

THE RITUAL OF  
**RECONNECTION**  
HEALING WITH WATER

HEALING &  
WELLNESS  
SANCTUARY







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This thesis is presented in partial fulfilment of the requirements for the Master of Architecture degree at the University of the Free State's Department of Architecture. The work presented in this dissertation has not previously been submitted to meet the requirements for a qualification at this or any other institution of higher learning. Except where noted, this dissertation contains no previously published or written content by any other individual.

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Signed Elzette Esplin





It has been a fantastic adventure!

I want to thank God for all His grace and for equipping me with the talents, determination, and courage necessary to conclude this endeavour. My husband, Donald, our three children, and the rest of my family and friends, I sincerely appreciate all you have done to help me along the way and for loving and supporting me no matter what. My whole family is part of the “village” that helps make things work.

I am incredibly grateful to my superiors, who have always maintained their faith in me. I saw each growth opportunity as a huge blessing.



## 00 ] [ ABSTRACT

Healing was identified as the focus of this project by considering the advantages of water, light and nature, and using architecture to create a therapeutic setting through the theory of phenomenology. How can architecture help to re-engage man with his environment and spark a dialogue between the human body and the constructed world for a therapeutic experience?

The options for a therapeutic atmosphere of a bathhouse in South African architecture are limited to hospitals and spas. Research indicates that this therapeutic environment is thriving in first-world countries. Most South Africans are, however, unfamiliar with the term “bathhouse” and the therapeutic value of such an environment. The proposal is therefore a Healing and Wellness Sanctuary concentrated around a bathhouse. A restaurant, relaxing pools, baths, and therapeutic gardens were all designed after researching what would be feasible in the South African context.

After analysing several precedent studies of bathhouses from various cultures, the common denominator of these theoretical approaches was phenomenology. Further studies of architects’ design philosophies were applied, and featured in the design of the bathhouse in Vanderbijlpark. A bathhouse is characterised by social connections and therapeutic value, and provides the opportunity for the re-engagement of man and the environment.

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## STARTING THE INVESTIGATION

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- 1.7 DOCUMENT FRAMEWORK
- 1.8 RESEARCH QUESTION

# 01 ] [ STARTING THE INVESTIGATION

## 1.1 PREFACE

Vanderbijlpark is situated in a region heavily influenced by the nearby Vaal River. Symbolic of peace and tranquility, the river winds its way through the landscape like a serpent. One of the critical considerations for selecting this site was its location on the Loch, an artificial section of the Vaal River. On visiting the site, one is transported to an oasis surrounded by the sound of singing birds and 60-year-old blue gum trees that slowly creek and rustle in the wind, while the mighty river splashes silently further down the bank. As the sun caresses one's face, a cool breeze brushes softly against one's skin, and peace settles over both body and mind. For a moment, the city howls disappear, one's heart rate slows, one's lungs expand, and one's muscles relax. Yes, nature can heal – both body and mind. I value physical and mental health, and decided to focus this project on these matters. The underlying question is why mental wellness is so essential.



Figure 1: View towards East of Everett on Vaal (Author 2022)



Figure 2: View towards the west of Everett on Vaal (Author, 2022)

One's physical health, relationships, emotional well-being, spiritual growth, and ability to establish and sustain a sense of equilibrium may benefit from attention to one's mental health. Taking care of one's mental health and addressing anything that may affect it, is crucial in order to obtain stability in one's constructive behaviour, emotions, and thoughts. Taking better care of our minds might make us more productive, help us to feel better about ourselves, and strengthen our connections with others.

# 01 ] [ STARTING THE INVESTIGATION

## 1.2 INTRODUCTION

The primary focus of this dissertation is healing, which was determined through research into the curative effects of water and nature, and the therapeutic potential of architectural design. A healing environment has the power to encourage and facilitate recovery. The idea that our healthcare system should do more to encourage holistic health by emphasising healing rather than merely treating physical ailments is gaining traction (DuBose, MacAllister, Hadi & Sakallaris, 2018). This dissertation's intended site is Everett on Vaal. Located adjacent to Vanderbijlpark on the Vaal River, its distinctive aesthetics on the river's edge provided the ideal natural therapeutic atmosphere. This leads to the enquiry, how can architecture be used to create a therapeutic interaction between the human body and nature? Is it possible that when you spend enough time in a conducive space, the body may begin to heal and affect the mind and soul? This investigation will be from the theoretical perspective of phenomenology, which shows how humans value healing experiences by focusing on the role that elements such as water and light can have on therapeutic environments.

These days, many people regard contemporary modern western civilisation as an era in which people have become emotionally and spiritually estranged from the natural environment. Many people in today's "period of anxiety" feel overwhelmed by stress and a loss of connection to the natural world because of the way society has fragmented individuals into isolated units. The senses are more than just the information processed by individual receptors. Instead, they constitute a dynamically active feedback loop inside the brain's cognitive processing centre, including a complex, overlapping network of interconnected receptors for sensory acquisition. In order to fully perceive the world's vitality, we need to stimulate our senses. To take in and make sense of the world, we use our five senses: hearing, sight, smell, taste and touch. A person's psychological reaction and the resulting modes of created reality are directly influenced by their environment's phenomenology, typology, or formal qualities (Dirscherl, 2015).

A number of limitations were noticed regarding this research, specifically in the South African context. Bathhouses are not a traditional reference theme or phenomenon in our country. According to the research findings, this concept has been adapted for the South African market to incorporate indoor pool sections for leisure activities, and spas are also prominent for their therapeutic pool features. Through contextual investigation, the only example I could find in the Vanderbijlpark region was the Aqua Dome at the Emerald Casino, which is intended for recreational functions. There are several spas in and around the Vaal region that provide hydrotherapy and relaxation, but none of these specifically focus on mental, spiritual, and therapeutic advantages.

According to the South African Journal of Psychology, one in six South Africans will deal with mental health issues such as anxiety, depression, or drug abuse during their lifespan. Nearly half of all pregnant women suffer from depression, and up to 60% of the general population may have post-traumatic stress disorder. In the past two years, these numbers have increased even more due to external factors such as the impact of the Covid outbreak, significant job losses, and the death of family members, to name a few. The health care system's disregard for mental health is evident because only roughly 27% of patients with severe mental problems obtain treatment (Nguse & Wassenaar, 2021). Is it not imperative that we focus more energy and resources on improving the state of mental health and speeding up the process of natural recovery and healing?

This study aims to find new ways to utilise water to relieve anxiety, connect with nature, and excite the senses by creating novel experiences. To heal, one needs more than just medical treatment. The proposed design will allow visitors to engage with various water rituals within and around the bathhouse and reintroduce those to nature in the sprawling gardens as part of a purification journey of the mind and, ultimately, the ritual of reconnecting with oneself.

In this theoretical and practical presentation, the argument will be focused on Everett on Vaal, outside of Vanderbijlpark, which is uniquely positioned to be close to major cities while far enough to appreciate nature and the breath-taking attributes of the Vaal River. Therefore, the fundamental motivation for this design came from the Vaal River itself. The goal is to facilitate healing and well-being by employing an invisible matrix of connections that may be activated via exposure to particular events. This study's primary concern is the phenomenological impact of materiality, light and shadow, environment, space, water, and the human senses. The goal is to research how these architectural elements in combination can improve people's health—modifying a patient's psychological and physiological reactions through a therapeutic environment (Zohby, 2022).

In the words of Pallasmaa: *"Architecture is the masterly, correct magnificent play of masses brought together in light."* The visual impact of light and colour is also critical in sensory design. The use of shadows aids in depicting mass and volume through depth. *"In great spaces of architecture, there is constant, deep breathing of shadow and light; shadow inhales, and illumination exhales, light"* (Pallasmaa, 2007).

# 01 ] [ STARTING THE INVESTIGATION

## 1.3 PROJECT SUMMARY

### PROGRAM

Healing & Wellness Sanctuary: an administrative building with offices, changing room amenities, misting channel, courtyards leading to bathing facilities, a water bar and restaurant, service spaces, and staff areas. In addition, the river landscape with a therapeutic garden of senses has designated pavilions as meditation areas.

### LOCATION

Everett on Vaal, Ravel Street, Vanderbijlpark, Gauteng, South Africa

### SITE COORDINATES

26.7484° S, 27.7240° E

### CLIENT

Global Institute of Emotional and Mental Wellness

### USER

Population pursuing mental health and wellness

### THEME

Therapeutic and healing spaces assist in healing mental health diseases and enhancing individuals' quality of life and well-being.

### ARCHITECTURAL THEORETICAL GROUNDING

In what ways can therapeutic spaces be created on this foundation to emphasise purification and healing of mind, body, and soul, and how can architecture, via the theory of phenomenology, support the healing process in an environment by experiencing water, light, shadow and nature?

## 01 ] [ STARTING THE INVESTIGATION

### 1.4 AIM OF STUDY

The first part of the document will explore the theoretical view of human engagement with water and light and the psychological effects on the mind and body. This proposed design layout is meant to entice those needing mental rejuvenation by utilising the restorative powers of nature, water and light. By using phenomenology as a philosophical method in architecture, which considers how people assign meaning to their everyday experiences, this study will explore how this process can focus on healing through therapeutic settings created by architecture. The second section will investigate the synthesis of developing a technique and framework of various perspectives, and how this was incorporated into the development of the project. Creating time and space for relaxation and rejuvenation may help purify the body, mind, and soul.

### 1.5 DESIGN PROPOSITION

One option for addressing the problem is by focusing on healing through mental balance, and reconnection to nature. For a solution, the proposal is to construct a Wellness and Health Sanctuary, with a bathhouse at its heart. The proposition will be outlined in three components. Firstly, the Vaal River is the primary source of inspiration for this bathhouse. Secondly, water is a sustaining component to examine the influence of light, texture, and colour. Thirdly, inspiration is drawn from nature in constructing therapeutic gardens at two levels, on approach to the facility and below the 100-meter building line, to link the bathhouse to the river. In this project, the emphasis is on developing an experience-based journey that contributes to the purification and healing of the physical body, while healing the mind by stimulating the senses. It aims to connect to the basic humanness of all people - removing barriers through establishing common ground to rejuvenate and reestablish connections.

*"No man ever steps in the same river twice, for it is not the same river, and he is not the same man." - Heraclitus*

### 1.6 RESEARCH METHODOLOGY

This study will employ phenomenology, and investigate how a story can unfold by applying narrative architecture. The suggested location will be analysed using a site evaluation and relevant precedent research. Several papers, journals, and books were evaluated to support the objectives of this project.

- 1) This discourse takes a perspective and phenomenological approach to studying the mental health benefits associated with the design of architectural therapeutic environments. The idea of healing is formulated into four components, namely the emotional, psychological, social and behavioural, to discover more about how recuperation-friendly health environments might be designed. A sense of physical, mental, and spiritual completeness is encouraged in architecturally designed healing spaces (DuBose et al., 2018).
- 2) The story develops a narrative approach to architecture through research into the client's desires, the building's program or purpose, the site context, and the historical relevance of the bathhouse (Browne, 2010).

# 01 ] [ STARTING THE INVESTIGATION

## 1.7 DOCUMENT FRAMEWORK

### PART 01

#### INVESTIGATION

This section exposes the reader to the clients, users, and overall scope of the study.

### PART 02

#### GROUNDING

The purpose of this portion is to introduce the user to the site through site analysis.

### PART 03

#### EXPLORATION

Readers will learn about the theoretical foundations of the design in this section of the document.

### PART 04

#### THERAPEUTIC GARDENS

This section will examine the benefits and value of Therapeutic Gardens for mental health.

### PART 05

#### DESIGN SYNTHESIS

This section of the document will explain the design process and the final design product to the reader.

### PART 06

#### TECHNICAL INVESTIGATION

The technical components of the design outcome will be discussed in this section of the book.

### PART 07

#### CONCLUSION

This section of the document will present the conclusions drawn after the completion of the investigation.

# 01 ] [ STARTING THE INVESTIGATION

## 1.8 RESEARCH QUESTION

How can architecture, by employing the theory of phenomenology, help to re-engage man within his environment and spark a dialogue between the human body and the constructed world?

How can insights into the experiential and metaphysical character of water be used to better comprehend the built environment?

How can designing therapeutic settings in such a manner influence how people's perceptual processes acquire and interpret information about their physical surroundings, thereby furthering the healing goal through the sensations of light and the play of shadow?



# 021

## GROUNDING

### 2.1 PROBLEM STATEMENT

#### 2.1.1 CLIENT

#### 2.1.2 USER ANALYSIS

### 2.2 COMPONENTS OF USER ANALYSIS

#### 2.2.1 EMOTIONAL

#### 2.2.2 PSYCHOLOGICAL

#### 2.2.3 SOCIAL

#### 2.2.4 BEHAVIOURAL

#### 2.2.5 CONCLUSION

### 2.3 BRIEF HISTORY OF BATHHOUSES

### 2.4 THE BENEFIT OF BATHS

### 2.5 SITE ANALYSIS

#### 2.5.1 CONTEXTUAL DATA

#### 2.5.2 SENSE OF PLACE



## 02 ] [ GROUNDING

### 2.1 PROBLEM STATEMENT

Can architecture facilitate man's innate intuition to connect with nature? The Vaal Triangle is home to a diverse cultural scope. There is a fundamental contrast between the tranquility of the Vaal River and the city's dynamic array of enterprises. The area offers opulent residences on expansive riverside grounds, but also densely populated regions with limited access to recreational opportunities. Due to Vanderbijlpark's peri-urban position, commercial farming and smallholdings occupy a significant portion of the territory. Sometimes it is hard to tell where one contrast ends and the next begins. Although distinctions are unclear, the common theme is a society that requires healing. This discussion aims to offer something meaningful by opening possibilities for the region's neglected mental balance, with architecture serving as the narrative link between the community and the individual seeking the beginning of a journey towards recovery.

#### 2.1.1 CLIENT:

**The Global Institute for Mental Wellness (GIEMW)** was founded in 2019 to aid workers in dealing with workplace issues. It soon became clear, however, that the demand was far higher among low-income neighbourhoods and the general public. Therefore, it became a non-profit organisation. They aim to reach people of diverse socioeconomic backgrounds, racial and religious backgrounds, and other demographics (Global Institute for Mental Wellness, 2021).

#### 2.1.2 USER ANALYSIS:

In terms of frequency of usage, this project includes both regular and occasional users. There are three types of categories:

- 1) Visitors who will utilise the amenities regularly (e.g. daily, monthly, or seasonally)
- 2) Permanently employed personnel in contexts such as offices and restaurants management
- 3) Support staff including cleaning and restaurant staff, and pool maintenance workers

## 2.2 COMPONENTS OF USER ANALYSIS

### 2.2.1 EMOTIONAL HEALING:

The website *verywellmind* summarises the process of emotional healing best: it entails addressing and working through traumatic feelings and experiences. Various elements might be present, including sensitivity, command, compassion, openness, insight, and integration (Blanchfield, 2022). There are various ways in which the built environment may affect the healing process, but ultimately, it is up to individuals to make such changes. Healing and receptivity to new ideas are greatly aided by active participation. Environments may either aid or hinder the healing process. Ultimately, it is a unique process that hinges on one's environment and network of relationships. As a result of environmental constraints, the environment cannot cause healing, but it may generate physical and emotional responses that are conducive to recovery (Dubose et al., 2018). Figure 3 illustrates how overlapping processes can impact healing.

The National Memorial for Peace and Justice by the Mass Design group exemplifies emotional healing via architecture. The spatial design utilised in this memorial aids redemption by creating a calm platform for users to be emotionally receptive to healing. In addition, the benefit of soft filtered lighting is optimised, which can induce a unique balance of stimuli to further this experience.

### 2.2.2 PSYCHOLOGICAL HEALING:

The psychological components of healing are inextricably linked to how we think and feel about ourselves, our lives, and our surroundings. The atmosphere of a building may have a significant effect on the motivation and emotions of the individuals who occupy it (Dubose et al., 2018). Versatile layouts and furnishings may help to provide a better in-room experience for the user. A well-designed space should give its inhabitants various options for ambience, so they may find the one that best suits their needs at any given time, whether they are in the mood for socialising or some quiet time.

Biophilic design in architecture that seeks to connect building occupants more closely to nature. It recognises the restorative and calming effects of the colour green beyond its mere aesthetic value, and the inclusion of outdoor areas also play a crucial role in improving the quality of the space and, by extension, the well-being of its residents. Some ways to create a pleasant and healthy environment include using natural lighting and ventilation, installing soundproofing, and using high-quality materials (Equipe ArchDaily Brasil, 2021). As illustrated in Figure 7 and Figure 8.



Figure 3: Behaviours impacting the healing experience (Dubose et al., 2018 modified by Author)



Figure 4: The National Memorial for Peace and Justice, Alabama (Jayachandran, 2022)

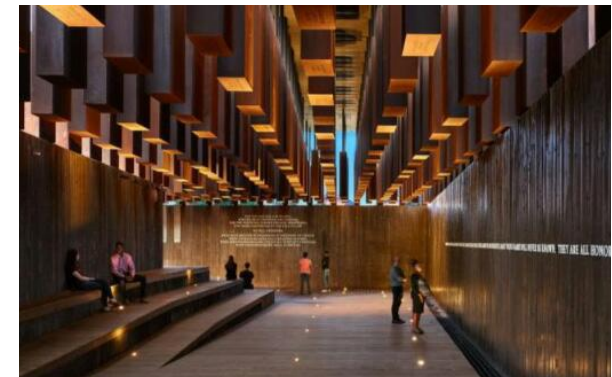


Figure 5: Interior view of the memorial (Jayachandran, 2022)



Figure 6: Alvar Aalto's Paimio Sanatorium, Finland (Otero, 2018: Online)



Figure 7: Biophilia architecture example – Santa Fe de Bogotá Foundation in Bogotá, Columbia, designed by El Equipo de Mazzanti in 2016 (Jayachandran, 2022)



Figure 8: Typical use of nature in interior spaces to showcase biophilia (McNaughton, 2022)

### 2.2.3 SOCIAL HEALING:

An individual's social position and behaviour in terms of their peers, as well as the motivation they derive from their relationships, are represented in the social construct (Dubose et al., 2018). Social architecture is defined as the deliberate design of environments to encourage particular patterns of social behaviour to accomplish one or more goals (Wikipedia contributors, 2022m). As a result, the factor of spatial orientation is critical as an incentive for social contact and to account for behaviour mapping of the user in determining the organisation of spaces within a therapeutic environment.

### 2.2.4 BEHAVIOUR HEALING:

Behaviour is an individual's actions in reaction to a circumstance or stimuli. The built environment may affect people's behaviour because of the emotional responses it evokes (Dubose et al., 2018). X-ray architecture by Beatriz Colomina mentions Alvar Aalto's Paimio Sanatorium, a former TB treatment centre, as an example of healing architecture. In this context, *"the physiological and psychological sensibility of the sick person was employed to recalibrate architecture"* (Colomina, 2019).

### 2.2.5 CONCLUSION:

The potential for spaces to positively affect people's minds and feelings is substantial, which is especially important when designing healing environments. Architecture can directly and positively affect people's emotions, and understanding the relationship between the user and the built environment can affect their behaviour, and every possibility should be considered. Nature can be essential in this process by establishing a relationship between architecture and nature as part of the therapeutic environment.

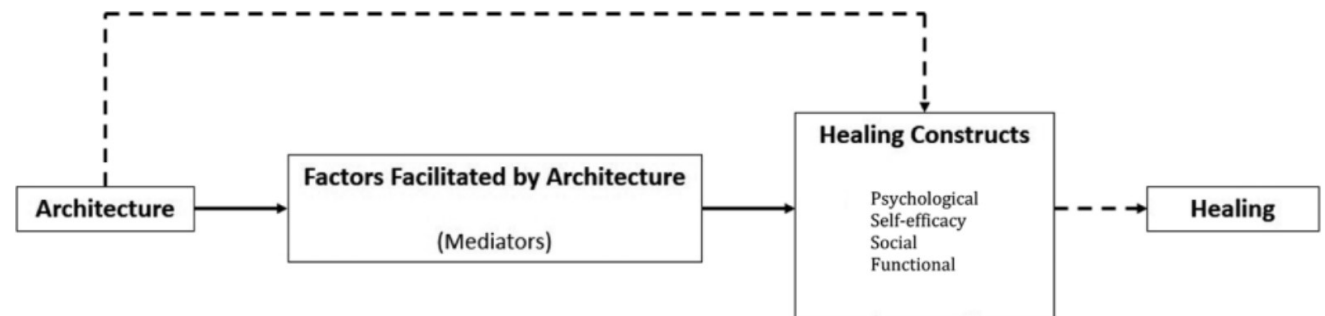


Figure 9: Casual model for architectural impact on healing (Dubose et al., 2018)



Figure 10: Summary of positive and inhibitory measures of optimal healing environments (Sakallaris, MacAllister, Smith & Mulvihill, 2016 modified by Author).

## 2.3 A BRIEF HISTORY OF PUBLIC BATHING

Culturally, the public bathhouse is almost as old as humanity itself, and is linked with cleansing and purification rituals. Mohenjo-Daro, located in the Indus Valley of Pakistan, is considered to be one of the first known public bathhouses, dating back to roughly 2500 BC. Although much has changed since then, it is no surprise that the bathhouse culture has grown pervasive in modern society. The public bathhouse serves as more than just a practical amenity - it also serves as a focal point for the local community. Taking a bath was not just about keeping clean in ancient civilisation, but it also served a spiritual purpose and provided a social setting for interaction. Large, elaborate bath complexes were a staple of Roman culture, providing residents with a place to unwind, mingle, and swim in various temperature-controlled pools. There are elements of Roman bathhouse rituals in the modern spa culture worldwide. In addition, the bathhouse is a cultural and social experience with significant symbolic value (Koyfman, 2022).

**Roman baths:** All around the Roman Empire, one could find luxurious public baths called “thermae Romanae” that served both practical and recreational purposes. The baths featured various temperature-controlled chambers, swimming pools, and quiet communal spaces. Dome construction was developed due to the need for substantially enclosed rooms in Roman baths. The Romans further expanded the concept, and public baths, often situated close to the forum, spread to even the smallest villages across the Roman realm. In major urban centres, however, these bathhouses (known as *thermae*) grew in colossal proportions, complete with grand colonnades and enormous arches and domes. Baths were made with fireproof terracotta bricks and had mosaic floors, marble walls, and statuary. By the 1<sup>st</sup> century AD, the baths had evolved into aesthetically pleasing edifices, frequently located in landscaped gardens or parks. Natural hot water springs or fire pits were used to heat the water in early baths, but by the 1<sup>st</sup> century BC, more complex heating methods, including under-floor heating powered by wood-burning furnaces, were utilised. Greek baths had a similar method of heating, but the Romans enhanced it for optimal efficiency (Cartwright, 2013).

**Hamman:** Turkish baths, or hammams, possibly evolved from Roman-style bathhouses. Hammams have served as community hubs and religious sites for cleansing the body and spirit since around 600 CE. Hammams are usually attached to mosques with similar architectural features, such as pointed arches and ornate details. The act of taking a bath was formerly an essential part of many ancient cultures' wedding and birth rites. Today's Turkish baths often have a hot room, a warm room, and a cold room where guests may unwind with a cup of tea. After entering the hot chamber, guests are instructed to lie down on a giant hot stone to begin sweating and warming up. Next, a staff member will perform a cleansing procedure that includes massages, scrubs, and soaps (Koyfman, 2022).



Figure 11: Mohenjo-Daro, Pakistan (Micu, 2021)



Figure 12: Roman public bath in Bath, England (Wikipedia contributors, 2022o)

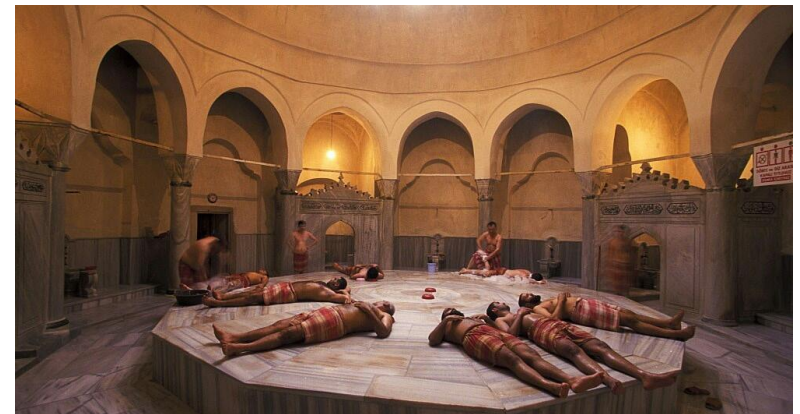


Figure 13: Turkish Hamam Hürrem Sultan in Istanbul (Yablochkina, 2022)



Figure 14: Russian banya -Sandunovsky in Moscow (Fomina, n.d.)



Figure 15: Japanese Onsen -Kusatsu near Tokoyo (Japan RailPass, 2018)

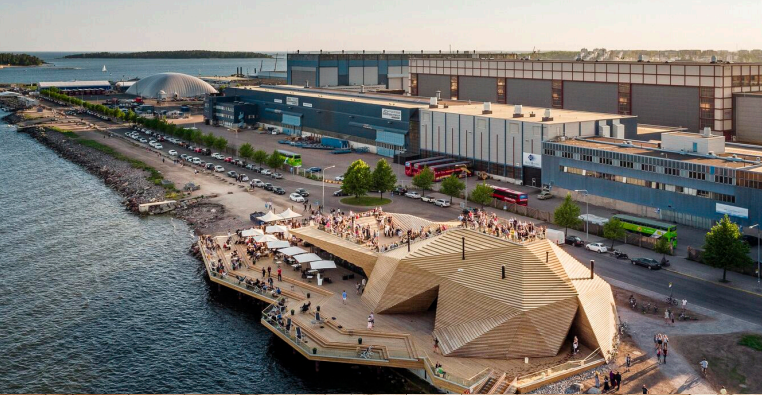


Figure 16: Löyly sauna, Finland (ArchDaily, 2016)



Figure 17: interior view of Löyly sauna, Finland (ArchDaily, 2016)

**Russian Banya:** Ancient Russian daily routines included frequent visits to the steam chamber, or banya, which played a significant cultural and historical role in Russian history. The banya is used for both physical and spiritual cleansing. According to Herodotus, a Greek historian from the 5th century BC, the Scythians of present-day Ukraine employed banyas. They wrapped three bent poles with felt and set them up in a staggered formation. Then they positioned a bucket at the room's focal point and put hot stones in it. Around the middle of the 5<sup>th</sup> century, banyas began to be built throughout Russia. Many professionals recognise the advantages of banyas. Banyas calm, heal, cleanse pores, eliminate toxins, and enhance coordination. In addition, the banya and cold water pouring or snow rubbing help temper the body and boost the immune system (Meet Russia Online, 2019). The Sandunovsky in Moscow is considered the most famous banya in Russia.

**Japanese Onsen:** Natural hot springs, or onsen, in Japan are the result of the country's abundant volcanic activity, and the tradition of using onsen for therapeutic, religious, and restorative purposes dates back to the 500's when Buddhism was introduced to Japan. There is proof that Buddhist monks helped establish early spas around the country. Since many onsens in Japan are built into pre-existing geological features, their histories can go back thousands of years (Sood, 2012). Kusatsu is a famous onsen at a natural hot spring located 200 kilometres from Tokyo.

**Finnish Sauna:** The origins of the Finnish sauna are unclear, but the country's cold climate may have inspired its creation. Some of the original saunas were heated shelters that doubled as houses. The typical Finnish sauna is a smoke sauna heated by a wood burner without a chimney. After bathing in the heat, residents roll in the snow or leap into a frozen lake to promote blood circulation. "Sauna" is Finnish for a hot steam bath made by pouring water over heated stones. Finland has 2 million saunas, one for every two or three people (Sood, 2012). Saunas are known for other uses besides being therapeutic. Löyly is one of the most popular saunas in Finland, designed by Avanto Architects in 2016.

## 02 ] [ GROUNDING

### 2.4 THE BENEFIT OF BATHS:

Baths are recognised for their therapeutic and healing capabilities and capacity to alleviate stress and improve one's general health. The following baths are known for their therapeutic properties.

**Salt bath:** The use of salts in baths for therapeutic purposes can be traced back to 2700 B.C. in China. They are still used today for their medical benefits (Schmidt, 2022). A salt bath can reduce muscle tension and calm the mind. Salt baths contain magnesium and potassium, which can be absorbed in a warm bath to flush toxins away and restore balance. Sea salt baths improve the body's immune system. Warm baths boost disease resistance by stimulating the body's anti-inflammatory response. The high antibacterial content of salt is believed to prevent sickness and germs. Mineral deficiencies can contribute to progressive tiredness, and regular salt soaks counteract one's body's acid overproduction and restores minerals. (De Guzman, 2020).

**Epsom salt bath:** Epsom salt is derived from the English town Epsom, which was found in the early 17<sup>th</sup> century. The salt itself is a naturally occurring magnesium and sulfate mineral compound with a bitter taste (Zimmerman, 2019). Epsom salt can be used as an integrative medicine tool. It can either be consumed orally with a glass of water or used for therapeutic reasons in a hot bath. The benefits include relief of muscle pains and aches and absorption of the magnesium component, which is beneficial to the brain (Cleveland Clinic Health Essentials, 2022).

**Ice bath:** This phenomenon dates back to the ancient Egyptians and was also found in the Greek culture around 3500 BC (Plunge, 2021). A 4-6 minute ice bath means being submerged in icy cold water or a bath filled with ice cubes. It is mostly beneficial to pain relief, fatigue and fat loss. It is also known to lift depression and aid in stress management as neurotransmitters are activated, it is an excellent treatment for PTSD, and beneficial to overall mental health (Shields, 2022).

**Mud bath:** Ancient Romans utilised thermal pools, sweating caves, and mud baths in mountainous Bormio, Italy, more than 2000 years ago. They appreciated the healing powers of water (Ghansiyal, 2021). Mud baths contain active physical and chemical qualities that can treat psoriasis, eczema and rosacea symptoms. The regenerative and antibacterial characteristics of mineral-rich mud assists and regulates abnormalities, preventing and curing acne from the inside out. Soaking in mud relaxes aching muscles and joints, relieving aches and pains (Ghansiyal, 2021).

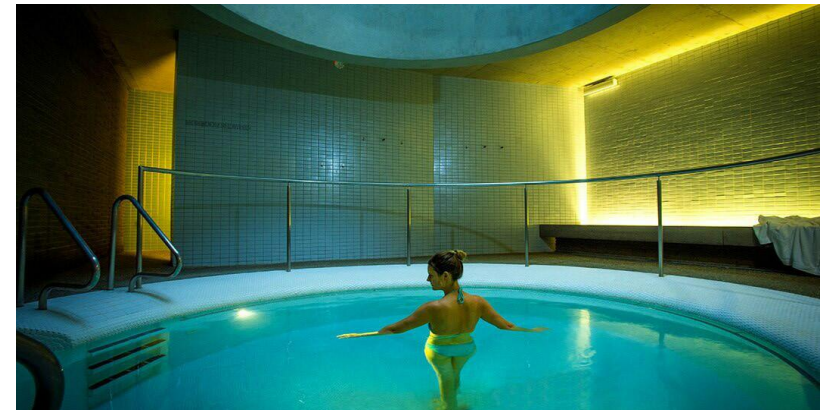


Figure 18: Salt bath, Hepburn Bathhouse and Spa (Robinson, 2021)



Figure 19: Ice bath (Furstpost, 2019)



Figure 20: Mud bath (Ghansiyal, 2021)

## 02 ] [ GROUNDING

### 2.5 SITE ANALYSIS

The proposed site of Everett on Vaal is about 12 kilometres west of Vanderbijlpark, along the R42 road that connects to the N1 to the west. The origin of the unusual name of the site is unclear, but it is one of the most significant undeveloped properties in the area, and has access to +-82 meters of the riverbank. Sixty-year-old blue gum trees line the border of the property, standing sentinel over the river and providing a peaceful retreat from the busy street beyond. At the water's edge, two weeping willow trees serve as a focal point. Due to its western orientation, the natural dam provides a stunning backdrop to some of Africa's most breathtaking sunsets.

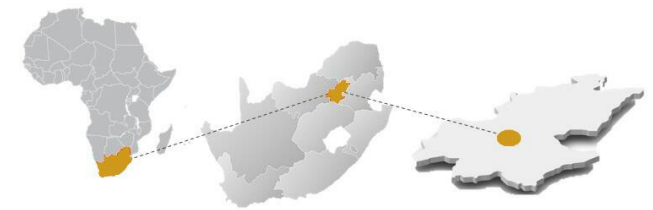


Figure 21: Location of Everett on Vaal in relation South Africa (Author, 2022)



Figure 22: Location of Everett on Vaal in relation to the Vaal River (Author, 2022)

### 2.5.1 CONTEXTUAL DATA:

Vanderbijlpark is an industrial hub 80 kilometres south of Johannesburg. The town was established in 1947 as a place of residence for local steelworkers and their families. Since then, it has grown and prospered, to the point that it now has the largest steelworks in the southern hemisphere. Emfuleni is the name of the municipality that contains the city's 95,000 people.

Dr HJ van der Bijl, a young scientist in the United States who was encouraged to return to South Africa to plan the country's economic expansion, inspired the city's name. Van der Bijl is a suitable namesake for this city since he oversaw the founding of ISCOR (Iron and Steel Corporation). After it was determined in 1942 that the Pretoria steelworks of the South African Iron and Steel Industrial Corporation could not be extended, the company was formed. Vanderbijlpark, South Africa's primary steel production hub, was incorporated as a city in 1952, the same year the steelworks began there. Other significant metal processing enterprises produce castings, mining, and power plant equipment (Wikipedia contributors, 2022p).

Vanderbijlpark, Vereeniging and Sasolburg are the three cities that constitute the Vaal Triangle. During the second half of the 20<sup>th</sup> century, it became the economic hub of South Africa. The current usage of the Vaal area is widespread, notably in the tourism industry. The Vaal River, Vaal Dam, and riverside villages and resorts are referred to as "the Vaal". The Greater Sebokeng region, which includes Evaton and Orange Farm, Sharpeville, Bopelong and Boipatong, Heidelberg, Zamdela, and Potchefstroom, is considered to be part of the Vaal Triangle (ShowMe, 2009).



Figure 23: Map outline of Vanderbijlpark (Google Maps, n.d.)



Figure 24: Aerial view: Vanderbijlpark (Wikipedia contributors, 2022p)



Figure 25: Skyline of Vanderbijlpark with Acerlor Mittal (Creamer, 2021)

### Wind - Vanderbijlpark, South Africa

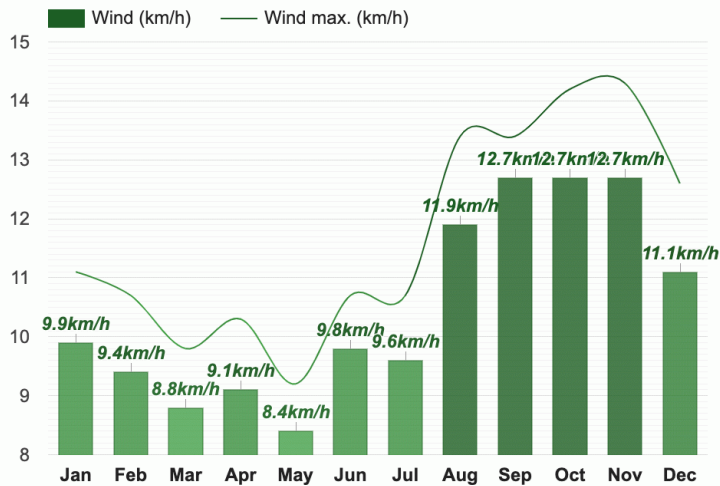


Figure 26: Average annual wind – Vanderbijlpark (Weather Atlas, n.d.)

### Rainfall - Vanderbijlpark, South Africa

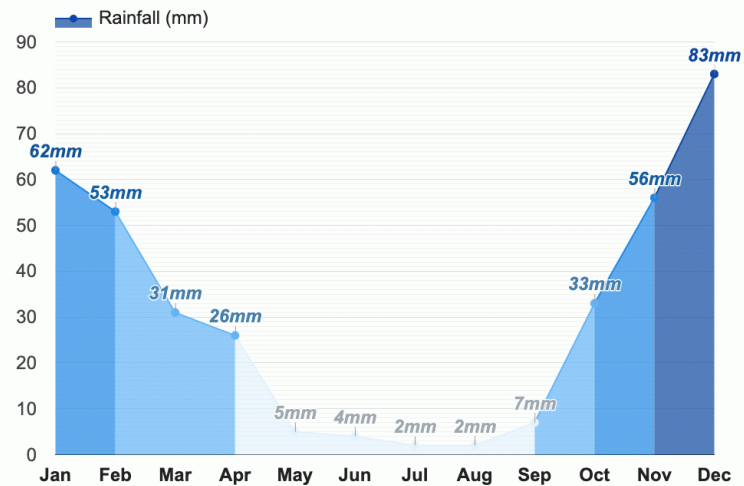


Figure 27: Average annual rainfall – Vanderbijlpark (Weather Atlas, n.d.)

**Weather:** In summer, the region has maximum temperatures between 31 and 35 degrees Celsius, with lows of between 15 and 22 degrees Celsius. The average daytime temperature in the region in winter is between 18 and 23 degrees Celsius, while the average temperature at night is between 1 and 5 degrees Celsius (Wikipedia contributors, 2022p).

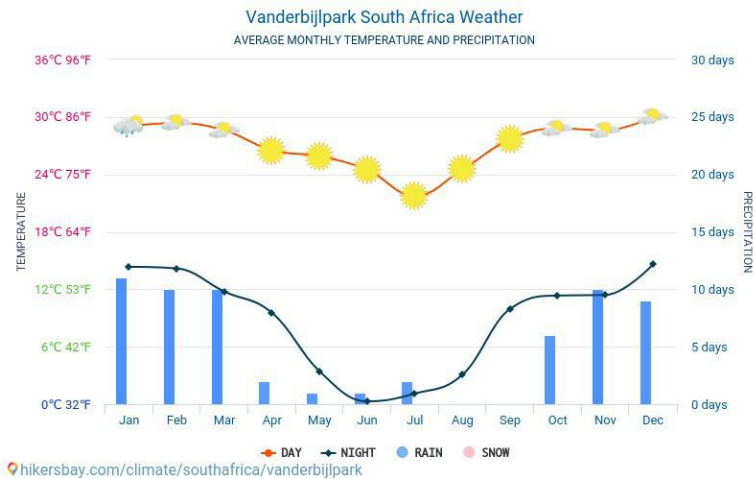


Figure 28: Temperature annually in Vanderbijlpark (hikersbay, 2022)

### Humidity - Vanderbijlpark, South Africa

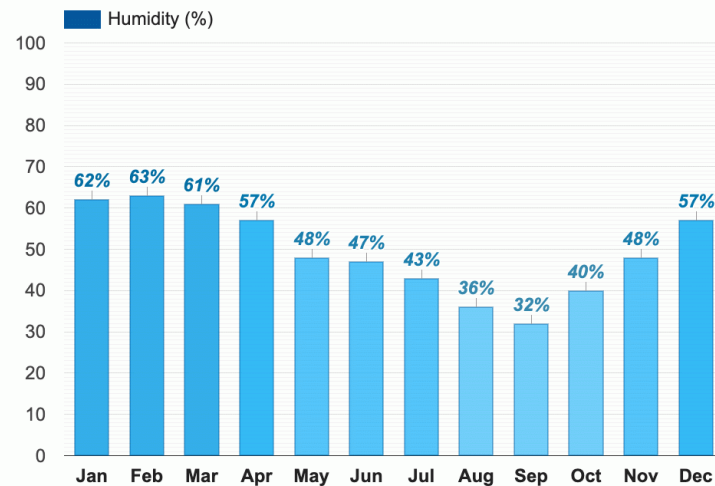


Figure 29: Average humidity annually in Vanderbijlpark (Weather Atlas, n.d.)

Thousands of towering green trees line the streets of Vanderbijlpark, giving the city a luxurious look and a calming atmosphere. Because of its vast size and the availability of water, as well as the many water activities it supports, the Vaal River is a critical component of this metropolis. Both tourists and locals enjoy recreational opportunities such as regattas, boat excursions, and opportunities to boat, ski, fish, and swim. The river forms a boundary to the province of Gauteng.



Figure 30: Vaal River sunsets (Liquid Lounge, n.d.)

**Vaal River:** The Vaal River, a tributary of the Orange River in South Africa, passes through Mpumalanga province. The merge of these two rivers happens around Douglas. The middle segment of the river forms part of the northern frontier of the Free State. The Wilge, Klip, Vals, and Riet Rivers are important tributaries that flow from the river's left bank. The Vaal River has been completely developed and is now used for industrial and domestic functions. It is primarily a plateau river with a shallow bottom. For most of the year, its flow is moderate, but during the winter months, it may form a muddy torrent or turn a grey-brown colour, named after the Vaal Dam, located 37 kilometres upstream of Vereeniging (Tikkanen, n.d.).

**Geology:** The Vaal River's banks are made up of silt-clayey soil that is quite expansive above the water table (Labuschagne, 2015). The majority of the Witwatersrand Supergroup consists of very hard, erosion-resistant quartzite, banded ironstones, and some marine lava deposits, as well as softer, more easily eroded tillites, mudstones, and conglomerates (Vanderbijlpark, n.d.).

Everett on Vaal is located at Latitude: 26.748998 and Longitude: 27.722628, with a riverside elevation of 1421.5 meters above sea level. The land is 8.56 hectares, with a +-82-meter riverside and side limits (north and south) extending roughly 1017 meters to the river road. The main entrance is on the north side via Southern Road. There is a 100m building line from the river's shore with yellow beacons indicating the Randwater area. Structures are not authorised below this line. Because the 1975 flood line is currently positioned below the 100m building line, it has no further impact as a restriction. The 1/100-year flood line is a few meters above the 100m building line but is not seen as a restriction. The location has a 25-meter rise from the waterfront to the top of River Road. The elevation from the riverbank to the site entrance is 13 meters. This property is designated agricultural land. Additional rezoning applications will be required for any other development. There are smallholdings on either side of this location.

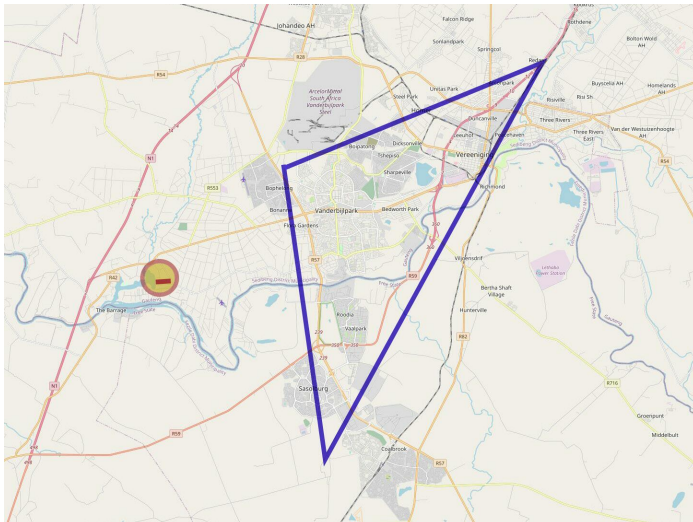


Figure 31: Location of the site concerning the triangle formed by Sasolburg, Vanderbijlpark and Vereeniging (Author, 2022)



Figure 32: Vaal River (Chauke, 2019)

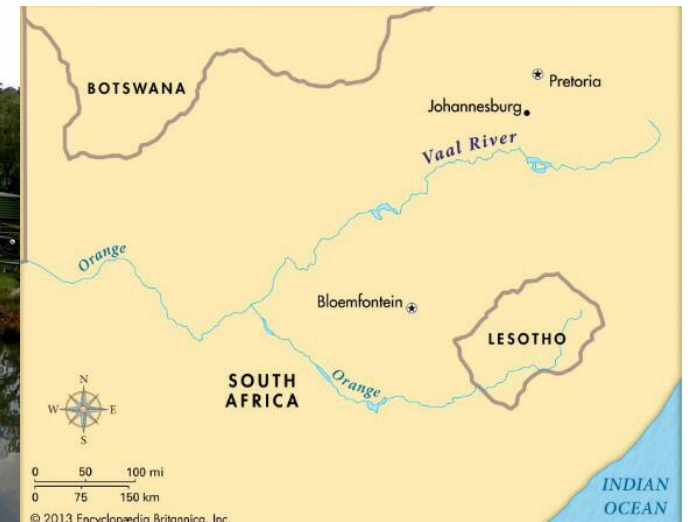


Figure 33: Vaal River in South Africa (Britannica Kids, 2022)

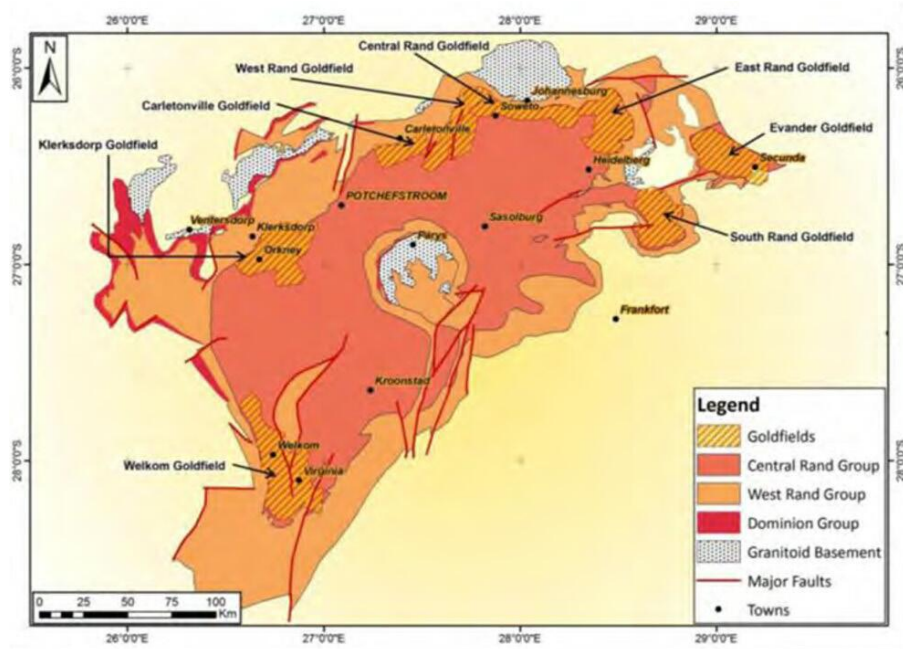


Figure 34: Simplified geological map of the Witwatersrand Basin (Labuschagne, 2015)

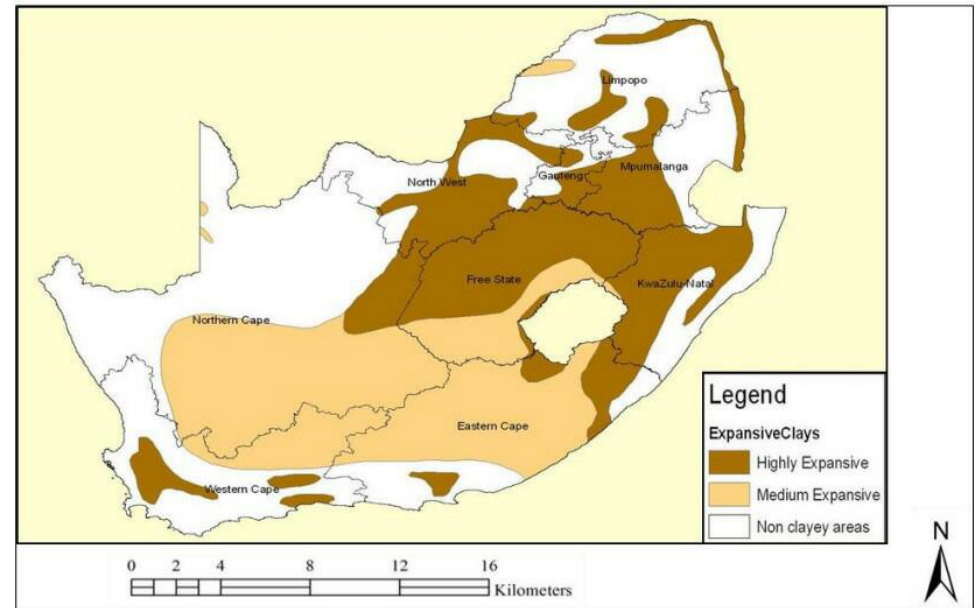


Figure 35: Regional distribution of clay swell in South Africa (Dlamini, 2015)

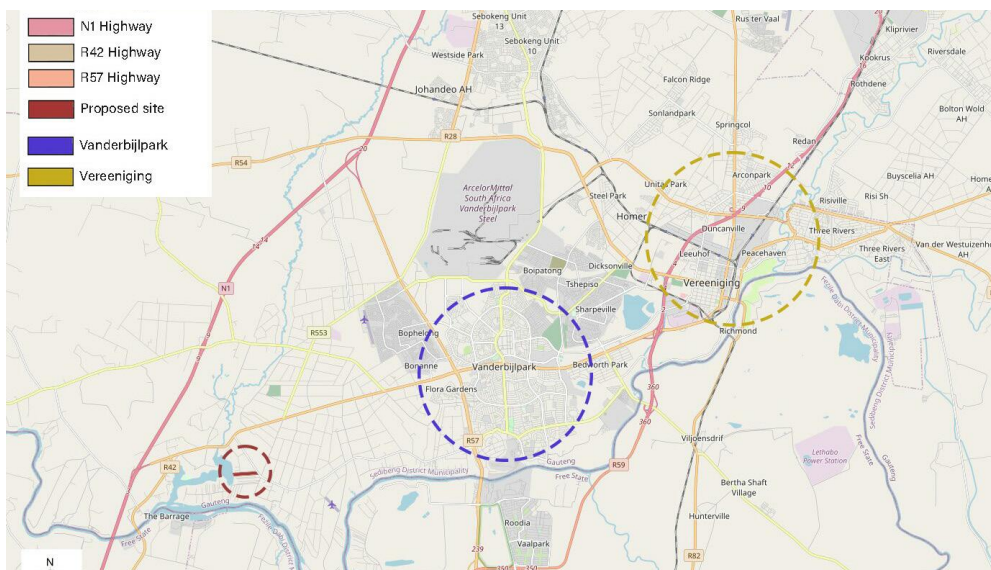


Figure 36: Major roads concerning the proposed site (Author, 2022)

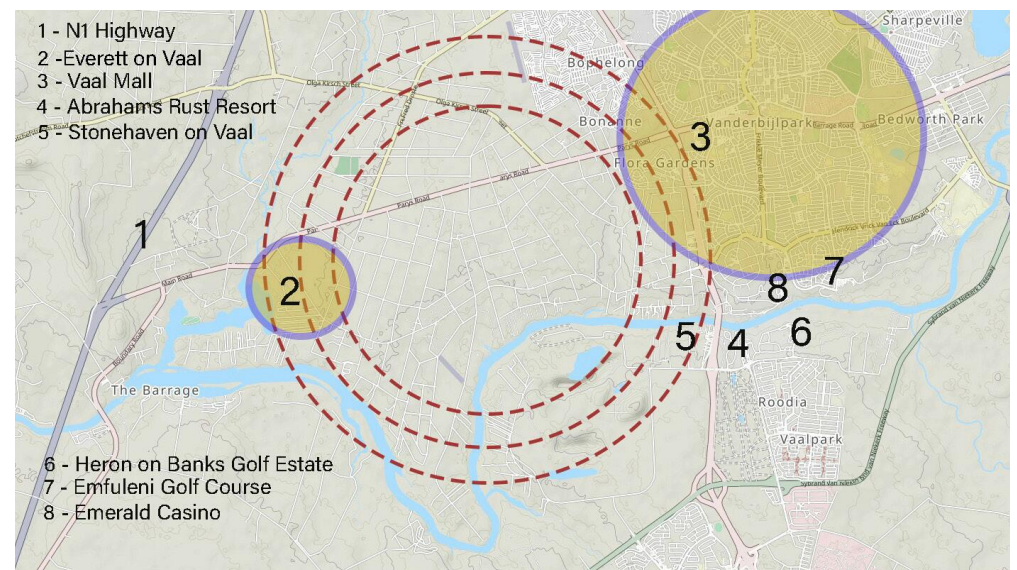


Figure 37: Major attractions in 10 km radius from Vanderbijlpark (Author, 2022)

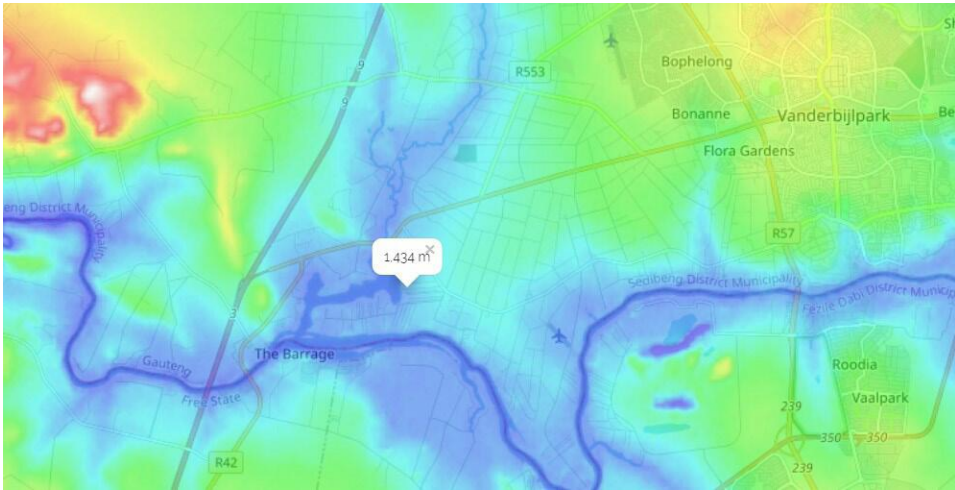


Figure 38: Topographic map elevation of Everett on Vaal (topographic-map.com, n.d.)

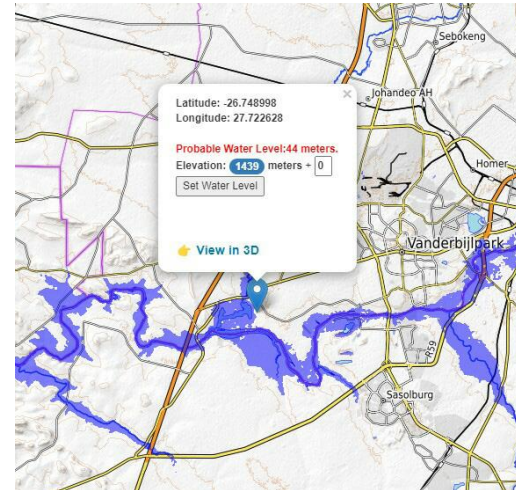


Figure 39: Flood map of area (FloodMap, 2020)

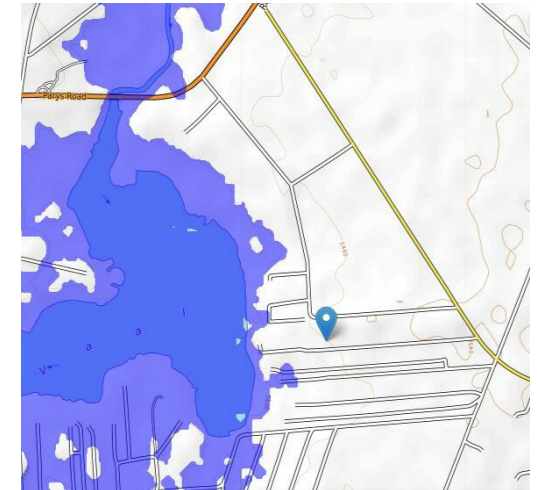


Figure 40: Potential Site Flood area (FloodMap, 2020)



Figure 41: Everett on Vaal (Author, 2022)

- 1 - Vaal River 2 - smallholding 3 - Southern Road entry to site 4 - smallholding 5 - smallholding 6 - smallholding 7 - Ravel Street 8 - Portion 79 of Farm 577
- 9 - surrounding treeline site 10 - Proposed location of Healing and Wellness Sanctuary on Everett on Vaal 11 - Garden of Senses 12 - Parking area
- 13 - 2 weeping willows 14 - the yellow beacons of Rand Water (Author, 2022)

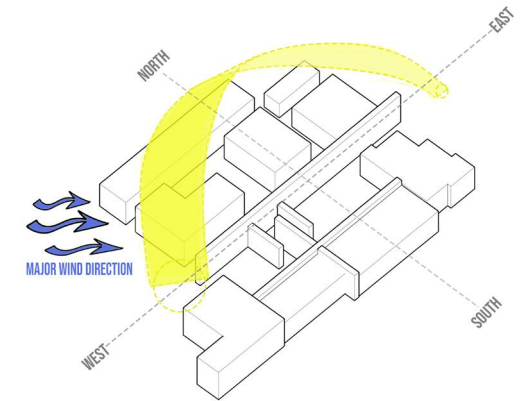


Figure 42: Sun orientation of building and primary wind direction to Healing and Wellness Sanctuary



Figure 43: Refer to 9 on location layout: Blue gum trees surrounding perimeter (Author, 2022)



Figure 44: Refer to 1 on location layout: Riverfront view (Author, 2022)



Figure 45: Refer to 13 on location layout: Two old weeping willow trees as vista point (Author, 2022)

### Surrounding Areas:

The surrounding areas vary from smallholdings to agricultural businesses. More expansive properties with luxurious residences and various outbuildings may be found at the land's southern boundary. The northern region is more thickly populated and is divided into small holdings. There are miles of farmland to the east of River Street. The Vaal River marks the western border.

