

Ariella Eisenberg
Year: 2023



Chemical Re-composition

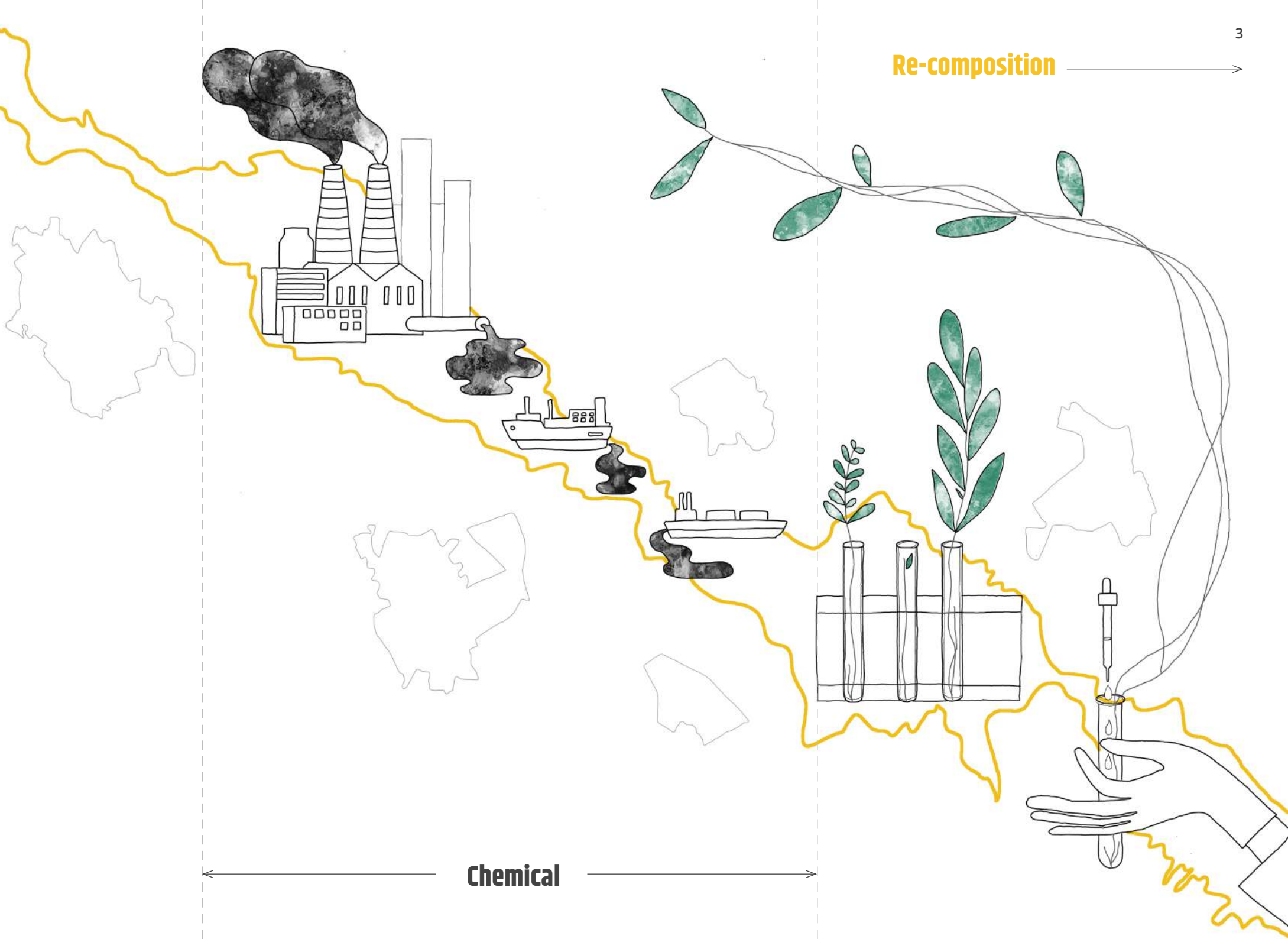
Holistic Drug Rehabilitation in Modderfontein's Green Spaces

Reader's Note

This document deals with themes of chemical human destruction through drug use and healing through rehabilitation. Man-made chemicals have impacted the world in many ways, including oil spills and factory pollution. *Re-composition* deals with using chemicals for healing which can occur in controlled environments. This is illustrated in a controlled laboratory where nature begins to grow. Rehabilitation requires evidence-based and professional interventions.

Fig. 0.1
Front Cover
(Author, 2022)

Fig. 0.2
Title Graphic
(Author, 2022)



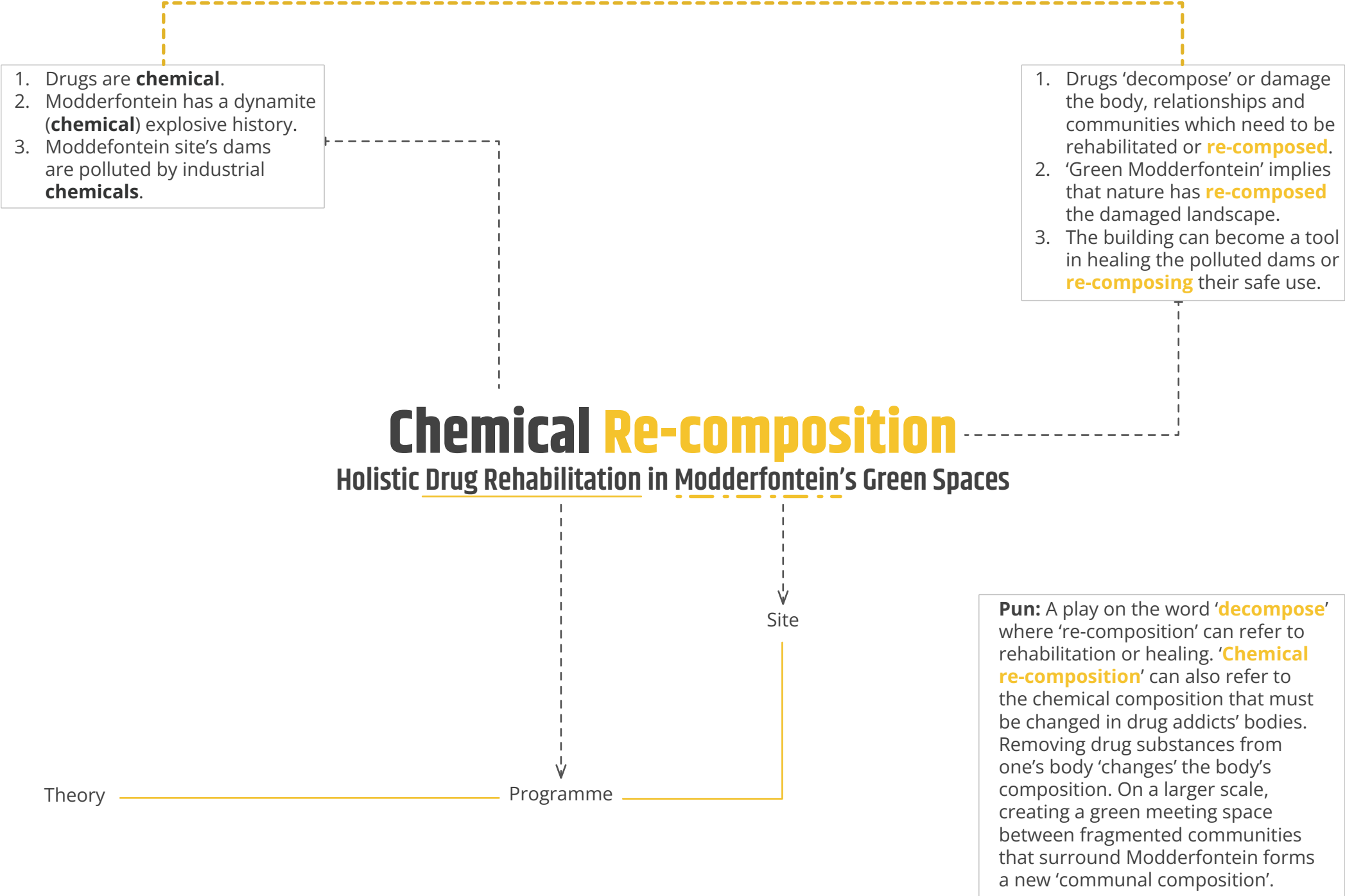


Fig. 0.3
Title Explanation
(Author, 2022)

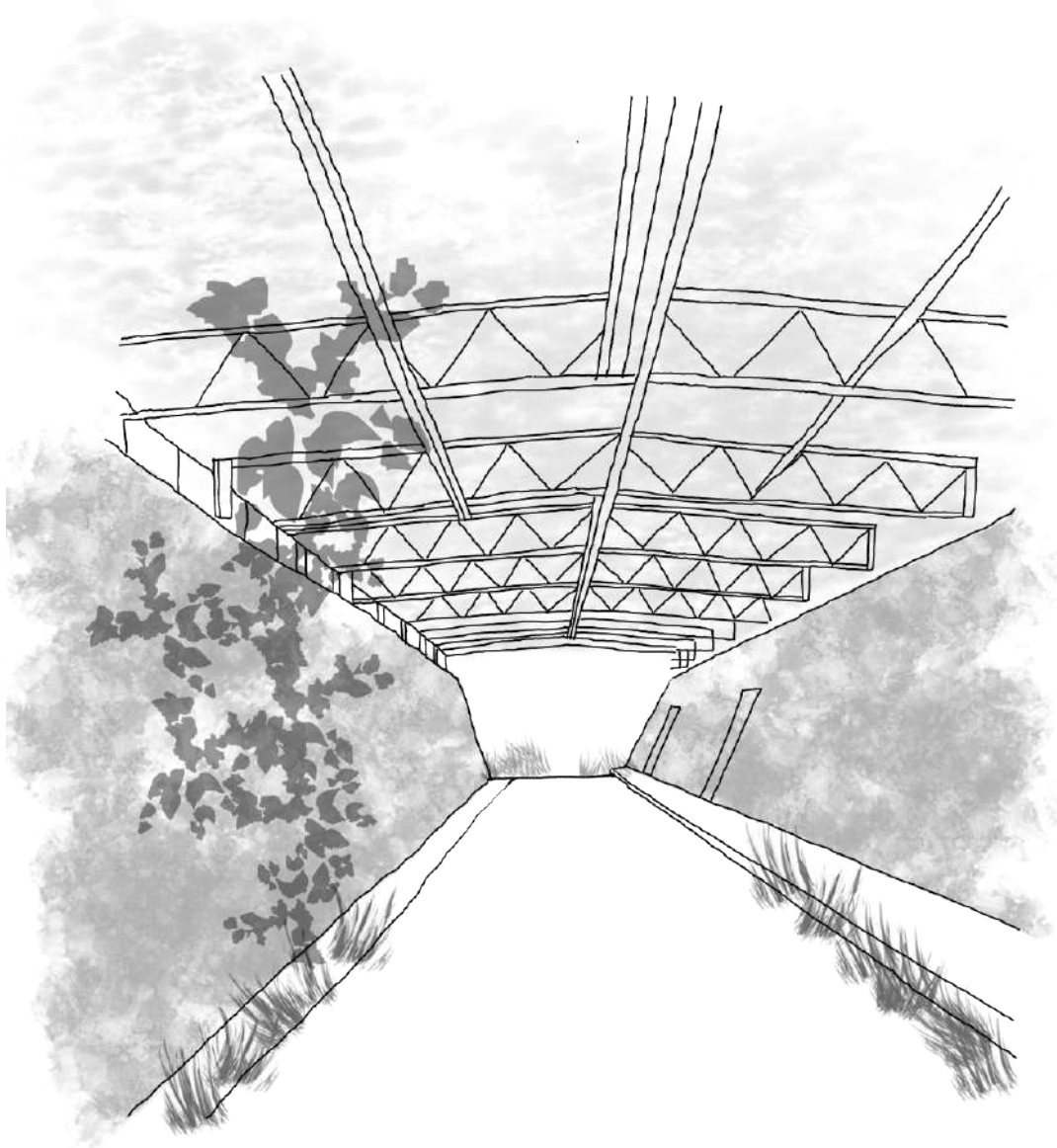


Fig. 0.4
Open Previous Dynamite Storage Unit
Adjacent to Site: Nature Takes Over Built
Form
(Author, 2022)

Chemical Re-composition

This document is submitted in partial fulfillment for the degree:
Master of Architecture (Professional)
at the University of the Witwatersrand, Johannesburg, South Africa, 2022.

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Supervisor: Liale Francis

Declaration

I Ariella Eisenberg (1712459) am a student registered for Master of Architecture (Professional) in the year 2022. I hereby declare the following:

I am aware that plagiarism (the use of someone else’s work without their permission and/ or without acknowledging the original source) is wrong.
I confirm that ALL the work submitted for assessment for the above course is my own unaided work except where I have explicitly indicated otherwise.
I have followed the required conventions in referencing the thoughts and ideas of others.
I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this is not my own unaided work or that I have failed to acknowledge the source of the ideas or words in my writing.

Signature: Ariella Eisenberg

30th day of January 2023 in Johannesburg, South Africa.

Abstract

Drug addiction is prevalent socially, in film and within Johannesburg’s context. Locals turn to drug use as a source of identity, meaning and belonging – which can be found in phenomenological practices.

Socially-conscious architecture can be used as a healing tool for vulnerable people and fragmented communities.

Urban design principles, phenomenology (*Genius Loci*; sensory experience; process and archetypal roofing materiality) and therapeutic architecture (open areas; fenestration views; light; colour; natural rammed earth materiality and acoustics) can be applied to the conceptualisation and design of rehabilitative buildings and spaces to better recovery processes – especially in drug rehabilitation.

Modderfontein, like someone recovering from drug addiction, requires rehabilitation. These problems must be decomposed

(dissected) to re-compose (rehabilitate) them. This paper explores rehabilitation of the problems on three main scales and suggests ways of re-composing (rehabilitating) them through architectural conceptual drivers. The first driver is *Kintsugi*: a practice of re-composing what is broken (decomposed) by celebrating or highlighting the rehabilitation process. *Kintsugi*’s golden seams produce the landscape and pathways between the building’s shards’ edges. A second conceptual driver is chromatography which also deals with themes of decomposition and re-composition. The first and largest scale that requires rehabilitation is the fragmentation of communities surrounding Modderfontein. This segregation arose because of Apartheid planning and until today still requires the facilitation of a welcoming meeting point. Secondly, Modderfontein’s land has experienced damage through chemical dynamite explosions,

identity-stripping alien trees and chemicals in its dams. The building uses rehabilitative indigenous landscaping and purifying water systems. Thirdly, on the smallest scale, the drug addict requires rehabilitation through the building’s programme. The inclusive programme is divided into three parts where firstly, *earning* is carried out through retail spaces. Secondly, destigmatising and shard-like *education* facilities teach surrounding communities about drug use and rehabilitation awareness - opposing the stereotypically institutional drug rehabilitation. The third area is *healing* which includes conventional inpatient and outpatient facilities, as well as a harm-reducing overdose prevention site (OPS) where addicts can use substances under professional observation.

Definitions

The following definitions will be re-explained in the text in their relevant chapters:

Decomposition

The first step in rehabilitation: breaking down a situation or problem to simplify its parts.

Synonyms: dissection; break down; analysis, erosion, fragmentation; separation; extraction

Re-composition

Re-forming the decomposed parts of a situation or problem to advance the rehabilitation process.

Synonyms: rehabilitation; healing; re-formation

Order

Controlled rehabilitative processes such as professional observation of drug users at overdose prevention sites (OPS) or safe injection sites.

Chaos

The common disordered nature of drug use and its unpredictable results.

Kintsugi

A long-established Japanese art where broken pieces are glued together while their cracks are still seen and highlighted (*Richmon-Abdou, 2022*).

Chromatography

Separating a secondary or tertiary colour into its primary colours by drawing onto filter paper (with a marker) and adding water droplets. This prompts the separation process.

Acknowledgments

Firstly, I would like to express deep appreciation to Liale Francis, my supervisor, for answering my many questions as well as for offering a great depth of continuous encouragement, effort, and insight into my project. Thank you for allowing me to grow within the architectural discipline by guiding me, while allowing the project to remain my own.

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Abbreviations: General

AEL	African Explosives Limited	R	Retail
AECI	African Explosives and Chemical Industries	SACAP	The South African College of Applied Psychology
BEE	Broad-based Black Economic Empowerment		
C	Community	SANAB	The South African Police Service’s Narcotics Bureau
CCID	Central City Improvement District	SANCA	South African National Council on Alcoholism and Drug Abuse
FDA	The United States Food and Drug Administration	T	Temporary
LSD	Lysergic acid diethylamide		
LT	Long-term		
MT	Medium-term		
NGOs	Non-governmental organisations		
OPS(s)	Observation prevention site(s)		
PDPM	The Portuguese Drug Policy Model		

Abbreviations: Referencing

EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
NDSU	North Dakota State University
UN ODCCP	United Nations Office for Drug Control and Crime Prevention
VHBA	Victorian Health Building Authority

Part 1

01

Introduction



Fig. 1.1
Site Path
(Author, 2022)

Personal Drivers

Drug addiction and its ripple effects can destroy lives, families, and communities. This is a reality which I have encountered via three main mediums: film, my life and factual accounts of the situation in Johannesburg.

Drug addiction is illustrated in an emotional manner in the film ‘Beautiful Boy’. It explores David Sheff’s biography and how his son [Nic] is dealing with drug addiction (Super Summary, n.d.). The film explores jarring instances of the lived experience of addiction which are based on true events. These include Nic’s ongoingly worrying behaviour including extended periods of no communication with his father; his undergoing of rehabilitation processes and time spent in halfway houses; his fall into relapse and turn to lying to gain access to drugs; an overdose that nearly kills him, and his oscillation between blame and the desire to be drug-free. David uses extreme methods to better understand his son’s actions by

purchasing and using cocaine. These dangerous actions illustrate the **importance of education, management and legislation surrounding drugs from professional entities**. ‘Beautiful Boy’ demonstrates the difficulties of drug addiction and the heart-breaking effects that it can have on loved ones (Super Summary, n.d.).

A second instance that alerted me to the realities of substance abuse was through my encounters with a close friend. He has a worrying relationship with alcohol, yet he is considered to be the ‘life of the party’. People react happily to his drinking and do not see it as excessive. This reaction has validated his habits which lessens the possibility of his ever seeking help. **Socially, there is a normalisation of legalised drugs** such as alcohol. This can be drawn from South Africa’s work-related stress mentality and how one’s friends and family drink.

South Africa’s extreme urbanised

nature has led to its high rates of drug abuse, especially in Johannesburg, Cape Town and Pretoria (Peltzer et al., 2010). Large proportions of urbanisation, restricted employment possibilities, extensive informal trade and the corrosion of ‘traditional values’ and family unity have come to define certain social realities and spaces of these cities (Peltzer et al., 2010). In Johannesburg, **youth gravitate towards highly accessible** and plentiful **alcohol shops** rather than limited libraries, which is evident in Klipfontein (adjacent to Modderfontein) (Joburg, 2018). Township youth lack a sense of identity and belonging which can lead to drug use (Sedibe and Hendricks, 2021). Furthermore, there has been an increase in female-led homes in urban environments which are mostly found in the poorest communities (Peltzer et al., 2010). Parents typically arrive home at late hours, while their impressionable children stay home without adult guidance for extended periods during the

day. Unemployment intensifies the social and economic burdens that encourage both illegal trade and drug dealing. These occur in informal settings which government organisations cannot supervise, nor handle efficiently (Peltzer et al., 2010).

My design strives to offer improvements to communities on a large scale which will aid people’s well-being and sense of self. The building will offer an environment where drug rehabilitation can be undergone while also serving as an educational site for surrounding communities grappling with how to deal with alcohol in a social setting. In addition, the building opens up practical, alternative possibilities for life choices by providing a library as a place of leisure.

The problem of not seeking drug-related help is often hidden by shame where resources are unknown or unaccessible. This is why this implementation is needed. I believe that this is the purpose of

architecture: designing spaces to better lives.

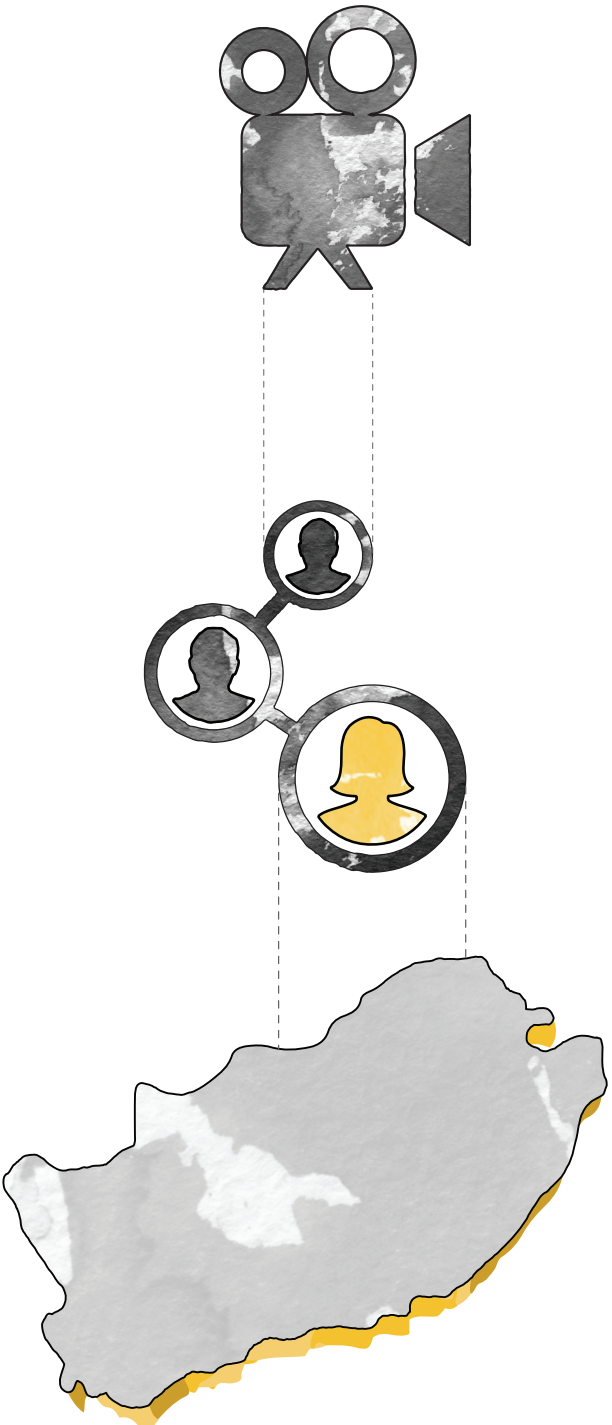


Fig. 1.2
Personal Drivers
(Author, 2022)

Outline of Method

The goal of my architectural intervention is to create rehabilitation opportunities for those who suffer from drug addiction. I will use proven methodologies that will be carried out in a cutting-edge manner, while also providing opportunities for employment-related skills, educating surrounding communities about drug use and creating passions that can heighten a sense of identity. Additionally, these methods will aid in building a bridging centre between early drug rehabilitation and day-to-day life. This bridging centre will be accessed by patients, determined by professionals as being mentally and physically ready to occupy this space. The bridging centre will provide rehabilitation through educational workshops and a sense of the ‘outside world’ in the form of restaurants and retail spaces.

Firstly, **theoretical** research will underpin the design of my rehabilitation programme and

building layout. I will discuss previous and current drug treatment methods, as well as therapeutic architecture and its creation as a response to modern architectural design, and phenomenology as a way to establish meaning in design through threshold, topography, ‘dwelling’ spaces, journey and materiality.

Secondly, the architectural design will be based on findings (**case studies**) from a discussion on *The Portuguese Drug Policy Model* (PDPM), its methods and why its drug statistics have improved. The PDPM has influenced countries, including Australia and South Africa. I will introduce both instances and use Cape Town as a case study from within local context. Cape Town faces difficulties in curbing its existing drug situation through problematic features in its legislation. As such, alternative avenues for intervention are sought through the involvement of

non-governmental organisations (NGOs). This will be followed by a discussion about the current context of legislation around drugs in South Africa and the possibility of amending drug laws as a measure towards reducing current high numbers of substance addiction cases.

Thirdly, I will provide a history of Modderfontein (**context**) through a timeline. I will conceptualise rehabilitation through themes of decomposition and re-composition concerning Modderfontein’s site and programme. In rehabilitation, decomposing the problem is necessary before re-composing. Rehabilitation will be decomposed and explored using three scales. These scales will explain Modderfontein as a suitable location for my implementation owing to its linkage to themes of chemicals and natural growth. As a starting point, I will explore the issue on a site scale; I will explain the chemical scars on Modderfontein’s landscape caused

by dynamite explosions and its polluted water. Additionally, the presence of flora alien species will be addressed. Then, on a larger scale, I will address Modderfontein’s past, present, and future to explore contextual sensitivities and details. Here, fragmented communities surrounding Modderfontein have a racial demarcated historical past, an inter-exclusionary present and a potentially selective future. Lastly, I will probe how the smallest scale of rehabilitation refers to the individual addicts. This scale involves individuals within the contextual dynamics of substance abuse in South Africa. The dynamics of substance abuse have been influenced by Apartheid, post-apartheid changes, work-related stress and the societal normalisation of alcohol. Substance abuse may lead to addiction - a problem exacerbated by the fact that seeking help through drug rehabilitation is often stigmatised.

Fourthly, the theoretical underpinnings, research and site selection will lead to a **sketch charette** exploration. I will use themes of decomposition and re-composition to explain my concept exploration through a sketch charette model. Studies of *Kintsugi* and chromatography will be explained and design-driven conclusions will be drawn.

Fifthly, a discussion on carefully chosen **precedents** will be completed: The Foundation Clinic, Rehabilitation Centre Groot Klimmendaal and Freedom Park. These precedents are relevant to my design through their characteristics, including programme, phenomenological approaches, therapeutic architectural design, scale, use of nature and materiality. The buildings will be analysed and I will draw appropriate information and methodologies from them to take into my design.

Lastly, the design of my chosen **programme** will be explained through the conceptual frameworks of decomposition and re-composition. Decomposition in the programme addresses the need to dissect the core causes of drug addiction and decompose its understanding to avoid stigma. Re-composition refers to the rehabilitation methodologies and education around drug addiction. I will then integrate previously discussed theory, site parameters and specifics, the sketch charette exploration and precedents in order to form a suitable programme able to cater for this critical societal need.

The above theoretical explorations will propel my future building design.

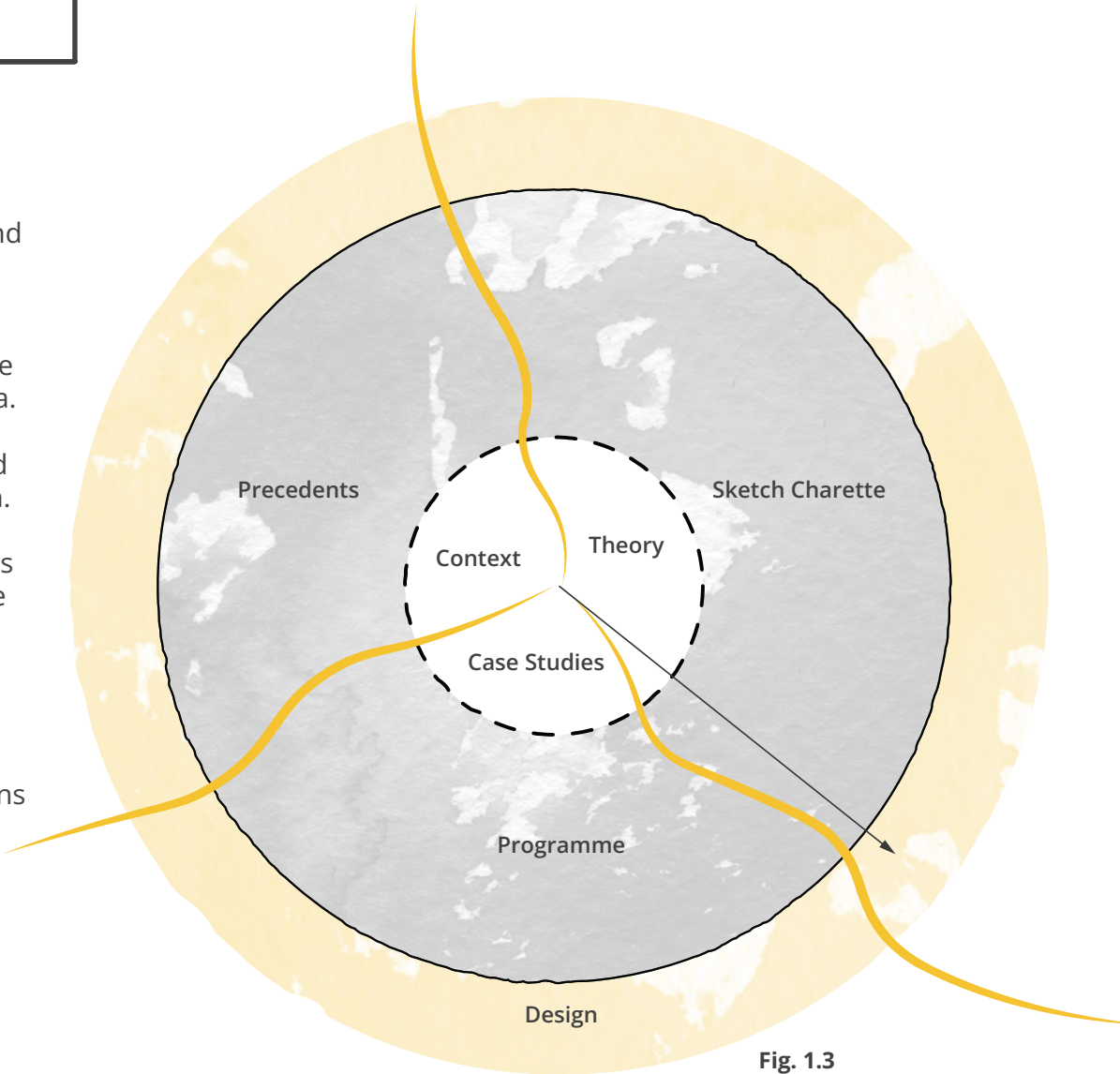


Fig. 1.3
Outline of Method Process
(Author, 2022)

02

Theoretical Underpinnings



The drug rehabilitation programme and resultant building design will be driven by theoretical underpinnings and research. Drug rehabilitation methodologies have been rejected, altered and retained. There is continuous research on successful drug rehabilitation methods. These healing methods extend into one's surroundings where psychologically-underpinned design, such as therapeutic architecture and phenomenology, can benefit patients. My building's users will have a more beneficial experience through occupying and interacting with spaces that have been designed based on this theoretical rigour.

Fig. 2.1
Modderfontein Hiking Bridge
(Author, 2022)

Old and Ongoing Philosophies

There has been extensive scientific research on the roots, treatment and most efficient recovery strategies for drug addiction and abuse (Branson, 2007). The medical realm attributes addiction to changes within brain chemistry caused by consistent drug abuse. This can result in behavioural alterations and bodily dependency which can be ameliorated through medication and rehabilitation regimes (Branson, 2007).

Many early drug treatment methods have been revoked in contemporary society, now being considered as dangerous and outrageous (Editorial Staff, 2022). Today, dominant treatments are significantly more humane. Many of these methods have foundations in previous treatments such as the continuous use of aversion therapy (Williams, 2005). It is vital to understand which treatments were ineffective, which treatments have shown proven success throughout time - consequently now forming the base for current treatment programmes implemented in today's drug rehabilitation centres. Below is the history of previous drug addiction treatment methods in The United States. Many of the country's drug rehabilitation methods have influenced the globe such as *The Minnesota Model* (Fatima, 2022). It can be assumed that the technologies below also influenced the world.

1800s

The 1800s: People are mainly addicted to alcohol and opium which are treated with other 'medications' including cocaine or morphine (Department of Psychology University at Buffalo, 1999).

1879: The Keeley Cure is implemented. Emulsions comprising gold and strychnine are injected into nicotine, narcotics, and alcohol addicts. At the end of the 1800s, more than 200 Keeley Cure facilities exist (NDSU Libraries, n.d.). The injections are found to be unhelpful, but the Keeley Cure initiates group therapy sessions and community care organisations – both practices which are still used today (NDSU Libraries, n.d.).

1900s

The 1800-1900s: **Hydrotherapy** involving cold and warm water is used to remedy alcohol addiction and mental health problems – aiming to 'shock' the system (Quest for a Cure, n.d.).

The 1900s: Seasonal affective disorder – related to **winter sadness** – is tied to addiction. It is believed that the gloomy and cold weather triggers addiction. Treatment involves light boxes and heat lamps (Editorial Staff, 2022).

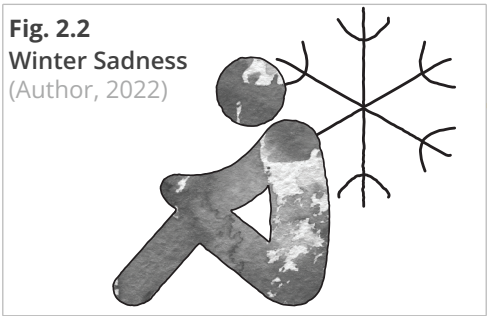


Fig. 2.2
Winter Sadness
(Author, 2022)

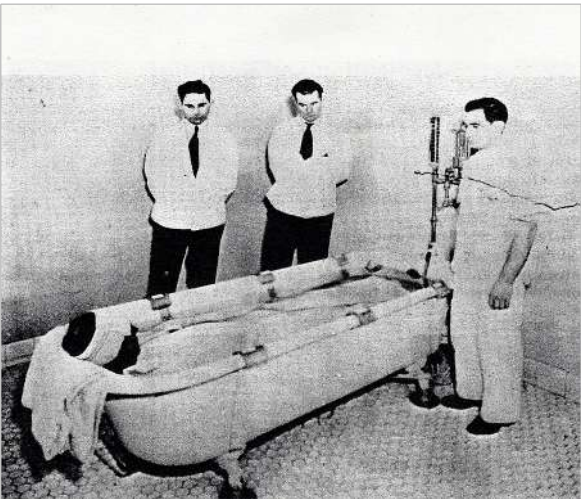


Fig. 2.3
Patient Wrapped in Sheets During Hydrotherapy
(Meghan, 2020)

The 1900s: Addiction is treated using sleep therapy with a sodium-bromide-induced coma. When patients do not die, they are believed to awaken as cured (Editorial Staff, 2022).

1899-1903: An addict's skin is cut and presented with antibodies to alcohol from horse blood. This blood becomes a vaccination for alcohol addiction but this regime is rejected shortly afterwards (Editorial Staff, 2022).

1909: **Belladonna**, a deadly nightshade plant is used as a treatment which may cause hallucinations (Editorial Staff, 2022).



Fig. 2.4
Belladonna
(Author, 2022, edited Bildagentur, 2017)

1907: Certain governments ban marriage for drug addicts. Some sterilisation occurs which aims to stop addicts from passing their addictions to future generations (Editorial Staff, 2022).

1927: High quantities of **insulin** are given to drug addicts to increase blood sugar levels exponentially. This results in **comas** as it is believed that patients awaken 'healed' from addiction (Editorial Staff, 2022).

The 1930s- 1950s: Colorado State Penitentiary criminals and addicts have blisters on their bellies that are drained and re-inserted into their arms as a form of treatment (Editorial Staff, 2022).

1935: Withdrawal is treated with morphine injections (Editorial Staff, 2022).

1935: Seattle's Shadel Sanatorium presents aversion therapy for alcoholics to condition patients to loathe any alcohol-related subjects. Aversion therapy consists of introducing uncomfortable stimuli when alcohol is offered. Some stimuli include provoking nausea (Editorial Staff, 2022).



Fig. 2.5
Insulin-induced Coma
(Vann, 2014)

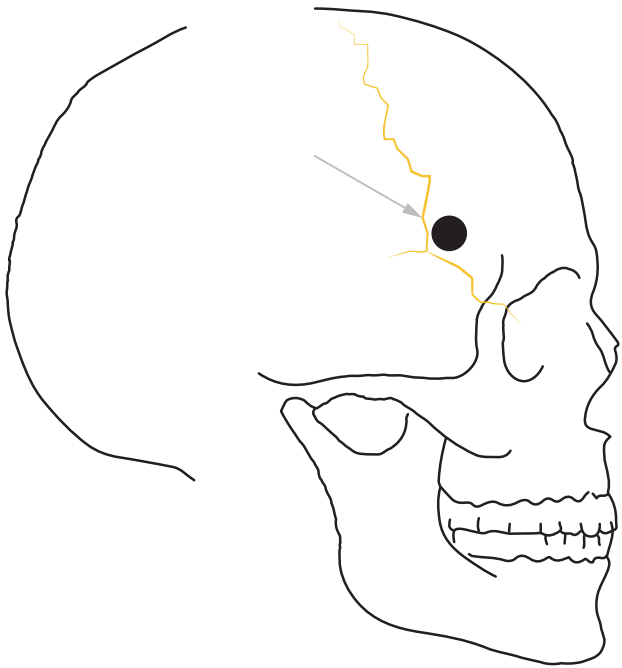


Fig. 2.6
Frontal Lobotomy
(Author, 2022)

Fig. 2.7
Lobotomy Performance
(Holland, 2019)

1940-1950: Addiction is believed to stem from an unfit endocrine system. Adrenal gland adrenocorticotrophic hormones are injected into addicts (Editorial Staff, 2022).

1948-1952: Alcohol and drug addicts' frontal lobes in their brains are often surgically removed or **frontal lobotomies** are conducted. The belief is that addiction stems from the prefrontal cortex (Editorial Staff, 2022).



The mid-1950s: Electroshock therapy is conducted on addicts during which wires are connected to their bodies and heads. Patients are shocked repeatedly as a form of treatment (Editorial Staff, 2022).

1950-1960: Lysergic acid diethylamide (LSD) is used as a treatment. It causes hallucinations (White et al., 2021).

1964-1975: American insurance companies start to compensate for the treatment of alcohol addiction. Medical professionals refer to alcoholism as a chronic condition. This leads to an upsurge in inpatient rehabilitation centres and medication to treat alcoholism (Talcchekar, 2022).

1964: Methadone is presented to treat drug addiction (Talcchekar, 2022). Methadone is an opioid agonist that inhibits severe opioid withdrawal signs (Talcchekar, 2022).

1972: The FDA accepts methadone as a heroin addiction treatment (Talcchekar, 2022).

1971: The United States Food and Drug Administration (FDA) accepts Narcan, an injectable opioid overdose remedial, as a treatment. Narcan potentially takes effect within two minutes. Today, it is presented as a nasal spray (Talcchekar, 2022).

1970: Acupuncture is used to treat addiction which shows extreme success (Talcchekar, 2022).

The 1980s: Programs consisting of secular drug addiction treatment increase. Here, spirituality is not part of the healing process but the practice of rational decision-making is promoted as key to recovery (Talcchekar, 2022).

1982: Cocaine Anonymous is established and uses the 12-step thinking method previously created by Alcoholics Anonymous (Talcchekar, 2022).

1987: The American Medical Association recognises drug addiction as a disease (Talcchekar, 2022; White, 1998).



Fig. 2.8
SMART Recovery
(Author, 2022, edited White, 2017)

1994: **SMART Recovery** is established which deals with **self-encouragement and behavioural management** (Talcchekar, 2022). Additionally, Naltrexone, an opioid receptor hinderer in the brain, is certified by the FDA for alcohol addiction (Talcchekar, 2022).

2000s

2002: FDA accepts buprenorphine – a medication-based treatment for opioid dependence – and it is introduced as part of hospital treatment plans. Only specifically certified doctors can recommend buprenorphine to patients (Talcchekar, 2022).

Today: The internet provides a surplus of strange and experimental techniques and addiction ‘treatments’ that can lead to illness (Editorial Staff, 2022). These methods are mostly ineffective.

Other rehabilitative methods used today include outpatient courses, residential treatments, transitional courses, addiction specialist therapy sessions, and detoxing (Editorial Staff, 2022). Residential treatments focus on high-level care and continuous observation. Detox is usually achieved by outpatients, in one’s home environment. This depends on the seriousness of the individual’s alcohol or drug addiction (Editorial Staff, 2022). More extreme dependency will result in more severe withdrawal and longings. Severe withdrawals and longings do well through medical detoxification, consistent medical professional observation and medications (Editorial Staff, 2022). Medications are often used to combat various addictions such as disulfiram for alcoholism or opioid agonist naloxone which triggers opioid withdrawal if misused. This can prevent relapse (Williams, 2005).

Addicts continue to find ways to justify behaviour and legitimate

their substance uses in ways that deny addiction issues. This behaviour requires education. Community spaces, schools, and public education-based organisations are committed to both preventative education and highlighting avenues of help for those already in the throes of addiction (Editorial Staff, 2022).

Behavioural-aimed therapy meetings are seen in most drug addiction rehabilitation programs (Editorial Staff, 2022). Individual and group therapy sessions are used to create healthy management systems and a greater understanding of the relationship between ideas and actions, as well as how to handle them beneficially. Group sessions can introduce an individual to a supportive community which can help to avoid relapse through shaping a sense of belonging. Many facilities include patients’ families in their sessions. Mental health therapy sessions can also consist of skill-related educational

programs such as communication or building self awareness (Editorial Staff, 2022).

There has been a great evolution in drug rehabilitation facilities over time and they continue to morph according to new research and scientific proof (Editorial Staff, 2022). Today, there is a hybrid between holistic and conservative treatments, aiming to help individuals and their families to create a ‘**mind, body, and soul**’ stability – **rehabilitating all aspects of the patient**. Physical health is directly interlinked with emotional well-being - thereby promoting recovery as a holistic process that addresses both one’s physical and mental health (Editorial Staff, 2022). These ideas will thread into my building’s programme. My design weaves in spaces and places enabling drug addicts’ family involvement, group therapy sessions, mental health therapy sessions, outpatient programmes, detox rooms and an overall holistic approach to drug

addiction rehabilitation.



Fig. 2.9
Mind, body, soul
(Author, 2022)

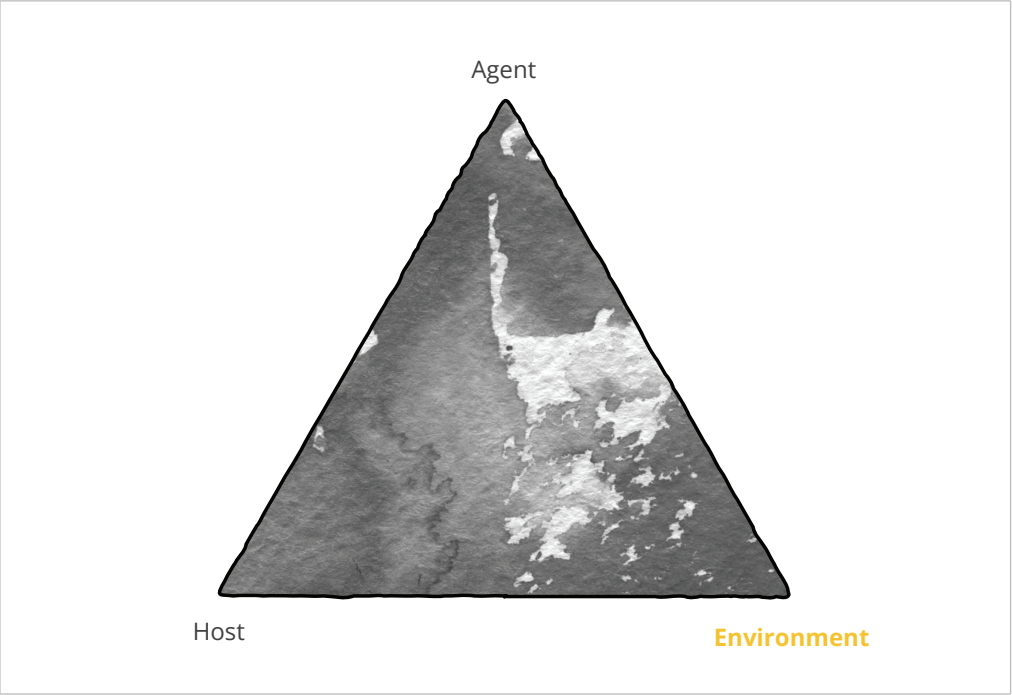


Fig. 2.10
Epidemiologic Triangle Model
(Author, 2022, derived from Basson, 2014)

Rehabilitation can extend beyond spatial functionality and into design. Therapeutic architecture is a people-centric and research-grounded speciality in the architectural realm (Chrysikou, 2014). It is used in the design of healing facilities including hospitals and rehabilitation centres. Its goal is to recognise and maintain methods of combining spatial components which connect with individuals (physically and psychologically) through architectural design (Chrysikou, 2014). Architecture is vital in different stages in one’s life: It plays a core role in promoting health during experiences of sickness when the handling of day-to-day life becomes more challenging (Chrysikou, 2014). Drug rehabilitative architecture thus must cater to people’s well-being.

Therapeutic Architecture was formed as a response against institutional-like modern treatment spaces where healing was focused on rationality and

medical advancements (Basson, 2014). The individual was not at the core of healing architecture. Buildings were designed to contain patients; give them any attention required (sometimes in an inhumane fashion) and send them away. Modern rehabilitation facilities mimicked prisons in terms of function: individuals were isolated from civilisation to aid their drug addictions. However, the antithesis of a rehabilitative goal was achieved: patient healing was delayed, and patients began to imitate their environments. It is important to have authority and security in rehabilitation facilities, but therapy must be the primary concern. The response of therapeutic architecture exemplifies the goals of successfully designed architectural experiences that aim to heal individuals (Basson, 2014). Therapeutic architecture is not the sole solution to one’s addiction and unhealthy encounters, but architectural spatial morphing can create a foundation for the

implementation of other design factors such as colour, light and sensory detailing that helps to create a therapeutic environment. Professionals such as architects and psychologists have extolled the importance of a physically healing environment – especially for inpatients that require care for extended periods. A well-designed healing space allows for improved physical, social and mental stability – particularly for patients that have previously suffered in these areas owing to drug addiction (Basson, 2014).

A stigma around treatment is upheld through previous and current models of rehabilitation facilities in which patients are isolated from communities (Basson, 2014). The aim is to remove patients from urban disturbances and replace them with a more rural environment, as this is believed to better support a successful process of healing. However, a change in the environment creates

disorientation. When one’s life is not connected to the healing rehabilitation environment, this lessens the viability of the treatment in the long term (Basson, 2014). Rehabilitation conditions are vastly different to a patient’s home where the patient’s healthy self is found at the rehabilitation centre and their home becomes a space of future mentally jarring experiences that often creates relapse as the outcome (Basson, 2014). Mimicking a home-like environment in drug rehabilitation centres may be beneficial while introducing a bridging facility between intense rehabilitation and the outside world as previously mentioned.

Throughout modernity, there has also been a pull towards finding spaces of balance or rebalance amidst the incessant pace of city life: individuals continue seeking ways to escape the pressures of urban living and forge lifestyles and living spaces which allow for a mentally calming environment

and psychological repair (Basson, 2014). This illustrates the human need to integrate with nature and the importance of a healing space within the urban environment (Basson, 2014). The Modderfontein site is a rural-like space within the urban context, where healing can be introduced into the city through a nature-centric environment.

Drug addiction relapse can be understood through the **epidemiologic triangle model** (Figure 2.10) (Research Institute of Medicine (US) Committee on Opportunities in Drug Abuse, 1996). If one side of the triangle is interrupted, the cycle of addiction can be prevented (Basson, 2014). The environmental factor (one aspect of the triangle) can consist of architecture where **design can contribute to laying out the pathway of successful drug addiction rehabilitation**. Modern research argues that evidence-based design in architecture can benefit patients in rehabilitation environments. A patient’s stress

levels and sense of discomfort can be bettered through various design tools (Basson, 2014). These architectural design tools include open areas, fenestration views, light, colour, materiality, and acoustics (Zohby, 2020).

Clinical evidence has proven that open spaces (or exposure to nature) improve the stress levels of patients through both visual and audio mediums (Zohby, 2020). Professor Irving Biermann from the University of Southern California conducted a study during which participants were exposed to natural scenery. It was found that in these environments, neurons are activated and the brain’s ‘natural painkillers’ are stimulated. This increases one’s calmness (Zohby, 2020). According to revolutionary nurse Florence Nightingale’s documented findings in ‘Notes on Nursing’, it is vital for patients to experience bright colours found in nature (Yak, 2018). This encounter with plants heals both the mind and the body (Yak,

Therapeutic Architecture

2018). Drug addicts experience both physical and mental harm. Therefore, it is beneficial to include greenery and have a strong interior-exterior relationship in my architectural intervention.

Fenestration can be used to increase views of open spaces. Ulrich’s research paper titled ‘Power of the Window’ explains that inpatients recovered more rapidly when they had an immediate view of a voided natural space, rather than an interior wall (Zohby, 2020). Patients, who could sense nature around them needed fewer pain pharmaceuticals than those who had no views of nature (Zohby, 2020).

Light plays a significant role in both physical and mental health (Zohby, 2020). In a study, it was found that the majority of patients perceive sunlight as **enjoyable** and **calming**. However, most staff members find sunlight to decrease the functionality of a space. Therefore, artificial light must be

adaptable so that staff members can perform their tasks efficiently and patients are less stressed (Zohby, 2020). Perhaps yellow light can be used rather than white light or, through fenestration, south light can be used instead of north light. It produces softer light. However, dim spaces have a ‘cosy’ atmosphere. This can also bring comfort to patients.

Some colours can inspire activity, while others encourage passive actions (Zohby, 2020). Colours can affect emotions, energy intensity and mental conditions. Colour therapy can trace the psychological impact of colour and how a change in this stimulus can promote behavioural or mood change (Zohby, 2020). Muted colours can heighten calmness, while bold colours can energise individuals.

Materiality can influence the atmosphere of an environment through resulting comfort, circulation and sound (Zohby, 2020). Therapeutic architectural

materiality consists of natural materials, which can have an ecological component and local materials - thereby including relevant communities in buildings (Zohby, 2020).

Improved acoustics directly help shape a more restorative psychosocial surrounding (Zohby, 2020). Sound disturbances can reduce patient recovery, lessen sleep, and raise levels of stress. These sounds include conversations amongst staff, general surrounding noises and in multi-bed instances, the disruption of staff treating adjacent patients. Architecture can aid acoustic-related issues through sound-absorbent ceilings (Zohby, 2020).

There is significant potential for **spaces to aid the emotions and mental states of patients** (Zohby, 2020). Care and time can be given to design factors such as open areas, fenestration views, light, colour, materiality, and acoustics to influence the well-being of

people, allowing patients to heal quicker (Zohby, 2020). I plan to use these aspects to better my design such as by ensuring patients are exposed to natural outdoor spaces; using light to give a ‘cosy’ or open sense of space, as well as, where relevant, by using local and natural materials. Architecture provides an environment which allows the active processes of rehabilitation to be carried out with greater success.

