

FULL CYCLE [PROMESION IN THE CITY]



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Declaration of original authorship:

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

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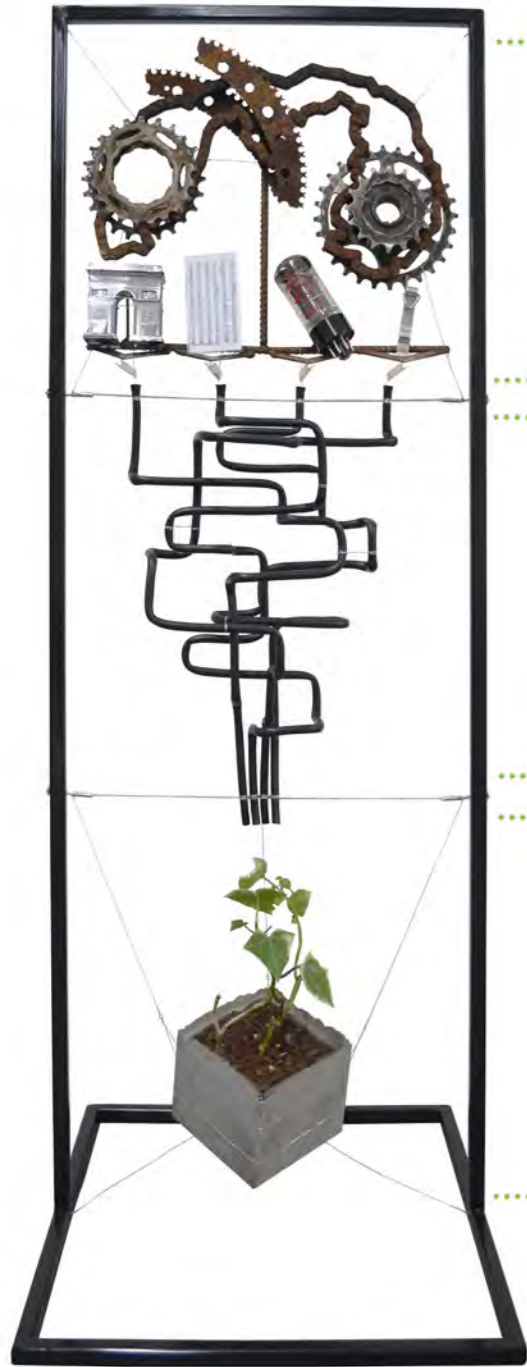
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“Do not stand at my grave and weep
I am not there. I do not sleep.
I am a thousand winds that blow.
I am the diamond glints on snow.
I am the sunlight on ripened grain.
I am the gentle autumn rain.
When you awaken in the morning’s hush
I am the swift uplifting rush
Of quiet birds in circled flight.
I am the soft stars that shine at night.
Do not stand at my grave and cry;
I am not there. I did not die.”

(Frye , 1932)

I still remember that afternoon and the phone call that would scar the 7th of December 2005 in my memory forever. By drawing on the tragedy of losing three of my closest friends and the mourning process that accompanied this tragedy, this dissertation aims to introduce an alternative memorial complex within the heart of Bloemfontein.

This alternative burial complex will evolve around the topic of promession, a burial method that returns the remains to the earth in the form of nutrient rich soil. Interest in the topic was further extended upon the realization of how death influences society as well as the environment. Through investigating various cultural and religious rituals surrounding death as well as the way the topic of death is perceived in a contemporary society, the memorial complex aims to reinterpret and embody this non-place within the Bloemfontein CBD. Additionally, the development seeks to explore ways in which the abandoned towers can be reinterpreted and integrated within the proposed design. This dissertation firstly identifies and introduces the topic of promession, and the perimeters associated with the project through a statement of aims. Thereafter it seeks to explore and ground concepts through research, analysis, and theoretical approaches to death of the physical and metaphysical. These concepts and theoretical approaches will then be applied in order to form a design and technical synthesis. In conclusion, the dissertation reflects on and evaluates the complete investigative process with the focus on the way in which the conceptual exploration, theoretical approach and research aided in the development.



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PART 01

INTRODUCTION

With the Free State experiencing on average 15 000 deaths a year, (SA, 2019, p.17) the question was asked; where do all these bodies go and how do these everyday burial methods, such as inhumation and cremation, impact the environment?

This question led to investigating an alternative burial method namely promession, a clean process which returns the body back to the earth in the form of nutrient rich organic material. By drawing on past tragedy, looking into statistics, and experiencing the negative connection society has with death this section introduces the client as well as the project rational and aims.

1.1 Introducing the topic of Promession

1.1.1 Promession process

1.2 Project motivation

1.2.1 Drawing on the tragedy

1.3 Project rational

1.3.1 Client

1.3.2 Theoretical approach

1.3.3 Project aim

1.3.4 Statistics

1.4 Touchstone: The cyclical nature of life and death



1. INTRODUCTION

PROMESION IN THE CITY

When we are born, we are all diagnosed with the same condition; death, it is inevitable. All of us face this reality, yet it is so difficult to acknowledge that we do our best to avoid it. Death is hidden away in hospitals, retirement homes and cemeteries on the outskirts of society.

Death is an uncomfortable subject in a contemporary society; it values permanence and pursues everlasting youth. Even though death is suppressed in everyday life, we are ironically confronted by the media with memories and representations thereof, but we do not experience it personally and therefore we continue with our daily lives. However, when a loved one dies, we are faced with the reality thereof and it has a personal impact. Depending on the culture and religion, various rites and rituals are performed as part of the mourning process assisting in the transition to the afterlife; a start to the journey of the dead on this road that remains unclear for the living.

Promession is a process that offers an alternative to that of conventional burial methods such as inhumation and cremation. This process converts human remains into soil and returns it back to the earth, nourishing new life after death. Not only does the process acknowledge the inevitability of death, it provides a lasting memory of the individual in the form of a plant. During the COVID-19 pandemic, promession offers a safe burial method that limits human contact by means of the automated process. Promession also guarantees the destruction of the bacteria and virus by flash freezing the corpse which will cause the bacteria to “hibernate” before going through the promession process. After the corpse is flash frozen and broken up into organic material, the promains (organic material) is exposed to UV light as an added precaution, (Wiigh-Mäsak, 2020, online).

1.1.1 PROMESION PROCESS

3. The freezing crystallizes the body and makes it brittle enough to be disintegrated into tiny particles with the use of ultrasonic vibration.

4. The remains are then collected so that it can be freeze-dried to remove any remaining moisture.

2. The body is now submerged in liquid nitrogen and undergoes cryogenic freezing for approximately 2 hours which takes the body to -196°C .

5. Any metals such as mercury, sodium or other foreign substances are separated from the freeze-dried remains. Whatever is left, is placed in a biodegradable coffin made from corn or potato starch.

1. Following the funeral service, the body is removed from the coffin. The body is then frozen at -18°C before being placed into a Promator. After this, the entire process is automated, which means this is the last step in which the body is handled by human hands.

6. The remains are buried at a depth of 15 to 30 cm and within 6 to 18 months, it will turn into nourishing soil from which plants can grow.



1.2 PROJECT MOTIVATION

DRAWING ON THE TRAGEDY

Coming back into the house, with the sweat of a long day's play streaming down your forehead, this was the glory of my childhood. Johandre, Jenny, Jessica, and Matthew along with myself and my sister were inseparable. Endless days were spent having sleep overs, birthday parties, going on outings, horse riding, and getting into trouble. This formed a bond between us that only we truly understood. We were all enjoying life, enjoying childhood and the innocent excitement of life that goes with that.

I still remember that afternoon. That phone call that would scar the 7th of December 2005 17:17 in my memory forever. The phone call that changed the life of a naïve, innocent, 10-year-old me forever...

If we knew our dear family friends were going horse riding that afternoon, my sister and I would have been in the vehicle with them. On that day, all four my childhood compatriots, got into that bakkie. That bakkie that only a few moments later would be in a field, 30 meters away from its crash site. The sound of the oncoming goods train, still ringing in the silence. First responders to the scene found four of the wounded in the field and Jessica still stuck in the passenger seat. Francois (the father of Jessica and Matthew) sustained chest-, back-, neck injuries and memory loss; Johandre had back- and hip injuries. Jessica and Matthew's injuries were so severe that they passed away in hospital only days apart. Jenny sustained severe head injuries leading to emergency neural surgery after which she spent 8 days in ICU before passing away.

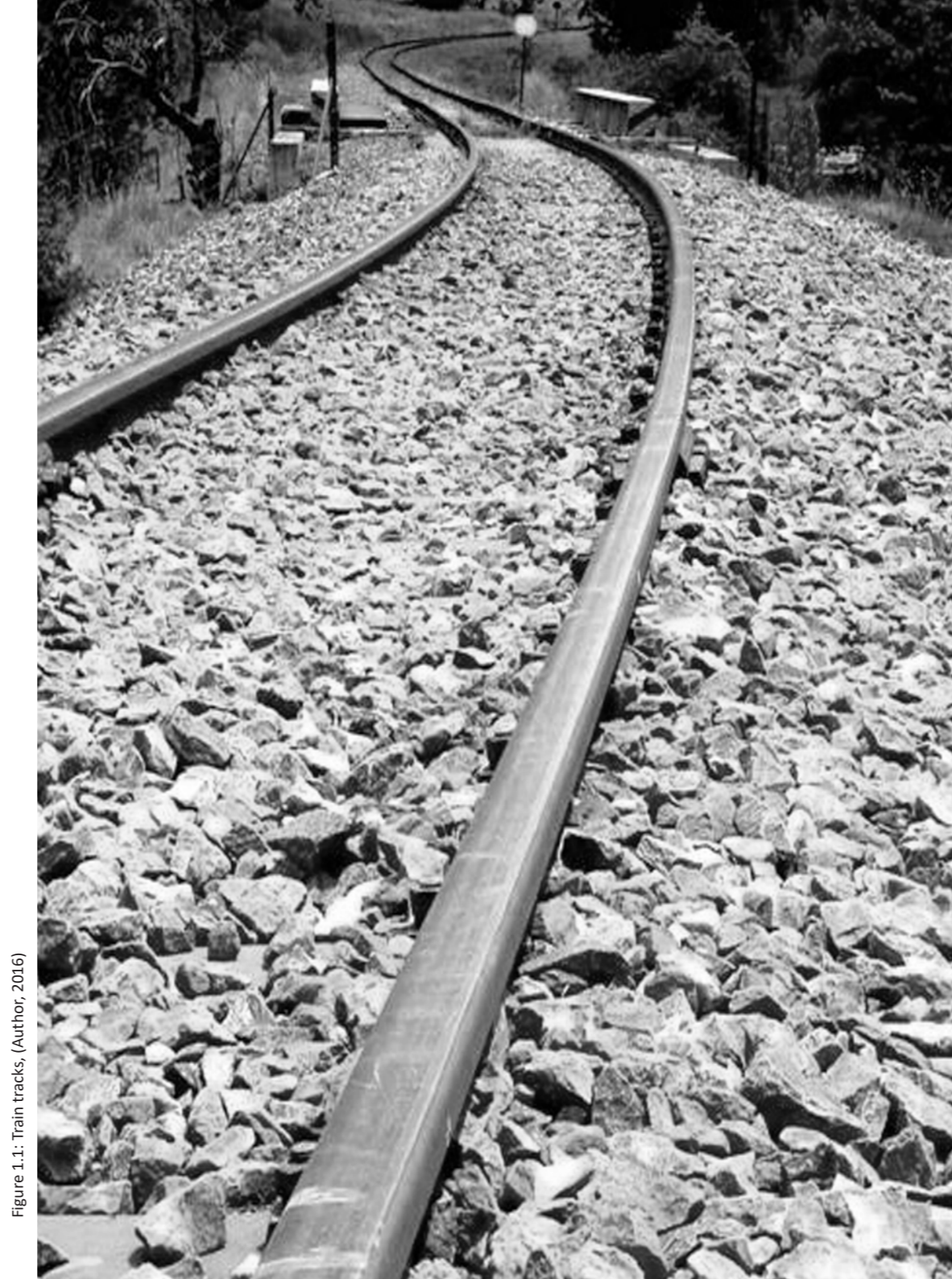


Figure 1.1: Train tracks, (Author, 2016)

Although the majority of the memories from the incident have been blocked out or forgotten over time, some memories stayed with me. One of which is my mother removing thorns from Jenny's feet while she was lying in the hospital bed. I also remember the hours my parents spent at the hospital to take over from Jenny's parents for them to get some rest.

Because we were so young, and to shield us from this grief and sorrow, my sister and I were only allowed into the ICU once – my sister did not want to go in. My parents wanted us to preserve the living memory of our friends. We were removed from the incident to a certain extent; we were not able to say our final goodbye.

Something that stood out to me was the way Jenny's parents chose to remember her by. Instead of bringing flowers, they asked the mourners to rather bring plants, something that could be planted to keep her memory alive and celebrating her life. As a 10-year-old, this tragedy was a lot to comprehend and work through but, upon looking back, I have come to realize that mourning is an essential part in accepting death. We as individuals all have our own ways of grieving and need time to heal. This approach to death and how I dealt with it had such an impact on my life that after 15 years it serves as the basis of my thesis.

By looking at a larger spectrum of burial customs and the elements that goes along with them, it becomes clear that modern society has a lot of negative connections with death. From graveyards that take up a lot of space; to pollution created by the disposal of bodies. This led to the search of an alternative burial method, something that has less of a negative influence on both society as well as the environment in the form of promession.

Bakkie, trein bots by Bfn



Figure 1.2: Newspaper clippings of accident, (Author, 2020)

1.3 PROJECT RATIONAL

1.3.1 CLIENT

Promessa is a company based in Sweden that has developed and offers the environmentally friendly process of promession. Promession provides an alternative for issues regarding the death care industry such as unsustainable land usage and pollution of vital resources such as soil, water, and air, (Wiigh-Mäsak, 2020, online).

Promession is a process that offers an alternative solution to problems being experienced in the funerary industry around the world. Over the past two years Promessa has received interest from 99 countries worldwide as well as the latest additions to that list being that of African countries. The South African representative of Promessa is currently based in Pretoria and provides training to local entities such as Eternal Funeral Services and Living Word Ministry Trust. According to the CEO and founder Susanne Wiigh-Mäsak, significant interest has been shown from South Africa with regards to cleaner, environmentally friendly burial methods from ministries, government, and non-profit organizations (Wiigh-Mäsak, 2020, online). Therefore, the decision was made to appoint a representative in South Africa. The concept of promession focusses on letting the natural way of aerobic decomposition take place, by supporting new life in a positive way. This method does not produce any methane gas as with cremation or pollute ground water as with inhumation (traditional burial) and therefore does not contribute to environmental issues. The process developed by Promessa guarantees zero dioxin release which is impossible with methods that are currently available.

According to Ben van der Merwe, the head of division for Eternal Funeral Services Pretoria, plans are in motion to educate the larger public as well as prepare the market through means of infrastructure and partners. The aim is to launch promession within 1-3 years so that this green method may benefit our environment in a positive manner. Seeing that Promessa is still in the infancy stages in South Africa, it serves as the ideal opportunity to reach out and partner with them in the development of a promatorium.



1.3.2 THEORETICAL APPROACH

With death having a profound impact on everyone, it becomes imperative that mourning the loss of the deceased is experienced and emotion is expressed in the process. Through sharing these emotions, we as individuals form a unity during the grieving process by creating essential physical and emotional connections. To facilitate these connections, the question arises of how to reintroduce death into society by creating a space that engages in conversation and embodies an environment of remembrance through recasting a non-place into a place?

To engage in the discussion of the death of place, architecture and individuals, investigation will be made into the following:

- Death within society
- Place and non-place
- Ritual space
- Cultural and religious rituals
- Death and architecture

Death instills a new meaning to life and therefore the proposed promatorium will aim towards creating a place of new identity, a place that will envelope and house cultural and religious rituals and has the ability to maintain both physical and spiritual roots with a timeless quality. Reintroducing death into society in a way that is respectful and allows for significance of such a space will embody an environment of remembrance.

1.3.3 PROJECT AIM

The aim of the development will be to reintroduce death back into society by creating space that engages in the conversation of death as well as embodies an environment that allows for mourning and acceptance of death. By recasting the site of the old quarry surrounding the cooling towers into a place of remembrance, new identity will be given to this white elephant within Bloemfontein.

The project will cater for both the functional as well as the ceremonial aspects of a funerary complex in a way that will lend itself to functions such as that of promession (dealing with human remains) and administration and rituals that go hand-in-hand with this process. The development will make provision for ceremonial space as well as the rites and rituals performed by the various cultural and religious groups found in Bloemfontein. Seeing that the product of the promession process will be returning the promains (organic material) back to the earth in the form of a plant, a large part of the development will make provision for green space.

STATISTICS

POPULATION, MORTALITY, RELIGION, FUNERARY SERVICES



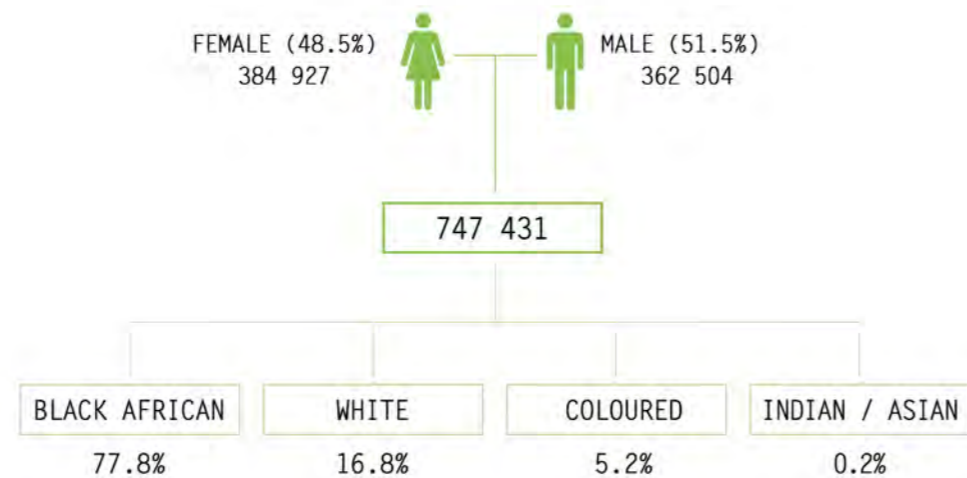
FREE STATE POPULATION



2 887 465



BLOEMFONTEIN POPULATION



1.3.4.1 POPULATION STATISTICS

According to the 2019 mid-year population estimates compiled by Stats SA, the Free State is made up of a population of 2 887 465 people, (SA, 2019, p. 17). Of this total Bloemfontein makes up 747 431 people (25.88%) of the population of which 384 927 (51.5%) is female and 362 504 (48.5%) is male.

The demographics in Bloemfontein as stated in the 2011 Free State Municipal report consists of the following population groups:77,8% Black African, 16.8% White, 5.2% Coloured, 0.2% Indian or Asian.

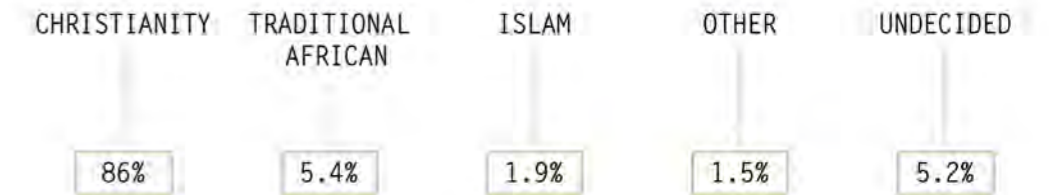
YEAR	NUMBER OF BIRTHS	NUMBER OF DEATHS
2002	255 124	150 432
2003	256 903	160 432
2004	273 876	167 938
2005	285 166	171 346
2006	274 203	173 901
2007	303 058	171 049
2008	309 741	164 124
2009	311 644	155 904
2010	311 748	148 768
2011	308 676	142 783
2012	306 704	142 551
2013	305 611	138 735
2014	305 100	139 488
2015	304 671	137 907
2016	305 309	136 216
2017	305 125	137 247
2018	304 226	138 590
2019	303 174	140 167

Table 1: Mid-year population estimates, (SA, 2019, p.17)

1.3.4.2 DEATHS

As seen in table 1 of the 2019 mid-year population estimates compiled by Stats SA, which was compiled over a 12-month period (e.g. 1st July 2018 to 30th June 2019), it is evident that the mortality rate is quite high. On average, during 2019 there were ±11 683 deaths.

RELIGIONS IN BLOEMFONTEIN



FUNERARY SERVICES IN BLOEMFONTEIN

- CEMETERIES - 13
- FUNERAL HOMES - 30
- CREMATORIUMS - 20

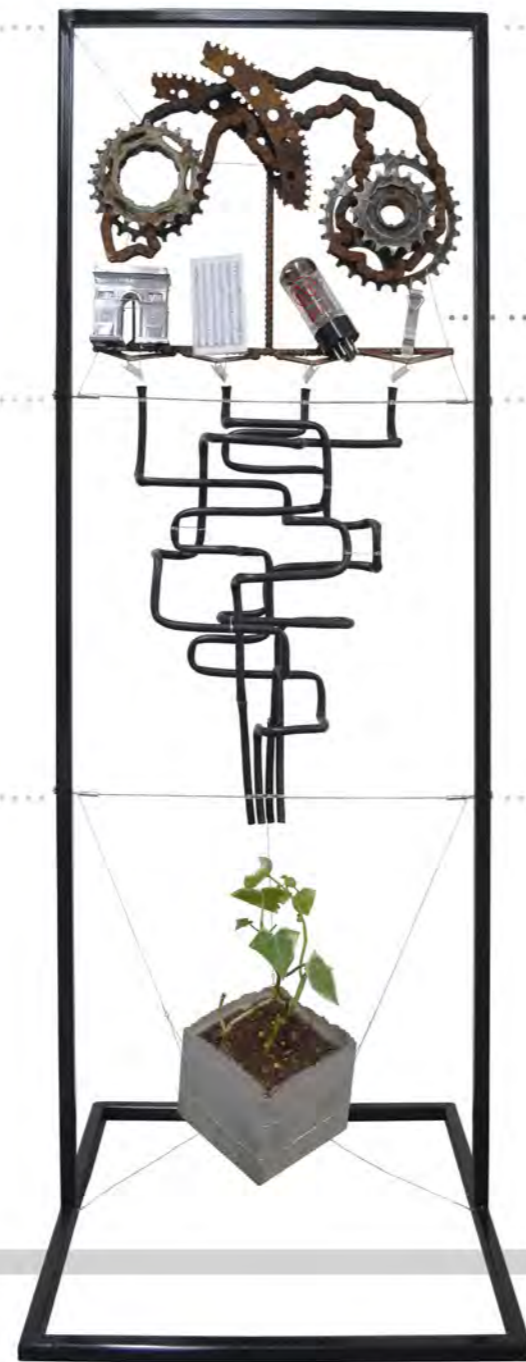
TOUCHSTONE

THE CYCLICAL NATURE OF LIFE AND DEATH

- TONGKONAN -

A word used by the people of South Sulawesi, Indonesia, that refers to the traditional houses. These houses are regarded as the representation of the individuals life and death, (Kim, 2018, online).

Figure 1.3: Touchstone, (Author, 2020)

**SOCIAL INHERETANCE**

Society, as a whole, is separated from death and through social interaction so much baggage and norms are cemented in our lives, baggage that is passed along from one generation to the next. Represented by means of mechanical objects, the ideas surrounding mortality comes across as very rational, justified, and final but subconsciously this is what we pass along to each other and the next generations.

Objects related to individuals, frozen and placed within society start to melt over time. This symbolizes the individuals within society and in these pre-conceived norms that are enforced on us. As they start to melt the water is fed into the second stage of the touchstone which leads to the individual journey.

SEARCH FOR PURPOSE (RITUAL)

Individuality plays a large role in this section. As the ice (inheritance) melts and is fed into the physical journey of each individual, we as outsiders are only able to see the beginning and the end of these journeys. We are not allowed to see more than mere glimpses along the way. The past filters into the present and becomes something different, remaining a memory but becoming the life force of each individual. Our involvement as outsiders is limited to the beginning and the end. As with the water spilling over the sides, we are allowed the occasional input into individual lives.

As our individual journeys come to an end, we are mourned. But why does this need to be the case, why can we as society not approach death differently? How can we use this process of grief to celebrate the life of those who pass?

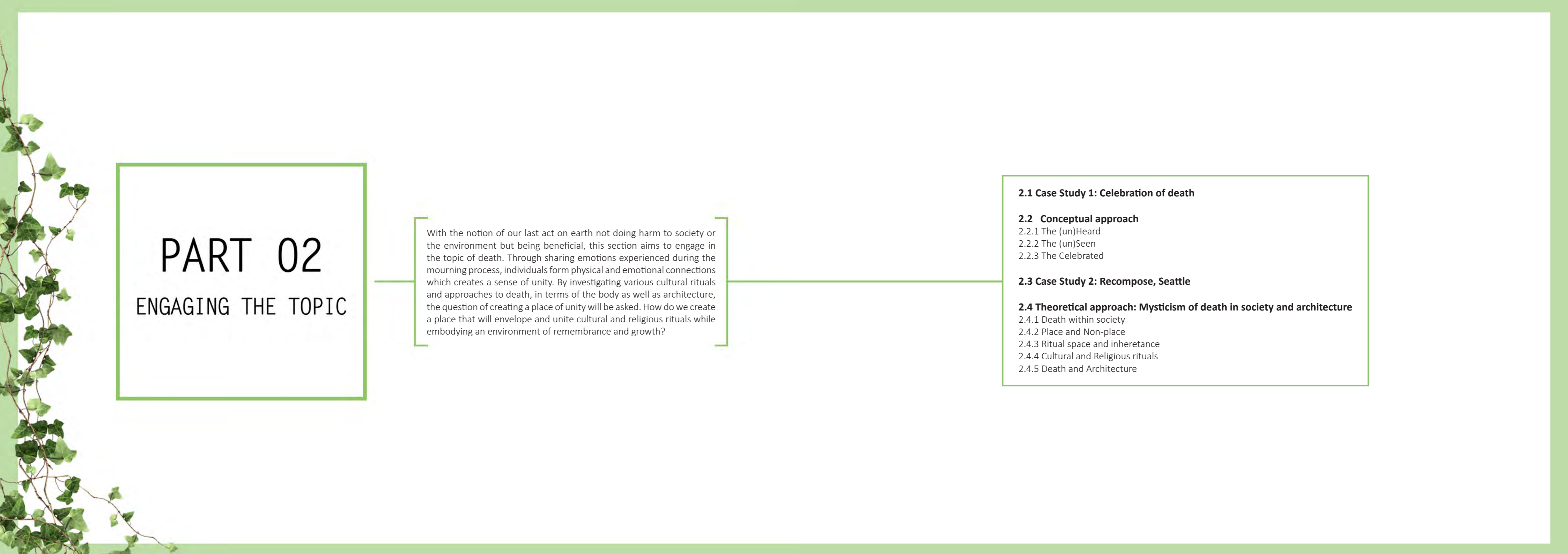
ENGAGING IN CONVERSATION

After the melted ice drops complete these individual journeys, they drip on the plant. This symbolizes the end product of the promession process as well as the conversation piece which will grow and pass through the individual journeys and eventually connect society with the topic of death. By doing this, the cyclical nature of life and death is revealed and re-introduced into society.

By re-introducing the topic of death back into society; the aim is to counteract and balance this mystical/mythical absence of death with the essence of celebrating and engaging with it. Allowing the end product to represent the life cycle.

Why not have our last act on earth be beneficial...





PART 02

ENGAGING THE TOPIC

With the notion of our last act on earth not doing harm to society or the environment but being beneficial, this section aims to engage in the topic of death. Through sharing emotions experienced during the mourning process, individuals form physical and emotional connections which creates a sense of unity. By investigating various cultural rituals and approaches to death, in terms of the body as well as architecture, the question of creating a place of unity will be asked. How do we create a place that will envelope and unite cultural and religious rituals while embodying an environment of remembrance and growth?

- 2.1 Case Study 1: Celebration of death**
- 2.2 Conceptual approach**
 - 2.2.1 The (un)Heard
 - 2.2.2 The (un)Seen
 - 2.2.3 The Celebrated
- 2.3 Case Study 2: Recompose, Seattle**
- 2.4 Theoretical approach: Mysticism of death in society and architecture**
 - 2.4.1 Death within society
 - 2.4.2 Place and Non-place
 - 2.4.3 Ritual space and inheretance
 - 2.4.4 Cultural and Religious rituals
 - 2.4.5 Death and Architecture

2.1 CASE STUDY 1

CELEBRATION OF DEATH

TANA TORAJA PEOPLE OF SOUTH SULAWESI, INDONESIA

Death is unavoidable, whether you have experienced the death of someone close to you or have yet to do so, it is inevitable, and it is a universal experience. However not all of us experience death in the same way. In Tana Toraja located in Sulawesi, Eastern Indonesia, death is not experienced as a singular event; life does not end with death, (Kim, 2018, online).

Torajans do not reject medical treatment, nor do they escape mourning when loved ones die. But rather than push death away they consider death to be at the centre of life. Here, once a person dies he/she is not considered dead but rather referred to as 'to makala' (a person who is sick) or 'to mama' (a person who is sleeping) because the human connection lasts well beyond death. This person then "lives" with and is a part of the household while being cared for and symbolically fed and is included in conversations. During this time, families will start a series of death rituals that informs the community that a member of the family is making the transition into puya (the afterlife). Only once the family reaches an agreement and has enough money as well as resources to hold the funeral, the status of the individual to deceased. It is also very important that the funeral celebrations are deemed appropriate to the status of the deceased, (Swazey, 2013, online).

Death is not seen as a solid wall but rather a perforated screen into the next life and therefore the connection to the dead does not end with a gravestone but continues.

Figure 2.1: Gathering for Ma'Nene ceremony, (WIDI, 2019, online)



Figure 2.2: Cleaning the corpses during Ma'Nene ceremony, (Sieber, 2017, online)



Figure 2.3: Cleaning the corpses during Ma'Nene ceremony, (Koudounaris, 2014, online)

Death rituals and funerary customs of the Tana Toraja

Funeral ceremonies in Sulawesi are lively events that last anything from a couple of days to weeks on end. Unlike weddings or the birth of a child, these funeral ceremonies are considered to be the most important social moment in someone's life, (May, 2013, online). Therefore, death is celebrated rather than mourned by the community and the family. These ceremonies take place in various stages, stages that allow the deceased to pass through the veil and enter 'puya' (the afterlife).

According to April Holloway, once the individual dies the family is required to hold a series of ceremonies known as Rambu Soloq. The ceremonies begin when visitors attend a buffalo slaughtering field (figure 2.4). Here family members slaughter buffaloes and pigs that went through strength trials (known as Tedong Silaga) in order to award the spirit of the deceased a peaceful afterlife tending to the animals that have come to join him/her.

After the sacrifice has been made, meat is distributed among the visitors and community members according to their position (figure 2.5). The spirit of the deceased is also given a portion of the meat (known as Aluk Todolo). The heads of the buffaloes are returned to the site of the deceased person to pass into puya with the individual and the horns are placed in front of the family house (here the amount of horns placed is related to the status of the family in the community).

Burial, although the body is not technically buried, only takes place after the eleventh day of the ceremony. The final resting place of the body is either in a shallow cave on a cliff face (figure 2.6) or in a wooden casket suspended from the cliff face. The spirit of the deceased is believed to linger around the village until the ceremony is completed and it can start the journey to the land of the souls. This is represented by the Tau-Tau, a wooden carved effigy, of the individual that represents the dead and is placed close to the resting place that watches over the remains, (Holloway, 2014, online).

This however is not the end of the funerary customs of the Tana Toraja, every year in August the Ma'Nene ceremony (ceremony of cleaning corpses) takes place; here bodies are exhumed, cleaned and dressed in new clothes and will happen every year (figure 2.7). Therefore, death is not a singular event in this culture, rather than pushing death to the side it is considered to be at the centre of life.

An individual's life is captured in the traditional house/grain store erected by the locals referred to as a Tongkonan, not only does this boat like structure represent the life of a person, it also represents the death of the individual. Therefore, death becomes an integral part of the Tana Torajan society and symbolizes both the mystical as well as the reality of our journeys.

Although the approach of the Tana Torajan people is not something that will easily be translated into the western culture or approach to death, it sparked the notion of life not ending after death and raised the as to why we as society choose to distance ourselves from death to such an extent? This led to the conceptual investigation into how the design of a promatorium within the city can nudge society into a direction that challenges the sociological ideas relating to death, engages in a honest and transparent conversation about death, and creates a place of remembrance that contributes to the surrounding context.

Figure 2.4: Buffalo as sacrifice, (Sieber, 2017, online)



Figure 2.5: Dividing the sacrifice, (Charlton, 2016, online)



Figure 2.6: Cliff face resting place, (Lange, 2013, online)



Figure 2.7: Ma'Nene ceremony, (Sieber, 2017, online)



2.2.1 Concept 1

THE (UN)HEARD

CHALLENGING SOCIOLOGICAL IDEAS ...



Death is not a comfortable topic for anyone; it is not something that we as society discuss. We all know that it is part of cyclical nature of life, yet we avoid the topic.

This concept aims to challenge these sociological ideas of death by re-introducing the concept of death back into society, back into the heart of city and not pushed to the outskirts. By creating space not only for the acceptance of death but also introspection, one allows the mystical/ mythical idea of death to become a reality. The model explores isolated spaces side by side with the fragile connections we as society create with the mystical.

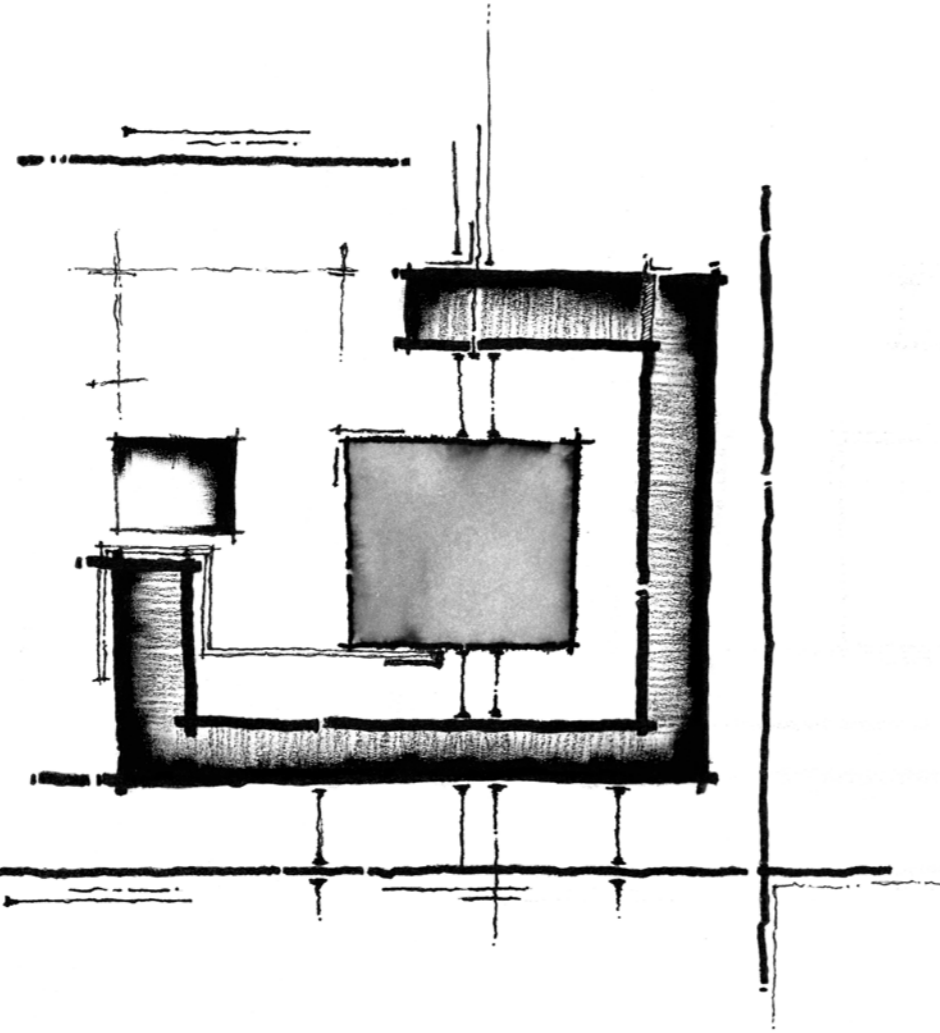


Figure 2.8: Conceptual model exploring the concept of the (un)Heard, (Author, 2020)

2.2.2 Concept 2

THE (UN)SEEN

ENGAGING IN CONVERSATION ...



Asking the question; why do we as society avoid the topic of death? What would happen if we engaged in this conversation in a way that is honest, transparent and leads to the celebration of life as well as death?

This concept aims to bridge the gap and mediate the unexplored space between the mythical topic of death and the ideas we are brought up with. This platform of transparency not only allows for the journey of the deceased, where the life lost is captured and celebrated, but also for that of those left behind to engage in the mystical.

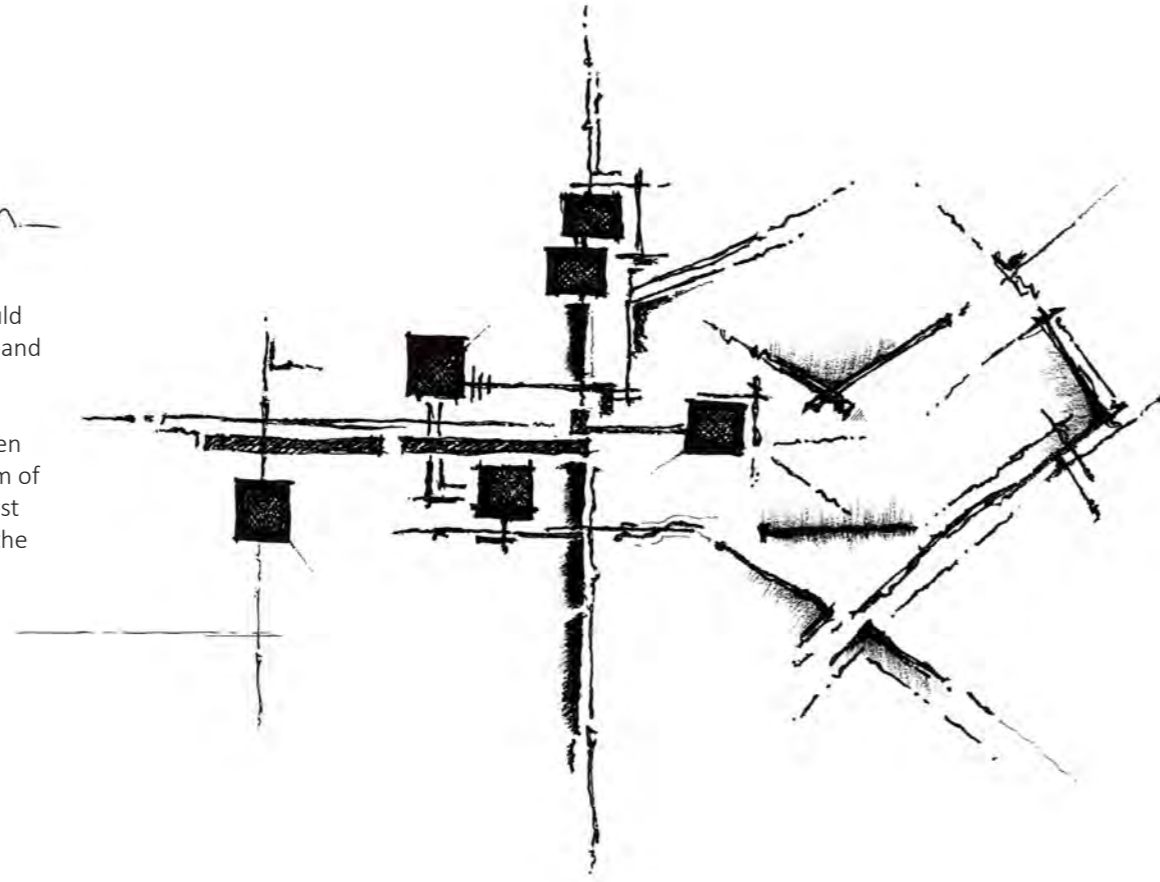


Figure 2.9: Conceptual model exploring the concept of the (un)Seen, (Author, 2020)

2.2.3 Concept 3

THE CELEBRATED

REMEMBRANCE THROUGH CELEBRATION ...



After engaging in the topic of death and accepting it for what it is, why do we still decide to only mourn the passing of a loved one, why not celebrate the life lived? Would it be possible to create, both a physical and metaphysical, place of remembrance that focuses on this celebration?

With this concept, the investigation is made into the celebration of death, both in the dematerialization of the structure as well as that of the physical body as it completes the procession process. The model explores the option of utilizing the cooling towers as the place of celebration. By embodying this place which was once used as part of the power station, we can create a mystical environment of celebration and remembrance.

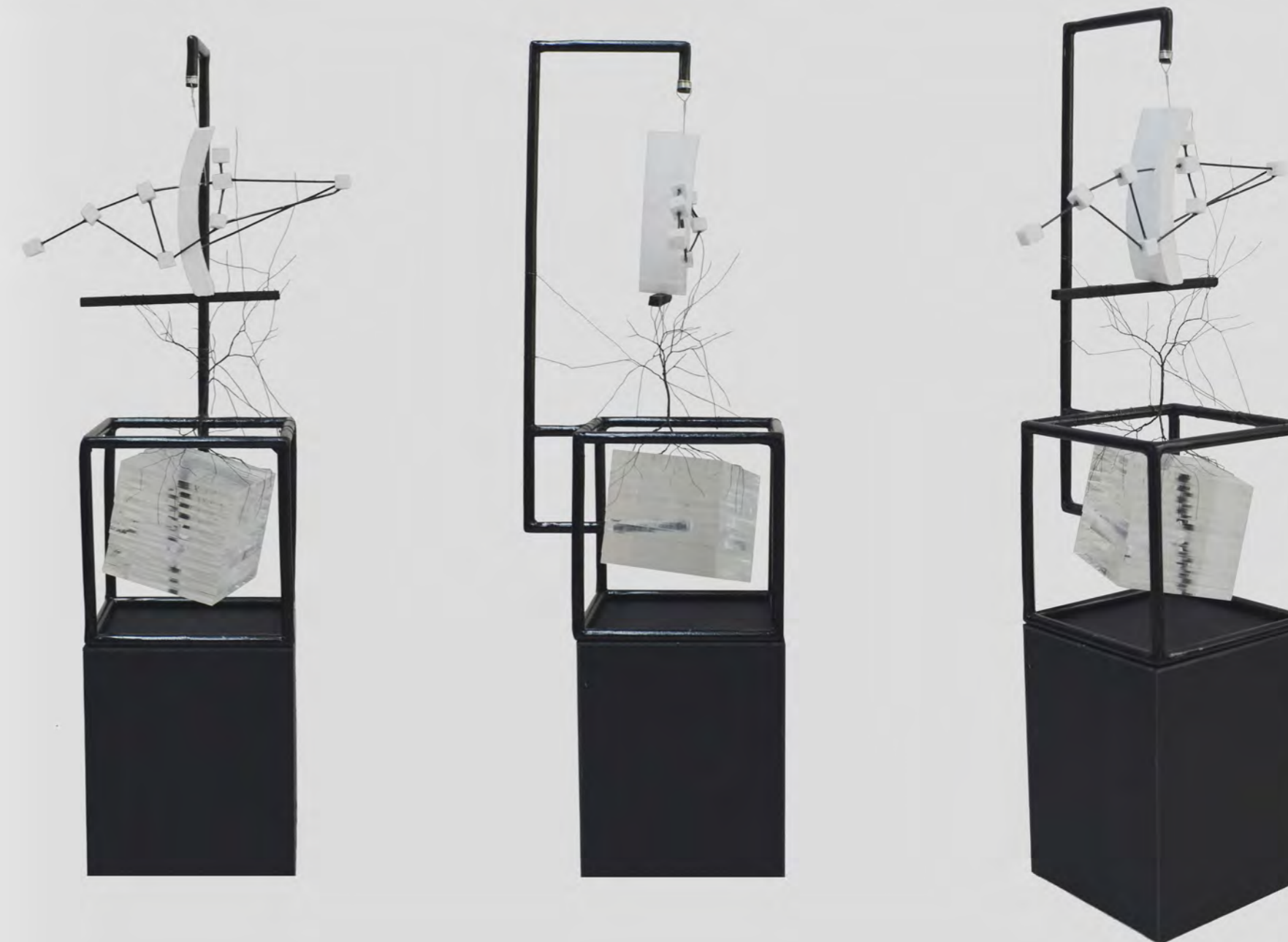
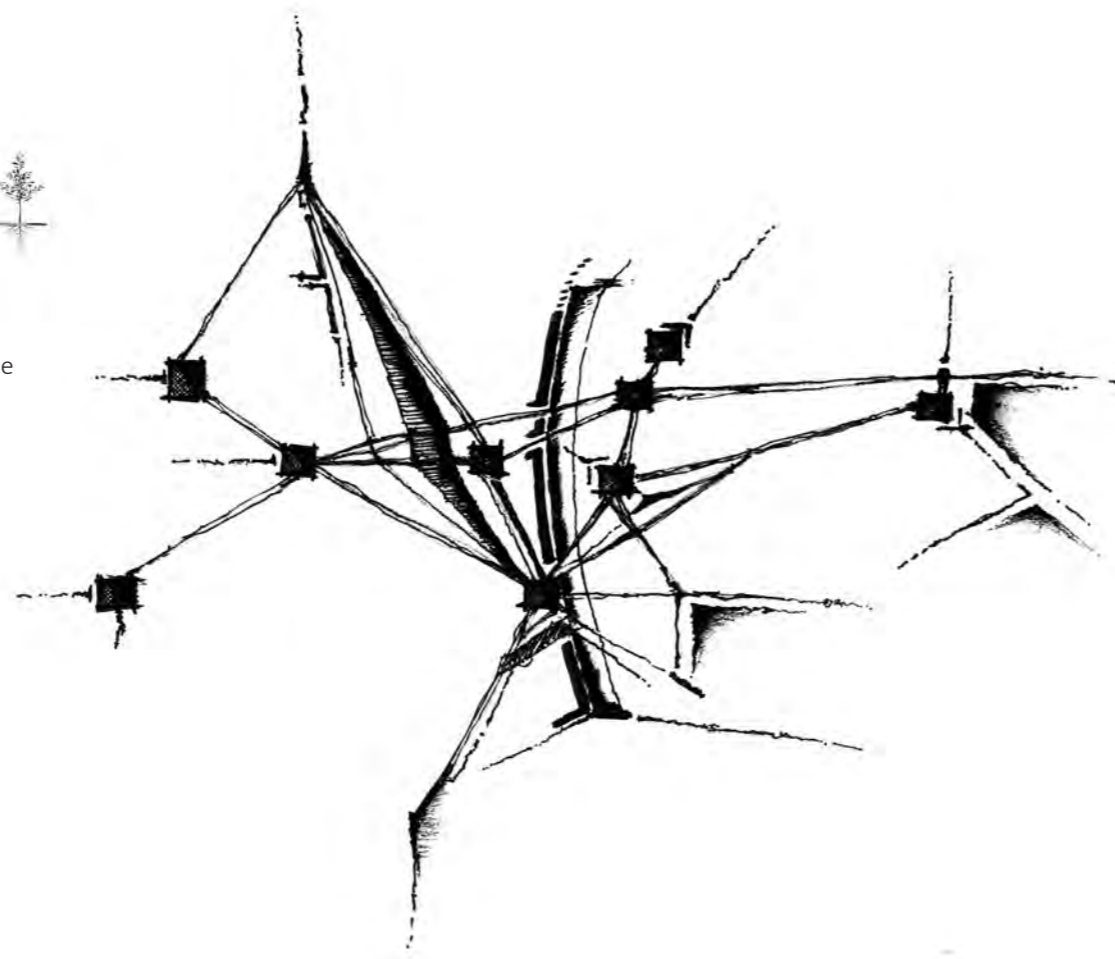


Figure 2.10: Conceptual model exploring the concept of the Celebrated, (Author, 2020)

2.3 CASE STUDY 2 RECOMPOSE, SEATTLE

RECOMPOSE: ALTERNATIVE BURIAL FACILITY

By looking at the question of creating and embodying a space of growth and remembrance in a respectful manner by introducing an alternative burial method, Recompose was introduced. Done by Olsen Kundig Architects, the 1,719m² centre is designed for a company founded by Katrina Spade. This centre offers an alternative to cremation and traditional burial in the form of a process through which the human body is composted and turned into soil.

The Recompose Seattle project follows Washington becoming the first US state to legalise human composting in 2018. Recompose is scheduled for completion in the spring of 2021; the facility will be the first of its kind to offer the process of human composting on a large scale. According to Katrina Spade, Recompose will also be “the first facility in the world to provide a sustainable option for after-death care”. The process of human composting is more sustainable and environmentally friendly in comparison to other options, (Cogley, 2019, online).

Throughout the process, around a cubic yard of nutrient-rich soil is produced from the human body, which can then be used for growing plants. An eighth of the energy needed for cremation is required and it saves one metric ton of carbon dioxide per person in comparison. Another benefit of the process is that less space is used in comparison to alternative processes such as burial.

Figure 2.12: Central indoor ceremony space, (Stewart, 2019, online)

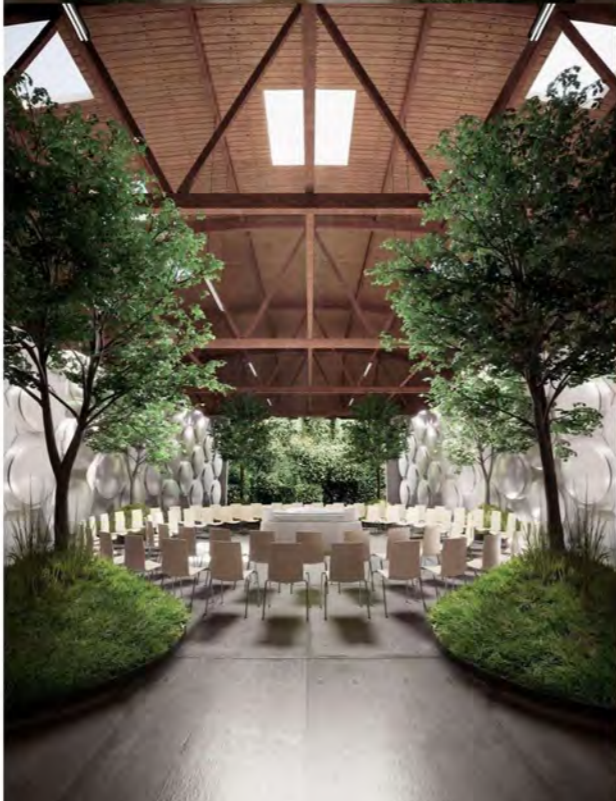


Figure 2.11: Funeral ceremony before body is placed in chamber, (Stewart, 2019, online)



Figure 2.14: Modular vessel where body will decompose, (Stewart, 2019, online)



Figure 2.13: Final private greeting room for family members (Stewart, 2019, online)

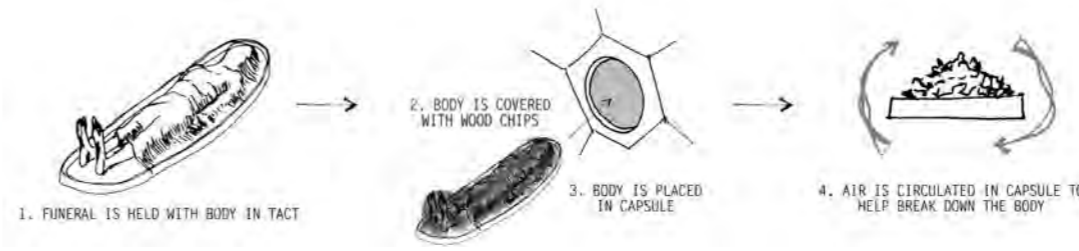


Figure 2.15: Recompose process, (Author, 2020)

Accommodated within the building design will be Recompose’s “patent-pending” process (figure 2.15) which involves placing bodies in a controlled, modular, and reusable vessel, where the body will be covered in wood chips and aerated to promote break down. According to Katrina Spade, “Everything – including bones and teeth – is transformed”. This break down happens because the system creates a perfect environment for thermophilic (heat-loving) microbes and beneficial bacteria to quickly break the body, (Cogley, 2019, online).

White walls house hexagon-shaped portals with circular doors that open into the pods where the bodies will decompose, there are approximately 75 of these vessels in the facility that demarcate ritual and memorial space. The open area will be utilized for ceremonial purposes following death of an individual, with chairs arranged in a circular pattern to accommodate the gatherings. Located around the central space are the treatment/ preparation rooms where the bodies are prepared, placed on the vessel, and covered with a white cloth.

After the process of recomposing the families have the option to collect the resulting human-based soil or if they choose not to, the soil is used to reforest a previously mismanaged 300-hectare land in southern Washington with a non-profit conservation organisation. Not only does Recompose offer an alternative to the usual burial practices, it encourages the natural cycle of life in the sense of returning to dust in such a way that positively influences the earth.

Although not the same process as promession, this method provides yet another beneficial alternative for burial that places focus on the future growth of the environment. By looking at the procession and overall neutrality of the design, the question of how this facility and the approach to death will be facilitated started revolving more around ritual and procession and how to implement this in the promatorium.

Figure 2.16: Central indoor ceremonial space for funeral rituals, (Stewart, 2019, online)



THEORETICAL APPROACH

MYSTICISM OF DEATH IN SOCIETY AND ARCHITECTURE

2.4.1 Death within society

The death of a loved one and the emotion of grief that goes hand-in-hand with it can have a deep impact on individuals. It is imperative that those mourning the loss of the deceased can experience and express this emotion. This sharing of emotion is a form of unity, which is an essential connection, needed during the grieving process. A funeral ceremony can draw people together and unite them for a moment in time. The mourning process and awareness of death gives meaning to life. This realization that one must eventually die motivates a person to strive towards a meaningful life. Our ontological security (having a sense of order and continuity in relation to life events) depends upon being able to find meaning in life. As Mellor states it "The existential confrontation with death, one's own or that of others, has the potential to open individuals up to dread, because it can cause them to question the meaningfulness and reality of the social framework in which they participate", (Mellor, 1993, p. 13).

Death is an event that is experienced, not only by an individual, but also by society. In the past, the death of an individual disrupted the order of a social group by forcing a readjustment in responsibilities and feelings. This type of disturbance and readjustment created by the death of an individual did not necessarily only have negative influences on the remaining members of the community. In most cases the event served to increase cohesiveness, adaptability and growth, it served as a reminder of mortality, (Aiken, 1991).

A progression of modern systems removed certain aspects of death from public spaces and relocated them into privatized areas of an individual's life. Where once death was celebrated through communal practices and expressions of grief, it has moved to the seclusion of the medical field for the medical professionals to deal with, (Mellor, 1993, pp. 11-30). Because of this denial and absence of death from the public space, it has made the meaning thereof so privatized, any attempts to construct a meaning around death becomes naturally weak. Giddens states that this "becomes a fundamental psychic problem, since the moral questions and existential problems poses in a day-to-day life are denied answers where answers cannot be found within the internal referentiality of modernity", (Giddens, 1991, p. 9).

Contemporary society has however seen a shift in the modern ideology of the privatized death to a more comfortable acceptance of death. This could be seen as a result of the public displays of death through media such as newspapers, television and other media sources. Contemporary memorials are being designed all over and offer a new opportunity of reflection of death within societal structures (figures 2.17-19). These memorials offer constant reminders that life is not infinite, and death is unavoidable, (Aiken, 1991). Architecture becomes a unique mode of reflecting on the ideology of society, therefore it creates the opportunity to manifest these contemporary views of death as well as the apparent existential need to find a sense of identity, purpose, and place. The architecture that therefore houses this rite has a unique potential to enhance and articulate this uncommon moment of unity, (Pohlman, 2014, p. 51). In creating these opportunities for the manifestation of purpose and identity, the notion of place and non-place is introduced.

Figure 2.17: Ground Zero memorial, (Fehrenbacher, 2016, online)



Figure 2.18: Steilneset memorial, (Minutillo, 2018, online)



Figure 2.19: Oklahoma city memorial, (Minutillo, 2018, online)



2.4.2 Place and Non-place

According to Lebbeus Woods, place is defined as a space being taken over and where something is said about the relationship which human beings have with their own history, their natural environment and with one another. Non-place is also defined by him as a place that comes into existence when human beings do not recognise themselves in it, (Woods, 1997, p. 16). Marc Auge makes a similar statement to that of Lebbeus Woods in saying that non-place comes into existence when individuals do not recognize themselves within the space, (Read, 2000, p. 9). Auge however adds the notion that non-place has both a subjective as well as an objective dimension and that non-place comes into existence when individuals have not yet recognized themselves. Opposed polarities of place and non-place act like layers or palimpsests in the city accommodating many vernacular identities portrayed in existing buildings and structures. Identities become distorted and relations are mixed, creating ever-increasing chaos.

Looking at the larger context of Bloemfontein we find various non-places within the city, places that have over time fallen into ruin and have lost its purpose. Located on the threshold between Bloemfontein CBD and Waihoek, the previously known black residential area, we find the cooling towers. Even though the site is bordered by significant landmarks (places) in Bloemfontein such as Queens Fort and the Wesleyan church (founding place of the ANC), the site surrounding the cooling towers have become a void within the city; therefore becoming a non-place. As argued by Ginsberg, in the architectural construct, the cooling towers are seen as a ruin in the sense that they no longer serve their original purpose, (Ginsberg, 2004, p. 249). They are subject to nature and decay which serves as a reminder of the passing of time which will never be repaired to its original state, as Ginsberg argues that a ruin can never be fully restored (2004: 297). Through intervention they can serve as a place of new identity, allowing the opportunity to make a place of the non-place.

