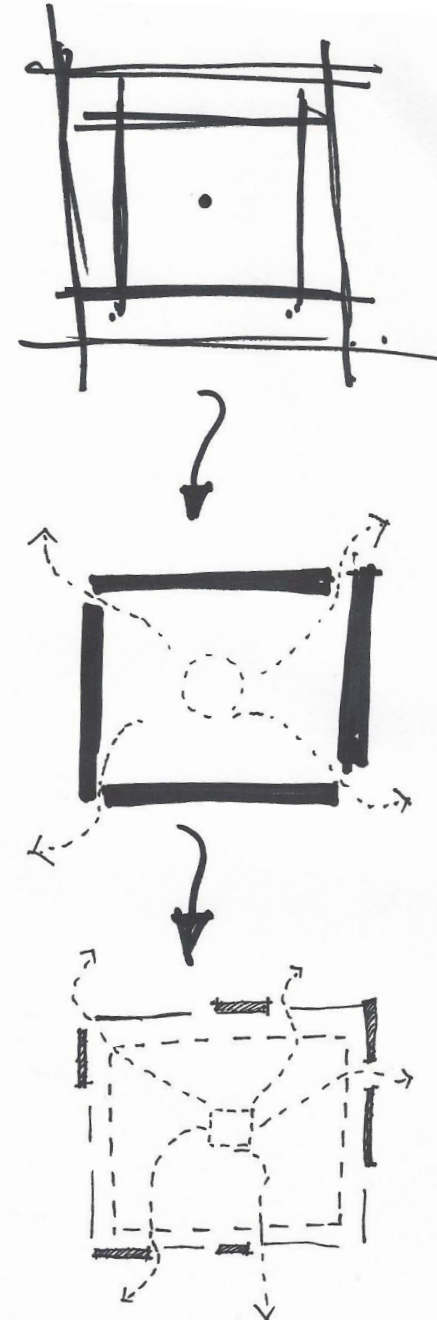


fig. 116
Porous boundaries

2.4.2. HEALING SPACES

“Healing is a process of re-establishing harmony within the organisms” where “illness implies a loss of this balance and need for reintegration with the body’s natural ability to heal” (Hassain, 2015: 1). Healing spaces don’t necessary refer to a healthcare space. These two spaces should technically be completely intertwined however; in some cases, they are complete opposites. Strenernberg (2009: 5) explains that healthcare architecture has followed the clinical rationality of function equals profit, forgetting about the effects it has on the patients. Healing spaces on the other hand are closely related to nature and spirituality, creating a sustainable and durable environment which activate all the senses of the human body, reducing the stress of the users and enhancing the healing process.

Natural elements such as: materials, sound, light, views, smell and colour can all have an effect on how people perceive themselves and cope with their situation within a space (Beggs, 2015: online). The idea of healing spaces is to use these natural elements as a tool to reduce all levels of stress, promoting the healing environment. This does not suggest that these spaces have the capacity to heal patients in anyway, but rather manipulating structures and spaces to allow for a therapeutic environment which promotes the healing process (AbdelHay & Dewidar, 2016: 4). Morgenther (2015: I) explains that, “addicts who are suffering from mental stress and fatigue can feel better if they occupy spaces that have favourable colours, wide windows that allow them to view the outside, and spaces that restrict noise that would be considered loud.” Focusing on these elements to create spaces of healing throughout the design will be crucial in order to allow the users to reorientation themselves within their state of reality and start the process of healing.



fig. 117
re-establishing harmony
(Chantier, 2016: Online)



fig. 118
Indian use of light and colour through Chakras
(Chacrys, 2019: Online)



fig. 119
representation of the light used by the Egyptians
(Franhein, 2018: Online)

One of the most important elements that rehabilitation centres need to focus on is colour. The effects it has on a person are highly underestimated in the built environment. The University of North Carolina have done studies that indicate how the use of specific colours can be used to improve the moods of inpatients of rehabilitation centres (Hamilton, 2009: 4). The importance of colour and how it is used for therapeutic rituals in different cultures support this idea of it promoting the healing process. For example the Egyptians designed their tombs in such a way which allowed a ray of light, passing through a prism onto the sick individual in order to help them heal (Jos & van Leeuwen, 2006). Indians however use different colours which are linked to various energy centres in the human body called Chakras (Jos & van Leeuwen, 2009: 98). It is important to understand that light and colour work hand in hand with one another but, mean nothing in rehabilitation centres if they are not used for the specific purpose of healing.

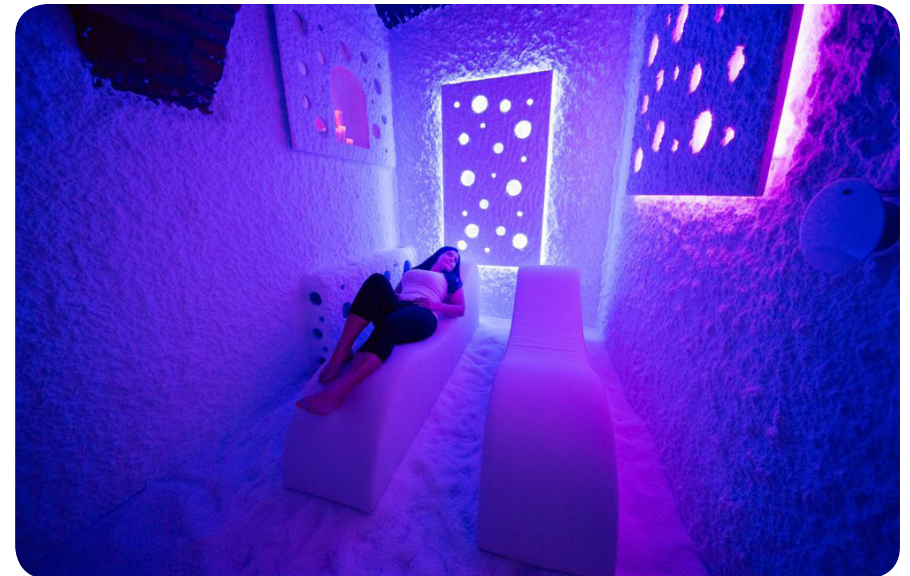


fig. 120
Blue room helpin to reduce stress
(Hamilton, 2009: 4).

As important as light and colour, nature and how the user interacts with it also becomes a major factors in creating a healing environment. Plants, vegetation and natural elements immediately have a calming atmosphere. Hussain (2015: 2) states that, "being outdoors endows a confined person with many positive benefits such as increasing the mood and positivity as well as feeling free within a confined environment." This sense of feeling free allows the addicts to wonder through natural elements such as gardens, allowing them to reconnect with nature as well as themselves referring back to the reconnection of the mind and body. Roger Ulrich did a study on patient's rooms that looked out onto brick walls and the other half had a view of nature. The patients who had a view of nature needed fewer pain medication as those who had a view of a brick wall (Strenenberg, 2009: 5). This study supports the concept of nature increasing ones will to recover in a medical facility and how human being cannot live without nature.



fig. 121
representation of the light used by the Egyptians
(Franhein, 2018: Online)

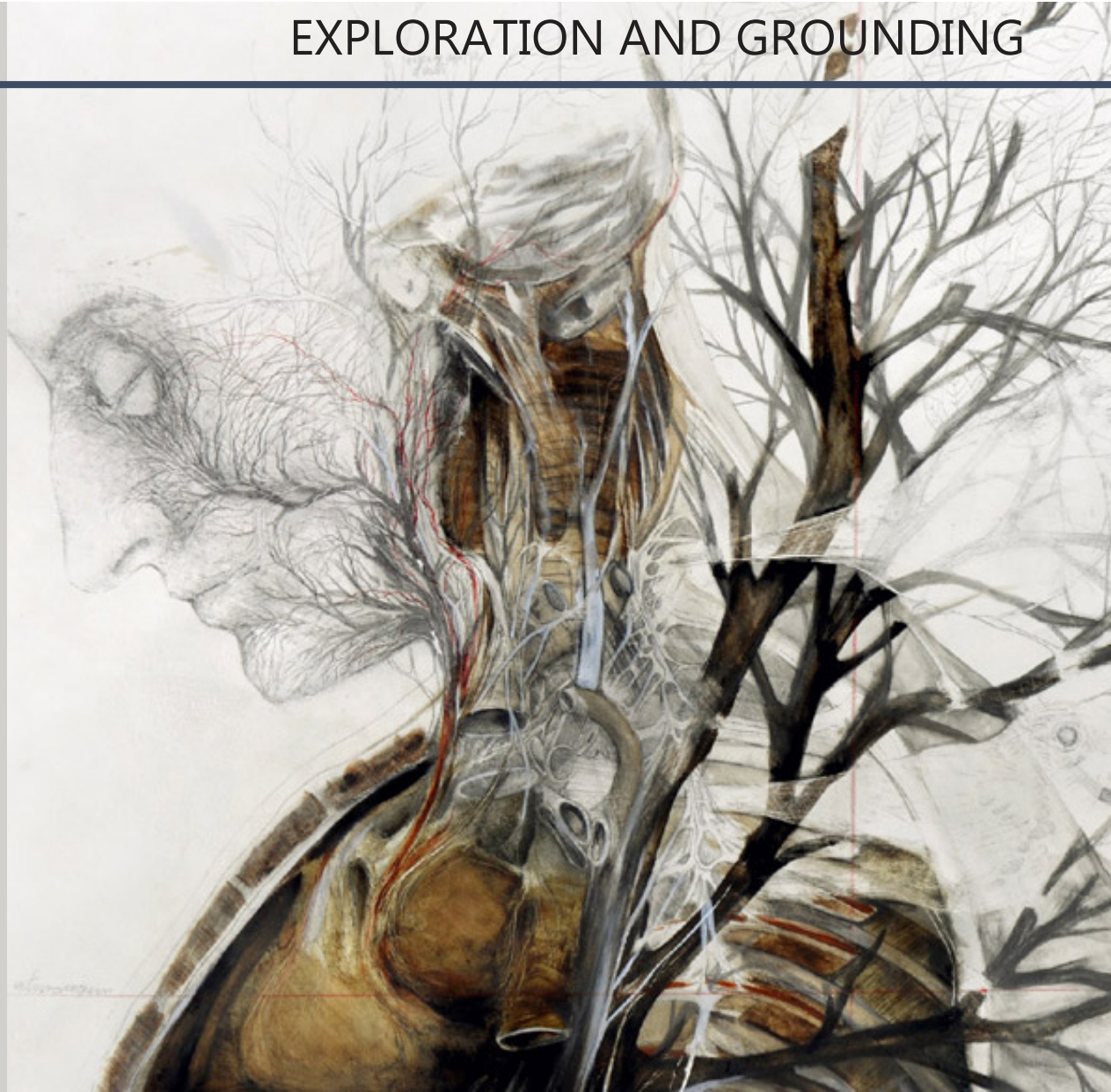


2.5

LOGIC OF TECTONICS

_technical investigation

EXPLORATION AND GROUNDING





| | |
|--|-----------|
| 2.5.1 INTRODUCTION | pg. 71-72 |
| 2.5.2 ENVIRONMENT + MICRO CLIMATE | pg. 73-84 |
| 2.5.3 STRUCTURAL PHILOSOPHY | pg. 85-91 |
| 2.5.7 HEALTH AND SAFETY | pg. 92 |
| 2.5.4 STRUCTURAL SYSTEMS + DETAILING | pg. 93-95 |
| 2.5.6 CIRCULATION | pg. 96 |
| 2.5.5 SUSTAINABILITY | pg. 97-98 |

2.5.1 INTRODUCTION

Project Background

Historically, Heidedal was a thriving mixed race community bordering Batho and Bochabela as seen in figure 122. It once was a well-developed suburb of Bloemfontein with a growing local economy and a very active civil society (Delpont, 2017). However, over the years there has been a lack of investment in Heidedal by the local and provincial government, leaving parts of this little community to fall apart and grow in poverty. This has led to the decrease in job availability and an increase of substance abuse, which is affecting the overall living environment for the whole community.

This dissertation is an investigation of introducing an Addiction Rehabilitation Centre into the suburb of Heidedal- Bloemfontein. The centre is located within the heart of the community, allowing easy access for both patients as well as visitors. The design of the Centre is strongly influenced by the theoretical investigation of 'healing spaces' and 'spirituality'(see 2.4); as well as the technical investigation which will be discussed in this chapter.

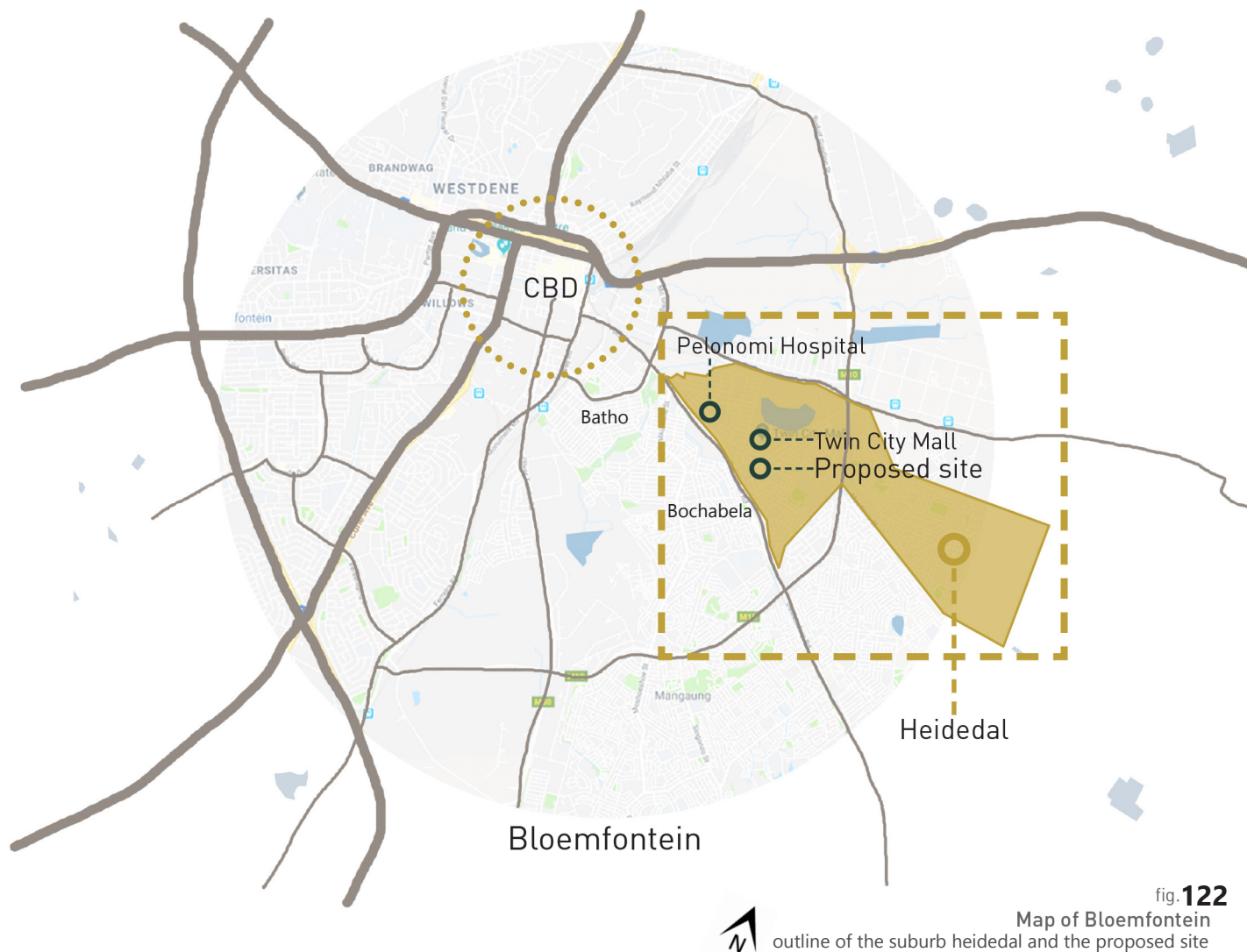


fig. 122

Map of Bloemfontein
outline of the suburb heidedal and the proposed site

Site Location

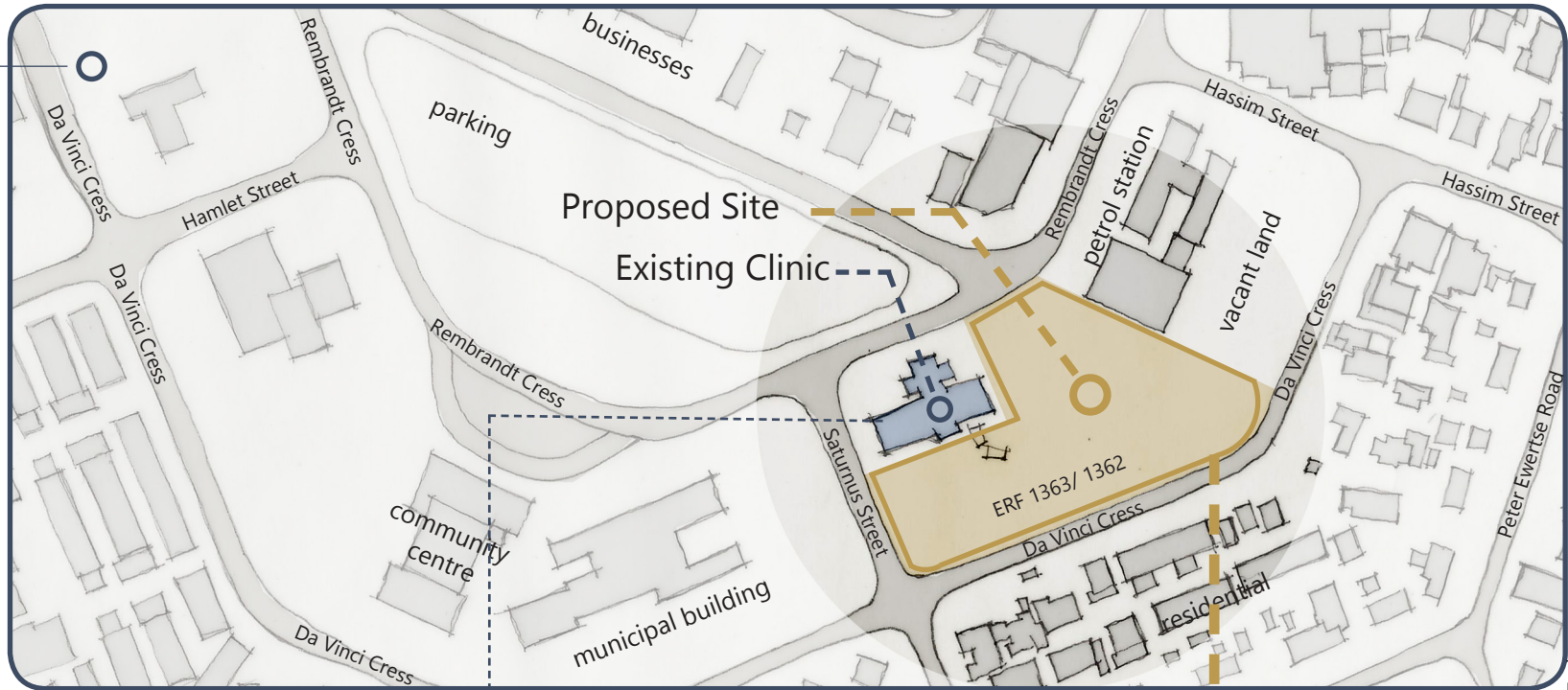
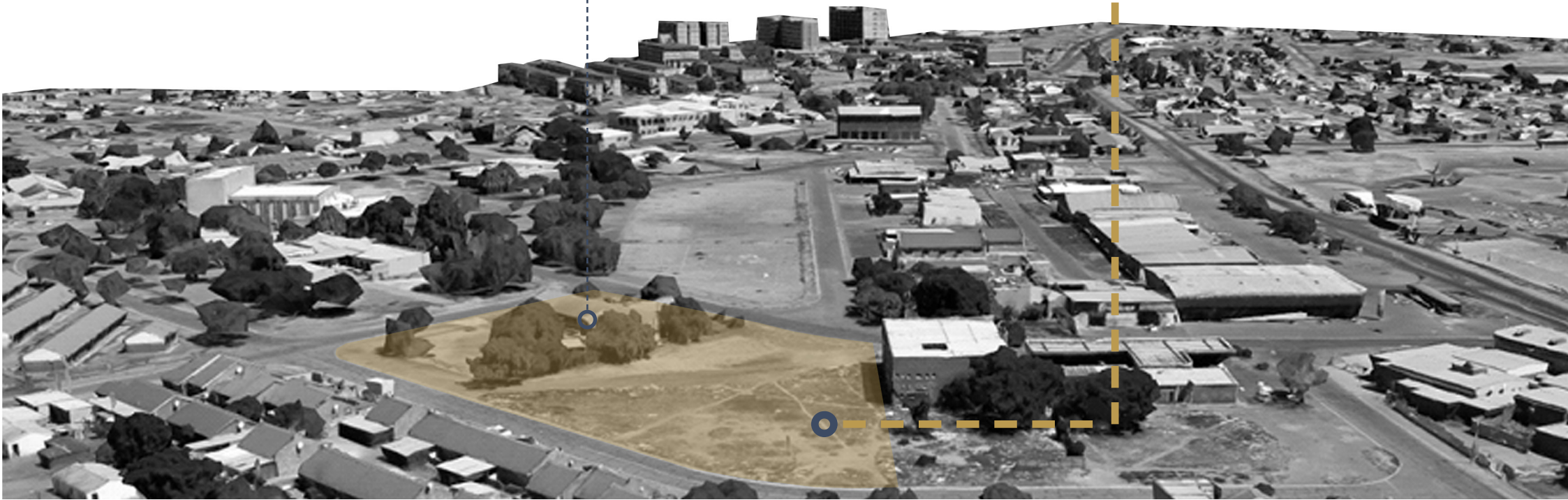


fig. 123
location plan -not to scale



2.5.2 ENVIRONMENT + MICRO CLIMATE

2.5.2.a Site Information

The proposed site is located within the suburb of Heidedal on consolidated ERF 1362/1363 (as seen on figure 124). It is about 28km south east of the CBD of Bloemfontein. The site is located in-between the residential and commercial areas of Heidedal, with Rambrandt Crescent bordering on the West and Da Vinci Crescent on the East. An existing clinic can be located on the western corner of the site as shown in figure 124. The proposed rehabilitation centre will not directly touch the clinic or disturb the current procedures related to the clinic in any way.

The natural topology of the site is quite flat with only a 1080mm fall across the entire site of 115m (1: 0.54° fall), Refer to attached drawing A102. A strip of indigenous vegetation is currently found on the edge of ERF 1362 which borders ERF 1363 (as seen in figure 127). This strip of vegetation will be preserved with walkways running parallel to it, articulating the existing walkways found on site.

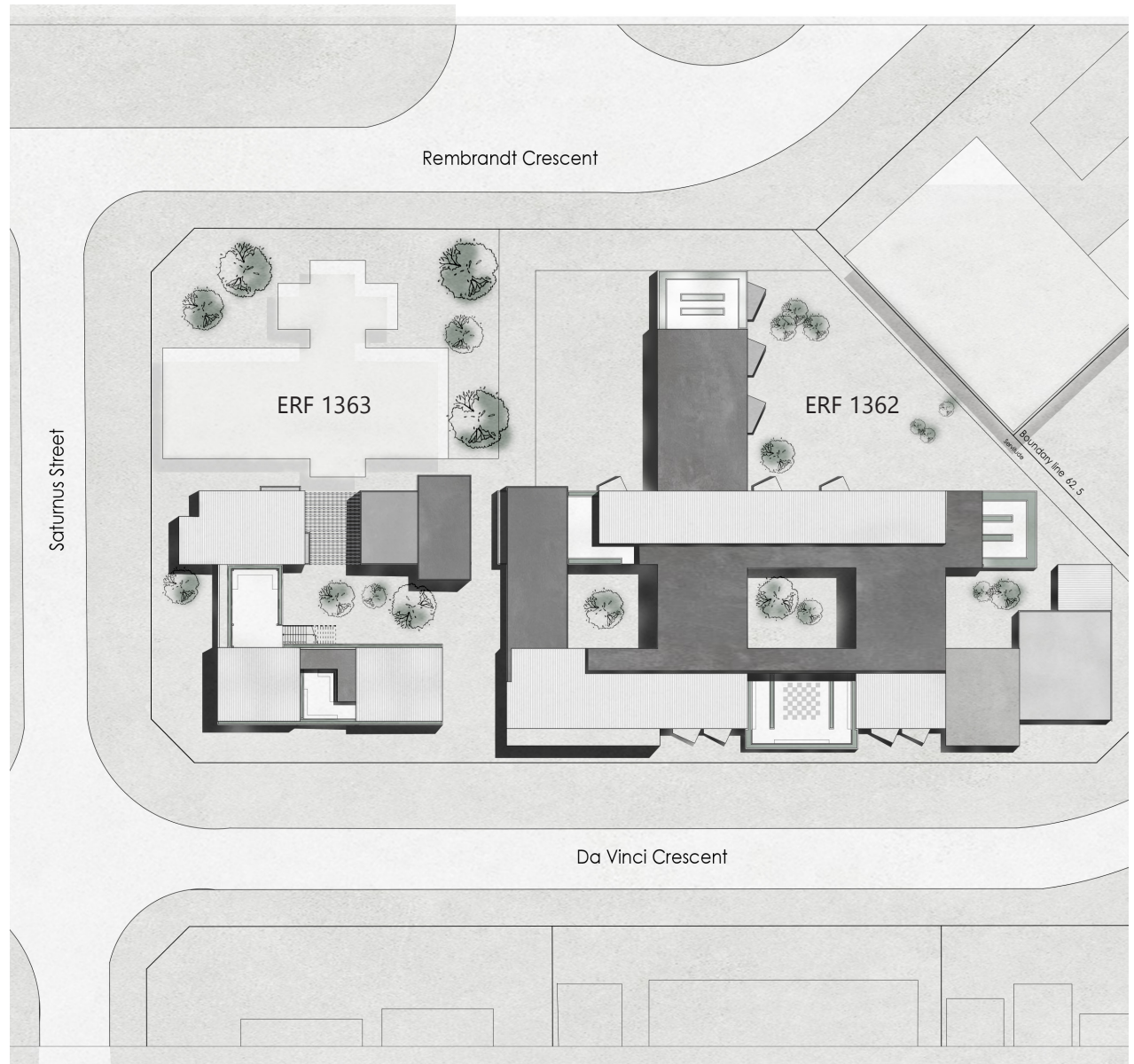


fig. 124
Site plan -not to scale

2.5.2.b Cadastral Information

- + Site Plan
- + Surveyor General Diagram (SG Diagram)
- + Zoning
- + Development Rights
- + Service Connection points
- + Servitude

(HEIDEDAL ALLOTMENT AREA)

GENERAL PLAN

SHEET 2

(Comprising 3 sheets)
of the Town of

ASHBURY - (EXTENSION 2)

Administrative District: BLOEMFONTEIN Province of Orange Free State
For full description etc. and data of Main Figure see Key Plan on Sheet 1.