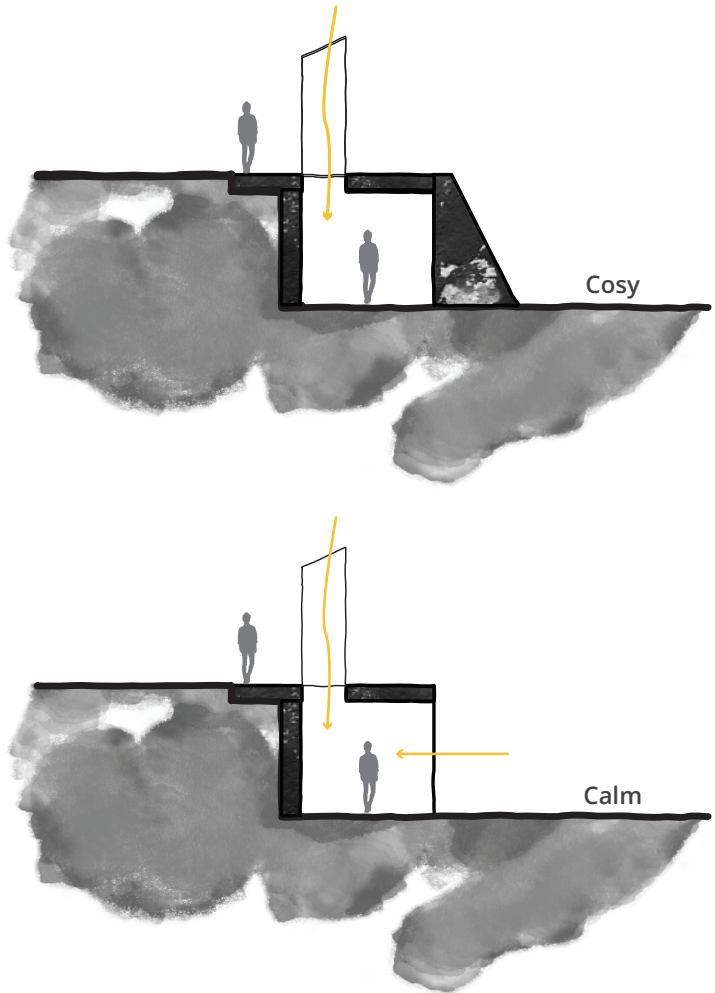


Fig. 2.11
Comforting Light
(Author, 2022)

Phenomenology

Much like therapeutic architecture, phenomenological architecture deals with one's senses and can be explored in order to bring meaning into my architectural intervention. This architectural practice connects building users to both the physical nature that surrounds them and offers for that meaning to be drawn from these spaces in a spiritual sense.

Edmund Husserl established phenomenology which is a philosophy that deals with the human lived experience from which all sense is derived (Armstrong, n.d.). Husserl combined philosophy with science in a unique way whereby phenomenology is a '*science of consciousness*' (Soltani and Kirci, 2019). The term was first recognised in Lambert's work as '*the theory of illusion and of its varieties*'. It has also been described by Husserl as '*back to the things themselves*' (Soltani and Kirci, 2019) or by Finnish architect Juhani Pallasmaa in *The Thinking*

Hand as a 'multi-sensory experience' (Pallasmaa, 2009).

Phenomenology in architecture gives significance to the emotional extent of one's spatial journey and explores the entirety of the subjective lived experience (Soltani and Kirci, 2019). The lived experience includes everyday experiences and unusual aspects of life. Phenomenology aims to explain reality from an inward perspective. Norwegian architect Christian Norberg-Schulz explains phenomenology as a process to infiltrate the day-to-day lived experience. Spatial journeys have become rationally driven. However, architectural phenomenology combines the human with its environment. The human is considered an entire being (Soltani and Kirci, 2019). Architectural phenomenology seeks to reconnect the mind and body, which is also relevant in drug rehabilitation, focused as it is on healing both these aspects (Fatima, 2022). Architectural

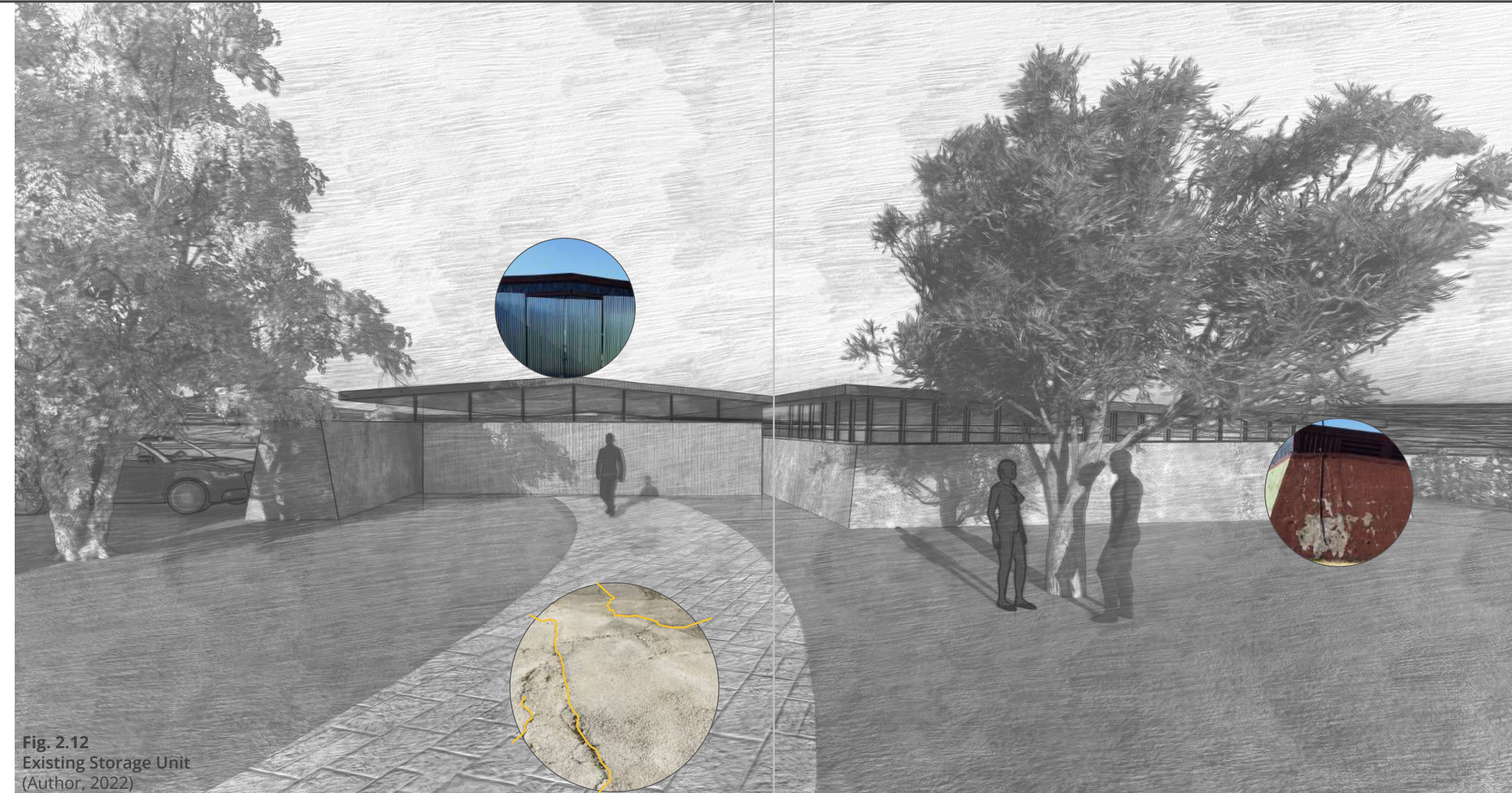


Fig. 2.12
Existing Storage Unit
(Author, 2022)

phenomenology can be addressed using four factors: *Genius Loci* (place), sensory experience, making, and archetypes.

Firstly, Norberg-Schulz explained *Genius Loci* (sense of place) using nature (Eisenberg, 2021). He speculated that architecture was the depiction of man's experience. These experiences are derived from nature and the landscape (Crysler et al., 2012; Eisenberg, 2021). Norberg-Schulz connected those early encounters of nature with *Genius Loci* - to communicate the history of the location in contemporary architecture. He explains that the designer should use the topography as an initial source rather than historical structures (Crysler et al., 2012; Eisenberg, 2021). It will be necessary to use Modderfontein's topography as a design informant for my intervention. The **existing storage unit** in the site's immediate context is included as **part of the existing 'topography'**. The structure's

surfaces have decomposed – as if the building has started to blend into the topography (Figure 2.12). *Genius Loci* aims to retain and reinforce a 'sense of place' rather than completely functional design prompts (Norberg-Schulz, 1979). An example of this is allocating regions for various functions autonomous from the state of the context. Additionally, Norberg-Schulz evaluated the unusual and abandoned blend of man-made and natural designs where the urban setting is homogeneous (Eisenberg, 2021; Norberg-Schulz, 1979). I aim to use both natural and man-made elements in my design. The natural Modderfontein site has a phenomenological effect that will be affected by the building. I hope to use architecture sensitively in relation to the natural slope, wind, light, cloud cover, water, earth and vegetation. I intend the building to both mimic the natural effects of the site and intentionally go against it, where relevant.

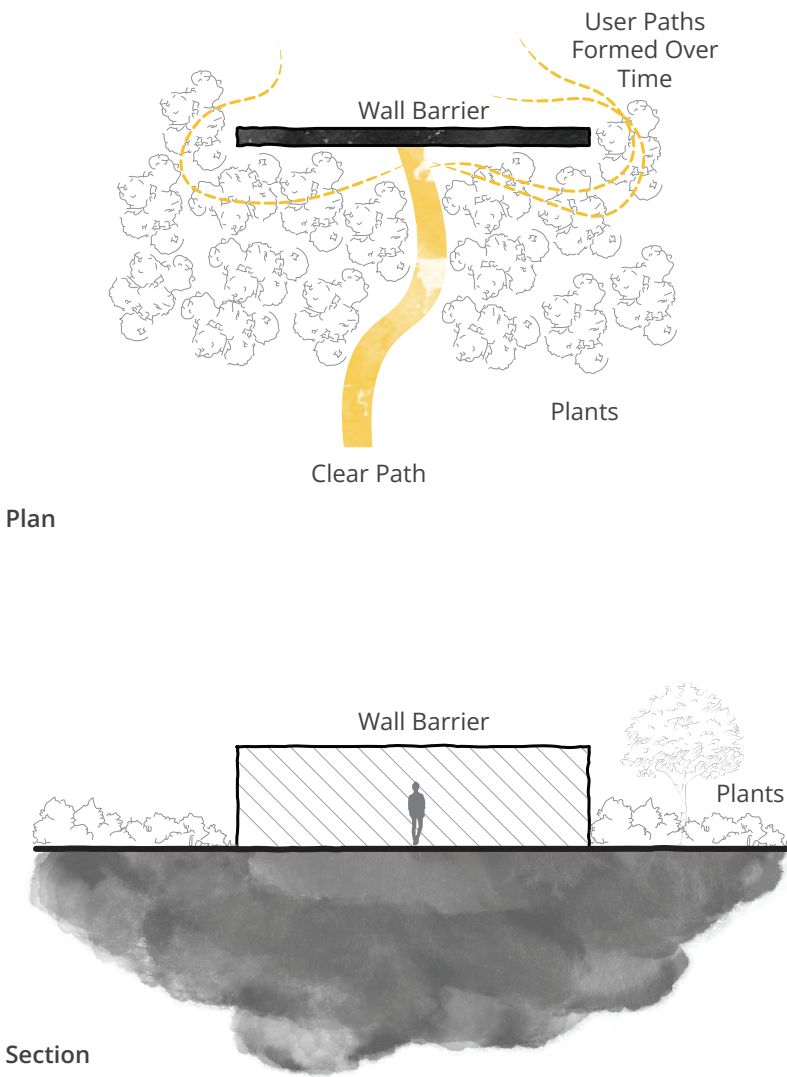


Fig. 2.13
User-made Wayfinding
(Author, 2022)

Norberg-Schultz has linked *Genius Loci* to the notion of dwelling: humans aim to create meaningful spaces where dwelling can occur (Eisenberg, 2021; Norberg-Schulz, 1979). It is necessary for users in the drug rehabilitation centre to feel safe and comfortable, to 'dwell' in the 'healing' spaces. These feelings must occur on a collective scale as phenomenology aims to evoke a communal reaction above an individual's response (Eisenberg, 2021).

Phenomenology explains the significance of architectural landscape in creating character and *Genius Loci* (Young and Vosloo, 2020). Meanings of place are drawn from rooted stories and representations (Young and Vosloo, 2020). The historical stories of Modderfontein must be extracted and dissected to understand and generate significant design elements. Yet, their meanings depend on context and are embedded in a changing set of conditions – attached as they

are to the connection between individuals and their experience of place (Young and Vosloo, 2020). Place is tied into one's identity and the values that one assigns to a landscape according to one's lived experience in, and of, this location. This theory proposes that landscape design generates places that conjure feelings. The user becomes sensitive to the proposed meaning of place when the place addresses the connection between individuals' values and their identity (Young and Vosloo, 2020). Perhaps place can create this connection literally? A design method could include building users creating moments of **wayfinding**. This can be introduced through seemingly dead-ended paths that are surrounded by plants. These plants are designed to be walked over – therefore, over time, creating direction by the users in the landscape (Figure 2.13). Figuratively, **meaning is established by building users overcoming obstacles related to their drug**

addictions.

Additionally, *Genius Loci* addresses a drawing (Figure 2.14) in Norberg-Schulz's **'The Concept of Dwelling'** (Eisenberg, 2021; Norberg-Schulz, 1979). A wise elderly man is depicted at the centre of simultaneous connections to multi-directional points of one's existence on earth. The vertical upward direction deals with identification or a 'sense of belonging' (mind) – tied to one's meaningful relationship with the universe and the knowledge gained through a journey. 'Orientation' relates to one's physical journey (body) between, and to, the four cardinal points – it is a collected experience in this world (Eisenberg, 2021; Norberg-Schulz, 1979). Man is grounded to a point within the physical space in which he dwells. He is linking his body and mind, embedding himself into his natural surroundings. Similarly, the 'mind-body-soul' drug rehabilitation approach can be addressed in the landscape design using *Genius Loci*.

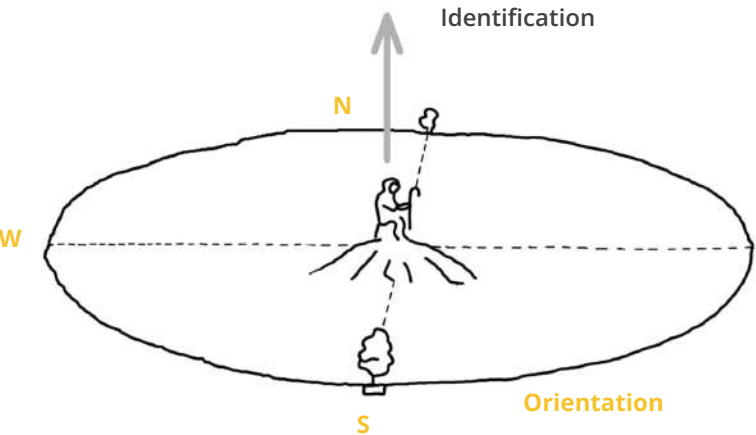


Fig. 2.14
The Concept of Dwelling
(Eisenberg, 2021)

A further area of discussion is sensory experience. Sensory experience deals with Pallasmaa’s idea of phenomenology as a ‘multi-sensory experience’ (Pallasmaa, 2009; Soltani and Kirci, 2019). He believes that there is significant importance placed on what we see as that separates the mind and body (Eisenberg, 2021). Creativity can reach its full potential once the mind and body are reconnected. Pallasmaa’s architectural designs explore the physical body in space and the mind’s response to space (Eisenberg, 2021). Architectural journeys can only be experienced effectively once the mind and body are united, as sparked through sensory experiences (Pallasmaa, 2009). Architectural journeys and thresholds can heighten senses through feeling (texture), smells (incense), sight (materiality), hearing (footsteps on floor finishes) and taste (natural courtyards).

Moreover, ‘making’ refers to hints from materiality and form as to how a structure was built, what

the building generates and the uniqueness or convention that is provided to the architecture (Eisenberg, 2021). Architectural materiality is significant in the phenomenological experience. Local or international techniques can be seen in architecture which will either provide more meaning to a particular building or deter from the building as an artwork. Construction details can be used to hide the making process through neat joinery or joinery between old and new structures can be emphasised. This could be useful in my implementation, if I choose to incorporate existing unused storage structures in Modderfontein into my new design.

Orientation, scale and form can dictate how materiality is used. I plan to use the natural environment one of the drivers in my building. I would like to carry this out in various ways: rock face forms can create phenomenological experiences in the landscape through

green roofing and ‘extruded’ solar chimneys. The green roof can mimic the erosion of soft earth exposing hard rock (solar chimneys). Rock surface colours can be mimicked using rammed earth and texture can be created using formwork. Imitating nature creates a serene feeling. This will be beneficial for the rehabilitation process. Cantilevering rock-like forms can create a sense of belonging or upward identification for the user. Heavier and tall cantilevers may feel too overwhelming but light, shard-like and room-height cantilevers can create a sense of comfort in nature. A large, highly reflective metallic surface, floating above the ground instead of an earthy, coarse mass embedded into the earth could create a literal reflection in various rehabilitation processes. Furthermore, materiality can continue its process once the structure is built. ‘Making’ will be evident in the built forms and change through time. This can be carried

out by **letting metals oxidise and stain adjacent materials** (Figure 2.15). Metal oxidation onto rock surfaces creates colour-staining. This informs a sensory phenomenological experience of texture and light. Additionally, exposed rock-like shards can create forms along contours in the landscape and jut out against contours in certain regions.

Lastly, architectural phenomenology consists of archetypes (or typologies) which are simple forms that are the base of all subsequent alterations and combinations in architecture (Thiis-Evensen, 1987). This basic set of architecture can be described as ‘the grammar of architecture’. The word ‘archetype’ has Greek origins and can be translated as ‘first form’ (Thiis-Evensen, 1987). In my design, archetypes can be used from the recognisable homes of surrounding communities – through materiality and pitched roofs. Drug addicts can feel more at home in this way.

Phenomenological *Genius Loci*, sensory experience, making and archetypes can be used to infuse meaning into my design. This can add another layer to therapeutic design through which users can both heal and ‘find themselves’ by ensuring their environment itself plays a core role in their rehabilitation treatment.

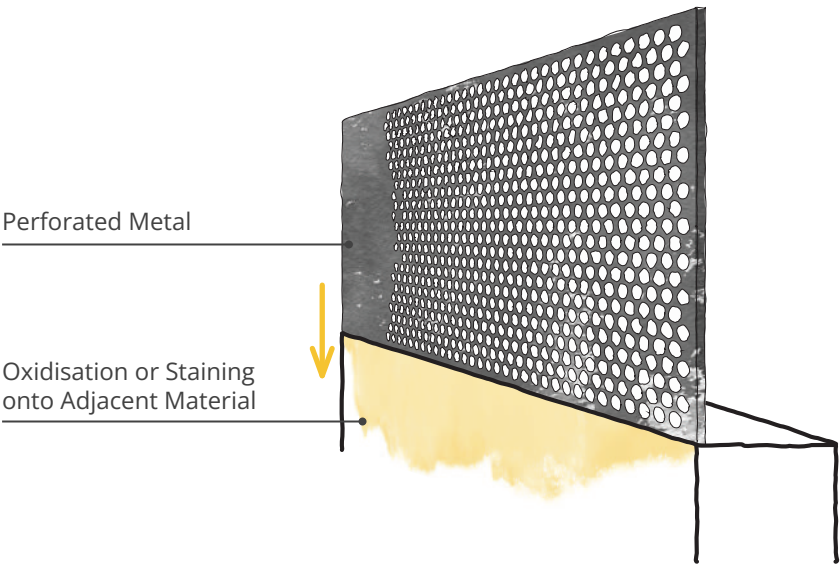


Fig. 2.15
Oxidisation Staining
(Author, 2022)



Order in Chaos

03

The Need for Harm Reduction: Case Studies

Certain methods which may seem conventional today were in fact radical in their time. As seen in the previous chapter, there is continual research to find the most effective drug rehabilitative approaches. This chapter will delve into the success rates and reasons for overdose prevention sites (OPSs) or safe injection sites. OPSs can be implemented if drug legislation allows. Therefore, international and local OPS case studies will be explored, as well as the current state of drug legislation in South Africa.

Fig. 3.1
Modderfontein Reserve Dam
(Author, 2022)

Portuguese System

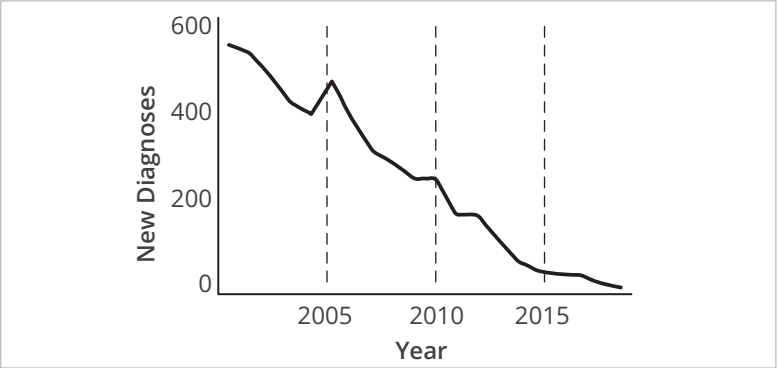


Fig. 3.2
New HIV Diagnoses Attributed to Injecting Drug Use (Portugal)
(Author, 2022, extracted from Transform, 2021)

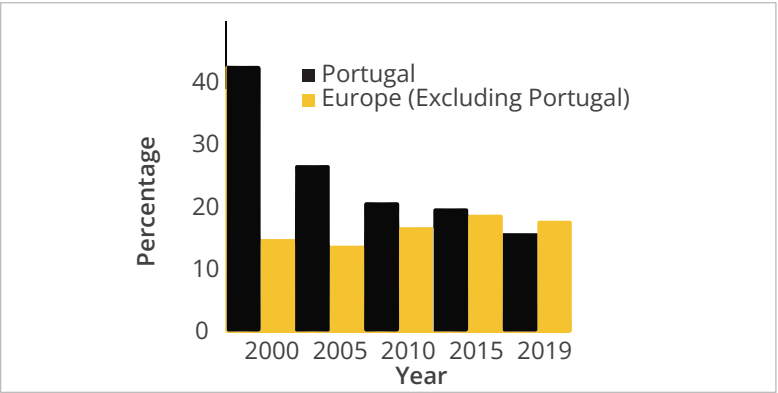


Fig. 3.3
Percentage of Prisoners Sentenced for Drug-related Offences
(Author, 2022, extracted from Transform, 2021)

Implementation: The National Action Plan for the Fight Against Drugs and Drug Addiction
Country: Portugal
Date: 2001
Use: Legal and Drug Rehabilitation (project similarity)

The PDPM has become a revolutionary benchmark drug addiction tool. Its methods have shown favourable results in reducing high statistics of various drug-related crimes and problems.

Background

Portugal changed its drug laws in 2001, decriminalising the individual possession of all drugs and implementing **supervised injection rooms** (Transform Drug Policy Foundation, 2021). This was part of a large policy shift towards a healthier country. Drug personal use is now considered an administrative offence – this means that drug possession will not lead to imprisonment or a criminal record. However, under

new laws, drugs are confiscated, and possession can lead to fines or community service (Transform Drug Policy Foundation, 2021).

OPSS or safe injection sites, where illicit drugs can be consumed under trained staff's observation, are part of Portugal's aim to better its drug situation (EMCDDA, 2018). These sites aim to lower the severe dangers of infection spread through unsanitary injecting, inhibit overdose mortalities from drugs and link high-risk drug addicts with addiction therapy and other medical and mental services (EMCDDA, 2018). This then connects back to conventional drug rehabilitation methods.

The data in *Figure 3.2* shows the effect that the decriminalisation of drugs has had on the new HIV diagnoses attributed to injecting drugs (Transform Drug Policy Foundation, 2021). In 2001, drug policy improvement in Portugal involved the introduction of infection-reducing needle

programmes (Transform Drug Policy Foundation, 2021). These **programmes significantly decreased** Portugal's **high rates of HIV transmission** amongst those who inject drugs: from 518 in 2000 to 13 in 2019 (Transform Drug Policy Foundation, 2021).

Drug decriminalisation in Portugal changed the prison population dynamics (*Figure 3.3*). In 2001, before the drug decriminalisation law was put into place, more than 40% of Portuguese prisoners had drug-related sentences (Transform Drug Policy Foundation, 2021). This figure was significantly higher than Europe's average. However, Europe's average has slowly risen over the last twenty-one years and Portuguese prisoners sentenced for **drug-related crimes have lessened substantially** to 16% - lower than Europe's average (Transform Drug Policy Foundation, 2021).

Portugal's drug decriminalisation law has shown improved statistics

with a lower number of new drug-related HIV transmissions and the percentage of criminals sentenced for drug-related offences. Therefore, the decriminalisation of drugs has had an overall positive effect on Portugal and its people. This data can be used to explain the importance of constant development and innovation needed in the design of drug rehabilitation programmes. This case study has been used as a benchmark in Australia and can be used to question South Africa's current drug addiction rehabilitation methods. The South African Constitution is '*one of the most progressive in the world*' and focuses on human rights (Government of South Africa, 2022). Perhaps the Constitution will be open to decriminalising drugs as it has been shown to help people. With this potential legislative shift, OPSS may become possible additions to local drug rehabilitation facilities.

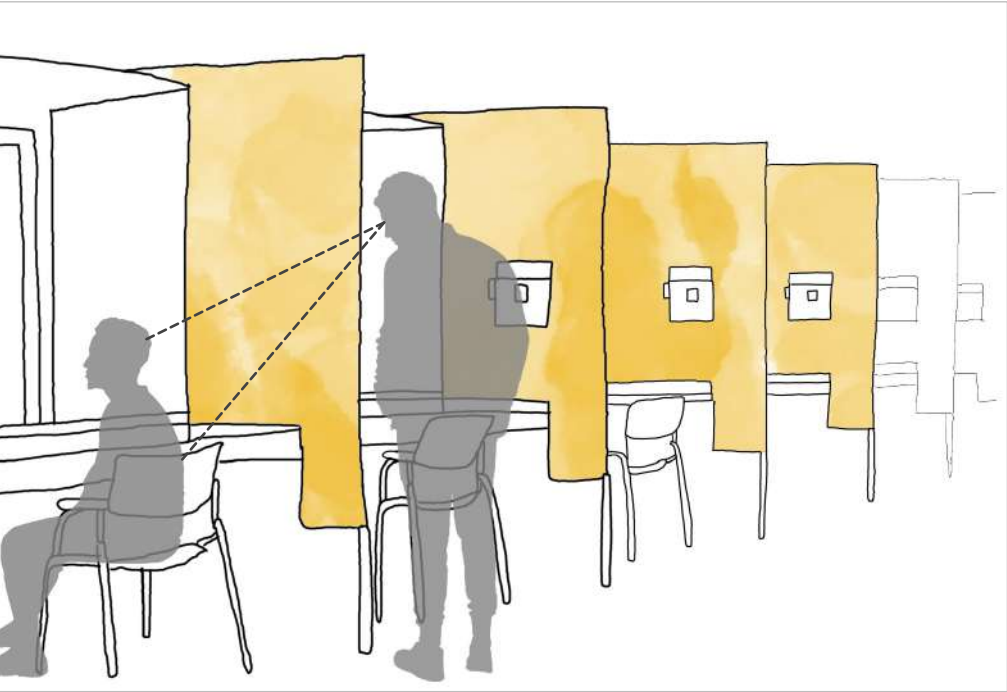


Fig. 3.4
Supervised Injection Room in Portugal
(Author, 2022)

North Richmond Community Health



Fig. 3.5
Injection Centre in Melbourne
(Author, 2022, edited from VHBA, 2021)

Architect: Lyons
Builder: Kane Construction
City: Melbourne, Australia
Date: 2019
Use: Drug Injecting Room (project similarity)

The supervised injection rooms originating from Portugal, have influenced other countries including Australia (VHBA, 2019). There is a medically-controlled injection space in North Richmond Community Health Centre in Melbourne which was built to assist in helping with drug addiction issues in the area. This room provides both **medical health opportunities** and a safe, **comforting** space for addicts to use drugs. Users start the **process** by going to the counter where they are asked a series of questions in order to determine whether they are fit to use the rooms. These questions include users' medical history and drug usage over the previous twenty-four hours. Users can go to the injecting area once they are

cleared. Here, they receive a sterile kit, advice on the safest way to inject and go to a three-sided booth (VHBA, 2019). The fourth (open) side allows for observation by medical professionals. Some booths allow for two users, since some people come into the facility in pairs. People are typically in the injecting areas for twenty minutes. Observers watch for overdoses and often need to resuscitate people using medical equipment. These observers are trained to understand the effects of different drugs such as post-heroin consumption's sleepy few-minute effect. Once users are alert, they migrate into the aftercare room where there are handwashing and oral health amenities, as well as trained staff available for conversation. North Richmond Community Health centre's staff include general practitioners, hepatitis nurses and lawyers (VHBA, 2019).

Mental health services are available at North Richmond Community

Health centre for users either after injection or from the point of arrival (VHBA, 2019). The facility's staff have explained the importance of offering mental health support structures as part of the function of the injection rooms: many users want to be clean but have ongoing physical and mental health problems that at that moment remain uncontrolled. Some users would like treatment but have not had the opportunity (VHBA, 2019).

Some benefits of this medically-supervised injection facility include a decline in Victorians' (local residents) previous high rates of overdose fatalities; a growth in the community's amenity by lessening public injecting and the possibility of wider access to social and medical services for addicts (VHBA, 2021).

This case study provides vital information about the programmatic requirements of a safe injection space, its

functionality and its proportions – elements which will be carried into my design intervention. The project shows evident benefits to individual and communal well-being. The journey through various spaces is designed carefully to ensure people receive help holistically – a goal which I have for my project. I would like to include an OPS alongside more conventional drug rehabilitation practices. However, the possibility to include this locally must be further explored.

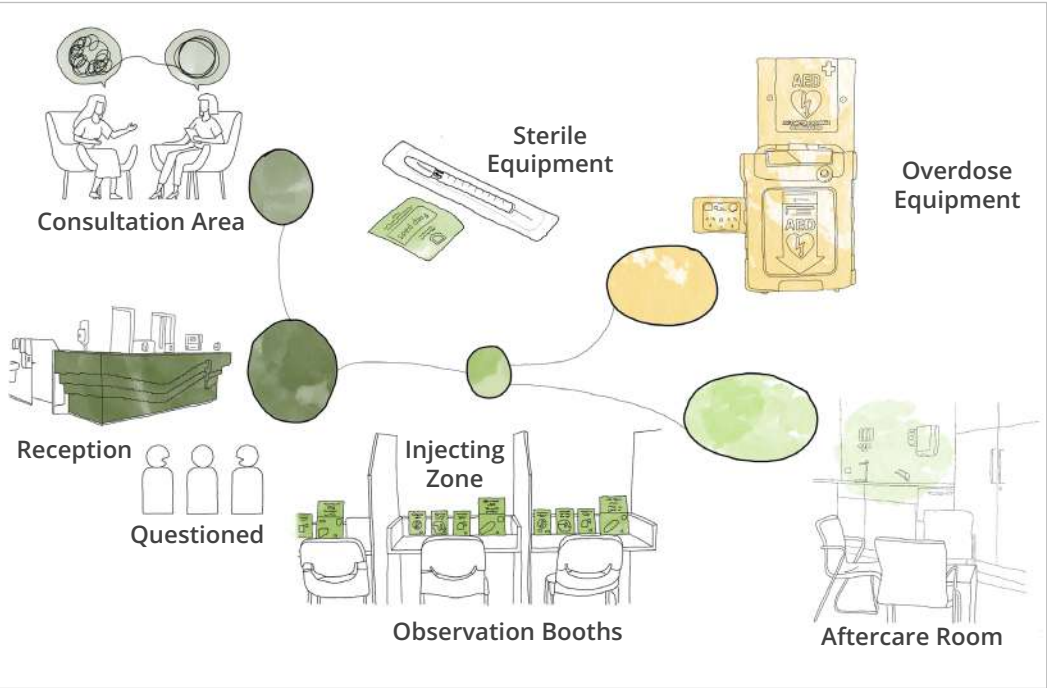
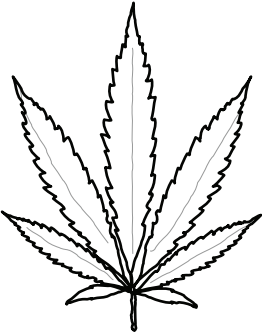
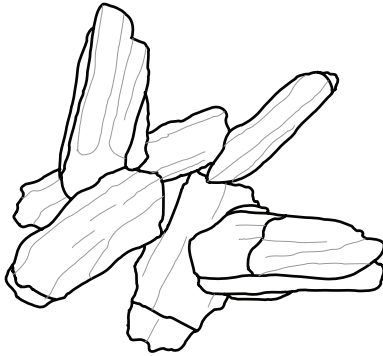
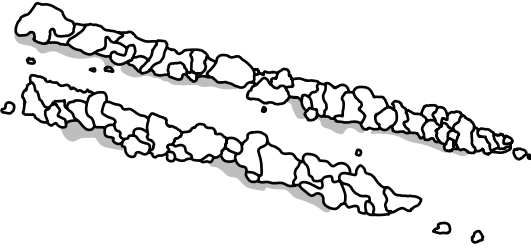
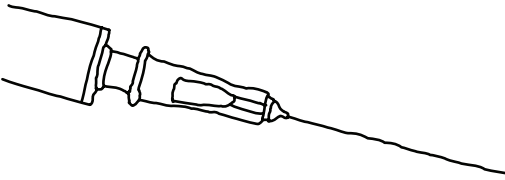
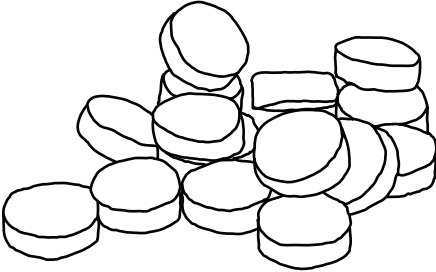


Fig. 3.6
Injection Centre Process
(Author, 2022)

Fig. 3.7
Prevalent South Africa Drug Information
(Author, 2022, information adapted from
SANCA, n.d.; Peltzer et al., 2010)

Drug Type **Percentage** of Rehabilitation
Patients in South Africa:

	Cannabis 16.9%	Methamphetamine (Tik) 12.8%	Cocaine (Crack) 9.6%	Heroin (Opiates) 9.2%	Mandrax 3.4%	Prescription 2.6%
						
Attraction:	Relaxation, euphoria	Rapid effect, intense euphoria	Feelings of contentment and happiness, improved concentration	Excitement, calmness	Stress and anxiety reducer	
Process of Use:	Smoked or eaten in food	Smoke is inhaled by warming the substance in light bulbs; rarely injected	Sniffed through a tube or fumes are inhaled after heating	Injecting or smoking	Smoked in a cigarette with cannabis or smoked in severed glass bottle necks	
Damage:	Lack energy, mood swings, inferior coordination heightens accident risk	Death, a rapid crash follows its 'high' which can result in violence, strokes and seizures	Nosebleeds, anxiety and depression, heart attacks, death, strokes	Nausea, loss of interest in relationships and goals, death (overdose)	Aggression, nightmares, exhaustion, emotional issues	

Local Drug Addiction Implementation Context

Drug addiction issues are growing in Cape Town, especially issues around heroin (Smith, 2022). Phentermine is often a secondary drug for heroin users. Johannesburg is a bigger landscape therefore its need for drug addiction implementation is larger than Cape Town's need. These implementation strategies should include harm reduction methods such as opioid substitute therapy (OST) and legal syringe services (Smith, 2022). Johannesburg may implement safe injection sites before Cape Town. Recent years have shown an increase in heroin use rather than the previously widely used 'tik' (crystal meth) (Smith, 2022).

Prevalent illicit substances in South Africa (and Johannesburg), their attractions, the process of use and resulting damage have been illustrated. They have been shown according to their admission percentage in South African rehabilitation facilities. This shows the importance and the need for



drug rehabilitation interventions and the expected drug use at the OPS in my building. Interestingly, alcohol was not one of the main substances listed. Perhaps the article does not consider alcohol a drug. However, many other sources state that alcohol is a dominant drug in South Africa (Department of Health and Social Development, 2009). Alcohol links to South Africa’s Apartheid practices concerning social and economic control, as well as local excessive drinking norms that are regarded as unproblematic.

Treatment differs according to the drug used – for example heroin can only be treated properly through OST (Smith, 2022). OST was introduced in Cape Town in recent years. It entails working with methadone which is an opioid agonist like heroin. Heroin and methadone affect brain receptors in the same way, but methadone extends the time between drug cravings, and it does not give the same ‘high’ as heroin. Heroin

addicts need to inject every three or four hours while methadone (when the correct dose is prescribed, and it is taken as a chronic medication, at the same time every day) lasts twenty-four hours (Smith, 2022). Methadone has holistic effects whereby it not only removes withdrawals and longings but also allows patients to reintegrate back into life. Some examples include rekindling family ties or getting married. Methadone can be dangerous as it is an agonist and can result in an overdose if the prescription is not provided by a professional. Users are terrified of overdoses so they are meticulous with their dosage (Smith, 2022). Cape Town NPO TB HIV Care has been successful with adding methadone to the essential drug list and has gotten approval for another methadone supplier in South Africa. Methadone is given and increased slowly to build a tolerance. After this, there is a down-titration process where patients aim to be methadone-free (Smith, 2022).

Another heroin treatment is Oxone. It is a partial-agonist which has naloxone (overdose drug) and morphine built into its tablet form (Smith, 2022). However, an anonymous expert, cited by Smith, explains that it partially binds to brain receptors and does not give as much withdrawal coverage as methadone. For this reason, many of this expert’s patients have a preference for methadone over Oxone (Smith, 2022).

Even though drug abuse occurs ubiquitously in the city, there is some linkage to locations that are often ‘gang infested’, (Smith, 2022). Expert drug-addiction organisation, TB HIV Care, maps areas and determines where improvements are vital. These areas are added to TB HIV Care’s portfolio so that sufficient services can be delivered where they are needed (Smith, 2022). The mapping acts as a statistics record and allows comparison through time. The implementation also occurs in areas that are worsening according

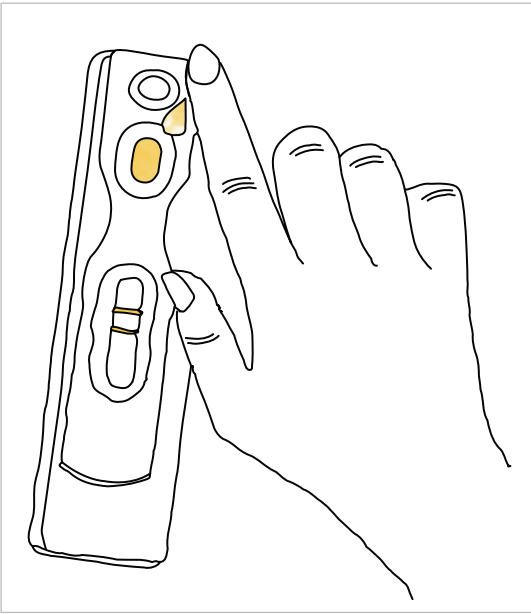


Fig. 3.8
HIV Blood Test
(Author, 2022)

to their previous readings (Smith, 2022).

Future OPSs in Cape Town follow the same model as the OPS in Melbourne, Australia and the PDPM (Smith, 2022). TB HIV Care promotes for drug decriminalisation in South Africa (like Portugal) and needs local municipalities and ward councillors to agree (Smith, 2022). Currently, the maximum prison sentence for being found with drugs is 15 years (UN ODCCP, 1999). Some Cape Town ward councillors already see the benefits and the Cape Town Central City Improvement District (CCID) concur (Smith, 2022). Over the past year, OPSs are in the process of being implemented in Cape Town, where a building has been chosen but no facilities yet added. The biggest hurdles that TB HIV Care faces in order to create OPSs are permissions from politicians, ward councillors, environmental health bodies, as well as funding. TB HIV Care explains that since Cape Town residents do not want to witness drug use or any related drug activities - OPSs are the solution. These facilities stop public drug use and inappropriate needle disposal (Smith, 2022). Furthermore, OPSs give users needed care, safety and counselling. In addition to lessening overdoses through observing professional staff in their injecting spaces, the program links to hepatitis and **HIV testing (often contracted by needles)** and relevant treatments. Therefore, these centres offer clean syringes – making sure that drug users leave the facility with extra syringes for later use. Often, people inject their tissue, rather than their veins. This can cause ulcers and proves the importance of drug addiction professionals to guide users in OPSs. Despite all these benefits of OPSs, politicians are persuaded by stigma and a long-standing abstinence approach which is outdated and unrealistic (Smith, 2022). Some communities are not sensitised and do not understand the radical implementation of

OPSs; yet, these communities do not want children collecting poorly discarded needles. Other communities understand the need for OPSs and are willing to welcome the concept and facilities. There needs to be a compromise which could lead to a reduction in high statistics linked to drug abuse in South Africa (Smith, 2022).

An expert at TB HIV Care explained some important design characteristics of an OPS (Smith, 2022). There only needs to be one main facility per city with additional satellite services where needed. Currently, Johannesburg does not have an OPS. These centres must be easily accessible, yet they must be in spaces where neighbours will be unbothered by outside congregations. Centres should not have many barriers upon entrance. However, patients must be clearly identified as drug addicts: staff can identify drug users through behaviour and injection markings. Security must be stringent, yet people must not feel victimised. It

is essential to take these factors into account when designing my building. Theft is unavoidable as addicts often steal to be able to purchase drugs. Drug injection cubicles need sanitary surfaces, available clean syringes, cotton balls to remove undissolved drug particles, drug preparation cups and ‘sharps’ disposal containers (in order to reduce cross-contamination) (Smith, 2022). A post-injection relaxation space heightens the facility’s support system (Smith, 2022). Many of these spaces and requirements are the same as North Richmond Community Health’s injecting facility and have universal effects wherever implemented. Both local and international drug implementation methods are relevant in Modderfontein.

The radical implementation of OPSs is holistic and is a form of harm reduction (Smith, 2022). Similarly, driving a car requires the ‘*practice of harm reduction by putting on a seatbelt, preventing*

harm upon yourself and others’ (Smith, 2022). People will continue using drugs despite laws and backlash. The solution is to advocate safe and reduced use which may require a mindset shift (Smith, 2022). Pro-abstinence people are not affected by the addict’s rehabilitative process and do not necessarily grasp the addict’s suffering during abrupt withdrawal. Abrupt withdrawal can escalate underlying mental health issues. Drug addicts need sustainable rehabilitation (Smith, 2022).

Citizens will likely see the facilities as beneficial once they are in action. On a human scale, these facilities allow people to ask for help without the worry of being arrested. The combination of taking drugs in the safest possible environment; being able to seek help for both mental and physical health (HIV and hepatitis testing and treatment), as well as connecting with people who truly understand drug users’

situations – all these facets create holistic rehabilitation. I would like to use this approach and layer it with architectural theories and materiality whereby the space caters to the programme. Vulnerable people become the core while programme, theory and architecture cater to these people.

I have extracted important ideas from this case study that I can incorporate in my design. Firstly, I will include various spaces for different drug treatments. Secondly, perhaps the education facility can include a research aspect. Researchers can **examine and compare drug statistics in Modderfontein’s** surrounding communities through time. This can allow the building to target its education strategies in specific areas through community-based programmes and workshops. Thirdly, I have learned where to locate an OPS and how to support its success through design. These design principles include access and security. Lastly, drug

decriminalisation (which can lead to an OPS in my building) will likely improve South Africa’s drug statistics through community comfort, addict safety and harm reduction. South Africa’s current drug legislation needs to be explored.

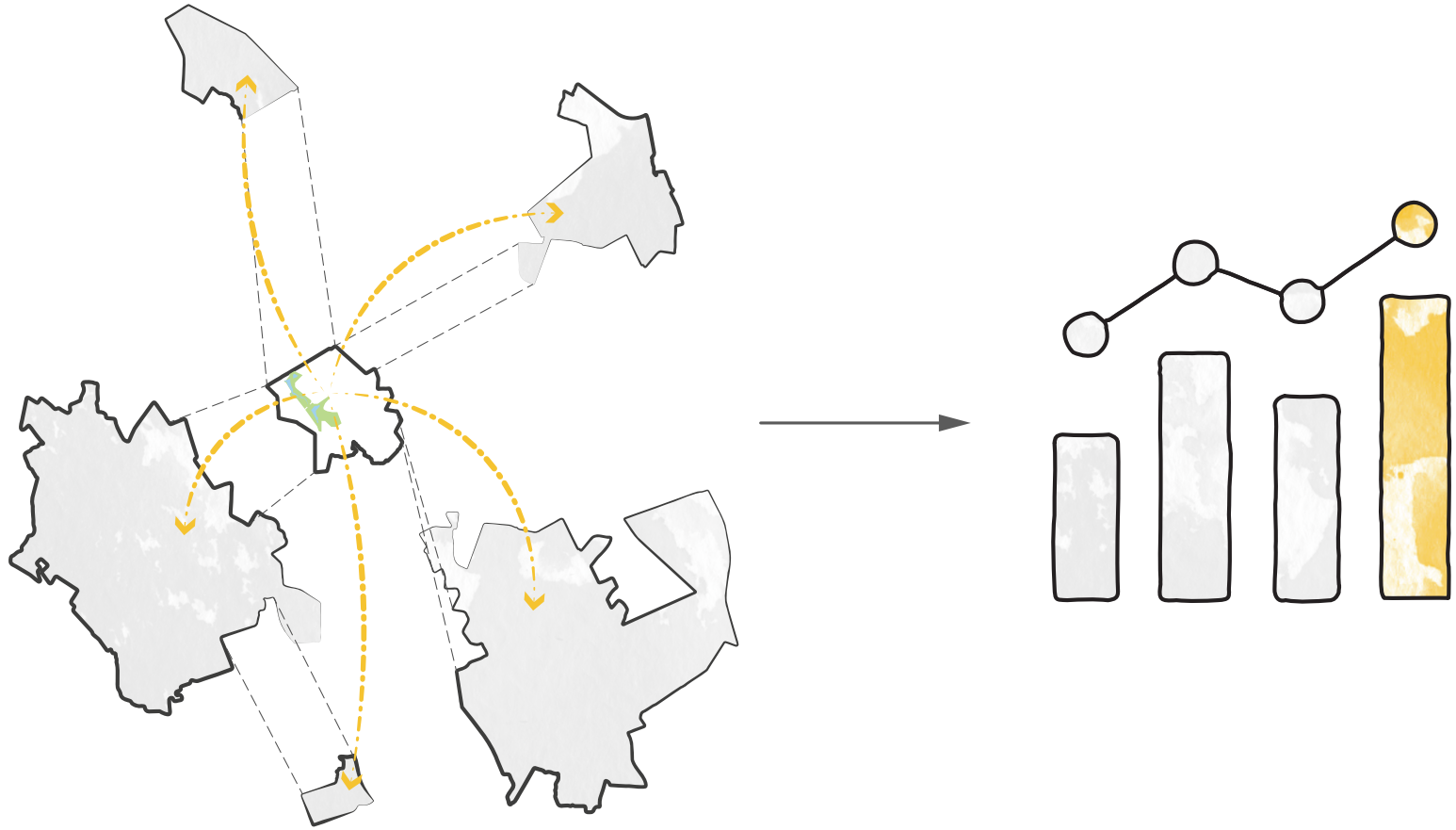


Fig. 3.9
Surrounding Community Drug Statistics Through Time
(Conducted by Building)
(Author, 2022, extracted from Google Maps, 2022)

Drug Legislation in South Africa



Fig. 3.10 Medicines and Related Substances Control Act of 1965 (Yumpu.com, n.d.)

It is important to understand the local context of drug legislation and the possibility of drug decriminalisation in South Africa's future.

In February 1999, parliament implemented the foundation of the national drug management structure: The National Drug Master Plan (UN ODCCP, 1999). This governmental action stemmed from the local drug issue which was *'disjointed, fragmented and uncoordinated'* (UN ODCCP, 1999). Various governmental plans were attempted in previous years, but they were not extensive enough for South Africa's worsening drug issues. In response, the Minister of Population Development and Welfare requested the creation of a National Drug Master Plan by the Drug Advisory Board in 1997. The goal was to *'bring about a decrease in the availability of drugs (control and law enforcement) and the demand for them (through prevention, treatment, and rehabilitation)'* (UN ODCCP, 1999).

The plan was decelerated after the national elections in 1999 and the changing of the government cabinet (UN ODCCP, 1999). The implementation was carried out by the South African Police Service's Narcotics Bureau (SANAB). Through this umbrella organisation, the country provides rehabilitation means for drug addicts through NGOs. These include the South African National Council on Alcoholism and Drug Abuse (SANCA). SANCA has various drug treatment facilities throughout South Africa. The organisation coaches drug abuse therapists and other relating consultants such as educators and social workers. However, funding is insufficient and services are inadequately dispersed through South Africa. There is also not enough collaboration between educational and health divisions working in the field. Therefore, scarce funding is provided for drug avoidance. Drug avoidance strategies are formed by NGOs and worried residents, but skills and mandates are restricted

(UN ODCCP, 1999).

It is impractical to establish the precise capital needed for the government to spend on drug reduction pursuits (UN ODCCP, 1999). There has been a decrease in spending on rehabilitation. Treatment facilities have shut down and there has been little development towards implementing centralised control of expanded rehabilitation schemes by the health department. An increase in the avoidance program budget would be needed for the government sectors to increase their NGO support. The government has created a few avoidance programs (UN ODCCP, 1999).

Harm reduction is one of the Government's drug mandate lowering policies (UN ODCCP, 1999). Its goal is to lessen the harm linked to drug use, rather than to eradicate drug use as such (UN ODCCP, 1999). Perhaps drug decriminalisation may occur

as a form of harm reduction – given its resulting statistics seen in other countries. OPSs are other forms of harm reduction. This aligns with South Africa's legislation. South Africa's National Drug Master Plan aims *'to build a drug-free society together and to contribute to solving the global problem of substance abuse'* by lessening crime associated with drugs, maintaining public health, guarding youth, supporting information distribution, bettering communication on drug abuse throughout the country and inspiring international connection (UN ODCCP, 1999). This international connection is supported by the *'Medicines and Related Substances Control Act of 1965'* in which developments discussed in UN Conventions on drug use are supported by South Africa (UN ODCCP, 1999). According to the 'Medicines and Related Substances Control Act of 1965', South Africa may be open to decriminalising drugs. This will be particularly useful in

terms of my building: it makes the implementation of an OPS more of a future possibility rather than just a floating idea.

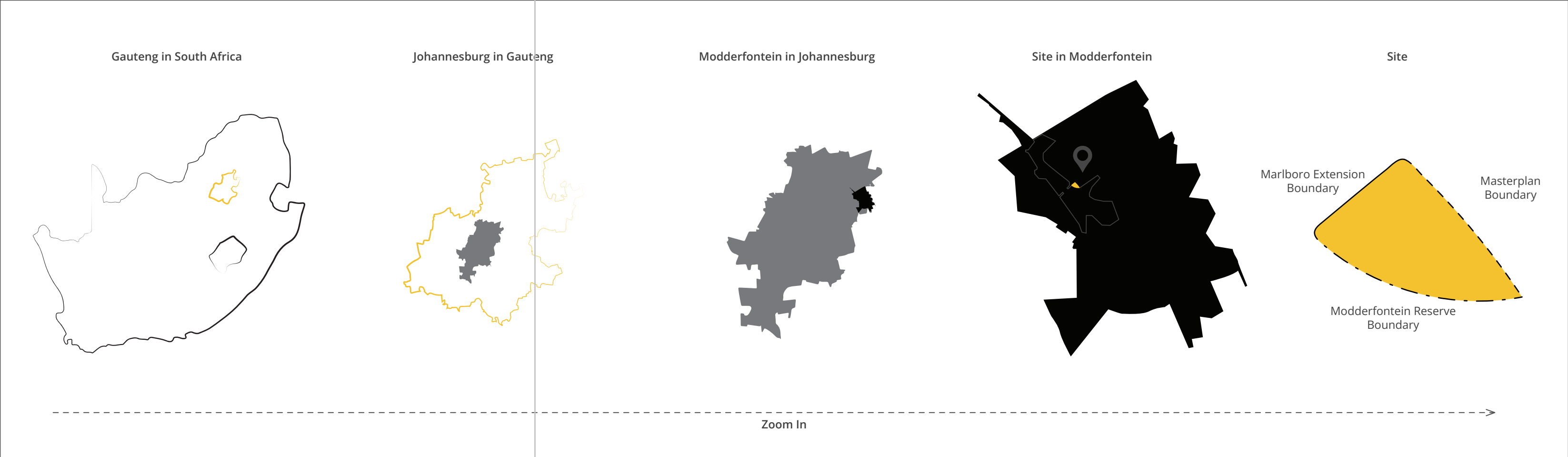
Introducing OPSs in South Africa would create 'order in chaos'. This chapter's name *Order in Chaos* is linked to harm reduction. In this case, chaos is drug abuse and order refers to ways of lessening chaos. In this chapter, order is decriminalising drugs in Portugal, implementing injecting rooms in Portugal and Australia, and aiming to decriminalise drugs in South Africa. OPS harm reduction does not remove chaos through banning drugs. Instead, 'order' or professional observation finds its way into the chaotic realm.

