

Death of the Cemetery

Burial ground as park route

Erwin Derek Struwig

Death of the Cemetery
Burial ground as park route

2015

BUILDING

Address: Highlands Ridge, South Lane, Johannesburg, 26°11'23.6"S 28°03'34.1"E

Function: Natural Park, Spiritual Route, Chapel, Mortuary and Crematorium

Research field: Heritage and cultural landscape

*Dedicated to Daniel Johannes Struwig
14 November 1927 - 29 August 2009*

Special thanks to my parents Hannes and Erwine Struwig for making everything possible and always believing in me.

I would like to thank Gerrit and Elsa van der Klashorst, Atelier Kremetart, Gert van der Merwe and Pieter Swart for their support throughout the year!

Thank you Derick de Bruyn for your support and for believing in me.

Thank you Lorenzo Nasimbeni for all the late night crits and amazing advice.

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Thank you Gillian van der Klashorst for your constant love and affection and immeasurable advice during those late nights. We make an amazing team. Love you always.

By Erwin Derek Struwig

Submitted in fulfilment as part of the requirements for the degree
Masters in Architecture (Professional)

Department of Architecture
Faculty of Engineering, Built Environment and Information Technology
University of Pretoria, South Africa

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Pretoria, South Africa
2015

Edited by:
Karlén van Niekerk

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I further state that no part of my thesis has already, or is currently being submitted for any such degree, diploma or other qualification.

I further declare that the thesis is substantially my own works. Where reference is made to the works of other, the extent to which that work has been used is indicated and fully acknowledged in the text and list of references.

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Erwin Derek Struwig

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Re(presentation)

– Marzanne Roux

– Erwin Struwig

– Gillian van der Klashorst

– Elzanne Pieterse

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The Journey from the Farm

Having grown up on a sugarcane farm on the north coast of Kwa-Zulu Natal, I often found myself wandering the rolling green hills and exploring the remnants of old farming structures, building forts in old run-down sugarcane mills and cooling my feet in the Nonoti River.

The immense isolation on the farm allowed for hours of solitude and reflection. It allowed for aimless wandering and afternoon jogs with the dogs.

The landscape of the North Coast.
The route on which one travels from Struwig Estates towards the town of Stanger is one of great diversity, constant change, and immense natural beauty.

Perched on top of one of the highest koppies one would find our farm house, surrounded by dense bluegum trees (to guard against runaway farm fires), thick evergreen hedges and an abundance of indigenous plants. Our driveway, lined with beautiful lush green palm trees that rustle in the wind, forms a transition threshold between tar road and estate property.

Driving down along this palm-lined dirt road, an entire world of rolling hills is exposed on your right, and on your left, in close proximity, the neatly ordered lines of sugarcane which form the expansive green fields that cover the hills like fur. At one point this winding road starts to deny one full view of the house, but instead poses a reminder of it by exposing the tips of the bluegum trees.



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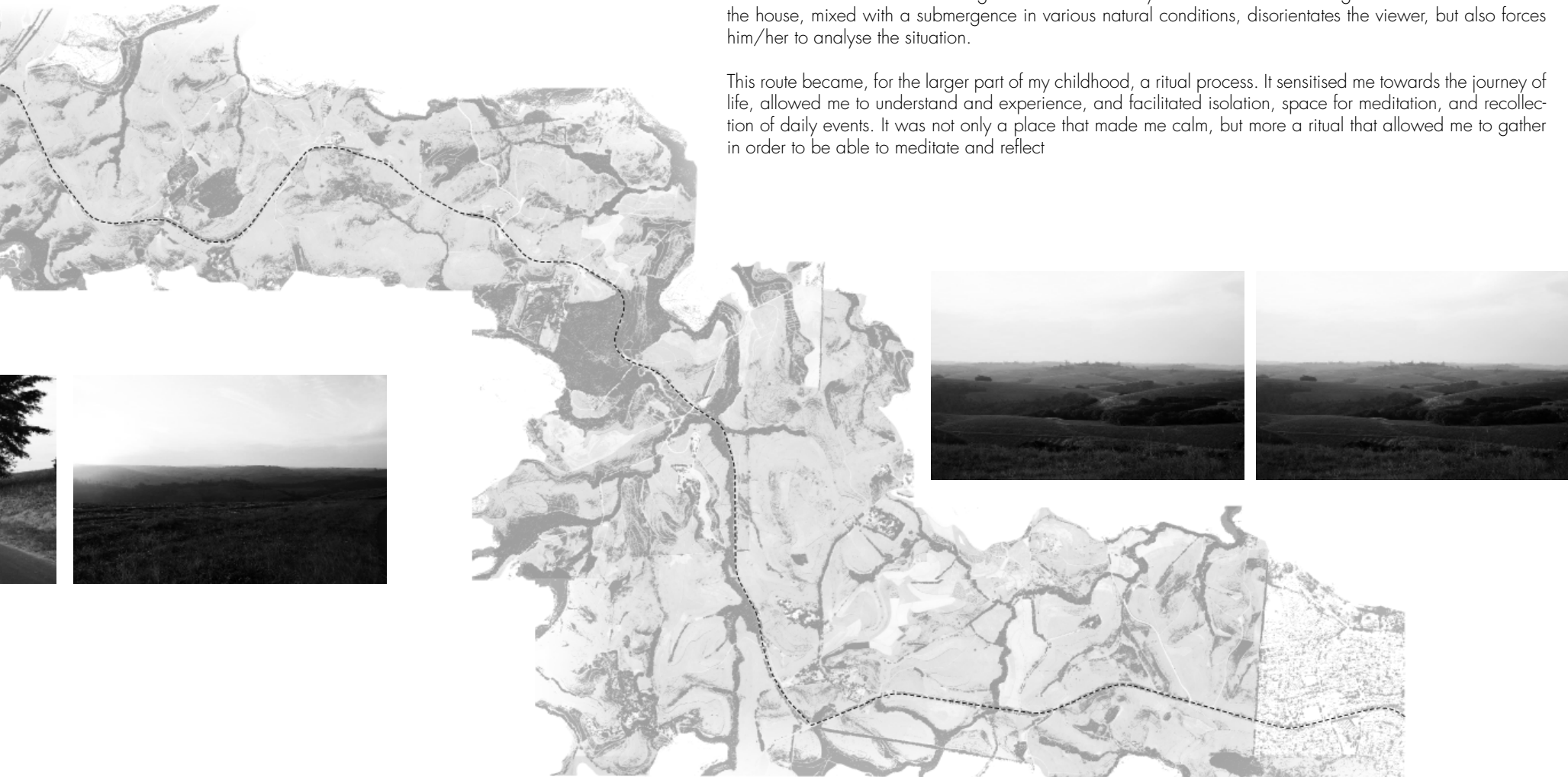


fig 1.1. Image depicting journey from town through rolling hills of sugarcane to Struwig Estates (Author, 2015)

When driving along this winding road one is constantly made aware of the environs through sudden sharp turns which force the car to slow and the driver and passengers to analyse the surroundings. There is constant disorientation when traveling this route; it is also the only route to get to town.

Suddenly and unexpectedly the house and its lush, dense vegetation is visible at a distance. Thus one is reunited with the place from whence you have come. At this specific point the viewer realises that the house and its immediate context is being viewed from a totally removed and distant angle. This constant denial of the house, mixed with a submergence in various natural conditions, disorients the viewer, but also forces him/her to analyse the situation.

This route became, for the larger part of my childhood, a ritual process. It sensitised me towards the journey of life, allowed me to understand and experience, and facilitated isolation, space for meditation, and recollection of daily events. It was not only a place that made me calm, but more a ritual that allowed me to gather in order to be able to meditate and reflect



Introduction

Exploration of Johannesburg

Observation

The author's exploration of Johannesburg started out as curiosity. Opportunity to observe an unknown city. A city known for its constant change. A city he became calm in.

By observing and analysing Johannesburg over an extended period, certain conditions have become visible. Through the characterisation of specific pockets within the city, a better understanding of the nature of the city was developed. This characterisation of fragmented pockets within the city gave rise to a completely unique model, one that can be compared to an archipelago of some sorts. Johannesburg is a fragmented city established through fantasy and opportunity. The idea of "uitvalgrond" was explored as a way of understanding various conditions – conditions that allow architecture to play a crucial role to add meaning and strength to them. The ridge along which Johannesburg was formed played an extremely important role in the development of the city, not only from a historical viewpoint but also a current one. One characteristic of great importance which was identified was that of isolation, a characteristic which can be linked to the Witwatersrand, especially Yeoville Ridge.

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The ruination of derelict apartments and ritualistic plinths fills the voids within the dense urban context. Constant decay forms an integral part in understanding the absence of social integration. (Buildings degrade back into the landscape from whence they once came).

The natural terraces formed by the Yeoville and Highlands koppies form an integral punctum point for the gateway created between Ponte City and Gordon Terrace. This area, like Ponte City, is steeped in mysterious tales of ruination and decay, prosperity and development (Judin 1999).

The site under investigation is located on the fringes of the Johannesburg Central Business District (CBD), opposite Ponte City along Joe Slovo Drive. Along the Highlands Ridge, which forms the highest koppie in Johannesburg, lies the suburb of Yeoville, the gateway to the inner city, once known as the bohemian centre of South Africa. Initially established as a sanctuary for the rich to escape the smoke-filled mining town of Doornfontein, the Highlands Ridge opposite Ponte City is an area of rich daily ritual and event, from which life sprawls into neighbouring Hillbrow and Berea (Jansen 2012).

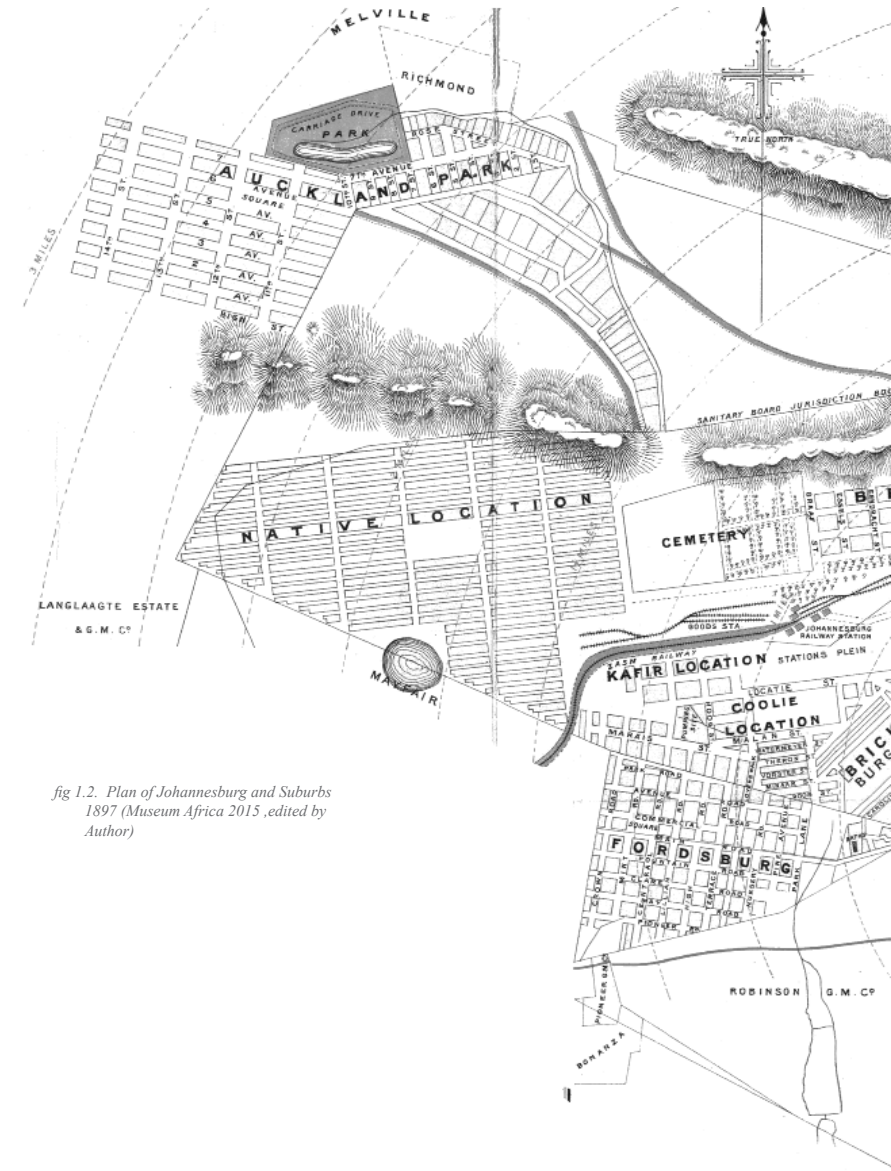
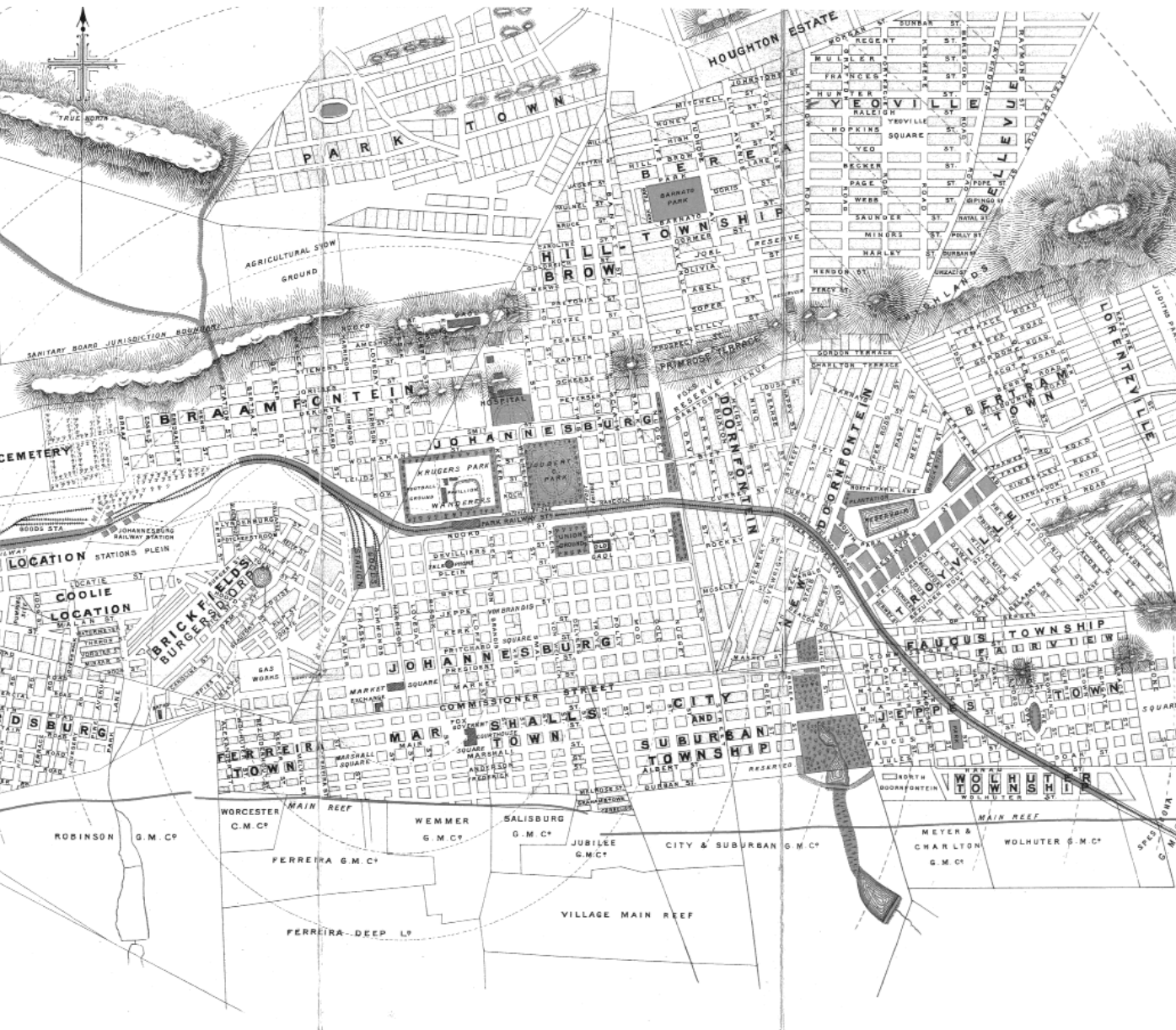


fig 1.2. Plan of Johannesburg and Suburbs 1897 (Museum Africa 2015, edited by Author)



The site is enclosed by various barriers, natural and man-made – firstly the ridge to the south of the site, secondly one of the main arterials into Johannesburg (Joe Slovo Drive), and thirdly the large water reservoir and water towers that populate the top of the ridge (Smithers 2013).

These three elements play a crucial role in establishing the isolated nature of the site.

The site also finds itself host to followers of various spiritual beliefs who make use of the top terrace of the ridge to perform spiritual rituals. This uitvalgrond is also a popular destination for people seeking panoramic views of Johannesburg or even solitude (Smithers 2013).

Appropriation by humans has allowed this landscape to be experienced on a more intimate level, a level of being that forms part of everyday Johannesburg.