### 2.5.2 SENSE OF PLACE:

A peaceful feeling flushes over you when you sit on the edge of the river at Everett on Vaal. The tranquility of the water holds a magnetic power. It is quiet and serene, and birds also enjoy this setting by voicing it in a song. It feels as if time has no importance, and as if the world is on mute for a while. Every few minutes, a fish jumps out of the water as if nature intended this to be a private show, leaving only a few ripples, and then the water becomes as smooth as a mirror again. Passing clouds paint exciting pictures on this canvas. One becomes aware of how the form of a cloud can change into something recognisable for a moment, before its shape changes again. The wind slowly moves the natural wild grass as if this is an audience giving applause for this sensational story told by nature. One slowly becomes aware of an earthy scent that is at once familiar yet impossible to place. It is therapeutic to sit there, only being aware of the magnificent performer that mother earth can be with all her supporting cast in complete harmony. When was the last time you felt such complete mental balance?



Figure 46: Refer to 14 on location layout: Yellow beacon of Randwater (Author, 2022)



Figure 47: Refer to 4,5,6 on location layout: Smallholdings next to Everett on Vaal (Author, 2022)



Figure 48: Refer to 4,5,6 on location layout: Smallholdings next to Everett on Vaal (Author, 2022)



Figure 49: Refer to 4,5,6 on location layout: Smallholdings next to Everett on Vaal (Author, 2022)



# 03 ]

## EXPLORATION

3.1 TOUCHSTONE

3.2 THEORETICAL GROUNDING

WATER

LIGHT

NATURE

SENSES

3.3 PRECEDENT STUDIES

3.3.1 THERME VALS

3.3.2 HEPBURN BATHHOUSE

3.3.3 PARC ANDRE CITROEN

3.3.4 BABYLONSTOREN WINE ESTATE

3.4 ACCOMMODATION LIST

## 03 ] [ EXPLORATION

### 3.1 TOUCHSTONE

The design of a touchstone is the idea of life symbolised through layers. Layers of society, culture, and human experience are all interconnected. The concept of layers is symbolised through the many sensory filters of sight, hearing, and touch. Creating a central axis defines the connection to everything that is integrated. All humans are connected, and the earth is our central connection on a large scale. There is a water channel, the underlying cross-reference to the idea of water as the main focus of this proposed project. As water can be perceived in many forms, dry ice was used to create a mystical experience. Light and shadow reflections created the spatial proportions of each layer, and these were deliberately created on a different scale. The layers could be swiveled around the axis to create a unique user experience.

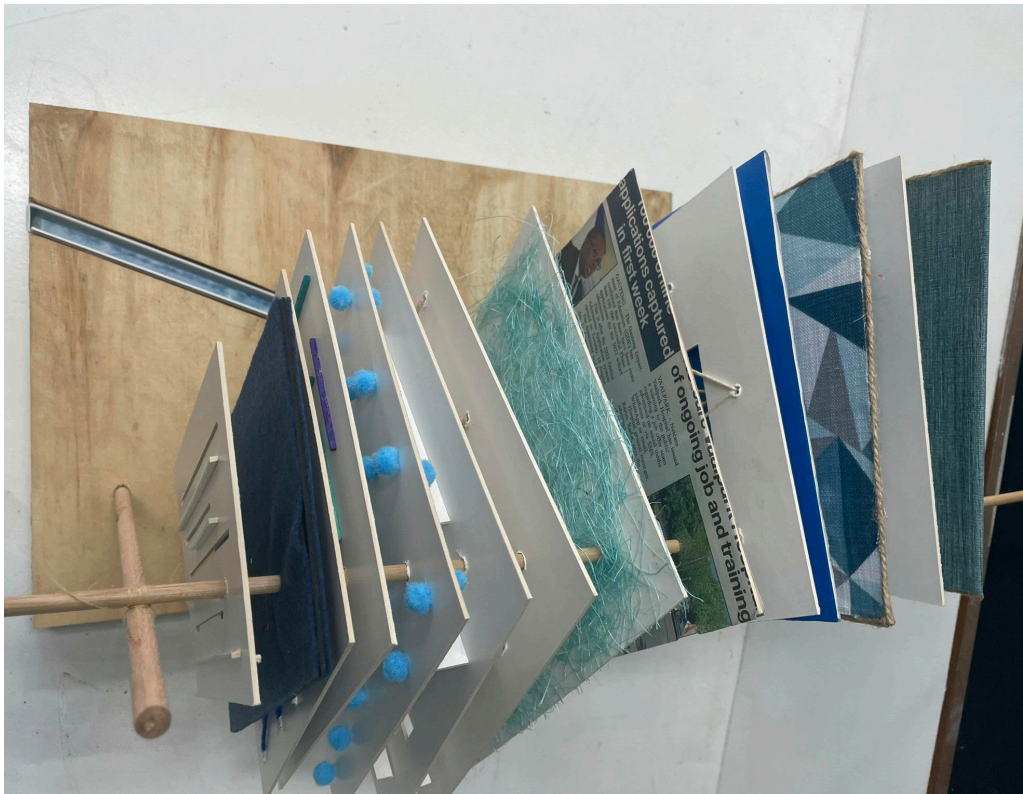


Figure 50: Touchstone - Top view (Author, 2022)

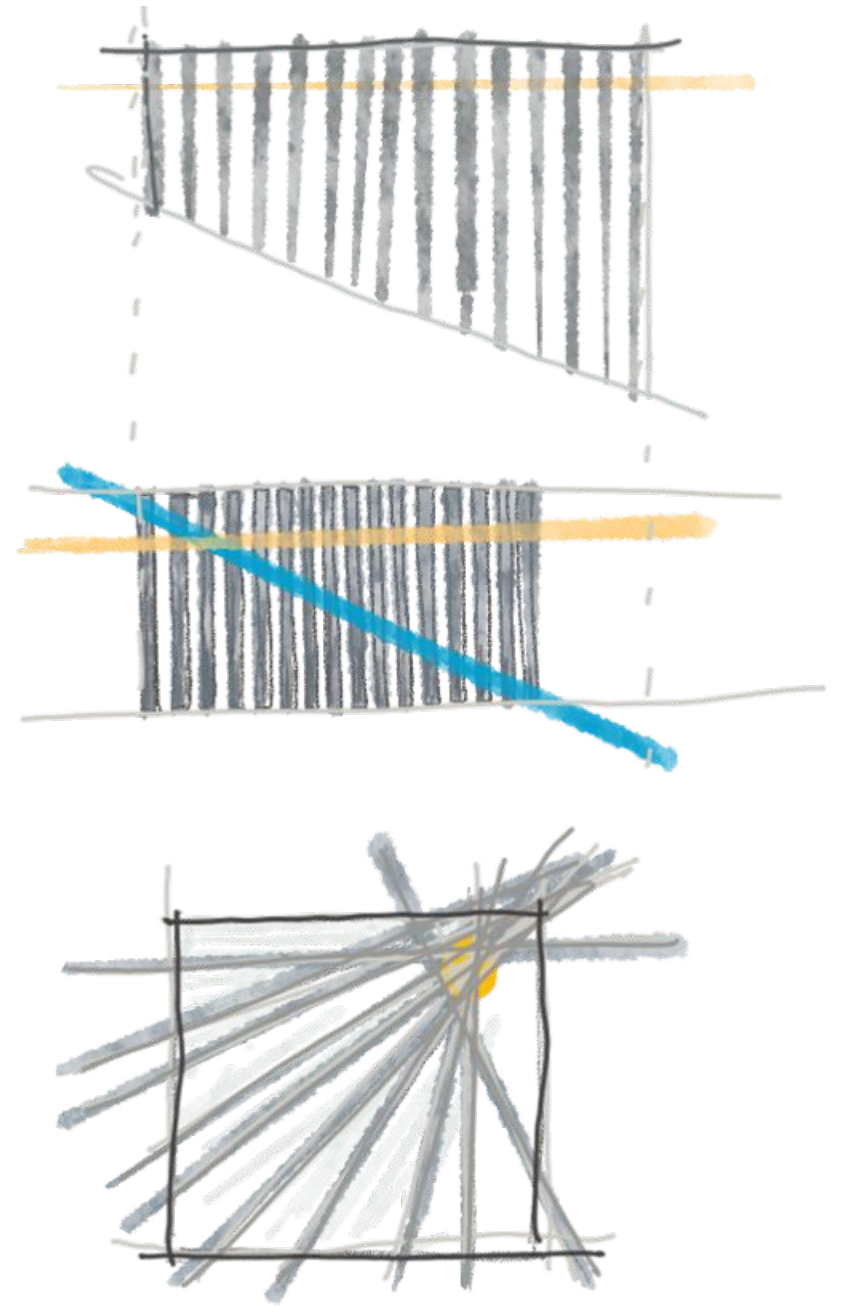


Figure 51: Touchstone - Concept plan, section and elevation (Author, 2022)

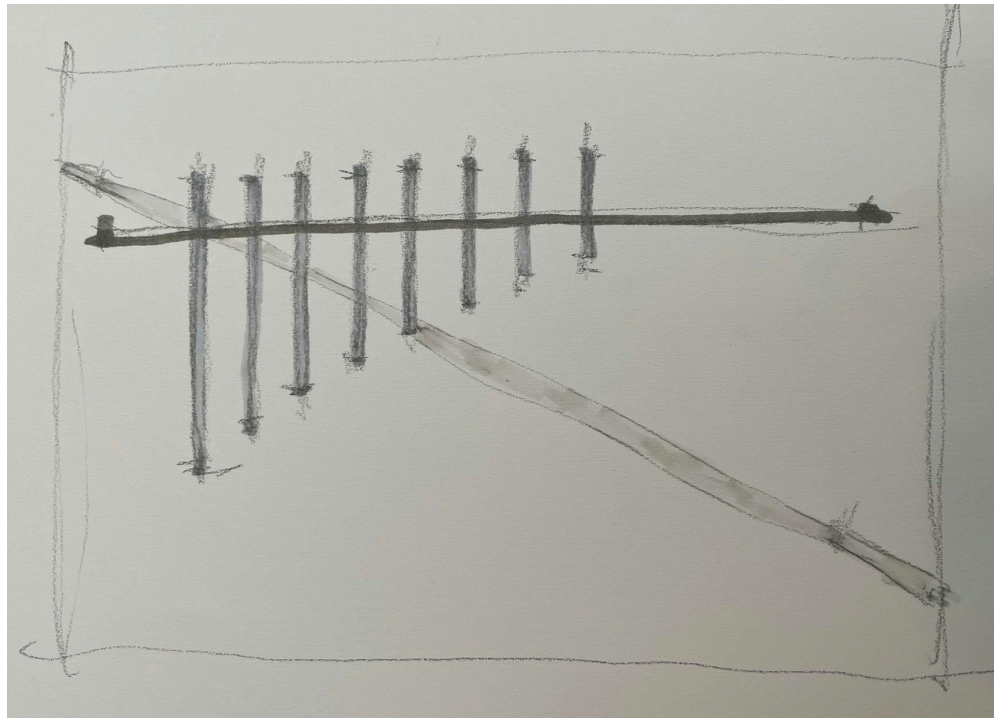


Figure 52: Multilayer metaphor (Author, 2022)



Figure 53: Touchstone - Side (Author, 2022)

Figure 54: Touchstone - Side (Author, 2022)



Figure 55: Touchstone - Front (Author, 2022)

## 03 ] [ EXPLORATION

### 3.2 THEORETICAL GROUNDING:

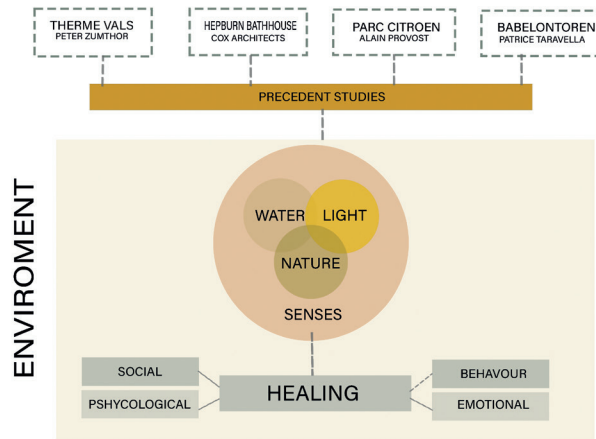


Figure 56: Mind map of theoretical approach (Author, 2022)



Figure 57: Church on Water, Japan by Tadao Ando (Boyet, 2020)

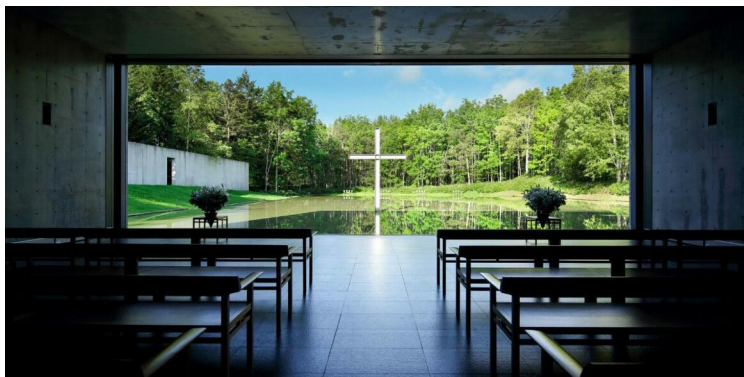


Figure 58: Interior view of Church on water (Moreno, 2021)

This architectural proposal uses phenomenology to research the three essential components of water, light and nature to stimulate the human senses and how this will aid in creating therapeutic environments. The investigation will further explore the theoretical significance of water and light, how the user relates to them, and how they shape our encounters with buildings. How can we use water as a connection to nature for mental well-being? What factors should be considered for building a healing space and modifying the landscape around water and light so that people may have meaningful relationships with it?

Research on the topic of water led me to psychology, as it became apparent that these two concepts are intertwined. The human condition is a trinity of mental, physical, and spiritual elements. On a primal level, water is connected to movement, and the flow of water is ever-changing. This flow feature can be physically experienced and also mentally, through a person's state of mind, but there is also a spiritual aspect of flow that connects us to earth, desire, ambience and the spaces around us (Ramsey, 2018). Our observation and study of these factors give us an understanding of life and the interconnectedness of life. Moving water can remind us of our connection to nature and its healing potential. Beyond its primary function of keeping us hydrated, water has many other uses. It gives us life and restores both our psyche and our physical health. Getting back in touch with nature and spending time in the water may replenish the mind and soul.

Humans may benefit from water's healing properties on all levels: physical, mental, and spiritual. Water immersion has been recognised for millennia to assist in treating sickness, revitalising the body, and calming the mind (Moss, 2010). In addition, submerging in water has a profound physiological relaxation effect on the body. Water activates the parasympathetic nervous system, which can calm and regulate our bodies (Long, 2021), as outlined in the benefits of bathing.

Water represents cleansing, rebirth, and fertility. In most faiths, it is an essential component of the healing ritual. The Church on the Water, designed by Tadao Ando and built in Japan, is an excellent example of a building inspired by its surrounding watery landscape. The primary objective was to establish a connection with nature. The approach to the building signifies the ceremonial and purifying process, and its spatial organisation gives the impression that the chapel is floating on water, thus enhancing the area's sanctity (Leleu, 2021). Incorporating light into this design enhanced the aesthetics and set the mood to focus on the sanctity of the space, and transformed the walls into a captivating building form.

In an explanation from the Architectural review, Ando stated the following regarding light in the Church: "Things are articulated along borders of light and darkness, and obtain their particular form, discovering interrelationships, and become infinitely linked... light continually reinvents the world out of its ceaseless transformation" (Oshima, 2020). This phrase defines the power of light to alter our reality and give architecture meaning. It interconnects back to our senses since we perceive light via our visual senses.

To answer one of the theoretical questions – *How can architecture help to re-engage man with his environment and spark a dialogue between the human body and the constructed world*, Tadao Ando not only answers but also succeeds in building a conversation between architecture and nature with light as an ever-changing element in this project. In essence, our senses observe our surroundings, and to mould them for healing, the components of water and light must work in harmony with nature to produce a therapeutic atmosphere. Ando applied the substantial use of geometric form and the theory of foundational ideology in his design (Dayman, 2019). As it is understood, the theory of ideology is the influence of culture and politics on a particular set of values and beliefs, forms and symbolic representations, as explained by Mako Blagojevic and Lazar (2014). Tadao Ando used familiar symbols, like the cross and light, but his approach was more symbolic to this design of a sanctuary. Water was a central factor, and through the composition layout, it is apparent that many insights into this element were used, including the reflective nature of water and the sound it can produce to create a ritual of silence and reconnection with nature. His project strongly influenced the proposed design integration of nature into architecture and the use of water for tranquility, while stimulating the senses. Based on the research conducted, it is the author's opinion that certain facets of the project were approached through the theory of phenomenology, such as the manipulation of space through light and shadow, while also being extremely sensitive to how water was used to stimulate the senses while assigning meaning to this environment.

The aesthetic and practical qualities of light significantly impact a building's efficiency, and its effect on our moods is well-documented. Not only does it help to orientate a space, but it can also render depth and texture with the play of light to create a shadow. As the first thing we notice when we look around, light significantly impacts our mental and emotional well-being because it provides the context within which we make sense of the world (Hillbrand, 2018). The impact of light and shadow can create and reflect meaning in architecture, enabling us to perceive our surroundings through our emotions and assign meaning to them. These characteristics of phenomenology are examined in the precedent study of Therme Vals by Peter Zumthor, who is well-known as an architect on this subject. His main objective is to produce a tangible experience through the senses by using light, space and material to achieve this dialogue. Therme Vals is located in a small village in Switzerland set on a natural hot spring. There was careful consideration of the structure for minimum impact on its surroundings and the use of local materials for visual aesthetics. In Therme Vals, the light was the essence of how the baths would be experienced, through different light colours, memories and associations (Dreki, n.d.).

This case study changed the way that the designer initially thought to incorporate the proposed building into the sloping environment. It manifested the idea of carving out a section for the building, and his use of a solid geometric form aided the designer in spatial development. Zumthor succeeded in creating a therapeutic space that uses water as a material in the sense that it focuses the attention on the essence of bathing. His phenomenological approach to light and water was pivotal in understanding how he achieved these elements and the embodiment of the sense used to create a meaningful experience through this study. The narrative of nature unfolds throughout the design with framed views in the form of windows placed in strategic sections so that the user can experience the connection inside the building. The use of local stone placed in a pattern tells the story of being inside the mountain. Narrow glass sections in the roof were another clever way of utilising light to enhance the stone features that create a rhythm on the inside. In this project, Peter Zumthor understood the quantitative aspects of the user experience and addressed this with the qualitative aspects of light, water and connection to nature in his design.

Figure 59: Entrance to Therme Vals (5osA, 2009)



Figure 60: Interior view of circulation (5osA, 2009)



This brings the study to the concept of nature. Christian Norberg-Schulz says that the environment influences people, and design should prioritise this with meticulous detail to allow a connection beyond the physical. The study of phenomenology focuses on the relationship of the user via the senses to the place or environment (Krause, 2019), while the International Style (also known as Internalism) focuses on the modern use of materials and disregards the user or the environment in which it is placed (Mako et al., 2014). Architects like Philip Johnston and Le Corbusier are well-known for using this style, and there is a beauty to the truth of how they showcase materials, but in my opinion, these buildings can be placed anywhere, and there is no specific consideration for the context of the site, or sensorial qualities. Pallasmaa argue in *The eyes of the skin* how there was a disappearance in architecture's sensory and sensual qualities. He became interested in the function of the body and perception, cognition, and consciousness, as well as the relevance of the senses in articulating, storing, and processing sensory responses and thoughts, which constitute the embodiment of the human being. The body recalls who we are and where we are in the world (Pallasmaa, 2012:11).

Architect Steven Holl and historian Alberto Pérez-Gómez are well-known for their views on the theory of phenomenology and its implementation. From their viewpoints, the relationship between the user and the architectural object needs to complement the emotional responses that elements such as colour and texture and the use of light can have within an environment (Krause, 2019). Life-changing architecture must target all senses simultaneously and aid in integrating our image of self with our experience of the environment. Beyond design, the ultimate significance of any structure is that it leads our attention back to the world and towards our sense of self and being. A building's primary function is to provide shelter and integration. The feeling of self allows us to engage in mental dimensions, imagination, and desire. Space borrows one's feelings and connections, and one borrows space's atmosphere, which beckons and liberates our senses and ideas (Pallasmaa, 2012:12).

Vision is our primary sense, and it suppresses the other senses. The visual sense is comprised of focused and peripheral vision. The mental system prioritises peripheral vision. Focused vision confronts us with the world, while peripheral vision integrates us with the features of space and a sense of its atmosphere. Consequently, architectural work is experienced not as disconnected retinal images but in its entire and integrated material and spiritual essence. Architecture explores metaphysical themes of self and the world, interiority and exteriority, time and length, and life and death. Architecture gives time and space a human dimension. As a result of space and time's interconnectedness, the conversation of internal and exterior space, physical and spiritual, material and mental, conscious and unconscious concerns, and their respective roles and interconnections, affect nature and architecture (Pallasmaa, 2012:13-19).

Natural materials such as stone, brick, and wood, allow our eye to pierce their surface, expressing their age and telling the narrative of their origin and human use. They mature through time, adding to the experience of the construction materials. Modern structures purposefully conceal their flaws, giving them a timeless and ageless appearance. The deterioration of the time experience in contemporary contexts has disastrous mental consequences. We have a mental need to understand that we are anchored in the continuity of time, and it is the responsibility of architecture in this constructed world to support this experience (Pallasmaa, 2012: 34-35). The philosophy of Merleau-Ponty places the human body at the centre of the experienced universe. Our bodies and motions continuously interact with our surroundings, as the world and the self continually inform and redefine each other. This continual connection strengthens and articulates one experience of reality. Architecture is simply a natural expansion into a created environment (Pallasmaa, 2012:43-44). It defines the year's cycle, the sun's course, and the passing of hours. Every architectural experience is multisensory, and the senses judge all aspects of space, materials, and scale.

The intention with using these viewpoints is to strengthen the connection of mental health in a therapeutic environment so that users can re-establish themselves within nature and use the elements of water. This will allow users to constantly be aware of the presence and calming effect of nature through the perception of the senses. Sensory experiences become integrated through the body and human mode of being. Light is vital to convey the message of the areas that will be designed to enhance healing. In some sense, light will be the main focus point, and in other areas it might be strengthened by creating shadows and enhancing texture. Touch enables us to experience connection, affection and intimacy, as opposed to the eyes, which are the organs of separation and distance. Touch approaches and caresses, while the eyes survey, control, and examine. We often close our eyes when we have a highly emotional experience, such as dreaming or listening to music. Deep shadows and darkness are necessary because they soften stark light, give perspective and depth, stimulate tactile imagination, and allows us to unconsciously use peripheral vision. Imagination and daydreaming are stimulated by dim light and shadow, which can strengthen the experience of a place. Suppressing eyesight acuity is necessary in order to think clearly. Objects in light are given form and vitality by shadow. Shadow inhales, and illumination exhales light in architectural spaces to create a breathing relationship between the two. Luis Barragan, a master of intimate mystery and shadow manipulation, feels that large windows deprive buildings of intimacy, shadow, and atmosphere.

As a result, we stand in danger of losing our feeling of personal connection (Pallasmaa, 2012:50-51).

The auditory experience of water created by architecture is experienced through tranquillity, silence, matter and light. Silence focuses our attention on our existence and makes us aware of solitude and introspection. It allows us to slow down into the healing flow of time and connect to space through the sense of being. Smell frequently recalls images from long-forgotten memories, making it the most persistent sense memory. The nose reminds our eyes, and our olfactory senses take on the role of a hidden world poet. According to Heidegger, every hand action and hand bearing include the element of thinking. The skin can perceive the texture, density, and temperature of materials. The tactile sense links us to time and convention. The soles of our feet measure gravity, and we perceive the ground's density and texture. Our senses impede the earth's respiration. There is a modest correlation between tactile and gustatory sensations. Vision is transmitted to taste, and specific colours can conjure a distinct flavour. The architecture of Carlo Scarpa and the colours used by Luis Barragan create oral sensations with their sensual materials and skilfully produced colours (Pallasmaa, 2012:55-64).

The aim is to experience the architectural environment and its benefit for healing, and explore the fundamentals in extending the design to include a therapeutic garden to stimulate the senses and address our psychological, social and spiritual needs. The research made it apparent that this is a subject that is gaining popularity, specifically mental well-being and the environment. Gardens are as old and rich in history as



Figure 61: Sense (Sense, 2019: Online)

architecture, and the notion is that we gain a positive impact from spending time in them (Stigsdotter & Grahn, 2003a). The design should internalise the landscape and set it as a whole. The body feels the functioning of movement, balance, and scale instinctively. Understanding scale requires measuring an object or structure with one's body and projecting the body's proportions onto the space. We have a natural ability to recall and visualise locations. Perception, memory, and imagination interact continuously. Glen Murcutt, Steven Holl and Peter Zumthor's work all enhance the variety of sensory experiences in their buildings (Pallasmaa, 2012: 71-77). Architecture's everlasting objective is to create embodied existential metaphors that affect our lives. It captures, manifests, and perpetuates concepts and visions of existence. Every experience involves actions of reflection, recollection, and comparison. We associate ourselves with this location, this area, and this particular time, and these attributes constitute who we are. Architecture is an art form through the senses that helps us to link with the outside world.

## 03 ] [ EXPLORATION

### 3.3 PRECEDENT STUDIES

#### 3.3.1 THERME VALS

**Architect:** Peter Zumthor

**Location:** Graubünden, Switzerland

**Year:** 1996

#### ARCHITECTURAL ELEMENTS

Bathhouse  
Spa  
Public Spaces  
Waiting Areas

#### LANDSCAPE ELEMENTS

Valley  
Hotel  
Natural surroundings

#### MATERIALS

Stone  
Light  
Water  
Concrete



Figure 62: Grass roof with geometric pattern (Carolina planning, 2015)

**SITE:**

Vals is a rural mountain town in western Switzerland. The community purchased the bankrupt hotel and commissioned Peter Zumthor to construct a hydrotherapy centre. The location highlighted the limits on the design of this structure, and the valley's slope and the hotel's views were two significant restraints. Zumthor's response was to submerge the building into the valley. The grass-covered flat roof blends well with the surrounding scenery. Only the roof's geometrical design shows its presence (Glanville, 2018).

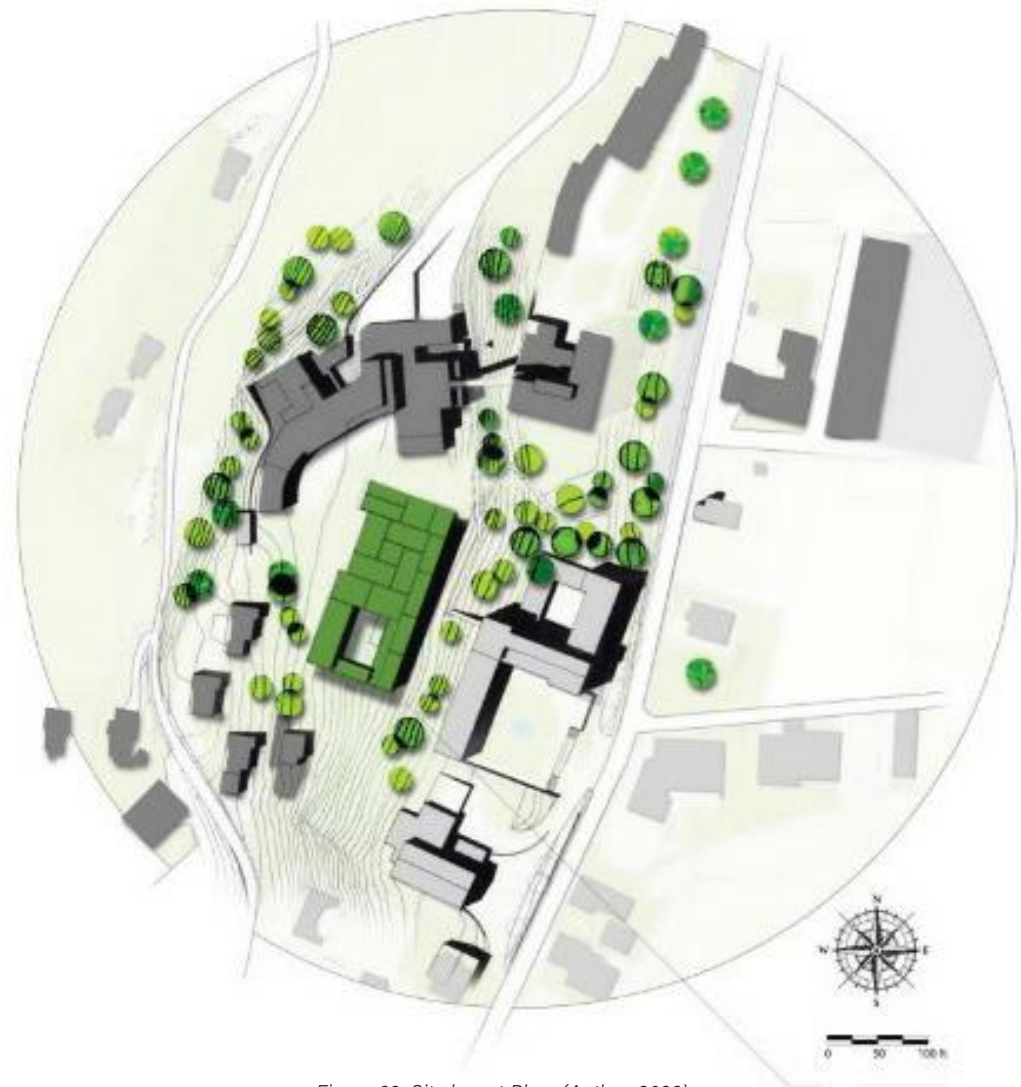


Figure 63: Site layout Plan (Author, 2022)



Figure 64: Terrace pool (Sosa, 2009)



Figure 65: Stone surrounds (Sosa, 2009)



Figure 66: Staircase (Peter Zumthor, 2009)



Figure 67: Main Terrace Pool (Peter Zumthor, 2009)

**MATERIALITY & FUNCTION:**

The only visible façade of the bathhouse faces the mountain and is constructed of stone from a local quarry. It can be worked into thin slabs and withstands significant temperature changes. The façade incorporates large gaps, windows, and terraces without any apparent entrances or exits. The spacing of the massive stone slabbed walls throughout the tower generates an acoustic experience that Zumthor characterises as “a wonderful quiet.” The spa pools range in temperature from 10-42 degrees Celsius and are infused with scented flowers to promote relaxation. The calm pod speaks its language, enticing visitors to stay for a prolonged period. The façade design as a whole relates to the phenomenological relevance of Peter Zumthor’s topic (Glanville, 2018)

The building embraces natural elements such as heat, water, stone, and sound, in distribution and combination beyond the conventional, while creating an environment for the senses. The concept and function of this building demonstrate the essence of bathing, as it dates back to the concepts of baptism and purity from the Roman tradition. The structure’s design is like a maze, with several corridors leading in different directions, but the individual’s path is ultimately up to them. The institution’s many cloakrooms and locker rooms all feature opaque doors, representing the rise of self-awareness (Glanville, 2018)

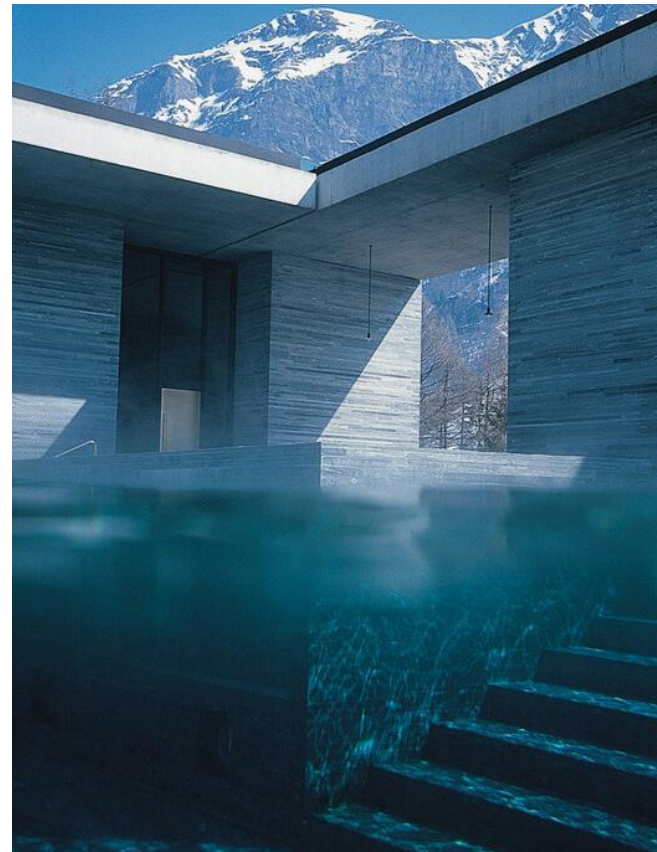


Figure 68: Facade openings (Ross, 2020)



Figure 69: Main Entrance (Sosa, 2009)

## STRUCTURE:

While the building's side entry lacks visual appeal, the irregularly shaped pool draws in guests. There is an indoor pool in the middle of the structure and an outdoor pool with a breathtaking view. These pools, with high walls, seem to have been carved out of the mountain itself. Flat stones and benches just below the surface make it look like a natural pool fed by the hot springs. The building comprises 15 simple rectangular units, each 5 meters in height. These units are different, as each has a large cantilever roof section held by metal cables carrying the load to the ground. The tie beams are invisible, cast in the second layer of concrete, and held by two layers of stone in the walls. The roof covering the whole site was developed to fit together like a puzzle. None of the roof sections touches each other, allowing for movement through the building. The pieces of the puzzle are separated by 8cm gaps that are filled by glass joints. Stacking stones of varying thickness to the same height provides visual interest without distracting from the building's structural integrity (Karanfil, 2017).



Figure 70: Visible facade (5osa, 2009)



Figure 71: spacing of bricks (flickr, 2012)

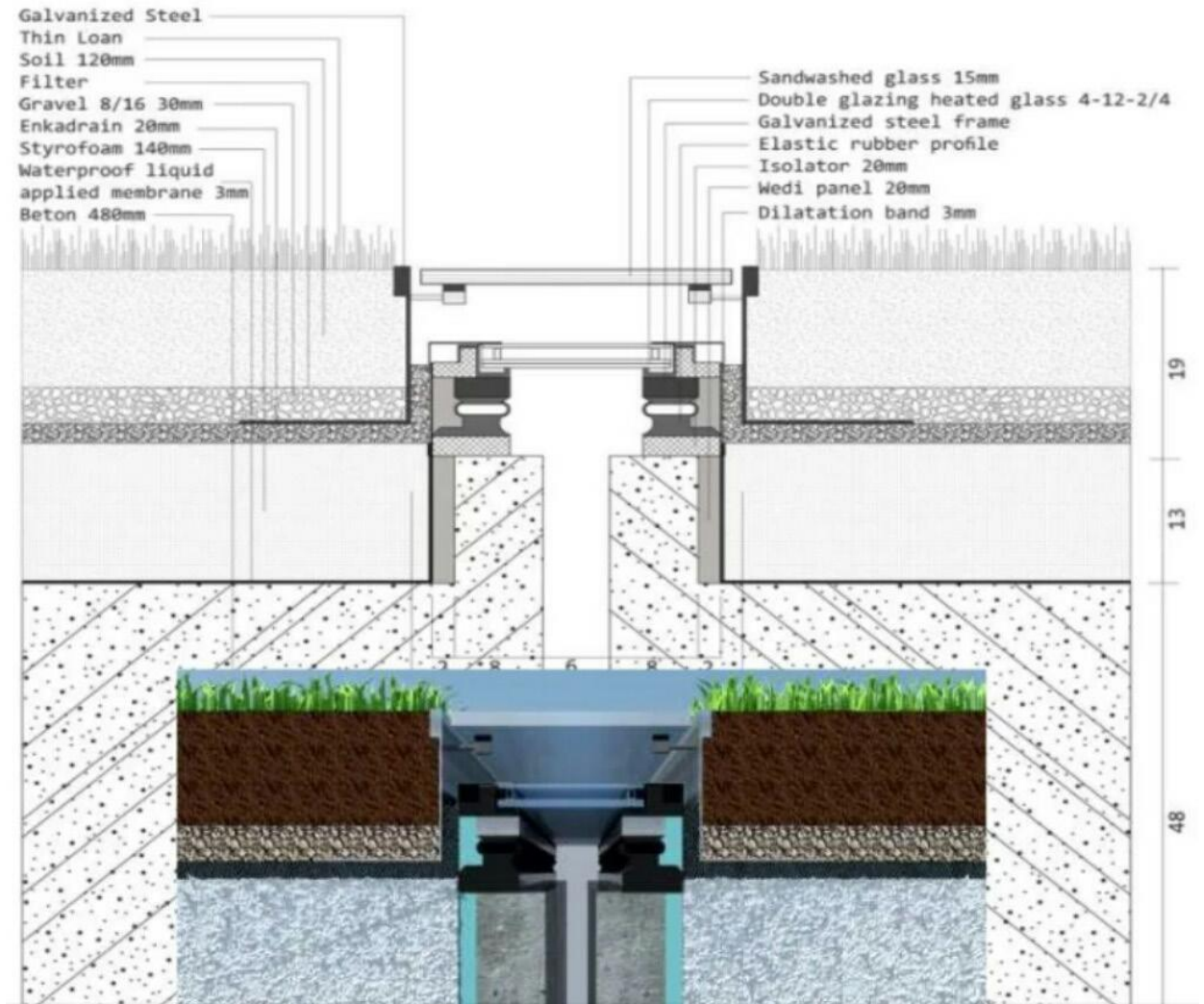


Figure 72: Glass roof detail (Mylonaki, 2012)



Figure 73: Blue light indicating cold pools (Von Wefing, 2009)

Figure 74: Red lights indicating warm pools (5osA, 2009)

Figure 75: Framed views (5osA, 2009)

Figure 76: Lighting of walkways (5osA, 2009)

### LIGHTING:

Zumthor refers to the inside block walls as “table blocks.” Expansion joints have a little gap that creates an optical illusion that plays with light. While the joints of some tables provide light, while some of those under the surface are used to provide water. There is an emphasis on corners, and the skylight casts a beautiful glow over walls, windows, and the water. The atmosphere provided by the light is like that of a sanctuary—calm, healing, and even otherworldly. The architecture of the Therme Vals is not limited to the physical form alone but also includes sound, temperature, and light. In a natural setting, Zumthor transforms the traditional bath into a sensory experience through the use of these elements (Atmospherics, n.d.).

### THEORETICAL APPROACH:

As a philosophy that establishes experiences collected by the five senses, Martin Heidegger's *The Subject of Phenomenology* was the architect's primary source of inspiration. While designing the Therme Vals Spa in Switzerland, Peter Zumthor paid particular attention to the region's most distinctive features, including the steam that rises from the mountains, the area's alpine setting, and the passage of the seasons. In order to demonstrate his idea of pleasure, Zumthor adopted a unique architectural language for the spa complex. He was meticulous in his choice of materials, the temperature of the bath water, and his application of light and shadow. To honour the act of bathing and the magical quiet it inspires, he designed a sensory architectural experience that re-embraces ideas about ancient purifying rites and thermal bathing. Therefore, it is essential to create therapeutic spaces in which people can live in harmony with the built environment and the natural world (Sojo, 2022). Therefore, Therme Vals's architectural labyrinth contains many well-considered and articulated materials. Its relevance to the proposed project can be outlined in the approach from inception to a therapeutic environment. The benefit of this research was to establish how he achieved the goal of multi-sensory facets within a successful design while still adding meaning and value to the user.

ANALYSIS OF THERME VALS:

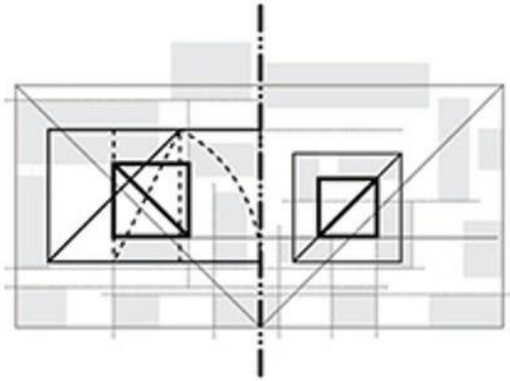


Figure 77: Geometry (Sendor, 2013)

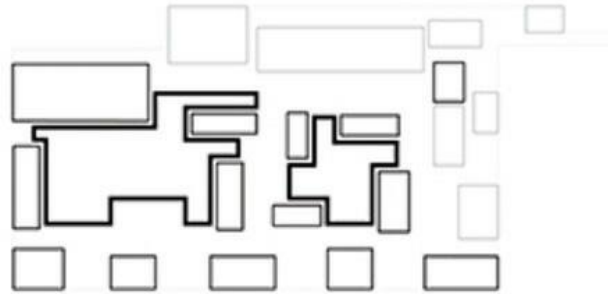


Figure 78: Hierarchy (Sendor, 2013)



Figure 79: Public to private (Sendor, 2013)

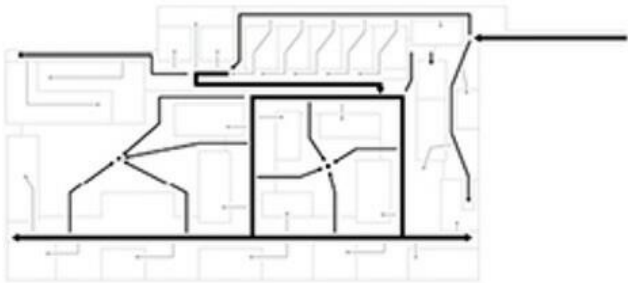


Figure 80: Program to circulation (Sendor, 2013)

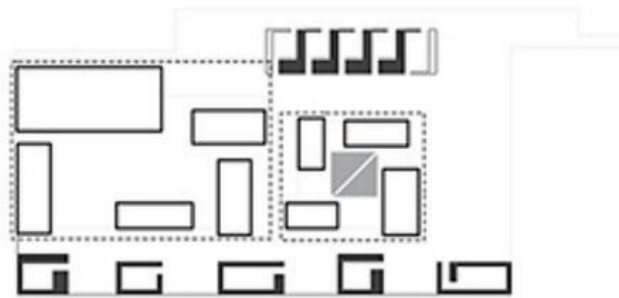


Figure 81: Repetitive to unique (Sendor, 2013)

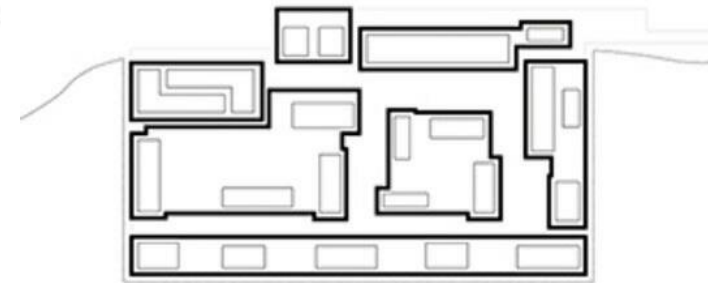


Figure 82: Unit to the whole (Sendor, 2013)



Figure 83: Structure to the enclosure (Sendor, 2013)

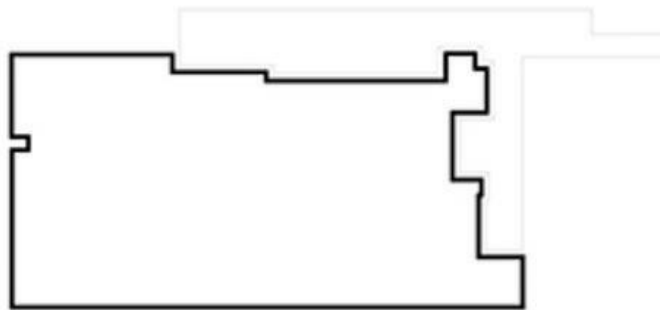


Figure 84: Form giving (Sendor, 2013)

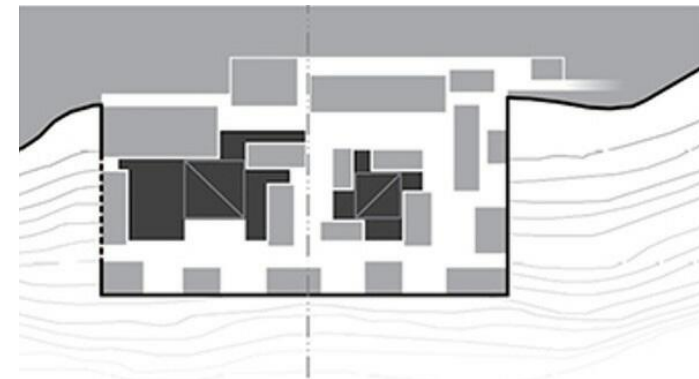
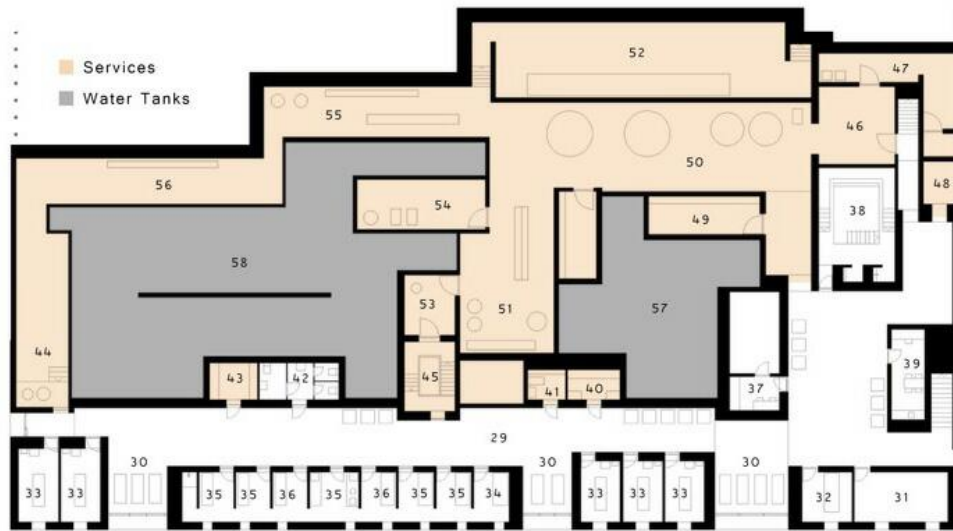


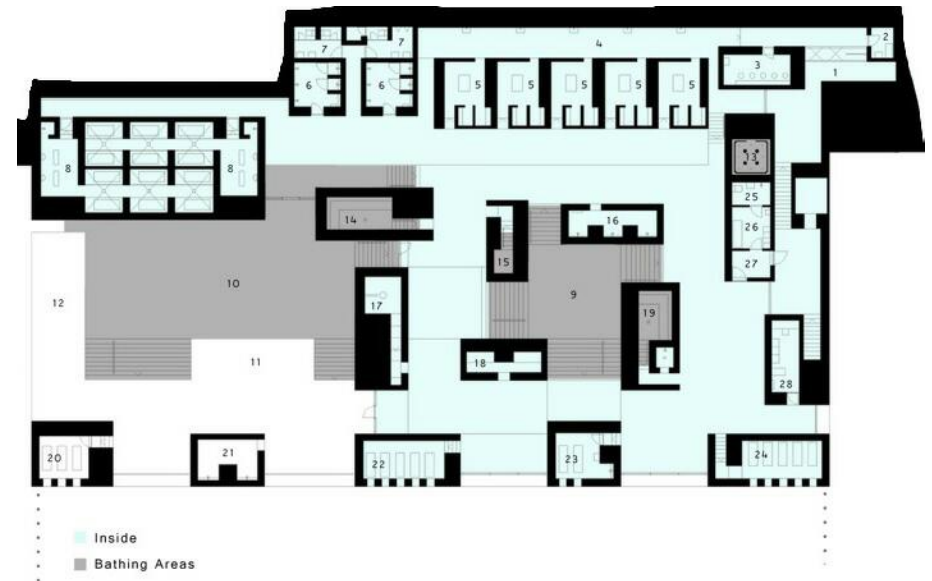
Figure 85: Parti (Sendor, 2013)



Ground Floor

- 29. Waiting Areas
- 30. Rest Areas
- 31. Physiotherapy
- 32. Underwater Massage
- 33. Massage Rooms
- 34. Orthopaedic Bed
- 35. Fango and Prep Room
- 36. Medicinal Bath
- 37. Inhalation
- 38. Aquatherapy 36°C
- 39. Tea Kitchen
- 40. Laundry Store
- 41. Cleaner's Store
- 42. WCs
- 43. Store
- 44. Plant Access
- 45. Plant Stairs
- 46. Flower Bath Equipment
- 47. Chemicals
- 48. Lift Machinery Room
- 49. Electricity Plant
- 50. Water Treatment
- 51. Main Sanitation Plant
- 52. Air-Conditioning Plant
- 53. Carbonic Acid
- 54. Fire Bath Plant
- 55. Clone Treatment
- 56. Secondary Sanitation Plant
- 57. Freshwater Tank
- 58. Wastewater Tank

Figure 86: Ground storey (Inneme, 2014)



- 1. Entrance and Exit
- 2. Cleaner's Store
- 3. Make-Up Room
- 4. Hallway with Drinking Fountains
- 5. Changing Rooms
- 6. Showers
- 7. WCs
- 8. Sweat Stone Spa with Turkish Showers and Sweat Chambers. Humidity 75 - 100%
- 9. Inside Bath 32°C
- 10. Outside Bath, Winter 36°C, Summer 30 - 33°C
- 11. Rock Pool
- 12. Sunbathing Terrace
- 13. Sound Bath 35°C
- 14. Fire Bath 42°C
- 15. Cold Bath 14°C
- 16. Showers
- 17. Drinking Water
- 18. Sound Stone
- 19. Flower Bath 33°C
- 20. Rest Space 1
- 21. Outdoor Showers
- 22. Rest Space 2
- 23. Massage Room
- 24. Rest Space 3
- 25. Disabled WCs
- 26. Disabled Cloakroom and First Aid
- 27. Disabled Access
- 28. Bath Attendants

Figure 87: First storey (Inneme, 2014)

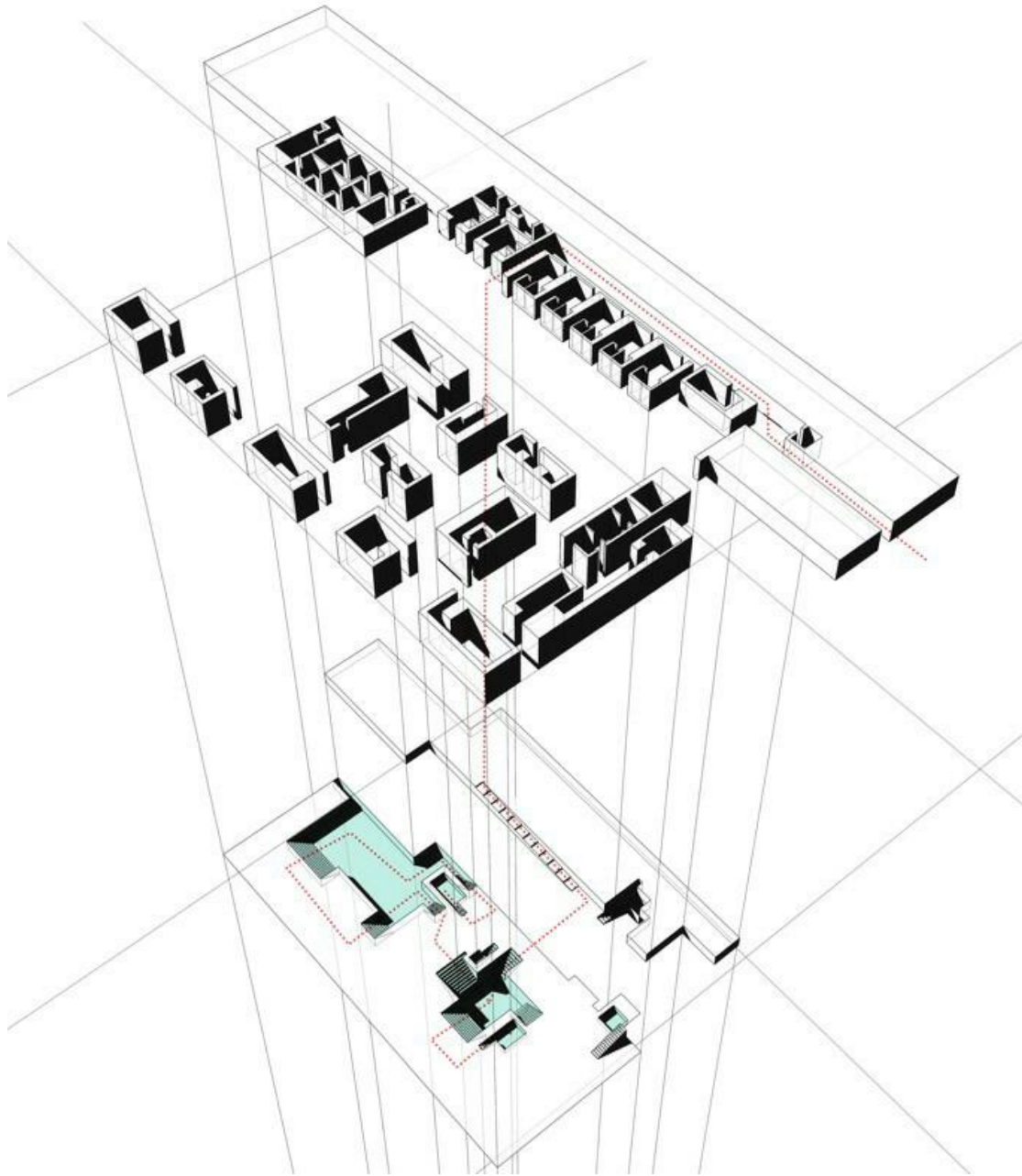


Figure 88: Axon view (Innemees, 2014)

### CONCLUSION:

Peter Zumthor's project is an example of a passion for understanding the human psyche as a source of inspiration. He managed to connect the building and the user on an emotional level. Through perception in memories of an ancient bathing ritual, he created a meaningful relationship with the senses by being sensitive to the natural elements and drawing them into the experience through texture and material, while maintaining the central focus of water throughout this design. The emancipation of light is a binding factor and acts as the golden thread that connects back to the physical, mental and spiritual aspects of the therapeutic space.

This project served as an inspiration to learn from the site aspects, in placing a building in a sloping environment with a great sensitivity to the surrounding views. This exploration greatly benefitted the proposed project in analysing the internal spatial organisation and methods of introducing lighting to create a therapeutic environment. The narrative of the environment and connection to nature is apparent throughout this building, with uniquely positioned views and the use of natural stone as material, and this connection was incorporated into the proposed design.