Modderfontein is a green area in the East Rand in Gauteng, South Africa (SA-Venues, 2022). It is a small town which offers an ‘escape’ through nature-embedded activities such as its golf club. Modderfontein lies adjacent to bustling commercial areas in Johannesburg and Sandton (SA-Venues, 2022).

This chapter will delve into my site. It will be explored through a historical timeline of Modderfontein, a basic location understanding, mapping explorations, recorded site visits and various scales of rehabilitation that will be decomposed and then re-composed. These scales will explore the relevance of Modderfontein as a drug rehabilitation centre site in its industrial and natural elements. Firstly, on a medium (site) scale, Modderfontein’s chemical dynamite-damaged and polluted-water wounds will be addressed, in addition to the planting of alien trees that strip the site of its

identity. Secondly, Modderfontein’s larger-scaled surrounding communities will be traced from past to present times. Topics covered will include Apartheid’s racial delegation of areas and the current and potential future non-legislative separation between communities. Lastly, the smallest scale will cover rehabilitating addicts and their lived experience of grappling with the undercurrents of South African society which include ruptures and unresolved trauma from Apartheid, along with a post-colonial landscape, work-related stresses and the social normalisation of alcohol. This will lead to a discussion on the need for drug rehabilitation and the stigma associated with it in Johannesburg.

Fig. 4.1
Scales of Context
(Author, 2022, extracted from Bossman, 2010; GADM, 2018; Htonl, 2008)



Contextual Analysis | 04

Modderfontein Timeline

A Brief History

The significance of extracting historical contextual roots is embedded in phenomenology: meanings of an area originates from its stories and representations which change through time.



Racial

South Africa has a history of racial segregation and control through alcohol. This will be discussed in the section on the 'Landscape of Substance Abuse within the Local Communities'. This inequality was seen when researching Modderfontein's history. My building aims to be inclusive and welcome people across demographical groups to be educated about drugs and seek help against addiction. It is emotionally difficult but necessary to decompose history and re-compose a gathering area for Modderfontein's surrounding communities.

Exercise

Healing the body is an essential component in drug rehabilitation (Fatima, 2022). One tool for physical healing is exercise. This theme is relevant and evident in Modderfontein's past activities and current outdoor exercise happenings that are adjacent to the site (this will be delved into later). It is essential to make these activities accessible through the building design.

Explosion

Dynamite explosions are dispersed through Modderfontein's history - some resulted in fatalities and scarred earth. However, nature has since become a healing tool - growing and mending the earth. I wish for nature to be used as a design tool in helping to heal drug addiction. Just as underlying psychological conditions must be decomposed in order to rehabilitate people, decomposing what caused the damage to the land is necessary to understand in order to appreciate the process fully through which nature has now healed.

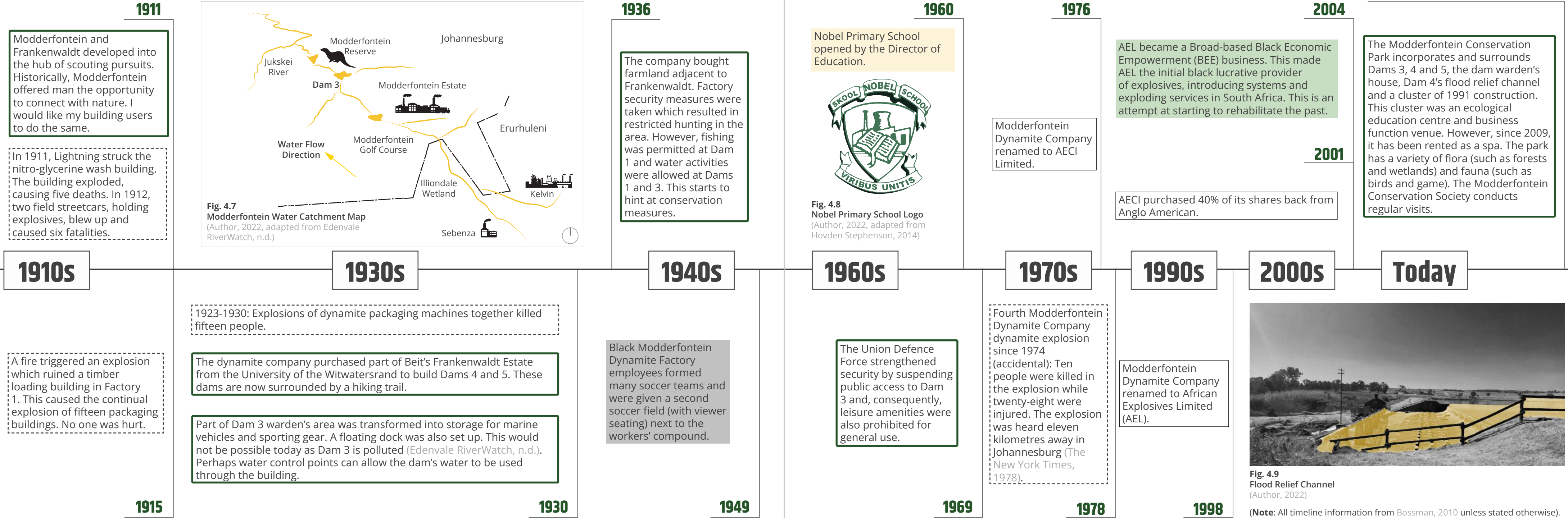
Education

An educational drug programme is needed in my building to both destigmatise drug rehabilitation and to educate surrounding communities about drugs. Modderfontein's historical communities show clear efforts to better their education systems (as seen in the timeline).

Nature Reserve

Modderfontein's Conservation Park area began as a hunting ground, yet today, it is protected. Its dams were used for fishing, yet today, its water is polluted and fishing (catching and releasing) can only occur in Dam 3. This ecologically protected area calls for water (dams) to be healed. Delving into the history of the dams will allow for better implementation decisions. I aim to integrate water sustainability into my design to rehabilitate the site.

1907



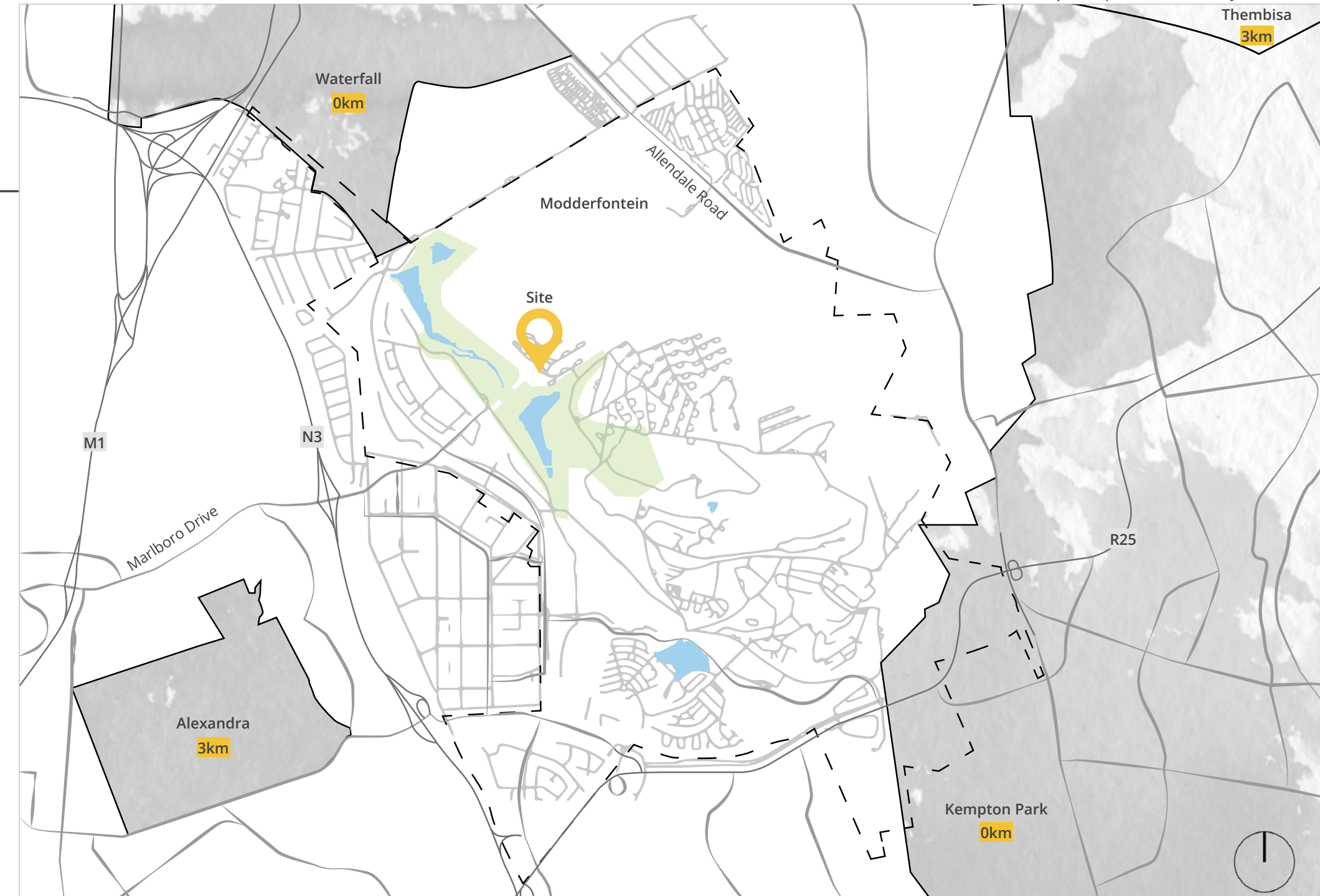
Location

The site context is a greenfield in Modderfontein near Taroko Farm and the Modderfontein Reserve. It lies between Kempton Park, Sandton and Waterfall, as well as the densely populated areas of Alexandra and Tembisa. I would like my building to cater to a range of diverse communities from these areas.

My site is located next to the **Modderfontein Reserve**, close to the **N3 highway** and adjacent to a potential Marlboro Drive extending road that could **connect Allendale Road and Marlboro Drive**. Marlboro Drive would need to be extended which is in M&T Development's Masterplan (M&T Development, 2022). However, it will only be built once its adjacent structures are in the process of construction (M&T Development, 2022). In this way, the drug rehabilitation centre can be easily accessible from Tembisa and Alexandra, as well as Sandton, Waterfall and Kempton Park. OPSS need to be easily accessible and

from an accessibility standpoint, this site is suitable. Moreover, the site is embedded in the green, construction-bare landscape and creates a sense of discretion which is relevant for the programme. This does not limit the building to a plot, allowing for a somewhat larger threshold between the streets' edges and the building's envelope. However, surrounding buildings will be constructed in future. Therefore, the building must be designed in order to allow a sense of discretion around the drug rehabilitation area, despite its surrounding context of continual urban development.

Fig. 4.10
Site Location
(Author, 2022, extracted from
Google Maps, 2022)



Mapping

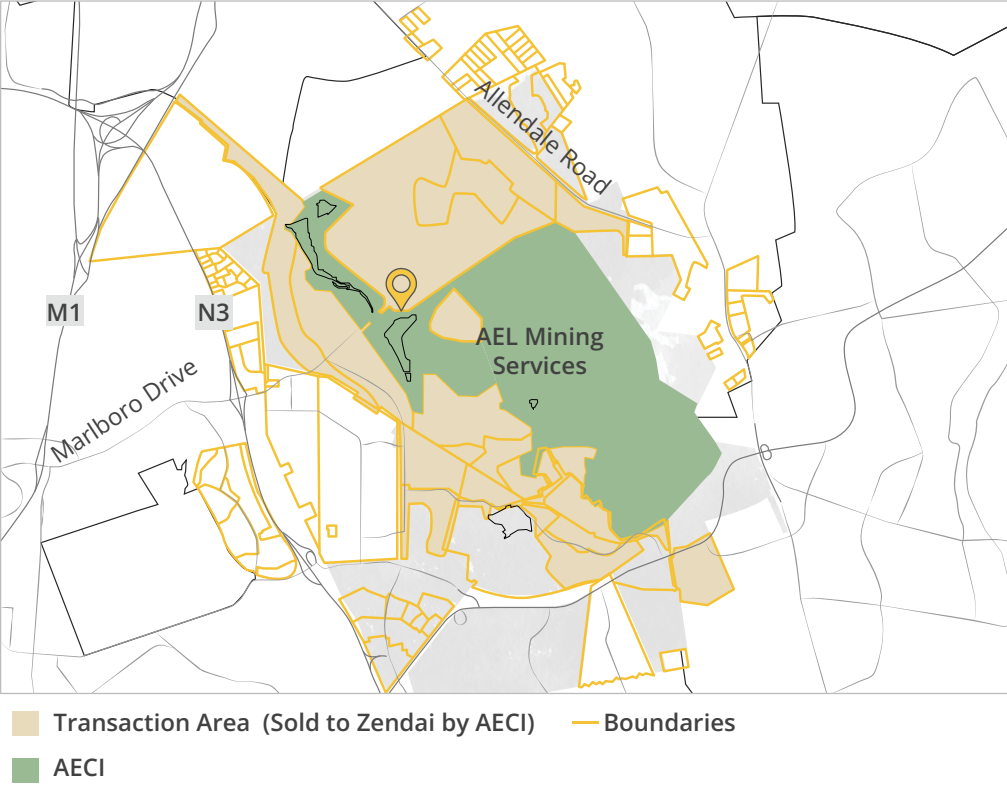


Fig. 4.11
Ownership
(Author, 2022, extracted from Reboredo, 2021)

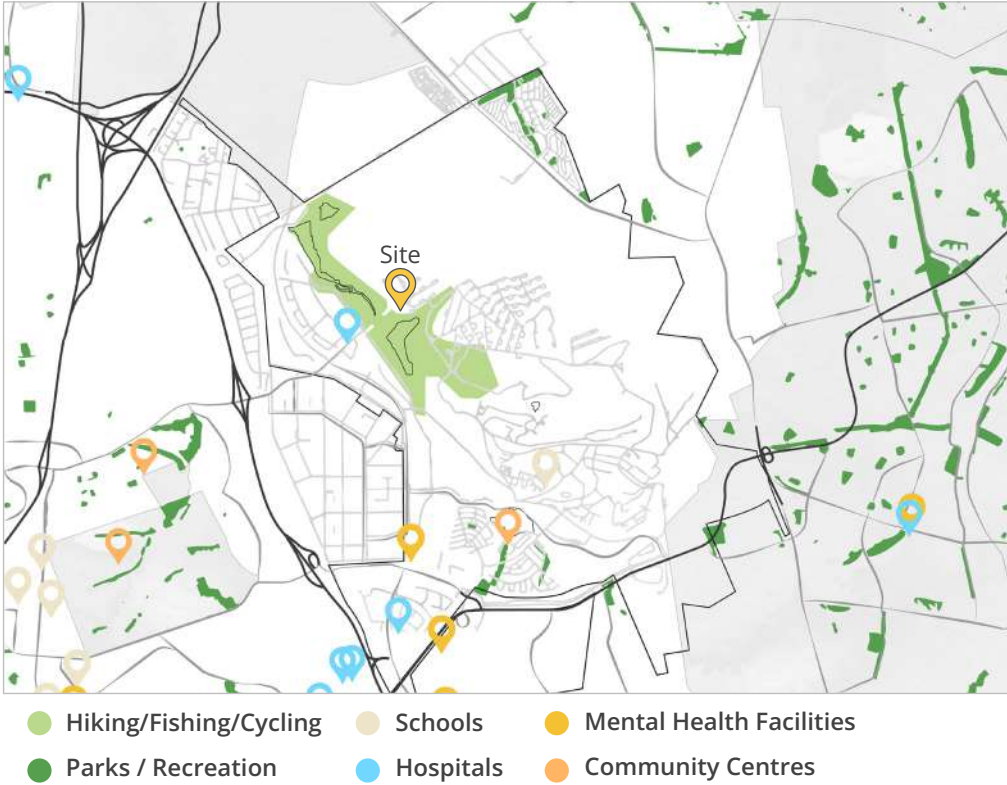


Fig. 4.12
Facilities
(Author, 2022, extracted from Google Maps, 2022)

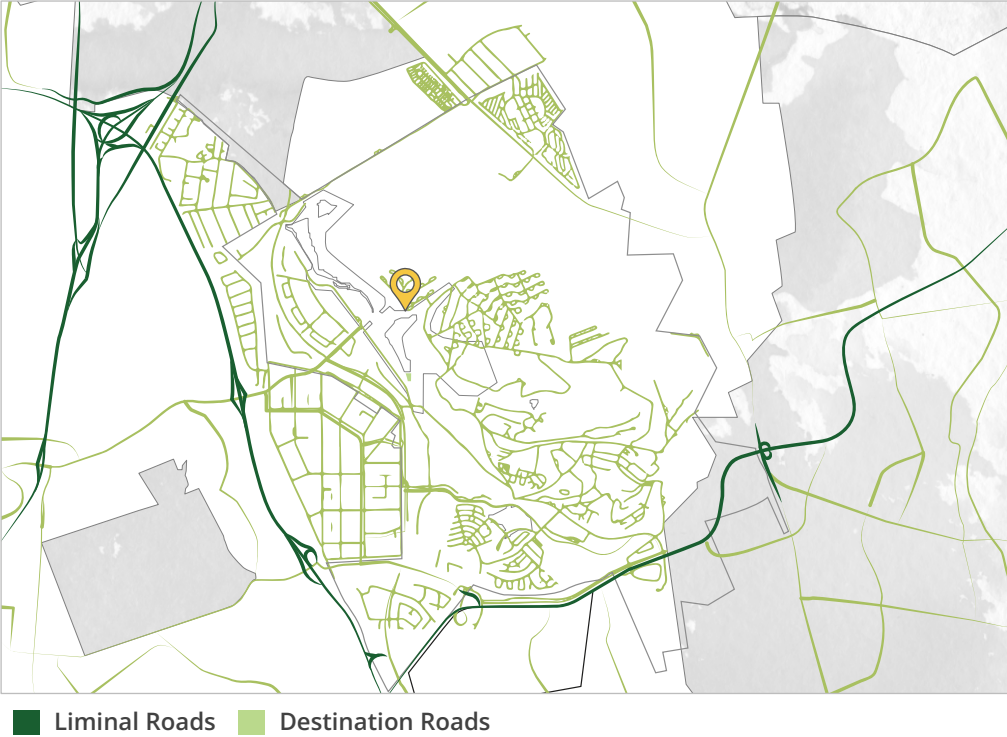


Fig. 4.13
Transport
(Author, 2022, extracted from Google Maps, 2022)

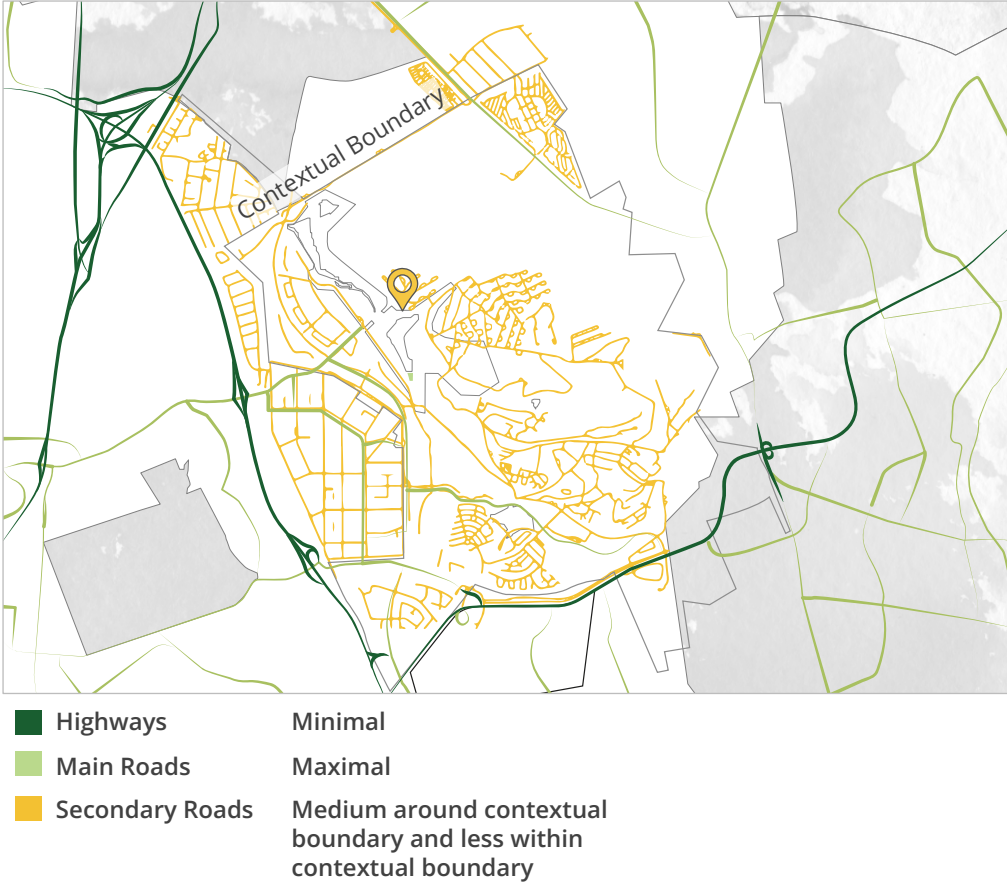
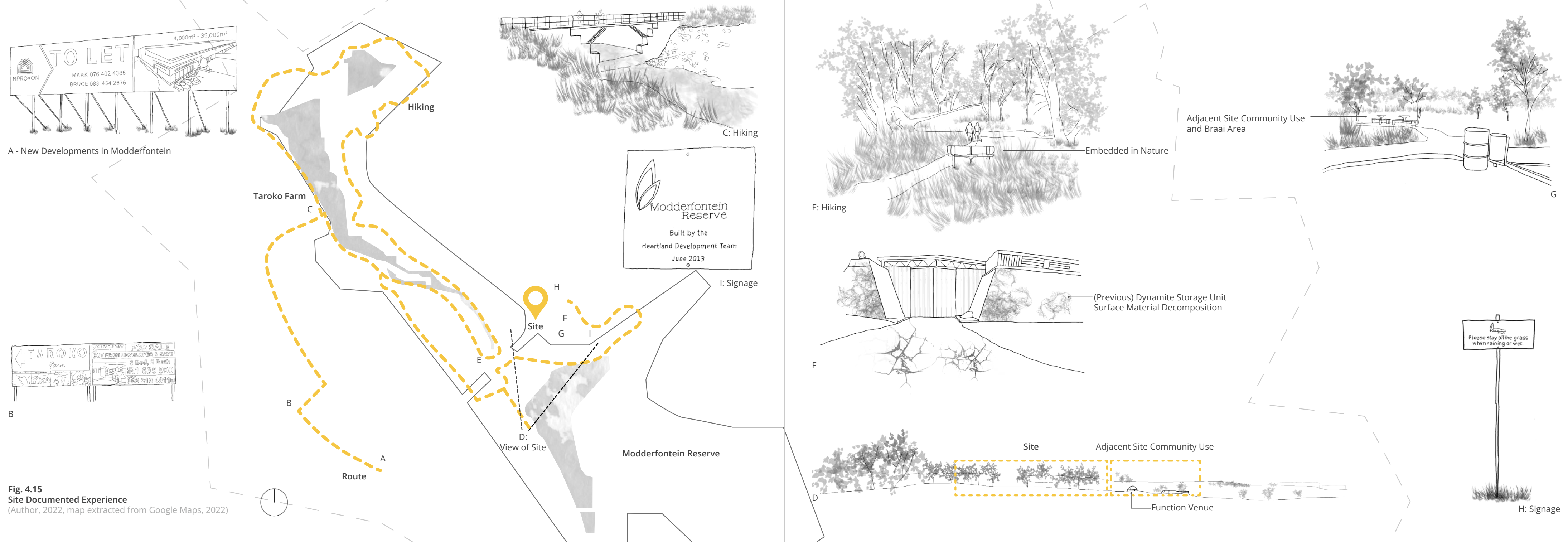


Fig. 4.14
Pedestrian Movement
(Author, 2022, extracted from Google Maps, 2022)





Site Scale: Landscape [Industry Versus Nature]



Fig. 4.16
Chemically Polluted Dams
(Author, 2022, map extracted from Google Maps, 2022)

The thread that ties the Modderfontein site to the drug rehabilitation building includes evocations of chemicals and healing through growth - in which there is an interesting tension between the natural and unnatural.

Chemicals are evident in Modderfontein’s history as it was founded on the need for explosives (Modderfontein Reserve, 2021). Chemicals were also evident in the resulting dynamite explosions (scars) and are seen in the industrial typology (Figure 4.19). The industry is contrasted with the wildlife protection zones of the Modderfontein Reserve that lies in the greenfield. There is an impact of the industrial process on Modderfontein’s landscape which has scarred and decomposed the land by **polluting its streams and dams** (Edenvale RiverWatch, n.d.). Residential construction in Illiondale and industrial pollutants of Sebenza have intruded into wetlands and flood plains. This polluted water

flows through the Modderfontein Golf Course, Modderfontein Estate and Modderfontein Reserve respectively. Various metro divisions have attempted to better this water pollution, flooding, and erosion issues. However, projects have either halted or failed. The polluted water has caused a decline in various fauna species in Illiondale, Sebenza and Isandovale waters (Edenvale RiverWatch, n.d.). The rehabilitative water element in my building (water control points) will transport cleaned dam water into the building – as previously mentioned.



Fig. 4.17
'Unsafe Water' Sign at Modderfontein Reserve
(Author, 2022)

The yellow areas are residential buildings and housing developments that are **under construction** (Figure 4.19). I noticed many development billboards when I was travelling to this area which surrounds the greenery. Some buildings such as schools and shopping centres are in a masterplan for the area. This masterplan should have sustainable water and land network guidelines given the state of the site (and the world). No matter how sustainable my building is, it cannot alone heal Modderfontein. The masterplan and existing buildings need to be involved in order to form a solution. There is friction between the natural reserve and the unnatural surroundings that already exist and those still planned for future construction. A blend of the natural and unnatural could be incorporated through my building, and hopefully then also implemented into other surrounding construction projects.

Taroko Farm is part of the Modderfontein Reserve. It is a beautiful green space that has the ‘Fourways Farmers’ Market’, hiking, fishing, and a nursery (Modderfontein Reserve, 2021). It is as if the greenery has healed the scarred landscape after the damaging explosives past. I have planned for the drug rehabilitation centre’s exercise and natural programmes to work in conjunction with Taroko Farm. Exercise is an important aspect of drug rehabilitation. Additionally, including **green spaces** aligns with Florence Nightingale’s writing and therapeutic architectural approaches for this **rehabilitation** centre. These ideas allude to the site as a rehabilitative tool for both the scarred landscape and for individual addicts.



Fig. 4.18
Taroko Farm and Modderfontein Hiking and Cycling Trail Map
(Author, 2022, adapted from Modderfontein Reserve, n.d.)



Fig. 4.19
Typology Map
(Author, 2022, adapted from Google Maps, 2022)

Flora History

Trees are an additional site-scaled aspect that requires rehabilitation. Historically, the trees in Modderfontein were planted for social order, creating green points in a brown-yellow veld environment (Behrens, 1999). The trees planted were exotic - tampering with the site's identity (Modderfontein Reserve, 2021). Modderfontein Reserve is a private wildlife park overseen by Endangered Wildlife Trust. A large amount of time and money has been devoted to the restoration and removal of alien plants. Now, the area contains various grasslands, wetlands and rocky outcrop features (Modderfontein Reserve, 2021; Edenvale RiverWatch, n.d). I plan to include nature in my building and provide landscape features. It will be necessary to **ensure these plants are indigenous** so that the landscape of flora rehabilitates the land.

In the aerial map illustration from 1938, one can see how the

aforementioned trees start as an evident feature throughout the area. Some of these trees are removed over time in the Modderfontein Reserve area. Perhaps alien trees are being removed or areas cleared to create space for outdoor activities, such as hiking. There is also a clear growth in urbanisation in 2002. The constructed dams are juxtaposed with the **natural** water experience which they seemingly provide, much like the juxtaposition of the rural feeling of the immediate site against its neighbouring industrial surrounds. It will be interesting to tussle between these ideas of the urban versus the ecological landscape in my building.

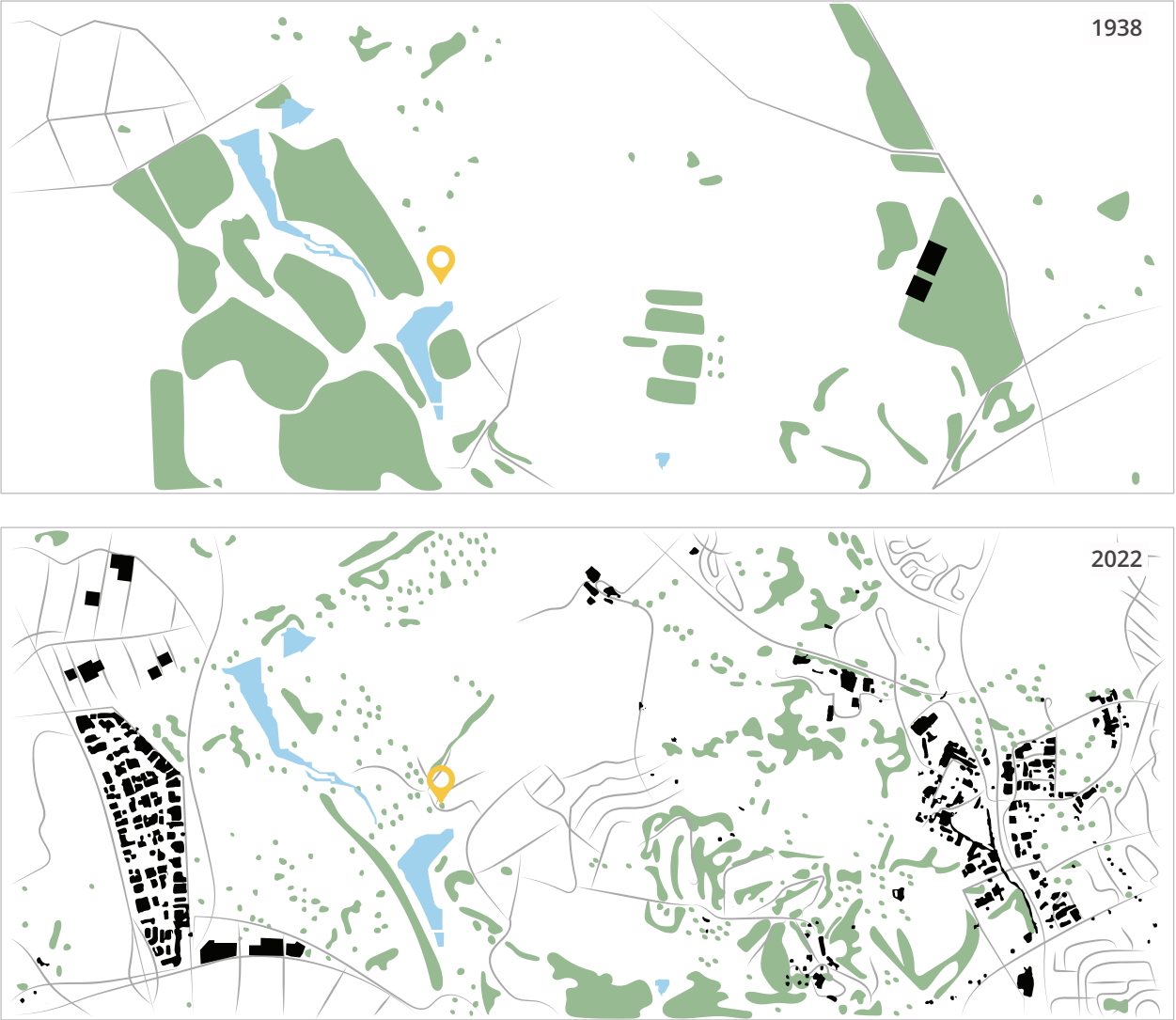
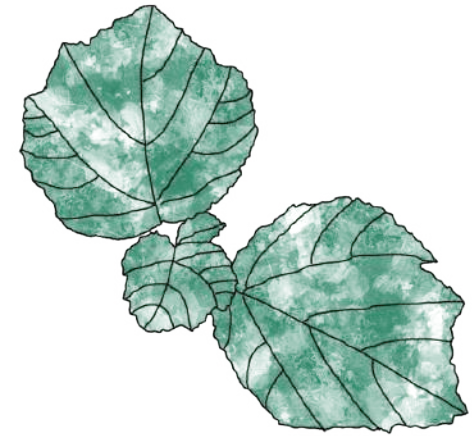
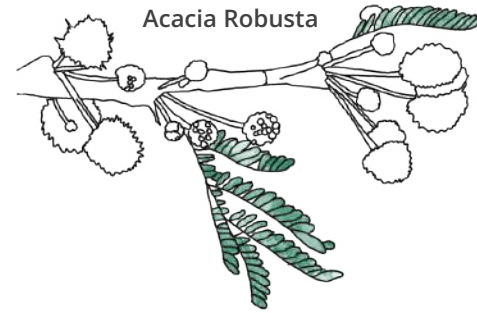


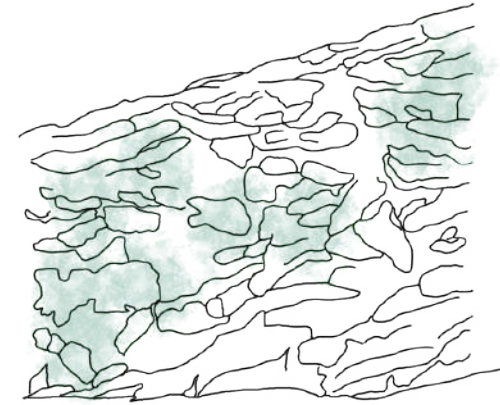
Fig. 4.20
Maps Through Time
(Author, 2022, adapted from Tom Tom et al., 2022)



Dombeya Rotundifolia



Acacia Robusta



Acacia Caffra



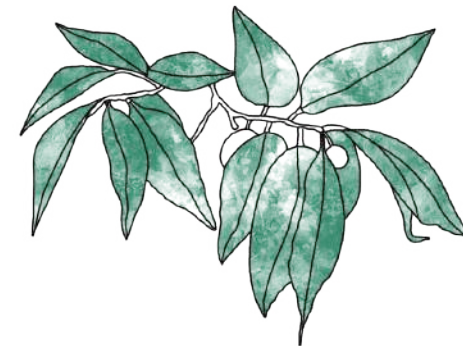
Leucosidea Sericea



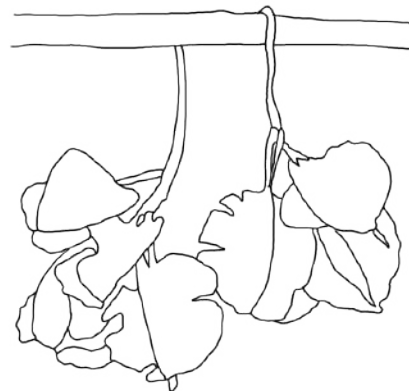
Buddleja Saligna



Olea Europaea (Africana)



Celtis Africana



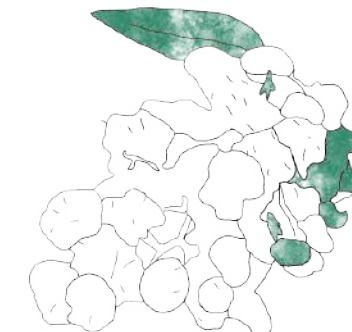
Combretum Erythrophyllum



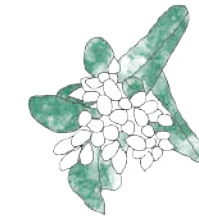
Searsia Lancea



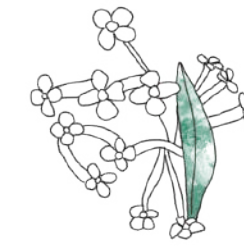
Dodonea Angustifolia



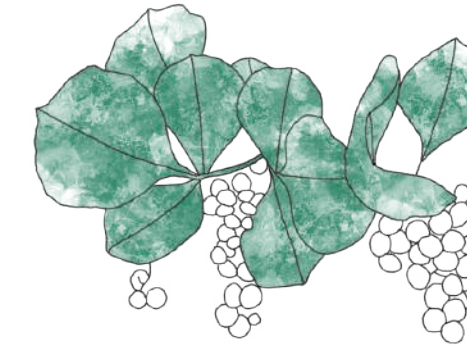
Tarchonanthus Camphoratus



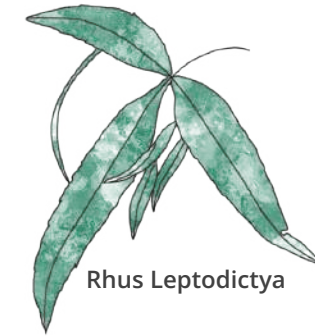
Ethretia Rigida



Buddleja Auriculata



Rhus Searsia Pyroides



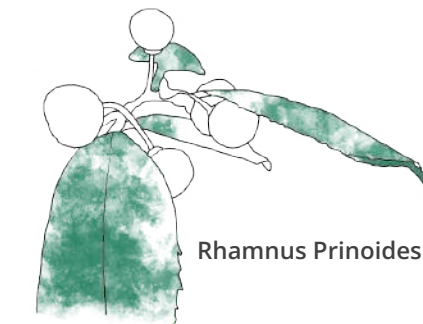
Rhus Leptodictya



Portulacaria Afra



Buddleja Salviifolia



Rhamnus Prinoides

Fig. 4.21
Indigenous Flora in Modderfontein Plant Program
(Author, 2022, extracted from PlantNation, 2020)

Large Scale: Urban Developmental History

On a large scale, Johannesburg has **inter-fragmented communities** in its urban settlements and people. The fragmented areas are a result of Apartheid planning, economic boundaries, and the creation of gated communities versus townships as class continues to be a faultline of division.



Fig. 4.22
Surrounding Community Map
(Author, 2022, map extracted from Google Maps, 2022)

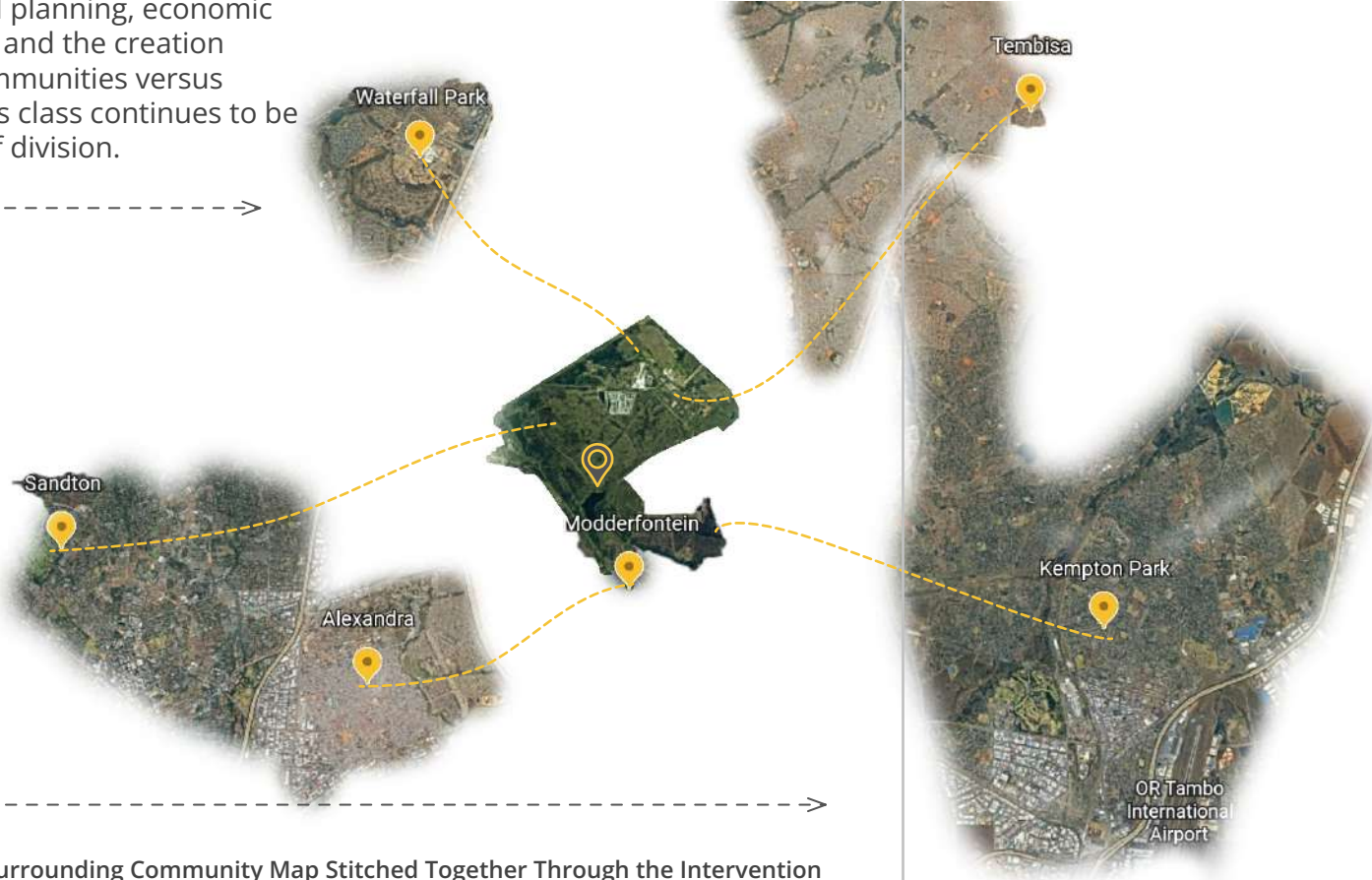


Fig. 4.23
Fragmented Surrounding Community Map Stitched Together Through the Intervention
(Author, 2022, map extracted from Google Maps, 2022)

Mapping *Figure 4.24* aimed to gain an insight into the **Apartheid city, segregation**, and the historical development of Alexandra, Tembisa, Kempton Park and Sandton. There is a clear history of segregation and exclusion in Modderfontein's surrounding communities. Areas were delegated according to racial classification during Apartheid. This racial delegation has had an impact on today's demographics whereby most people living in Alexandra and Tembisa are black African. However, Sandton and Kempton Park are more varied racially despite their Apartheid allocation to white people. Modderfontein appears to have become a large area of land that disconnects and limits access between urban developments. It is as if these areas were organised around the limited residential and chemically dangerous Modderfontein to emphasise the divide between surrounding areas during Apartheid. Modderfontein's organisational past creates

contaminants that are historical, in addition to being chemical.

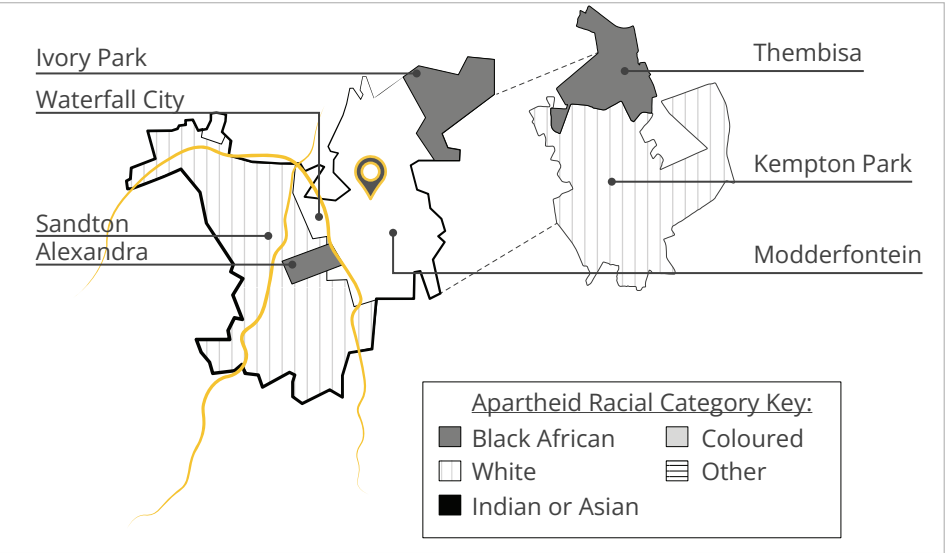
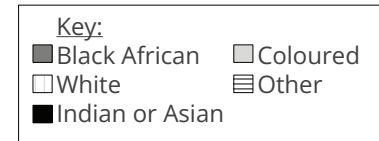


Fig. 4.24
Pre-1994 Delegated Residential Areas
(Author, 2022, adapted from Machard and McKay, 2015)



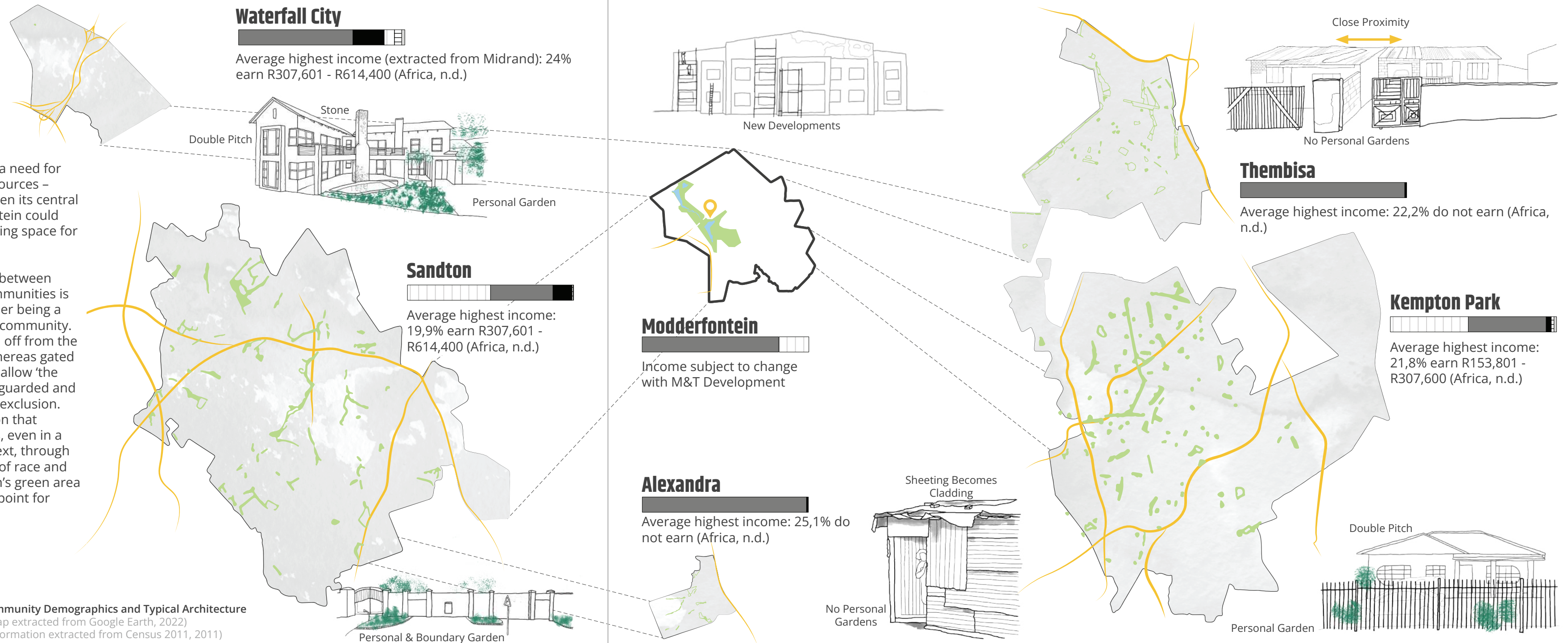


It is necessary to **decompose the demographics** and existing frameworks of these communities so that I can create a re-composing welcoming building. These communities have a large economic difference between them. This reflects in the homes which people can afford to live. The architectural sketches of each area show typical residential structures which feed into the idea of phenomenological archetypes. There is a great divide in the way that people live in these areas; this influences the positioning of the Modderfontein Reserve as a partially accessible natural resource. Even the word 'reserve' emphasises exclusivity. The study of green space is indicated in each area which shows their densities. The townships of Alexandra and Tembisa have homes that are grouped densely which decreases their personal green or breathing spaces. Additionally, access to, and the number of public amenities provided, is limited - compared to those on offer to people living

in Sandton. There is a need for people to access resources – perhaps for free. Given its central location, Modderfontein could become this welcoming space for all.

An additional divide between the surrounding communities is their dynamic of either being a township or a gated community. Townships are gated off from the 'fear of the Other' whereas gated communities do not allow 'the Other' in, serving as guarded and surveyed pockets of exclusion. This is a phenomenon that reproduces divisions, even in a post-apartheid context, through an intersection now of race and class. Modderfontein's green area becomes a meeting point for these communities.

Fig. 4.25
Surrounding Community Demographics and Typical Architecture
 (Author, 2022, map extracted from Google Earth, 2022)
 (Demographic information extracted from Census 2011, 2011)



Modderfontein's future organisation has both exclusionary and welcoming elements. The critique of the upcoming masterplan for the Modderfontein area is that it could potentially become yet another **gated community** as seen in *Figure 4.26*. Yet, I believe Modderfontein forms a healing opportunity to address the surrounding communities' historical issues.

A community-based facility within a gated community is not sustainable. Therefore, I am aiming to create an inclusive building that serves as a resource for all surrounding neighbourhoods. My building must create edges that welcome people. The community drug awareness centre's goal is to educate people, while offering a supportive drug rehabilitation centre for those that need it. This building cannot stand alone in improving the area. In future, the masterplan brings developmental improvements of affordable housing (purple areas) as well as

job opportunities in its factories and transport – which would see that those living in Thembisa and Alexandra have **easier access** to surrounding factories via the Marlboro Drive extension. Civic amenities such as public spaces and schools are also included in the masterplan.