Problematic

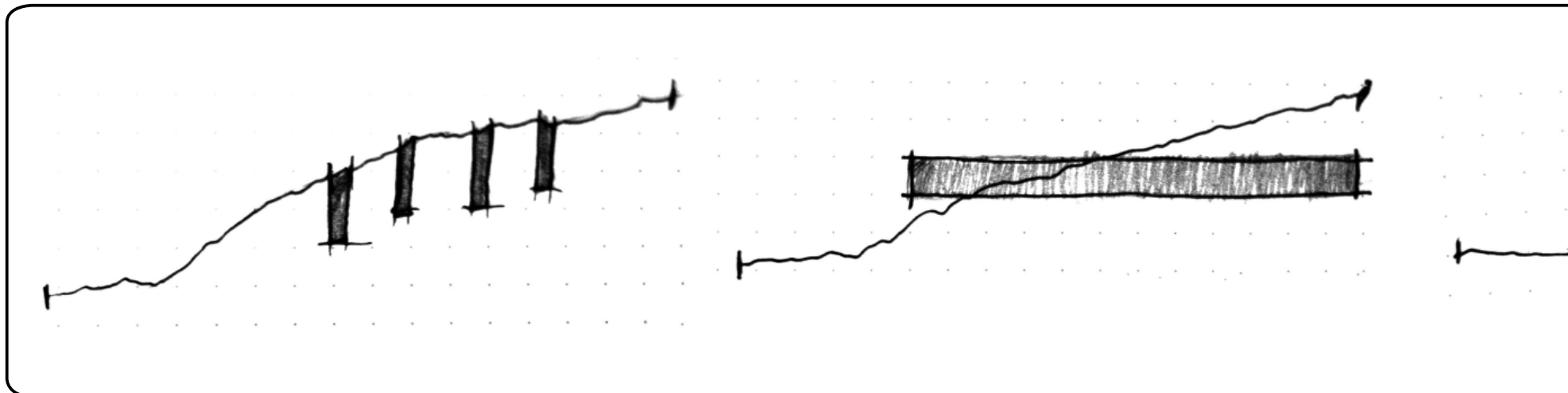
The post-apartheid city has a fragmented history that disconnects the dweller and observer from its identity. It is a city where pilgrimage to isolated destinations forms part of the intrinsic cycle of the city. Yeoville can be described as such an isolated site. Today Yeoville is an eyesore that suffers from urban decay, and a lack of infrastructure and long-term investment. The natural ridge and rituals on site beg for a mediation between man-made built environment and natural environment. Through this understanding of Yeoville Ridge and the events taking place in the area, death was explored.

Death and its relation to daily life, how dwellers are affected by it, and how architecture can form a mediating platform for the events and rituals connected with it, were investigated. These issues are directly relevant on a global scale, as large metropolitan cities are facing an increasing mortality rate, which results in a lack of space and inadequate methods of burial (Leuta & Green 2011). The city of Johannesburg has since its beginning constructed 35 cemeteries and 3 crematoria, of which 27 cemeteries are full and cannot accommodate 3rd burials, and the 3 crematoria cannot accommodate the drastically increasing interest in cremation (Johannesburg City Parks 2008).

The issue is further heightened by the fact that Johannesburg's mortality rate has surpassed its birth rate (Moodley 2007). The site in question allows architecture to address this issue in the form of unconventional burial methods, whilst retaining the condition of the site and addressing the conditions of event and ritual. By designing architecture of such a programmatic nature on an area of land that is viewed as a gateway pillar to the city, one is given the opportunity to sensitively address this issue as part of everyday life.

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fig 1.3. Concept sketches showing development of architectural intention in relation of the ridge
(by Author, 2015)

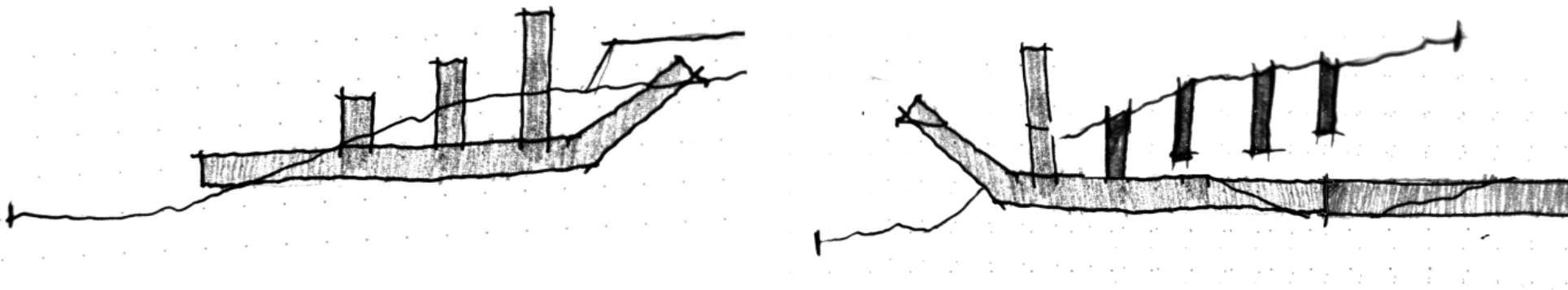


Intention

The architectural intention is to create a public space that exposes the rituals of the everyday through subtle insertions into the Koppie, to challenge the presence of Ponte City as a monument and reminder of past power, and to explore the isolated nature of the Highlands/Yeoville Koppie and the bodies which isolate the site (Judin 1999).

The above will be achieved through exploring event-driven architecture, and understanding ritual and activity currently taking place in Yeoville. The incision into the landscape will act as a mediator between ritualistic events within the landscape and the harsh urban conditions, posing as a subterranean monument delving into the geomorphology and history of an invisible city (Abraham 1982).

By experiencing the city in an unbiased manner, one is able to view situations differently and with a fresh mind. Exploring and understanding event and ritual within the city allow for a more connected feeling between the dweller and the identified pockets. Current conditions within the isolated pockets will be enhanced. By enriching existing conditions, a stronger built fabric, networks and connections can be established.



Hypothesis

By exploring the abovementioned rituals and events related to everyday Johannesburg, by understanding the conditions identified within the isolated pocket of Yeoville Koppie, and by looking at issues that not only the city of Johannesburg, but also similar cities worldwide, face, one is able to investigate more specific programmatic approaches relevant to the concept of uitvalgrond and its identified characteristics.

Through the exploration of an inner city burial ground, the typology of a cemetery and crematorium will be developed into a contextually relevant program that addresses previously mentioned issues relating to burial space and ritualistic events connected to death (Johannesburg City Parks 2008).

The intention is to challenge the norms related to cemeteries, burial typologies and commemorative architecture in the South African context.

Mediation

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By establishing a connection between the dweller and the city one is able to strengthen an already existing relationship. Through making this metaphysical connection between dweller and city, an opportunity is created to further understand the relationship between the death of the city dweller, and how the dweller experiences architecture that acts as a mediator between life, death, dweller and city.

The isolated nature of the Yeoville Koppie should be fully understood from a historical and contemporary viewpoint; therefore the isolated and spiritual nature of the Koppie should be preserved and respected.

The architecture will be used as a mediator between life and death in the city, establishing a relationship between ritual events relating to death and ritual events relating to the everyday of Johannesburg. It will also mediate between the built (man-made fabric) of the city alongside the un-built (natural fauna) of the world's largest man-made forest.

Memory

Historic and present memory will be connected. This connection should not necessarily be of a physical nature but could be metaphysical, as the isolated and spiritual nature of Yeoville Koppie should be respected and kept intact.

Ritual

Ritual within the landscape would be explored through mapping and sketches. Ritual in the everyday life of a dweller in Johannesburg should be understood. Reasons for these rituals should also be understood.

Observation

The Yeoville Koppie lies on the threshold upon entering Johannesburg from Joe Slovo Drive, calling to mind the gateway when entering Pretoria between UNISA and the Freedom Park Monument. A parallel could be drawn here so as to discover how this pattern prevails within the South African context, and how it has relevance in Johannesburg.

The aim of this project is not to act as a template for burial design, but rather as a vessel for understanding the related complexities and struggles, in order to challenge an age-old tradition that can no longer be accommodated due to increased rates of mortality and lack of space. Along with this it should also be made clear how ritual and memory play a large role in adding relevance to the architectural intent.

Project Vision

The vision of the project is to act as a medium where the architecture relating to ritual can be strengthened and deeper relevance gained. This dissertation will also challenge the boundary between the natural landscape and the built landscape – how Ponte City is seen as a monument within Johannesburg and how the relationship between it and the proposed thesis project can be used as a tool to create contextually relevant and spatial architecture. How architecture and its remains suggest stories of human fate, both real and imaginary, will also be investigated.

Theoretical Approach

The literature study will focus on seven aspects which will inform the outcome of the dissertation:

- o The theory of Cemetery as garden, cemetery as urban space
- o Architecture at the funeral: Between Nature and Artefact
- o Architecture, nature and the constructed site
- o Materiality and its relation to weathering in time.
- o Memory and its relation to burial space (death) and architecture, and how it can act as a tool for creating relevant architecture within the context of Yeoville Ridge and Johannesburg
- o Experiential and Referential time
- o Buildings are geological agents

Research Methodology

The suburb of Yeoville is shrouded in personal tales of nostalgia. The isolated site opposite Ponte City along the ridge is rich in history and forgotten memories. The interest here lies with the geomorphology of the site in close relation to its historical context and evolution, and the development of the dense urban fabric. The research methodology will be approached in a number of ways. These methods of research will relate directly to the previously mentioned proposal.

Sketches from memory

By sketching various images of the site from memory one might be able to observe and relate to the intrinsic nature of the site. This method of exploration and observation allows one to delve into memory as well as the ritual of accessing such an isolated and dangerous site.

Photographic site study

A photographic film study will be undertaken in order to document rituals on site as well as changing weather patterns that result from the geographic location of the ridge. Also, a study will be undertaken in order to depict the relationship between man-made and natural within the city of Johannesburg, and more so within the Yeoville and Highlands Koppie area.

Mapping

Physical site mapping will be undertaken in order to develop a more intrinsic understanding of the site and its immediate surrounds. Psychogeographic mapping techniques will be used to create various physical and metaphysical maps. This should inform and help develop the programmatic as well as architectural response.

Precedent Studies

Precedent studies of intended and completed projects of relevance will be researched in order to inform and understand the architectural concept.

- | | | | |
|----|-----------------------|------------------|--------------------|
| 1. | Igualada Cemetery | - Enric Miralles | - Cemetery & Route |
| 2. | Leça Swimming Pools | - Álvaro Siza | - Route |
| 3. | Double Negative | - Michael Heizer | - Geomorphology |
| 4. | Water Temple | - Tadao Ando | - Geometry |
| 5. | Woodlands Crematorium | - Johan Celsin | - Crematorium |

Urban Vision

Understanding Johannesburg: an Origin

Reading the city: the logic of fragments

The Uitvalgrond as fragment

Fantasy and fragment

Identified 'Uitvalgrond' sites

Nostalgia translated

Projects

PART I: Johannesburg Nostalgia - Urban Vision

An investigation undertaken as a group study. The collaboration between Elzanne Pieterse, Marzanne Roux, Erwin Struwig, Pieter Swart and Gillian van der Klashorst.

The urban investigation undertaken by the group started with a 'conversation' between us, the group, and the material that constitutes the city of Johannesburg in the absence of lived experience. The objective of this conversation was to engage and encounter the city as representation from a position of uncompromised and unblemished naivety. It is as much a personal account of the city as it is reading and research. This approach takes the built structure as the point from which to investigate how a city, and more specifically the city of Johannesburg, unconsciously projects and constructs its own image. It is in this unconditioned capacity from which the city is first understood as fragment.

Understanding Johannesburg: an Origin

Firstly, Johannesburg was investigated as 'fragment'. A condition of fragmentation permeates the city on all scales, the geomorphological, the cartographic, the political, typological and, perhaps most significantly, on the scale of individual fantasy.

A mapping exercise was undertaken in order to understand Johannesburg's conception and development and, more specifically, its geomorphology, cartographic development and political history – the city as a whole.

To understand the grain, one must understand the whole.

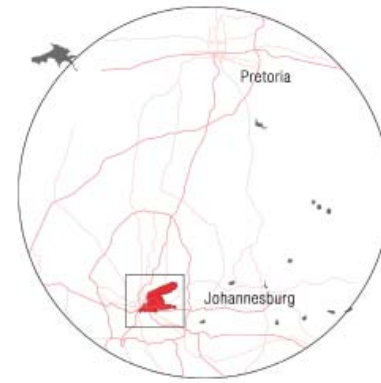


fig 3.1. Initial study undertaken and the illustration of fragmented Johannesburg'



JOHANNESBURG: 'ISLANDIFICATION'

The Origins of the City of Gold

3 Billion years ago the Witwatersrand basin was covered by an inland sea/lake. Heavy materials and minerals, such as gold, were deposited through streams into the bottom of the lake. Over time layers of sand and sediment accumulated, eventually buried by lava, creating sedimentary rock, wherein one finds the gold of Witwatersrand.

2 Billion years ago a meteorite, the size of table mountain, collided with the earth leaving a crater of 250km wide. The force caused 'Upliftment'- a geological phenomenon occurring in the centre of impact craters, wherein rock bounces back and forms a dome, here known as the vredefort dome. The tremendous force of the collision caused the rock and earth to liquidise, disrupting the earth's crust and tilting the 'bowl' of the Witwatersrand basi, burying the gold kilometers beneath the earths surface. Without this impact the gold on the surface would have washed away.

The Johannesburg main reef and southern reef is visible on the southern slopes of Witwatersrand, running east to west at a constant angle of 25-30 degrees. Johannesburg's mining industry began in 1886 with 0.16 % of the global industry to largest single source of gold supply in the world – over a ¼ by 1898.

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fig 3.2. 1964 Map of geological conditions

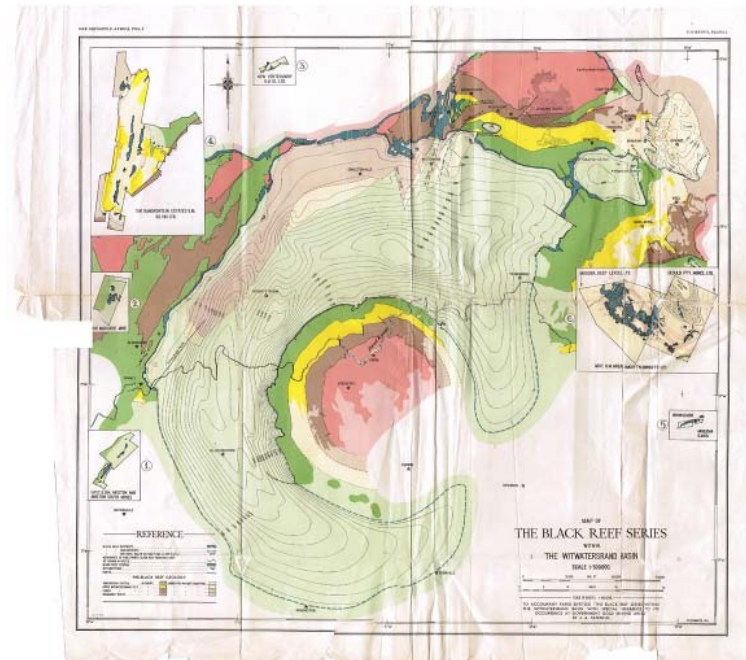
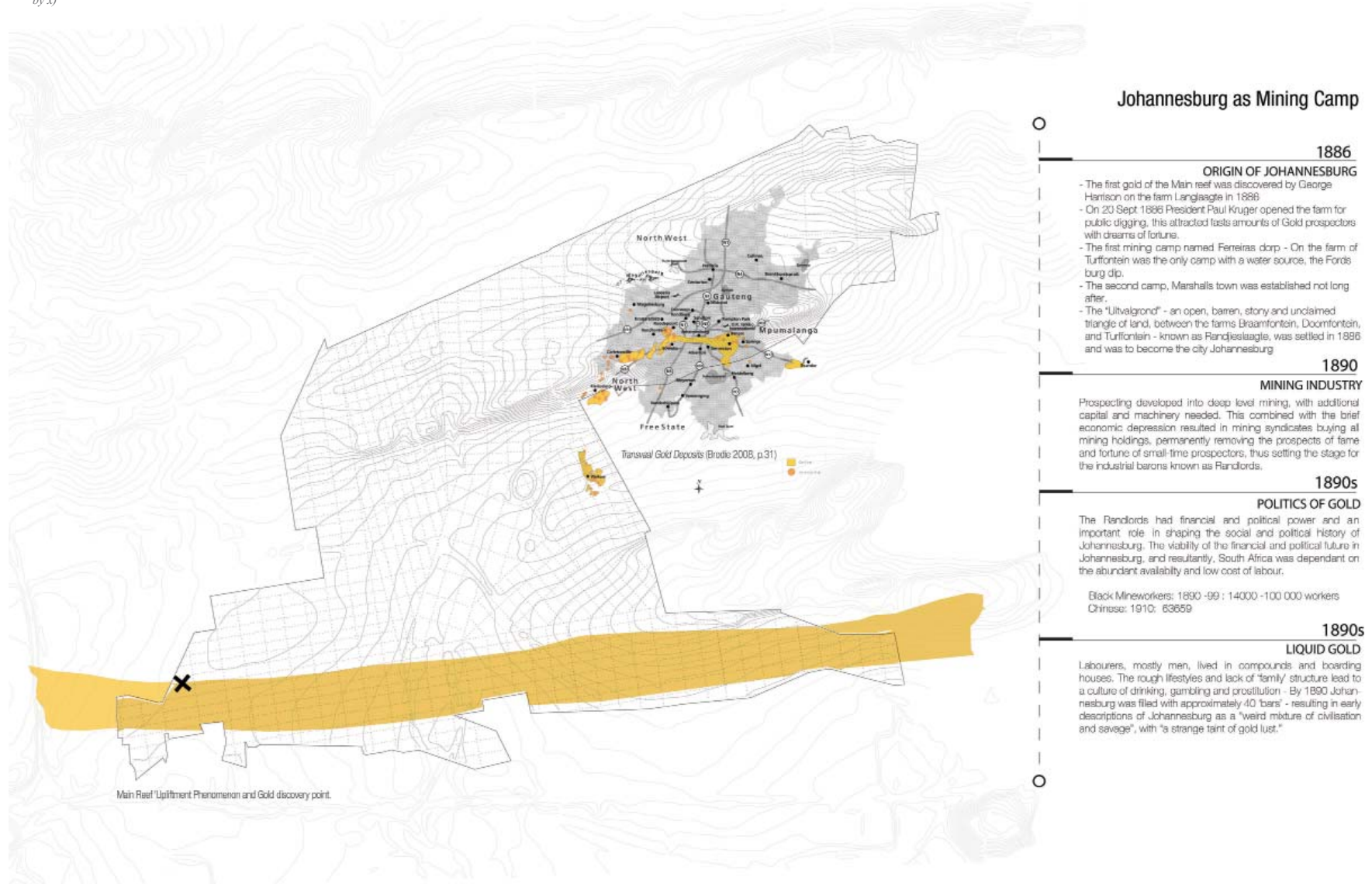


fig 3.3. A Study of Johannesburg's mining development, also illustrating the first area where gold was found (marked by x)



"Uitvalgrond"



fig 3.4. The boundaries of the historic farms, and the location of the 'Uitvalgrond'
(Meiring et al., 1986:11)



fig 3.5. 'Uitvalgrond' - The Randjeslaagte Triangle within the present boundaries of the Johannesburg municipal area.