Scale 1:750

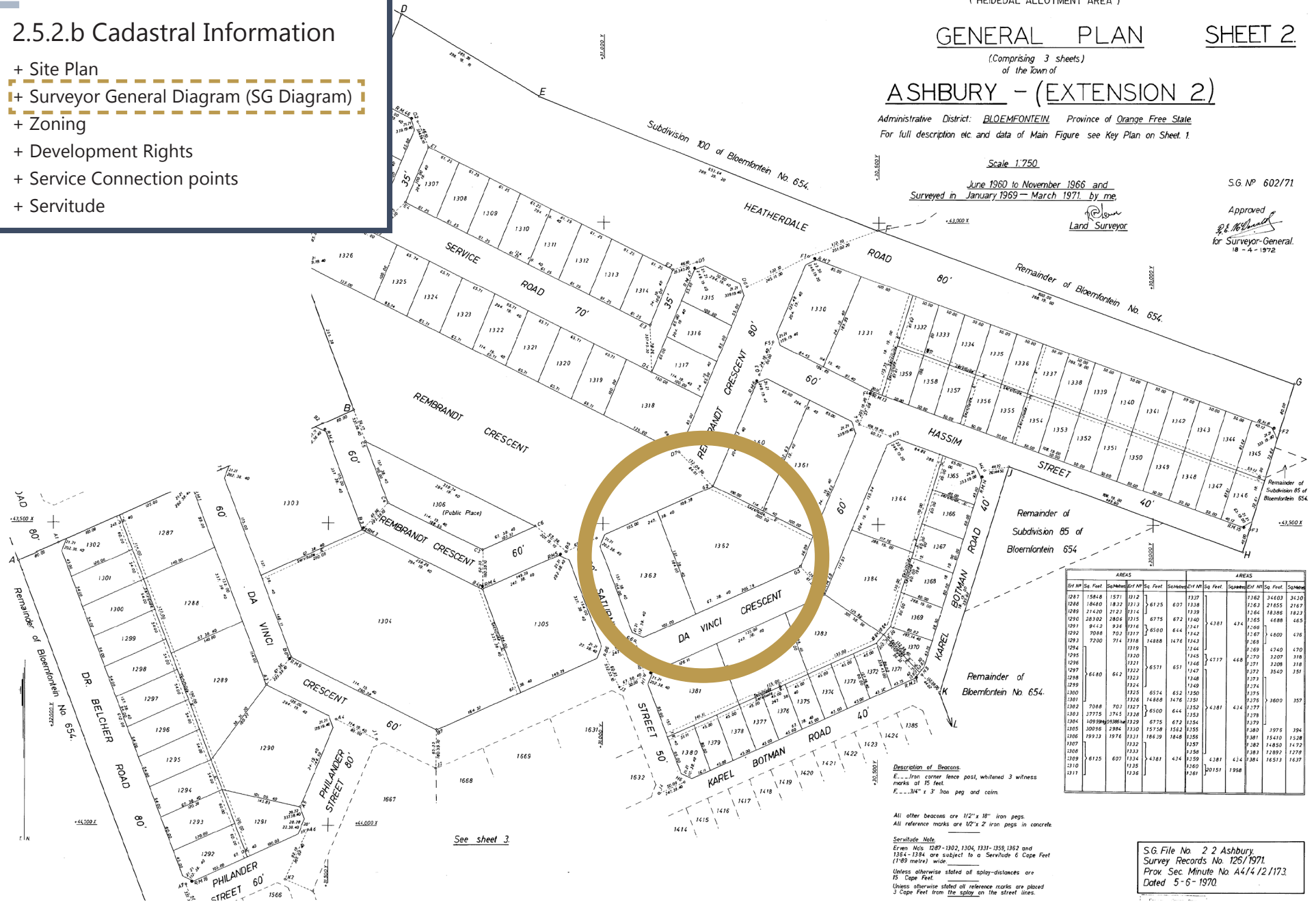
June 1960 to November 1966 and
Surveyed in January 1969 - March 1971 by me

S.G. No 602/71

Land Surveyor

Approved
for Surveyor-General.
18 - 4 - 1972

ASHBURY



| AREAS | | | | | | AREAS | | | | | |
|---------|------------|---------|---------|------------|---------|---------|------------|---------|---------|------------|---------|
| Gr. No. | Surf. Feet | Subdiv. | Gr. No. | Surf. Feet | Subdiv. | Gr. No. | Surf. Feet | Subdiv. | Gr. No. | Surf. Feet | Subdiv. |
| 1287 | 1584.8 | 1571 | 1312 | 1337 | 1337 | 1362 | 3460.3 | 3450 | | | |
| 1288 | 1840.0 | 1832 | 1313 | 6125 | 607 | 1338 | 1263 | 21855 | 2167 | | |
| 1289 | 21420 | 2123 | 1314 | 1339 | 1339 | 1364 | 18386 | 1823 | | | |
| 1290 | 28302 | 2806 | 1315 | 6775 | 672 | 1340 | 1365 | 4488 | 465 | | |
| 1291 | 9443 | 936 | 1316 | 6580 | 644 | 1341 | 1266 | | | | |
| 1292 | 7048 | 702 | 1317 | 1342 | 1342 | 1367 | 1267 | | | | |
| 1293 | 7200 | 714 | 1318 | 14888 | 1476 | 1343 | 1368 | 4600 | 478 | | |
| 1294 | 1319 | 1319 | 1319 | 1344 | 1344 | 1369 | 4740 | 470 | | | |
| 1295 | 1350 | 1350 | 1320 | 1345 | 1345 | 1370 | 3207 | 318 | | | |
| 1296 | 1321 | 1321 | 1321 | 1346 | 1346 | 1371 | 3208 | 318 | | | |
| 1297 | 6140 | 612 | 1322 | 6571 | 651 | 1372 | 3540 | 351 | | | |
| 1298 | 1323 | 1323 | 1323 | 1347 | 1347 | 1373 | 1348 | | | | |
| 1299 | 1324 | 1324 | 1324 | 1348 | 1348 | 1374 | 1349 | | | | |
| 1300 | 1325 | 1325 | 1325 | 6574 | 652 | 1350 | 1375 | | | | |
| 1301 | 1326 | 1326 | 1326 | 74868 | 7476 | 1351 | 1376 | 3600 | 357 | | |
| 1302 | 7048 | 702 | 1327 | 6574 | 642 | 1352 | 4381 | 434 | 1377 | | |
| 1303 | 37775 | 3745 | 1328 | 6500 | 642 | 1353 | 1378 | | | | |
| 1304 | 109980 | 10980 | 1329 | 6775 | 672 | 1354 | 1379 | | | | |
| 1305 | 30936 | 3094 | 1330 | 15758 | 1552 | 1355 | 1380 | 3976 | 394 | | |
| 1306 | 19933 | 1976 | 1331 | 18639 | 1848 | 1356 | 1381 | 15410 | 1528 | | |
| 1307 | 1322 | 1322 | 1332 | 1357 | 1357 | 1382 | 14850 | 1472 | | | |
| 1308 | 1323 | 1323 | 1333 | 1358 | 1358 | 1383 | 12897 | 1279 | | | |
| 1309 | 6125 | 607 | 1334 | 4381 | 434 | 1359 | 4381 | 434 | 1384 | 16513 | 1637 |
| 1310 | 1325 | 1325 | 1335 | 1359 | 1359 | | | | | | |
| 1311 | 1326 | 1326 | 1336 | 1360 | 1360 | | | | | | |

Description of Beacons:
E. - Iron corner fence post, whitened 3 witness marks of 15 feet.
F. - 3/4" x 3" iron peg and cairn.

All other beacons are 1/2" x 1/2" iron pegs.
All reference marks are 1/2" x 2" iron pegs in concrete.

Servitude Note
Erem. Nos. 1287-1302, 1304, 1331-1352, 1362 and 1364-1384 are subject to a Servitude 6 Cape Feet (1709 metres) wide.
Unless otherwise stated all survey-distances are 15 Cape Feet.
Unless otherwise stated all reference marks are placed 3 Cape Feet from the spray on the street lines.

S.G. File No. 2 2 Ashbury
Survey Records No. 126/1971
Prov. Sec. Minute No. A4/4/12/173.
Dated 5-6-1970.

See sheet 3

2.5.2. Cadastral Information

- + Site Plan
- + Surveyor General Diagram (SG Diagram)
- + Zoning
- + Development Rights
- + Service Connection points
- + Servitude

4.2.1.c] Zoning

According to the LUMS (Land Use Management System of Cape Town: Online), zoning is a method of urban development management. It allows and designates certain properties within a zone for a particular use or development. Each zone has its own provisions and rules for which the property may be used, and the manner in which it may be developed.

According to the Mangaung Zoning Diagram (as seen in figure 126), the proposed site currently falls under the zone of mixed land use (MU) (as seen in figure 126). The MU zones accommodate a mixture of business, appropriate industrial, and residential development. This zone is particularly suitable at the interface between general business and residential dwellings. There are three different subzones which fall under this zone such as MU1, MU2 and MU3; which categorize the different types of mixed use building into business, industrial and residential developments. The proposed site currently falls under the subzone MU3 which is the subdivision for the mixed use of 75 residential development.

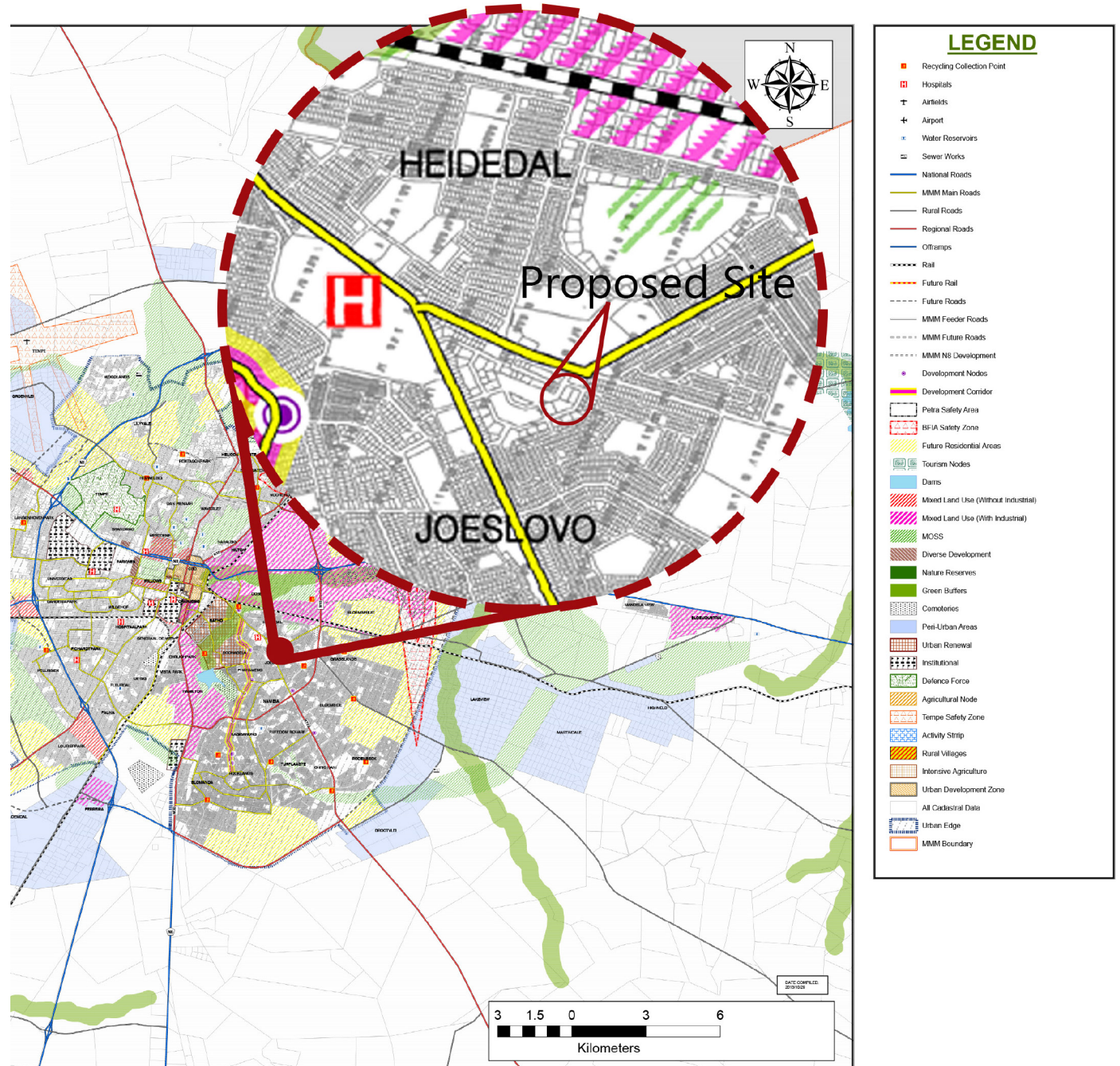


fig.126



fig. 127

Locality map indicating usage of buildings

USAGE OF THE SURROUNDING PROPERTIES:

The sites adjacent to the proposed site are also zoned for mixed use (MU) (as seen in figure 127). The surrounding buildings all have different occupancies, however, they all comply with the regulations and development rules of the MU zone.

According to the NBR the proposed Rehabilitation Centre has an occupancy E3 and considered to be a "Residential-Institution" or a "Private Sub-Acute Facility". An E3 occupancy is where groups of people who are either not fully fit or who are restricted in their ability to making decisions are cared for (NBR, 2008; 34). This complies with the primary use of the subzone MU3 and means that no application for rezoning will be necessary. 76

2.5.2. Cadastral Information

- + Site Plan
- + Surveyor General Diagram (SG Diagram)
- + Zoning
- + Development Rights
- + Service Connection points
- + Servitude

4.2.1.f] Development rights

Development rights are rules and regulations imposed by the state or local law for specific zones and occupancy's for buildings. It is a way of controlling and managing the urban growth of city or town. A schedule of rights should be indicated on drawings for the local planning authorities to go through in order for plans to be approved. Figure 128 is a general schedule of rights for the proposed site, based on Land Use Management System (Online)

| Schedule of rights | |
|--|--|
| Property description | |
| Consolidation of ERF 1362 and 1363 | |
| ERF: 1362/ 1363 | Site Area: 5471,06 |
| Township: Heidedal | Title Deed: - |
| Zoning Information | |
| Current Zoning : Mixed use [MU] | Amendment scheme number: 2016 |
| Current Occupancy: Existing Clinic and Vacant Land | |
| Development Control Measures | |
| Control | |
| Floor Area Ration (FAR) | 6.0 |
| Coverage | 100% |
| Height restriction | 15 m |
| Building line | 4,5m along the street or common boundary |
| Street centreline setback | 8m |
| Parking requirements | 2 bays per consulting room 0,75 bays per bed + 0,25 bays for visitors |
| Canopy or balcony projection | 500mm to a vertical plane through the kerb line |

2.5.2. Cadastral Information

- + Site Plan
- + Surveyor General Diagram (SG Diagram)
- + Zoning
- + Development Rights
- + Service Connection points
- + Servitude



Fig. 129

1. Electrical connection



Fig. 130

2. Sewer connection



Fig. 131

3. Telephone connection

2.5.2. Cadastral Information

- + Site Plan
- + Surveyor General Diagram (SG Diagram)
- + Zoning
- + Development Rights
- + Service Connection points
- + Servitude

4.2.1.e] Servitude

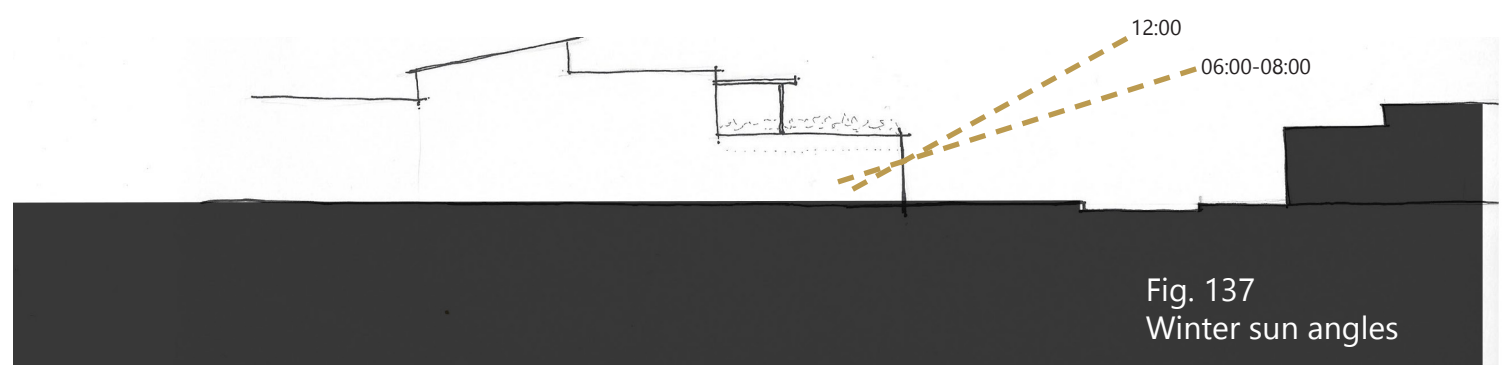
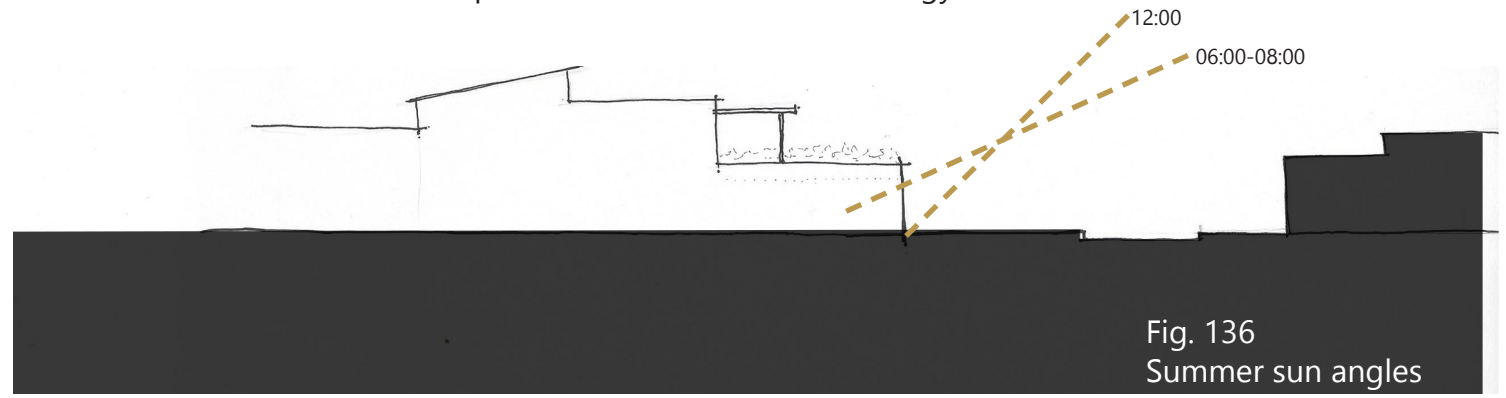
According to Van de Venter (2017) a servitude is “the right a person has over the immovable property of another person”. As indicated on the SG diagram there is a servitude running along the north-east boundary of ERF 1362. It is considered to be a public servitude which is 1, 89 meters wide. This type of servitude is created in favour of the general public and not in favour of an individual and will also only affect one property, creating a public walkway.



2.5.2.c Climate

Climate Considerations

According to the Sans 10400-XA, Bloemfontein is located in climate Zone 1, which experiences cold interiors in winter and hot interiors in summer, with low humidity and high diurnal range. The site receives sunlight from all directions. The neighboring building on the Northern side of the site blocks a section of the late morning sun. Careful attention will be given to the design and technical resolution to achieve a space which is comfortable, energy efficient and sustainable.



Climatic design principles

- + Cross-ventilation
- + Insulation of walls and roof
- + Large amounts of natural light
- + Prioritizing the northern facade
- + Minnaminnie openness on the Western facade
- + Double glazing with insulating frames
- + Passive solar heating
- + Insulating thermal mass including slab edges
- + Use adjustable shading

2.5.2.d Orientation

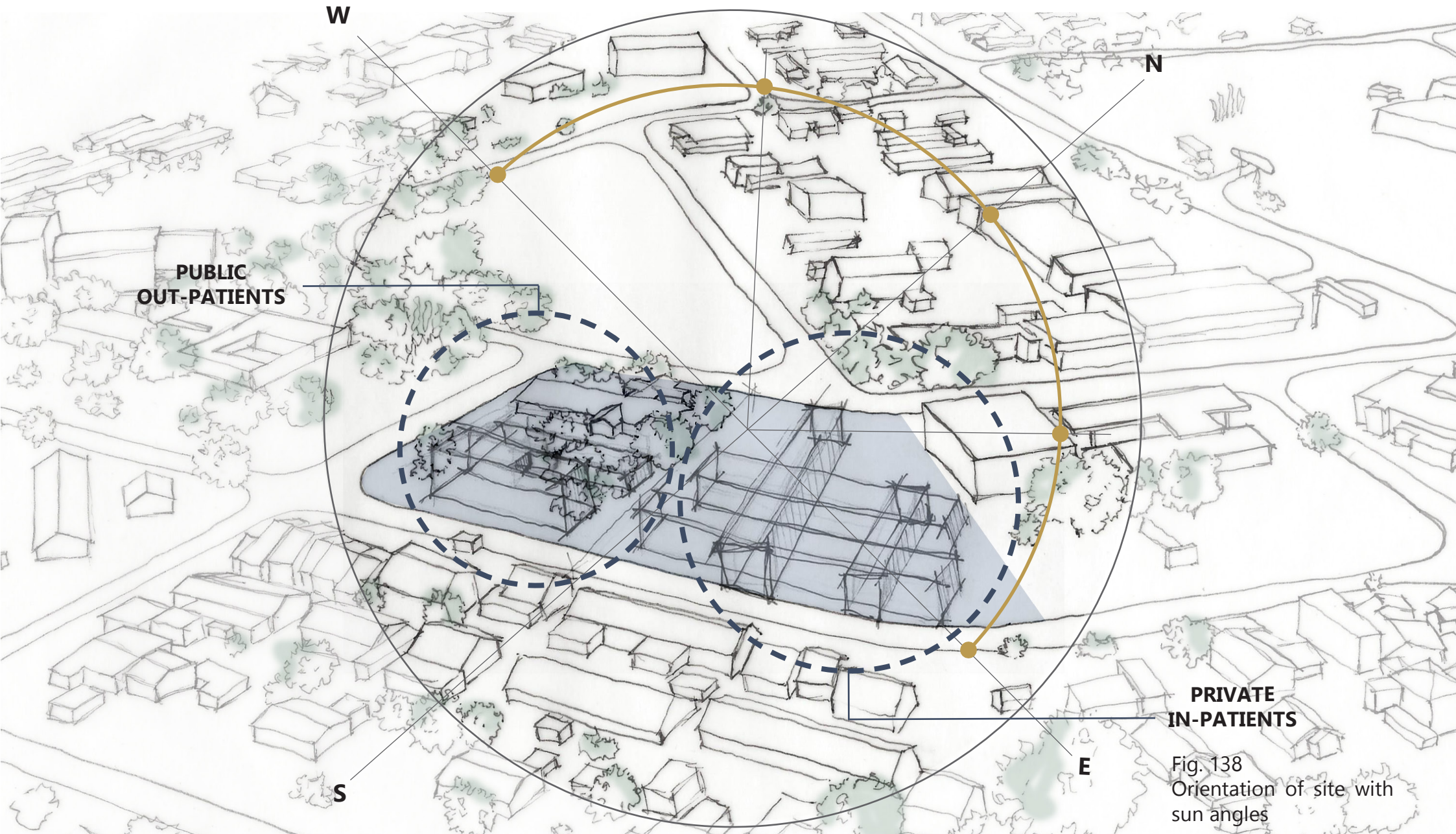


Fig. 138
Orientation of site with
sun angles

2.5.2.e Planning of spaces

The project is orientated north-west in order to allow for optimum natural light to enter the building. A courtyard typology was used in order to still allow natural light in while keeping the building private. Shading mechanisms such as louvers and screens are used to control the amount of light needed within the building.

Taking the orientation into consideration, the spaces and functions were planned. Allowing the more sociable and active spaces to be on the northern side while the offices and doctors rooms are located on the southern side (as seen in figure 139).

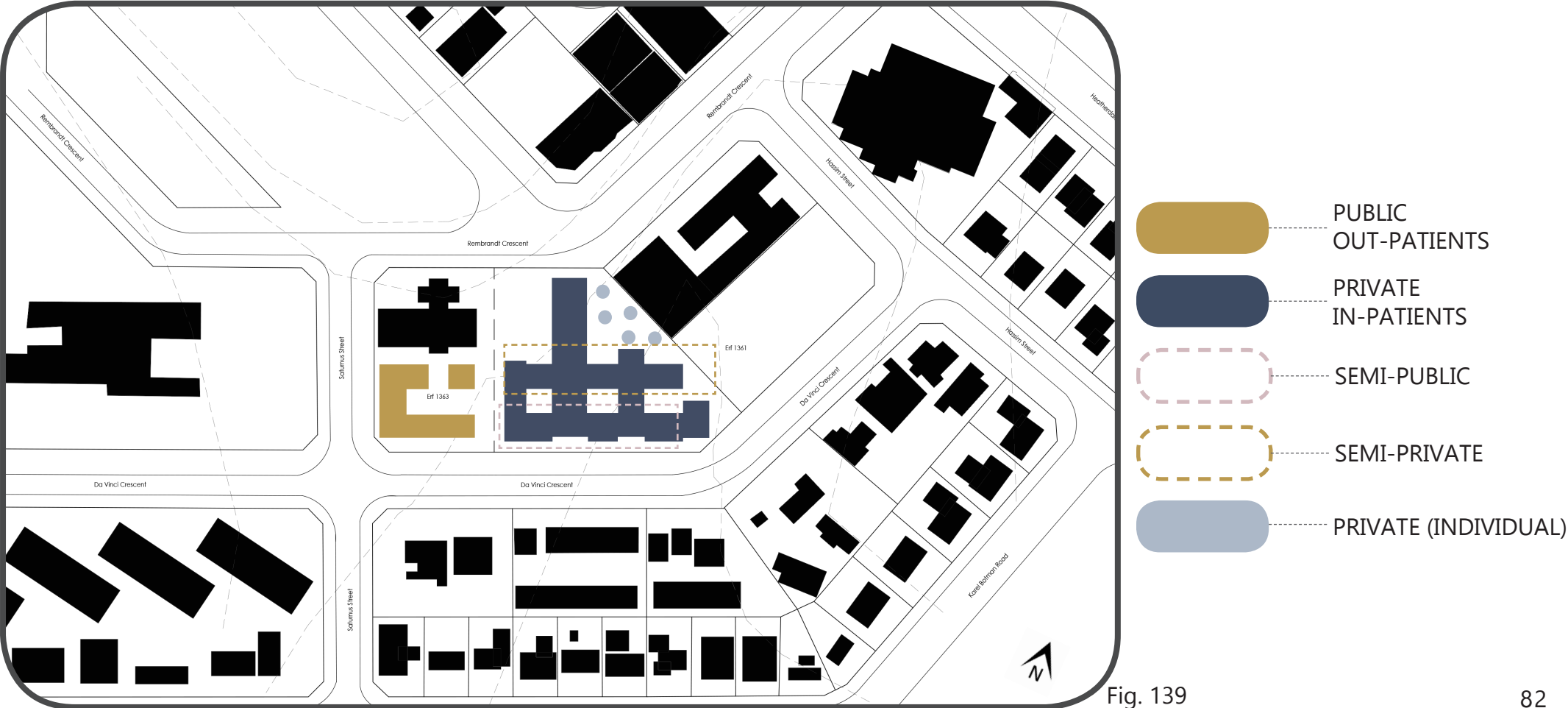


Fig. 139
Setting out of spaces within the context

2.5.2.f Existing clinic on site

Man-made topography

An existing Clinic is located on the proposed site which will not be altered in any way. However, existing pathways and entrances to the clinic will be articulated through new pergolas and landscaping to link it with the proposed Rehabilitation Centre. Figure 144 is an approximated indication of the floor plan of the existing Clinic.