## 03 ] [ EXPLORATION

### 3.3 PRECEDENT STUDIES

#### 3.3.2 HEPBURN BATHHOUSE

**Architect:** Cox Architects

**Date:** 2009

**Location:** Hepburn Springs, Australia

#### ARCHITECTURAL ELEMENTS

- Bathhouse
- Spa
- Public Spaces
- Waiting Areas

#### LANDSCAPE ELEMENTS

- Valley
- Natural surroundings
- Mineral Spring

#### MATERIALS

- Stone
- Light
- Water
- Concrete

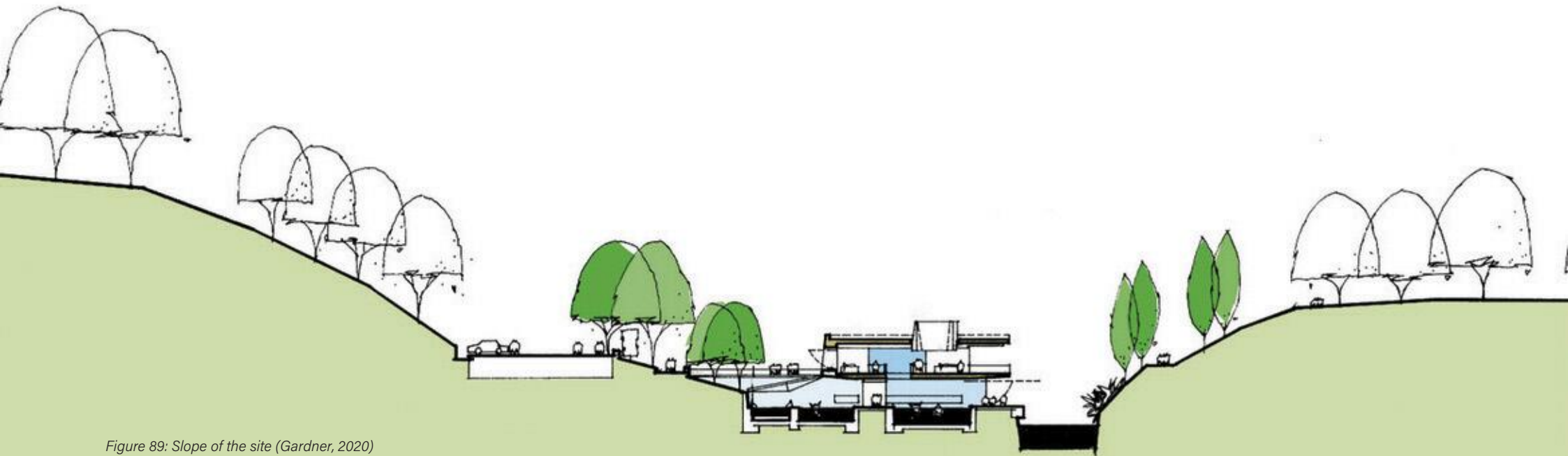


Figure 89: Slope of the site (Gardner, 2020)

**SITE:**

The Hepburn Bathhouse & Spa are located on a mineral resource close to Daylesford, Victoria, in Western Australia. The community was named for the explorer Captain John Hepburn. The original Hepburn Springs Bathhouse, which opened in 1895, was mainly constructed of red brick in the Edwardian style. As part of the 2009 Hepburn Bathhouse & Spa restoration, a significant component of the existing bathhouse structure was repurposed, along with heritage structures and a new addition to the south. While the northern wing is primarily single-story, there is a mezzanine entry on the higher level (Cox Architects, 2007).

According to Gardener (2020), the natural valley descends towards a stream formed by the mineral springs. While using this slope, this bathhouse blends in seamlessly with its natural surroundings. A bridge that connects the parking area to the main entrance creates a sense of arrival.



Figure 91: Location Hepburn Springs (Author, 2022)



Figure 90: Main Entrance Hepburn bathhouse and spa (Gardner, 2020)



Figure 92: Heritage of Hepburn Spring (Balance Architecture, n.d.)

## MATERIALITY & FUNCTION

The selected materials were essential to expressing the design's central concept. The concrete and split-faced block shape reflect the mineral water's source rock, and changes with age. The exterior materials and detailing are carried through to the internal areas, creating a unified approach and expression. A service plenum is under the service deck, providing warm air to the sloping glazing walls. This plenum eliminates the need for visible ducting and drastically minimises condensation build-up on window panes, contributing to the pool hall's clean, open environment. The plenum also provides access to the pool's hydraulics, which are prone to clogging due to the accumulation of mineral salts in the water. Sustainability was addressed through double-paned windows, insulation, heat exchangers, and natural ventilation.

Local materials from sustainable sources and handcrafted by regional craftsmen were used whenever possible. The new structure was designed from the ground up with a focus on durability and using cost-effective, long-lasting materials expressively and engagingly. A minimal number of applied finishes and the selection of materials based on their resistance to the mineral water's caustic environment resulted in a structure that would age beautifully and persist. The building's cost-effective core consists of concrete, split-faced block, reclaimed lumber, and an exposed aggregate floor complemented with glass, steel, and wood. As a result, the architects at COX decided not to employ any exterior or interior treatments. *"We employ natural, raw materials that will develop a distinctive patina with time and use."* Water is prioritised as a valuable resource. The idea was to utilise as little mineral water as possible while significantly expanding the capacity of water bodies (Gardner, 2020).



Figure 93: Public space materials (e-architect, 2019)



Figure 94: Private bath materials (e-architect, 2019)

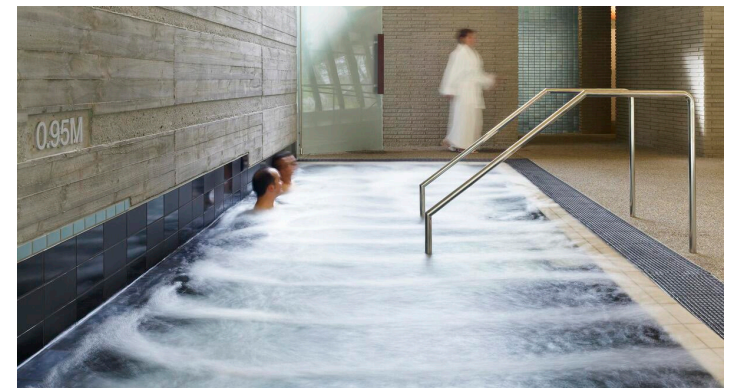


Figure 95: Materials (e-architect, 2019)

## STRUCTURE:

The interior is moulded utilising exterior materials and elements, resulting in a unified approach and expression. The primary columns, outriggers, and window frames are constructed from recycled ironbark. The ironbark was resawn after being reclaimed from a recently destroyed 100-year-old pier in Darling Harbor, Sydney. Due to its durability and longevity, wood is the perfect material for this project. This column arrangement combines both functionality and sculpture. Each footing was crafted from cast aluminum bronze, a material renowned for its uniqueness and connection to bathers. The newly constructed northern and reconstructed southern wings are connected with ironbark flooring. The flooring stretches up the walls, over the ceilings, and into sitting and bench recesses. The reception area is enclosed by cast-glass panels that allow guests to view the pool hall while retaining a high level of privacy. The distinction between ancient and modern art is made through materials and craftsmanship. It is evident that the old and the new are distinct and unmistakable (e-architect, 2019). A long lean-to roof and mostly transparent walls give context. The grass-roofed building with its distinctive skylight projections nestle softly into the neighbouring creek channel. The northern pavilion is a stunning one-storey structure that houses the principal public swimming pools and creek-level (lower) changing rooms (Gardner, 2020).

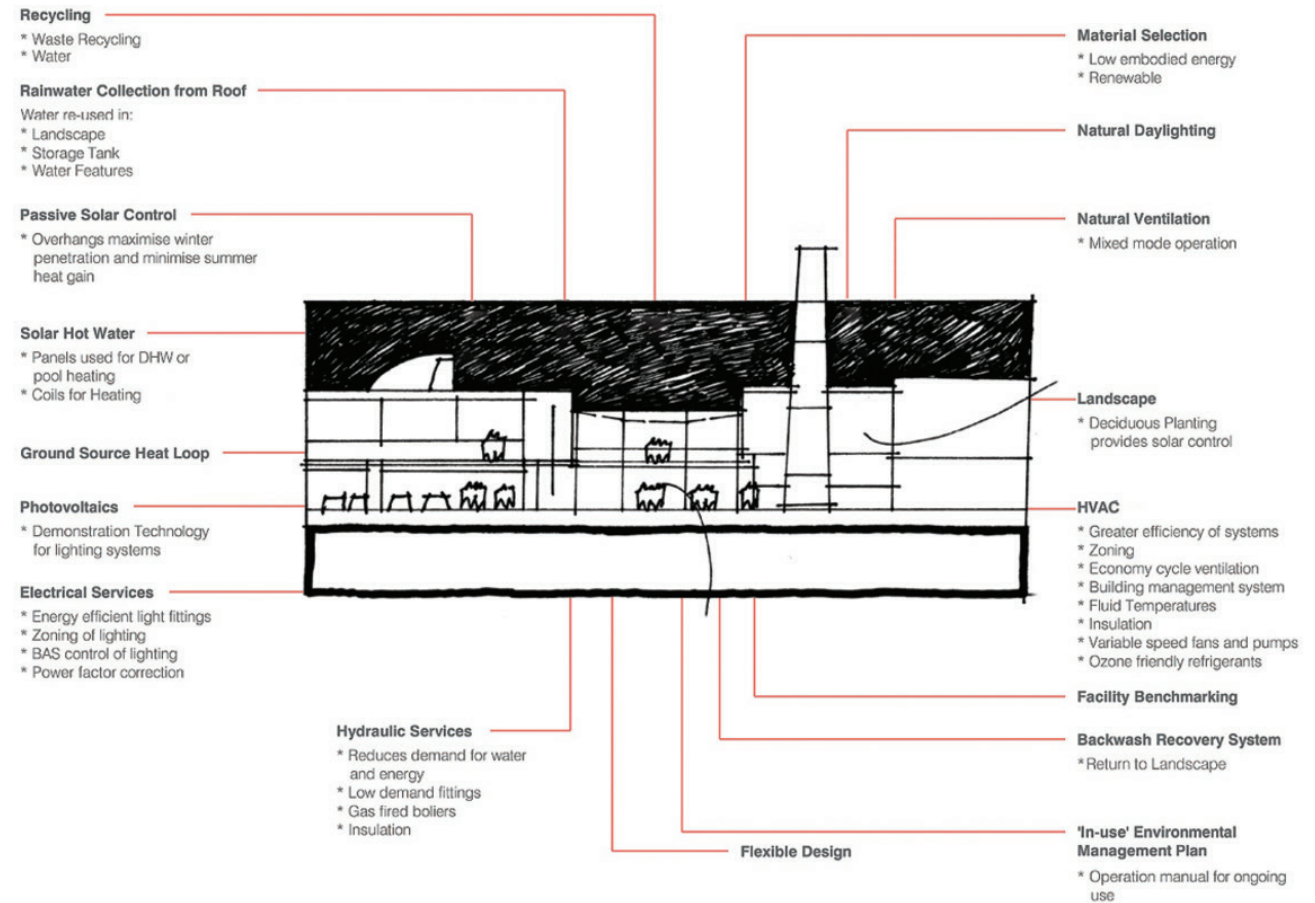


Figure 96: Structure and services (Gardner, 2020)

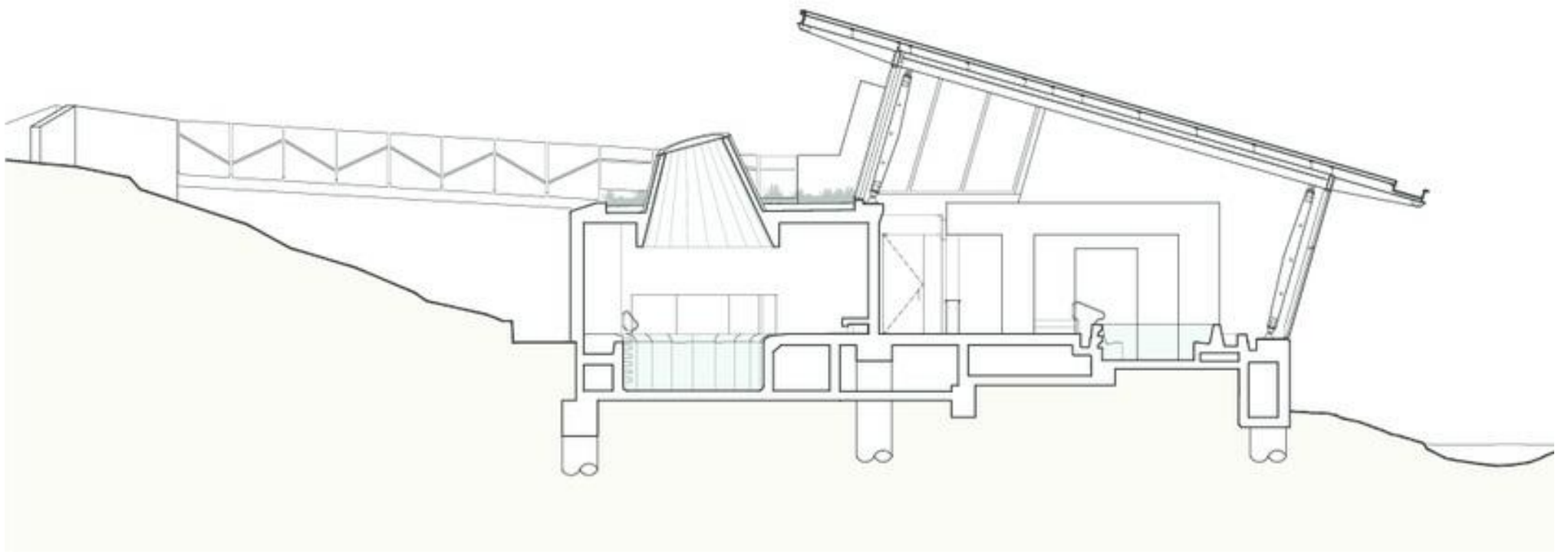


Figure 97: Section (Gardner, 2020)

### LIGHTING:

The interior was designed to create a spacious atmosphere with ample open spaces and daylight while limiting glare and solar heat absorption. As a result, this building has a distinctive appearance due to the protruding skylights and mostly glass walls. (e-architect, 2019). By diffusing light in areas for a more personal experience, the user can experience healing and focus on mental well-being, while well-lit areas create a social environment for engagement and behavioural healing. The connection to the emotional, mental and spiritual qualities of this therapeutic environment is better understood in the context of light and shadow.

### THEORETICAL APPROACH:

Cox Architects took the essence of the traditional bathing experience and incorporated it into a modern facility. Intimate spaces were created with the idea of reflection and purification, while more social spaces can connect the user on a psychological and behavioural level for healing. For a therapeutic environment, the benefit of water for healing can be essential in the detail of how a space is designed for engaging and stimulating the senses. Nature was a trustworthy source of inspiration in this design by being sensitive to the natural hot spring and allowing the user to be engaged via a dialogue for restorative qualities found in the serene surroundings. In the philosophical explorations into human embodiment, the tactile senses play a significant role. Edmund Husserl maintains that it is essential to return to objects instead of merely focusing on their appearance. By altering space, material, light, and shadow, projects like these create a unique feeling of being within a space by appealing to the human senses (George, 2020).

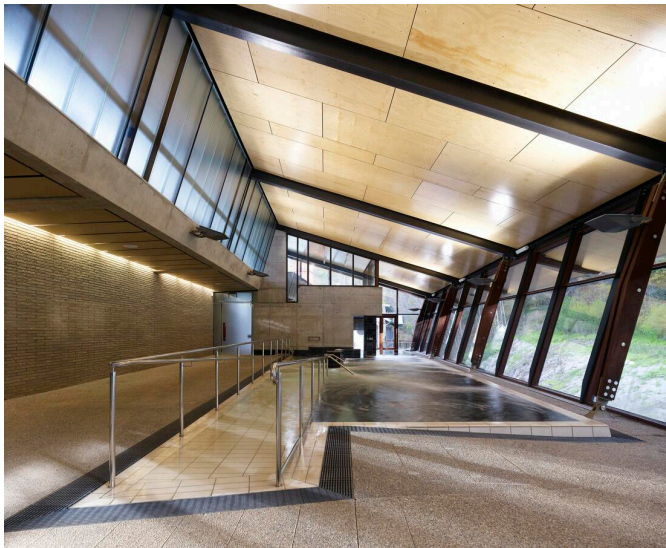


Figure 98: Main mineral baths (Gardner, 2020)

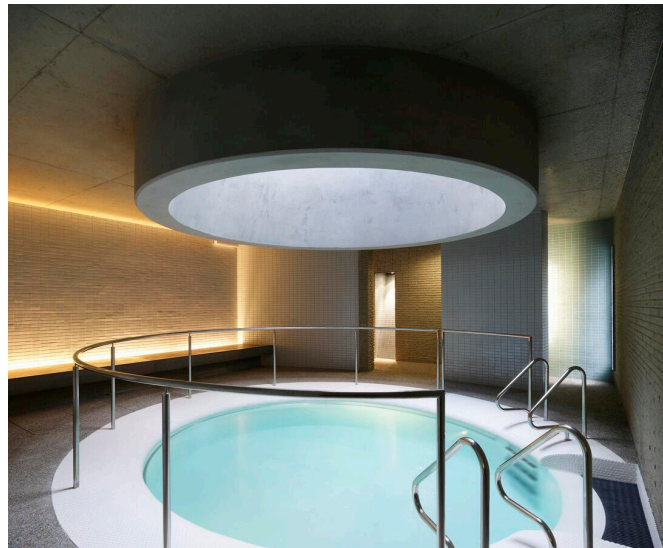


Figure 99: Salt bath with skylight (Gardner, 2020)

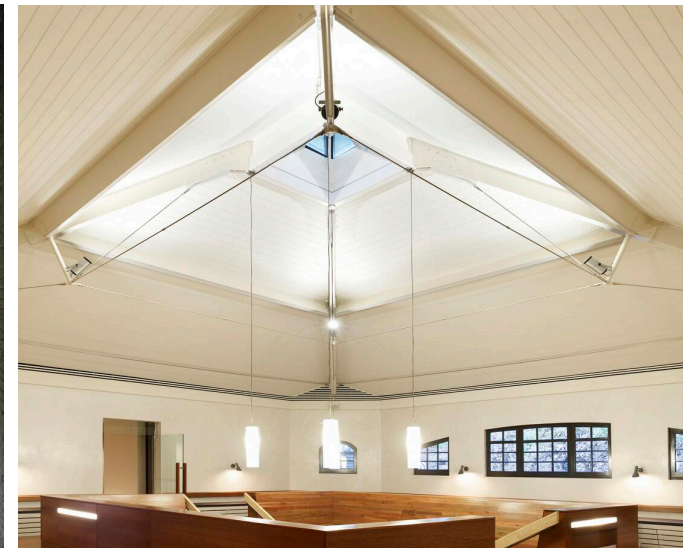


Figure 100: Waiting area with skylight (Gardner, 2020)



Figure 101: Viewing deck (e-architect, 2019)



Figure 102: Northern facade (e-architect, 2019)

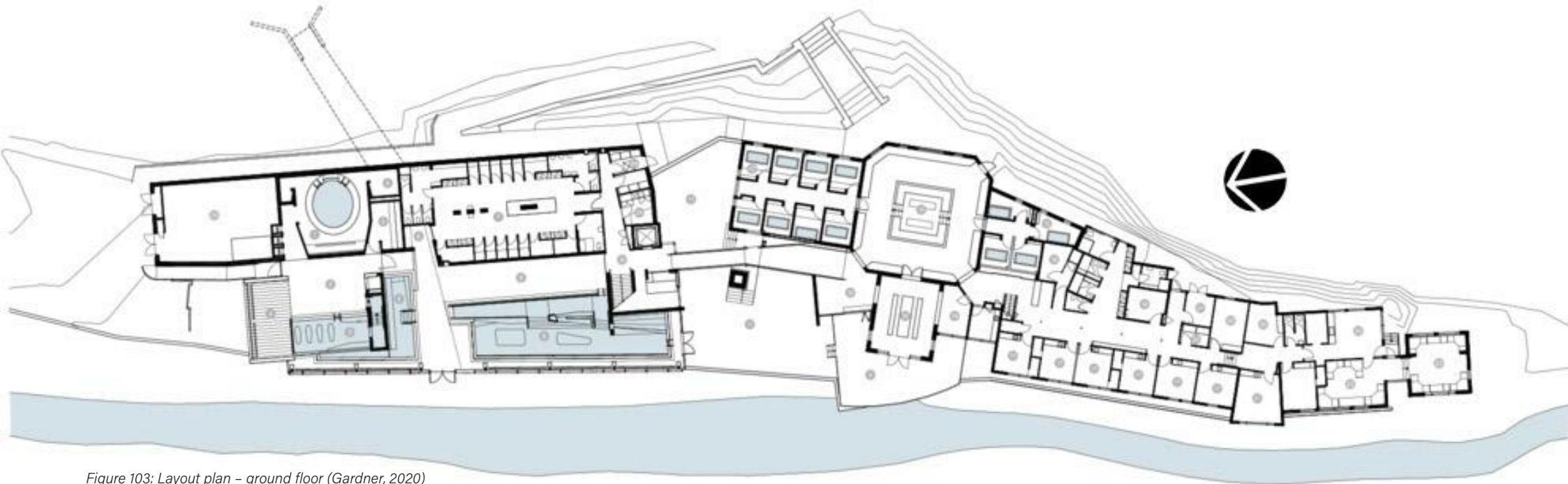


Figure 103: Layout plan - ground floor (Gardner, 2020)

### CONCLUSION:

This contemporary bathhouse offered a unique view of a modern approach to an ancient cleansing and purification ritual. The building interprets the surrounding terrain and uses nature as a dictator for design clues, while sustainable features show the sensitivity to protecting valuable resources. The essence of nature was captured by selecting materials that could withstand the natural environment. Water was the central focus, from the creek's hot spring flowing to the indoor pools' spatial organisation. Careful consideration was taken towards the perception of sense in this experience, with texture and light playing a crucial role in achieving this. In this research, it became apparent that water was used as a connection between the inner and outer worlds, serving as an interactive association with our mental and spiritual sides. The proposed design illustrates that a user's associations and memories can influence healing even in a modern setting. Therapeutic spaces can resemble nature and contribute to our physical well-being by reducing stress in modern society. The influence on the proposed design contributed to the unique usage of material and interaction between nature and light. A feature area that served as great inspiration was the salt bath with the detail feature of the light cone above to create a more intimate area with filtered light from above. This creates a mysterious and healing environment to reconnect.



Figure 104: 3D layout plan – ground floor (Gardner, 2020)

## 03 ] EXPLORATION

### 3.3 PRECEDENT STUDIES

#### 3.3.3 PARC ANDRE CITROEN

**Architect:** Alain Provost, Patrick Berger,  
Jean-François Jodry And Jean-Paul Viguier,  
Gilles Clément

**Date:** 1992

**Location:** Paris, France

#### ARCHITECTURAL ELEMENTS

- + Steel and glass pavilions
- + Concrete wall waterfalls
- + Public spaces
- + Man-made river

#### LANDSCAPE ELEMENTS

- + Geometric form garden
- + Fountains
- + Natural surroundings

#### MATERIALS

- + Glass
- + Light
- + Water
- + Concrete

Figure 105: Aerial view of Parc Andre Citroen (CITROËNVIE! 2020)



# Parc Andre Citroen

## Site Plan

1. White Garden
2. Black Garden
3. Large Greenhouses
4. Fountain
5. Plants Peristyle
6. Main Plaza
7. Diagonal Path
8. Canal - Waterborder
9. Serial Gardens & Small Greenhouses
10. Garden in Movement
11. Main Lawn
12. Large Canal & Nymphaeum
13. Changing Garden
14. Rock Garden
15. Lawn & Train Bridge
16. Lawn
17. Seine River

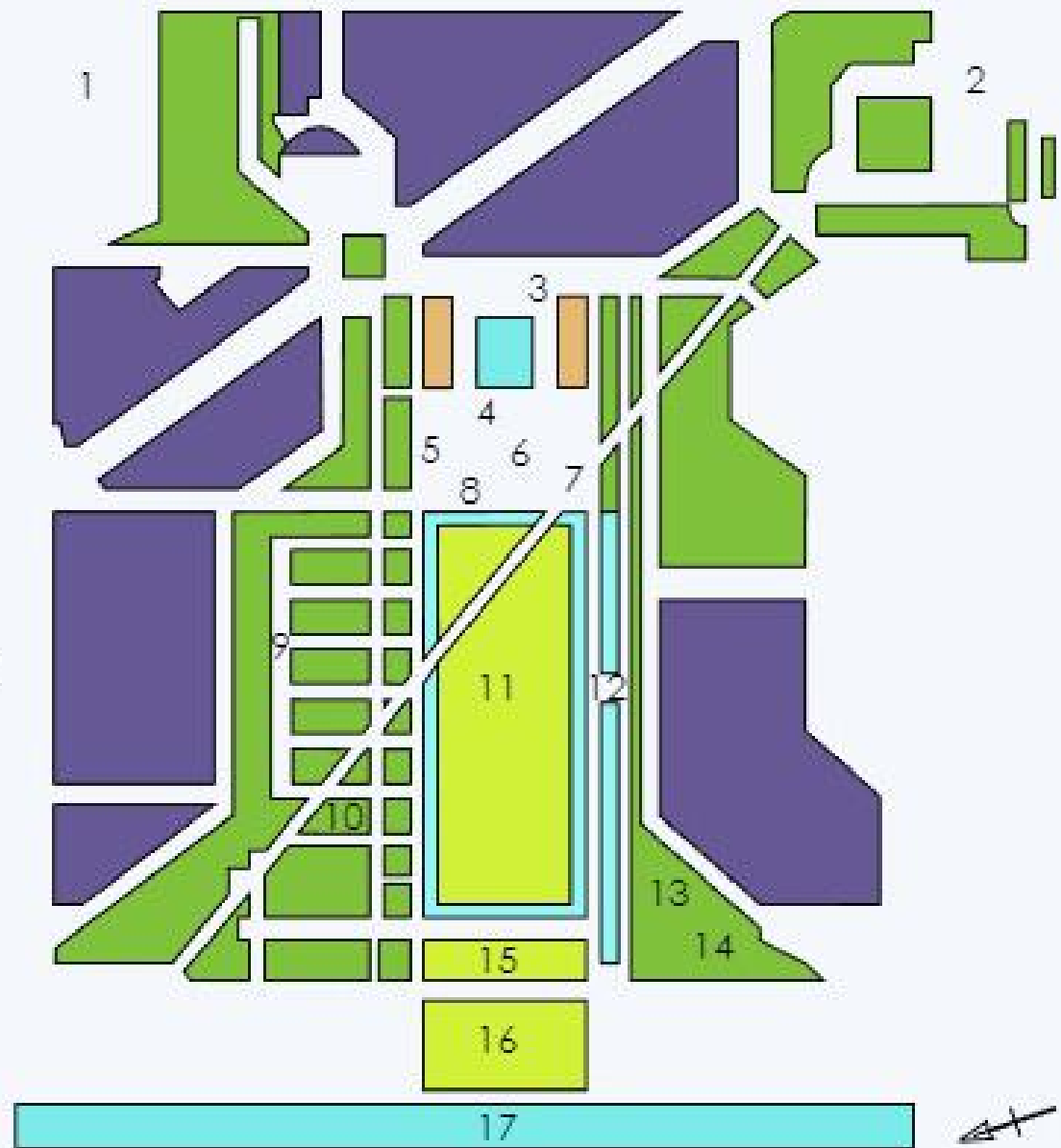


Figure 106: Site plan (Kalliergeia, n.d.c)

**SITE:**

Parc Andre Citroen, one of Paris's most significant urban renewal projects, is located on the east bank of the Seine and encompasses 14 hectares. The Citroen motor plant was constructed in 1915, but was closed in the 1970s due to relocation further away from Paris. As a result, Paris began to purchase back brownfield lands as part of a municipal beautification plan and rehabilitated others, as part of a historically significant urbanisation reclamation. In 1985, the old Citroen automotive assembly plant was chosen in a competition to become a public park connecting Paris's urban and rural areas. The 1992-completed Parc Andre Citroen was not an initiative but a collaboration of minds and designs. The jury advised an alliance of proposals led by landscape architect Alain Provost due to the lack of a clear winner throughout the competition. The fundamental objective of the park's design was to connect the urban and rural districts of Paris. Provost and his team focused on four design tenets to form the park as an interstitial area where people from the city and the country could meet: nature, artifice, architecture, and motion (Kroll, 2019).



Figure 107: Ornamentation (Project for Public Spaces, n.d.)



Figure 108: Geometric layout (Kroll, 2019)



Figure 109: The area where the factory of Andre Citroen was located before it turned into Parc Andre Citroen (CITROËNVIE! 2020)

### **MATERIALITY & FUNCTION:**

Parc Andre Citroen must, due to its position, establish a balance between the river and the city. In the distance, the Seine represents the city of Paris as a motionless length of water. It was therefore crucial to emphasise the importance of water. Water is present in several ways, including a perimeter channel, a river, fountains, and a water feature (CITROËNVIE! 2020). The alignment of the water element was essential to the success of the integration, as it was not allocated a design curve. Rhythm and structure are created by the repetition of soft and hard edges.

While the geometry of the park is considered modernist, the decoration can be classified as postmodern. The transition from urban to rural is the design's overarching objective. The use of water and trimmed plants distantly mimics the French Baroque style. The park's primary feature is a vast, rectangular stretch of grass bounded by a diagonal road that leads to a White Garden and a Black Garden. A nearby channel flows into the Seine River. On the northwest side is a gorgeous waterway and six gardens – Serial or Themed Gardens with varied atmospheres (Parc Andre: n.d.c). With an elevated reflecting pool and granite guard stations surrounding it to the southwest, an elevated canal gives either limited or maximum vistas over the park, depending on the viewpoint. Each garden explores various metals, plants, water conditions, senses, and even days of the week (Kroll, 2019). The gardens are separated from the main lawn by a barrier of shrubbery, allowing guests to enter a more secluded setting for reflection and relaxation.



Figure 110: Water in Parc Andre Citroen (Kalliergeia, n.d.c)



Figure 111: Water (Project for Public Spaces, n.d.)



Figure 112: Fountain (Paris Insiders Guide, 2022)

## STRUCTURE:

The combination of open and intimate places within a broader system should be considered while designing for the urban and rural link. The park's heart is a vast lawn of 273x85 meters connecting to a plaza in front of two 15m tall greenhouses, where exotic and Mediterranean plants grow. All the gardens are connected by a pathway, making it possible to view each one from a distance while appreciating the open landscape. However, except for the themed gardens, the rest of the park is out of proportion to the human scale. The greenhouses are the only architectural element that contributes to the broader site plan in terms of composition and structure, yet as individual structures, they represent a more industrial style (Kroll, 2019).



Figure 113: Towers (Kalliergeia, n.d.c)



Figure 114: Greenhouses (Kalliergeia, n.d.c)



Figure 115: Structure by geometry (Wikimedia, 2022)

### THEMED GARDENS:

Parc Andre Citroen's Serial Gardens are the park's living body, complementing the master plan of the site's skeletal framework. The Serial Gardens are crucial because they define the physical look of the park and, via formal interpretation, function as the narrative. The Serial Gardens are located on the east side of the main lawn. Each Serial Garden consists of six unique shapes, each of which is tied to a particular combination of material and immaterial components. These are some examples of such entities: metals, planets, days of the week, the states of water, human senses and colours (Parc Andre Citroen, n.d.b.) The primary colours represent the names of specific Serial Gardens:

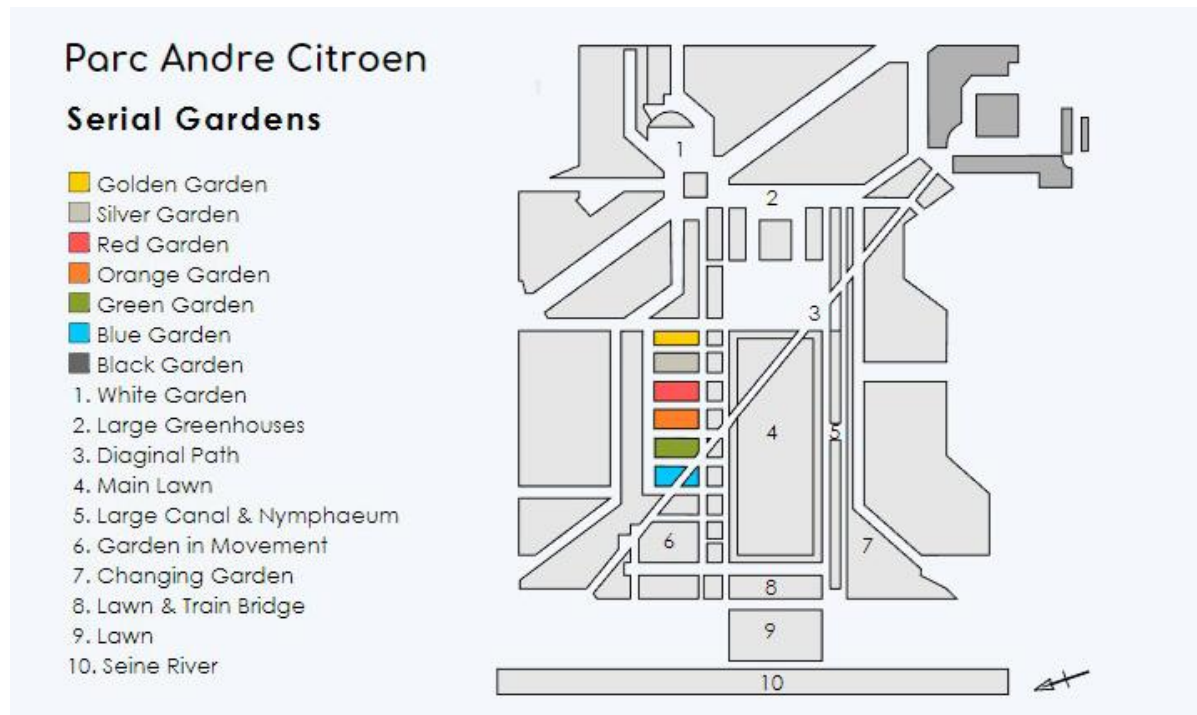


Figure 116: Themed gardens (Kalliergeia, n.d.b)

### Golden Garden (Jardin Dorie):

The first discovery is the Golden Garden. Each Serial Garden is decorated with metal signs explaining the significance of its name. The Golden Garden is related to the six senses and the elements of gold such as the sun, the colour gold, Sunday, and water evaporation. The plants in that garden also display the colour of the precious metal. Visitors to the Golden Garden will discover the Solar Clock, the only Shadow Clock in the world, to be the most exciting feature (Kalliergeia, n.d.b).



Figure 117: Golden Garden (Kalliergeia, n.d.b)



Figure 118: Shadow solar clock (Kalliergeia, n.d.b)

### **Silver Garden (Jardin Argenti)**

The Silver Garden represents the silver moon, the colour silver, rivers, Mondays and sight. The garden is one of Parc Andre Citroen's most beautiful places. The garden's hardscape and softscape feature balance and harmonise to bring out the silver tint. Raised 'Japanese steps,' zigzagging wooden pathways with straight planks and texture break up the light-coloured gravel. This is also the case with dark green versus silver plants. The silver tint inspires Japanese and Mediterranean garden aesthetics (Kalliergeia, n.d.b).



Figure 119: Silver Garden (Kalliergeia, n.d.b)

### **Red Garden (Jardin Rouge)**

The Silver Garden leads to the Red Garden. The Crimson Garden depicts iron, Mars, red, Tuesdays, waterfalls, and flavour. Each Serial Garden's materials and plants are visually designed to document its name. However, the red garden is exceptionally subtle in summer red berry clusters and magenta blossoms (Kalliergeia, n.d.b).



Figure 120: Red Garden (Kalliergeia, n.d.b)

### **Orange Garden (Jardin Orange)**

The Orange Garden is associated with Mercury, orange, Wednesdays, rivers, and touch. The plants are carefully arranged along the path. The walkway has a flat grey-cream centre and sloping grey pebble sides, and the design has suggestive inspiration from Antoni Gaudi (Kalliergeia, n.d.b).



Figure 121: Orange Garden (Kalliergeia, n.d.b)

### Green Garden (Jardin Vert)

The Green Garden is connected to tin, Jupiter, green, Thursdays, spring water, and acute hearing. This open area has a pathway in the shape of the Greek letter P, with a grassy strip in the middle and two flower beds on either side. The Green Garden's plants were selected for their distinct qualities and aesthetic appropriateness (Kalliergeia, n.d.b).



Figure 122: Green Garden (Kalliergeia, n.d.b)

### Blue Garden (Jardin Bleu)

The Blue Garden, the final of the Themed Gardens on the Seine bank, is at the intersection of two paths. Copper, blue, Fridays, rain, Venus and heightened fragrances are associated with the Blue Garden. The openness and quantity of scented flora are pleasant surprises (Kalliergeia, n.d.b).

With effort, humans can have six senses, and there are seven days in a week. The Black Garden is added to the theme, and instinct is added to enable matching a matching number (Parc Andre Citroen, n.d.a). Every Serial Garden is hidden from the park, and one Serial Garden cannot be seen from another. Without this revelation, the juxtaposition of stylistically distinct areas would have been redirected. One of the project's most remarkable conceptual and spatial qualities is the unique usage of enclosed spaces, which contrasts with open sections such as the vast central lawn.



Figure 123: Blue Garden (Kalliergeia, n.d.b)

### Black Garden (Jardin Noir)

It is geographically and thematically separate from the other Serial Gardens. The Black Garden is connected to lead, Saturn, black, Saturdays, the water, and primitive impulses. The Black Garden has ample level space and two subterranean areas. The middle portion is square, and the outer area is labyrinthine. The perimeter comprises private gardens separated by a walkway. This garden features a broad path with two benches. Each garden has a cement patio and a raised bed with rich plants. Walled gardens provide visitors with privacy and quiet (Kalliergeia, n.d.a).



Figure 124: Black Garden (Kalliergeia, n.d.a)

**THEORETICAL APPROACH:**

In the Parc Andre Citroen, powerful geometric forms are juxtaposed with natural elements. The tenderness of the distinctive gardens soothe the hard edges. Multiple dimensions combine at Parc Andre Citroen to create a natural mix of intimate and open spaces, soft and hard surfaces, and rural and urban areas. These sizes and forms cannot coexist in peace within the city on their own. In the Parc Andre Citroen, the garden as a dynamically “motionless” space and the park as a non-action environment “in motion” are juxtaposed. These oppositions rationally support the postmodern design of these contradictions. It is characterised by the fusion of many aesthetic traditions in service of a common objective: the development of new works of art in which the act of creation serves as the unifying force (Gardenvisit.com, 2022).

**ANALYSIS:**

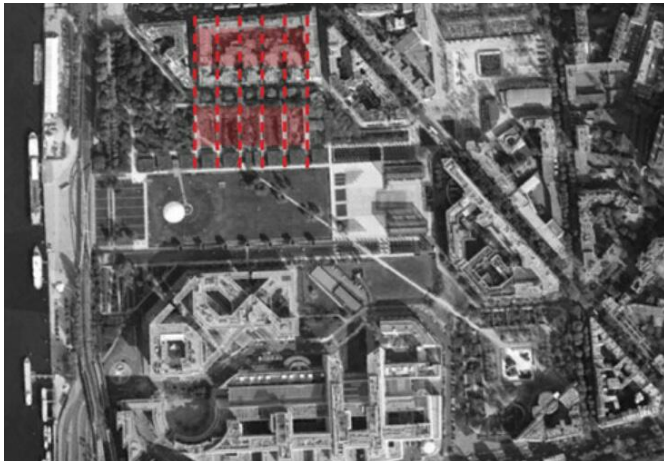


Figure 125: Parc Citroen and surrounding urban context (Salgado, 2013)

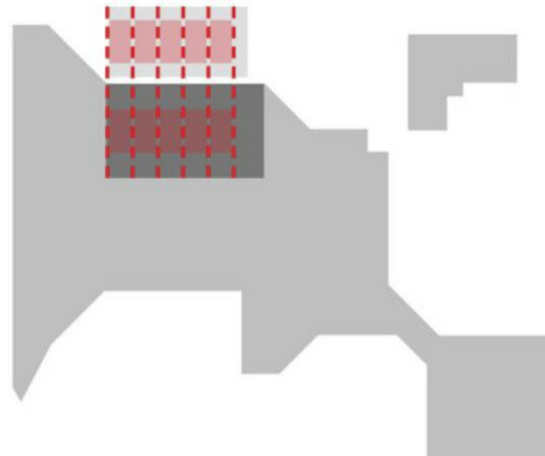


Figure 126: Potential spatial relationship (Salgado, 2013)



Figure 127: Citroen Automobile Manufacturing Plant (Salgado, 2013)



Figure 128: Historical and contemporary spatial relationships (Salgado, 2013)

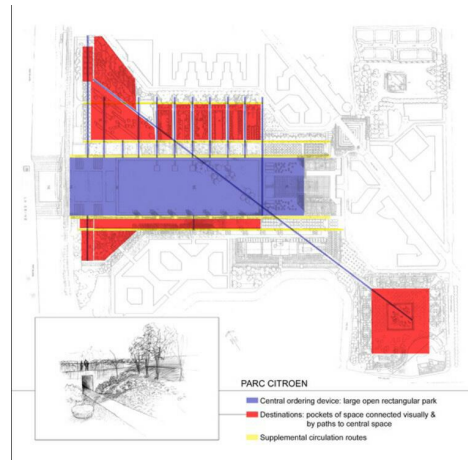


Figure 129: Parc Citroen, ordering, destinations and circulation (Salgado, 2013)

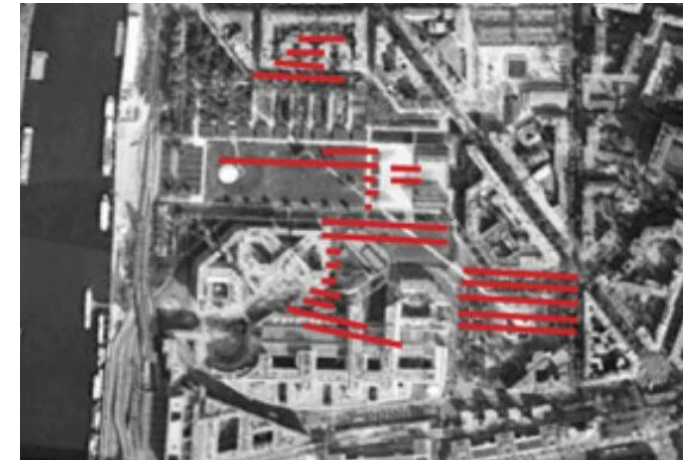


Figure 130: Parc Andre Citroen and surrounding context (Salgado, 2013)

**CONCLUSION:**

With two distinct design philosophies from the designers, it is evident that geometrics and nature can be interwoven to create an experience via moments. The experiences you encounter while exploring the seven gardens is evidence of how a garden can be used to support the stimulation of the senses. As water is a fundamental component of the park, the author believes that this Parc can become a therapeutic space for rest and recuperation from the demands of life in Paris. In urban areas, the connection to nature becomes much harder to achieve, and on this 14-hectare property, it is possible to reengage on a physical and psychological level with nature and find solitude in the intimate spaces created. Furthermore, the open and huge areas create the perfect space for social and behavioural healing, and allow people to interact and relate to one another. This study aimed to look at the interconnection of themed gardens within the context of a vast property and how to create a meaningful connection for a user keeping scale in mind. Hierarchy elements entice the visitor to explore more. The author believes that the themed gardens could have received a more significant portion of the spatial organisation for a more dominant role. The overall design concept of the reconnection between rural and city and man and nature serves as a valid precedent study.



Figure 131: Overview of Parc Andre Citroen (Kroll, 2019)

## 03 ] [ EXPLORATION

### 3.3 PRECEDENT STUDIES

#### 3.3.4 Babylonstoren Wine Estate

**Architect:** PATRICE TARAVELLA

**Date:** 2010

**Location:** Franschhoek, South Africa

#### ARCHITECTURAL ELEMENTS

Cape Dutch architecture  
Gardens  
Public spaces  
Vineyards

#### LANDSCAPE ELEMENTS

Geometric gardens  
Mountains  
Fountains  
Natural surroundings

#### MATERIALS

Glass  
Light  
Mortar and Brick  
Water



Figure 132: Overview of Babylonstoren (Siyabona Africa, 2022)

**SITE:**

The historic 1692 Cape Dutch farm of Babylonstoren is situated in the Drakenstein Valley in Franschhoek, at the foot of the Simonsberg. Two other mountain ranges complete this picturesque view, Du Toitskloof and the Franschhoek Mountains (Siyabona Africa, 2022). The original house dates back to 1777 and is still used as the main lodge today, while the original cowshed transformed into the Babel restaurant. New accommodation was added, but considerable care was taken to keep the architectural style and relationship to the environment intact (Babylonstoren, 2022). The estate's distinctive name was derived from a nearby hill on the property that resembled the biblical Tower of Babel to the landowners (Babylonstories, 2013).

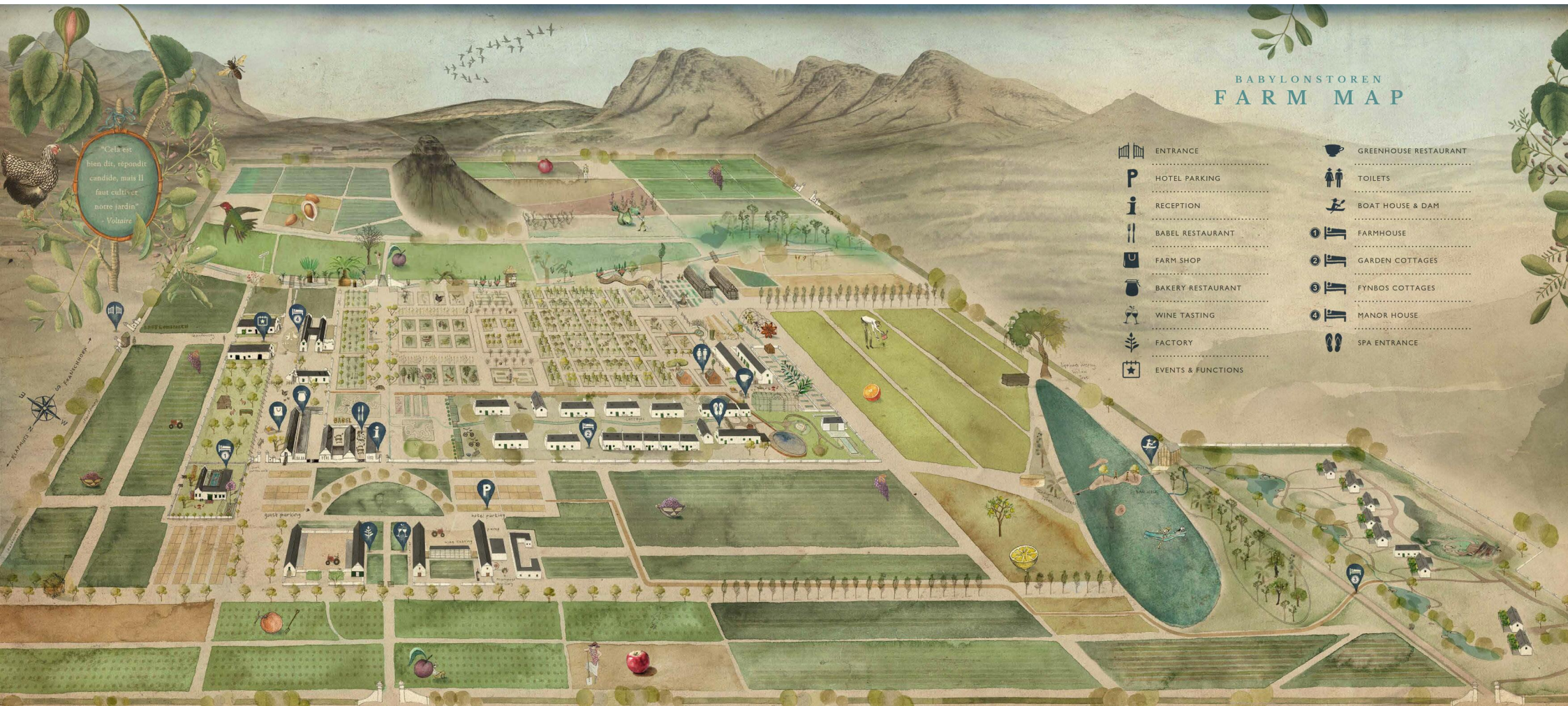


Figure 133: Map of Babylonstoren (Babylonstoren, n.d.)

**MATERIALITY & FUNCTION:**

Babylonstoren accommodates an operational farm set on 500 hectares with a hotel and other accommodations, a day spa, seasonal restaurants, and a vineyard. The 3.5-hectare incredible gardens are the main attraction to these facilities, situated in the breathtaking surroundings of nature. The garden's function is not merely visual stimuli for the visitor, but serves the purpose of providing fresh seasonal produce in terms of vegetables, fruits and nuts (Babylonstoren, 2022). In addition, natural materials were selected for the structures, and selecting sustainable materials like thatch roofs and hardwood showcases the sensitivity to the environment. These materials also gracefully age over time.



Figure 134: Original farmhouse (Secretplaces, 2022)



Figure 135: Cottages (Secretplaces, 2022)



Figure 136: Balau walkways (Babylonstoren, 2019)

## STRUCTURE:

The most prominent features of the Cape Dutch style are thick stone white-washed walls with ornate gables. At Babylonstoren, the thatched roofs are still visible in most of the structures with featured items like glass boxes in certain additions for a more contemporary look to complement the traditional style (Babylonstoren, 2022). An exciting feature is the balau slatted walkways to keep out the puff adders while enjoying the clivias planted along this route. The garden is an integral part of this facility's layout and the main inspiration for the design of this project. The garden is divided into 15 spaced clusters, each serving various functions of providing fresh produce for the two restaurants on site. Water features are an exciting part of this design, and the old bullfrog (ou brulparra) is set out in a labyrinth detail with motion sensors (Babylonstories, 2022). Many other water-inspired features are found on the property, from water channels to the intricate details of the pools in the spa. The addition of the simple steel-framed greenhouse with a slight arching roof structure by Malherbe Rust Architects serves as the spice garden dining area. Water continuously running over a table in a humid setting for the plants creates a unique sensory experience (Frearson, 2019)

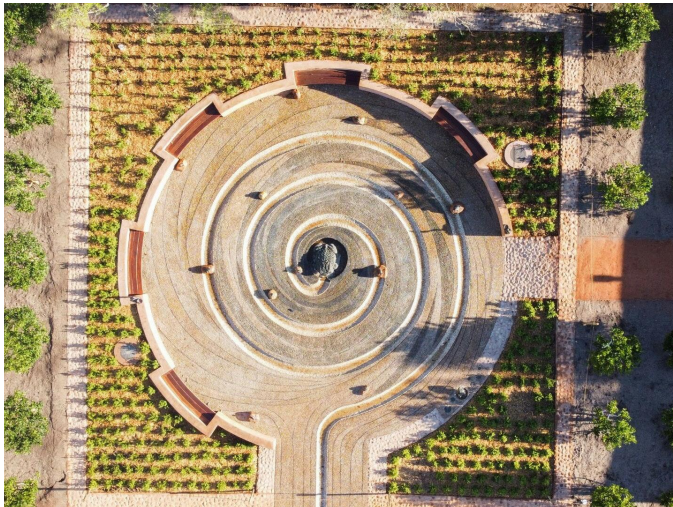


Figure 137: Top view – The Old Bullfrog water feature (Babylonstories, 2022)

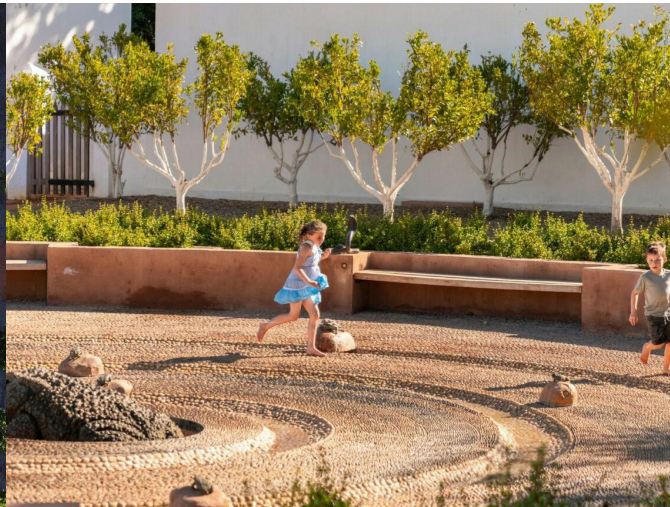


Figure 138: Side view – The Old Bullfrog water feature (Babylonstories, 2022)

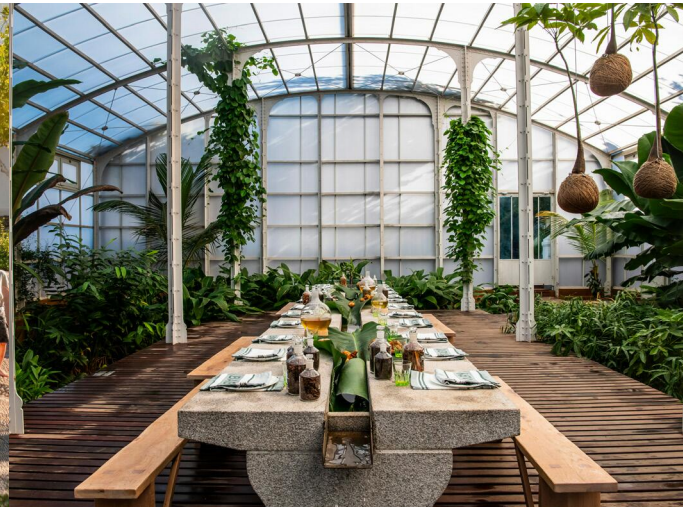


Figure 139: Spice garden with steel frame (Frearson, 2019)

## GARDENS:

The gardens were inspired by the Garden of the Dutch East India Company of Jan van Riebeeck in the early Cape settlement, as well as the Hanging Gardens of Babylon. The architect, Patrice Tarravella, designed the French-inspired garden layouts, keeping people's movement in mind (Archilovers, 2013). All the plants in the garden were selected for their edible or medicinal properties. Geometric blocks form the basis for this layout with textured pathways and a gravity feed irrigation system adds a sustainable solution. An axis is formed between the Babylonstoren hill and the converted "Kraal" (Suthivarakom, 2022). Each section is planned around the plants that will occupy the zone. The healing garden was added as a quiet space for introspection, and hosts an array of plants specifically selected for their medicinal or remedial qualities (Nature's apothecary, 2017). The healing effect that a garden can have on people's emotional and social behaviour is evident in the tranquil surroundings of this setting and the ritual of reconnecting with nature through the bounty it provides. The active participation of picking one's own produce makes it an interactive garden with a psychological and emotional connection made by the senses. The theory of time is evident in these gardens. The seasonal changes in plants and gardens are profound for the restaurant but also in tune with nature and its cycles.



Figure 140: Irrigation channel (Suthivarakom, 2022)

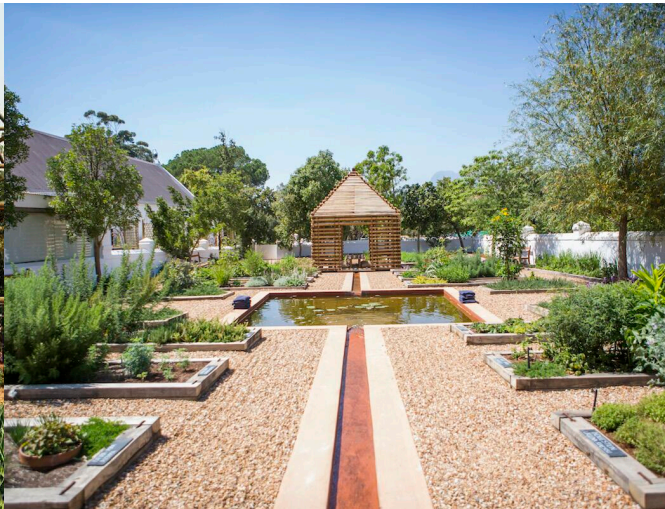


Figure 141: Water channel and feature (babylonstoren, n.d.)



Figure 142: Aerial view of gardens (babylonstoren, n.d.)

### THEORETICAL APPROACH:

In this project, architecture becomes a mediator between the mountain horizon line and the lower lying terrain of the landscape with the geometric precision of the garden layout. Due to the constraints of the ancient constructions' building materials and technologies, these agricultural structures are also purposely utilised in conjunction with natural features. The cultural landscape portrays the delicate character of the unique balance of historic and contemporary architecture (Kotze, 2014). Significant effort has been taken in the general arrangement of all of these items to enhance and improve the existing while incorporating new elements with related design principles. With all the additions, much care was taken to consider the environment and preserve the views. The structural elements were designed with human scale, while the gardens create a sense of order with the axis link and geometric forms. The ordering system allows users to orientate and become more familiar with the settings. The movement of people was a significant focus, and the calming effects have profound therapeutical benefits in terms of the user's psychological, emotional and social behaviours. These behaviours allow individuals to attribute meaning to their experiences, and by connecting the senses in the numerous ways that water is depicted in this project in close connection to nature, the theory of phenomenology is established as an approach. The nature narrative portrayed by the ever-changing seasons and landscape entices the user to explore more and connect back to nature in a relaxed and calming way.