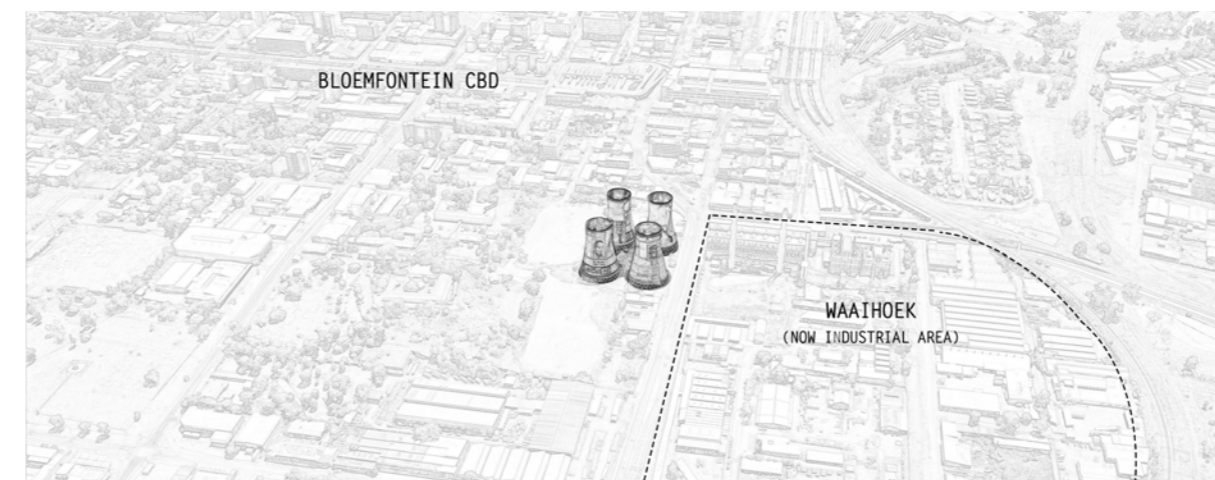


Figure 2.20: Cooling towers within the context of Bloemfontein CBD and Waihoek, (Author, 2020)

Made up of complex layers, spaces, uses and reuses, woven over time and generations into a living tissue of meaning, old or abandoned structures become absorbed into their complexity, being embodied within the context.

Figure 2.21: A void within, (Author, 2020)



Figure 2.22: Reality of the cooling towers being a Non-Place, (Author, 2020)



As Pallasmaa says; “The acceptance of death projects a new depth into our awareness of the fragility of life. Ruins make us experience this fragility and depth of time even more vividly than buildings that we use, having lost their mask of utility, and become pure metaphysical devices. Its vulnerability revealed, a ruin has lost the illusion of its performance. The sole task of a ruin is to accompany time without resistance”,(Pallasmaa, 1995, pp. 314-315).

When thinking of the term ruin, an association of the past is formed together with the loss of something or the idea of mourning. The process of mourning a place calls for letting go of the past landscape in order to open the residual space up for the possibility of a new interpretation, (Kearney, 2007, p. 96). By approaching the site in this manner, these industrial ruins become a platform for reinterpretation and opens up for active engagement.

When looking at the definition of Auge relating to non-place, it becomes evident that individuals need to recognize themselves within the space. Therefore, to create a connection, rituals must be present and layered within the space. By introducing new, but recognizable rituals within the space, the repurposing this non-place as a place of ceremonial commemoration and celebration becomes possible.

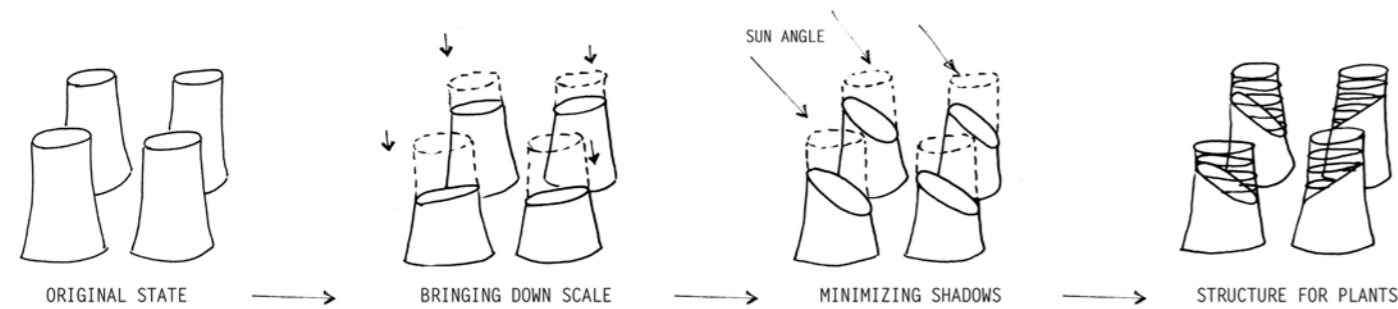


Figure 2.23: Reinterpreting the cooling towers, (Author, 2020)

2.4.3 Ritual space and inheretance

Rituals form part of daily life, when they are defined as repetitious movements through a space, ritual becomes a measured, concentrated approach to life, (Joubert, 2012, online). Not only are these rituals formed by us as individuals, they are passed down from generation to generation and become part of our sociological inheritance. They form part of the field which Habraken speaks of; the field being a coherent and lasting physical entity because it is inhabited and continuously subject to being reshaped by the interactions and interventions of individuals who inhabit it, (Habraken, 2005, p. 105).

Regardless of social and religious variations, rites of passage have been and still are at the center of the various cultures, as they are passed on from generation to generation. It is these rituals that form the foundation of social and spiritual dynamics within a culture. Moving through life from birth, to infancy, to puberty, to adulthood, to old age and eventually death, each individual’s life is marked by rites of passage. These rites not only serve to recognize the transition from one status to the next, they help to facilitate the transformation the new stage brings, (Alexander, 1977).

Rituals surrounding death can be seen as an extremely important rite of passage in a social environment. Even though details differ from culture to culture, most of the behavior associated with death remains the same. According to van Gennepe, these rites of passage are divided into three stages namely separation, transition and incorporation, (Aiken, 1991).

Separation: Death itself is seen as the separating element which separates the mourners from their previous social condition.

Transition: Making the transition from one stage to the next. During this stage mourners assume certain actions while the spirit of the deceased is believed to be on its journey to the afterlife or may still be lingering.

Incorporation: Re-establishing the previous social condition. This is where mourners have gone through the mourning process and the spirit of the deceased is seen to have reached its final destination.

These social rites and rituals associated with mourning serve a variety of purposes including disposing of the physical body; helping the spirit of the deceased with activities of the afterlife; assisting the bereaved in coping with their grief and paying tribute to the deceased. It is evident that the needs of present times are different to those of the past. In the past, death was not seen as a single event but rather a slow transition from the land of the living into the afterlife. ‘Primitive’ people, defined by Vulliamy as someone that belongs to an early stage of civilization and lives in a simple manner, established death rituals amongst themselves out of fear of the supernatural. These rituals were performed in order to facilitate the journey of the spirit into the world and contributing to their continuation in it, (Vulliamy, 1926, pp. 8-12). These rituals and rites became more elaborate as time passed and they became evident in the physical environments.

Looking at the contemporary society, these rituals and rites of passage, be it cultural or religious, are not as distinct; they are not as clearly celebrated and have faded over time, (Alexander, 1977). To understand the need within Bloemfontein, inquiry was made into the cultural and religious groups present in order to facilitate various groups throughout the development.

2.4.4 Cultural and religious rituals

According to the 2019 mid-year population estimates as put together by Stats SA, the Free State is made up of a population of 2 887 465 people (SA, 2019, p. 17). Bloemfontein makes up 747 431 people (25.88%) of the population of which 384 927 (51.5%) is female and 362 504 (48.5%) is male. Of this population the main religions in Bloemfontein are the following:

- Christianity: 86%
- Ancestral, tribal, animists or other traditional African religions: 5.4%
- Muslim: 1.9%
- Other: 1.5%
- Undecided: 5.2%

This section seeks to investigate and understand the rites and rituals associated with these religious groups and the way these rituals influence the ceremonial procession and preparation to dispose of a body. The aim is to explore these rituals and the way that they will influence the appropriate architectural response to the design of the promatorium.

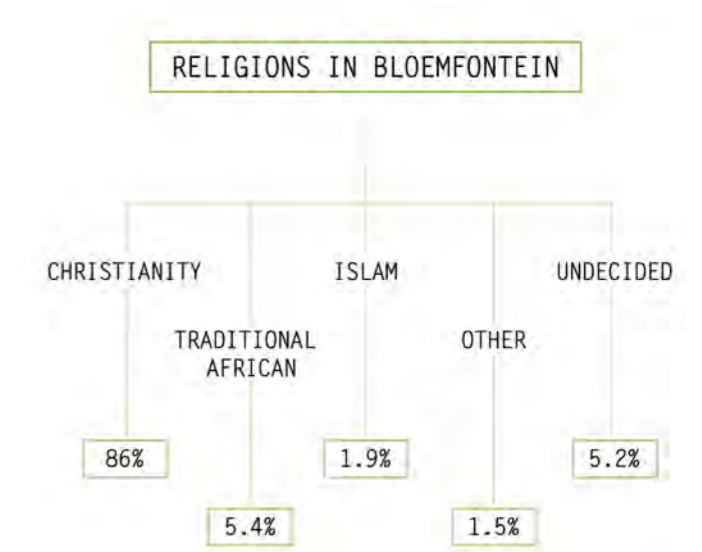


Figure 2.24 : Religious groups in Bloemfontein (Lehohla, 2011, online)



Figure 2.25 : Carrying the casket, (Mayne, 2019, online)



Figure 2.26: Axial funeral service (Morgan, 2020, online)



Figure 2.27: At the grave (Mayne, 2019, online)

Christianity:

Early Christianity had rituals such as wrapping bodies and placing them in catacombs or caves rather than being buried, burying bodies in sacred spaces and normal burials. Over time these traditions changed but the main belief remained. It was believed that the dead would ascend to heaven and await their final resurrection and therefore funerals were considered as occasions of celebration. Mourners typically wore white instead of the contemporary black garments. However, during the eighteenth century, fear of the afterlife and the last judgement changed Christian views on funerary rites and rituals. Mourners started wearing black garments instead of white, and prayers changed to that of deliverance for the soul of the deceased. Christian rituals vary considerably according to the branch of denomination; however there are basic similarities, (Innes, 2000, p. 68).

When an individual passes away the following procedure is usually followed, before, during and after the funeral service, (Pohlman, 2014, p. 42):

- The body of the deceased is collected, prepared and transported to the funeral ceremony by members of the funeral industry.
- In some cases, the casket is carried into the ceremonial hall by members of the family (figure 2.25). This varies from family to family, some prefer to have the casket placed in the ceremonial hall ahead of time, some to carry it themselves and others not to have the body present during the ceremony.
- The funeral procession requires an axial arrangement (figure 2.26) of the primary ceremonial space; the casket is placed at the head of the ceremonial space where the pastor conducts the memorial service.
- Once the service is concluded, family members who brought the casket into the space then carry it out and place the deceased in the hearse. The casket is then transported to either the crematorium or the graveyard to be buried.
- At the graveyard, family once again removes the casket from the hearse and carries it to the grave. At the grave side the pastor says a prayer (figure 2.27) and the casket is lowered into the grave.
- Mourners can then offer their condolences to the family before leaving the ceremony.

Note: Cremation is permitted in Christianity, (Snow, 2012, p. 399) and therefore promession would also be acceptable.

Traditional African religions (Sotho specifically):

In traditional African religions life does not end with death, rather it continues in another realm; the ancestral realm, (Vulliamy, 1926). Life and death are not mutually exclusive concepts and there is no clear division between them. Human existence is believed to be a process that involves the increase or decrease of “life force” of living and dying during the different stages of life and death. Sickness and death are seen as a result of an outside agent such as a person, event or circumstance that weakens people because it contains a greater life force than that of the individual. Death does not end the life of an individual but rather causes them to change condition which is expressed in the concept of ancestors. The ancestors are seen as people who have died but continue to have a presence in their communities, (Bolaji, 1975).

Looking into the traditional Sotho culture within Bloemfontein, when an individual passes away in the Sotho culture, the following procedure is usually taken, before, during and after the funeral service, (Mathobisa, 2020: interview):

- The funeral is seen as a celebration of the individuals’ life and therefore, a week before the funeral family start to gather and certain rituals take place:
 1. An animal (usually a cow) is slaughtered and food is prepared by the older women in the family. This is done on an open fire along with various pots of food (figure 2.28).
 2. A tent is set up in the yard of the deceased which communicates to individuals that pass by that someone has died.
 3. A piece of rope is tied around the waist of children, siblings, and the wife of the deceased, by an uncle, the ceremony is referred to as ‘ho roala thapo’. The rope is around the waist of the children for a month and for the wife, up to three months before it is removed in a ceremony known as ‘thapo’ (referring to the physical cutting of the rope that is worn around the waist).
 4. Family members bathe in the blood of the cow or animal that is slaughtered to cleanse themselves.
 5. The children of the deceased are required to shave their heads to symbolize a cleansing as well as the preparation of a new phase of life. The wife of the deceased wears black and covers her head during the time leading up to the “thapo” being removed to signify her mourning.
- On the day of the funeral the casket is carried into the ceremonial space (figure 2.29), either in the church of the deceased or in the home of the deceased in the case that the individual did not attend church, by members of the family where it is placed at the head of the ceremony where the service is carried out.
- Following the service, the casket is carried outside by members of the family (figure 2.30) and transported to the graveyard.
- At the graveyard, the casket is placed in the grave by male family members after which the family members are allowed the chance to throw some soil onto the casket which signifies the last goodbye before the casket is buried. After the burial everyone returns to the house of the deceased. Here the food that was prepared during the week is served up.
- Before entering the house, a bucket of water containing sage and aloe is hung on the gate in which everyone must wash their hands. This serves to cleanse bad spirits and darkness before entering the house, (Mokoena, 2020: interview).

Note: Cremation is permitted, (Vulliamy, 1926, p. 50) should the family choose to do so and therefore promession will be allowed.



Figure 2.28 : Preparing food, (Spencer, 2015, online)



Figure 2.29 The service (Marinovich, 2012, online)



Figure 2.30: To the graveyard (Marinovich, 2012, online)



Figure 2.31: Shrouding the deceased, (Shamma, 2013, online)



Figure 2.32: Salat ul Janaza, (AMAA, 2020, online)



Figure 2.33: Burial, (Saahir, 2018, online)

Islamic funerary rituals:

Muslims do not view death as the end but rather the transition from one state of being to another, with the actions you takes during your life following you into the afterlife. Therefore, if you life a good life and follow the law of the Koran you will be rewarded in the afterlife, (Funeralwise, 2020, online). If a Muslim lives according to the Koran, death is seen as the element that separates the individual from the ugliness of the world, with the opposite also being a reality; if a dishonest and bad life was lived, the individual is separated from the beauty of the world. When a Muslim passes away it is important to bury the deceased as soon as possible (preferably within 24 hours), (Sultan, 2010, p. 3). Funeral is broken up into three main parts, (Sultan, 2010, pp. 13-36):

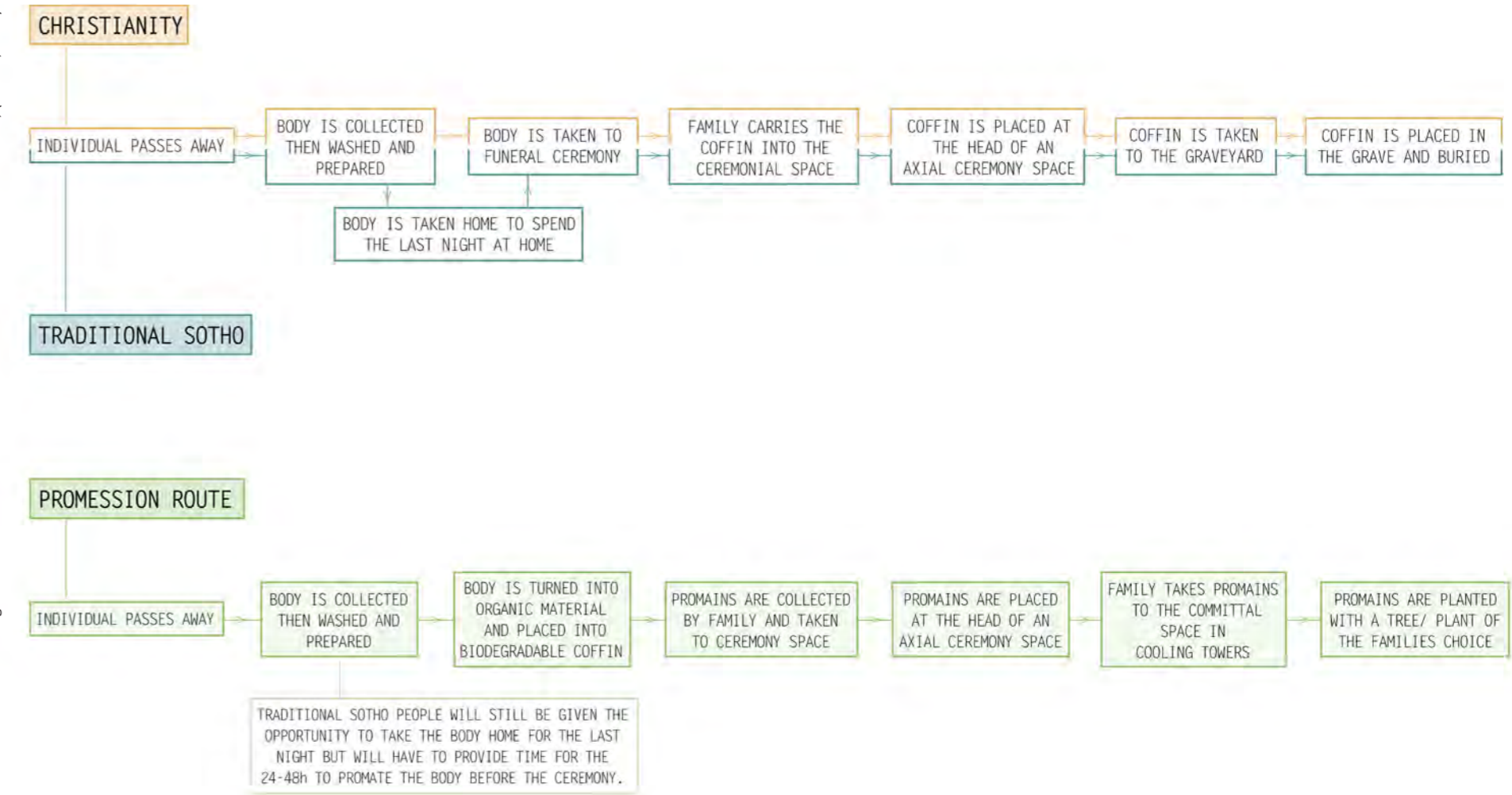
- 1. Washing and shrouding the body:
 - When a Muslim passes away, the body is collected and taken to a clean, private and secluded place where it is the responsibility of the family or other Muslims in the community to wash the body. Hygiene is very important throughout the process.
 - The washing of the body starts with the washer saying “Bismillah”(In the name of Allah) after which the body is washed. Cleaning the body is done with soap if it is available, and is done starting at the head, then the upper right side of the body, the upper left side and after that the lower right side and the lower left.
 - The washing is done three, five or seven times depending on how many is needed. With the last wash including the use of camphor or perfumed water.
 - After the final wash, the body is covered with a white sheet (satar) in preparation for shrouding (Al-Kaffan).
 - The process of Al-Kaffan (shrouding the body of the deceased) then commences and is done with white sheets made from inexpensive material (figure 2.31). It is important to note that the Kaffan of male and female Muslims differ, the male Kaffan consists of three layers where the female Kaffan consists of six layers which is used to shroud the body.
- 2. The funeral prayer:
 - Once the body has been washed and shrouded, a divine service is held to request pardon for and pray for the deceased. This is not only done by the family but it is encouraged that every Muslim participates (it is seen as a collective obligation).
 - Salat ul Janaza is not performed in the Mosque or the Musallah (Prayer room), this is considered to be makruh (disliked), but rather in the Mosque activity rooms, courtyards or at the graveyard (Al-Barni, 2012, p. 103).
 - The body of the deceased (only in shrouds and not in a casket) is placed in front of the Imam (the leader of the Mosque or in the case of a funeral, the father of the deceased) who leads Salah (the prayer).
 - Behind the Imam, Muslims form a minimum of three lines facing Qiblah (the sacred shrine in Mecca). These lines are in formed with males being first, the children and then females (figure 2.32).
- 3. The burial process:
 - After Salat ul Janaza, the body is taken to the cemetery where the burial process, characterized by humility and simplicity, takes place and only permits men to perform it (women are forbidden from attending the burial).
 - Male family members enter the grave (figure 2.33), dug in the direction of Qiblah, from the direction where the feet will be and the body is lowered into the grave.
 - Once the body is in the grave, it is placed on its right side and supported against the wall of the grave so that the face is towards Qiblah. Attendees are permitted to pray facing the grave.

Note: Cremation is seen as Haram (forbidden) and is not permitted, (Ansari, 2007, p. 548). Therefore promession is also not permitted and the use of ceremonial space used for ceremonies related to religions other than Islamic is frowned upon.

Parallels drawn between Christian and Traditional Sotho burial rituals regarding the body of the dead:

When looking at the route of specifically the body of the individual that passed away in both Christian and Traditional Sotho burial rituals, it becomes evident that the main route of the body remains very similar. These rituals will therefore serve as the basis of the ritual route through the promatorium along with minor changes that will be introduced to accommodate the promession process.

Figure 2.34: Parallels between Christian and Traditional Sotho burial rituals, (Author, 2020)



2.4 .5 Death and Architecture

What we admire today in art and architecture of the past owes its existence to motives, sentiments, and beliefs of what seem unfamiliar to contemporary belief systems and values. These works were to honour and celebrate the dead. In the past, man created elaborate social and religious rituals along with investing enormous amounts of time and effort into creating sculptured tombs and buildings to house and symbolically celebrate the memory of the deceased, (Pohlman, 2014, p. 17).

Influenced by the ideology of the time the main attributing factors that helped shape the development of disposal customs as well as that of the structures that accompany these customs, were formed. Looking at historical examples we find that the imposing religion and cultural beliefs controlled these ideological views. However, in contemporary times a reliance on rationality and logic has become the dominating influence on our approach to funerary architecture.

Even though over time a change has come about in the ideology and cultural belief systems have changed, there are still recognizable physical similarities in the development of funerary architecture which can be seen as, (Pohlman, 2014, p. 26):

1. Timeless value
2. Semiotic significance and identity
3. Sacredness

Timeless Value

The flow of time is directly related to a process of changes that take place both in the natural and cultural environment and architecture is inevitably influenced by time, (Andhikaputra, 2017, pp. 133-136). The notion of architectural timelessness is not a style that can be pursued, nor is it a superficial element that can be incorporated. Timelessness is a fundamental principle on which architecture should be based. According to Vitruvius, there are three archetypal principles that should be fulfilled in order to embody a spirit of timelessness namely, (Essawy, 2017, pp. 265-273); *Firmitas* (durability), *Utilitas* (utility) and *Venustas* (beauty).

Timelessness is achieved through honesty in the design, both in intent and approach regarding the design. Truthful evaluation of form, function, and materiality as well as context will result in architecture that transcends the test of time; architecture that conveys meaning to generations to come. Timelessness suspends architecture in the past, present and future.

Semiotic significance and identity

Semiotics is defined as meaning-making or interpretation of signs, (Prior, 2014) and therefore architecture can be translated as the expression and representation of socio-cultural ideas and identities of the past and present. By means of these expressions society is able to leave a trace, reflecting the direct and indirect relation between man and the environment. These relations are expressed by means of preconceived notions of volumes, shapes and spatial relationships which carry deep symbolic meaning connected to the emotional aesthetic.

The perception of form and volume is based on three levels; signalling (the collective unconscious), figurative (the individual unconscious) and symbolic (the collective conscious). These methods are applied in a sense of symbolic content of shapes, lines and geometries that incorporate interpretations within the architecture with a focus on proportion and planes (both horizontal and vertical).

Sacredness

In the words of Alexander, “people cannot maintain their spiritual roots and their connections to the past if the physical world they live in does not also sustain these roots... Traditional societies have always recognized the importance of these sites. Mountains are marked as places of special pilgrimage, rivers and bridges become holy; a building or a tree, a rock or a stone tales on the power through which people can connect themselves to their own past.”, (Alexander, 1977).

Sacred sites are always charged with emotional energy when experienced spatially (figure 2.35), they are never placed within an impassive environment. The notion of transcendence to the spiritual realm is achieved through sites which are elevated and have a strong connection with nature, (Vulliamy, 1926). The cooling towers can be seen as one of these spaces of transcendence, a symbolic mountain within the city creating a vertical connection to the heavens (figure 2.35). This relationship with nature is usually embodied by means of the integration thereof; creating the architecture as an object within nature; using nature as a threshold; the approach to the sacred space as well as the spiritual approach.

Death has a profound impact on each individual and it is imperative that mourning the loss of the deceased is experienced and emotion is expressed in the process. Sharing these emotions forms a unity during the grieving process and creates an essential connection. Death instills a new meaning to life and therefore the proposed promatorium will aim towards creating a place from this non-place by drawing on the history as well as the imagined future of the site. This will be a place that will house cultural and religious rituals and has the ability to maintain both physical and spiritual roots with a timeless quality.

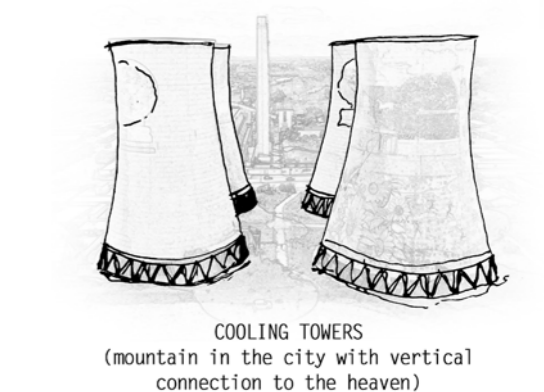
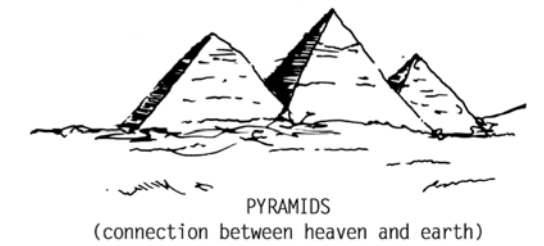


Figure 2.35: Sacred sites with vertical connections to the sky. (Author, 2020)



PART 03

PROCESS NARRATIVE

By allowing death to instil a new meaning to life in a manner that impacts the individual as well as context in a positive manner, the design opens a door to future possibilities. This section will embody the discussed theory and the site by looking at the past, investigating the present and dreaming for the future.

The question now becomes; what is possible within the heart of Bloemfontein and how this embodiment of death can be re-imagined and reintroduced back into society?

3.1 Site selection

- 3.1.1 Site history: Waaihoek and the quarry
- 3.1.2 Precedent study: Woodland cemetery (Incorporating nature)

- 3.1.3 Quantitative site analysis
- 3.1.4 Qualitative site analysis

3.2 Technical investigation

- 3.2.1 Promession process
- 3.2.2 Precedent study: Baumschulenweg (Function, Structure, Light)
- 3.2.3 Precedent study: Brion Tomb (Thresholdspace, Intentional space)

3.3 Design development

- 3.3.1 Accommodation list
- 3.3.2 Design phase 1: Initial approach
- 3.3.3 Precedent study: Jubilee church (Structural form giving)
- 3.3.4 Design phase 2: Plan and section development

3.4 Design phase 3: Spatial development

- 3.4.1 Promatorium
- 3.4.2 Main ceremony space
- 3.4.3 Secondary ceremony space
- 3.4.4 Cooling towers
- 3.4.5 Proposed vegetation

3.5 Design phase 4: Final design

3.6 Conclusion

3.7 References

3.8 List of figures

3.1 | SITE SELECTION ORIENTATION

Looking at the larger context of Bloemfontein various non-places within the city become evident, places that have over time fallen into ruin and have lost its purpose. The theme of the dissertation aims to reintroduce death into society by converting a non-place into a place of significance that could house the proposed promatorium as well as the remembrance gardens. Therefore it became important to locate a site within the urban context with enough open space for the building as well as gardens; the decision was made to use the abandoned cooling towers located on the threshold between Bloemfontein CBD and Waihoek. Even though the site is bordered by significant landmarks (places) in Bloemfontein such as Queens Fort and the Wesleyan church (founding place of the ANC), the site surrounding the cooling towers have become a void within the city; therefore becoming a non-place.

As argued by Ginsberg, in the architectural construct, the cooling towers are seen as a ruin in the sense that they no longer serve their original purpose, (Ginsberg, 2004, p. 249). They are subject to nature and decay which serves as a reminder of the passing of time, as Ginsberg argues that a ruin can never be fully restored (2004: 297). Through intervention they are able to serve as a place of new identity, allowing the opportunity to make a place of the non-place.

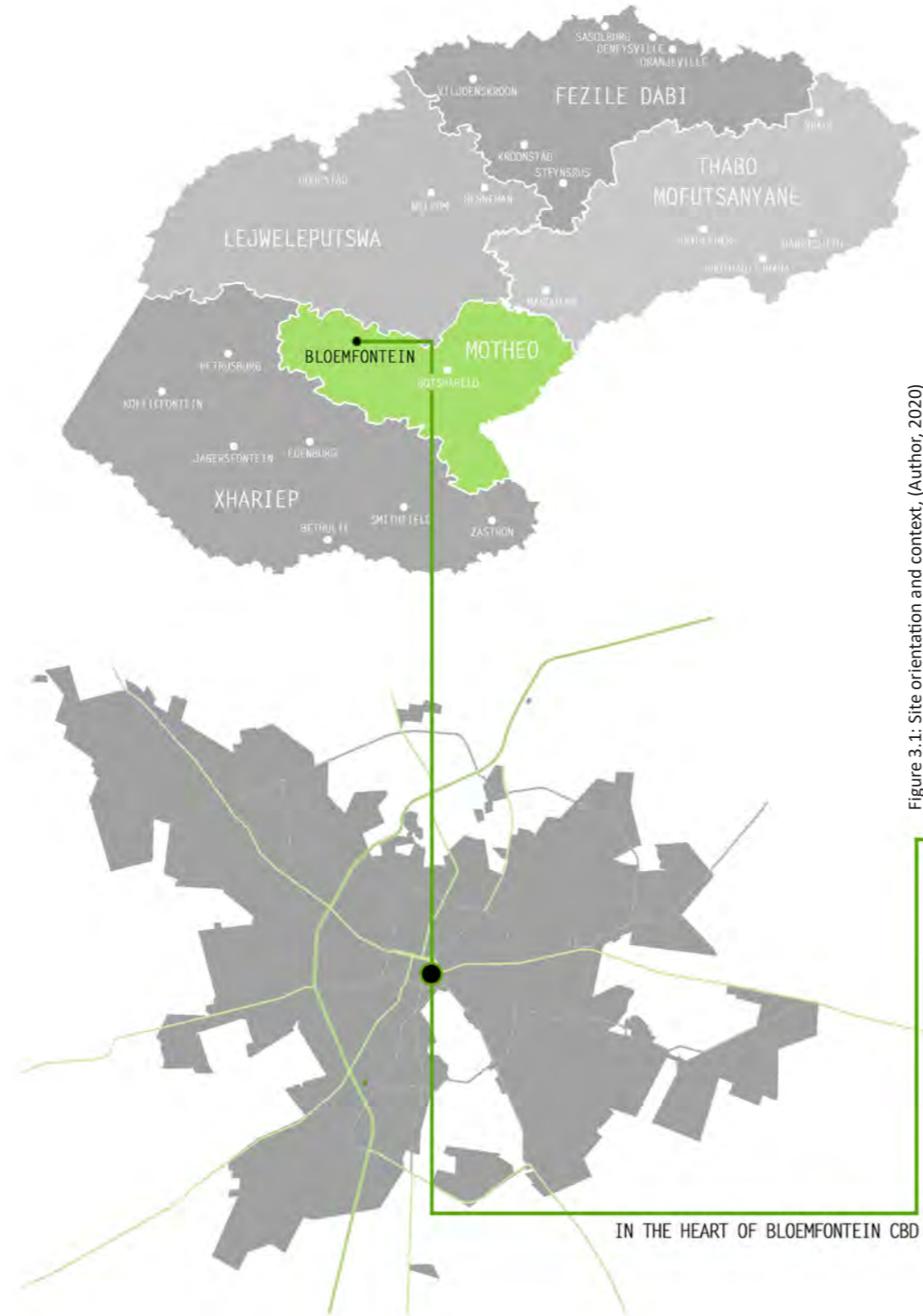


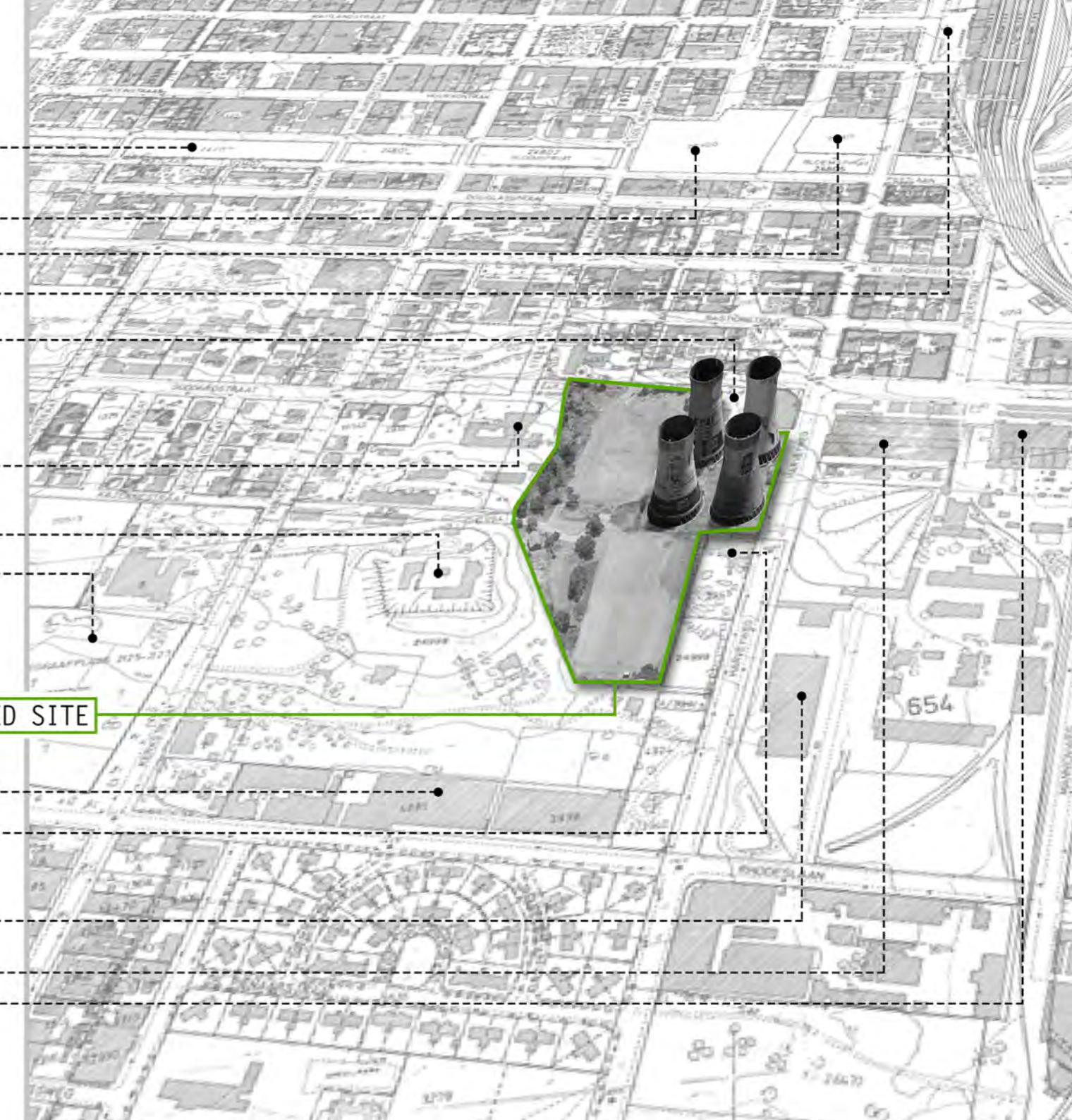
Figure 3.1: Site orientation and context, (Author, 2020)

- BLOEM SPRUIT
- BUS TERMINAL
- TAXI RANK
- TRAIN STATION
- WESLEYAN CHURCH + WAAIHOEK VISITOR CENTRE

- MOTHEO COLLEGE
- QUEENS FORT MILITARY MUSEUM
- MILITARY CEMETERY

- [COOLING TOWERS]
- PROPOSED SITE

- INDUSTRIAL BUILDINGS
- GAS STATION
- CENTLEC TRAINING FACILITY
- CURRENT POWER STATION
- ABANDONED POWER STATION



3.1.1 | SITE HISTORY

WAAIHOEK AND THE QUARRY

Throughout the larger context of Bloemfontein, various non-places become evident. Places that have fallen into ruin and have lost its purpose and therefore the intended identity. Located on the threshold between Bloemfontein CBD and Waaihoek, the previously known black residential area, and bordered by significant landmarks (places) in Bloemfontein such as Queens Fort and the Wesleyan church (founding place of the ANC) we find the proposed site for the promatorium.

This site becomes prominent and contested especially in when looking at the history thereof. In 1904 Bloemfontein experienced a natural disaster in the shape of a flood that came from the Bloemspruit overflowing its natural banks (figure 3.4-5). This led to the decision to canalize the spruit and the town council jumped at the opportunity to further extend the distance between Bloemfontein and Waaihoek. In order to canalize the spruit, a quarry was introduced (figure 3.3) to unearth stone which led to the expropriation of the thirty closest Waaihoek stands, (Auret, 2016, p. 203). According to correspondence of the Native Affairs Branch (NAB 1, 1905, No.79/a/05) there were reports by residents of Waaihoek of boulders crashing through their roofs from the blasting done at the quarry. This natural disaster led to human actions that saw to the further separation and eventually the demise of Waaihoek.

When looking at the history of the site it becomes evident that there are many forgotten stories, histories, and lives and therefore this serves as the perfect site for a memorial within the urban context. A memorial that reinterprets this non-place and embodies the abandoned structures to create a place of memory by returning the site to nature.

Figure 3.2: Aerial photo survey 1935 BFN, (Collection of The National Museum, FSPAR Collection) 108 Photos digitally stitched together by HA Auret.



Figure 3.3: Quarry introduced in order to canalize the Bloemspruit, (Collection of The National Museum, Bloemfontein, Reference number 1660)



Figure 3.4 : Bloemspruit flooding its banks, (Collection of The National Museum, loemfontein, Reference number 352)



Figure 3.5: Damage done to buildings by the flood, (Collection of the National Museum, Reference number VA1721)

The woodland cemetery by architect Gunnar Asplund serves as the leading precedent when it comes to giving back to nature. This cemetery, also, located on a former quarry site does not serve as a city of the death but rather absorbs death back into nature which in turn allows visitors a peaceful and comforting experience through the creation of place from this non-place.

PRECEDENT STUDY

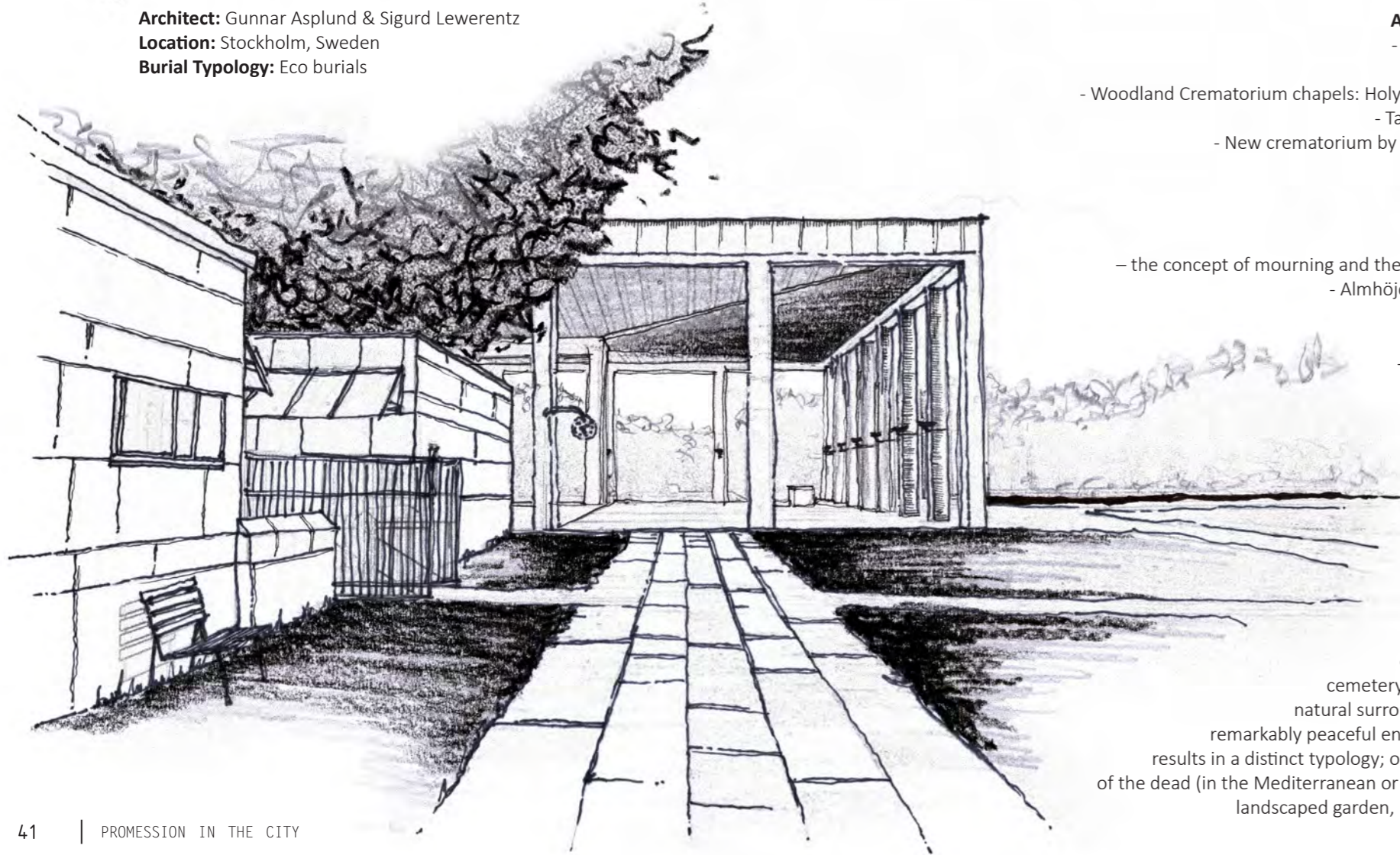
INCORPORATING NATURE

Woodlands cemetery (Skogskyrkogården)

Architect: Gunnar Asplund & Sigurd Lewerentz

Location: Stockholm, Sweden

Burial Typology: Eco burials



Architectural Elements:

- Chapel of Resurrection
- Woodland Chapel
- Woodland Crematorium chapels: Holy Cross, Faith, and Hope
- Tallum (Tall tree) Pavilion
- New crematorium by architect Johan Celsing

Landscape Elements:

- Nature
- The experience
- the concept of mourning and the feelings surrounding it
- Almhöjden – meditation grove
- Granite Cross
- Seven springs way
- Remembrance garden
- The wall

Materials:

- Concrete
- Wood
- Brick
- Granite

Situated on the site of a former quarry, this cemetery is one that utilizes the natural surroundings and provides a remarkably peaceful environment. This in turn results in a distinct typology; one that is neither a city of the dead (in the Mediterranean or Islamic tradition) nor a landscaped garden, (Warpole, 2003, p. 51).

The cemetery is extensive and appealing; the ornamental entrance guides you into a route which then splits (figure 3.6). One way leading into a rural landscape with a body of water and the meditation hill lined with trees, while the other takes visitors to the large standalone granite cross and the crematorium, as well as the chapels of Faith, Hope and The Holy Cross. The path Way of Seven Wells passes straight through a dense woodland of tall pine trees heading to the Resurrection Chapel. The giant dark standalone cross creates a point of focus from the main entrance which binds earth and sky together. Although the meaning of the cross is still disputed, it was based on wayside crosses signifying hope in an otherwise abandoned world. The cross is open to non-Christian and Christian interpretations and to those who choose to see it as such, a consolation, to those who don't, simply a cross, (Warpole, 2003, p. 147).

As Swedish architect Thorbjörn Andersson writes; "...there are feelings of landscapes of many different sorts, such as hope and happiness, sorrow and despair, death and resurrection. It is an environment full of feelings that facilitate contact between the inner and outer landscapes."

Only when visitors reach the main chapel, the graves become visible at a great distance between the pine trees (figure 3.7). According to Warpole the cemetery is "just a vast rolling landscape, with deep forest beyond and stands out for its intense naturalism". No sculptural monuments can be seen, as severe restrictions on the size and form of headstones were imposed by The Stockholm Cemetery Board, (Warpole, 2003, p. 147) .

The Woodland cemetery became a place that absorbs death into nature and by allowing this to happen, provides visitors with a peaceful experience. All of this is achieved by the careful mixture of human sensitivity, though through design and the appreciation for the mystical nature of death and human equality.

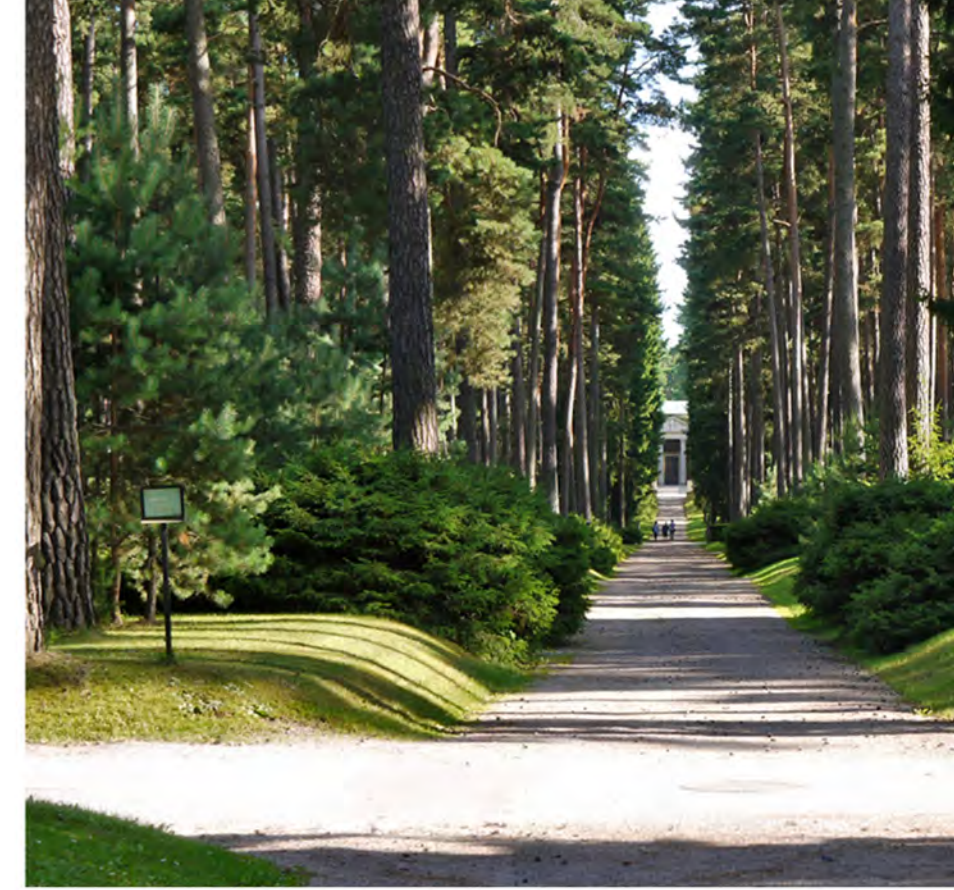


Figure 3.7: Towards the main chapel on the way of the seven wells, (Landezine, 2015, online)



Figure 3.6: Woodland cemetery plan, (Crombie, 2013, online)



Figure 3.8: Burial, (Landezine, 2015, online)

Outcome and application:

Through the use of a non-place in Sweden such as the old quarry, the cemetery came into existence and created a distinct typology that forms part of nature without creating a city of the dead, (Warpole, 2003, p. 51). This cemetery has been made a place of significance, a place that allows individuals to experience it as sacred and form a bond with nature by burying their deceased there.

Looking at the use of nature throughout the development, it became evident that not all graveyards have to be a sea of headstones in a harsh barren environment on the outskirts of society. A cemetery can be something individuals want to visit, a place of sensitivity and peacefulness. By incorporating as much nature as possible, the design will aim to see the remains (product of promession) returned to the earth in the form of a plant. In doing so, the soil will be fertilised which will contribute to the creation of a place of significance within the heart Bloemfontein.