Fig. 140

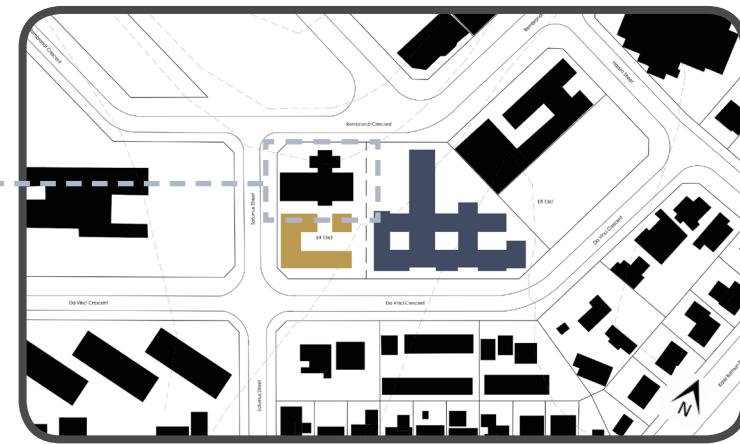


Fig. 141
Location of Existing Clinic



Fig. 142



Fig. 143

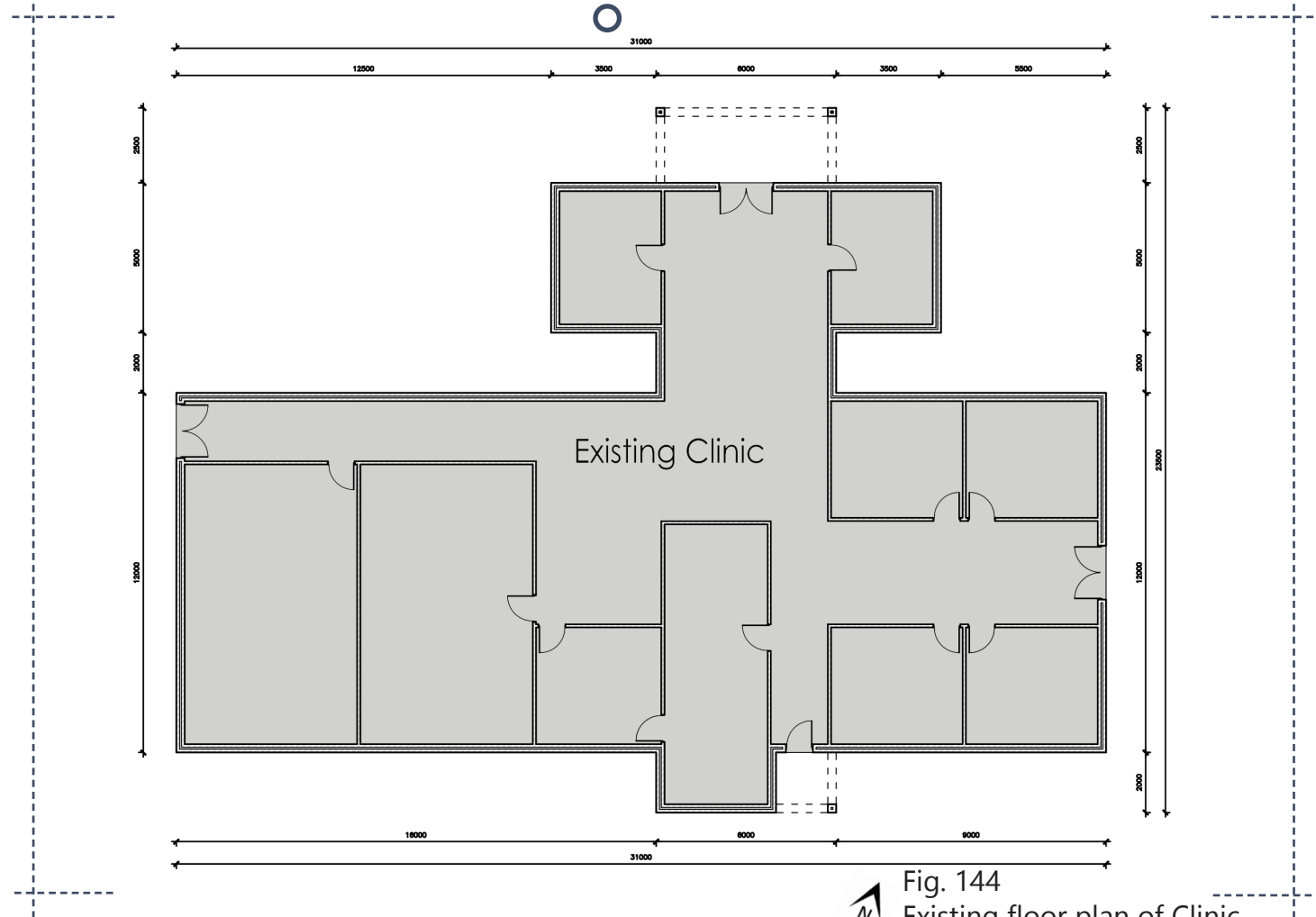


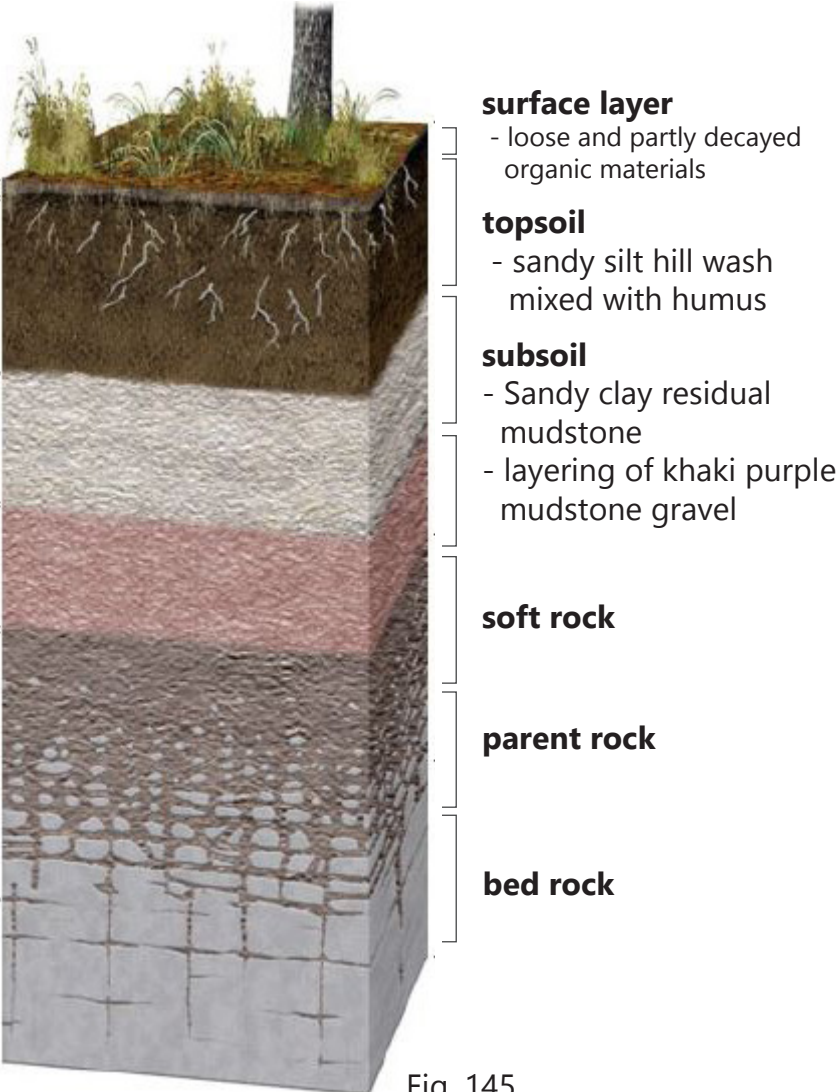
Fig. 144
Existing floor plan of Clinic

2.5.6.g Geotechnical analysis

The geotechnical investigation indicates no natural potential ground instabilities. A study that was carried out in 2005 by Africon on an adjacent site (Erf 1360) found that the area predominantly consists of weathered mudstone (Africon, 2006). Sandy silt hill wash can be found in the topsoil, followed by a layer of sandy clay residual mudstone, below this layer an internal layering series of khaki and purple mudstone gravel was found and finally soft rock was found beneath that (Africon, 2006).

This indicates that the foundations will have to be excavated down to the parent rock as seen in figure 145. Pad foundations will be used for the steel columns and strip foundations for the infill masonry walls.

The sandy silt hill wash that is found in the topsoil could be considered susceptible to erosion by unchecked stormwater flow. In this case the stormwater will be managed by being removed from the site without damaging the structure, or overloading the stormwater kerb inlets on the northern side of the site. The current condition of the site can be seen in figure 146-149.



- surface layer**
- loose and partly decayed organic materials
- topsoil**
- sandy silt hill wash mixed with humus
- subsoil**
- Sandy clay residual mudstone
- layering of khaki purple mudstone gravel
- soft rock**
- parent rock**
- bed rock**

Fig. 145
Soil Profile
(Goyal, 2019: Online)
-adapted by author



Fig. 146



Fig. 147



Fig. 148



Fig. 149

2.5.3

STRUCTURAL PHILOSOPHY

The structural philosophy is explored through the combination of the theoretical discourse and the design concepts discussed earlier on in this chapter (2.1 and 2.4). Creating safe spaces within the familiarity of the community allowing the mind and body to reconnect to the built environment. While staying true to the industrial typology of Heidedal, the building needs to have a welcoming and light atmosphere surrounding it. Despite that the building needs to be private, the structure should create an illusion of open free moving spaces. Ma-

CONCEPTS FOR A NEW
STRUCTURAL PHILOSOPHY

MATERIALITY

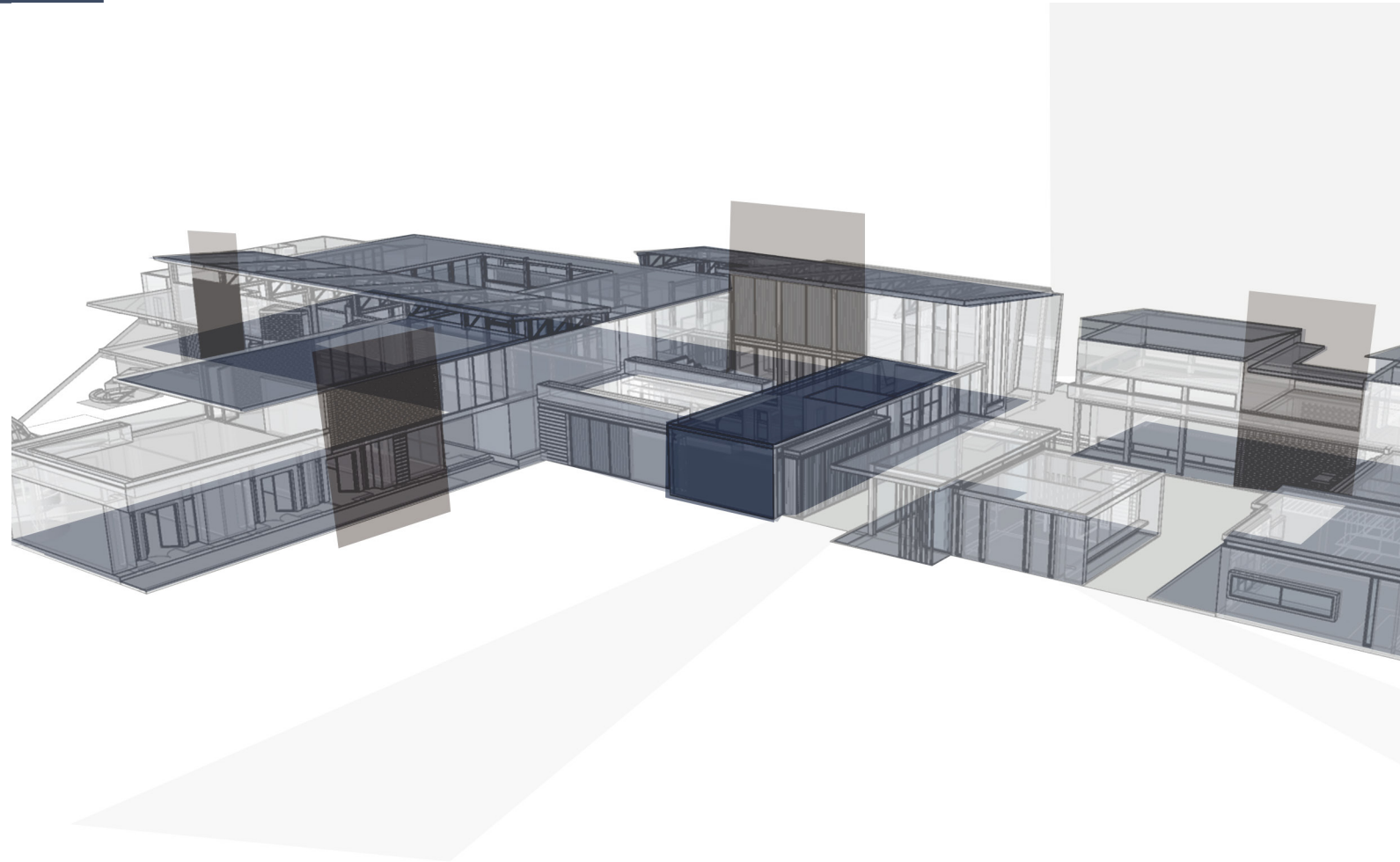


Fig. 150
Structural philosophy

CONCEPTS FOR A NEW STRUCTURAL PHILOSOPHY

Manipulating the structure to enhance healing

Manipulating straight walls in order to allow natural light in

Creating breaks in the roof to allow for vegetation on the interior of the building

Perforating the structure to allow visual connection of the context

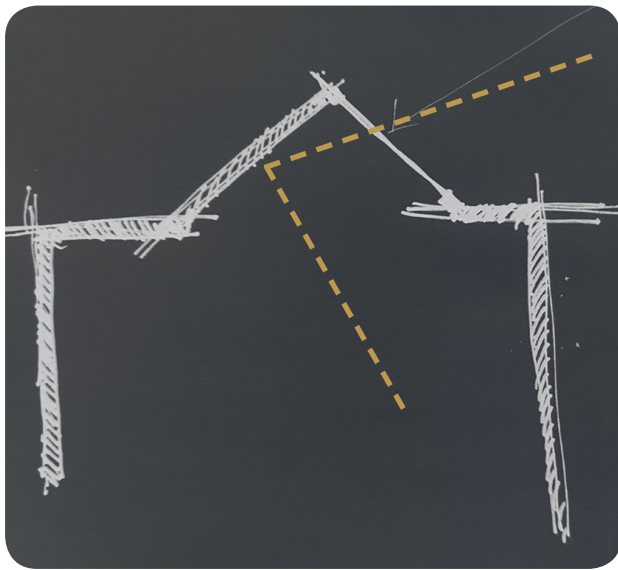


Fig. 151

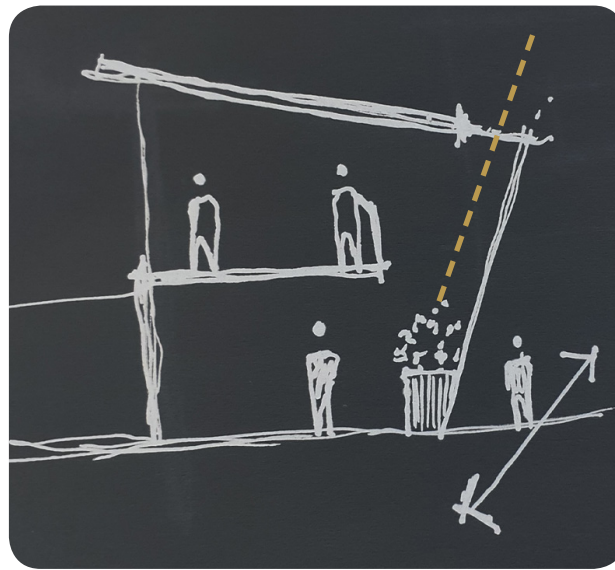


Fig. 152

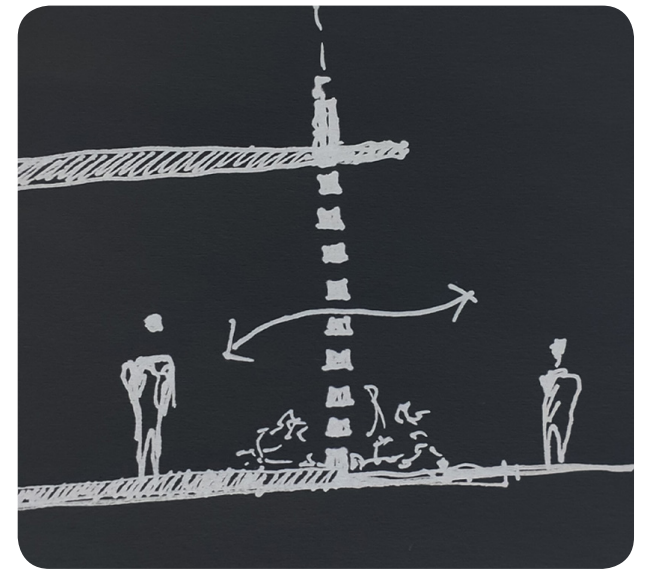


Fig. 153

2.5.4. Materiality

2.5.4. Materiality

Materiality plays a huge role within the design of an addiction rehabilitation centre. While dealing with addictions and mental health issues, patients need as much encouragement and comfort as possible. Materials therefore need to help the patient feel at ease within this recovery environment. Sound absorbing materials such as wood, green walls, carpeting, soft textured paths and textured walls will help keep the spaces soft and livable, rather than hard surfaces such as smooth concrete walls and floors that amplify the sounds in a small environment. This helps keep the patients relaxed and stressed free when moving through the building. However, some parts of the building will need to be sterile with white plastered and painted walls, adhering to the national department of health regulations (2018).

These areas will only be found within the nurses stations and medical rooms which need to be easily cleaned. The exterior of the building will also have to use this 'soft' approach with materiality, creating a welcoming building for the public and patients. Harsh materials such as concrete and hard metal screens could create a stigma of fear and intimidation which contradicts the idea of a safe and healing space. The materials chosen will be kept as true to the natural state as possible which relates back to the theoretical approach of connecting back to nature and ones self which was discussed in part 2- 2.5.

- Material Palette
- + Masonry
 - + Glass
 - + Steel
 - + Timber

Main Material Palette



Fig. 147

Brick

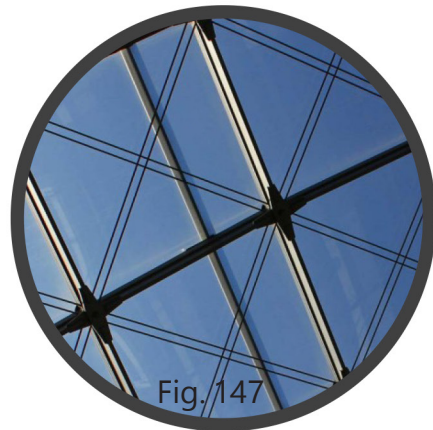


Fig. 147

Glass



Fig. 148

Steel



Fig. 149

Wood

- Material Palette**
- + Masonry
 - + Glass
 - + Steel
 - + Timber

2.5.4. a) Masonry

Face brick is the most common material found within Heidedal due to the fact that it is one of the cheaper material where not a lot of maintenance is required. Keeping to the building culture of Heidedal, face brick is used as the main infill of the structure throughout the design. Different patterns (brise soleil) as shown in figures 150-153 is used in allocated places to allow light into the building while still keeping a sense of privacy.

Cavity walls are used in order to soundproof the building from the surrounding environment. According to the SANS 10400 part 1 the cavity should not be less than 50mm and not greater than 110mm (SANS 10400, 2007; 25). 40mm IsoBoard will be used to fill the cavity which will prevent heat transfer and a build-up of heat in the inner leaf of the brick layers.

All masonry shall be bonded in a full masonry bond or tied to the intersecting walls by means of galvanized hoop-iron straps provided at vertical centres that do not exceed 450 mm unless other specified (SANS, 2007: 25). Two main types of face masonry from Corobrik will be used in the Centre namely: Agate and Onyx (Figures 154- 155)

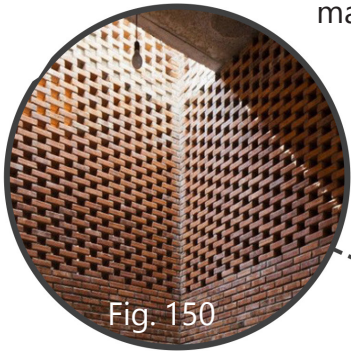


Fig. 150

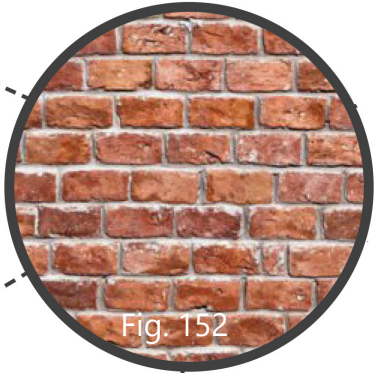


Fig. 152



Fig. 153

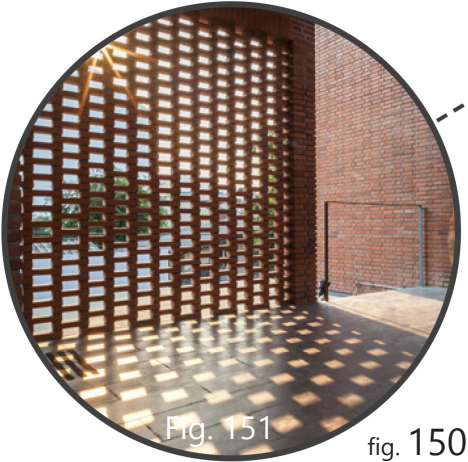


Fig. 151

fig. 150-153
Ways in which the masonry will be used

Agate



Fig. 154

Brick Type: Face Brick
 Base Colour: Grey
 Dimension: 222 X 106 X73 mm
 Format: Imperial
 ISO: 9001:2008
 24 Hr Water Absorption: 10-12
 Exposure Zone Suitability: 1-3

Texture: Satin
 Class: FBX
 SANS: 227:207
 Comp. Strength: 20-30
 Moisture Expansion Cat: I

Onyx



Fig. 155

Brick Type: Face Brick
 Base Colour: Brown
 Dimension: 222 X 106 X 73 mm
 Format: Imperial
 Typical Comp Strength: 30-40
 Typical 24 Hr Water Absorption: 8-10
 Moisture Expansion Cat: II

Texture: Satin
 ISO: 9001:2008
 Class: FBX

- Material Palette**
- + Masonry
 - + Glass
 - + Steel
 - + Timber

2.5.4. Glass

Glass and how it is treated has a great influence on the Centre due to the need of natural sunlight throughout the building. It has to be used strategically in order to respect the patient's privacy while creating a sense of openness. Glass bricks are therefore used where privacy is extremely essential and natural light is needed. These bricks can either be transparent or textured which allows light in but a person cannot see through them (figure 162). They are both sound and thermally insulating which is important as well as the sustainability of the building. Full double glazing panes with steel frames will be used towards the courtyards of the building where privacy is not that necessary as shown in figure 161.

According to the SANS regulations 10400:

All glazing should comply with the requirements of SANS 50572-1 to SANS 50572-5 and SANS 1263-1, or polycarbonate sheeting. All metal frames shall, before glazing, be painted with an anti-corrosive primer.

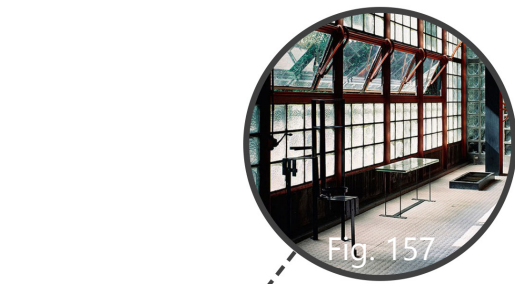


Fig. 157



Fig. 158

Glass blocks for private spaces

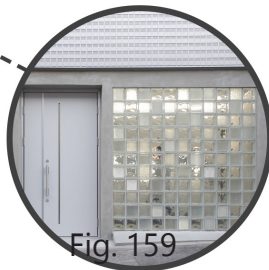


Fig. 159

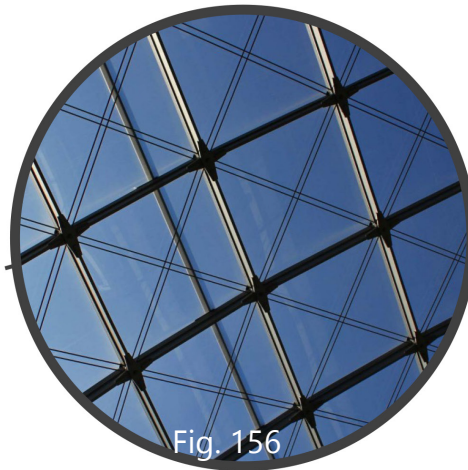


Fig. 156

fig. 156-161

Ways in which the glass will be used



Fig. 160

full length windows for courtyard spaces



Fig. 161

Glass Bricks

Aluglass Bautech



Fig. 162

- Advised Joint: 10mm
- Finishings: transparent, sandblasted 1 or 2 sides
- Size: 19x19x8cm
- Weight: 2.3 Kg
- Weight/ m2 (KN): ~0.75
- Sound Insulation: 40dB
- Thermal insulation: 2.81 W/m2 °K
- Fire Resistance: integrity until 30 minutes and insulation until 15 minutes

(Aluglass Bautech: Online)

- Material Palette**
- + Masonry
 - + Glass
 - + Steel
 - + Timber

2.5.4. Steel

Heidedal has a general industrial typology. One of the main design influences is to stay true to this industrial typology while making it habitable (refer to precedent study 01: page 59). Steel is the main structural system used and will be discussed in more detail later in this chapter. Inspired by the morphology exploration, other steel components such as louvers and pergolas will be used and integrated with vegetation and creeper plants to create this industrial habitable feel within the community. A precedent study of this nature was investigated in part 2 – 2.2.3. All steel will be painted with a new steel anti-corrosion primer and then painted a dark charcoal colour.