"Uitvalgrond"



fig 3.6. The historic development of Randjeslaagte, Ferreiras Dorp, Marshalls Town and Jeppes- town what was to become the current Johannesburg CBD

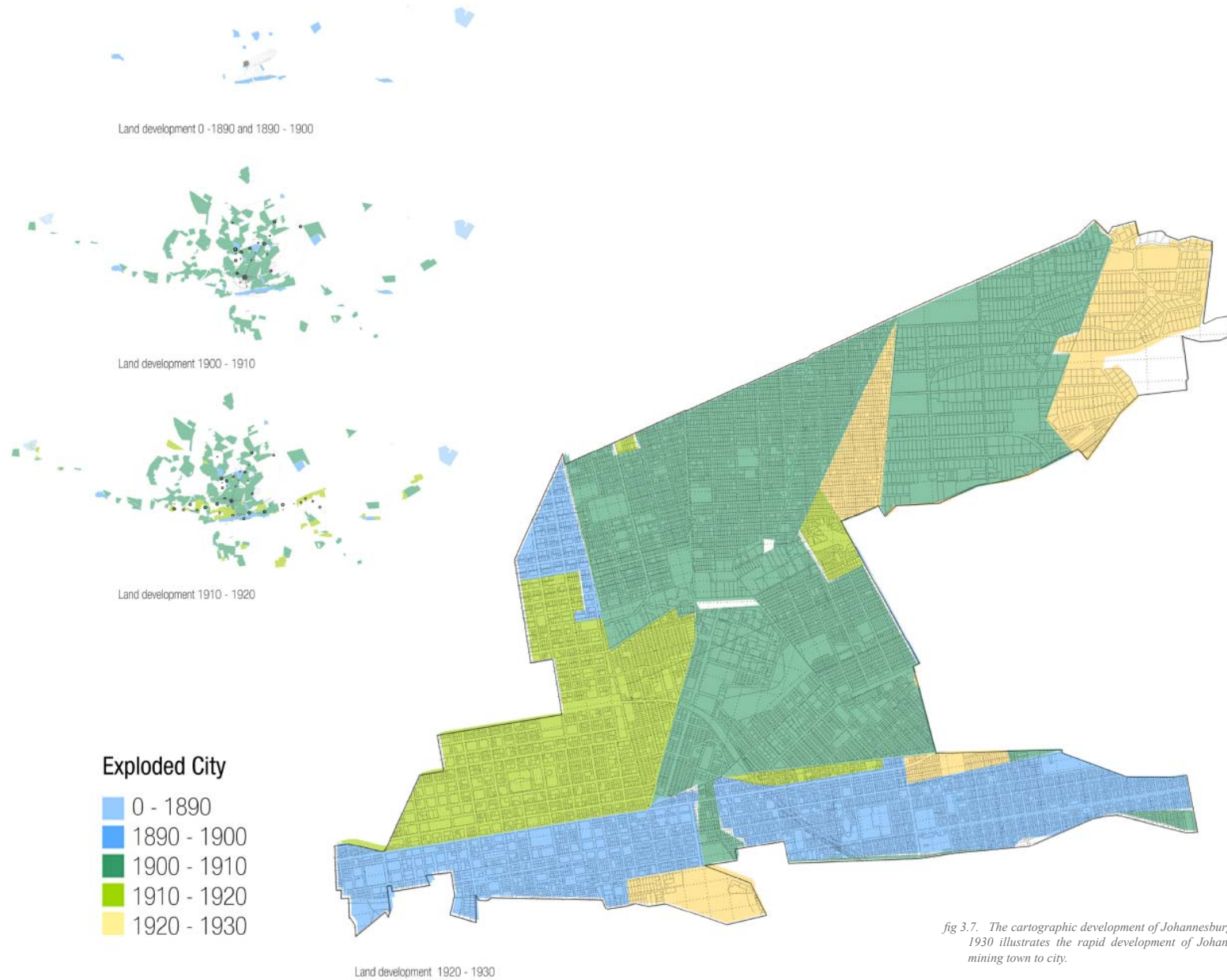
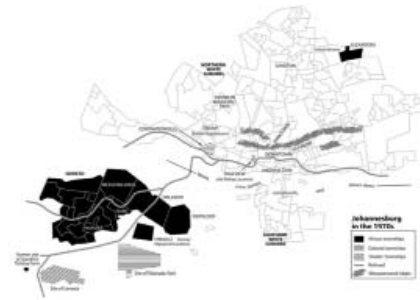


fig 3.7. The cartographic development of Johannesburg between 1890-1930 illustrates the rapid development of Johannesburg from a mining town to city.

Segregated Johannesburg

- 1911 - The Mines and Works Act: prevents Africans from obtaining jobs beyond the level of manual labourer.
- 1912 - ANC - African National Congress is formed
- 1913 - The Native Land Act (No: 27) is passed, forcing Non-whites to live in specific areas
- 1922 - The Stollard Commission is established owing to African labour protests in the Witwatersrand, permanent African migration into towns and the emergence of squatter settlements close to towns. The Commission encouraged racial segregation.
- 1934 - The Slum Clearance Act: Enabled municipalities to forcibly remove people who were settled in areas that were considered to be slums. (District 6)
- 1946 - The Asiatic Land Tenure & Indian Representation Act restricted Indian people from buying or occupying land outside certain exempted areas.
- 1948 - The National Party (NP), led by D.F. Malan in alliance with Nicolaas Christiaan Havenga's Afrikaner Party (AP) wins by a majority of five seats and 40% of the overall electoral vote.
- 1950 - The Group Areas Act: Gives the government power to create racially segregated areas where members of a specific racial group could live and work. The Act enables the authorities to forcibly remove people of a different racial group/s from an area that has been designated as being long to another racial group.
- 1955 - Sochiatown is declared a White area under the Group Areas Act, and over 60 000 people are forcibly removed from the area and a suburb named "Triomf" for whites is established in its place in
- 1957 - Lenasia: Indian people are forcibly removed from around Johannesburg and relocated to Lenasia
- 1960 - Sharpsville massacre
- 1964 - Rivonia trial: ANC members like Nelson Mandela was sentenced to life imprisonment in Robben Island
- 1976 - Soweto uprisings
- 1985 - Height of state of emergency
- 1990 - Mandela is released
- 1994 - Democracy - First democratic elections



The legal racial zoning of Johannesburg and Soweto after forced removal of the apartheid era (Nightingale 2012).



Racial segregation - Apartheid Planning Larger Impact



Key Influence Locations

KEY

- | | |
|---------------------------------|-------------------------------|
| 1 - John Vorster building | 17 - Math Building |
| 2 - The Engine | 18 - Old Mill |
| 3 - JHB Public Library | 19 - Star City |
| 4 - Old Market square | 20 - Esko park Roadan complex |
| 5 - City Hall | 21 - Tropic Bar |
| 6 - Gold Hill Pub | 22 - Oostersiggen Hotel |
| 7 - Old Arcade | 23 - Market street arcade |
| 8 - post office | 24 - Leonard Roper Theatre |
| 9 - Reed Club | 25 - Parka City tower |
| 10 - Ho. Makeny's Theatre | 26 - Old water tower |
| 11 - Colson's Movie Palace | 27 - Westinbrook Apartments |
| 12 - Carlton Centre | 28 - Observatory |
| 13 - High Court | 29 - Little Boon & Rasmussen |
| 14 - Amey's Hill Drive building | 30 - Mankie Panga club |
| 15 - French Foreign Quarter | 31 - The ambassador |
| 16 - Rennie's Social Centre | 32 - Hillbrook tower |

fig 3.8. The city's political history and places where important political events occurred.

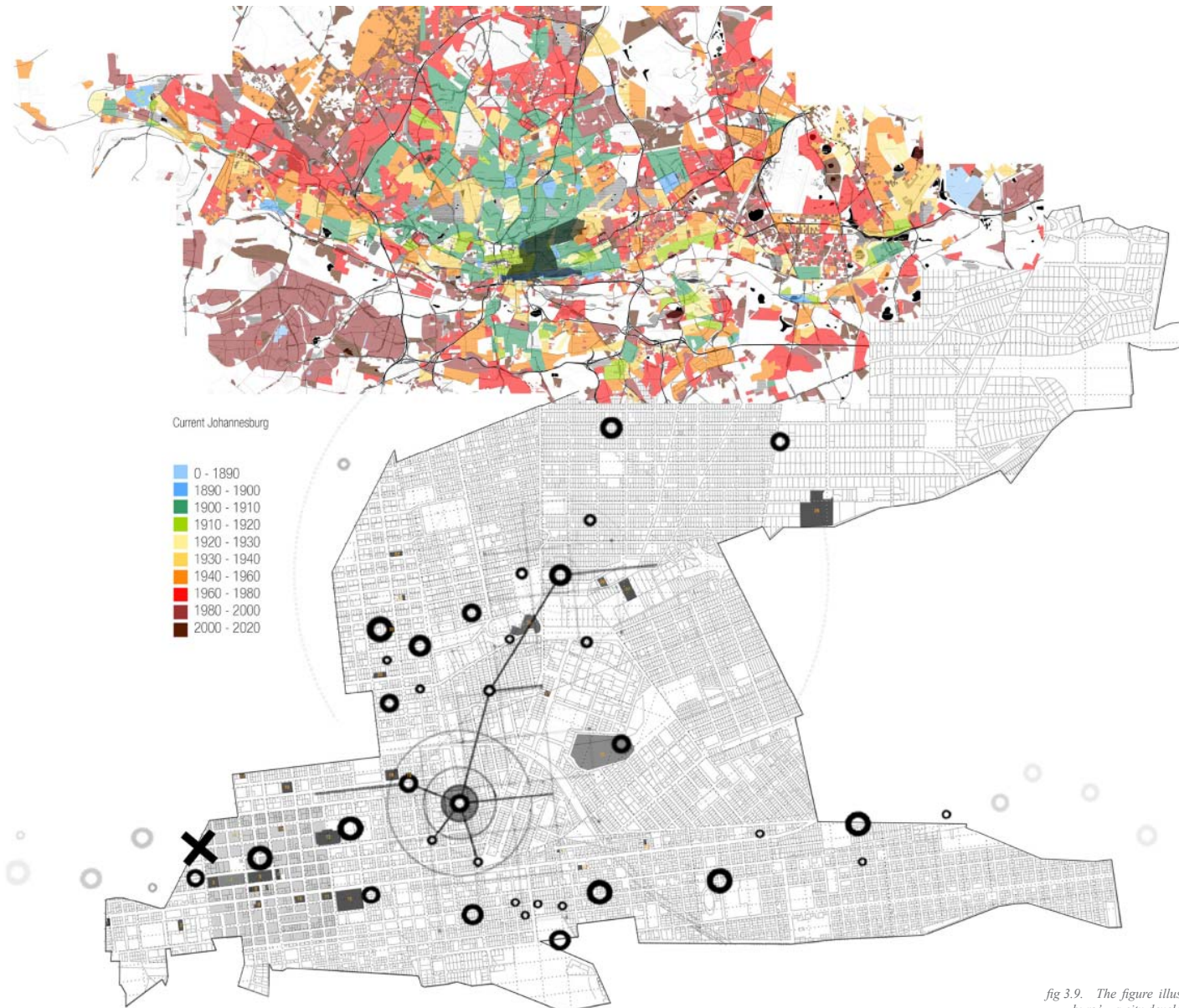


fig 3.9. The figure illustrates 'Resultant Johannesburg' - a city developed

Reading the city: The logic of fragments

Traditional historic studies of Johannesburg can be separated into three categories (Nuttall et al. 2008:12): the study of geographic poverty; the urban development of Johannesburg; and the spatial reconstruction of Johannesburg. The categorical study of the city results in specific problems when trying to 'read' the city.

When reading the city of Johannesburg only as 'geographies of poverty', the developed city that is envisioned is not an aesthetic project, but a developed project of special division. The post-apartheid 'urban development' readings of the city do not take into account the multiple aspects of city life and city form, resulting in a prescriptive reading of the city. Finally, the reading of Johannesburg's 'spatial reconstruction', the study of urban sprawl and resultant polycentric character of Johannesburg, is a reading of what Nuttall et al. (2008:13) term as "fantasy urbanism" and odd lifestyles. These categories of study favours a reading of the city as an urban theatre of capitalist accumulation and exploitation, a total reading which, according to Nuttall et al. (2008:12), is undeveloped in terms of comparative focus points.

The mapping exercise that was undertaken similarly categorized the development of Johannesburg, and was not successful as a total exploration of the whole – as it was found that Johannesburg as a city is not simply a string of categories that can be studied; the city is comprised of actual bodies, images, forms, footprints and memories (Nuttall et al. 2008:12).

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In the book *Not No Place: Johannesburg, Fragments of Spaces and Times*, Malcomess and Kreutzfeldt (2013:.....) combine the written history of the city and its build environment with that which is less certain, less defined: the invisible and visible seams and ridges that hold the city together. The book was undertaken as a project resulting from the authors' own subjective relationship to the city, as formed over time. This project begins with a conversation between the individuals and the material that constitutes the city, in the absence of lived experience, as encounter and as representation. It is as much a personal account of the city as it is reading and research (Malcomess & Kreutzfeldt 2013:.....).

Malcomess and Kreutzfeldt (2013:.....) state that Walter Benjamin used the 'arcade', an architectural typology of passage, to illustrate a city that is a world in miniature. This typology, as defined by Benjamin, is the 'wish image' of an emerging subjectivity, and the approach defines the built structure as the point from which to comment on how a city unconsciously projects and constructs its own image.

There is no exact equivalent for Benjamin's arcade typology in Johannesburg, but rather multiple complexities of 'place', which Malcomess and Kreutzfeldt (2013:.....) describe as instances which produce their own vocabulary – not a single image, but many fragmented images projected by the city spaces of Johannesburg. These various fragmentary images of Johannesburg and the intrigue surrounding their nature was the starting point for the reading of Johannesburg Nostalgia – an urban investigation.

'Uitvalgrond' as fragment

The city develops by re-articulation, layering and reuse of fragments; in short, by reconstruction. The act of reconstruction does not necessarily imply that earlier states are neglected, but rather that some characters are written over and over again with fixated nostalgia. For example, the story of Johannesburg always begins with the discovery of gold. As this narrative still dominates, each new beginning point of the narrative re-situates the point from where it last began. For this exploration the concept of uitvalgrond was used as starting point.

Malcomess and Kreutzfeldt (2013:....) argue that the notion which best describes the reading of Johannesburg is that of uitvalgrond. The Afrikaans word "uitvalgrond" can roughly be translated into English as 'surplus ground'; it is a fragmented state. "Uitvalgrond" as a term is used to describe the original triangle-shaped area between the historic farms of Braamfontein and Doornfontein, on which the town of Johannesburg was built.

In uitvalgrond there resides uncertainty, a concept resulting perhaps from its beginning – a beginning which is defined by speculation, randomness and self-promotion. It is the uitvalgrond that defines the characters and the fabric which constitute the city, serving as the territory of informal traders, trash collectors, the city's indigent and homeless, or as a pathway between industry and a settlement.

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The concept of uitvalgrond, the surplus, proliferates in present Johannesburg; it now defines the zones between the visible and intangible, the stranded moments of the history of the built city. The negotiation of these complexities allows the possibility of the actual materialisation of place within the ambiguities of the present city form – it allows the possibility of place as fiction, as both impossibility and always deferred potential. Uitvalgrond appears to be unoccupied but is not necessarily unused. It is the 'no place' that proliferates the future nostalgia of the city. It is this nostalgic non-place, the 'Modern Uitvalgrond', fragmented across the city, that drew us to certain sites which recurred unexpectedly throughout our exploration and mapping of the city.

The aim was now to record the characters of these sites, how they have shifted and changed, as they are central to the city's spatial relations and the understanding of the whole, and this provided the group with a method through which to explore Johannesburg as 'fragments' and 'fantasies'. The 'fragments' and 'fantasies' present in Johannesburg have always been central to the city's spatial relations. It becomes evident how the concept of 'fantasy' has in a peculiar way shaped the city into fragments, affirmed by Johannesburg being built on the resource of gold and the promise of prosperity that it offered the pilgrims who flocked there in a frenzy, rather than being built with the assurance of providence through natural resources – water, sustenance and defence. This promise, this desire, this fantasy has shaped the physical fabric of the city. It becomes a fantasy which was never realised, but one which is always underlying, an almost nostalgic feeling for a future that is never to be reached.