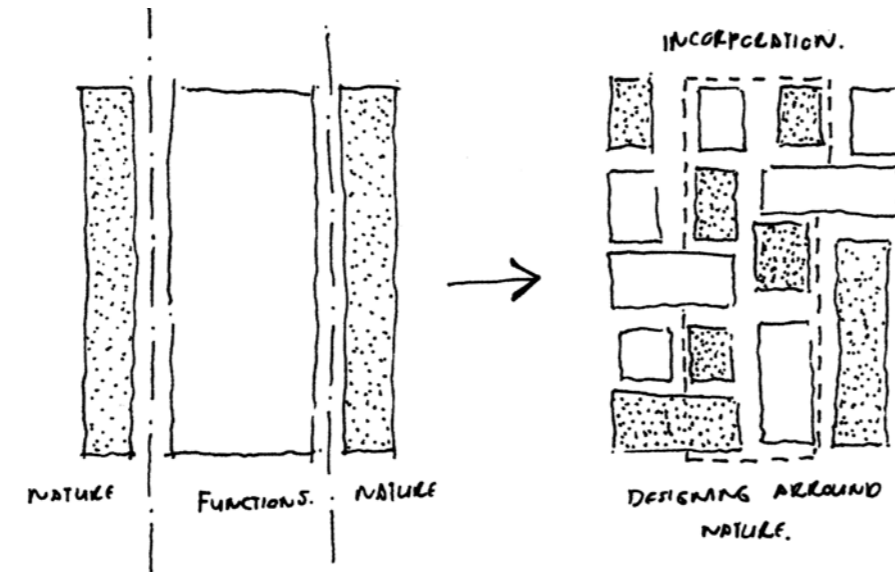


Figure 3.9: Incorporating nature within the design, (Author, 2020)



Figure 3.10: The graves, (Landezine, 2015, online)

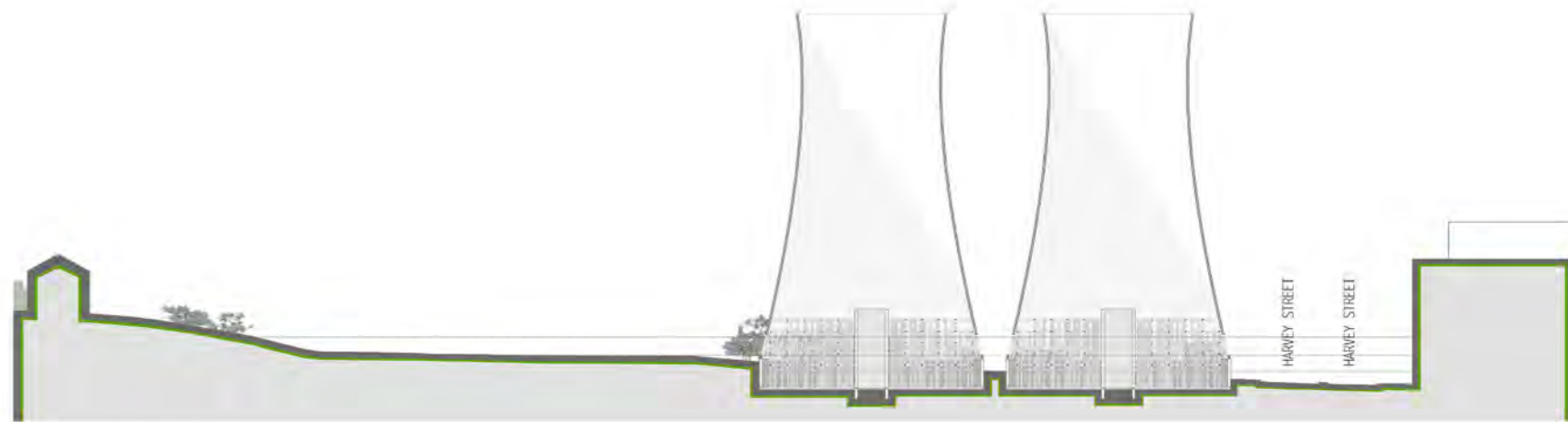
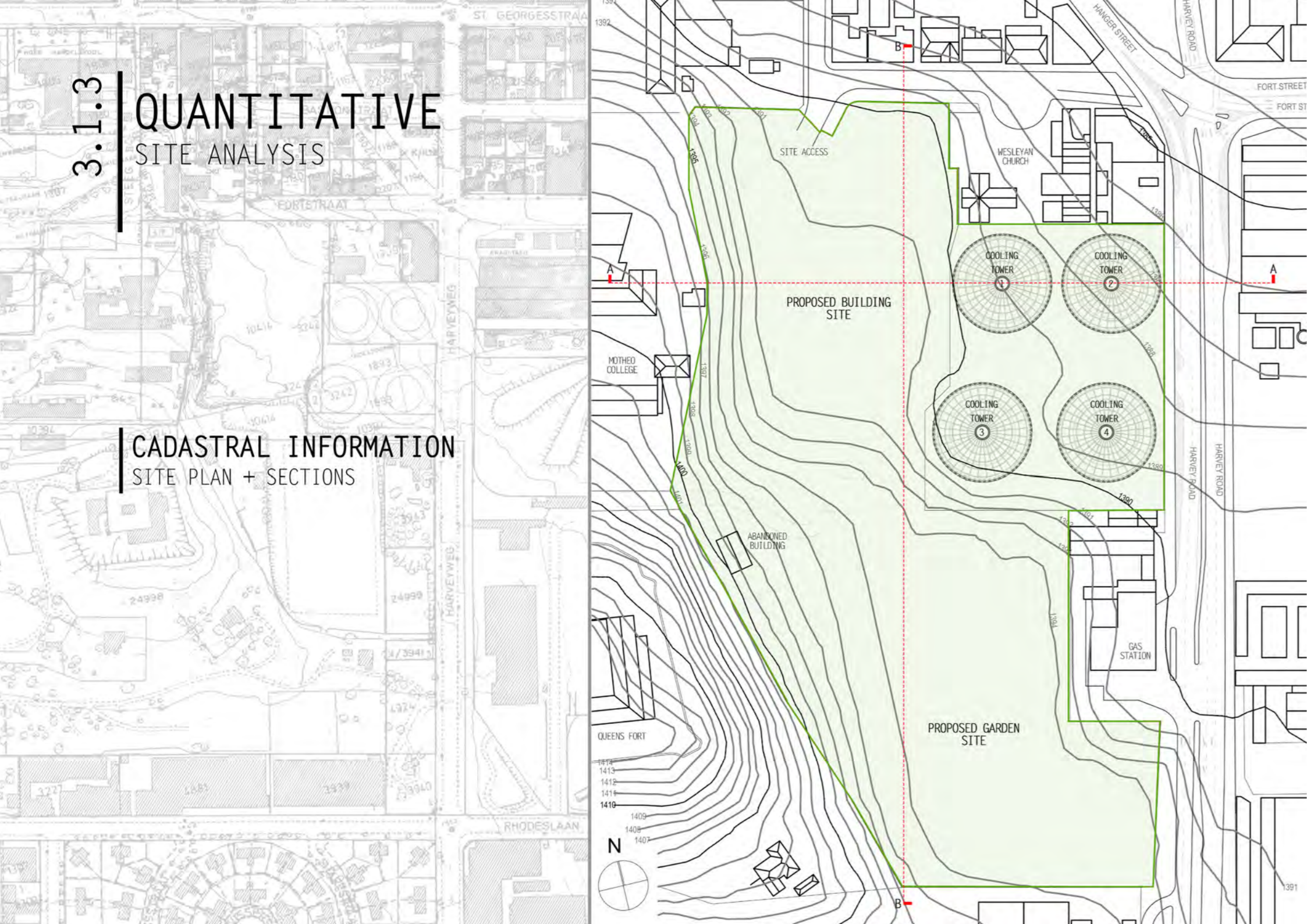


Figure 3.11: Panorama of Bloemfontein taken from Naval Hill to indicate site within context, (Author, 2020)

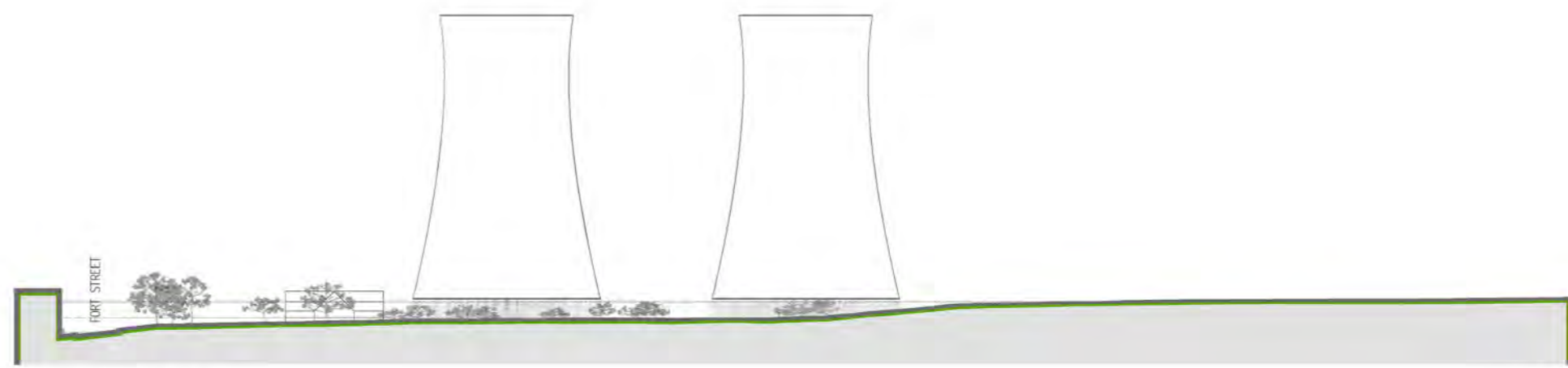
3.1.3

QUANTITATIVE SITE ANALYSIS

CADASTRAL INFORMATION SITE PLAN + SECTIONS



SITE SECTION A-A
NOT TO SCALE

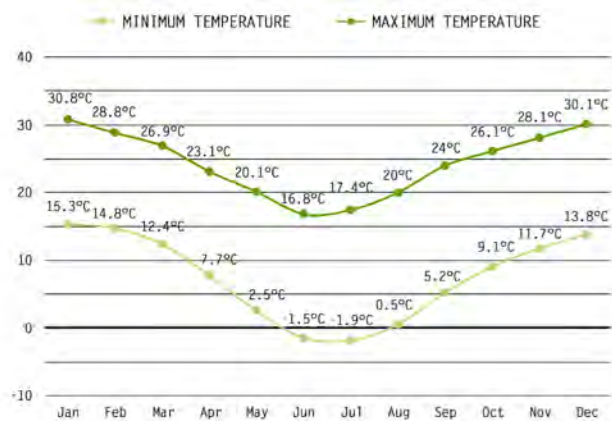


SITE SECTION B-B
NOT TO SCALE

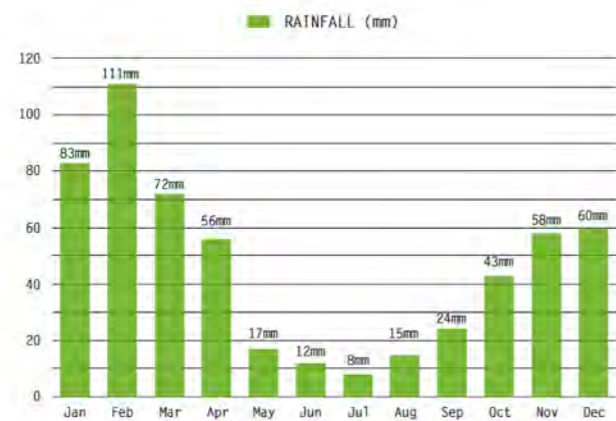
CLIMATE

WEATHER CONDITIONS AND SUN PATTERNS

AVERAGE TEMPERATURE BLOEMFONTEIN, SOUTH AFRICA



AVERAGE RAINFALL BLOEMFONTEIN, SOUTH AFRICA



AVERAGE RAINFALL DAYS BLOEMFONTEIN, SOUTH AFRICA

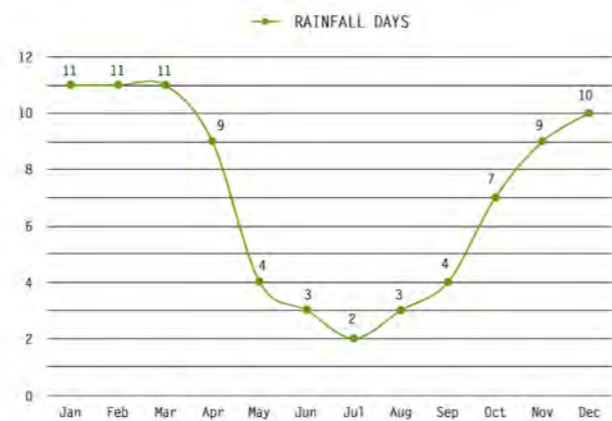
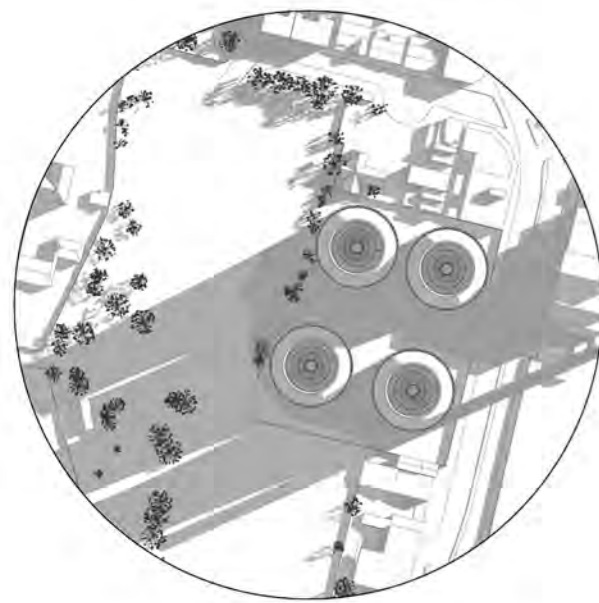
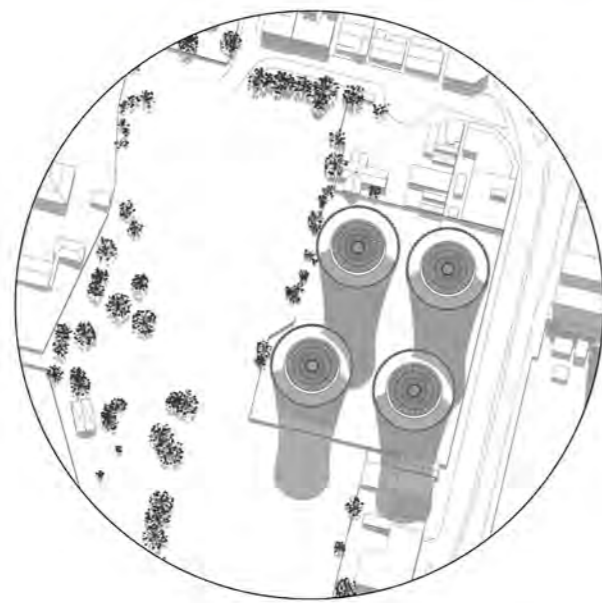


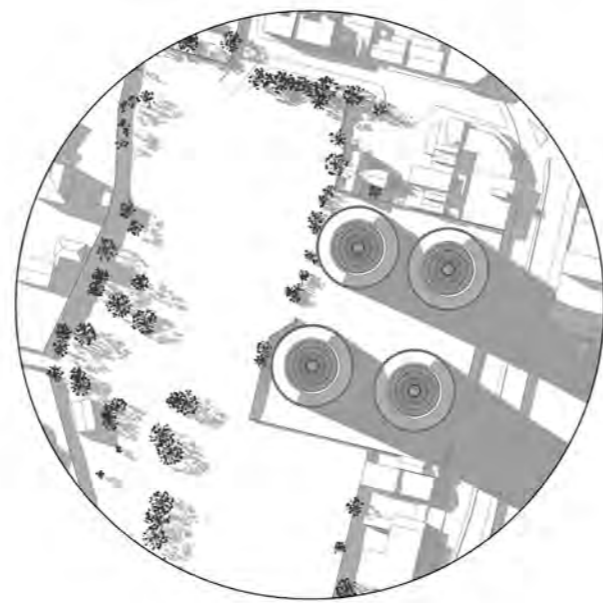
Figure 3.12-14: Climate data, (Author, 2020)



08:00

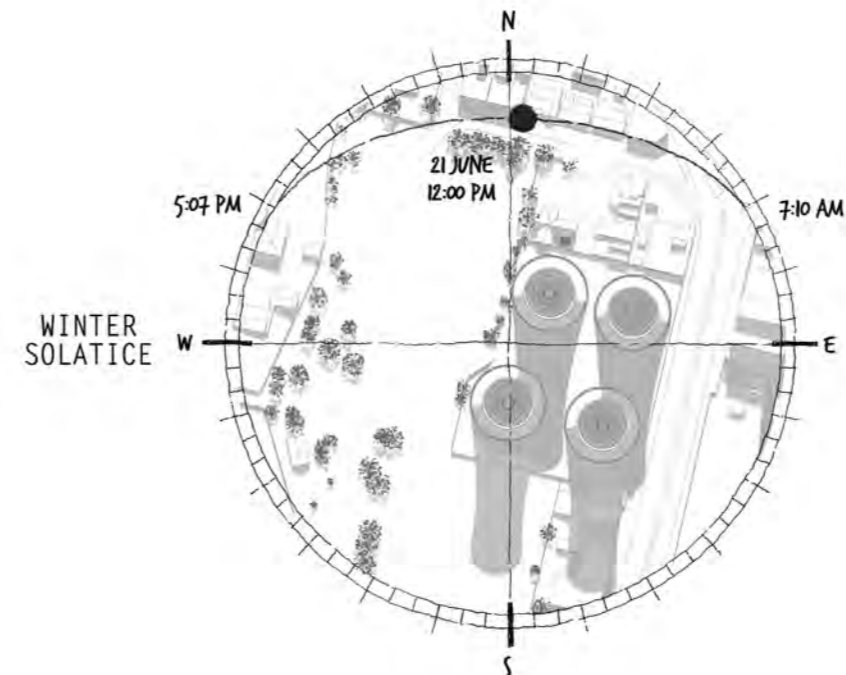


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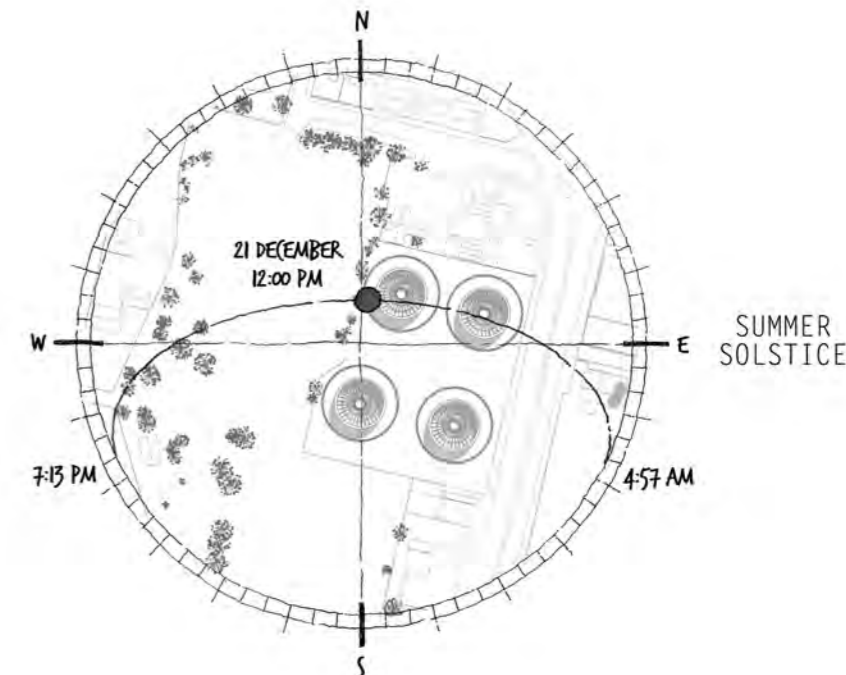


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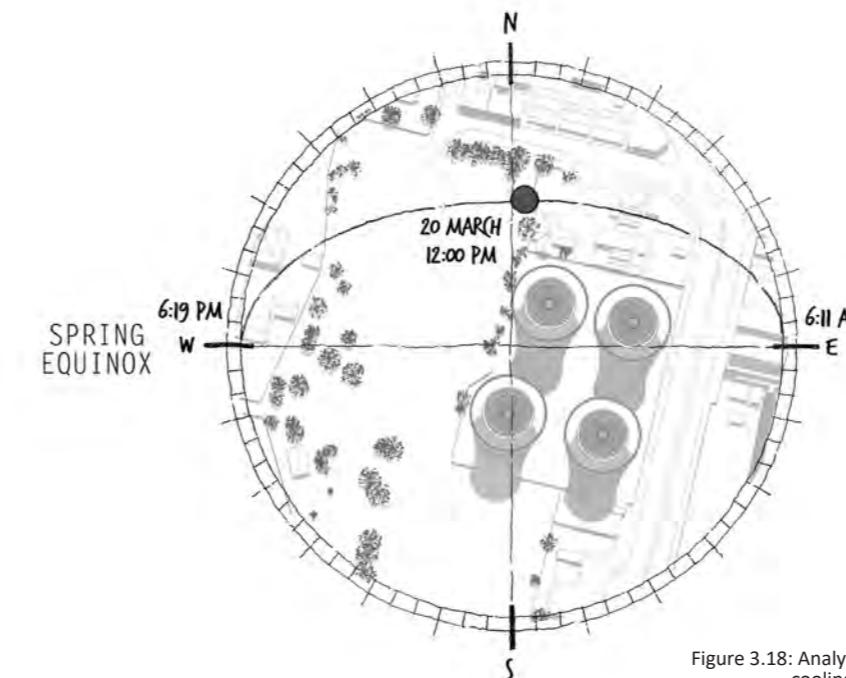
Figure 3.15-17: Analysis of shadows throughout the day, (Author, 2020)



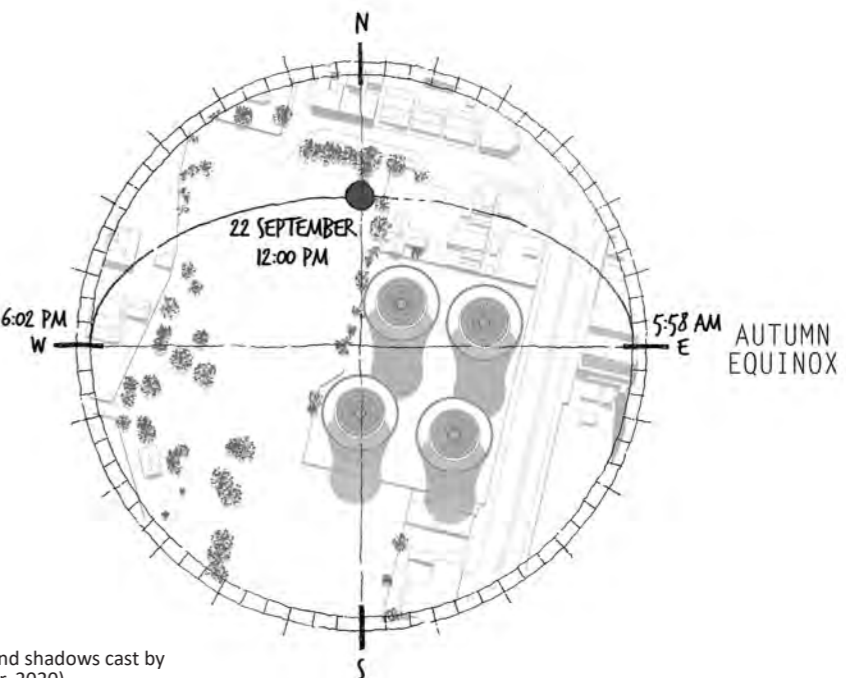
WINTER SOLATICE



SUMMER SOLSTICE



SPRING EQUINOX



AUTUMN EQUINOX

Figure 3.18: Analysis of sun path and shadows cast by cooling towers, (Author, 2020)

3.1.4 QUALITATIVE SITE ANALYSIS

EXTERNAL TOWER TEXTURES



INTERNAL TOWER TEXTURES



Figure 3.19: External and internal textures found on site, (Author, 2020)



Figure 3.20: Aerial photo of proposed site for promatorium, (Author, 2020)

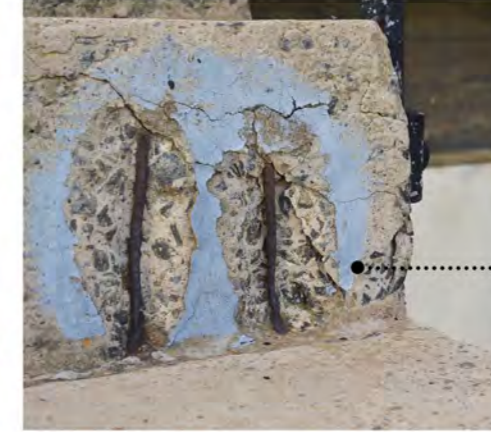


NATURAL STONE

- Present mostly on the embankment on the eastern side of the site

BRICK PAVERS

- Used for paved walkway between the cooling towers



INTERNAL TOWER STRUCTURE

- Aged and weathered concrete structure

REINFORCED CONCRETE STRUCTURE

- Mainly present on structures connected to cooling towers such as staircases and internal cooling tower structures



RED FACEBRICK

- Present in abandoned structure located on the south west corner of site

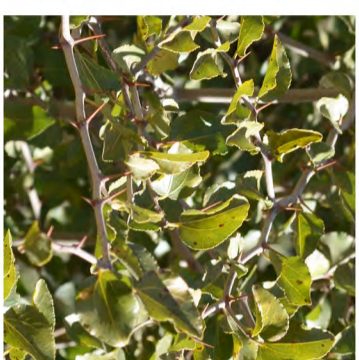
CONCRETE BLOCKS

- Primarily used on retaining walls surrounding cooling towers

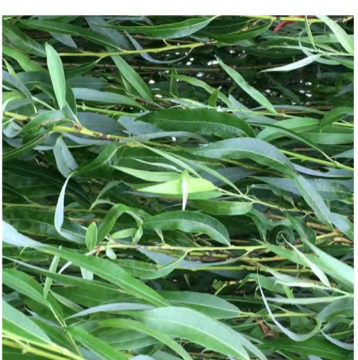
Figure 3.21: Materials found on site, (Author, 2020)

VEGETATION CURRENTLY ON SITE
EXISTING SITE CONDITIONS

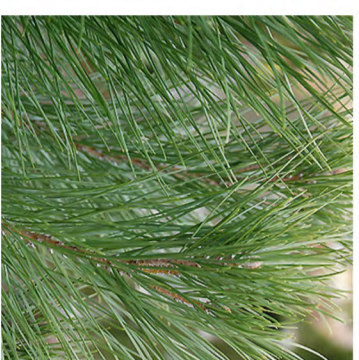
ZIZIPHUS MUCRONATA
-BUFFALO THORN-



SALIX BABYLONICA
-WEEPING WILLOW-



PINUS PINEA
-ITALIAN STONE PINE-



COSMOS BIPINNATUS
-COSMOS FLOWER-



ALOE CILIARIS
-ALOE VERA-

AMARANTHACEAE CHENOPODIUM
- GOOSEFOOT-



CELTIS AFRICANA
-WHITE STINKWOOD-



TARCHONANTHUS CAMPHORATUS
-CAMPHER BUSH-



SEARSIA PENDULINA
-WHITE KAREE-



SEARSIA LANCEA
-KAREE-



SEARCIA PYROIDES
-FIRETHORN CROWBERRY-



GREWIA OCCIDENTALIS
-CROSS-BERRY BUSH-



HEDERA HELIX
-VARIETY OF IVY-



With the end product of promession process being a plant, the aim is to use the nutrition provided by the promains to re-fertilize the soil when a plant is planted. By doing so, the site will eventually be populated with indigenous plant species that can survive in dry conditions.

PROPOSED VEGETATION
TO BE INTRODUCED BY THE PROMATORIUM

CONTEXT

AERIAL AND STREET VIEWS OF SURROUNDING CONTEXT

Figure 3.22: Aerial photo of Queens Fort, (Author, 2020)



QUEENS FORT MILITARY MUSEUM

Figure 3.23: Motheo College, (Author, 2020)



MOTHEO TVET COLLEGE



BLOEMFONTEIN POWER STATION (CURRENT + ABANDONED)

Figure 3.24: Visitor centre, (Author, 2020)



WESLEYAN CHURCH AND VISITOR CENTRE

Figure 3.25: Wesleyan church, (Author, 2020)



Figure 3.25: Power station from cooling towers, (Author, 2020)



Figure 3.26: Old and new power station, (Author, 2020)



TECHNICAL INVESTIGATION

PROMESSON PROCESS

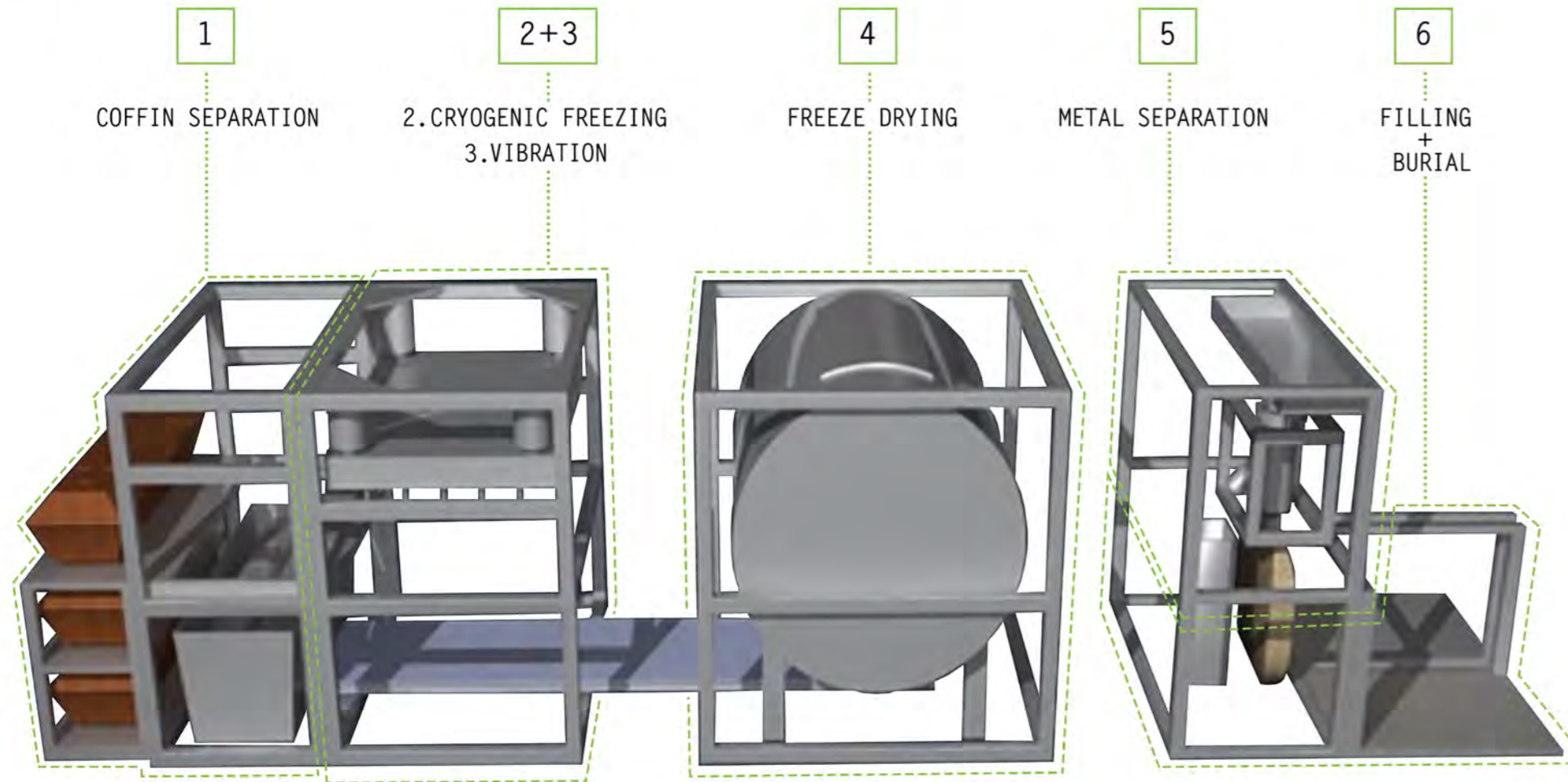


Figure 3.27: Promession process and equipment, (Adapted by Author, 2020)

When the funeral ceremony is complete, the body is removed from the coffin and placed into a mechanical freezer. The body remains in the freezer for approximately 24-48 hours depending on the body temperature when the body arrives at the facility. Once the body is cooled to -18°C, it is placed into the Promator and then sealed. This is the final step in the process where the body is handled by human hands.

The body is weighed in order to determine the exact amount of liquid nitrogen that is required to freeze the body. This is determined in the ratio of 1kg of liquid nitrogen for 1kg of body weight. The body is then submerged into the liquid nitrogen for approximately 2 hours in order to freeze the body to -196°C which results in the body being extremely brittle. The liquid nitrogen then evaporates back into the atmosphere as a natural gas in the form of nitrogen, (Wiigh-Mäsak, online, 2020).

As soon as the body has been frozen to -196°C, it is mechanically transported onto a vibrating belt that vibrates at 5mm amplitude. Because the body is so brittle at this stage, the vibrating belt reduces the body to an organic powdery substance. The powder is then transported into a vacuum chamber where the remaining moisture evaporates into the atmosphere as steam. The dry powder now passes through a metal separator where an electrical current extracts any remaining metal which is then recycled.

Once the metal has been separated from the powder it is sealed in a biodegradable unit, usually made from corn or potato starch, and given to the relatives of the deceased. The organic powder is odourless and hygienic and will not decompose when kept dry. It is recommended that the remains be buried at a depth of 15 to 30cm and it will, within 6 to 18 months, along with the biodegradable unit fully decompose and turn into nutrient-rich soil. Along with the ritual of the remains being buried, the relatives place a tree or plant above the remains. The nutrients from the burial will be absorbed by the plant which will instil greater insight and respect for the ecological cycle of which every living organism forms part of. The plant serves as a memory of the deceased and then stands as a symbol of life and the celebration of that life, (Pohlman, 2014, pp. 60).

The Promator consists of six connected sections (figure 3.27) which are necessary for the automatic operation thereof. The area of the equipment used is 27m² and can be assembled within the promatorium. Preparation room requires a space of 99m² for the efficient process of promession to take place, where the liquid nitrogen used during the process is stored in a bulk container (1.728m wide, 2.032m high and 5.105m long) on site. This storage tank should not be exposed to sunlight and should be situated close to the Promator as well as the service entry to facilitate the delivery of the liquid nitrogen.

EFFECTED ENTITY	INHUMATION (Conventional Burial)	CREMATION	PROMESSON
GENERAL ENVIRONMENTAL EFFECT	Considerable	Considerable	None
ENERGY CONSUMPTION	Small	High, equivalent to 23 litres of fuel oil and half a kilogram of activated carbon per cremation.	High, but green energy can be used.
AIR	None	Flue gases, mercury, carbon dioxide (greenhouse effect)	None
LAKES AND SEAS	Eutrophication Oxygen depletion	Eutrophication Oxygen depletion	None
DRAINAGE WATER	Yes	Yes	None
GROUND WATER	Yes	Yes	None
DRINKING WATER	Yes	Yes	None
SOIL	Yes	Yes	Positive effects
BURIAL GROUND	Large areas. High demands on preparation, drainage and sewage treatment.	Small areas	Medium sized areas. Possibility to reuse old burial ground. Low demands on drainage and sewage treatment.

Table 1: Effects on the natural resources and the environment by various disposal methods, (Pohlman, 2014, pp 61)

PRECEDENT STUDY

FUNCTION + STRUCTURE + LIGHT

Baumschulenweg Krematorium

Architect: Axel Schultes, Frank Schultes Witt

Location: Berlin, Germany

Building Typology: Crematorium, Condolence Hall

Footprint: 4 058m²

Gross floor area: 9 339m²

Structural Engineers: GSE Saar Enseleit and Partner

Architecture Elements:

- Crematorium
- Chapels
- Public space
- Waiting areas

Landscape Elements:

- Graves
- Natural surroundings (Vegetation)

Materials:

- Concrete
- Steel
- Water
- Light

The road ahead of us is unclear and we do not know where it will lead, the aim of Shultes Frank Architekten was to glorify this road by making it as silent, peaceful and still as possible, (Mutuli, 2016, online). Located in Berlin, Germany we find Crematorium Baumschulenweg, a place inspired by ancient tombs. Built from stone and overflowing with light, it allows for a peaceful and tranquil final resting place for those who pass away.

Figure 3.28: Chapel interior, (Kaplinger, 1998, pp. 11)



A resting place for the dead is not something that is easily designed because none of us has the experience of dying, we do not know what it feels like other than using our imagination. By using their imagination, Shultes Frank Architekten has attempted this feat and the end product became something poetic, a place for those to start their journey on this road that remains unclear for the living, (Mutuli, 2016, online).

CLIMATE:

According to Climate-Data.org, the climate in Baumschulenweg, Berlin is classified as warm and temperate with significant rainfall even during the driest months. The temperature here reaches an average of 9.1 °C with an average rainfall of 570mm per year shown in figure 2.39, (Climate-data, 2020, online).

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	-0.9	0	3.9	8.6	13.5	16.8	18.6	18	14.4	10.4	4.4	1
Min. Temperature (°C)	-3.4	-2.9	0	3.8	8	11.3	13.4	12.7	9.5	7.5	1.9	-1.2
Max. Temperature (°C)	1.7	3	7.9	13.5	19.1	22.3	23.8	23.3	19.4	13.3	7	3.2
Avg. Temperature (°F)	30.4	32.0	39.0	47.5	56.3	62.2	65.5	64.4	57.9	50.7	39.9	33.8
Min. Temperature (°F)	25.9	26.8	32.0	38.8	46.4	52.3	56.1	54.9	49.1	45.5	35.4	29.8
Max. Temperature (°F)	35.1	37.4	46.2	56.3	66.4	72.1	74.8	73.9	66.9	55.9	44.6	37.8
Precipitation / Rainfall (mm)	43	34	35	41	54	70	57	61	44	37	45	49

Figure 3.29: Climate-Data for Baumschulenweg, Berlin, (Climate-Data, 2020, online)

CONTEXT:

Located in the Friedhof cemetery, bordering the Britzer channel just outside of Baumschulenweg in Berlin as seen in figures 2.40-41, we find the Baumschulenweg Crematorium. This building serves as the ceremonial final resting place for inhabitants of the Baumschulenweg area, (Mutuli, 2016).

Figure 3.30: Aerial view of Friedhof cemetery, (Adapted by Author, 2020)



Figure 3.31: Friedhof cemetery, (Adapted by Author, 2020)

SITE PLANNING AND PROGRAM

As mentioned earlier, the crematorium is located in the larger Friedhof cemetery park (figure 3.33) on the outskirts of Baumschulenweg. The site consists of a nature trail, leading visitors from the northwest section of Baumschulenweg into the cemetery park, vast amounts of nature, the crematorium as well as several smaller buildings which house various functions relating to the park.

The program is almost exclusively related to that of the cemetery and therefore, other than the individuals visiting the site for the architecture or the nature, majority of individuals visit the building for funerary purposes, (Kodish, 2017, online). According to Kodish, the four main functions of the site consist of the following:

- Cremation; the building is firstly a crematorium and that is the main function thereof.
- Funeral services and mourning; this goes hand in hand with the cremation process as well as the final greetings of those who pass away.
- Tourism purposes; this is enforced by podiums around the central space with visitor information and signage.
- Events; the building occasionally host events with the main theme of these events mainly evolving around the topic of death.

On the outer periphery of the structure we find various smaller, private spaces, for family of the deceased to gather and mourn. These spaces primarily consist of waiting rooms and private rooms for open casket ceremonies for the family and close relatives and are used in private before the formal ceremony in one of the three chapels.

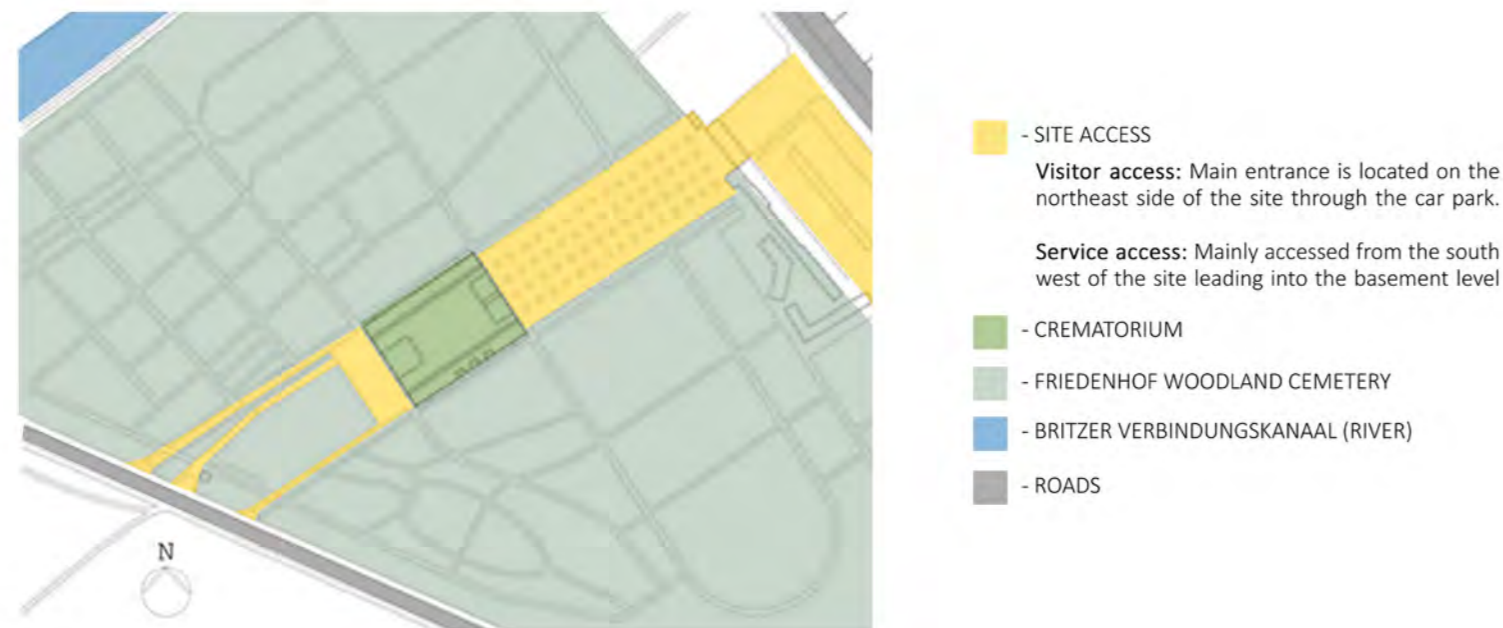


Figure 3.33: Site zoning and access, (Adapted by author, 2020)

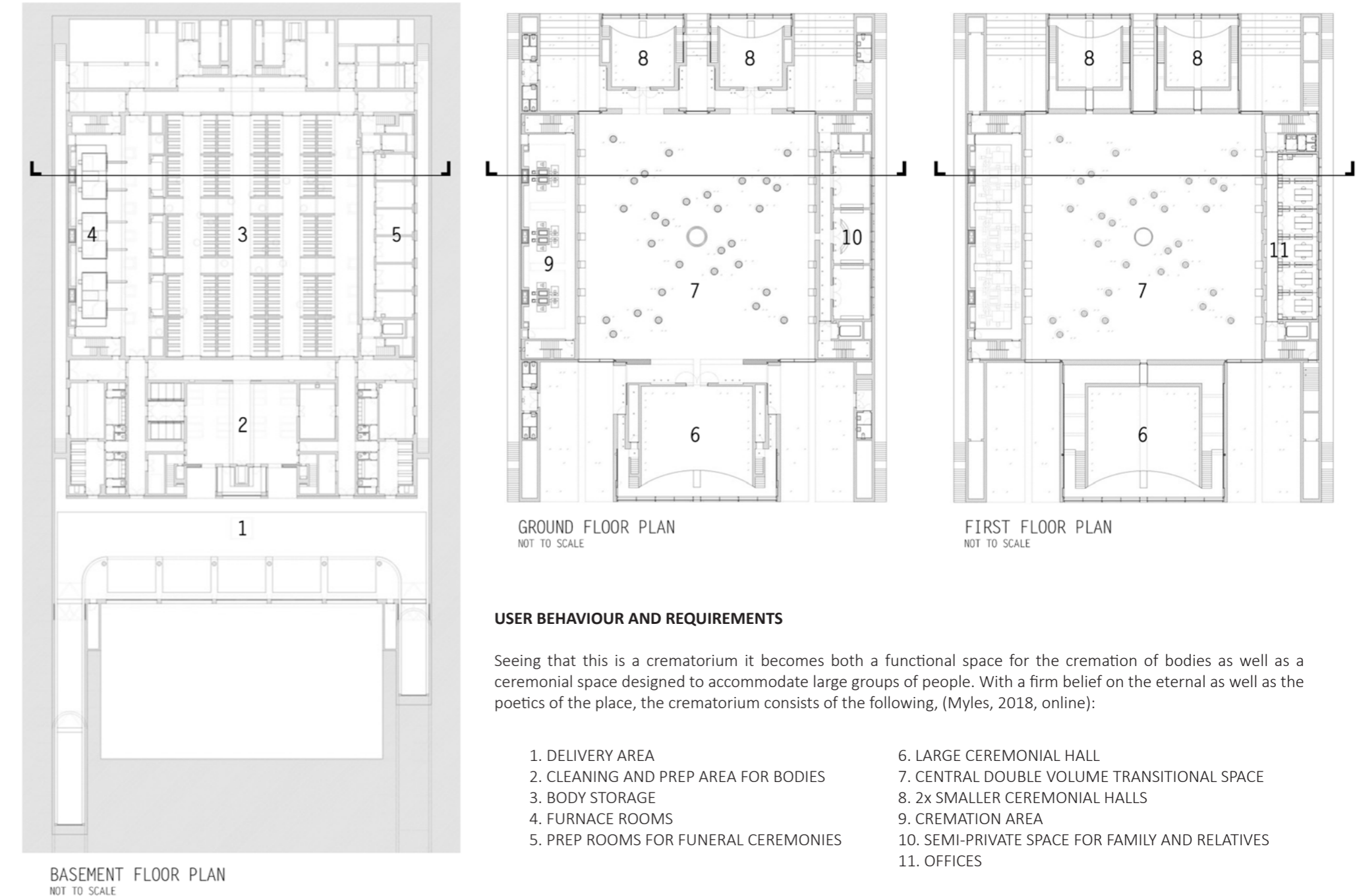


Figure 3.34: Crematorium Floor plans, (Adapted by author, 2020)

USER BEHAVIOUR AND REQUIREMENTS

Seeing that this is a crematorium it becomes both a functional space for the cremation of bodies as well as a ceremonial space designed to accommodate large groups of people. With a firm belief on the eternal as well as the poetics of the place, the crematorium consists of the following, (Myles, 2018, online):

- | | |
|--------------------------------------|---|
| 1. DELIVERY AREA | 6. LARGE CEREMONIAL HALL |
| 2. CLEANING AND PREP AREA FOR BODIES | 7. CENTRAL DOUBLE VOLUME TRANSITIONAL SPACE |
| 3. BODY STORAGE | 8. 2x SMALLER CEREMONIAL HALLS |
| 4. FURNACE ROOMS | 9. CREMATION AREA |
| 5. PREP ROOMS FOR FUNERAL CEREMONIES | 10. SEMI-PRIVATE SPACE FOR FAMILY AND RELATIVES |
| | 11. OFFICES |

With the division of the building by means of the sectional roof slab, the building is divided in three main sections. The outer two sections on either side of the transitional space (no.7 in figure 3.34), in the terminology of Louis Kahn, 'serve' the central section of the building which accommodates the three chapels and condolence hall, (Charleson, 2005, p. 14).

The main features of the crematorium are the two small halls which can accommodate 50 people each, the large hall which can accommodate 250 people and the central transitional space or condolence hall. Looking at the overall construction of these spaces they are generally seen as small boxes placed within a bigger box (figure 3.35) which adds to the concept of addition and subtraction of volumes within the building, (Mutuli, 2016, online).

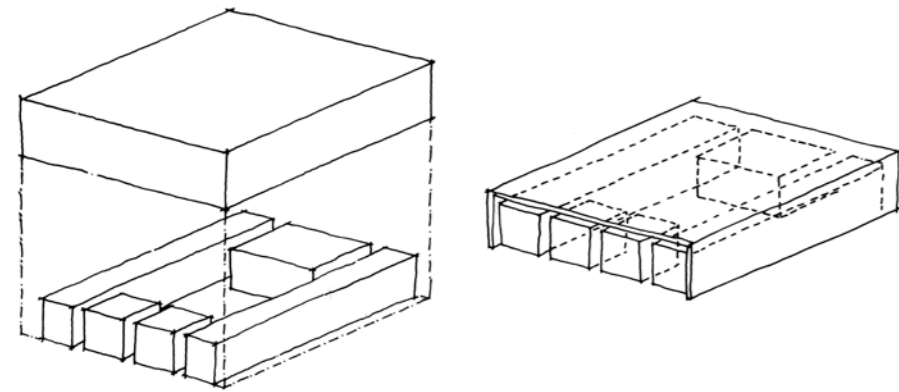
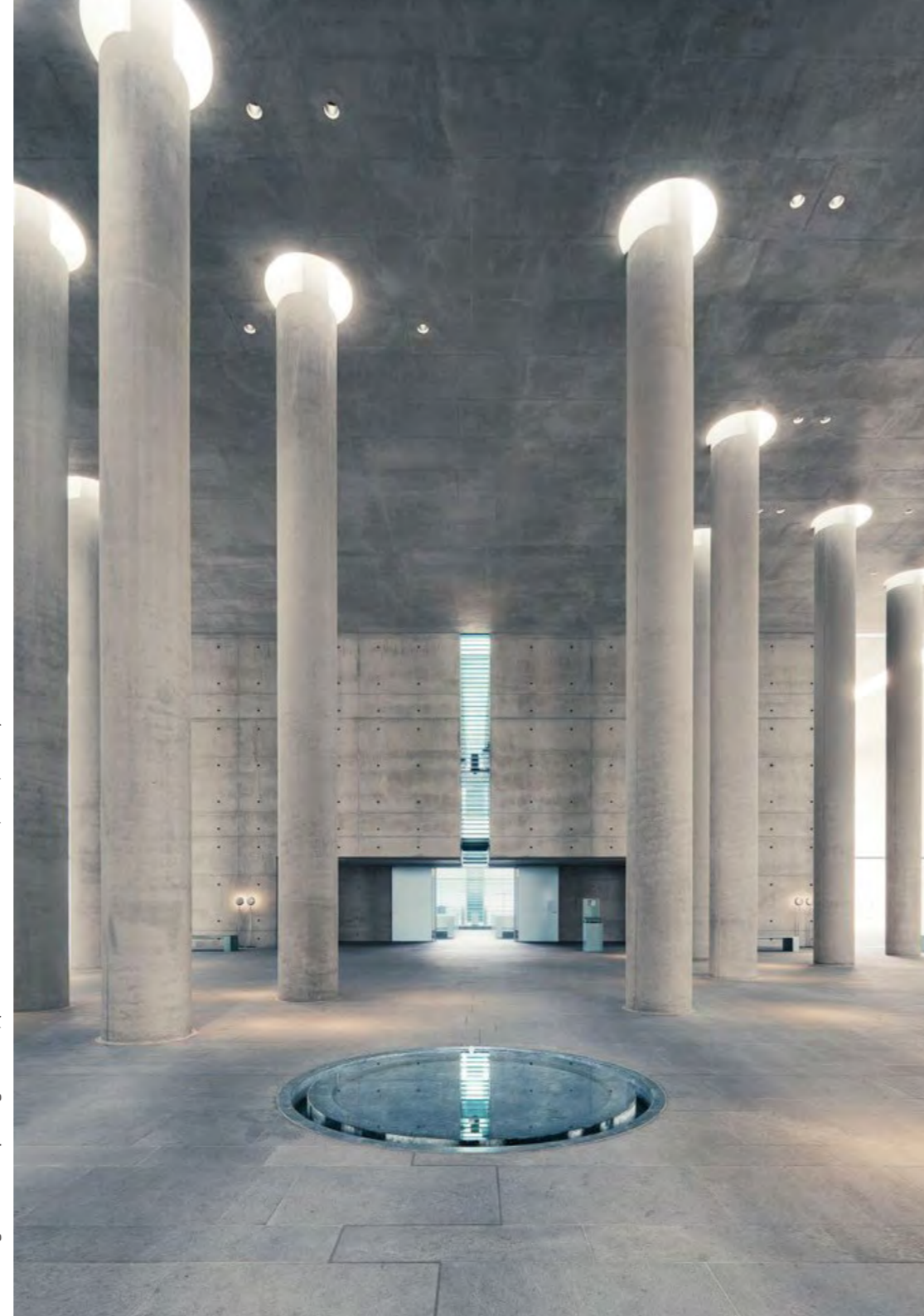


Figure 3.35: Creating small boxes in the bigger enclosing box (Author, 2020)

While designing this 50x70m non-jointed building that is sunken 10m underneath the earth and protrudes 10m above it, the architects envisioned the place where the deceased goes to. It is portrayed as heaven with clouds, trees and a presence of light which led to the spread out vegetation that are placed closer to the slat covered casing of the glass sections that allow light to penetrate the crematorium. All of these design decisions add to the main function of the building, being that of comfort, one that glorifies the unknown road ahead by making it as silent, peaceful and still as possible, (Mutuli, 2016, online).

Figure 3.36: Repeating columns, (Schultes Frank Architekten, 2000, online)



FORM AND FUNCTION

Morphology:

This crematorium is truly monumental in terms of scale and mass, as mentioned earlier; the building is a geometric load bearing block of 50 x 70m which is both 10m below and 10m above the earth. The building gives the appearance of a block that has been cut into, hollowed out and used to form the intricate spaces inside which embody the unknown path that awaits the deceased, (Kaplinger, 1998, p. 48). On the approach to the building one encounters a slow change of height which makes the internal floor level 1m above that of the surroundings, this is done in an attempt to further distance the experience of the building from the external world.

Throughout the structure, the minimalistic uniformity of the design allows recurring elements to stand out. These include elements such as the multiple columns in the central space (figure 3.36), vertical sand deposits in the walls (figure 3.39), geometric patterns created by the concrete walls (figure 3.38) and the identical benches in the chapels (figure 3.37). By repeating these elements, the way visitors interact with the building is influenced. A good example of this is the way visitors are made to weave through the forest of columns, activating this space in a completely different way as it would have been experienced without the presence of the columns, (Kodish, 2017, online).



Figure 3.37: Benches in chapels, (Schultes Frank Architekten, 2000, online)



Figure 3.38: Geometric pattern, (Schultes Frank Architekten, 2000, online)

Figure 3.39: Vertical sand deposits, (Schultes Frank Architekten, 2000, online)



Function:

The aim of the crematorium was to create a space that, according to the architects, “which balances the transient and final nature of the experience, which makes what is heavy clear and what is light possible”, (Kapplinger, 1998, p. 48). According to Kodish, the four most striking characteristics of the design are; tranquil, contemplative, minimal and grand. Of these characteristics, each exists in relation to the program which heavily influences the design as the form is influenced by the function. The space becomes minimalistic with over simplified design features which aims to not take away from the individual mourning experience, (Kodish, 2017, online). The design revolves around experience and therefore it involves various symbolic gestures, gestures such as that of the columns in the central space which appear to reach towards the heavens, puncturing the concrete roof giving mourners a sense of pride and dignity while seeing their loved ones off. In the central space these columns serve as a symbolic gesture of honour to the deceased.

Throughout the crematorium, visitors interact with the form in order to create their own personal idea of the essence, and therefore the essence of the building may be interpreted differently depending on the user and the program that brings them to the building. The main function of the crematorium however remains cremation and the services surrounding that which are housed in the basement level (figure 3.40). Because of the large amount of cremations yearly (around 12 000 each year), the basement makes provision for the completely automated storage of 700 coffins (figure 3.41) and three furnaces to cope with these 12 000 cremations yearly, (Kapplinger, 1998, p. 49).

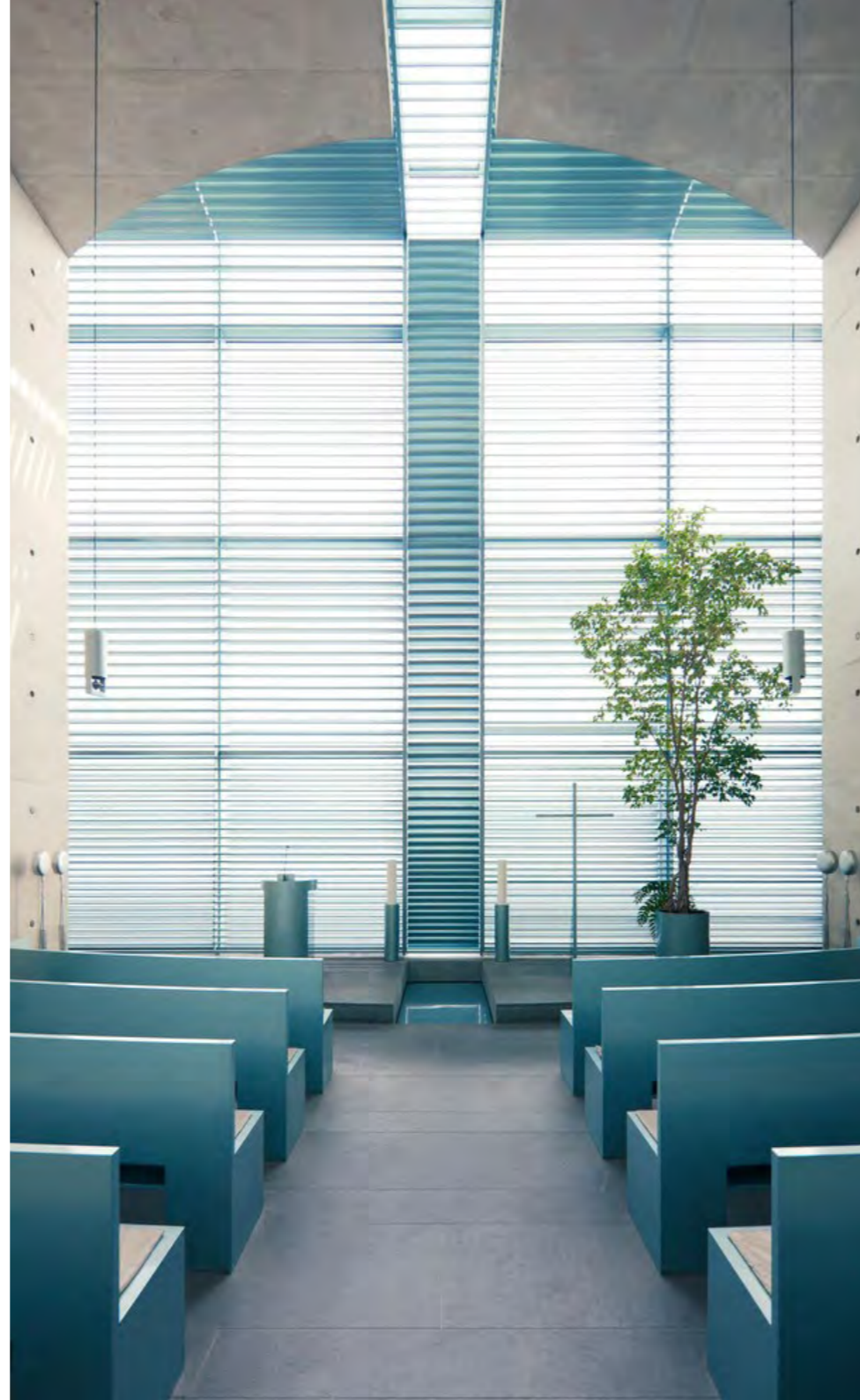


Figure 3.40: Approach to basement level, (Kapplinger, 1998, p. 49)



Figure 3.41: Coffin storage, (Kapplinger, 1998, p. 49)

Figure 3.42: Roof slab with slit, (Schultes Frank Architekten, 2000, online)



STRUCTURAL SYSTEM

Structure:

Exterior elevations of the building are dominated by the load bearing concrete walls which double both as structure and cladding. The side walls of the building seem to be solid 2m thick concrete structures (figure 3.43) but they are actually hollow and house rooms within them on either side of the central atrium, (Charleson, 2005, p. 14). Throughout the building thin edges of exposed slabs and walls are present which express the structural language used in creating these interior boxes, housing the chapels, within the larger envelope of the building. The roof slabs of these smaller boxes are terminated in gentle curves and contain slits which allow light to penetrate the building through louvered glazing elements (figure 3.42).

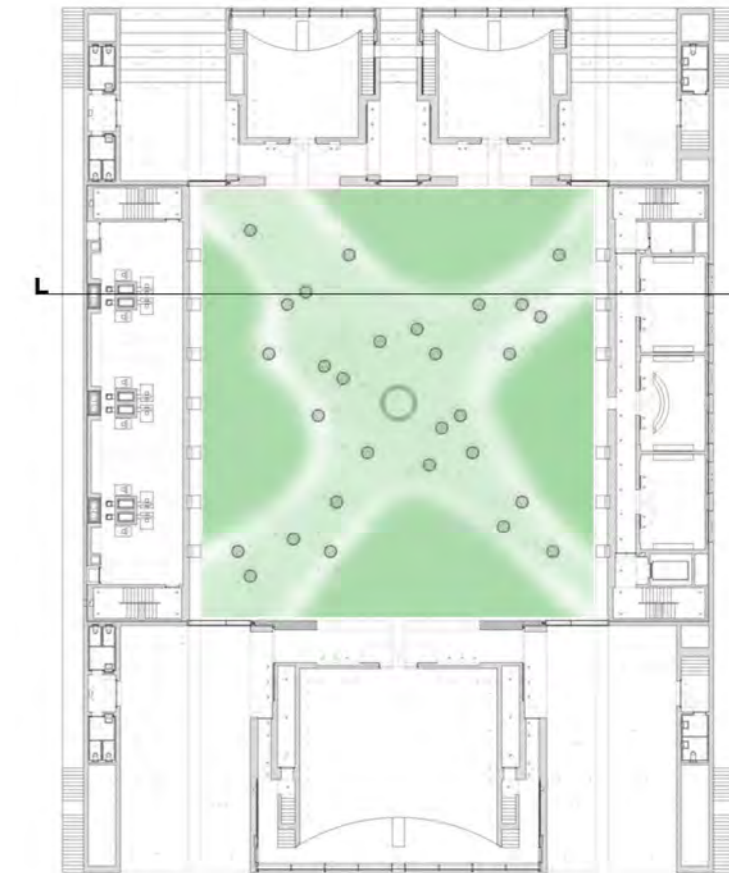


Figure 3.43: Exterior side walls, (Schultes Frank Architekten, 2000, online)

The large interior space is comprised of its primary architectural element, being the columns. These are placed ‘randomly’ in order to create the notion of a native forest rather than that of a plantation, (Charleson, 2005, p. 15). By scattering these large diameter columns, the architects intended to disrupt the linear movement through this transitional space. Through doing this, the space is divided up into four relatively large spaces along with many smaller spaces, (figure 3.44) which make it ideal for groups of two to four people to gather in these differently shaped spaces.

These columns form a large part of the spatial experience within the building, while instilling a sense of awe rather than intimidation. They puncture the roof slab to allow light into the space, the roof slab is constructed and reinforced in such a manner as to allow these columns to appear to be free standing, using light as their capitols (Kapplinger, 1998, p. 48).