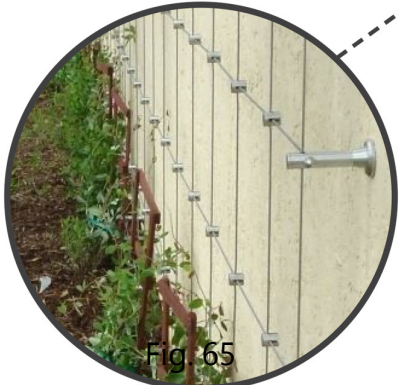
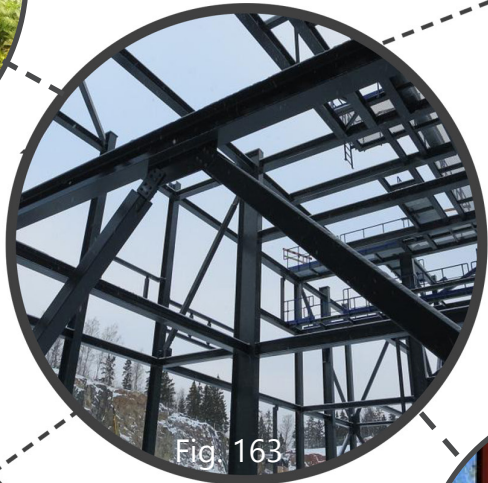


fig. 162-167
Ways in which the steel will be used

Pergola



Fig.168

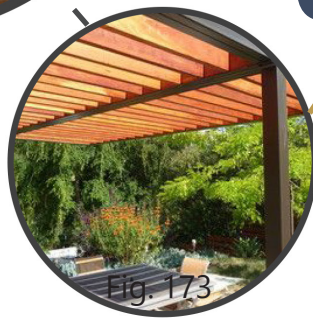
Square Steel Tubing
 Size: 150 x 150 x 10 mm
 Painted with charcoal anti-corrosion primer
 Cemented into the ground

Woven net Wire mesh
 stainless steel
 Size: 30 x 30 x 2.5 mm
 Welded onto steel tubing

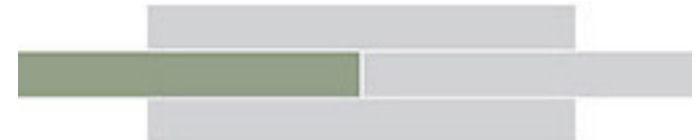
- Material Palette**
- + Masonry
 - + Glass
 - + Steel
 - + Timber

2.5.4. Timber

Apart from the vegetation, timber and timber cladding will be used throughout the design in order to soften the harsh industrial environment creating warmer spaces inside and outside the building. Warmer spaces refer to a space which has more textures and relatable materials, where sound can be absorbed instead of enhanced. Timber will be used in sections of the building in forms of flooring, cladding of walls and ceilings and planter boxes.



COLOUR: Chocolate Brown Oil
 SIZE: 40mm x260x2200mm
 PROFILE: Tongue and groove
 INSTALLATION METHOD: Glue Down Elastomeric



COLOUR: Teak Plascon Wood care Ultra Varnish
 SIZE: 50mm x228mm
 INSTALLATION: Bolted to steel

2.5.5. Services

+ Health
+ Safety

According to: The Board of Healthcare Funders of South Africa : Private Sub-Active Facilities

(Board of Healthcare of Southern Africa. 2018)

General Requirements

- ⦿ A private sub-acute facility should have a minimum of 12 beds, and maximum of 36 beds per nursing unit.

Therapy Areas

- ⦿ Natural light
- ⦿ Cross ventilation access.
- ⦿ Access to the outside garden areas for all patients.

Living Units (Beds)

- ⦿ 0,6 m between the non-attending side of any bed and the nearest wall on that side;
- ⦿ 0,9 m between the attending side of any bed and the nearest wall on that side;
- ⦿ 1,0 m between the sides of any adjacent beds;
- ⦿ 1,2 m between the foot of any bed and the opposite wall; and
- ⦿ 1,5 m between the foot of any bed and the opposite bed.

SUPERSTRUCTURE

2.5.4. Structural System and Design Detailing Explored

SUPERSTRUCTURE

SUBSTRUCTURE

FLOOR STRUCTURE

WALLS

ROOF STRUCTURE

THERAPY PODS

A steel column-and-beam system is used as the primary structure. All the steel used should be coated with an appropriate coating for fire resistance (where necessary) and for the climatic conditions which could erode the steel and compromise its structural integrity. This coating should be applied when all welding is complete, to avoid corrosion at the joints.

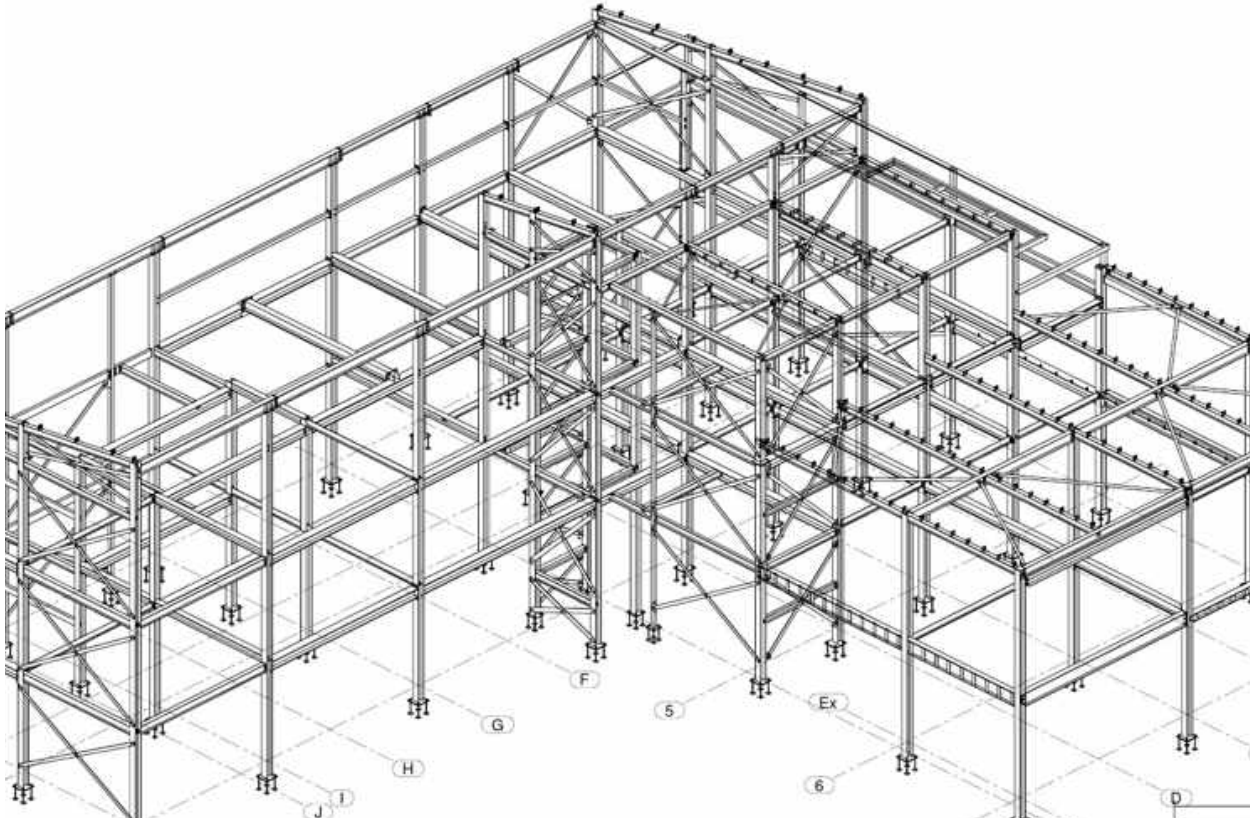


Fig. 177
typical steel beam and column structure
(Steel detailing UK, 2007: Online)



SUBSTRUCTURE

The foundations are the lowest division of the building and will have to be able to carry the load of the structure adequately and transfer the load to the soil (Ching, 2014: 80). Pad foundations will be used for the steel structure, as they transfer the load of each individual column separately into the ground. A strip foundation will be used for the infill masonry walls.

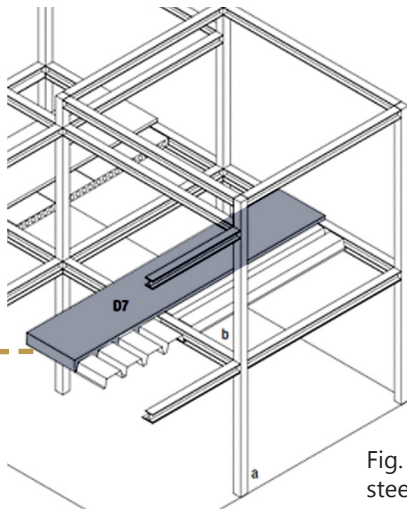


Fig. 178
steel structure in relation to composite floor slabs
(Deplazes, 2005: 128)

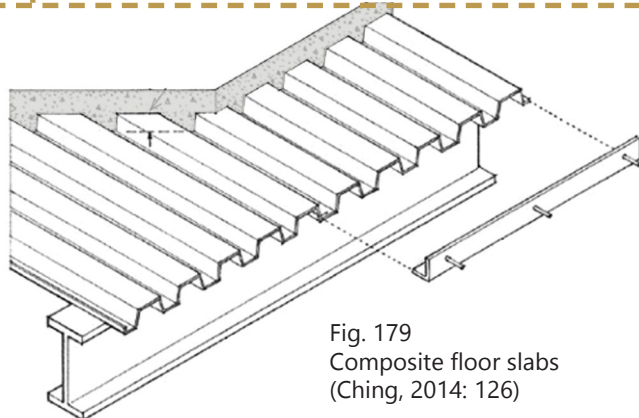
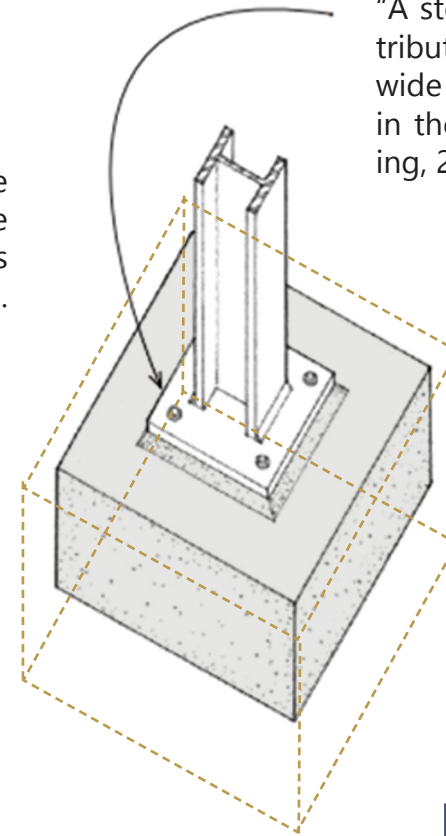


Fig. 179
Composite floor slabs
(Ching, 2014: 126)



"A steel base plate is necessary to distribute the column load over an area wide enough that the allowable stresses in the concrete are not exceeded"(Ching, 2014: 94).

Fig. 177
Pad foundation with steel base plate
(Ching, 2014: 94)

FLOOR STRUCTURE

Composite floor slabs will be used throughout the steel frame structure. Composite steel floors consist of profiled metal sheets, 0.80–1.75 mm thick, with a filling/ topping of concrete (Deplazes, 2005: 125). This floor system will be used because of the fast erection and that no framework is required for the concrete (Deplazes, 2005: 125). However, because of the steel profile underneath the slab, ceiling boards will have to be used to create a softer interior.

WALLS

All external infill walls will be brick cavity walls with a 30mm cavity. These cavities will be filled with isoboard to reduce the noise pollution from the surrounding context of Heidedal. The internal walls will consist of single brick walls where security is an issue and dry walling panels. The dry wall panels will consist of 81mm steel studs @600 C.T.C. and 9mm medium density fiber cement boards on either side as seen in figure 180.

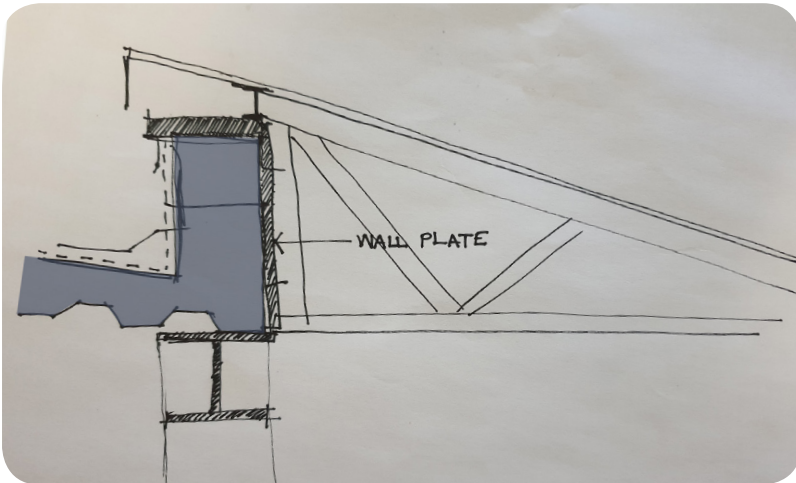


Fig. 181
Connection between two main roof systems

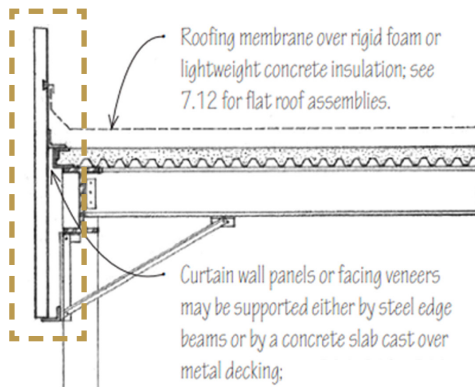


Fig. 182
composite slab edge finish
(Ching, 2014: 94)

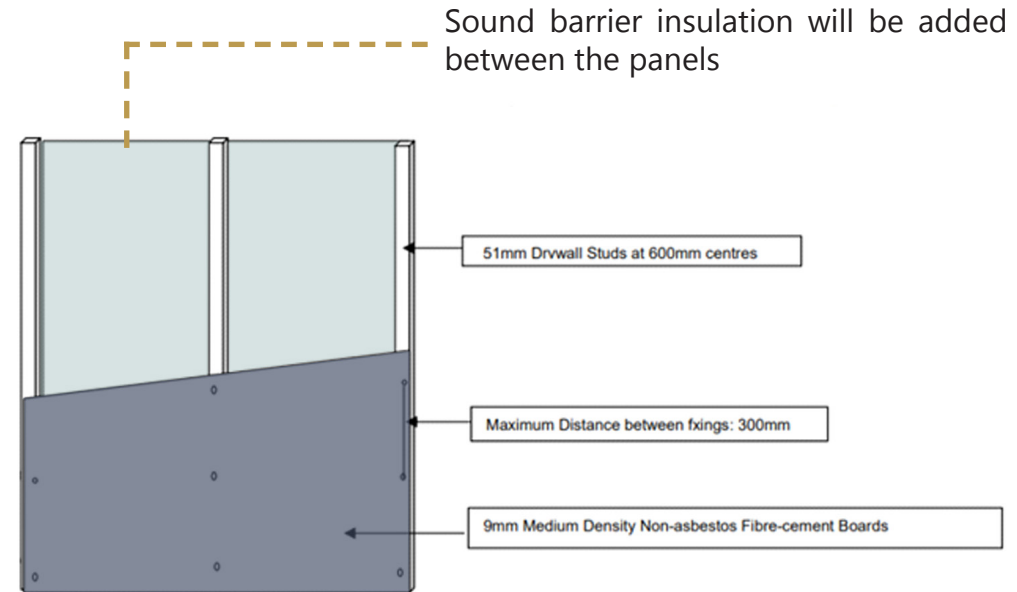


Fig. 180
internal dry walls
(SABISA, 2004: part 5- Annex 1)

ROOF STRUCTURE

There are two main roof systems: mono-pitched steel roof system and concrete composite slabs. The steel roof uses an exposed steel truss system. Rain water will be collected through the use of gutter and directed into tanks. Composite slabs will be used to connect the different mono-pitched roofs on a lower level. These roofs will slop at three degrees to guide the water to the adequate outlets.

2.5.6. Circulation

Horizontal Circulation

Vertical Circulation

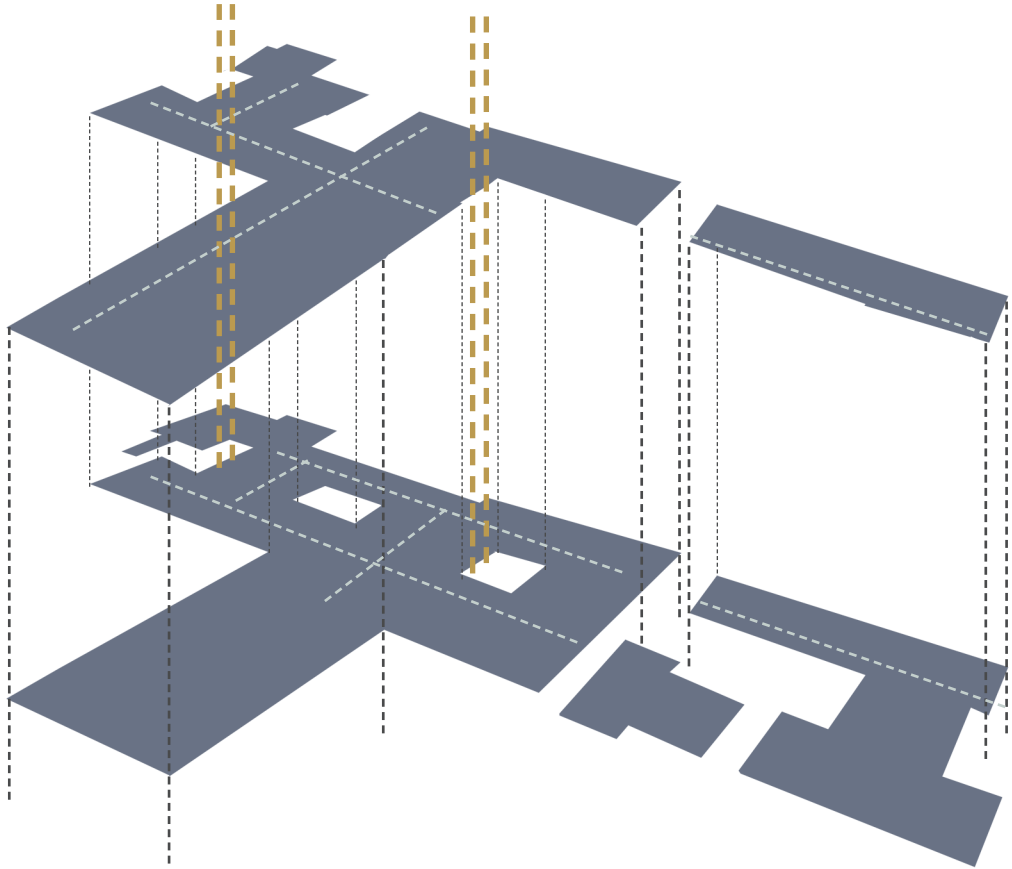


Fig. 183
horizontal and vertical circulation routes

2.5.3. Sustainability

Healing Environment

=

Sustainable Environment

Sustainable opportunity's to reduce the carbon foot

Designing with the natural environment instead of against it is a key role of architecture in today's era. According to the Brundtland Commission (1987) sustainability is 'the focuses on meeting the needs of the present without compromising the ability of future generations to meet their needs'. Focusing on the ecological sustainable principles, this dissertation will focus on the passive systems of sustainability and build the dynamic systems around this basis. Passive systems like orientation, natural ventilation, shading and lighting will be explored in order to ensure the users comfort levels while attempting to reduce the carbon foot print of the Centre. Dynamic systems such as rain water harvesting, micro climates in court years and keeping the maintenance to a minimum adds to the ecological sustainable principals of the dissertation.

ORIENTATION

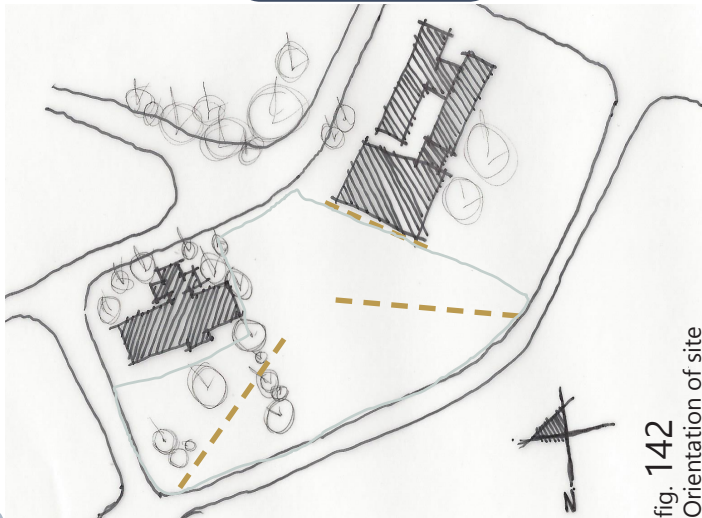


fig. 142
Orientation of site

SHADING

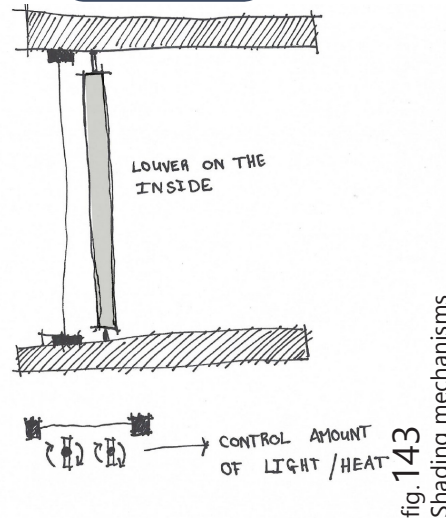


fig. 143
Shading mechanisms

NATURAL LIGHTING

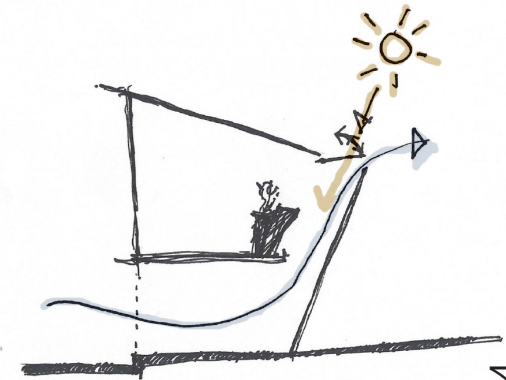


fig. 144
Ways of bringing in natural light

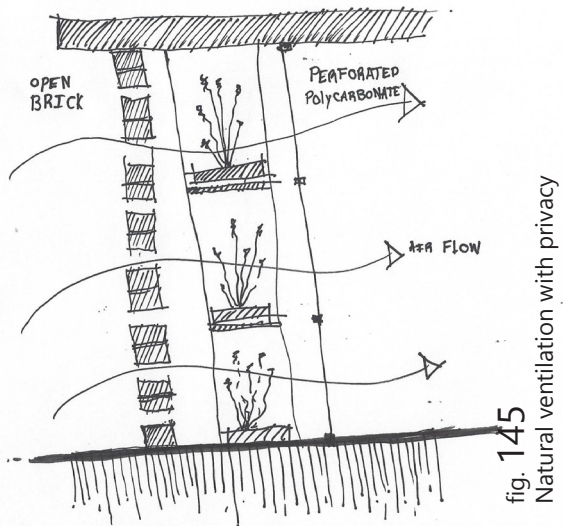
- Site is orientated North-West
- Double story building found on the North-East border which will block Northern light.
- Site opens up to the South

- Subtle shading, not making the building feel like a jail
- Using the shading as one of the security procorshion louver

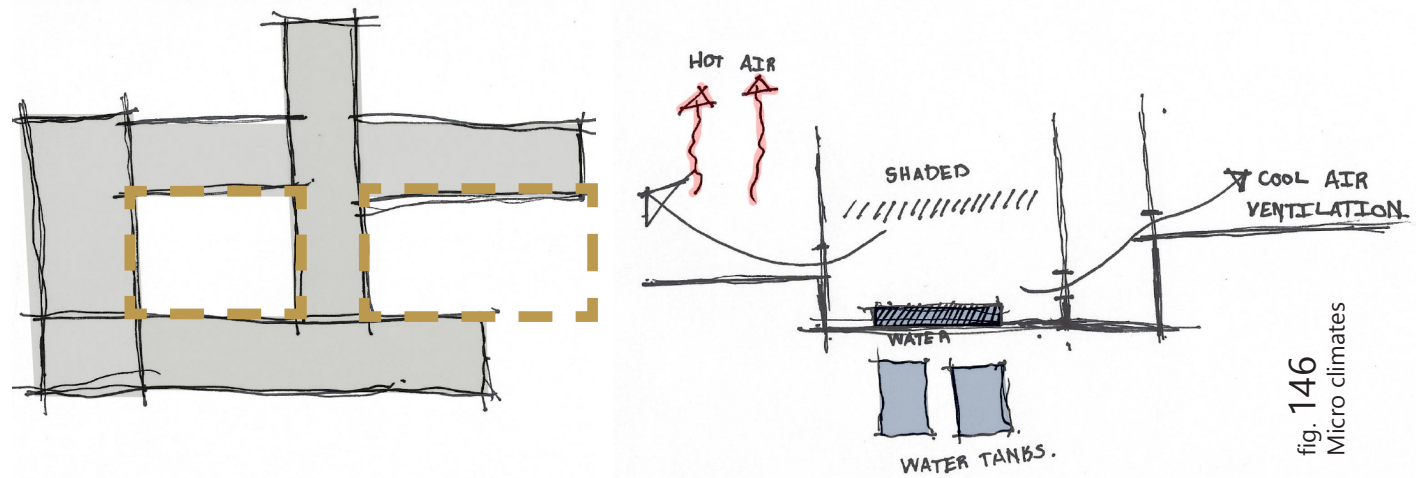
- Allowing in as much natural light in as possible without interfering with the privacy of the centre

- Natural light - Where a requirement for natural light (daylight) is stated, this may be met by windows opening onto an atrium or courtyard, providing privacy within the room or space is maintained.
- Ventilation - All rooms shall be ventilated and lit in accordance with NBR, unless otherwise stated.
- Maintenance - A responsible person shall be appointed in terms of the Occupational Health and Safety Act All plant rooms on the premises shall be in a clean and orderly state, as should all workshop facilities. Maintenance record books must be kept and updated regularly.