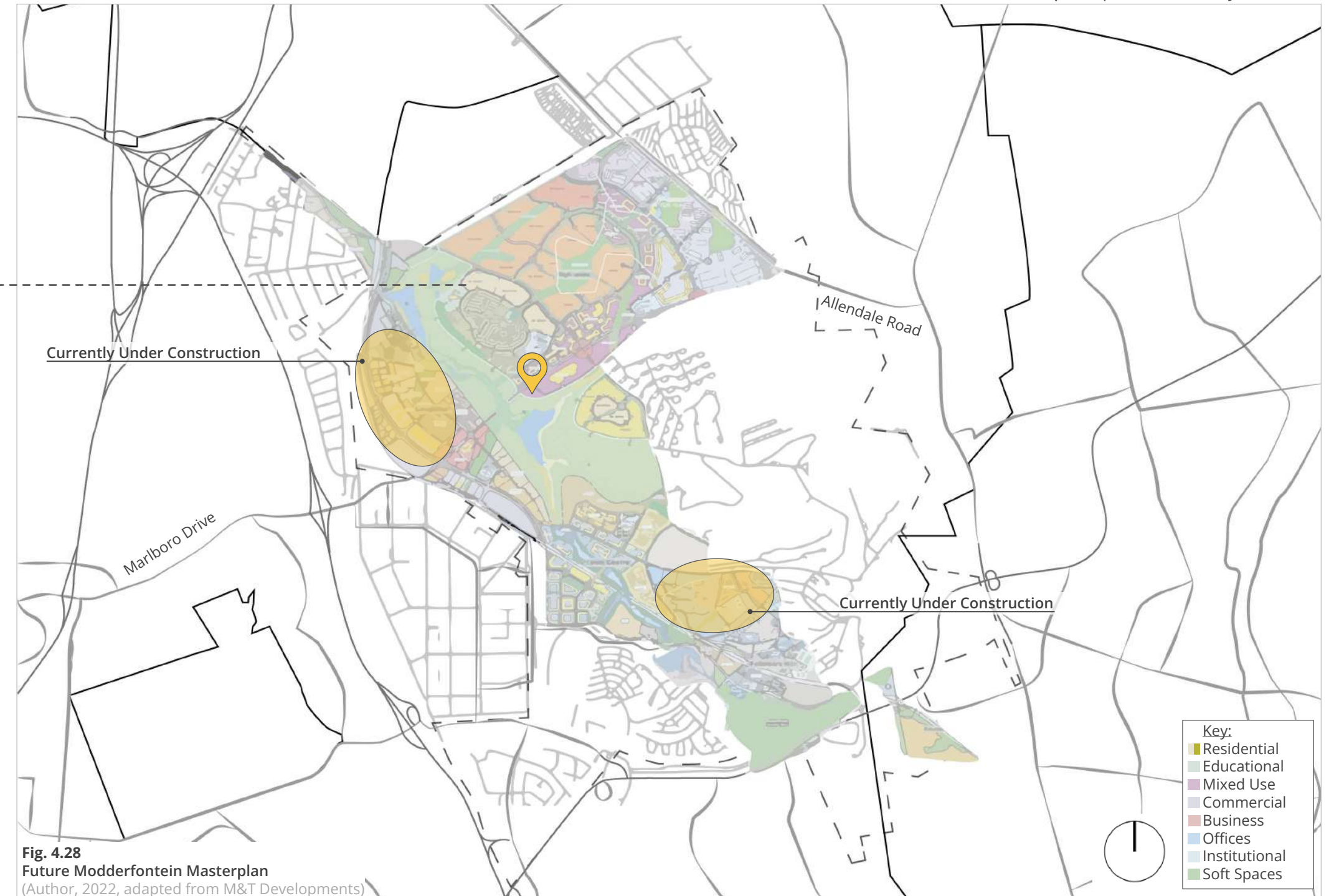
The building will draw surrounding communities in through leisurely retail and educational facilities. This will raise awareness of the existence of the facility and destigmatise drug addiction. Additionally, the inclusion of an OPS will introduce addicts to various methods of drug rehabilitation. The building not only welcomes various communities but also diverse individuals that require differentiated experiences and forms of assistance.



Fig. 4.26
Potential Gated Communities
(Author, 2022, adapted from M&T Developments)



Fig. 4.27
New Road Links
(Author, 2022, adapted from M&T Developments)



Pause

I am being absorbed into my research and forgetting my connection to this project. I have been exploring drug rehabilitative theory and architecture on various levels. However, I must not forget how the research can **better the individual** and their loved ones. Therefore, I would like to explain another personal story relating to drug addiction.

A relative of mine’s **life deteriorated through drug use**. He was exceptionally bright - studying medicine and achieving nicely. He was taking drugs casually, until one occasion when he used a concoction of drugs of which his friends were afraid. This experience inhibited his abilities, damaged his goals and, to this day, he has a full-time nurse and struggles to do tasks for himself.

I am sensitive about my own story. This **sensitivity must be remembered** while delving into how other individuals have been affected by drug addiction.



Fig. 4.29
Sensitivity
(Author, 2022)

Remind

Smallest Scale: The Landscape of Substance Abuse within Local Communities

At the smallest scale, people find themselves addicted to drugs and in need of drug rehabilitation. These people form part of larger communities that have been influenced by South Africa’s past and present. The history of drug consumption in South Africa was dictated by the Apartheid and post-apartheid periods (van Heerden et al., 2009). The discriminatory laws of Apartheid marginalised black South Africans and diminished their sense of belonging in their own country (Sibanda and Batisai, 2021). Post-apartheid South Africa failed to forge a truly cohesive sense of belonging for all. A lack of a sense of belonging and its connection to drug abuse is not only owing to Apartheid-related dynamics (Sibanda and Batisai, 2021). As previously mentioned, additional causes are the country’s urbanised environment and township dynamics. This is especially evident in Modderfontein’s surrounding communities which include both urbanised settlements and

townships. Substance abuse has also impacted these communities through the historic use of alcohol as a means of control, as well as changing social and political dynamics that continue to promote the substance as a ritual of leisure and pleasure. In addition to general work-related stress (and general stress) that can lead to alcohol use, this societal normalisation of alcohol abuse which can lead to addiction, is exacerbated by the ongoing stigmatisation around seeking treatment.

Alcohol has a lengthy and sinister history of being used to preserve the unjust system of power which can be seen in colonial South Africa (Harriman et al., 2022). At the time, farm workers were often paid with alcohol. Alcohol has been used to control workers and switch their focus away from their oppressive working conditions, thereby curbing striking and other potential protest actions (Harriman et al., 2022). This was also evident in the mining realm where beerhalls

and alcohol became workers’ lone sources of comfort (Blignaut and Sithole, 2014). This comfort led to dependence on liquor which morphed into alcohol addiction. Alcohol addiction controlled workers by forcing them to extend their mining contracts (Blignaut and Sithole, 2014).

Substance-related problems extended into Apartheid South Africa that cut across race and class. Extreme social and political changes occurred when trade with the rest of the world resumed (van Heerden et al., 2009). Indeed, there has been a steep rise during the last decades in social problems caused by substance abuse, such as car accidents, mental disorders and crime (van Heerden et al., 2009).

Modern cultural behaviour is another aspect of South African life that may lead to alcoholism. Industrialisation and economic systems are demanding and isolate workers from being able to

implement measures that could promote mental and physical wellbeing. The South African Depression & Anxiety group have documented that a quarter of employees are suffering from work-induced depression (Zwavel Stream Clinic, 2018). It can begin as a gradual process and can prevent individuals from functioning. Often, people do not seek mental help as it is stigmatised and seen as a weakness. Untreated work-related stress can lead to worsened symptoms and regular panic attacks (Zwavel Stream Clinic, 2018). Evidence suggests that work pressures are linked to alcohol use (Frone, 1999). Self-medication in the form of alcohol consumption and other substance usage can become the norm in families and communities. This can lead to multi-generational and genetic substance abuse issues (Galbicsek and Hampton, 2022). Individuals can be genetically predisposed to alcoholism. Alcoholism is associated with certain genes. If these genes are passed down, it

makes individuals more prone to developing alcohol dependence (Galbicsek and Hampton, 2022).

A study on the causes of alcohol abuse was conducted by PhD students at Wayne State University (Abbey et al., 1993). The researchers interviewed 781 participants who had drunk alcohol within the previous month. The results were consistent with previous similar studies: sex, age, managing stress mechanisms, friends’ alcohol intake and social environments all have major effects on those who drink alcohol socially (Abbey et al., 1993). **Alcohol consumption increased** when participants were **more stressed**, or when their **friends were drinking alcohol**. Alcohol consumption is guided by the relationship between one’s reasons for consuming alcohol and one’s environment related to those reasons. These results imply that the risk of alcohol abuse rises when one drinks as a stress-coping mechanism or socially (Abbey et

al., 1993). The brain starts to rely on alcohol to generate various chemicals after a long period of alcohol abuse (Galbicsek and Hampton, 2022). This can lead to alcoholism. Therefore, frequent alcohol abusers struggle to stop and can face withdrawal (Galbicsek and Hampton, 2022).

Once substance addiction occurs, the drive to seek help may not be clear-cut. Dominique Le Claire Rossouw (an experienced addiction counsellor and social worker) has stated that there is a necessity for additional education and recognition of drug addiction (Giovannoni, 2021). Many Johannesburg residents do not consider addiction as a medical disorder. Additionally, Johannesburg communities view drug and alcohol users as dangerous individuals (Giovannoni, 2021). There is an idea that addicts can merely stop their use – which is untrue. Le Claire Rossouw has witnessed addicts’ families’ fury and self-blame, not understanding

the nature of addiction (Giovannoni, 2021).

The above implies the need for a rehabilitation centre that aids individuals from townships and other communities. South Africa has a history of drug addiction so biologically, citizens can be genetically prone to addiction – especially through work-related stress and social environments. Additionally, education is necessary for surrounding communities on healthy stress relievers (such as exercise), and in framing addiction as a medical disorder. This reinforces the need for the drug education facility in my intervention.

Addiction is a psychological condition, in addition to being a bodily dependence. It can be part of a systemic problem that is related to politics, economics, spatial planning and governance.

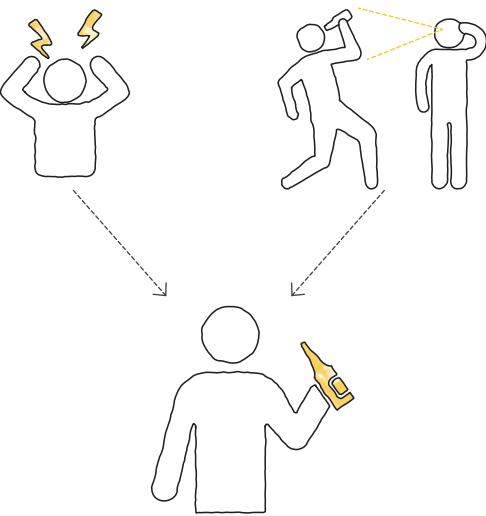


Fig. 4.30
Alcohol Consumption: Increasing Factors
(Author, 2022)

05

Sketch Charette

Fig. 5.1
Taroko Farm Hiking Trail
(Author, 2022)



The conceptual model exploration dealt with juxtaposed themes of chaos and order, as well as decomposition and re-composition which are evident in both my programme and site. *Chaos* refers to the common disordered environment of taking drugs and the unpredictable high that comes with it. In contrast, *order* is the rehabilitative process and observation at OPSs. *Decomposition* refers to the dissection of a problem into simpler pieces which are essential before finding a solution. *Re-composition* refers both to these dissected pieces of the problem that are rehabilitated and the start of a healing journey.

The sketch charette delved into decomposition and re-composition (or rehabilitation) on three scales: fragmented surrounding communities, the site (polluted water, industrial scars, and the landscape bereft of its identity through the planting of alien trees) and individual addicts. On a community scale, perhaps the

educational awareness centre in my building can aid communities to acknowledge and actively seek solutions and interventions that can help in the present. On an individual scale, re-composition addresses the self in three ways: healing the body, addressing underlying psychological issues and re-forming the relationship between the individual and society. This is carried out by empowering addicts to re-integrate with their families and communities.

Themes of decomposition and re-composition led me to *Kintsugi*. *Kintsugi* is a long-standing Japanese artform that deals with glueing (re-composing) something that is broken (decomposed pieces) back together, ensuring that its cracks are still seen (Richmon-Abdou, 2022). The cracks are further enhanced by painting them in gold (Richmon-Abdou, 2022). Traditionally, *Kintsugi* involves sealing broken fragments together with lacquer and using gold powder to form its iconic

metallic cracks (Michener, 2021). It is a celebration of re-composition, the healing process, and imperfections. There is a beauty in repair and scarring which should be exposed. The re-composition process proudly displays decomposition. It honours and dignifies the rehabilitative experience - especially drug rehabilitation. *Kintsugi* can stitch all three project-related issues or scales together.

Japanese philosophy states that the golden cracks add to the value of the re-formed vessel. Each step of the process is a metaphor for life (Michener, 2021). The steps involve a reflective progression with significant intent: it advocates self-love, increases internal strength, allows one to accept their past and heightens one's beauty. **This sensory experience is similar to phenomenology.** Interestingly, *Kintsugi* has been used as an art therapy tool for addictive rehabilitation at New Start Recovery (a treatment facility)

(Michener, 2021). Perhaps *Kintsugi* can become a literal practice in my drug rehabilitation centre.

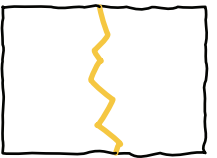
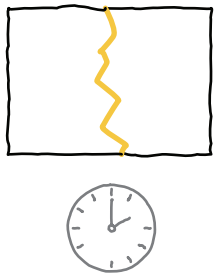
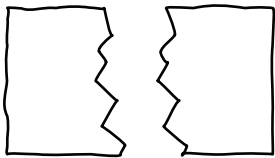


Fig. 5.2
Kintsugi Process
(Sketches: Author, 2022, Nom Living, 2018)

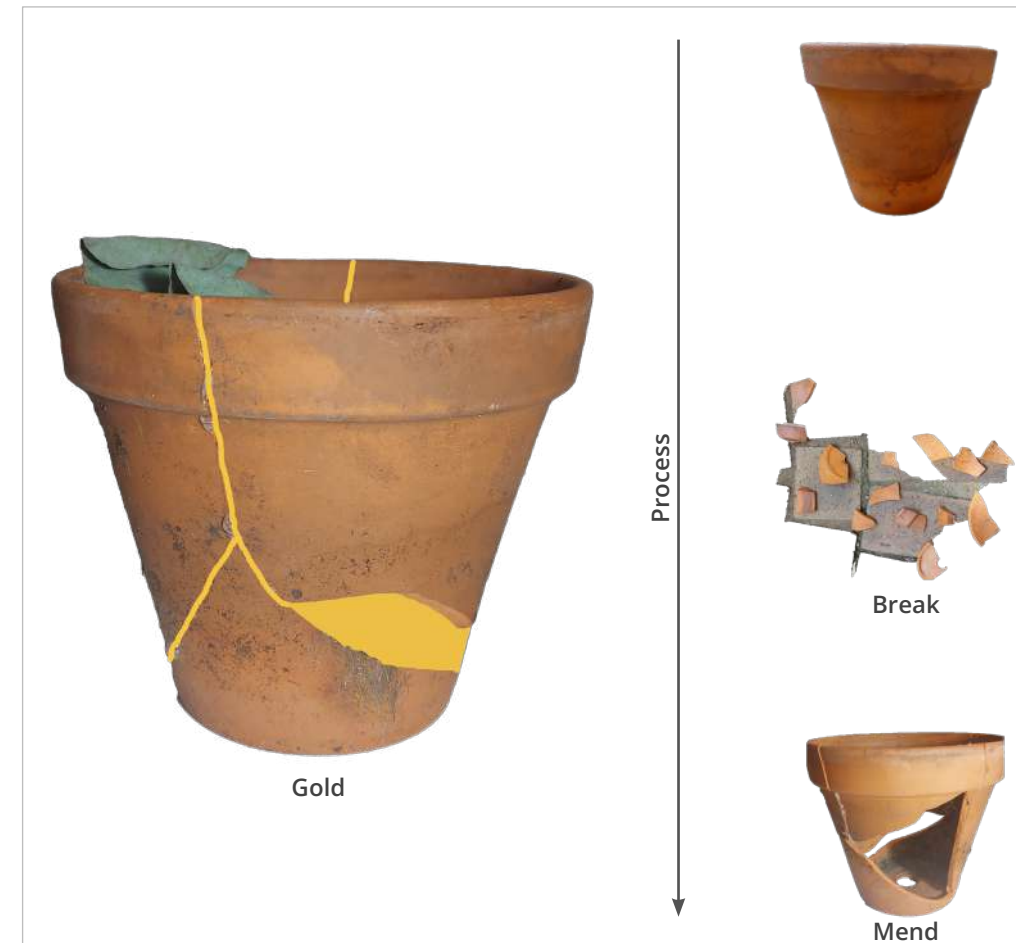


Fig. 5.3
Kintsugi Own Process
(Author, 2022)

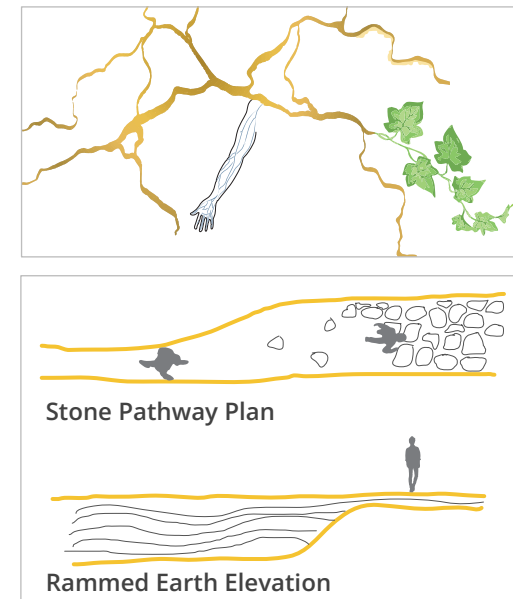


Fig. 5.4
Form Connection: *Kintsugi*, Body, Nature
(Author, 2022)

Fig. 5.5
Kintsugi as Phenomenology
(Author, 2022)

The *Kintsugi* concept model led to form exploration of delicate and (in certain areas) heavy structures along and across the site's contours where the buildings (or cracks) re-compose addicts and allow healing to take place. Rehabilitation re-joins an individual's sense of self to a degree. This glue or the strength to seek help is celebrated. There is also an interesting form connection between the human body (blood pathways), *Kintsugi* cracks and nature (stems and branches). It is as if the cracks or human body will also need **nature to heal** (Figure 5.4).

Kintsugi can be translated into materiality using sensory and wayfinding aspects of phenomenology. Certain material elements ('broken pieces') can be 'stitched' together with other elements. Rammed earth walls can stitch foundation systems below and roof systems above it in elevation. Additionally, this can evoke powerful natural and man-made moments - just like Norberg-Schulz's previously mentioned

philosophy on phenomenology. Perhaps rammed earth's elevation **ribbon-like appearance** can mimic cracks and close into **slimmer platforms** (Figure 5.5). In plan, stone pathways can begin to open into larger spaces (Figure 5.5). This can inform **wayfinding and add to the sensory experience**.

The ideas of decomposition and re-composition using **cracks** led to a second sketch charette exploration. **Chromatography** separates (**decomposes**) pigments into their primary colours (**re-composing** one's original form). To achieve this, I used a green marker to draw a 'crack' circle on filter paper and added water. The rippled resulting colour acts perpendicularly to the drawn circle. The crack or healing spreads outside of the initial line's path. This idea allows rehabilitation to spread over a larger area when applied to the building. It also hints at rust seeping into adjacent materials - as previously mentioned.

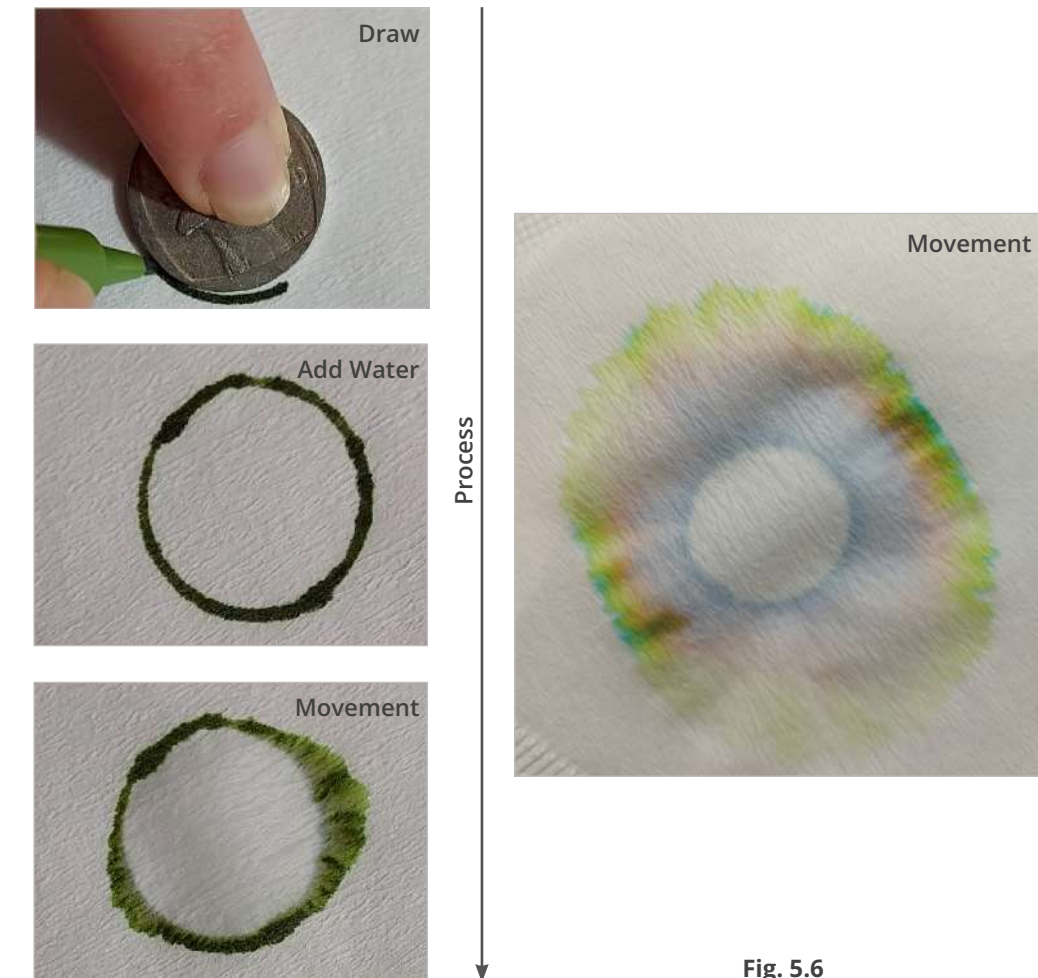
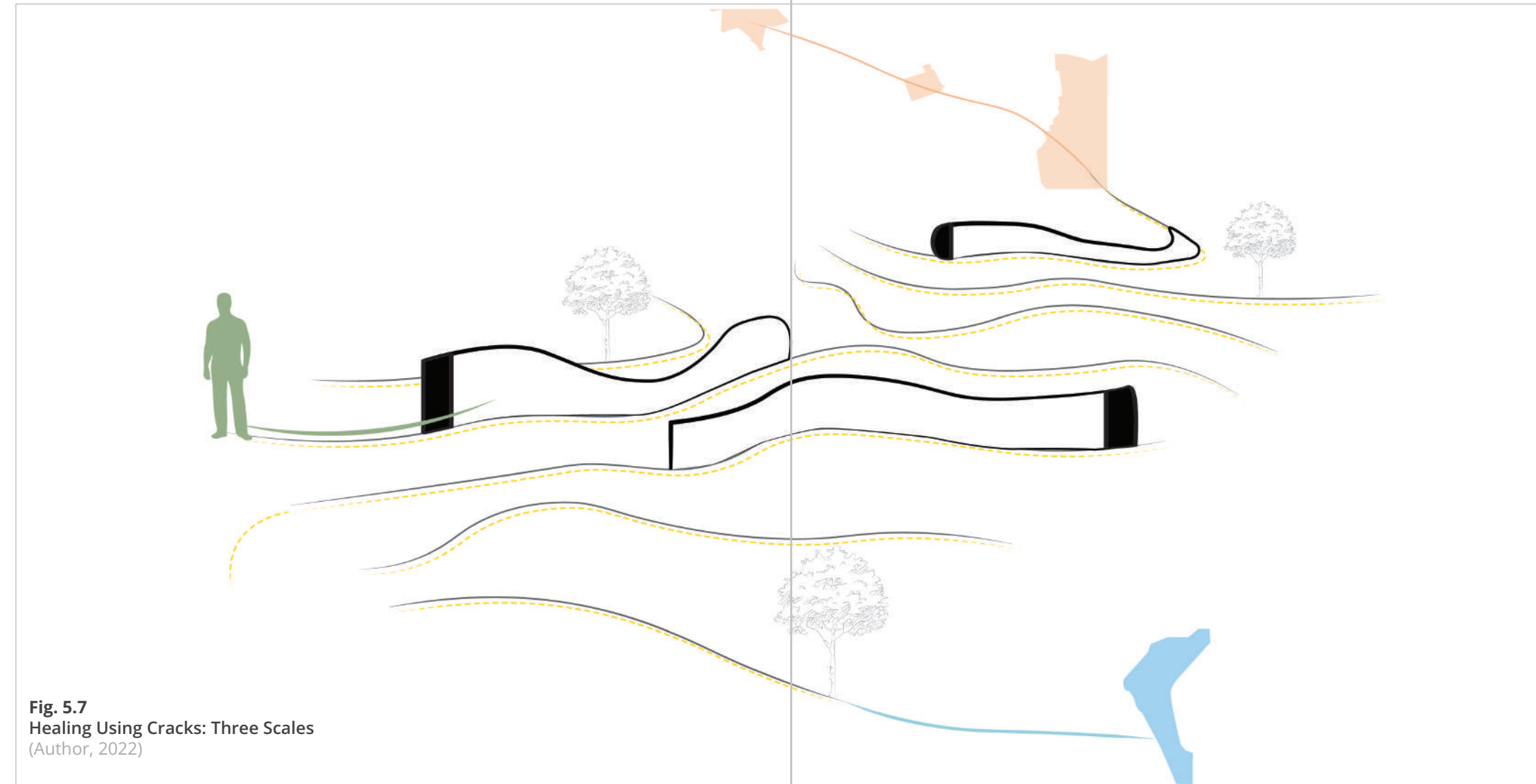


Fig. 5.6
Chromatography Process
(Author, 2022)



The building cracks extend as sustainable tools to re-compose the site in the form of piping towards the existing dam. These pipes become water control points – healing the polluted water. Water control points draw water from the dam and purify it for building use, as the crack leads the water from the water control points into the building. The water rehabilitation process continues perpendicularly to the cracks and into the building's rooms.

Kintsugi rehabilitation extends into rehabilitation pods that overlook the reserve or are embedded in nature. These crack-like spaces inform garden moments, group meeting spots, individual reading nooks, meditative spaces and attenuation ponds. Rainwater runoff is controlled and held on the site through attenuation ponds. This water will also be purified and used in the building.

An additional site healing component will be the inclusion of indigenous plants in the building's

courtyards and landscaping. The cracks and chromatography pigments spread becomes symbolic of the building's intention to extend its reach to neighbouring communities where all people are welcome to seek help or educational opportunities at the drug rehabilitation facility.



Precedents

06

My thesis deals with drug addiction, drug rehabilitation methods, chemicals, healing through natural growth, order, chaos, decomposition, and re-composition. I have chosen the following precedent studies to look deeper at relevant design methods. Firstly, The Foundation Clinic shares my programme type. It is a local drug rehabilitation centre that uses scale, layout, and greenery to cater to its users. Secondly, the Rehabilitation Centre Groot Klimmendaal is also a rehabilitation centre. It invites the surrounding nature into its spaces while blending into its environment. It is essential to understand architecture's relationship with nature in shaping a healing environment. Lastly, Freedom Park uses the landscape in its form and blends itself into the topography through materiality. It uses fragmentation in its form to interact with the environment;

creates a strong connection between its users and their journey through phenomenology and it is located on a slope – just like my site.

Fig. 6.1
Hike Tree Stump: Modderfontein Reserve
(Author, 2022)

The Foundation Clinic

Architect: Anthony Holshausen (renovation)
City: Johannesburg
Date: 2012 (renovation)
Use: Drug Rehabilitation Centre
Own Exploration: 13 May 2022

The Foundation Clinic started in 2001 as a secondary care facility and was registered in 2002 (Fatima, 2022). It was initially owned by David Collins. They treat substance use disorders – a disease of addiction. They offer an education-based drug rehabilitation program that aims to treat, train, and empower patients. Its demographic is diverse and caters to those on medical aid. They refer those who cannot afford their services to other facilities such as the Institution of Grace which is faith-based and located on the West Rand (Fatima, 2022).

Initially, The Foundation Clinic used *The Minnesota Model* in its rehabilitation approach (Fatima, 2022). It is thorough and includes a variety of experts. It was centred

around the principles of Alcoholics Anonymous (Cook, 1988). However, today, The Foundation Clinic uses the Bio-psycho-social Model (The Foundation Clinic, 2021). It entails using the *‘mind, body and soul’* whereby the first week focuses on spiritual principles (which relate to the idea of identification in phenomenology), the second week delves into the mind and cognitive behavioural therapy. The third week addresses community and growth (Fatima, 2022). The physical aspect includes exercise, eating a balanced diet and sleeping as patients need to get *‘physically well again’* before treating their minds (Fatima, 2022). The Modderfontein site has adjacent hiking and cycling trails which will create easily accessible exercise for users. A variety of professionals focus on each theme in their corresponding week, during which the aim is to change patients’ behaviour and habits (Fatima, 2022). These professionals are consultants and include a social worker, counsellor, recovery coach and a general

practitioner who specialises in addiction (Fatima, 2022). The Foundation Clinic is not a medical hospital and has twenty-four-hour nursing with an emergency room for certain situations. Patients are referred to the hospital, if there is a medical emergency (Fatima, 2022).

This drug rehabilitation centre has both inpatient and outpatient programmes and caters for a total of twenty-four patients (Fatima, 2022). The inpatient programme runs over three weeks, while the outpatient programme allows patients to have price-inclusive treatment over eleven months (Fatima, 2022). Inpatient aftercare is offered for eleven months post-treatment as relapse is common when people return to their everyday lives. An additional three-week reintegration programme is available for patients whom the facility’s professionals believe need a longer time in the rehabilitation process (Fatima, 2022). This bridging programme materialises a schedule that allows patients

to spend some time outside the facility at places such as the gym, as well as being obligated to join outpatient classes every day. Patients are referred to a halfway house if this reintegration programme does not offer enough time (Fatima, 2022).

The treatment is family inclusive which means inpatients’ families are expected to attend sessions once a week (Fatima, 2022). The Foundation Clinic’s management explains the importance of families learning to cope with patients’ addiction. These meetings take place in the *‘family room’* where patient-family sessions occur. There are also *‘group rooms’* where group sessions happen (Fatima, 2022). These rooms specifically have chairs and no couches as chair circles are often formed for talking sessions (Fatima, 2022).

Addicts encounter the facility through both word of mouth and when searching for drug rehabilitation centres on the

internet (Fatima, 2022). Many patients return periodically. Once patients decide to seek help, they phone The Foundation Clinic where the staff member that answers is trained to coach patients immediately, aiming to bring them into the facility. Once the patient has arrived at the facility, the typical following steps include an assessment, admission and treatment (Fatima, 2022).

A large portion of The Foundation Clinic’s patients is addicted to prescription drugs that often take *‘longer to come off than normal drugs’* (Fatima, 2022). It can be fatal as people might experience seizures (Fatima, 2022).

The Foundation Clinic is open to educating and training both psychology students from The South African College of Applied Psychology (SACAP) and previous patients (Fatima, 2022). Psychology students can learn drug rehabilitation methods and carry skills over to other facilities,

while previous patients ‘give back’ and stay connected to the facility, lessening possible relapse (Fatima, 2022).

Clinic and Operations’ managers Mureeda and Fatima believe that drug decriminalisation and OPSs in the South African context may dissolve the current stigma, making more people seek drug rehabilitation (Fatima, 2022). Mental illness is taboo, resulting in cases whereby people feel *‘judged, ashamed and guilty’* to seek help, unlike *‘having a physical condition such as diabetes’* (Fatima, 2022). The managers believe that there would be much debate around drug decriminalisation but the *‘world is changing’* and rehabilitation methods will change with new findings (Fatima, 2022).

The Foundation Clinic

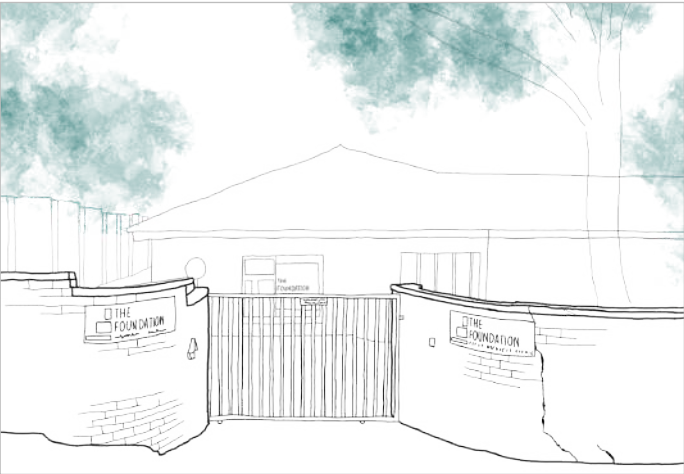
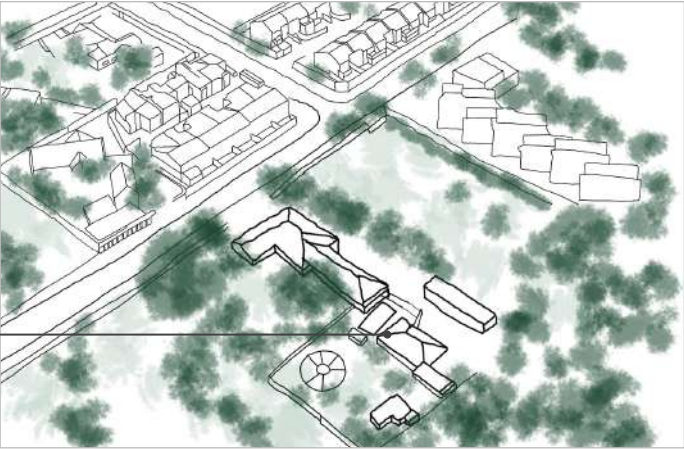
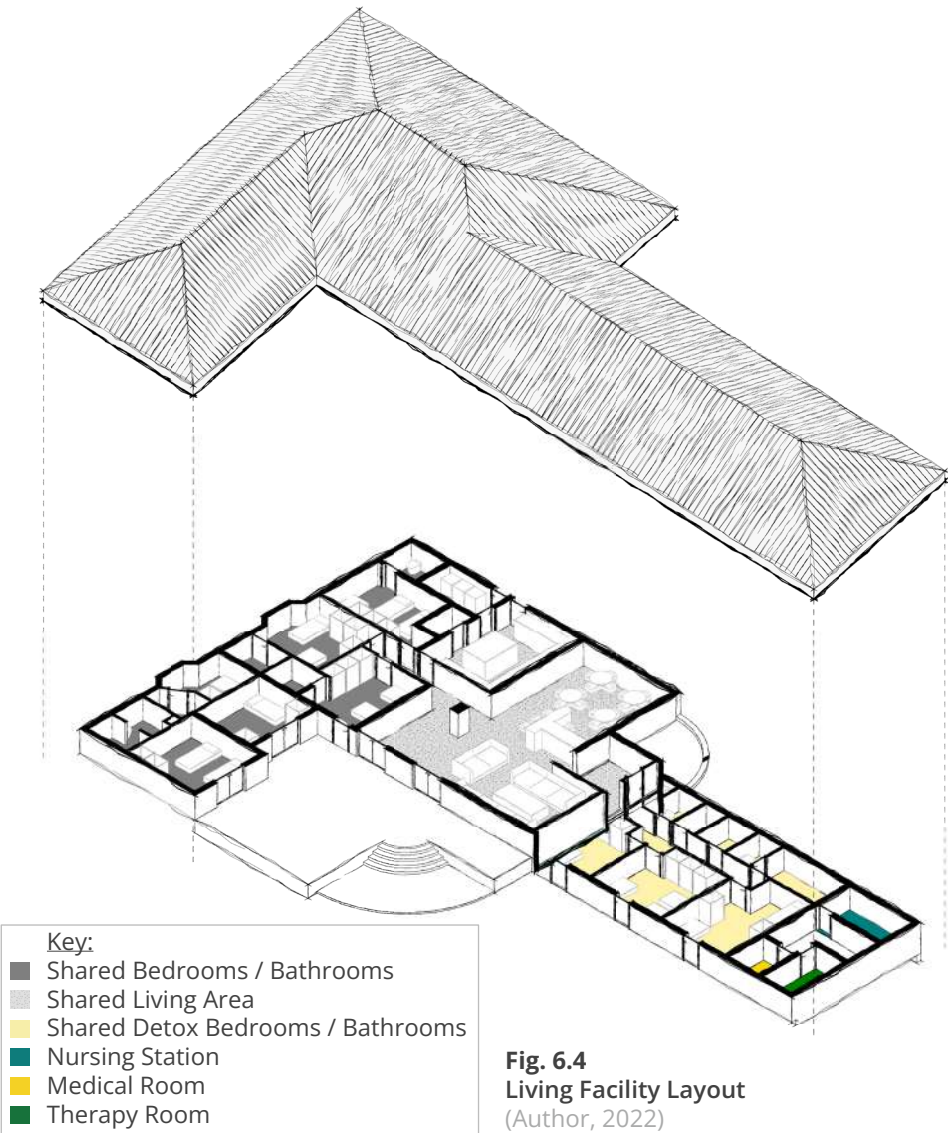


Fig. 6.2
Green & Built-up Context
(Author, 2022)

Fig. 6.3
Non-intimidating Street Edge
(Author, 2022)



Architecture

The Foundation Clinic is in an old house that has been renovated into a drug rehabilitation centre (Fatima, 2022). The structure was maintained and alterations were made. The architecture has a **home-like scale** that makes patients feel more secure and comfortable. Management prioritises the upkeep of the facility by re-painting walls annually, further enhancing a sense of comfort. The property is surrounded by low walls and the residential area consists of a ground floor. This ties into the nature of the facility: all patients need to volunteer to join and stay. Patients can exit the programme as they wish (Fatima, 2022).

The centre's rooms include counselling rooms that are small with three chairs (adjacent to reception), two stacked group session classrooms, board rooms for case management, family rooms, workstations for working

patients, a nursing station that monitors the detox rooms, an emergency room, a lounge with a pool table, a gym, live-in rooms, a shared eating area, a kitchen and an outdoor amphitheatre with a bonfire (Fatima, 2022). The bedrooms are minimal with beds, cupboards, and bathrooms. Beds are specifically unmade as people come into the facility under the influence – *'jumping from bed to bed and dirtying the linen'* (Fatima, 2022). The inpatient **rooms are shared** between two, three or four patients (separated into male and female rooms) as *'addiction is born in isolation'* and they want their patients to stay *'connected to their peers'* amongst whom feelings of suicide, anxiety and depression can be discussed (Fatima, 2022). Furthermore, the inpatient rooms open into an outdoor area that encourages connection and communication between patients (Fatima, 2022).

There are twelve stairs leading to reception – representing the

twelve steps of recovery found in *The Minnesota Model* (Fatima, 2022).

The outside area has a well-kept pool, lush greenery and benches embedded in the plants – placing patients within nature's healing atmosphere. Patients sometimes have counselling in the gardens and can have weekend picnics on the lawn with their families (Fatima, 2022).

The building includes the most essential types of rooms needed and spaces for the key elements of a drug addiction programmes (inpatient, outpatient and a bridging facility) that I will carry into my project. The facility is structured as a shared-living experience. It is necessary to take this approach to my project – ensuring shared bedrooms. This structure strays from a sense of isolation and increases patient comfort – creating a homey environment. This homey atmosphere is intensified through large garden spaces and scale

where rooms have standard ceiling heights. Typical home materials and forms are used such as painted masonry, exposed brick, and pitched roofs. There is no institutional ambience whatsoever. Interestingly, the rehabilitation rooms such as counselling rooms, use this same scale to intensify a homey, safe environment. I would like to include elements of home-like architecture in my building.

Fig. 6.5
Home-like Scale
(Author, 2022)

Fig. 6.6
Stair Concept: 12 Steps of Recovery
(Author, 2022, 12 Steps: Fatima, 2022)



Rehabilitation Centre Groot Klimmendaal



Fig. 6.7
Building Blending into Its Environment
(ArchDaily, 2011)

Architect: Koen van Velsen
Location: The Netherlands
Use: Rehabilitation and Entertainment Community Centre
Project Similarities: Use; nature setting; uses materials to blend into the environment; part of a masterplan; therapeutic architectural design
Size: 14000 m²
Date: 2011

The Rehabilitation Centre Groot Klimmendaal meets the ground over a smaller area which steadily expands with height – cantilevering over the ground below (ArchDaily, 2011). This form mimics the surrounding trees while the earthy-golden anodised aluminium cladding allows the building to integrate into the natural environment (ArchDaily, 2011). The immediate exterior nature has a powerful graphic and physical existence throughout the building and is involved in the rehabilitation process (ArchDaily, 2011).

This rehabilitation centre is

designed as part of Van Velsen’s masterplan: a set of one- to two-story structures which form a portion of a public park (ArchDaily, 2011).

The hybrid program is organised according to use; the roof holds a Ronald McDonald House, below are clinical rooms and then offices lie further below the clinical rooms (ArchDaily, 2011). The ground floor has a double volume that houses special programmes including sports and fitness facilities (such as a swimming pool), a café and a cinema. This encourages patients, their relatives, and the surrounding community to use the offered facilities frequently. This allows patients to feel involved in the community, as well as allowing the architecture to form the heart of the local people (ArchDaily, 2011).

This centre’s rehabilitation approach aims to form an encouraging environment that betters patients’ well-being and their rehabilitation course

(ArchDaily, 2011). The building specifically does not appear as a medical typology and aims to blend into its environment. An example is the building’s encouragement of physical activity – not only in its rooms but in its circulation. A wooden staircase runs throughout the building’s interior height and forms direct paths to each floor, encouraging physical activity (ArchDaily, 2011).

Rehabilitation Centre Groot Klimmendaal’s design **blurs the threshold between inside and outside** spaces. It uses therapeutic architecture through the fenestration and open spaces to achieve this. Full façade height glazing in the main area of the building exposes the outside forest, while tall linear floor-to-ceiling mullions mimic the linear geometry of trees. The winding, pod-like restaurant’s façade which extends into the treetops further unifies the interior and exterior (ArchDaily, 2011). Each ‘pod’ contains seated areas which are divided by glazed

polygon cut-outs – creating multi-sided forest views, as well as connections between each pod. The black mullions emphasise the flora by receding and drawing the eye to the exterior trees. As previously mentioned, nurse Florence Nightingale explained the importance of plants to help mentally and physically ill patients. It is necessary to integrate the existing Modderfontein landscape into my design through materiality and form. Cantilevering structures can be used in various parts of my design to integrate form with the surrounding trees.

Some interesting aspects that I would like to include in my building are: integrating physical activity into the design by using Tarako Farm’s cycling trails. This will help ensure that the ambience does not allude to a modernist institution and opens up spaces for activities so that patients feel less isolated. Like this project, I wish for community members to enter the education facility in my

building. This will decrease the stigmatisation of drug addiction.

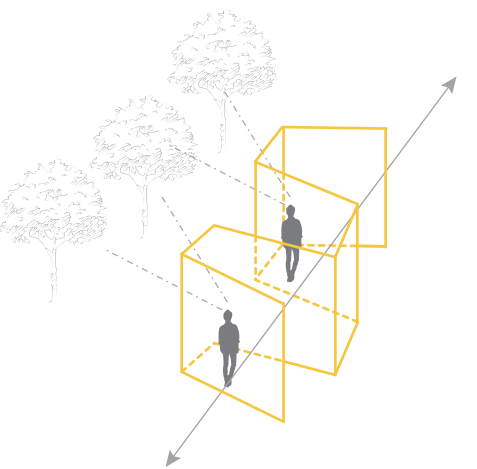


Fig. 6.8
Blurred Relationship: Building-users & User-user
(Author, 2022)



Fig. 6.9
Building Blending into Its Environment
(Author, 2022, edited from ArchDaily, 2011)

Freedom Park



Fig. 6.10
Phenomenology: Archetypes (Typical Spatial Layout of an African Homestead)
(Author, 2022, derived from Young and Vosloo, 2020)

Architect: GAPP; Mashabane Rose Architects; MMA
City: Pretoria
Date: 2008 (phase 1); 2011 (phase 2)
Use: Museum
Project Similarities: Emphasis on the threshold; a sense of journey; use of phenomenology (**archetypes**; *Genius Loci*; process; sensory experience) materiality; use of fragmented form; topography
Own Exploration: 2018

Freedom Park was designed to be a global symbol of 'humanity and freedom' (ArchDaily, 2012). The design aims to provide a revolutionary and encouraging heritage venue that confronts users to think about the past, how to better the present and create a future as a joint nation. Culture, history and theology create reconciliation and growth in the nation. 'Indigenous Knowledge and Knowledge systems' are used in the project to guide architecture and its landscape (ArchDaily, 2012).

Much like the Modderfontein site, Freedom Park is adjacent to a city and lies in a natural landscape with great environmental value (ArchDaily, 2012). The project creates a significant natural and visual threshold in the city (north) (ArchDaily, 2012). Freedom Park is located on a hill (with multiple slopes) where it can be seen and 'sees' surrounding roads and the city. Freedom Park both faces an existing community (Pretoria to the north) and the multi-directional landscape, integrating itself within nature, much like Modderfontein's green context: it is surrounded by existing communities. This idea is emphasised in the design's use of form in plan: the museum mimics the north city through its block-like forms, yet the **fragmentation offers voids that open spaces to the landscape**. The form becomes organic and natural as the distance increases between the city and the programme. This is evident in the amphitheatre and its adjacent paths, 'sanctity' areas, and places designed for moments of pause.

The museum's **fragmented plan** form creates a **journey** that crosses thresholds many times. The exterior space has strong design intent and plays with the interior-exterior relationship: there is an outside amphitheatre with a central indoor structure (usually amphitheatres are fully open-air), and high slits of punctured envelopes in the museum suggest outside space, which is uncommon in this typology; it also combines paved lengthy walkways designed for moments of sheltered pause and exterior walkways with high walls. The fragmented form will be carried into my project to create a strong interior-exterior relationship where both solid and void spaces heal individuals in different ways.

Phenomenology is present in Freedom Park through *Genius Loci*. Freedom Park explores its ideas in its concept in a meaningful way - through a design of knowledge, tradition, culture, and community (Young and Vosloo, 2020).

Genius Loci is also experienced through the landscape and steep contours in how the building begins to blend with nature. This is first experienced as one passes over the boomed threshold: there is a natural, calming atmosphere using greenery. The muted earthy paving allows the trees above to be visually celebrated. Freedom Park's structures are embedded in and evoke nature. The forms derive from large boulders that form an outcrop and create large volumes - as if they are planted at the bottom of Salvokop hill (ArchDaily, 2012). The **copper** sheeting-clad buildings (boulders) will **rust** in time and turn green. Therefore, the building will become **one with nature** - enriching a sense of place (ArchDaily, 2012).

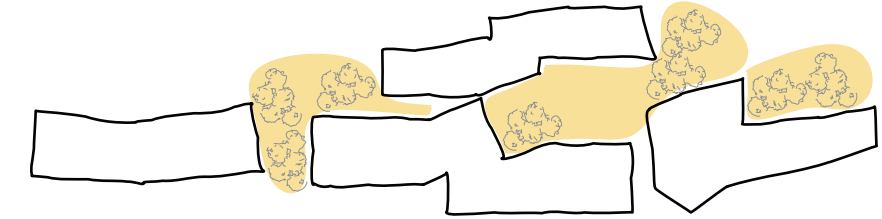


Fig. 6.11
Fragmented Form Opens to Landscape Plan
(Author, 2022, extracted from ArchDaily, 2012)

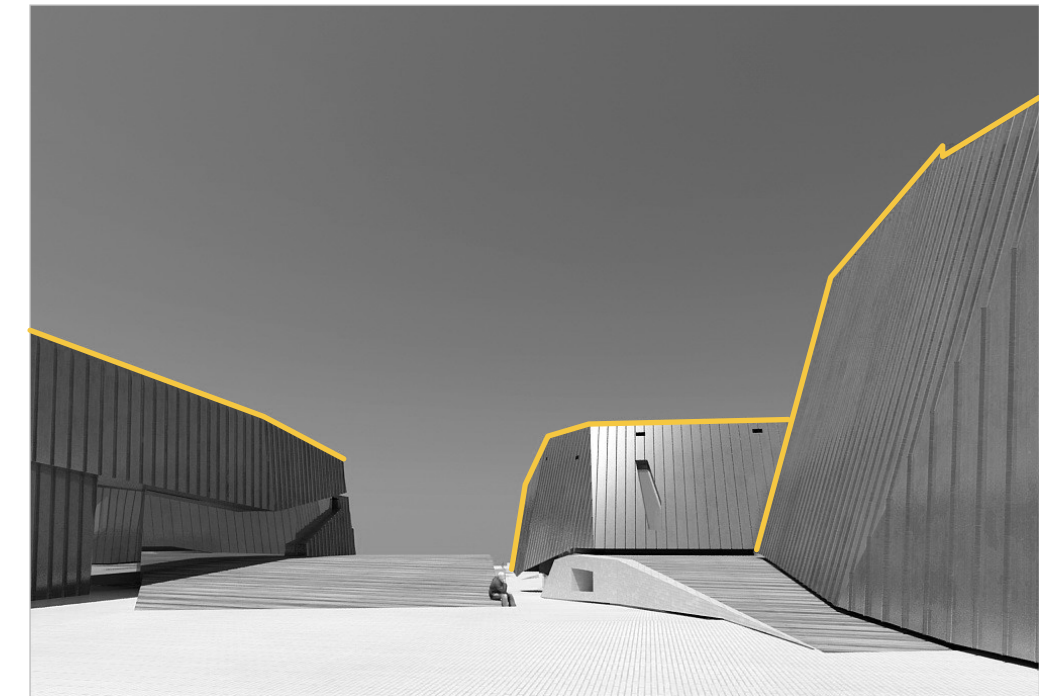


Fig. 6.12
Three-dimensional Fragmented Form
(Author, 2022, edited from ArchDaily, 2012)

A sense of place is emphasised further through the relationship between Freedom Park and the Voortrekker Monument. Freedom Park mimics The Voortrekker Monument's hill location (Jacobs, 2014). Both buildings are heterotopic monument sites through their 'Other' and exclusive natures (Jacobs, 2014).

Freedom Park gives me insight into my project. It has aspects that I would like to carry forward and

some design choices that I will not carry forward. I would like to use phenomenology stemming from Freedom Park in my design in terms of its meaning of place (using nature in or through its form as a spiritual healing tool) and in its thresholds. There is an important sense of journey through a rehabilitation process - especially in thresholds between rehabilitation rooms and the healing natural landscape. This would need to be dissected in my project.

Freedom Park is easily seen from its surrounding roads through its '**colonnade of lights**'. An iconic, easily seen feature in my building would add to my goal of destigmatisation - to introduce and educate the community about drug addiction. Additionally, I enjoy copper's **oxidisation to blend the building into its landscape**. Another material would be Corten steel which has similar oxidisation effects. This material also gives an aged appearance

which mimics existing structures in Modderfontein.

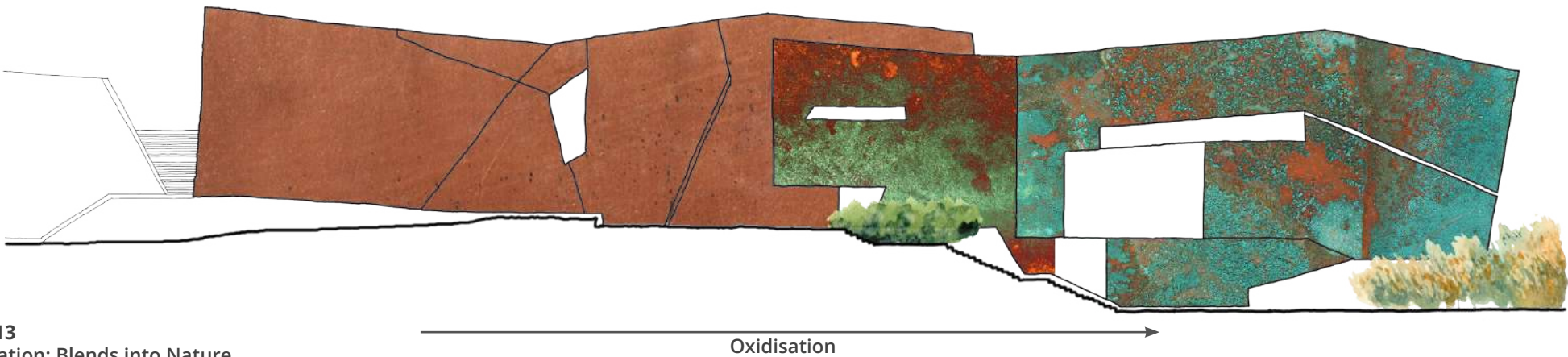


Fig. 6.13
Oxidization: Blends into Nature
(Author, 2022, derived from ArchDaily, 2012)

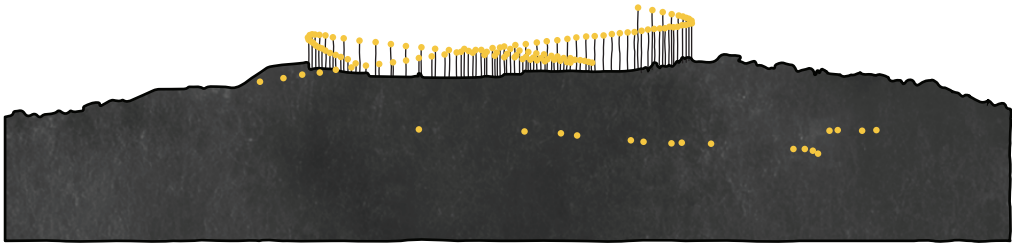


Fig. 6.14
'Colonnade' of Lights - Extended View of the Building
(Author, 2022, from Greeninc Landscape Architecture and Urbanism, n.d.)