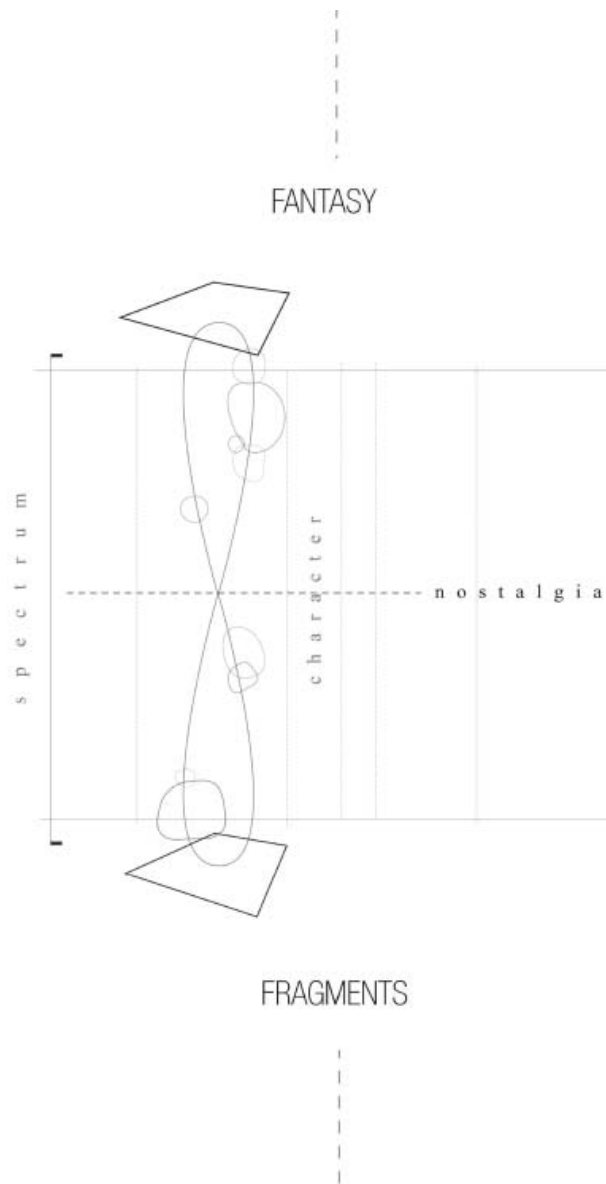


fig 3.10. Fantasy and fragment - A conceptual diagram

It is this town that was laid bare and exposed in states of unadulterated fantasy that ensured the vulnerability of the present city fabric, and assured the production of fragments in a way already predicting the proliferation of fantasy. It is a condition ingrained in the character of Johannesburg, ensuring that the same characters are to be written over and over again with a fixated nostalgia.

Fantasy and Fragment

The differentiation of uitvalgrond as fragments within the city – islands with a concentrated function – may lead to the understanding of the mapped city as a coherent whole. By connecting these fragments and creating an archipelago of fragments, the exploration addresses the potential of architecture to create urban pockets of meaning and significance. The identified “uitvalgrond characters” are prototypes of the city within the city. The analysis and exploration of these characters do not show the city of Johannesburg in a state of crisis requiring correction, but rather identifies these characters, and various others that are not addressed, as inherent conditions of a projective model for the city itself.

Current urban practices and ideologies further perpetuate these fragments, as they are often ignorant of nostalgic and fantastical co-productions of space and place; therefore the need arises to devise a model for extracting information from the city that is sensitised to the concept of ‘Modern Uitvalgrond’ as both fragment and fantasy, as both the material and immaterial substance that pervades and produces the city.

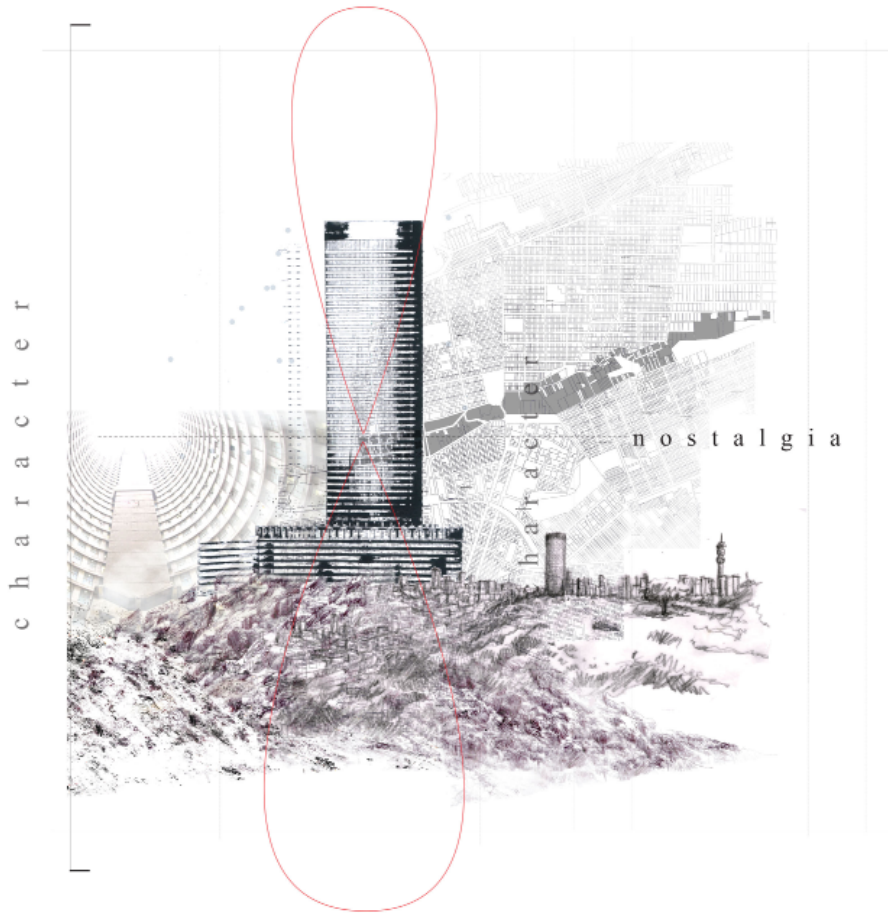
To illustrate and ground the conceptual investigation of ‘fantasy’ and ‘fragments’, a dynamic diagram was devised and applied to specific places and spaces in Johannesburg. These spaces, all different forms of uitvalgrond, are defined in this study as sites with specific characteristics. For the purpose of this study specific sites within selected focus areas were identified, although many forms of uitvalgrond exist within Johannesburg. These sites were identified and chosen as they strongly demonstrate the manifestation of the notion of uitvalgrond in the realms of fragment and fantasy both.

The diagram serves as instrument to gauge the nostalgic nature of the identified uitvalgrond sites and their respective characteristics. The produced collages are based on their polarisation towards either fragment or fantasy, thereby determining a certain resilience inherent in the conditions where a symmetry exists between these poles.

In the context of Johannesburg, resilience is interpreted as the ability to absorb fantasy as a fragment, rather than as immunity to the material trauma which the conditions endure. It is the ability to absorb fantasy which makes certain conditions and certain characters more resilient than others, and it is these characters, understood as the personality of a specific fragment, which demonstrate how nostalgia is physically manifested in the fabric of the city – how the material and immaterial memories contained in the city allow the unconscious projection and construction of the city.

Collages were constructed in order to extract information from the identified uitvalgrond sites. The produced collages were determined using various scaled layers – literature, dialogue, narratives, and now, lived experience. This method was used for its ability to enable an archaeological density of a non-linear narrative through the juxtaposition of fragmented images deriving from irreconcilable origins. This method has, however, been sensitised to this investigation of 'Modern Uitvalgrond' as fragment and fantasy.

f a n t a s y



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c h a r a c t e r

n o s t a l g i a

f r a g m e n t

PONTE CITY

Ponte City

fig 3.11. Fantasy and fragments character: Ponte City

Highlands North

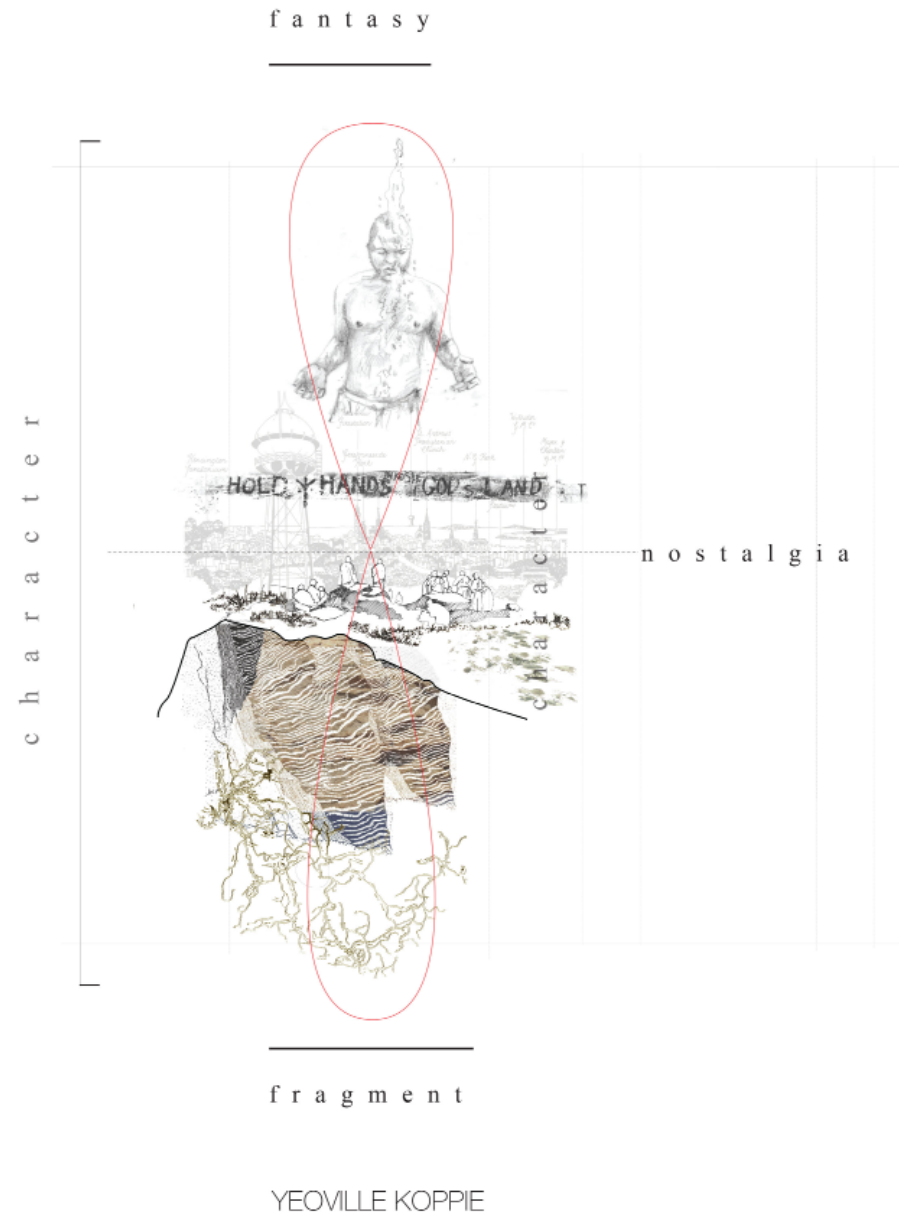
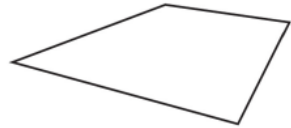


fig 3.12. Fantasy and fragments character: Highlands North

f a n t a s y



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n o s t a l g i a



Observatory ridge

f r a g m e n t

fig 3.13. Fantasy and fragments character: Observatory Ridge

Observatory

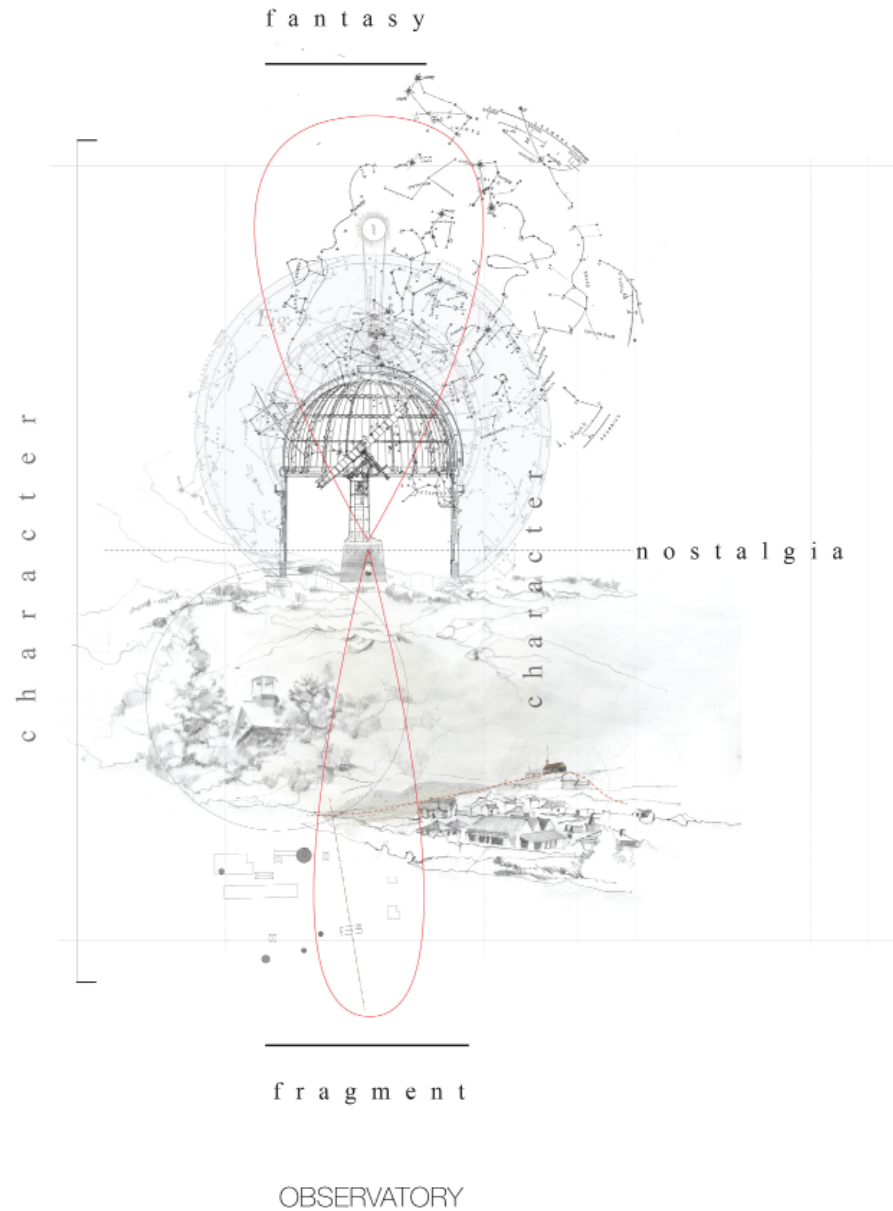
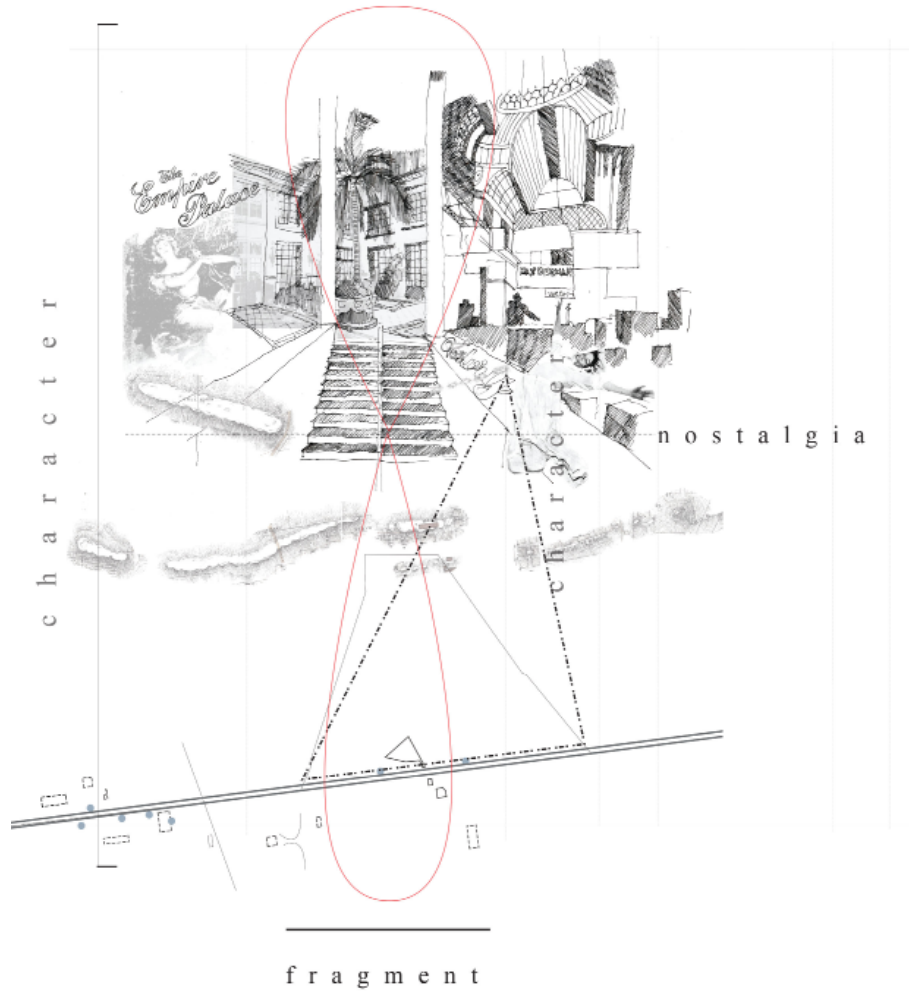