### CONCLUSION:

In conclusion, this project was selected to understand the complexity of the garden design. It showcases the approach of the proposed therapeutic garden layout and the qualities portrayed by the garden design and layout of Babylonstoren. Furthermore, as a South African precedent, its unique view of our culture and climate is appreciated in setting the tone for

the African market while maintaining the integrity of a healing space. The essential elements of line and order were grounds for the proposed design proposal for the therapeutic gardens in the Healing and Wellness Sanctuary. In addition, the recurring elements of water and light, together with nature as entity, infused the focus for the intent of healing and recovery. This investigation was highly beneficial to the proposed project in terms of analyzing the spatial configuration and ways of reintegration to water and movement to create a healing environment. The environment's narrative to the psychology and emotional connection to nature was evident throughout this project, with uniquely positioned vistas and natural materials, and this relationship was included in the suggested design.

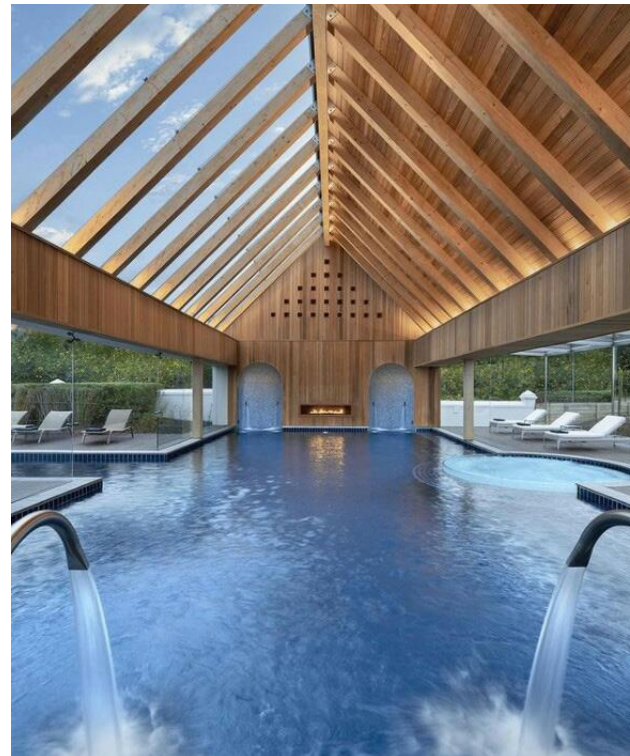


Figure 143: Hot spa water area (Babylonstoren, 2022)

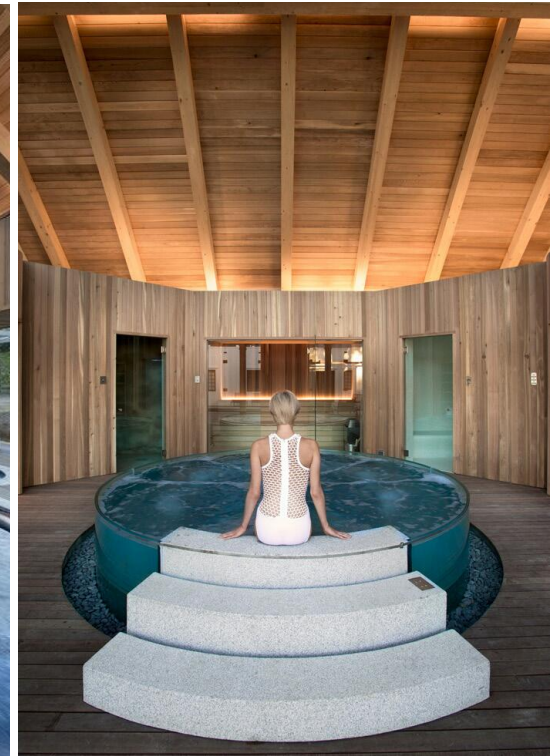


Figure 144: Intimate Pool area (Kapilevich, 2016)

## 03 ] [ EXPLORATION

### 3.4 ACCOMMODATION LIST

#### Accommodation list - Healing and Wellness Centre

##### RECEPTION

	<b>Area</b>
Reception Area	57 m <sup>2</sup>
Waiting Area	26 m <sup>2</sup>
Boardroom	47 m <sup>2</sup>
Office 3	22 m <sup>2</sup>
Office 2	19 m <sup>2</sup>
Office 1	19 m <sup>2</sup>
Open Plan Office	74 m <sup>2</sup>
	<b>264m<sup>2</sup></b>
Walkway	75 m <sup>2</sup>
Service Room (Below Walkway)	48 m <sup>2</sup>
Walkway	125 m <sup>2</sup>
	<b>248m<sup>2</sup></b>

##### CHANGE ROOMS

	<b>Area</b>
Women's change room	38 m <sup>2</sup>
Shower 1	9 m <sup>2</sup>
Shower 2	8 m <sup>2</sup>
Shower 3	8 m <sup>2</sup>
Shower 4	9 m <sup>2</sup>
Shower 5	9 m <sup>2</sup>
Shower 6	10 m <sup>2</sup>
Para. Bathroom	11 m <sup>2</sup>
Mens change rooms	40 m <sup>2</sup>
Shower 1	8 m <sup>2</sup>
Shower 2	9 m <sup>2</sup>
Shower 3	7 m <sup>2</sup>
Shower 4	7 m <sup>2</sup>
	<b>173m<sup>2</sup></b>

##### MISTING CHANNEL

	<b>Area</b>
Misting channel	39 m <sup>2</sup>
	<b>39m<sup>2</sup></b>

**BATHHOUSE**

	<b>Area</b>
Ice bath	60 m <sup>2</sup>
Hot mineral bath	185 m <sup>2</sup>
Mud room	23 m <sup>2</sup>
Epsom baths	104 m <sup>2</sup>
Salt bath	23 m <sup>2</sup>
Water bar	150 m <sup>2</sup>
Store	4 m <sup>2</sup>
Wc	4 m <sup>2</sup>
Pump room	15 m <sup>2</sup>
Walkway	237 m <sup>2</sup>
	<hr/> <b>805m<sup>2</sup></b> <hr/>

**RESTAURANT**

	<b>Area</b>
Restaurant	322 m <sup>2</sup>
Restaurant patio area	105 m <sup>2</sup>
Wc	7 m <sup>2</sup>
	<hr/> <b>444m<sup>2</sup></b> <hr/>

**SERVICE**

	<b>Area</b>
Office	26 m <sup>2</sup>
Drygoods	19 m <sup>2</sup>
Wetgoods	19 m <sup>2</sup>
Kitchen/prep/wash	90 m <sup>2</sup>
	<hr/> <b>154m<sup>2</sup></b> <hr/>

**STAFF AREA**

	<b>Area</b>
Laundry	61 m <sup>2</sup>
Staff room	74 m <sup>2</sup>
Cleaner store	11 m <sup>2</sup>
Store	12 m <sup>2</sup>
Walkway	69 m <sup>2</sup>
Staff (woman)	21 m <sup>2</sup>
Staff (men)	19 m <sup>2</sup>
Service room	42 m <sup>2</sup>
	<hr/> <b>309m<sup>2</sup></b> <hr/>

**TOTAL: 2439m<sup>2</sup>**



# 04 ]

## THERAPEUTIC GARDEN LAYOUT

4.1 INTRODUCTION

4.2 THE THERAPEUTIC GARDEN

4.3 THE GARDEN OF SENSES:

4.3.1 TACTILE SENSE (TOUCH)

4.3.2 TASTE SENSE

4.3.3 AUDITORY SENSE (HEAR)

4.3.4 OLFACTORY SENSE (SMELL)

4.3.5 VISUAL SENSE (SIGHT)

4.4 CONCLUSION



Figure 145: Illustration of the proposed therapeutic garden as viewed from the river towards the Healing and Wellness Centre (Author, 2022)

## 04 ] [ THERAPEUTIC GARDEN LAYOUT

### 4.1 INTRODUCTION

Historically and today people worldwide have used garden design to create healing places. People have changed the terrain throughout history to create better living conditions. Mesopotamian civilisations had hanging gardens and gardens at city entrances with flowers, shrubs, and trees, giving visitors the feeling of entering a paradisaic oasis. Renaissance gardens were filled with new motifs and innovations, while Baroque gardens used green walls to show the city as a living, breathing organism. The industrial revolution of the 19<sup>th</sup> century provided new ways to produce and shape nature. Greenhouses in parks and green walls in buildings have become popular in the 20<sup>th</sup> and 21<sup>st</sup> centuries. Past garden designs may inspire future urban botanical habitats (Babnik, 2019). A therapeutic sensory garden is designed to stimulate all the senses and strengthen the connection to nature to promote recovery (Conte, 2022). The question is: how can we strengthen this connection, and why will it impact recovery?

### 4.2 THE THERAPUTIC GARDEN

The visual elements of a garden that provoke viewers' emotional reactions are called compositional elements. These include harmony, symmetry, proportion, and balance, and can help a person to unwind both physically and emotionally. For example, psychologically, people feel more at ease in landscapes organised into geometric patterns. Gardens are usually associated with lush landscapes, sometimes large and open areas and sometimes in smaller settings, but irrespective of size, they always evoke an experience. Before designing the garden, it is essential to consider the contextual clues from the area. The design of a garden should focus on providing experiences and creating movement. In this case, for therapeutic environment, the emphasis is on addressing variables that might assist in healing, and allowing spaces to be divided into recognisable sections that are not too theoretical. Rhythm and repetition are two factors that can aid in achieving this. The objective is to focus on a reflective and restorative concept. Everett on Vaal is located on natural terraces leading towards the river. Two designated areas have been identified as beneficial for the layout of the therapeutic garden. The first is at the entry to the facility, and the second is below the 100m building line towards the river. Creating different settings through areas designated for a specific sense will tempt people's curiosity and let them explore more. Interesting points and intersections can manifest different experiences (Stigsdotter & Grahn, 2003b). This garden design is centred around the influence that movement can have on a human. The movement of the physical body helps us to engage and become aware of our surroundings, while it reduces stress and is an outlet for anger. Exercise in moderation aids the recovery process. On a spiritual level, movement is connected to the sun and sky with its ever-changing canvas, and it connects us to flexibility and serenity. Time itself is connected to this type of movement, as the time of day, season, and weather can influence how the garden is experienced. The passing of time is experienced in the natural ageing and deterioration of plants and trees, and this connects us to our mortality with the metaphysical awareness of growth, development, and ultimately death (Wright, 2014). Light and shadows created by the movement of the sun enhance or decrease textures. We perceive a garden first with our focused sense and texture with our peripheral sense. This function will create an experience that links the other senses in understanding the human dimension of the garden space.

The intended therapeutic garden is divided into sections. Although it is impossible to stimulate only one sense at a time, the intention is to feature a sense and highlight it through carefully selecting plants, elements and textures. Each section's functions are designed to elicit subconscious emotional reactions and connect with the user through emotional and physical action. For example, walking through a tactile maze or labyrinth can potentially awaken contemplation, reflection and transformation. The interactive garden provided through herbs and vegetables allows the visitor to engage physically and participate in tasting and touching the plants, and connect the body to the essence. Finally, meditative spaces in the form of pavilions in the secluded area will allow the user to pause and relax for introspection and self-focus. Meditation is a mindful and relaxing therapeutic process that can generate a series of psychological or physical responses, and is specifically beneficial in healing (Lizier, Silva-Filho, Umada, Melo & Neves, 2018). In a natural setting, a connection to nature may be created, but for that connection to take place, the body must relate to and comprehend the area within its context. Scale and human proportion are some factors created with spatial organisation through the placement of hierarchical elements, repetition and order (Hansen, 2019). To conclude, these elements evoke security and may recall memories of familiar objects. As a result, people can feel calm and more relaxed, and by evoking these emotions to benefit our mental health, the healing objective of the garden may be achieved.

## 04 ] [ THERAPEUTIC GARDEN LAYOUT

### 4.3 THE GARDEN OF SENSES

The following section will explore the senses of each garden section.

These gardens will focus on a specific sense in each area, but every area will inadvertently stimulate multiple senses. Only the highlighted sense will be explained in this dissertation.

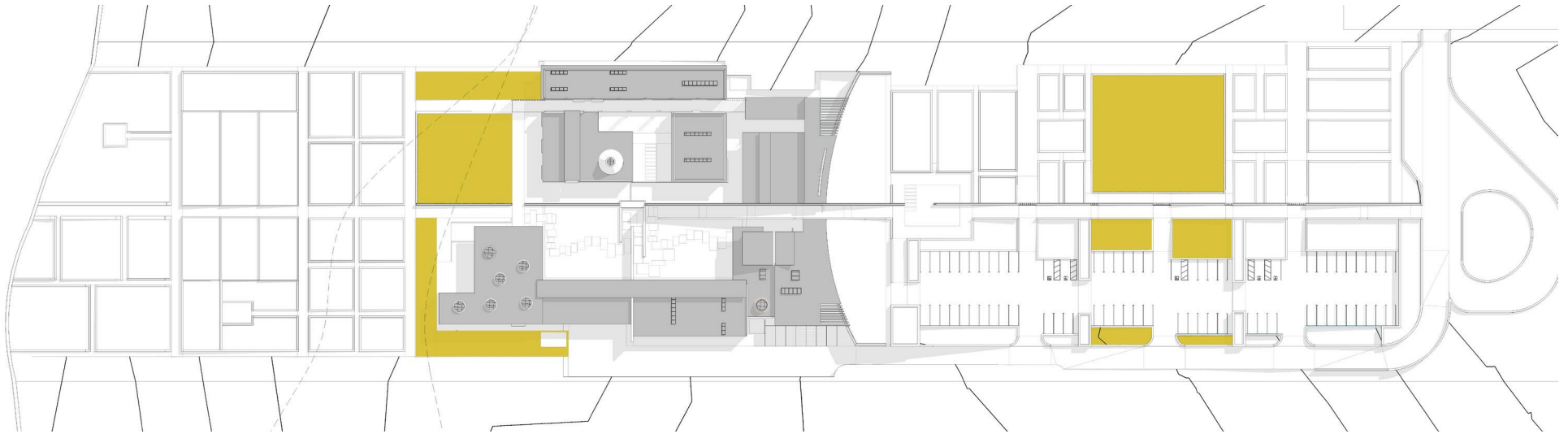


Figure 146: Section of the garden for tactile sense (Author, 2022)

**4.3.1 Tactile sense (touch):** In this part of the garden, the tactile sense will be stimulated through the design of several maze designs in different sections. The terms labyrinth and maze have been used interchangeably throughout history. Labyrinths present a single route to the centre, while mazes offer a number of possibilities. Labyrinths date back to ancient Egyptian cultures and were also found in English and French traditional garden designs with a formal geometric order (Wittenstein, 2016). Mazes create a sense of transformation and curiosity, which sparks a sense of adventure and exploration. It inspires people to touch the perfectly trimmed edges with their hands. Skin is considered to be the “third brain” of the body since it contains cognitive and judicious abilities. In addition, two brain chemicals, oxytocin and serotonin, are released and play a crucial role in regulating social behaviour in response to tactile experiences. Research confirms the intimate relationship between physical touch and emotional experiences (Dougherty, 2020). Therefore, de-stressing and igniting curiosity through tactile stimulation in the natural environment links our overall emotional and physical well-being. The maze in the proposed project is influenced by the formal design of English and French gardens, as seen in the illustration of Hampton Court on figure 148. The objective is to interact and connect with nature via our tactile senses while creating a relaxed atmosphere conducive for a spiritual journey.

The following illustrations showcase some of the intended plant configurations considered for the design of this area.

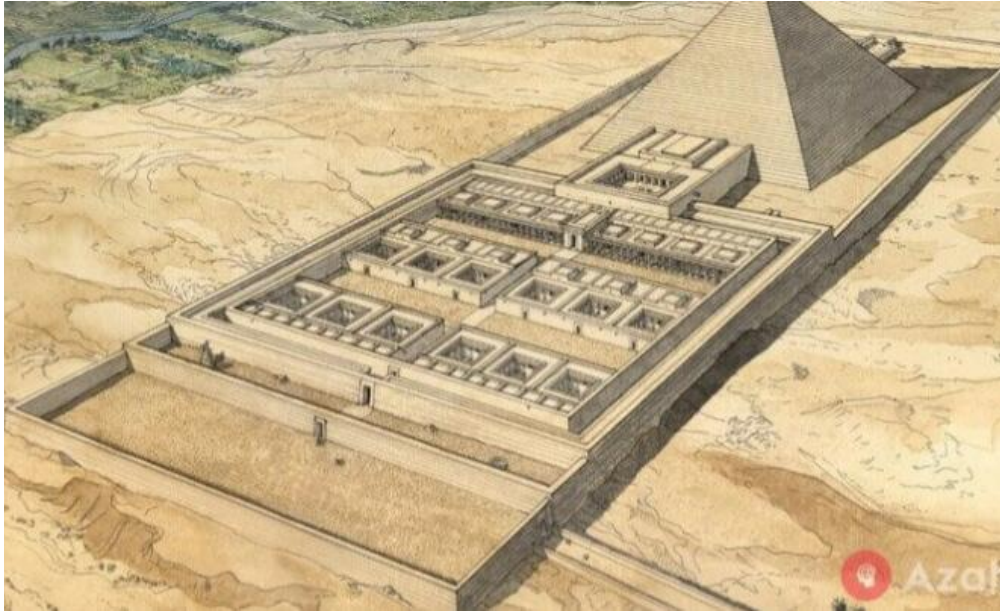


Figure 147: Oldest example of a maze: Amenemhet III's tomb in Faiyum, Egypt (Azahar,2020)



Figure 148: Hampton Court labyrinth for King William III (Historic royal palaces, 2020)



Figure 149: Nandina hedge edge (Blaettler, 2020)



Fig 150: Maze with hedge (Homestratosphere, 2021)

### 4.3.2 Taste sense:

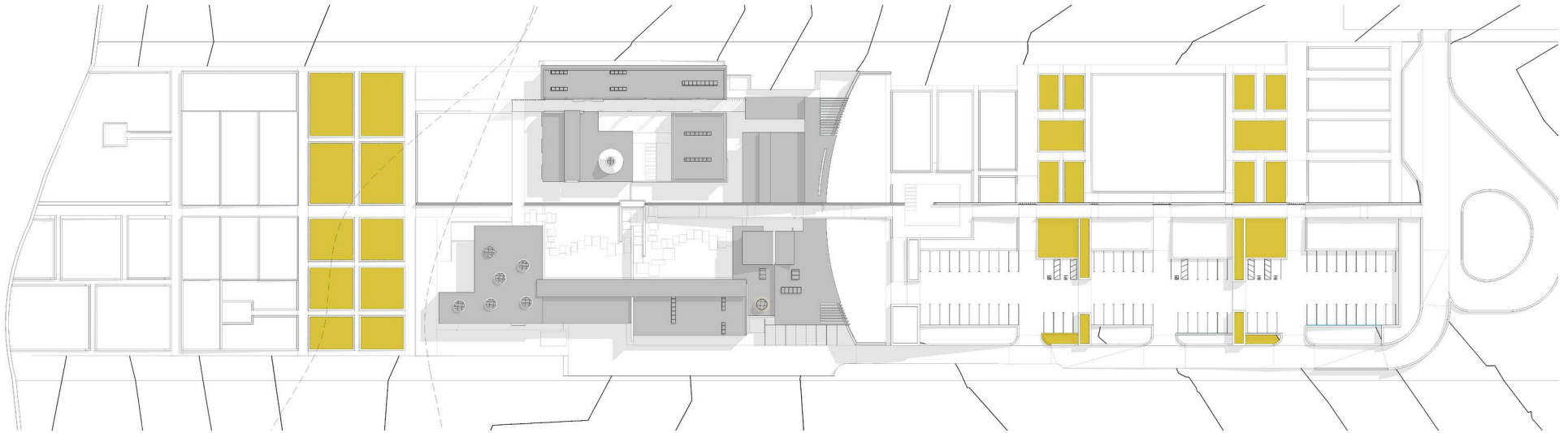


Figure 151: Section of the garden for taste sense (Author, 2022)

What exactly is taste, if not only a matter of personal preference? When we talk about 'tasting', we mean the way that something tastes on the tongue. However, our senses of taste, smell and touch all work together to create the sensation we call flavour. The sum of these impressions determines whether or not something is tasty. What is it, then, that our tongues can detect? Human taste buds can distinguish five primary flavours: sweet, sour, salty, bitter, and umami (Alimentarium, 2021). This section of the garden aims to allow the user to interact through movement by touching and tasting the variety of herbs and vegetables available for consumption in order to excite exploration. Designing a garden to arouse the sense of taste is multifaceted, requiring that the garden elements be placed close to the user. Therefore, this section will be divided into smaller geometric blocks for easy access to achieve the desired result. The walkways will add defining features to this garden, and there is an emphasis on creating functional areas, while the repeated pattern can induce feelings of familiarity (Alimentarium, 2020). Sensory food gardens are gaining popularity for sustainable ecosystems that provide a unique opportunity for horticulture therapy. They also give people the perfect opportunity to engage. Therapeutic horticulture has many social and mental benefits as it allows people to connect with one another to reduce feelings of isolation (Dr John La Puma, n.d.). This area with designated sections can allow for a moment of pause to enjoy the bounty that nature offers. This type of garden is considered an active participation garden where users can engage and socialise.

Herb and vegetable blocks with several levels of flavour will be an adventure in this design strategy. A visual illustration is found on the right hand page.

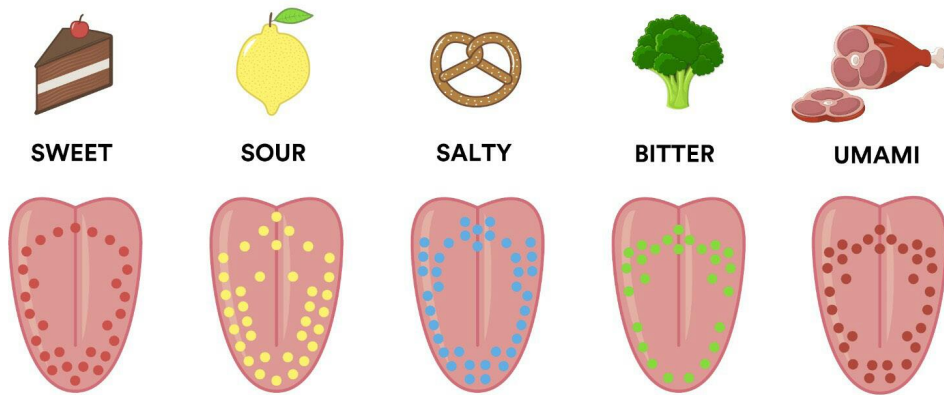


Figure 152: Areas of the tongue that can differentiate between flavours (Alimentarium, 2021)



Figure 153: Herb garden (Maya, 2021)



Figure 154: Herbs (Olivia, 2022)



Figure 155: Tongue for taste (edulab, 2015)

### 4.3.3 Auditory sense (hear)

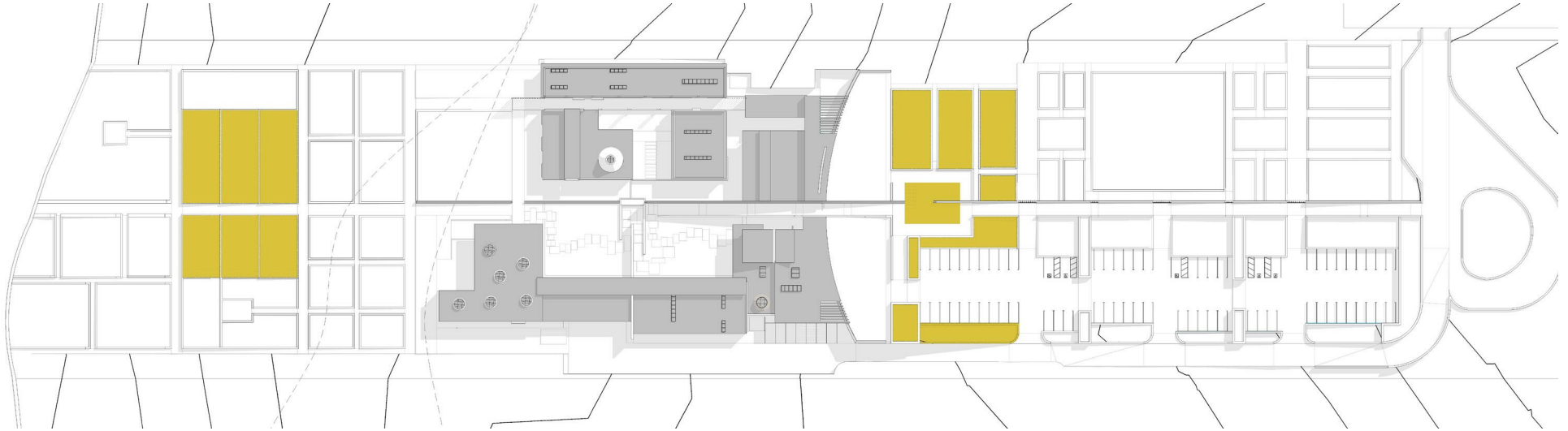


Figure 156: Section of the garden for auditory sense (Author, 2022)

The garden environment provides several opportunities for aural stimulation. Our auditory response can be triggered by the sound of plants, with a resulting calming effect. Therapeutic gardens are one of the tools that we can use to improve the psychological, cognitive and social functions of people suffering from mental imbalance. The historical relevance of water components to promote sound was demonstrated by the abundance of water elements in the Renaissance era. This was further emphasised throughout history (Babnik, 2019). In the modern era, it is a popular feature for many public buildings or to create an intimate setting in a garden. The sound of water is considered to be nature's music, while moving grass can also produce a soothing sound. The sound of wind rustling and birds singing can have a profound healing effect on our emotional state. Our brain is programmed to instinctively detect cues from our surroundings, and react to them. Producing a calm and serene surrounding focuses these responses to relax. This type of garden may be classified as a passive healing space, where one is not motivated by physical action but rather encouraged to slow down and connect with emotion that can be experienced in a calm surrounding (Detweiler, Sharma, Detweiler, Murphy, Lane, Carman, Chudhary, Halling & Kim, 2012). Water is the main feature in the proposed space in the garden. A gravity-feed water channel running from the entrance into a number of ponds will constantly remind the user of its presence. The lower section of the garden will be positioned to mimic the river flow in a considerable body of shallow water, and will contain a number of fountains which will entice the auditory sense. Water is movement and change, and with the gentle auditory sounds of nature, it can play a supporting role in this relaxing therapeutic garden. The research on Babylonstoren and Parc Citroen aided the designer in how water can be used on both horizontal and vertical levels. Active water elements such as fountains, have both visual and strong auditory qualities, will be balanced with passive features such as a calming water channel or a pond. Individuals seeking the mental antidote of nature may benefit from increasing their hearing sensitivity. One can achieve a state of calm and concentration by shutting your eyes and listening to the sound of water.

A visual illustration of the inspiration of water use in the proposed Garden of Senses is found on the following page.

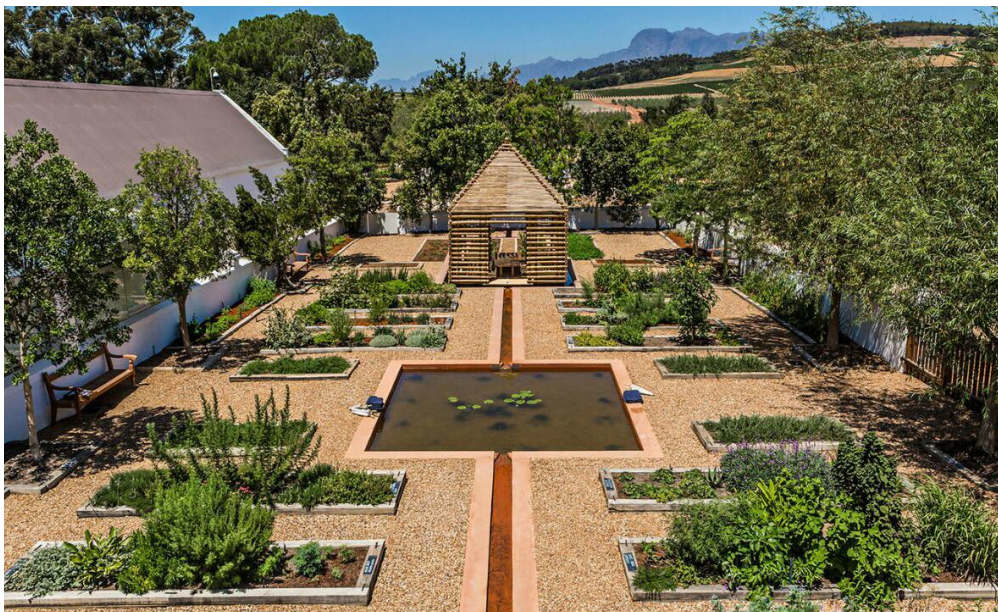


Figure 157: Water channels and features at Babylonstoren (Kalula, 2022)



Figure 158: Fountains at Parc Andre Citroen, Paris (Parc Andre Citroen, n.d.)



Figure 159: Proposed view of water channel from the parking are towards the Healing and Wellness Sanctuary (Author, 2022)



Figure 160: Illustration of water flow (Patterson, 2020)

#### 4.3.4 Olfactory sense (smell)

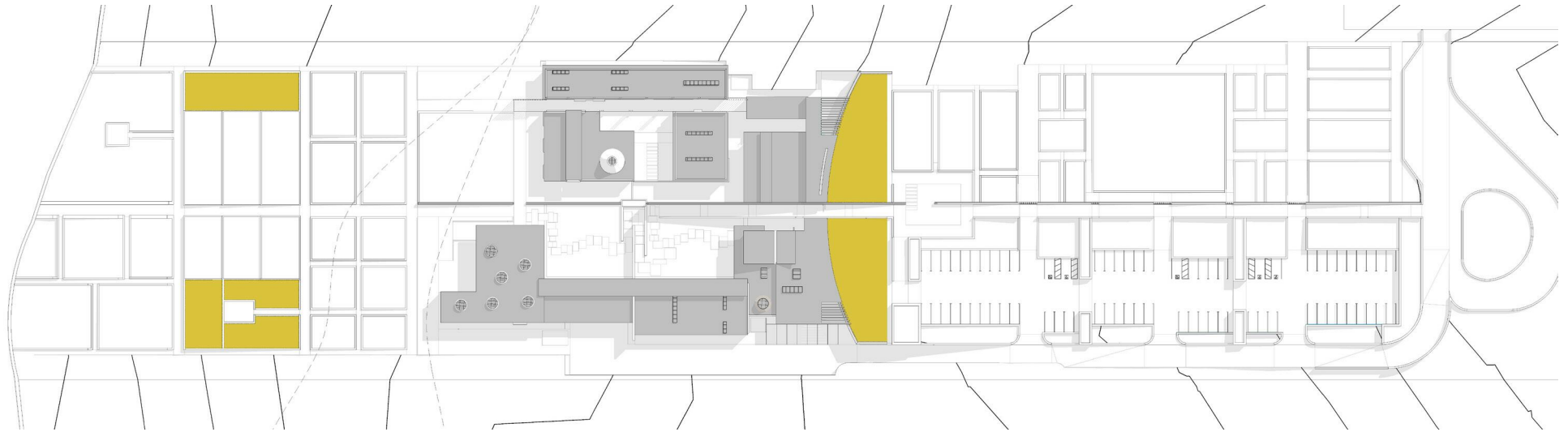


Figure 161: Section of the garden for olfactory sense (Author, 2022)

The sense of smell is a powerful memory trigger, but in a garden it is often secondary to the sense of vision, which tends to dominate the other senses. Smell is linked to the intangible and experienced with the whole body. It is exciting to speculate on how natural aromas may help us relax. The aromas of nature may influence a person's perception and memory, and these aromas can elicit a wide range of feelings and thoughts. The phrase "smellscape" describes the investigation and exploration of the complete olfactory sensory environment of a place. A person's sense of smell depends on three factors: (1) their scent qualities, (2) their environment, and (3) their uniqueness. Smell can be experienced via the rate of evaporation through air quality and temperature, and the amount of stimulation is further influenced by the wind and a person's age, gender and health status (Pálsdóttir, Spendrup, Mårtensson & Wendin, 2021).

No two people share an identical sense of smell, so one's favourite scents such as floral-sweet, herbal, fruity, or spicy, are entirely up to "the nose of the smeller". Adding purposeful olfactory elements in strategic locations, such as the path leading to the river and in and around selected sites of interest, will heighten the olfactory experience of this region. Spreading a wide variety of shrubs, perennials, and annuals around the therapeutic garden is the best way to ensure a continuous flow of aromas throughout the season. Some edible plants such as mints and rosemary, have a pleasant scent that can be released by brushing past them. The focus of this design is to place 'touch-me plants' in areas where the visitor will see them frequently. The sense of smell is deeply linked to our emotional and memory recall. On a practical level, the best way to smell the perfume of a plant is to take short, shallow breaths rather than long, deep ones. Next, periodically pause and sniff one's elbow. Due to its familiarity, the scent of our skin aids in resetting our olfactory system to its normal state (Roach, 2020). Through the research on precedent studies of Babylonstoren and Parc Citroen, it became apparent that water can also produce smell. Petrichor is a technical term associated with the smell of freshly saturated soil, and it can evoke feelings of renewal and satisfaction (Wikipedia contributors, 2022k).



Figure 162: Touching lavender produces a fragrance (Vistacreate, 2022)



Figure 163: Star jasmine emits a sweet scent (GardenersWorld, 2019)

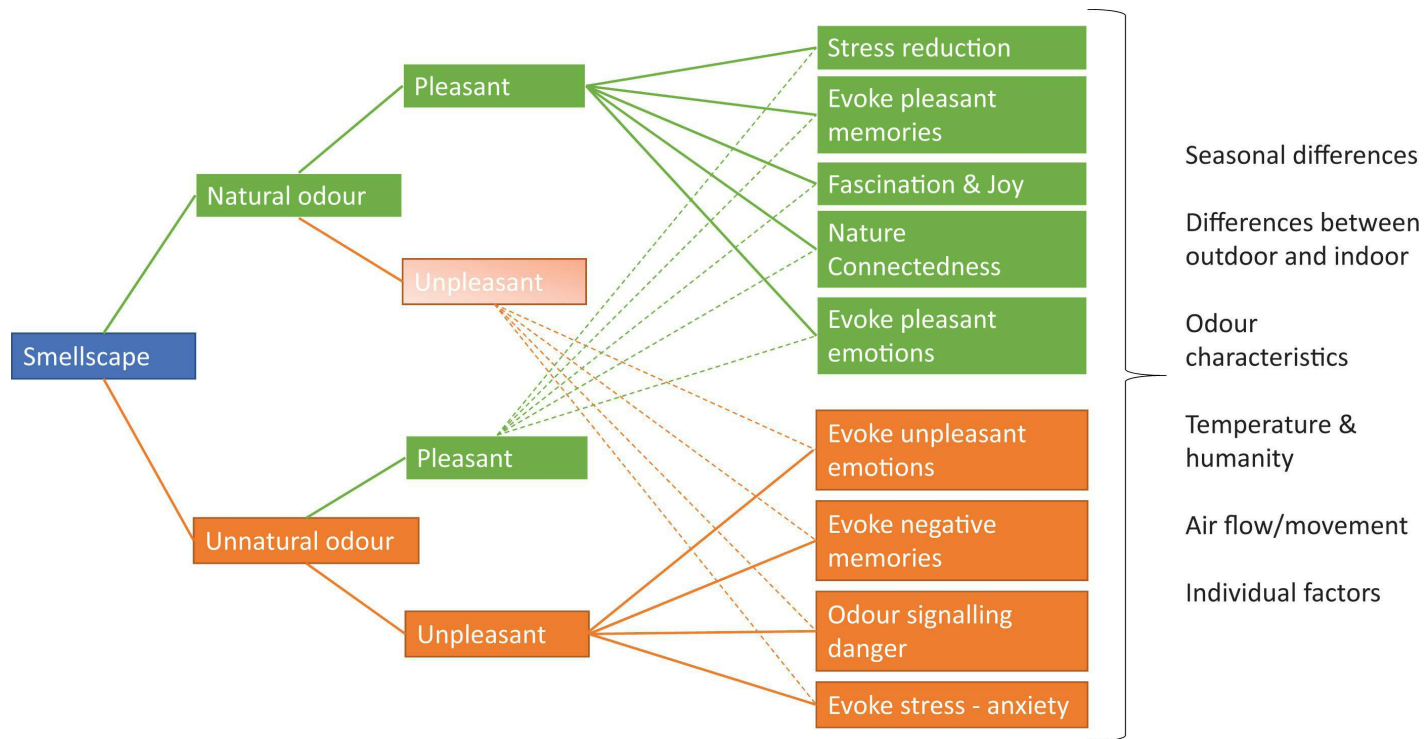


Figure 164: Smellscape (Pálsdóttir et al., 2021)

#### 4.3.5 Visual sense (sight)

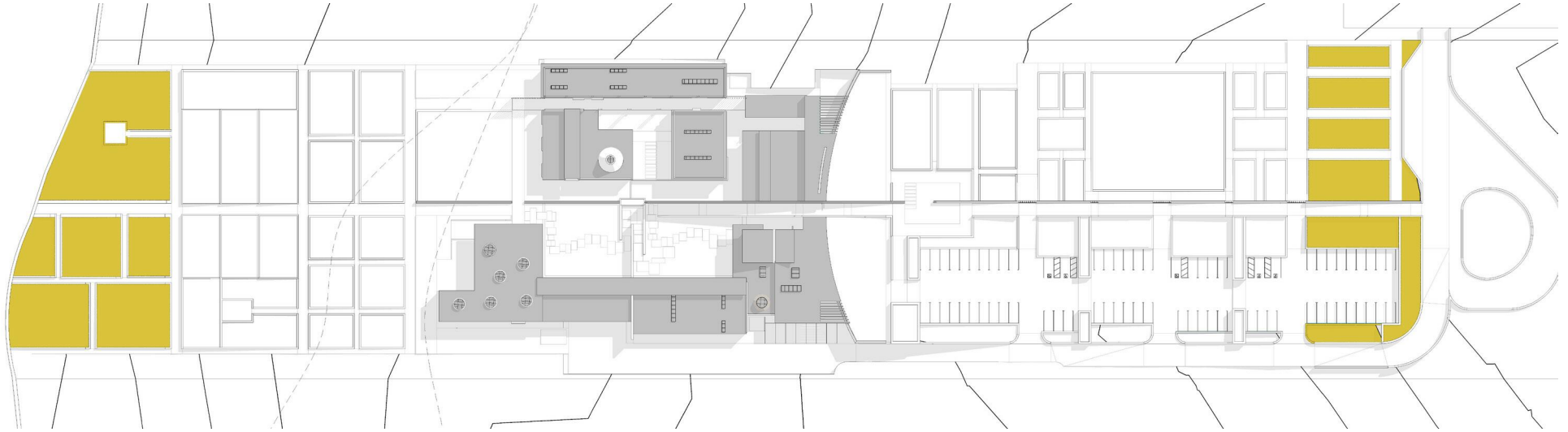


Figure 165: Section of the garden for the visual sense (Author, 2022)

One of the easiest and most productive ways to use our senses in a garden is through sight. The contrasts in colour, shape, movement, light, and shadow that make up a beautiful garden allow us to experience it fully. Warm colours like red, orange and yellow encourage physical activity. Tension-relieving colours include blues, purples, and whites. The key is to find a balance between jarring colours and calming pastels to avoid overwhelming the senses. For example, plants that attract butterflies may be identified by their distinct fragrance and colours, as well as those with a wide range of flower colours and bloom times, leaf shapes, and sizes (Hubbard, 2019). Likewise, trees, shrubs and other plant species have various heights, forms, colours, and patterns to play with to pique viewers' visual interests (Avis-Riodan, 2020:). Likewise, a visual array of plants can create a psychological response and affect our behaviour and expressions.



Figure 166: Sensory delight of plans (Royal Botanical Gardens, n.d.)



Figure 167: Array of flower colours (Royal Botanic Gardens, Kew, n.d.)



Figure 168: Array of flower colours (Royal Botanic Gardens, Kew, n.d.)

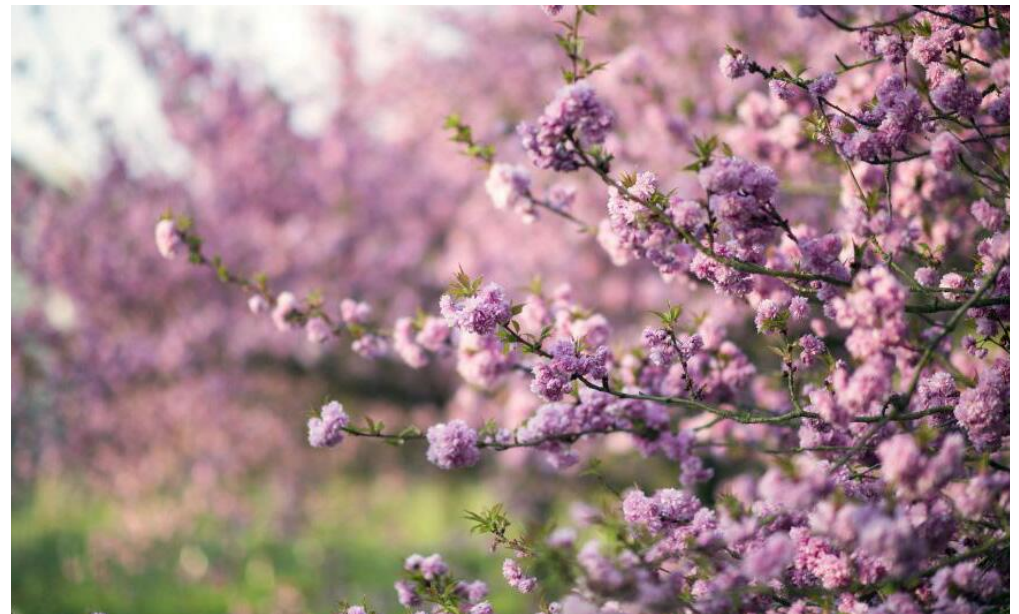


Figure 169: Spring flower blossom (Royal botanic gardens Kew, n.d.)

## 04 ] [ THERAPEUTIC GARDEN LAYOUT

### 4.4 CONCLUSION

The garden layout reflects the lyrical and poetic atmosphere of the therapeutic garden. Here the visitor seeks deep, intimate ties with nature. The garden presents a dynamic colour palette whose colours and saturations shift with the seasons and the light of day. This links it with the constant passage of time in the metaphysical world. Therefore, with each visit, new details such as blossoming flowers, nectar-gathering insects, and vantage positions along walkways, become evident. The perfumes and soothing sounds entice one into a dreamlike state. The garden is designed to pay homage to the myriad ways in which plants enrich our lives, including their scents, textures, flavours, and practical uses. The emotional and psychical responses from the time spent in the garden, and the experiences that the body can perceive, will connect us psychologically to the ultimate healer that mother nature can be. These gardens provide a peaceful retreat from the outside world. Gardens are beneficial for healing because of the ever-changing movement and our inherent connection with nature. A healing journey through nature might be triggered by engaging the senses in a garden's therapeutic setting and ultimately igniting the ritual of reconnecting.





051

## DESIGN SYNTHESIS

5.1 CONCEPT + FORM + FUNCTION

5.1.1 CONCEPT 1: ACTION

5.1.2 CONCEPT 2: SUBMERGE

5.1.3 CONCEPT 3: EMOTION

5.2 DESIGN DEVELOPMENT & SYNTHESIS

5.3 FINAL DESIGN SOLUTION

## 05 ] [ DESIGN SYNTHESIS

### 5.1 CONCEPT + FORM + FUNCTION

The following was part of the concept design phase. The investigation assessed the importance of water for the users, their feelings, and their reactions to a therapeutic environment. Several factors impact such a landscape, but the goal was to create an environment where the user could have a meaningful encounter towards healing. Water is connected to movement, and the forms and functions of this source can influence humans through experiences, memories and evoked emotions.

#### 5.1.1 Concept 1: ACT (ion) - Movement of water

What does action mean in terms of water? Water is the ultimate source of life on earth, and our existence depends on it. It connects us to the cosmos, and physically, emotionally and spiritually influences our life. Water is an ever-changing element, and the emotions it can evoke through movement has been harnessed by mankind since time immemorial. Water is a medium that can be used to facilitate healing. The research on this concept led the author to investigate how water was utilised in Lupin Research Park by Malik Architects (2011) in Pune, India (Archello, 2022). The facility was designed after the timeless mandala, and it has sloping conditions similar to the site in this proposed project. At Lupin Research Park water was used to enhance the sloping qualities of the site. Complex forms and structures make up this design, and the moving water creates a link through the facility between nature and manufactured structures. This concept portrays the movement of water as a path linking the user and the river.

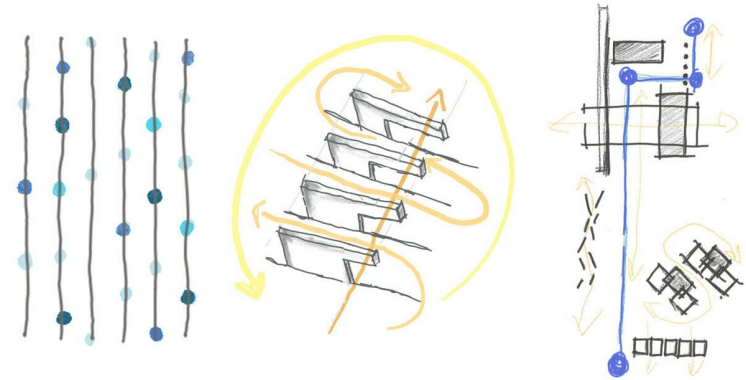


Figure 171: Movement of water (Author, 2022)

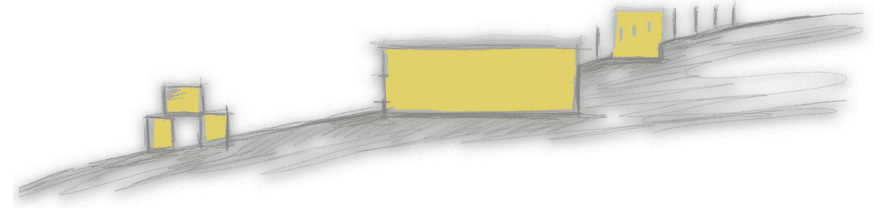


Figure 172: Site section of Action (Author, 2022)



Figure 170: Lupin Research Park (Modified by Author, 2022)

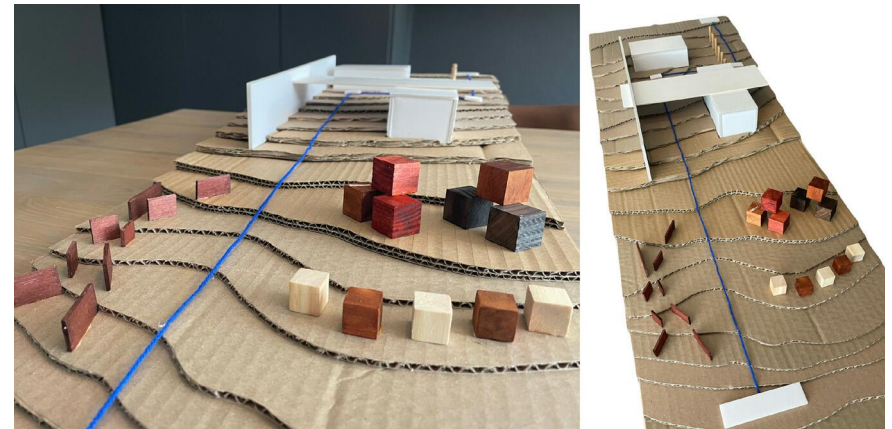


Figure 173: Concept models of (Act)ion (Author, 2022)

### 5.1.2 Concept 2: (sub)MERGE - Merge into water

What does Submerge or merge mean in terms of water? The historical relevance of water and its therapeutic qualities, especially being submerged in water, is well known. Furthermore, water immersion is linked to our psychological and mental states, and profoundly influences our body and its responses to our environment. This concept was explored through the Therme Vals bathhouse by Peter Zumthor, designed in 1996 in Switzerland (5osA, 2009). The actual act of bathing was explored here, where an array of pools and other facilities offered the opportunity to merge mind, body and soul with water. In addition, the exploration investigated the spatial and light qualities influenced by water and how this links back to our emotional state. In this concept, the solid geometrical forms found in the precedent study influenced the layout and composition around water as the central axis. The familiarity with the site location and the exploration's descriptions of how the structure's composition and geometric design were employed to improve the views in the area, were other factors in the decision to apply this precedent.

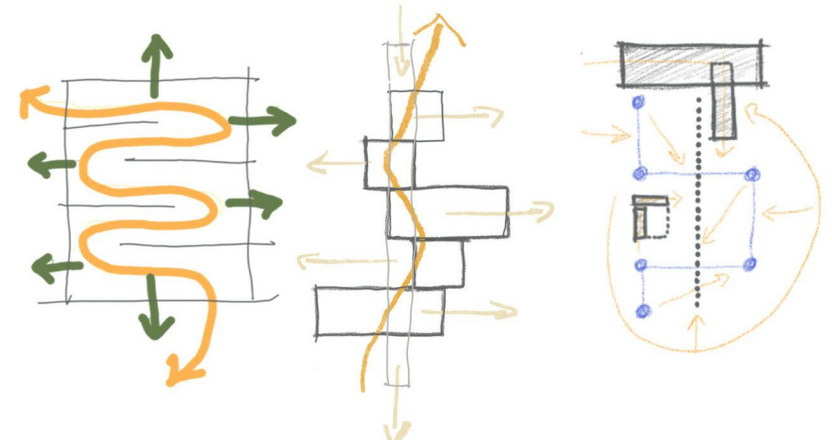


Figure 175: Concept diagrams of Merge (Author, 2022)

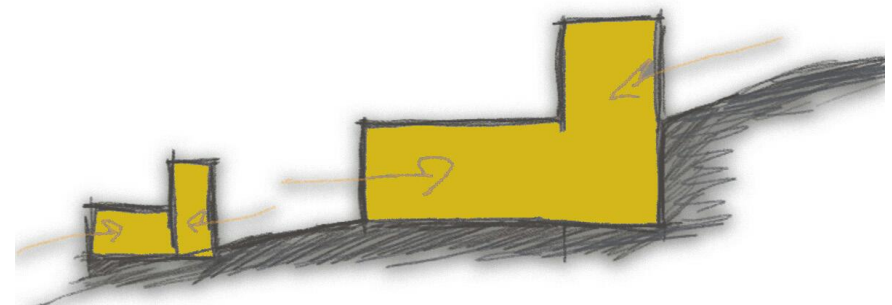


Figure 176: Section proposal (Author, 2022)

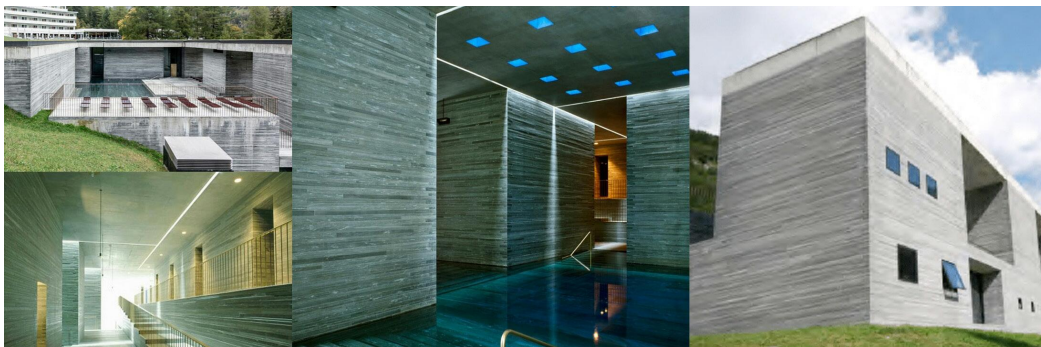


Figure 174: Therme Vals by Peter Zumthor (5osA, 2009 – modified by author)

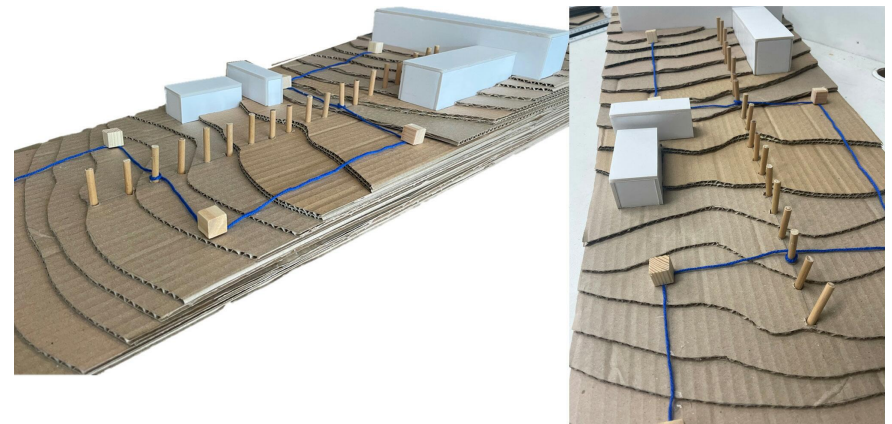


Figure 177: Submerge – concept models (Author, 2022)

### 5.1.3 Concept 3: (e)MOTION - Emotion through water

What does emotion mean in terms of water? Water can evoke emotional engagement with one's environment via a progression of stages and encounters. Emotion is inherently connected to the senses. Water's physical properties, such as temperature, colour, flavour, and odour, are interpreted through the senses of touch, sight, smell, and taste (Crook, 2008). Emotion is also connected to the expression of water. Turbulent water can evoke different sensations and emotions compared to calm and serene water. Our emotions can also dictate our experiences through thoughts and feelings provoked by the environment. For a healing environment, the essence is to enhance feelings associated with healing and restorative aspects.

The exploration of emotion in architecture led the author to the Steilneset Memorial by Peter Zumthor in Vardo, Norway (Zumthor, 2011). In addressing historical events, architecture can be a mediator of healing. This memorial is an architectural landmark to capture the emotions of a tragic event. The landscape with the bare minimum of plants creates the setting for isolation. Indications of how the landscape influence this project is seen through the use of light. The landscape can become a dark and dull surrounding, and contrast with artificial light is created as a connection. The play of shadow induces different emotional responses like sorrow and sadness, while the light is like a beacon of hope for recovery. The selection of material finishes and textures all have meaning in the design that captures the essence of emotion in this project. During this research, it was intriguing to learn about Peter Zumthor's use of sensory stimulation to elicit emotion in the studies of Steilneset and Therme Vals.

As a reflection of the concept stage, it became clear that water is a potent mediator in conveying a message. The emotional response and experience created in different environments can aid people in connecting on psychical, emotional and spiritual levels through water. The sensorial properties of a human are a profound method of conveying this message. It became clear that water can change the environment's ambience and atmosphere. Light is a powerful communicator, and its many properties can change the mood and efficiency of an environment. The approach to all three buildings demonstrates sensitivity to nature and the incredible attention to detail that allows each structure blend seamlessly into its surrounding environment, so that the visitor can fully enjoy nature, water, and light.