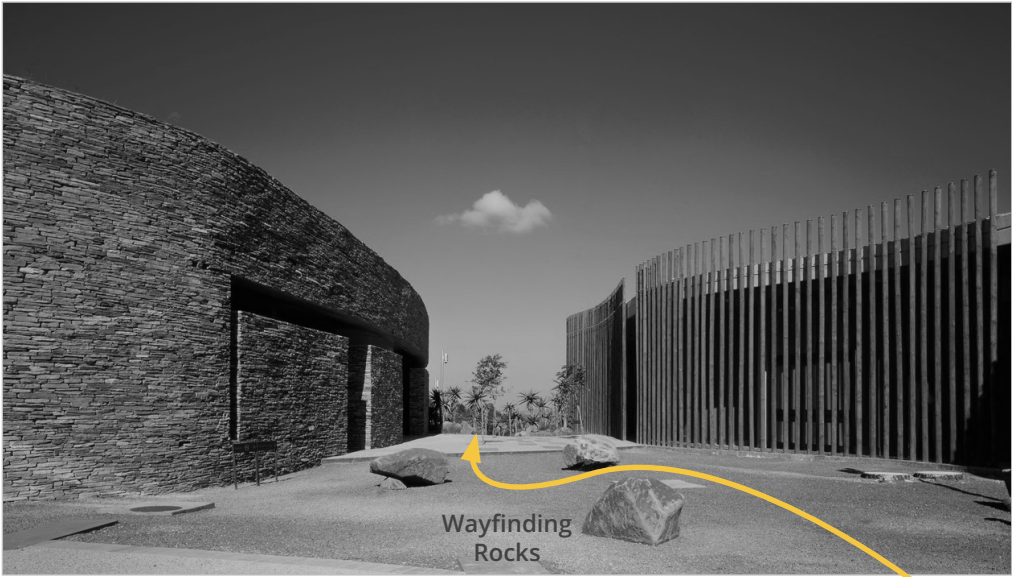


Fig. 6.15
Buildings Create Paths (Alludes to Hiking on My Site)
(Author, 2022, edited from ArchDaily, 2012)

07

Programme

Fig. 7.1
Urban Framework Views in
Modderfontein Reserve
(Author, 2022)



My building’s programme uses specific information from the above case studies, site and precedents.

The drug rehabilitative programme would be divided into spaces of *earning*, *education*, and *healing*. *Earning* takes place through retail facilities. This money can be used for the maintenance of the building. *Education* occurs in drug awareness, workshop and research facilities. This area of the programme aims to destigmatise drug rehabilitation, educate (ignite passions) and record drug abuse statistics of surrounding communities. Additionally, the educational realm involves a reintegration bridging facility between rehabilitation and society. The need for education around drugs is illustrated through the movie ‘Beautiful Boy’ in which it is seen how the drug addict’s father takes drugs to understand his son’s strife. The *healing* area is split into three parts: long-term, medium-term, and temporary healing

spaces. The long-term facility forms spaces such as shared inpatient living (treatment spaces where patients can detox from potentially triggering home environments), a gym, a lounge and a kitchen. The medium-term facility houses conventional individual counselling, group discussions, and family intervention spaces. The medium-term facility also offers outpatient courses. The temporary facility holds an overdose prevention site or safe injection site, where illicit drugs can be consumed under-trained staff’s observation.

The design aims to have an intra-community base where the rehabilitation centre is connected to an earning and educating community centre. Together, these programmes form a holistic healing process. As previously mentioned, The Foundation Clinic has both inpatient and outpatient facilities, as well as a bridging programme which offers a combination of everyday life with rehabilitation. My facility aims to offer both traditional drug treatment and hybrid treatment programmes.

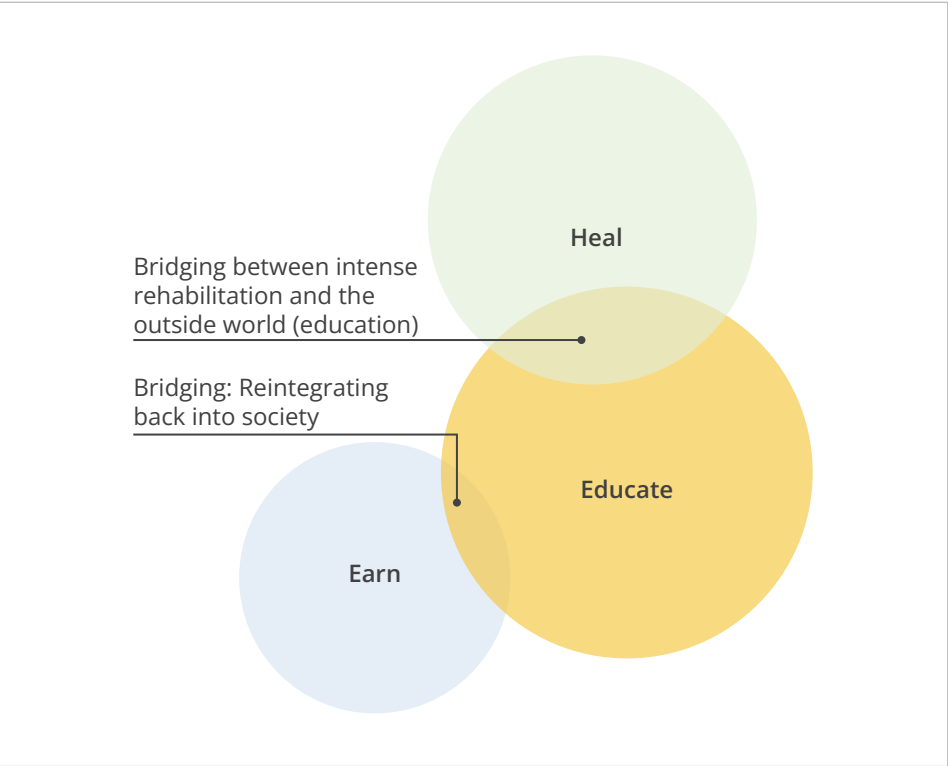


Fig. 7.2
Programme Overview
(Author, 2022)

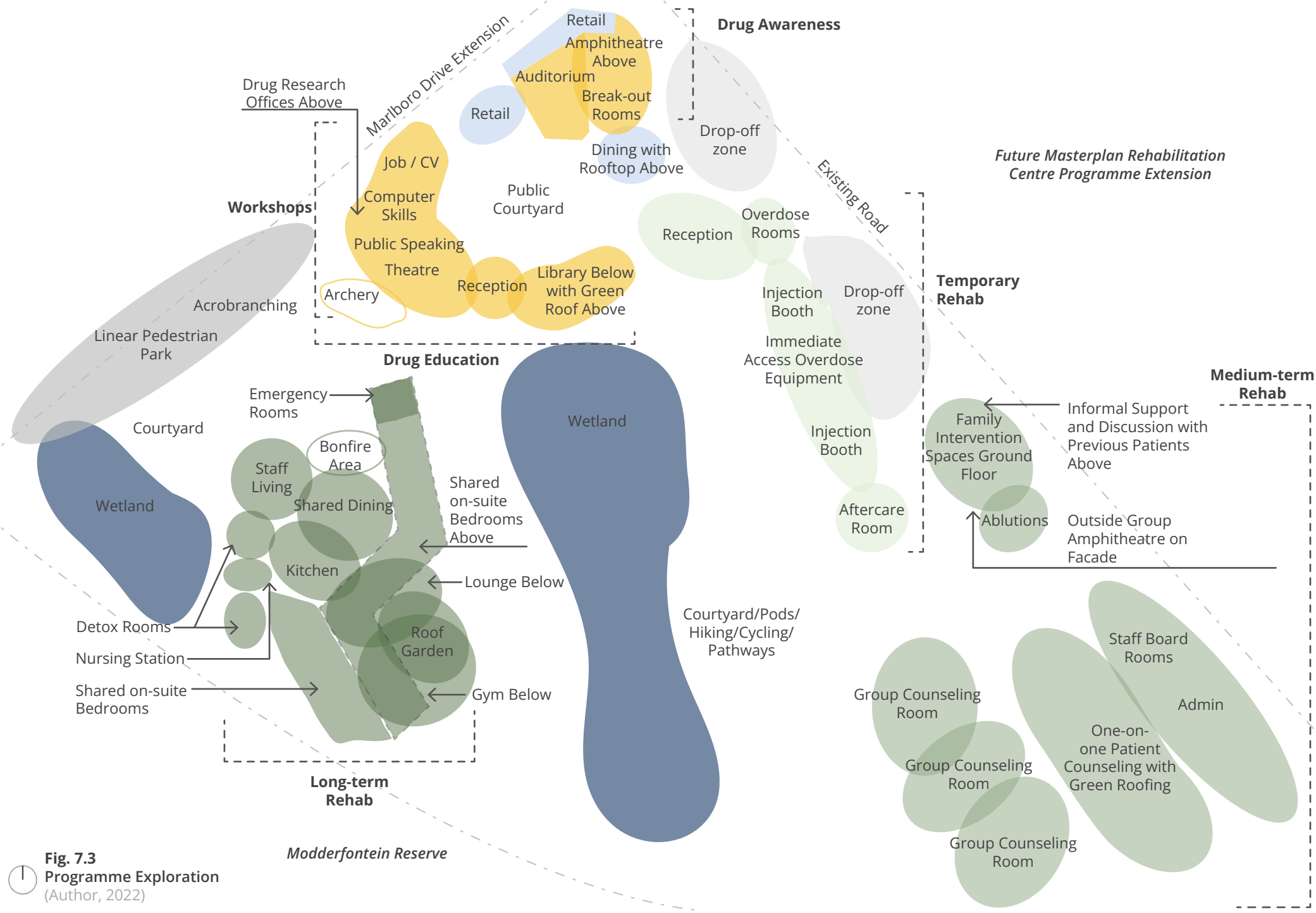


Fig. 7.3
Programme Exploration
(Author, 2022)

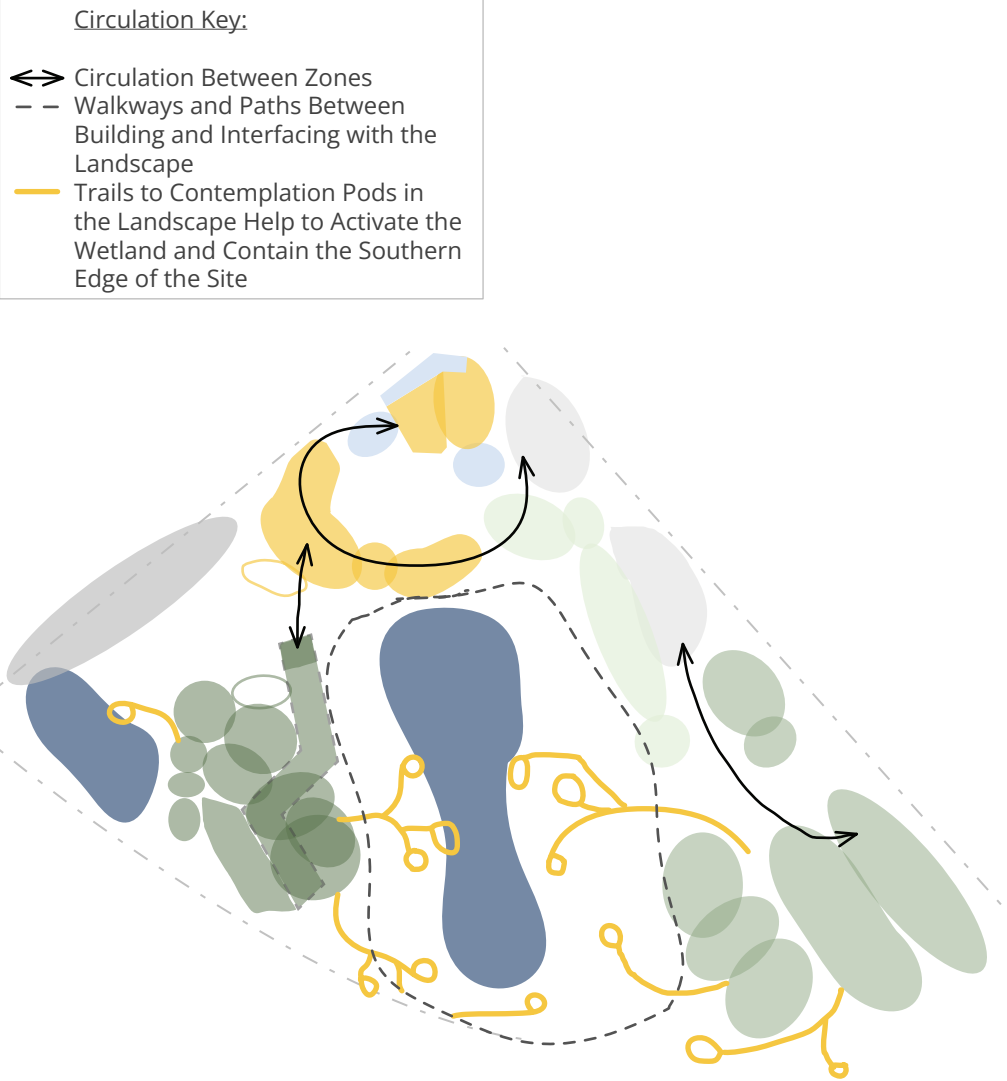
According to The Foundation Clinic management, the patients who offer services and time to the facility after treatment are less likely to experience relapse (Fatima, 2022). Keeping a relationship with the facility reminds patients of their strength and purpose, helping them to remain clean. My intervention will offer previous patients an opportunity to give back to the rehabilitation centre through an educational community centre. This community centre will offer skill-building related to occupations (curriculum-vitae writing, computer skills, job-seeking resources, professional development), passions (archery, cycling, theatre) and confidence-building (public speaking, reading at the library) – building identities and a sense of purpose. The community centre will allow outpatients and bridging patients to utilise retail and restaurant facilities. It is essentially an ‘opposing gateway drug’, aiming to lead people away from a lifestyle filled with addiction toward a drug-

free life.

The building’s **journey** takes addicts that feel isolated and gives them help to decompose their root issues (or decompose hyper-unhealthy drug use methods in the OPS). Re-composition takes form through the recovery process and continues into the educational community which teaches acceptance of rehabilitating drug addicts. This structure removes stigma and judgement, propelling patients into larger communities outside of the centre. This journey will use phenomenological approaches of archetypes through home-like structures, senses, and *Genius Loci* through the landscape.

In future, I would like to expand my facility’s programme into adjacent sites in the masterplan - especially along the east side of my site.

Fig. 7.4
Circulatory Programme Exploration
(Author, 2022)



08

Conclusion

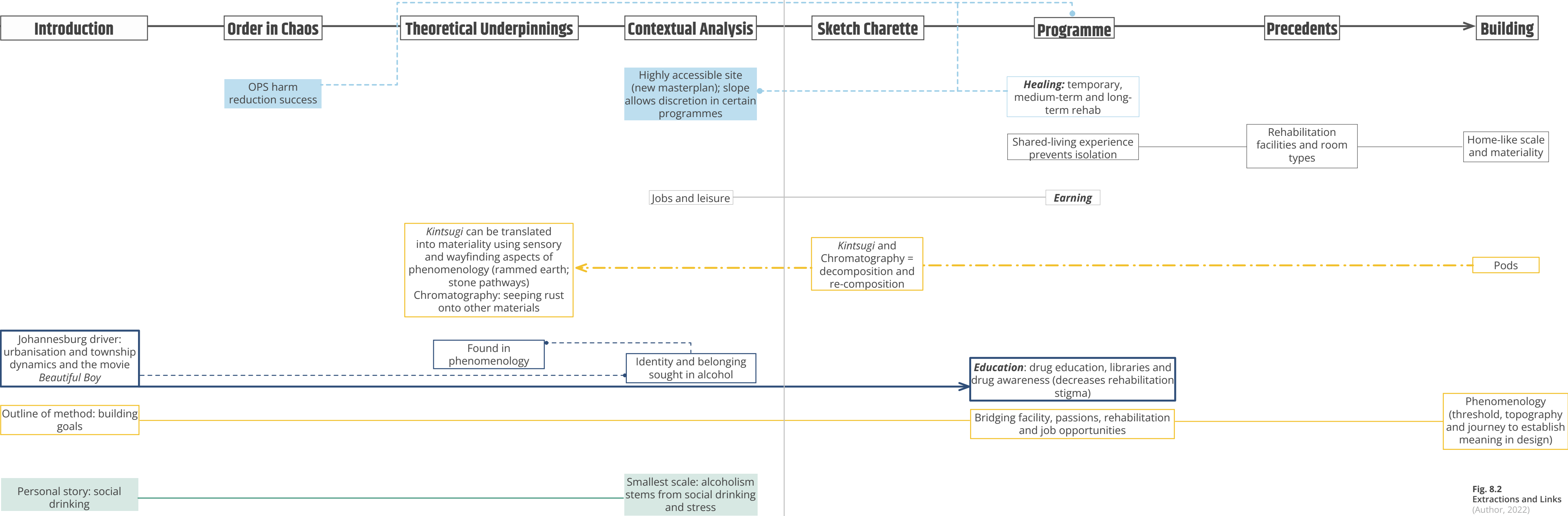


Fig. 8.1
Taroko Farm Hiking Trail Towards Site
(Author, 2022)

The above-written component of my research addresses my project drivers, drug treatment's continued and outdated methods, therapeutic architectural design strategies and architectural phenomenological methods in order to inform meaning in design. Additionally, the research explored case studies of international and local statistically-sound OPSs and aspects of South Africa's drug legislation. I then delved into my site selection, exploration and validation, site decomposition and re-composition through various scales, *Kintsugi* and chromatography conceptual model experimentation design extractions and relevant precedent studies. It was found that OPSs show favourable results in conjunction with counselling, testing, and treatment facilities. OPSs introduce drug addicts to other forms of help (including more conservative methods), and they are not accessible to everyone. Decriminalising certain harmful acts has proven to reduce statistics related to

drug harm and the betterment of communities as people are not afraid to ask for help when the 'criminal act' no longer distracts from deeper issues, including mental health disorders. I will use the above information to design my building with therapeutic and phenomenological architectural factors, ensuring that it is carried out with the discussed theories and research extractions as backbones.

Some limitations of this study include not visiting OPSs in person as one cannot get a true sense of space. In future, I can create satellite OPSs in addition to my implementation and explore more local drug rehabilitation centres. Additionally, previous drug addicts could be consulted if the extent of this study develops.



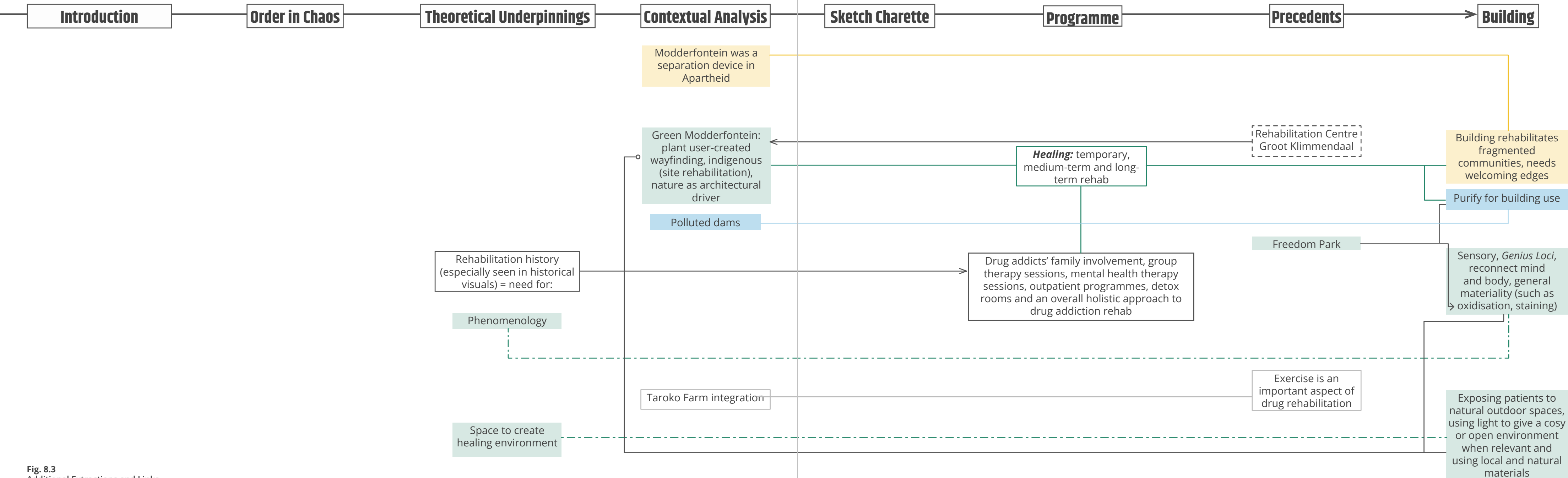


Fig. 8.3
Additional Extractions and Links
(Author, 2022)

Part 2 01

The Building

Fig. 2.1.1
Storage Unit Interior on Site
(Author, 2022, adapted from Lloyd, 2022)



Space	Quantity	1 Unit SQM	Total SQM
Rehabilitation			
Temporary			175
Reception	1	6	6
Booths Single	8	2	16
Booths Double	6	4	24
Observation	1	65	65
Overdose Rooms	3	13	39
Aftercare Room	1	25	25
Ablutions			
Medium (Outpatient)			378
Reception	1	6	6
Group Rooms	4	25	100
Outside Group Amphitheatre	2	50	100
Family Intervention Rooms	4	12	48
Patient Coaching Rooms	14	6	84
Staff Board Rooms	2	20	40
Ablutions	TBC		
Long-term (Inpatient)			2506
Workstations	30	2	60
Computer Lab	2	25	50
Apartments	20	14	280
Detox Rooms	8	14	112
Nursing Station	1	8	8
Kitchen	2	30	60
Lounge	2	70	140
Shared Eating Area	2	50	100
Gym	1	112	112
Outdoor Patient Discussion Area	1	80	80
Emergency Rooms	8	13	104
Bridging Apartments	10	14	140
Skill Learning	6	30	180
Staff Apartments	20	24	480
Garden Space			600
Ablutions			
Youth Centre			3414
Reception	1	6	6
Retail / Restaurants	10	12	120
Theatre	1	340	340
Public Speaking / Debating Rooms	4	25	100
Library	1	400	400
Coding Classrooms	3	12	36
Camping Area	1	1400	1400
Swimming Pool	1	832	832
Cycling Trail Connection (Showers etc.)	1	180	180
Ablutions			
Extras			
Parking	TBC		
Circulation	10%		647
Walls	10%		647
Storage	TBC		
Total:			14065

Fig. 2.1.2
Initial Programme
(Author, 2022)

Initially, the programme included a youth centre as an **activity-loaded option for youth** in surrounding communities. This was a response to there being more alcohol shops available than libraries. However, I wanted the communal aspect of my project to cater to entire communities and teach more than exciting skills. Therefore, I decided to add drug education facilities as a stepping stone between rehabilitation and everyday life. Additionally, I included drug awareness facilities to teach communities about drug rehabilitation and destigmatise it. Additionally, I decided to remove bridging apartments from the programme and allow the drug education facilities to welcome both outpatients and inpatients.

In terms of form, I was micro-focused on following the site's contours and occasionally

working perpendicularly to them. I was looking into two main form languages: **carving** and **raising**. Carving (embed in nature) would occur closer to the Modderfontein Reserve. This includes long-term (LT) rehabilitation, medium-term (MT) rehabilitation and community (C) regions. 'Raising' would be seen closer to the Marlboro Drive boundary in the temporary (T) rehabilitation and retail (R) facilities.

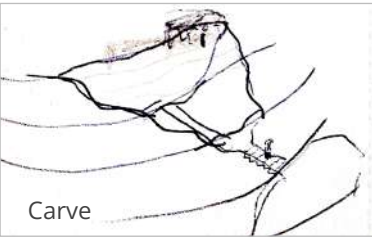
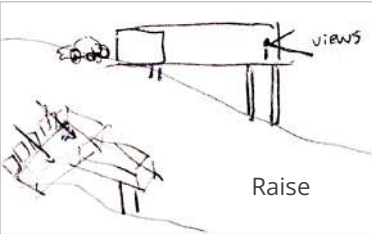
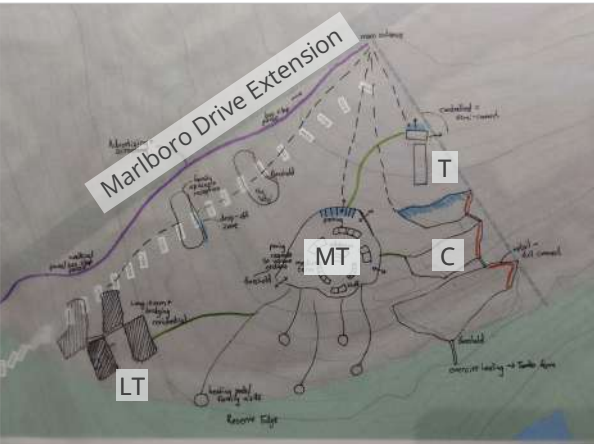
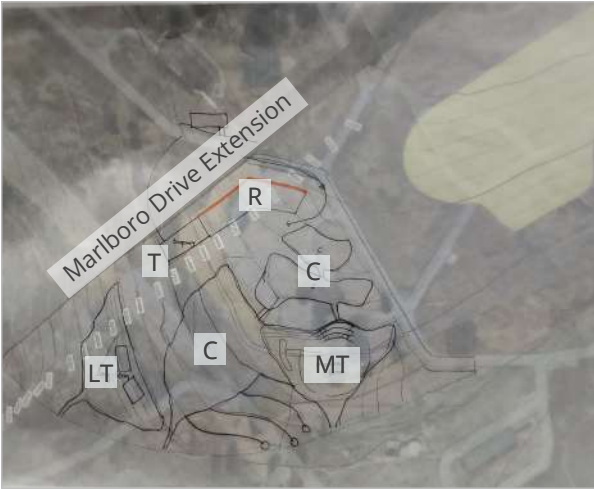


Fig. 2.1.3
Initial Bumf Programme
Organisation
(Author, 2022)

Fig. 2.1.4
More Detailed Organisation
(Author, 2022)

Fig. 2.1.5
'Raised' Strategy
(Author, 2022)

Fig. 2.1.6
'Carving' Strategy
(Author, 2022)

Design Development and Reflection

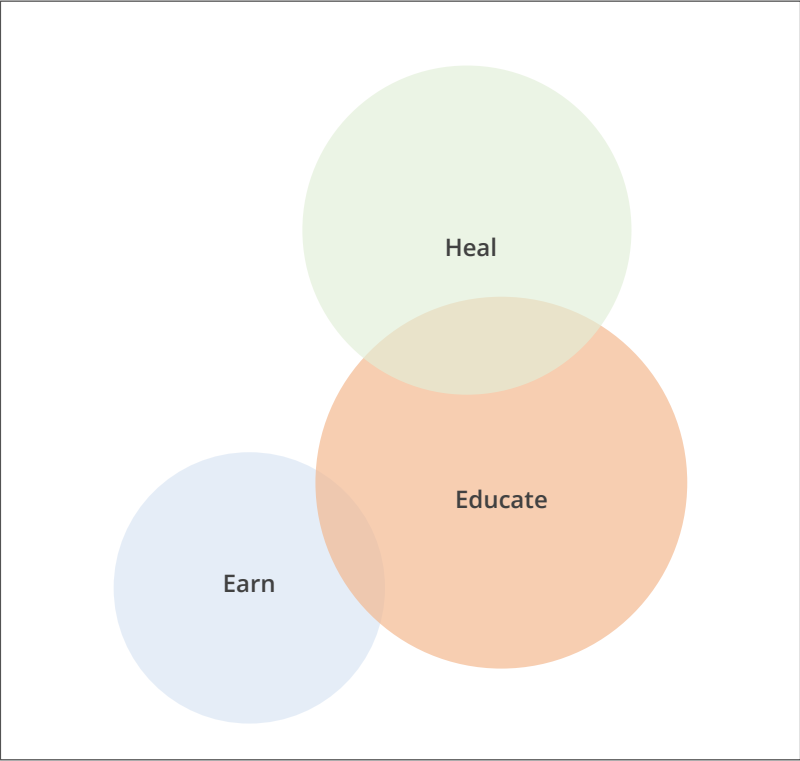


Fig. 2.1.7
Mid-year Programme Overview
(Author, 2022)

For the mid-year review, **delicate forms** inspired by *Kintsugi* follow the larger site's contours. However, I need to create a focal site for now - the timing of this year does not allow for such a large exploration. As previously mentioned, the programme can extend to adjacent sites (within this version of the site) in future. Additionally, the form 'floats in space' rather than the goal of one fragmented building.

The building's programme layout is successful as it responds to the site's street edges. The public designs (retail and main entrance) lies along the Marlboro Drive extension site edge. Retail spaces, the library and workshops, the drug education 'museum' (display-like educational strategy) and the temporary drug rehabilitation centre revolve around a public central courtyard. This allows all these programmes to be

accessible to the public. Retail, temporary, and medium-term facilities lie along the Future Masterplan Community (urban framework) street edge which opens essential leisure and rehabilitation opportunities to the adjacent community. Private programmes (such as the inpatient and outpatient rehabilitation facilities) are located along the Modderfontein Reserve edge. This is also a human-centric design decision: the Modderfontein Reserve will always be protected as a green space; therefore, it will aid in healing through nature.

The patient's entire route through the building programme is close to 300m. This was too long - despite nature's healing ability. Post-entry, patients go through the temporary rehabilitation centre, to the medium-term centre, and finally to the long-term centre.

Once patients are clean and mentally ready, they will enter the community education centre where they learn skills such as how to apply for a job. This portion of the project is the previously mentioned bridging facility. Public users enter the site and stay in the public region to shop and engage in educational programmes. The various facilities they enter revolve around a public courtyard. These spaces include shops, the drug awareness museum-styled centre in the existing storage building, an amphitheatre and workshop spaces. This **route is logical** and will be carried forward.

Fig. 2.1.8
Patient Route
(Author, 2022)

Fig. 2.1.9
Public and Private Regions
(Author, 2022)

Fig. 2.1.10
Programme Organisation
(Author, 2022)

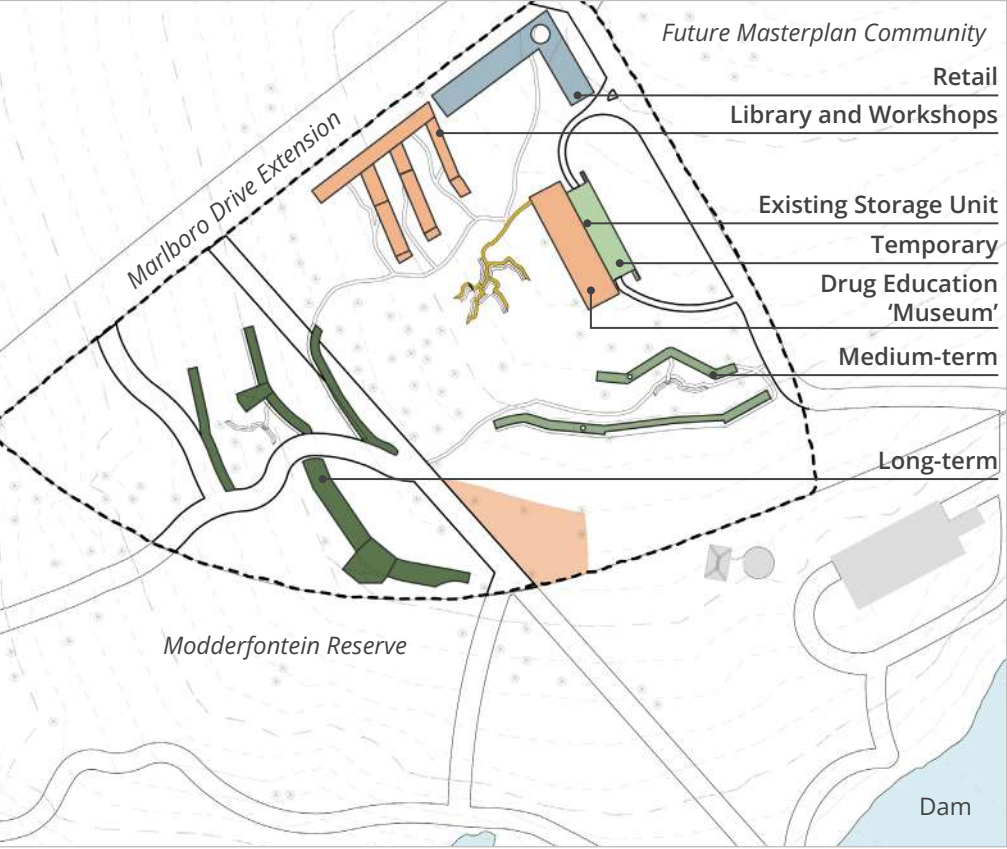
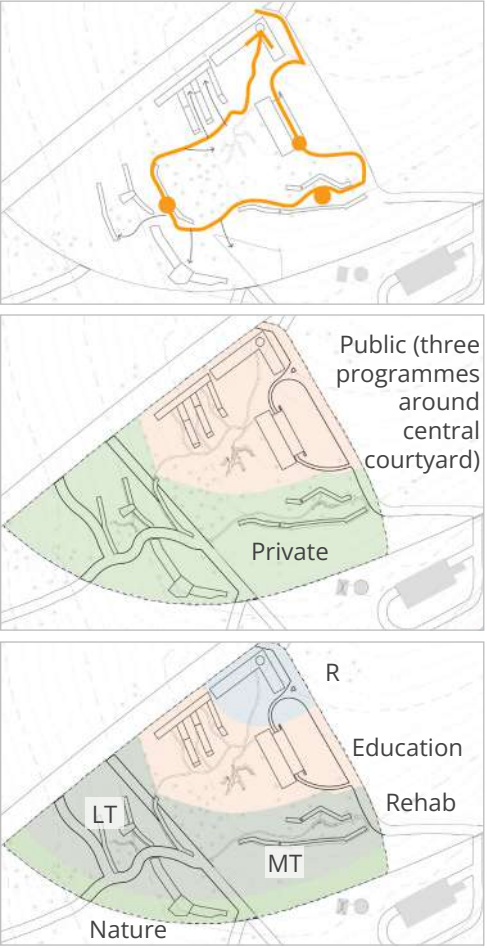
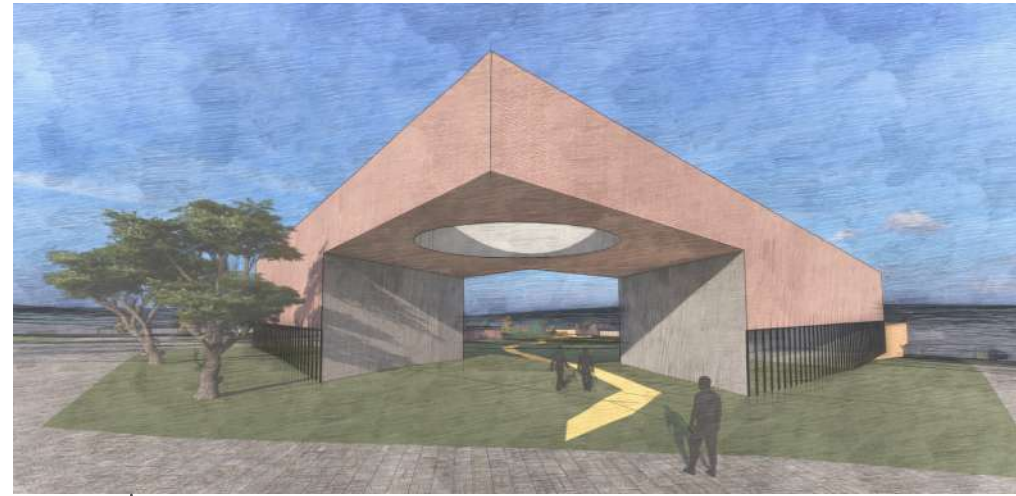


Fig. 2.1.11
Mid-year Review Design
(Author, 2022)



This entrance's architectural language is too formal for my intervention.

Wayfinding is emphasised through the community centre's hard street edge. It guides people to the main entrance. This logic will still be used in my design.

The long-term facility allows a sense of discretion as it is stepped back from the street edge.

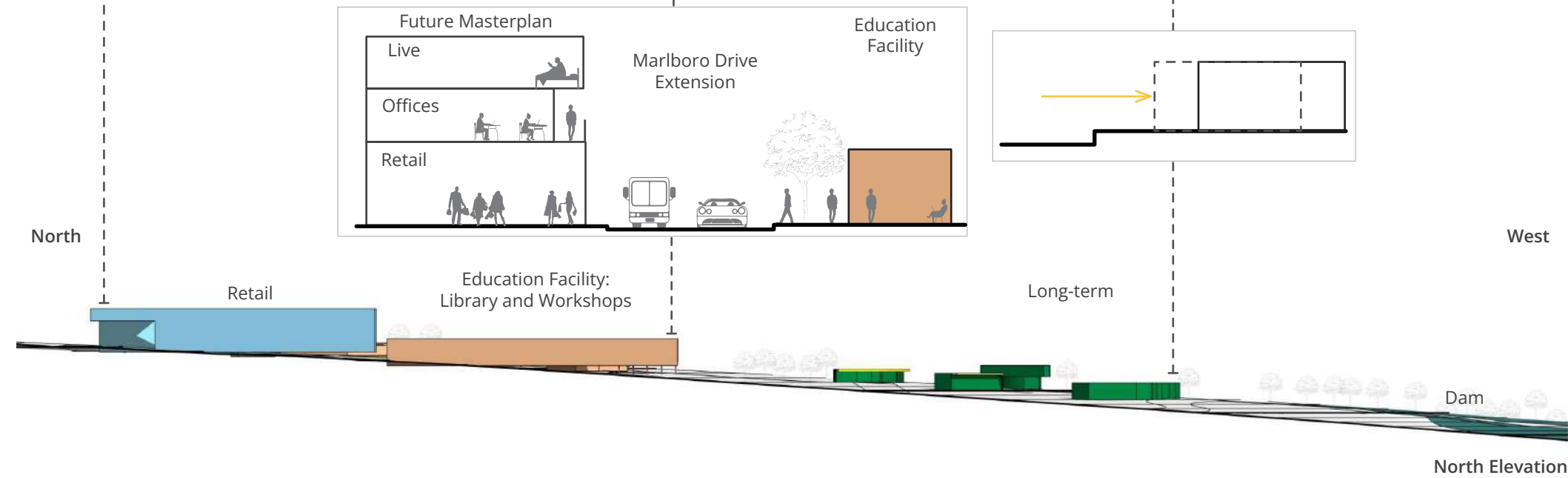
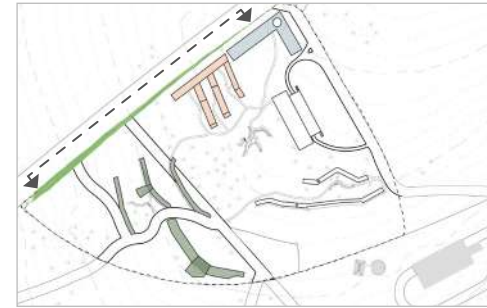
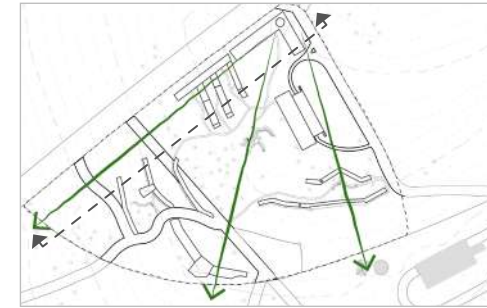


Fig. 2.1.12
Marlboro Drive Edge Design Strategies
(Author, 2022)



Reference Plan



Reference Plan

The **Modderfontein Reserve** can be seen from most areas on the site owing to the slope direction. Rehabilitation becomes deeper as the site moves towards the natural reserve. This is seen in the long-term facility. The building allows for both exterior and interior viewpoints of the reserve. Again, these are aspects that I will keep consistent throughout the design.

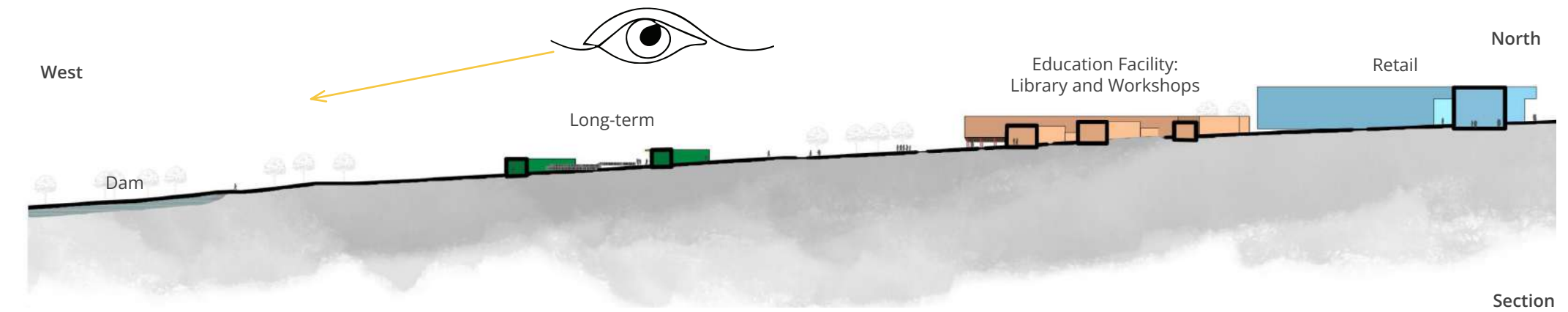


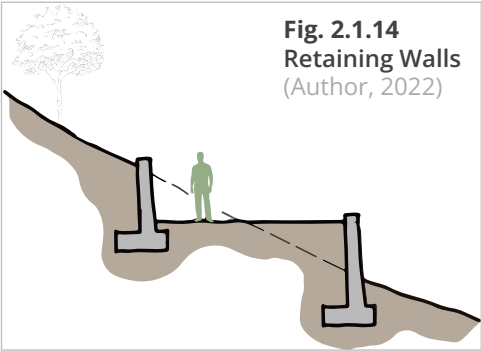
Fig. 2.1.13
Modderfontein Reserve Views
(Author, 2022)



The general **form softens** as the site moves from **urban to natural**. I do not think this works as I want form to be guided by human experience.

Water control points extract water from the dam and **filter it for building use**. Rainwater runoff is controlled and held on the site through attenuation ponds. This water will also be filtered and used in the building. Attenuation ponds are further needed as the **retaining wall** structure used creates hydrostatic pressure. These ideas will be kept. However, I must ensure that sustainability comes through in my architectural language.

Wayfinding is carried out through *Kintsugi*-like pathways. I thought that these pathways could be lined with sunflowers to give the site a visual golden crack. However, sunflowers are alien species and would add to the flora issues in Modderfontein. Instead, I would like the architecture and materiality to evoke wayfinding.



Kintsugi wayfinding extends into the previously mentioned **pods**. They can become reading nooks near the library and meditative spaces near the site's edge. The **group spots** are evident in the **amphitheatre**. I will use these ideas more definitively when furthering my design.

The room planning is too segmented. Rooms are divided perpendicularly along the slim masses and have two outside-facing sides. The structures need more circulation within them going forward.



Fig. 2.1.15
Perspective Form Geometry
(Author, 2022)

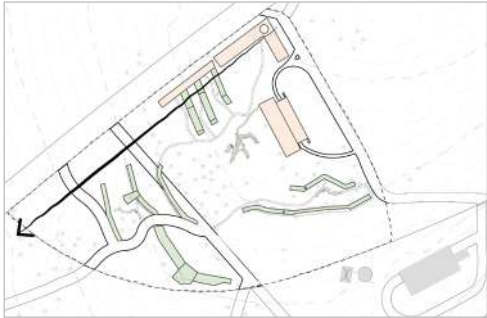


Fig. 2.1.16
Form Geometry
(Author, 2022)

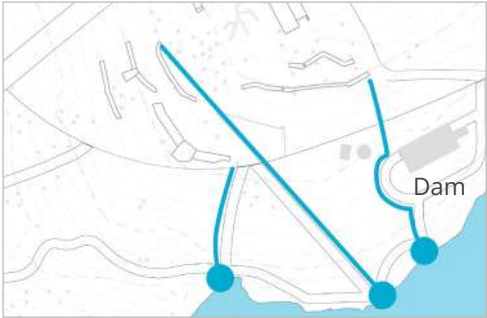


Fig. 2.1.17
Water Control Points
(Author, 2022)



Fig. 2.1.18
Amphitheatre
(Author, 2022)



Fig. 2.1.19
Individual Pod
(Author, 2022)

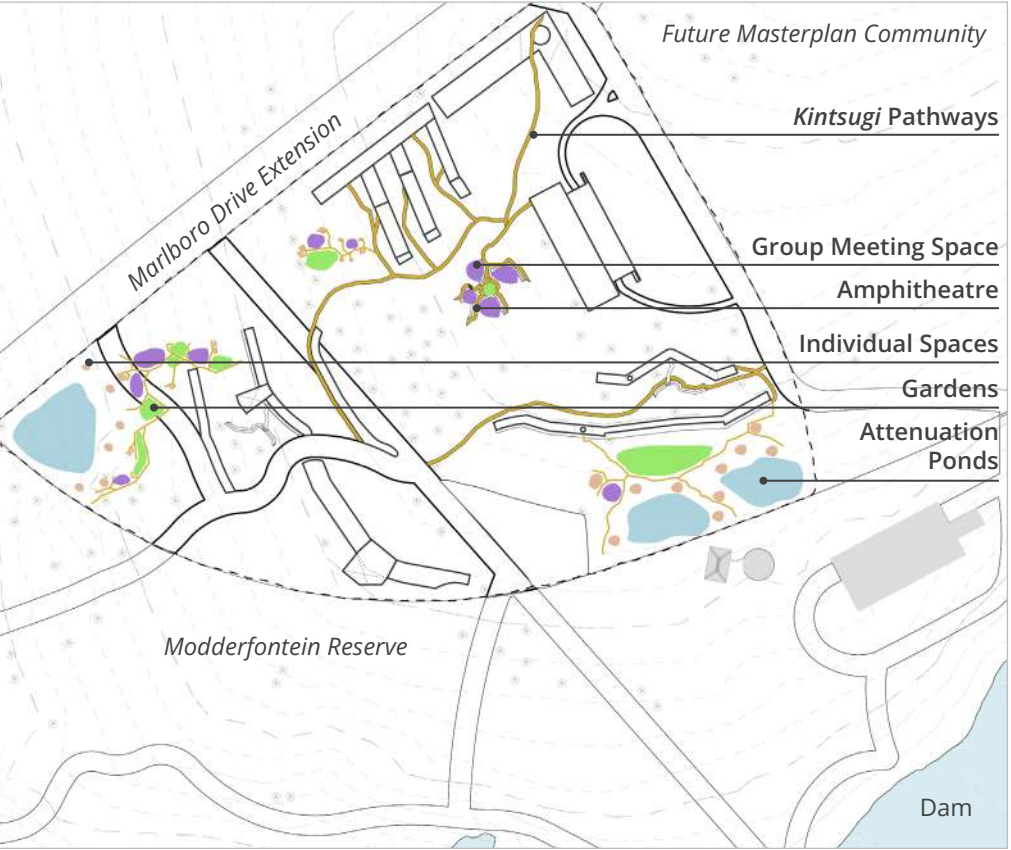


Fig. 2.1.20
Pod Design
(Author, 2022)

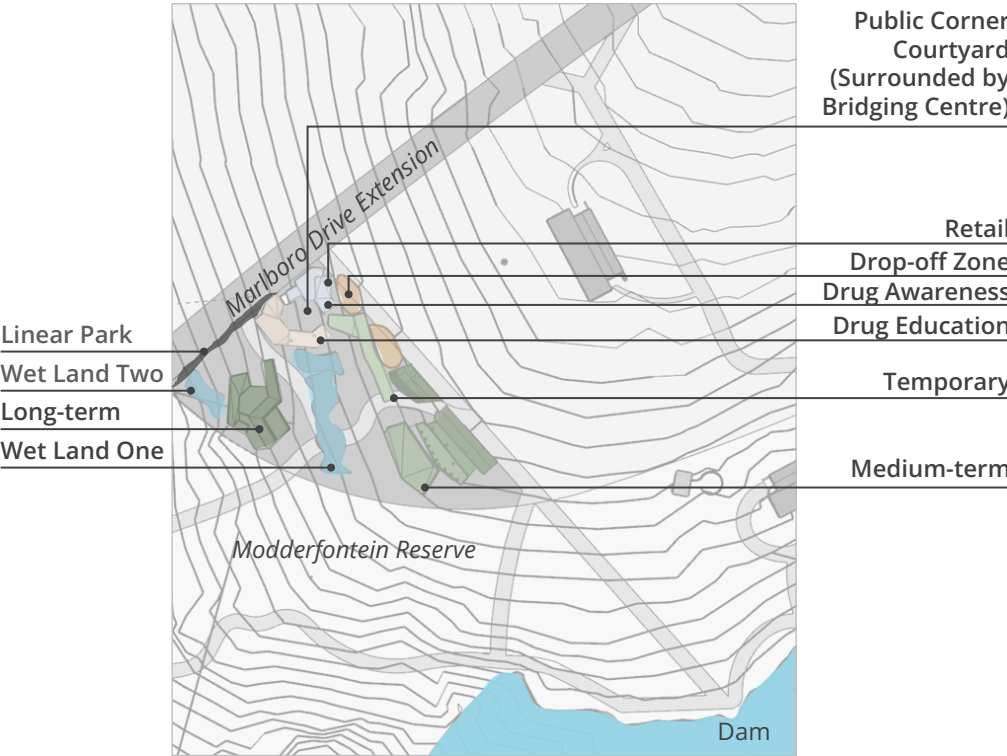


Fig. 2.1.21
Updated Site Organisation
(Author, 2022)

Fig. 2.1.22
Existing Storage Unit Architectural Language
(Author, 2022)

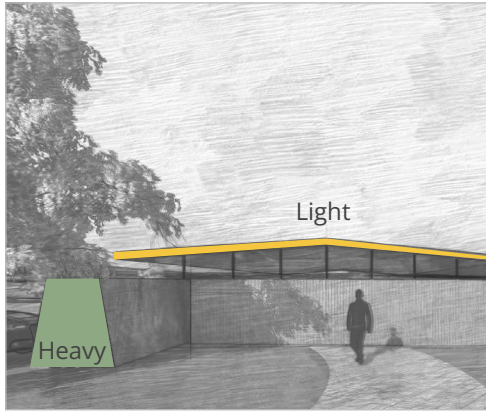


Fig. 2.1.23
Marlboro Drive Entrance
(Author, 2022)

Fig. 2.1.24
Updated Design
(Author, 2022)

In my next exploration, I **reduced the focal site size** significantly. I then began to design the building using the existing architectural language on the site: that of the dynamite storage unit. It has moments of heavy angular architecture with lightweight roofing. I also began using solar chimney extrusions as a form of wayfinding. These, angular forms and planted roofs create a sense of nature, as if building rocks were being pulled from the site. Shallow carving to form spaces allows for the use of the site's slope. The 'popping' out of rock-like forms also creates *Kintsugi* decomposition and re-composition fractures. There are also moments of the buildings following the site's contours (*Kintsugi* cracks) which evokes topographical site sensitivity (phenomenology).