fig 3.14. Fantasy and fragments character: Observatory

f a n t a s y



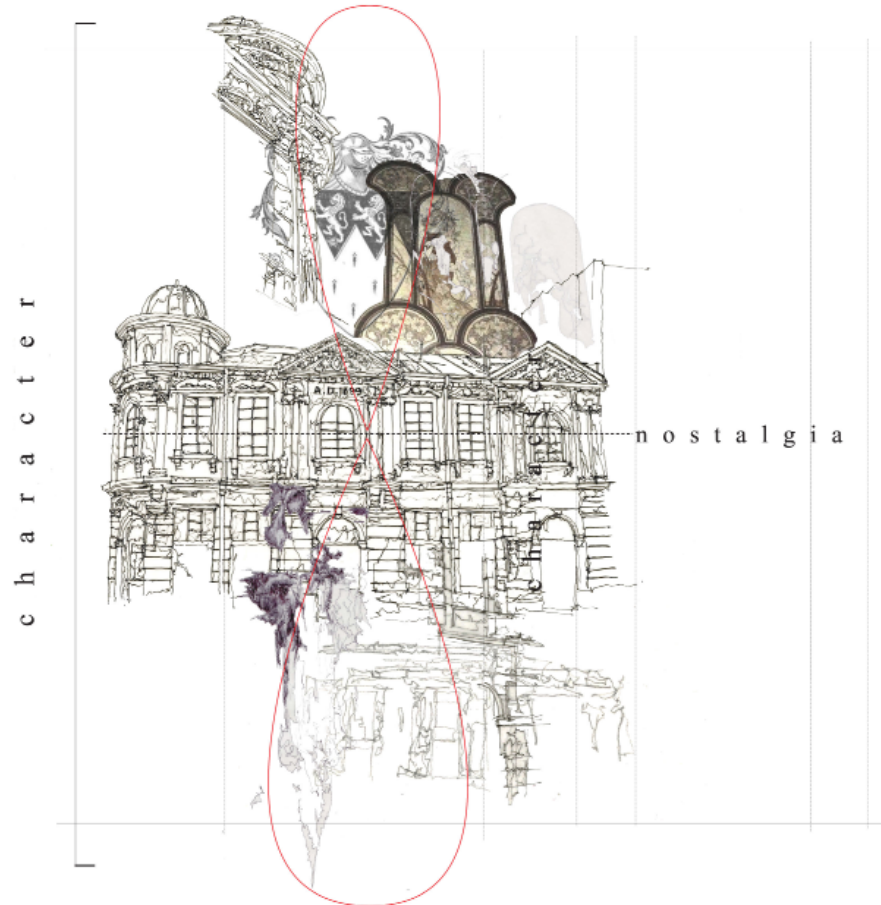
-46

THE GREAT WHITE WAY

The Great White Way

fig 3.15. Fantasy and fragments character: The Great white way

f a n t a s y



Cosmopolitan Hotel

n o s t a l g i a

f r a g m e n t

fig 3.16. Fantasy and fragments character: Cosmopolitan Hotel

THE COSMOPOLITAN HOTEL

Nostalgia Translated

After the uitvalgrond sites and their resilient characters were identified, and further research, site visits, interpretations and the making of the collages and diagrams were done, each individual group member was assigned to a specific uitvalgrond site and character. The intention of this, the investigation and conceptual framework, is to guide the individuals' projects in the understanding and interpretation of character of place, so as to make appropriate programmatic and architectural decisions that encompass not only material but also the immaterial elements and projections of each site and character.

With the probing investigation into the layers of fragments and fantasies of the character of each site, the proposed architectural interventions can be understood as the strategic re-interpretation of the continued state of the respective sites and their identified characteristics. The intention of this urban vision is to guide decision making through a coherent understanding of the spatial context as well as how the urban fabric could respond to the different architectural interventions. This notion reveals new possibilities for interacting with the city, recognizing the intricate networks and elusiveness of the City of Gold.



WATER BODIES - Disrupting the present to give access to the depth of absorbed fantasies

Marzanne Roux

Address: Corner of Rocky and Cavendish Streets, Yeoville, Johannesburg

Function: Public Swimming Pool

Research Field: Heritage and Cultural Landscapes

Character description: Rocky Street

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In Yeoville the reconstruction and unconscious projection of the city fabric finds expression in fragments that have significantly been able to absorb multiple fantasies, from the puritanical intentions that accompanied its initial built pastiche as a sanctuary for the rich, to a grey area powerfully connected to political activism and ideological resistance, and its current demographic shift to become the Pan-African society it hosts today.

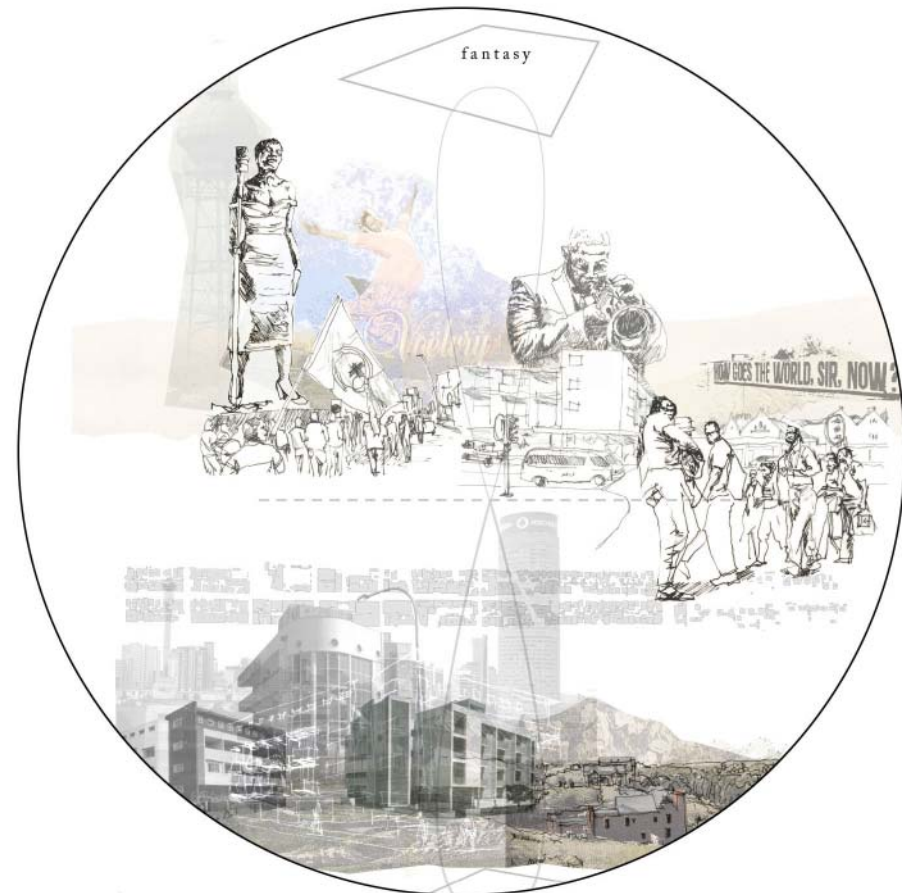


fig 3.17. Water Bodies - Character

URBAN OBSERVATORY - Re-introducing Observation and Measurement to Johannesburg

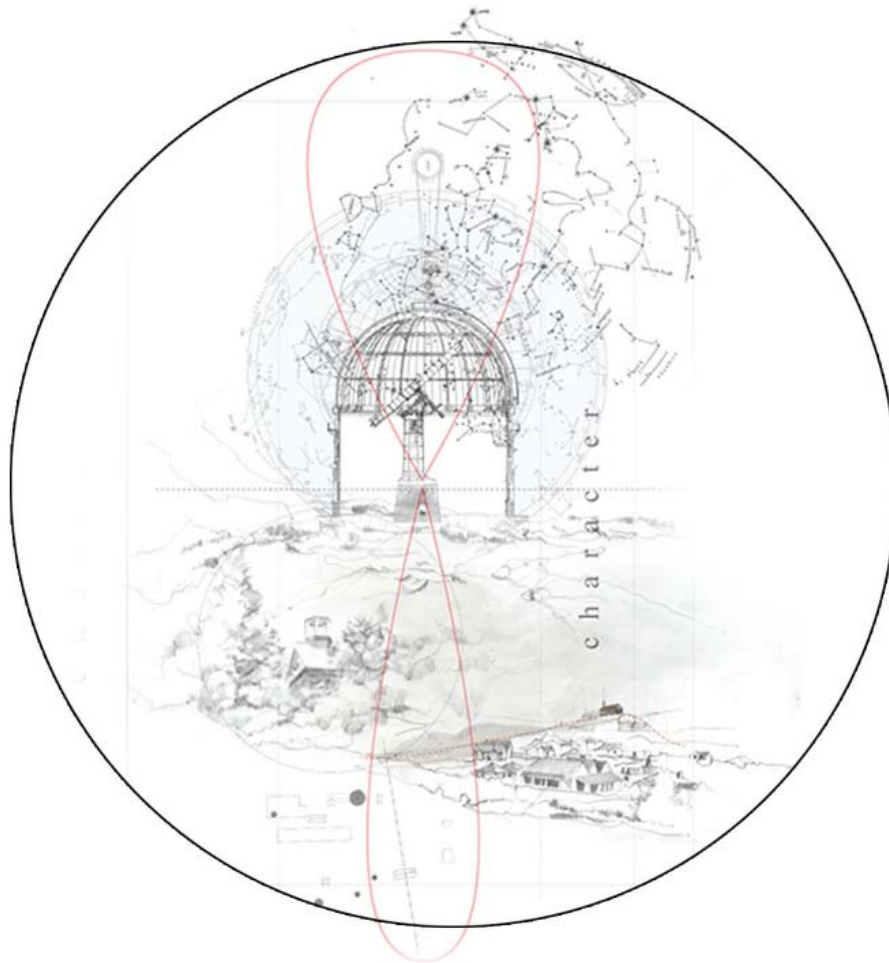


fig 3.18. Urban Observatory - Character

Gillian van der Klashorst

Address: 18 a Gill Street, Observatory, Johannesburg

Function: Urban Research and Innovation Centre

Research Field: Heritage and Cultural Landscapes

Character description: The Observatory

The Johannesburg Observatory occupies the highest point of the Witwatersrand as a landmark representing the nostalgia for the exploration of the night sky. The typology of the Observatory creates a fragmented space, composed to accommodate a specific function. The condition of isolation creates a focus to study the sky, amplifying the stimulation of contemplation, discovery and fantasy. This nostalgic striving to understand that which is beyond or unknown is the main driver for the resilience of the character of the Observatory.

DEATH OF THE CEMETARY - Burial ground as Park / Park as Burial Ground

Erwin Struwig

Address: Highlands Ridge

Function: Crematorium and Mortuary Bathhouse

Research Field: Heritage and Cultural Landscapes

Character description: Highlands North

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Perched on the ridge of the Witwatersrand, the site is a piece of leftover land, perhaps too steep to build on, fenced off, and claimed by those who have no place of their own. A strong sense of isolation is felt on the closed-off site; the overgrown vegetation makes one nostalgic for pure wild nature. The elevated plateau of the area is used by church and spiritual leaders along with their praying and singing congregants. These people have difficult lives, they cannot afford a church building, and thus this space becomes an isolated platform of hope and safety. For these people, the views over the city and Hillbrow, as well as the notorious Ponte tower, conjure up memories or perhaps hopes for a better future. The nature of the site allows for contemplation, isolation and spirituality to be experienced through its nostalgic roots

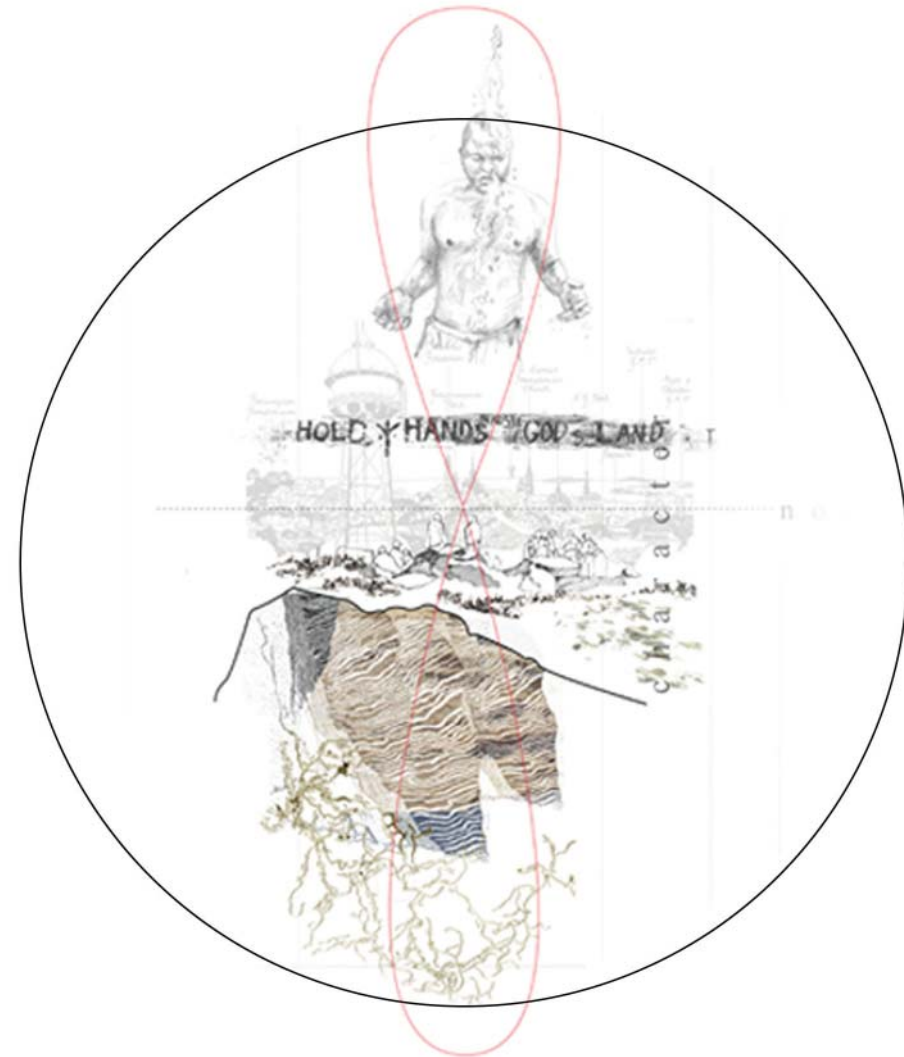


fig 3.19. Death of Cemetery - Character

RE(PRESENT)ATION - 'Site Unscene': The city as written text manifested by author

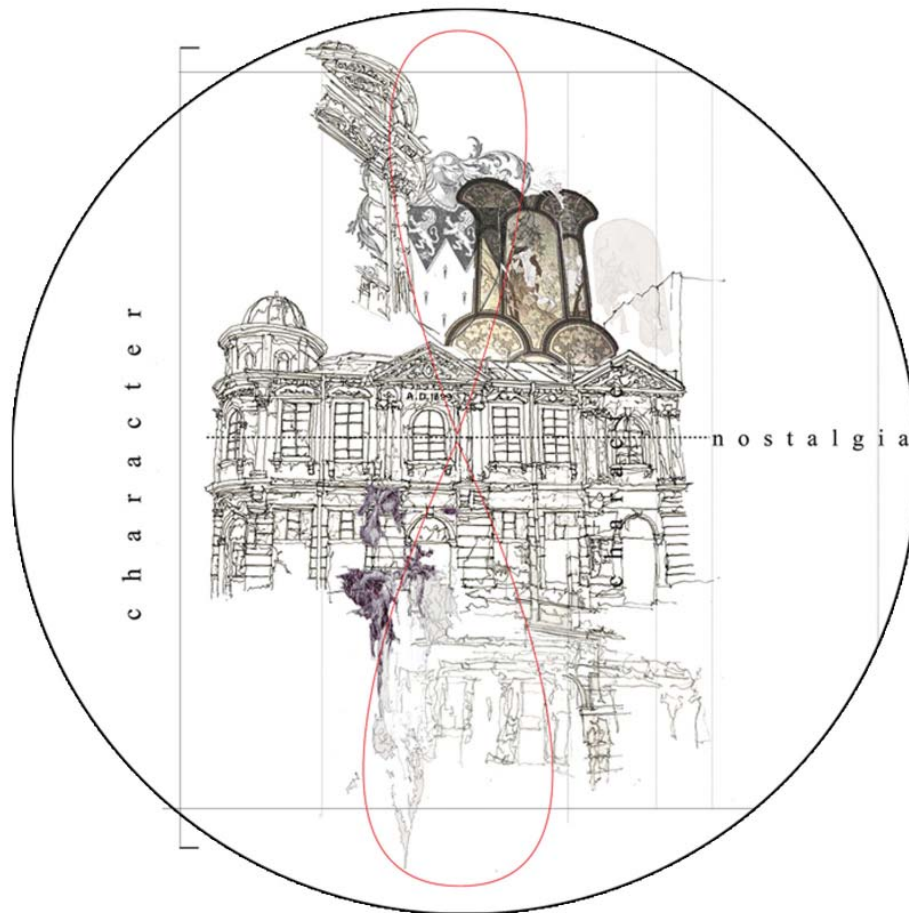


fig 3.20. Re(presentation) - Character

Elzanne Pieterse

Address: The Cosmopolitan Hotel, Albrecht Street, Johannesburg

Function: Boutique Hotel, Reading Room and
Readers' Institute

Research Field: Heritage and Cultural Landscapes

Character description: The Cosmopolitan

Originally built in a Victorian architectural style during the Edwardian era, the building advocates the nostalgia for 'home' in Europe, attempting to reconstruct the familiarity of that home in Johannesburg. The building was a symbol of wealth and opulence, rendered as a fantasy of extravagance under the boisterous living conditions of an early mining town. Currently the abandoned building stands out as a strange fragment, with its decay over time heightening the fragmented condition of the derelict hotel even more.