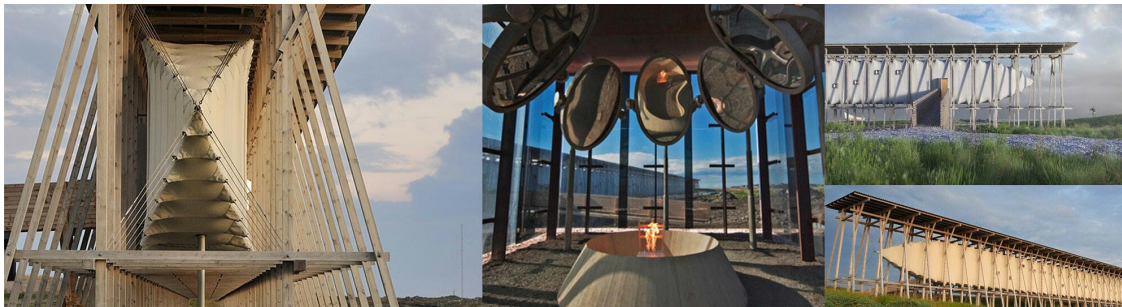


Figure 178: Steilneset Memorial by Peter Zumthor (Modified by Author, 2022)

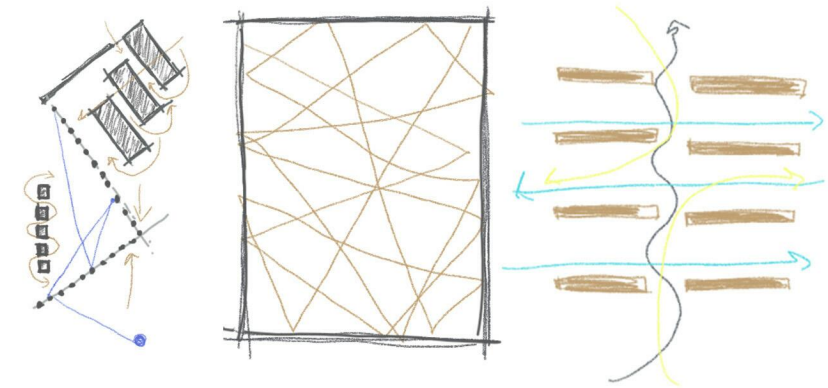


Figure 179: Concept diagrams of Emotion (Author, 2022)

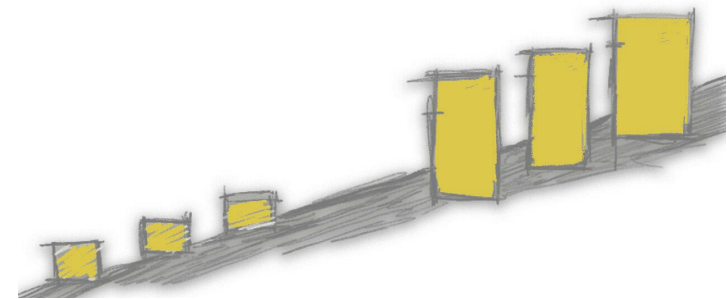


Figure 180: Proposed Section (Author, 2022)

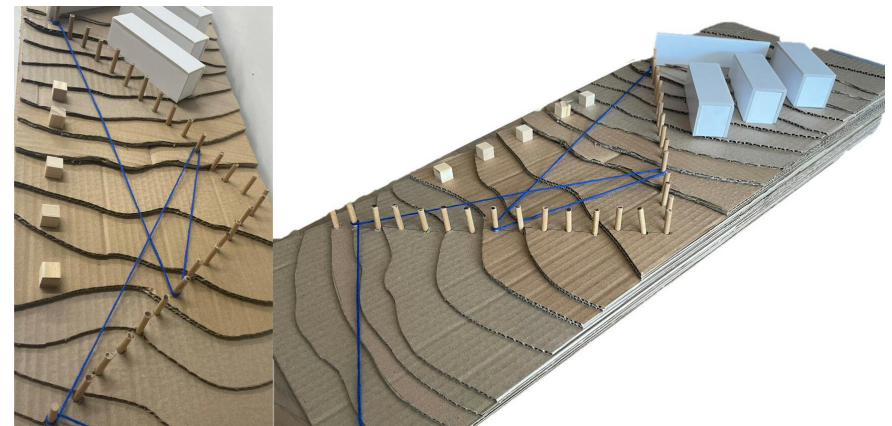


Figure 181: Emotion - concept models (Author, 2022)

## 05 ] DESIGN SYNTHESIS

### 5.2 DESIGN DEVELOPMENT

The design development started in April with the spatial development of the areas identified by the accommodation list. This was the first step to the design that placed elements in a sequence of events on-site. As the water was the thread tying the outlining blocks of buildings together, selecting a route for the water became a challenge. The 100m building line posed an edge for these spatial organisations, but the user still had to relate to the river, and the challenge was to design the water as an intermediate connection between nature and architecture. The site investigation of the Lupin Research Facility was a source of inspiration for staggering the buildings along the terraces with open courtyard areas through walkways. A water channel from the top to the river through a gravity feed enabled the continuous presence of water through the journey of discovery.

Lessons learned from this development phase included a closer look at the site context and the placement of the spatial organisation. Although this model attempts to apply logic to the outlines, with the buildings spaced at leading intervals, it posed a problem of cohesion in the placement. The water source did not yet display the ambience and sensorial qualities of healing. The design served as a practical layout rather than an experiential journey. The distance of the entry of the site to the river is 315 meters, and the design challenge was to create the journey over this distance. The connection to nature and the influences on the user were not yet complimented strong enough. The external examiners' criticism of this layout focused on how it was too disjointed and did not convey the message of water sufficiently.

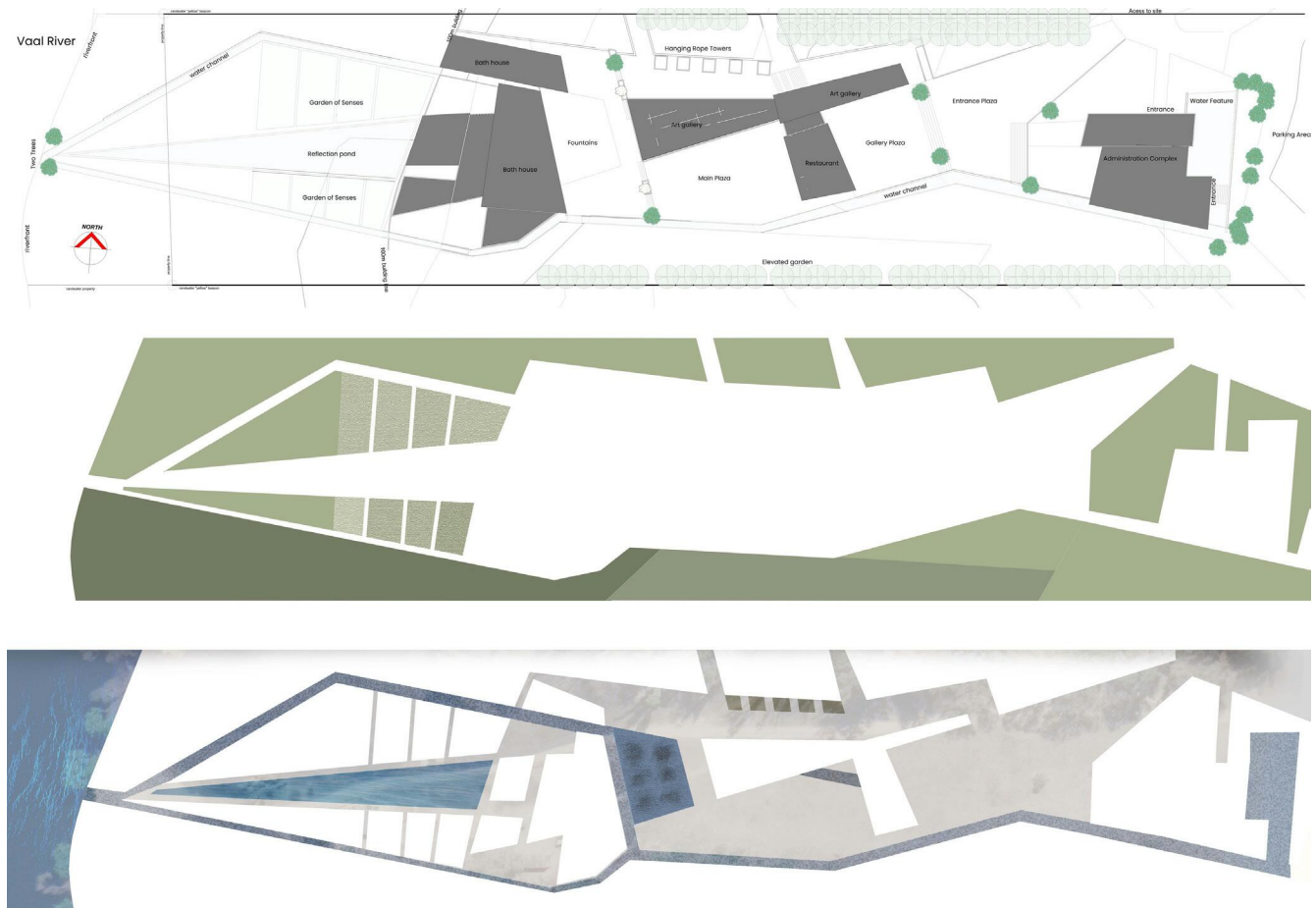


Figure 182: Site development plan in April (Author, 2022)

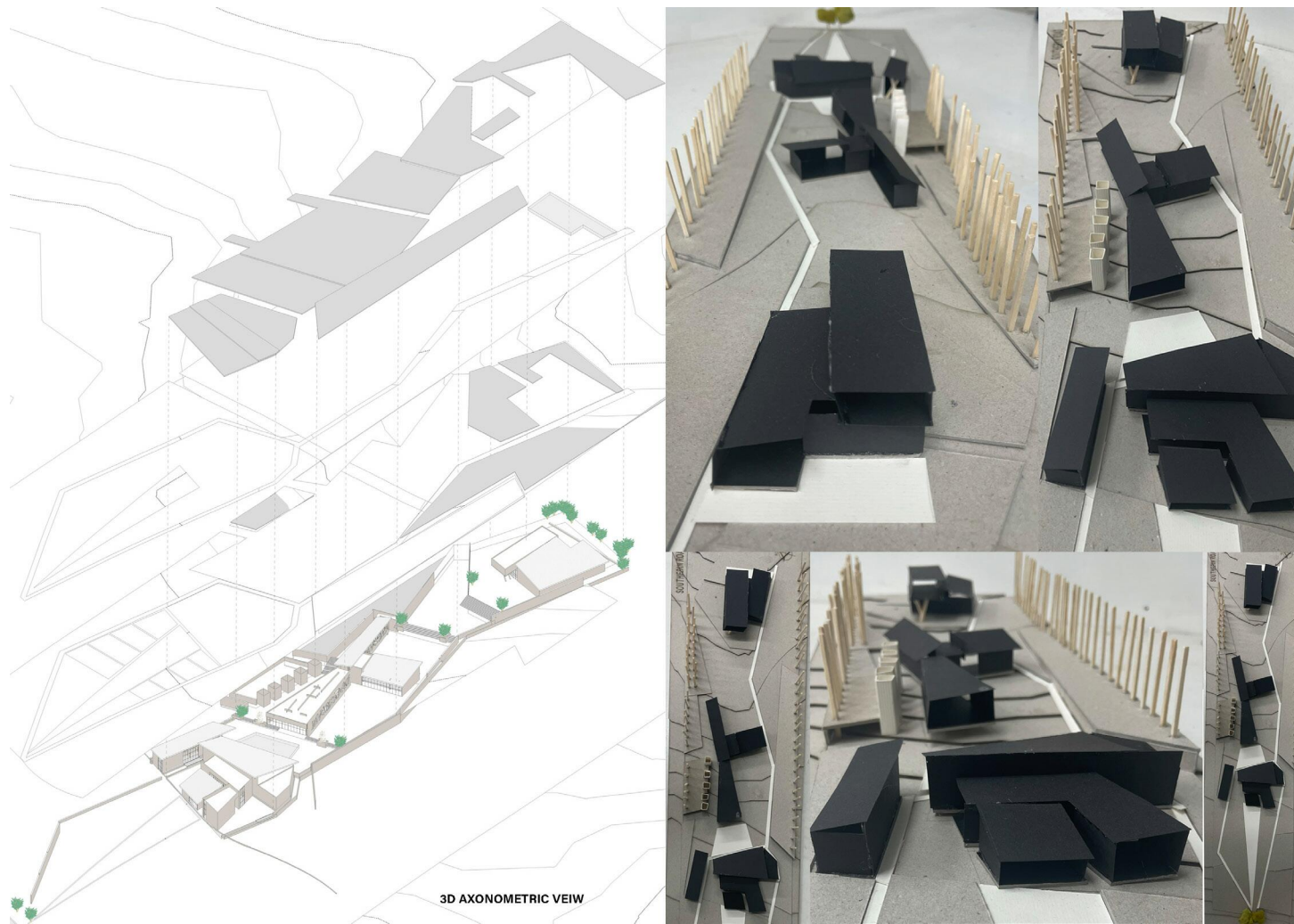


Figure 183: 3D Axonometric view and model in April (Author, 2022)



Figure 184: Site section in April (Author, 2022)

In May the development turned to a new direction due to comments and feedback from the external examination. The design focus was more on implementing some of the design solutions offered by Therme Vals, like the solid geometric forms placed for order and repetition. The careful examination of this precedent study incorporated larger geometric forms divided into smaller sections, while the flow of spatial arrangement determined the user's journey. There was a more logical approach to the entrance with the idea of placing a distinctive wall dividing the area. The purpose was to create a sense of arrival centred around a water feature. Luis Barragan served as inspiration in his unique way of using walls and accentuating light and texture with water to articulate an area and define the user experience.

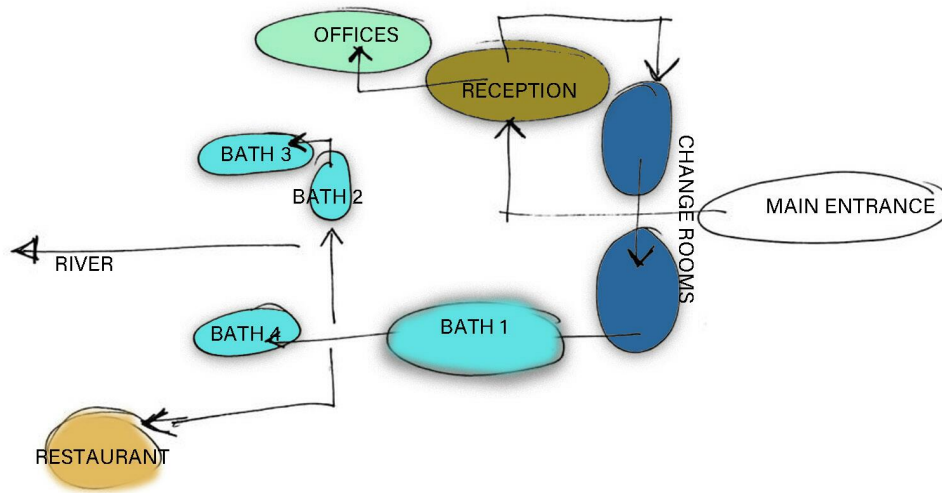


Figure 185: Site Section (Author, 2022)

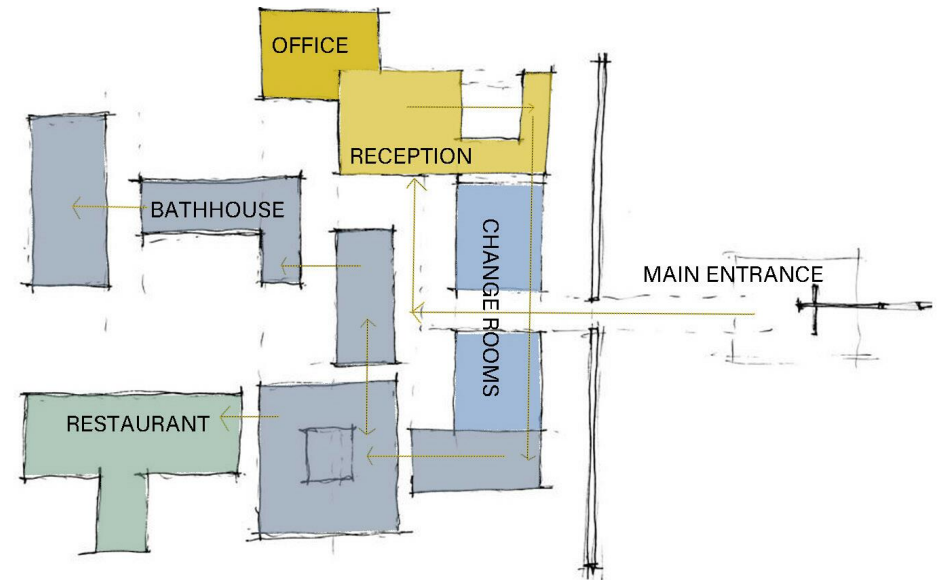
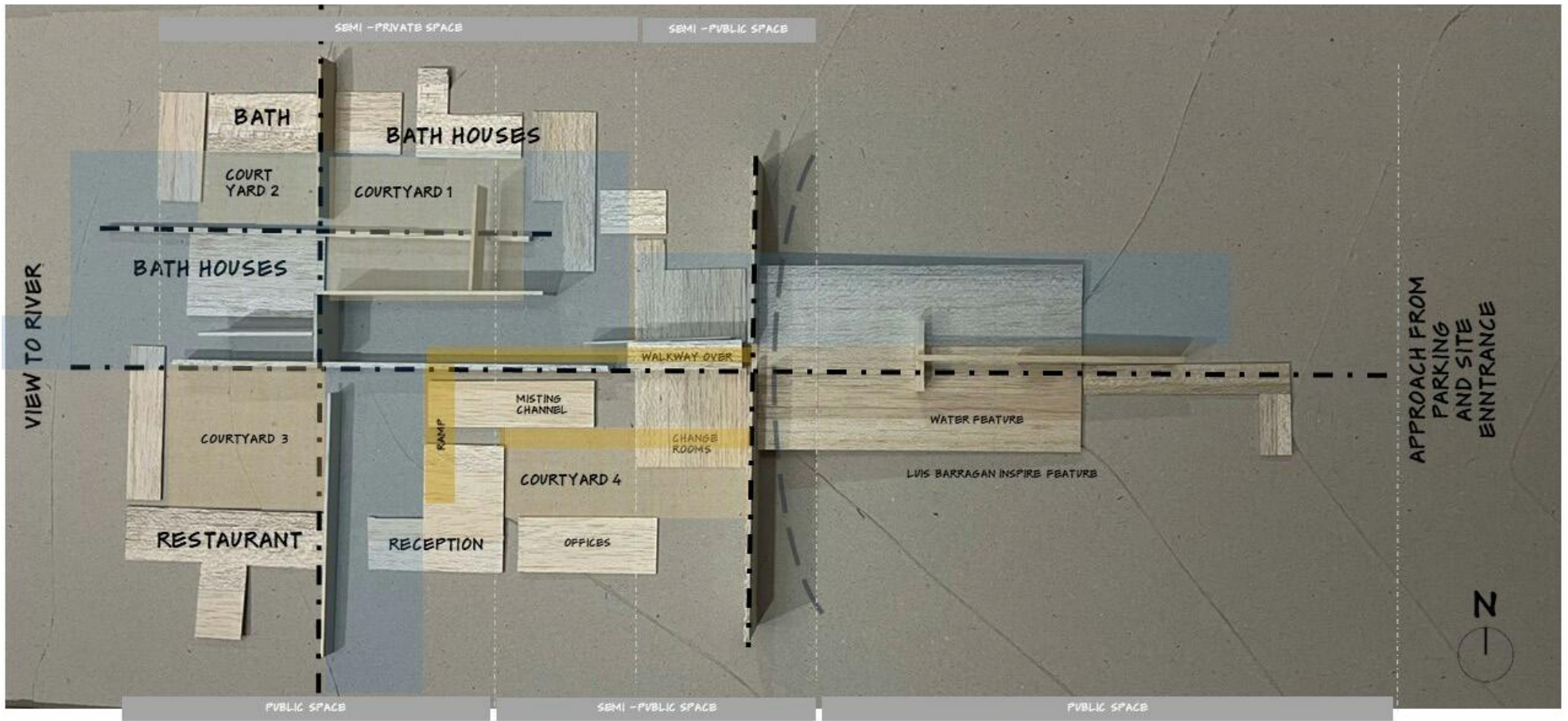


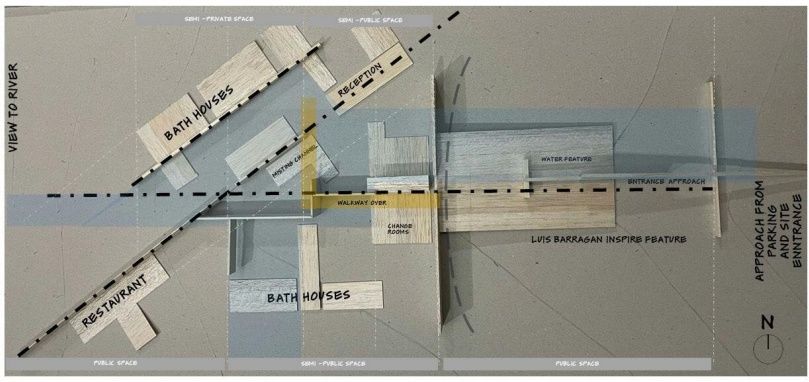
Figure 186: Site Section (Author, 2022)

Many spatial organisational configurations were investigated after the layout of the May development. The process was focused on establishing a unique journey with a logical flow in terms of circulation for the user. The distinction between public and private areas was not yet solved in May, but the different areas united in concept design C, refer to figure 187. The objective was to use water and light elements and to incorporate nature through different courtyard sections. The development continued with the spatial organisation of the geometric blocks to create defined circulation routes and established order.

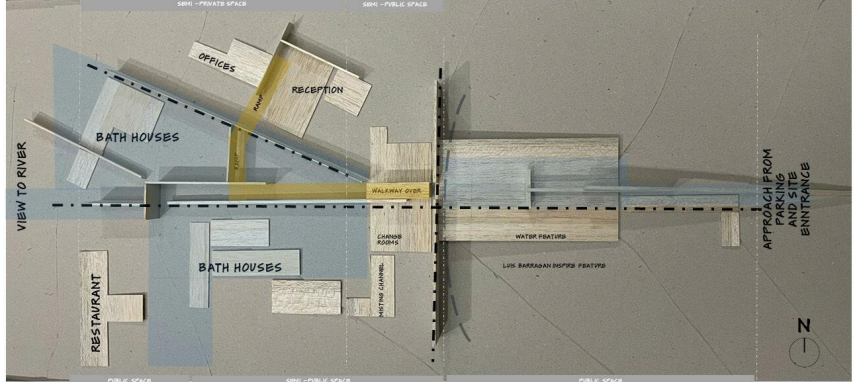


## CONCEPT DESIGN C

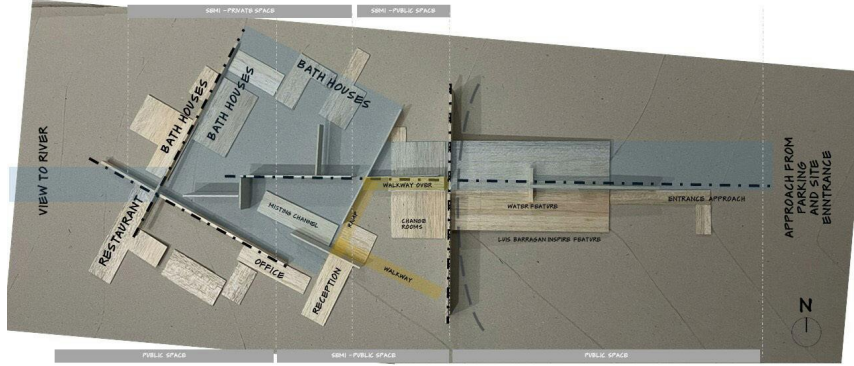
Figure 187: Configuration of successful spatial arrangements after the May bubble design (Author, 2022)



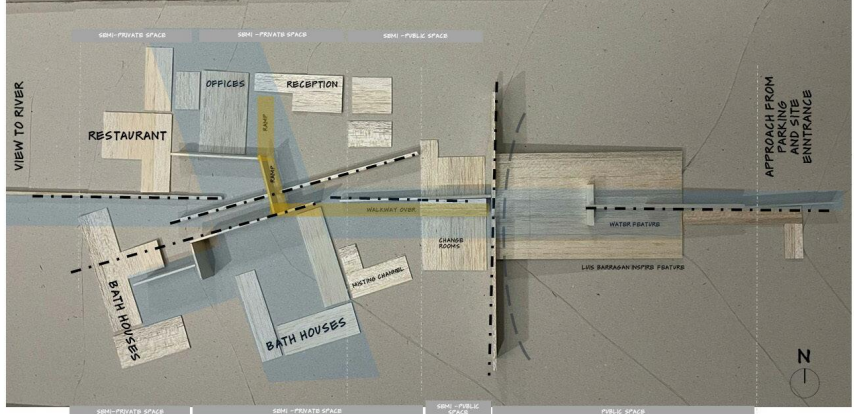
CONCEPT DESIGN A



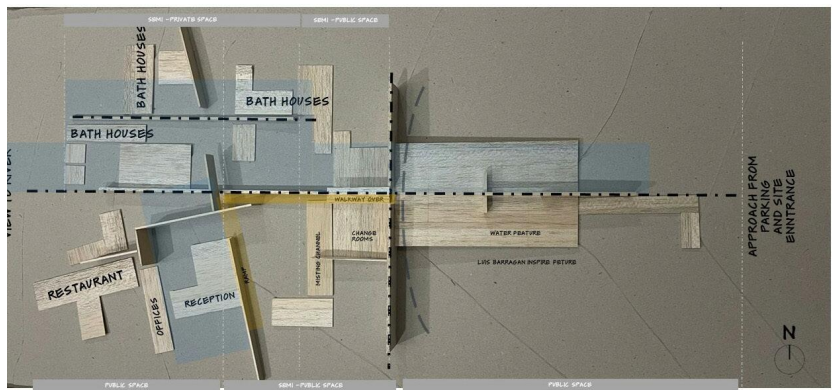
CONCEPT DESIGN E



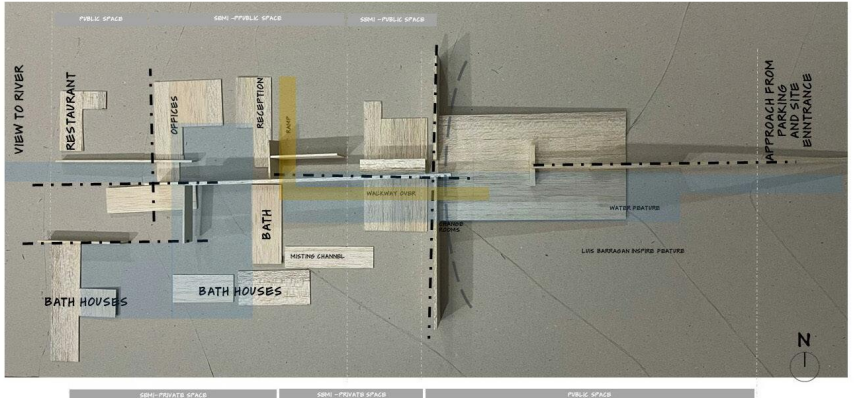
CONCEPT DESIGN B



CONCEPT DESIGN F



CONCEPT DESIGN D



CONCEPT DESIGN G

Figure 188: Configuration of unsuccessful spatial arrangements after the May bubble design (Author, 2022)

The bubble diagram explored the flow of the different spaces as a journey toward purification and mental healing. The initial straight wall at the entrance changed to a curved one for a softer design approach. Therme Vals, carved out of the sloping site, was the inspiration for lowering the level of the bathhouse into the site to create one level for the facility. Being on one level created the opportunity to eliminate the many staircases and ramps from the previous design solutions. A single ramp would now provide primary entry to the reception. The sensory perspective, which aimed to take the visitor on a journey, had to be engaging so that the mind could concentrate on the cleansing process before the body recuperated. The flow of visitors corresponds to the dotted red line. The sectional parti represents the separation of the contours into two levels.

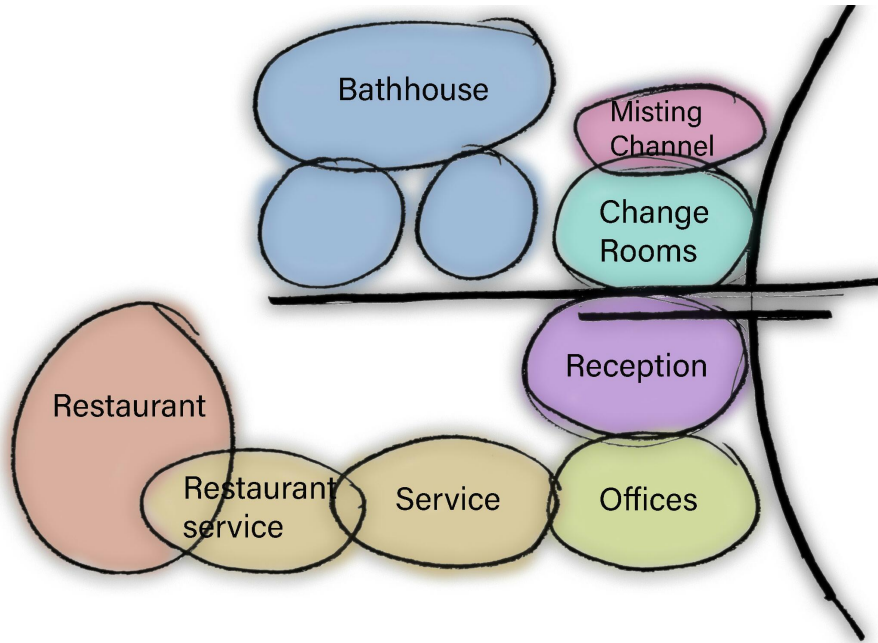


Figure 189: Bubble diagram of the organisation of functions (Author, 2022)

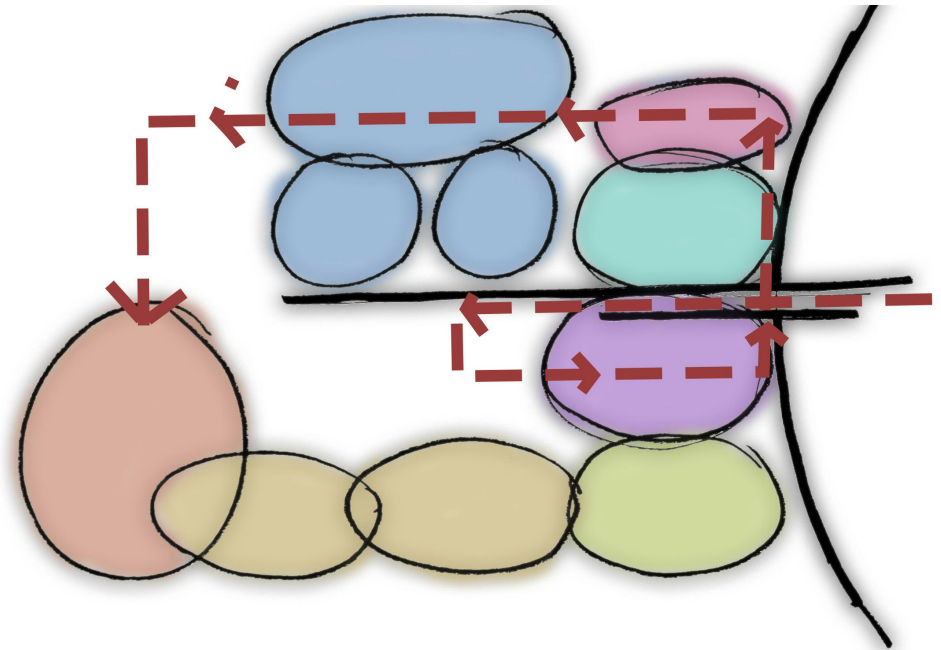
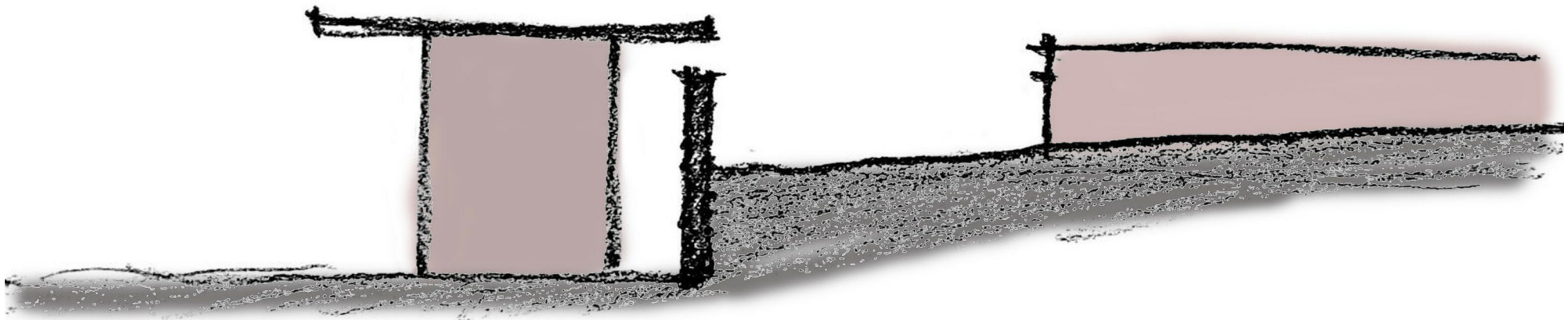


Figure 190: Bubble diagram of circulation (Author, 2022)

Figure 191: Sectional parti of levels (Author, 2022)



▪ **Forms and Functions**

The parti plan was formed from the bubble diagram analysis to utilise sectioned rectangles as the fundamental shapes. The parti will form positive and negative zones, with negative zones indicating potential circulation paths or courtyard areas. The program will determine the scale of the rectangles for the graphic components. The river is the key focal point. An axis is created between the river edge with two weeping willows and the entrance. A sequential flow is created by altering the contrast in grouping these rectangles.

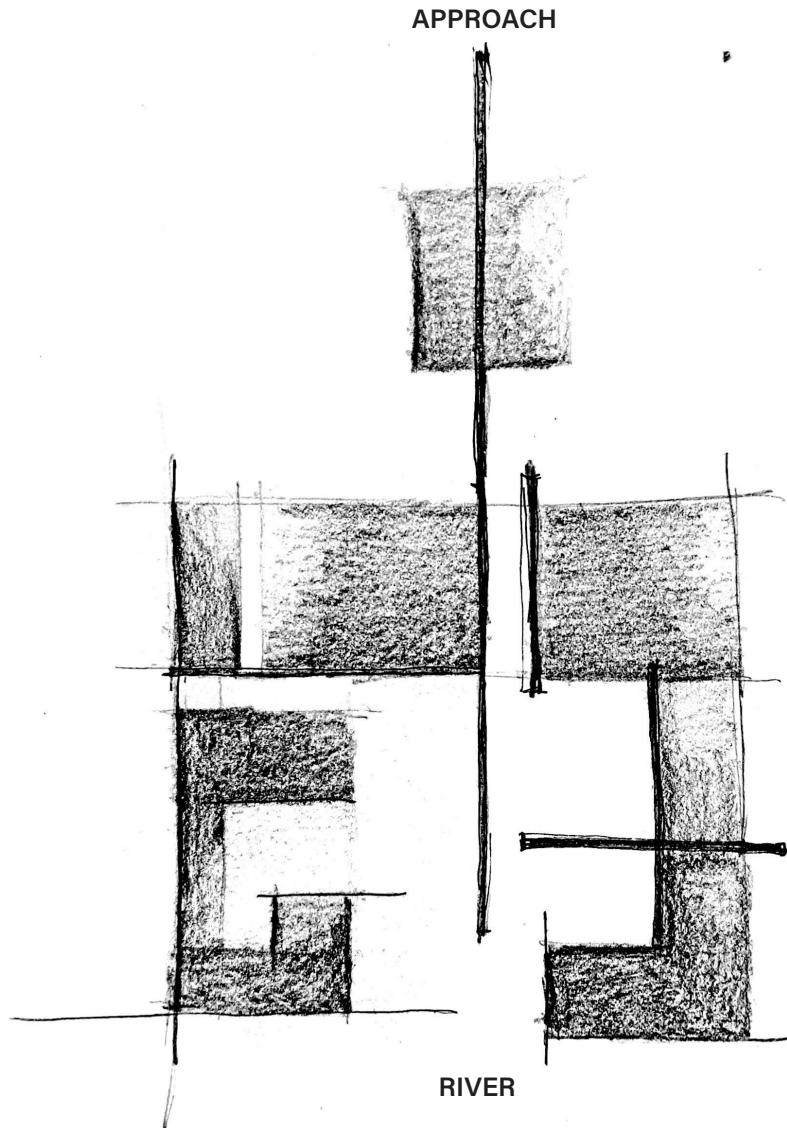


Figure 192: Parti diagram (Author, 2022)



Figure 193: Concept sketch (Author, 2022)

▪ **Access, circulation and structure:**

From the theory of phenomenology, the essence is to create a meaningful experience for the user through the environment. The relationship between the user and the architectural object needs to complement the emotional responses by the senses. The user needs to integrate an image of self with his experiences in the environment. The ultimate experience is the ritual of reconnection.

In the Healing and Wellness Sanctuary, access refers to approaching and accessing the facility. The decision to reach particular spaces and the entry point depended on the location of the primary access route for public assessment zones and the second access route for private areas. Since visitors and staff have different needs, two separate entrances were established. Because the provision of services is fundamental to the project, much thought was given to the best location for facilitating such provision without disrupting visitors' experience. This design structure comprises independent but connected components permanently located in one location. Scale and composition needed to complement each other, and to consider human perception regarding circulation in connection to the structure. The scale and materials used to erect the curving wall and its significance in connection to the structures were considered as this line created a distinctive separation in a metaphysical sense.

Several types of roof permutations were explored to introduce the play of light into the interior spaces. The spatial arrangements were functional, and the circulation routes were clearly defined. The flow of this simplistic design proved effective in achieving the desired effect on the user experience. However, according to comments made on the resulting roof model, more thought was needed regarding the location of the roof openings and how they related to the underlying structure.

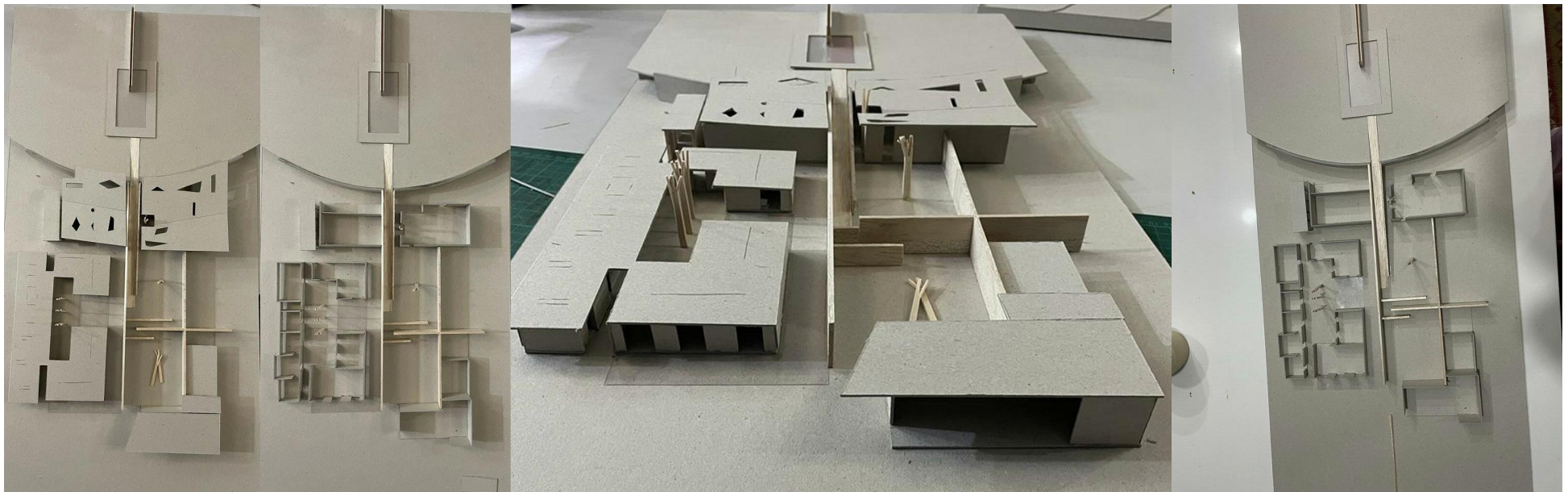


Figure 194: June development model (Author, 2022)

## 05 ] [ DESIGN SYNTHESIS

### 5.3 FINAL DESIGN SOLUTION

At this point in the design process, the practical aspects of the plan were addressed but the experience needed to be re-examined so that the three main features of water, light, and nature could be fully developed.

**Water:** the bath sections were divided into the selected baths for the facility, comprising Epsom, Mud, Ice, Mineral and Salt baths. The precedent studies of Therme Vals and Hepburn Bathhouse inspired the atmosphere and ambience created for each type of bath. Since each bath was distinguished in terms of type, geometry also needed to convey this message. Water was already present in each area, but the next step was to design the space for a mystical quality of light and textures to induce healing. Water was designed to be a constant element on the journey. Therefore, water channels and features were placed in various sections. Water symbolises flow and movement, and with the river as the main inspiration for using the element of water, it was pivotal for the journey of movement to continue to this focal point. Water can influence our experience on a physical, emotional and spiritual level.

**Light** was the principal method to create a mystical ambience in the therapeutic bath areas. In the section of the ice and Epsom baths, linear slots in the roof were created to give a sense of mystery with filtered light from above. The research on the Hepburn Bathhouse inspired the salt room's cone-shaped ceiling, which allows for a significant amount of natural light, but still enhances the feeling of seclusion and contemplation. This cone also served as a hierarchy feature in the orientation of the facility. Open areas in the walkway section posed an opportunity to use light and shadow by cutting out sections in the cantilever roof. The play of light can produce interesting shadow forms during the day. Light through window openings was presented through a number of methods, such as boxed window sections or vertical/horizontal window sections. The restaurant area light was addressed through a rhythm of smaller cones in the roof section defined by the interior arrangement.

**Nature:** as the environment influences people to allow connection beyond the physical, this was an important design aspect in terms of healing. The spatial arrangement allowed for activities and comfort, but nature provided the experience. Therefore, it was essential throughout the design to develop the project so that nature could be experienced, even though the user was not physically outside. Colour and texture are two elements that connect us to nature. Texture in natural materials complements nature as it can mature with age and link us to our mortality. Soothing colours with contrasting effects can create an ambience of imagination and desires. Water, light and nature all appeal to our senses to create an emotional response in creating a meaningful relationship with our environment. The precedent studies of Parc Andre Citroen and Babylonstoren aided the designer to understand the relationship between architecture and nature.

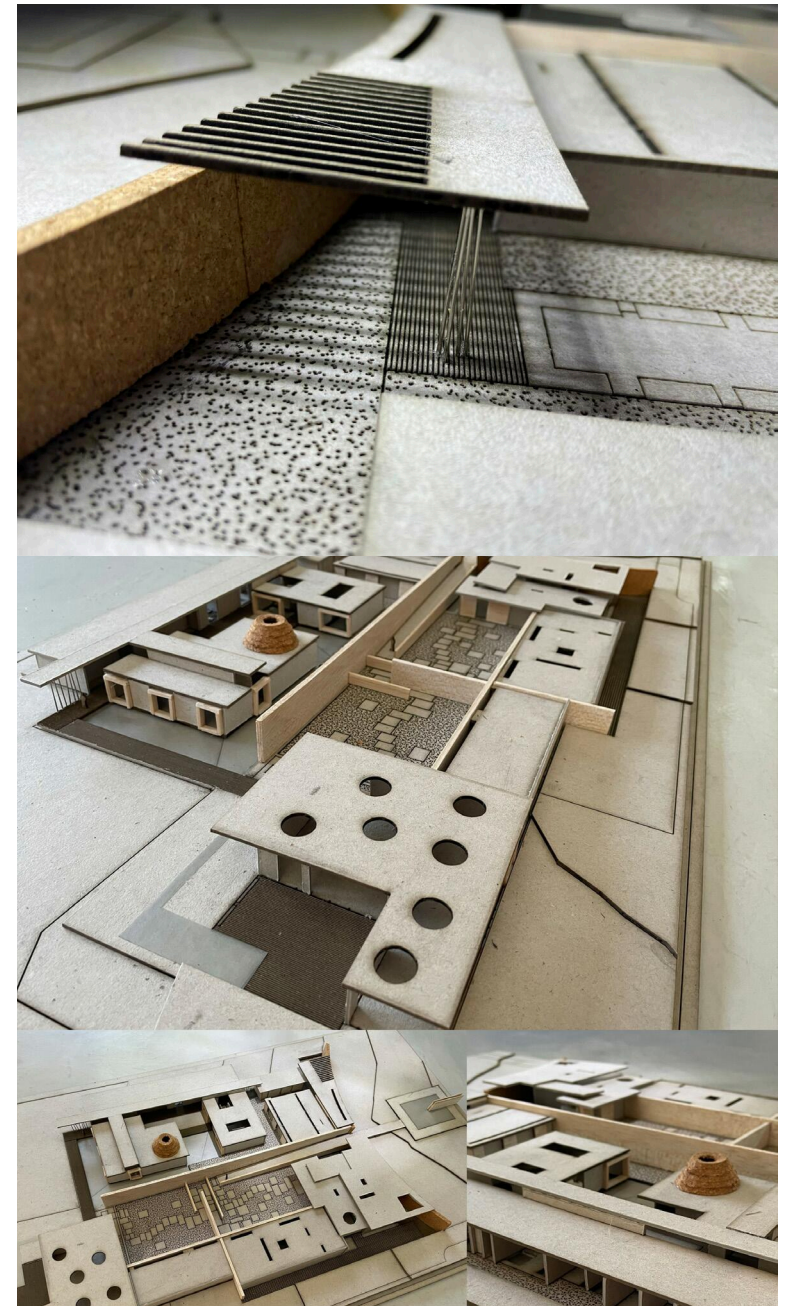


Figure 195: June development model (Author, 2022)



**WALKWAY TO RESTAURANT ENTRANCE**



**MAIN ENTRANCE WALKWAY WITH RIVER VIEW**



**RECEPTION COURTYARD**

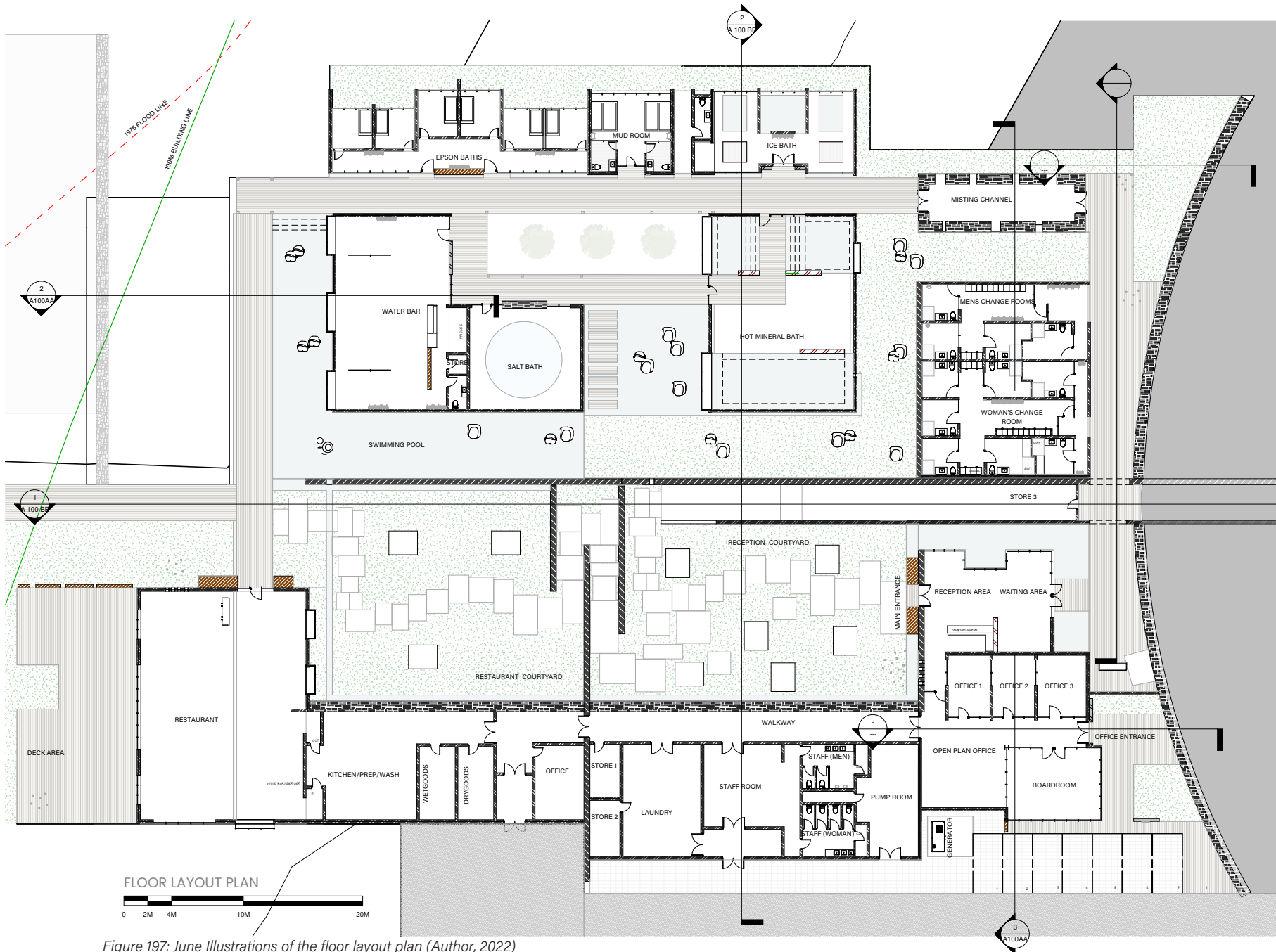


**WATER BAR INTERIOR**



**WALKWAY RAMP TO RECEPTION**

*Figure 196: June Illustrations of the buildings and surrounding views (Author, 2022)*



FLOOR LAYOUT PLAN  
 0 2M 4M 10M 20M

Figure 197: June Illustrations of the floor layout plan (Author, 2022)

Overall changes to the design and sections and improvements to the roof openings and sizes coincided with the floor plans below. The site model indicated the play of light in featured sections. In addition, 3D visualisations provided a unique look at how the building corresponds to the natural surroundings. The overall feedback on the design's plan arrangement was effective and practical in circulation and spatial development, but more attention could be invested in developing the façade designs.

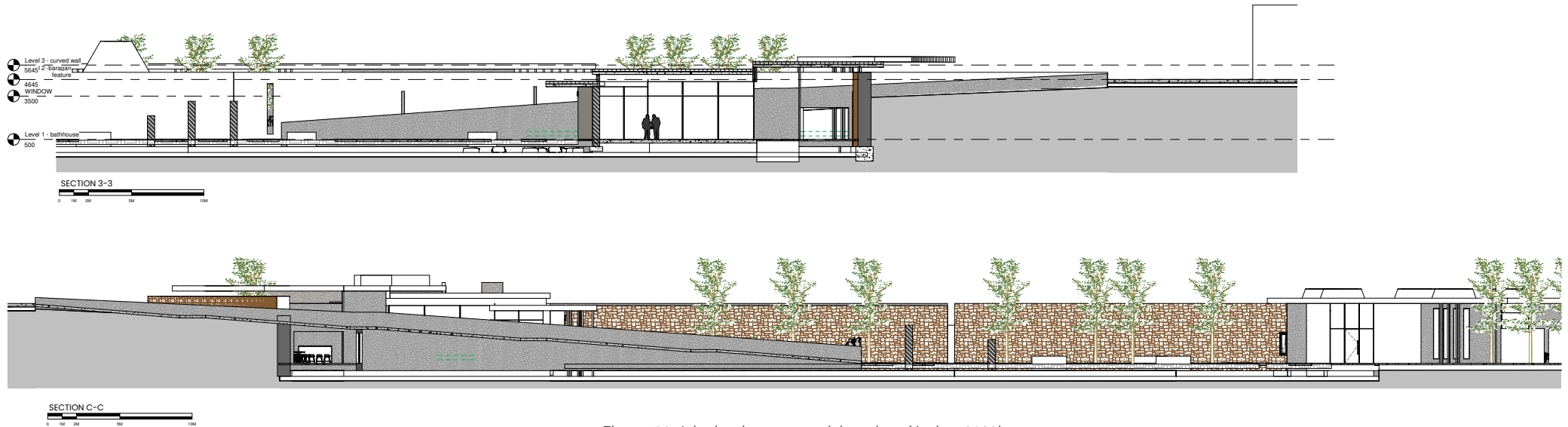


Figure 198: July development model sections (Author, 2022)

The roof forms were modified slightly in the July model, and the solid axis line with a solid wall was emphasised further by breaking the feature and transforming it into a continuous water channel. The opening improved the visitor's comprehension of the distinctive feature in the shape of a cone above the salt bath for a continual experience.

The development of the journey to reach the river continued in August, with the addition of the therapeutic gardens below the 100m building line. The focus of these gardens was to divide areas into sections to stimulate the senses. The 'precedent studies of the Parc Citroen Themed Gardens in the context of the Parc served as an inspiration to understand the significance of addressing each element of the senses in the garden layout. However, the precedent study of Babylonstoren inspired the design layout through its geometric proportions. The intended purpose of these gardens is to serve as a continuous journey of reconnecting on a physical, emotional and spiritual level. The elements of water, light and nature are addressed in these garden layouts through the senses affected by the emotional, behavioural, psychological and social healing which a garden can provide.