- FOUR LARGER GATHERING SPACES
- MULTIPLE SMALLER GATHERING SPACES



GROUND FLOOR PLAN
NOT TO SCALE

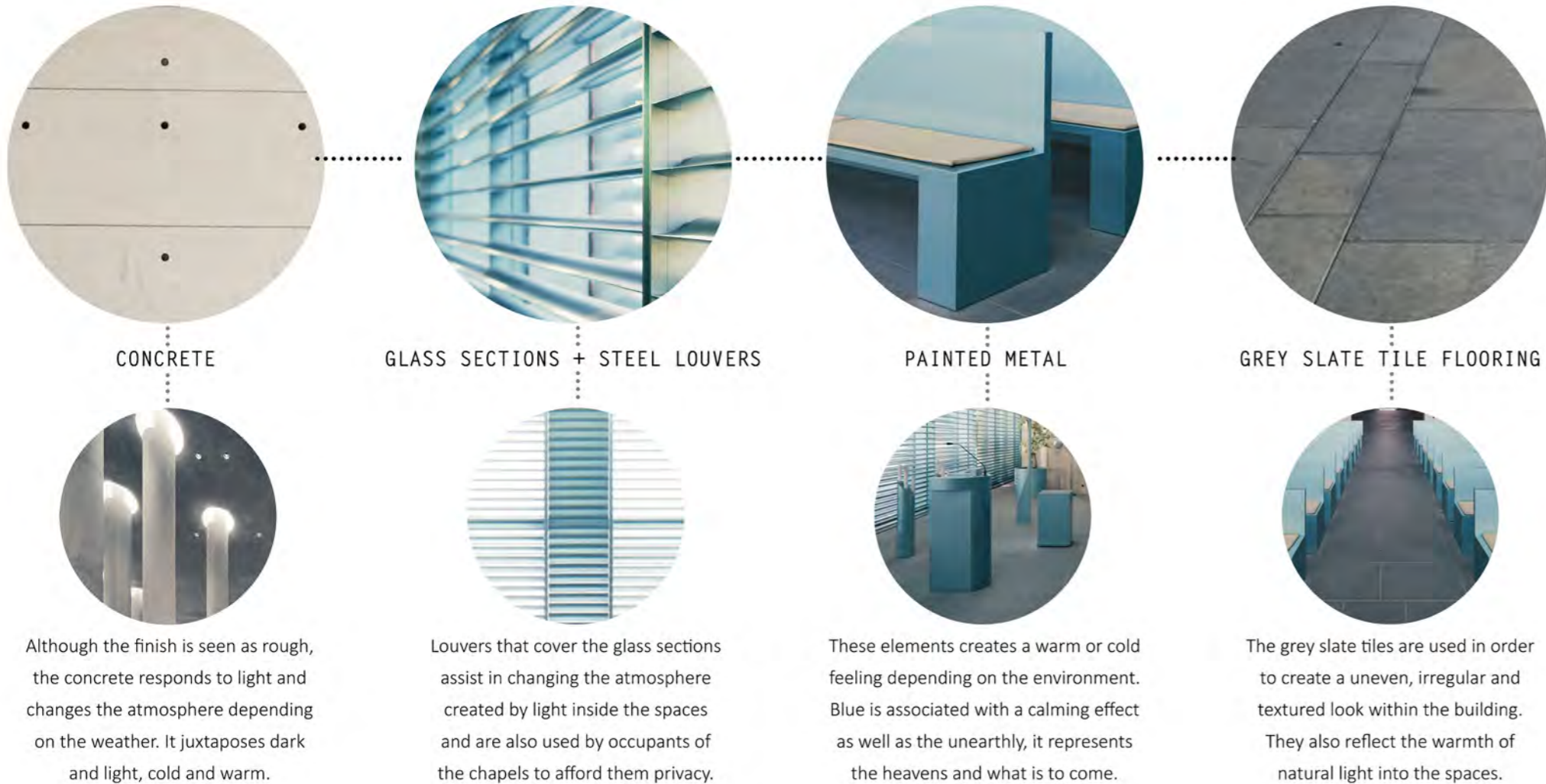
Figure 3.44: Gathering spaces formed by column placement, (Author, 2020)

Material usage

The building is not seen as being sentimental towards, nor does it glorify death. It is cold and clean, yet it still offers tenderness and comfort in the way material is used. Throughout the building the decision was made to juxtapose raw surfaces with polished surfaces, and therefore the main materials used are concrete and steel. Large sections of concrete are split and filled in with a section of glass which juxtaposes the cold and heavy nature thereof with warmth that is brought in by natural light.

A blue accent colour is used throughout the building in areas such as the louvered steel sections covering the glass sections; the polished steel benches in the chapel; lamp shades; podiums and crosses, (Mutuli, 2016, online). Blue is seen as a calming colour which is used to comfort mourners while at the same time, peacefully sending the deceased on his/her way. Floor slabs throughout the building are a darker shade of grey slate tile which even further contrast the walls and blue accents.

Figure 3.45: Material usage throughout crematorium, (Author, 2020)



SPATIAL EXPERIENCE

Light:

When approaching the crematorium from either side, one is made aware of the cuts made into the roof slab allowing the sky to be brought into the building to a certain degree, (Russell, 2000, pp. 224-231). This introduction of natural light is used to intensify the experience in the building. Columns puncture the roof slab and created a structural connection (figure 3.46) which allows light to enter the interior and wash over the columns. With the roof slab cantilevering from the columns and stopping short of the walls on two sides of the central space, light enters and reflects off the structure. Light is intentionally used at low levels along with the columns and concrete walls to intensify the sense of calmness, (Charleson, 2005, p. 16).

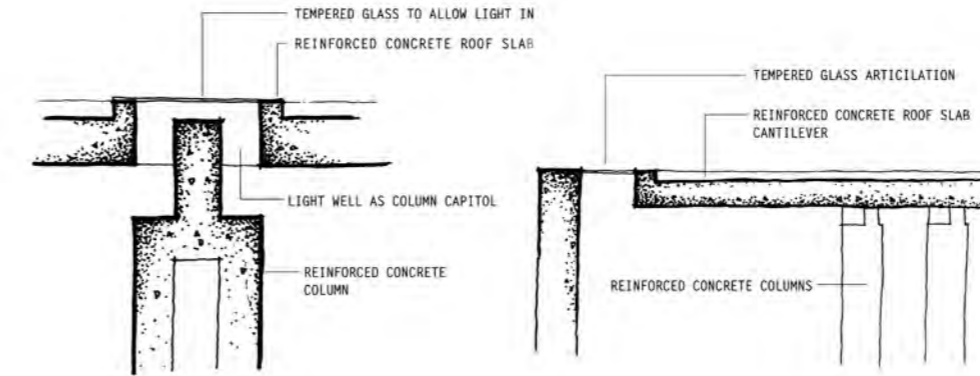
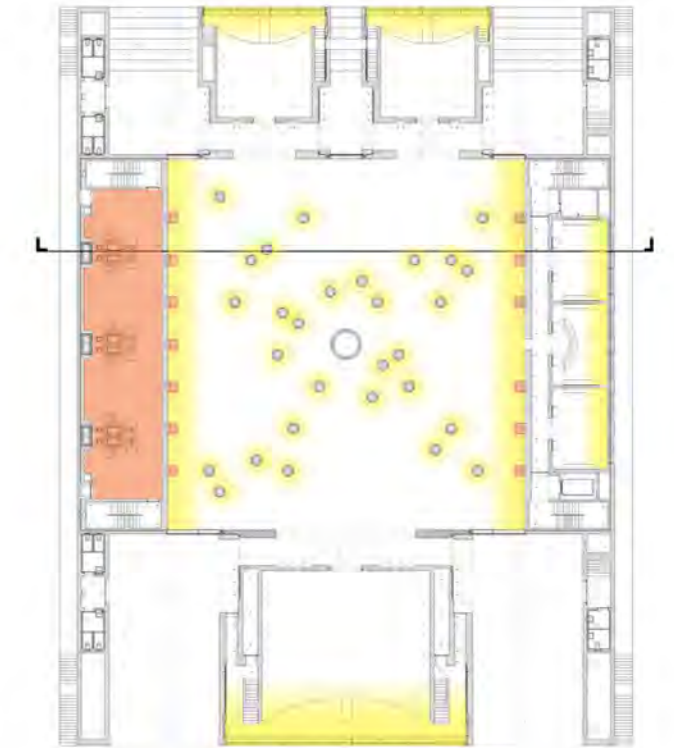


Figure 3.46: Column connection and roof slab, (Author, 2020)

The interior of the crematorium has a complex relationship with light (figure 3.47). Seeing that the building is only accessible to the public till 2pm, majority of the light experiences experienced by visitors is natural light. The only exception is made with sand deposits on either side of the central space that is artificially lit in order to emphasize their importance, (Kodish, 2017, online). As mentioned earlier, the ceiling has openings on either side of the central space that allow light in and give the effect of a floating structure which lets light spill into the space. Circular skylights where columns penetrate the roof slab create a capitol of light for each column and forms a play of light inside the space emphasizing the shadows cast by the columns throughout the day. Lastly, the chapels make use of natural light through the sections of glazing and the light is controlled by horizontal louver systems which allow for a play of light and privacy in these spaces.

Outcome and application:

Looking at the Baumschulenweg, the use of light and scale became an important influencing factor on that of the proposed promatorium. Not only does this enhance the spatial experiences, it creates a clean yet comforting space for that of mourning. It becomes evident that the use of minimalistic material, such as steel and concrete, can create an environment of comfort for the mourners. The building allows for the opportunity of more than one funeral service to take place at a time in privacy and therefore the use and organization of space will play a large role in the design going forward.



GROUND FLOOR PLAN
NOT TO SCALE

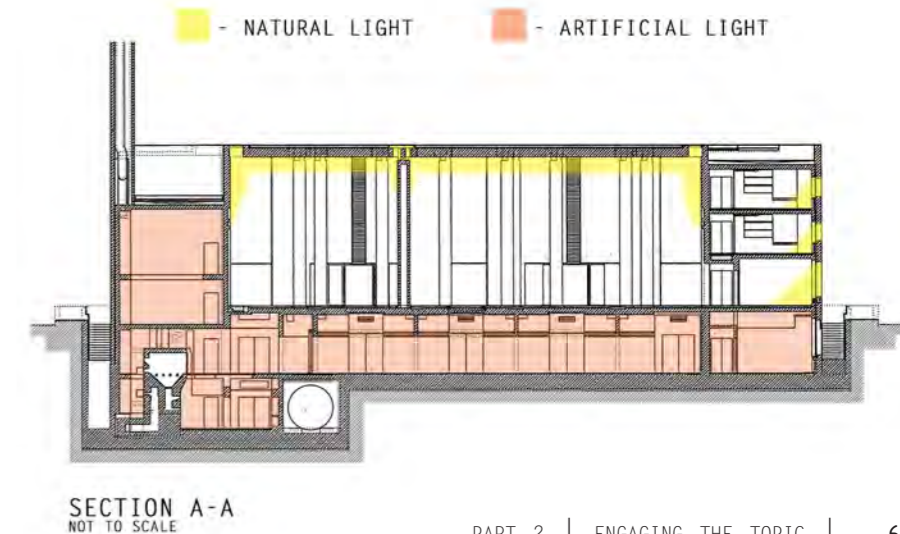


Figure 3.47: Plan and section indicating the use of natural and artificial light, (Author, 2020)

PRECEDENT STUDY

THRESHOLD SPACE + INTENTIONAL SPACE

Brion Tomb

Architect: Carlo Scarpa

Location: San Vito d'Altivole, Italy

Burial Typology: Private burial ground – an addition to existing local cemetery

Architecture Elements:

- Acrosolium
- Floating meditation pavilion
- Chapel
- New entrance

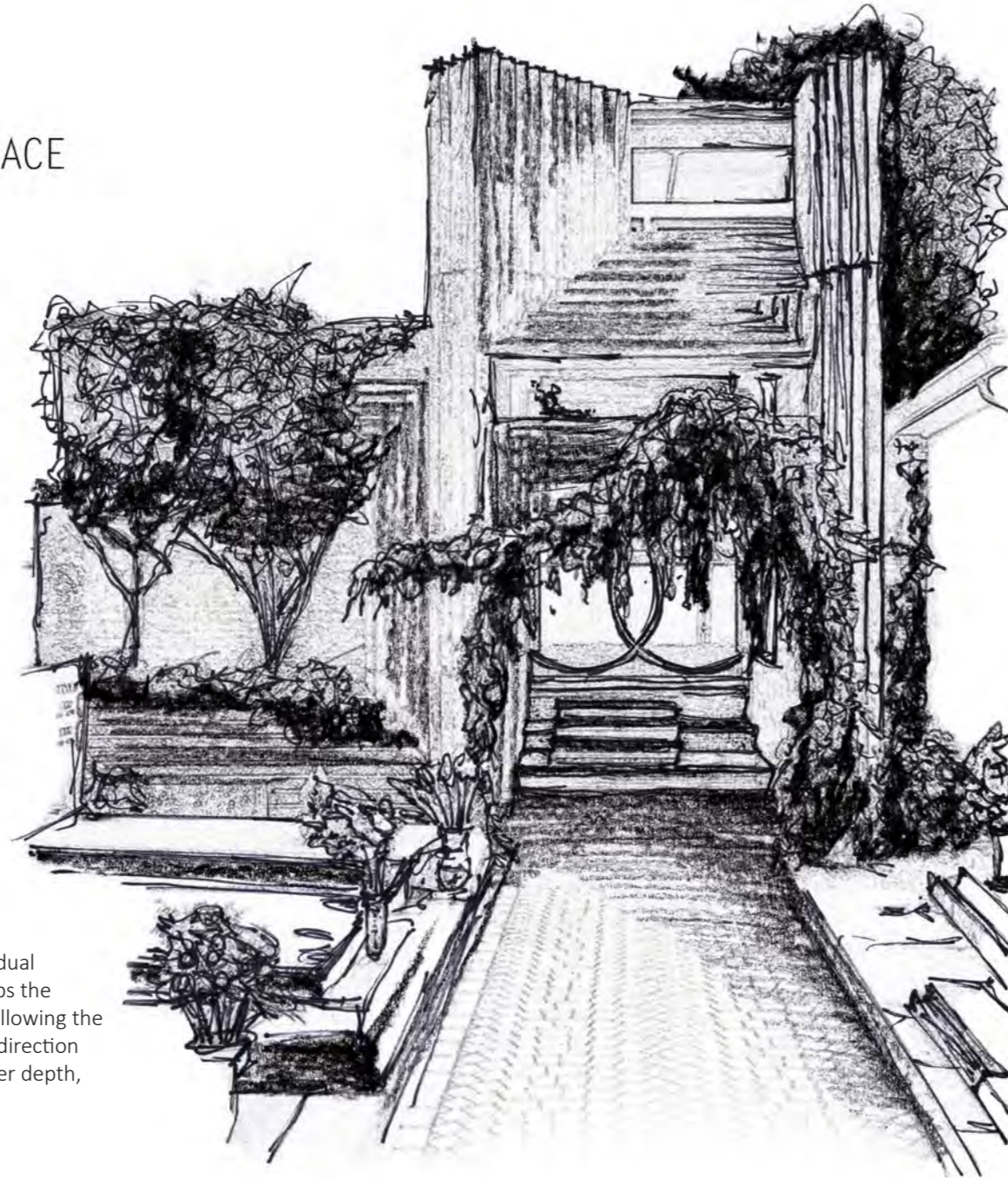
Landscape Elements:

- Mausoleum plaza
- Dense grove of cypresses Prato (lawn)
- Water (water channels and heavily vegetated reflecting pool)

Materials:

- Concrete
- Steel
- Timber
- Water

The cemetery becomes a journey where the water channels guide the individual through space through immersing them in the layered experience which helps the mourner to create a connection with the space, (Heathcote, 1999). By not following the norm of money and power when death occurs, Scarpa went in the opposite direction and avoided the dictation of rationalism and rather decided to stress the inner depth, dreams and nostalgia, (UKEssay, 2018).



In what Carlo Scarpa describes as a pathway, the tomb epitomizes the use of architecture in order to create meaning which leads to the genius loci (spirit of the place). Each element of the tomb will be analyzed individually as part of the whole in order to understand the transitional spaces of both physical as well as metaphysical.

5 main elements make up the L-shaped cemetery namely; the Acrosolium that spans over the graves, the two graves, the floating meditation pavilion, the chapel and the new entrance to the complex.

1. The Acrosolium

Historically the Acrosolium was situated within catholic burial chambers and would be for important people and martyrs. The Acrosolium is a arched recess carved from solid rock with a stone coffin placed underneath, (UKEssay, 2018).

In the tomb complex, the Acrosolium became the focal point connecting and acting as a hinge to the two perpendicular sections of the L-shaped site (figure 3.48). Underneath this the two heads of the family is buried and it becomes important therefore it was constructed at the north east side of the site. Rather than taking the traditional route of stone, the Acrosolium was designed and constructed out of slender concrete that span a section of sunken ground that houses the graves.

The arch is designed in an asymmetrical manner and is made up of four components that form the whole. Visually the arch is two parts, the first being the main arch or backbone that spans over the graves and second the floating plane that sits below and shelters the graves. The arch is connected on both sides by means of pin joints to the third and fourth elements being the concrete plinths (figure 2.33). These plinths are also both split in two visual sections with the solid mass capping the arch and the dynamic section completing the arch, (Heathcote, 1999).

2. The graves

Situated below the arch we find the two graves of Mr. and Mrs. Brion in a sunken circular section that is sheltered by the Acrosolium (figure 3.49). These two sepulchers (small room/monument that houses the deceased) are made out of two toned marble with the sides facing each other being ebony, allowing for a softer touch, and the top layer a speckled black marble. The two sepulchers lean towards each other as though they want to touch and at the same time also symbolizing a bow towards each other, signifying honor as well as a greeting in the afterlife. Not wanting to have these read as heavy objects; Scarpa designed them to curve at the bottom and therefore having them read as moveable objects, (UKEssay, 2018).

In Yutak Saito's book Carlo Scarpa (1997), he describes how the two sepulchers are perceived to "float like two boats beneath the arch." This is reminiscent of the buildings of Scarpas beloved Venice, (Saito, 1997).

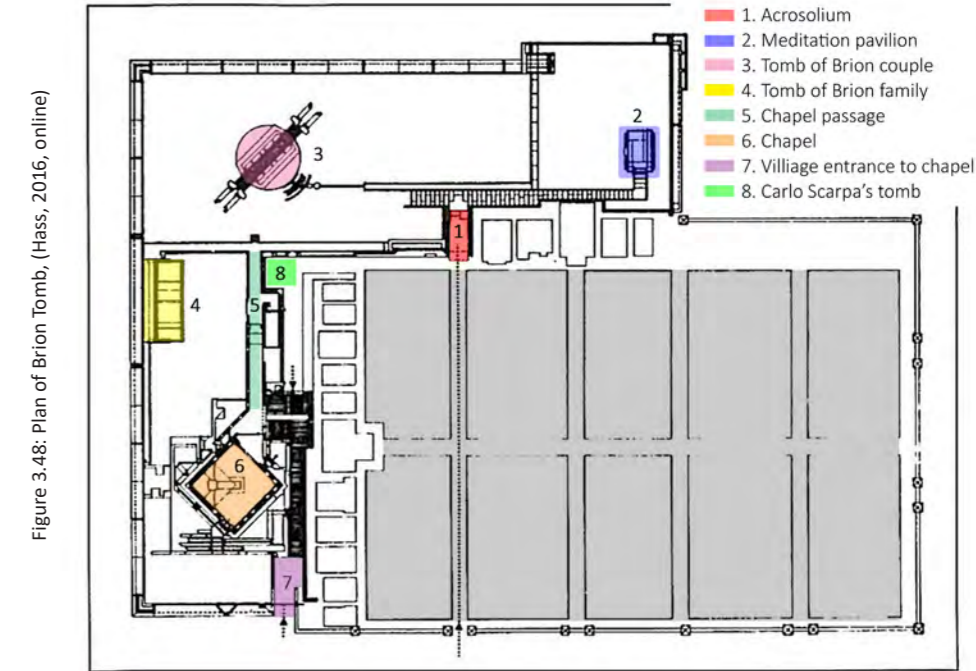


Figure 3.48: Plan of Brion Tomb, (Hass, 2016, online)



Figure 3.49: The graves of Brion couple, (Hass, 2016, online)

3. The Pavilion

Located on the northern side of the complex, seemingly floating in a shallow body of water is the meditation pavilion (figure 3.50). The motivation for the pavilion was to create a space underneath a canopy that the souls of the departed may enter to meditate, (UKEssay, 2018). This space is accessed through the main entrance along the narrow and through the glass door which opens by means of an elaborate system of pulleys that is seen on the wall on the other side of the door.

The pavilion itself consists of the top section that is clad in weathered timber sections and below that a thin metallic panel that is was textured with a pattern of nails and then painted green in order to soften the material and make the space more comfortable, (Saito, 1997). From outside the pavilion looks very solid with a sense of heaviness but from inside the structure is hollow and allows light through into the space where you find a bench (figure 3.50), which Scarpa imagined the spirits using after moving around in the garden.

4. The chapel and Sacristy

Emphasized by the continual vertical sections that cut through the horizontal plane of the flat lawn, the chapel is located on the eastern side of the complex which shows the hierarchy of the building within the complex. The chapel is accessed by means of one of two entry points; the most important being the formal entrance which is used for occasions like mass and the second entrance being the more informal entrance through the garden. The transition between the garden and entrance to the chapel is created by two small steps which are accompanied by the tall walls that create a vertical volume to travel down. On the wall to the left we find a grid pattern of concrete lines formed by a 10mm recess in layers of plaster which were trowelled and then polished in order to reflect light down the corridor, (UKEssay, 2018). Further down on the same wall we find the camouflaged door of the private sacristy which identifies the privacy thereof. At the end of the passage one is met with a large steel door in that resembles a Japanese screen. This threshold lends itself to the easy access of coffins into the chapel as well as to accommodate large numbers of people on occasion.

Material used in the construction of the chapel consists predominantly of layered concrete as with the rest of the complex. The floor is constructed of small stones similar to cobble stones, which is laid at a 45° angle to the room towards the altar where two marble steps lead up to the altar.

5. The new entrance

The new entrance lies along a corridor of trees that runs from the old village cemetery, upon approach one is confronted with the two intersecting circles (figure 3.52) at the end of the small corridor which symbolizes the heaven and earth as well as the spiritual world that lies in between, (Bhatt, 2016, p. 36). Decorated with horizontal slices such as the Acrosolium the heaven, as in Scarpa's eyes, is visible and it softens the mass of the structure.



Figure 3.50: Floating meditation pavilion, (Hass, 2016, online)



Figure 3.51: The chapel, (Covre, 2017, online)

Once inside, four steps that are slightly offset to the left lead to the corridor giving the visitor a sense of which direction to go. The symbolism of the heaven, earth and the in between is once more visible when looking through the intersecting circles and are represented by the sky, the grass and the concrete wall instilling a sense of how close these three worlds are and how they intersect each other, (Bhatt, 2016). The corridor then splits and allows the visitor the choice of the brighter path on the left leading to the Acrosolium, where the corridor opens up and water channels continuing the lines of the buildings leading to offset steps which forces you to start with a certain foot, or the darker corridor which leads to the floating pavilion.

The use of water throughout

The use of water throughout the design is elemental and therefore Scarpa designed two pools at the opposing sides of the complex which were connected by streams that weave between the tombs and connect them to a sense of life and movement. This concept was unfortunately not fully designed but can clearly be seen connecting the various parts of the complex, (UKEssay, 2018).

The pools created were rather shallow (around 500mm deep) with a stepped concrete pattern that gave the water a sense of volume while allowing the sun to cast intricate shadows in these pools during the daytime. With the flow of water through the channels one experiences the narrowing of these channels, this gives the feeling of momentum and in essence, life, (Saito, 1997).

Outcome and application:

Thresholds becomes such an important part in the development, from the way one enters the building with your feet being guided through which step to take first, to the subtle gestures of offset stairs. This actively engages, not only the physical actions of the individual, but also that of the subconscious. Individuals experience spaces with the help of architectural gestures and the use of the elements.

The use of subtle and unconscious gestures such as these used in the Brion Tomb, will aim to incorporate elements to create a peaceful environment in the design of the promatorium. Mourners will be able to pass through these physical and spiritual thresholds while experiencing a sense of comfort.

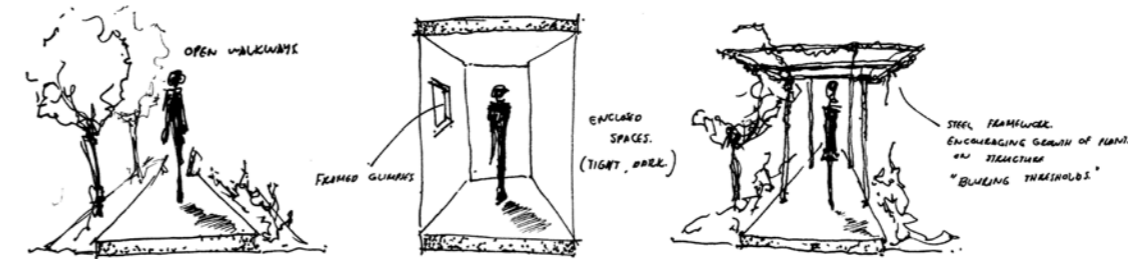


Figure 3.52: Village entrance to chapel, (Hass, 2016, online)



Figure 3.53 : The use of water, and threshold space (Phaidon, 2017, online)

DESIGN DEVELOPMENT

ACCOMMODATION LIST

FUNCTIONAL COMPONENTS

FUNERARY OFFICES

42m ²	Reception and waiting area
16m ²	Administration office 1
16m ²	Administration office 2
22.5m ²	Main office
26m ²	Boardroom

SERVICE CORE

10m ²	Female ablution
8m ²	Male ablution
6m ²	Unisex/ disabled ablution
21m ²	Staff kitchen/ Break room
16m ²	Cleaning staff break room
7m ²	Storage room
23m ²	Records room
86m ²	Passage

PROCESSING AREA

193m ²	Delivery bay
102m ²	Mortuary
30m ²	Preparation room (wash and prep)
21m ²	Cold room
8m ²	Storage room
105m ²	Promatorium
37m ²	Storage for liquid nitrogen

795.5m²

COUNSELING OFFICES

21m ²	Reception and waiting area
33m ²	Therapy room
16m ²	Counseling office 1
16m ²	Counseling office 2
40m ²	Passage

SERVICE CORE

8m ²	Female ablution
7m ²	Male ablution
3m ²	Unisex/ disabled ablution

114m²

SACRED SPACE

MAIN CEREMONIAL SPACE

246m ²	Entrance courtyard
480m ²	Ceremonial space and seating
100m ²	Outside space
60m ²	Foyer space

SECONDARY CEREMONIAL SPACE

242m ²	Ceremonial space and seating
32m ²	Outside space
38m ²	Foyer space

SERVICE CORE

25m ²	Female ablution
25m ²	Male ablution
3m ²	Unisex/ disabled ablution
22m ²	Storage
10m ²	Service shaft
15m ²	Passage

1 298m²

REFLECTION AND REMEMBRANCE

REMEMBRANCE SPACE

310m ²	Committal space (cooling tower 1)
310m ²	Committal space (cooling tower 2)
310m ²	Committal space (cooling tower 3)
310m ²	Committal space (cooling tower 4)

EXTERIOR SPACES

458m ²	Raised walkways
425m ²	Walkways
4 500m ²	Gardens (with possibility for extension)

SERVICES

4 912m ²	Nursery space (Cooling tower ground floor)
---------------------	--

11 535m²

Figure 3.54: View of power station chimney from between cooling towers (Author, 2020)



3.3.2 DESIGN PHASE 1 INITIAL APPROACH

While looking at the initial design concepts of the (un)Heard, the (un)Seen and the Celebrated (figure 3.55), the approach was taken to combine the three sketches into an individual sketch. This sketch then led to the exploration of placement on site in such a way that it embodies this non-place surrounding the cooling towers (figure 3.56-57). Each of these explorations served as a step in the direction of creating a place of remembrance.

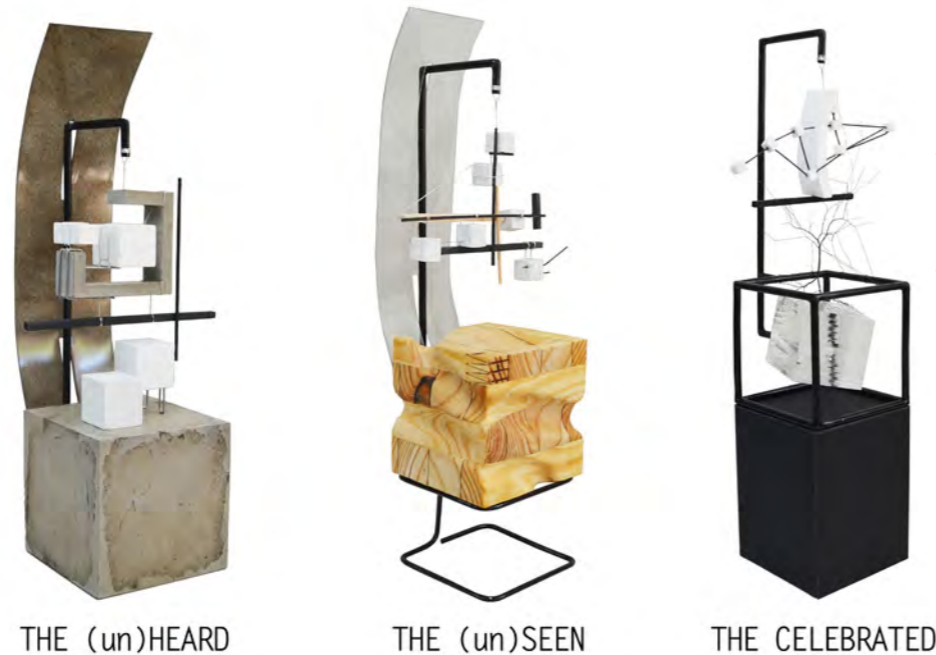


Figure 3.55: Concepts, (Author, 2020)

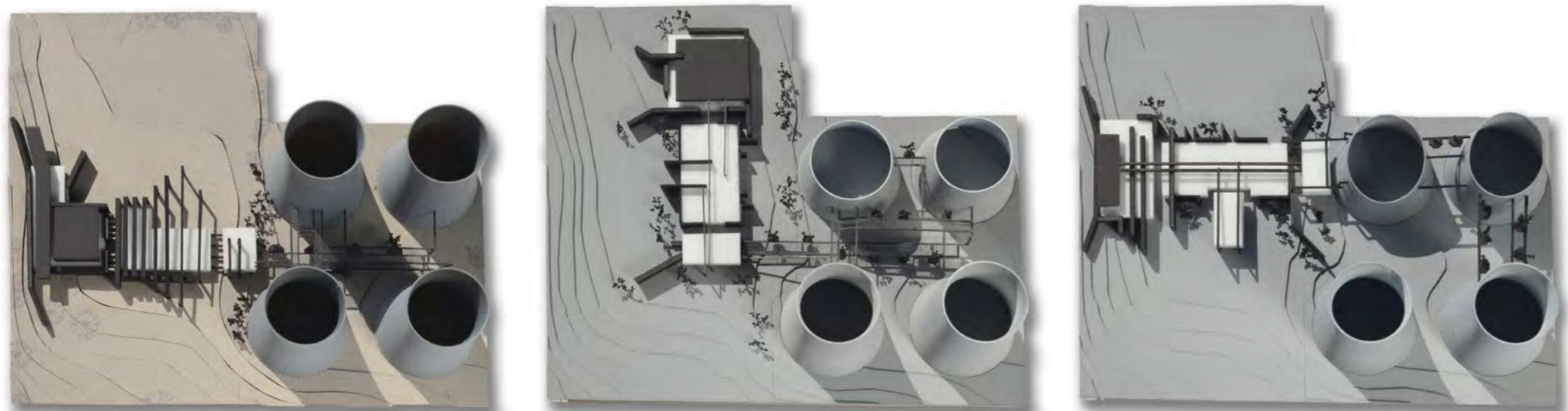
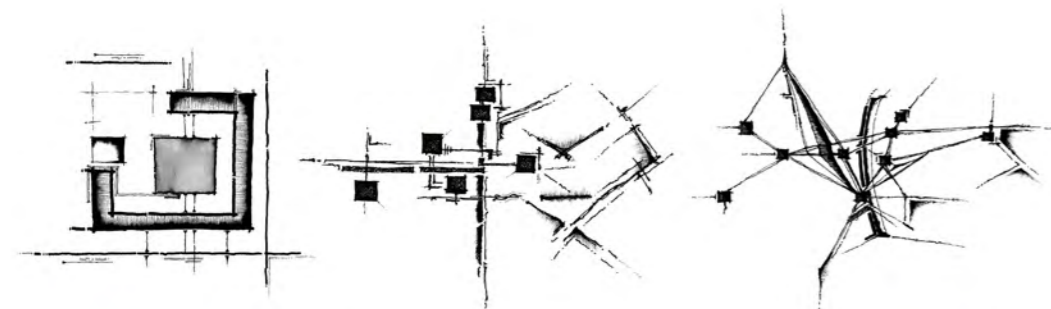
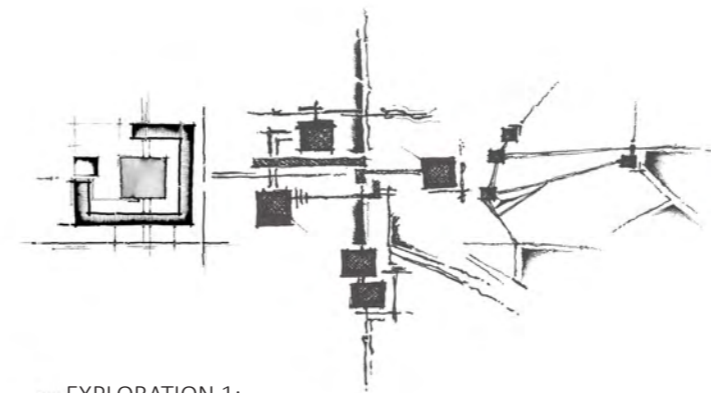


Figure 3.56: Conceptual exploration, (Author, 2020)



EXPLORATION 1:

Interpreting the combined sketch as linear the design also took on the linear approach. The design was placed on the axis between the cooling towers while embodying the concepts in a very literal sense. The (un)Heard was cut into the quarry wall allowing for quiet reflection, The (un)Seen was placed in the middle where the promession process were to take place challenging the sociological ideals of death and the Celebrated was placed in between the cooling towers creating a framework for plants to grow.

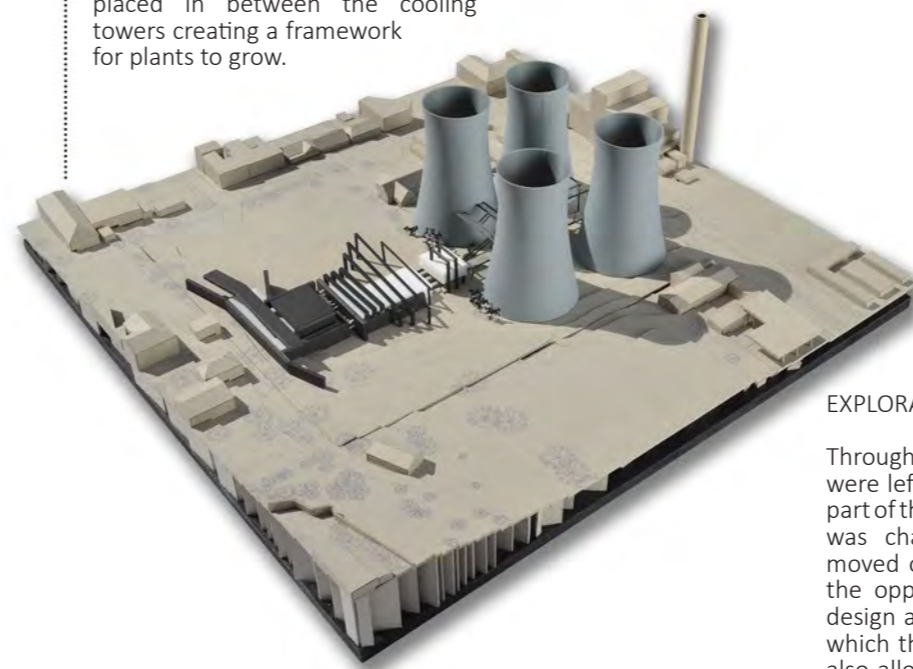
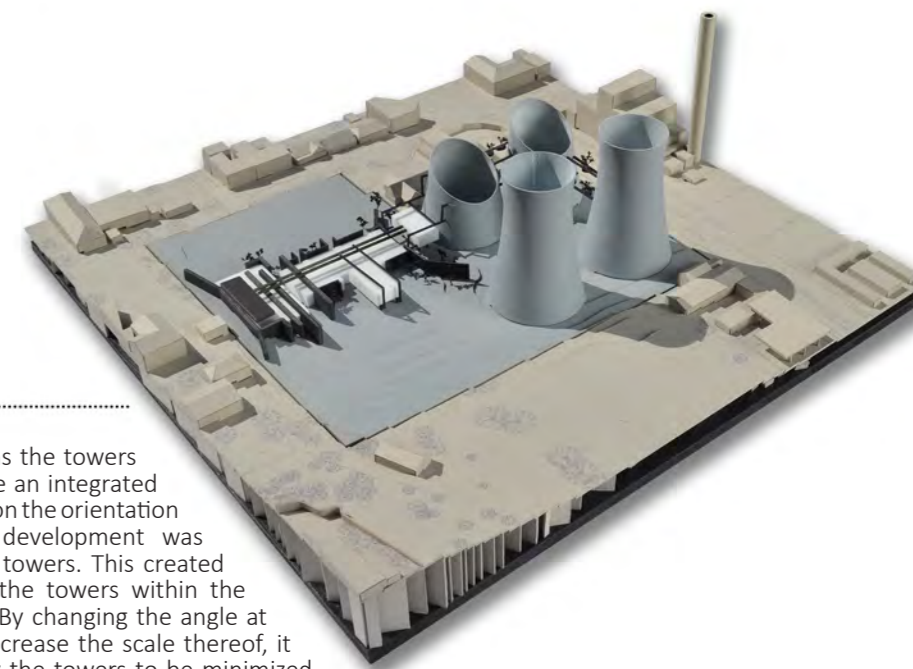


Figure 3.57-59: Conceptual explorations in context, (Author, 2020)



EXPLORATION 2:

Looking at the existing structures on site the scale became difficult to negotiate. The approach was taken to try and reinterpret the cooling towers to bring down the scale and make the transition between the design and the towers less intimidating. The orientation of the first exploration was also questioned to allow for more flow through the site into the garden space but by changing the orientation, the development faced towards the west which was not ideal.



EXPLORATION 3:

Through the previous explorations the towers were left out and did not become an integrated part of the design. In this exploration the orientation was changed, and the linear development was moved off the axis between the towers. This created the opportunity to incorporate the towers within the design as part of the linear axis. By changing the angle at which the towers were cut to decrease the scale thereof, it also allowed for shadows cast by the towers to be minimized and allow more sunlight to reach the lower plants.

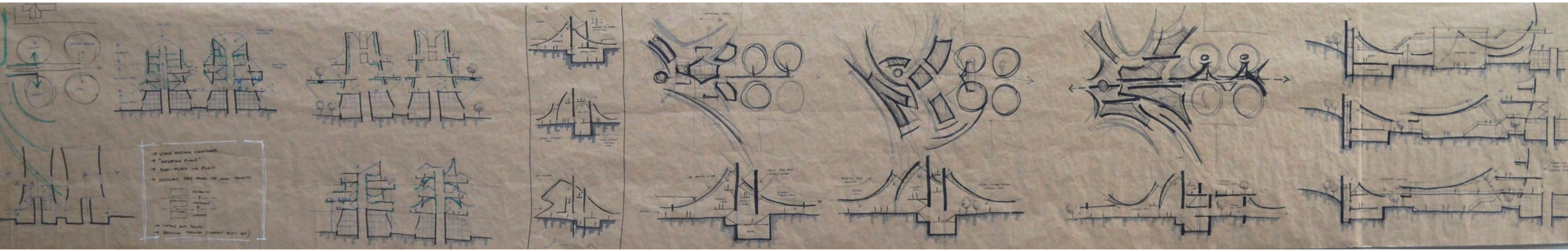
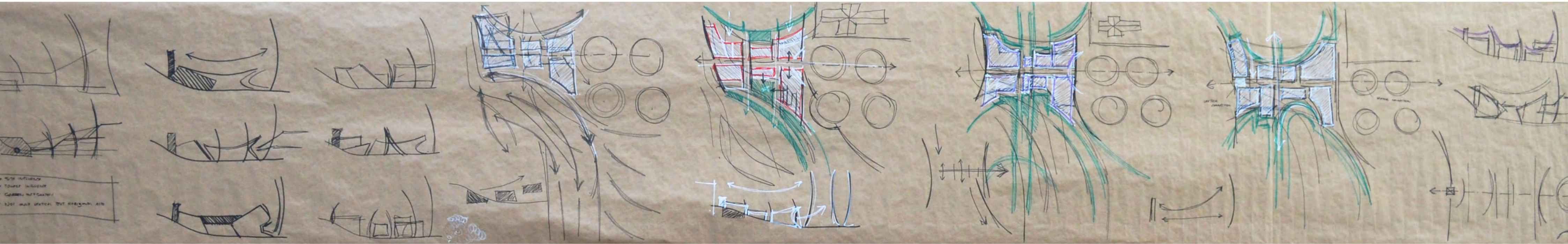


Figure 3.60: Brown paper sketches, conceptual development, (Author, 2020)



Figure 3.61: Structural touchstone 1, (Author, 2020)

Structural touchstone

By placing focus on the route of the body as it passes through various rituals, the initial approach of the touchstone was to link spaces together with a singular structural spine (figure 3.61). This structural spine however became more of a subconscious connection by means of level changes (figure 3.62) with focus largely being placed on the overall forming of the development and the reaction of the quarry wall on the cooling towers by means of the up-swept roof.

After the touchstones were completed, they were translated into workable spaces to investigate possible spatial qualities within (figure 3.63). The quarry wall served as the anchoring point for the design not only rooted in the present but also in the past. This allowed the design to serve as a transitional space between the past and present as well as life and death by creating a space of awareness and memory through spatial awareness.



Figure 3.62: Structural touchstone 2, (Author, 2020)



Figure 3.63: Possible spatial development, (Author, 2020)

PRECEDENT STUDY 4

STRUCTURAL FROM GIVING

Jubilee Church

Architect: Richard Meier and Partner Architects LLP

Location: Tor Tre Teste, Rome, Italy

Building Typology: Church

Gross floor area: 830 m²

Architecture Elements:

- Church hall
- Prayer hall
- Public space
- Waiting areas
- Service spaces + Admin

Materials:

- Precast architectural white concrete
- Stucco
- Stone and glass (translucent and transparent)
- Hemlock wood (north wall of nave)
- Travertine marble

As Richard Meier describes it himself, (Ten, online, 2013);

'Light is the protagonist of our understanding and reading of space. Light is the means by which we are able to experience what we call sacred. Light is at the origins of this building... In the Jubilee Church, the three concrete shells define an enveloping atmosphere in which the light from the skylights above creates a luminous spatial experience, and the rays of sunlight serve as a mystical metaphor of the presence of God...'

Figure 3.64: Jubilee church interior, (Meier, 2000, online)



Characterized by the rational use of geometry, clarity of spaces and use of light the Jubilee church consists of two main elements namely the church itself and the parish center. Clear differentiation between the two is made by means of form giving and separated by a vertical plane while being joined with a concave wall of glass, (Ten, online, 2013).

The chapel is made up of three curved walls, with the same radius, that represent the sails of a boat connected to the body of the ship being the parish center. Inside the church, visitors experience an ever-changing experience with the natural light bathing the curves of the walls. Indirect lighting is introduced by means of inclined planes around the altar which reflects light into the interior. Along with the indirect lighting, white surfaces and soft edges are used to create the illusion of floating elements above the marble walls within these spaces. Warmth is introduced into the interior by means of wooden slats as well as artificial lighting along with the wooden furniture. This allows for a well-integrated language throughout the church by creating a comfortable environment.

The initial proposal for the steel structure, covered with concrete and stucco only allowed for a 50-year life span, but with the proposal of a new method the life span was increased. This new method, suggested by Antonio Michetti, introduced a structure of prefabricated blocks with a double curvature which will be connected by means of post tensioned horizontal and vertical wires, (Meier, online, 2000). To preserve the whiteness of the concrete, a new cement containing titanium dioxide was developed and used which guarantees a lasting whiteness to the concrete despite pollution, rain, and weather effects.

Outcome and application:

In the design of the promatorium, focus must be placed on the spatial quality especially within the ceremonial spaces. Therefore, by drawing on the form giving of the Jubilee church investigation the roofscape was largely influenced by the design of the church. By using a similar shape to that of the church, northern light will be maximized with in the spaces which will contribute to the feeling of being in nature. The clear definition between the ceremonial spaces and the service spaces also plays a large role in the promession process and will be incorporated throughout the design and addressed differently within each space.

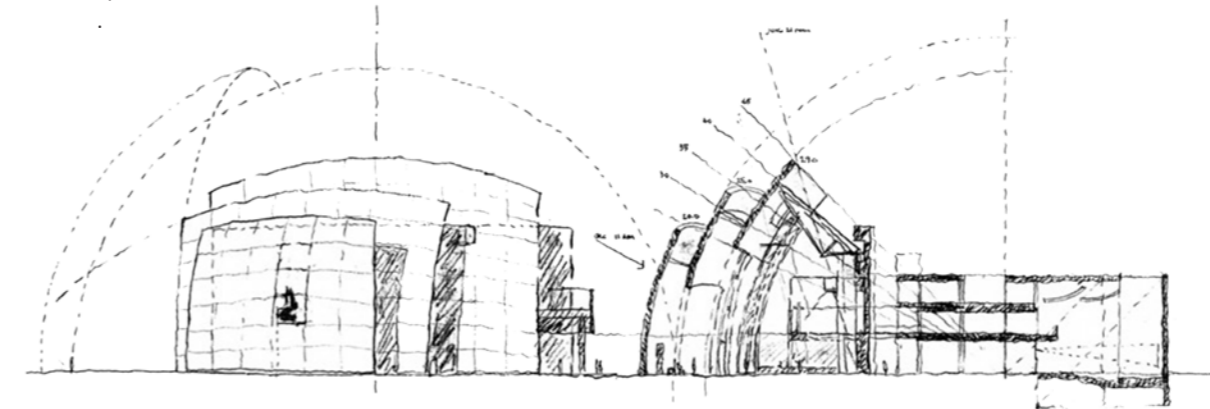


Figure 3.65: Sketches by Richard Meier, (Meier, 2000, online)

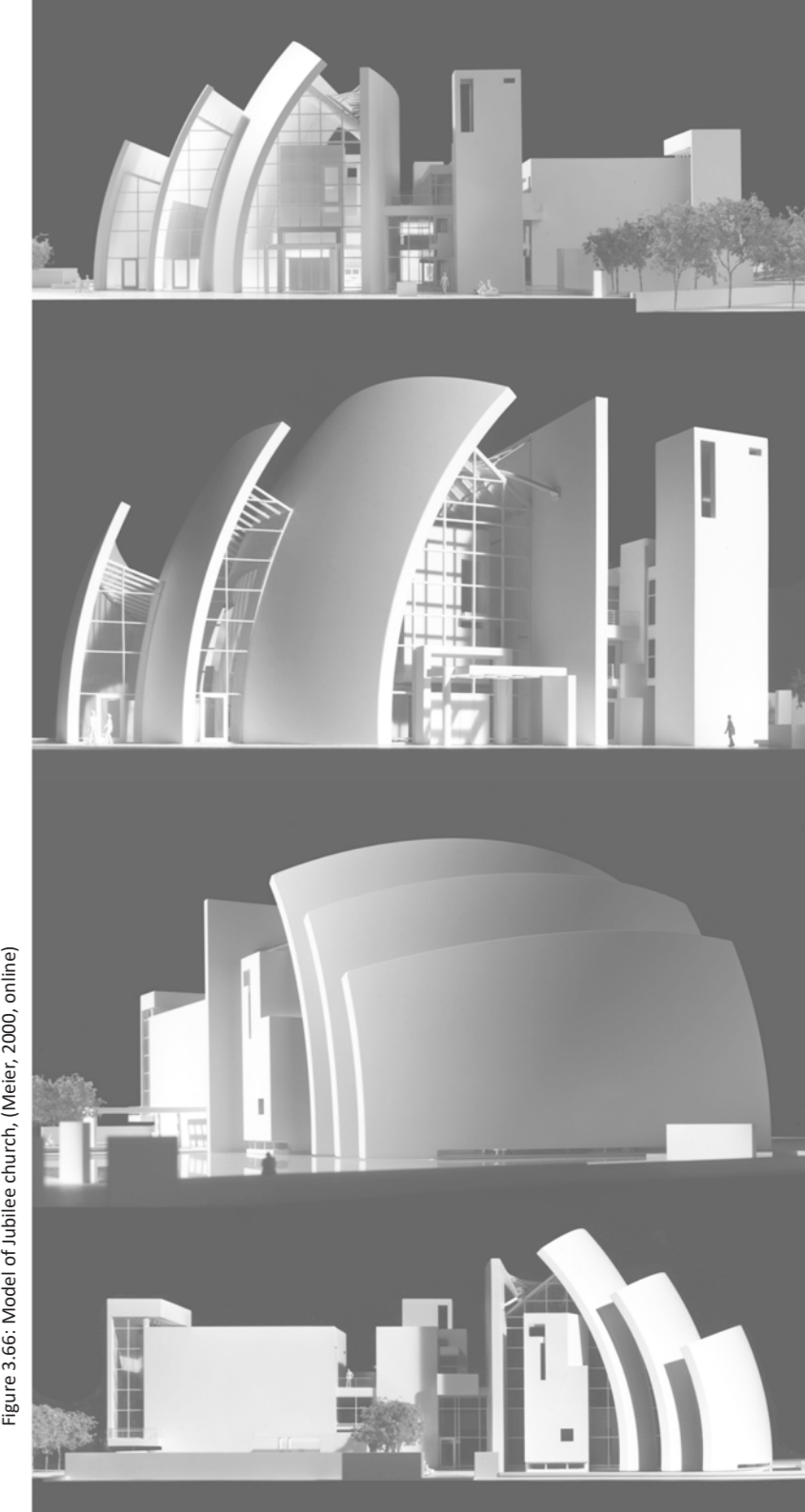


Figure 3.66: Model of Jubilee church, (Meier, 2000, online)

DESIGN PHASE 2 PLAN + SECTION DEVELOPMENT

As with the initial approach to the plan, a similar approach was taken with the development of the section. The driving concepts were interpreted as the three stages of the promession process with the focus being placed on isolation, mourning and celebration through remembrance.

The (un)Heard: Seeing that the promatorium will be designed within the heart of Bloemfontein, the initial approach was to “burry” this section of the development. This allows for the reintroduction of death within the city by creating a space of introspection, a space where isolation from the surroundings during the stage of acceptance allows for introspection and engagement with this mystical/ mythical idea of death.

The (un)Seen: After experiencing isolation from the surroundings and engaging with the acceptance of death, the individual will be reintroduced to the ground level where the ceremony will be held. By reintroducing individuals to the ground floor and not having the ceremony be held outside of the surroundings, the topic of death will be reintroduced by means of the ceremonial rituals taking place. It also became important that this space serve as a transitional space between death and life. By moving from below ground to ground and then above ground, the development, just as the plant, must grow and open up.

The Celebrated: As the funeral ceremony is completed, the family will take the remains and return it back to the earth in the form of a plant. This takes place within the cooling towers, an elevated place of significance, a monumental structure that immediately creates a vertical connection with the heavens that will become a beacon of life within the city.

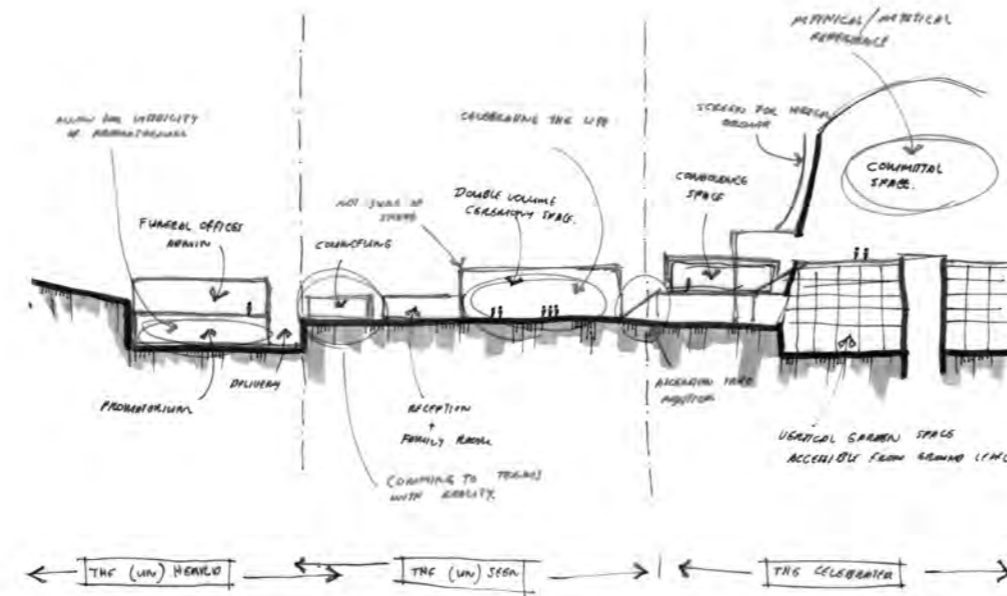


Figure 3.67: Placement of spaces, (Author, 2020)

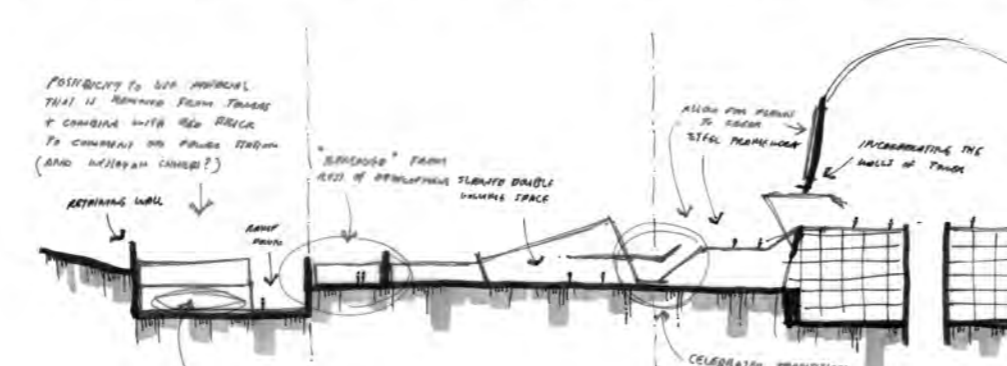


Figure 3.68: Exploring geometries, (Author, 2020)

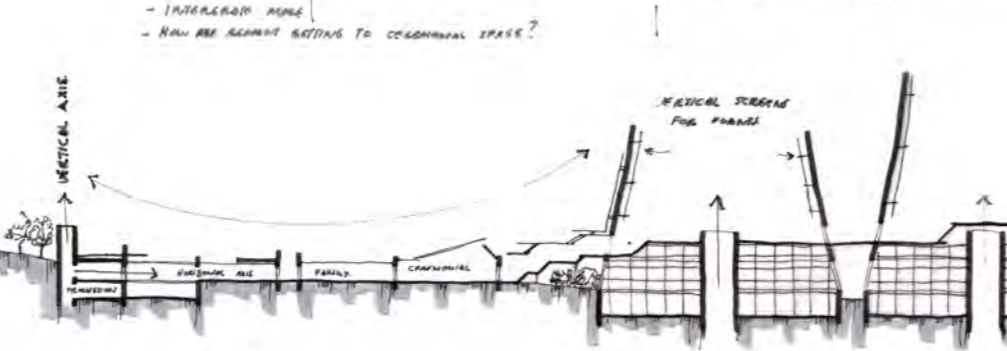


Figure 3.69-70: Connections, (Author, 2020)

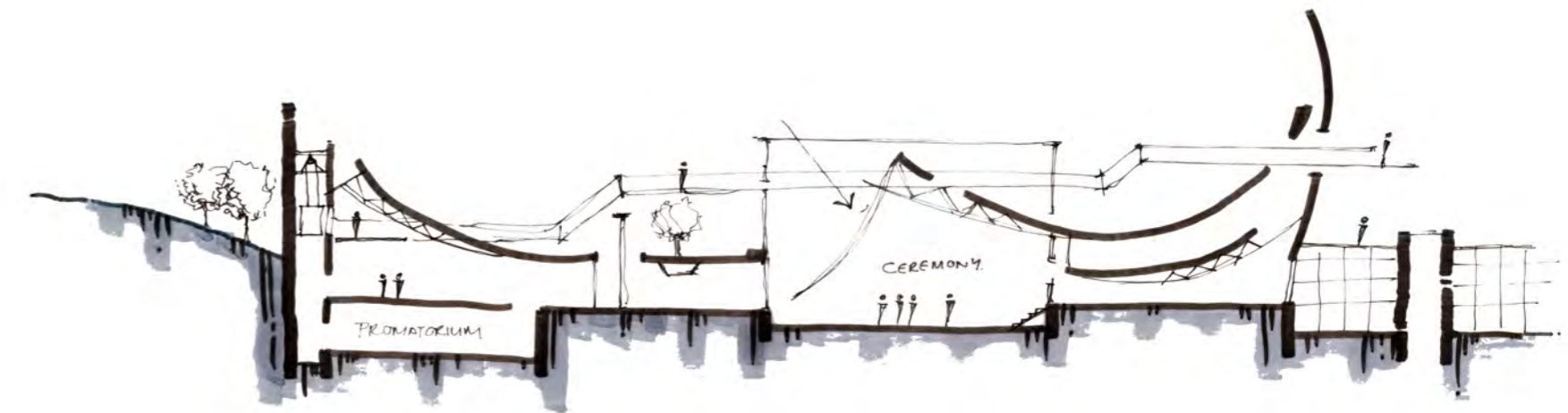
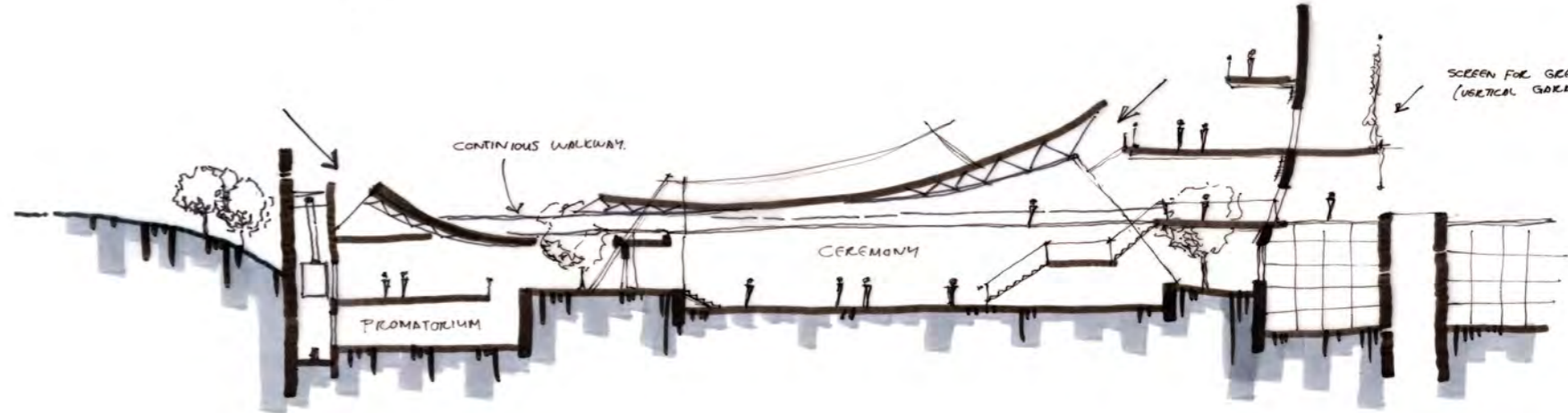
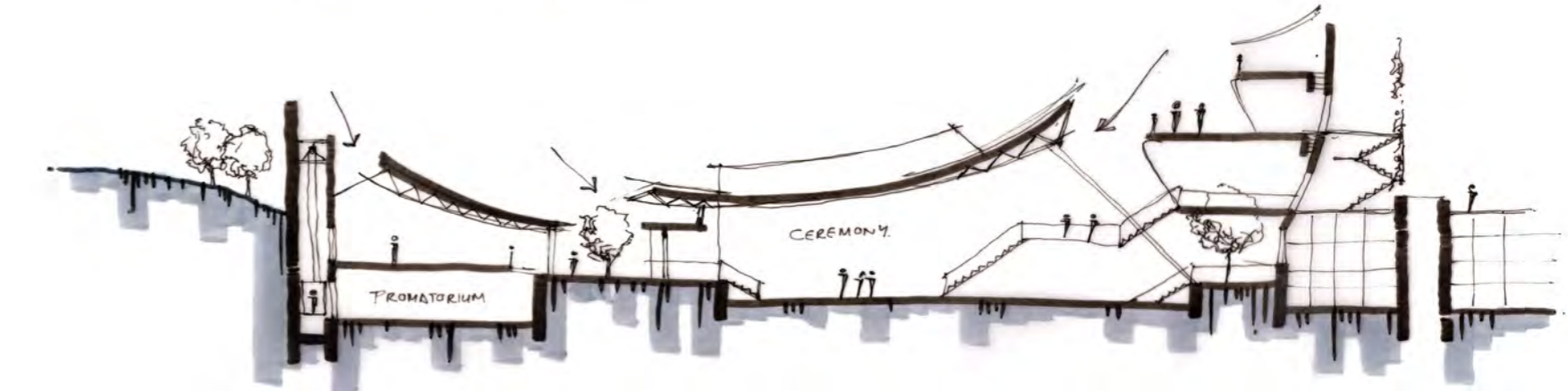


Figure 3.71-73: Longitudinal section development, (Author, 2020)



By looking at the Jubilee church and the roofscape, this influenced the sectional development in terms of geometry as well as the introduction of natural light. Clear definition also started to form between the geometry of functional and ceremonial spaces and the way they were introduced seeing that both functional and ceremonial spaces play a significant role in the procession process.