Context & Setting

Location and Mapping

Photographic analysis

Background and Delimitations

Yeoville Koppie as Uitvalgrond

Site Mapping

- Natural Ridge Conditions
- Edges and Boundaries
- Site Development Potential
- Sight Line Analysis
- Vegetation Analysis
- Spiritual Analysis
- Ordering
- Open and Soft Space
- Routes on Site
- Site Hydrology

*fig 4.1. Panoramic photograph from Ponte city parking ramp towards Johannesburg CBD. Site under investigation on the left.
(by Author, 2015)*

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fig 4.2. Context mapping illustrating site in relation Gillian, Marzanne and Pieter with whom the author shares a ridge framework. (by Author, 2015)



fig 4.3. Larger context map illustrating site in relation to prominent landmarks in area. (edited by Author, 2015)





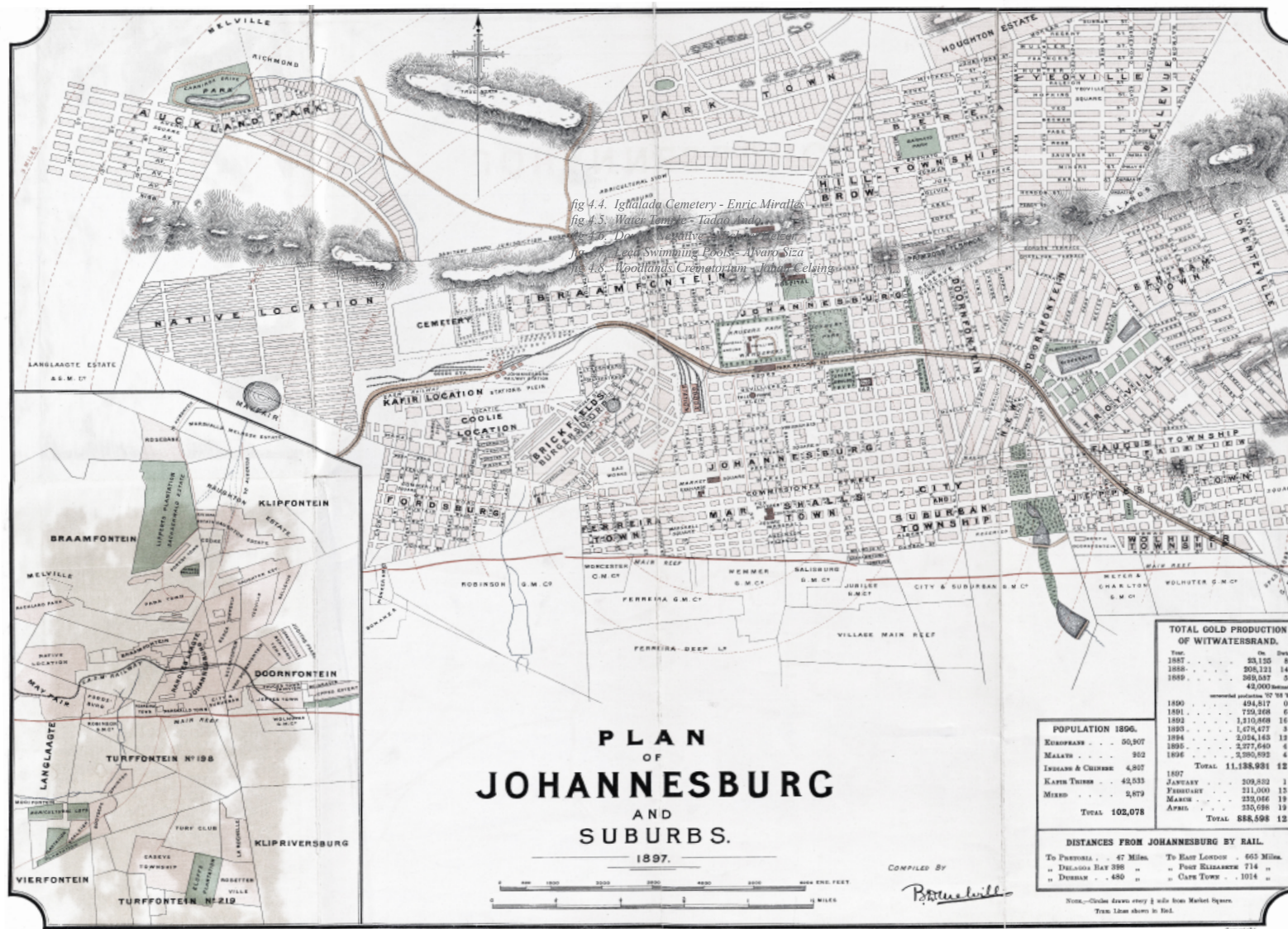


fig 4.9. Plan of Johannesburg and Suburbs 1897 (Museum Africa 2015, edited by Author)

Photographic Essay - *Site analysis*

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fig 4.10. Image of off-ramp to Gordon Terrace road from Joe Slovo drive (by Author, 2015)



fig 4.11. Image of ruined dry packed stone wall on site. (by Author, 2015)



fig 4.12. Ridge, Concrete Bridge and Nature come into conflict on Joe Slovo drive. (by Author, 2015)



fig 4.13. Prayer stone on Highlands Ridge. (by Author, 2015)

fig 4.14. Stone terraces opposite Ponte City as viewed from Joe Slovo drive. (by Author, 2015)







fig 4.15. View up ridge, Granite quarry visible in the foreground and Ponte City in the background. (by Author, 2015)



fig 4.16. Pedestrian walkway up winding road cut into ridge. (by Author, 2015)



fig 4.17. View of exposed granite as a result of excavation. (by Author, 2015)

fig 4.18. View across site from ruined structure. People praying in the foreground and Ponte in the Background. (by Author, 2015)

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fig 4.19. Daily prayer gathering. (by Author, 2015)



fig 4.20. Gods Land. (by Author, 2015)

fig 4.21. Panoramic view across grassland surrounding ridge. (by Author, 2015)





fig 4.22. Panoramic view of interior of ruined structure overlooking Johannesburg. (by Author, 2015)







fig 4.23. Surface condition of ridge. (by Author, 2015)



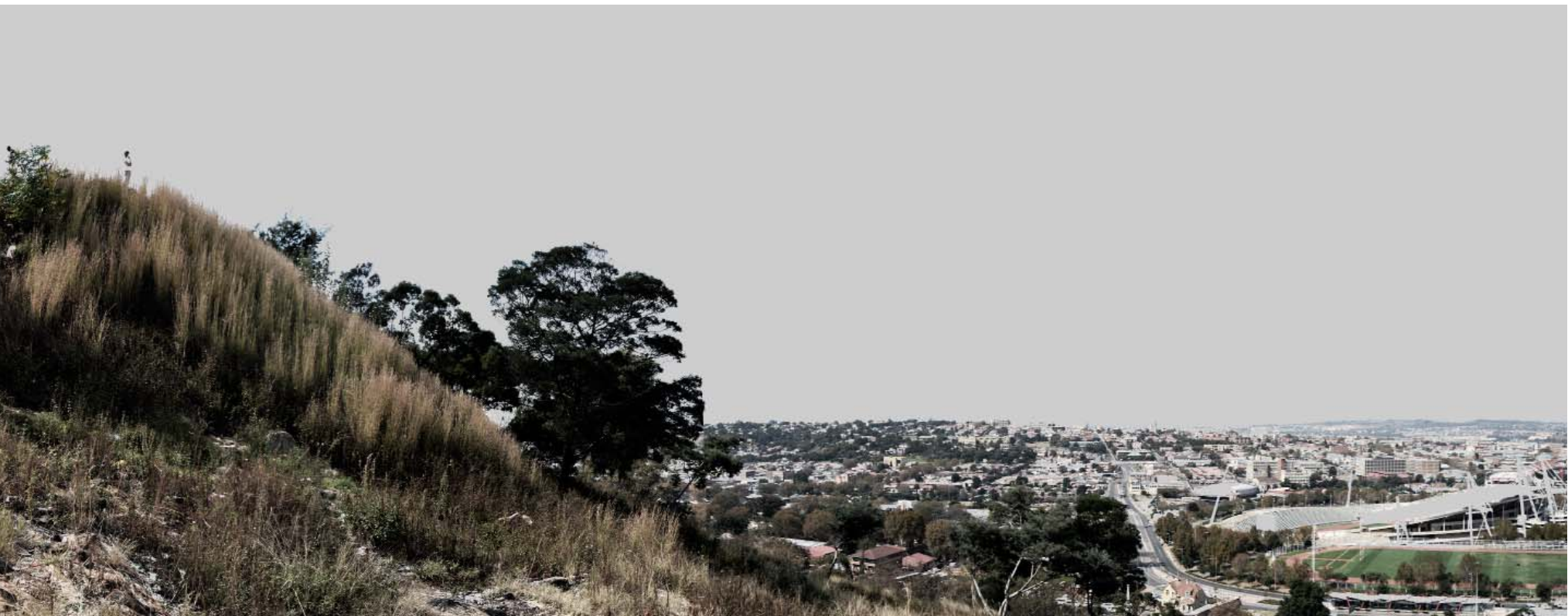
fig 4.24. Jawbone among trash and rubble. (by Author, 2015)



fig 4.25. Back of apartments bordering site along the North. (by Author, 2015)

*fig 4.26. Panoramic view showing natural and slope condition of site.
(by Author, 2015)*

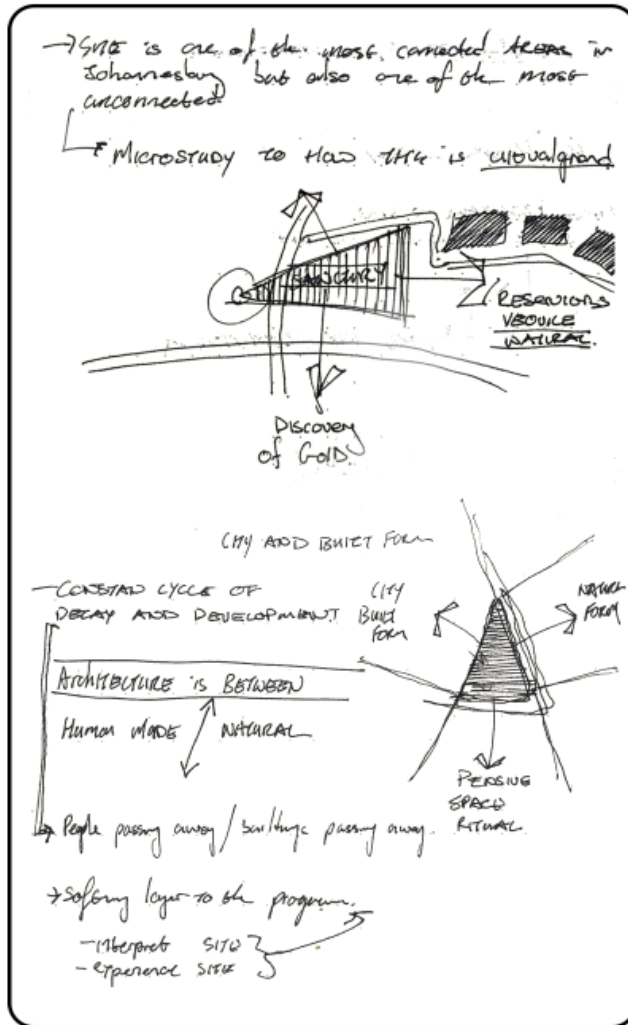




Background and Delimitations

For the purpose of this dissertation, the site will be analysed in relation to other koppies within the greater Johannesburg area. These will be viewed as areas of significance that carry importance within the city as uninhabited natural landscapes. Also, studies will be made regarding cemeteries in Johannesburg as boundary-defining elements that show the urban sprawl of the city. Thus Melville Koppies will be studied as a natural koppie within Johannesburg that borders a residential housing area as well as one of Johannesburg's largest cemeteries, Westpark Cemetery.

Yeoville Koppie as Uivalgrond



Yeoville Koppie forms part of a larger series of ridges within the environs of Johannesburg. It is situated on the westernmost edge of Observatory Ridge, opposite Ponte City. Yeoville Ridge forms part of the greater and more well-known Witwatersrand on which Johannesburg was founded. The geological development of the ridge over time has informed the planning development of Johannesburg, making it a pivot point for the future development of the city. When one looks at the ridge and its surroundings, it becomes clear that it forms a physical barrier between old Johannesburg (the CBD) and new Johannesburg (the northern suburbs). The ridge as barrier developed as a result of its geological nature; it mostly consists of granite rock and bounded iron ore, and is densely vegetated with Highveld grasses and Eucalyptus saligna.

The ridge has two main characteristics. Firstly, it is seen as an area of isolation within Johannesburg, an area where solitude and calmness can be experienced. The top of the ridge, like Melville Koppies, is a space where people from various spiritual groups gather for meditation, to find calmness and solitude. The ridge has a strong spiritual sense surrounding it. It allows the user to feel connected with the being of the city, providing enough distance between the hustle and bustle of the street to focus and find spiritual relief.

The Isolation of the ridge is the result of its steep topography, making it virtually impossible for city dwellers to access and move across it. Most of the site boundary is closed off by residential boundary walls.

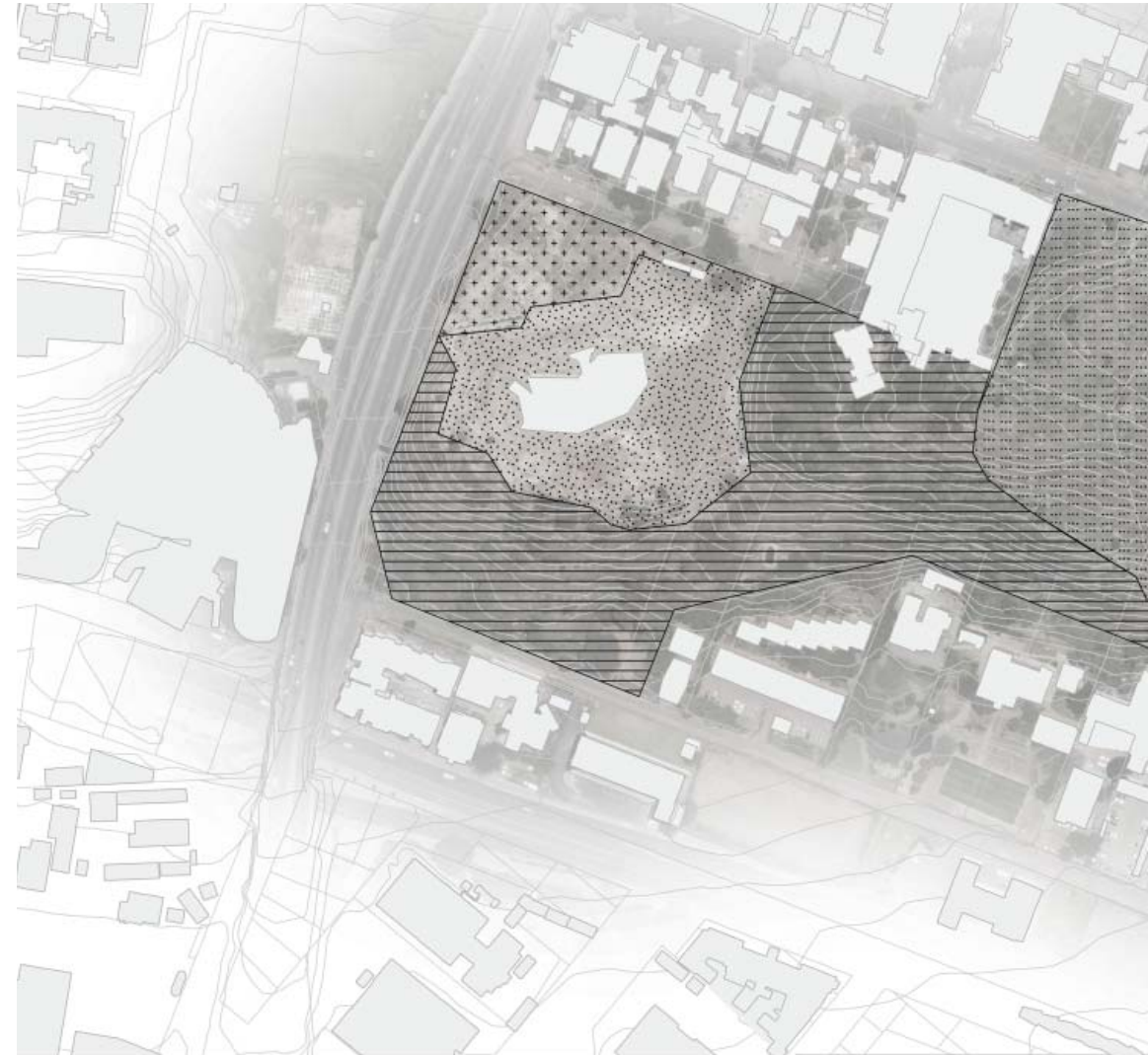
Secondly, the ridge forms part of a series of green spaces within Johannesburg. Densely covered with veld grass and invasive bluegum trees, the ridge acts as a green belt flowing into the city. Its visibility from vast distances pleads for an architecture that grants accessibility and that respects the surrounds through sensitivity and a deeper, more abstract understanding of site and program.