The **dynamite storage unit's sense of materiality** has been included in my project whereby the heavy mass becomes rammed earth and lighter structures may include corrugated sheeting.

Chromatography's bleeding nature is seen in Corten steel's bleeding and staining rust.

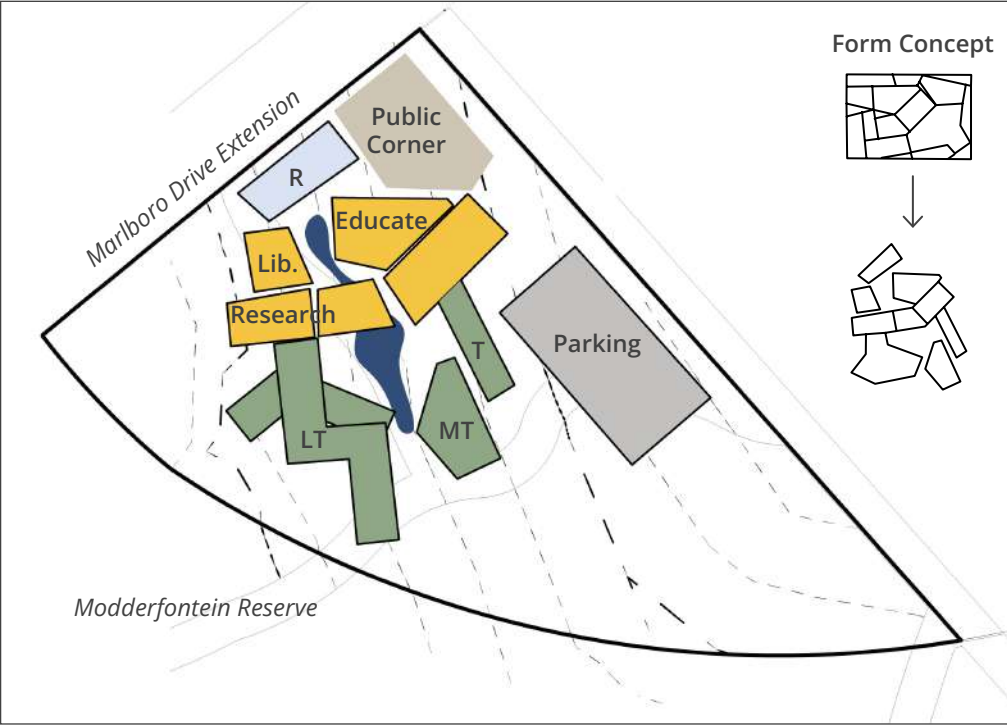
My programme placement is similar to my previous exploration: there is a linear pedestrian Park (along Marlboro Drive) leading building users to the main entrance (experience is embedded in nature at the start of the journey); there is a public set of buildings surrounding the courtyard (bridging centre); temporary rehabilitation spaces that feed into both the public corner and medium-term rehabilitation section, as well as a long-term rehabilitation facility near the reserve. The materiality mimics the programme and landscape features (such as the central phenomenological 'wetland' and hiking-like area) become poetic filtration systems which will be discussed further in the 'Technical System' chapter.

The **entrance is oblique**, like a *Kintsugi* crack in the facade, leading people into the courtyard. The

Marlboro Drive corner's forms give height, therefore creating an edge buffer zone. This building is also 'double-facing' into both the street and courtyard.

Design continuation: I plan to create architecture informing circulation discussed in the 'Programme' section through a lightweight structure pavilion on the edge of the various building sections (around 'wet land one'). This will link the project together. Additionally, I will create the golden *Kintsugi* thread through pathways. Both ideas will enforce wayfinding.

Another form I would like to explore is softer earth-like rock buildings. Solar chimneys can form the rocks breaking through the earth-like architecture.



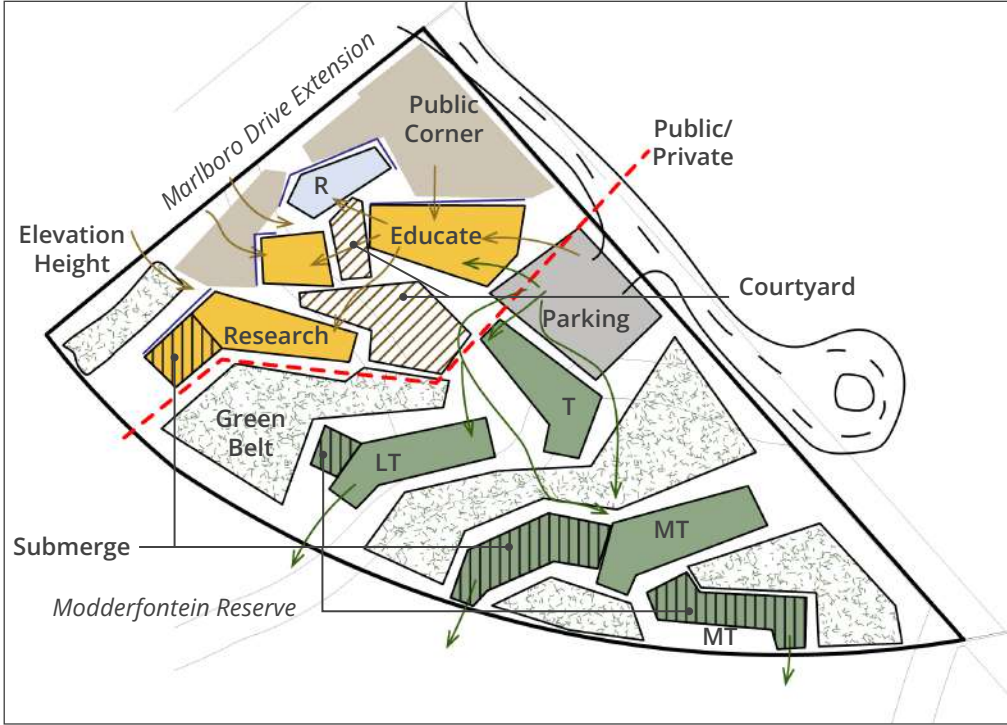
I decided to explore *Kintsugi* in terms of form: the building pieces come from an entire vessel. The decomposed form can offer the golden thread around and through its spaces.

The public corner welcomes people successfully but, the internal

courtyard needs to be developed more.

The building needs to be integrated with the landscape more using the slope. It also needs exploration of internal spatial planning, structural systems, services and materiality to develop the overall form.

Fig. 2.1.25
Kintsugi Revisited
(Author, 2022)



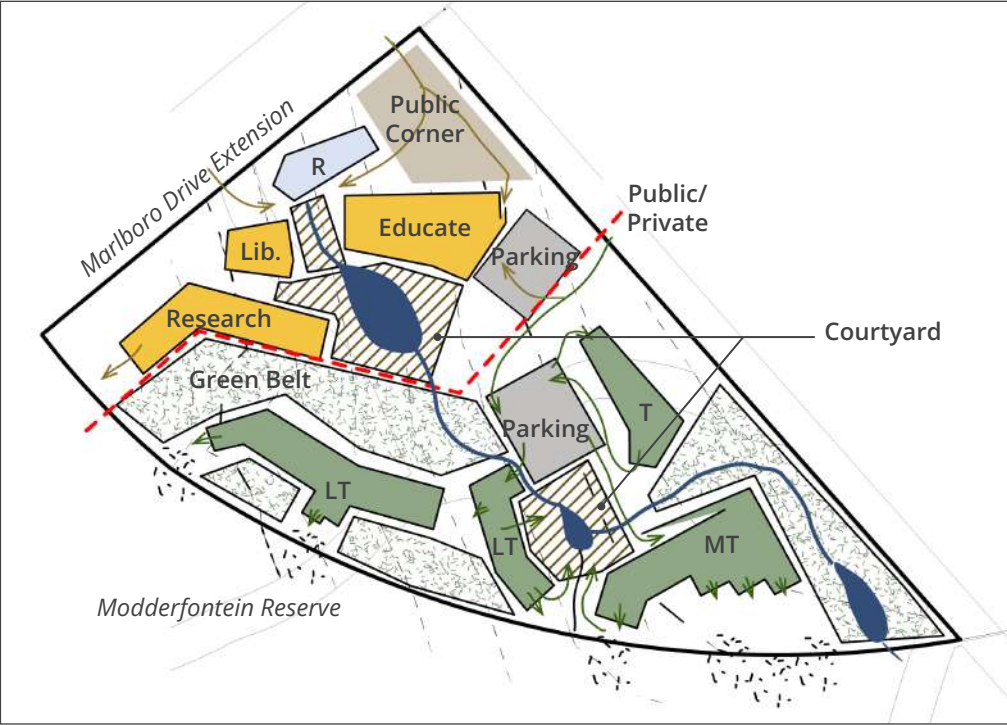
Rock-like and submerged buildings that are partially submerged are explored where they jut out towards the reserve. This allows a deeper site-architecture engagement. This is further emphasised: green landscape seems to be 'pulled' from the reserve (green belt).

The library can become public.

The research and training area can form a buffer between the public and private. It can also help to define the Marlboro street edge.

North-orientated buildings became a design driver.

Fig. 2.1.26
Outside Spaces
(Author, 2022)



The public parking works in terms of location but appears to be the 'centre' of the project.

The water system begins to terrace down the contours as a feature of the courtyard spaces. This informs one's sensory experience.

Fig. 2.1.27
Parking and Water System
(Author, 2022)



Physical *Kintsugi* (see page 152) model created: this deepens the notion of decomposition and re-composition.

There is now a 'main' rehabilitation reception which betters circulation.

The oblique form becomes a tool

for *Kintsugi* cracks throughout the buildings.

Parking becomes more functional from the street (east). It also begins to form 'part of the landscape' in its pocket-like shape.

Fig. 2.1.28
Concept and Circulation
(Author, 2022)



Technical System

Intent: To rehabilitate Modderfontein on three scales: fragmented communities, site alien species and individual drug addicts, through decomposition and re-composition in the form of **rammed earth's nurturing essence**.

Rammed earth is rehabilitative as on a community (large) scale, it can create jobs through its need for constant maintenance. On a site scale, rammed earth will be made using 'indigenous' excavated site soil. And, lastly, on an individual scale, rammed earth has an interesting connection to drug rehabilitation. Drug rehabilitation must be maintained consistently, just like rammed earth.

Additionally, rammed earth does not allow light into the building. This allows the **solar chimney to provide a cosy light**.

Rammed earth must be extracted or 'decomposed' from the earth's soil before compacting it into

its form or 're-composing' it. Similarly, these above scale issues must be decomposed before re-composition or rehabilitation.

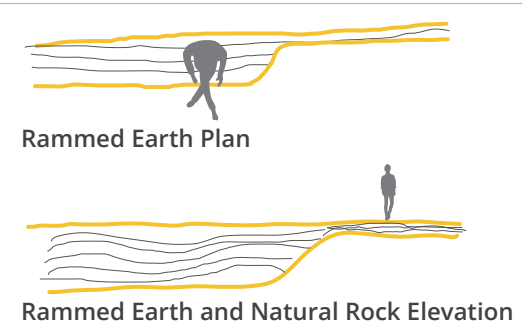
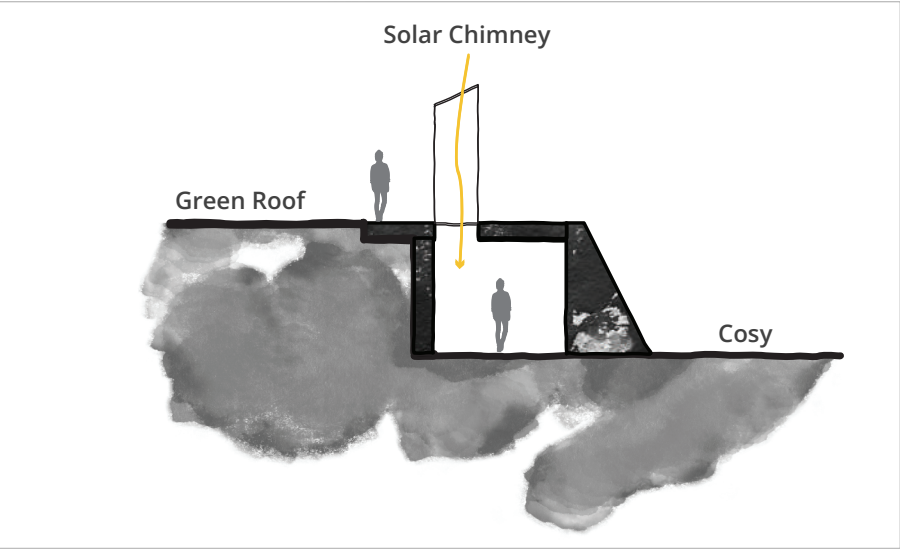
Rammed earth is sustainable, together with the choice of concrete. Sustainability is increased through recycled concrete aggregate and fly ash used in the concrete components.

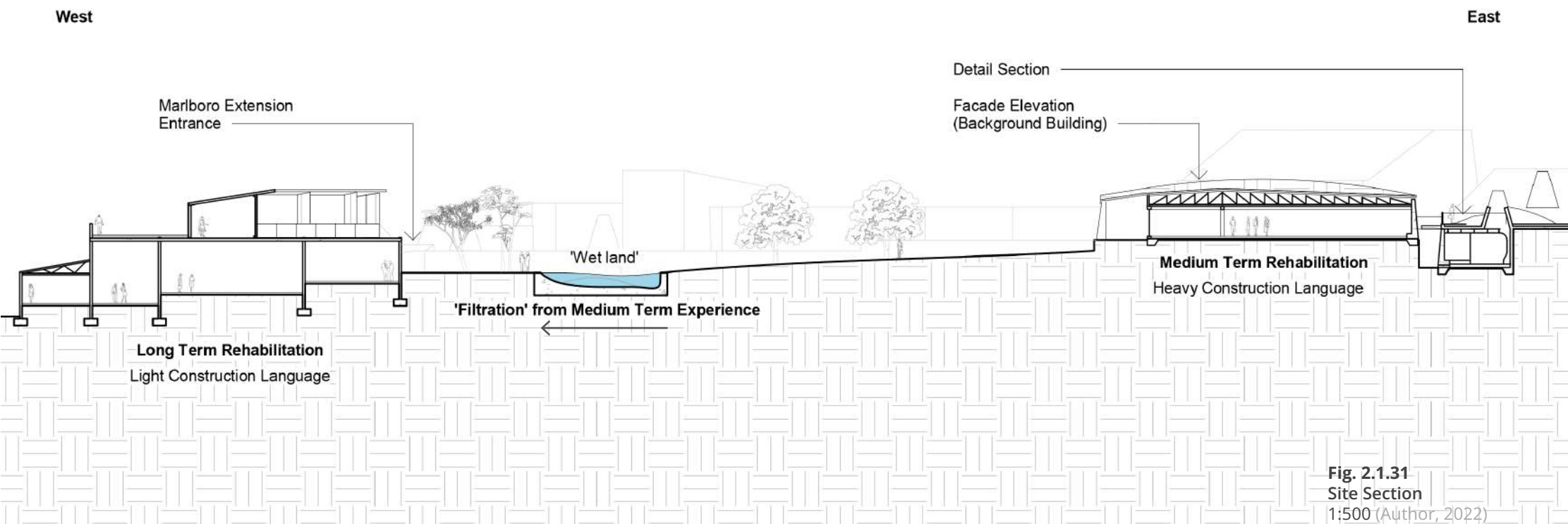
Rammed earth is connected to the use of natural material in therapeutic architecture as well as providing a visually clear 'making process' relating to phenomenology.

Rammed earth is connected to **Kintsugi** (Figure 2.1.3). Its crack extends from a wall into seating in plan and from facades to overhangs in elevation.

Fig. 2.1.29
Cosy Light Section
(Author, 2022)

Fig. 2.1.30
Kintsugi Connection: Materiality
(Author, 2022)





'Heavy' topics are decomposed in the medium-term facility through counselling. This is reflected through its 'heavy' architectural rammed earth and concrete. The medium-term aims at a deeper form of rehabilitation. Building users move from the medium-term facility into the long-term facility through a wetland. This wetland acts as a **filtration system where users are re-composed** through nature. The long-term facility involves living and actively working through drug rehabilitation with less monitoring and a greater degree of independence. This is reflected in its architecture through its use of timber construction and perforated Corten steel. Heavy elements are involved in the long-term facility while light elements can be seen in the medium-term facility. Specific rehabilitation methods can be the main focus in certain areas but it is not isolated. For example, two patients can have a deep discussion in the long-term rehabilitation centre.

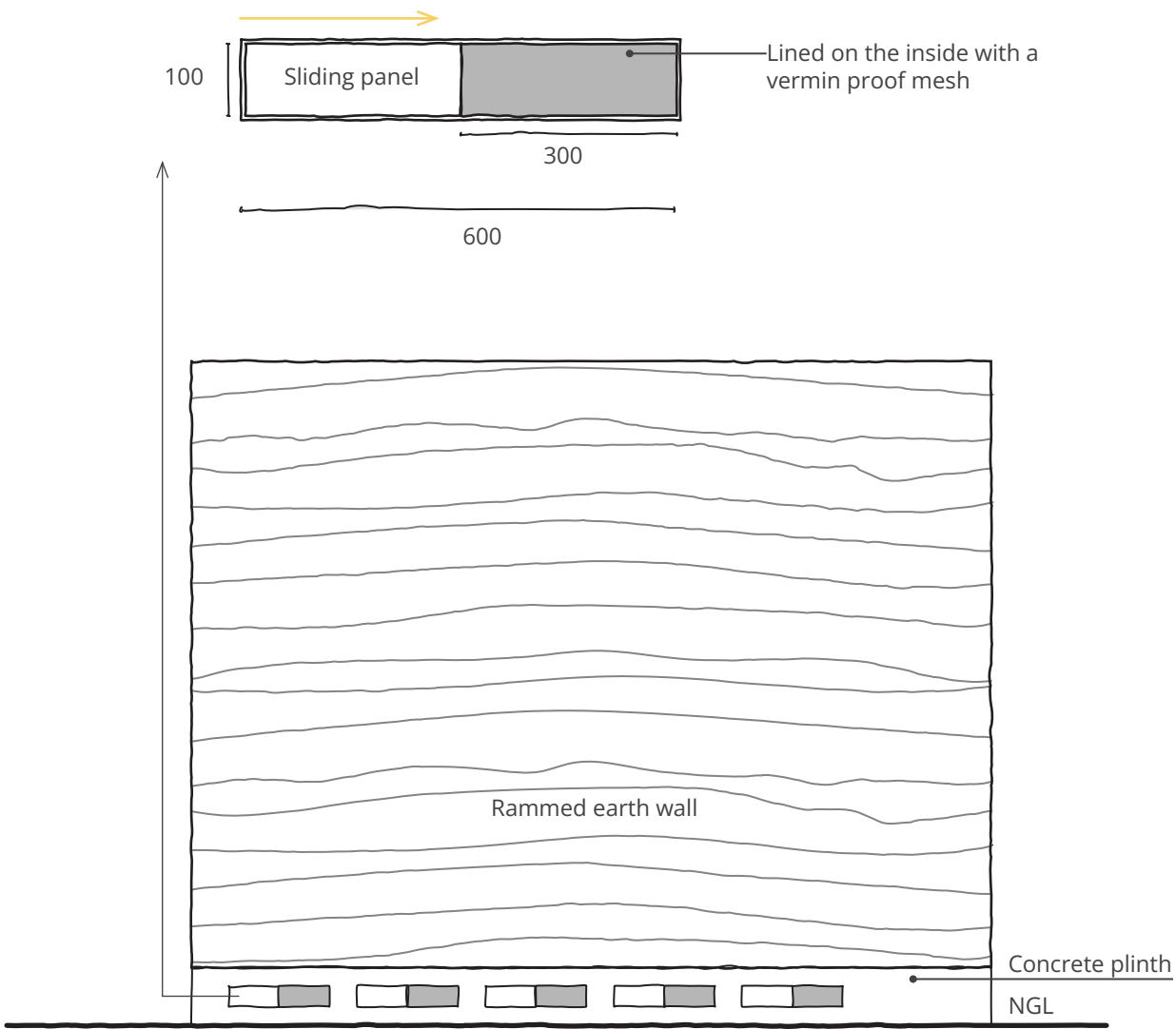


Fig. 2.1.32
Air Channel Sleeve Elevation
(Author, 2022)

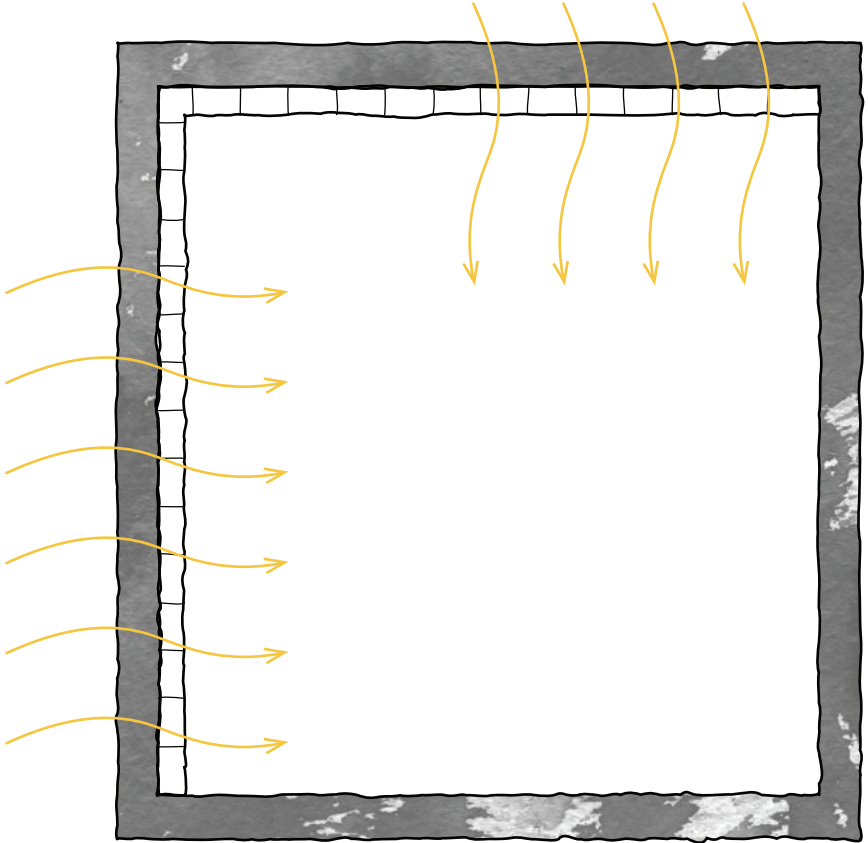


Fig. 2.1.33
Ventilation Grate Apron on Exterior Wall Edges Plan
(Author, 2022)

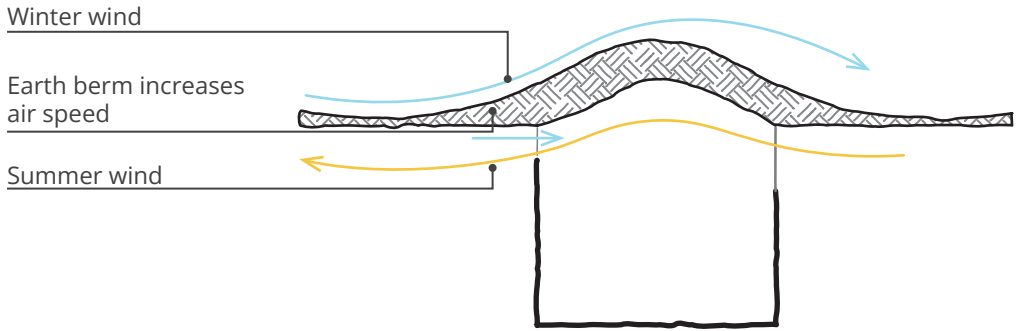


Fig. 2.1.34
Venturi Effect Berm System Using Earth Elevation
(Author, 2022)

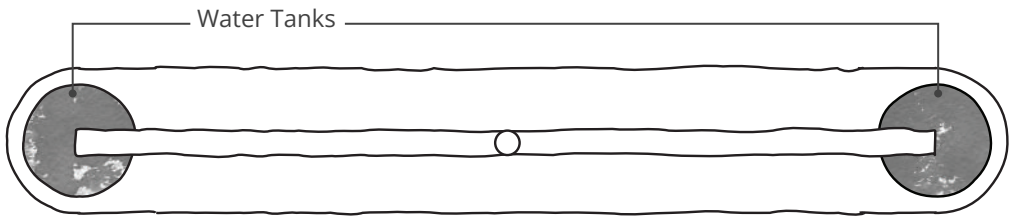
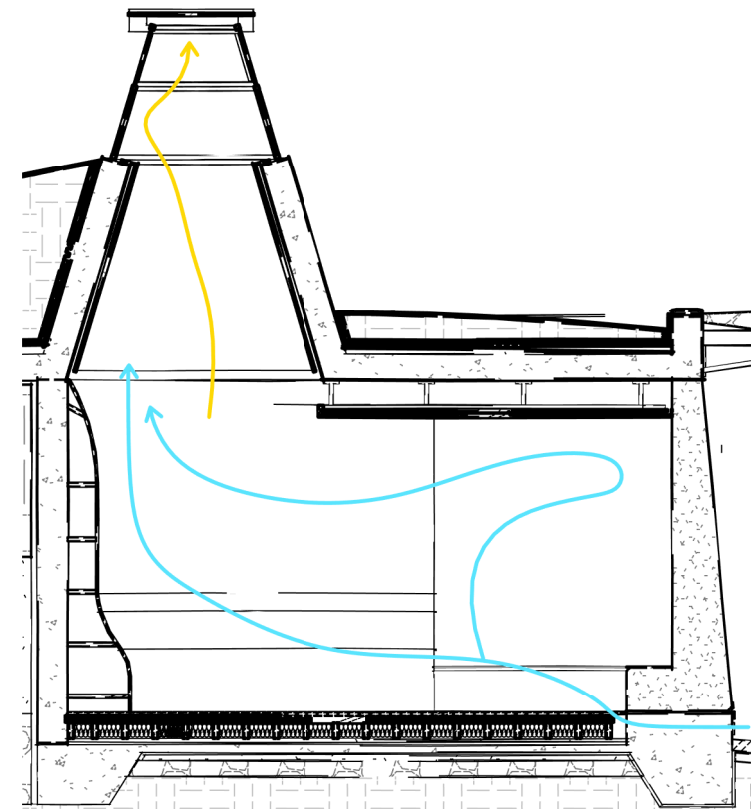
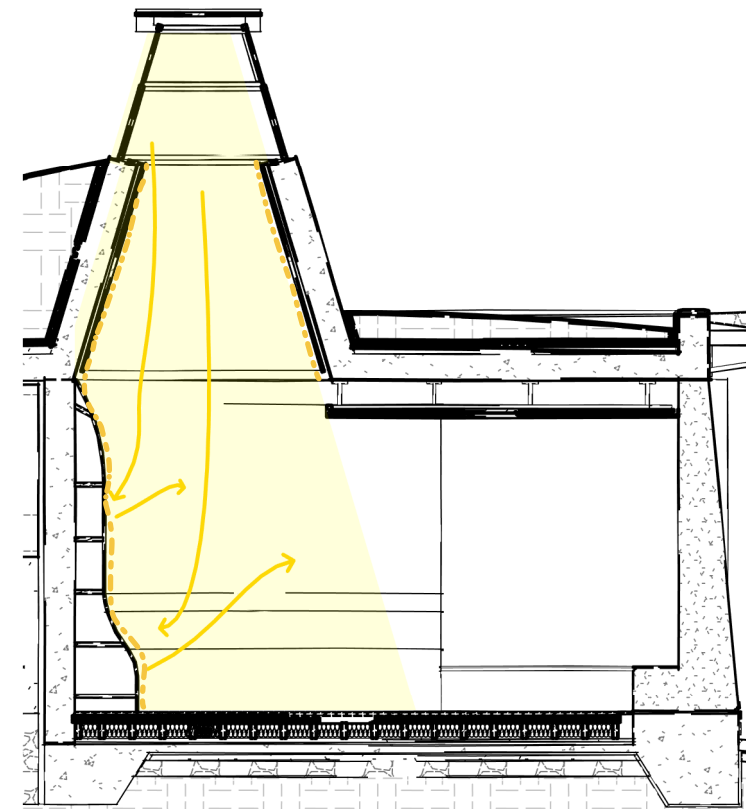


Fig. 2.1.35
Underground Storage Water Tank Plan
(Author, 2022)



Air enters through an air channel sleeve (bottom), hot air escapes into the south opening (into the page)

Fig. 2.1.36
Displacement Ventilation System: Air Flow
(Author, 2022)



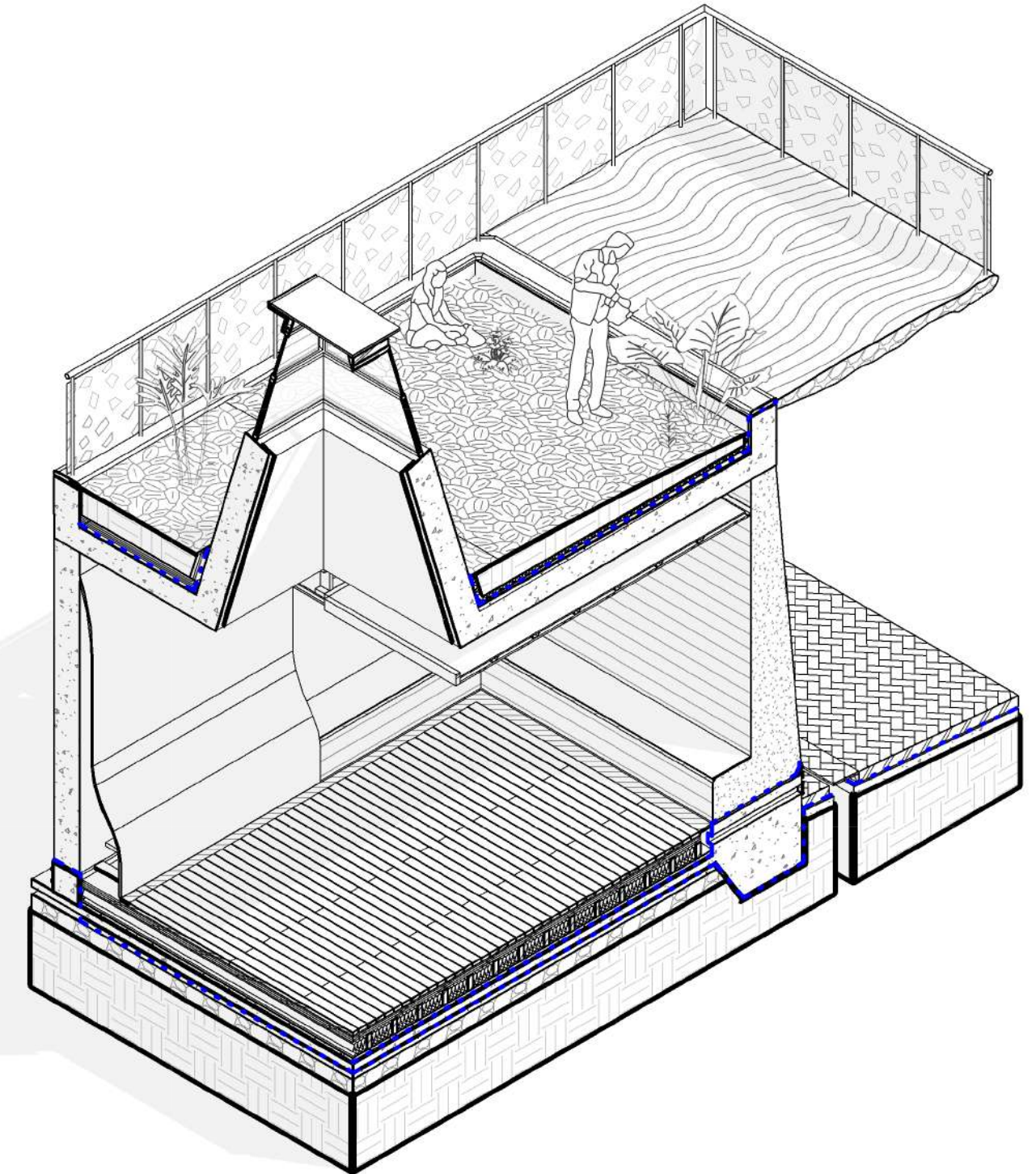
Cosy Counsel Room

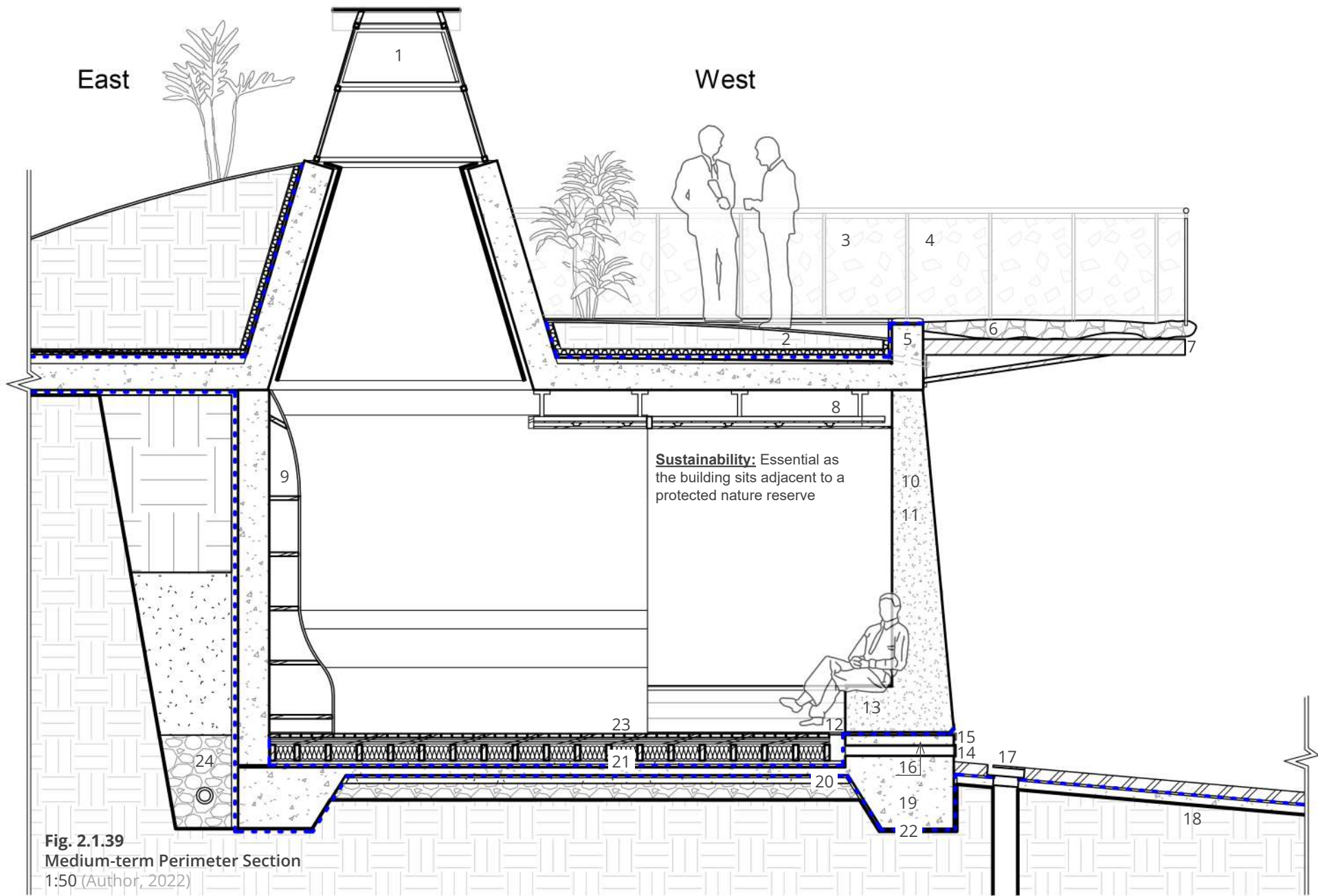
Fig. 2.1.37
Light Source and Reflective Essence
(Author, 2022)

Mass from nature: the sculptural solar chimneys puncture the landscape. It is as if the soft earth has been eroded by water to reveal these hard rocks in the landscape.

The solar chimneys provide a feeling of sculpture in the landscape. This creates a phenomenological experience. The solar chimney allows both an interior and exterior experience. In a way, the light coming from the high level is the 'light at the end of the tunnel'. This is relevant in the rehabilitation process and evident in phenomenology: an upwards effect is created (identification).

Fig. 2.1.38
Medium-term Perimeter Section Axonometric
(Author, 2022)





Labels

1. **Solar and Ventilation Chimney:** Part of displacement ventilation system to later detail
2. **Roof:** Green Roofing System on 30mm floated screed 30 MPA @ 28 days and concrete roof slab
3. **Oxidisation:** Material begins to blend into natural environment or seep (like sketch charette of chromatography)
4. Corten steel balustrade
5. 255mm upstand reinforced RCA (recycled concrete aggregate) concrete with fly ash roof slab to ENGINEERS Spec.
6. Natural rock overhang to be extracted from site context by expert to ENGINEERS spec.
7. 152x152mm steel I-beam and steel bracket fixed to RCA concrete slab to ENGINEERS spec.
8. **Ceiling:** Rift-sliced wood veneer suspended ceiling
9. **Joinery:** Steam bent wood on SAP grid system for natural and soft atmosphere and gloss sealed to reflect light
10. **Heavy Materiality:** 'Medium Term Centre' where 'heavy' subjects are decomposed
11. **Indigenous Rammed Earth:** (Ties into Nature Reserve): Requires maintenance like staying 'clean' or constant nurturing in looking after oneself. Maintenance becomes a ritual which ties into phenomenology
12. **Ventilation Grate:** Apron on exterior wall edges
13. **Rammed Earth Seating:** Rammed earth seat with rustic French oak wood board top surface, sealed to maintain natural grain
14. **Displacement Ventilation System:** RCA (recycled concrete aggregate) concrete with fly ash plinth to ENGINEERS spec. with cast air louvers by specialist
15. **Edging:** Mild steel angle edging on concrete plinth rammed earth edges to produce shadow line and express material junctions
16. Plinth air channel sleeve with edge elevation sliding system lined on the inside with a vermin proof mesh, openings at 800mm spacing
17. Stainless steel channel drain surrounded by brick herringbone paving pattern
18. NGL to be set to fall away from building 1:100
19. **Foundation:** New RCA (recycled concrete aggregate) concrete with fly ash edge beam to ENGINEERS spec.
20. Screed on DPC on RC surface bed 50mm river sand-blinding layer on compacted fill
21. DPC
22. DPM
23. Timber flooring system
24. **Drainage:** 110 Dia. PVC drain pipe wrapped in Geo-textile layer, encased in course aggregate under fine aggregate under 50mm layers of compact fill

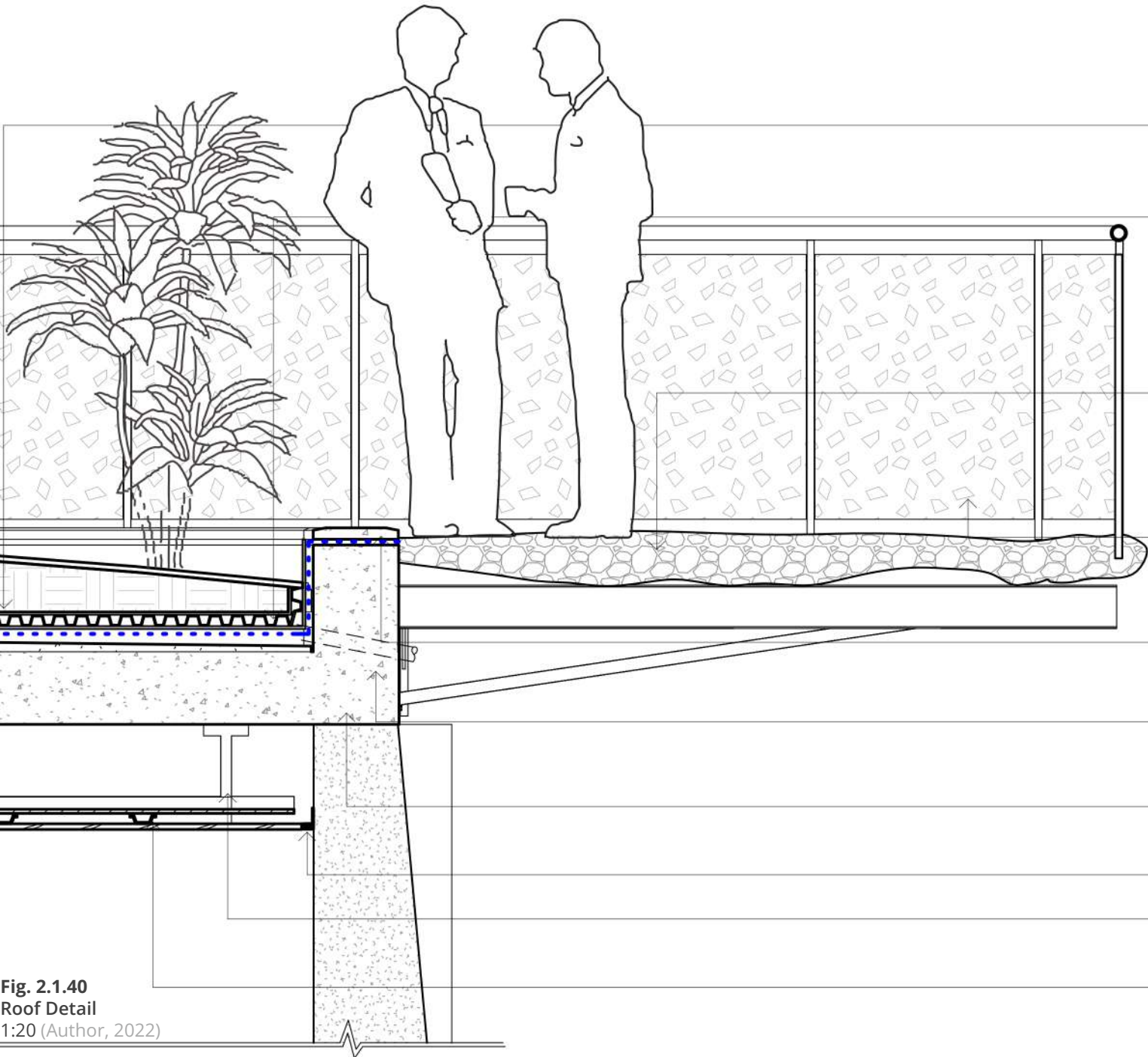


Fig. 2.1.40
Roof Detail
1:20 (Author, 2022)

- Roof:** Green Roofing System on 30mm floated screed 30 MPA @ 28 days and concrete roof slab
- Habitable Green Roofing System:** Indigenous grass to ARCHITECTS later spec. on min 50mm soil. Waterproofing system to consist of Geotech-style fabric on drainage cell layer on root barrier on waterproofing membrane to supplier's spec. Supplier: Sika
- Overhang:** Natural rock overhang to be extracted from site context by expert to ENGINEERS spec. 152x152mm steel I-beam and steel bracket fixed to RCA concrete slab at 800mm spacing to ENGINEERS spec. Supplier: BSI Steel
- Balustrade:** 50mm Dia. aluminum handrail on lasercut perforated 2400 x 1200 mm Corten steel sheets to later detail balustrade set in rock with silicon buffer to Eng. Spec.
- Coping:** Precast concrete coping Supplier: Concrete Slab Supplies
- Spout chased into slab at angle held in place by stainless steel flange plate water to drain to stainless steel channel drain to basement watertanks behind section cut
- Slab:** 255mm upstand reinforced RCA (recycled concrete aggregate) concrete with fly ash slab to ENGINEERS Spec.
- 50 x 20 x 2mm perimeter channel
- 25mm mild steel strap hangers at 1200 c/c
- 60 x 40mm mild steel channel at 1200 mm c/c

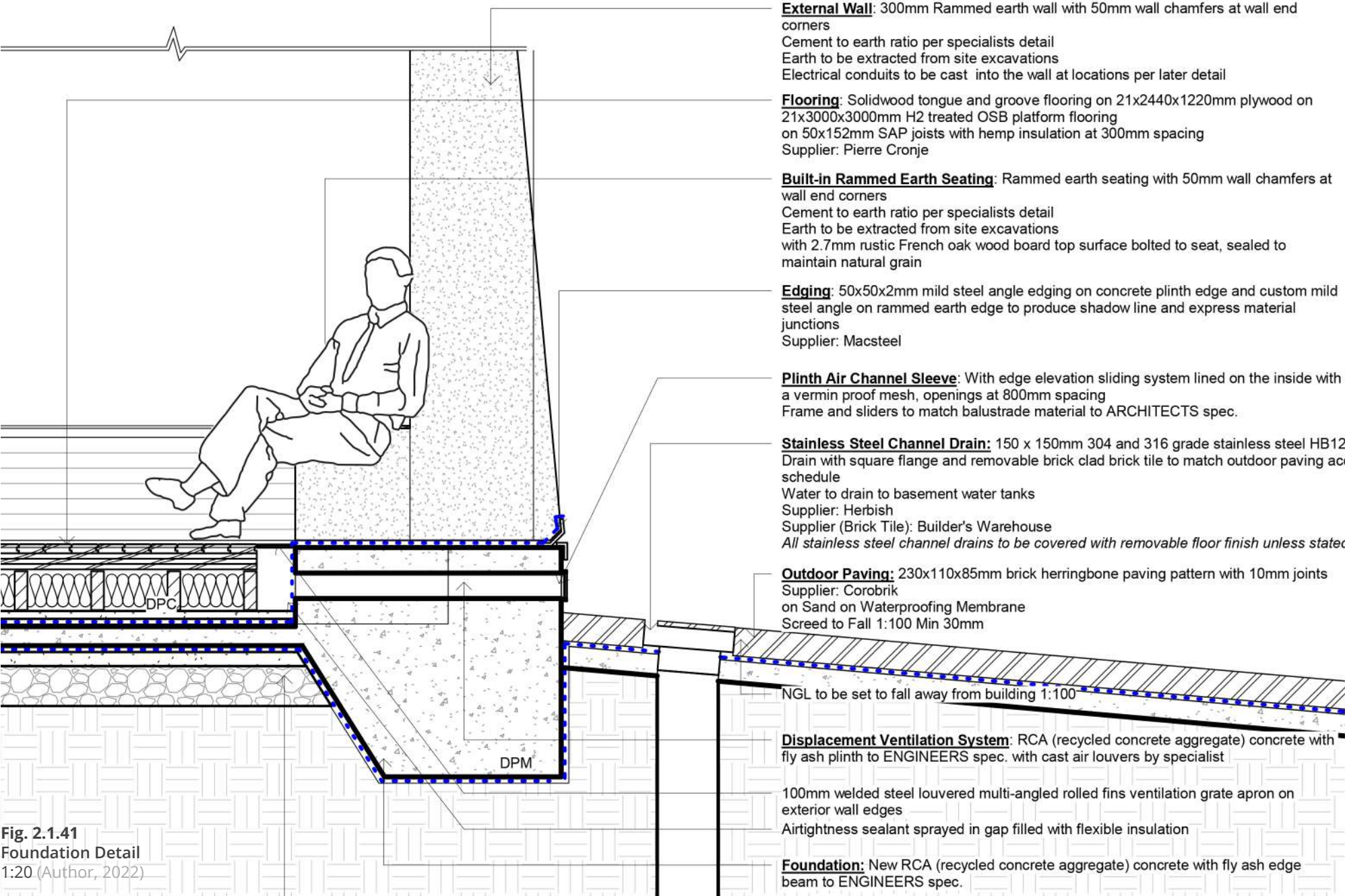
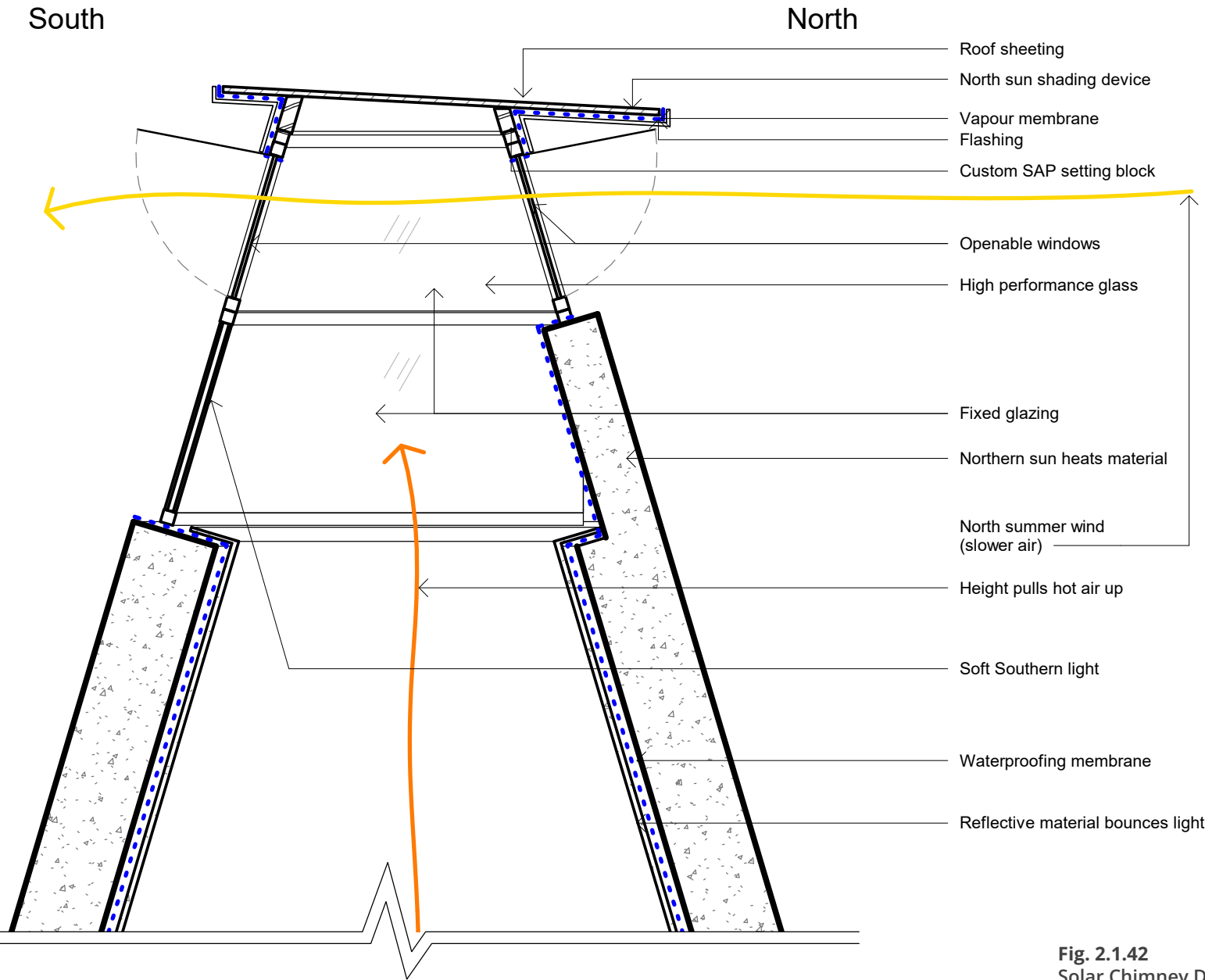


Fig. 2.1.41
Foundation Detail
1:20 (Author, 2022)

- External Wall:** 300mm Rammed earth wall with 50mm wall chamfers at wall end corners
Cement to earth ratio per specialists detail
Earth to be extracted from site excavations
Electrical conduits to be cast into the wall at locations per later detail
- Flooring:** Solidwood tongue and groove flooring on 21x2440x1220mm plywood on 21x3000x3000mm H2 treated OSB platform flooring on 50x152mm SAP joists with hemp insulation at 300mm spacing
Supplier: Pierre Cronje
- Built-in Rammed Earth Seating:** Rammed earth seating with 50mm wall chamfers at wall end corners
Cement to earth ratio per specialists detail
Earth to be extracted from site excavations
with 2.7mm rustic French oak wood board top surface bolted to seat, sealed to maintain natural grain
- Edging:** 50x50x2mm mild steel angle edging on concrete plinth edge and custom mild steel angle on rammed earth edge to produce shadow line and express material junctions
Supplier: Macsteel
- Plinth Air Channel Sleeve:** With edge elevation sliding system lined on the inside with a vermin proof mesh, openings at 800mm spacing
Frame and sliders to match balustrade material to ARCHITECTS spec.
- Stainless Steel Channel Drain:** 150 x 150mm 304 and 316 grade stainless steel HB125V Floc Drain with square flange and removable brick clad brick tile to match outdoor paving according to schedule
Water to drain to basement water tanks
Supplier: Herbish
Supplier (Brick Tile): Builder's Warehouse
All stainless steel channel drains to be covered with removable floor finish unless stated other
- Outdoor Paving:** 230x110x85mm brick herringbone paving pattern with 10mm joints
Supplier: Corobrik
on Sand on Waterproofing Membrane
Screed to Fall 1:100 Min 30mm
- NGL to be set to fall away from building 1:100
- Displacement Ventilation System:** RCA (recycled concrete aggregate) concrete with fly ash plinth to ENGINEERS spec. with cast air louvers by specialist
100mm welded steel louvered multi-angled rolled fins ventilation grate apron on exterior wall edges
Airtightness sealant sprayed in gap filled with flexible insulation
- Foundation:** New RCA (recycled concrete aggregate) concrete with fly ash edge beam to ENGINEERS spec.