NATURAL VENTILATION



COURTYARD MICRO CLIMATE AND RAIN WATER HARVESTING



OBSTACLES

- Allowing natural ventilation without opening the building up to the public
- Natural cooling of the building

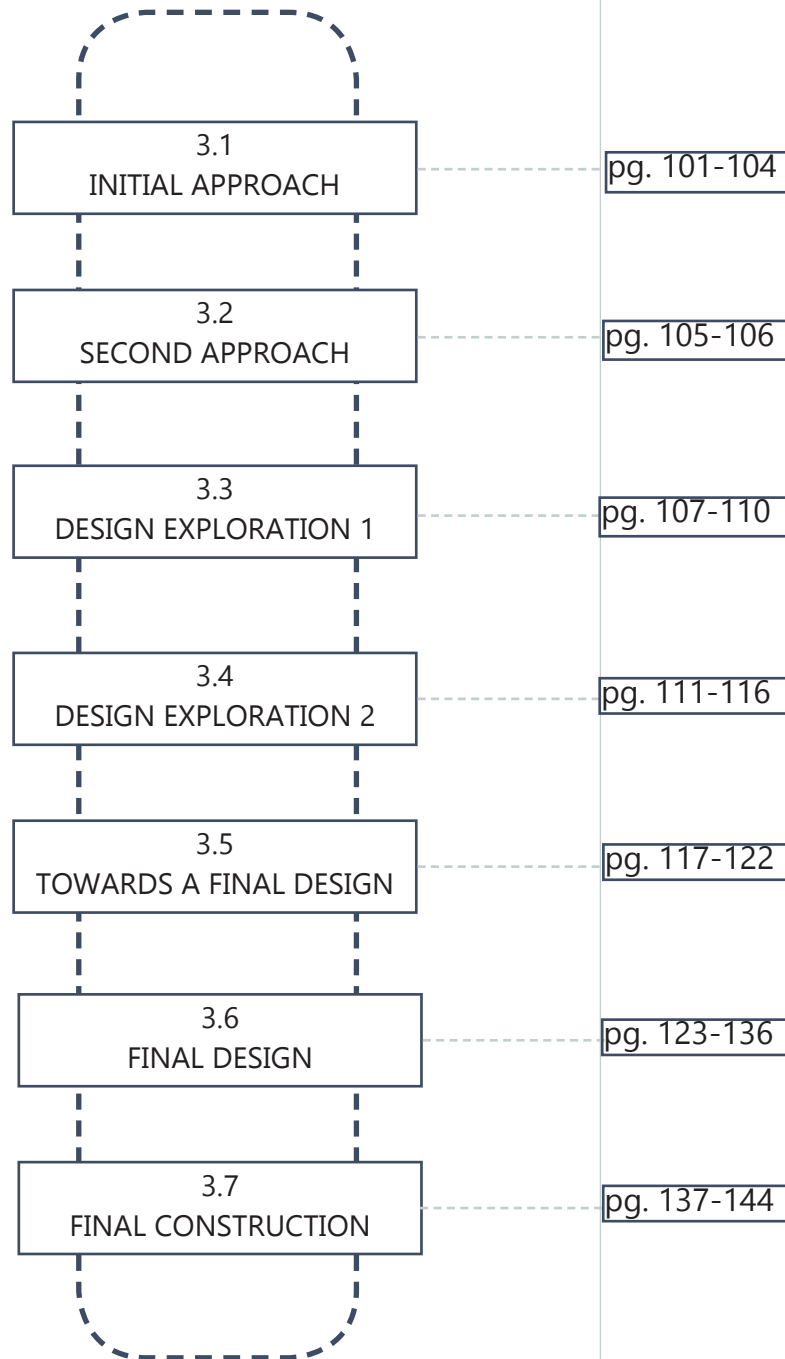
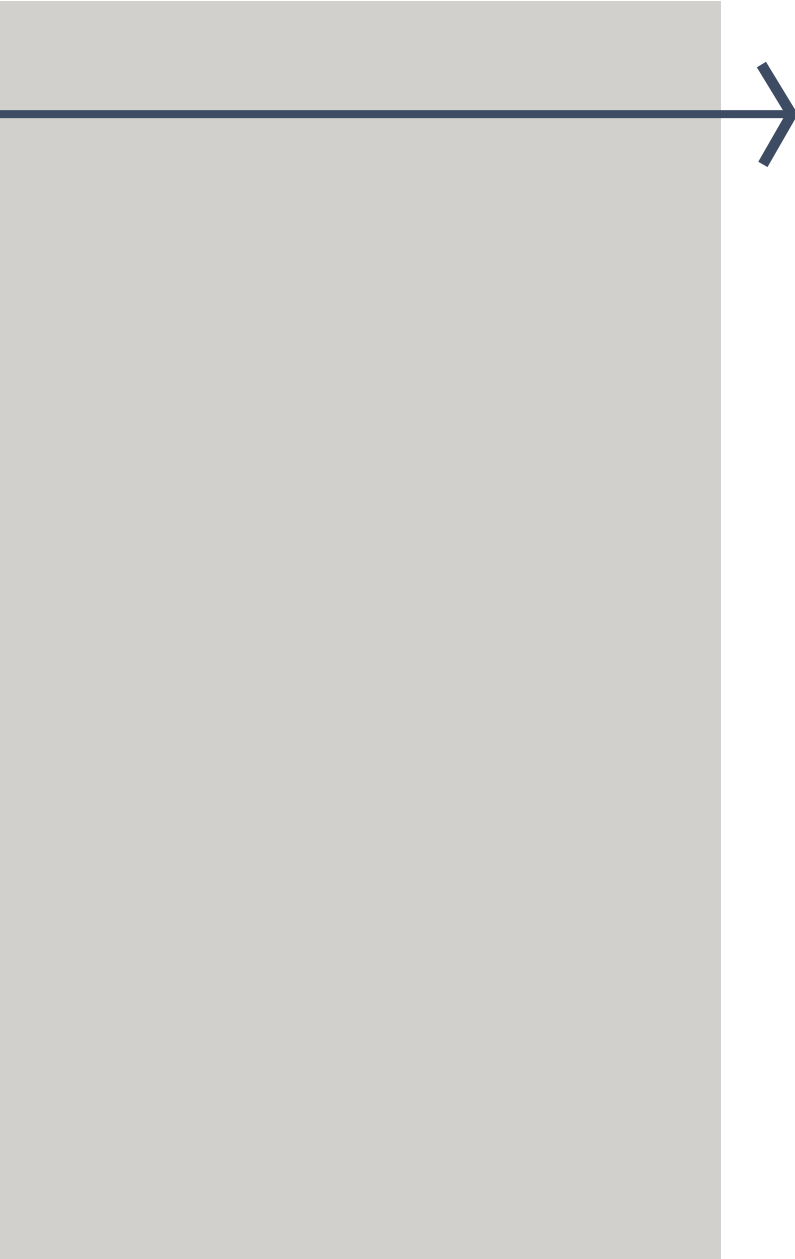
- Creation of micro climates with courtyards
- Space for Rain water collection - underground in courtyards



PART

03

Design and Technical Synthesis



3.1 INITIAL APPROACH

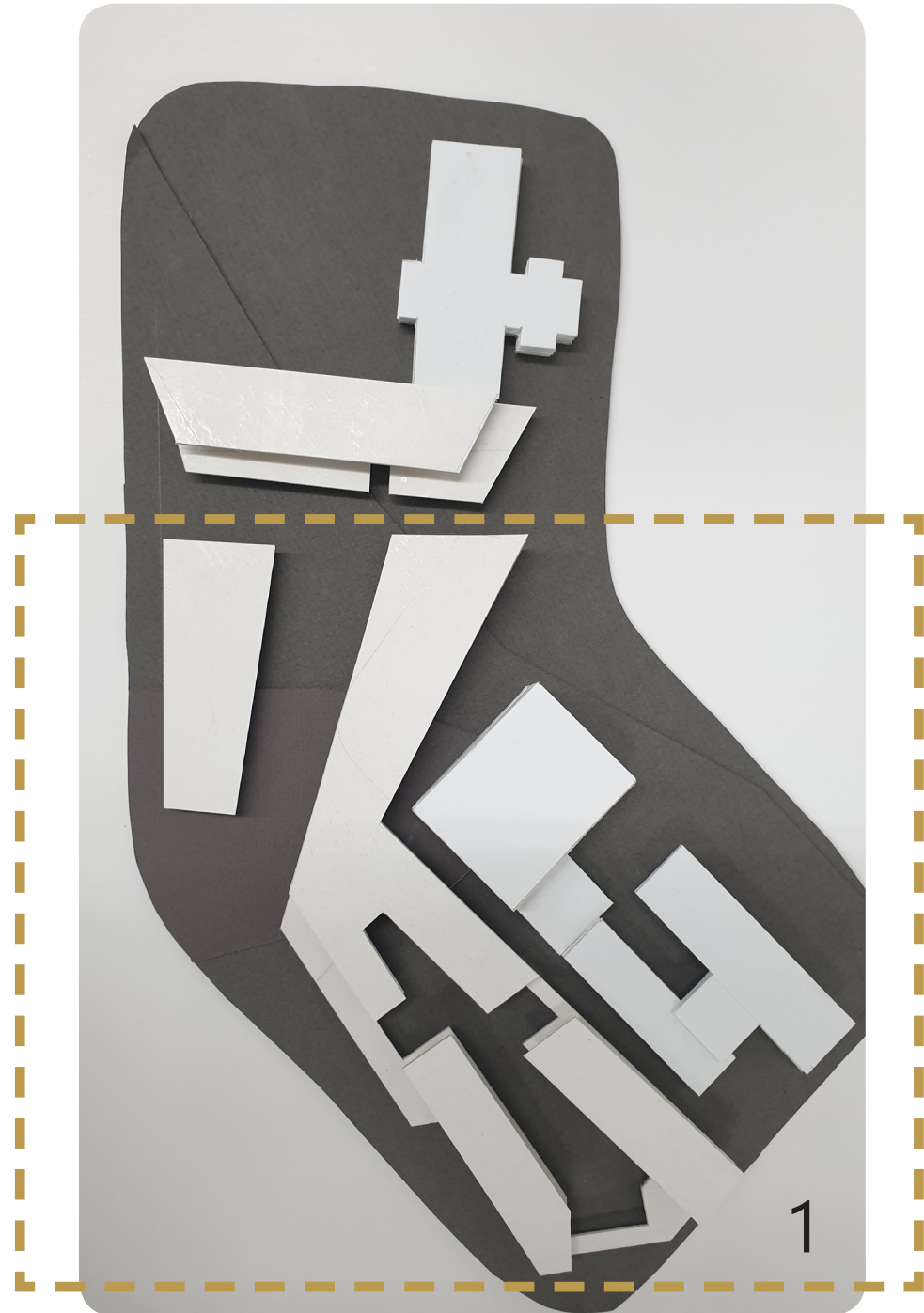
_exploring the site and forms

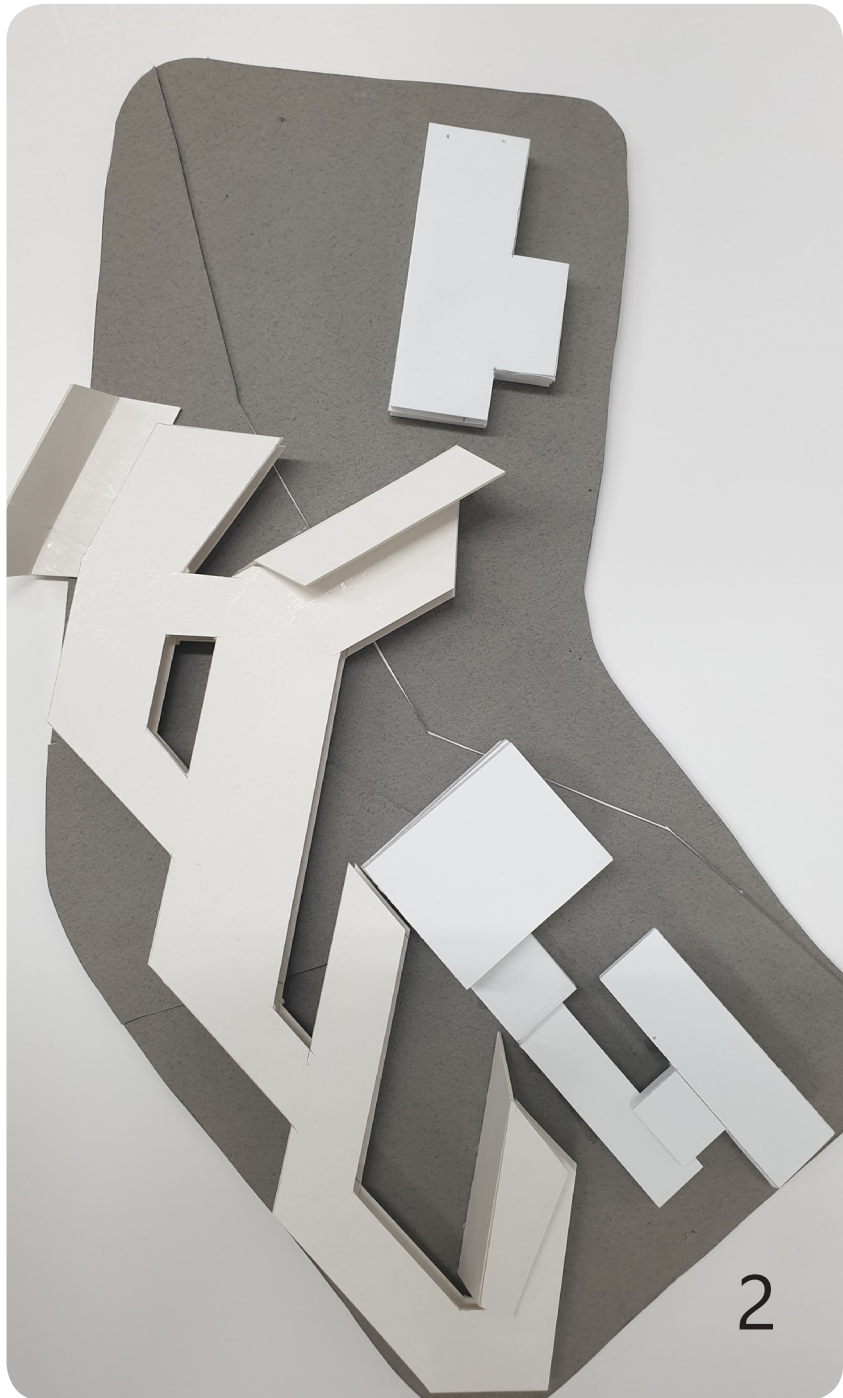




3.2 FIRST APPROACH

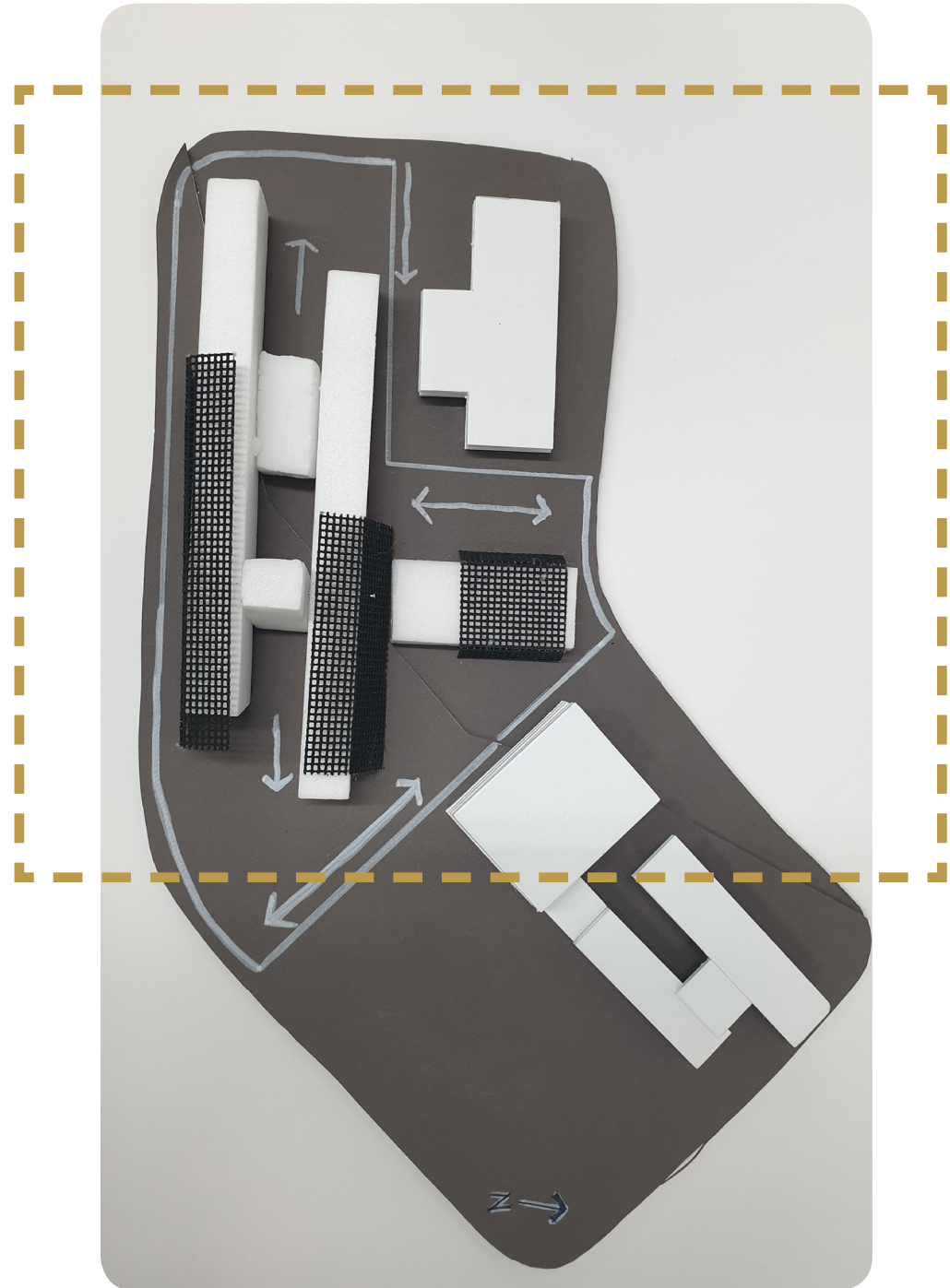
Eastern side of the site





3.3 SECOND APPROACH

+moved building to the western side of the site and tried an geometric approach

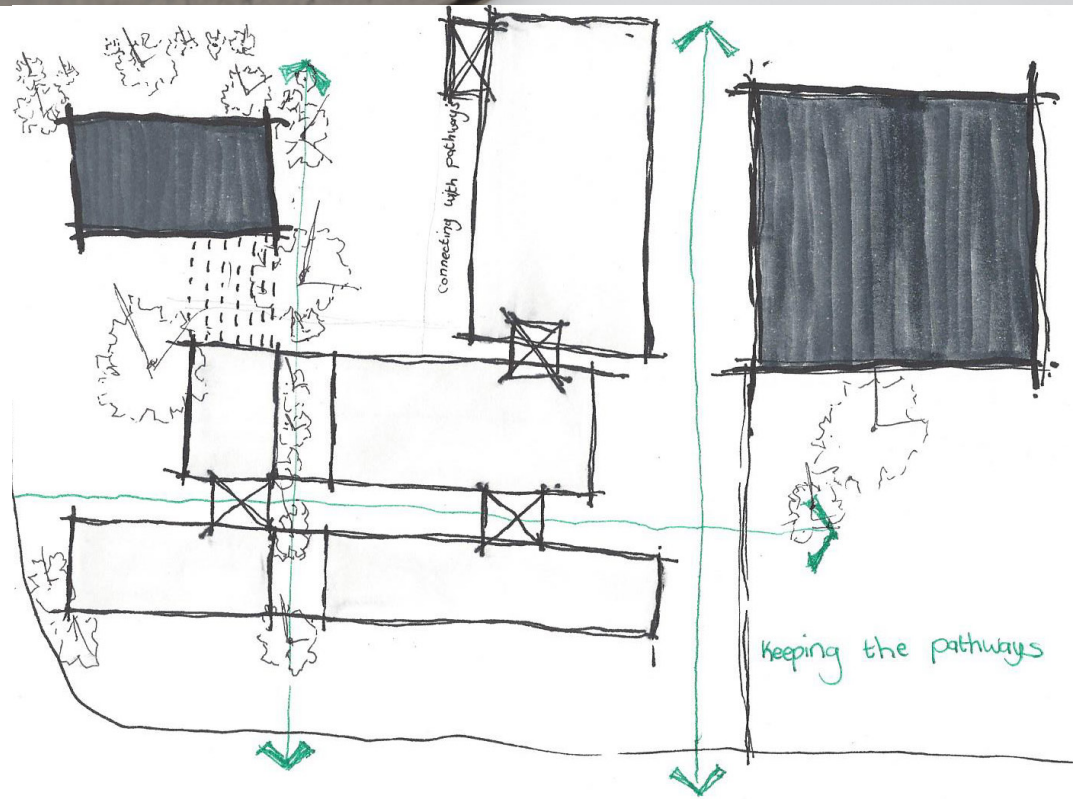




3.4 DESIGN EXPLORATION 1

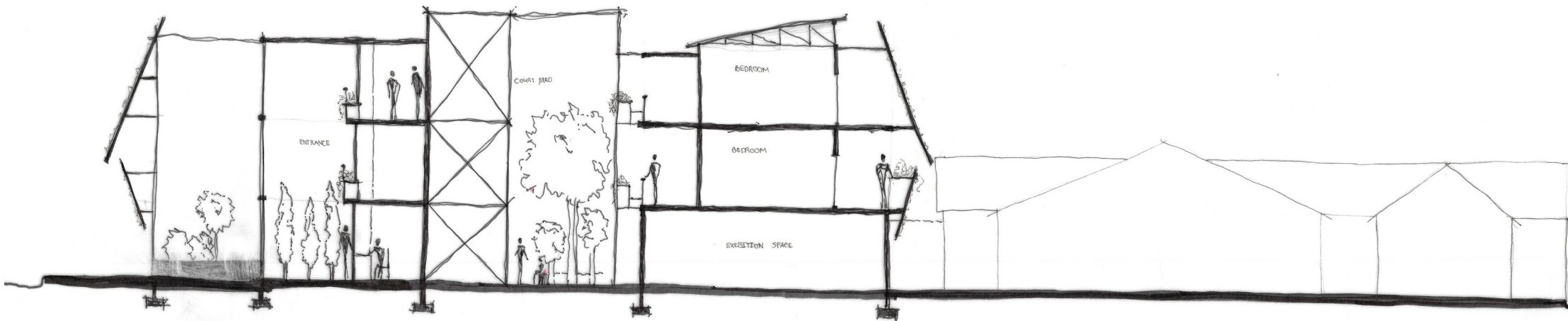
Problems found in this exploration

- + too public with no security
- + out of scale compared to the context
- + facades were harsh and general giving a feeling of an office block
- + spaces were not designed specifically for a rehabilitation centre

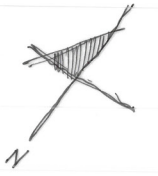
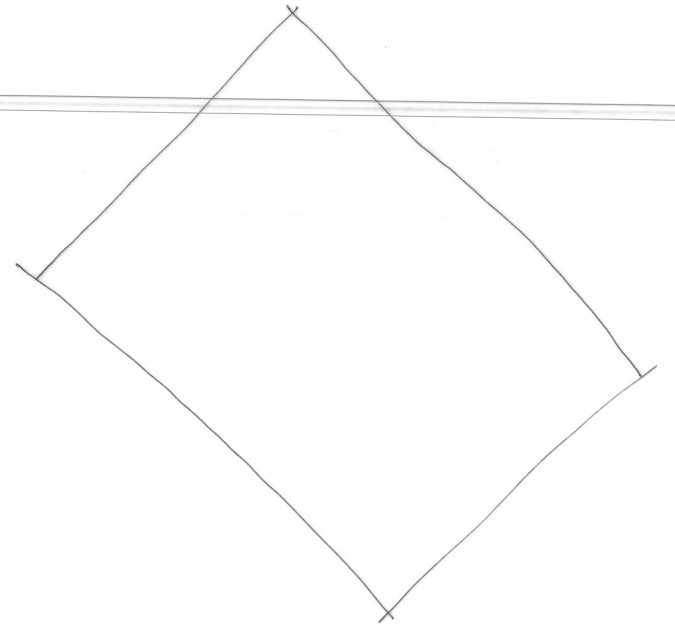
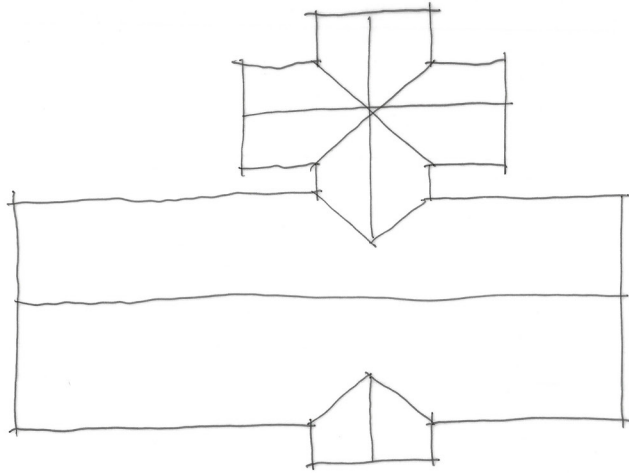