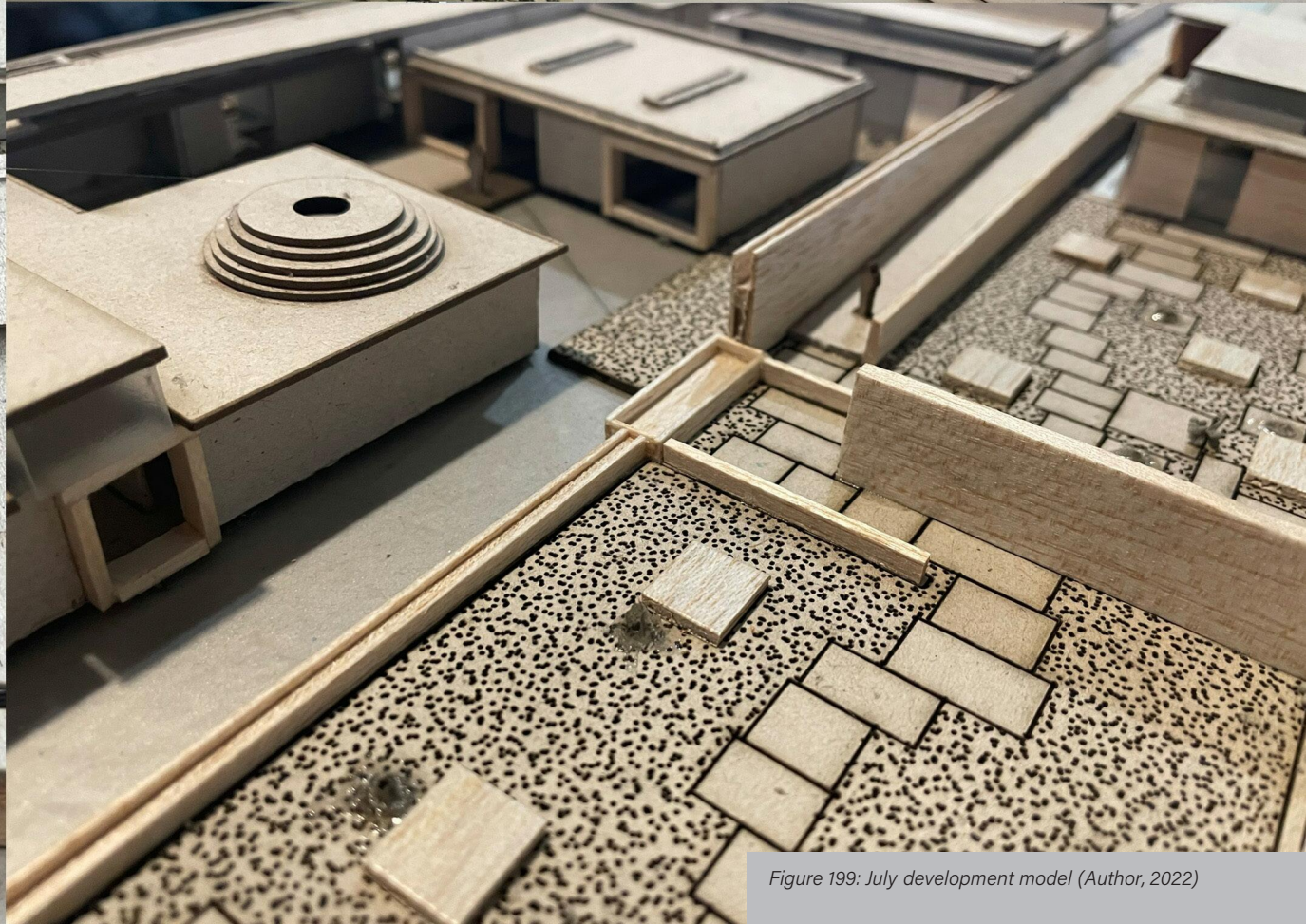
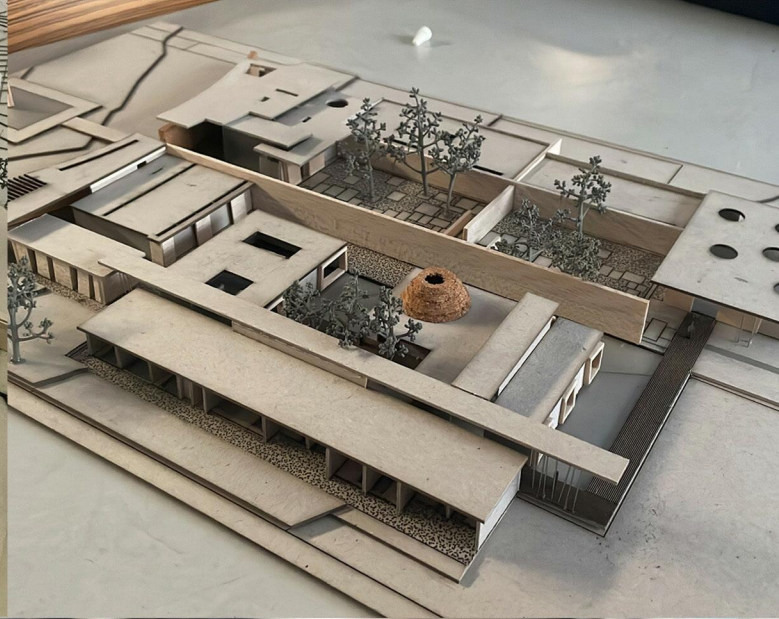


Figure 199: July development model (Author, 2022)

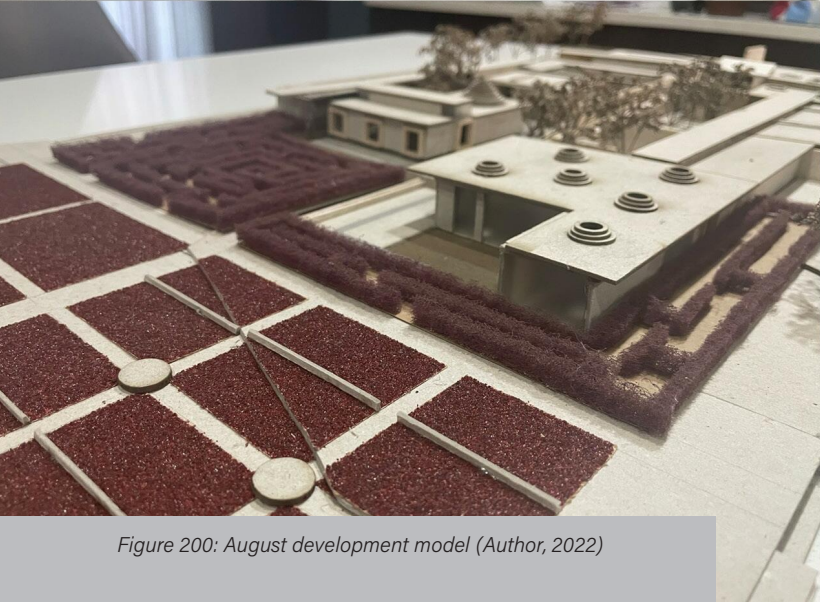
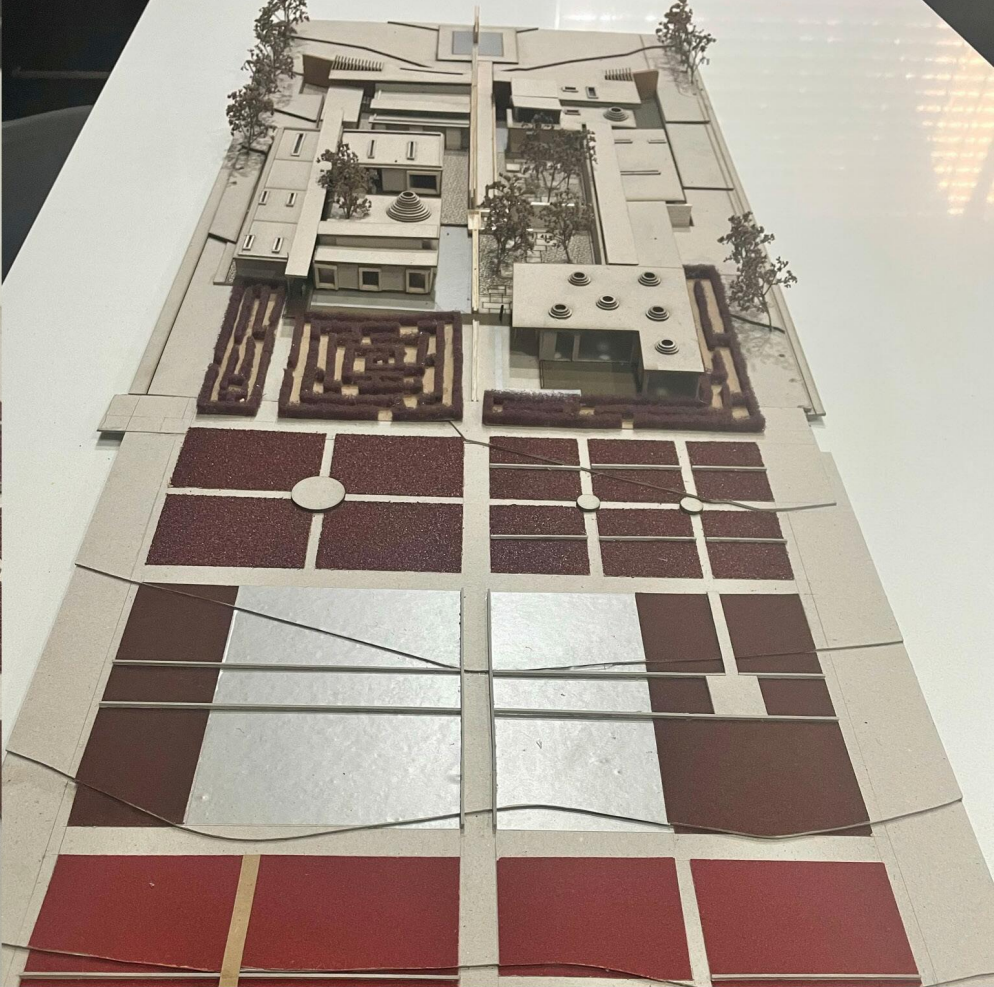


Figure 200: August development model (Author, 2022)

The following block diagrams present an analysis of the building.

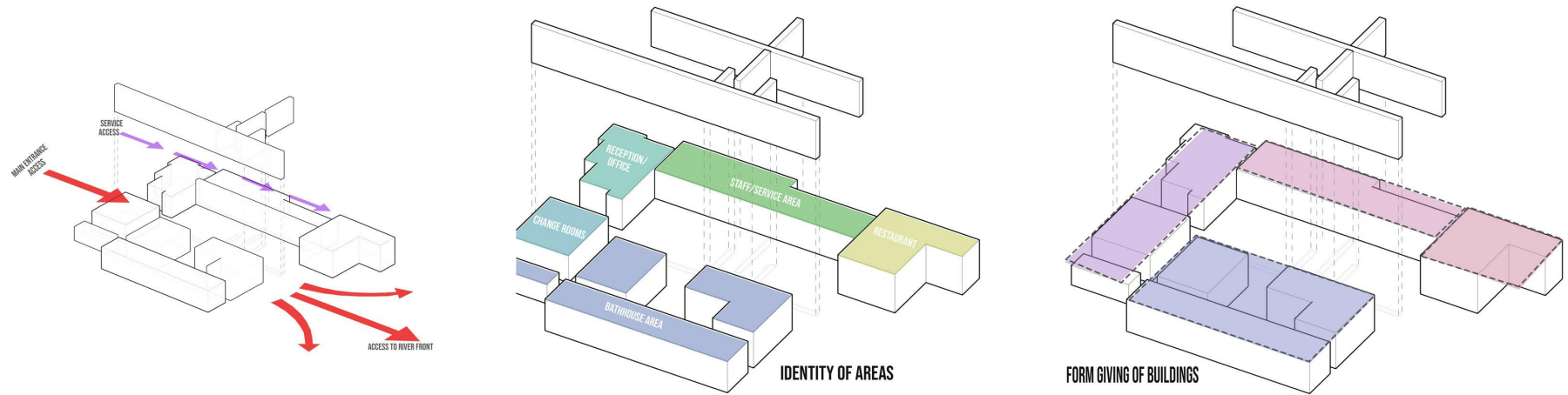


Figure 201: Circulation, identity of areas, form-giving (Author, 2022)

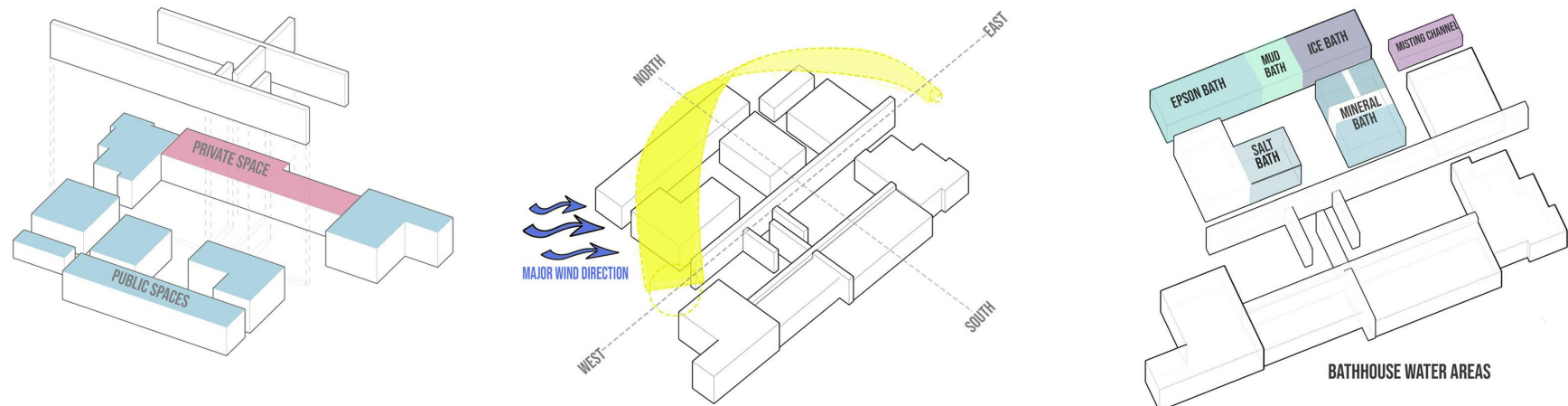
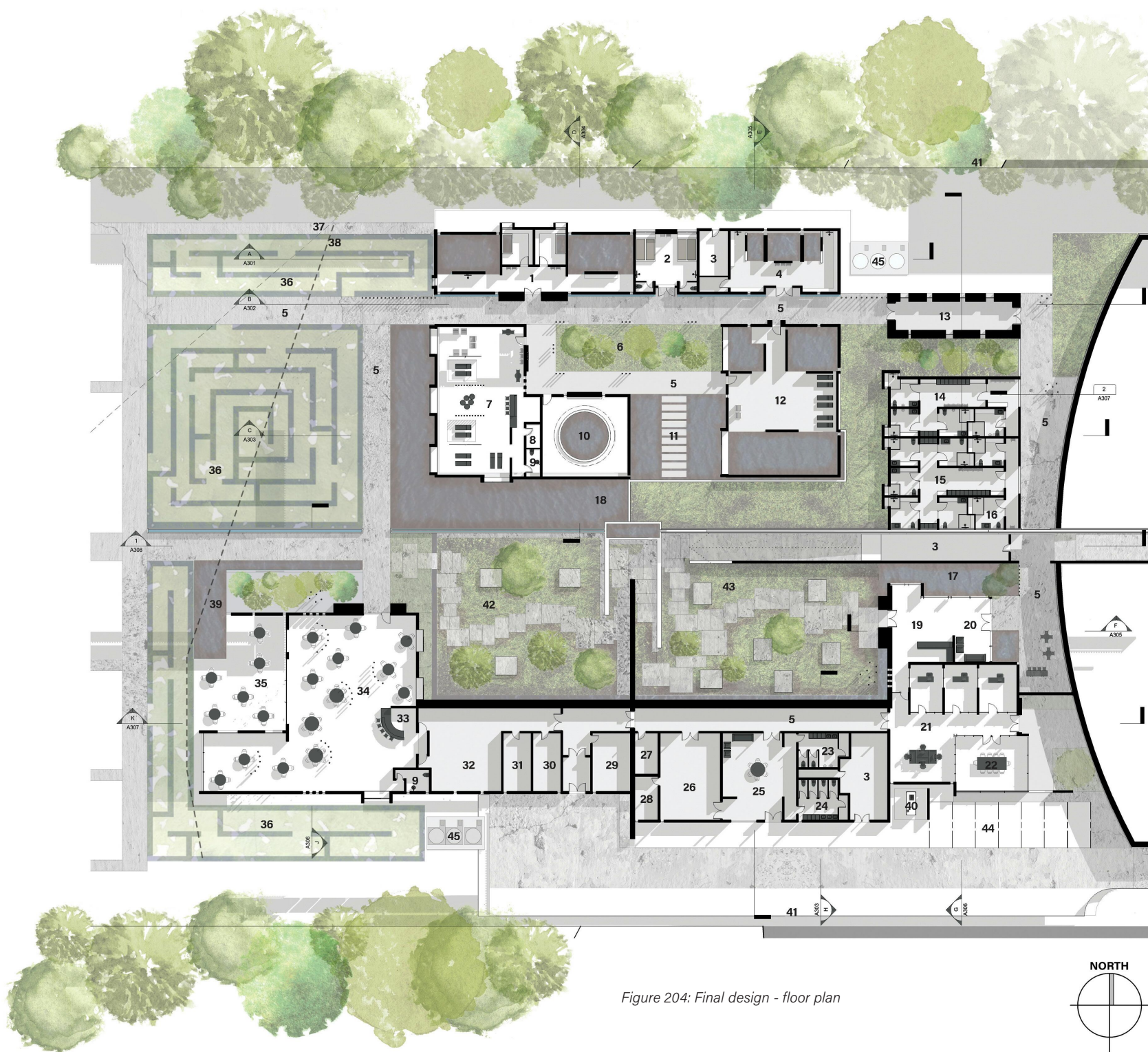


Figure 202: Public vs private, sunpath and wind, bathhouse area (Author, 2022)

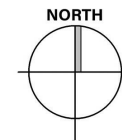


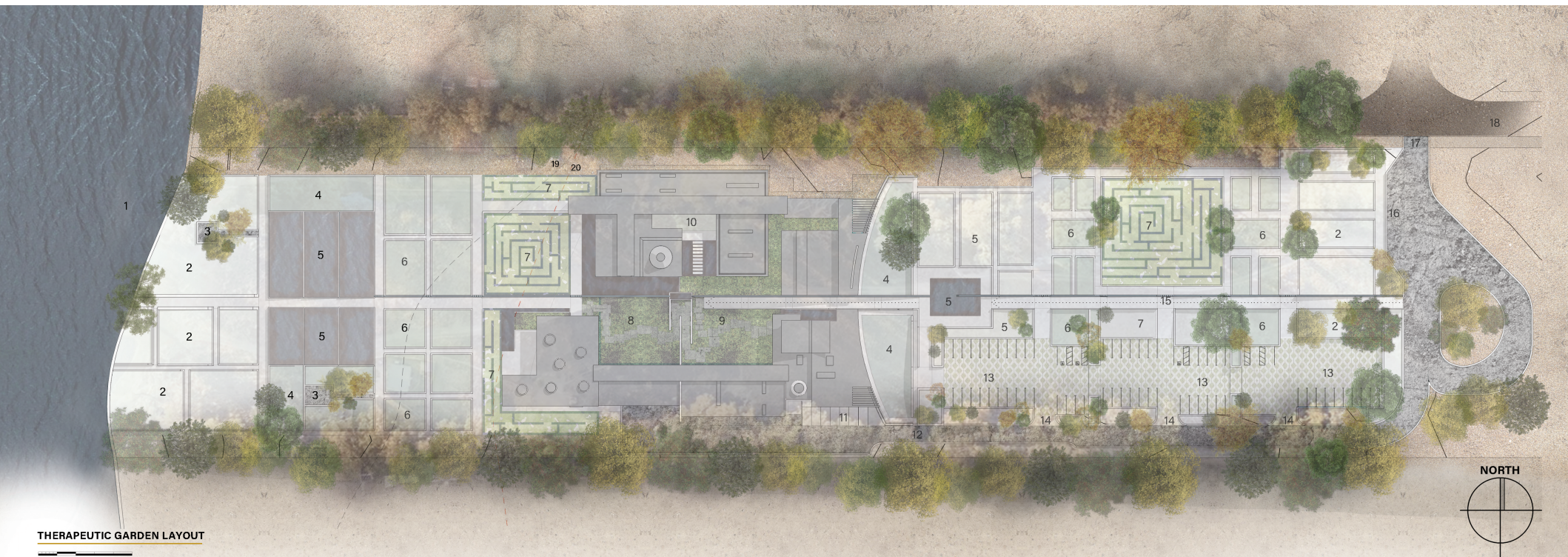
Figure 203: Final design - context plan of Everett on Vaal



- 1 - EPSOM BATH
- 2 - MUD BATH
- 3 - PUMP ROOM
- 4 - ICE BATH
- 5 - WALKWAY
- 6 - BATHHOUSE COURTYARD
- 7 - WATER BAR
- 8 - STORE
- 9 - WC
- 10 - SALT BATH
- 11 - STEPPING STONE POND
- 12 - MINERAL BATH
- 13 - MISTING CHANNEL
- 14 - MEN'S CHANGE ROOMS
- 15 - WOMAN'S CHANGE ROOMS
- 16 - BATHROOM FOR PARAPLEGIC
- 17 - WATER POND
- 18 - SWIMMING POOL
- 19 - RECEPTION
- 20 - WAITING AREA
- 21 - OFFICES
- 22 - BOARDROOM
- 23 - MENS'S STAFF BATHROOM
- 24 - WOMAN'S STAFF BATHROOM
- 25 - STAFF ROOM
- 26 - LAUNDRY
- 27 - CLEANER STORE
- 28 - STORE
- 29 - KITCHEN OFFICE
- 30 - WET GOODS STORE
- 31 - DRY GOODS STORE
- 32 - MAIN KITCHEN
- 33 - WINE BAR
- 34 - RESTAURANT
- 35 - RESTAURANT PATIO AREA
- 36 - TACTILE GARDEN
- 37 - 1975 FLOOD LINE
- 38 - 100M BUILDING LINE
- 39 - KOI POND
- 40 - GENERATOR
- 41 - SITE BOUNDARY
- 42 - RESTAURANT COURTYARD
- 43 - RECEPTION COURTYARD
- 44 - STAFF PARKING
- 45 - RAIN WATER TANKS

Figure 204: Final design - floor plan

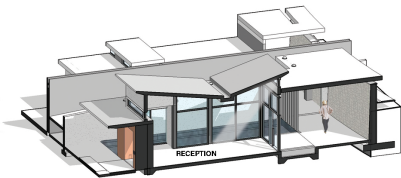




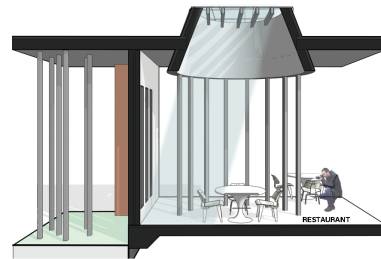
**THERAPEUTIC GARDEN LAYOUT**

*Figure 205: Final design - therapeutic garden layout*

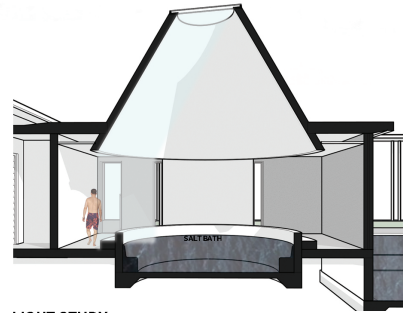
- |                                   |                                      |
|-----------------------------------|--------------------------------------|
| 1 - VAAL RIVIER                   | 11 - STAFF PARKING                   |
| 2 - VISUAL SENSE GARDEN           | 12 - DELIVERY ROAD                   |
| 3 - PAVILLION MEDITATIVE SPACE    | 13 - PUBLIC PARKING                  |
| 4 - OLFATORY SENSE (SMELL) GARDEN | 14 - PUBLIC PARKING ENTRANCE         |
| 5 - AUDITORY SENSE GARDEN         | 15 - WATER CHANNEL AXIS NEXT TO RAMP |
| 6 - TASTE SENSE GARDEN            | 16 - BUS PARKING                     |
| 7 - TACTILE SENSE (FEEL)GARDEN    | 17 - MAIN ENTRANCE                   |
| 8 - RESTAURANT COURTYARD          | 18 - SOUTHERN ROAD                   |
| 9 - RECEPTION COURTYARD           | 19 - 1975 FLOOD LINE                 |
| 10 - BATHHOUSE COURTYARD          | 20 - 100M BUILDING LINE              |



LIGHT STUDY  
SECTION F-F



LIGHT STUDY  
SECTION J-J



LIGHT STUDY  
SECTION I-I



LIGHT STUDY  
SECTION L-L

Figure 206: light study

**WATER**

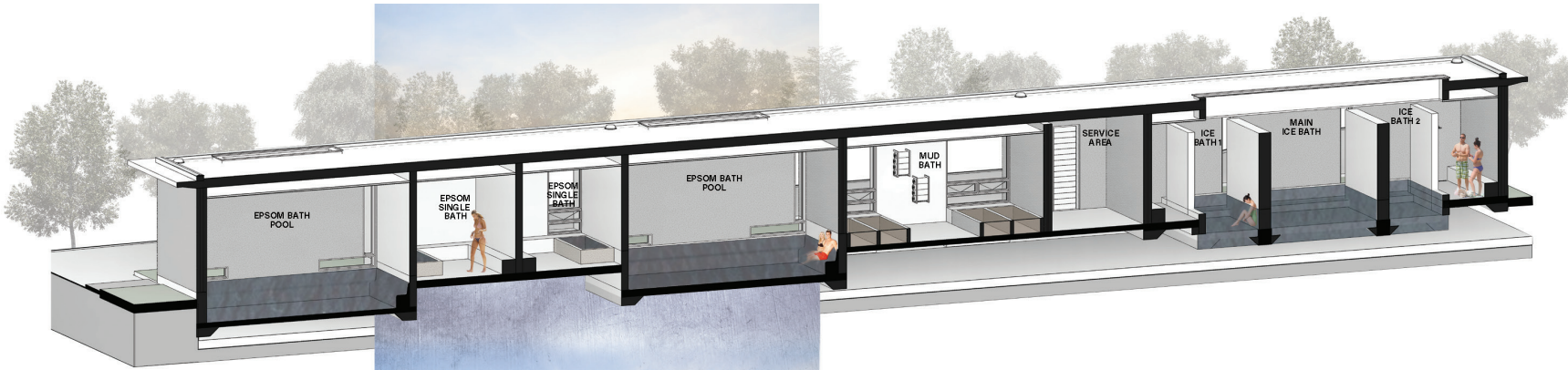
THE HUMAN CONDITION IS A TRINITY OF MENTAL, PHYSICAL, AND SPIRITUAL ELEMENTS. ON A PRIMAL LEVEL, WATER IS CONNECTED TO THE MOVEMENT, AND WATER FLOW IS EVER-CHANGING. THIS FLOW FEATURE OF THE MIND, BUT THERE IS ALSO A SPIRITUAL ASPECT OF FLOW THAT CONNECTS US TO EARTH, DESIRE, AMBIENCE AND SPACES AROUND US. WATER REPRESENTS CLEANSING, REBIRTH, AND FERTILITY; IN MOST FAITHS, IT IS AN ESSENTIAL COMPONENT OF THE HEALING RITUAL.

**LIGHT**

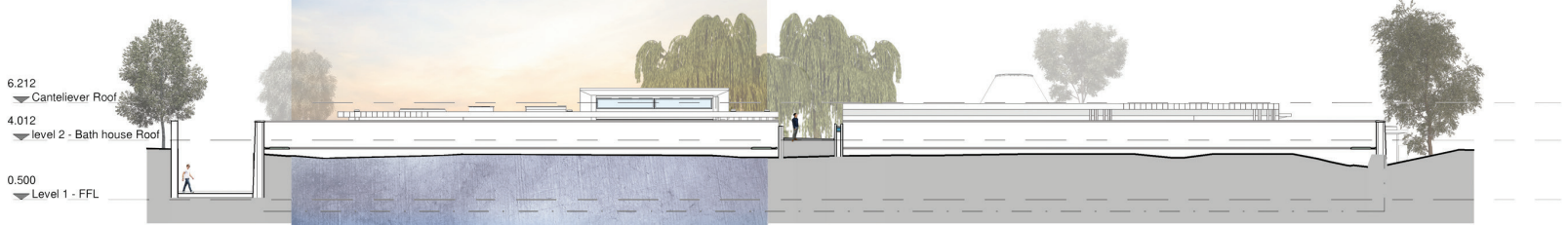
THE IMPACT OF LIGHT AND SHADOW CAN CREATE AND REFLECT MEANING IN ARCHITECTURE, ENABLING US TO PERCEIVE OUR SURROUNDINGS THROUGH OUR EMOTIONS AND ASSIGN MEANING TO THEM. IT CAN ORIENTATE A SPACE, BUT IT CAN ALSO RENDER DEPTH AND TEXTURES WITH THE PLAY OF LIGHT TO CREATE A SHADOW.

**NATURE**

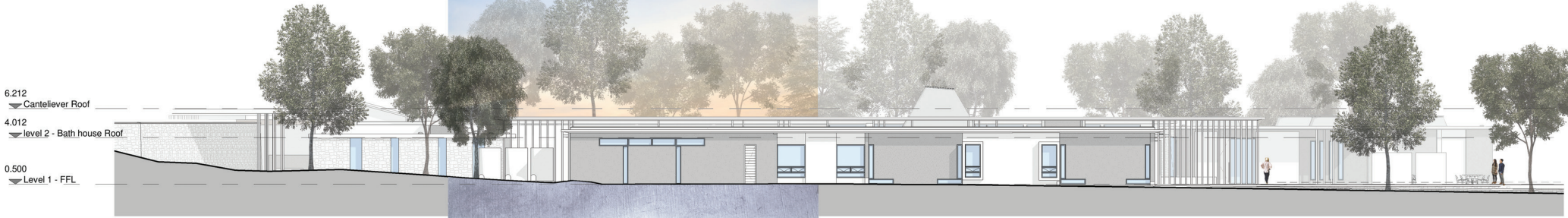
RE-ENGAGE A DIALOGUE BETWEEN MAN AND THE ENVIRONMENT THROUGH THE SENSES. THE INFLUENCE ON PEOPLE AND DESIGN SHOULD PRIORITISE THIS WITH METICULOUS DETAIL TO ALLOW A CONNECTION THAT EXTENDS BEYOND THE PHYSICAL. THE ARCHITECTURAL OBJECT NEEDS TO COMPLEMENT THE EMOTIONAL RESPONSES OF WATER AND LIGHT TO STRENGTHEN THE RECONNECTION OF MENTAL HEALTH IN A THERAPEUTIC ENVIRONMENT.



**SECTION A : A**



**EAST ELEVATION**



**NORTH ELEVATION**

*Figure 207: Final design - elevations*



Figure 208: Final design - elevations



EXPLODED AXONOMETRIC VIEW OF BATHS

Figure 209: axonometric view of baths



Figure 210 - Illustration of proposed entrance walkway ramp to water feature and main entrance



Figure 211: Parking to walkway with water channel axis to entrance



Figure 212: Epsom bath interior view



Figure 213: Entrance water feature and walkway



Figure 214: View from river to facility over therapeutic gardens



Figure 215: Ramp down to reception courtyard



Figure 216: Detail of water feature at entrance



Figure 217: Axis view to river at reception courtyard

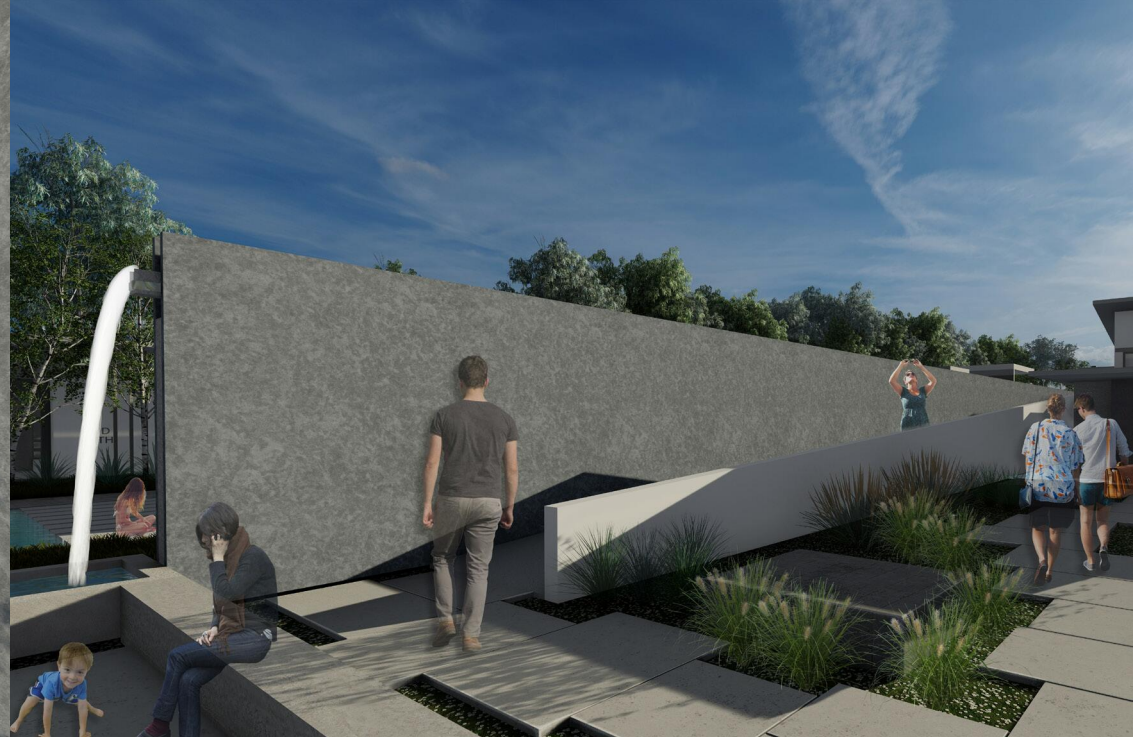


Figure 218: Water channel at reception courtyard



Figure 219: Cantilever roof over walkway at change rooms

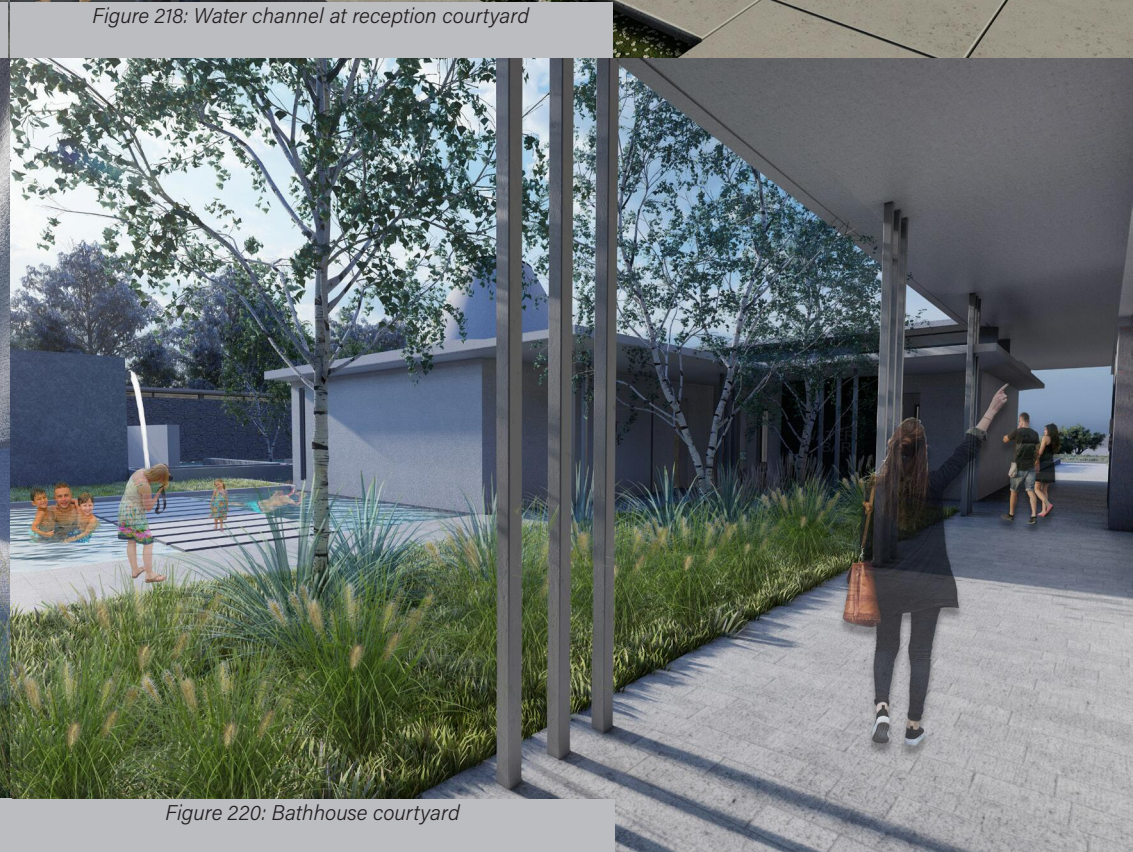


Figure 220: Bathhouse courtyard

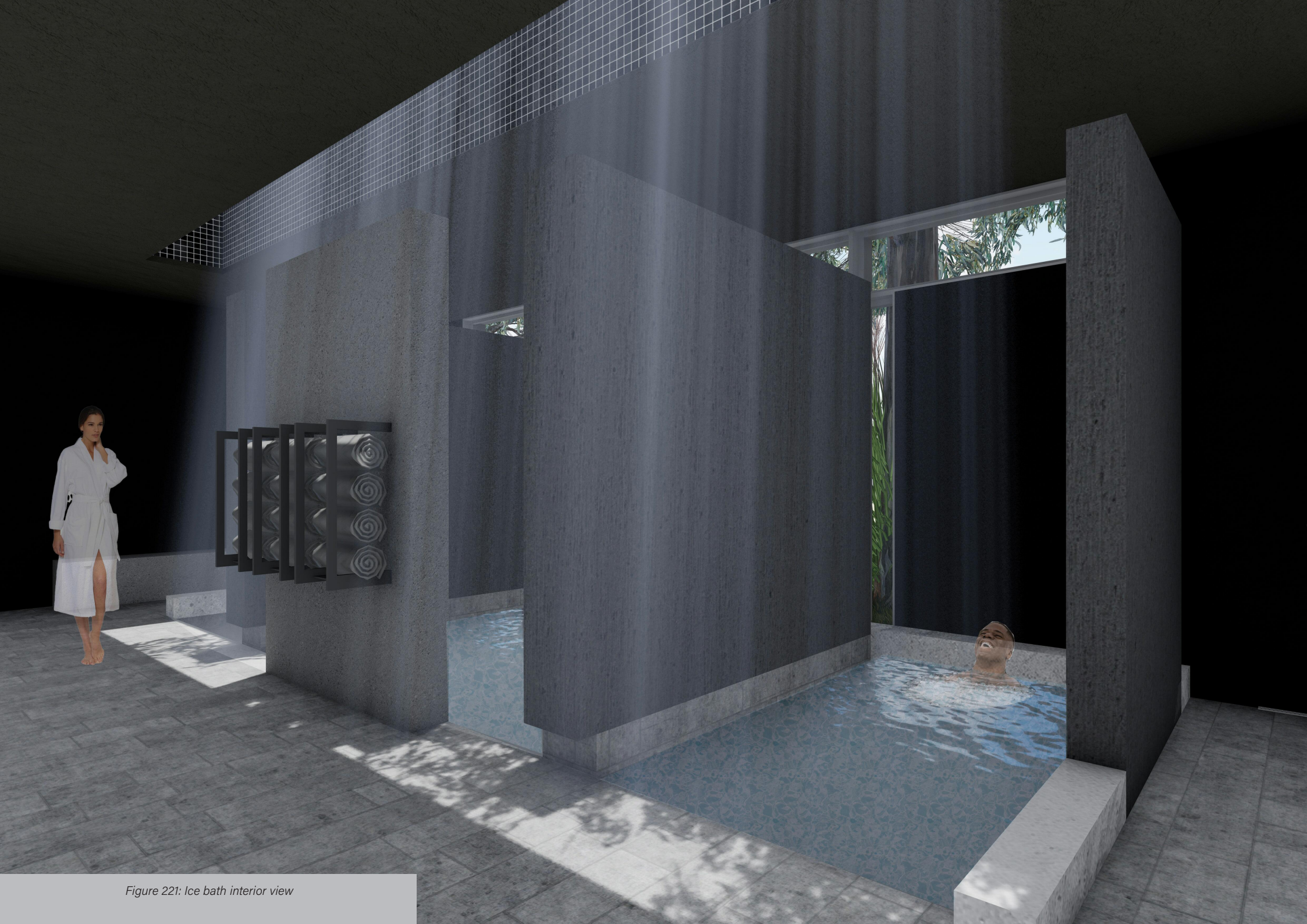


Figure 221: Ice bath interior view



Figure 222: Salt bath interior view



Figure 223: Restaurant courtyard

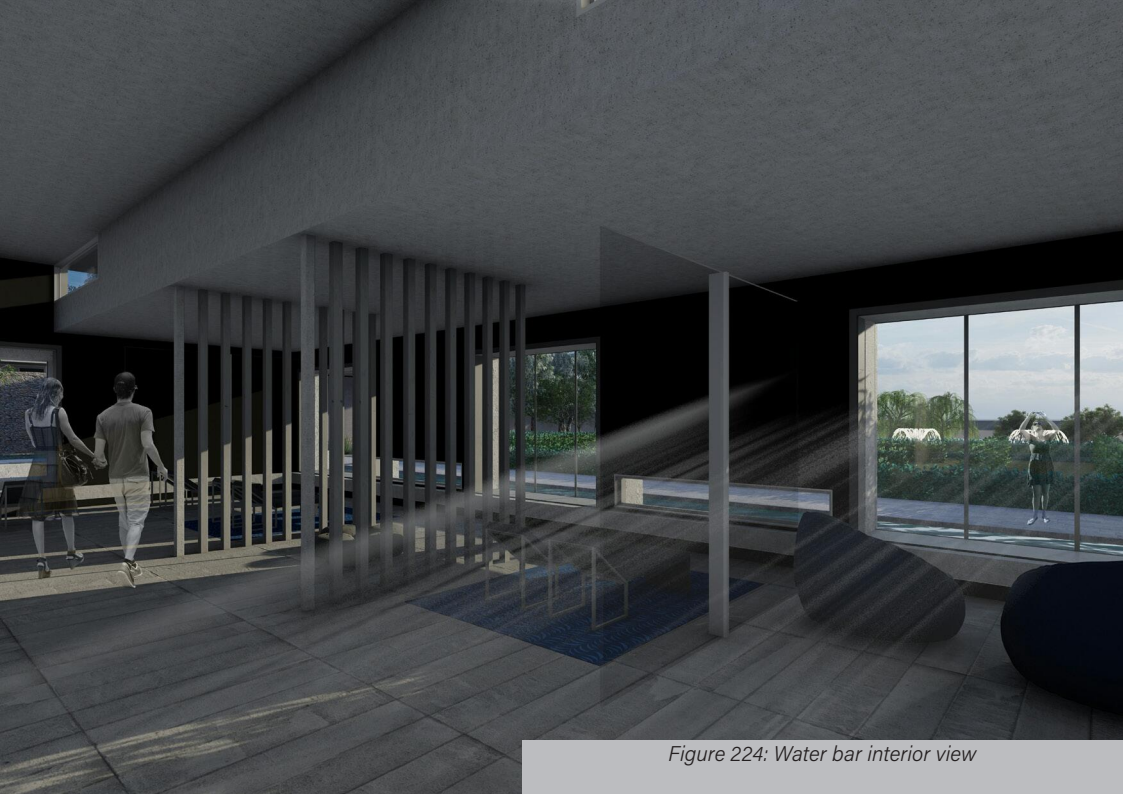


Figure 224: Water bar interior view



Figure 225: Walkway to restaurant courtyard



Figure 226: Model of final design



Figure 227: Models of final design



# 061

## TECHNICAL SYNTHESIS

### 6.1 TECHNICAL REPORT

- 6.1.1 INTRODUCTION
- 6.1.2 STRUCTURAL TOUCHSTONE
- 6.1.3 SITE CONDITIONS AND CHALLENGES
- 6.1.4 DESIGN AND TECHNICAL SOLUTIONS
- 6.1.5 CIRCULATION
- 6.1.6 STRUCTURAL OVERVIEW

### 6.2 SERVICES

- 6.2.1 WATER CAPACITY
- 6.2.2 PUMP SYSTEM REQUIREMENTS
- 6.2.3 BASIC WATER TREATMENT
- 6.2.4 WASTEWATER TREATMENT (SEWER)
- 6.2.5 SOLAR

### 6.3 TECHNICAL DRAWINGS

## 06 ] [ TECHNICAL SYNTHESIS

### 6.1 TECHNICAL REPORT

#### 6.1.1 INTRODUCTION

The concept of this thesis is to reconnect man and nature. In reconnection, healing can take place. A building's primary function is to provide shelter and integration within a context. Architecture provides space and time to the human context and connects us back to nature.

The analysis will investigate how the primary construction method and language were implemented and inspired by healing through water, light and nature. In addition, it will showcase how this concept is carried through to the technical investigation.

This will be implemented from the foundations to structural columns and the roof structure. The exterior wall will be masonry and plaster cavity walls. The curved wall will have a concrete base with rock cladding sides. Supporting steel elements of 100x10x4mm square tubes will form the supporting columns in walkway areas. Further details will be discussed in the structural overview.

#### 6.1.2 STRUCTURAL TOUCHSTONE

This structural touchstone represented the primary materials of concrete, steel, and brick as a reconnection with nature. Water is required for any physical construction; its metaphysical capabilities can also be exploited as a construction method through the binding of elements, making it the indispensable link between structure and nature.

The vertical and horizontal usage of concrete supports the fundamental human need for shelter, while the steel parts serve as a facilitating agent. This project focuses on healing and employs water as its primary component. In terms of the numerous "water areas" constructed, it was determined that masonry walls with concrete roofs were the most feasible option. Due to the complexity of certain concrete roofs, additional support was required. As Vanderbijlpark is the centre of steel production in South Africa, it was necessary to include this as a structural element.

Over the course of development, the final technical design evolved, but the structural touchstone inspired the concept for this final design.



Figure 228: Structural touchstone model

### 6.1.3 SITE CONDITIONS AND CHALLENGES

This area is known for its soil quality, which is similar to clay. A raft foundation structure will therefore be provided with a 500mm deep dump rock bed base below the compacted hardcore filling. The water table is estimated to be four meters below the finished floor level of the structure. The site slopes naturally over a distance of 1,070 kilometres from east to west toward the river. A gentle gradient of 2.3% creates contour intervals of 25m over this area. The site's highest point is east at +/-1446.50m above sea level. The site's lowest point is +/-1421.50m above sea level to the west. The size of the property is 85 608m<sup>2</sup> (8.56 hectares). The annual rainfall was taken as 700mm annually, seeing that the area falls between the 600mm to 800mm rainfall zone on the national rainfall map.

### 6.1.4 DESIGN/TECHNICAL SOLUTION

The design aims to create a journey towards healing. The inherent nature of the site is of a sanctuary with its surrounding treeline as a natural barrier of nature. As an extension of nature, therapeutic gardens, together with the architecture, will serve as a sensorial approach to create a meaningful relationship for the user in his environment. The spatial organisation is divided into three zones. A first zone is for arrival and introduction, with sections of the therapeutic garden connected by a stepping water channel that serves as an axis towards entry to the facility. The second zone is the architectural facility built mainly out of concrete as a practical solution as adequate waterproofing additives can be used in conjunction with concrete. The third section is below the 100m building line, with the remainder of the therapeutic gardens towards the river as a final destination of reconnection.

### 6.1.5 CIRCULATION

The proposed site for the Healing and Wellness Sanctuary with its bathhouse and restaurant is accessible by car and parking approximately 20m away from the entrance. Seventy parking bays will be provided, as per the calculations below. In addition, there will be four disabled parking bays. From the parking area, users will access the facility on foot via a long ramp leading into the facility. A water feature and sensory therapeutic garden will aid in different circulation routes for exploration of the facility. A separate road for deliveries and additional parking for office staff personnel will be provided next to the offices.

Parking requirements as per zoning information:

Bath area 1 (Epsom, mud and ice baths) – 292m<sup>2</sup>

Bath area 2 (mineral baths) – 208 m<sup>2</sup>

Bath area 3 (water bar and salt bath) – 264 m<sup>2</sup>

Misting channel – 69 m<sup>2</sup>

Change rooms – 2.36 m<sup>2</sup>

Total = 1066 m<sup>2</sup>/100/4.2 = 45 parking

(Requirement: 4.2 parking per 100 m<sup>2</sup>)

Restaurant – 225m<sup>2</sup>

Restaurant service area – 282 m<sup>2</sup>

Total = 507 m<sup>2</sup>/100/1.8 = 9 parking

(Requirement: 1.8 parking per 100 m<sup>2</sup>)

Offices – 294 m<sup>2</sup>

Staff area – 340m<sup>2</sup>

Total = 634 m<sup>2</sup>/100/3 = 16 parking

(Requirement: 2.5 parking per 100 m<sup>2</sup>)

Total parking required: 70 bays

### 6.1.6 STRUCTURAL OVERVIEW

The building envelope serves the purpose of separating the internal and external environment, and inherently provides an enclosed space with habitable weatherproof and thermally insulated spaces. The walls, roofs and floors will carry out the functions of the structural actions, such as loads and spans. The study of Therme Vals by Peter Zumthor inspired the structure's practical composition, while maintaining the integrity of quality and materials available in the region of Vanderbijlpark.

Site-formed concrete is the dominant construction method in this project. Raft foundation details were also designed to be support bases for the submerged pools. Bearing in mind the soil's clay conditions, a dump rock bed will add extra stability. Walls will be mainly masonry construction with plaster. The concrete roof varies in thickness due to the clear spans of the areas. At the floating concrete roof over the office and change room walkways, a beam strip inside the slab will aid in achieving a clear span. As extra supports on walkways, 100x100x4mm square tubes will be utilised. There are two main types of cones, and the largest is above the salt bath. Specified reinforcement and angle iron on top of the cone create a distinct shadow line between the cone and the glass. The restaurant area has smaller cones, with 100x100x4mm square tubes as support, with similar detailing. All the concrete roofs have a detailed tapered edge to create uniqueness for the benefit of sensorial perceptions.



# 06 ] TECHNICAL SYNTHESIS

## 6.2 SERVICES

### 6.2.2 Pump system requirements



Figure 229: Pump and sand bag filters (Author, 2022)



Figure 230: Kio pond system (Author, 2022)



Figure 231: Heat pumps (Author, 2022)



Figure 232: mud pump HSD2.55S Tsurumi

### SYSTEM 1 (SWIMMING POOL)

**Location: Below the walkway ramp**

- 2x 2.2kw DAB pump [540mm(L) x 250mm(W) x 300mm(H)] each
- 4x sand filter – fits 5 bags of sand [950mm (diameter) x 750mm (H)] each
- 4x 17kw storm heat pump [1200mm(L) x 500mm(W) x 850mm(H)] each

### SYSTEM 2 (KOI POND AT RESTAURANT)

**Location: next to the restaurant**

- 2x 1.5kw DAB pump [540mm(L) x 250mm(W) x 300mm(H)]
- 2x sand filter – fits 5 bags of sand x [950mm (diameter) x 750mm (H)]
- 1x 50lt Bio filter [1260mm(H) x 460mm (diameter)]
- 1x 25lt Bio filter [670mm(H) x 460mm (diameter)]
- 1x 30Watt UV light [1000mm x 180mm(H)]

### SYSTEM 3 (POND AT RECEPTION AND CHANNEL)

**Location: Service room next to Staff change rooms**

- 2x 1.5kw DAB pump [540mm(L) x 250mm(W) x 300mm(H)] each
- 1x sand filter – fits 5 bags of sand x [950mm (diameter) x 750mm (H)]

### SYSTEM 4 (STEPPING STONE POND)

**Location: Below the walkway ramp**

- 1x 1.5kw DAB pump [540mm(L) x 250mm(W) x 300mm(H)]
- 1x sand filter – fits 5 bags of sand x [950mm (diameter) x 750mm (H)]

### SYSTEM 5 (BARRAGAN WATER FEATURE)

**Location: Below the walkway ramp**

- 1x 3kw DAB pump [760mm(L) x 560mm(W) x 800mm(H)]
- 1x 1.5kw DAB pump [540mm(L) x 250mm(W) x 300mm(H)]
- 1x sand filter – fits 5 bags of sand x [950mm (diameter) x 750mm (H)]

### SYSTEM 6 (MINERAL BATHS 1, 2 & 3)

**Location: Pump room between Mud bath and Ice bath**

- 1x 3kw DAB pump [760mm(L) x 560mm(W) x 800mm(H)]
- 2x sand filter – fits 5 bags of sand x [950mm (diameter) x 750mm (H)]
- 1x 17kw storm heat pump [1200mm(L) x 500mm(W) x 850mm(H)]

### SYSTEM 7 (EPSOM BATHS 1 & 2)

**Location: Pump room between Mud bath and Ice bath**

- 1x 1.5kw DAB pump [540mm(L) x 250mm(W) x 300mm(H)]
- 1x sand filter – fits 5 bags of sand x [950mm (diameter) x 750mm (H)]
- 1x 17kw storm heat pump [1200mm(L) x 500mm(W) x 850mm(H)]

### SYSTEM 8 (SALT BATH)

**Location: Pump room between Mud bath and Ice bath**

- 1x 0.75kw DAB pump [500mm(L) x 250mm(W) x 300mm(H)]
- 1x sand filter – fits 2 bags of sand x [800mm (diameter) x 500mm (H)]
- 1x 12kw storm heat pump [1200mm(L) x 500mm(W) x 850mm(H)]

### SYSTEM 9 (MUD BATH)

**Location: under section build at mudbaths)**

- 1x hsd2.55s mud pump 0.55kw [186mm(l) x 162mm(w) x 391mm(h)]

### SYSTEM 10 (TERRACE FEATURE)

**Location: site boundary at the corner of the river edge**

- 1x 2.2kw DAB pump [540mm(L) x 250mm(W) x 300mm(H)]
- 1x 8-bag sand filter [1050mm(H) x 800mm (diameter)]

## 06 ] [ TECHNICAL SYNTHESIS

### 6.2 SERVICES

#### 6.2.3 Basic water treatment

The river water plant will be designed and treated by Aquamat Water Solutions. They specialise in rainwater, grey water and water recycling system. The following is an illustration illustrating a basic river treatment plant system.

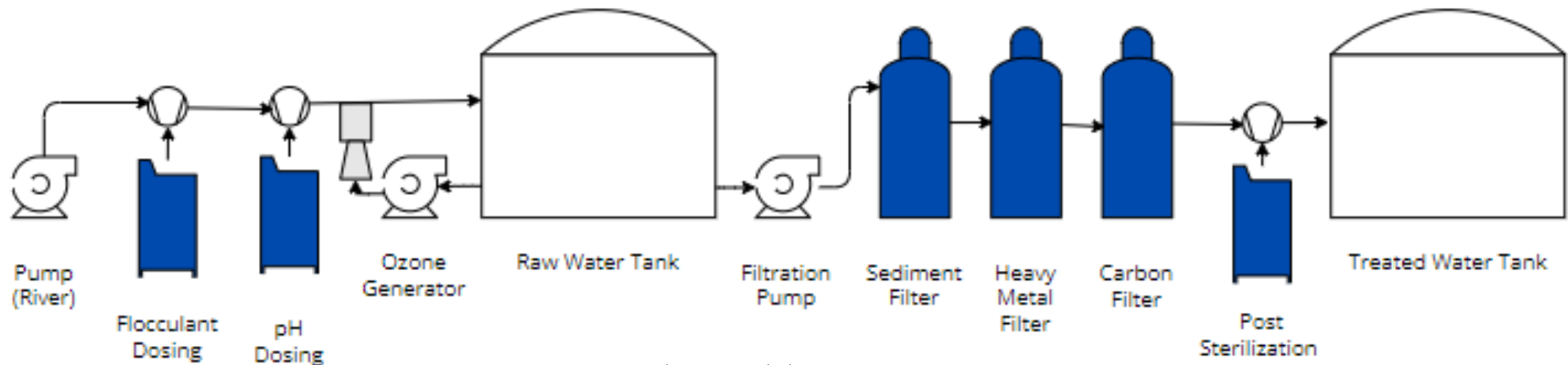


Figure 233: Basic river treatment system

**Basic river water treatment system:** River water is dosed with 'Floculant' to settle and remove Tannins. After that, the water is dosed to increase the pH level. To remove heavy metals, the water needs to be at a higher pH level, usually around 8 – 8.5. The water is then dosed with ozone to sterilise the water and oxidize the heavy metals. Water is stored in the raw water tank, as this increases the contact time of the chemicals. From the raw water tank, the water is pumped through the filters. The first filter is a sediment filter filled with activated glass media and can filter down to four microns. The second filter is a heavy metal removal filter filled with DMI65 media. The final filter is an activated carbon filter, and addresses the taste and smell of the water and clears up the colour. The water is then dosed with chlorine to sterilise the water standing in the treated water tank. From here, the water can be distributed to the buildings.

The system can deliver 500LPH. Each filter is roughly 25.4x25.4 x 145cm. The dosing tank and valve are roughly 40x40x106cm. The raw water tank can be roughly 1000L, and the treated water tank can be 3000L. The filtration and recirculation pump will roughly need to be around 75KW each. Considering the filters and pumps and adding a 20% contingency, this system will roughly use 2KW of power.

# 06 ] TECHNICAL SYNTHESIS

## 6.2 SERVICES

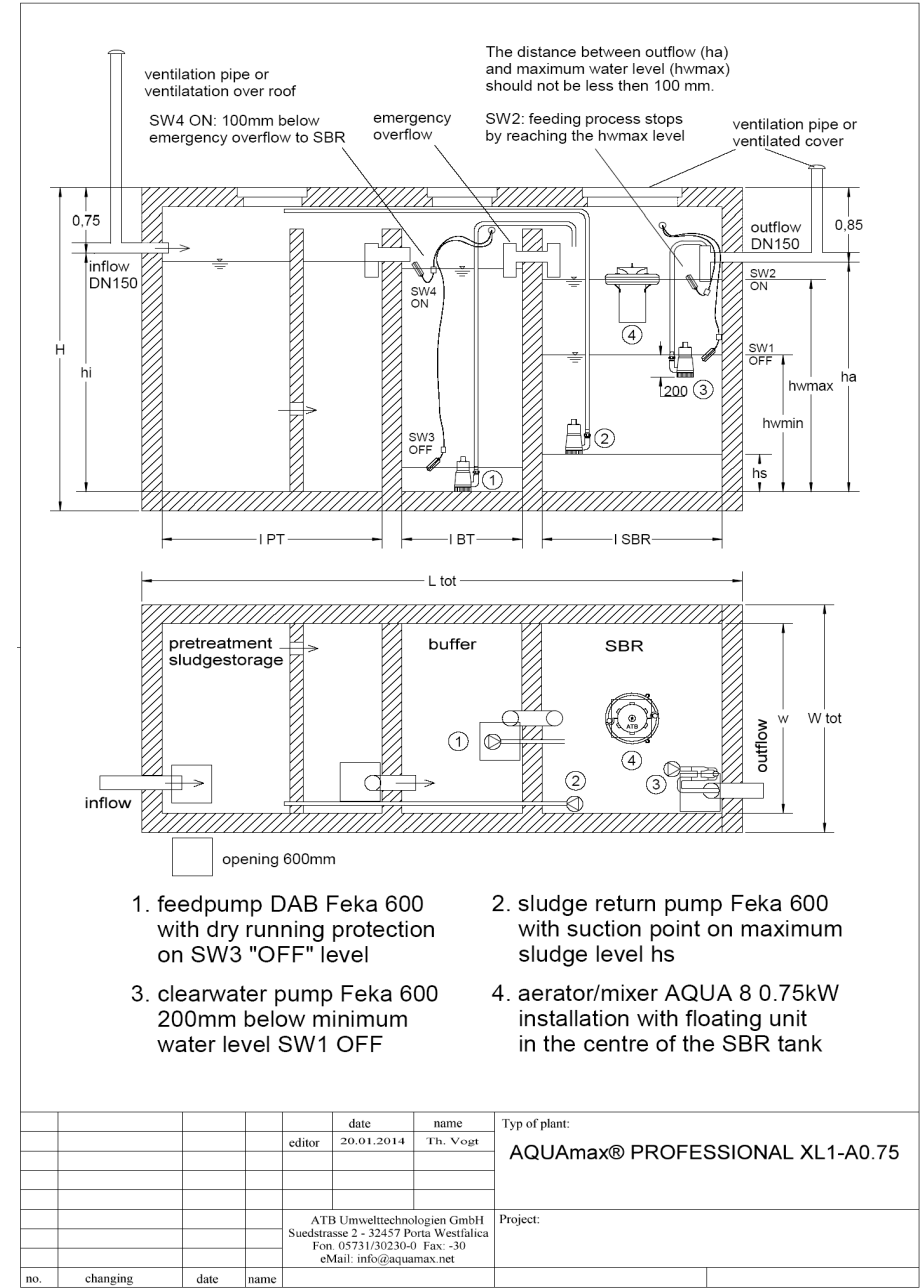
### 6.2.4 Wastewater treatment (sewer)

This design will be done in conjunction with Enviro Conscious Technologies© (ECT), which provides cost-effective, hygienic and dignified sanitation through the modular, decentralised AQUAmax® Wastewater Treatment systems.