Throughout the initial design stages the plan kept changing due to the scale as well as the placement on site and therefore various possibilities were investigated however the plan remained unresolved. This led to further investigation into the sectional development and how this could drive the design.

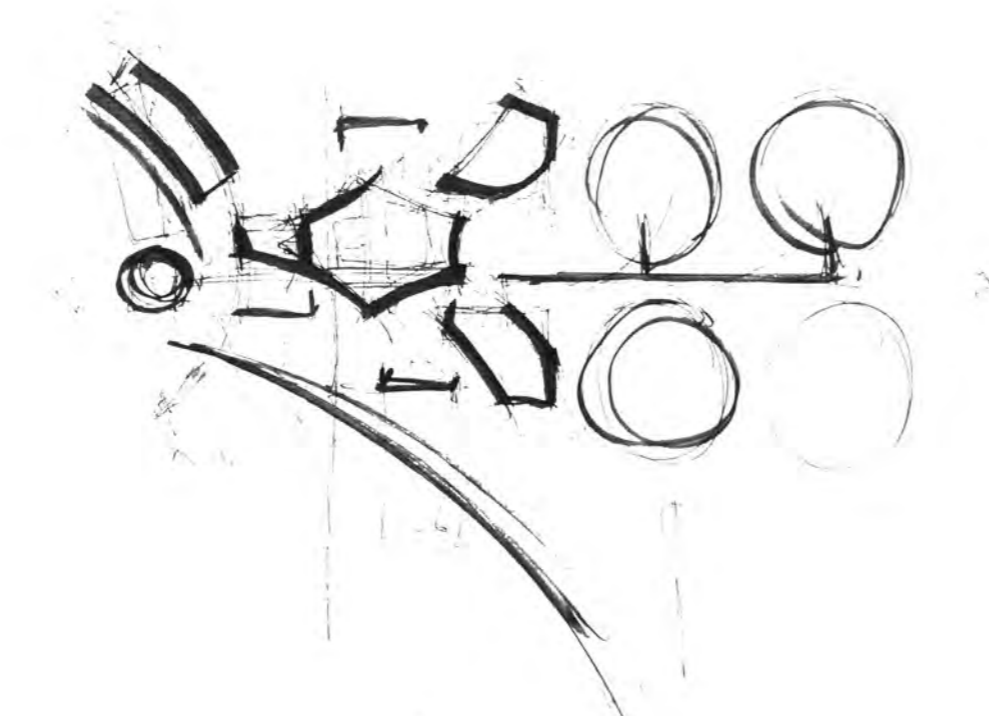


Figure 3.74 indicates the development of the section after looking at the Jubilee church, experimenting with the roofscape and how to allow for natural light. This section however proved problematic because the design became very narrow on a large site and this meant that the site overpowered the building.

The development serves not only as a transitional space, between life and death but also between the surrounding context and the more private gardens. This led to the development lending itself to extending the transitional space (figure 3.75) and allowing for nature to be brought into the building.

With the core remaining very similar, the section expanded even further and started introducing more geometries which allowed for primary and secondary ceremony spaces (figure 3.76). By further incorporating nature into the building, the transitional space increased and thresholds started becoming blurred which allowed for a better horizontal flow.

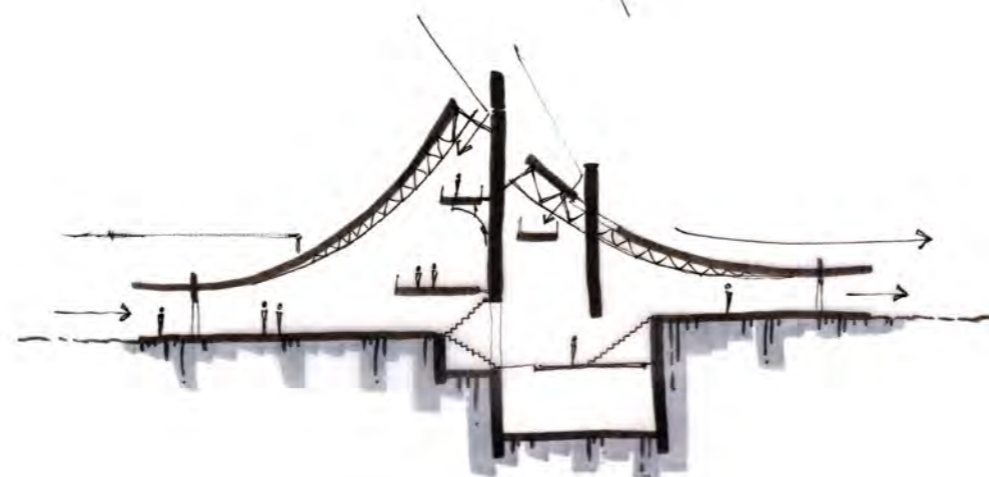


Figure 3.74: Compact section development, (Author, 2020)

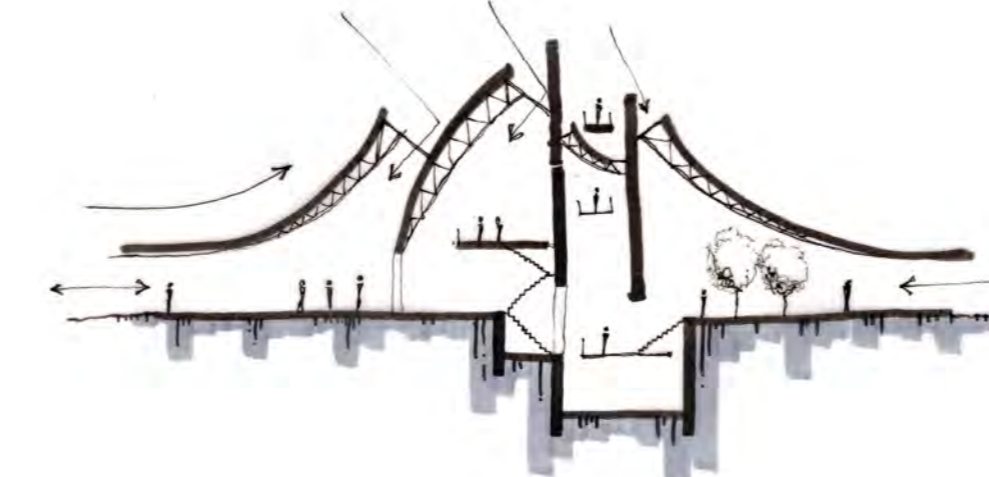
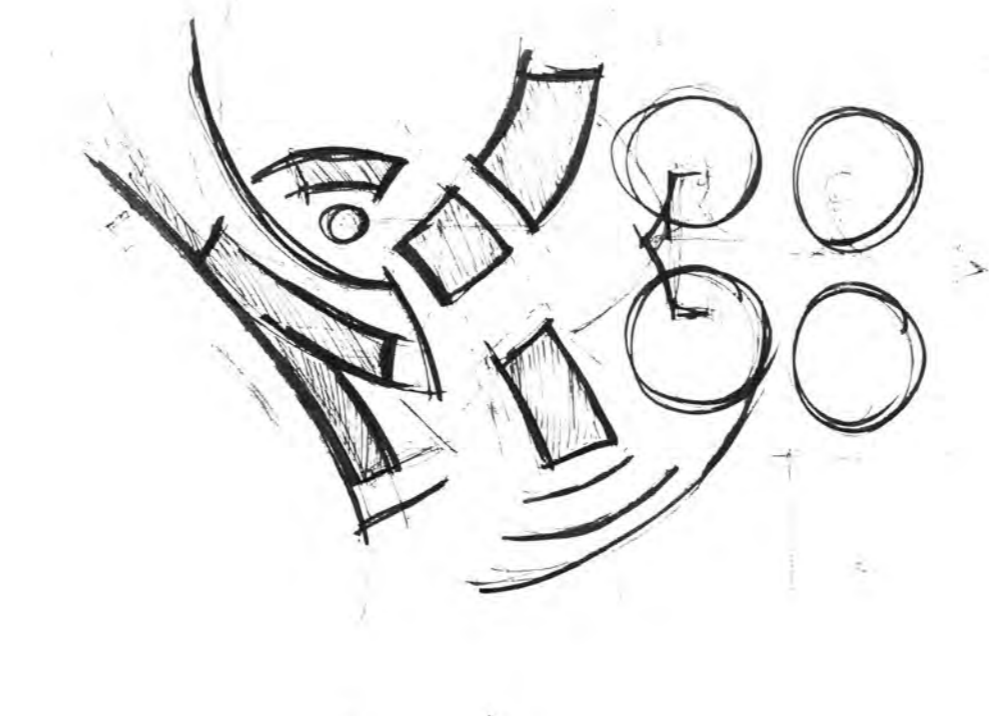


Figure 3.75: Increasing transitional space, (Author, 2020)

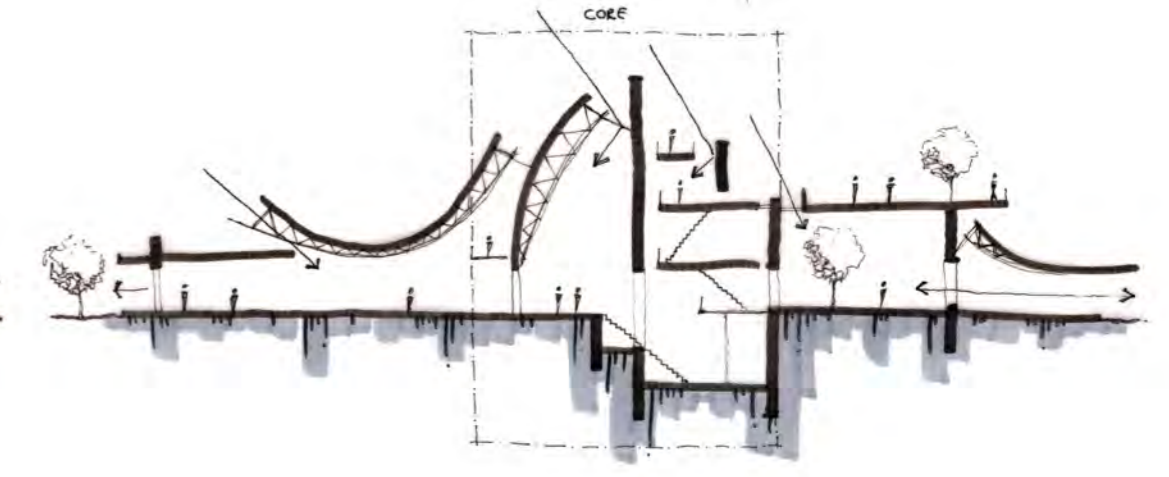
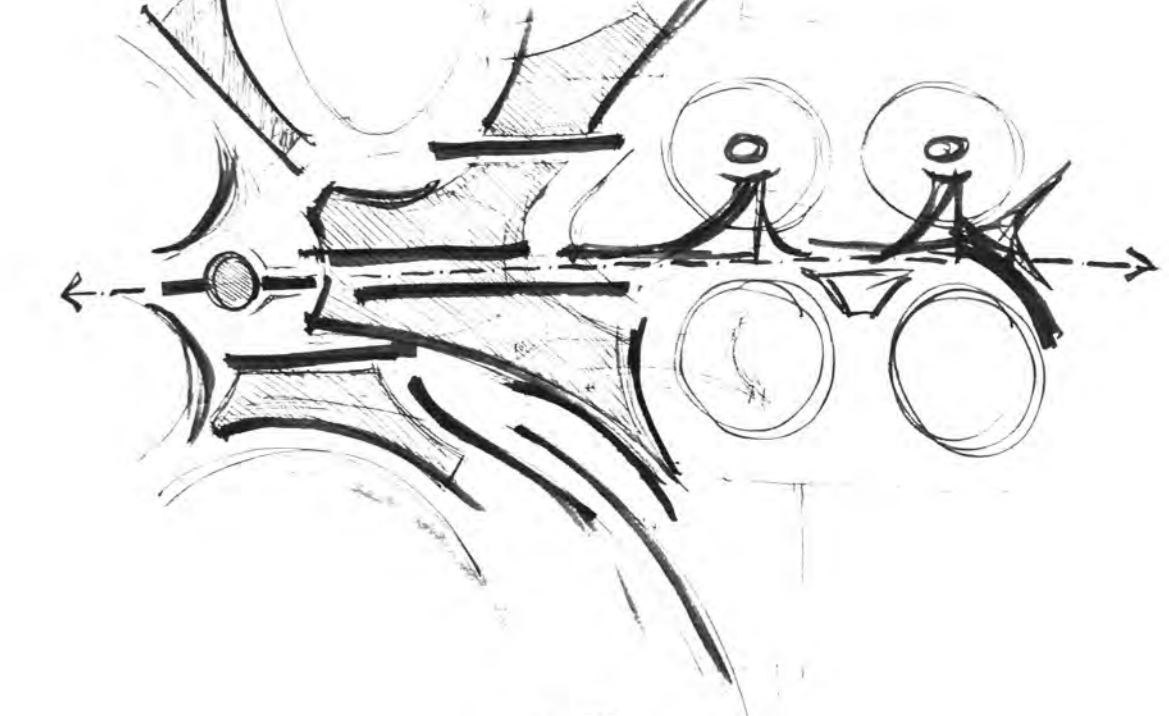


Figure 3.76: Introducing new geometries and incorporating nature, (Author, 2020)

- ADMINISTRATION**
 1. RECEPTION 5. KITCHEN
 2. OFFICES 6. STORAGE
 3. MAIN OFFICE 7. TOILETS
 4. OUTSIDE SPACE 8. BODY DELIVERY (BASEMENT)
- COUNSELING**
 9. RECEPTION
 10. OFFICES
 11. THERAPY ROOM
- CEREMONY SPACES**
 12. RECEPTION 17. KITCHEN
 13. FAMILY ROOM 18. SCULLERY
 14. CEREMONY SPACE 19. STORAGE
 15. STORAGE 20. DELIVERY AREA
 16. TOILETS
21. PARKING

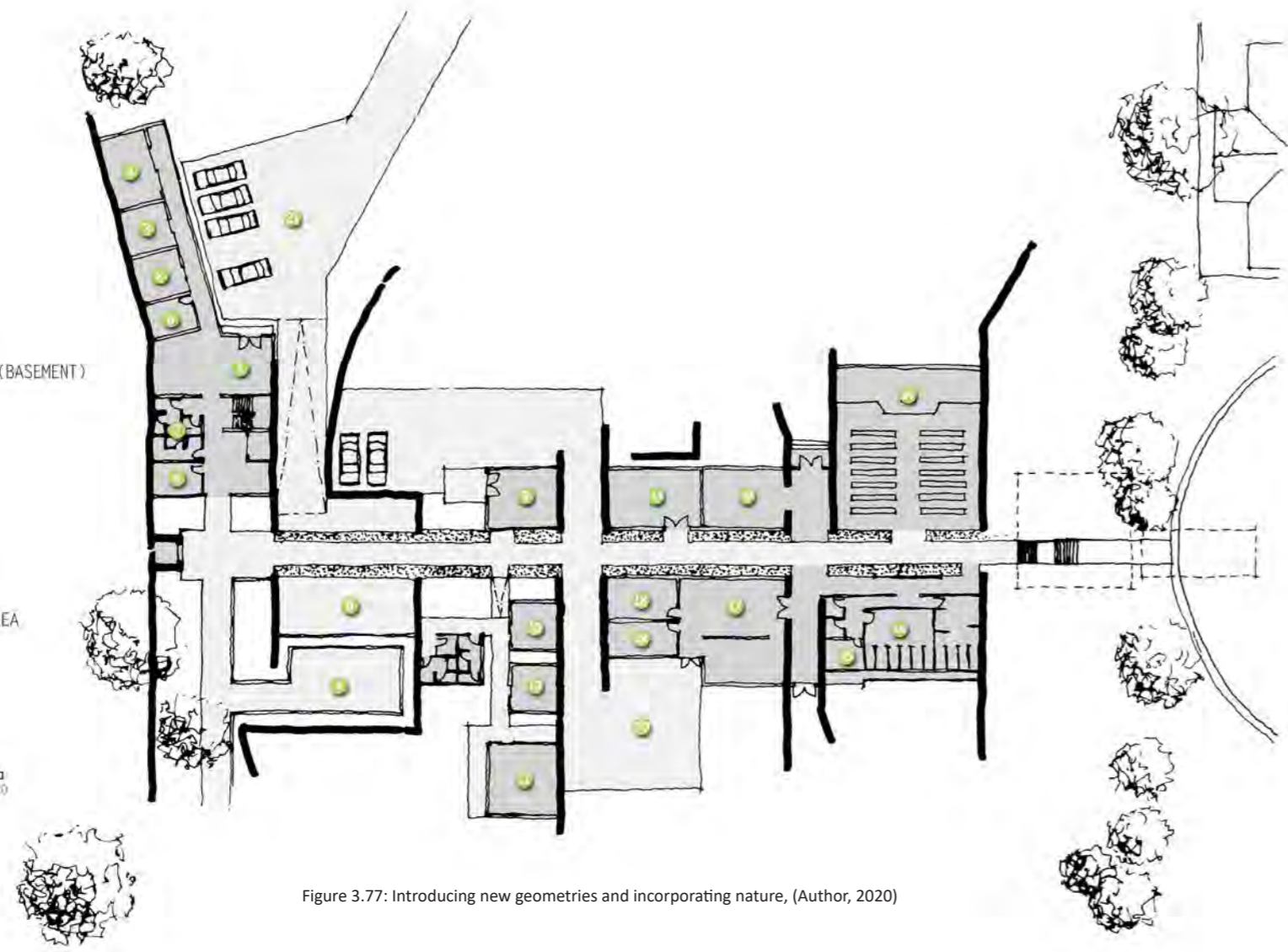


Figure 3.77: Introducing new geometries and incorporating nature, (Author, 2020)

- ADMINISTRATION**
 1. RECEPTION 5. KITCHEN + BREAK-ROOMS
 2. OFFICES 6. STORAGE
 3. MAIN OFFICE 7. TOILETS
 4. BOARDROOM 8. BODY DELIVERY (BASEMENT)
- COUNSELING**
 9. RECEPTION
 10. OFFICES
 11. THERAPY ROOM
- CEREMONY SPACES**
 12. FAMILY ROOM 16. KITCHEN
 13. CEREMONY SPACE 17. SCULLERY
 14. STORAGE 18. STORAGE
 15. TOILETS 19. DELIVERY AREA
20. PARKING

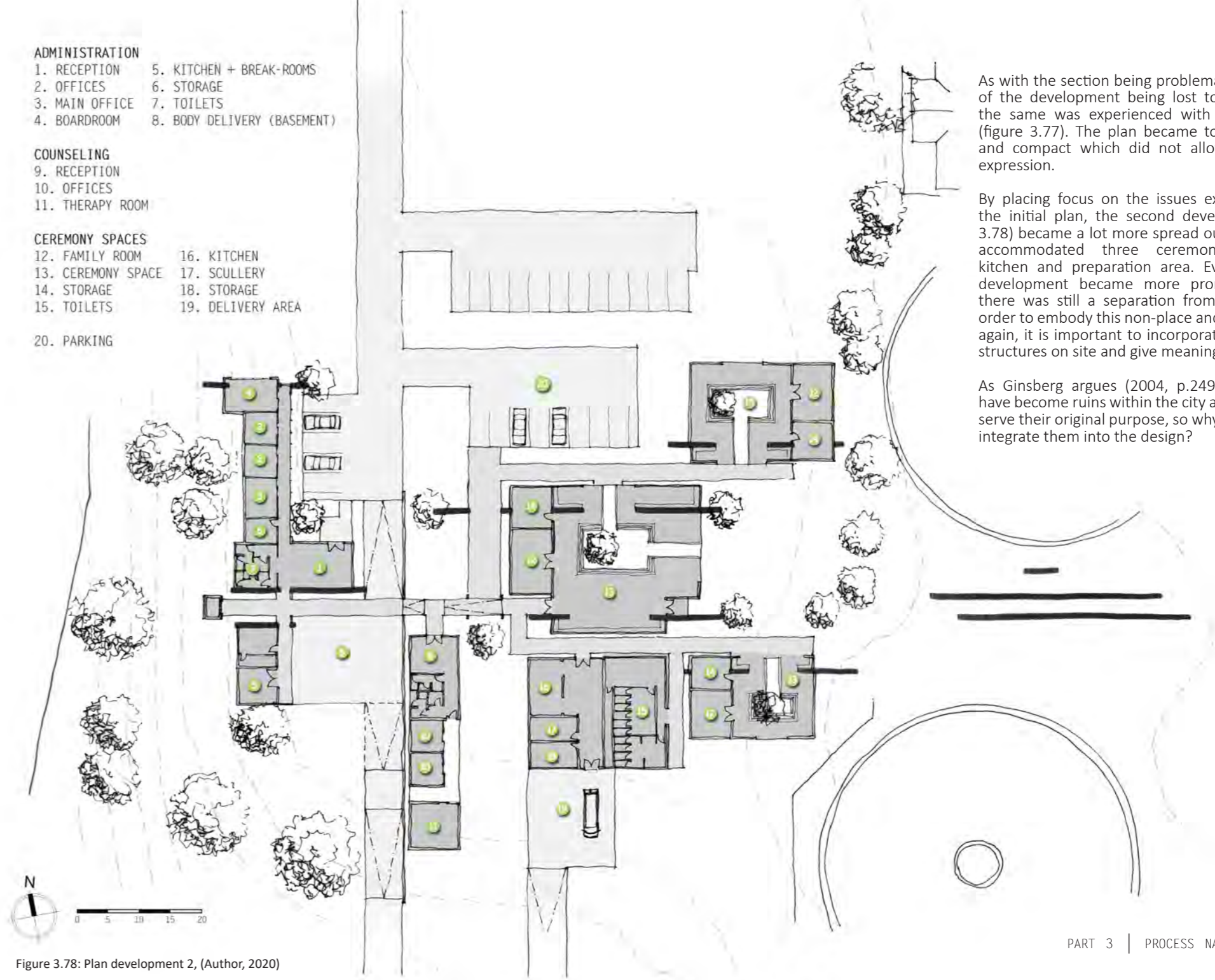
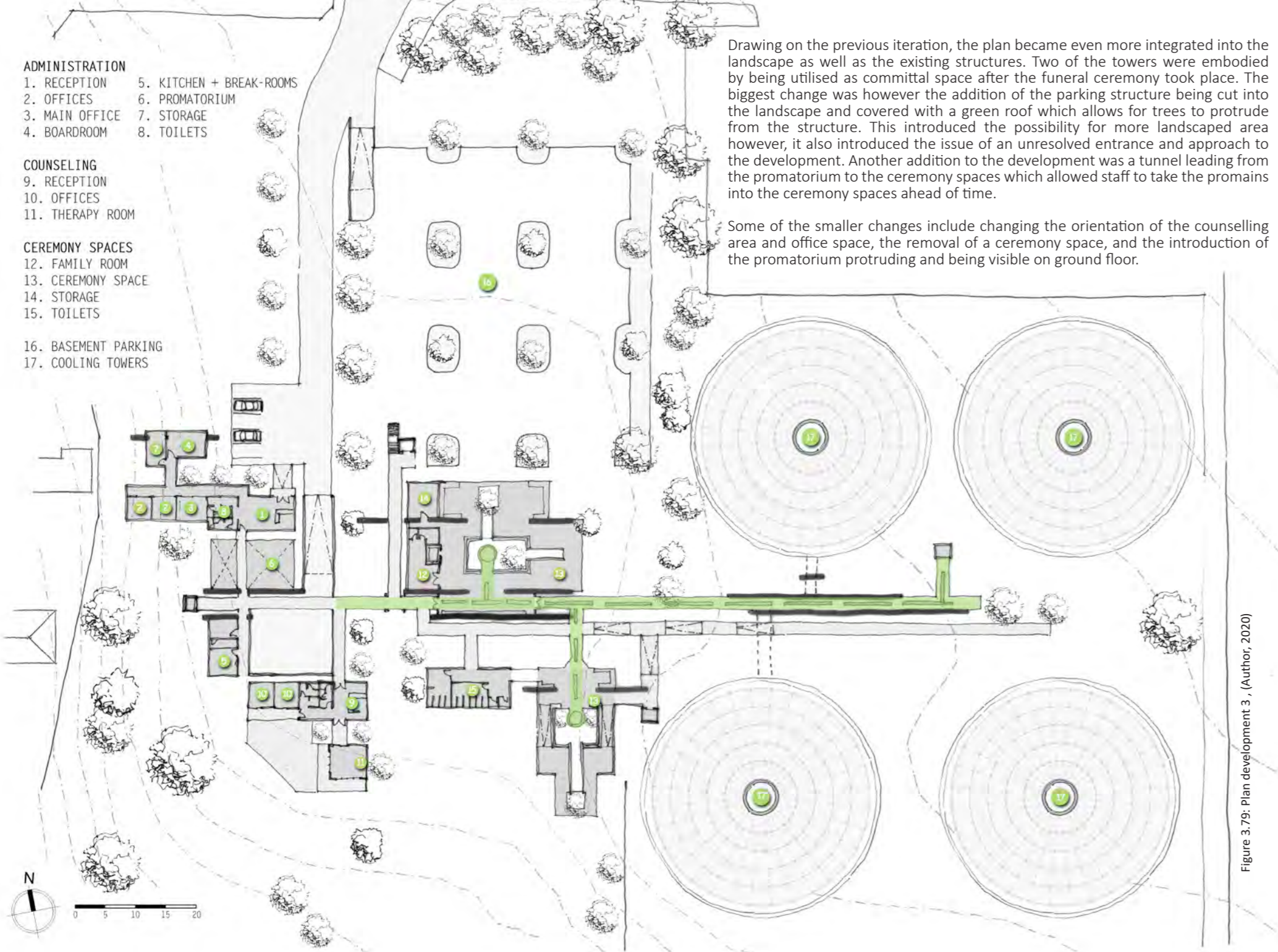


Figure 3.78: Plan development 2, (Author, 2020)

As with the section being problematic in the sense of the development being lost to the large site, the same was experienced with the initial plan (figure 3.77). The plan became too linear, forced and compact which did not allow for sufficient expression.

By placing focus on the issues experienced with the initial plan, the second development (figure 3.78) became a lot more spread out. This iteration accommodated three ceremonial spaces, a kitchen and preparation area. Even though the development became more prominent on site there was still a separation from the towers. In order to embody this non-place and make it a place again, it is important to incorporate these existing structures on site and give meaning to them.

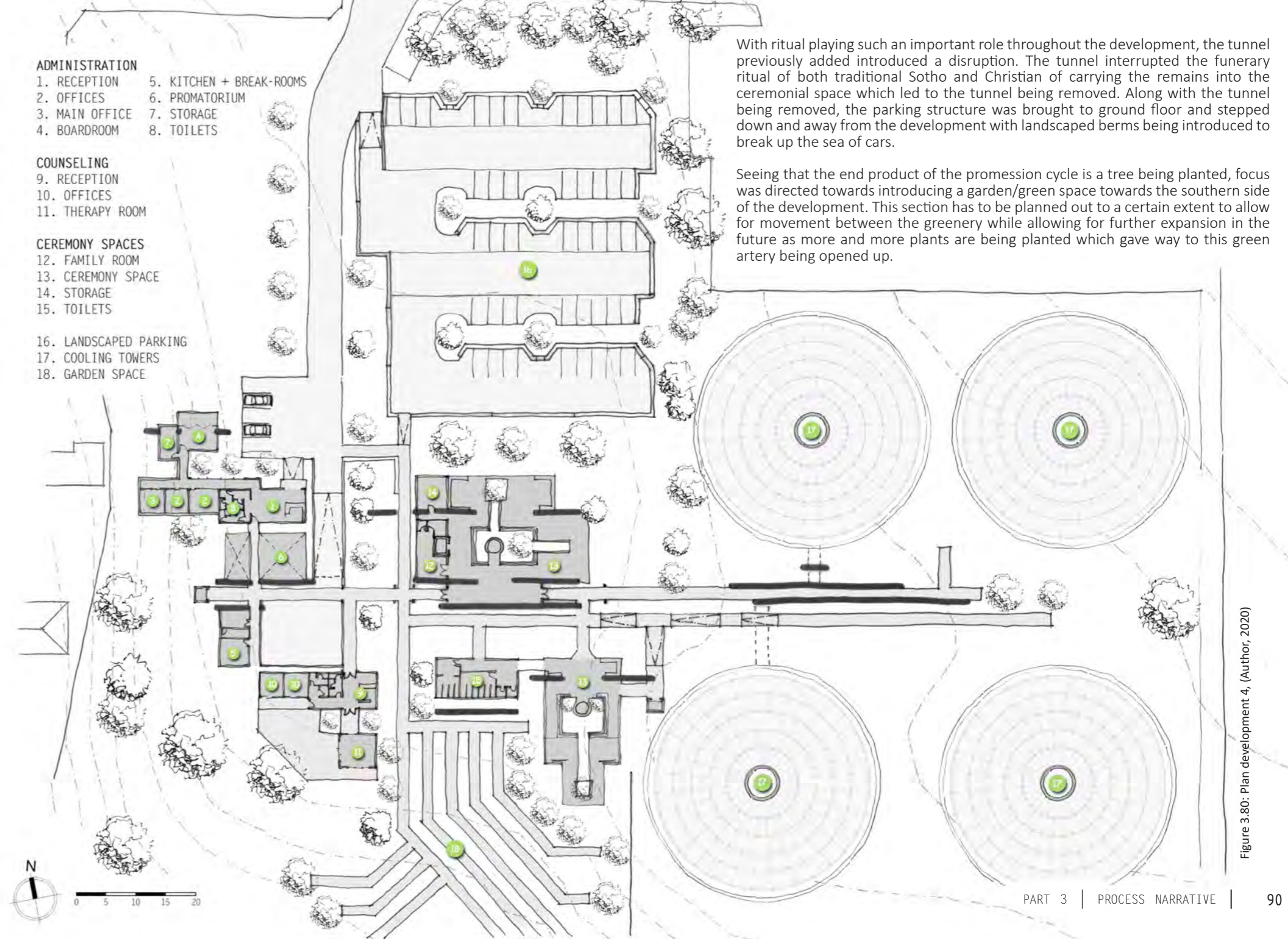
As Ginsberg argues (2004, p.249), these towers have become ruins within the city as they no longer serve their original purpose, so why not completely integrate them into the design?



Drawing on the previous iteration, the plan became even more integrated into the landscape as well as the existing structures. Two of the towers were embodied by being utilised as committal space after the funeral ceremony took place. The biggest change was however the addition of the parking structure being cut into the landscape and covered with a green roof which allows for trees to protrude from the structure. This introduced the possibility for more landscaped area however, it also introduced the issue of an unresolved entrance and approach to the development. Another addition to the development was a tunnel leading from the promatorium to the ceremony spaces which allowed staff to take the promains into the ceremony spaces ahead of time.

Some of the smaller changes include changing the orientation of the counselling area and office space, the removal of a ceremony space, and the introduction of the promatorium protruding and being visible on ground floor.

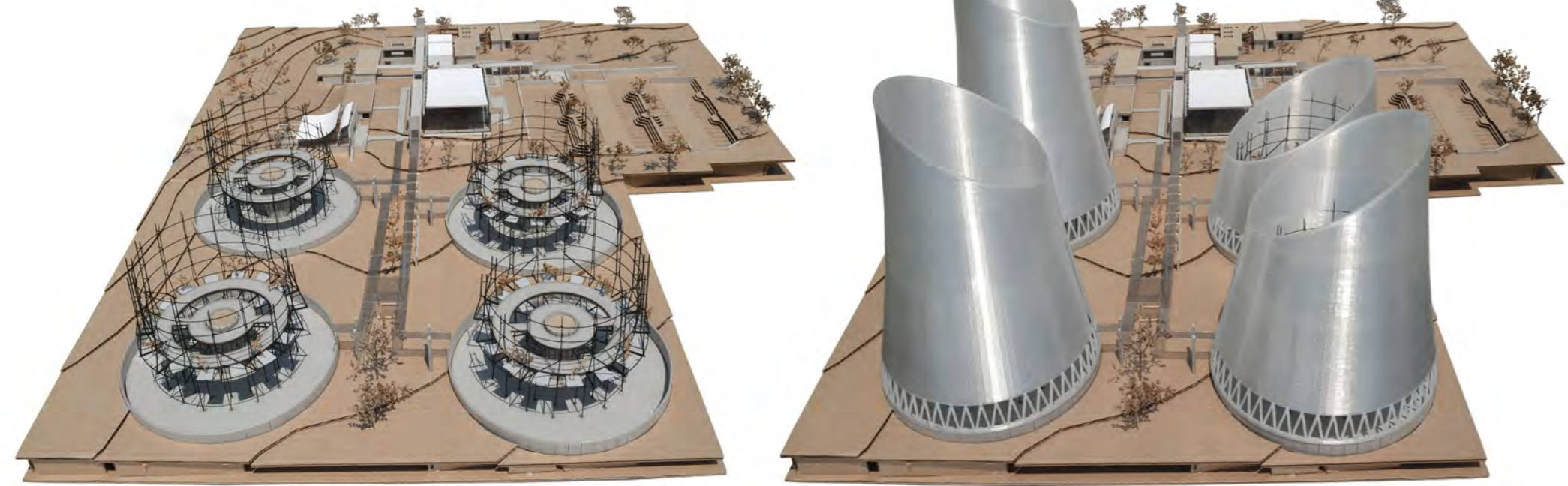
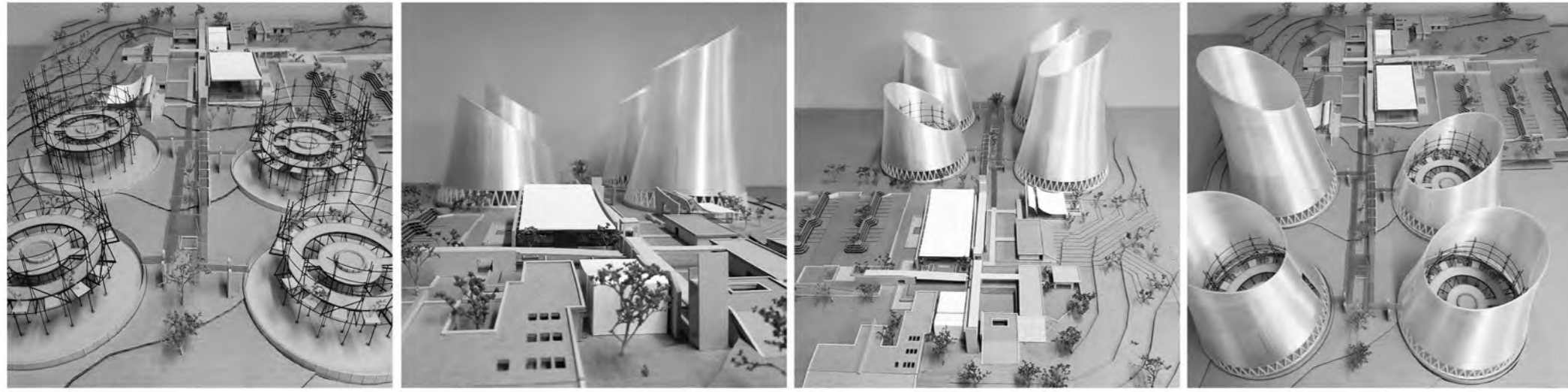
Figure 3.79: Plan development 3, (Author, 2020)



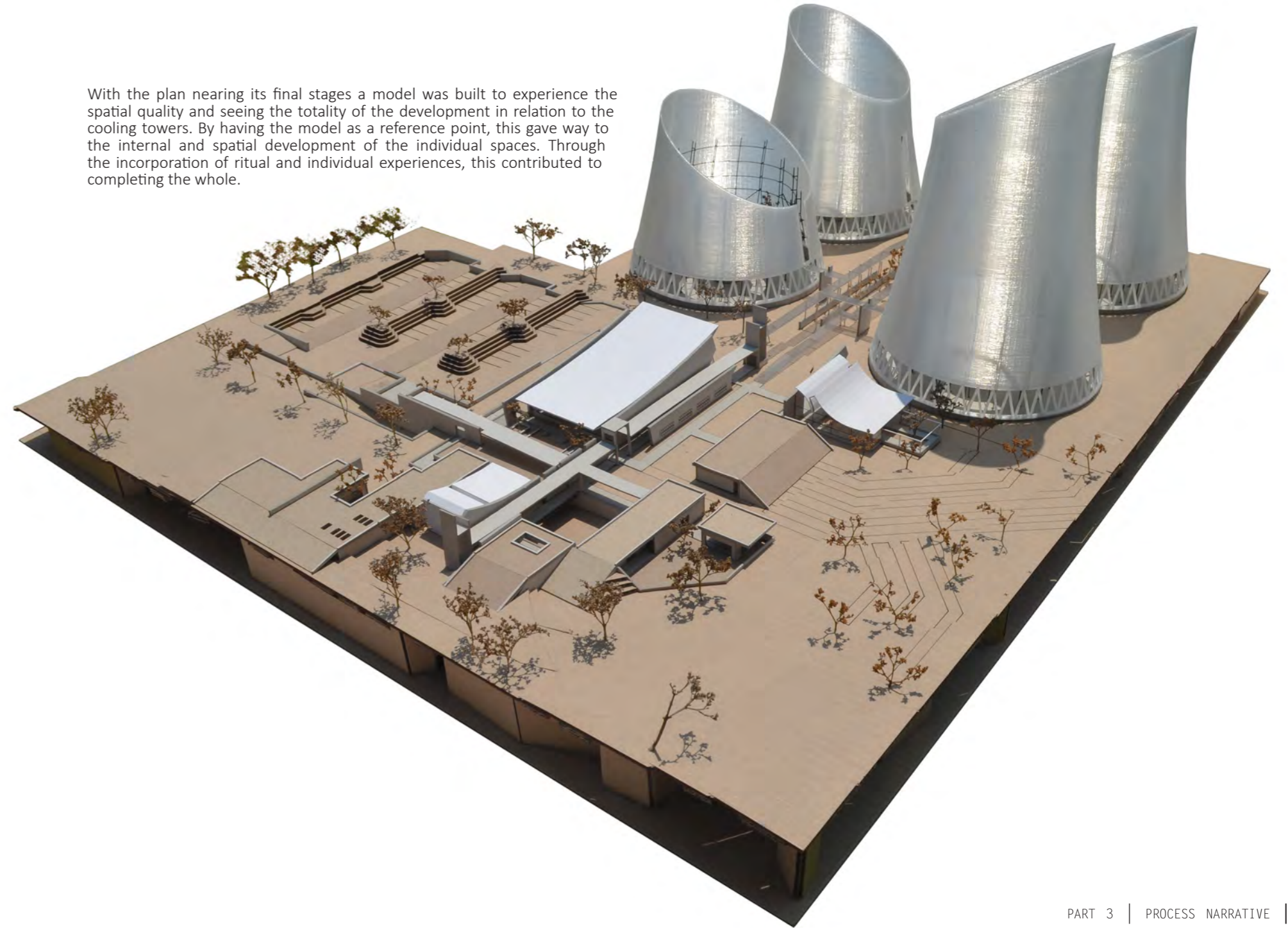
With ritual playing such an important role throughout the development, the tunnel previously added introduced a disruption. The tunnel interrupted the funerary ritual of both traditional Sotho and Christian of carrying the remains into the ceremonial space which led to the tunnel being removed. Along with the tunnel being removed, the parking structure was brought to ground floor and stepped down and away from the development with landscaped berms being introduced to break up the sea of cars.

Seeing that the end product of the promession cycle is a tree being planted, focus was directed towards introducing a garden/green space towards the southern side of the development. This section has to be planned out to a certain extent to allow for movement between the greenery while allowing for further expansion in the future as more and more plants are being planted which gave way to this green artery being opened up.

Figure 3.80: Plan development 4, (Author, 2020)



With the plan nearing its final stages a model was built to experience the spatial quality and seeing the totality of the development in relation to the cooling towers. By having the model as a reference point, this gave way to the internal and spatial development of the individual spaces. Through the incorporation of ritual and individual experiences, this contributed to completing the whole.



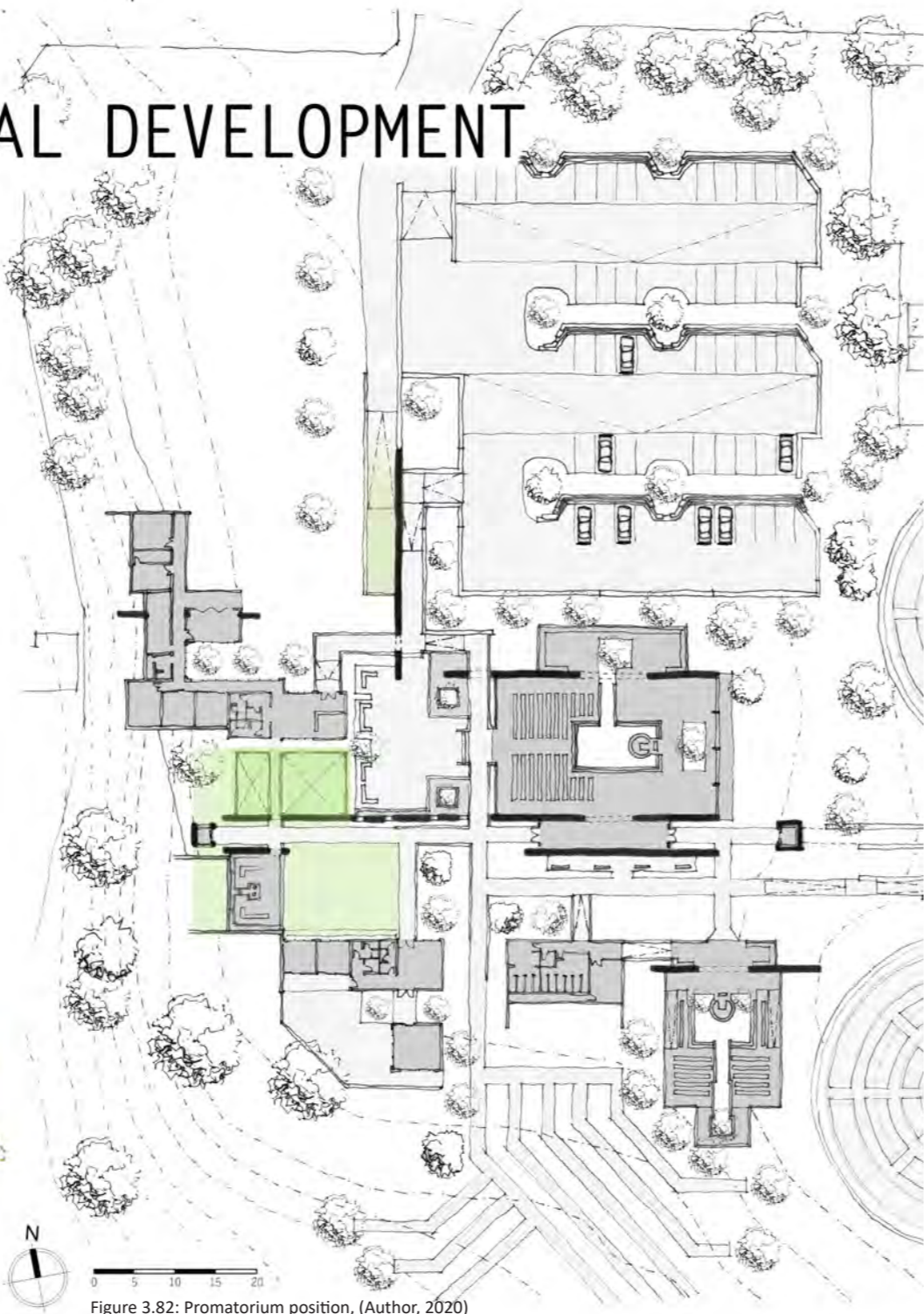
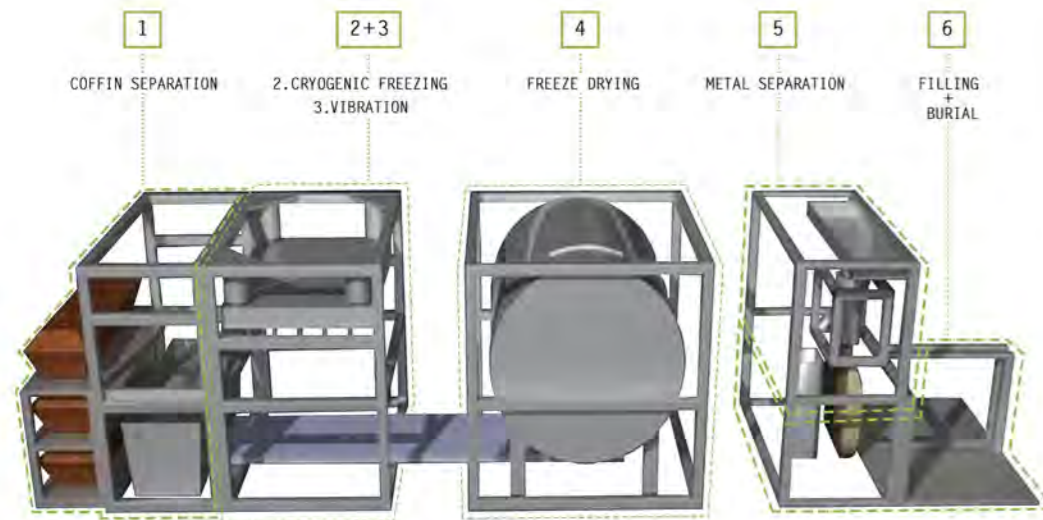
3.4.1 DESIGN PHASE 3: SPATIAL DEVELOPMENT

PROMATORIUM

Looking at the three stages of van Gennepe's rites of passage, namely separation, transition and incorporation (Aiken, 1991) what happens within the promatorium forms part of the separation stage. However, with the notion of reintroducing death into society this called for the promession process to form part of the ritual to a certain extent and not be hidden. Even though the body is separated from the family, the double volume space of the promatorium protrudes from basement and forms part of ground floor which creates awareness of the process by means of a visual connection.

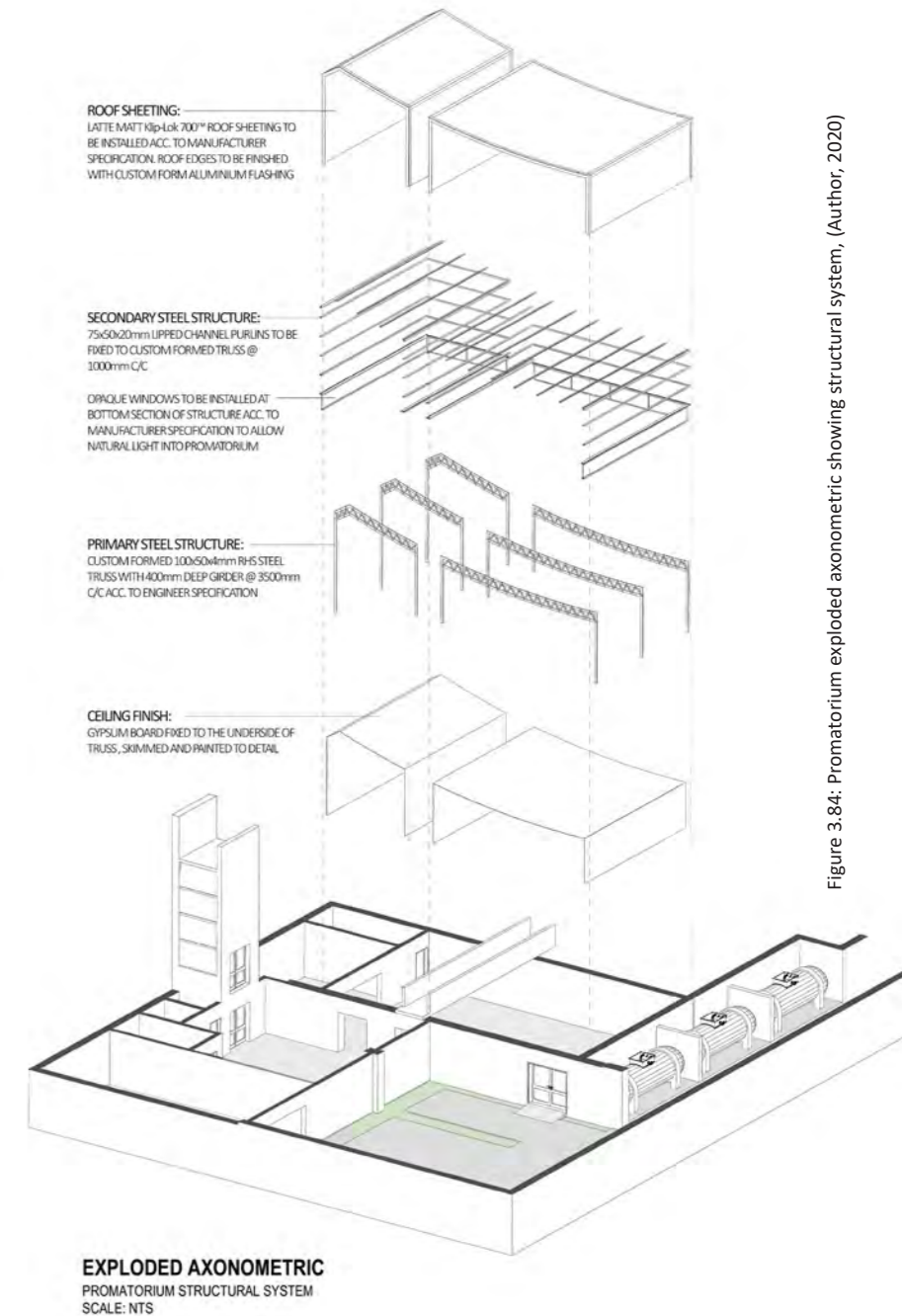
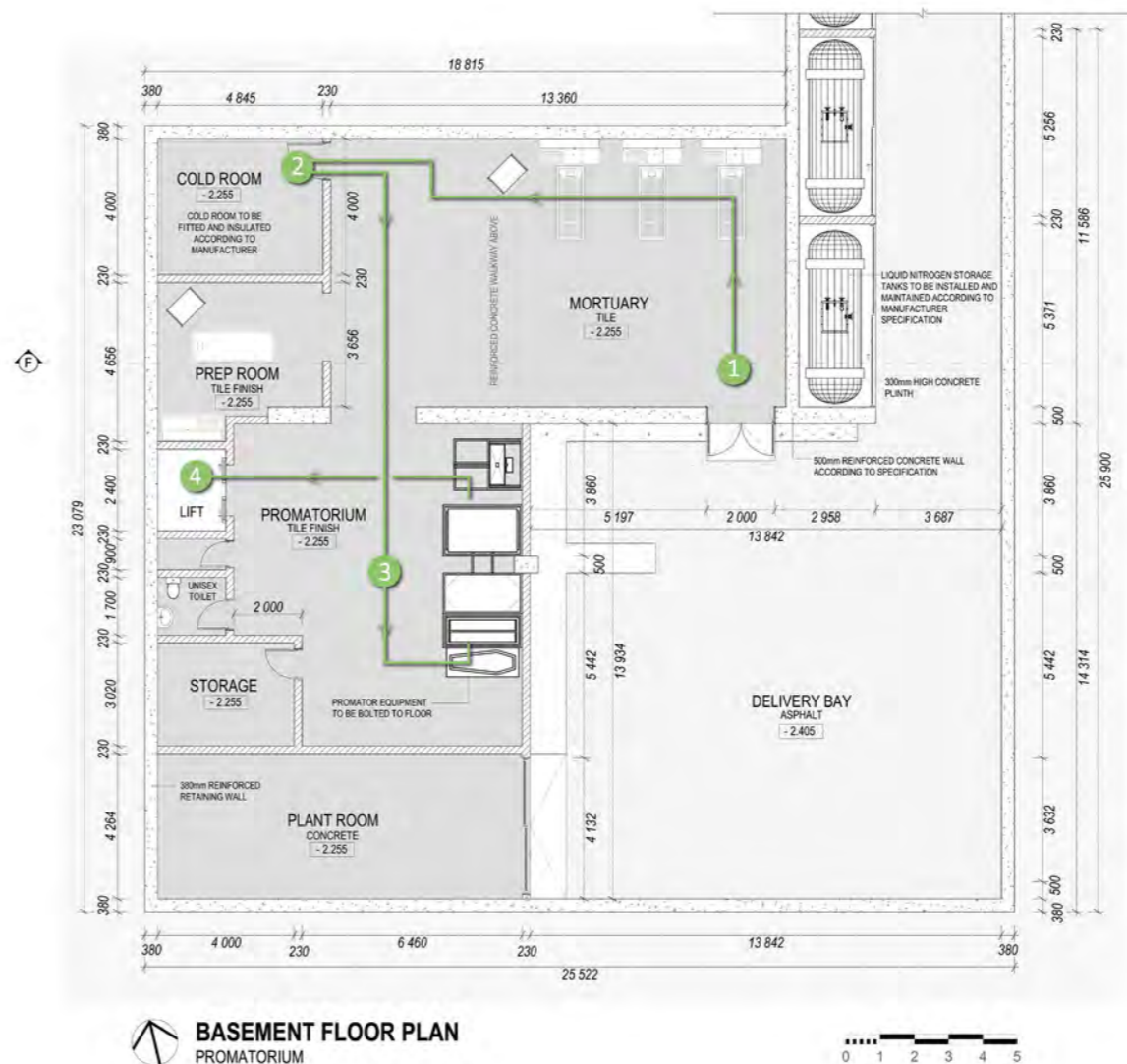
Dug into the quarry wall on the western side of the site, the promatorium is located on basement level and houses the functions related to the promession process. This is where the body is delivered, cleaned, and broken up into organic material.