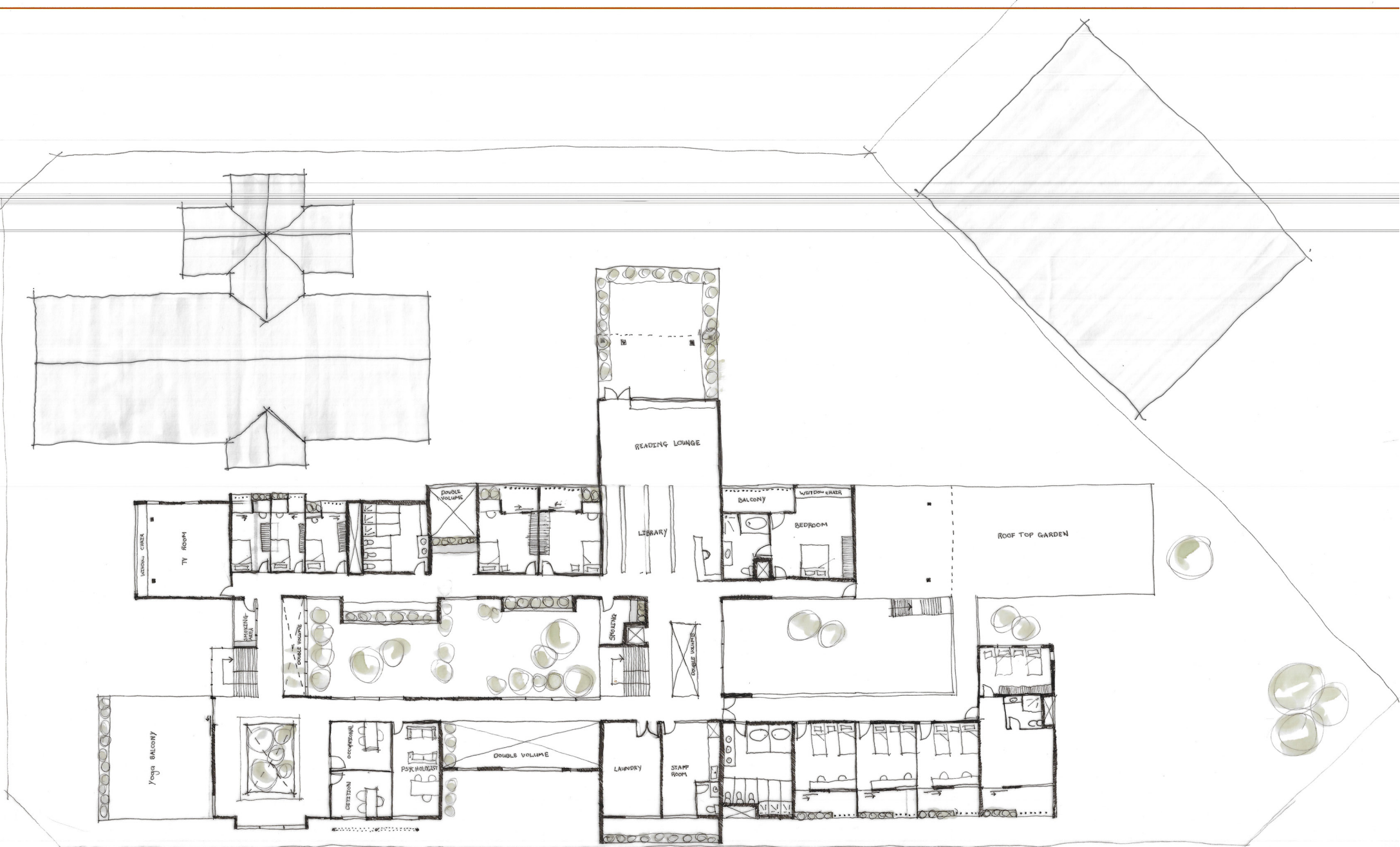
SECTION B-B 1:100



SECTION A-A 1:100



SECOND FLOOR PLAN 1:200

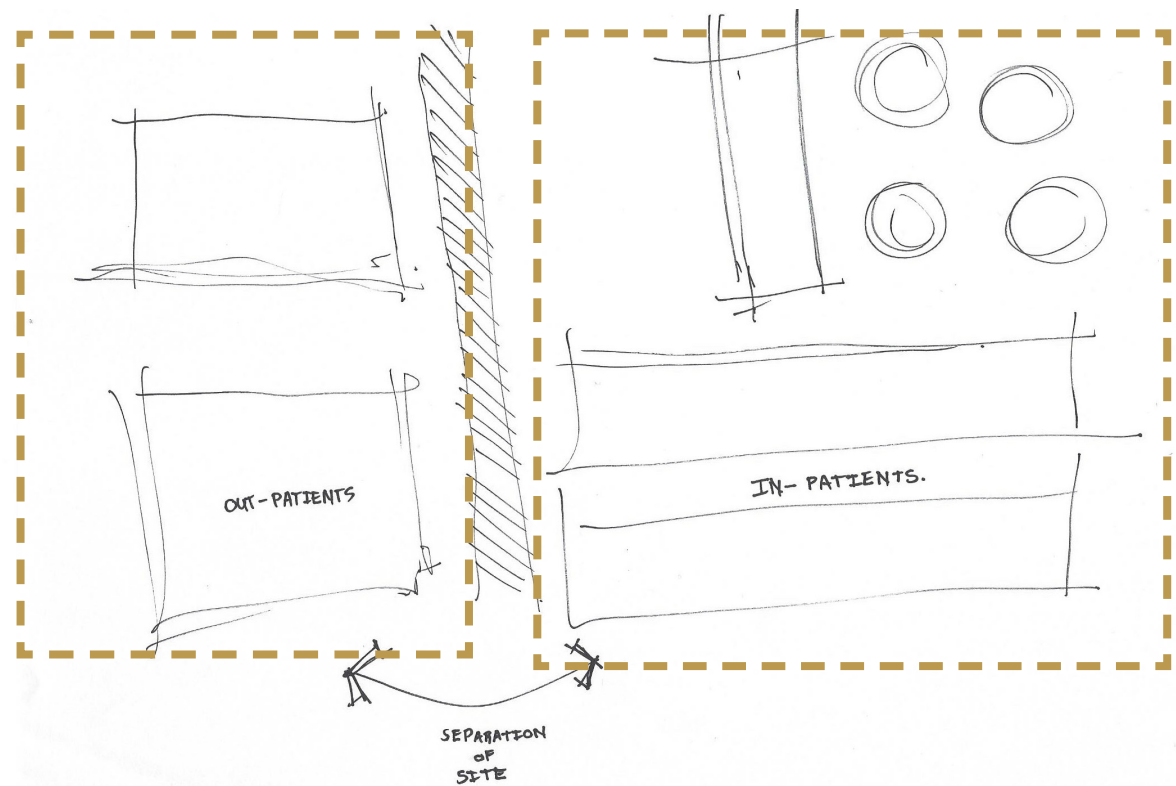


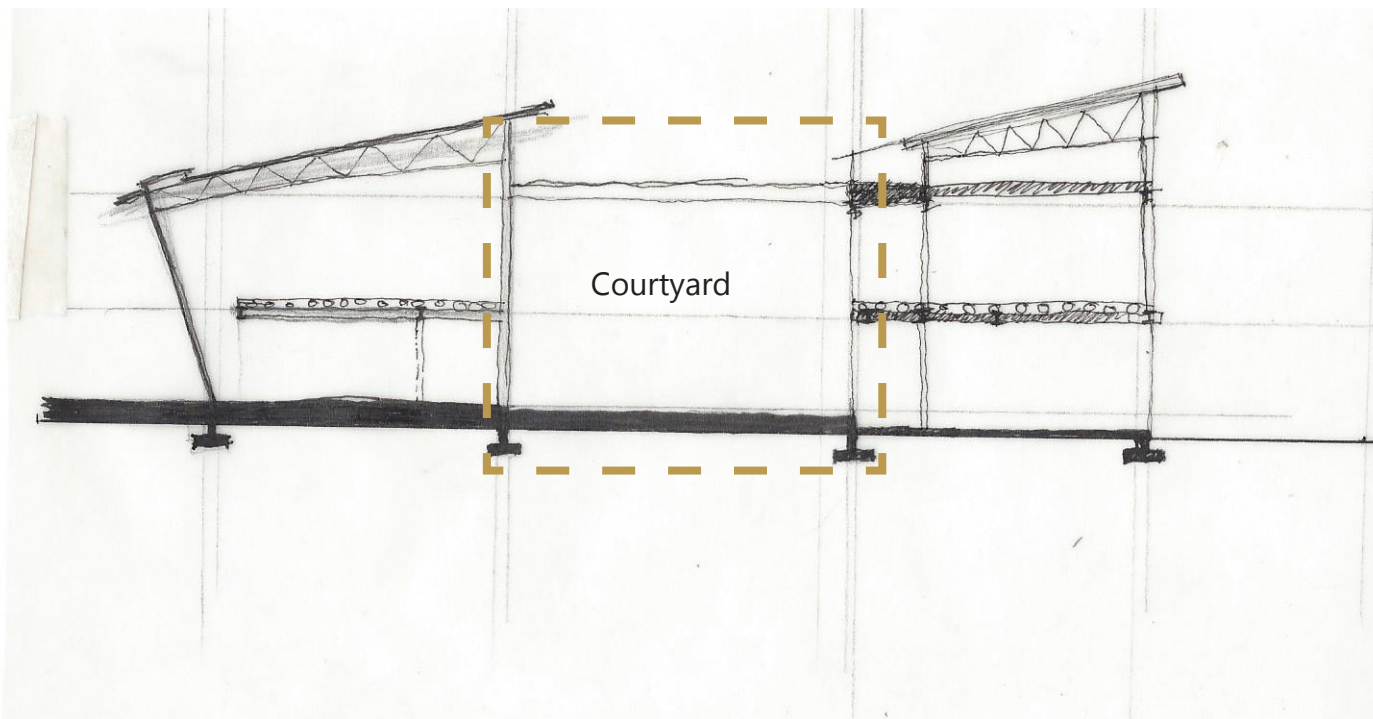
FIRST FLOOR PLAN 1:200

3.5 DESIGN EXPLORATION 2

Development

- + split site into public and private
- + in-patients / out-patients
- + focused on courtyard spaces
- + started using architectural elements to create healing spaces
- + squares for public spaces and circles for individual spaces
- + use of perforated walls and plants to enhance calming atmosphere





Rembrandt Crescent

Boundary line 65 m

Boundary line 67,5 m

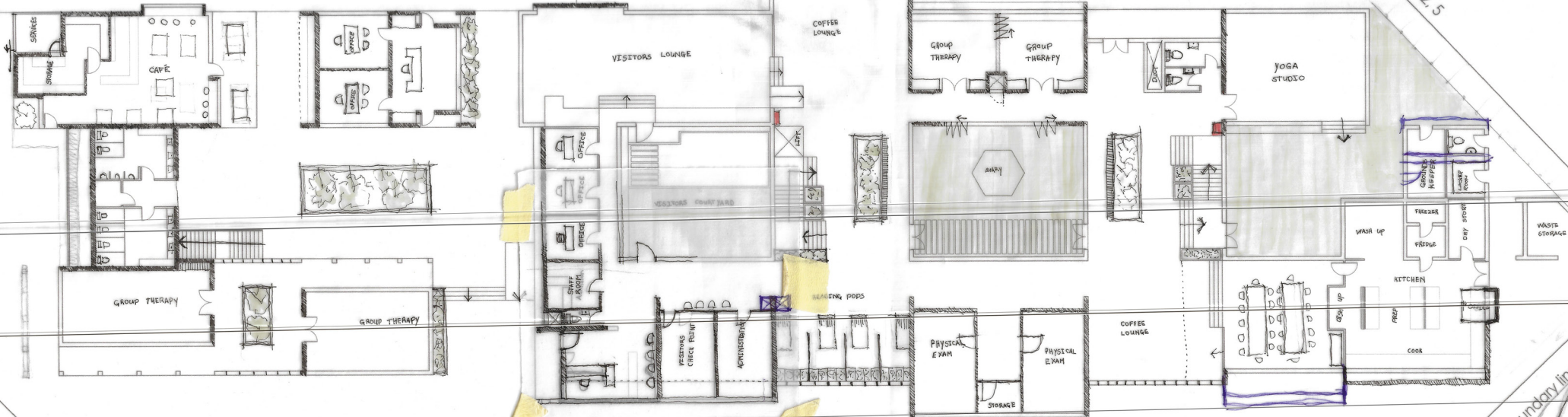
Erf 1360

Existing Building
CLINIC

Our door Gym

Erf

Boundary line 62,5
Service



Boundary line 40,5

Boundary line 65 m

Boundary line 97,5m

Boundary line 18,5 m
LAWYER

Da Vinci Crescent

6.5 m

Boundary line 67, 5 m

Erf 1360

Existing Building

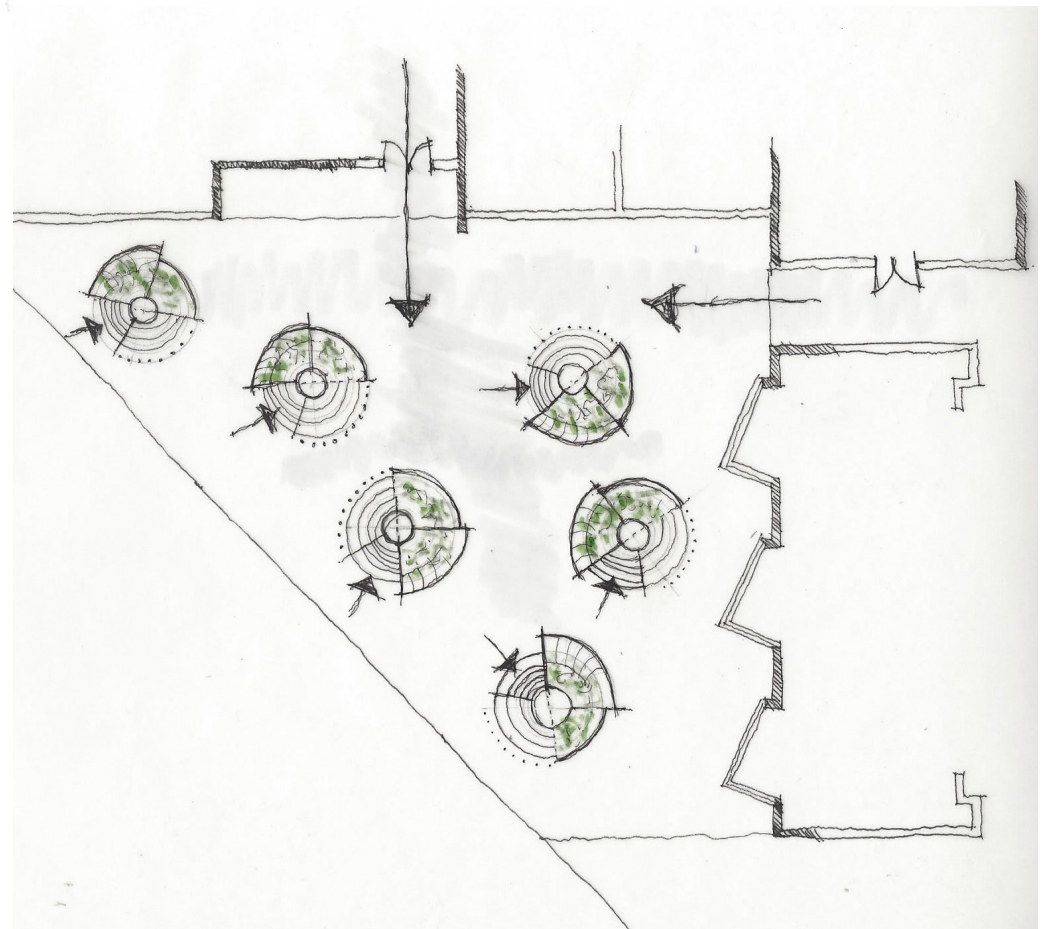
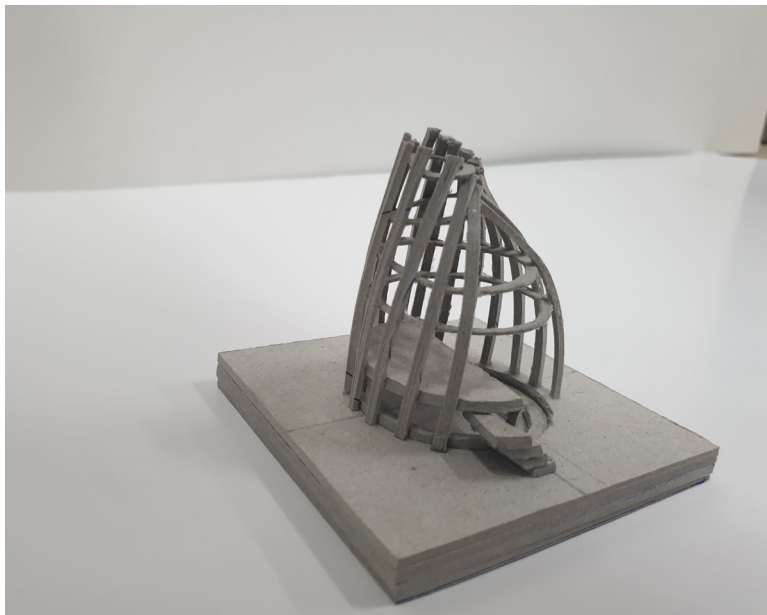
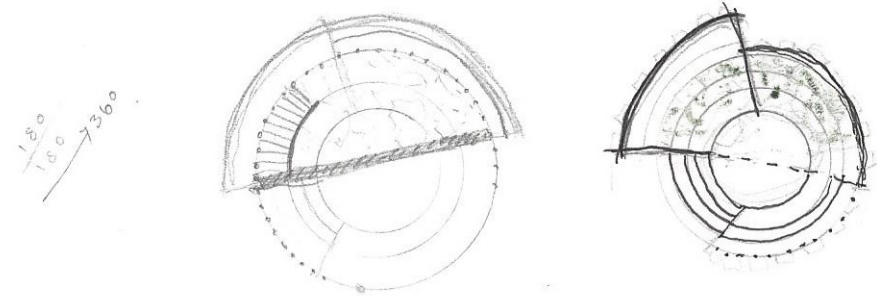
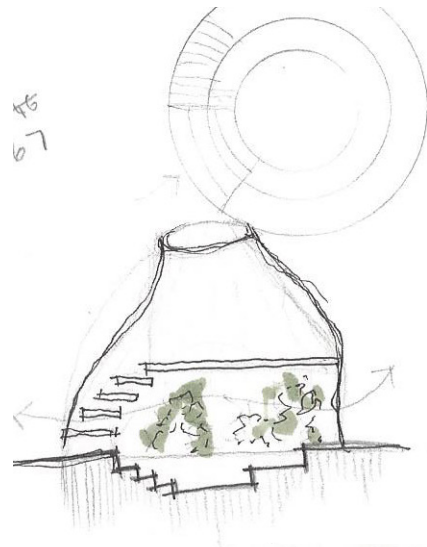
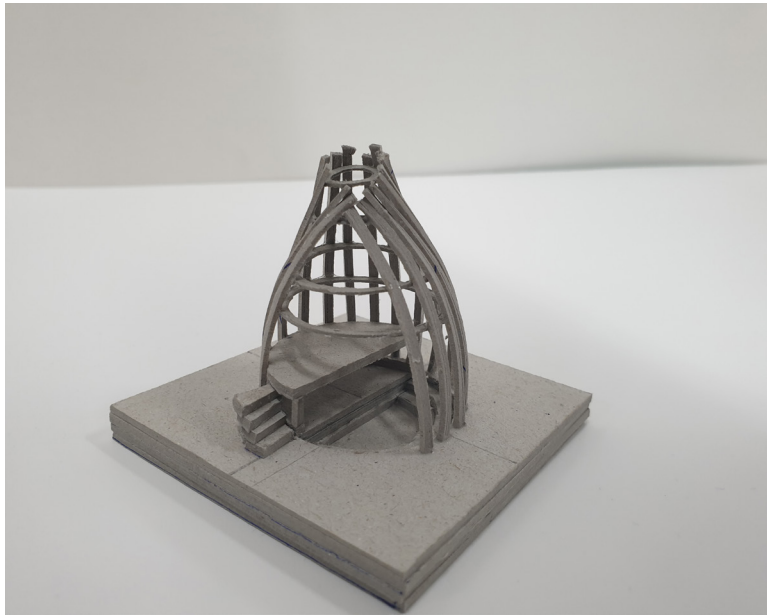
Boundary line 62,5
Service



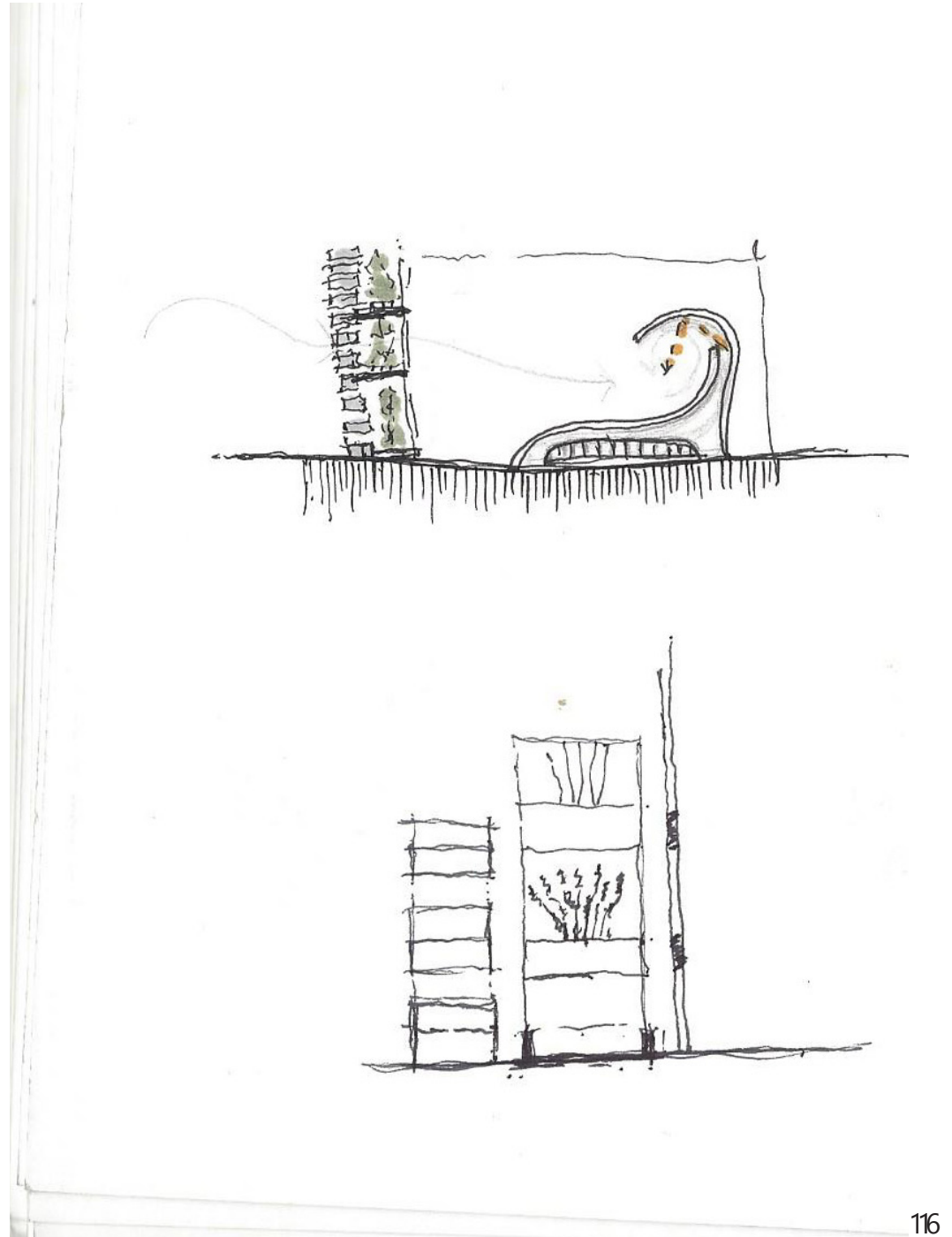
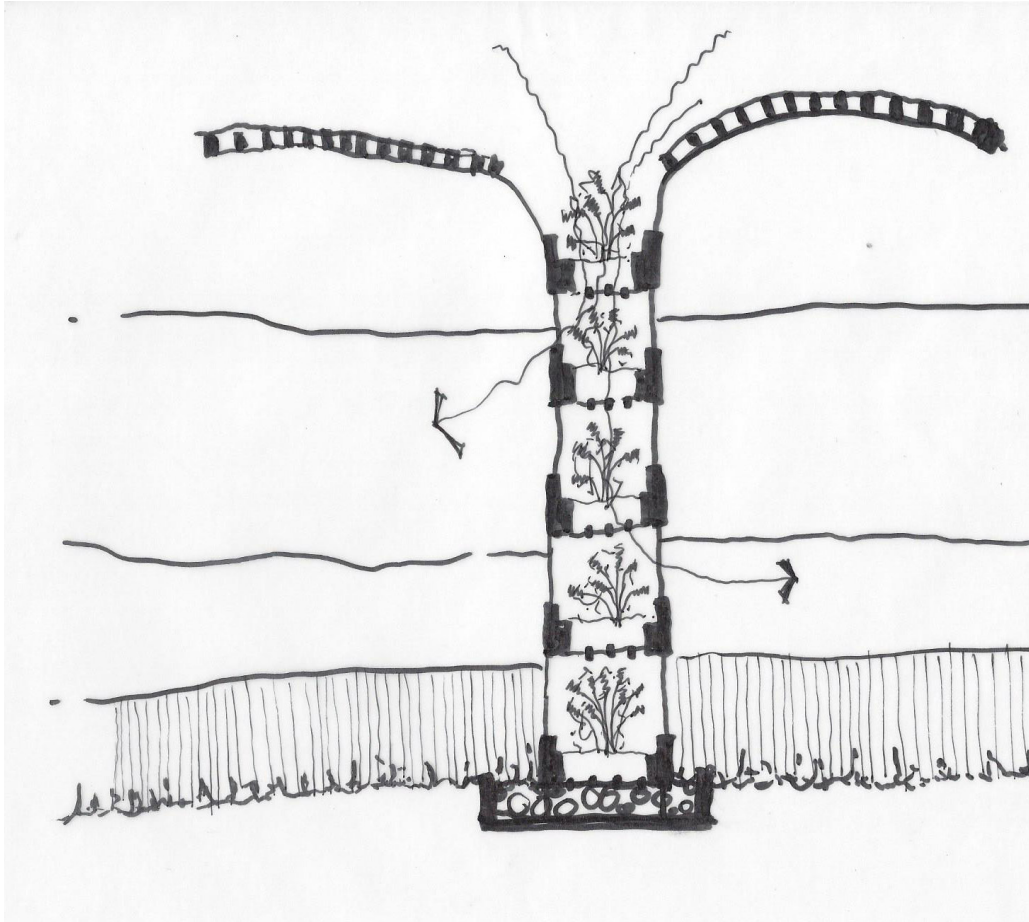
6.5 m