The following specifications were received from Enviro Conscious Technologies© for the Healing and Wellness Sanctuary: AQUAmax Waste Water Treatment Plant for a max inflow of up to 7.5m<sup>2</sup> of domestic wastewater per day or up to 60 people with the supply of annual natural bacteria.

### 6.2.5 Solar energy

Solar is a reliable form of renewable energy in this case, as Vanderbijlpark has an estimated 2550 hours of sunshine per year. The estimated solar radiation per square meter is roughly 220 watts per square meter (w/m<sup>2</sup>), compared to the United States, with an average of about 150 w/m<sup>2</sup> and Europe, with 100 w/m<sup>2</sup>. It calculates solar radiation levels of between 4500 and 6500 W/m<sup>2</sup> daily. Due to a large amount of land still accessible, it is conceivable to create a sufficiently sized solar farm on the eastern portion of the property.



hi	H	IPT	IBT	ISBR	hwmax	ha	W
1.9m	2.5m	2.4m	1.75m	2.5m	1.7m	1.8m	2.5m

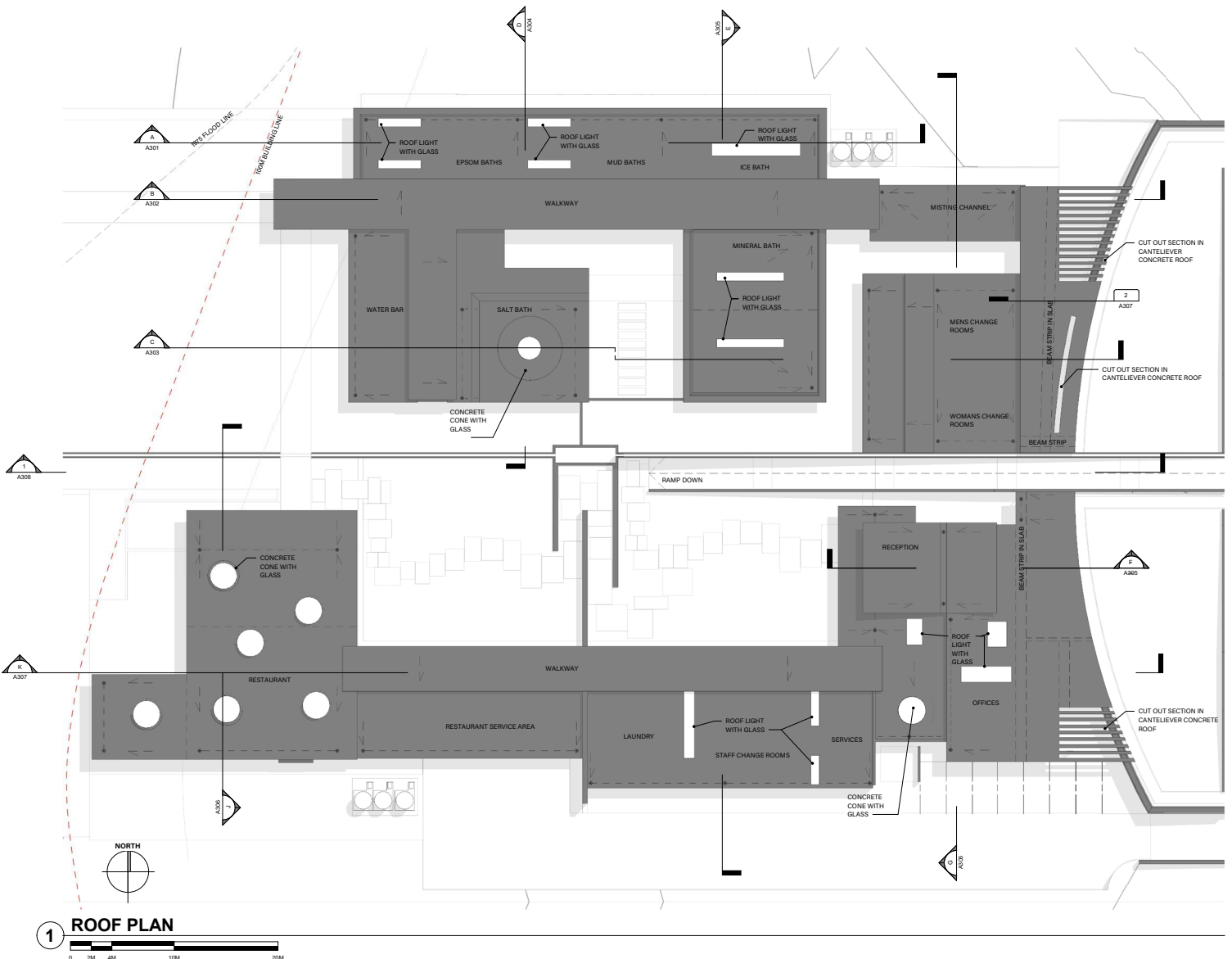
Figure 234: Wastewater treatment System

## 06 ] [ TECHNICAL SYNTHESIS

### 6.3 TECHNICAL DRAWINGS







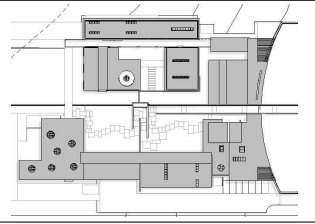
**1 ROOF PLAN**

**GENERAL NOTES:**  
 THIS DRAWING IS NOT TO BE SCALED. FIGURED DIMENSIONS TO BE USED AT ALL TIMES.  
 CONTRACTOR IS RESPONSIBLE FOR CORRECT SETTING OUT OF THE BUILDING ALL EXTERNAL AND INTERNAL WALLS WITH PARTICULAR REFERENCE TO BUILDING LINES, BOUNDARIES, ETC.  
 CONTRACTOR TO VERIFY ALL LEVELS, HEIGHTS AND DIMENSIONS ON SITE AND TO CHECK SAME AGAINST THE DRAWING BEFORE FITTING ANY WORKING HARD.  
 ALL CONTRACTORS TO CHECK DETAILS SHOWN ON THIS DRAWING FOR COMPLIANCE WITH STANDARDS OF GOOD BUILDING PRACTICE WITH PARTICULAR REFERENCE TO SPECIAL REQUIREMENTS INDICATED BY LOCAL AND ON ON SITE CONDITIONS AND REPORT ANY COMMENT TO THE ARCHITECT.  
 ANY BARRIER OBSTRUCTIONS OR DIMENSIONS TO BE REPORTED TO THE ARCHITECT IMMEDIATELY. FINAL DIMENSIONS TO BE TAKEN ON SITE BEFORE ORDERING SUPPLIES AND FITTING PROPRIETARY OR CUSTOMER FITTINGS.  
 CONTRACTORS ARE TO LOCATE AND IDENTIFY EXISTING SERVICES ON SITE AND TO PROTECT THESE FROM DAMAGE THROUGHOUT THE DURATION OF THE WORKS. CONTRACTORS ARE TO BUILD UP OF C.E. SERVICES OR NOT THESE ARE SHOWN ON DRAWING TO ALL EXTERNAL WALLS AT EACH FLOOR AND TO ALL WINDOW, DOORS OR OTHER OPENINGS IN EXTERNAL WALLS. CAVITY WALLS TO HAVE STOPPED C.P.'S.  
 CONTRACTOR TO BUILD IN BRICK WORK EVERY 8TH COURSE IN BRICK WALLS AND EVERY 4TH COURSE ABOVE WINDOWS, DOORS AND ALL OTHER OPENINGS.  
 ALL BEAMS IN CONCRETE TO BE CAST IN ACCORDANCE WITH THE LATEST EDITION OF BS 5951. ALL BEAMS MUST BE REPORTED TO THE ARCHITECT FOR CLARIFICATION BEFORE ANY BEAM IS PUT ON HAVE.  
 QUALITY OF ALL MATERIALS AND WORKMANSHIP TO COMPLY WITH THE RELEVANT S.A.B.S. AND B.S.S. SPECIFICATIONS.

**PART 06**

**ALL STRUCTURAL CONCRETE WORK TO ENGINEER'S DESIGN AND SPECIFICATION**

**DRAINAGE NOTES:**  
 ALL PLUMBING AND DRAINAGE WORK AND INSTALLATION WORK SANITARY FITTINGS TO COMPLY WITH THE RELEVANT LOCAL AUTHORITY BY LAWS, REGULATIONS AND REQUIREMENTS.  
 ALL DOWN PIPES MINIMUM FALL 1% IN MINIMUM FALL 1%.  
 ALL WASTE PIPES AND SOIL PIPES TO BE FULLY ACCESSIBLE ALONG ENTIRE LENGTH OF THE PIPE.  
 I.E. TO BE PROVIDED AT EVERY BEND, JOINT AND CHANGE IN DIRECTION AND EVERY 2M METERS WITH MARKED COVERS AT GROUND LEVEL.  
 ALL WASTE PIPE FITTINGS TO HAVE APPROVED RESAL TRAPS.  
 VENT PIPE OUTLET TO BE 150mm IN ABOVE ANY DRAINING.  
 ALL BATH ENCLOSURES TO HAVE ACCESS PANELS.  
 GALLEYS TO BE TRAPPED AND WITH SUITABLE GULLY GRATING AND TO BE 150mm ABOVE SURROUNDING LEVELS.  
 ALL DRAIN UNDER BUILDINGS OR FOOTINGS TO BE ENCASED IN 150mm CONCRETE ALL ROUND THE PIPE.  
 WASTE PIPES IN FLOORS TO BE SLEEVED AND BE FITTED WITH EASILY ACCESSIBLE C.E. ABOVE FLOOR LEVEL AND EACH END OF SLAB.  
 NO DRAIN BENDS OR JOINTS IN OR UNDER FLOOR SLAB.  
 KEEP ALL DRAINING 800mm FROM CONCRETE FOUNDATIONS.



CLIENT  
**THE GLOBAL INSTITUTE OF MENTAL WELLNESS**

DESIGNER  
**ELZETTE ESPLIN**  
 2000 00 4859

PROJECT  
**HEALING AND WELLNESS SANCTUARY**  
 TECHNICAL DRAWINGS

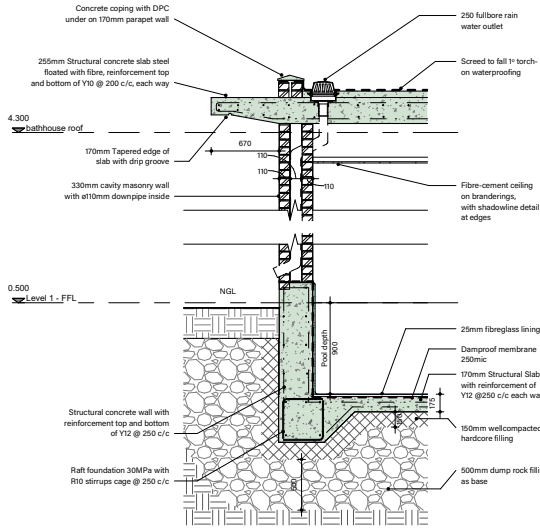
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NO	REVISION	DATE

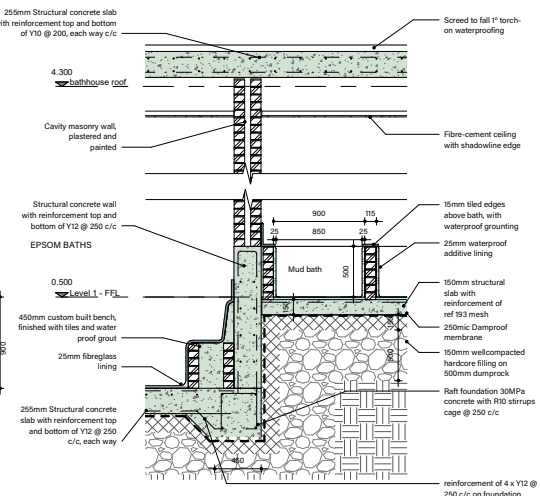
  

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PROJECT NUMBER <b>A1 - 10- 2022</b>		REVISION	
DRAWING NUMBER <b>A103</b>			

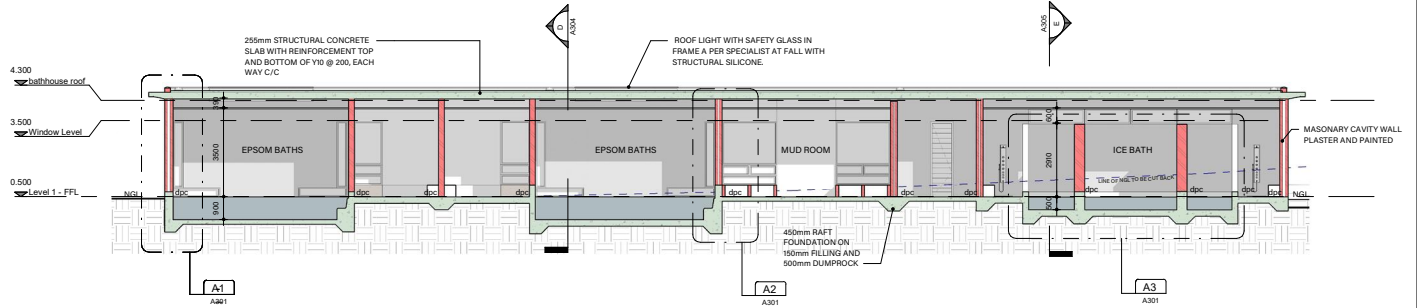




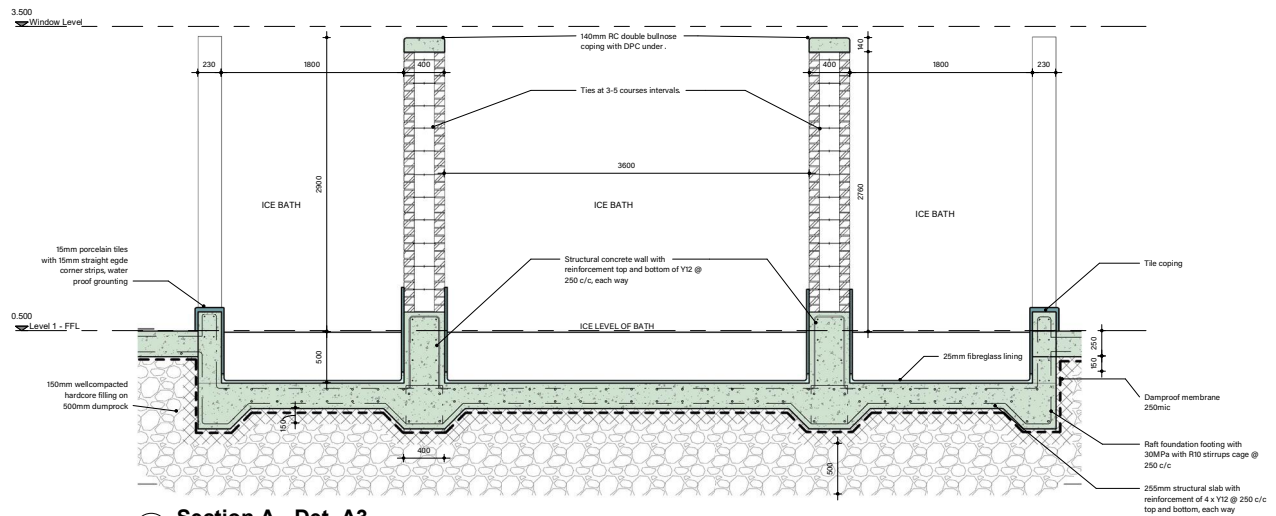
**A1 Section A - Det. A1**



**A2 Section A - Det. A2**



**A SECTION A-A**

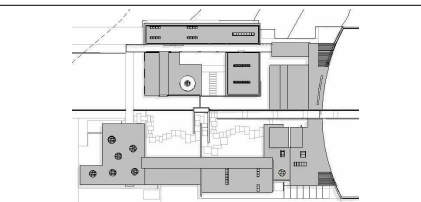
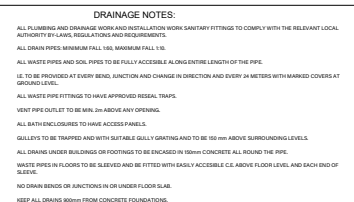


**A3 Section A - Det. A3**



**DRAINAGE NOTES:**  
 ALL FLUMBING AND DRAINAGE WORK AND INSTALLATION WORK SANITARY FITTINGS TO COMPLY WITH THE RELEVANT LOCAL AUTHORITY BY LAWS, REGULATIONS AND REQUIREMENTS.  
 ALL DOWN PIPES MINIMUM FALL 1% MINIMUM FALL 1%  
 ALL WASTE PIPES AND SOIL PIPES TO BE FULLY ACCESSIBLE ALONG THEIR LENGTH OF THE PIPE.  
 I.E. TO BE PROVIDED AT EVERY BEND, JUNCTION AND CHANGE IN DIRECTION AND EVERY 90 METERS WITH MARKED COVERS AT GROUND LEVEL.  
 ALL WASTE PIPE FITTINGS TO HAVE APPROVED RESAL TRAPS.  
 VENT PIPE OUTLET TO BE 900mm ABOVE ANY DRAINING.  
 ALL BATH ENCLOSURES TO HAVE ACCESS PANELS.  
 GALLEYS TO BE TRAPPED AND WITH SUITABLE GULLY GRATING AND TO BE 150mm ABOVE SURROUNDING LEVELS.  
 ALL DRAIN UNDER BUILDINGS OR FOOTINGS TO BE ENCASED IN 150mm CONCRETE ALL ROUND THE PIPE.  
 WASTE PIPES IN FLOORS TO BE SLEAVED AND BE FITTED WITH EASILY ACCESSIBLE C.E ABOVE FLOOR LEVEL AND EACH END OF SLAB.  
 NO DRAIN BENDS OR JUNCTIONS OR UNDER FLOOR SLAB.  
 KEEP ALL DRAINS 900mm FROM CONCRETE FOUNDATIONS.

**GENERAL NOTES:**  
 THESE DRAWINGS IS NOT TO BE SCALED. FIGURED DIMENSIONS TO BE USED AT ALL TIMES.  
 CONTRACTOR IS RESPONSIBLE FOR CORRECT SETTING OUT OF THE BUILDING ALL EXTERNAL AND INTERNAL WALLS WITH PARTICULAR REFERENCE TO BUILDINGS LINES, BOUNDARIES, ETC.  
 CONTRACTOR TO VERIFY ALL LEVELS, HEIGHTS AND DIMENSIONS ON SITE AND TO CHECK SAME AGAINST THE DRAWING BEFORE PUTTING ANY WORKING HAND.  
 ALL CONTRACTORS TO CHECK DETAILS SHOWN ON THIS DRAWINGS FOR COMPLIANCE WITH STANDARDS OF GOOD BUILDING PRACTICE WITH PARTICULAR REFERENCE TO SPECIAL REQUIREMENTS SPECIFICATED BY LOCAL AND OR ON SITE CONDITIONS AND REPORT ANY COMMENT TO THE ARCHITECT.  
 ALL DIMENSIONS TO BE TAKEN ON SITE BEFORE ORDERING, SUPPLYING AND FITTING PROPRIETARY OR CALLED FITTINGS.  
 CONTRACTORS ARE TO LOCATE AND IDENTIFY EXISTING SERVICES ON SITE AND TO PROTECT THEM FROM DAMAGE THROUGHOUT THE DURATION OF THE WORKS.  
 CONTRACTORS ARE TO BUILD IN D.C.P. INVERTS WHERE NOT THESE ARE SHOWN ON DRAWINGS TO ALL EXTERNAL WALLS AT EACH FLOOR AND TO ALL WINDOW DOORS OR OTHER OPENINGS IN EXTERNAL WALLS. CAVITY WALLS TO HAVE STEPPED D.P.C.'S.  
 CONTRACTOR TO BUILD IN BRICK FORCE EVERY 8TH COURSE IN BRICK WALLS AND EVERY 4TH COURSE ABOVE WINDOWS, DOORS AND ALL OTHER OPENINGS.  
 ALL DRAWINGS IN CONFORMANCE WITH THE LATEST EDITION. ANY QUERIES ARISING FROM ALL THE DRAWINGS MUST BE REPORTED TO THE ARCHITECT FOR CLARIFICATION BEFORE ANY WORK IS PUT ON HAND.  
 QUALITY OF ALL MATERIALS AND WORKMANSHIP TO COMPLY WITH THE RELEVANT S.A.B.S. AND B.S.S. SPECIFICATIONS.



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DRAWING NUMBER  
**ELZETTE ESPLIN  
 2000 00 4859**

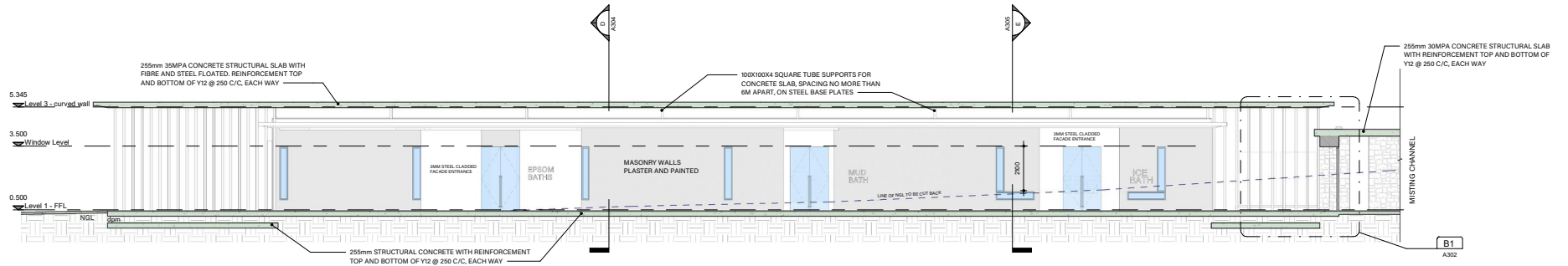
PROJECT  
**HEALING AND WELLNESS SANCTUARY**  
 TECHNICAL DRAWINGS

DRAWING  
**SECTION A-A & DETAILS**

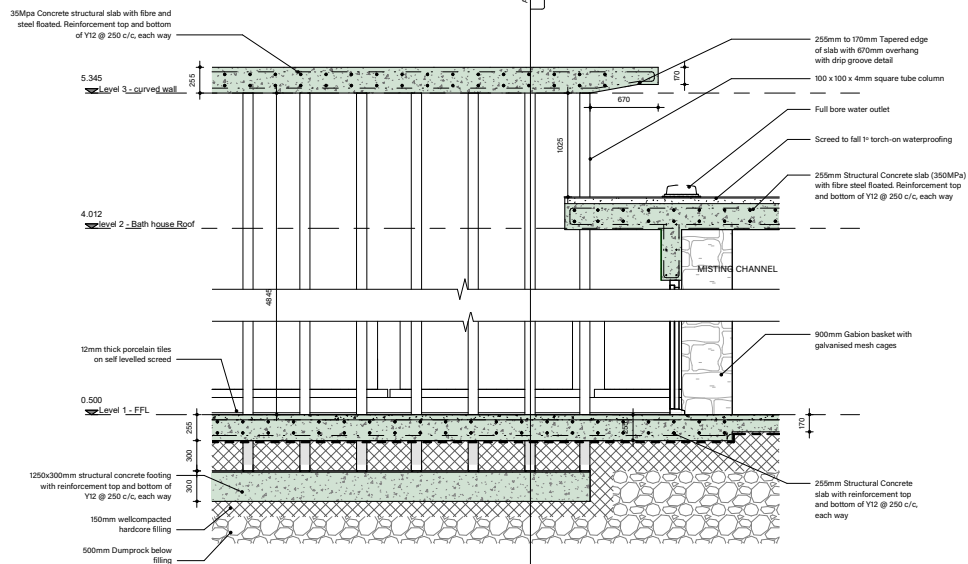
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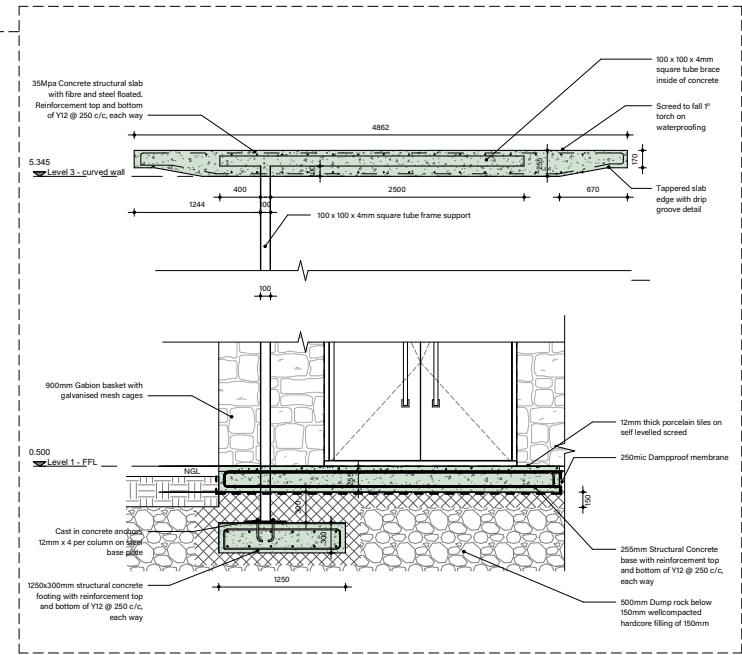
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PROJECT NUMBER <b>A1 - 10- 2022</b>		REVISION	
DRAWING NUMBER <b>A301</b>			



**B SECTION B-B**  
0 1M 2M 5M 10M



**B1 Section B - Det. B1**  
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**B2 Walkway Detail**  
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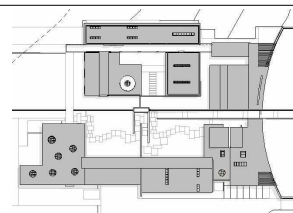
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THIS DRAWING IS NOT TO BE SCALED. FIGURED DIMENSIONS TO BE USED AT ALL TIMES.  
 CONTRACTOR IS RESPONSIBLE FOR CORRECT SETTING OUT OF THE BUILDING. ALL EXTERNAL AND INTERNAL WALLS WITH PARTICULAR REFERENCE TO BUILDING LINES, CORNERWORK, ETC.  
 CONTRACTOR TO VERIFY ALL LEVELS, HEIGHTS AND DIMENSIONS ON SITE AND TO CHECK SAME AGAINST THE DRAWING BEFORE FITTING ANY WORKING HAND.  
 ALL CONTRACTORS TO CHECK DETAILS SHOWN ON THIS DRAWINGS FOR COMPLIANCE WITH STANDARDS OF GOOD BUILDING PRACTICE WITH PARTICULAR REFERENCE TO SPECIAL REQUIREMENTS NECESSITATED BY LOCAL AND OR ON SITE CONDITIONS AND REPORT ANY COMMENT TO THE ARCHITECT.  
 ANY ERROR OR OMISSIONS OR COMPLECTIONS TO BE REPORTED TO THE ARCHITECT IMMEDIATELY. FINAL DIMENSIONS TO BE TAKEN ON SITE BEFORE ORDERING, SUPPLYING AND FITTING.  
 CONTRACTORS ARE TO LOCATE AND IDENTIFY EXISTING SERVICES ON SITE AND TO PROTECT THESE FROM DAMAGE THROUGHOUT THE DURATION OF THE WORKS. CONTRACTORS ARE TO BUILD IN D.P.C.'S WHETHER OR NOT THESE ARE SHOWN ON DRAWINGS TO ALL EXTERNAL WALLS AT EACH FLOOR AND TO ALL WINDOW, DOORS OR OTHER OPENINGS IN EXTERNAL WALLS CAVITY WALLS TO HAVE STEEPED D.P.C.'S.  
 CONTRACTOR TO BUILD IN BRICK FORCES EVERY 6TH COURSE IN BRICK WALLS AND EVERY 2ND COURSE ABOVE WINDOWS, DOORS AND ALL OTHER OPENINGS.  
 ALL BUILDINGS IN COMPLIANCE WITH THE SANS 10400 PART 1 LATEST EDITION. ANY QUERIES ARISING FROM ALL THE ABOVE MUST BE REPORTED TO THE ARCHITECT FOR CLARIFICATION BEFORE ANY WORK IS PUT ON HAND.  
 QUALITY OF ALL MATERIALS AND WORKMANSHIP TO COMPLY WITH THE RELEVANT S.A.S.S. AND B.S.S. SPECIFICATIONS.

**DRAINAGE NOTES:**

ALL PLUMBING AND DRAINAGE WORK AND INSTALLATION WORK SANITARY FITTINGS TO COMPLY WITH THE RELEVANT LOCAL AUTHORITY BY LAWS, REGULATIONS AND REQUIREMENTS.  
 ALL DRAIN PIPES MINIMUM FALL 1% MINIMUM FALL 1%  
 ALL WASTE PIPES AND SOIL PIPES TO BE FULLY ACCESSIBLE ALONG ENTIRE LENGTH OF THE PIPE.  
 I.E. TO BE PROVIDED AT EVERY BEND, JUNCTION AND CHANGE IN DIRECTION AND EVERY 3M METERS WITH MARKED COVERS AT GROUND LEVEL.  
 ALL WASTE PIPE FITTINGS TO HAVE APPROVED REGAL TRAPS.  
 VERY FINE DUTY TO BE SHOWN IN ABOVE ANY DRAWING.  
 ALL BATHING CUBICLES TO HAVE ACCESS PANELS.  
 GULLIES TO BE TRAPPED AND WITH SUITABLE GULLY GRATING AND TO BE 100 mm ABOVE SURROUNDING LEVELS.  
 ALL DRAIN UNDER BUILDINGS OR FOOTINGS TO BE ENCASED IN 150mm CONCRETE ALL ROUND THE PIPE.  
 WASTE PIPES IN FLOORS TO BE SLEEVED AND BE FITTED WITH EASILY ACCESSIBLE C.E. ABOVE FLOOR LEVEL, AND EACH END OF SLEEVE.  
 NO DRAIN BENDS OR JUNCTIONS IN OR UNDER FLOOR SLAB.  
 KEEP ALL DRAIN 900mm FROM CONCRETE FOUNDATIONS.



CLIENT: THE GLOBAL INSTITUTE OF MENTAL WELLNESS

STUDIO: ELZETTE ESPLIN 2000 00 4859

PROJECT: HEALING AND WELLNESS SANCTUARY TECHNICAL DRAWINGS

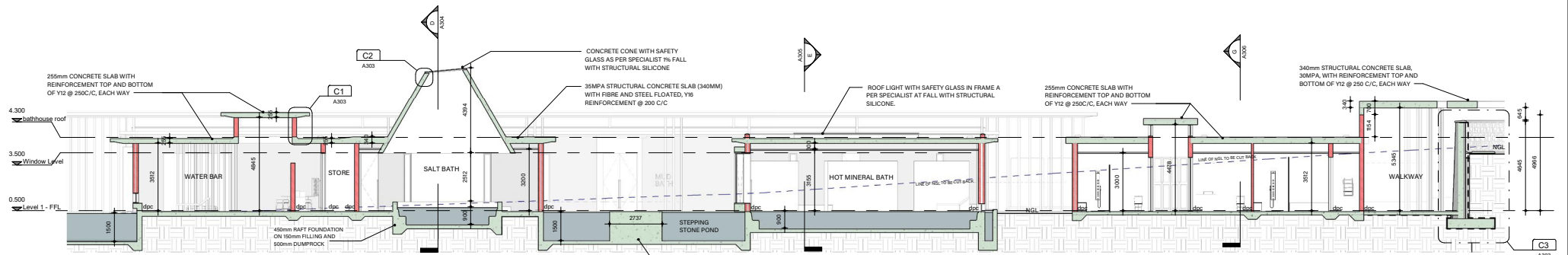
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NO	REVISION	DATE

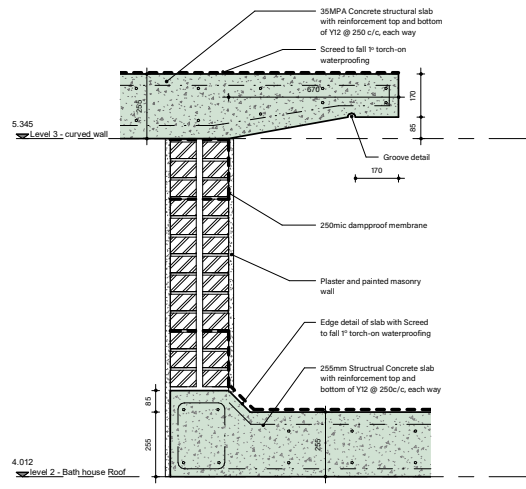
  

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PROJECT NUMBER	A1 - 10 - 2022		
DRAWING NUMBER	140	REVISION	
A302			

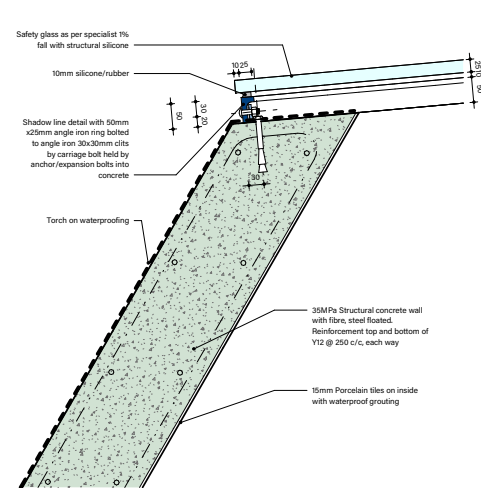
ALL STRUCTURAL CONCRETE WORK TO ENGINEER'S DESIGN AND SPECIFICATION



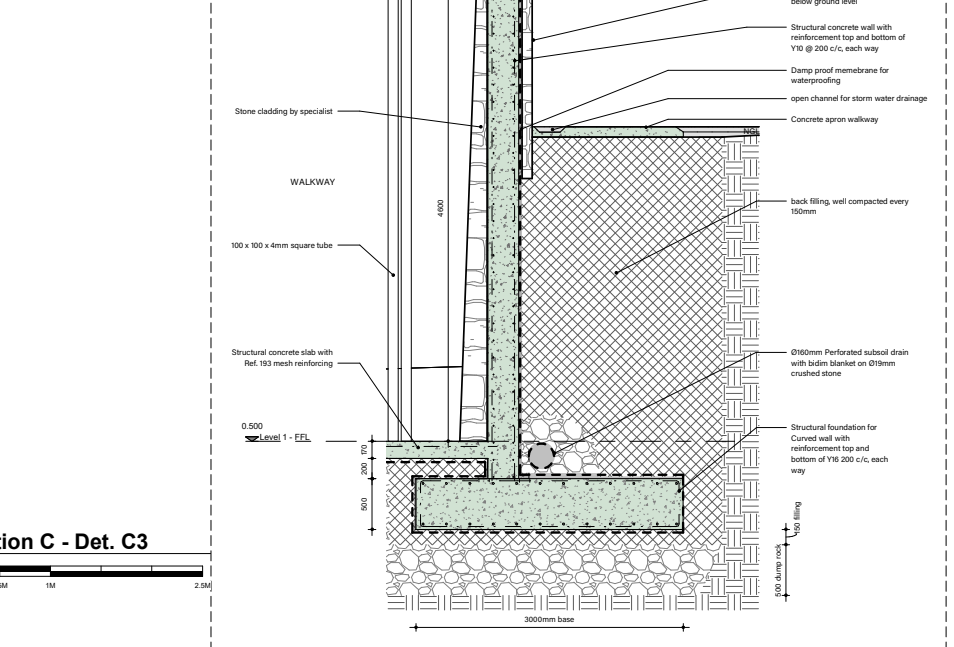
**C SECTION C-C**  
0 1M 2M 5M 10M



**C1 Section C - Det. C1**  
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**C2 Section C - Det. C2**  
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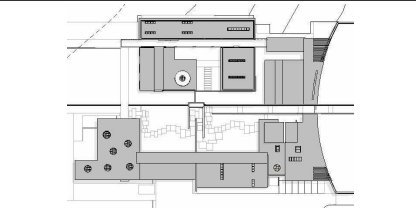


**C3 Section C - Det. C3**  
0 0.5M 1M 2.5M

**DRAINAGE NOTES:**

**GENERAL NOTES:**  
THIS DRAWING IS NOT TO BE SCALED. FIGURED DIMENSIONS TO BE USED AT ALL TIMES.  
CONTRACTOR IS RESPONSIBLE FOR CORRECT SETTING OUT OF THE BUILDING, ALL EXTERNAL AND INTERNAL WALLS WITH PARTICULAR REFERENCE TO BUILDING LINES, BOUNDARIES, ETC.  
CONTRACTOR TO VERIFY ALL LEVELS, HEIGHTS AND DIMENSIONS ON SITE AND TO CHECK SAME AGAINST THE DRAWING BEFORE PUTTING ANY WORK IN HAND.  
ALL CONTRACTORS TO CHECK DETAILS SHOWN ON THIS DRAWING FOR COMPLIANCE WITH STANDARDS OF GOOD BUILDING PRACTICE WITH PARTICULAR REFERENCE TO SPECIAL REQUIREMENTS NECESSITATED BY LOCAL AND/OR ON SITE CONDITIONS AND REPORT ANY COMMENT TO THE ARCHITECT.  
ANY BREACH OF CONTRACT OR DIMENSIONS TO BE REPORTED TO THE ARCHITECT IMMEDIATELY. FINAL DIMENSIONS TO BE TAKEN ON SITE BEFORE ORDERING, SUPPLYING AND FIXING PROPRIETARY OR CUSTOMER SPECIFIED FITTINGS.  
CONTRACTORS ARE TO LOCATE AND IDENTIFY EXISTING SERVICES ON SITE AND TO PROTECT THESE FROM DAMAGE THROUGHOUT THE DURATION OF THE WORKS. CONTRACTORS ARE TO BUILD UP TO TOP OF EXISTING SERVICES NOT THESE ARE SHOWN ON DRAWINGS TO ALL EXTERNAL WALLS AT EACH FLOOR AND TO ALL WINDOW DOORS OR OTHER OPENINGS IN EXTERNAL WALLS. CAVITY WALLS TO HAVE STEPPED D.P.C.'S.  
CONTRACTOR TO BUILD IN BRICK WORK EVERY 5TH COURSE IN BRICK WALLS AND EVERY AND COURSE ABOVE WINDOWS, DOORS AND ALL OTHER OPENINGS.  
ALL BELEANS IN CURB WALLS TO BE SAVED UNLESS PARTLY LATESTED. ANY QUERIES ARISING FROM ALL THE ABOVE MUST BE REPORTED TO THE ARCHITECT FOR CLARIFICATION BEFORE AN ORDER IS PUT ON HAND.  
QUALITY OF ALL MATERIALS AND WORKMANSHIP TO COMPLY WITH THE RELEVANT S.A.B.S. AND B.S.S. SPECIFICATIONS.

ALL PLUMBING AND DRAINAGE WORK AND INSTALLATION WORK (SANITARY FITTINGS) TO COMPLY WITH THE RELEVANT LOCAL AUTHORITY BY-LAWS, REGULATIONS AND REQUIREMENTS.  
ALL DOWN PIPES MINIMUM FALL 1% MINIMUM FALL 1:80.  
ALL WASTE PIPES AND SOIL PIPES TO BE FULLY ACCESSIBLE ALONG ENTIRE LENGTH OF THE PIPE.  
I.E. TO BE PROVIDED AT EVERY BEND, JUNCTION AND CHANGE IN DIRECTION AND EVERY 2M METERS WITH MARKED COVERS AT GROUND LEVEL.  
ALL WASTE PIPE FITTINGS TO HAVE APPROVED RESAL TAPS.  
WASTE PIPES OUTLET TO BE 150MM ABOVE ANY OPENING.  
ALL BATH ENCLOSURES TO HAVE ACCESS PANELS.  
GALLEYS TO BE TRAPPED AND WITH SUITABLE GULLY GRATING AND TO BE 150MM ABOVE SURROUNDING LEVELS.  
ALL DRAINING UNDER BUILDINGS OR FOOTINGS TO BE ENCASED IN 150MM CONCRETE ALL ROUND THE PIPE.  
WASTE PIPES IN FLOORS TO BE SLEEVED AND BE FITTED WITH EASILY ACCESSIBLE C.E. ABOVE FLOOR LEVEL AND EACH END OF SLEEVE.  
NO DRAIN BENDS OR JUNCTIONS OR UNDER FLOOR SLAB.  
KEEP ALL DRAINING 800MM FROM CONCRETE FOUNDATIONS.



CLIENT  
**THE GLOBAL INSTITUTE OF MENTAL WELLNESS**

DESIGNED BY  
**ELZETTE ESPLIN**  
2000 00 4859

PROJECT  
**HEALING AND WELLNESS SANCTUARY**  
TECHNICAL DRAWINGS

DRAWING  
**SECTION C-C, SECTION H-H & DETAILS**

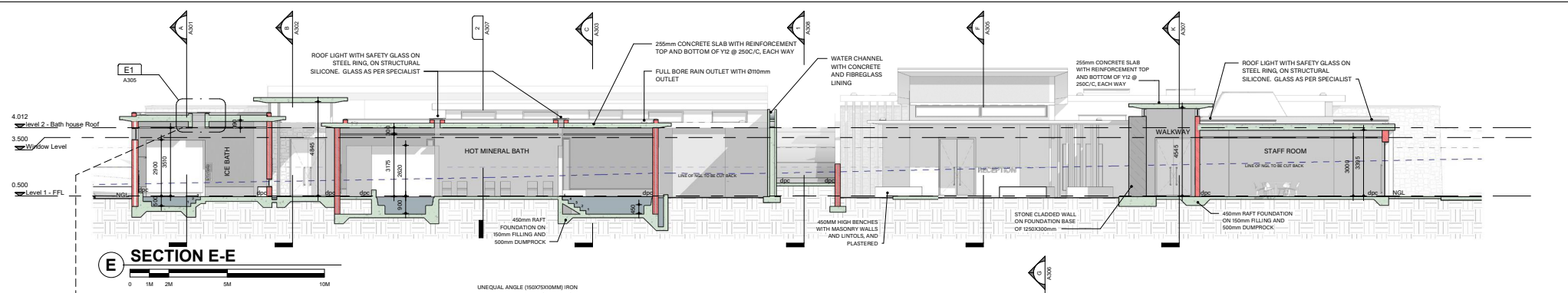
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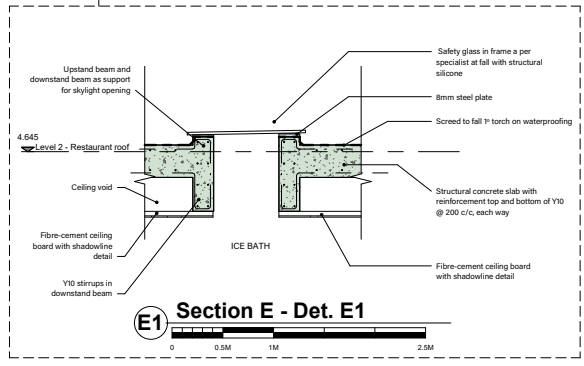
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PROJECT NUMBER <b>A1 - 10- 2022</b>		REVISION	
DRAWING NUMBER <b>A303</b>			

ALL STRUCTURAL CONCRETE WORK TO ENGINEER'S DESIGN AND SPECIFICATION

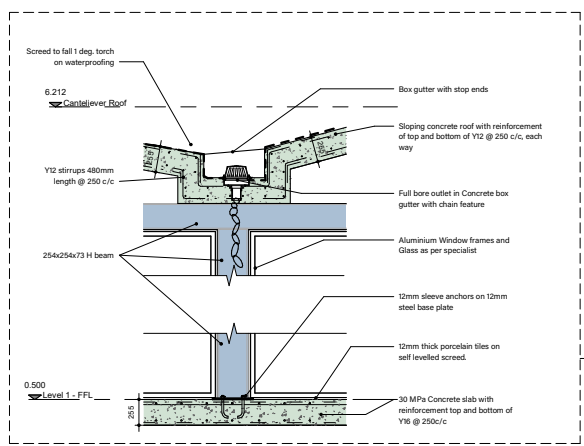




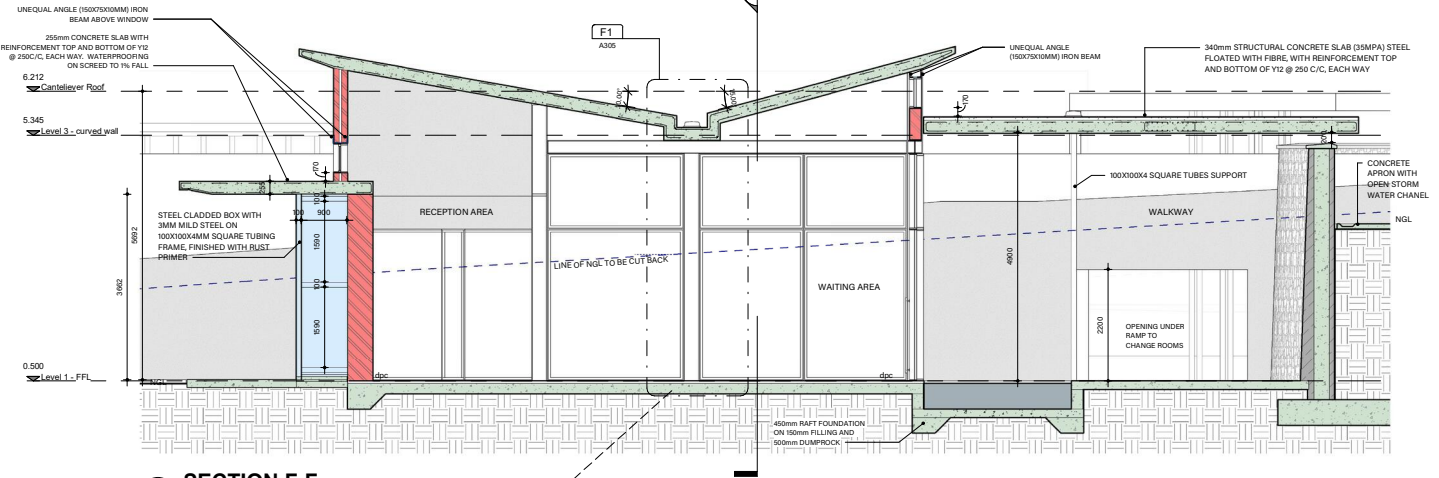
**E SECTION E-E**



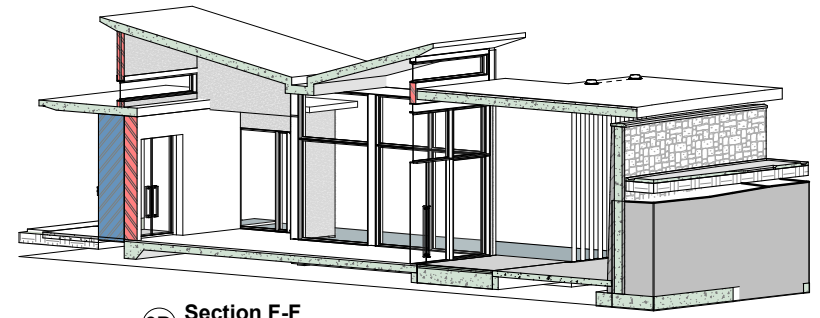
**E1 Section E - Det. E1**



**F1 Section F - Det. F1**



**F SECTION F-F**

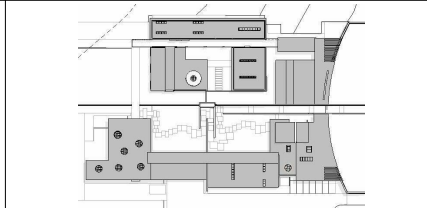


**3D Section F-F**

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**GENERAL NOTES:**  
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 CONTRACTOR IS RESPONSIBLE FOR CORRECT SETTING OUT OF THE BUILDING, ALL EXTERNAL AND INTERNAL WALLS WITH PARTICULAR REFERENCE TO BUILDING LINES, BOUNDARIES, ETC.  
 CONTRACTOR TO VERIFY ALL LEVELS, HEIGHTS AND DIMENSIONS ON SITE AND TO CHECK SAME AGAINST THE DRAWING BEFORE PUTTING ANY WORKING HAND.  
 ALL CONTRACTORS TO CHECK DETAILS SHOWN ON THIS DRAWING FOR COMPLIANCE WITH STANDARDS OF GOOD BUILDING PRACTICE WITH PARTICULAR REFERENCE TO SPECIAL REQUIREMENTS SPECIFICATED BY LOCAL AND/OR ON SITE CONDITIONS AND REPORT ANY COMMENT TO THE ARCHITECT.  
 ALL BRICKS, CONCRETE BLOCKS OR DIMENSIONS TO BE REPORTED TO THE ARCHITECT IMMEDIATELY. FINAL DIMENSIONS TO BE TAKEN ON SITE BEFORE ORDERING, SUPPLYING AND FIXING PROPRIETARY OR DETAILING FITTINGS.  
 CONTRACTORS ARE TO LOCATE AND IDENTIFY EXISTING SERVICES ON SITE AND TO PROTECT THESE FROM DAMAGE THROUGHOUT THE DURATION OF THE WORKS. CONTRACTORS ARE TO BUILD IN TOP OF CEILING TRAYS FOR NOT THESE ARE SHOWN ON DRAWINGS TO ALL EXTERNAL WALLS AT EACH FLOOR AND TO ALL WINDOW DOORS OR OTHER OPENINGS IN EXTERNAL WALLS. CEILING TRAYS TO HAVE STEPPED D.P.C.'S.  
 CONTRACTOR TO BUILD IN BRICK WORK EVERY 8TH COURSE IN BRICK WALLS AND EVERY AND COURSE ABOVE WINDOWS, DOORS AND ALL OTHER OPENINGS.  
 ALL BEARING IN CONCRETE TO BE 300mm MINIMUM PART IN LATEST EDITION. ANY QUERIES ARISING FROM ALL THIS DRAWING MUST BE REPORTED TO THE ARCHITECT FOR CLARIFICATION BEFORE AN ORDER IS PLACED ON WORK.  
 QUALITY OF ALL MATERIALS AND WORKMANSHIP TO COMPLY WITH THE RELEVANT S.A.B.S. AND B.S.S. SPECIFICATIONS.

**DRAINAGE NOTES:**  
 ALL PLUMBING AND DRAINAGE WORK AND INSTALLATION WORK SANITARY FITTINGS TO COMPLY WITH THE RELEVANT LOCAL AUTHORITY BY LAWS, REGULATIONS AND REQUIREMENTS.  
 ALL DOWN PIPES MINIMUM FALL 1% MINIMUM FALL 1%.  
 ALL WASTE PIPES AND SOIL PIPES TO BE FULLY ACCESSIBLE ALONG ENTIRE LENGTH OF THE PIPE.  
 I.E. TO BE PROVIDED AT EVERY BEND, JOINT AND CHANGE IN DIRECTION AND EVERY 2M METERS WITH MARKED COVERS AT GROUND LEVEL.  
 ALL WASTE PIPE FITTINGS TO HAVE APPROVED RESAL TRAPS.  
 WASTE PIPE OUTLET TO BE 150mm DIA ABOVE ANY OPENING.  
 ALL BATH ENCLOSURES TO HAVE ACCESS PANELS.  
 GULLIES TO BE TRAPPED AND WITH SUITABLE GULLY GRATING AND TO BE 150mm ABOVE SURROUNDING LEVELS.  
 ALL DRAINING UNDER BUILDINGS OR FOOTINGS TO BE ENCASED IN 150mm CONCRETE ALL AROUND THE PIPE.  
 WASTE PIPES IN FLOORS TO BE SLEEVED AND BE FITTED WITH EASILY ACCESSIBLE C.E. ABOVE FLOOR LEVEL AND EACH END OF SLAB.  
 NO DRAIN BENDS OR JOINTS IN OR UNDER FLOOR SLAB.  
 KEEP ALL DRAIN 800mm FROM CONCRETE FOUNDATIONS.



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DRAWING NUMBER  
**ELZETTE ESPLIN 2000 00 4859**

PROJECT  
**HEALING AND WELLNESS SANCTUARY**  
 TECHNICAL DRAWINGS

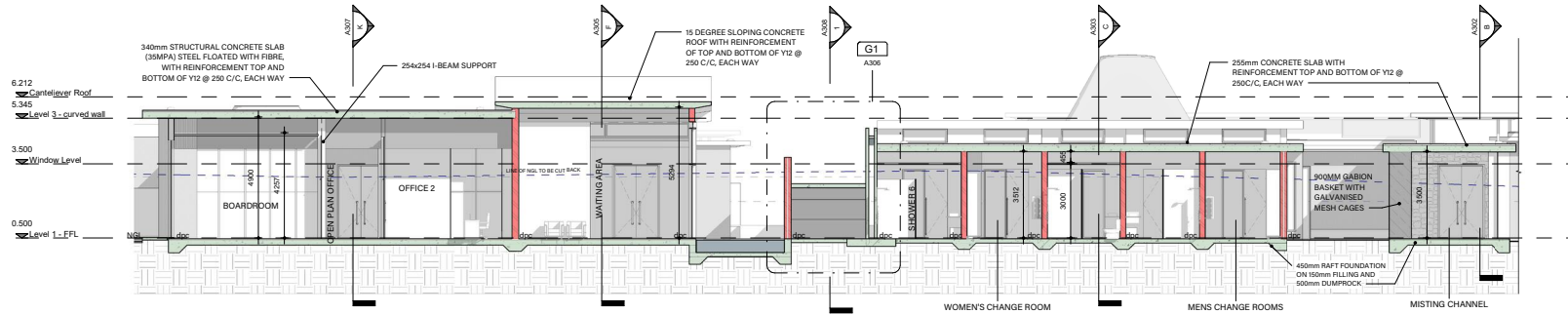
DRAWING  
**SECTION E-E, SECTION F-F & DETAILS**

NO	REVISION	DATE

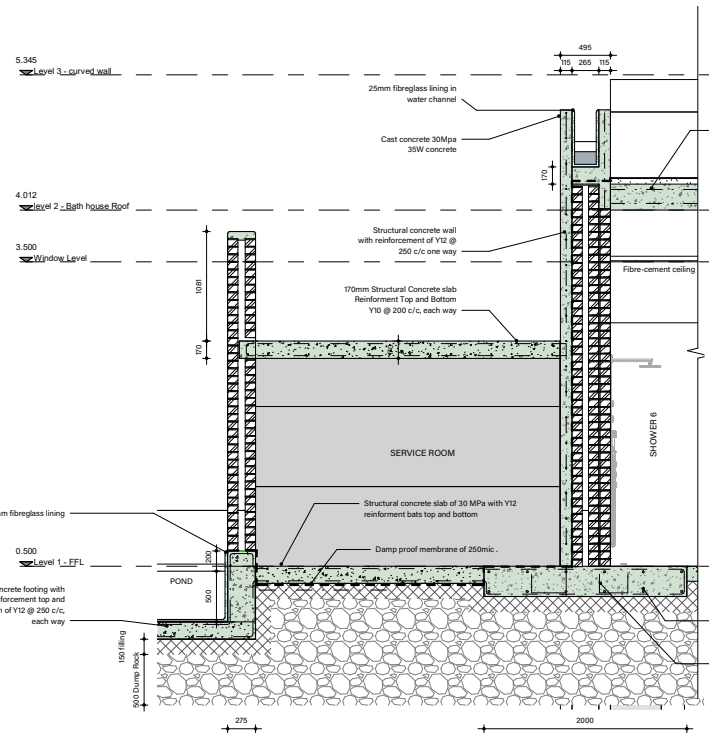
  

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PROJECT NUMBER <b>A1 - 10-2022</b>		DRAWING NUMBER <b>A305</b>	
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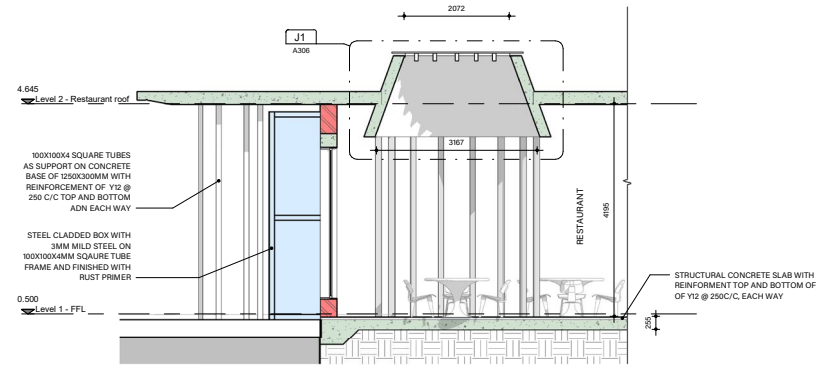
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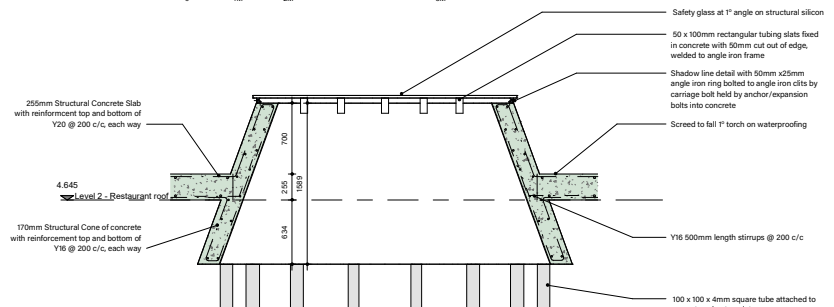
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**G1 Section G - Det. G1**



**J SECTION J-J**



**J1 Section J - Det. J1**

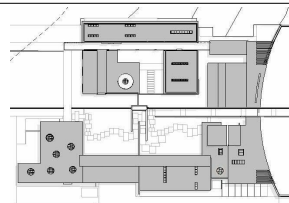
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 CONTRACTOR TO BUILD IN BRICK BOND EVERY 5TH COURSE IN BRICK WALLS AND EVERY 2ND COURSE ABOVE WINDOWS, DOORS AND ALL OTHER OPENINGS.  
 ALL BUILDINGS IN COMPLIANCE WITH THE DRAINAGE BY-LAW AND LATEST EDITION. ANY QUERIES ARISING FROM ALL THE ABOVE MUST BE REPORTED TO THE ARCHITECT FOR CLARIFICATION BEFORE ANY WORK IS PUT ON HAND.  
 QUALITY OF ALL MATERIALS AND WORKMANSHIP TO COMPLY WITH THE RELEVANT S.A.S.S. AND B.S.S. SPECIFICATIONS.