Figure 3.81: Promatorium equipment, (Author, 2020)



Once the body of the individual has been collected from the hospital morgue it is brought to the promatorium and then undergoes the following process (figure 3.83):

- 1-2. Body is delivered to the morgue where it is cleaned and placed into the cold room where the temperature of the body is brought down to -18°C .
3. Once the body has reached the temperature it is removed and placed in the promator where the automated process is started, and the body is broken up into organic material (promains) and places in the potato/ corn starch coffin.
4. The coffin is then taken to ground level where it is received by the family in the family room.



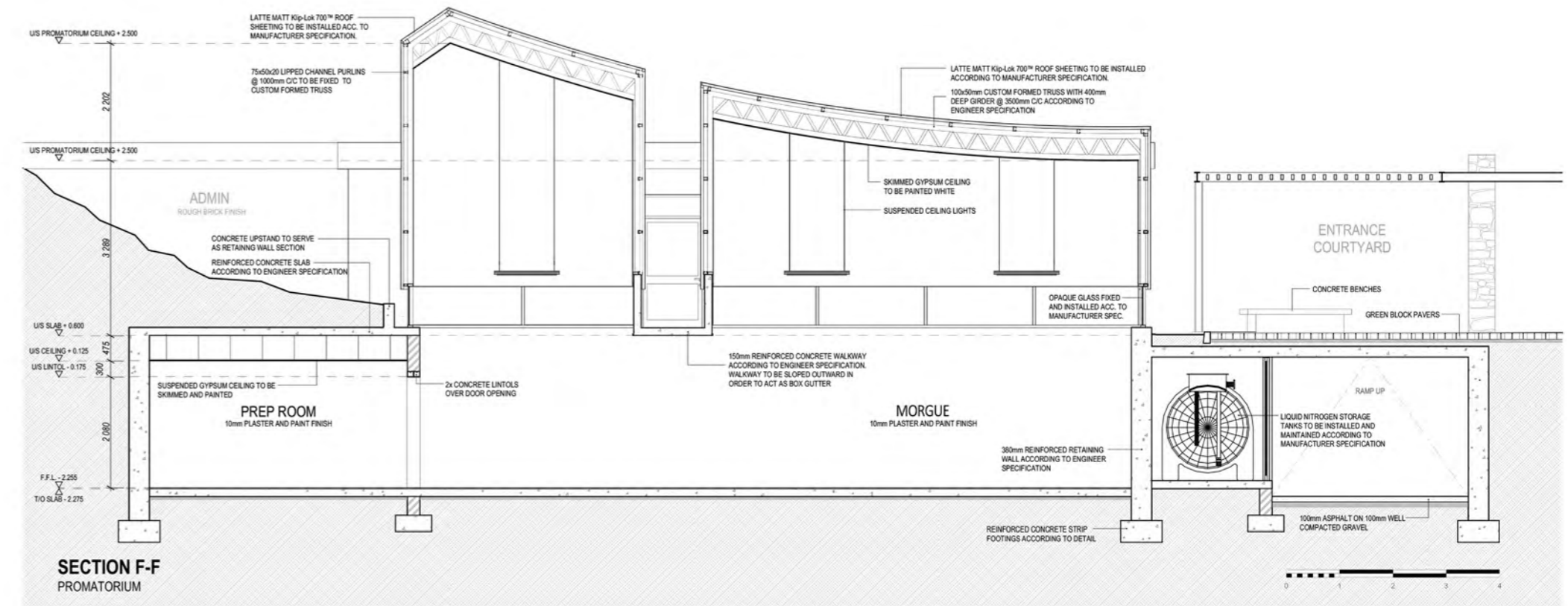


Figure 3.85: Promatorium section, (Author, 2020)



Figure 3.86: Delivery yard, (Author, 2020)



Figure 3.87: Morgue, (Author, 2020)



Figure 3.88: Promatorium, (Author, 2020)

3.4.2 SPATIAL DEVELOPMENT MAIN CEREMONY SPACE

After the body has been broken up into the organic material and received by the family, the ritual continues in either the main or secondary ceremonial spaces. By looking at the funerary rituals of both Christian and Traditional Sotho, the ceremonial space takes on an axial layout moving in the direction of the towers. The procession route is designed to move on the horizontal axis from west to east drawing on the ancient Egyptian notion of west signifying death to east signifying life. The promains will follow this same route along this axis to be laid to rest in the form of a treesymbolizingnew life.

The main ceremonial space consists of load bearing walls on the northern and southern side of the space which carries the 900mm thick convex roof structure which allows for a clear span (figure 3.89). With the roof being carried by the two load bearing walls, the rest of the envelope becomes glass infill. This enforces the transitional nature of the space as a whole, by creating a connection between the past and the future; not only of where the body has been but also of what the site was and to the future embodiment.

To apply the approach of the development that only uses indigenous trees, alien trees that are found on site and throughout Bloemfontein will be uprooted and repurposed as the ceiling, seating and acoustic panels throughout the space.

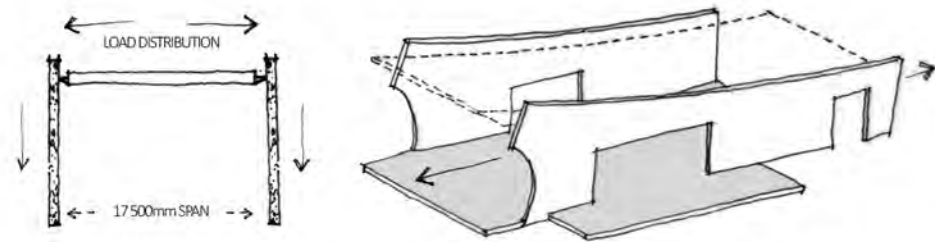


Figure 3.89: Main ceremony space structure, (Author, 2020)

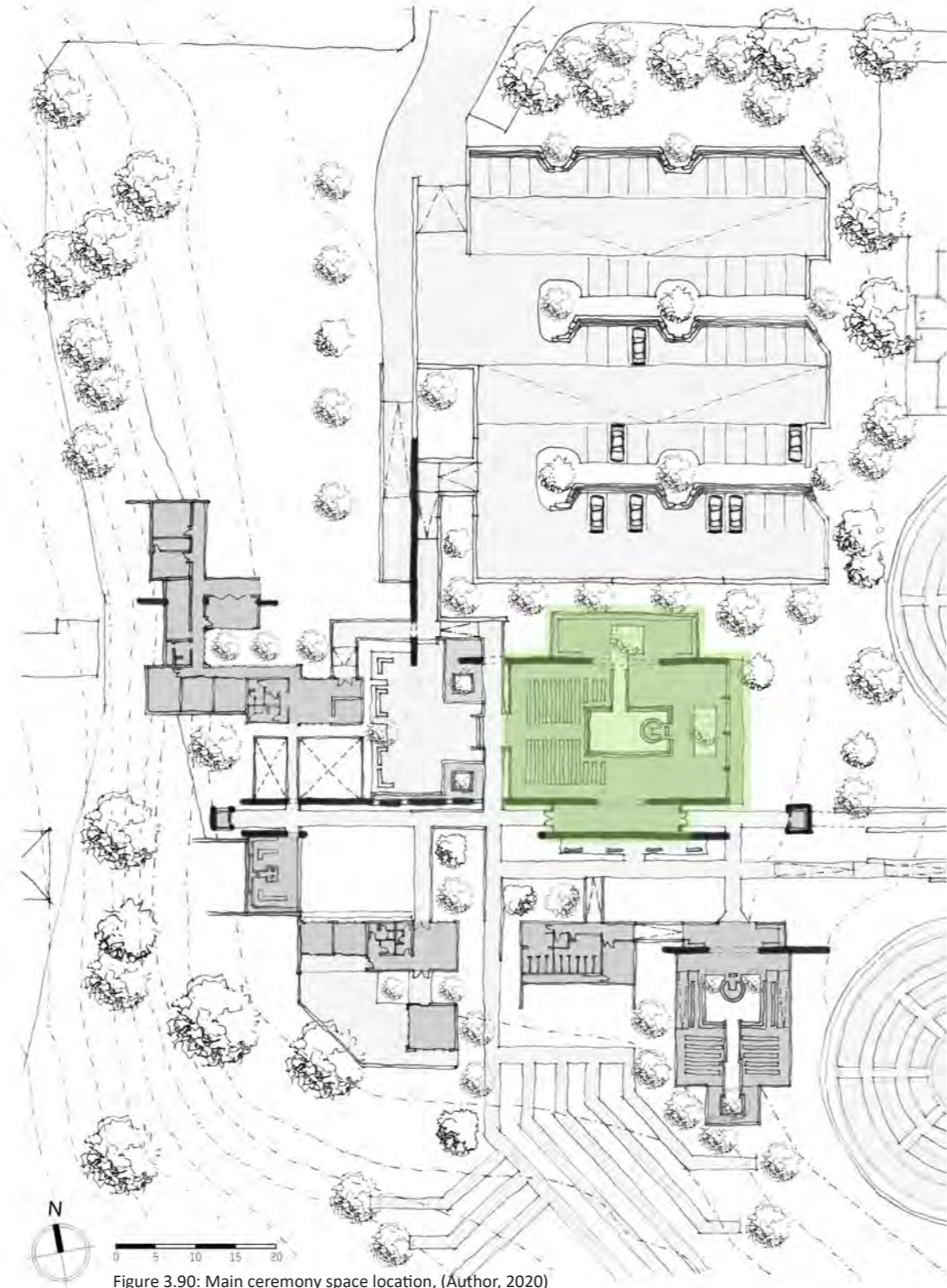
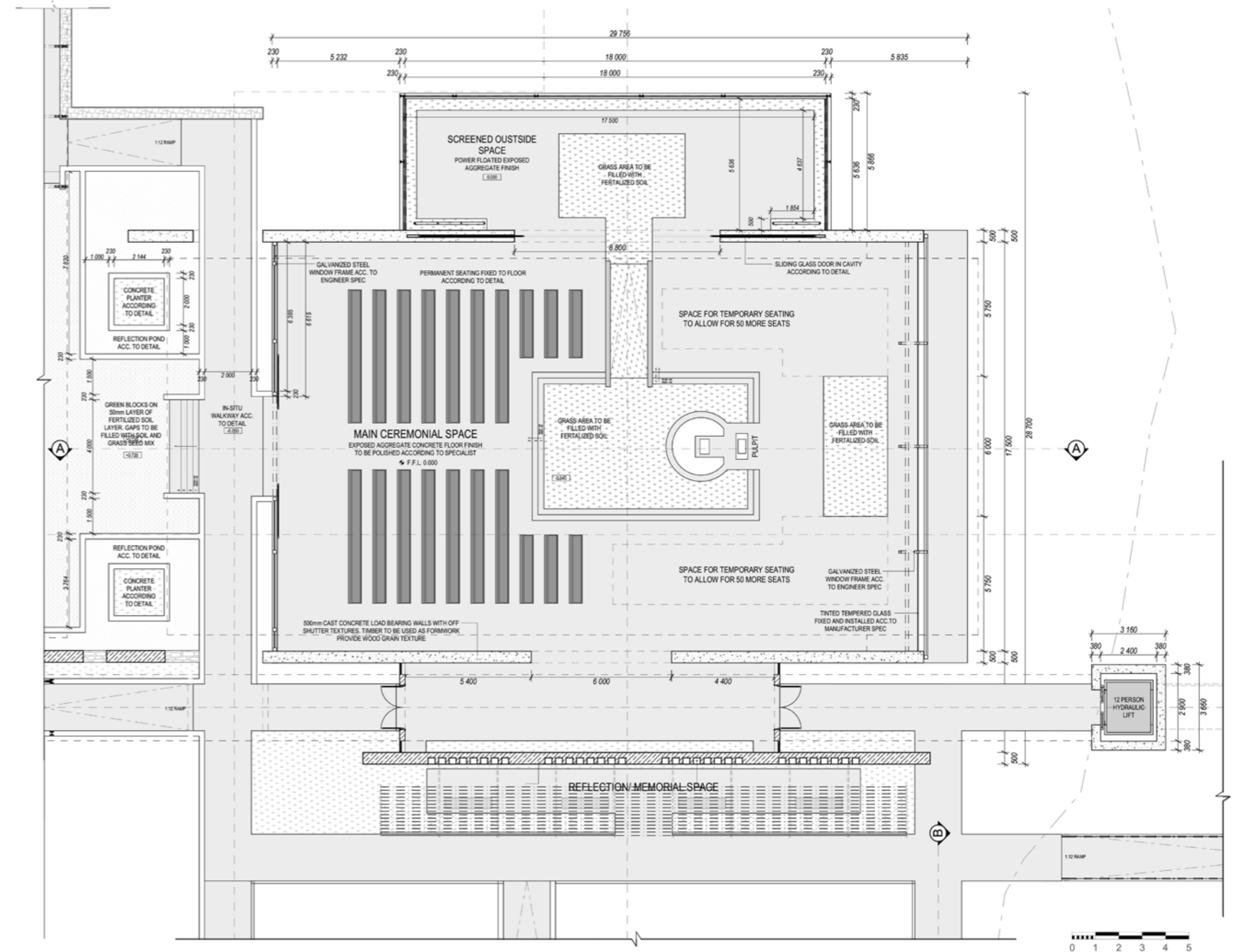


Figure 3.90: Main ceremony space location, (Author, 2020)



GROUND FLOOR
MAIN CEREMONIAL SPACE

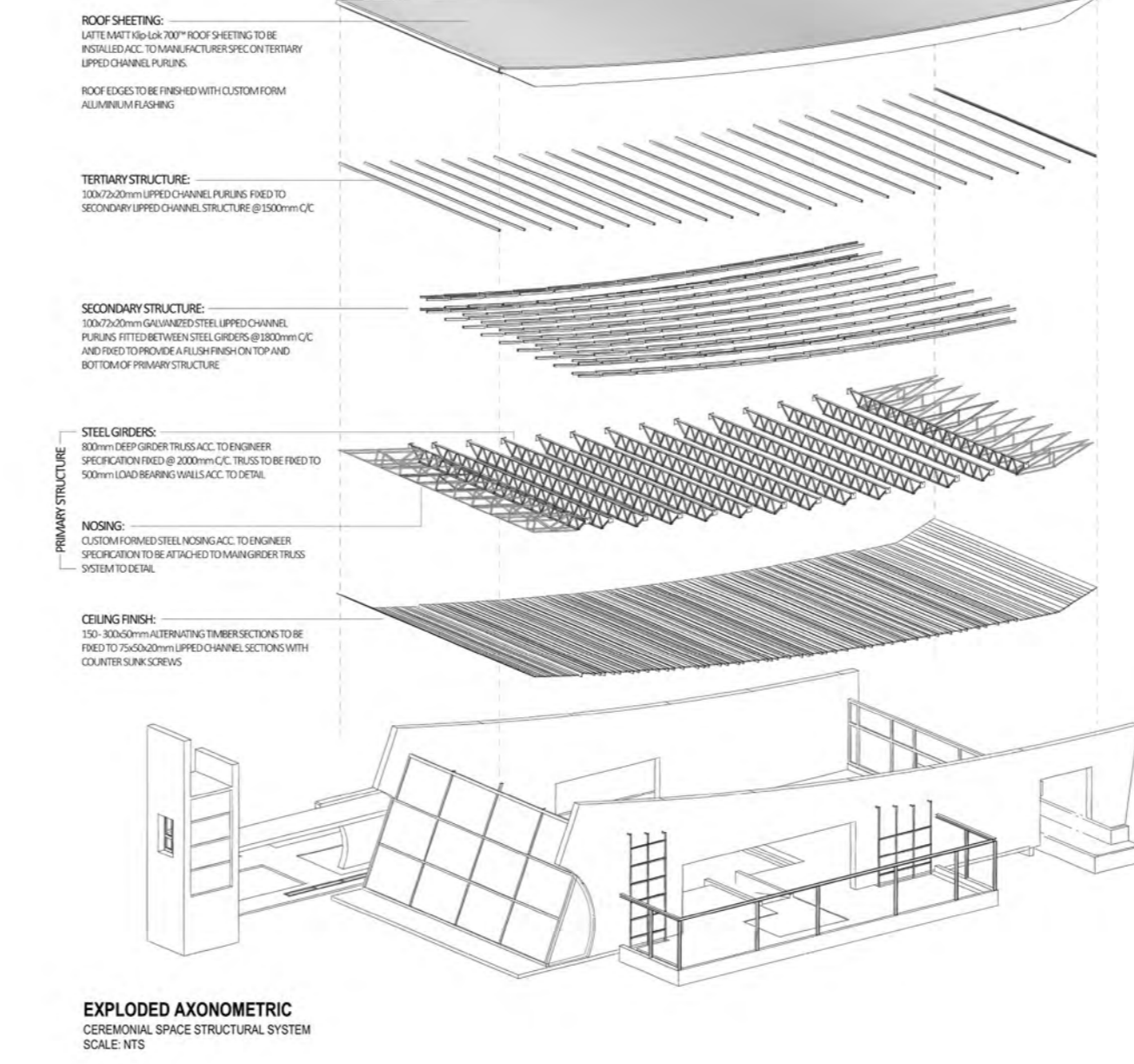
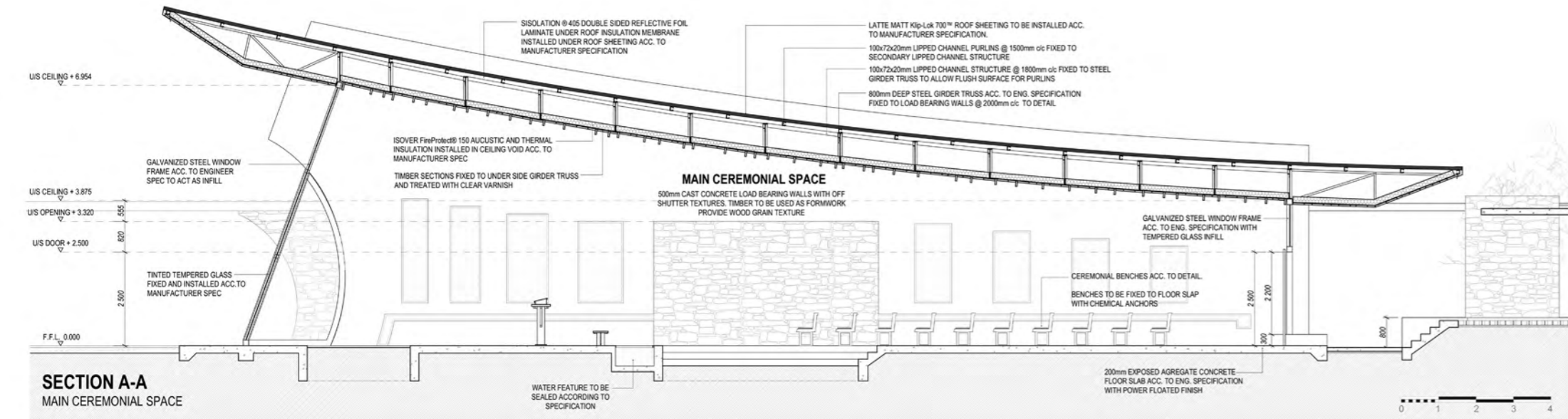


Figure 3.91: Main ceremony space exploded axonometric showing structural system, (Author, 2020)



Figure 3.92: Ceremony Entrance, (Author, 2020)



Figure 3.93: Behind the pulpit, (Author, 2020)



Figure 3.94: View of the towers, (Author, 2020)

3.4.3 SPATIAL DEVELOPMENT SECONDARY CEREMONY SPACE

Following the same axial layout as the main ceremonial space, the secondary ceremonial space creates a more intimate environment in the event of smaller funeral ceremonies. The space is located to the southern side of the axis and is surrounded by nature which allows for a more tranquil feeling. Seeing that the space is orientated north south, the roof acts as a light scoop supported on a steel structure with glass infill. This allows for natural light to filter into the space and illuminate the interior by bouncing off the concave and convex surfaces which diffuse the direct sunlight.

As with the main ceremony space, alien trees on site and throughout Bloemfontein will be used as the ceiling and seating elements. By removing the alien trees on site, the notion of reclaiming the space is re-enforced and contributes to creating a place of identity.

Figures 3.95 and 3.97 shows the initial approach to the space where a tunnel system was used to transport the promains to the space. This however became problematic and was removed seeing that it disrupted the ritual of both Christian and Tradition Sotho funeral ceremonies where the body is carried in by the family.



Figure 3.95: Secondary ceremonial space spatial development model, (Author, 2020)

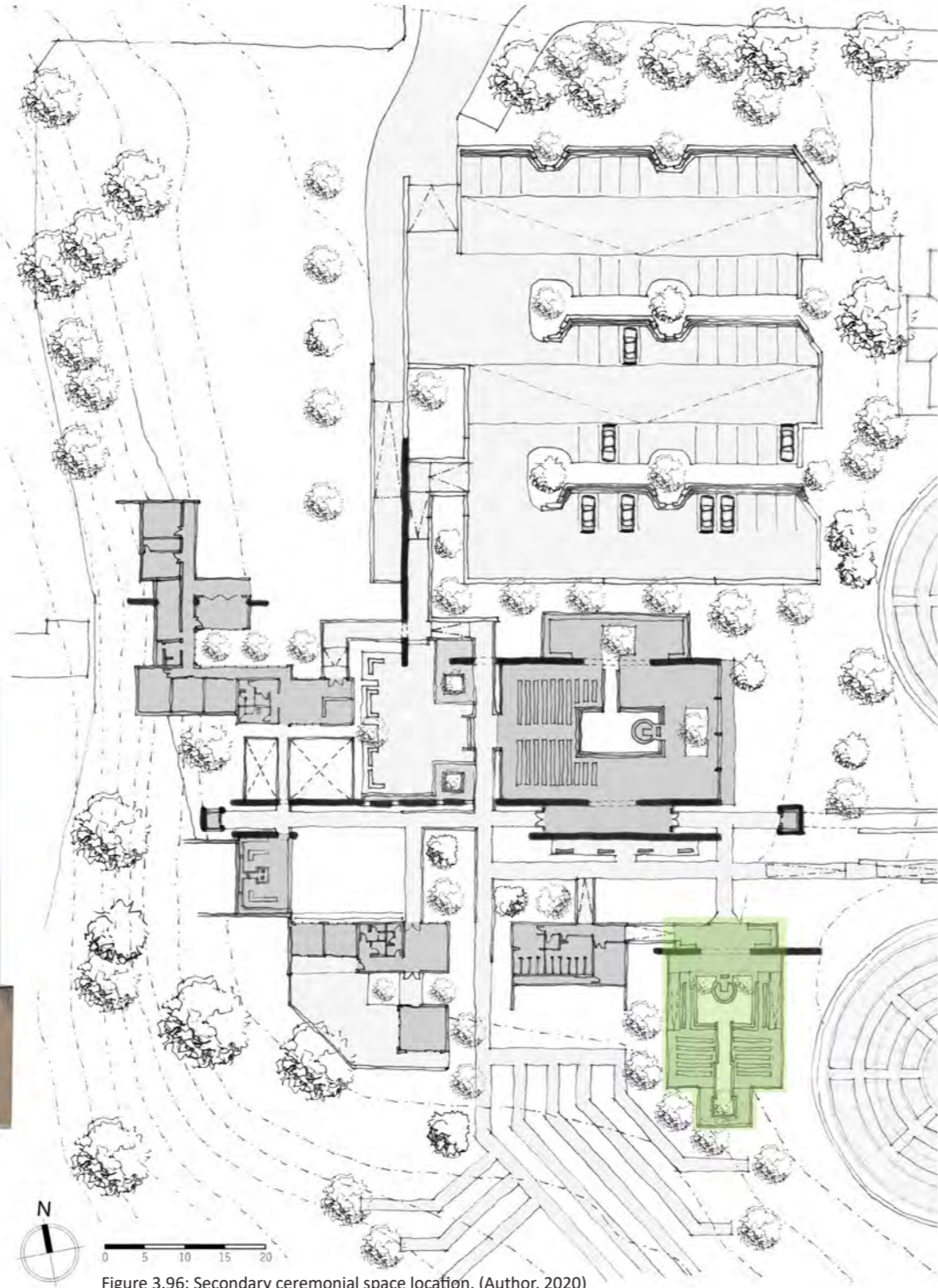


Figure 3.96: Secondary ceremonial space location, (Author, 2020)

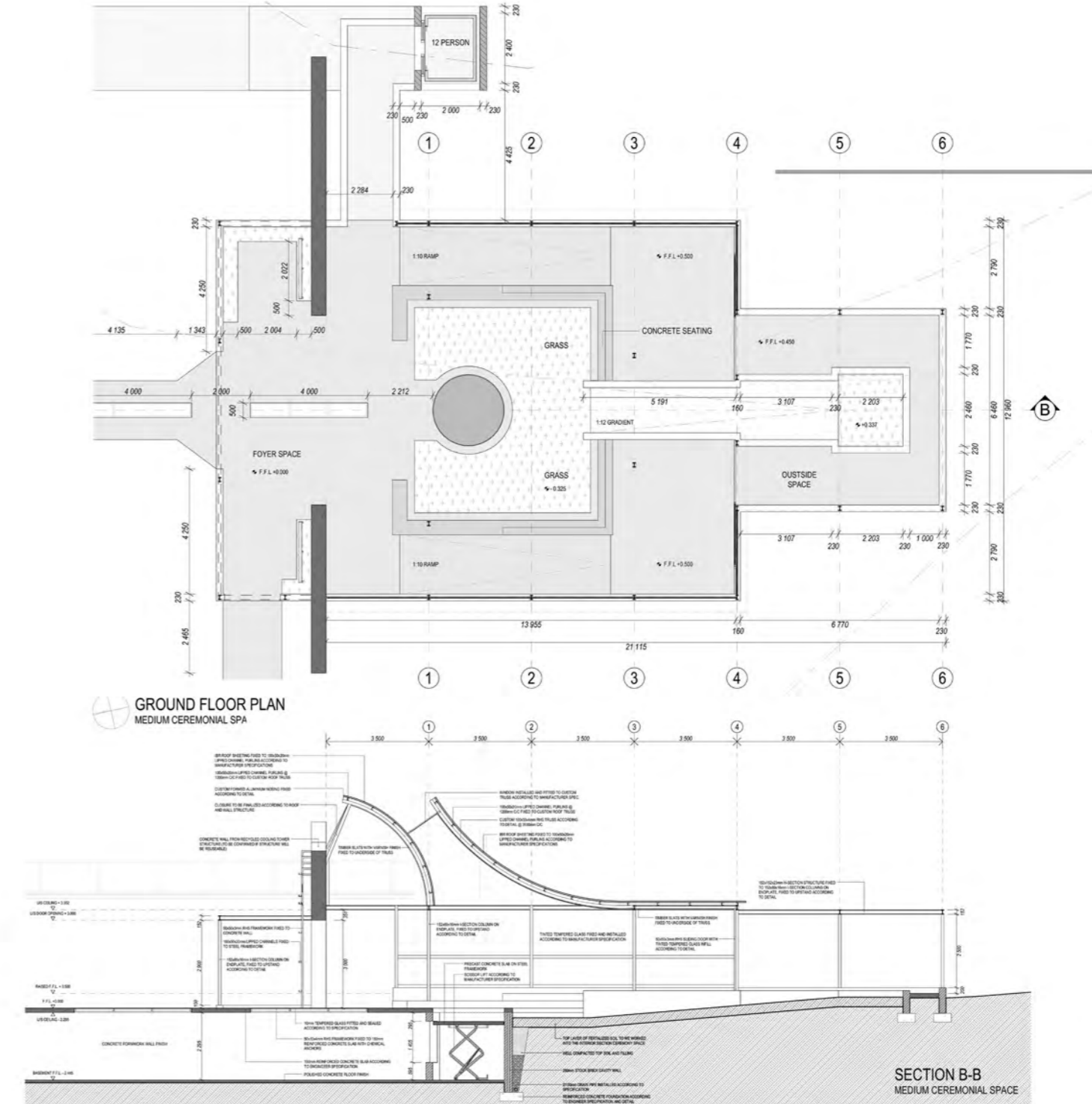


Figure 3.97: Initial Secondary ceremonial space approach with tunnel, (Author, 2020)



Figure 3.98-101: Initial Secondary ceremonial space model, (Author, 2020)

Figure 3.103: Exterior, (Author, 2020)



Figure 3.104: Interior from seating, (Author, 2020)



Figure 3.105: Interior from entrance, (Author, 2020)

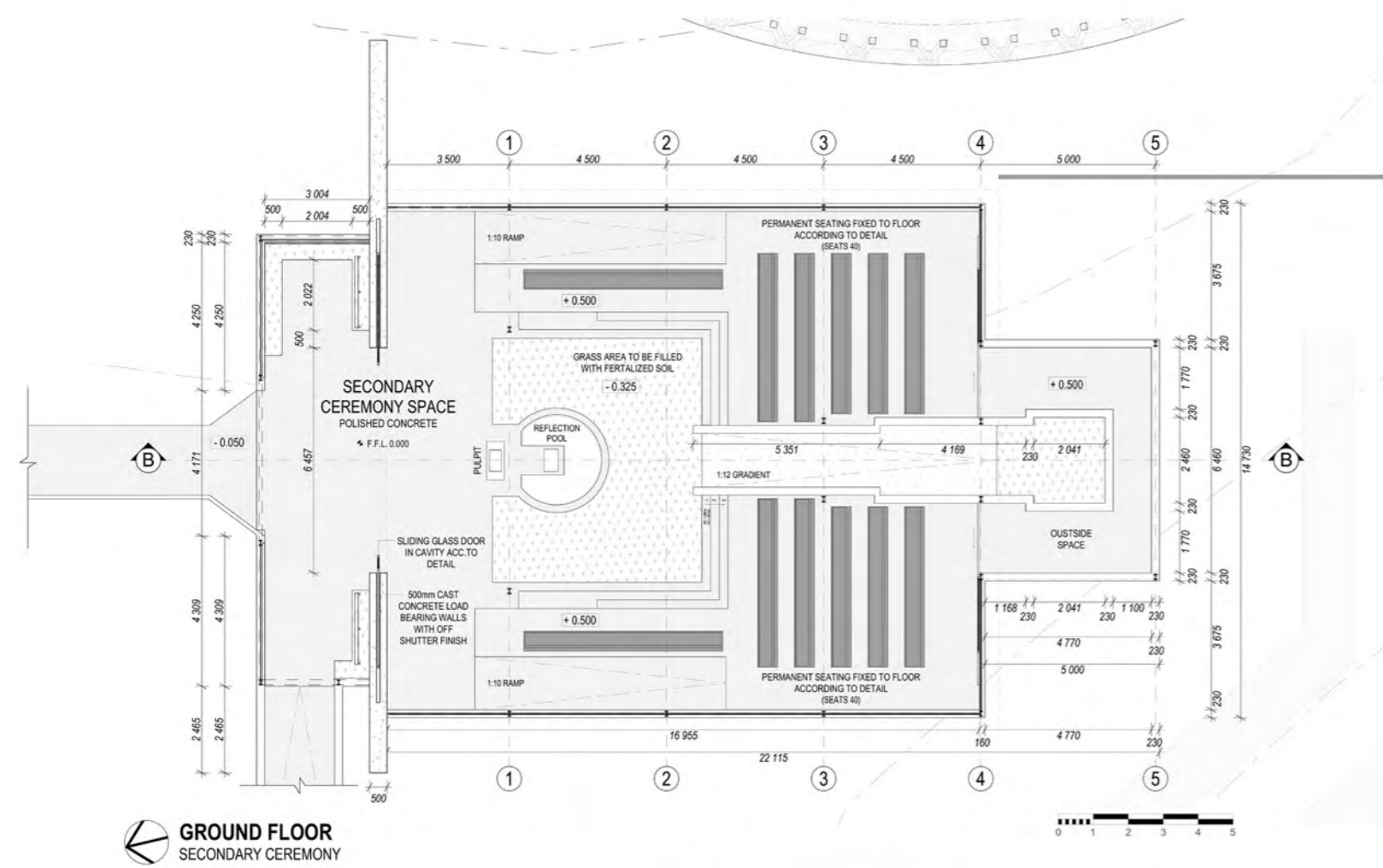


Figure 3.102: Secondary ceremonial space plan, (Author, 2020)

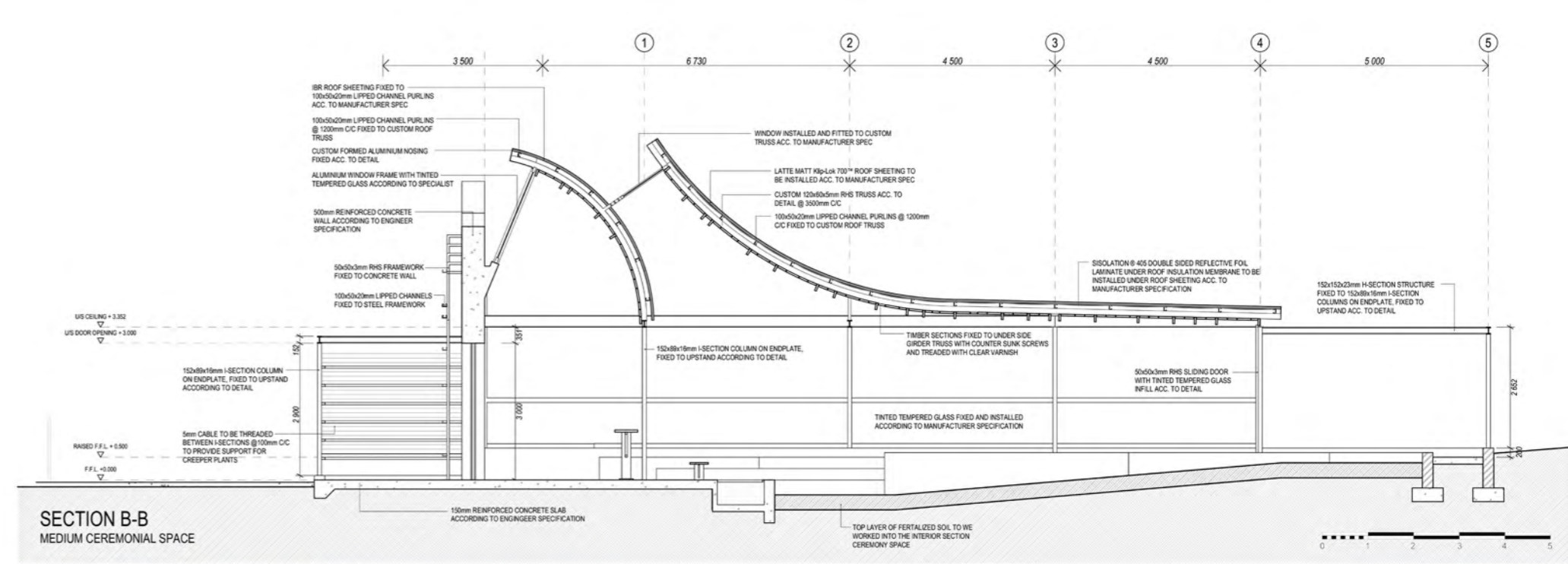


Figure 3.106: Secondary ceremonial space section, (Author, 2020)

3.4.4 SPATIAL DEVELOPMENT

COOLING TOWER COMMITIAL SPACE AND NURSERY

Sacred sites charged with emotional energy are never placed within an impressive environment and the notion of transcendence is achieved by sites which have strong connection with nature, (Vulliamy, 1926). With the cooling tower being seen as a site of transcendence due to the strong vertical connection, this becomes the main focus and the space where the promains are integrated into nature.

By transforming these ruins into a space of committal which acts as an incubator for the future of the site, the cooling towers become the embodiment of new life. These monuments within the city will house the initial life stages of the trees; on the other hand it will serve as the permanent resting place for those without identity and by doing so, acknowledge those who pass on without love ones.



Figure 3.107: Cooling towers, (Author, 2020)

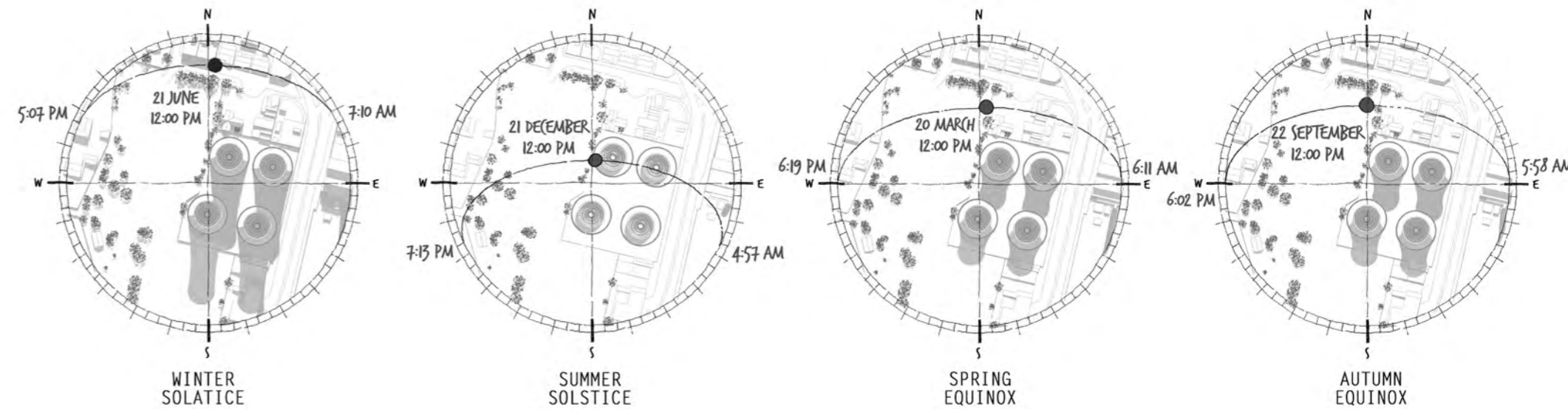


Figure 3.108: Sun angles, (Author, 2020)

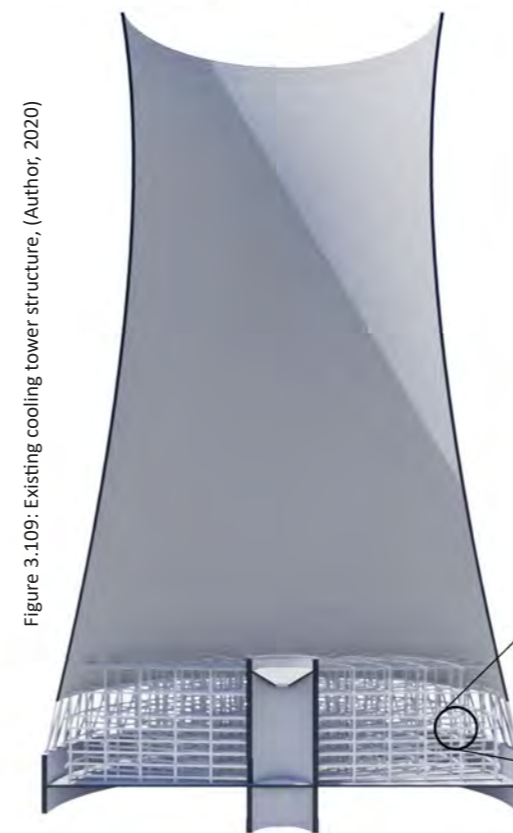


Figure 3.109: Existing cooling tower structure, (Author, 2020)

Looking at the existing structure and the intended purpose of housing plants during their initial stages of growth, it is evident that not enough natural light penetrates the interior of the towers (figure 3.109). The scale of the towers along with the existing internal (figure 3.110) structure that supported condensation screens was identified as the two biggest issues to address.

By looking at sun studies, the towers were cut at a 30° angle to allow the maximum amount of sunlight in throughout the day. By doing this the scale of the towers is brought down significantly which minimizes the shadows cast on site as well. The height at which the towers will be cut is determined by the plants in the specific towers and will be adjusted according to the amount of sunlight that is needed.

Seeing that the internal structure is independent of the external tower walls, the structure was removed and replaced with a less dense steel structure. The steel structure that latches onto the existing central shaft decreased the density and acts as less of a filter when allowing sunlight in.



Figure 3.110: Existing internal structure, (Author, 2020)

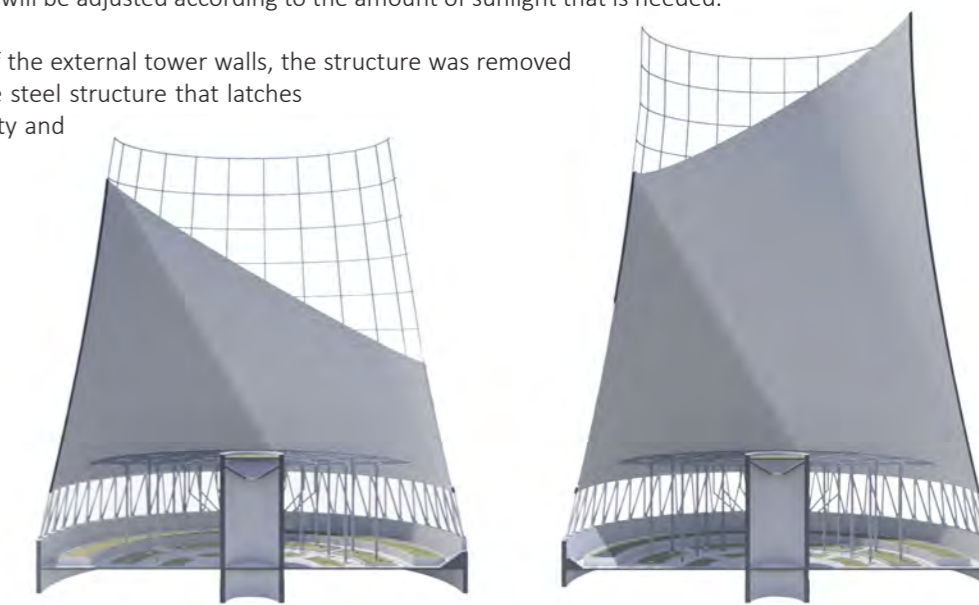
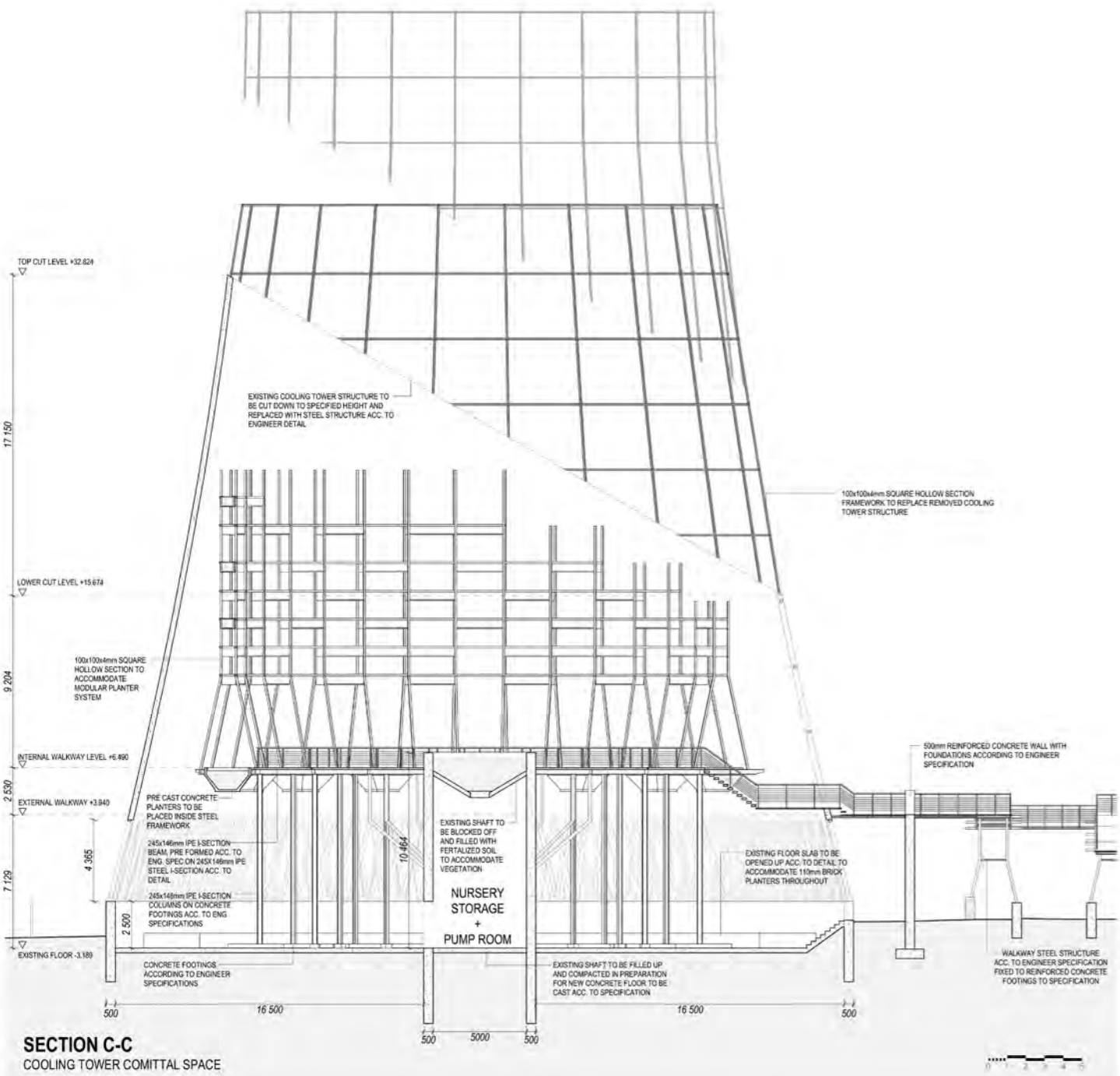
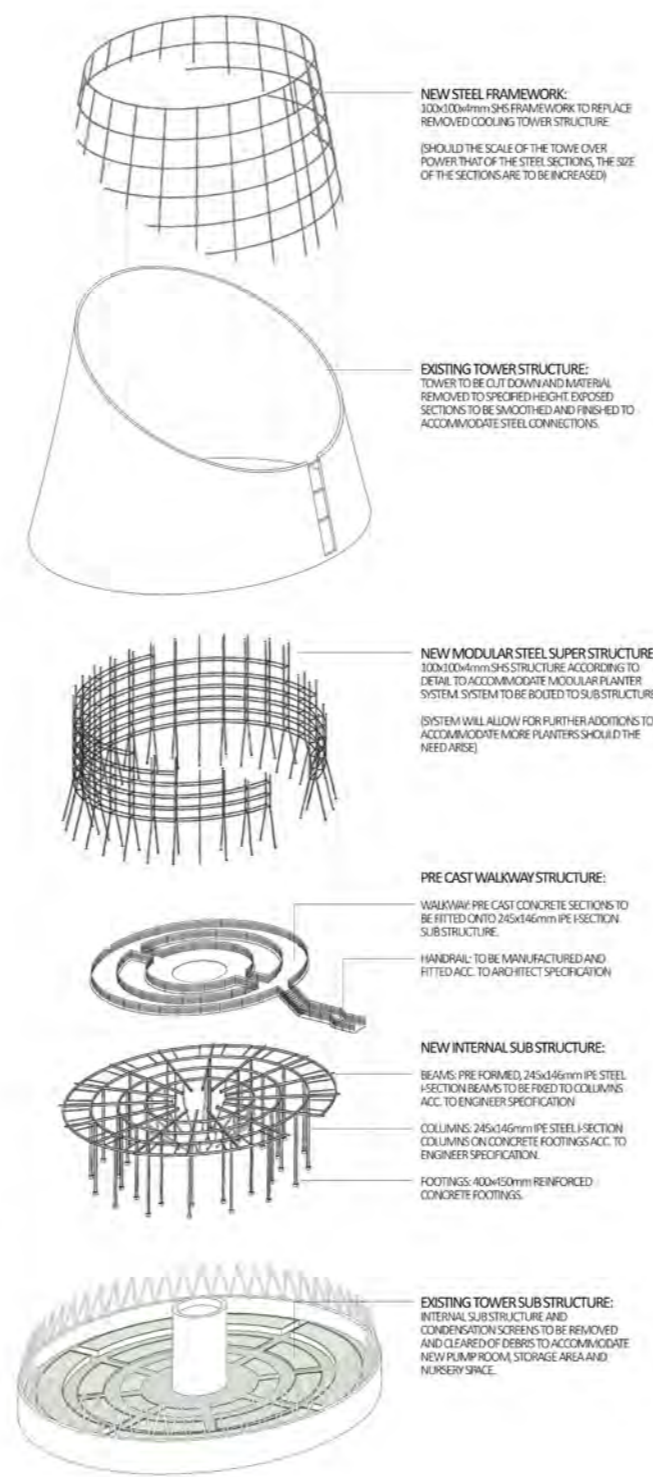


Figure 3.111: Alterations to allow for more sun inside towers, (Author, 2020)



SECTION C-C
COOLING TOWER COMMITTAL SPACE



As the funeral ceremony concludes, the procession will leave ground floor and access the elevated walkways that connect the towers and leads to the committal space within. The promains will be placed in the central shaft along with the chosen tree which will symbolize the final goodbye, the acceptance of death in the form of a new life.

After the promains have been committed the tree will be moved to ground floor where it will be planted and cared for until it is strong enough to be moved to the garden space. The family will be given the choice to plant the tree in the garden or to take it home.

Surrounding the committal space one will finds a modular steel structure with planter boxes in which creepers are planted. These are the only plants that will permanently remain within the towers and be allowed the opportunity to embody and reclaim the space by putting down roots. The structure will provide a basis for the creepers to grow horizontally and eventually overgrow the steel structure added at the top of the towers. In remembrance of what was, it will create beacons of hope within the heart of Bloemfontein for those without identity.



Figure 3.112: Alterations to cooling towers to accommodate communal space and nursery. (Author, 2020)



EXISTING COOLING TOWER STRUCTURE
WALLS + INTERNAL STRUCTURE

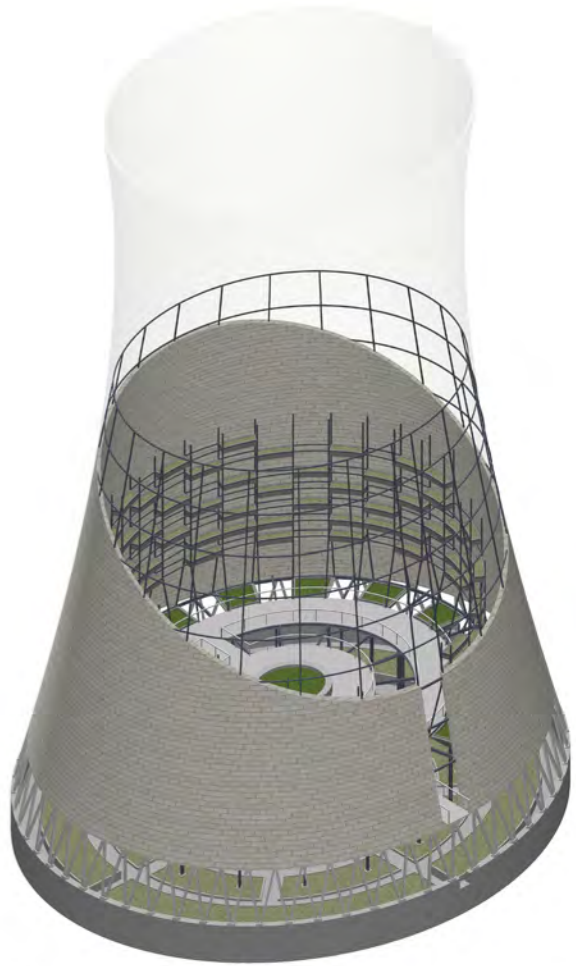


REPLACING DENSE INTERNAL STRUCTURE
WITH STEEL STRUCTURE TO
ACCOMMODATE WALKWAY
+
ADDING PLANTERS ON GROUND LEVEL



ADDING MODULAR STEEL STRUCTURE
WITH PLANTERS TO ACCOMMODATE
CREEPER PLANTS

CUT EXISTING COOLING TOWER WALLS
DOWN TO DECREASE SCALE AND ALLOW
SUFFICIENT LIGHT IN



ADD STEEL FRAMEWORK AS
REMEMBRANCE OF THE OLD AND TO
ALLOW FOR PLANT GROWTH

PROPOSED VEGETATION SELECTED TREES TO BE INTRODUCED

Keeping in mind that the site was once a quarry and that the soil conditions are fairly harsh, the following trees will be used throughout the development. These trees were selected based on their ability to survive in harsh conditions and the contributing factors that they have towards the biodiversity in the area, (Nenungwi, 2020: interview).



Figure 3.113-114: Rhamnus prinoides tree, leaves and fruit, (SANBI, 2020, online)

Rhamnus prinoides

Family: Rhamnaceae

Common names: African Dogwood, Camdeboo Stinkwood, Glossy-leaf (E), Blinkblaar, Camdeboostinkhout (A); umGlindi, Umlindi (X); umGilindi, uNyenyeye, umHlinye (Z); liNyenyeye (Sw), Mofifi (SS)

Description:

Rhamnus prinoides is a dense shrub or a small tree that grows up to 4,5 m high. The leaves are light green when young and very dark and shiny when mature. They are simple and alternate or sometimes nearly opposite; 2,5- 8 cm long; oblong, oval, or lance-shaped; pointed at the tip with toothed margins. The leaves are dark shiny above and paler below. The veins, sunken above and below, are conspicuous and covered with hairs.

The inconspicuous flowers are greenish, blooming between November and January, in small clusters in the axils of the leaves. They are loved by the bees and other insects. The fruits are about the size of a pea (about 5 mm in diameter), roundish and clearly divided into three compartments. They appear between December and June. They are fleshy and green, turning red and then purple as they ripen.

Ecology

The fruit is favored by many bird species.

Growing Rhamnus prinoides:

Rhamnus prinoides can easily be grown from seed. It is tough and frost resistant and grows well in most soils. It is evergreen and is good for small gardens and hedges, especially in cold areas. It does not grow very big and its glossy foliage and colorful fruits, which at various stages are green, yellow, red, and purple at the same time, are attractive. When cut and placed in water, the foliage keeps fresh for a long time. It is a very good small tree to plant in the garden to attract fruit-eating birds.

Not only will these trees serve as the living reminder of loved ones but by opening up the arteries on site, they will also contribute to the surrounding areas by creating a green lung within the heart of Bloemfontein. The following trees were selected, (SANBI, online, 2020):



Figure 3.115-116: Buddleja salviifolia tree, leaves and flowers, (SANBI, 2020, online)

Buddleja salviifolia

Family: Scrophulariaceae

Common names: sagewood, butterfly bush, mountain sage (Eng.); saliehout (Afr.); ewanci, ilotana, igqange (Xhosa); igwangi, iloshane, ilothane, ilotshane, mupambati (Zulu); chipambati, mupambati (Shona); lelothwane (Southern Sotho); umbataewepe (Swati), mupambati (Tswana)
SA Tree No: 637

Description:

Buddleja salviifolia is a semi-evergreen bushy shrub that grows up to 4m high under favorable conditions. Its leaves are dark green and conspicuously wrinkled and puckered above, densely covered with whitish or brown hairs below. Leaves can be broadly or narrowly long.

Masses of small, white to lilac blooms are borne in large panicles (clusters). The flowers are sweetly scented and vary in colour from dull to clear white to almost true purple. Flowering occurs in spring, from August to October.

Ecology:

Buddleja salviifolia flowers attracts many insects such as bees, butterflies, and birds.

Growing Buddleja salviifolia:

Sagewood can be propagated easily from seeds however the fastest way of propagation is through cuttings. Hardwood cuttings can be taken during the active phase of growth and must be treated with a root stimulating hormone powder. Cuttings should be planted in washed river sand and kept moist for three to four weeks. Rooted cuttings can be planted in nursery bags in a well-drained growth media. Young plants must be protected from frost for the first season whereas well established sagewood can withstand frost and drought. Sagewood grows easily in any soil but adding compost will give better results.



Figure 3.117-118: Celtis africana, leaves and fruit, (SANBI, 2020, online)

Celtis africana

Family: Cannabaceae

Common names: white stinkwood; witstinkhout (Afr.); umVumvu (Xhosa); uSinga lwesalukazi (Zulu); Modutu (Sotho & Tswana); Mpopano (Venda)
SA Tree No: 39

Description:

This deciduous tree that grows up to 25 m tall in a forest habitat, but in a garden, it can be treated as a medium-sized tree with an expected height of up to 12 m. In the wild, where it is growing in an exposed, rocky position it may be nothing more than a shrub, but well-grown specimens will have a single, straight bole (main stem of tree) branching to form a dense, semi-circular canopy. The trunk of Celtis africana is easy to distinguish by its smooth, pale grey to white bark. It may be loosely peeling in old trees and sometimes has horizontal ridges.

Ecology:

Many birds like rameron pigeons, willow warblers, black-eyed bulbuls, mousebirds, and crested barbets feed on the fruits and disperse the seeds. Celtis africana leaves are browsed by cattle and goats and are food for the larvae of the long-nosed butterfly.

Growing Celtis africana:

Celtis africana is easy to grow and is fast-growing. It is fairly drought resistant and can withstand frost. It does best in good, rich, deep soil with plenty of water in summer. This is an excellent tree for large gardens and parks and has also proved to be a successful street and avenue tree.

In the garden it makes an ideal shade tree, particularly when planted on the northern or western side of the building. It also works well as a specimen plant in a tub in a courtyard garden. Freshly collected seed harvested from the tree germinates easily, seed from the tree is preferred because seeds collected from the ground are usually infested by insects. The flesh from the berry is best cleaned off and the seeds should be sown in a flat seedling tray filled with river sand and well-decomposed compost (5 parts river sand to 1 part compost). The seeds should be covered with a thin layer of river sand and kept moist. The trays should be placed in a warm but shaded area. Germination will take 15 to 30 days with an expected germination of 70%. Transplant the seedlings into good, rich soil and give them plenty of water and they will grow fast, putting on 1 to 2 m per year.