Boundary line 97,5m

Individual therapeutic pods



Reading pods





3.5 Towards a Final Design

Locality Plan

Site Plan

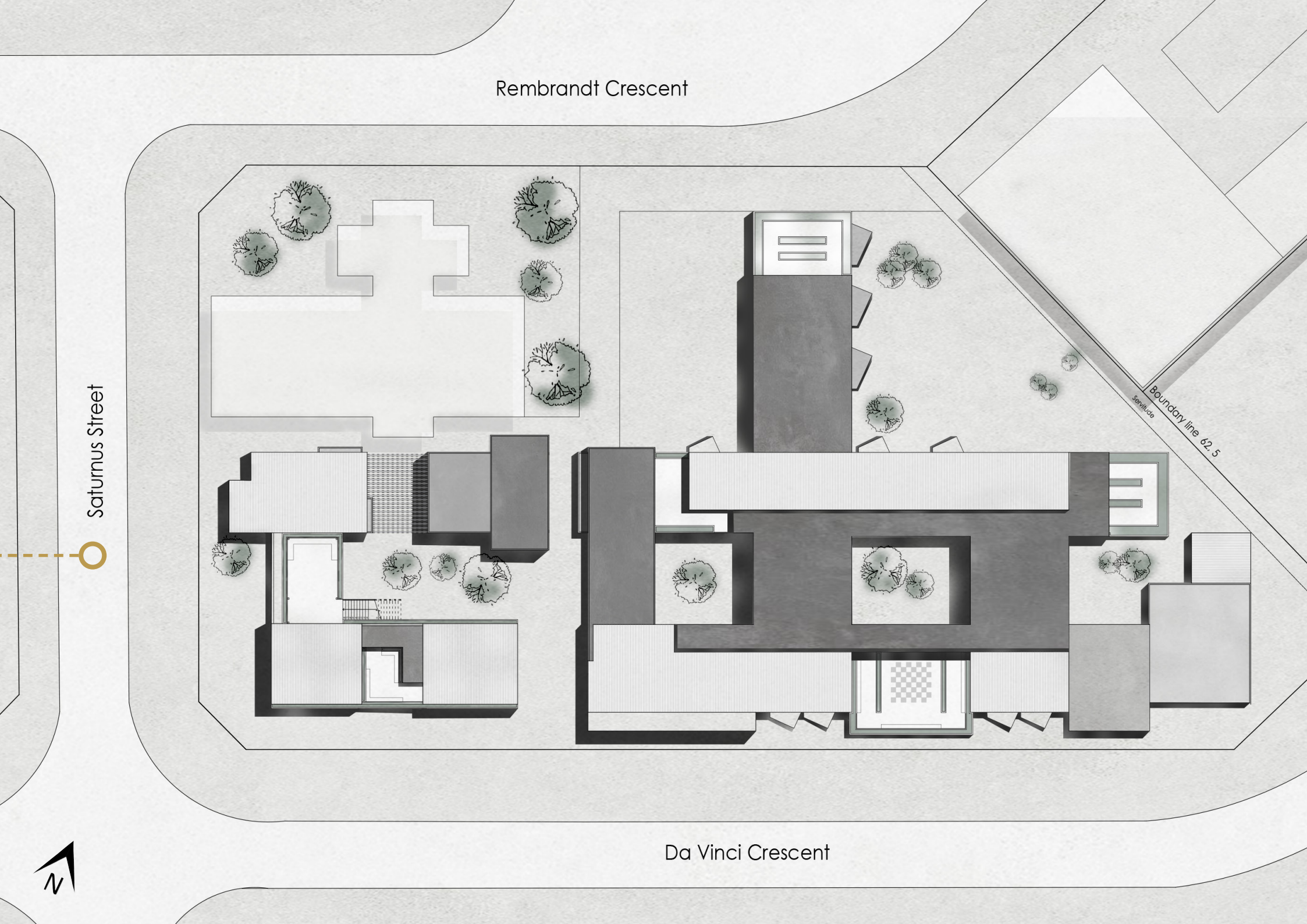
Rembrandt Crescent

Saturnus Street



Boundary line 62.5
Saville Ltd

Da Vinci Crescent



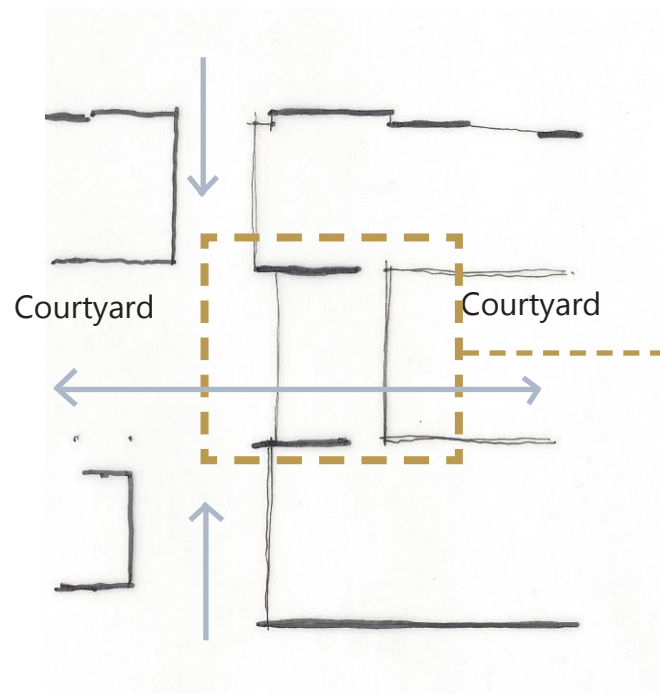
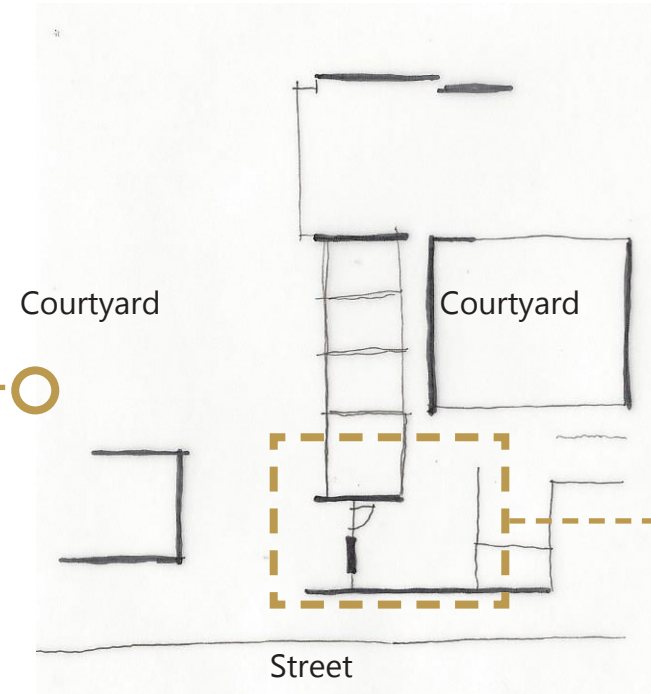
Rembrandt Crescent



Da Vinci Crescent

Ground Floor Plan

Development



Rembrandt Crescent

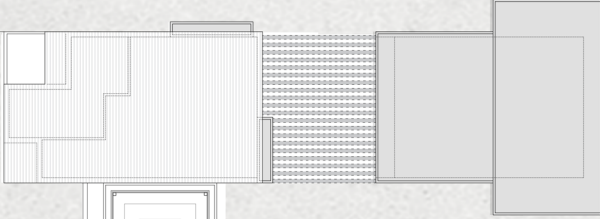


Existing Building

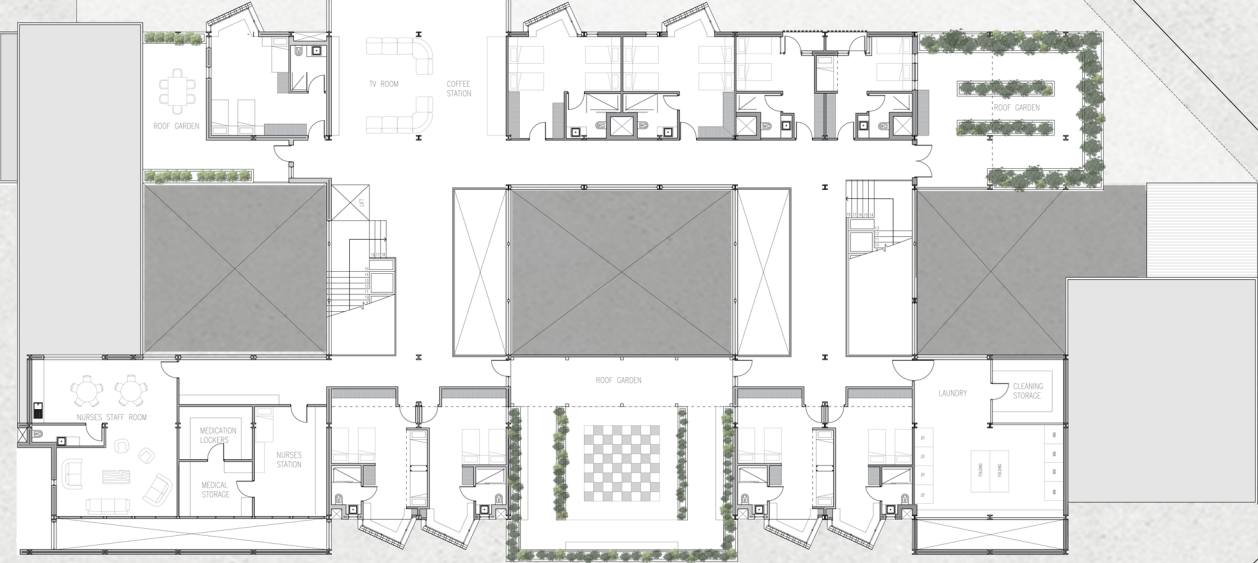
Erf 1360



Erf 1360



INDIVIDUAL THERAPY ROOM 1
INDIVIDUAL THERAPY ROOM 2
RECEPTION / WAITING AREA
BREAK ROOM
INDIVIDUAL THERAPY ROOM 3
INDIVIDUAL THERAPY ROOM 4



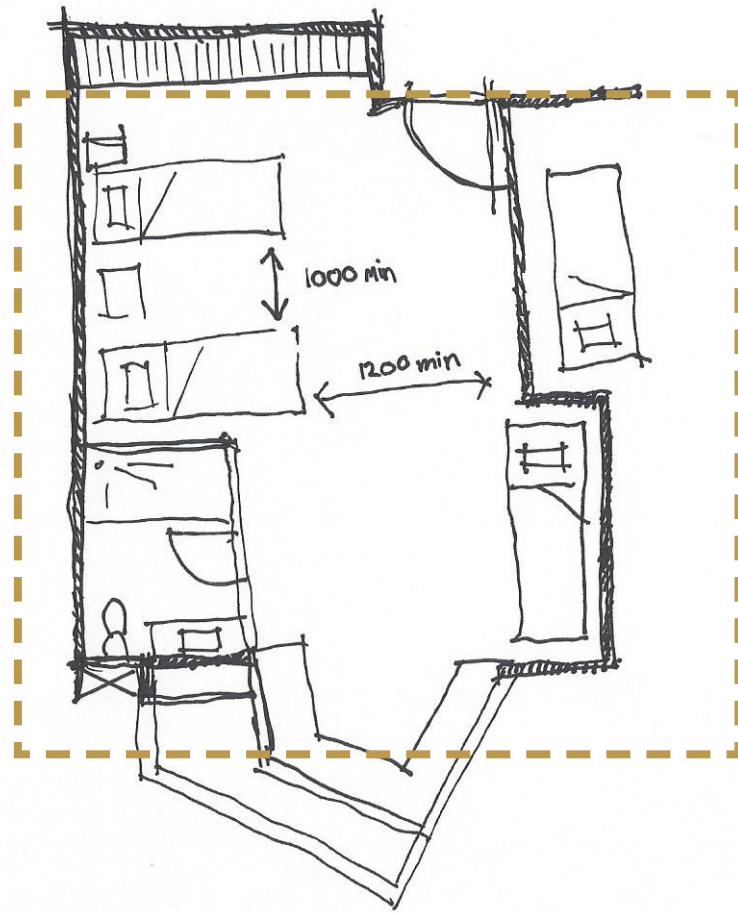
ROOF GARDEN
SUN LOUNGE
BOOK SHELF
TV ROOM
COFFEE STATION
ROOF GARDEN
ROOF GARDEN
ROOF GARDEN
NURSES STAFF ROOM
MEDICATION LOCKERS
MEDICAL STORAGE
NURSES STATION
ROOF GARDEN
LAUNDRY
CLEANING STORAGE



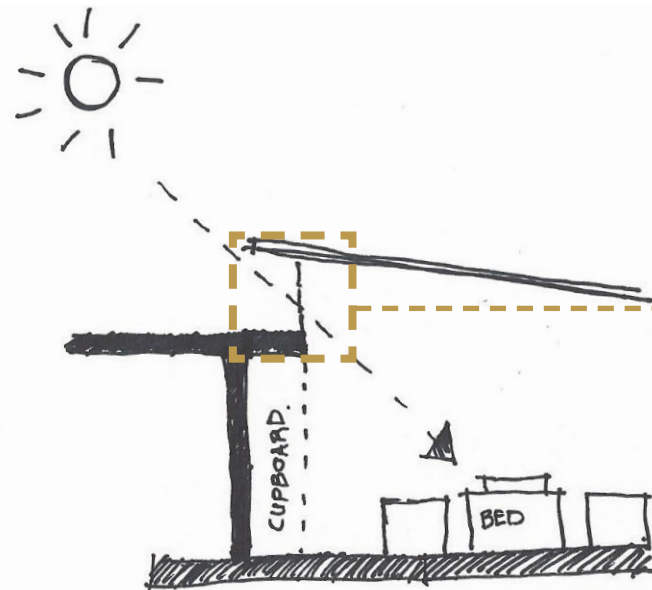
Da Vinci Crescent

First Floor Plan

Development



Room development
_ more spacious



Allowing natural light
in above cupboards



3.6

Final Design





Rembrandt Crescent



GROUND FLOOR PLAN 1:100



Da Vinci Crescent



Da Vinci Crescent





RECEPTION

VISITORS COURTYARD

CIRCULATION

CIRCULATION

THERAPY COURTYARD

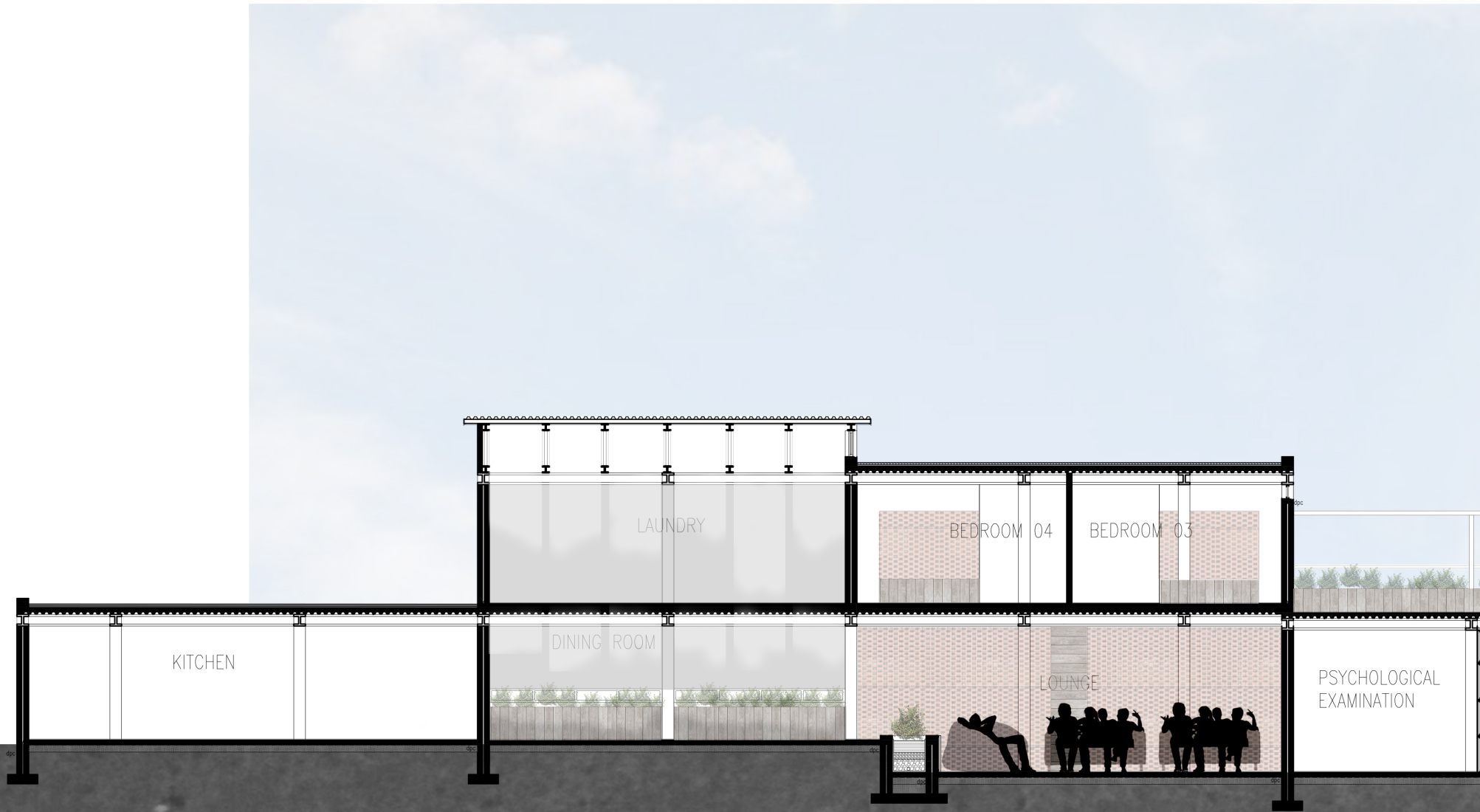
dpc
dpc
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15
14
13

dpc



SECTION A-A 1:100



KITCHEN

DINING ROOM

LAUNDRY

BEDROOM 04

BEDROOM 03

LOUNGE

PSYCHOLOGICAL
EXAMINATION



SECTION B-B 1:100



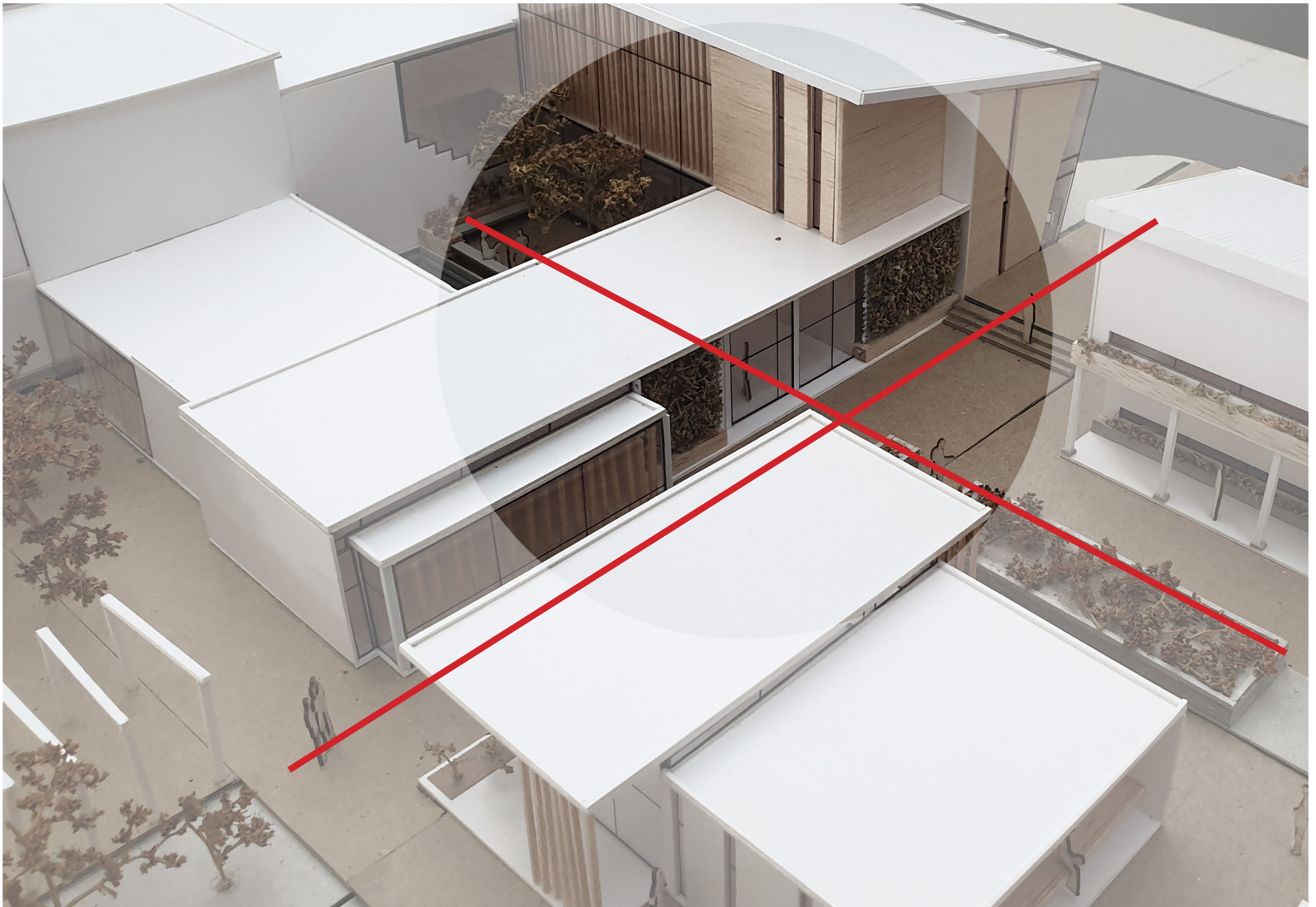
NORTH- WEST ELEVATION



ADMINISTRATION

GROUP SPACES

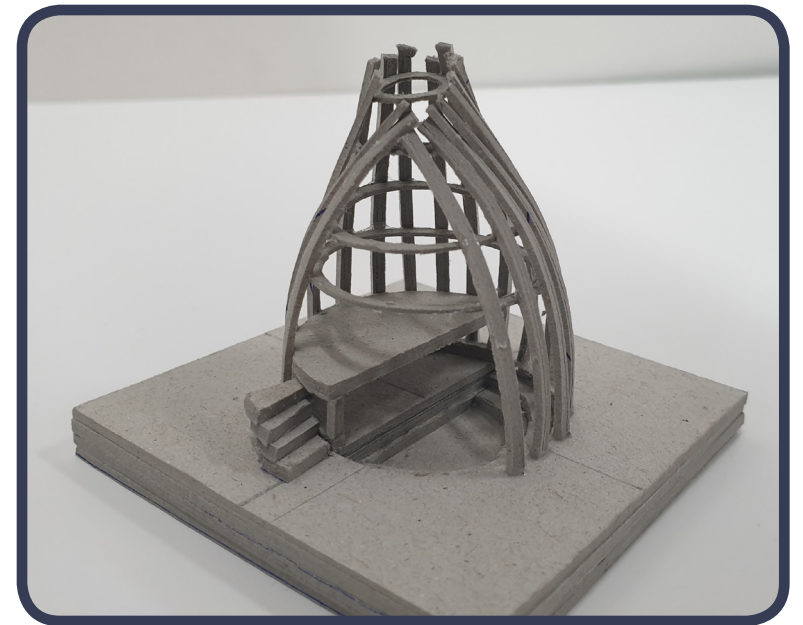
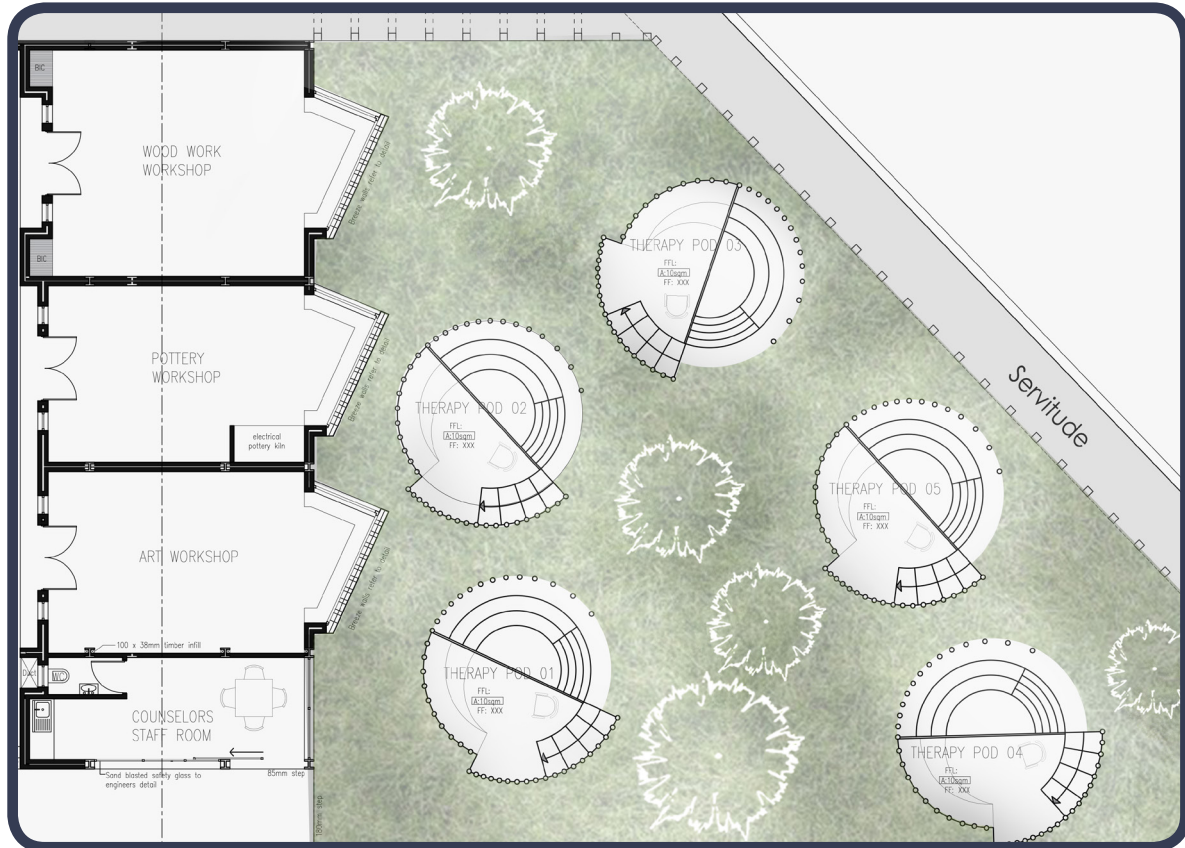
INDIVIDUAL SPACES