The nature of the site begs for a typological response that grants both access and isolation whilst maintaining the natural character of the site – a piece of uivalgrond that has been forgotten in time; a piece of land that has been discarded and left unkempt.

Natural Ridge Condition

The koppie itself plays host to three main natural phenomena: densely vegetated Highveld grasslands, invasive *Eucalyptus saligna* trees, and rocky outcrops along the steeper slopes of the ridge. The grasslands are divided by the long rocky outcrops which seem to divide the ridge into upper and lower sections. Along with an understanding of the hydrology and topography of the site, it is clear that on steeper sections of the ridge a more rocky natural soil condition is visible, while the *Eucalyptus saligna* trees grow in large groups on lower terraces of the ridge where water is able to collect.

fig 4.27. Mapping showing relationship between various ridge conditions. Conditions such as: Vegetated, Grassland, Rocky, Exposed soil, Unkempt lawn



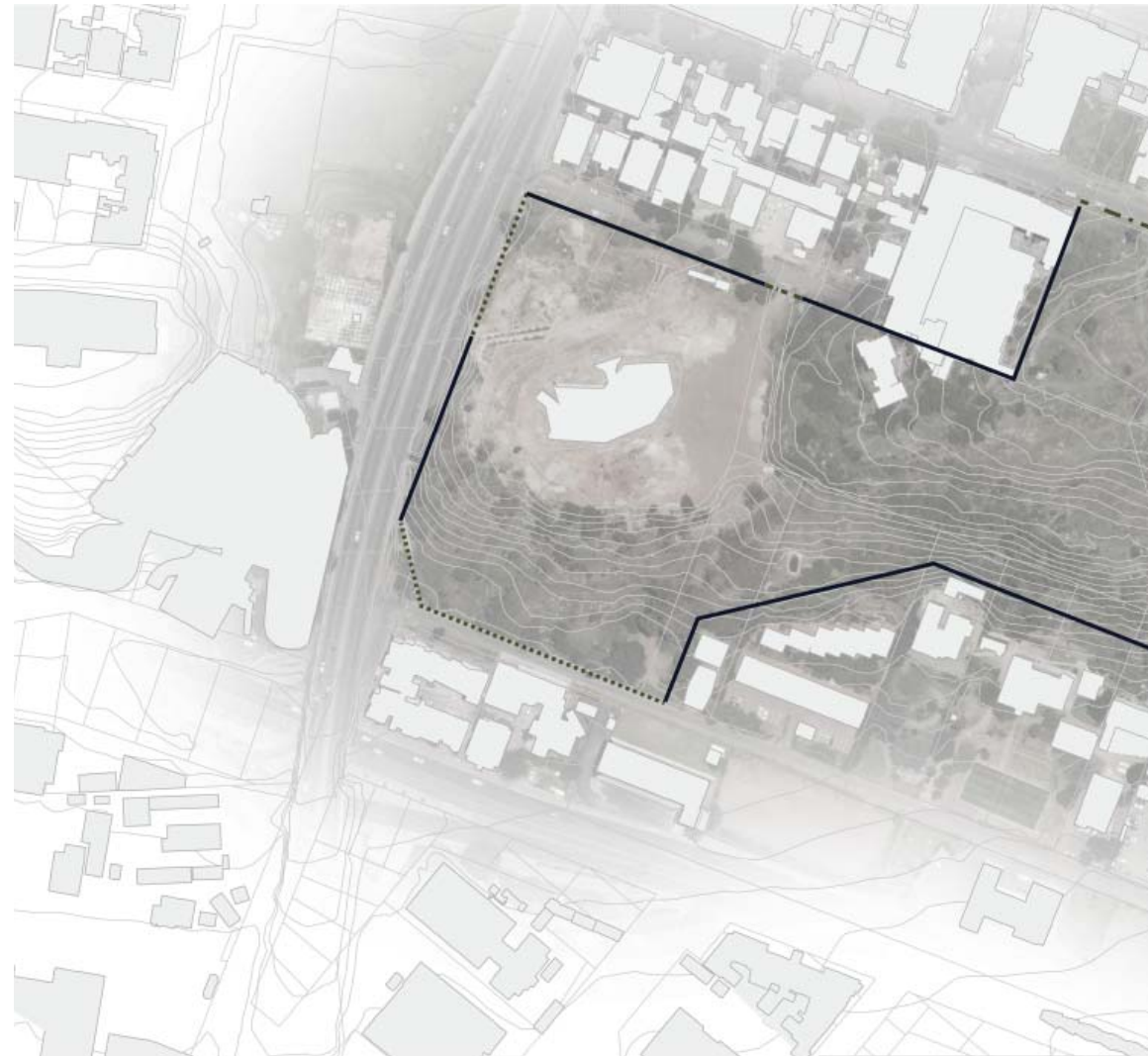


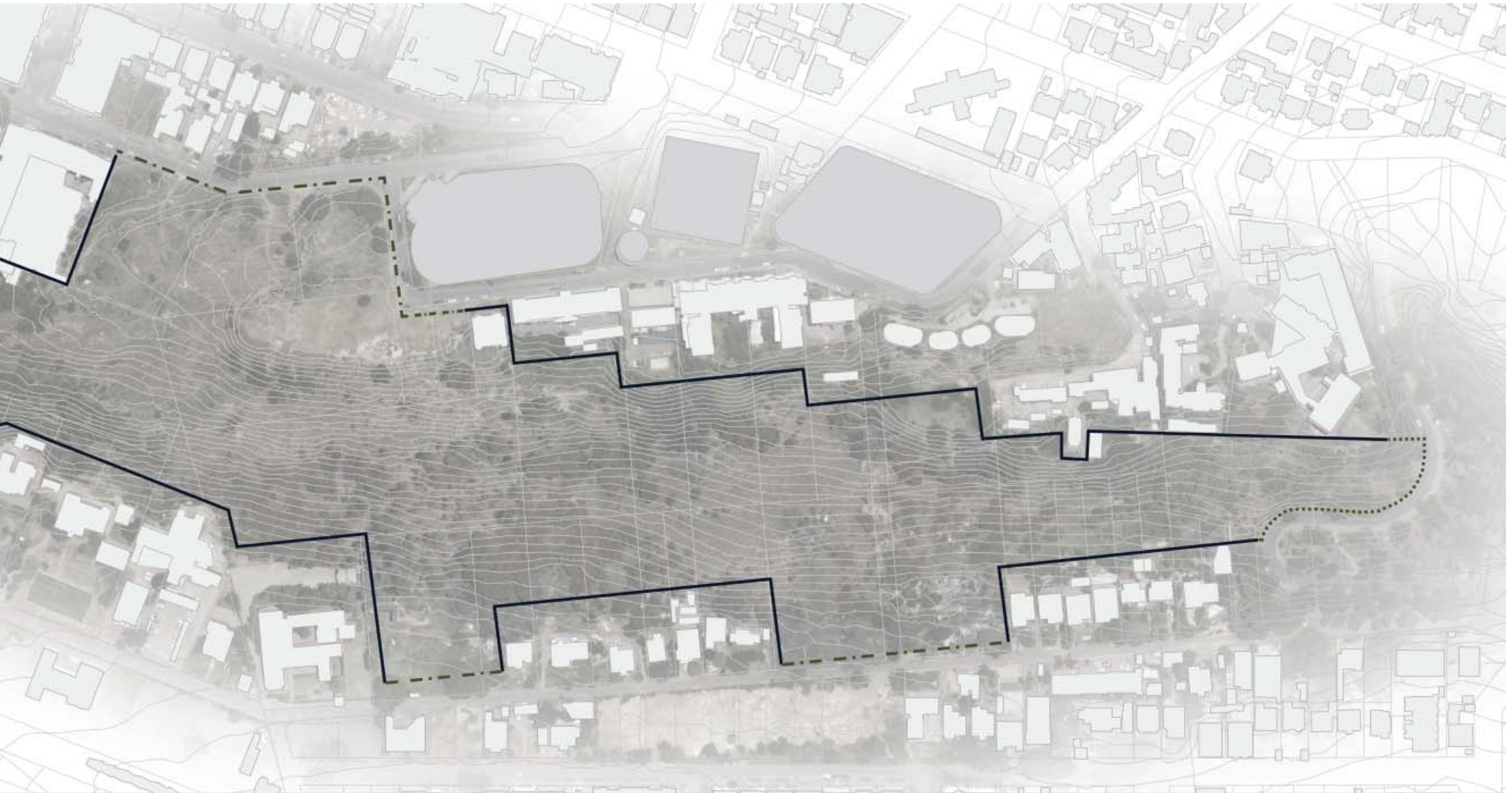
Edges and Boundaries

The edge conditions of the Yeoville Ridge vary greatly, from being enclosed by residential boundary walls to the south, to openly touching the street on both the northern and southern corners. The northern site boundary of the ridge merges from fully enclosed boundary walls into an open edge along Percy and Highlands Streets, while on the southern edge of the ridge, along Hunter Street and Gordon Terrace, the site is inaccessible for the majority of its length, except for two large vacant pieces of land. The edges of the site are characterised by densely vegetated grasslands and Eucalyptus saligna trees, and the naturally steep hillside. These characteristics help to contribute to the isolated spiritual character of the ridge and chosen site. The edge conditions limit the interaction between the ridge and the street at Hunter Street, Gordon Terrace, Percy Street and Joe Slovo Drive. Because of vacant pieces of land on the southern boundary, and direct street access on Highlands Street and, more importantly, South Lane, strategic controlled points of access can be granted onto the site.

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fig 4.28. Mapping showing boundary conditions of site. Condition such as: natural and man-made walled boundaries, open grassland, and gated sections





Site Development Potential

By understanding the site from a historical viewpoint and taking into consideration its natural condition, a potential development of the site finds itself situated between man and nature, between old and new Johannesburg, between life and death of man and city, and between fantasy and fragment. Across the entire site the potential exists to make a once inaccessible ridge accessible to city dwellers, not as urban space but as a liminal condition between natural and built. This also allows for structures to make use of the natural rock within the ridge, as a counterweight to man-made structures protruding from it.

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fig 4.29. Mapping showing development potential based on site visits, mapping and understanding of programme





Sight Line Analysis

The Yeoville Koppie forms part of the greater Witwatersrand. The ridge itself extends throughout the city, providing spectacular views. This koppie, which becomes part of Highlands and later Observatory hill, is the second highest koppie on the Witwatersrand. Because of its location within the city, Yeoville Koppie allows for spectacular views of the city from a perspective not available from Observatory hill. Whilst walking along the ridge one is able to direct views towards points of interest in the greater Johannesburg context. From Ponte City towards Observatory hill the ridge curves, allowing for views of the mine dumps and sister ridges to be exposed while views of Joe Slovo Drive and Hillbrow diminish around the corner. The character of the site can be experienced through its sight lines as the distance and disconnection from the city is visible by viewing from an isolated distance.

– 90

fig 4.30. Mapping of sight lines from and across site towards important landmarks such as Johannesburg CBD, Troyville koppie, Observatory ridge, mine dumps and goldfields, Ponte City and the Hillbrow tower.





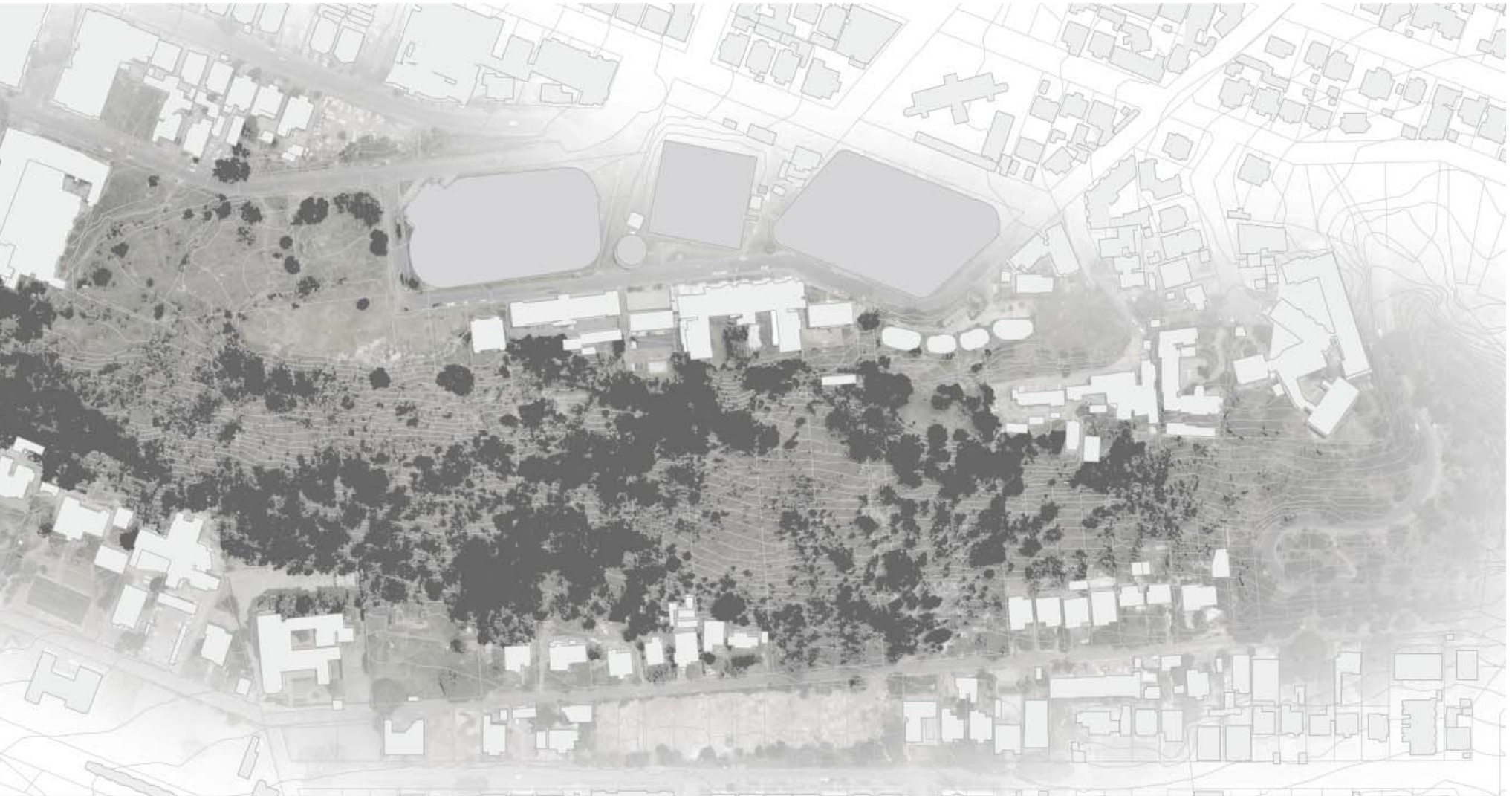
Vegetation Analysis

The vegetation on the Yeoville Ridge itself forms part of the greater Witwatersrand ridge, which has in certain places been urbanised and disturbed by man. The proposed thesis framework aims to address this specific section of the Witwatersrand, which has throughout the years become landlocked through intense urbanisation (refer to Urban Vision). The vegetation on the ridge mainly consists of Highfeld grasslands and invasive *Eucalyptus saligna* trees. These trees were planted to provide material for building and development, but soon spread throughout the city.

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fig 4.31. Mapping of dense tree vegetation on site, mainly invasive *Eucalyptus Saligna* trees





Spiritual Analysis

The Spirituality on site can be defined under two main groups. The first group gathers on the highest point of the ridge in order to escape the chaos of noise of the city. This group consists mainly of Pentecostals who gather on the ridge to pray and sing. The second group refers to an incomplete ruined church structure which would essentially house spirituality if ever completed. Both these groups are considered as highly spiritual.

fig 4.32. Mapping showing zones on site where spiritual rituals could and currently do take place.





Ordering

The attempt to discover a sense of order on the ridge developed from a landscape mapping exercise which defines important built points, along with topographic irregularities connected with a variety of dashed, dotted and solid lines in order to show the importance of new geometries created. Surrounding grid patterns were also extended onto the site in order to relate to the context of planning in the immediate surroundings. The new geometries were then superimposed onto the site in order to start to define an ordering system to respond to. Furthermore, a grid of 6 - 3 - 1-5 was imposed onto the site to respond to the topography and subtle curvature of the ridge.

fig 4.33. Mapping showing extrusions of surrounding buildings, natural phenomena and points of interest in order to create order on site





Open and Soft Space

The Yeoville-Highlands section of the Witwatersrand forms one of the largest undeveloped open soft spaces within the city, partly due to its topographic nature preventing high-rise development. Strategically it forms part of a larger network of parks and green spaces which lie along the ridge to the west of Ponte City. As one moves along the ridge towards the east, the soft space increases. Moving away from the density of the city the original untouched grasslands start to flourish, having escaped the grip of the *Eucalyptus saligna* trees. The site is located on the threshold between Yeoville and Doornfontein, where gold was mined and the Randjeslaagte triangle can be found. Ponte City, a geological agent situated on the ridge, forms part of the dichotomy of man-made and natural conditions along the ridge, transforming the earth's geomorphology, its surface, its geological era.