**DRAINAGE NOTES:**

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 ALL DRAIN PIPES MINIMUM FALL 1:80 UNLESS OTHERWISE SPECIFIED.  
 ALL WASTE PIPES AND SOIL PIPES TO BE FULLY ACCESSIBLE ALONG ENTIRE LENGTH OF THE PIPE.  
 I.E. TO BE PROVIDED AT EVERY BEND, JUNCTION AND CHANGE IN DIRECTION AND EVERY 4M METERS WITH MARKED COVERS AT GROUND LEVEL.  
 ALL WASTE PIPE FITTINGS TO HAVE APPROVED REGAL TRAPS.  
 VERY FINE SIFTLY TO BE SHOWN IN ANY DRAWING.  
 ALL BATH ENCLOSURES TO HAVE ACCESS PANELS.  
 GULLIES TO BE TRAPPED AND WITH SUITABLE GULLY GRATING AND TO BE 100mm ABOVE SURROUNDING LEVELS.  
 WASTE PIPES IN FLOORS TO BE SLEEVED AND BE FITTED WITH EASILY ACCESSIBLE C.E. ABOVE FLOOR LEVEL, AND EACH END OF SLEEVE.  
 NO DRAIN BENDS OR JUNCTIONS IN OR UNDER FLOOR SLAB.  
 KEEP ALL DRAIN 900mm FROM CONCRETE FOUNDATIONS.



CLIENT: THE GLOBAL INSTITUTE OF MENTAL WELLNESS

STUDIO: ELZETTE ESPLIN 2000 00 4859

PROJECT: HEALING AND WELLNESS SANCTUARY TECHNICAL DRAWINGS

DRAWING: SECTION G-G, SECTION J-J, & DETAILS

NO	REVISION	DATE

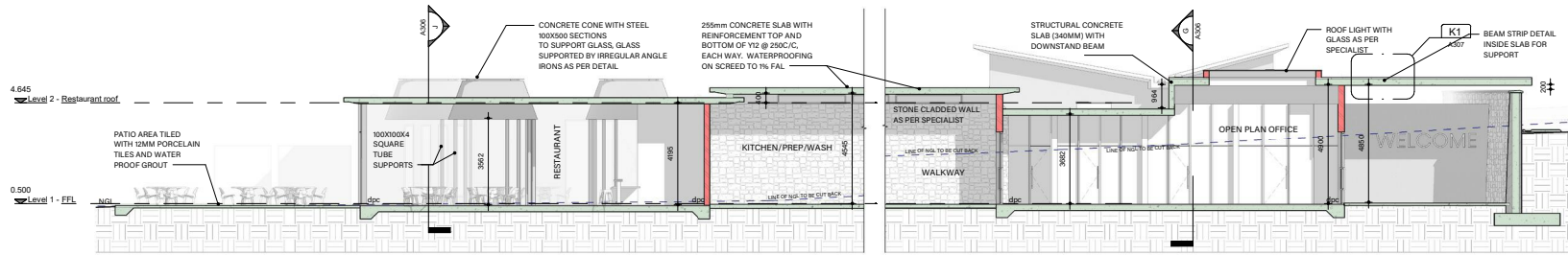
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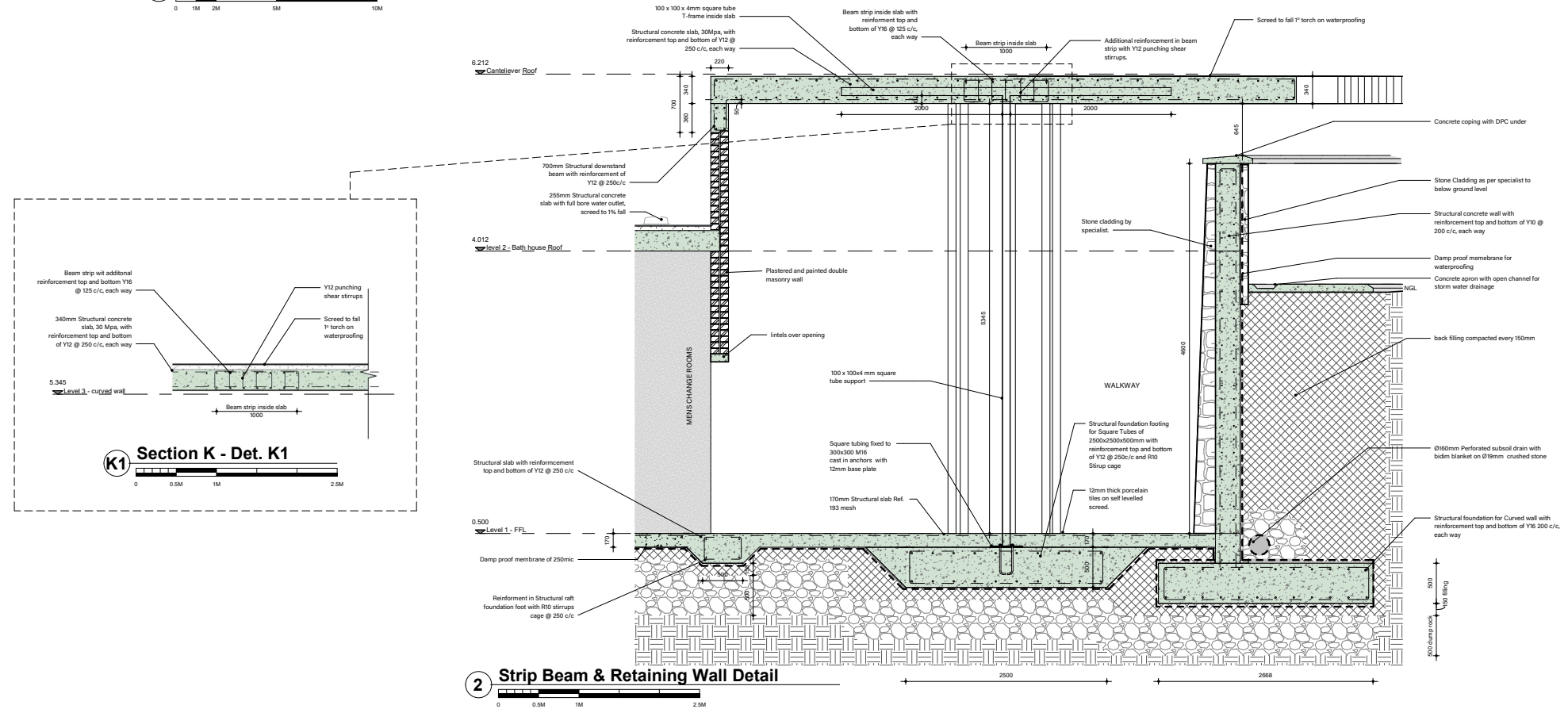
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REVISION: 144

ALL STRUCTURAL CONCRETE WORK TO ENGINEER'S DESIGN AND SPECIFICATION



**K SECTION K-K**  
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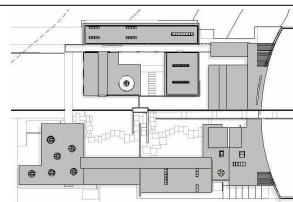


**2 Strip Beam & Retaining Wall Detail**  
0 0.5M 1M 2.5M

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CONTRACTOR TO CHECK ALL LEVELS, HEIGHTS AND DIMENSIONS ON SITE AND TO CHECK SAME AGAINST THE DRAWING BEFORE FITTING ANY WORKING HARD.  
ALL CONTRACTORS TO CHECK DETAILS SHOWN ON THIS DRAWING FOR COMPLIANCE WITH STANDARDS OF GOOD BUILDING PRACTICE WITH PARTICULAR REFERENCE TO SPECIAL REQUIREMENTS NECESSITATED BY LOCAL AND/OR ON SITE CONDITIONS AND REPORT ANY COMMENT TO THE ARCHITECT.  
ANY OTHER DISCREPANCIES OR DIMENSIONS TO BE REPORTED TO THE ARCHITECT IMMEDIATELY. FINAL DIMENSIONS TO BE TAKEN ON SITE BEFORE ORDERING, SUPPLYING AND FITTING PROPRIETARY OR CUSTOMER SPECIFIED ITEMS.  
CONTRACTOR TO BUILD IN BRICK FORCE EVERY 8TH COURSE IN BRICK WALLS AND EVERY AND COURSE ABOVE WINDOWS, DOORS AND ALL OTHER OPENINGS.  
ALL BUILDINGS TO BE CONFORMANT WITH THE LATEST EDITION. ANY QUERIES ARISING FROM ALL THE ABOVE MUST BE REPORTED TO THE ARCHITECT FOR CLARIFICATION BEFORE AN ERROR PUT ON DRAWING.  
QUALITY OF ALL MATERIALS AND WORKMANSHIP TO COMPLY WITH THE RELEVANT S.A.S. AND B.S.S. SPECIFICATIONS.

**DRAINAGE NOTES:**  
ALL PLUMBING AND DRAINAGE WORK AND INSTALLATION WORK SANITARY FITTINGS TO COMPLY WITH THE RELEVANT LOCAL AUTHORITY BY LAWS, REGULATIONS AND REQUIREMENTS.  
ALL DOWN PIPES MINIMUM FALL 1% MINIMUM FALL 1%.  
ALL WASTE PIPES AND SOIL PIPES TO BE FULLY ACCESSIBLE ALONG THEIR LENGTH OF THE PIPE.  
I.E. TO BE PROVIDED AT EVERY BEND, JUNCTION AND CHANGE IN DIRECTION AND EVERY 3M METERS WITH MARKED COVERS AT GROUND LEVEL.  
ALL WASTE PIPE FITTINGS TO HAVE APPROVED RESAL TRAPS.  
VEST PIPE OUTLETS TO BE 150mm ABOVE ANY COVERING.  
ALL BATH ENCLOSURES TO HAVE ACCESS PANELS.  
GALLEYS TO BE TRAPPED AND WITH SUITABLE GULLY GRATING AND TO BE 150mm ABOVE SURROUNDING LEVELS.  
ALL DRAINS UNDER BUILDINGS OR FOOTINGS TO BE ENCASED IN 150mm CONCRETE ALL AROUND THE PIPE.  
WASTE PIPES IN FLOORS TO BE SLEEVED AND BE FITTED WITH EASILY ACCESSIBLE C.E. ABOVE FLOOR LEVEL AND EACH END OF SLAB.  
NO DRAIN BENDS OR JUNCTIONS OR UNDER FLOOR SLAB.  
KEEP ALL DRAINS 900mm FROM CONCRETE FOUNDATIONS.



CLIENT  
**THE GLOBAL INSTITUTE OF MENTAL WELLNESS**

DESIGNED BY  
**ELZETTE ESPLIN**  
2000 00 4859

PROJECT  
**HEALING AND WELLNESS SANCTUARY**  
TECHNICAL DRAWINGS

DRAWING  
**SECTION K-K & STRIP BEAM DETAILS**

NO	REVISION	DATE

SCALE As indicated	DATE 10/11/2022	DRAWN E. Esplin	CHECKED E. Esplin
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DRAWING NUMBER <b>A307</b>			





07]

## REFLECTION AND EVALUATION

7.1 CONCLUSION

7.2 ADDENDUM: SPECIFICATION OF PLANTS  
IN THE PROJECT

7.2.1 TREES

7.2.2 THE THERAPEUTIC GARDEN:

7.2.2.1 TACTILE SENSE (TOUCH)

7.2.2.2 TASTE SENSE

7.2.2.3 AUDITORY SENSE (HEAR) &  
OLFACTOY SENSE (SMELL)

7.2.2.4 VISUAL SENSE (SIGHT)

## 07 ] [ REFLECTION AND EVALUATION

### 7.1 CONCLUSION

The design's success and the scheme's goal of reinforcing the idea of healing may be better understood by reflecting on its execution, and how it almost took on a life of its own inside the surroundings. The subject proved to be far more sophisticated than expected. The design may have been resolved in a specific setting, but it can still quite dynamically adapt to new conditions and accommodate growth and change, all of which confirms the idea of continually embodying the environment as a multilayer metaphor. The choice of location deepened the grasp of the site's complexity and expanded the design options. The philosophical technique of Phenomenology aids in developing an atmospheric quality in places that favourably affect people's thoughts, moods, and mental rejuvenation. The precedent studies connected the topic to expand the options of the final design proposal.

In reflecting on the investigation, precedent studies, research, and design process, it was important to keep in mind that the senses make up layers, constituting the fabric of experiences in life. These layers of psychological and emotional healing influence our behavioural and social healing. Healing is personal, and we create it in the context of our world. Our senses allow us to perceive the world in specific ways through memories and associations, from the psychical to the intangible. It is the author's opinion that architecture has the potential to restore the connection between humans and nature by making everyday places more significant through valued responses and experiences, which can induce the process of healing.

The healing properties of water are unlimited for the human body and mind, and together with our perception of light and shadow, they can engage us in mental dimensions far beyond what psychology has discovered. Mother nature is the ultimate healer, and through its connection and resources, it is possible to create a sensory experience with deep personal significance. All these factors contribute to the body's ability to cure itself through psychological and physiological means. Consequently, the author believes that the investigation and design result was successful. Ultimately, healing is a unique process that hinges on one's environment and network of personal relationships. As a result of personal and environmental constraints, the environment cannot cause healing, but it may generate physical and emotional states that are conducive to recovery. Healing can, therefore, only be initiated by making a personal choice.



## 07 ] REFLECTION AND EVALUATION

### 7.2 SPECIFICATION OF PLANTS IN THE PROJECT

#### 7.2.1 TREES:

#### SILVER BIRCH (BETULA PENDULA) ALSO KNOWN AS EUROPEAN WHITE BIRCH

##### Description

Each year, this lovely medium-sized tree sheds its leaves. Its silvery white bark does not flake off like the paper birch, after which it is named. Under ideal conditions, it may reach a height of +20 meters and a width of 12 meters, but this can take 50 to 60 years. Within the first decade of its life in a garden, it can reach a height of 5-10 meters and a width of 3-5 meters. The arching, drooping twigs and branches that make up the silver birch tree's crown are easily recognisable. Its trunk seldom exceeds 40cm in diameter. The bark is green while the tree is young but becomes white with age, especially around the trunk, and develops black diamond-shaped markings or more extensive patches. In colder climates, the long, triangular, brilliant green leaves turn a gorgeous golden colour in autumn. Catkins open to reveal bright yellow blossoms in the early spring, even before any new green foliage has even begun to appear. Succulents bloom in the spring and produce little winged seeds in the late summer (Gardening in South Africa, 2022a).

##### Habitat

Birches grow best in moist, cool places. They thrive in the area around the Vaal River and can also handle frost and snow. Birch trees have shallow roots. They grow best in cool areas in full sun but can handle a little shade in hotter gardens. The silver birch grows well in soils that are neutral to very acidic and have good drainage. It likes soils that are not too rich or too poor and can grow in clay, silt and sand (Gardening in South Africa, 2022a).

##### Medicinal properties

Medicinal actions: tonic, analgesic, antiseptic, anti-inflammatory, astringent, diaphoretic, bitter, mild laxative, diuretic, antispasmodic (Marciano, n.d.).

Medicinal use: it has historically been used to treat renal and chronic diseases, including arthritis and gout. In addition, birch sap has been recommended to cure various ailments, including hepatitis, rashes, intestinal worms, and scurvy. As an additional herbal beverage option, Silver birch bark infusions have widespread use across Europe (Rastogi, Pandey & Rawat, 2014).



Figure 235: Silver birch in a natural cluster (Gardening in South Africa, 2022a)

Figure 236: Tree colour in autumn (Gardening in South Africa, 2022a)

Figure 237: Detail of leaves (Gardening in South Africa, 2022a)

## SIMONE POPLAR (POPULUS SIMONII), ALSO KNOWN AS CHINESE COTTONWOOD

### Description

The tree's appearance changes with the seasons, but its vibrant colours are always on display since it is evergreen. This tree will be between 2 and 6 meters across its widest point, yet it can grow 8-15 meters tall. Foliage is shiny green in the summer, becomes a beautiful yellow in autumn, and dies off in the winter, and the crown is neat and rounded. Older trees have rough, fissured bark, whereas younger trees have smooth, white-greenish to grey bark. The blooming form is a long, drooping catkin that first appears in the spring. During the summer months, the fruit develops into a reddish brown, capsule-shaped fruit (Sun Trees, 2017).

### Habitat

*Populus Simonii* thrives in the Vaal River region because of its hardiness under harsh conditions. Even though it can survive and thrive in various environments, the tree's invasive root system is a well-known downside. This tree is an excellent centre piece for a large garden, but it must be planted away from buildings or paved areas. This tree proliferates, consolidating the soil and shading other, less hardy species. *Populus Simonii* excels in all three of these roles due to its consistent growth, namely as a windbreak, a screen, and an avenue tree (Sun Trees, 2017).

### Medicinal properties

Medicinal actions: include remedies for coughs, skin conditions, wounds, acne, haemorrhoids, sunburn and fever.

Medicinal use: poplar is frequently used as an expectorant in herbal remedies for coughs. Additionally, it acts as a stimulant and can be used to ease chest congestion. Wounds, scrapes, acne, external haemorrhoids, frostbite, sunburn, and several other skin diseases have all been treated topically with poplar (RxList, 2021).



Figure 238: *Populus Simonii* – full height (Sun Trees, 2017)  
Figure 239: detail of leaves (Sun Trees, 2017)

## WILD OLIVE TREE (OLEA AFRICANA), ALSO KNOWN AS “OLIENHOUT”

### Description

This beautiful South African tree with glossy grey-green leaves and tiny, black-coloured fruits may not reach great heights, but it can develop a large trunk and live for decades. This hardy tree enjoys the wind and salt air of the coast. Although the flowers are not beautiful, the winter and springtime fragrance they provide is well worth the time and work (Trees South Africa, 2022a).

### Habitat

The best conditions for these trees are fertile and well-drained soils. It works well as both formal or informal hedges. Due to their invasive root systems, *Olea Africana* trees should be planted at least 4 meters from any building or swimming pool. When planted near streams or rivers, this tree's deep roots act as a stabilising force. The wild olive is a hardy fixture in any garden since it can withstand both drought and winter extremes. It serves as a superb feed tree on game ranches and lodges, and provides excellent screening. After pruning, it grows back stronger than before (Wild Flower Nursery, 2022b).

### Medicinal properties

Medicinal actions: throat, aches, blood pressure.

Medicinal use: traditional medicine treats various illnesses, from a sore throat or earache to a urinary tract infection or kidney problem. It is also recommended for the treatment of hypertension. In addition, the leaves of this tree were first touted as a malaria cure in 1854 (Masoko & Makgapeetja, 2015).



Figure 240: *Olea Europaea* 'mission' – full height (Trees South Africa, 2022a)

Figure 241: Detail of leaves (CJM Growers, 2017)

## OLIVE TREE (OLEA EUROPAEA 'MISSION'), ALSO KNOWN AS OLIVE 'MISSION'

### Description

This species was first cultivated in Spain. Olive trees can reach heights of 9-12 meters and widths of 7-9 meters. Their leathery, grey-green leaves have a silvery shine in sunny conditions. In severe, semi-arid climates, olive trees can survive for a millennium or more. They are ideal for container gardening in urban areas because of their small size and high success rate. Irrespective of the soil type, the site must have good drainage. Planting distance guidelines range from 7 to 12 meters, depending on the shape of the cultivar. Only the cultivated olive (*Olea europaea*) produces edible fruit among the Oleaceae family of plants. The health benefits of olives and olive oil are well known. Studies demonstrating their nutritional value have shown promising results, contributing to their increased popularity (The Gardener, n.d.a).

### Habitat

Because of their versatility, olive trees can be planted almost anywhere. They flourish in low to medium fertility soil, as too rich soil may cause the tree to produce too many leaves. As long as the soil's pH is not too high, olives do well on very alkaline soils. They are well-suited to the Vaal's climate, and quite resilient (The Gardener, n.d.a).

### Medicinal properties

Medicinal actions: the olives from these trees are not edible and they are mainly used for cold-pressed olive oil.

Medicinal use: the *Olea europaea* (olive) family has several medical applications, but the healing potential of the "mission" olive is unclear (Olives Unlimited, 2022).



Figure 242: *Olea europaea* 'Mission' – full height (Trees South Africa, 2022b)

Figure 243: Detail of leaves (Trees South Africa, 2022b)

## 07 ] REFLECTION AND EVALUATION

### 7.2 SPECIFICATION OF PLANTS IN THE PROJECT

#### 7.2.2 GARDEN OF SENSES

##### 7.2.2.1 Tactile Sense (touch or feel)

In the following section I will describe the plants that will be used in the touch garden. For tactile stimulation, hedges will be strategically placed to create a maze or “labyrinth” with clearly marked exits and a feeling of mystery at every turn.

#### **Abelia (Abelia grandiflora ‘Francis Mason’ & Abelia x grandiflora ), also known as Golden Abelia and Glossy Abelia**

Abelia is a low-maintenance ornamental shrub that can grow up to two meters. It has dark green glossy leaves and long-blooming flowers. The vivid leaves change colour often throughout the growing season, from yellow to a deep crimson. Tubular flowers that release a pleasant aroma bloom for weeks, attracting various pollinators like bees, butterflies, and hummingbirds. Grandiflora, a green variety, and a yellow variety (Francis Mason) will be used (Loughrey, 2022).



Figure 244: *Abelia grandiflora* ‘Francis Mason’ (Loughrey, 2022)

Figure 245: Hedge (*Abelia grandiflora*, The Gardener, 2022)

Figure 246: *Abelia grandiflora* (Greenthumb, 2022)

Figure 247: Flower detail (SA Garden Guide, 2021)

#### **Nandina (Nandina domestica ‘Pygmaea’ ) also known as Heavenly bamboo**

This evergreen shrub is a favourite because of its attractive foliage and thick, bushy growth. The colours will put on a spectacular show as the seasons change. The chilly winters in the Vaal will cause the leaves to become a brilliant red. Many vibrant hues emerge in the spring, including yellows and greens. *Nandina domestica* “Pygmaea” can withstand cold but needs constant watering in arid climates. They do best in sandy coastal gardens with a light soil composition. It can reach a height and width of 50 centimetres with minimal effort. Plants of the genus *Nandina domestica* ‘Pygmaea’ will thrive anywhere. They give a splash of lasting colour just where it is required and make great borders for plant beds (Life is a garden, 2022a).



Figure 248: *Nandina domestica* ‘Pygmaea’ (Life is a garden, 2022a)

Figure 249: *Nandina domestica* ‘Pygmaea’ (Payless Plants, 2022)

## 07 REFLECTION AND EVALUATION

### 7.2 SPECIFICATION OF PLANTS IN THE PROJECT

#### 7.2.2 GARDEN OF SENSES

##### 7.2.2.2 Taste sense

This section of the garden will be divided into individual garden plots where seasonal herbs and vegetables can be grown throughout the year. Unfortunately, herbs cannot survive winters in the Vaal since it becomes too cold.

##### **Basil (*Ocimum basilicum*)**

Sweet basil, the most popular type of basil, is a staple in many kitchens due to its versatility. Green in hue, the rounded leaves of sweet basil are medium in shape. It may be used to ward off mosquitoes (How to culinary herb garden, 2022).

The leaves of the Genovese basil are vast and dark green. It is therefore optimal to use for pestos and other Italian dishes. Compared to Sweet basil, Genovese basil has flatter and more pointed leaves (How to culinary herb garden, 2022).

The purple basil in the herb garden stands out with its deep maroon colour. In contrast to certain types of basil with a more pronounced clove flavour, this one is not too sweet. Purple basil is highly fragrant and may be used to add colour and flavour to recipes by being soaked in vinegar or oil (How to culinary herb garden, 2022).

For a delightfully citrusy scent, crush some lemon basil leaves in your palms. Lemon basil, when freshly picked, has a taste like no other herb. Use some lemon basil in cocktails, desserts, or marinades for grilled fish or chicken. (How to culinary herb garden, 2022).

**Medicinal properties:** Basil's essential oils can help the body to fight inflammation. These include eugenol, linalool, and citronellol. The chance of developing inflammatory disorders like arthritis can be lowered because of these anti-inflammatory properties. In addition, basil may kill bacteria and other germs (Cassoobhoy, 2020).

Figure 250: Sweet basil (How to culinary herb garden, 2022)



Figure 251: Genovese basil (How to culinary herb garden, 2022)



Figure 252: Purple basil (How to culinary herb garden, 2022)



Figure 253: Lemon basil (How to culinary herb garden, 2022)



### **Chervil (*Anthriscus cerefolium*)**

Chervil is a delicate annual herb closely related to parsley. It is also known by the names French parsley and garden chervil. Its former name, myrrhis, originated from its volatile oil that smells like myrrh resin. This is also found in the French plant tarragon, which is used to season food with a moderate flavour (Wikipedia contributors, 2022d).

**Medicinal properties:** Chervil's dried flowers, leaves, and roots have therapeutic use (WebMD, 2022a).



Figure 254: Chervil (Wikipedia contributors, 2022d)

### **Coriander (*Coriandrum sativum*)**

Coriander, an annual plant, belongs to the Apiaceae family. Among their many familiar names are cilantro and Chinese parsley. Although fresh leaves and dried seeds are most often used in cooking, the entire plant is edible (Wikipedia contributors, 2022e).

**Medicinal properties:** Eating coriander has several health benefits due to its high vitamin, mineral, and antioxidant content. The Vitamin K in coriander leaves and seeds is essential for proper blood clotting. In addition, because Vitamin K promotes bone mending, it helps in lowering the risk of bone diseases, including osteoporosis (Brennan, 2020a).



Figure 255: Corriander (Wikipedia, 2022e)

### **Evening primrose (*Oenothera bienni*)**

The evening primrose is one of the most contentious flowers. Some people love its delicate beauty, while others regard it as an invasive plant. Fragrant flowers with four petals rise above a rosette of branching leaves at the plant's base. The flowers are yellow and smell like lemons. The plant's flowers open in the late afternoon and evening and are closed throughout the day, making it attractive to a wide variety of nocturnal pollinators, including moths and bats (Beaulieu, 2022).

**Medicinal properties:** Evening primrose oil is known for its potential to regulate hormones, reduce inflammation, and boost antioxidant levels. It has also been praised as a way to reduce unwanted hair. In addition, evening primrose oil may include high amounts of the anti-inflammatory fatty acid gamma-linoleic acid (GLA) (Watson, 2019).



Figure 256: Evening primrose flowers and bush (Beaulieu, 2022)

### Fennel (*Foeniculum vulgare*)

Fennel is a member of the carrot family and, like carrots, can be found in blossom form. It flowers year after year and has delicate, golden leaves. Its original home was the Mediterranean region, but now it is found growing wild pretty much everywhere there are dry soils and water nearby. It is grown to harvest its edible flowers, bulbs, foliage, and seeds (Wikipedia contributors, 2022g).

**Medicinal properties:** Fennel's anti-inflammatory benefits come from high levels of Vitamin C and quercetin, two powerful antioxidants (Kubala, 2019).



Figure 257: Fennel flowers in bloom (Wikipedia contributors, 2022g)

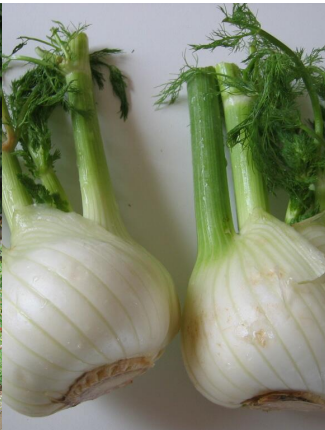


Figure 258: Bulb (Wikipedia contributors, 2022g)



Figure 259: Detail of flower (Wikipedia contributors, 2022g)

### Lemon geranium (*Pelargonium crispum*)

The Lemon Fresh Mosquito Fighter must be the most well-known in terms of scented geraniums. This lovely green geranium gives out a perfume similar to citrus, which is pleasant to humans but unpleasant to insects. The Mosquito Fighter is an attractive, compact plant with bright green, feltly-hairy leaves (Scent Geranium, 2022).

**Medicinal properties:** Geranium essential oil has been used medicinally since ancient times, and evidence shows that it can help with anxiety, sadness, infection, and pain. In addition, it has been hypothesised that it has antimicrobial, anti-inflammatory and antioxidant properties (Whelan, 2019).



Figure 260: Lemon geranium plant (Scent Geranium, 2022)

### Lemon balm (*Melissa officinalis*)

Regarding plants, lemon balm is an annual member of the mint family. It can grow to be 1 meter tall. A citrus scent may be picked up from the leaves. White, nectar-rich flowers bloom throughout the summer (Wikipedia contributors, 2022h)

**Medicinal properties:** It is recognised for its ability to calm the nerves, stimulate hunger and sleep, and treat stomach aches and pains (Mount Sinai, 2022).



Figure 261: Lemon balm (Wikipedia contributors, 2022h)

### Mint (*Mentha*)

Mint is a perennial herb that produces tiny blooms in shades of purple, pink, or white among its very scented, serrated leaves. Mint comes in a wide range of leaf textures, from smooth to fuzzy to vivid green to variegated, but they are all fragrant. A square stem is a reliable indicator that a plant is a member of the mint family. There is a distinct fragrance of candy and sugary beverages when you roll the leaves between your fingers. In this proposed garden, the following customisations will be utilised:

**Medicinal properties:** Mint has long been used as an alternative treatment for various medical problems. Studies have shown that mint can aid in digestion and reduce the symptoms of irritable bowel syndrome, but those are about the extent of its health benefits (Brennan, 2020b).

### Peppermint: (*Mentha x piperita*)

The peppermint variant is the experimental cross of watermint and spearmint, while the black and white peppermint are the two most popular versions of this fragrant plant. Black peppermint features leaves and dark purple-green stems with a unique oil content. The white is bright green and has a milder taste (Rhoades, 2022).



Figure 262: Peppermint (Rhoades, 2022)

Figure 263: Black peppermint (Annie's Annuals & Perennials, n.d.)

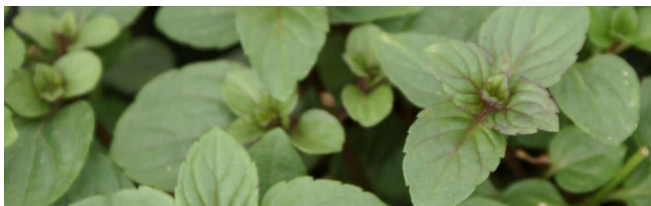


Figure 264: White peppermint (Hooksgreen Herbs, n.d.)

### Chocolate mint (*Mentha x piperita f. citrata* 'chocolate')

This mint is a domesticated form of peppermint. It smells like chocolate and has a warm, sweet undertone of peppermint, which is refreshing. This variety's duller foliage starkly contrasts with the colourful peppermint leaves. It is a hardy plant and has a black stem and dark green leaves with purple veins (Dekker, 2021).



Figure 265: Chocolate mint (Dekker, 2021)

### Spearmint (*Mentha x spicata*)

Spearmint is unique in every way, from its flavour to its appearance. The compound carvone, found in spearmint in relatively high proportions, is responsible for the herb's distinctive scent. What gives spearmint its subtle sweetness is a terpenoid. Spearmint is less intense than peppermint. It is best to utilise this herb as more of a supporting character than the main attraction in a meal. It attracts good bugs because of the pretty pink or lavender flowers it produces. It may eliminate mosquito breeding grounds and keep rodents, mice, and ticks at bay. Leaves are linked directly to the stem without a stalk and are smooth and hairless. Its stems are square, and its leaves are serrated and oblong or lance-shaped (Lofgren, 2022).



Figure 266: Spearmint (Lofgren, 2022)

### Oregano (*Origanum vulgare*)

The dried leaves and flowering stems of oregano, also known as organum or wild marjoram, are highly regarded for their flavour. The leaves are oppositely aligned, and little oval leaflets are covered with plant hairs. Young stems are square and hairy, and mature to be square and woody. Tiny, singular flowers cluster together in a wide range of colours, from white to pink to pastel purple (Augustyn, 2022).

**Medicinal properties:** Oregano may help reduce a chronic cough because of the chemicals it contains. Oregano may be helpful against some viruses and bacteria due to its antibacterial and digestive properties. Oregano is often used for wound healing and treating parasitic infections, despite the lack of scientific data supporting its effectiveness for the conditions mentioned above (WebMD, 2022b).



Figure 267: Oregano flower (Augustyn, 2022)

Figure 268: Oregano plant (AromaWeb, 2022)

**Rocket (*Eruca sativa*):**

Rocket is an annual plant in the family of medium-sized flowering plants grown for its edible, leafy greens. In addition to its distinct texture and sour, bitter, and peppery flavour, it is a popular food choice. This plant is also known as garden rocket. The profoundly lobed leaf design consists of a wide terminal lobe and four to ten smaller lateral lobes (Wikipedia contributors, 2022f).

**Medicinal properties:** Rocket contains amino acids and vitamins C,E, B and K. It is beneficial for eye health and helps protect against cancer (Lienard, 2022).



Figure 269: Rocket (Plants N Planters, 2021)

**Rosemary (*Salvia rosmarinus*):**

Typically called rosemary, this evergreen shrub has fragrant flowers in shades of white, pink, purple, and blue. It is related to the sage plants. It maintains functionality down to temperatures of -20 degrees Celsius. Even in harsh environments, it can survive for extended periods without water. The tallest erect variants may grow up to 1.50 meters tall (Wikipedia contributors, 2022l).

**Medicinal properties:** Rosemary has long been utilised for its medicinal properties, including its ability to reduce inflammation, enhance memory, strengthen the cardiovascular system, and stimulate hair growth (Nordqvist, 2017).



Figure 270: Rosemary flowers (Wikipedia contributors, 2022l)

Figure 271: Rosemary plant (Wikipedia contributors, 2022l)



Figure 272: Rosemary stem (Wikipedia contributors, 2022l)

**Spekboom (*Portulacaria afra*):**

The small, round, emerald-green leaves of the spekboom, held aloft by brilliantly crimson stems, make this evergreen succulent one of the most visually compelling plants in the world. The garden version only grows to a height of 1.5-2 meters, but it has the potential to become a little tree of 2-5 meters in the wild. They must be protected from the intense frost of winter (Gardening in South Africa, 2022b).

**Medicinal properties:** Depending on the section of the plant one chews on, it may provide relief from a severe throat or mouth illness. In addition, leaf juice can treat various skin conditions, including acne, rashes, insect bites, and sunburn (Shamwari, 2022).



Figure 273: Spekboom (Gardening in South Africa, 2022b)

**Winter vegetables:** Many of the plants mentioned above, especially the herbs, would perish in the harsh Vaal weather. As a result, winter vegetables will be utilised to produce a sensory garden experience.

**Onions (*Allium cepa*)**

A wide variety of onion cultivars are available for industrial use. Round and white, yellow, or red onions are all onions. Generally known as the bulb onion or the common onion, it is the most widely cultivated species in the genus *Allium*. The shallot is essentially an onion in terms of its biological makeup. The garlic chive, scallion, leek, and chive are all close cousins (Wikipedia contributors, 2022j).



Figure 274: Onion variants (Wikipedia contributors, 2022j)

Figure 275: Onion bulb (Wikipedia contributors, 2022j)



Figure 276: Onion flower (Wikipedia contributors, 2022j)

**Artichoke (*Cynara cardunculus* var. *Scolymus*):**

The globe artichoke, sometimes called the French artichoke, and the green artichoke, are both a type of thistle that has been grown for its edible buds. The edible element of this plant is the flower buds, which form before the flowers open. What we know as artichokes are in fact thistle blossom buds. The leaves shield the meaty ‘heart’ from view while the fuzzier ‘choke’ sits on top. Complete heart consumption is possible (Wikipedia contributors, 2022a).



Figure 277: Artichoke flower (Wikipedia contributors, 2022a)

Figure 278: Artichoke heart (Wikipedia contributors, 2022a)



Figure 279: Artichoke (Wikipedia contributors, 2022a)

**Broccoli (*Brassica oleracea* var. *italica*)**

Broccoli is ready to eat when it has a deep green colour, firm stems, and tight clusters of buds. Broccoli is both an annual and a fast-grower, reaching a height of 60–90cm. Broccoli is a plant with an erect, branching, leathery-leaved structure with dense green clusters of bloom buds at the ends of the central axis and the branches (Wikipedia contributors, 2022c).



Figure 280: Broccoli plant (Wikipedia contributors, 2022c)



Figure 281: Broccoli stem (Wikipedia contributors, 2022c)

**Brussels sprouts (*Brassica oleracea* var. *Gemmifera*)**

The large leaves of the Brussels sprout make it aesthetically distinct, similar to its close relatives cabbage, cauliflower, and broccoli. The sprouts, which look like little cabbages, grow at the top of a robust stalk (Neveln, 2020).



Figure 282: Brussels sprouts (Neveln, 2020)



Figure 283: Brussels sprouts on the plant (Neveln, 2020)

**Cabbage (*Brassica oleracea* var. *Capitata*)**

The waxy layer that gives cabbages their signature greyish or blueish-green colour also makes the leaves of all cabbages juicy, silky, and hairless. The plants do well in mild to cool climates and can endure moderate frost. Certain types may even be able to survive brief periods of severe cold (Petruzzello, n.d.b).



Figure 284: Cabbage head (Petruzzello, n.d.b)

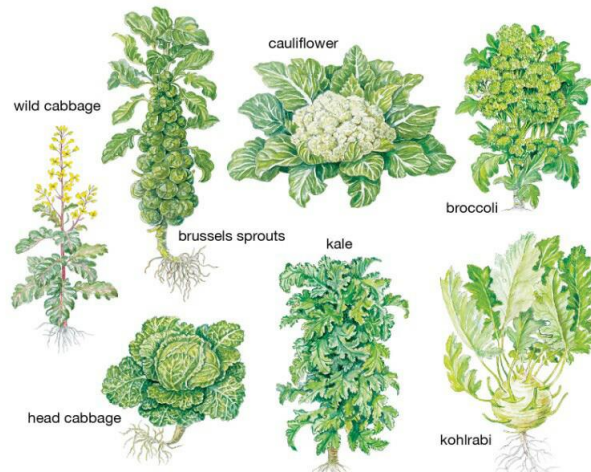


Figure 285: Cabbage family (Petruzzello, n.d.b)

**Celery (*Apium graveolens*)**

Celery is known as a vegetable with long and pale green stems and is family of the parsley. The celery root forms underground and sprouting stalks form above, these be eaten cooked or uncooked (Recipetips.com, 2022).



Figure 286: Celery stalk (Ferre, 2022) Figure 287: Celery plant (Ferre, 2022)

**Kale (*Brassica oleracea*)**

A rosette of long, thin leaves with undulating to frilled margins is what the kale plant produces. The leaves can range from blue-green to green, crimson, or purple, depending on the type. After an entire growing season, the main stem reaches a maximum height of around 60cm (Petruzzello, n.d.c).



Figure 288: Curly kale (Petruzzello, n.d.c)

**Cauliflower (Brassica oleracea var. Botrytis):**

Cauliflower is related to cabbages and other cruciferous vegetables. It is a short-lived annual plant which reproduces via seed. Curd is slang for the white, edible flesh found exclusively in the head. Besides white, other prominent colours include yellow and purple (Wikipedia contributors, 2022c).



Figure 289: White cauliflower head (Wikipedia contributors, 2022c)



Figure 290: Cauliflower variants (Wikipedia contributors, 2022c)

**Spinach (Spinacia oleracea)**

Spinach leaves are succulent and dark green. Vegetable undertones are subtle but noticeable, and there may also be a hint of iron or metal. Depending on the type and growth stage, spinach can have a variety of flavours, from sweet and earthy to nutty and acidic. Baby spinach (Spinacia oleracea) and Swiss chard (Beta vulgaris) are two of the most commonly grown vegetables in South Africa. Spinach is also available in a "rainbow" assortment of bright hues (Wikipedia contributors, 2022n).



Figure 291: Swiss chard (Wikipedia contributors, 2022n)



Figure 292: Baby spinach (Wikipedia contributors, 2022n)



Figure 293: Rainbow spinach (Watson, 2019)

**Beetroot (Beta vulgaris subsp. Vulgaris Conditiva Group)**

The taproot of the beet plant is known variously as the table beet, garden beet, red beet, supper beet, and golden beet. There is a common perception that they taste and smell somewhat earthy. Root vegetables like beets can be prepared and enjoyed in various ways, including boiled, roasted, and raw. Both the root and the foliage of the beet are edible. When cooked or steamed, the mature leaves have a taste and texture reminiscent of spinach. Many plants' tender, newly grown leaves can be eaten raw and used in salads (Wikipedia contributors, 2022b).



Figure 294: Beetroot (Wikipedia contributors, 2022b)



Figure 295: Cut beetroot (Wikipedia contributors, 2022b)



Figure 296: Variants in beetroot (Wikipedia contributors, 2022b)

## 07 ] [ REFLECTION AND EVALUATION

### 7.2 SPECIFICATION OF PLANTS IN THE PROJECT

#### 7.2.2 GARDEN OF SENSES

##### 7.2.2.3 Auditory and Olfactory senses

Two of the senses will be stimulated here. Fountains, trees and plants that produce sound, and plants with strong yet masked odours, are the focus of attention when designing for smell. Care was taken to choose plants that are well-adapted to this environment.

#### Lavender (*Lavandula* 'Margaret Roberts')

With proper care, a plant may be enjoyed for several years. Lavender is a fabulously tough plant that shares its origins with mint. The leaves and blossoms of this plant are prized for its aroma and beauty, and it is put to many other applications beyond just adding flavour to food and other items. Lavender can grow 75cm to 1 meter in stature (Life is a Garden, 2022b).



Figure 297: Lavender flowers (Life is a Garden, 2022b)

Figure 298: Lavender plant (Life is a Garden, 2022b)

#### Star jasmine (*Trachelospermum jasminoides*)

This exceptional plant is cultivated not for its blooms but its showy foliage. The adult leaves are dark green, while the new growth from spring and early summer is speckled with white and pink. The plant keeps its gorgeous colouring scheme throughout the year. The star jasmine vine may swiftly grow to cover a wire fence or reach the upper branches of a tree. Star jasmine can grow anywhere, even in the dead of winter. When the harsh winter cold kills or severely damages other plants, star jasmine quickly regenerate new growth. It is also called the Confederate jasmine or Trader's Compass in addition to star jasmine (The Gardener, n.d.b).



Figure 299: Star jasmine (The Gardener, n.d.b)

### Malva (*Pelargonium cucullatum* (L) L'Hér)

There is a broad choice of mauve and pink shades from which to choose for pelargonium flowers. White species have been spotted on occasion. It can withstand the salty air of the beach and proliferates, making it ideal for containers on a sunny patio or informal borders and rockeries. It forms a tall, sprawling shrub that might reach more than 2 meters in height. The lowest of the shrub's branches are quite woody. The leaves have a cupped shape and may be kidney- or heart-shaped, and they may also be succulent. When the leaves of some types are crushed, a sweet scent fills the air. The tips of the 5–8cm wide leaves are faintly reddened and incised. There are fine hairs covering the plant's stems and leaves (May, 2000).amounts of the anti-inflammatory fatty acid gamma-linoleic acid (GLA) (Watson, 2019).

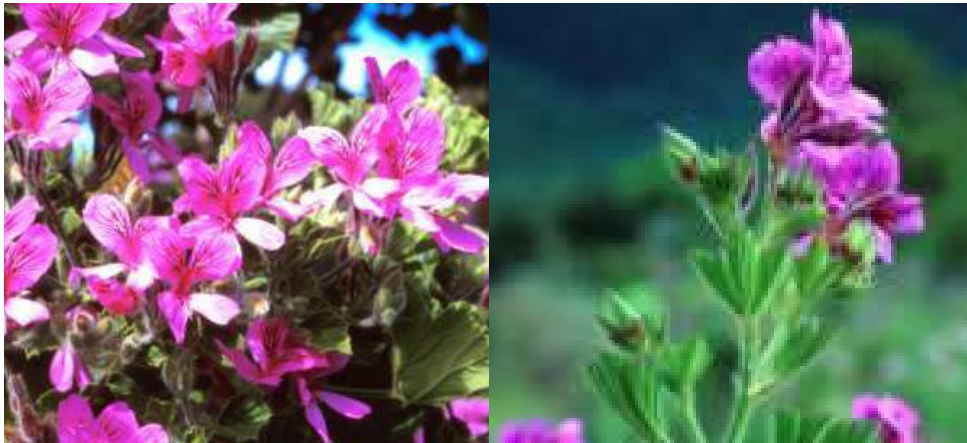


Figure 300: Malva (May, 2000)

### Wild garlic (*Tulbaghia violacea*)

Bulbous and quickly growing, *Tulbaghia violacea* is generally known as wild garlic or society garlic. The plant is easily identifiable because of its long, narrow, strap-like and slightly meaty leaves. Aside from its striking appearance, this plant is easily identifiable by its pungent aroma. Use this as an edging plant along a walkway, or plant it in a large area to cover the ground in full sun or partial shade. The wild garlic plant provides many excellent advantages for one's health, and also produces stunning pastel purple or lilac blooms. In addition, the plant's unpleasant scent is enough to dissuade moles from a space. This is an essential plant for environmentally conscious garden designs (Lifestyle Home Garden, 2022).



Figure 301: Star jasmine (The Gardener, n.d.b)

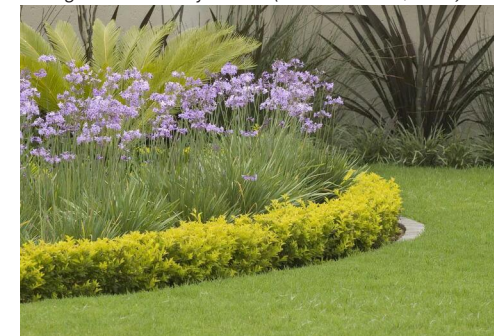


Figure 302: Star jasmine (The Gardener, n.d.b)



Figure 303: Star jasmine (The Gardener, n.d.b)

## 07 ] [ REFLECTION AND EVALUATION

### 7.2 SPECIFICATION OF PLANTS IN THE PROJECT

#### 7.2.2 GARDEN OF SENSES

##### 7.2.2.4 Visual sense (sight)

Vibrant, pulsating vegetation will excite the sense of sight. The ambience of the peaceful water of the river and the breathtaking sunsets will contribute to the feeling of contentment.

#### Thatch reed (*Chondropetalum tectorum*) also known as 'Kaapse Dekriet' in Afrikaans

The evergreen plant known as thatch reed has thin, dark green stems and grows in clusters. It is highly drought resistant. Emerging from the centre of the plant are young stems with almost entirely black coverings. The brown flowers bloom in March and April. There are separate male and female plants, and only the females carry seeds. Sunlight transforms it into a stunning lawn decoration. It needs a lot of water since it flourishes when its "feet" are wet. Instead of drastically reducing the plant's size, one should focus on keeping the plant's exterior free of unsightly dead or diseased stems. Its height ranges from 0.75-1.2 meters (Random Harvest Nursery, 2022).



Figure 304: Thatch reed cluster (Random Harvest Nursery, 2022)

Figure 305: Thatch reed plant (Random Harvest Nursery, 2022)

#### *Cyperus papyrus* (*Cyperus papyrus* L)

The plant's most distinctive feature is its bright green, rounded culms (flowering stems), which may grow to a height of 5 meters under ideal conditions and have a base thickness of up to 40 millimetres. Each is topped by a young, compact cluster of thin, bright green, glossy stalks like a feather duster. Over time, the stalks of the cluster get longer and bend gracefully under their weight, giving the whole plant the impression of a spherical (Archer, 2004).



Figure 306: Papyrus (Archer, 2004)



Figure 307: Papyrus cluster (Archer, 2004)

**Ngongoni tree-awn grass (*Aristida junciformis*)**

The *Aristida junciformis* tufted grass stands out during the warmer months thanks to its distinctive mauve plumes. In general, it may thrive in a wide variety of soils. Brooms are often made from this grass, and it also makes a fine roofing material. When planted in large numbers, *Aristida junciformis* produces a stunning show (Wild Flower Nursery, 2022a).

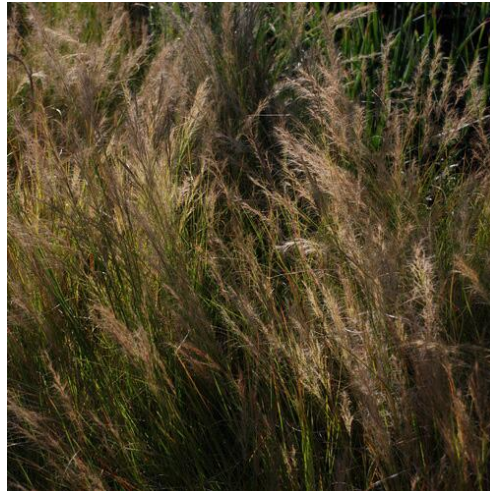


Figure 309: Plumes (Wild Flower Nursery, 2022a )



Figure 308: Young grass plant (Wild Flower Nursery, 2022a )



Figure 310: Full bloom of plumes (Wild Flower Nursery, 2022a )

**Cat's tail (*Asparagus densiflorus* (Kunth) Jessop 'Meyersii') also known in Afrikaans as "katstert"**

The cat's tail fern is a stunning ornamental perennial with clumps of tiny leaves on slender, arching stems. Birds love the beautiful red berries that follow the little white, star-shaped, aromatic flowers. With a mature height and breadth of 300–600 millimetres and 400–700 millimetres, respectively, *Asparagus densiflorus* 'Meyersii' is an example of neat, upright plant growth. The plant's lengthy fibrous roots are characteristic of its rhizomatous root structure. The roots bear round, turgid, creamy-beige tubers all along the side roots, which help the plant to endure periods of drought. The plant's evergreen, almost identical stems sprout from the ground at a single node and remain close together for the plant's life, ultimately turning woody and spiky at the base (Viljoen, 2018).



Figure 312: Upright cat's tail (Viljoen, 2018:)



Figure 311: Cat's tail cluster (Viljoen, 2018:)

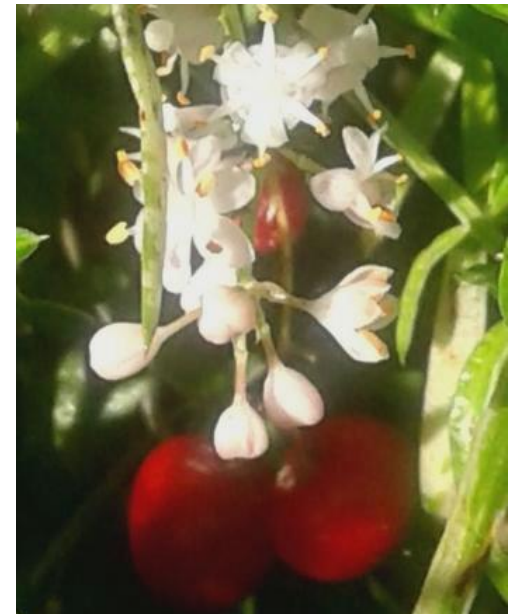


Figure 313: Detail flowers and fruit (Viljoen, 2018)

**Twisted arrows rush (Juncus twisted arrows):**

Twisted arrows, a thick, clump-forming perennial, is a commercial hybrid of two separate species of *Juncus inflexus* and *Juncus effusus* f. *spiralis*. The spiralling, similarly leafless, dark green stems stand in dramatic contrast to the upright, dark blue-green ones. In addition, the brownish blooms are unremarkable (Shoot, 2019).



Figure 314: Twisted arrows bush (Shoot, 2019)

Figure 315: Close up of twisted arrows (Shoot, 2019)

**River star (Gomphostigma virgatum [L.f.] Baill.) also known as 'besembossie' in Afrikaans**

River star (*Gomphostigma virgatum*) is a beautiful evergreen perennial shrub that can grow to a height of 2.6 meters. The slim, malleable, and silvery grey limbs have a refined appearance. The leaves are simple in structure and somewhat thin, and arranged asymmetrically. As summer progresses, it becomes a sight to see when it is blanketed with fragrant white blooms. The river star lives on or near waterways in South Africa. It is one of several types of vegetation have adapted so that their root systems can flourish in the muck next to the water (Mutshinyalo, 2001).



Figure 316: River star (Mutshinyalo, 2001)

Figure 317: Flowers (Mutshinyalo, 2001)

**Mother-in-law's tongue (*Sansevieria hyacinthoides*), also known as 'skoonma se tong' in Afrikaans**

These are persistent perennial plants with flat, mottled leaves. They grow in dense clumps and taste delicious. New roots grow from the rhizome and help the plant to spread. The leaves are flat (60x8cm), dark green with lighter patterns and crimson borders, and grow upright in loose clusters from the ground. Beautiful sprays of fragrant white flowers appear overnight. Birds love the succeeding large orange berries. White flower sprays, which are both beautiful and fragrant, bloom overnight. It is essential to provide at least some shade for these plants (Wild Flower Nursery, 2022c)



Figure 318: Mother-in-law's tongue cluster (Wild Flower Nursery, 2022c)

Figure 319: Mother-in-law's tongue (Wild Flower Nursery, 2022c)

**Marigold (*Tagetes*) also known as 'gousblom in Afrikaans**

These extravagant annual flowers cover our summer and autumn gardens in a cornucopia of gold, copper, and brass. It is perhaps a big part of why people love it so much, as it keeps flowering all summer. Marigolds can produce single or clustered blooms that look like daisies or carnations. The African marigold (*Tagetes erecta*) may reach a height of 1.2 meters. It is the tallest of the marigold species, and produces enormous, fully-laden flowers. French marigolds, also known as *Tagetes patula*, tend to be smaller than their Mexican cousins. Pot marigold, also known as *Calendula officinalis*, is a flowering plant commonly used in herbal medicine. Its bright flowers are edible and taste somewhat sour and peppery (Almanac, 2022).



Figure 320: African marigold (Almanac, 2022)

Figure 321: French marigold (Almanac, 2022)

Figure 322: Pot marigold (Almanac, 2022)





08]

## APPENDIX

8.1 REFERENCES

8.2 LANGUAGE EDITOR CERTIFICATE

8.3 TURNITIN REPORT

## 08 ] [ REFLECTION AND EVALUATION

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**To whom it may concern**

This is to state that the M. Arch. thesis titled A PLACE OF HEALING WITH WATER / ritual of reconnecting by Elzette Esplin has been language edited by me, according to the tenets of academic discourse. The final responsibility for applying any proposed corrections lies with the author.



B.Bibl.; B.A. Hons. (English)  
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