Figure 3.119-121: Olea exasperata tree, leaves, flowers and fruit, (SANBI, 2020, online)

Olea exasperata

Family: Oleaceae

Common names: dune olive, coast olive (Eng.); duineolien, glashoutolien, slanghout, vlashoutolien, basterolienhout (Afr.)
SA Tree No: 619

Description:

This is a bushy, evergreen, medium-sized shrub, 1–2 m tall, or small tree, with a rounded crown that can grow up to 7 m tall under favorable conditions. It is commonly multiple-stemmed, causing it to have a shrubby appearance. The leaves are opposite, linear-oblong in shape, 30–70 mm long and 3–10 mm wide, broadest in the upper two thirds, tending to curl downwards towards the midrib; with an entire margin. They are thinly leathery and glossy, dark green on the upper surface and dull green on the under surface, with tiny indentations on both surfaces of the leaf. The bark is greyish brown with young branchlets (a small branch or division of a branch) that are 4-angled, with very visible white lenticels (one of many raised pores in the stem of a woody plant) and prominent leaf scars.

The flowers are sweetly scented, small, white and are borne in short, many-flowered, terminal heads, appearing from late winter to late spring (August to October).

Ecology:

The fruits of most of the South African wild olives are eaten by birds, animals, insects, and humans, although the fruits may be found to be unpalatable when eaten raw. According to observations done on several species of plants at Kirstenbosch National Botanical Garden, honeybees were found to visit the flowers of many shrubs, herbaceous perennials, and trees, including species of Olea. However, that does not mean all flowers visited by honeybees are pollinated by them, and there may be several other pollinators.

Growing Olea exasperata:

Olea is propagated by means of layering, cuttings, and seed sowing. This is a plant that shoots out suckers which makes propagation from layering one of the easiest ways to grow. Layering is a method of propagating a plant in which a shoot is fastened down to form roots while still attached to the parent plant. Olea may also be propagated from seed sown fresh, or from hardwood cuttings using rooting hormone number 2 and coarse river sand. Grow Olea exasperata in full sun as they need at least 6 hours of direct sun daily.



Figure 3.122-123: Euclea crisa tree and leaves (SANBI, 2020, online)

Euclea crisa

Family: Ebenaceae
 Common names: blue guarri (Eng.); bloughwarrie (Afr.); iyeza-lokuxaxazisa, umgwali (isiXhosa), motlaletsogane (Setswana); idungamuzi, umgwali (isiZulu), gwari (Pedi)
 SA Tree No: 594

Description:

Euclea crisa is a single-stemmed small tree with many smaller branches forming a dense crown reaching a height of 2-6 meters and a spread of 2-4 meters. The bark varies from grey and smooth when young to dark brown and rougher with age; it is often covered in lichen (fungi). The young growth usually has rusty brown glands which disappear with age. The leaves are small and varies from blue to grey and variable in shape. They are smooth and leathery to the touch. Whitish green to yellow bell-shaped flowers are produced from spring to summer, October to February, which attract bees with their sweet scent. The male and female flowers are on separate trees. A single-seeded fruit ripens from reddish brown to black. They are palatable to humans and eaten by birds and mammals.

Ecology:

The sweetly scented flowers are visited by bees with the seeds attracting many species of birds, antelope, and vervet monkeys in the wild. Black rhino have been seen to enjoy browsing the leaves and bark of Euclea crisa.

Growing Euclea crisa:

In nature, the blue guarri grows quite easily from fresh seed as this is its natural way to spread. It must be noted that only female trees produce seed. During autumn seed is collected from healthy trees which are disease-free, and the thin fleshy seed covering is removed. The seed should be plump, not shrunken and light. Aim to sow as soon as possible after harvesting. Fill a 10 cm deep seedling tray with a mix of rich soil and compost. Ensure the soil is level by pressing down firmly, then place the seeds on top. Cover the seeds with a layer of river sand to a depth of 5 mm. The tray should be kept moist during germination, but never wet. Transplant the seedlings into black nursery bags when they are at the second leaf stage. These slow-growing seedlings will need to be protected from strong winds and frost during their first two years. This evergreen tree will provide year-round shade; the large canopy provides homes and a food source to birds and other wildlife as well as providing a sweet scent from the flowers in spring and summer.



Figure 3.124-125: Searsia pendulina tree, leaves and fruit, (SANBI, 2020, online)

Searsia pendulina

Family: Anacardiaceae
 Common names: White Karee, Willow Karee, River Karee (English), Witkaree, Rivierkaree, Kareehout, Kareeboom, Rosynebos, Rosyntjebos, Wilderosyntjieboom (Afrikaans), Garas (Nama), mosilabele (South Sotho)
 SA Tree No: 396

Description:

This is a willow evergreen small to medium-sized tree, 4 to 9 m tall, forming a neat crown of gracefully drooping branches. The bark is pale and smooth and becomes flaky with age. The leaves are trifoliate, narrowly lance-shaped with entire margins, and a fresh light green on both surfaces. The terminal leaflet is 25-95 mm x 6-15 mm and the lateral leaflets are slightly smaller. Being small and soft, after dropping, they curl up and disintegrate quite rapidly. Tiny green flowers are produced in delicately branched, many-flowered panicles (clusters) in spring-summer. They are inconspicuous but attract bees and other insects. The flowers are followed by small rounded 3 mm diameter berries, green turning reddish and drying to black, usually ripening in the autumn.

Ecology:

Birds eat the berries, and many butterflies breed on Searsia species, the Foxtrot Copper, Samba Copper, Burnished Copper, Common Hairtail and Pearl Charaxes.

Growing Searsia pendulina:

Searsia pendulina grows fast, withstands the wind and summer drought, and forms a sizeable tree after only a few years, casting shade and breaking the wind. With its ease in cultivation, unaggressive roots, and graceful willow crown, Searsia pendulina is a good choice for the suburban garden. Its size is also a plus in that it will not take over the neighborhood and does not need much pruning to keep it under control. It makes an attractive, low-maintenance street tree. Use it instead of the exotic willows. It is also a good 'bird tree', providing food and shelter.

Searsia pendulina is easily propagated from seed and cuttings. Water newly planted-out saplings well for their first few years to give them a good start in life- infrequent deep watering is better than frequent sprinklings. Although from a frost-free region, Searsia pendulina should be able to survive outdoors in a Zone 9 climate (-1 to -7 °C).



Figure 3.126-127: Searsia lucida tree, leaves and flowers, (SANBI, 2020, online)

Searsia lucida

Family: Anacardiaceae
 Common names: glossy crowberry, glossy currant, glossy wild currant (Eng.); blinktaabos, slaptaabos (Afr.); intlokolotshane-ebomvu, umchane, amapozi (isiXhosa); inhlokoshiyane (isiZulu)
 SA Tree No: 388

Description:

Searsia lucida is a densely branched, evergreen tree (up to 5 m tall) with branches that can have a spread of up to 4 m. The wood is red-brown, hard, tough, and durable. Leaves are glossy and trifoliate (has three leaflets) with a larger terminal leaflet, slightly leathery, rather sticky, dark olive-green above and below, with a prominent midrib.

Ecology:

Searsia lucida plays an important role as a pioneer species in the ecological cycle of plant succession, as it is able to establish itself under harsh environmental conditions, often providing shelter for less tough and slower-growing species.

Leaves of the Searsia species has a resinous smell when crushed. Stems and branches of this genus have prominent lenticels, and galls are often found on the leaflets. Bees and other insects pollinate the flowers and birds eat the ripe berries. A wide variety of butterflies breed on various Searsia species

Growing Searsia lucida:

Searsia lucida is an evergreen, fast-growing, and low maintenance tree that does best in the full sun. It is very well adapted to harsh conditions and can tolerate poor soil and drought conditions. It has dense green foliage provides a good backdrop for flowering species or grey-foliaged plants. The tree can also be used for informal hedging and screening and will provide shade and shelter for slower, softer plant species.

Searsia lucida can be propagated easily from seed or semi-hardwood cuttings. The seeds usually have a shiny brown coloring when ripe. As soon as the seeds are dry, they can be collected. Sow the ripe seed in autumn in seedling trays using a well-drained seedling medium. Only lightly cover the seeds with soil, and keep them moist, but never too damp. Seeds start germinating from about four to six weeks after sowing. Transplant the seedlings into bigger containers when they reach the two-leaf stage.



Figure 3.128-129: Searsia lucida tree, leaves and flowers, (SANBI, 2020, online)

Vachellia robusta subsp. robusta

Family: Fabaceae
 Common names: broadpod robust thorn (Eng.); enkeldoring (Afr.); mooka (Nso.); mvumbangwenya (Tso.)
 SA Tree No: 183

Description:

The Vachellia robusta is a small to medium-sized tree, reaching up to 10 m (usually around 5–8 m) tall, with a slightly flattened crown. The main stem is grey to blackish with rough hairy branches. The white thorns are straight and paired. The texture is moderately coarse to coarse and even. The wood is brittle and moderately durable, the sapwood is susceptible to sap-stain (sap-stain is usually caused by a fungus which discolours the wood). Flowers are creamy white pompons produced in July–October, followed by the dehiscent greyish brown, straight and broad, seed pods adorning the tree from November–August.

Ecology:

Vachellia robusta is commonly found in open forests and woodlands, where one can find large specimens. The strongly scented flowers attract bees and butterflies, and many other insects. Birds such as Sparrows and Finches, like to build their nests in the densely thorny branches of this tree, as the thorns offer excellent protection from predators. It is the larval host to various species of butterflies. Many other Lepidoptera species (butterflies and moths) are cited as breeding on unspecified species of Acacia which may include Vachellia robusta.

Growing Vachellia robusta:

Germination of wild collected, untreated seed can be very low, often only about 3%; however, germination can be significantly improved by scarification. This happens in nature when the seeds are eaten by herbivores or seeds lay in the soil for few to several years, decaying the seed coat. Seeds can be scarified in the nursery by rubbing them on rough sandpaper or other suitably rough surface, to scratch the cuticle.

The seed is then covered with warm water and left to cool and soak for 24 hours. After this, the swollen seeds can be planted in a mixture of compost and river sand, at a depth of approximately 5–10 mm, and covered with the sifted compost and sand mixture. Germination is quick, often within a couple of days in spring and summer; seedlings can be planted out into individual containers once they reach the two-leaf stage. Saplings can be planted out into open ground after one or two years and should be watered regularly until well established.

1. Vachellia robusta subsp. robusta
Common names: broadpod robust thorn (Eng.); enkeldoring (Afr.); mooka (Nso.); mvumbangwenya (Tso.)



2. Euclea crispa
Common names: blue guarri (Eng.); bloughwarrie (Afr.); iyeza-lokuxaxazisa, umgwali (isiXhosa), motlhaletsogane (Setswana)



3. Rhamnus prinoides
Common names: African Dogwood, Camdeboo Stinkwood, Glossy-leaf (E), Blinkblaar, Camdeboostinkhout (A); umGlindi, Umlindi (X);



4. Searsia pendulina
Common names: White Karee (English), Rosyntjebos, Wilderosyntjieboom (Afrikaans), mosilabele (South Sotho)



5. Buddleja salviifolia
Common names: sagewood, butterfly bush, mountain sage (Eng.); saliehout (Afr.); ewanci, ilotana, igqange (Xhosa); lelothwane (Southern Sotho)



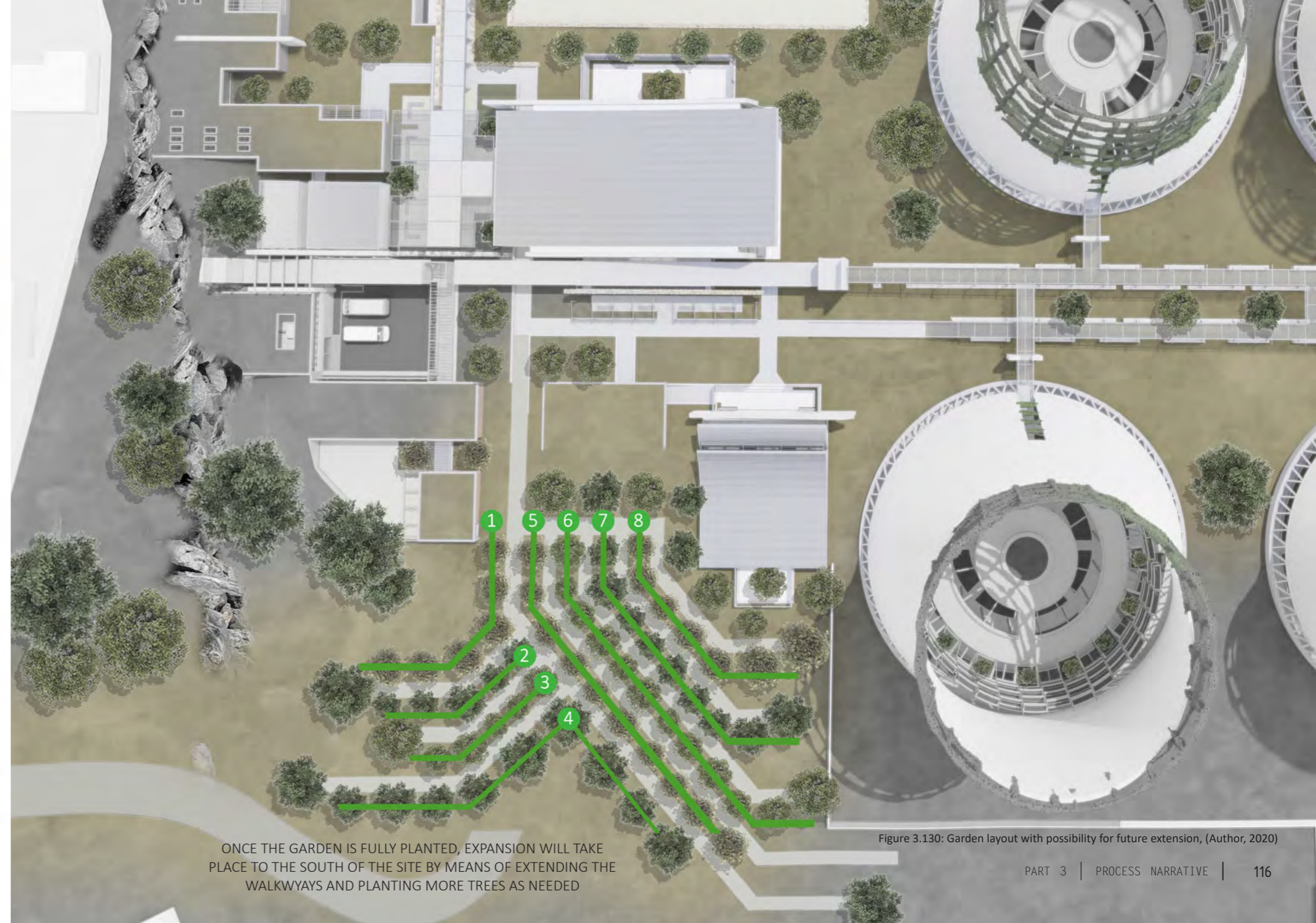
6. Olea exasperata
Common names: dune olive, coast olive (Eng.); duineolien, glashoutolien, slanghout, vlashoutolien, basterolienhout (Afr.)



7. Celtis africana
Common names: white stinkwood; witstinkhout (Afr.); umVumvu (Xhosa); uSinga lwesalukazi (Zulu); Modutu (Sotho & Tswana); Mpopano (Venda)



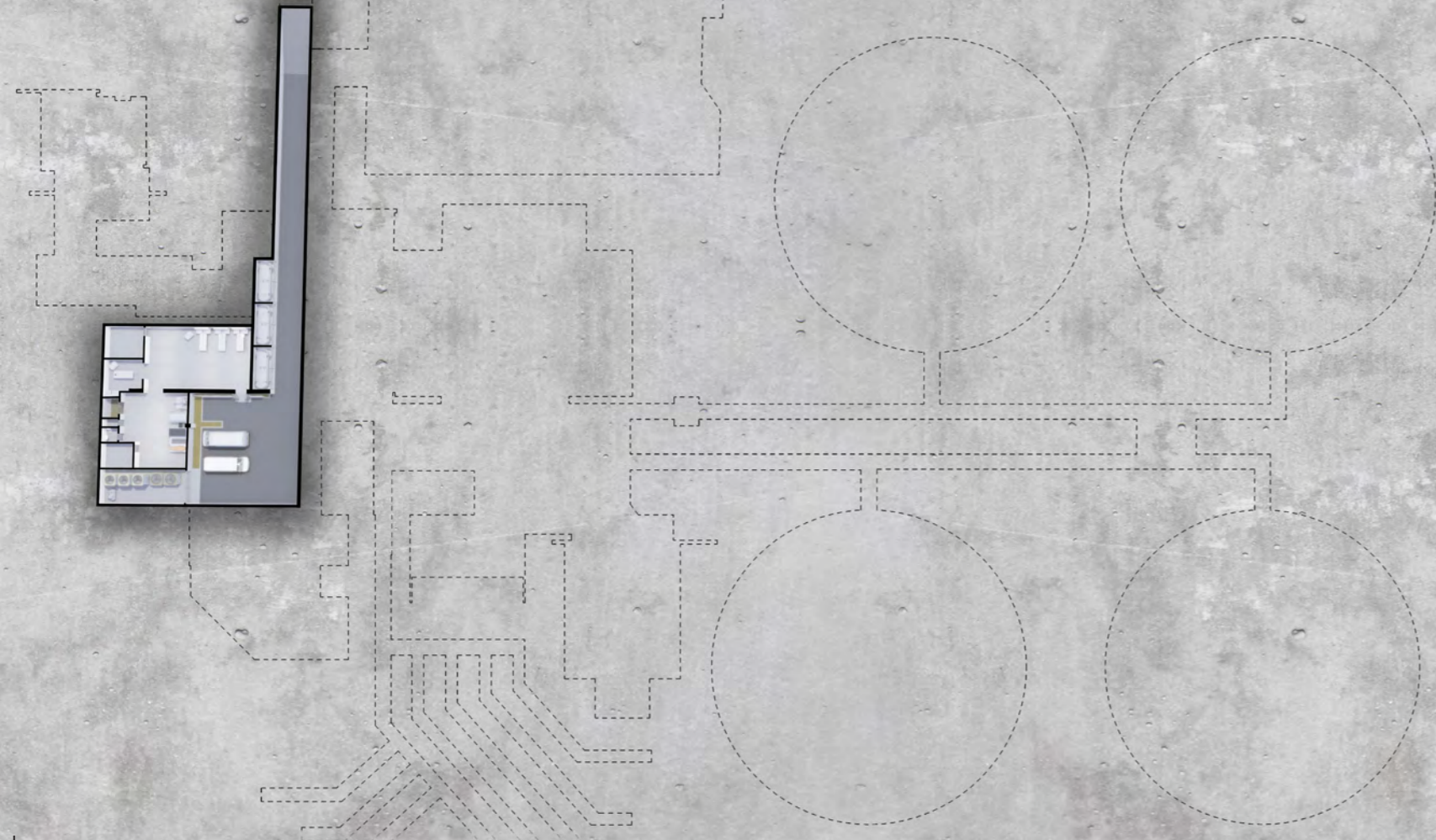
8. Searsia lucida
Common names: glossy crowberry, glossy currant, glossy wild currant (Eng.); blinktaaihos, slaptaaihos (Afr.); intlokotshane-ebomvu, umchane



ONCE THE GARDEN IS FULLY PLANTED, EXPANSION WILL TAKE PLACE TO THE SOUTH OF THE SITE BY MEANS OF EXTENDING THE WALKWAYS AND PLANTING MORE TREES AS NEEDED

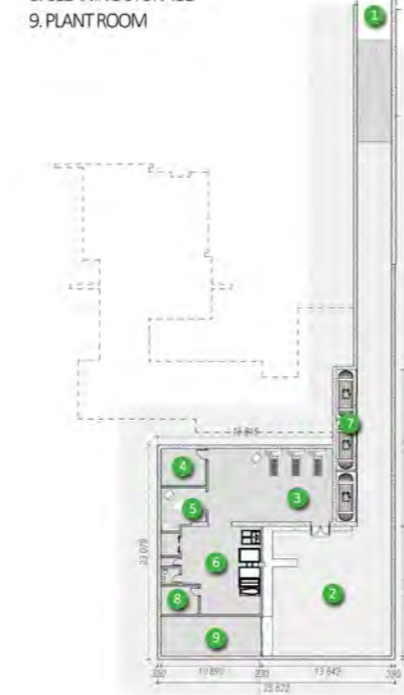
Figure 3.130: Garden layout with possibility for future extension, (Author, 2020)

3.5 | FINAL DESIGN
FULL CYCLE PROMATORIUM



- PROMATORIUM**
- 1. SERVICE ENTRANCE
 - 2. DELIVERY AREA
 - 3. MORGUE
 - 4. COLD ROOM
 - 5. PREP ROOM
 - 6. PROMATORIUM

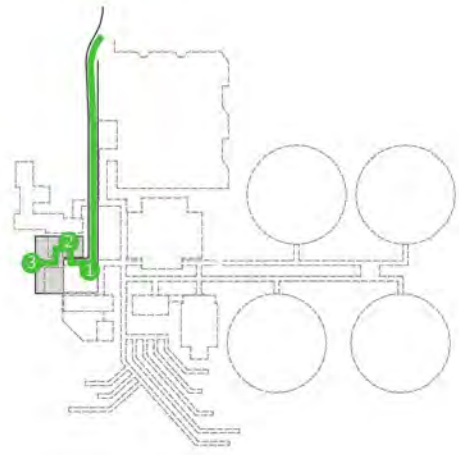
- STORAGE**
- 7. LIQUID NITROGEN STORAGE
 - 8. CLEANING STORAGE
 - 9. PLANT ROOM



BASEMENT FLOOR PLAN

BODY ROUTE

- 1. BODY IS DELIVERED TO MORGUE WHERE IT IS CLEANED AND BROUGHT OT TEMPERATURE.
- 2. BODY IS PLACED IN PROMATOR WHERE IT IS BROKEN UP INTO ORGANIC MATERIAL (PROMAINS).
- 3. PROMAINS ARE TRANSPORTED TO FAMILY ROOM WHERE IT WILL BE COLLECTED BY THE FAMILY.





- ADMINISTRATION**
- 1. RECEPTION
- 2. OFFICES
- 3. MAIN OFFICE
- 4. BOARDROOM
- 5. OUTSIDE SPACE

- COUNSELING**
- 11. RECEPTION
- 12. OFFICES

- CEREMONY SPACES**
- 15. ENTRANCE COURTYARD
- 16. FAMILY ROOM
- 17. MAIN CEREMONY
- 18. SECONDARY CEREMONY

- 21. SITE ENTRANCE
- 22. PARKING ENTRANCE
- 23. SERVICE ENTRANCE

- 6. KITCHEN + BREAK-ROOMS
- 7. RECORDS STORAGE
- 8. TOILETS
- 9. MORGUE (BELOW)
- 10. DELIVERY YARD (BELOW)

- 13. THERAPY ROOM
- 14. OUTSIDE COURTYARD

- 18. MEMORIAL SPACE
- 19. STORAGE
- 20. TOILETS

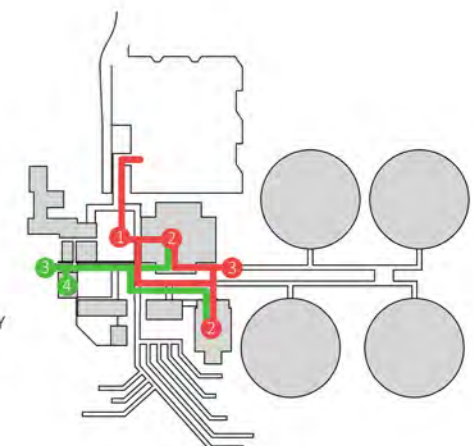
- 24. LANDSCAPED PARKING
- 25. NURSERY SPACE
- 26. GARDEN SPACE

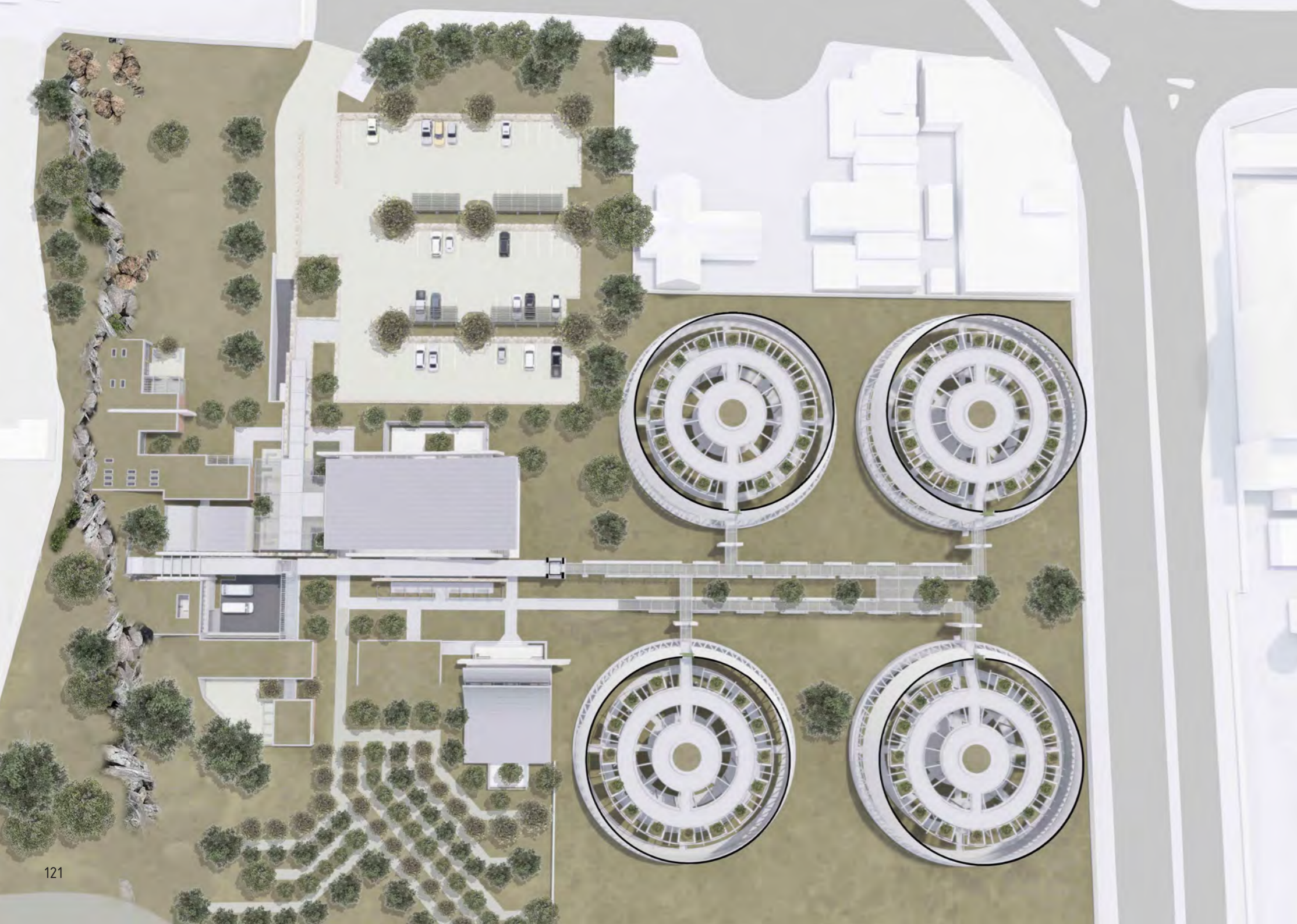


GROUND FLOOR PLAN

- BODY ROUTE**
- 3. PROMAINS IS BROUGHT TO GROUND FLOOR AND PLACED IN FAMILY ROOM.
- 4. PROMAINS ARE COLLECTED BY FAMILY AND TAKEN TO EITHER OF THE CEREMONY SPACES.

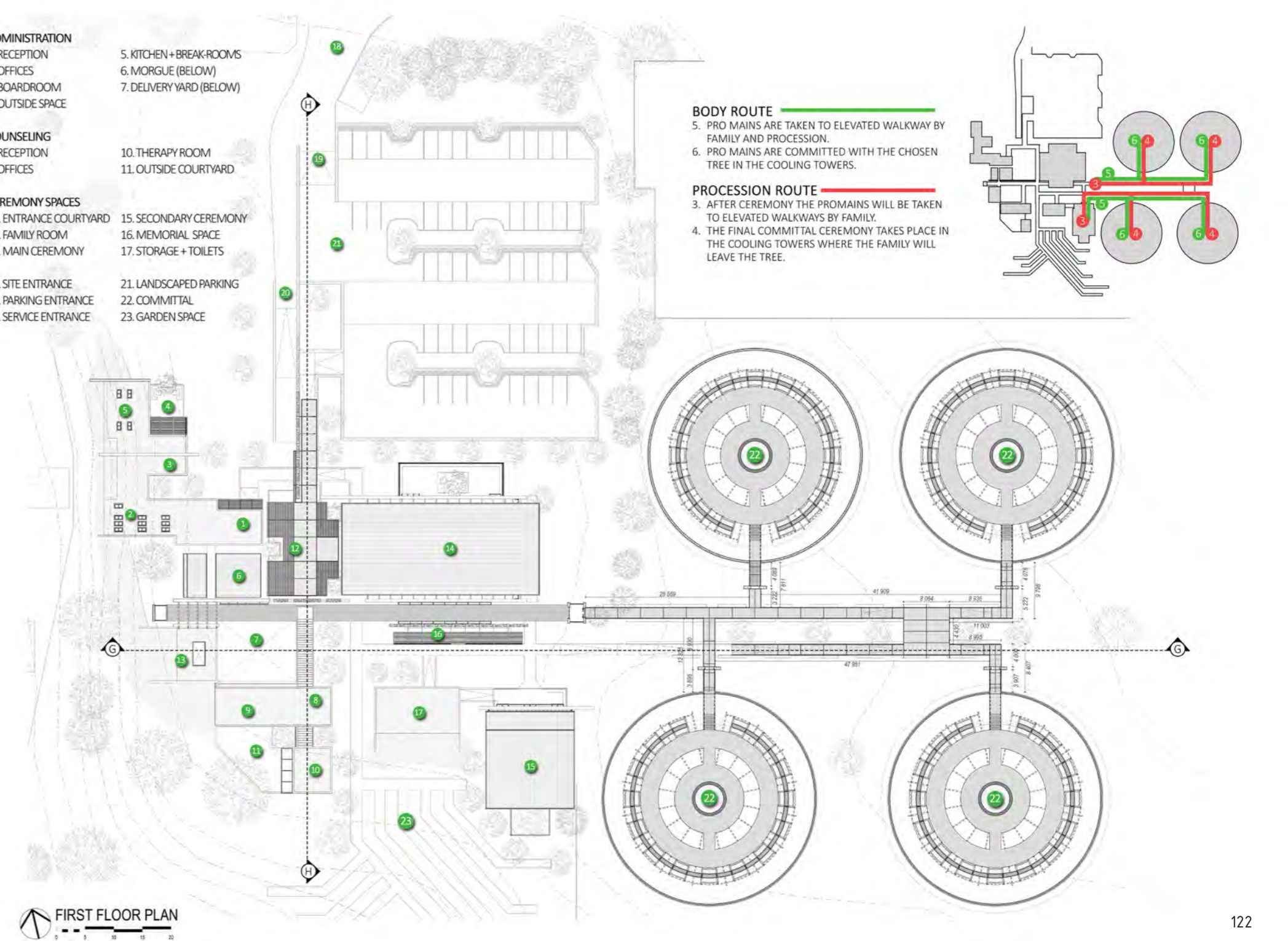
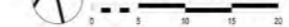
- PROCESSION ROUTE**
- 1. PUBLIC WILL ENTER INTO ENTRANCE COURTYARD.
- 2. PROCESSION WILL ENTER EITHER OF THE CEREMONY SPACES FOR FUNERAL CEREMONY.
- 3. AFTER CEREMONY THE PROMAINS WILL BE TAKEN TO ELEVATED WALKWAYS BY FAMILY



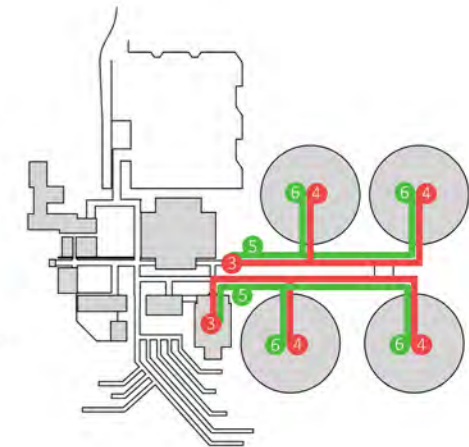


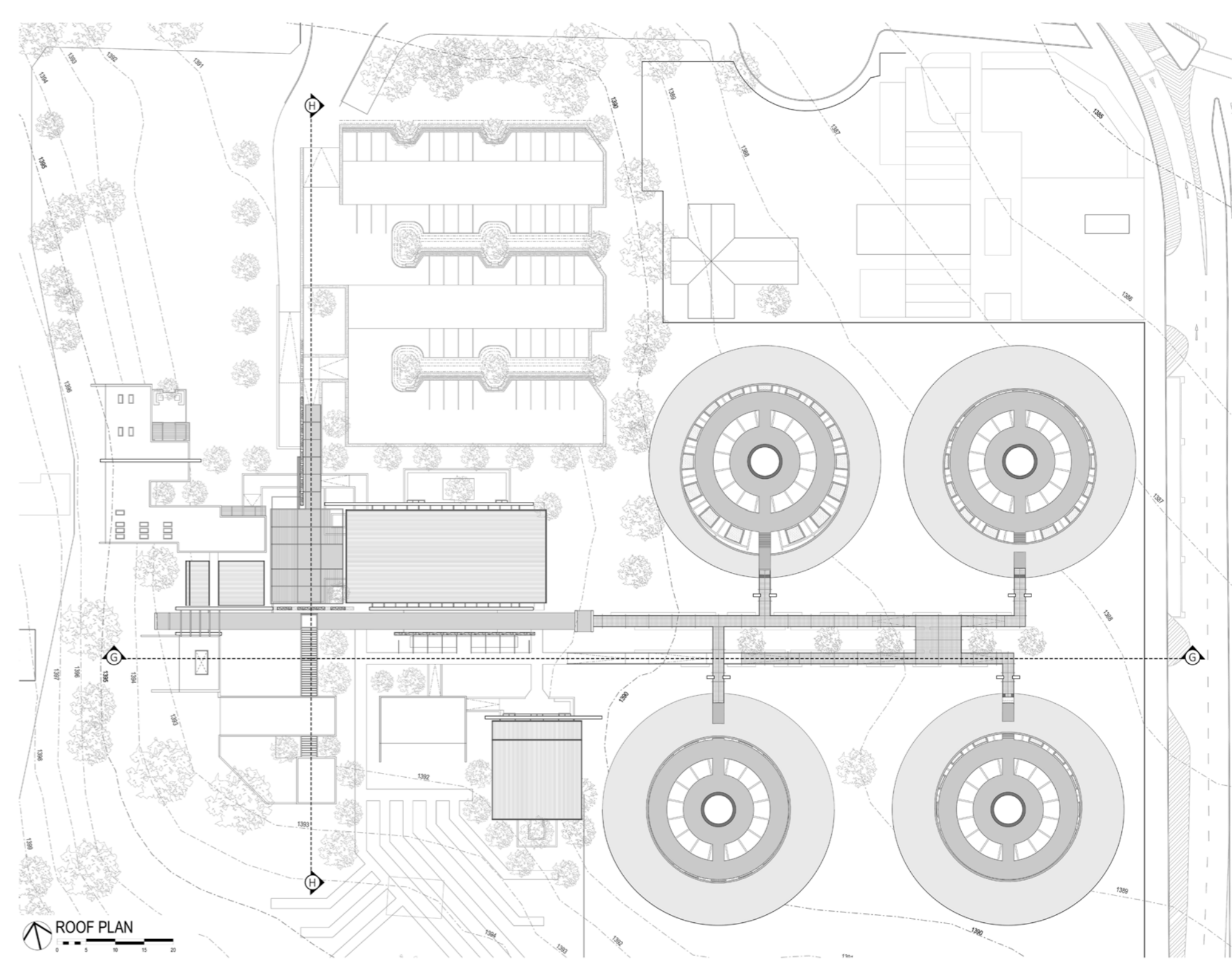
- ADMINISTRATION**
- 1. RECEPTION
- 2. OFFICES
- 3. BOARDROOM
- 4. OUTSIDE SPACE
- COUNSELING**
- 8. RECEPTION
- 9. OFFICES
- CEREMONY SPACES**
- 12. ENTRANCE COURTYARD
- 13. FAMILY ROOM
- 14. MAIN CEREMONY
- 15. SECONDARY CEREMONY
- 16. MEMORIAL SPACE
- 17. STORAGE + TOILETS
- 18. SITE ENTRANCE
- 19. PARKING ENTRANCE
- 20. SERVICE ENTRANCE
- 5. KITCHEN + BREAK-ROOMS
- 6. MORGUE (BELOW)
- 7. DELIVERY YARD (BELOW)
- 10. THERAPY ROOM
- 11. OUTSIDE COURTYARD
- 21. LANDSCAPED PARKING
- 22. COMMITTAL
- 23. GARDEN SPACE

FIRST FLOOR PLAN



- BODY ROUTE**
- 5. PRO MAINS ARE TAKEN TO ELEVATED WALKWAY BY FAMILY AND PROCESSION.
- 6. PRO MAINS ARE COMMITTED WITH THE CHOSEN TREE IN THE COOLING TOWERS.
- PROCESSION ROUTE**
- 3. AFTER CEREMONY THE PROMAINS WILL BE TAKEN TO ELEVATED WALKWAYS BY FAMILY.
- 4. THE FINAL COMMITTAL CEREMONY TAKES PLACE IN THE COOLING TOWERS WHERE THE FAMILY WILL LEAVE THE TREE.





ROOF PLAN

Figure 3.131: Aerial view of development. (Author, 2020)

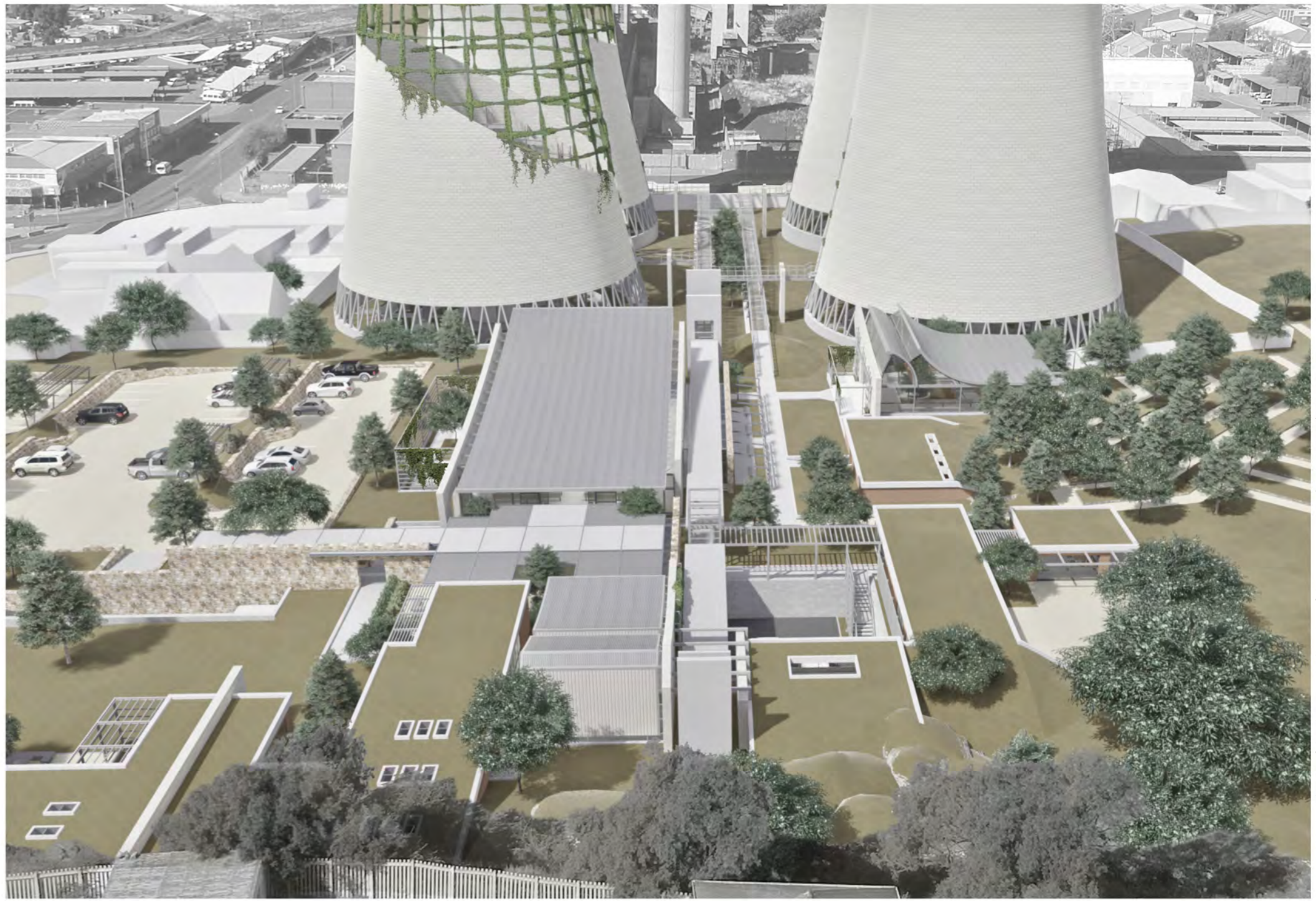
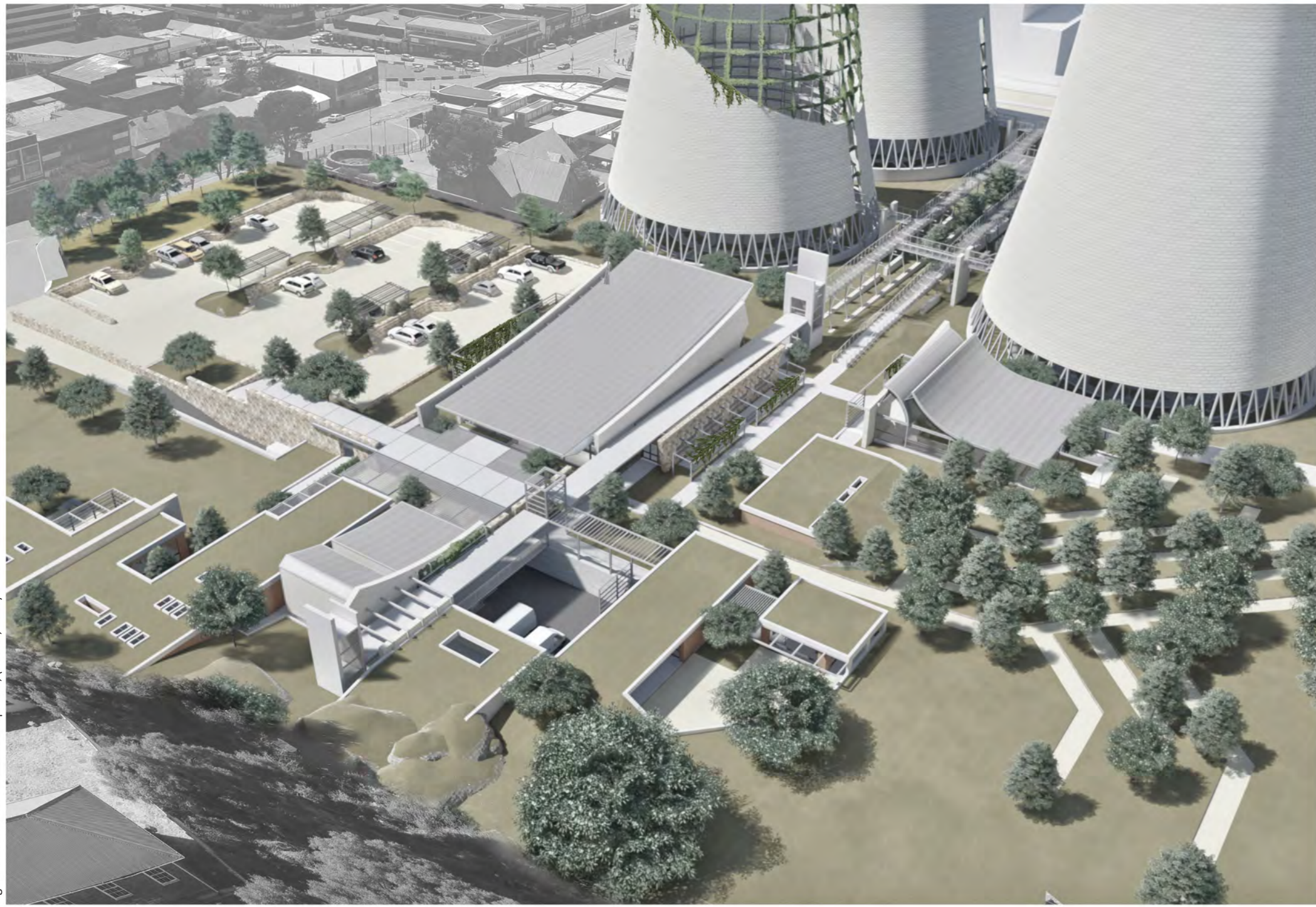


Figure 3.132: Aerial view of development in direction of the power station. (Author, 2020)

BODY ROUTE



Figure 3.133: Courtyard where body is dropped off, (Author, 2020)



Figure 3.134: Morgue, where body is cleaned before being promoted, (Author, 2020)



Figure 3.137: Family room where remains are received by family before moving to either of the ceremonial spaces, (Author 2020)



Figure 3.136: Interior courtyard space where procession gathers before ceremony, (Author 2020)



Figure 3.135: Entrance to complex for procession, (Author, 2020)

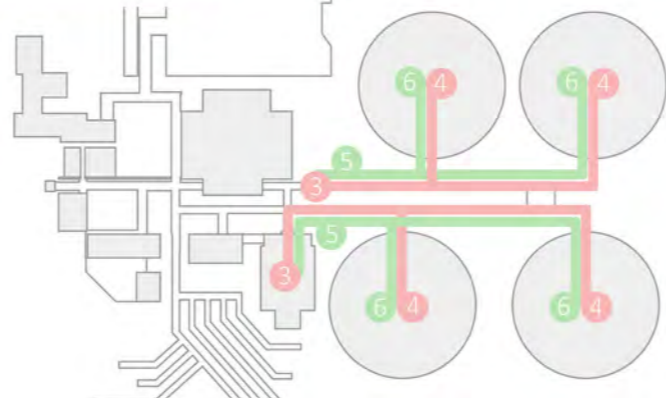
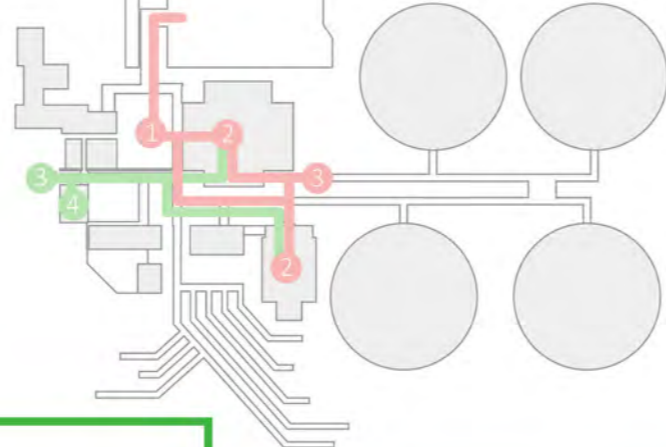


Figure 3.138: Main ceremonial space where ceremony is held, (Author 2020)

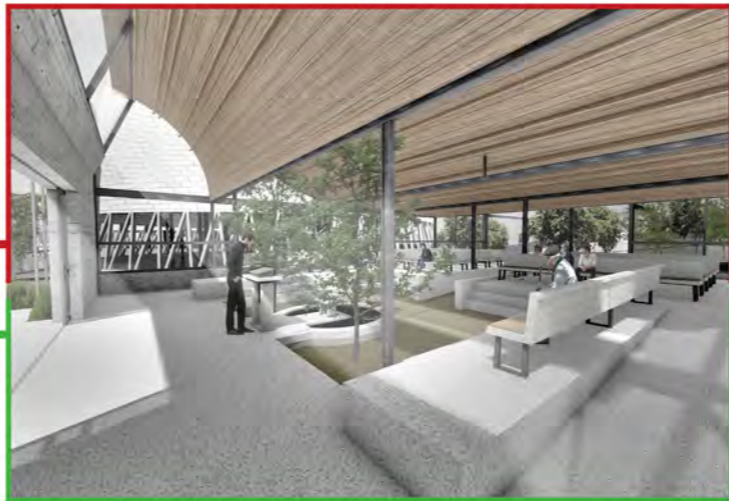


Figure 3.139: Secondary ceremonial space where ceremony is held, (Author 2020)



Figure 3.140: Walkways which lead into committal spaces after the ceremony, (Author 2020)

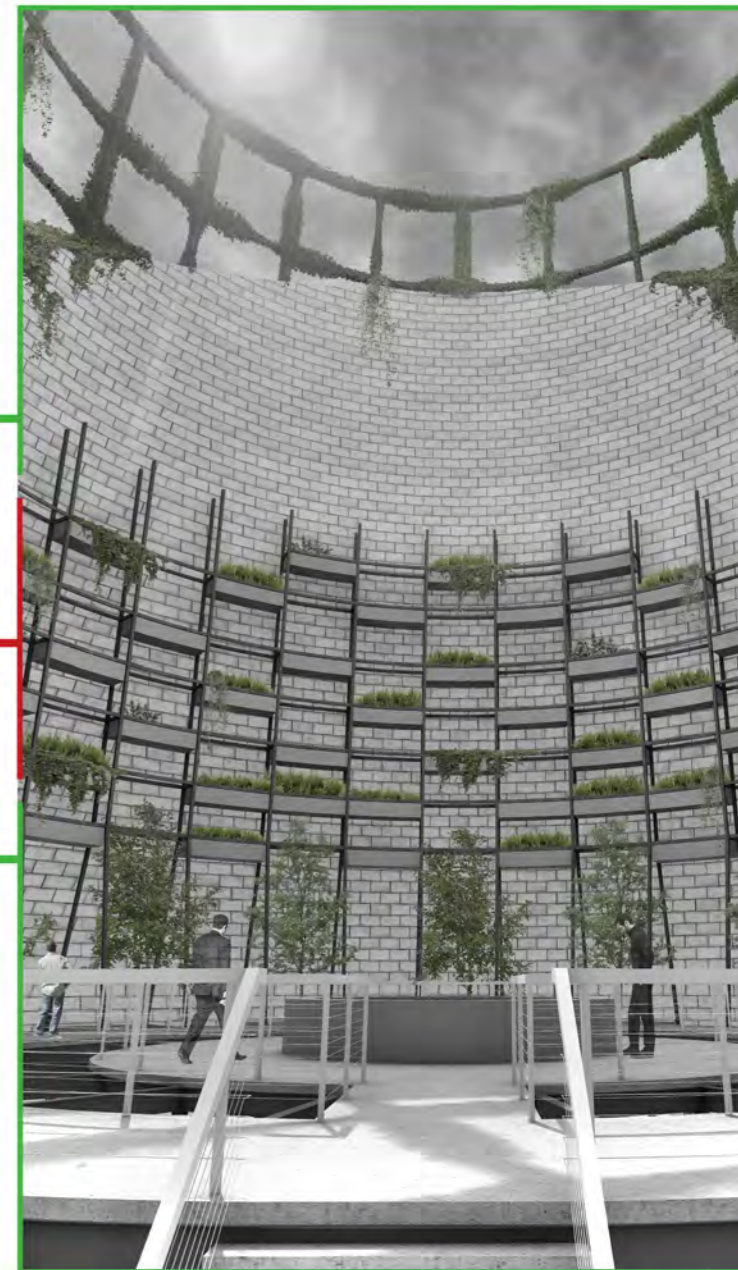


Figure 3.141: Committal space where remains are left, (Author 2020)

PROCESSION ROUTE



SITE SECTION G-G

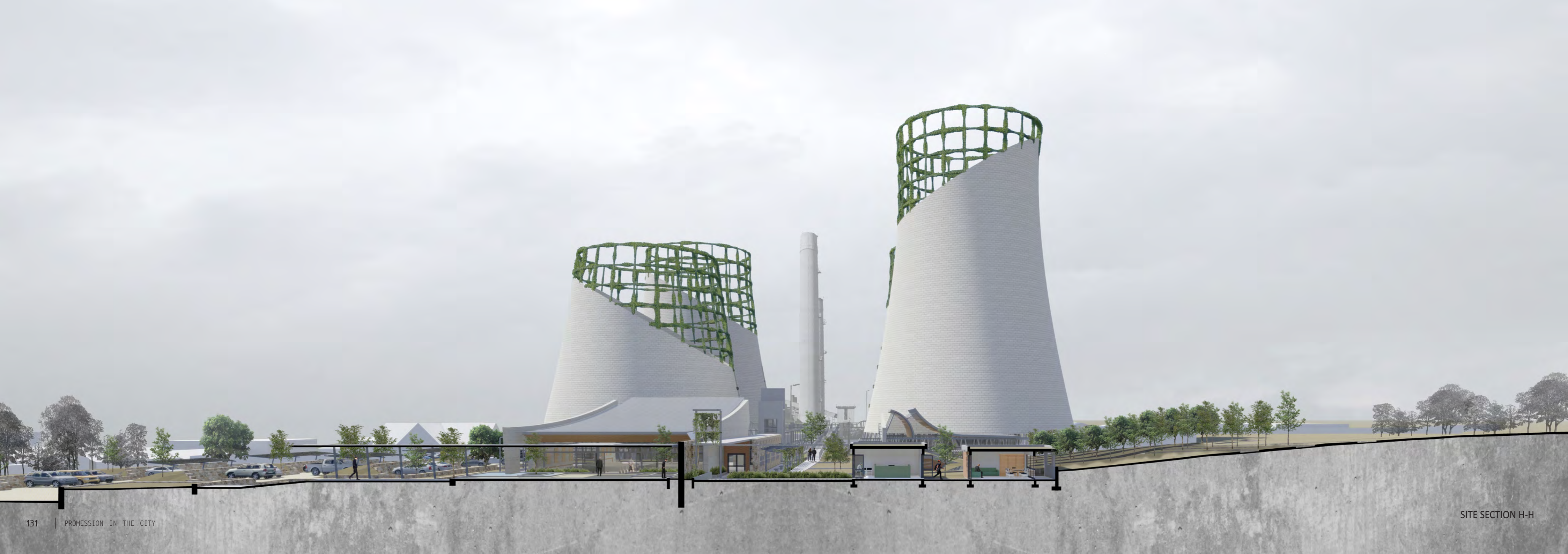


Figure 3.142: Procession entrance leading to interior courtyard, (Author, 2020)

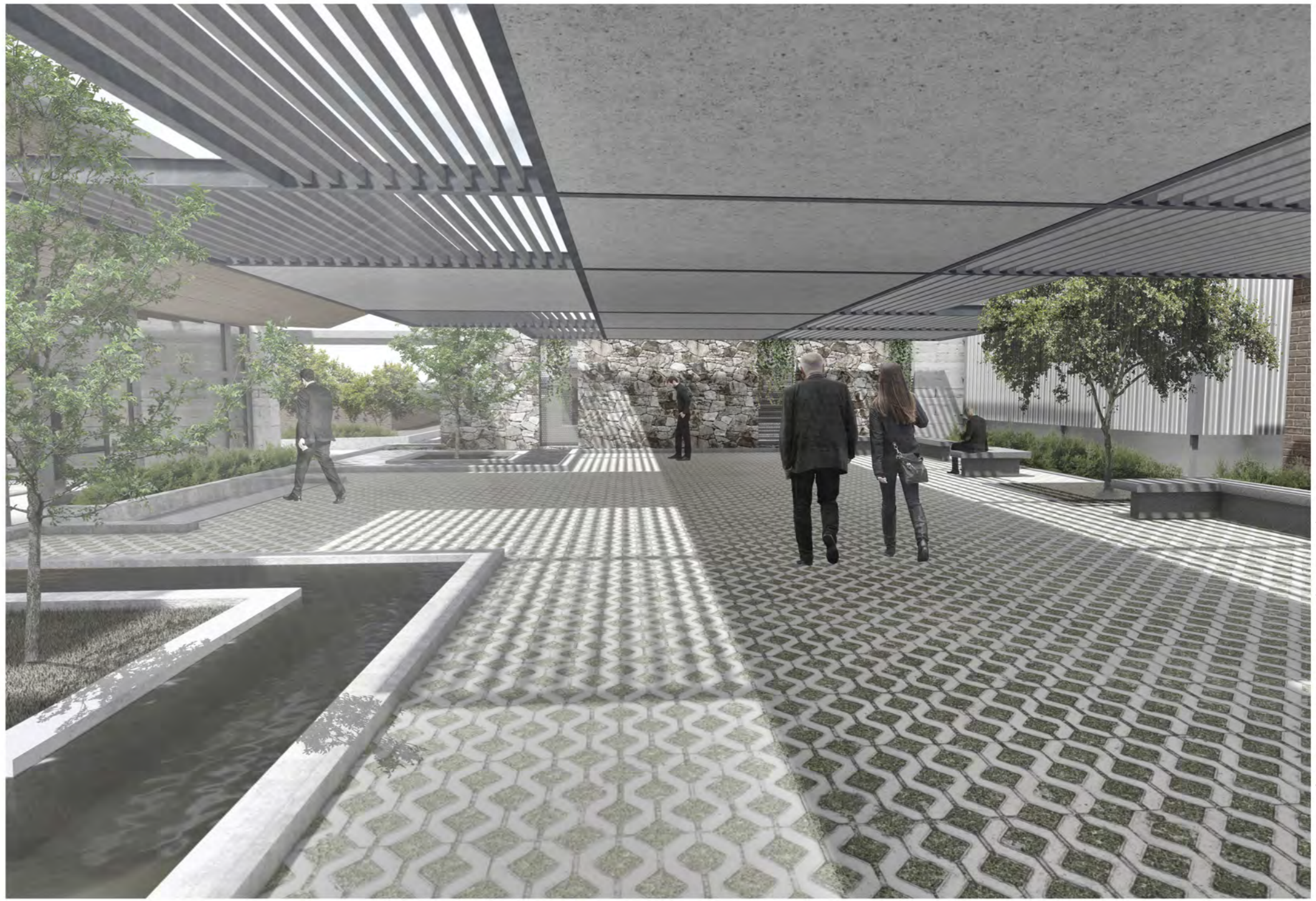


Figure 3.143: View of interior courtyard upon entrance, (Author, 2020)