Light is brought into the space through the solar chimney. The light then gets bounced from a reflective surface inside, to the rest of the space.

Glazing is situated on south, east and west sides. It has smaller glazing on the north which receives summer wind. Air exits through the south opening.

Fig. 2.1.42
Solar Chimney Detail: *Bernoulli's Principle and Stack Ventilation*
1:20 (Author, 2022)

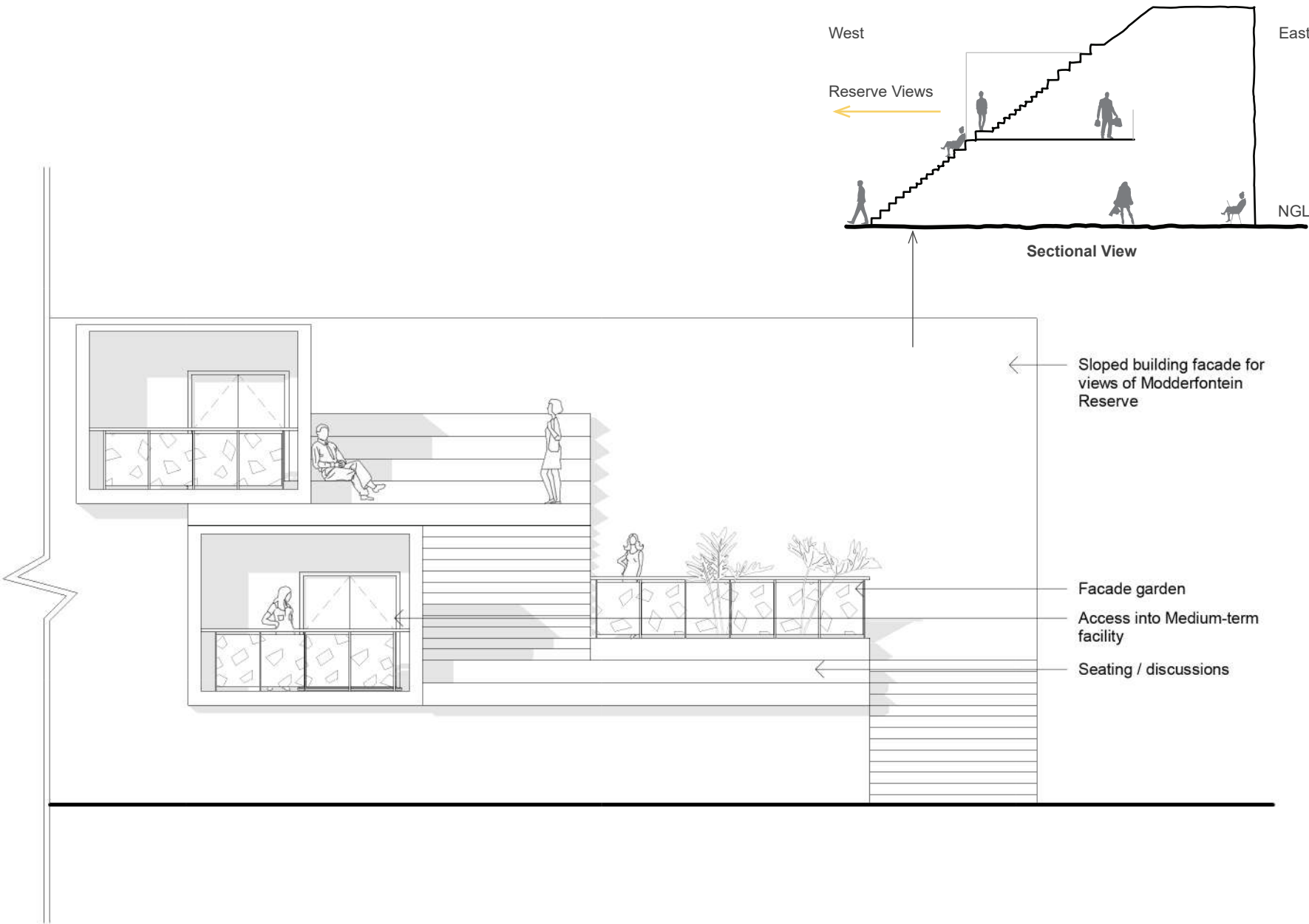


Fig. 2.1.43
Facade Elevation (Indicated in Site Section)
1:100 (Author, 2022)

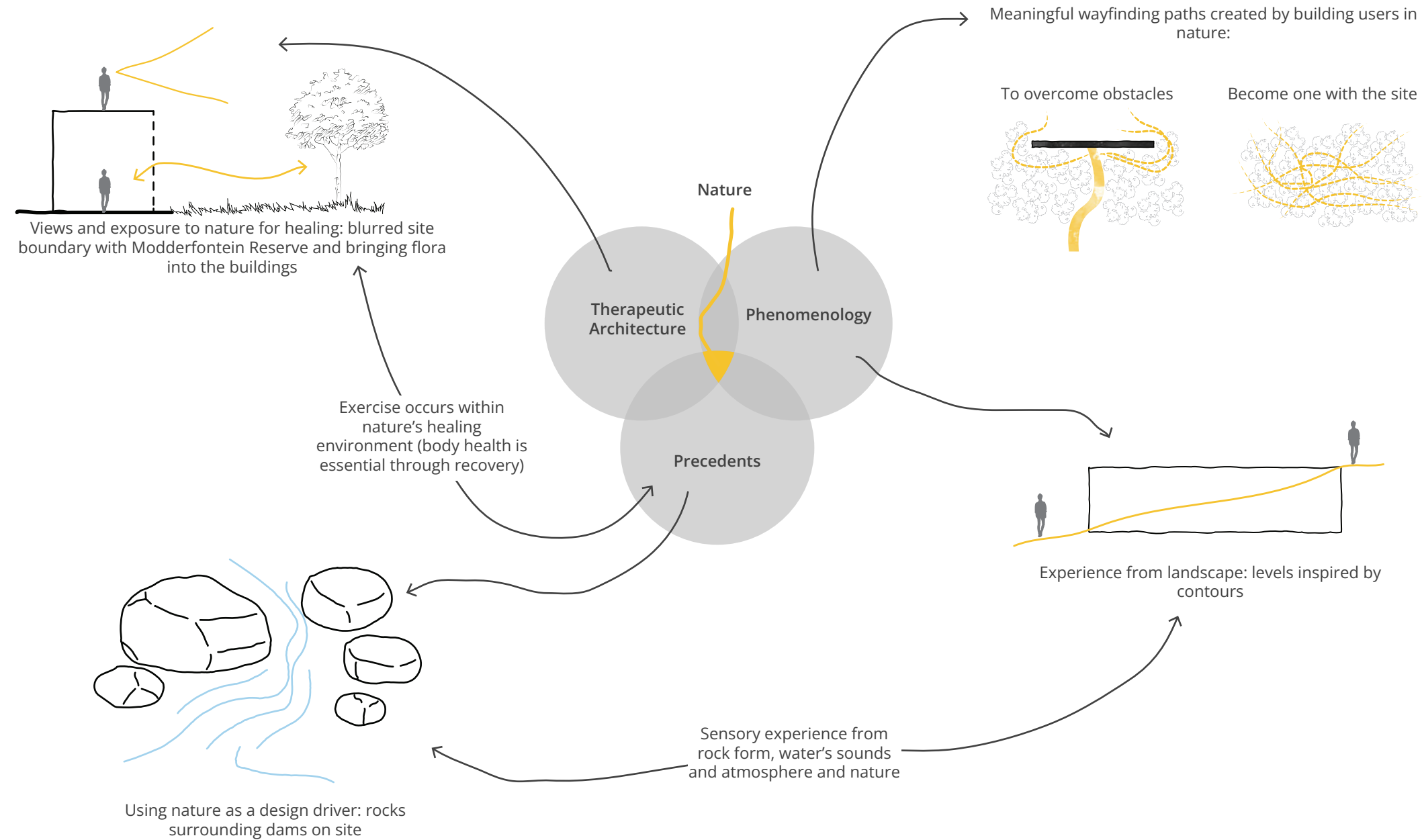
Design Drawings

Reader's Note:

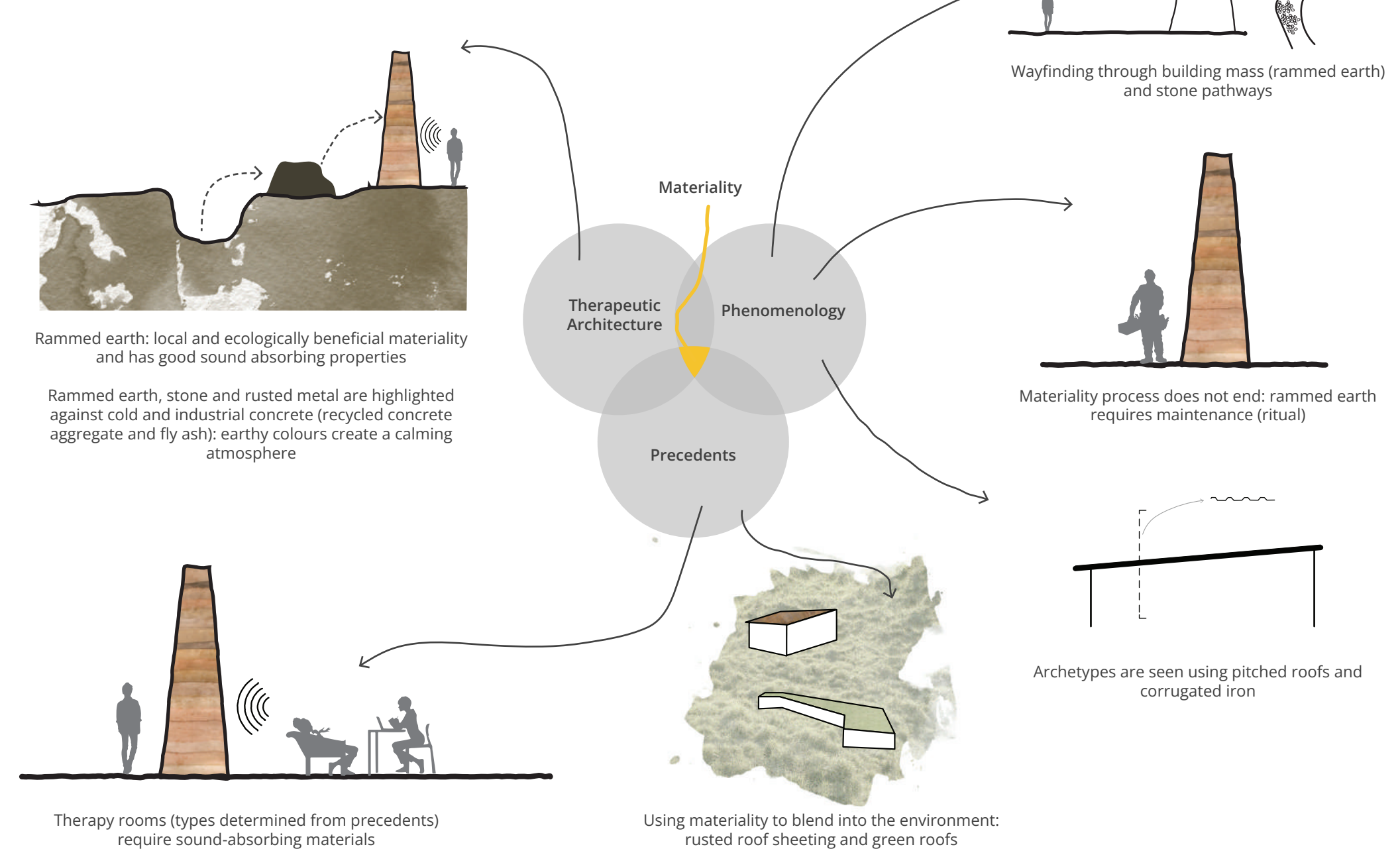
All vegetation shown in this chapter is **indigenous flora** and part of the Modderfontein Plant Program. All **contour lines** are in **two metre intervals**.



Theoretical Links to Design



Theoretical Links to Design

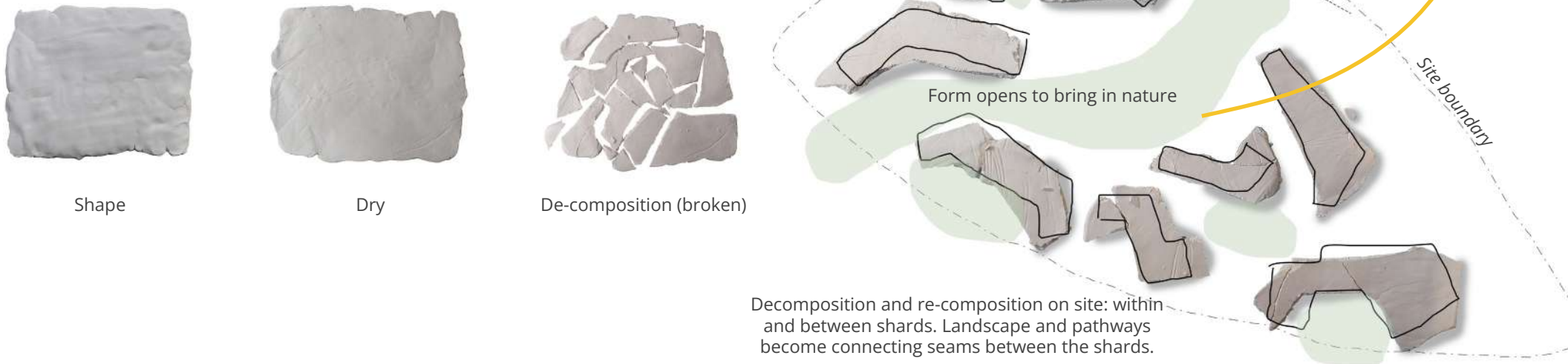


Sketch Charette Revisited

Multi-scale Decomposed Issues:

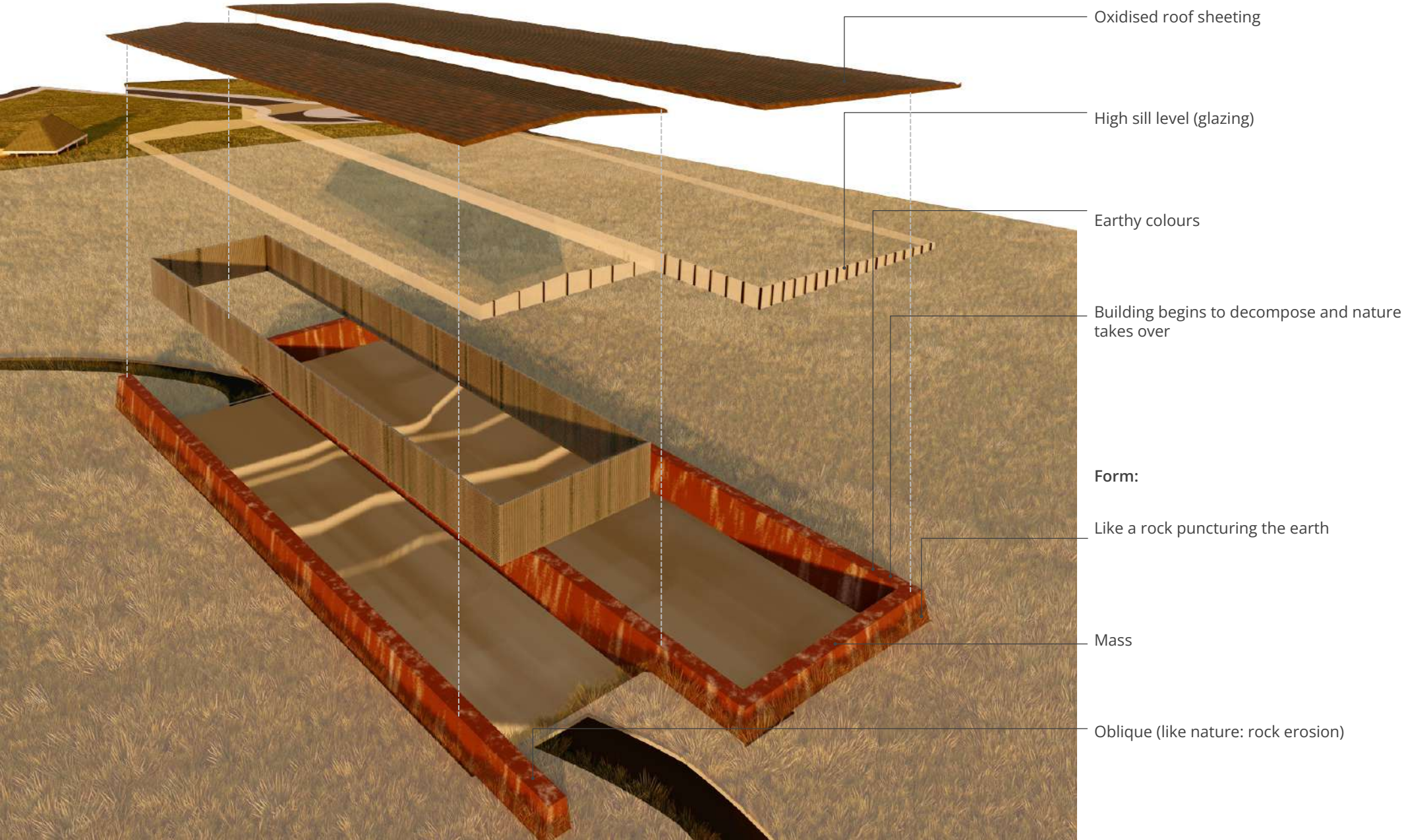


Concept Model *Kintsugi* Process

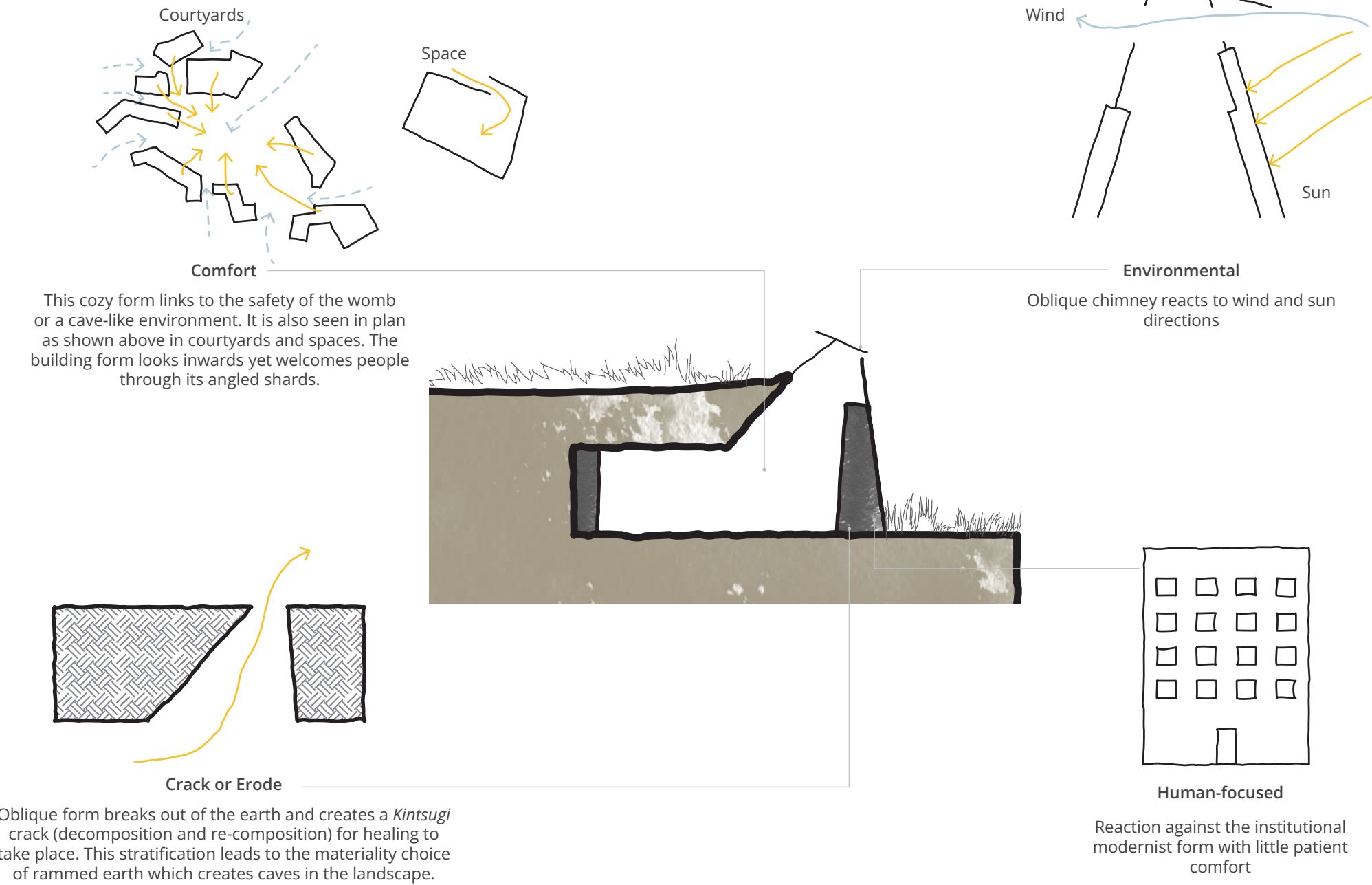


Form and Materiality: Phenomenology

According to *Genius Loci* (phenomenology), one should use topography above historical buildings as an initial design source. As mentioned previously, this existing dynamite storage unit has weathered to the point of becoming part of the site. Therefore, becoming a design source.



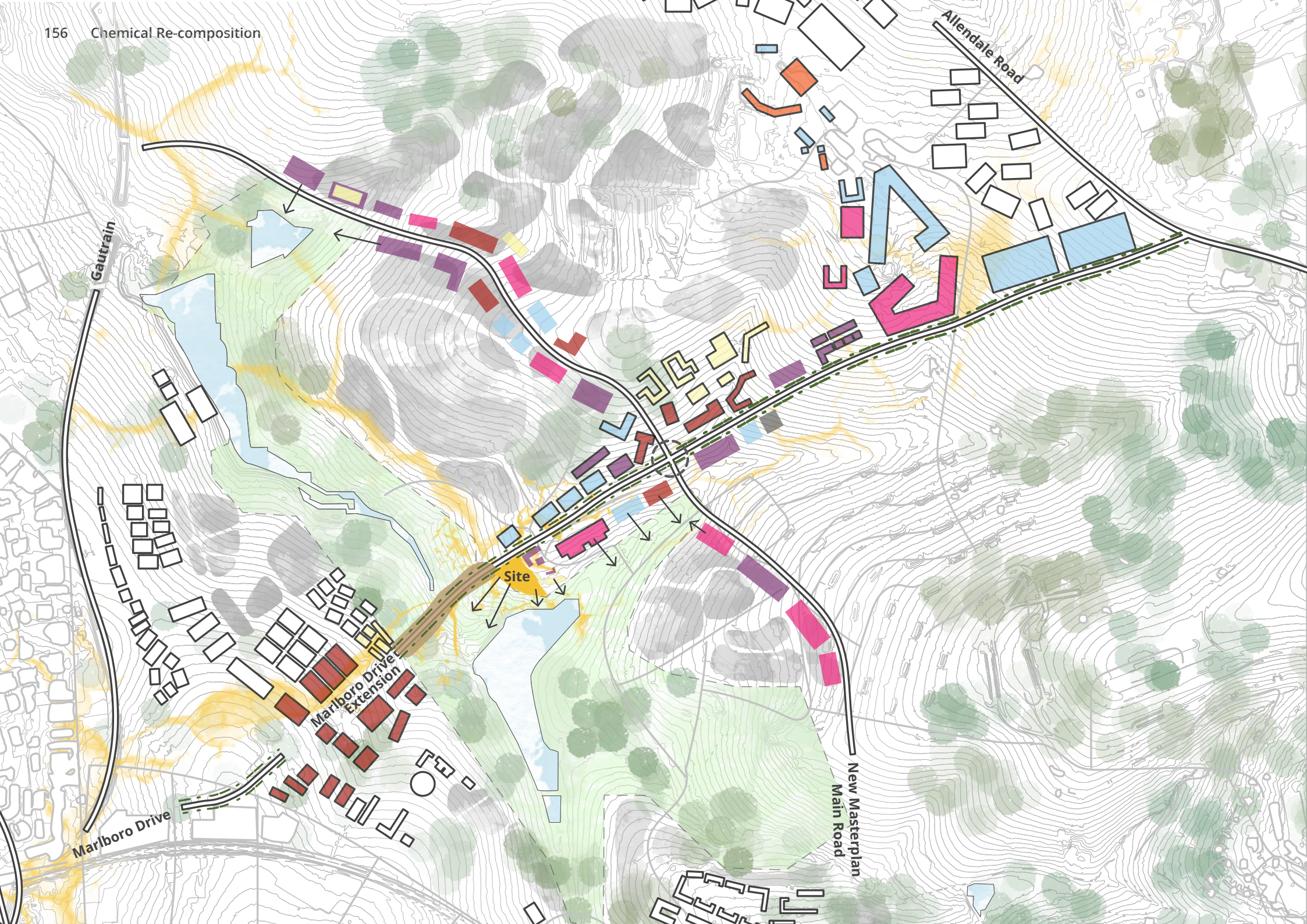
Form and Materiality: Rationalisation



Masterplan

This drug rehabilitation centre is part of an urban framework that can benefit (rather than create gated communities) and glue the surrounding fragmented communities. These communities result from segregated Apartheid planning. The M&T Development Masterplan creates two major links through new main roads. These roads open surrounding communities to more accessible resources in neighbouring areas and the new development. The new development can advantage these fragmented communities by creating a public service masterplan, rather than an exclusive one. Services that can aid an inclusive area include schools, mixed-use buildings, childcare facilities, clinics, community centres, public transport, retail and public amenities. These public facilities can become highly accessible to pedestrians by bordering the new main road links in the planned mixed-use areas. I have allocated zones to the mixed-use area forms in M&T

Development's Masterplan, as well as added public buildings along the new main roads. Marlboro Drive Extension's buildings on its far edges – namely business and light industrial or commercial buildings – have already been allocated in the existing masterplan.



Masterplan

General Key:

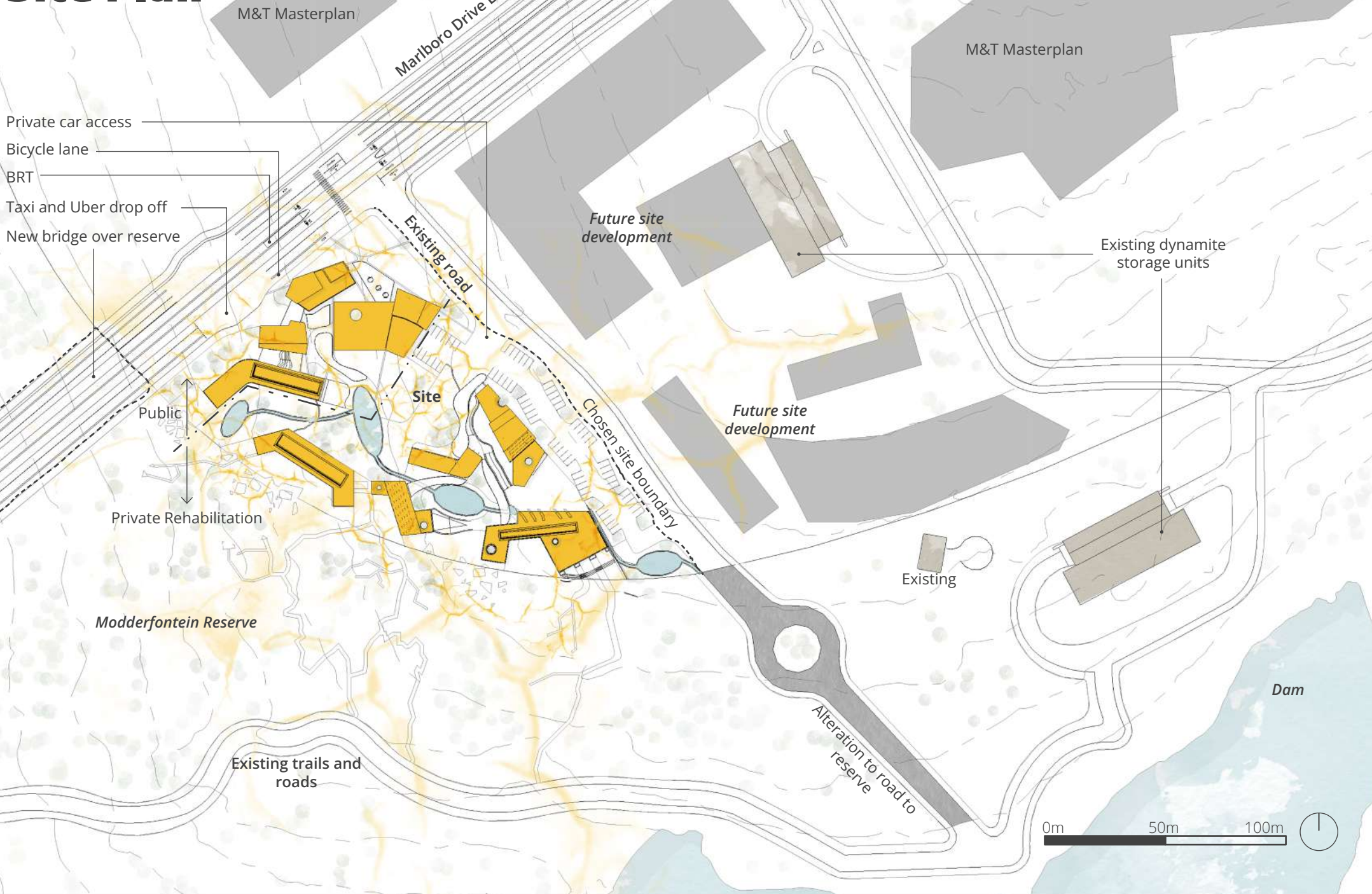
- Modderfontein Reserve
- Soft Spaces
- Main Roads
- Secondary Roads
- Dams
- Site
- Existing Buildings
- Masterplan Buildings
- Residential Gated Communities (Masterplan)
- BRT
- Linear Park as a multi model mobility spine
- Landscape bridge across low-lying nature reserve

Allocated Mixed-use Key:

- Residential
- Commercial
- Civic/Community
- Industry
- Business/Retail
- Institutional
- Forms on Masterplan
- Own Additions
- Reserve Access Points



Site Plan

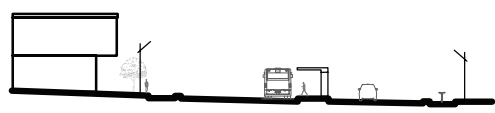


Placement

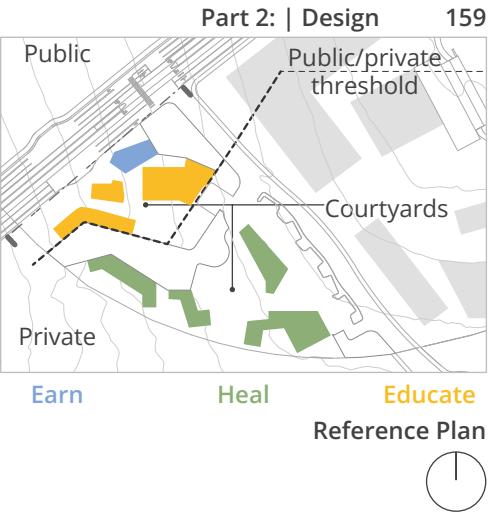
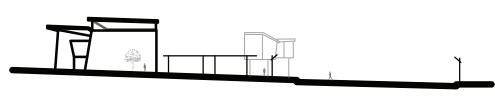
Marlboro Drive Elevation



Marlboro Drive Threshold

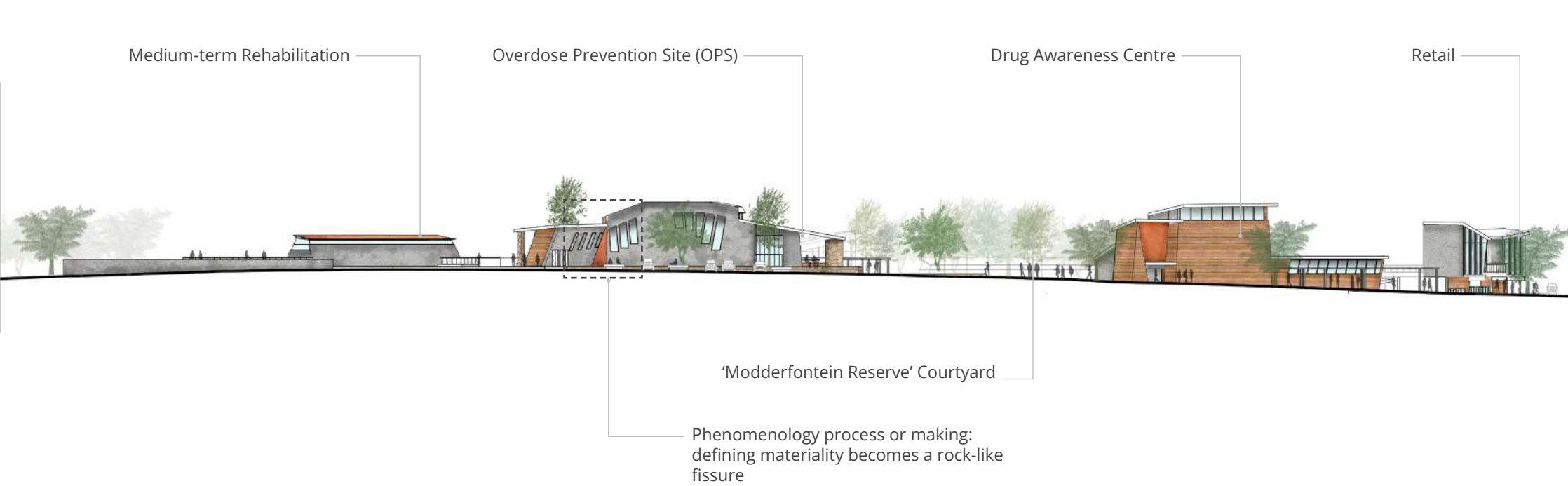
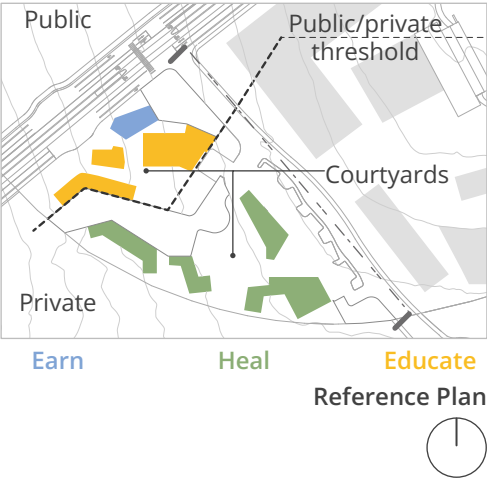


Marlboro Drive - Public Square Threshold



Placement

Future Site Development Elevation

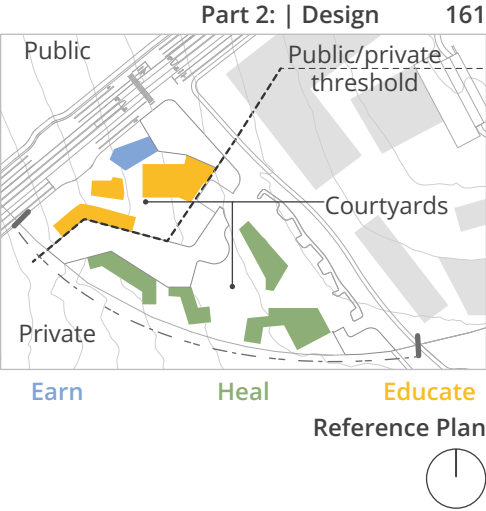


Future Site Development Threshold

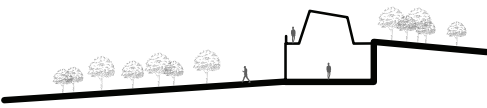


Placement

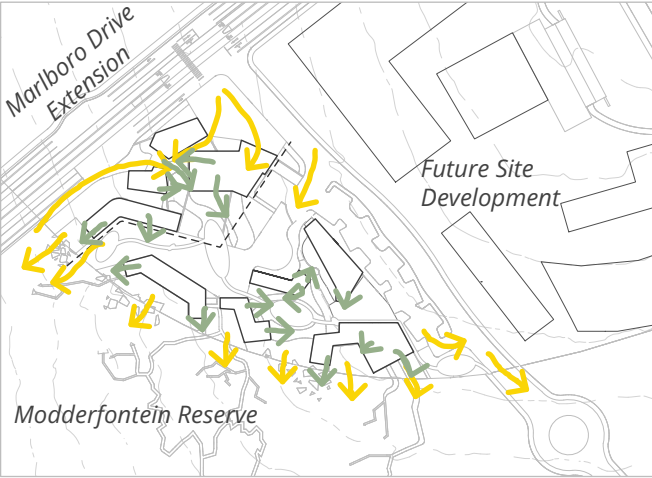
Modderfontein Reserve Elevation



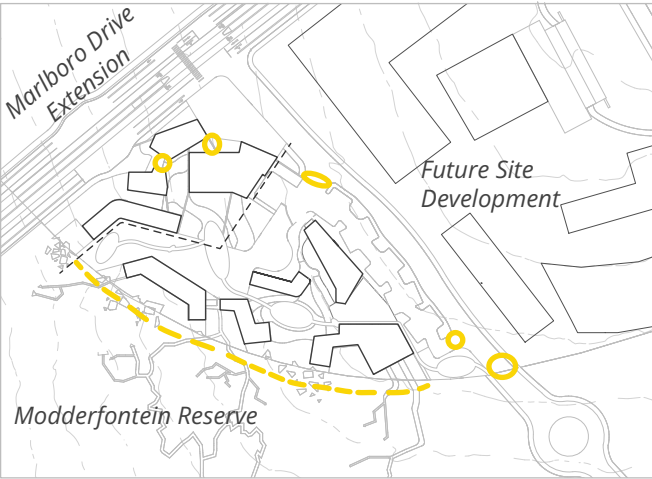
Reserve Threshold



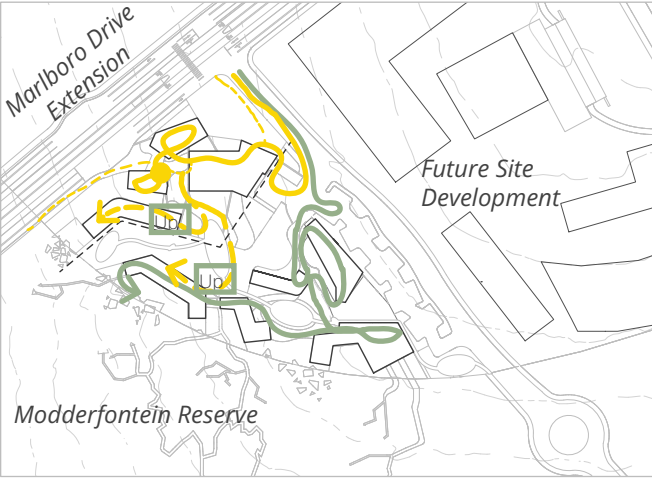
Building Rationality



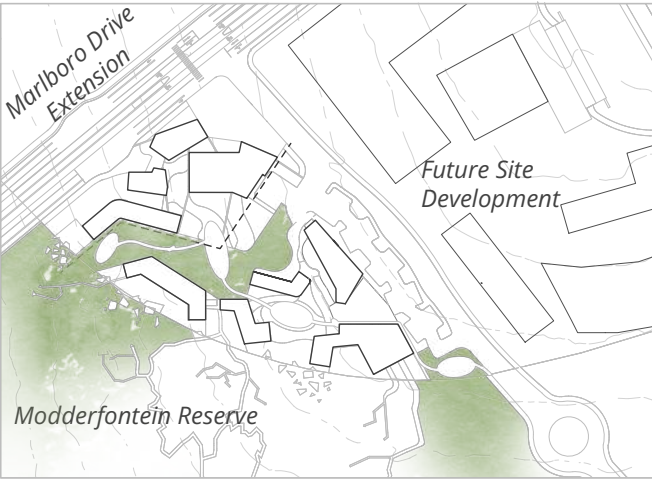
Interlinks and Intra-links (Through Courtyards)



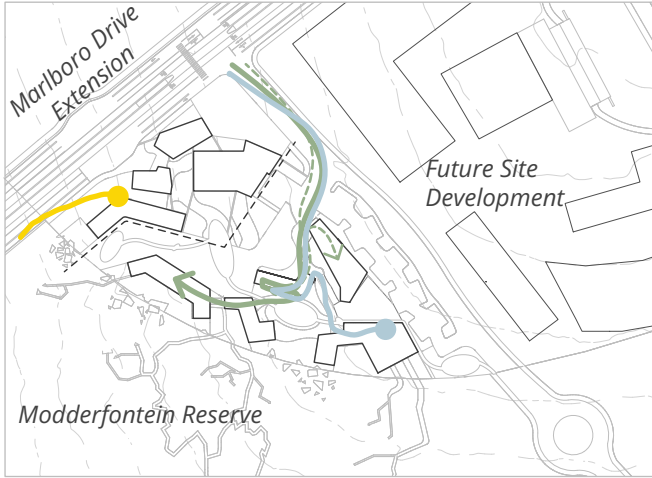
Control Points and Blurred Edges
(Patients seek rehabilitation at own will)



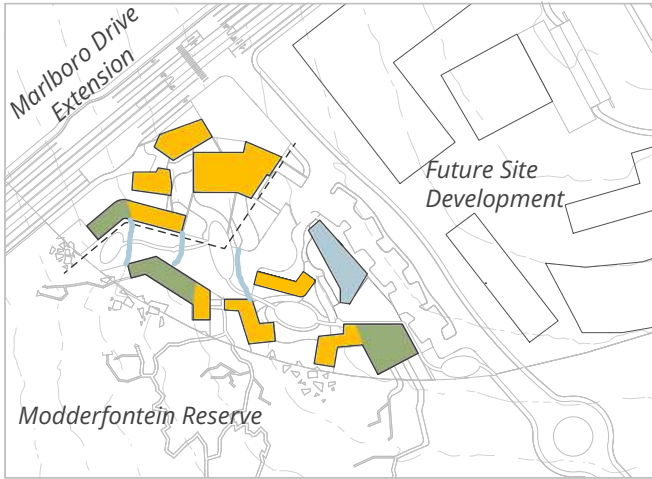
User Circulation
Public Member
Patient
Roof Circulation: 'Up'



Modderfontein Reserve and Site Blur
(Experience of Nature)

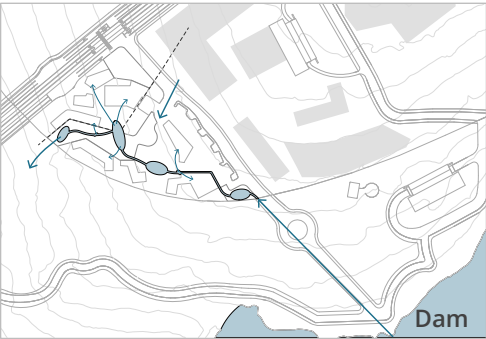
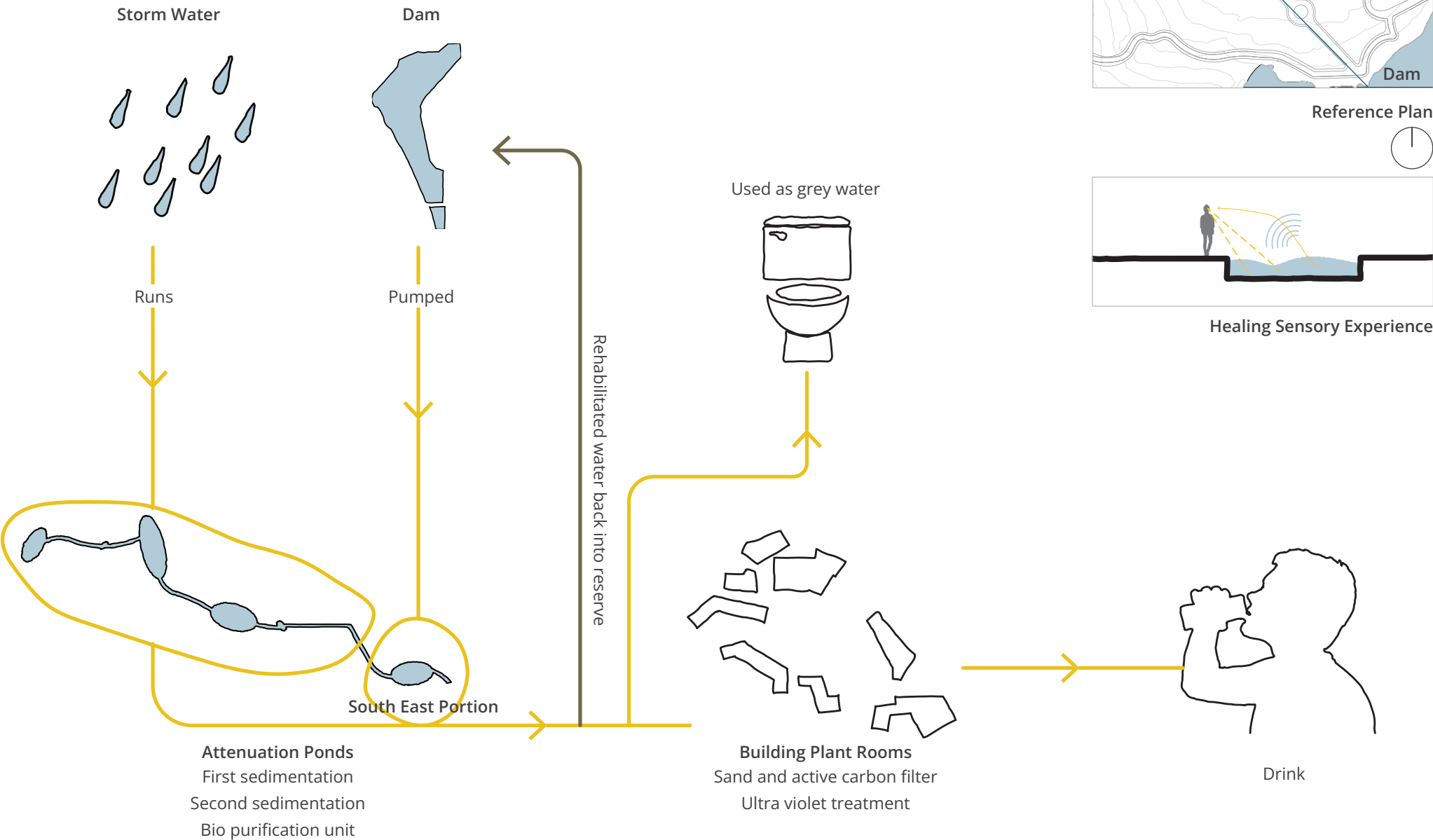