NORTH- WEST ELEVATION

INDIVIDUAL THERAPY PODS





OUT-PATIENTS

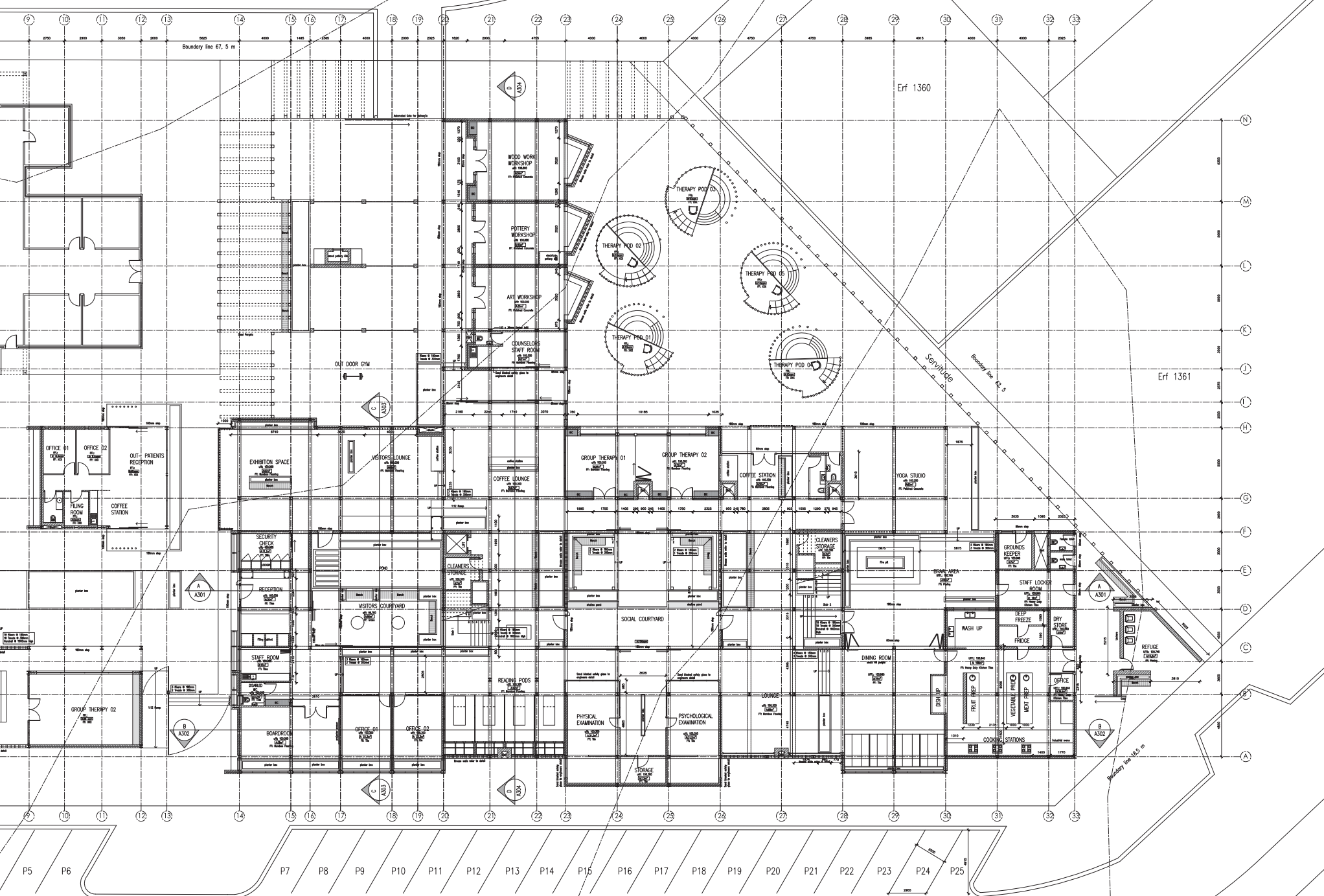
CENTRAL PUBLIC COURT YARD



ENTRANCE BECOMING PART
OF THE WALK WAY

- DRAWING LIST
- A101- BLOCK PLAN
- A102- SITE PLAN
- A104- GROUND FLOOR PLAN
- A105- FIRST FLOOR PLAN
- A201- NORTH AND SOUTH ELEVATION
- A202- WEST AND EAST ELEVATION
- A301- SECTION AA
- A302- SECTION BB
- A303- SECTION CC
- A304- SECTION DD

NOTE: ONLY PROPOSED BUILDING A WILL BE DOCUMENTED



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 010202010
 Tel: 071 422 4322
 Email: ngoodrich@goodrichgroup.com

PROJECT
 Addiction Recovery Centre -
 Heidelberg, South Australia

DRAWING TITLE
 Ground floor plan

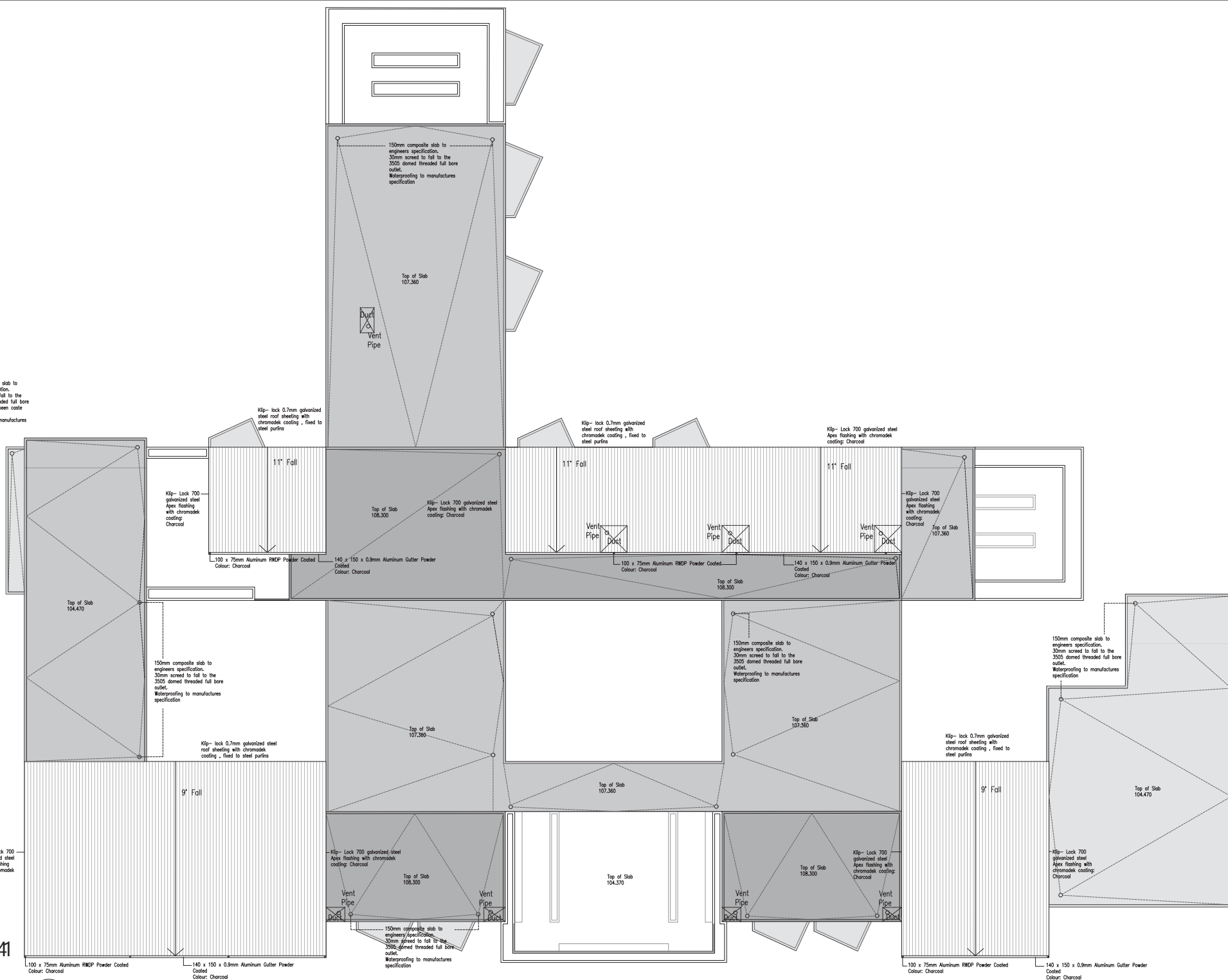
BY: [Signature]
 DATE: 29-10-2019

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- DRAWING LIST
- A101- BLOCK PLAN
 - A102- SITE PLAN
 - A103- ROOF PLAN
 - A104- GROUND FLOOR PLAN
 - A105- FIRST FLOOR PLAN
 - A201- NORTH AND SOUTH ELEVATION
 - A202- WEST AND EAST ELEVATION
 - A301- SECTION AA
 - A302- SECTION BB
 - A303- SECTION CC
 - A304- SECTION DD

NOTE: ONLY PROPOSED BUILDING WILL BE DOCUMENTED

150mm composite slab to engineers specification. 30mm screed to fall to the 3505 domed threaded full bore outlet which has been cast into the concrete. Waterproofing to manufactures specification



n gooo
20
Tel: 077
Email: natalsha.goodrich17@gmail.com

PROJECT
Addiction Recovery Centre -
Heidedal, Bloemfontein

DRAWING TITLE
Roof Plan

| REV | SHEET NUMBER | DATE |
|-----|--------------|------------|
| - | A103 | 29-10-2019 |

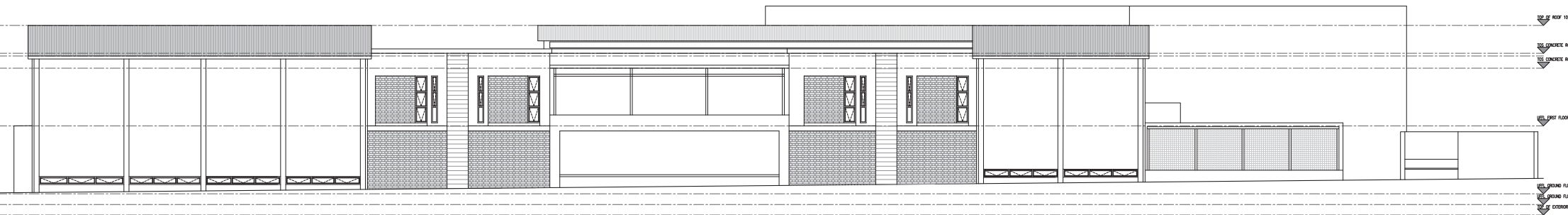
DRAWING STATUS
PRELIMINARY

CHECKED BY
-

ALL BUILDING WORK TO TO COMPLY WITH SANS 10400 AND LOCAL BY-LAW PRODUCTS TO BE INSTALLED TO MANUFACTURER'S SPECIFICATIONS.

THE CONTRACTOR MUST WORK FROM FIGURED DIMENSIONS ONLY. CHECK DIMENSIONS AND LEVELS ON SITE BEFORE COMMENCING ANY WORK. ALL DRAWINGS TO BE READ IN CONJUNCTION WITH DETAILS, SCHEDULES, SPECIFICATIONS, NOTES, ELEVATIONS, ENGINEERS AND OTHER SPECIALIST'S DRAWINGS.

REFER CONTRACTING INFORMATION TO THE ARCHITECT AND OTHER RESPONSIBLE CONSULTANTS.



A302 SOUTH ELEVATION 1:100



A302 WEST ELEVATION 1:100

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 2013003013
 Tel: 079 462 4362
 Email: natasha.goodrich78@gmail.com

PROJECT
 Addiction Recovery Centre -
 Heidedal, Bloemfontein

DRAWING TITLE
 SOUTH ELEVATION
 WEST ELEVATION

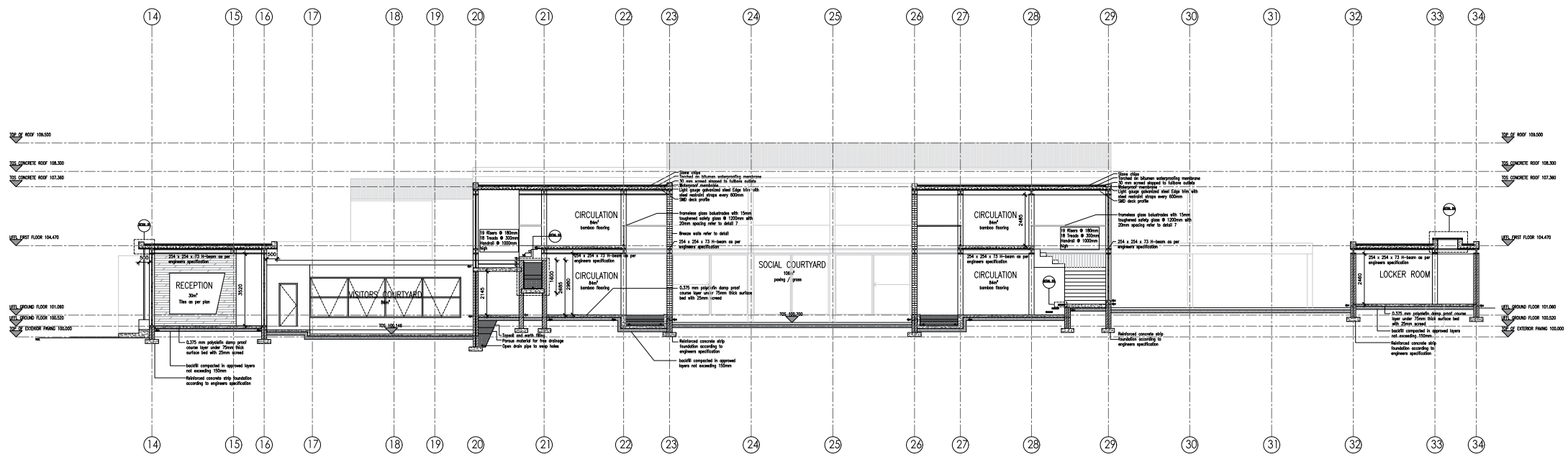
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| - | A201 | 1:100 |

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 FINAL

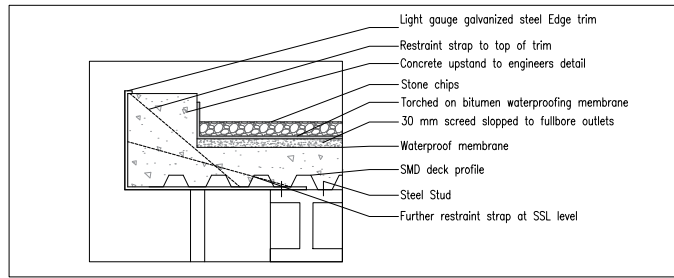
DATE
 29-10-2019

CHECKED BY
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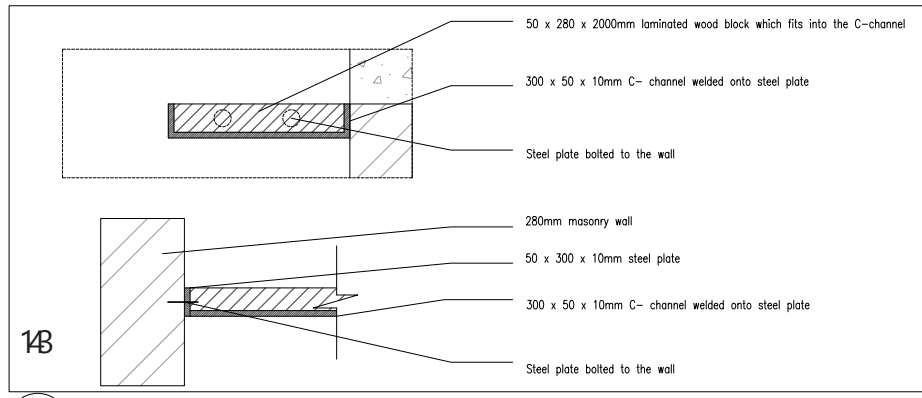
ALL BUILDING WORK TO COMPLY WITH SAWS LEGAL AND LOCAL BY-LAWS.
 ALL PRODUCTS TO BE INSTALLED TO MANUFACTURER'S SPECIFICATIONS.
 THE CONTRACTOR MUST WORK FROM FIGURED DIMENSIONS AND CHECK ALL
 DIMENSIONS AND LEVELS ON SITE BEFORE COMMENCING ANY WORK.
 DRAWINGS TO BE READ IN CONJUNCTION WITH DETAILS, SCHEDULES,
 DRAINAGE DRAWINGS, INTERNAL ELEVATIONS, ENGINEERS AND OTHER
 SPECIALIST'S DRAWINGS.
 REFER CONFLICTING INFORMATION TO THE ARCHITECT AND OTHER
 RESPONSIBLE CONSULTANTS.



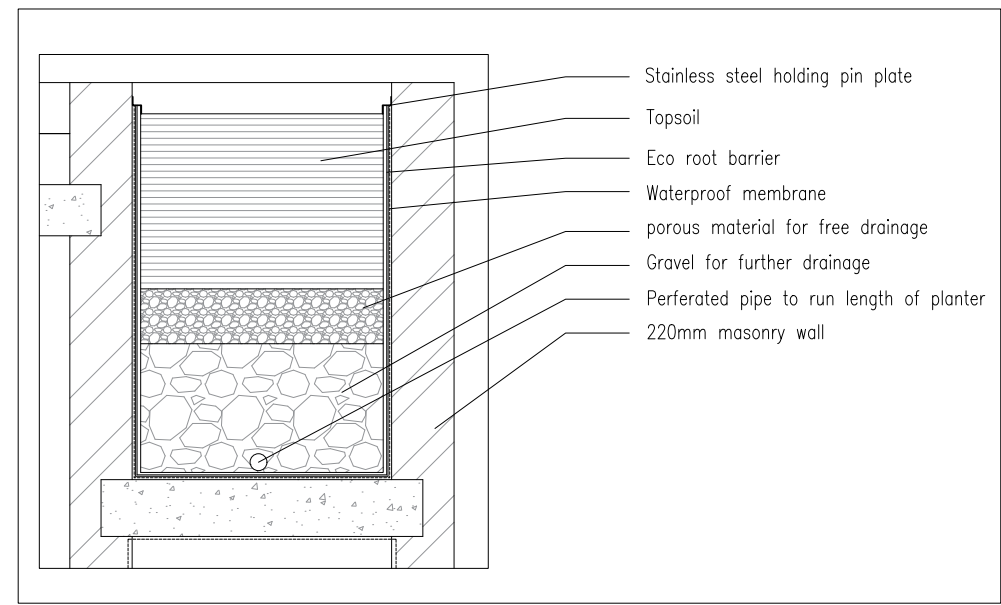
A301 SECTION AA 1:100



1 DETAIL 1 1:20 - COMPOSITE SLAB EDGE DETAIL



2 DETAIL 4 1:5 - FLOATING STEP DETAIL



3 DETAIL 3 1:20 - PLANTER BOX BY STAIRCASE

n goodri
2013003
Tel: 079 462 4
Email: malisha.goodrich7@gmail.com

PROJECT
Addiction Recovery Centre -
Heidelberg, Bioemfontein

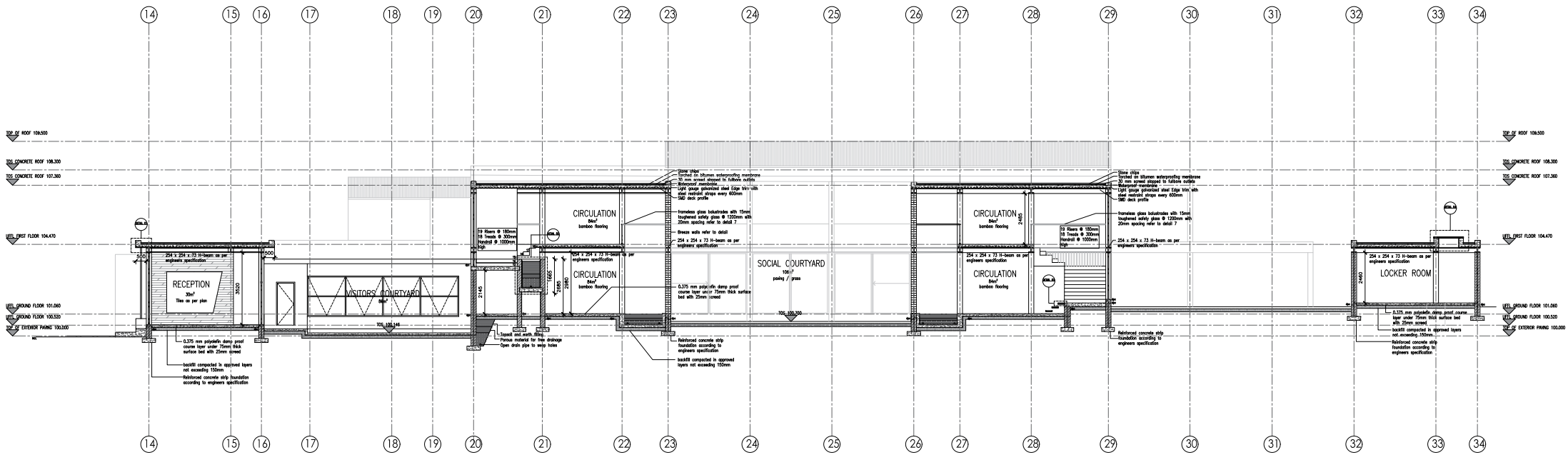
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Section AA

| | | |
|-------------------------------|----------------------|---------------|
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| DRAWING STATUS PRELIMINARY | | |

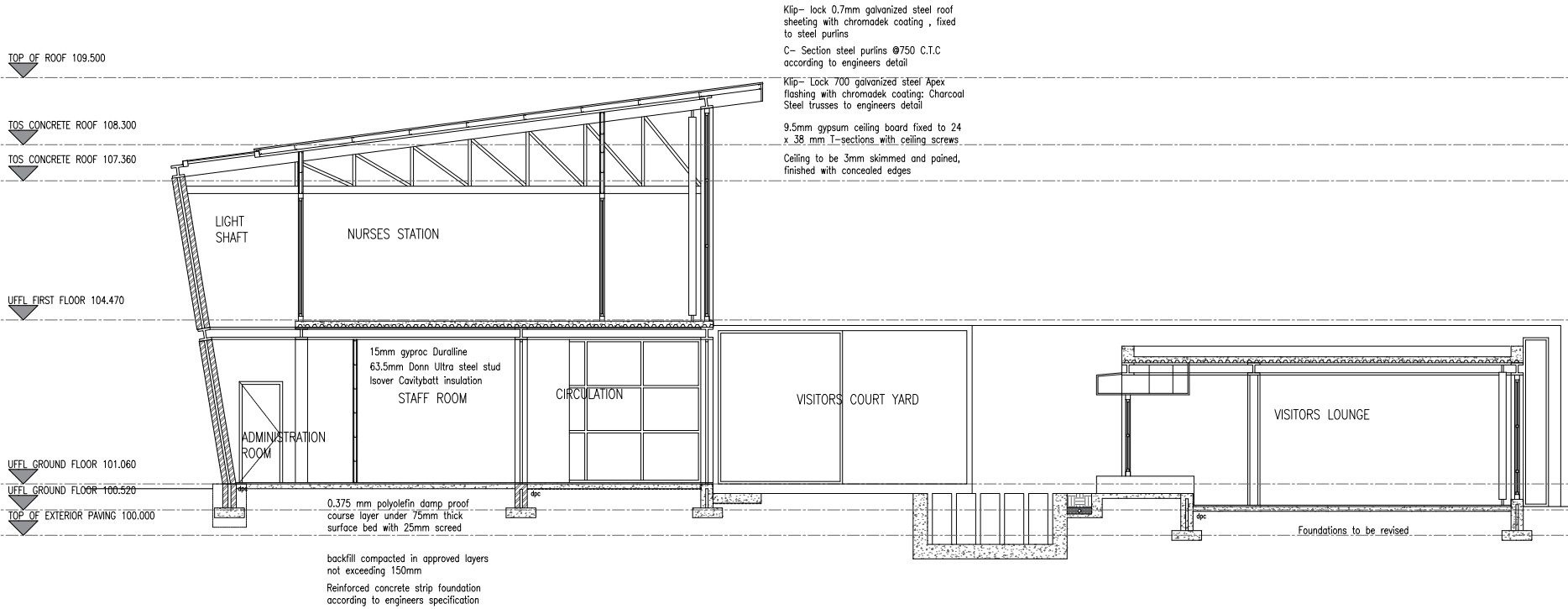
DATE
29-10-2019

CHECKED BY

ALL BUILDING WORK TO COMPLY WITH SANS 10400 AND LOCAL BY-LAWS.
ALL PRODUCTS TO BE INSTALLED TO MANUFACTURER'S SPECIFICATIONS.
THE CONTRACTOR MUST WORK FROM FIGURED DIMENSIONS ONLY. CHECK ALL
DIMENSIONS AND LEVELS ON SITE BEFORE COMMENCING ANY WORK. ALL
DRAWINGS TO BE READ IN CONJUNCTION WITH DETAILS, SCHEDULES,
DRAWING DRAWINGS, INTERNAL ELEVATIONS, ENGINEERS AND OTHER
SPECIALIST'S DRAWINGS.
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A302 SECTION BB 1:100



A302 SECTION CC 1:50

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PROJECT
Addiction Recovery Centre -
Heidelberg, Bloemfontein

DRAWING TITLE
SECTION B-B
SECTION C-C

| REV | SHEET NUMBER | SCALE (1:100) |
|-----|--------------|---------------|
| - | A302 | 1:100 |

DRAWING STATUS
FINAL

DATE
29-10-2019

CHECKED BY
-

ALL BUILDING WORK TO TO COMPLY WITH SANS 15400 PARTIAL BY-LAWS.
ALL PRODUCTS TO BE INSTALLED TO MANUFACTURER'S INSTRUCTIONS.
THE CONTRACTOR MUST WORK FROM PROVIDED DIMENSIONS ONLY. CHECK ALL DIMENSIONS AND LEVELS ON SITE BEFORE COMMENCEMENT AND WORK. ALL DIMENSIONS TO BE GIVEN IN CONJUNCTION WITH DETAILS, SCHEDULES, DRAINAGE DRAWINGS, INTERNAL ELEVATIONS, ENGINEERS AND OTHER SPECIALIST'S DRAWINGS.
REFER CONSULTING INFORMATION TO THE ARCHITECT AND OTHER RESPONSIBLE CONSULTANTS.





Reflection

_A Personal Statement

I was very intrigued by this topic of addiction and how it can affect not only the person with the mental illness but the whole community. The ambition for this dissertation is to explore ways of breaking down the fears associated with addiction rehabilitation centers, while manipulating architectural structures and spaces in order to achieve a healing environment.

This dissertation is seen as a piece of research which challenges the typical addiction recovery facilities. The aim was to contribute something to the architectural world and not to simply design something that is already familiar and fully explored. Through the research component it became evident to me how addiction is an ever present reality no matter who you are or where you come from, and how the connection to ones surrounds can affect this.

I would not consider this topic as an easy journey, especially throughout the design process. It was only through determination

perseverance and late nights of model building and sketches that got me through the decision making process. It took me a while to grasp the concept of creating spaces of healing and not just a generic office building space which have no meaning. The fact that I restarted the approach to my design three times took a toll on the amount of time I had to develop the final design. I still need to rearrange my plans as indicated on page 110 and 112 and further develop my sections. I would have also liked to investigate the courtyard spaces in more depth because they are the elements which hold the whole subtle approach together. Overall I am proud of what I have achieve despite all the obstacles I had to overcome in order design a building which welcomes the community and reduces that connotation to fear of addiction. While separating the building between the public and the private and yet still keeping the complex as on unit.

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Addendum

_Plagerism persentage



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