Figure 3.144: Exterior view of main ceremonial space, (Author, 2020)

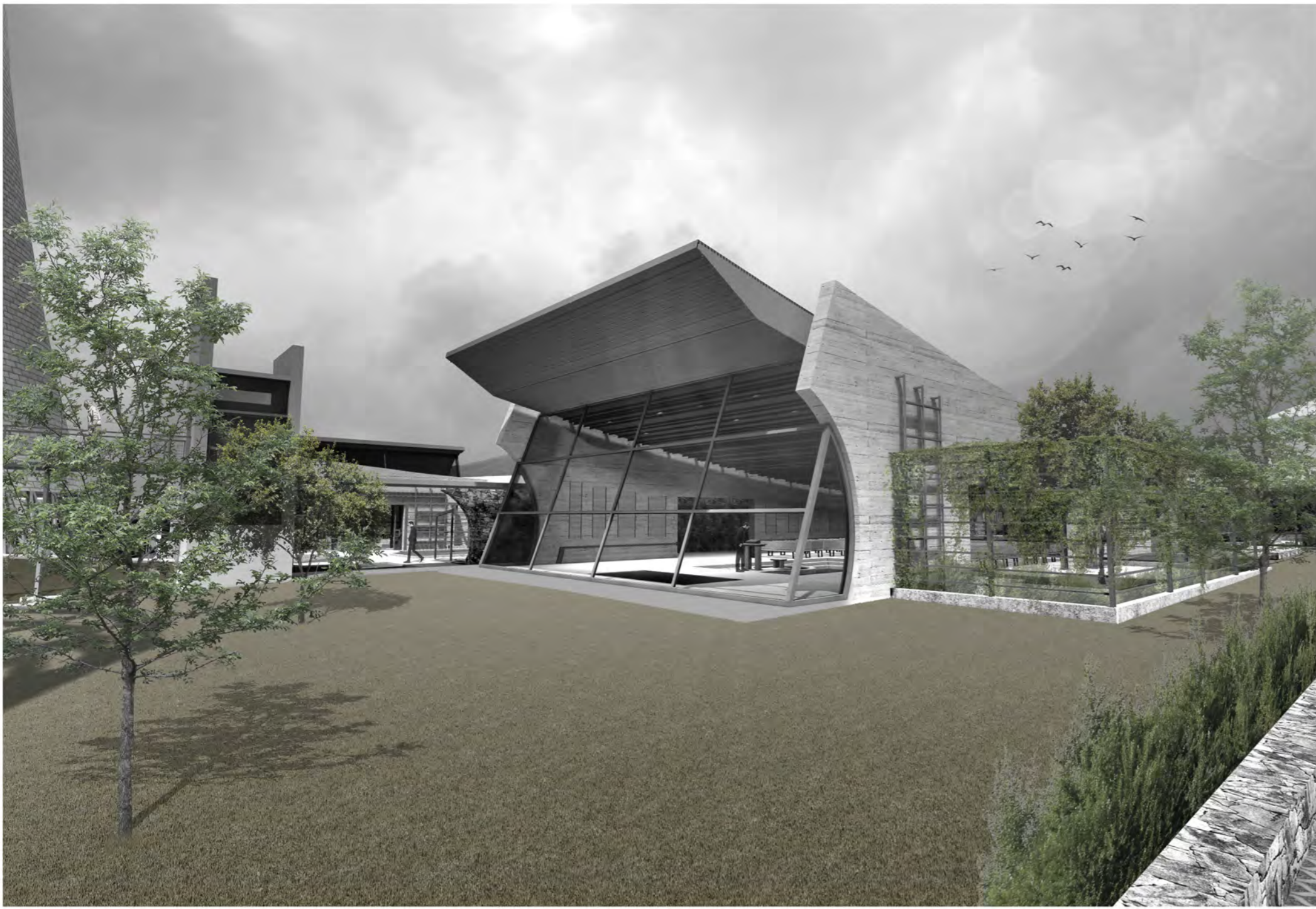


Figure 3.145: Interior of main ceremonial space looking out on cooling towers, (Author, 2020)

Figure 3.146: Exterior view of secondary ceremonial space, (Author, 2020)



Figure 3.147: Interior view of secondary ceremonial space, (Author, 2020)

Figure 3.148: View from first floor level of walkways leading to communal space within cooling towers, (Author, 2020)

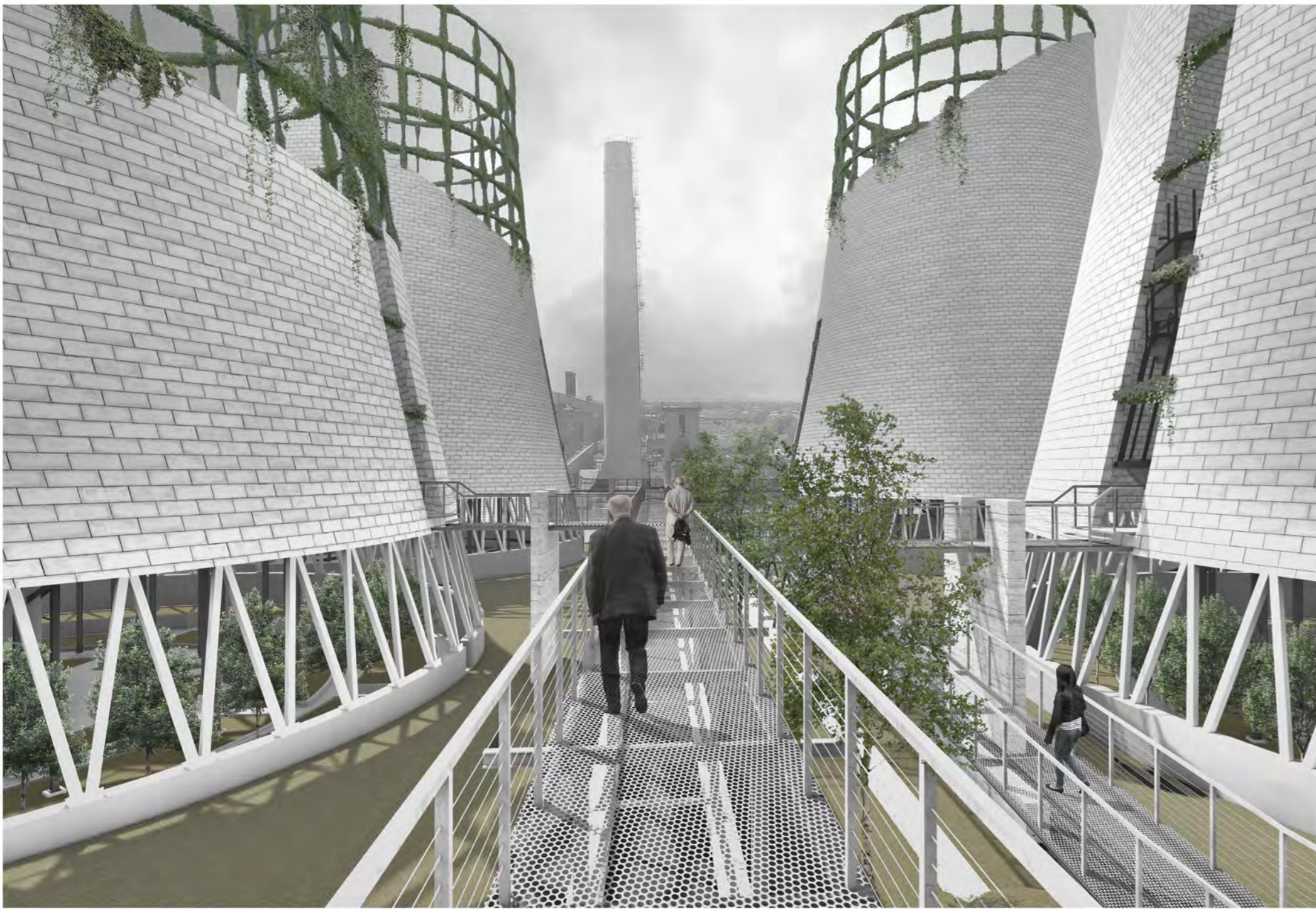


Figure 3.149: View from ground level of walkways leading to communal space within cooling towers, (Author, 2020)

Figure 3.150: View of communal space within cooling towers, (Author, 2020)

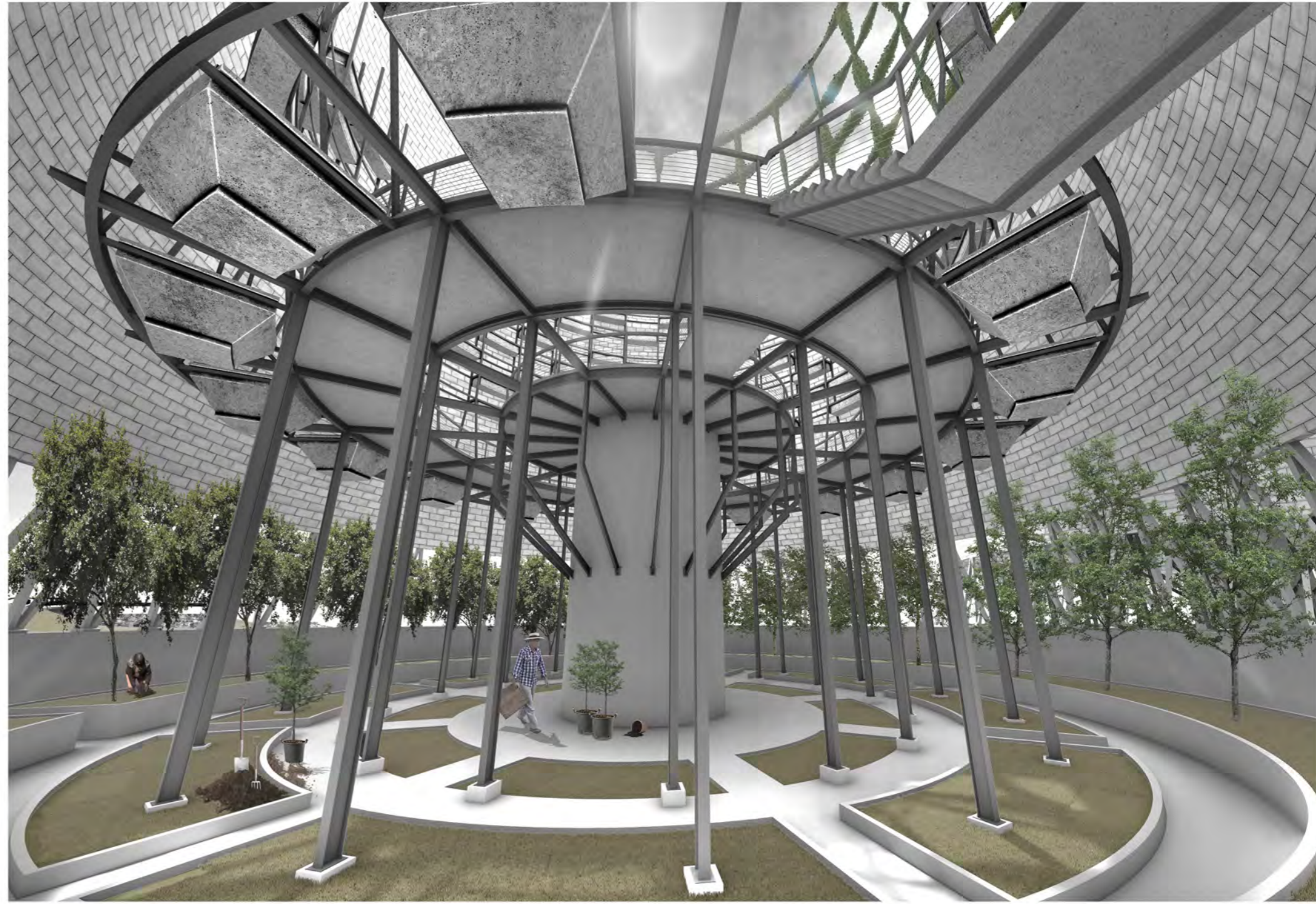
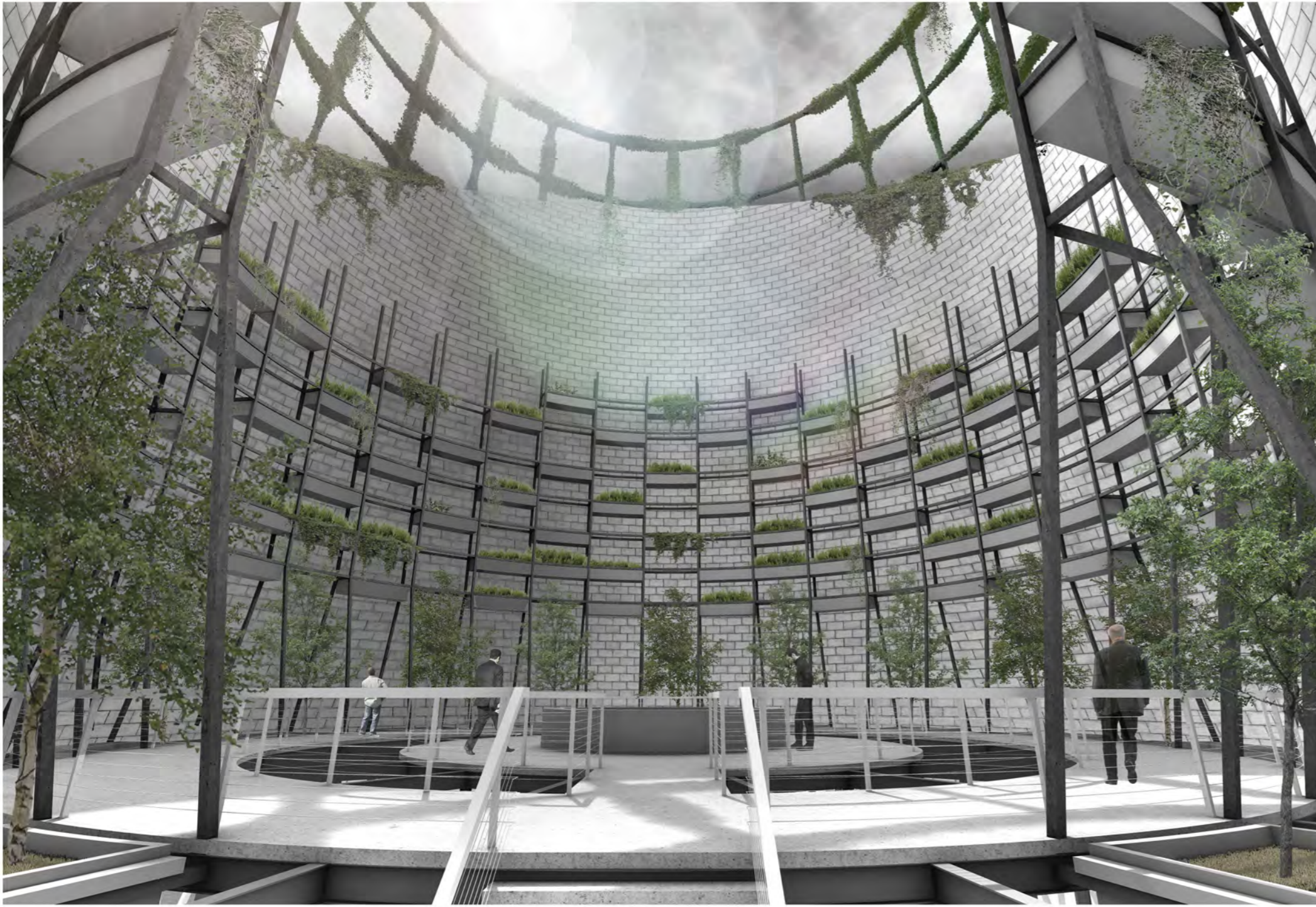


Figure 3.151: View of nursery space on ground level in cooling towers, (Author, 2020)

Reflecting on the design outcome, the way in which it was implemented and how it took on an identity of its own within the context, contributes to the success of the scheme and serves the purpose of reintroducing the topic of death. By taking on the challenge of reintroducing death into society, it became evident that the topic was a lot more complex than anticipated. Even though the design is resolved to a certain extent, it still lends itself to a lot more development and growth possibilities that tie into the notion of further development for the future and continuously embodying the site and context over time.

The development will never really be completed but will always be growing with the hope that this will serve as a steppingstone in bridging the gap between society and the mysticism of death. By drawing on the past we are able to embody the present while dreaming for the future.

If there is one thing that I will take from this year, it will be that it is okay not to be okay. We are human and we are not made to endure hardship or mourning in isolation or to be on our own, we are made to take part in rituals of life and be a part of something bigger. By constantly thinking of what might happen or what could have happened we are robbing ourselves of precious time; life is full of unexpected events and we will be caught off guard. The best thing that we can do is to be present and to make the most of every moment we get to spend with those around us.

Looking back, I had no idea that something that happened 15 years ago could to this day, still have such an impact on the way I think and approach life. Death is not something that we as individuals really think about or consider until we experience it in those closest to us. The tragedy of losing my childhood friends manifested itself in the selection of this thesis topic. However hard it was to get myself to relive this tragedy, it gave me the strength to push through this very difficult year. I was reminded that just as our lives are touched by others, we also touch the lives of others even in the smallest ways; we leave behind a legacy. Everything we do influences those around us; let's be sure that what we do and how we act might contribute positively on others – we have the power to influence in a good or bad way; let it be a good legacy.

Figure 3.152: Memorial wall with remembrance plates, (Author, 2020)





Figure 3.153: South West view of final model with external cooling tower structure, (Author, 2020)

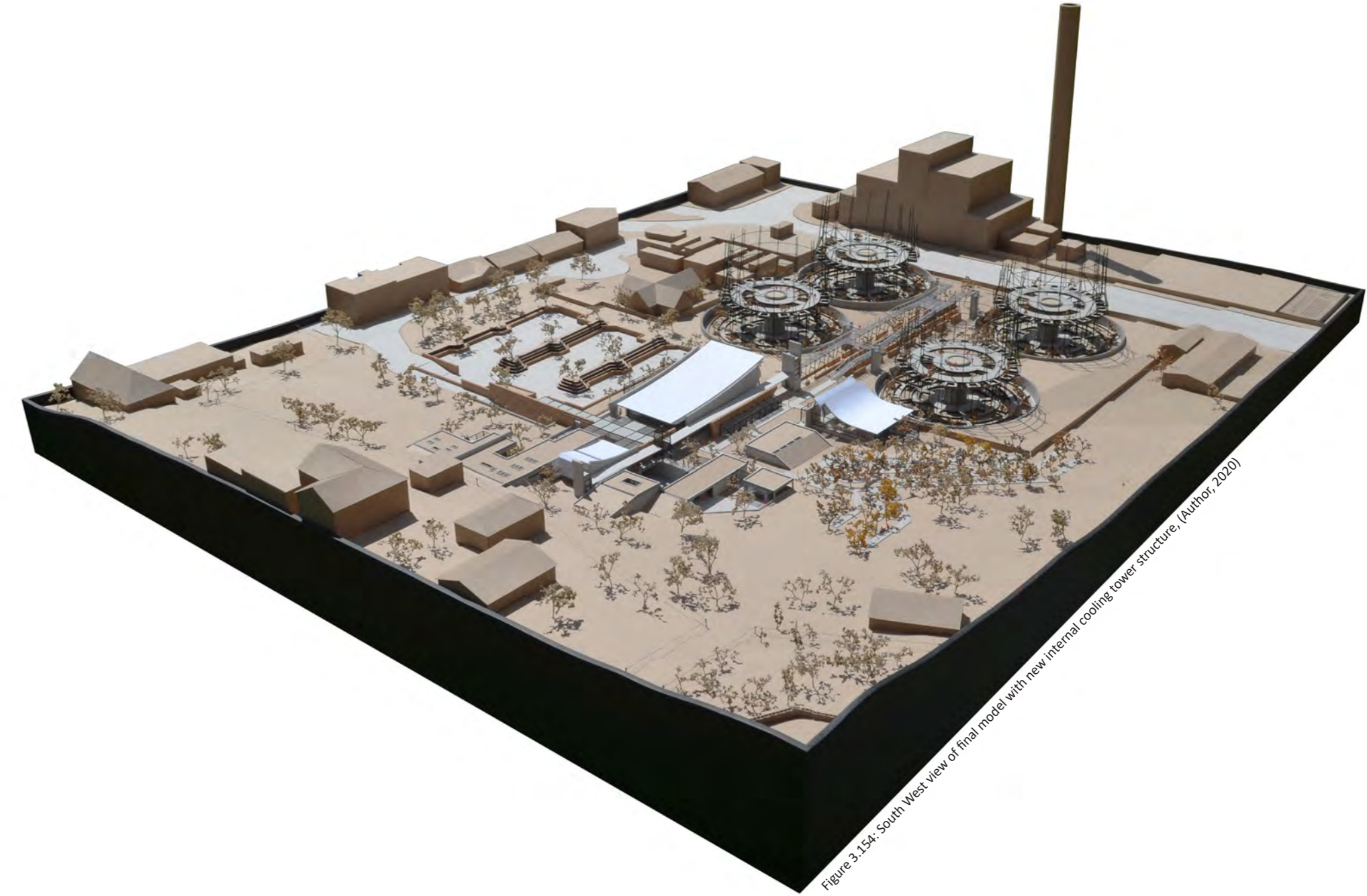
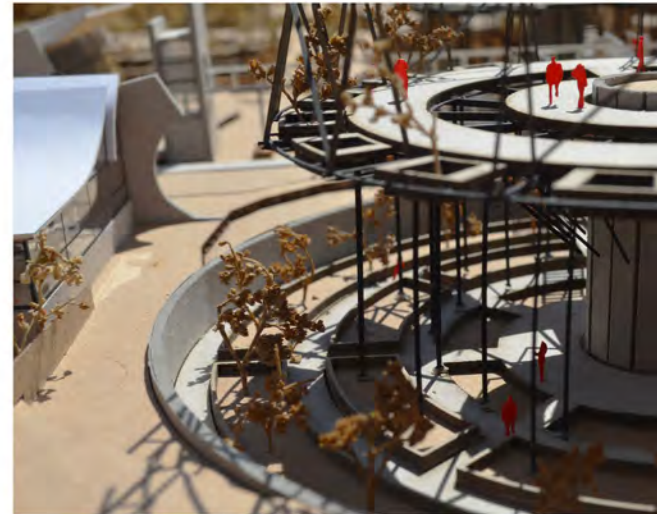
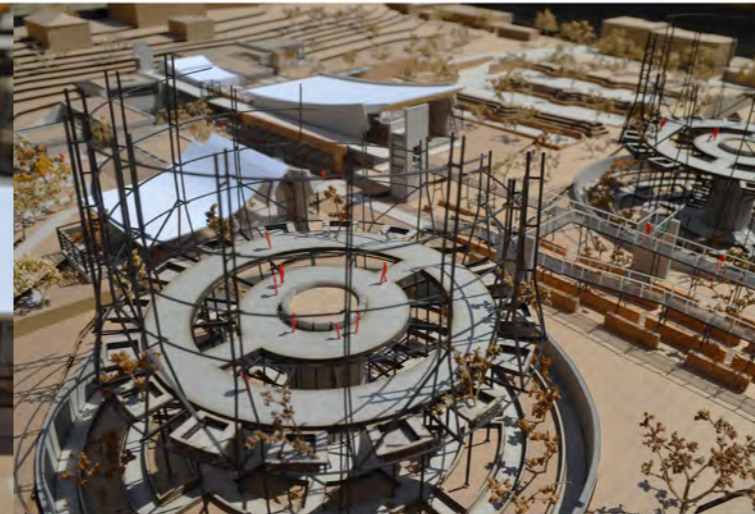
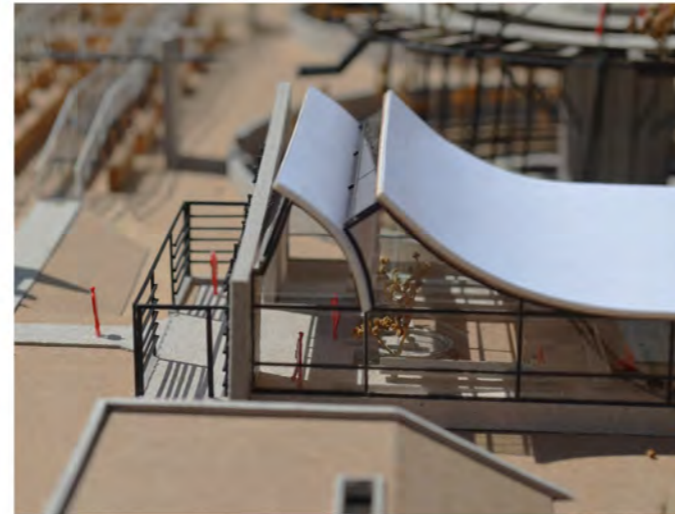
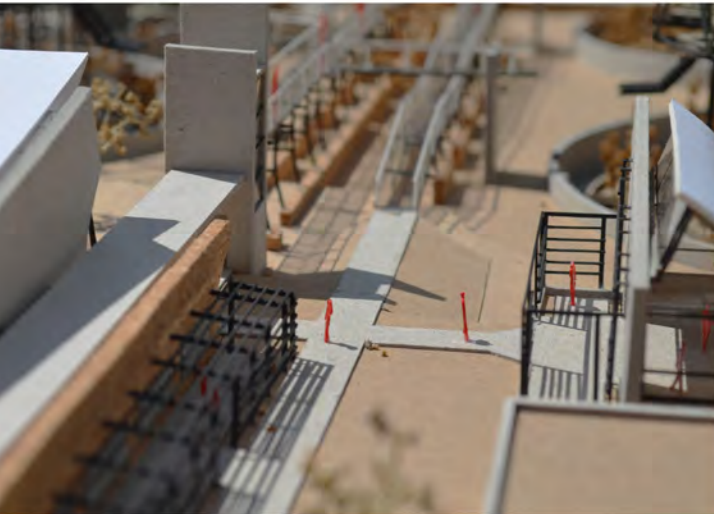


Figure 3.154: South West view of final model with new internal cooling tower structure, (Author, 2020)

Figure 3.155: Western view with external cooling tower structure

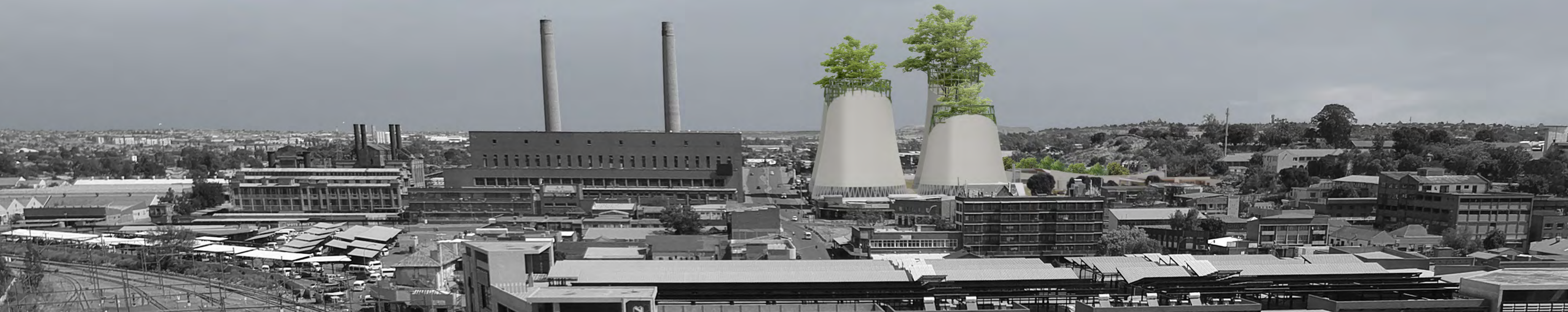


Figure 3.156: Western view with new internal cooling tower structure



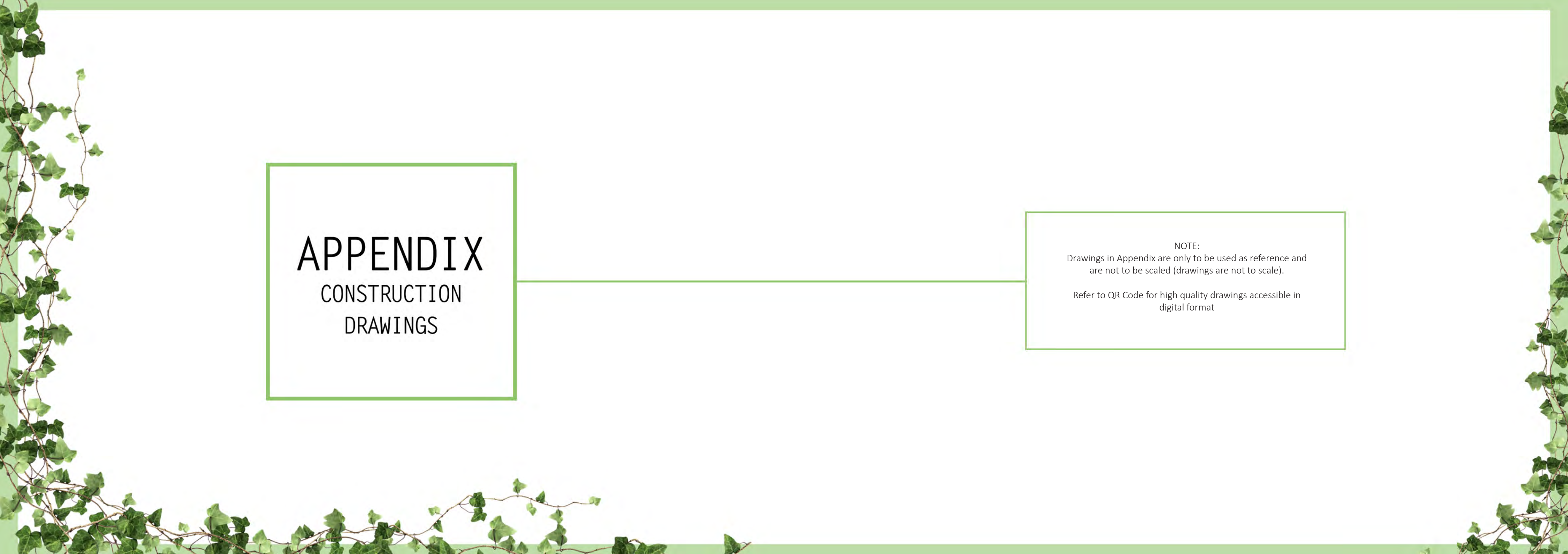
This thesis is dedicated to the memory of those we outlive, to those we will eventually leave behind.

May we strive to leave a lasting and living memory.





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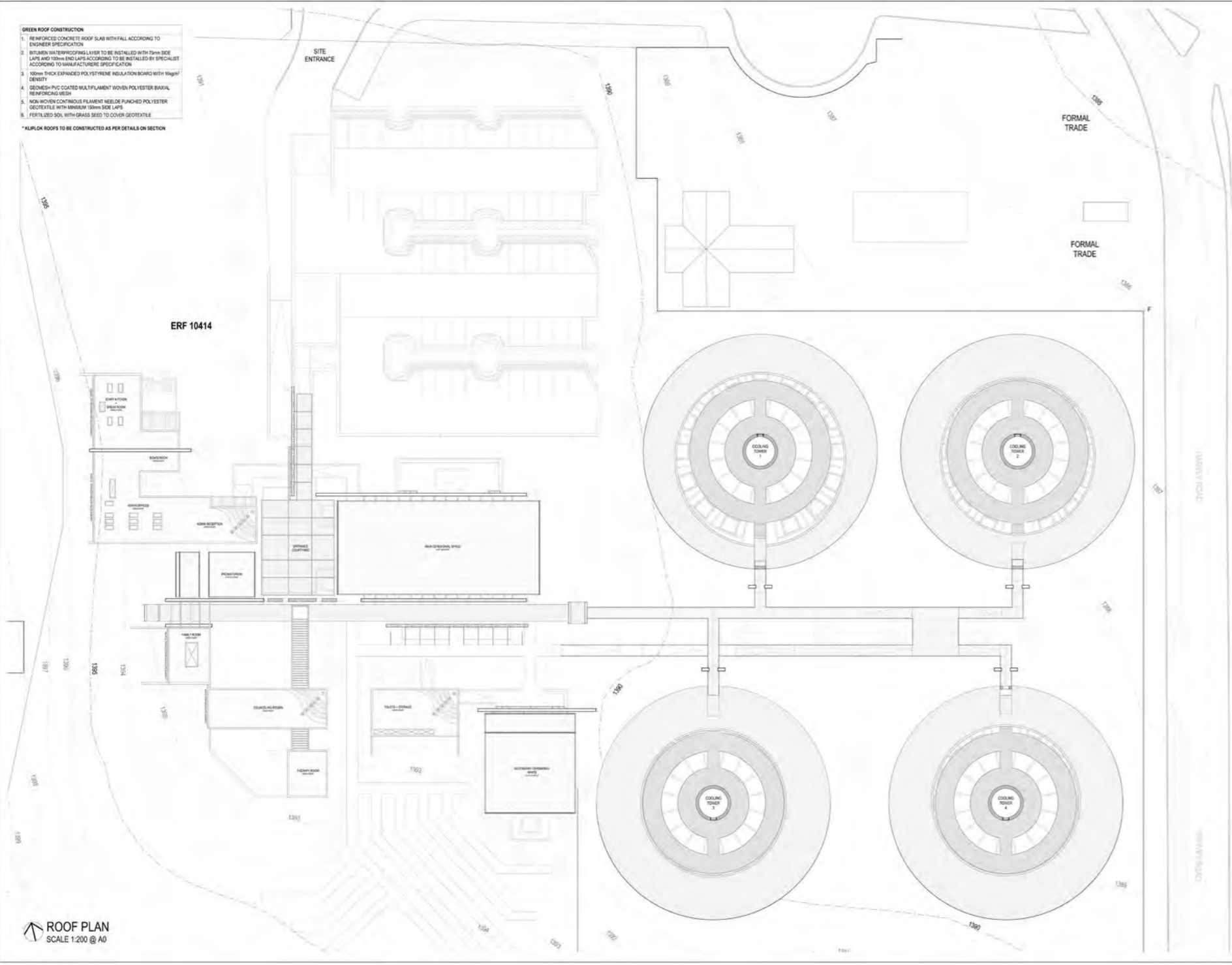


APPENDIX

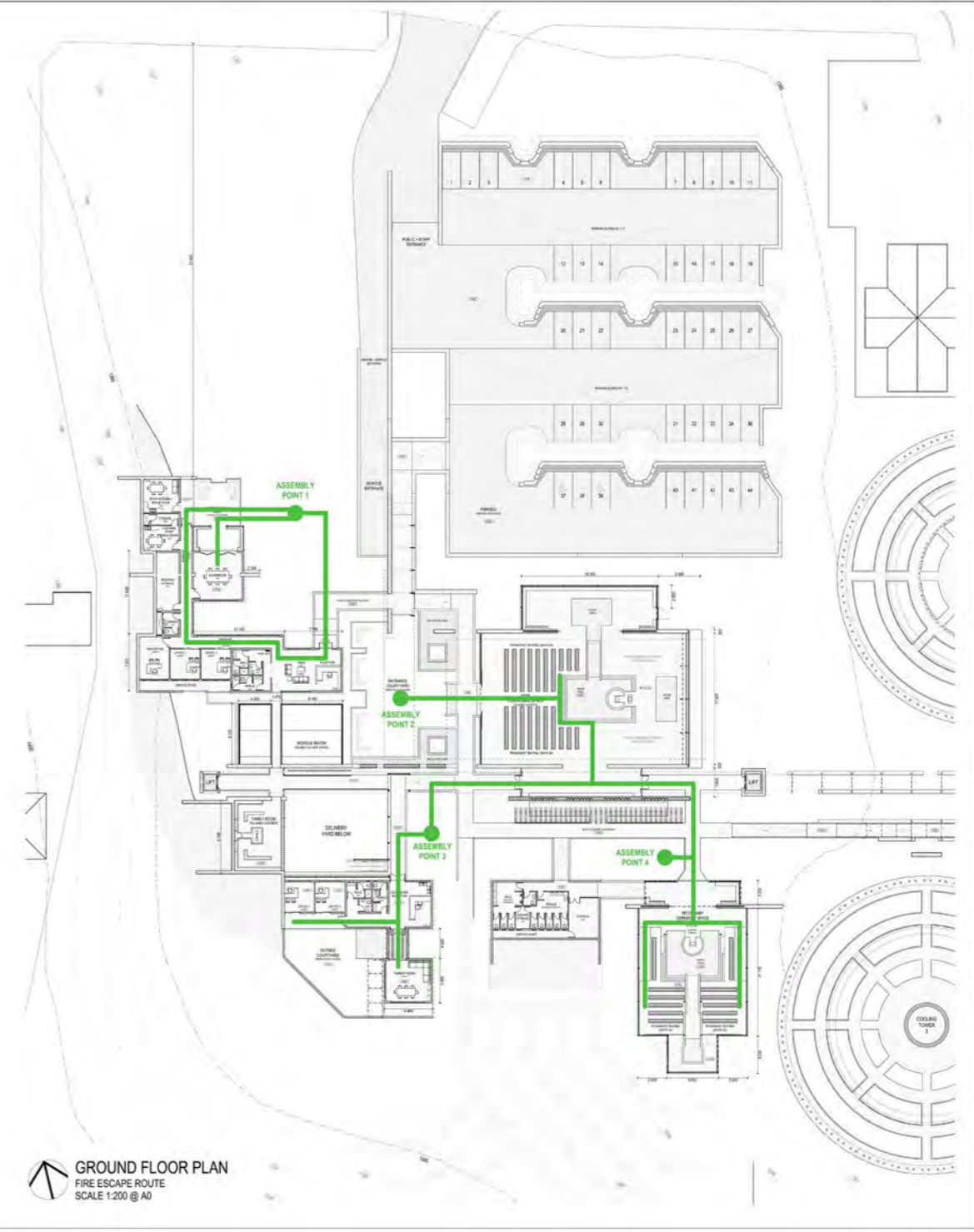
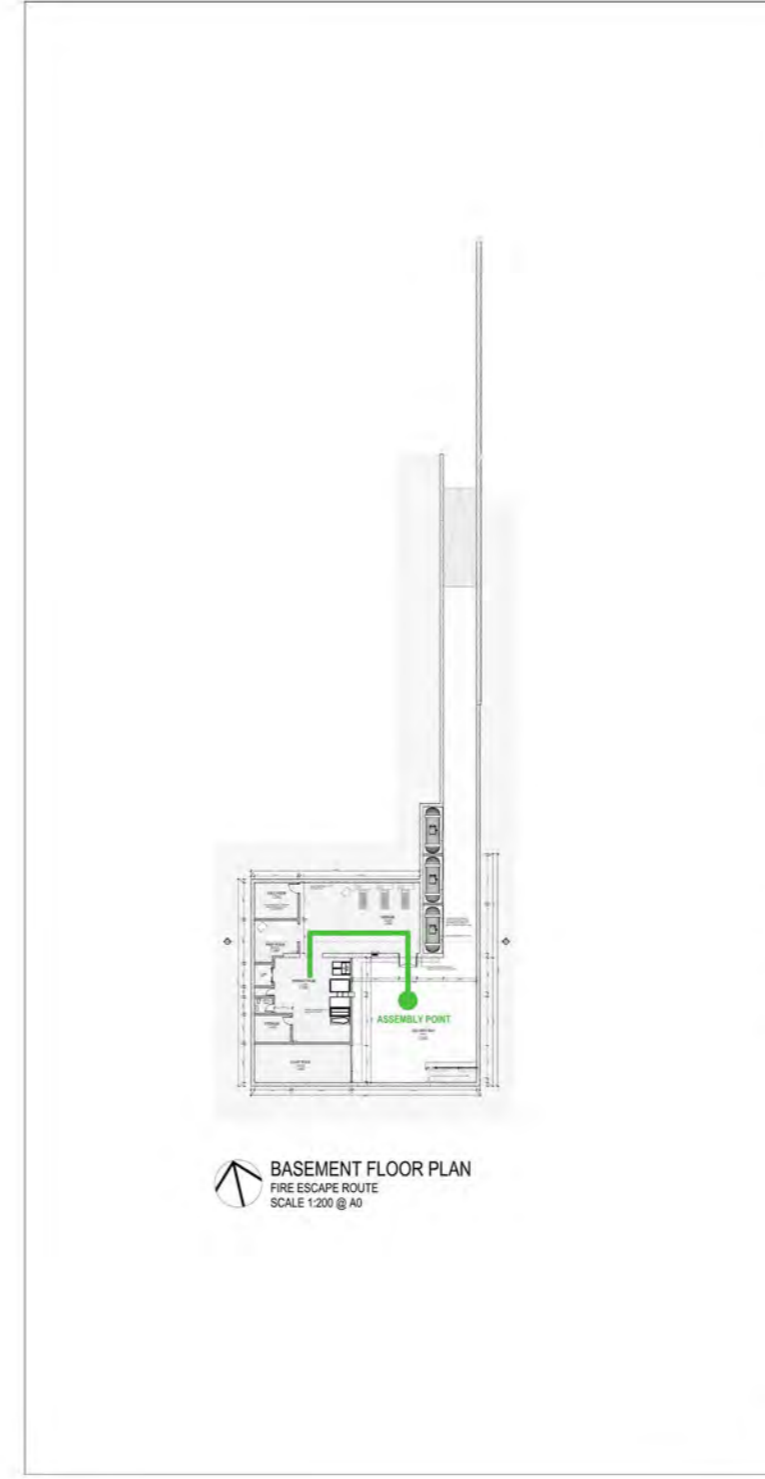
CONSTRUCTION DRAWINGS

NOTE:
Drawings in Appendix are only to be used as reference and
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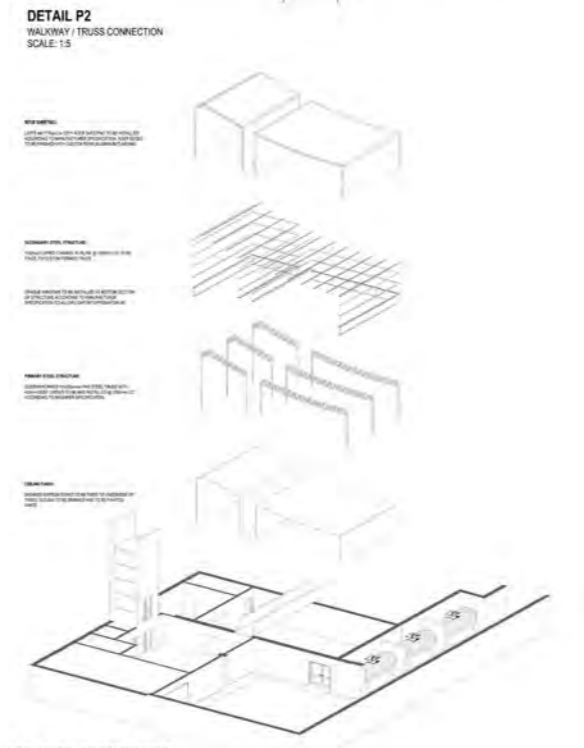
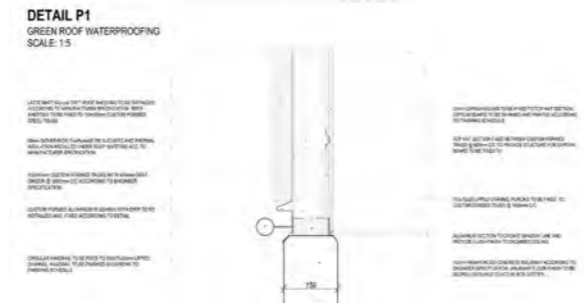
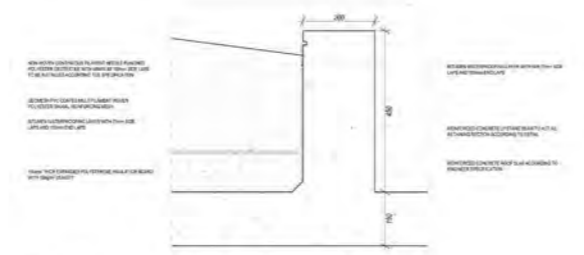
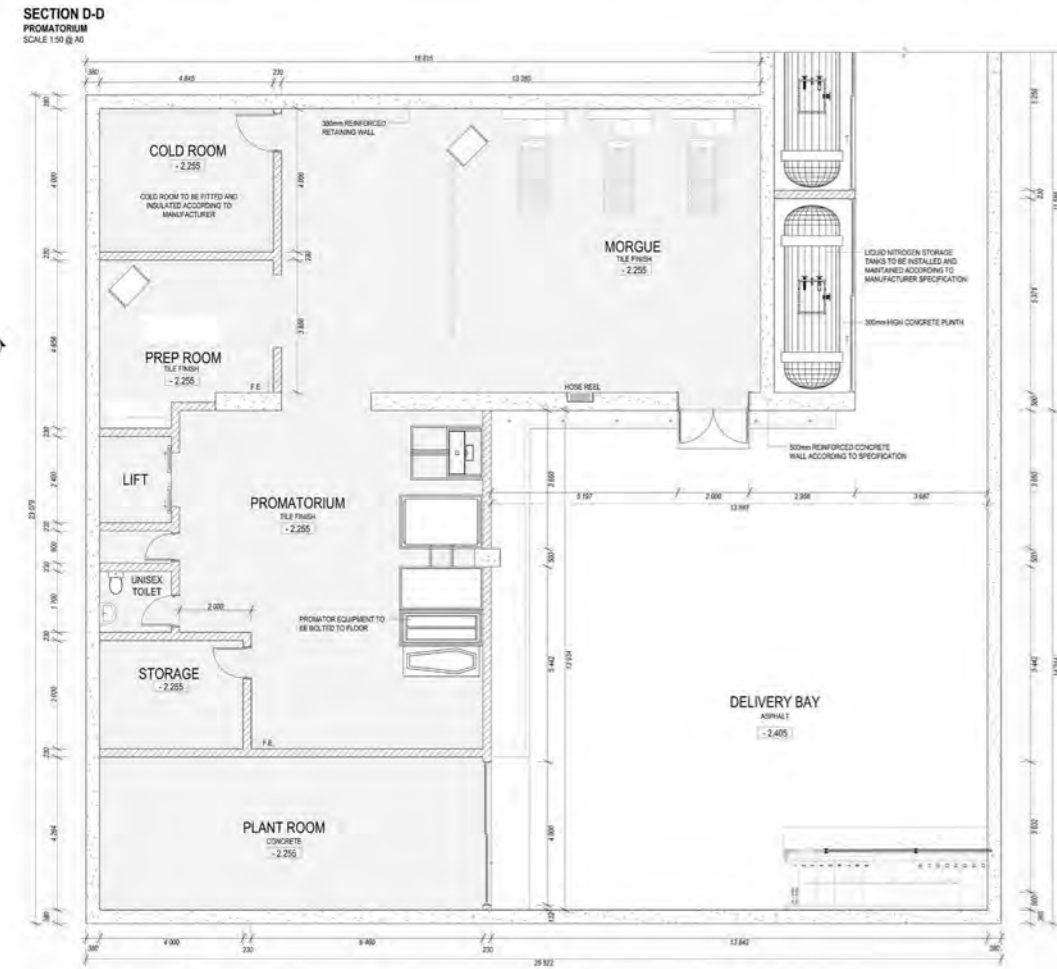
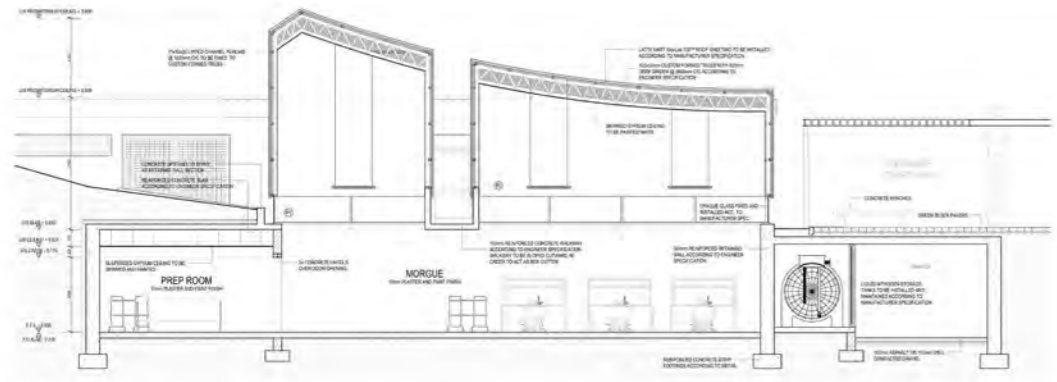
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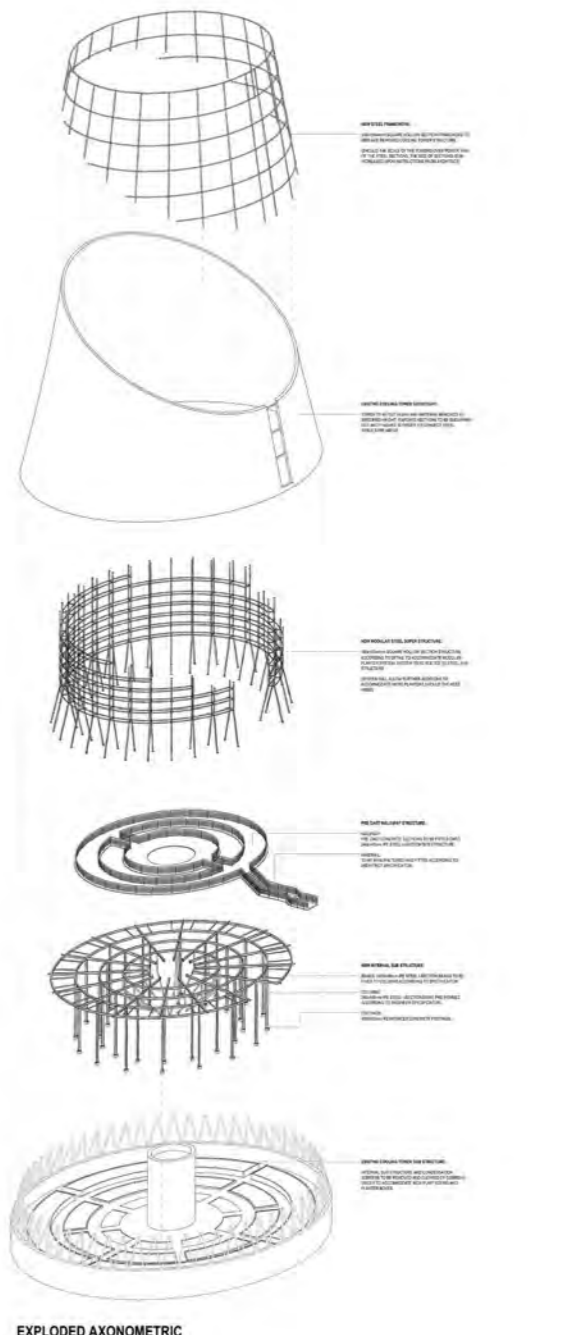
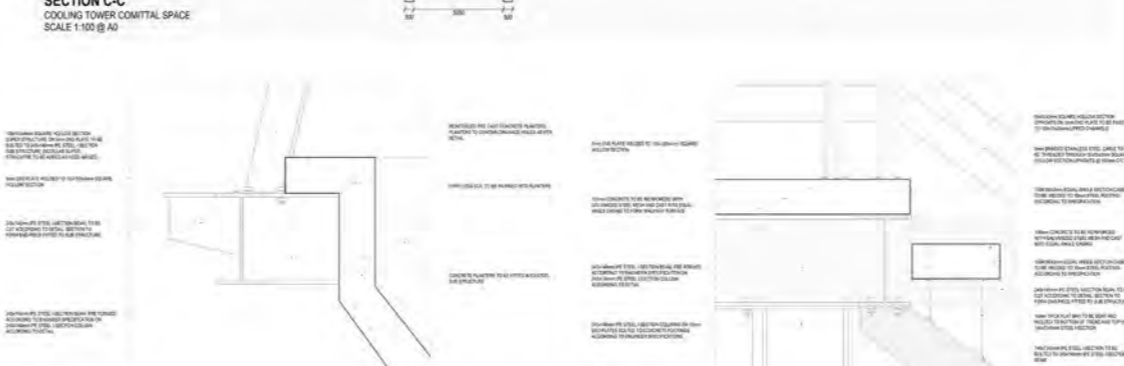
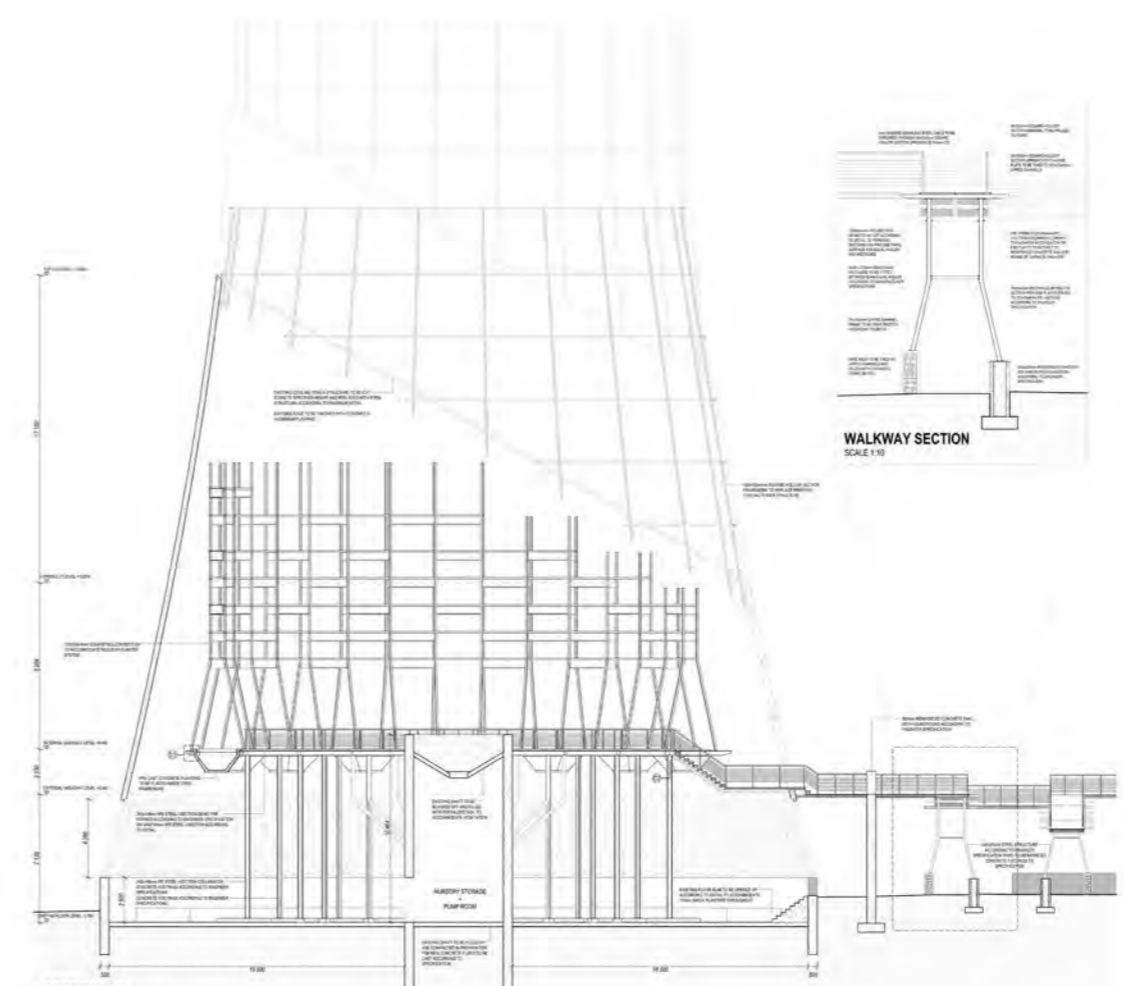
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