Professional Circulation
Nurse
Researcher
Therapist

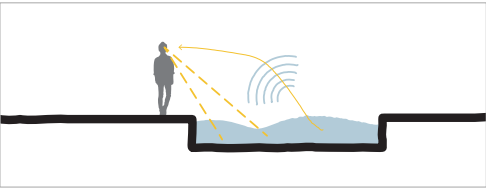


Cut, Fill (Slope) and Raise
Contour-following Retaining Wall Wayfinding

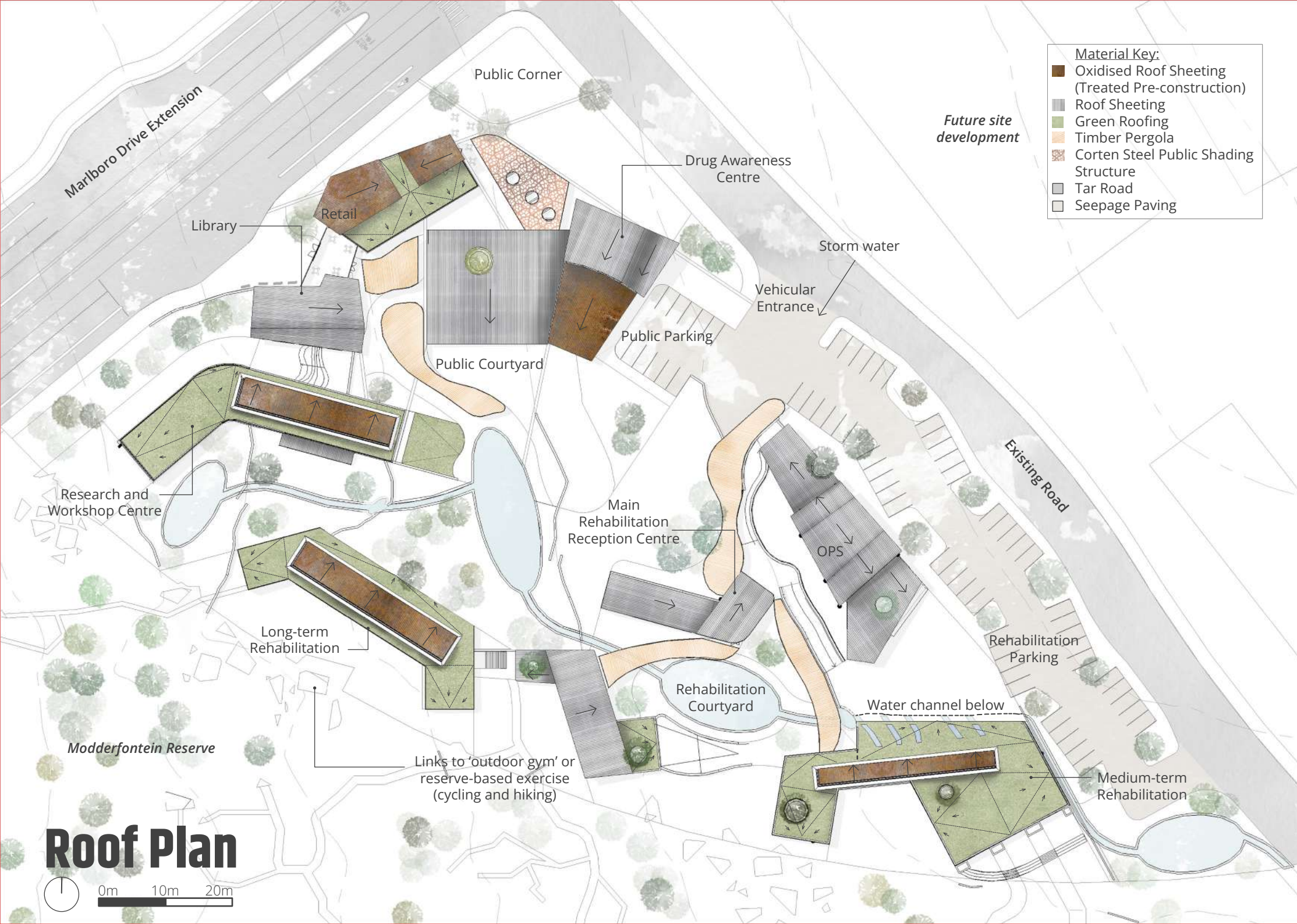
Water Filtration Process

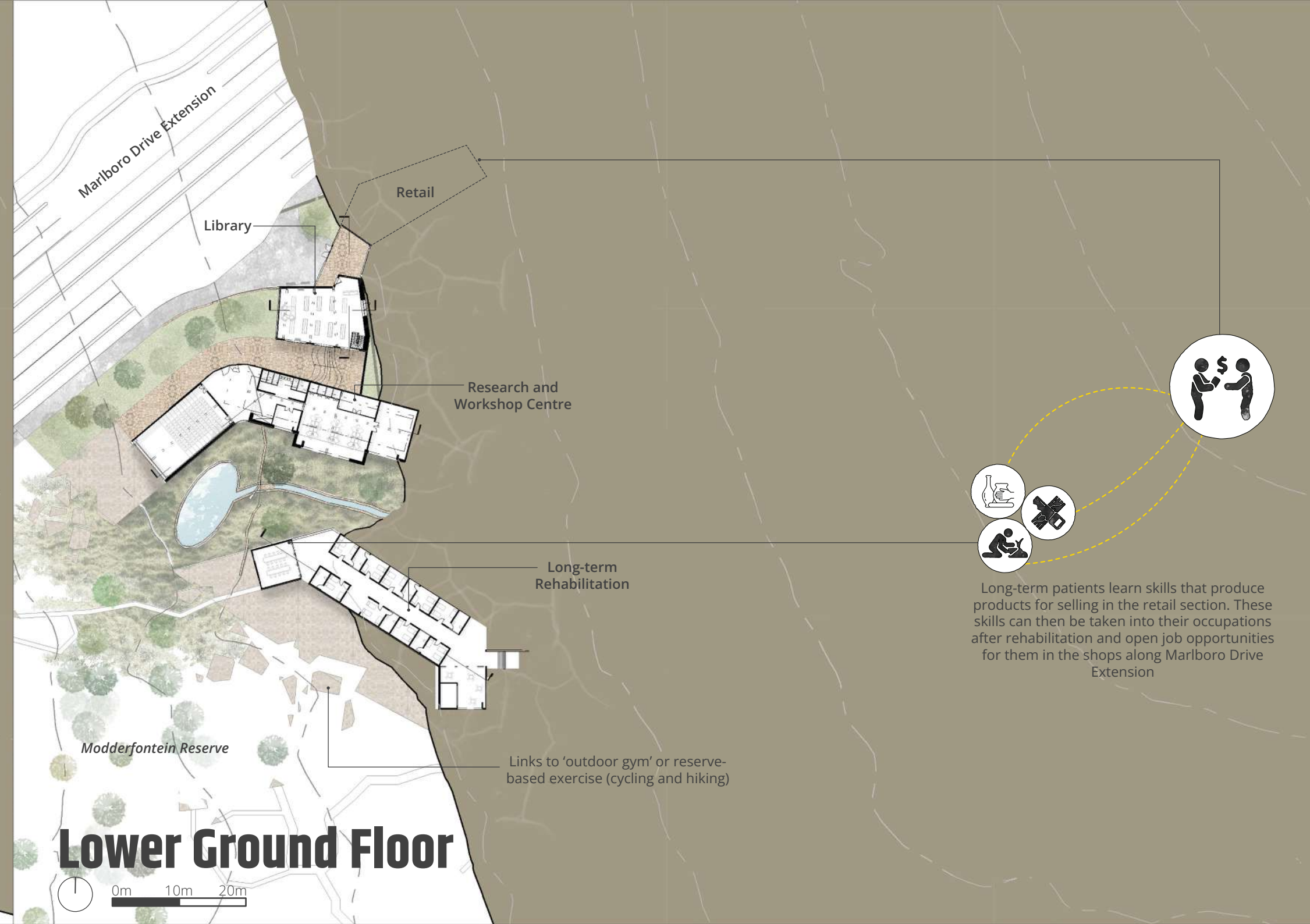
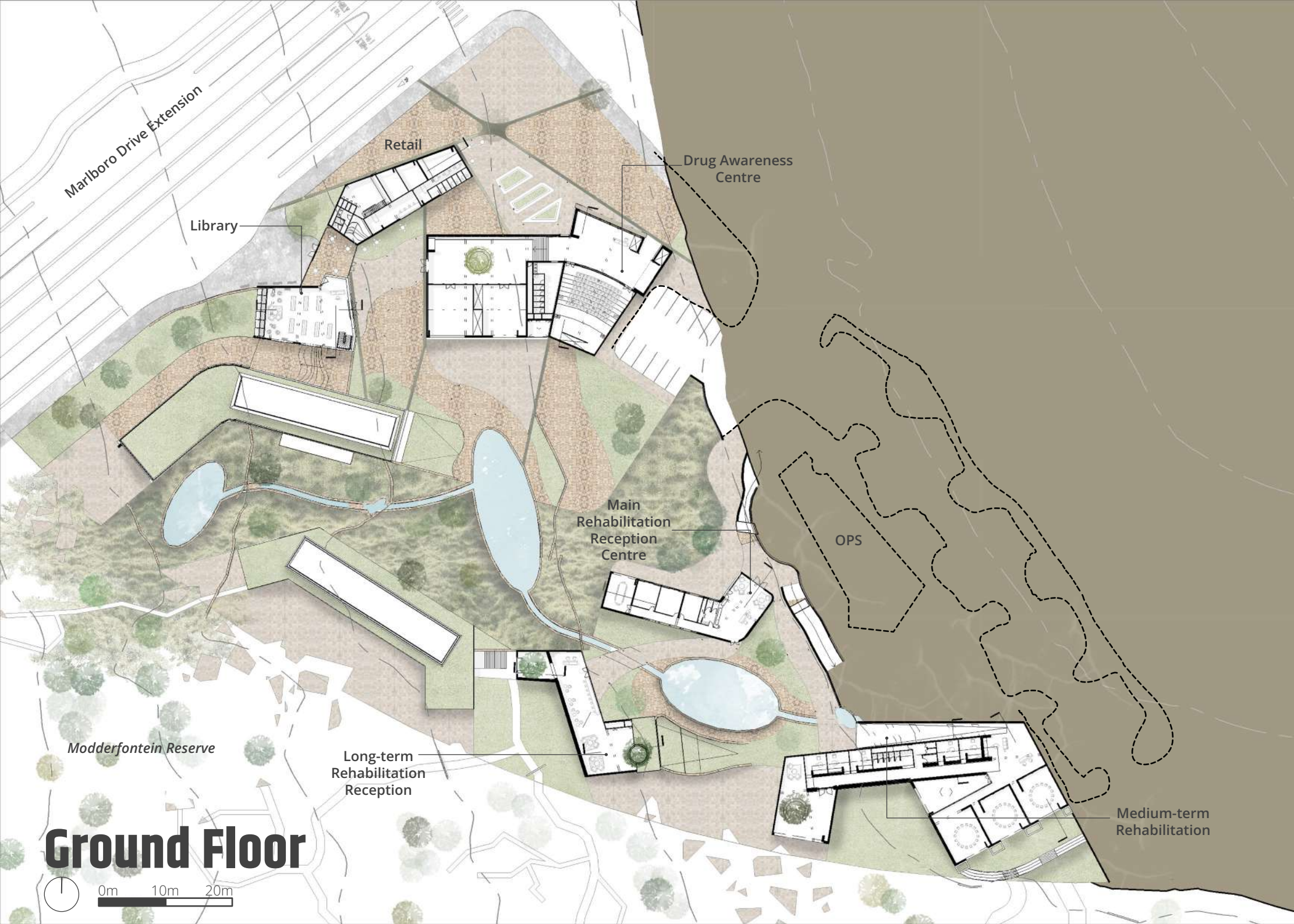


Reference Plan



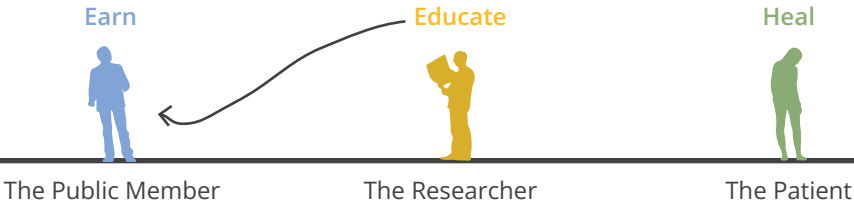
Healing Sensory Experience





A Journey through the Building

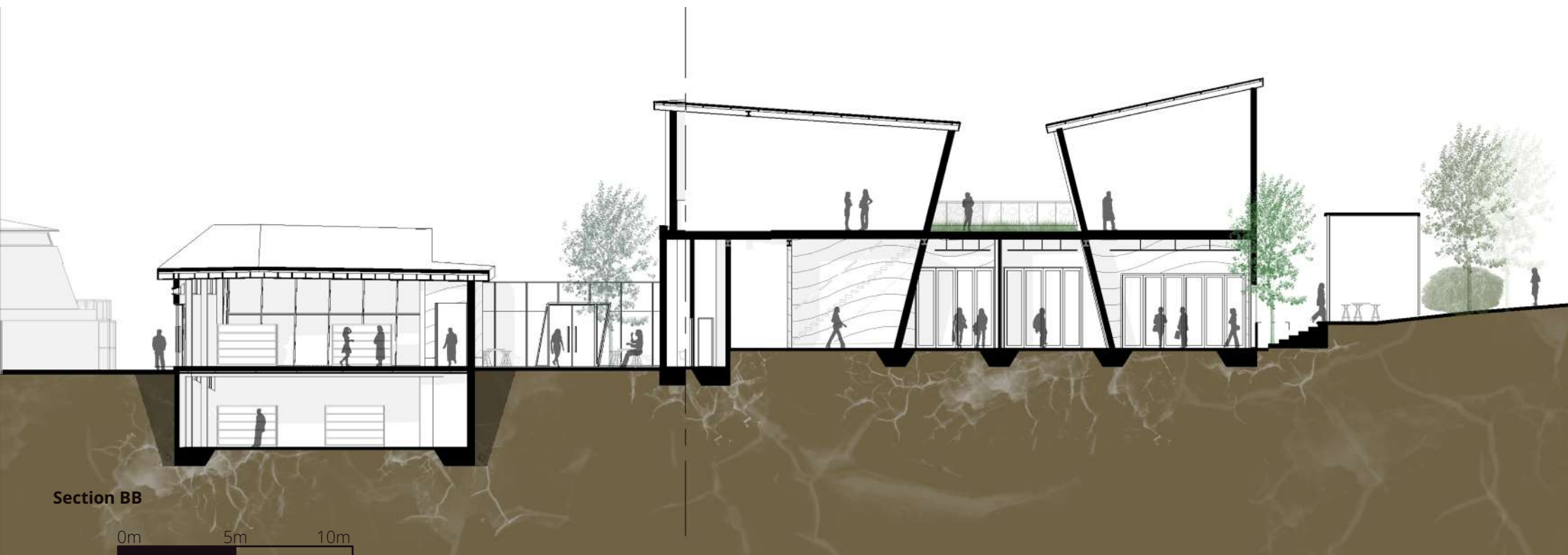
According to Its Users



The Public Member



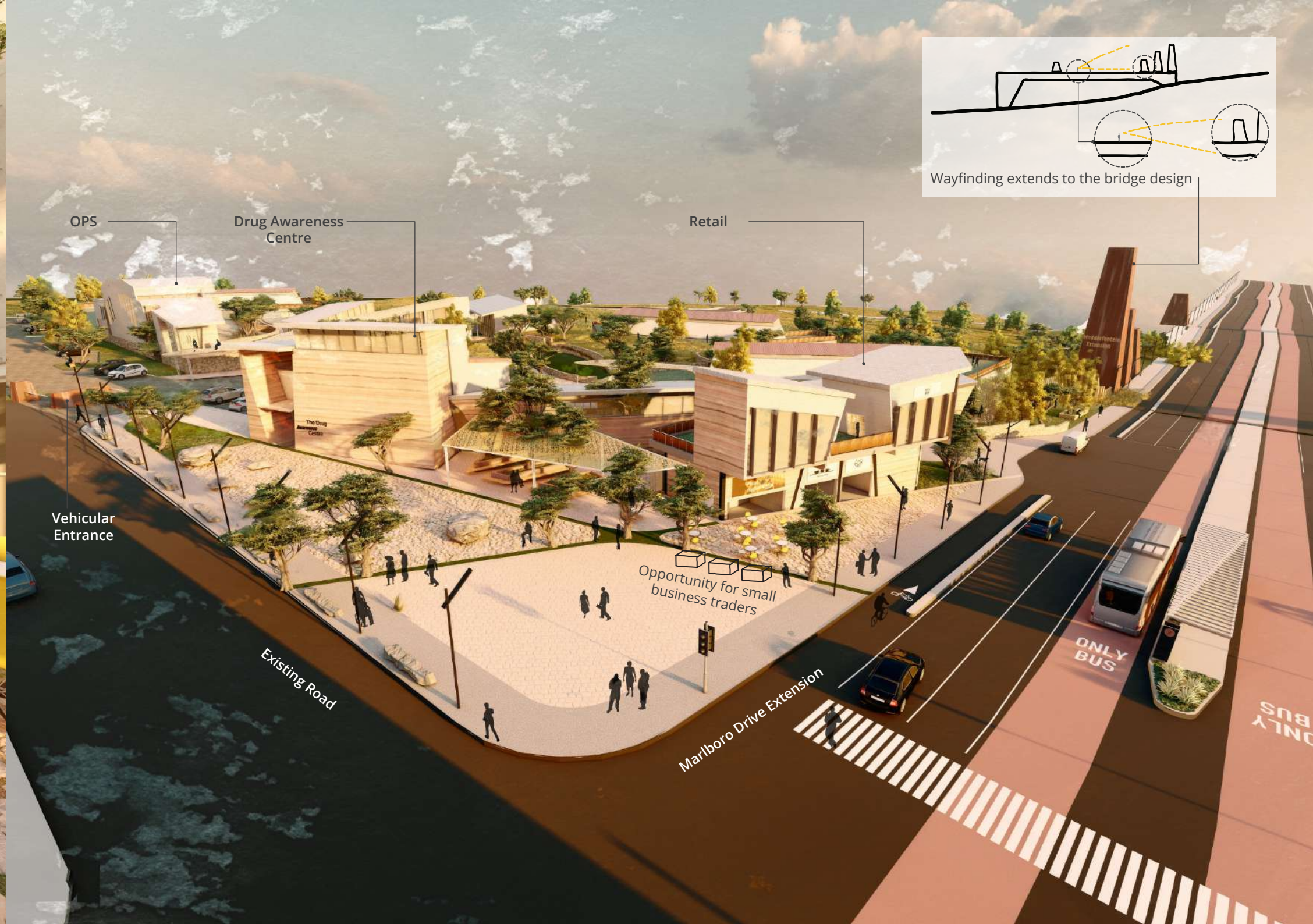
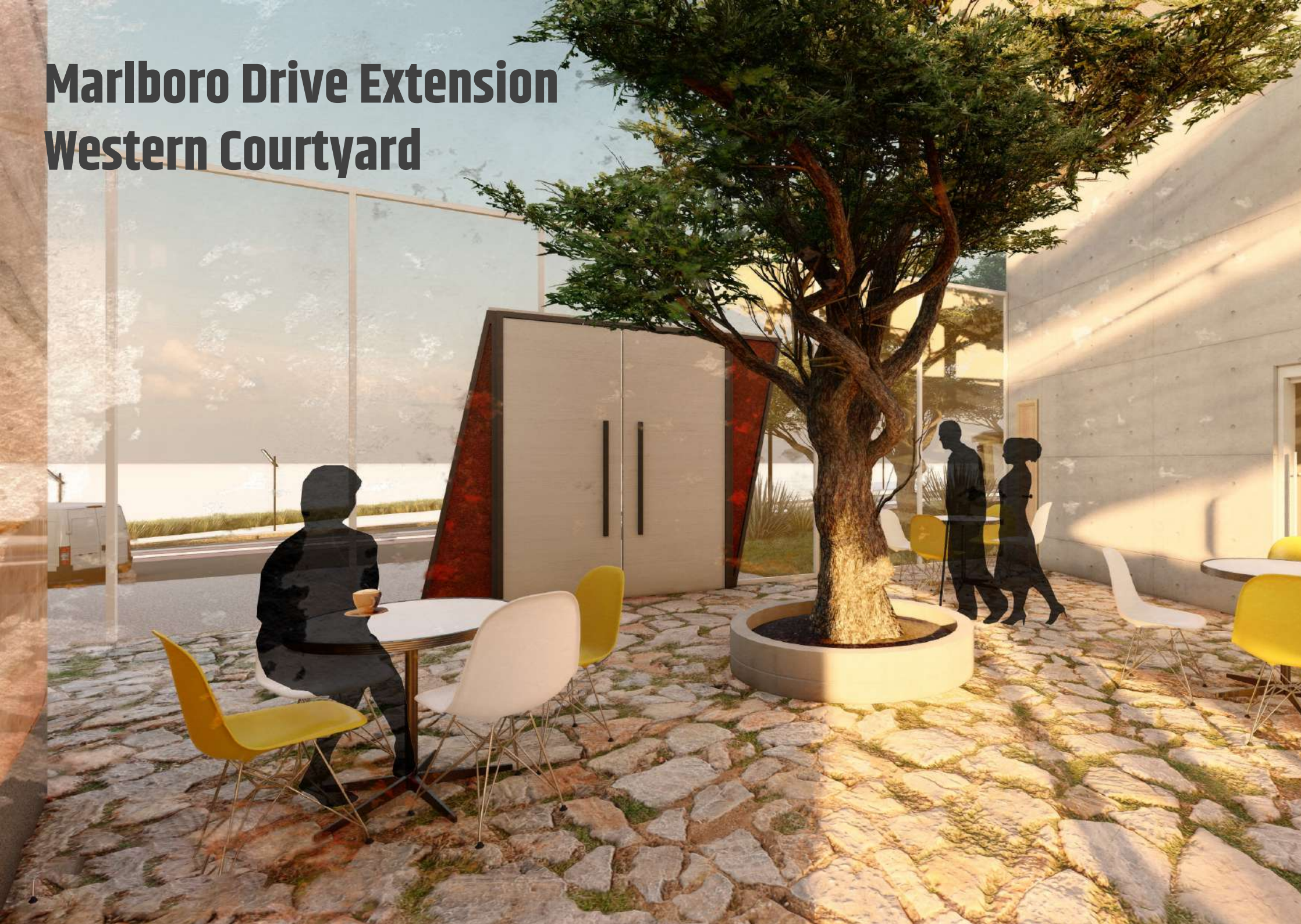
Retail and Library



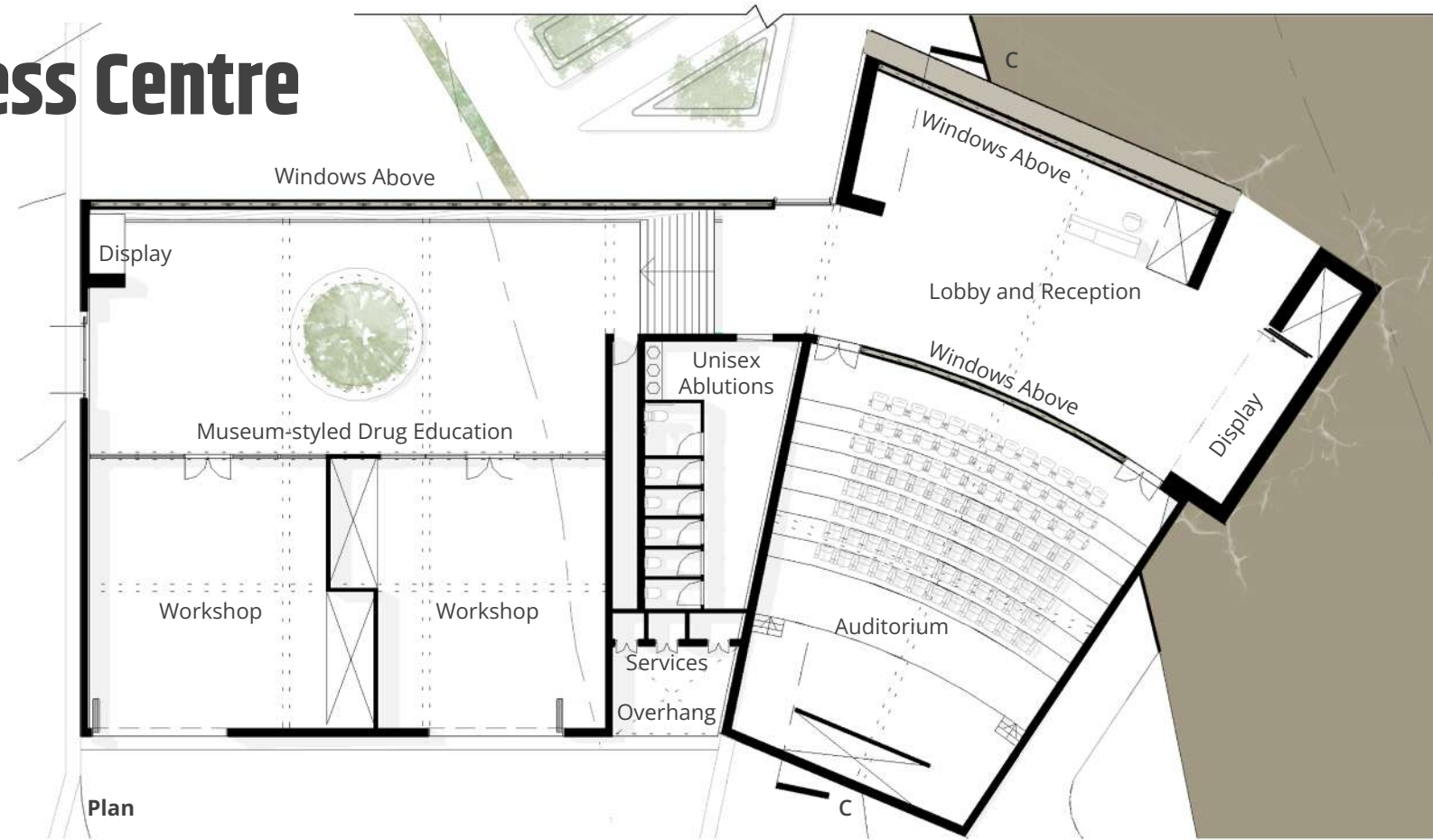
Library



Marlboro Drive Extension Western Courtyard



Drug Awareness Centre



The Researcher



Research and Workshop Centre



Plan



Section DD



Blurred Thresholds



The Patient



Rehabilitation Parking



Main Rehabilitation Reception



Main Rehabilitation Reception



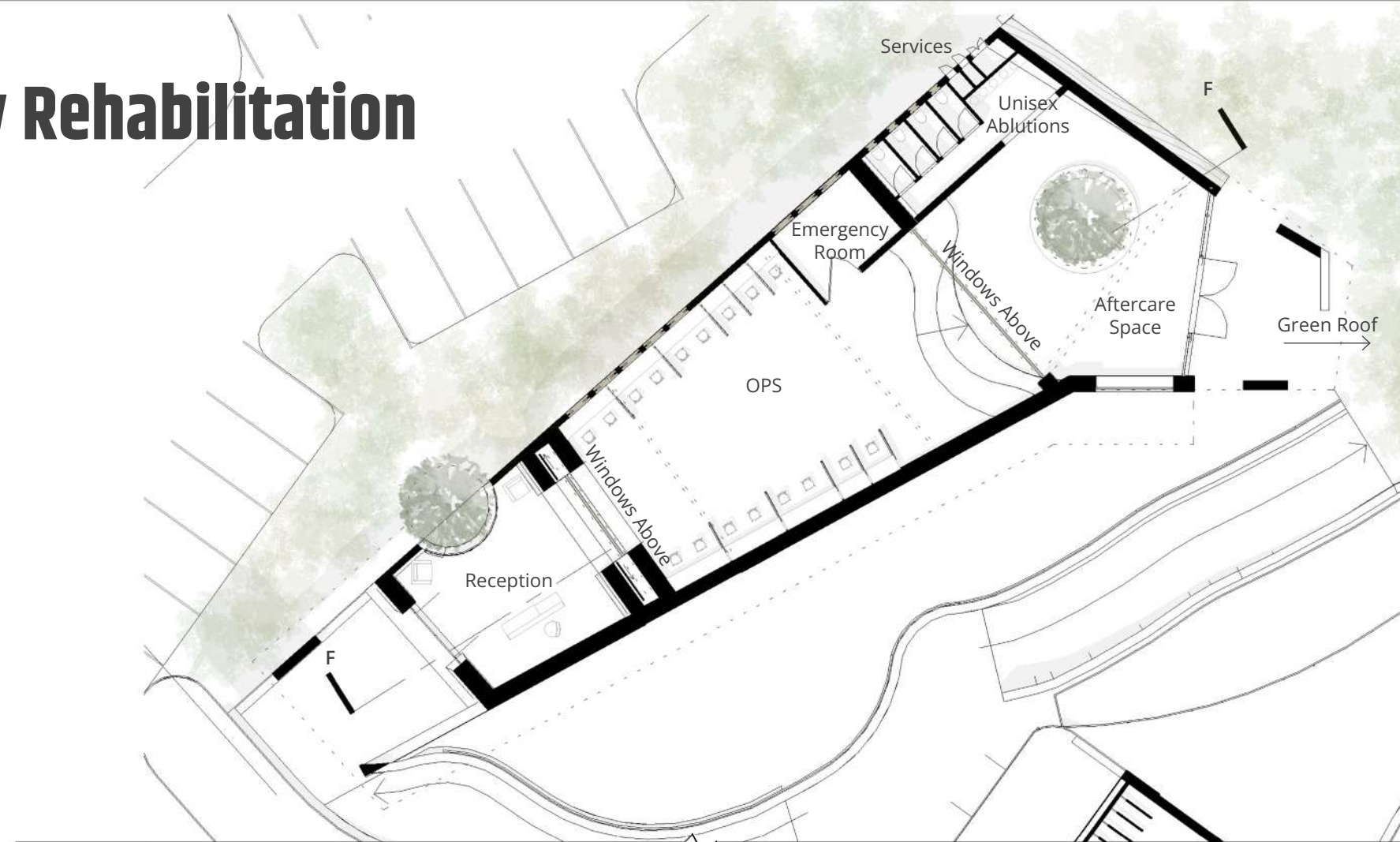
Temporary Rehabilitation Entrance



OPS

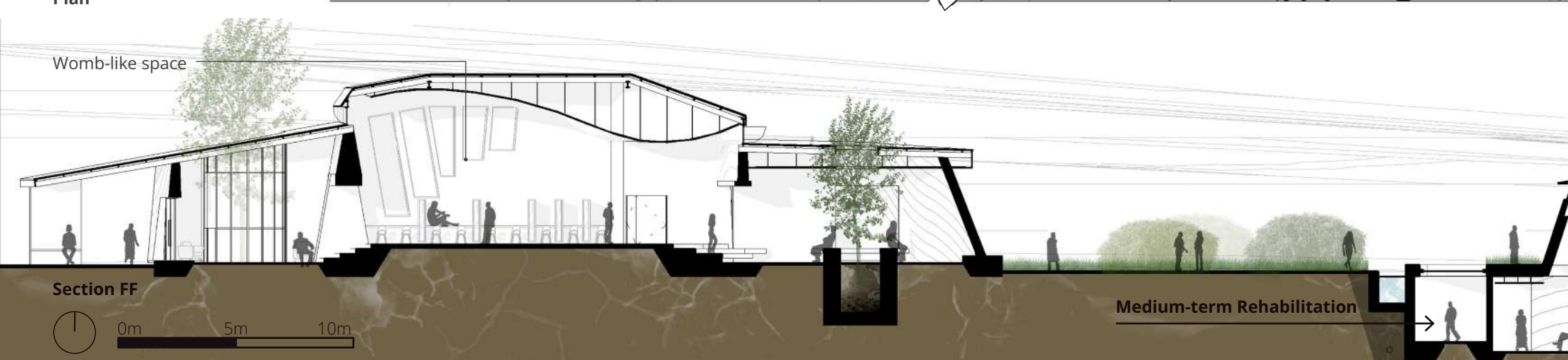


Temporary Rehabilitation

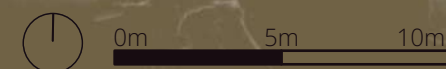


Plan

Womb-like space



Section FF

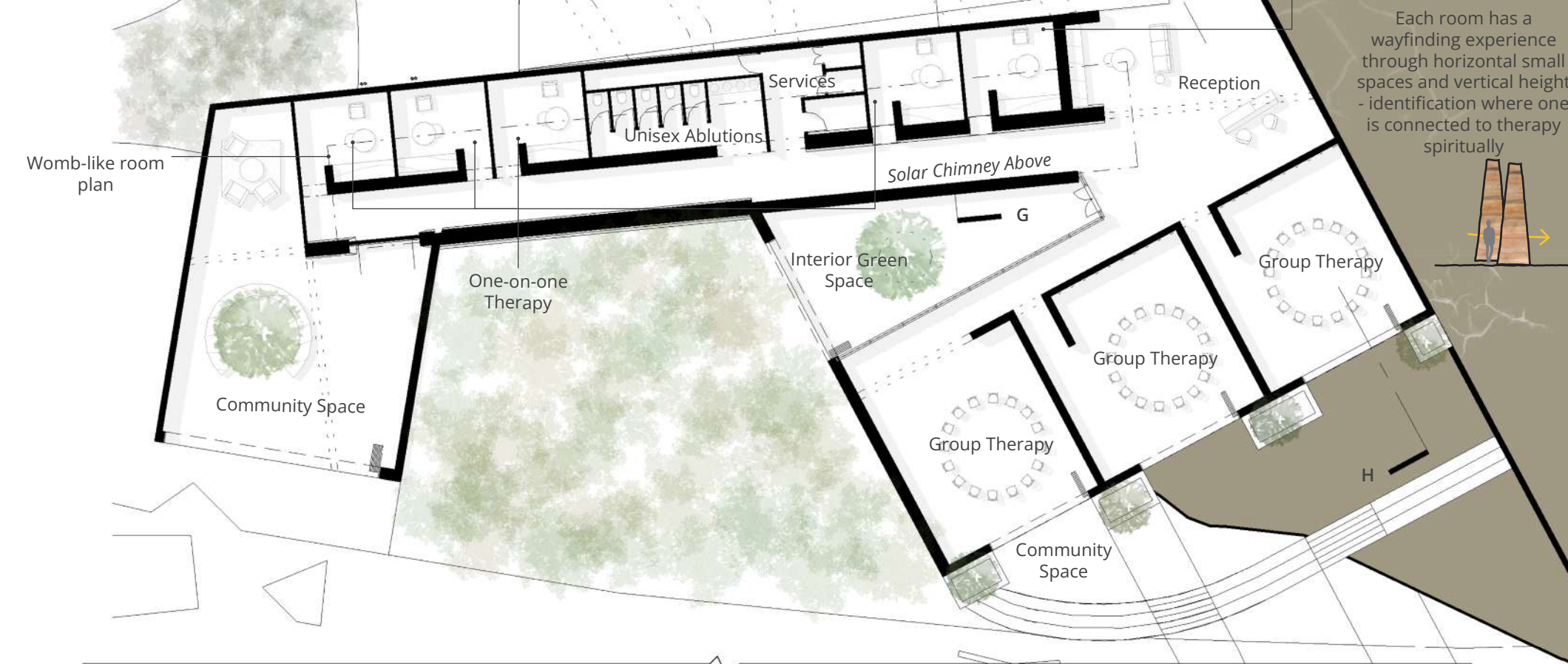


Rehabilitation Courtyard





Medium-term



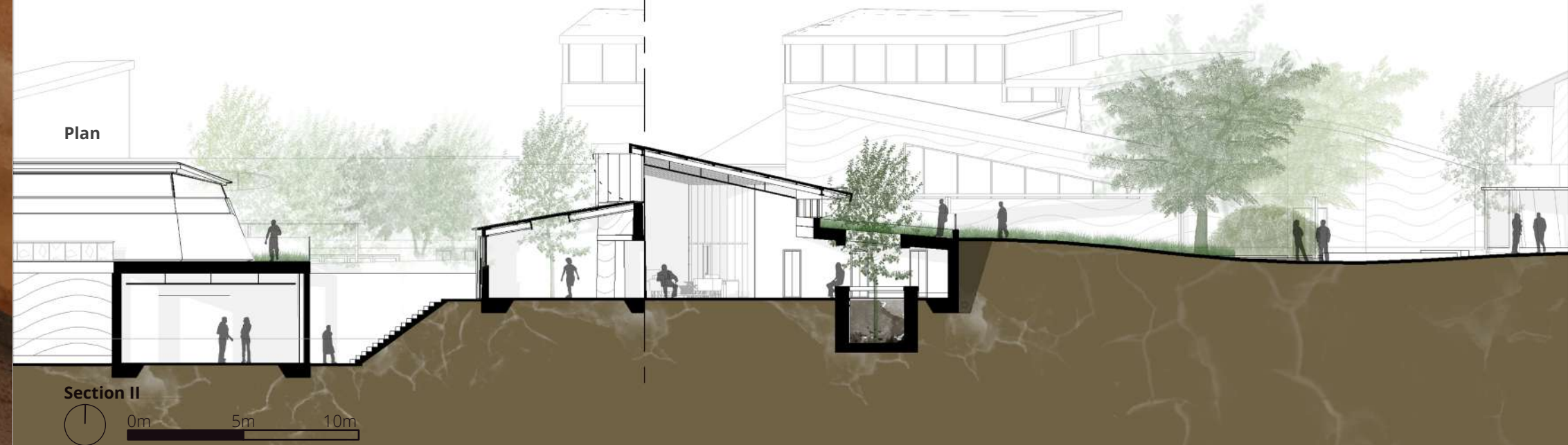
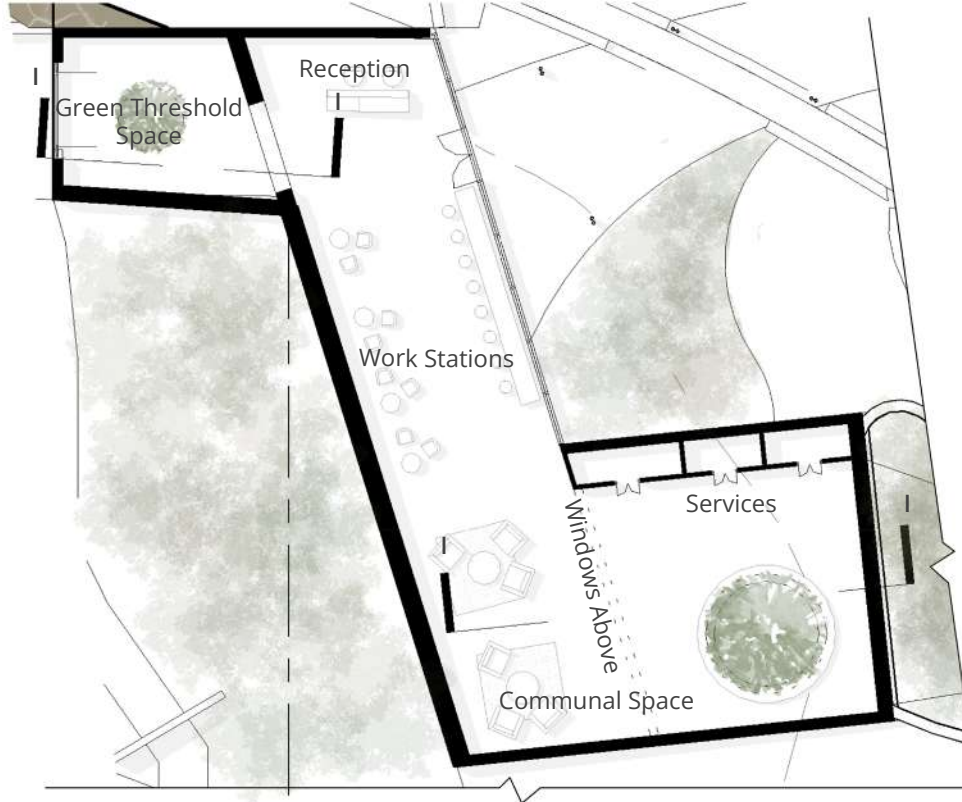
Plan



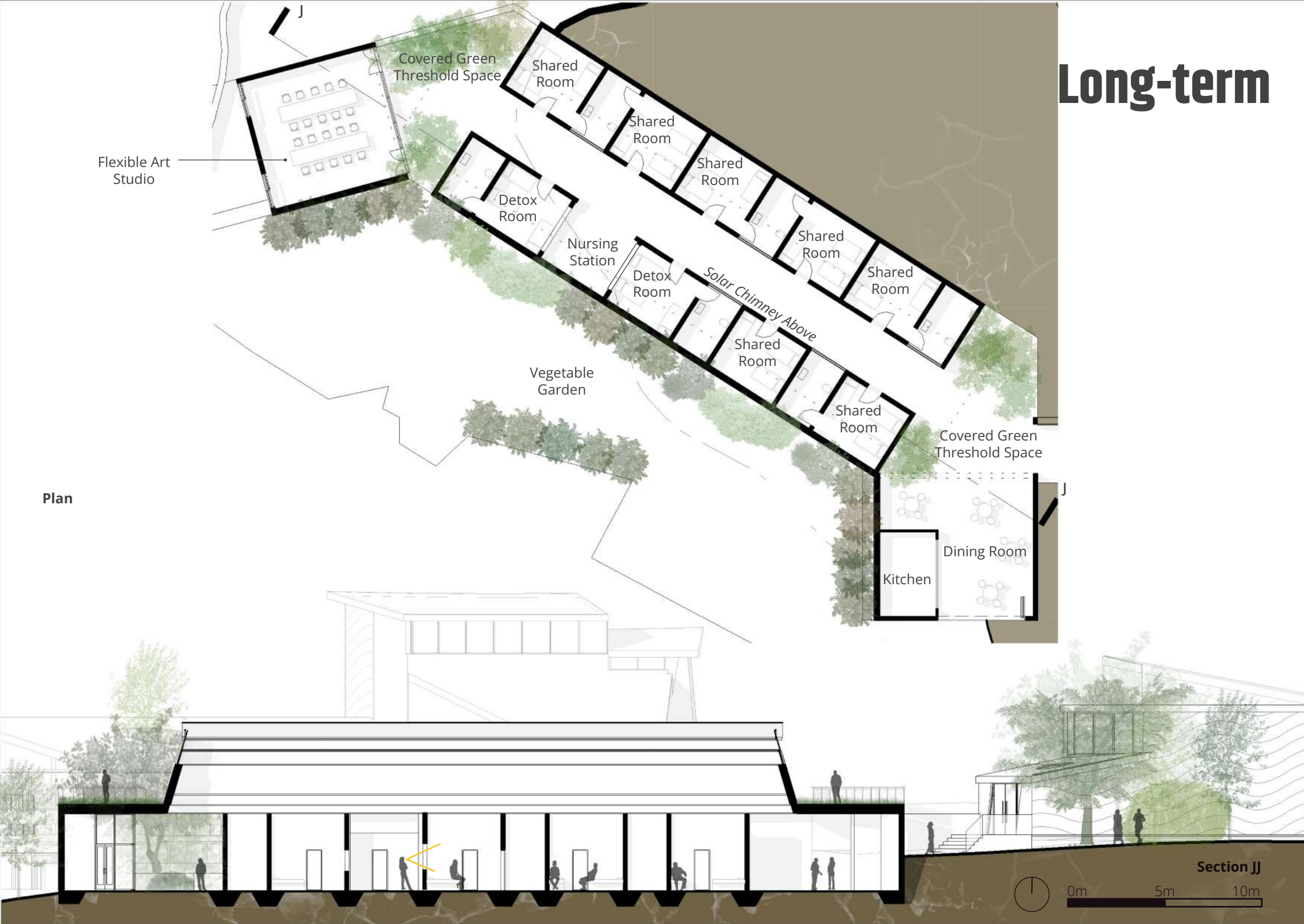


Group Therapy Room

Long-term Rehabilitation Reception



Long-term



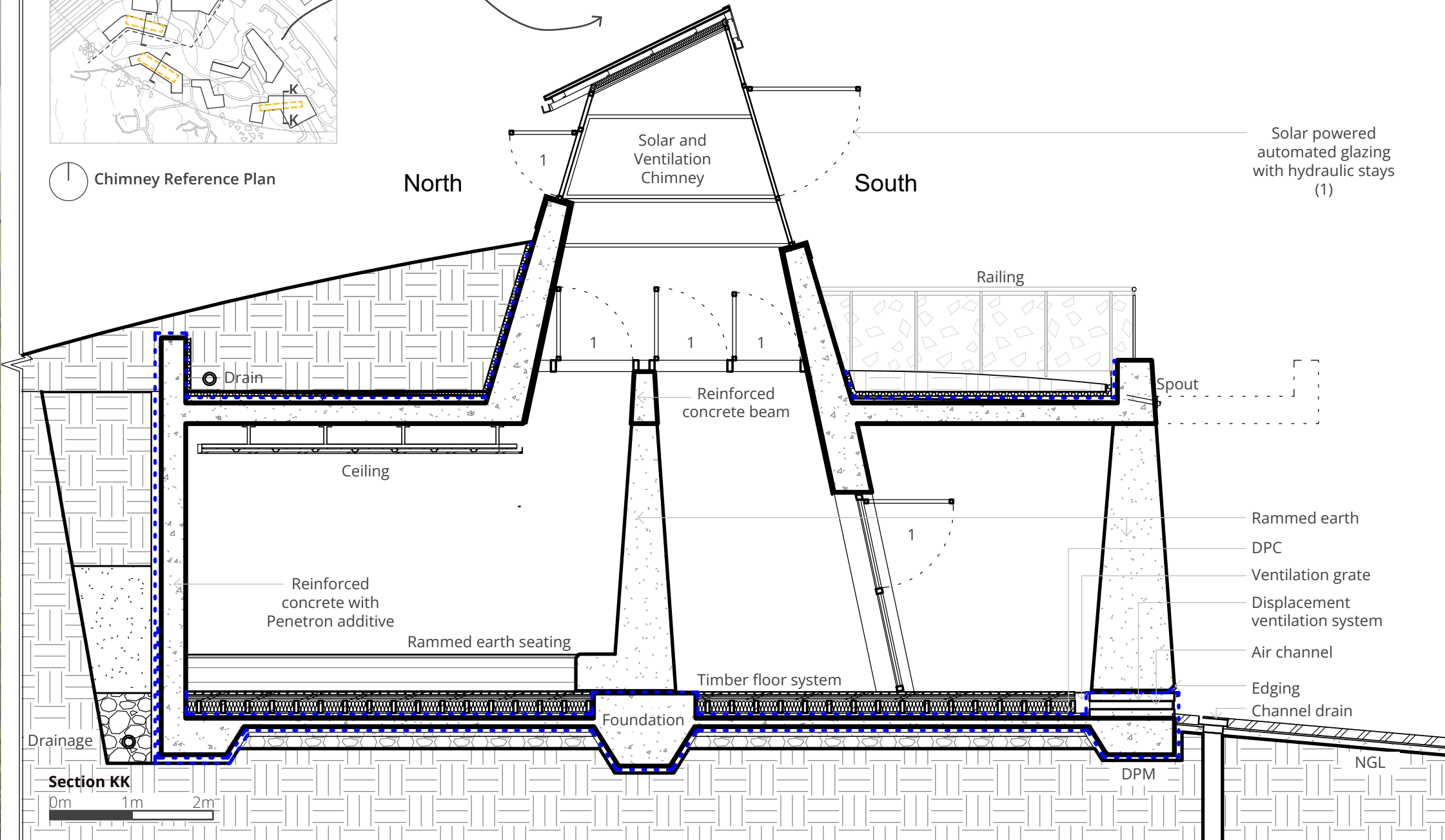
Pathways



Technical System Revisited

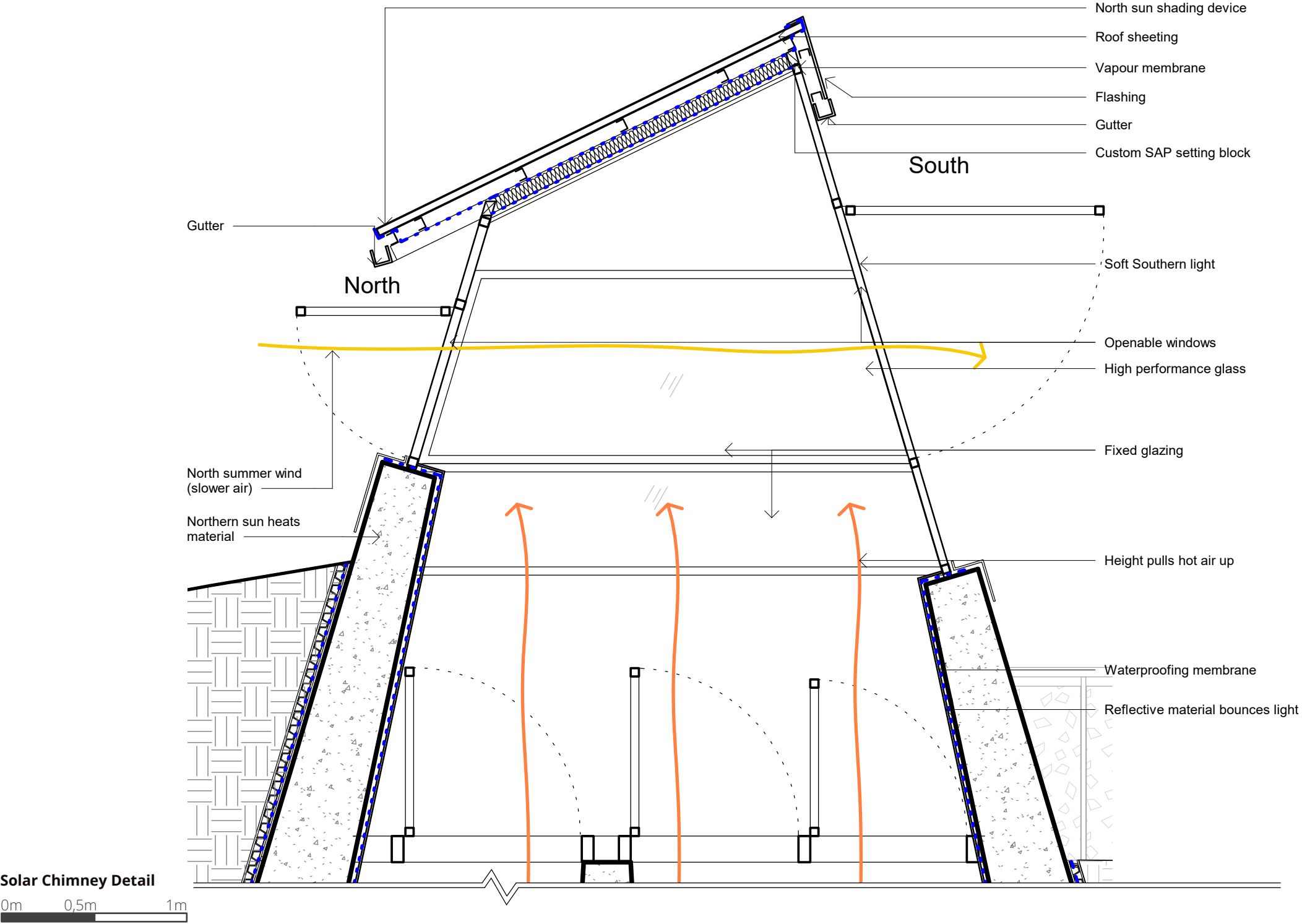


Chimney Reference Plan



More Information on the Section's Components

- **Solar and Ventilation Chimney:** Part of displacement ventilation system
 - **Roof:** Green Roofing System on 30mm floated screed 30 MPA @ 28 days and concrete roof slab
 - **Railing:** Oxidisation where material begins to blend into natural environment or seep (like sketch charette of chromatography)
 - Corten steel balustrade
 - Reinforced concrete beam to ENGINEERS spec.
 - **Ceiling:** Rift-sliced wood veneer suspended ceiling
 - **Ventilation Grate:** Apron on exterior wall edges
 - **Rammed Earth Seating:** Rammed earth seat with rustic French oak wood board top surface, sealed to maintain natural grain
 - **Displacement Ventilation System:** RCA (recycled concrete aggregate) concrete with fly ash plinth to ENGINEERS spec. with cast air louvers by specialist
 - **Edging:** Mild steel angle edging on concrete plinth rammed earth edges to produce shadow line
- and express material junctions
 - Plinth **air channel** sleeve with edge elevation sliding system lined on the inside with a vermin proof mesh, openings at 800mm spacing
 - Stainless steel **channel drain** surrounded by brick herringbone paving pattern
 - **NGL** to be set to fall away from building 1:100
 - **Foundation:** New RCA (recycled concrete aggregate) concrete with fly ash edge beam to ENGINEERS spec.
 - **Above foundation:** Screed on DPC on RC surface bed 50mm river sand-blinding layer on compacted fill
 - **Timber flooring system**
 - **Drainage:** 110 Dia. PVC drain pipe wrapped in Geo-textile layer, encased in coarse aggregate under fine aggregate under 50mm layers of compact fill



02

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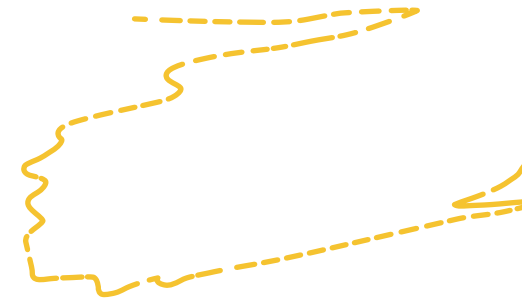


Fig. 2.2.1
Dam Next to Site
(Author, 2022)



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Appendices



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Braai Area Adjacent to Site
(Author, 2022)

Appendix A: Ethics Clearance



13 June 2022

Faculty of Engineering and the Built Environment:
Ethics clearance letter:

Dear Ariella Eisenberg
Student number (1712459), this letter confirms that your ethics application has been cleared. Your clearance/protocol number SOAP06/03/2022

Yours sincerely
Lera-to Nkosi

UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG



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Reference: Mr Yaseen Stoffberg
E-mail: facultyregistrar.ebe@wits.ac.za

31 August 2022
Person No: 1712459
PAG

Dear Miss Ariella Eisenberg

Master of Architecture (Professional): Approval of Title

We have pleasure in advising that your proposal entitled *Chemical re-composition: Holistic drug rehabilitation in Modderfontein's green spaces* has been approved. Please note that any amendments to this title have to be endorsed by the Faculty's higher degrees committee and formally approved.

Yours sincerely



Mr Yaseen Stoffberg
Faculty Registrar
Faculty of Engineering and the Built Environment



Appendix B: Approval of Title

Appendix C: Plagiarism Documentation

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