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fig 4.34. Mapping of soft and hard green space around site in order to understand impact of making site accessible to public might have





Routes on Site

The routes on the ridge itself are all footpaths that connect various cleared spaces to one another. These paths generally do not cross the entire ridge as shortcuts because of the steepness of the slope. Heavy pedestrian movement takes place on both sides of Joe Slovo Drive, the primary road into the city that divides Yeoville and Hillbrow. Secondary and tertiary roads branching off Joe Slovo Drive tend to be more pedestrianized as a result of high-rise, high-density apartments. Because of the nature of the site and surrounding roads, the site can only be accessed from one strategic points on secondary and tertiary roads. Access between Hillbrow and Yeoville is achieved by crossing Joe Slovo Drive above Berea Park between Hendon Street and Abel Road.

- 100

fig 4.35. Analysis mapping of existing routes on site and understanding of movement around site in order to determine points of access to site under investigation





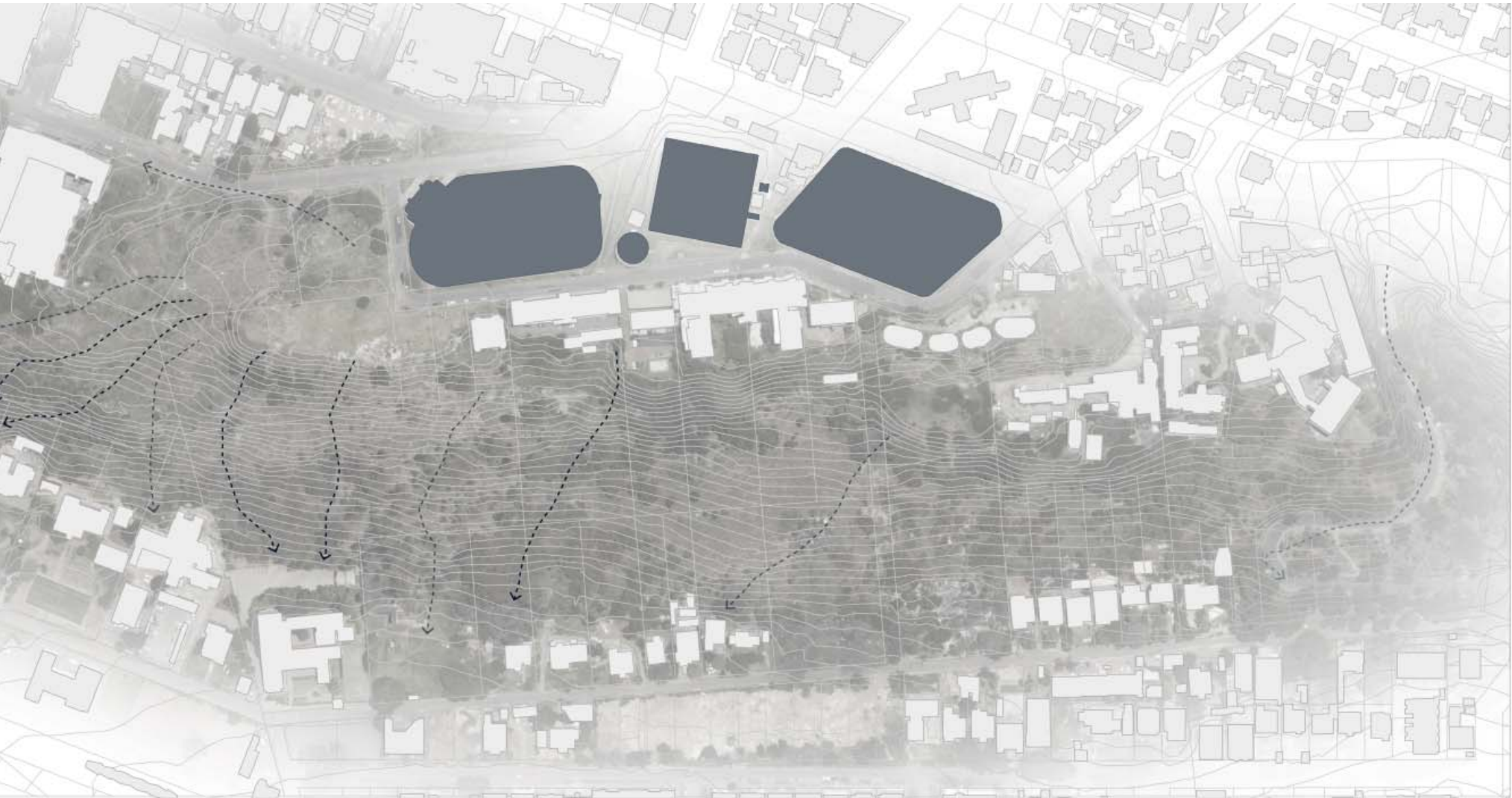
Site Hydrology

Historically the ridge was a natural grassland much like mellville Koppies is today. Due to the topographic nature of the proposed site and the condition of the vegetation on and around the site, the hydrology has become a major design informant. By thoroughly studying the conditions and various types of vegetation on site, it became clear that, where larger groups of Eucalyptus saligna trees grow, run-off water accumulates in the natural furrows along with surface run-off from the rocky areas on the ridge. The glasslands on the ridge are found at a higher level, because the run-off only starts to channel once it flows over the rocky mid-region of the ridge. Thus various natural water accumulation points can be determined due to the density of vegetation and soil conditions on the ridge.

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fig 4.36. Mapping of potential water runoff directions and flows as the site is the watershed between north- and east-flowing rivers that end up in the Indian Ocean, and south- and west-flowing rivers which end up in the Atlantic Ocean





History & Background

Homo Naledi

Mystery Man: Placement of bodies and Ritual Hypothesis

Ponte City - The Story

The World around Ponte

Harrow Road and Eastington Manor

The Reservoir behind Ponte and the Yeoville Water Tower

Transformation on site around Ponte City

Cemeteries in Johannesburg: A short history told in Cemeteries

The First Crematorium in Johannesburg

Johannesburg Cemetery Mapping

Braamfontein Cemetery

Brixton Cemetery

Homo Naledi - *Mystery Man: Placement of Bodies and Ritual Hypothesis*

Discovered in the remote Dinaledi and Rising Star cave system close to Swartkrans in the Province of Gauteng are the remains of an extinct species of hominin related to the Genus Homo. Professor Lee Berger believes the remains to be more than 2 million years old. (Shreeve, 2015)

Anthropologist John Hawks states that out of the remains discovered in the cave all re hominid except from the bones of one owl. There are no remains of predators or teeth marks on the bones, and that the layering of bones suggest that they did not accumulate all at once, but instead through an extended period of time. Inside the cave there is also no evidence of water having been present or even an opening to the surface. The distribution of the bones within the cave also suggest that there was no disturbance as the placement of the skeletal remains are exactly as they would be should a corpse be placed in the cave. Thus Hawks suggest that the only possible hypothesis could be that Homo Naledi deliberately placed the bodies of the dead in the cave. This evidence by the species homo Naledi suggest a form a burial practice that is not found in early Hominin but can similarly be found in apes and chimpanzees as they have been found to mourn the death of companions and even relatives. Studies with chimpanzees in Guinea show a mother carrying and caring for the copse of her deceased young one. This again suggests and supports the hypothesis brought forward by Hawks. Even if the “disposal” of these Homo Naledi bodies are not a form of burial it is likely that homo Naledi had an understanding of death to some degree and was able to take action to be able to deal with it in some manner. (Shreeve, 2015)

It is known that Neanderthals buried their dead 40 000 years and even 100 000 years ago. Thus if Homo Naledi is found to be much older than Neanderthals, which their features and bone characteristics suggest it would mean that anthropologists and archaeologist would have to re-examine ritual and burial practice of the Homo Genus. (Shreeve, 2015)

This poses an important point of departure when viewing burial rituals and understanding death. The place of burial becomes a space where members can safely dispose of the dead in a respectful manner through ritual practice.



fig 5.1. Photographs of Homo Naledi Exhibition at Marapang, (by Author, 2015)



fig 5.2. Painting depicting the act of disposing of the dead by Homo Naledi. (edited by Author; 2015)



fig 5.4. Interior view of the Rising Star cave system, (edited by Author; 2015)

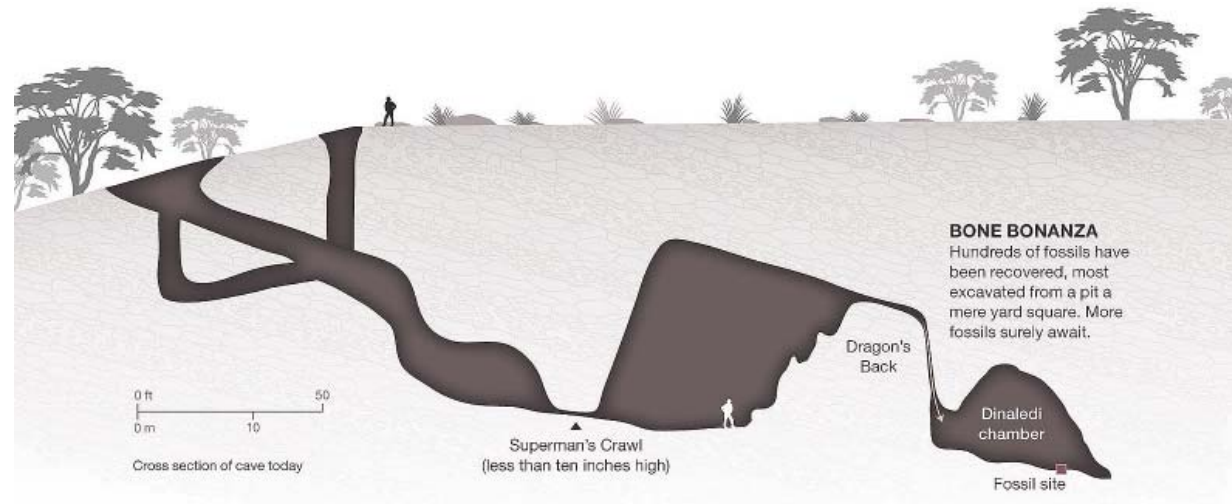


fig 5.3. Section of the Rising Star Cave showing the location of the find along with the route that was taken by archaeologist and possibly Homo Naledi partaking in the burial ritual. (edited by Author; 2015)

Ponte City - *The Story*

Situated on the periphery of Hillbrow alongside Joe Slovo Dr you can find one of the most iconic structures in Johannesburg. A structure shrouded in myth and legend. A structure that, like Johannesburg, has had its fair share of the good, the bad and the ugly. The brutal concrete cylindrical tower known as Ponte City.

Throughout its existence Ponte City has become something of a legend within the Johannesburg city skyline. Having been built in 1976 as a symbol of Apartheid planning and design, the structure soon followed a downturn as it became inhabited by illegal immigrants, brazen crack rings and prostitutes. This formed as a result of the exodus by the white middle class towards the safety of the northern suburbs. The structure forms some sort of a metaphor for the development of Johannesburg. Revealing aspects of its Psyche, its projection of myth and legend, its isolation within the development of the city. (Subotzky & Waterhouse, 2009, p. 1)

Ponte City has always been a structure shrouded in myth and legend. It speaks of determination and aspiration, desire and dreams. As a symbol of hope and prosperity for both the affluent and poor. Since its inception it has transformed from a symbol of prosperity and wealth to a beacon of hope and new beginnings, something similar to a piece of gold. Ponte City has an alluring character about it that draws people from all over the continent, promising them better lives, for them and their families. But just like the Gold on which Johannesburg is built, in all its incarnations fulfils the dreams of very few that live in Johannesburg. Yet the everyday struggle is perpetuated by a sense of nostalgic hope. (Subotzky & Waterhouse, 2009, p. 1)

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fig 5.5. Photographs of Ponte City taken during a tour of the structure explaining its history from during Apartheid until now. (by Author, 2013)



fig 3.6. Image of Eastington Manor from Saratoga Avenue.

The World around Ponte - Harrow Road and Eastington Manor

The area surrounding Ponte hold great value in the development of Johannesburg. Previously known as Harrow road, the 6 lane highway which passes through a natural gateway between Ponte City and Yeoville ridge was widened to make way for the new overpass known today as Joe Slovo Drive, which was completed in the early 1970s. Today this transportation network play an important role in the mobility of Johannesburg. With the building boom came the demolition of most f Doornfontein and Hillbrow smaller town houses and the construction of larger more high density apartment blocks. Alongside Harrow road opposite were Ponte is situated today one finds the "Ruins" of an incomplete Pentecostal Church where Eastington Manor once stood. Little is known about the manor itself except that numerous Randlords once resided in it. It is also unclear when exactly the structure was demolished but according to aerial photographs of the alterations of now Joe Slovo Drive its can be estimated that the demolition took place in the early 1960s. Other than the "ruined" Pentecostal church and Eastington manor there has been no further development on the isolated piece of ridge. (Latilla, 2013, p. 1)

The road below Yeoville Ridge, Saratoga Avenue was once the home to most of Johannesburg's founding fathers and Randlords. The street was later known as Millionaires row as many of the Randlords later built their manors there. This allowed Doornfontein to become prime property because of its close proximity to the early mine fields.

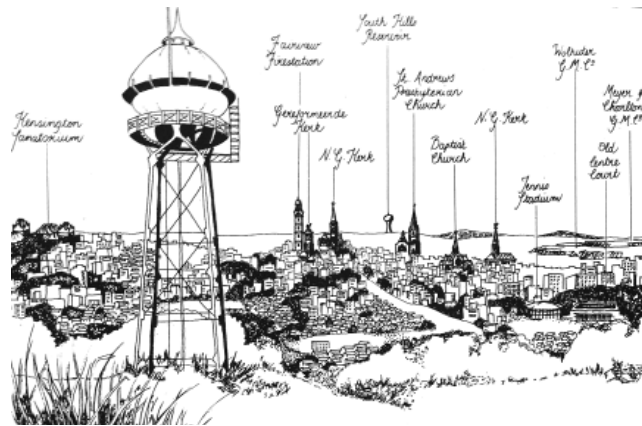


fig 3.7. Sketch of spires around Observatory Ridge and Troyville Ridge

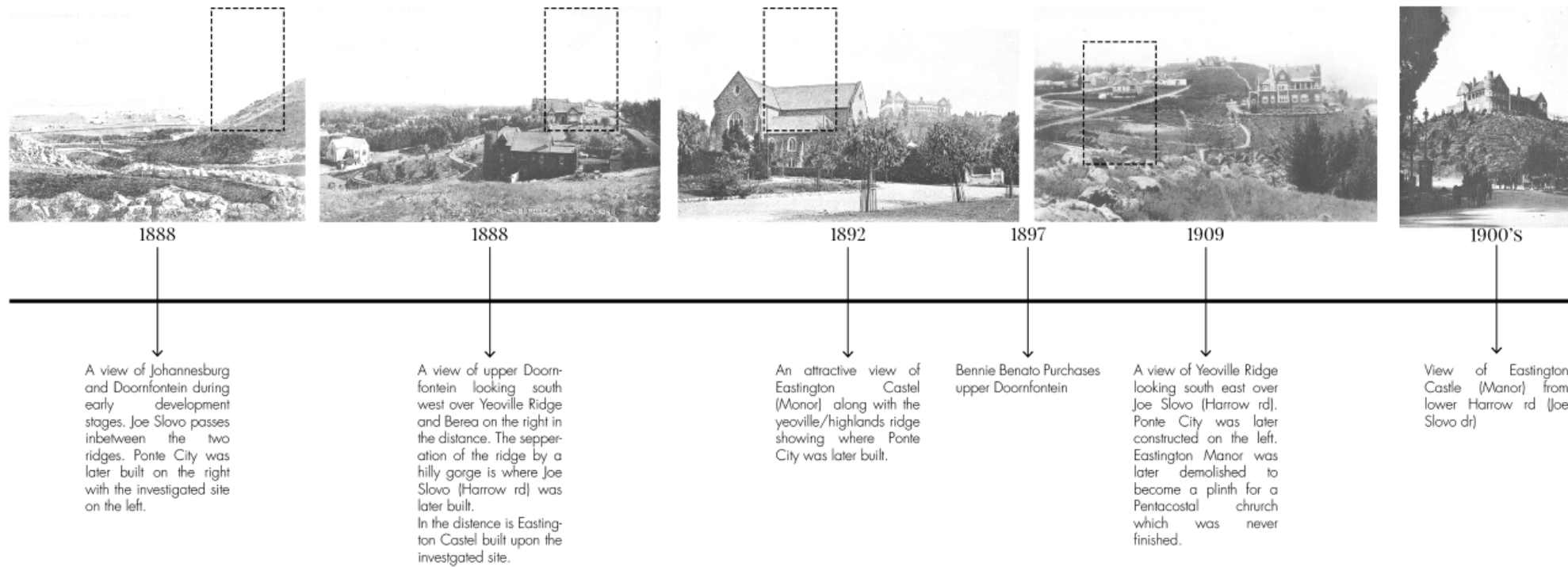
The Reservoir behind Ponte and Yeoville Water Tower

Until 1888 the residents of Johannesburg gathered their water from streams and shallow wells, whilst those without ease of access to these streams and wells purchased water from carts, cost which was dependent of distance from source.

Later Johannesburg waterworks, estate and Exploration Company and the Braamfontein Estate Company exploited the springs discovered beneath Harrow road on a piece of farmland called Andrews Reserve which is where the headwater of the Jukskei can be found. The newly discovered spring flowed down Bez Valley from where the water was pumped into a newly constructed concrete reservoir behind Ponte. The 4.5 million litre reservoir still exists today and lies on the periphery between Berea Park and Ponte bordering Joe Slovo. Water was first pumped to surrounding houses in June 1888. In 1914 the Sivewright's Johannesburg Waterworks, Estate and Exploration Company constructed the first water tower on the highest ridge in Yeoville. The water tower was the first of its kind in South Africa. Situated near the Doornfontein fountain. (Heritage Portal, 2013, p. 1)

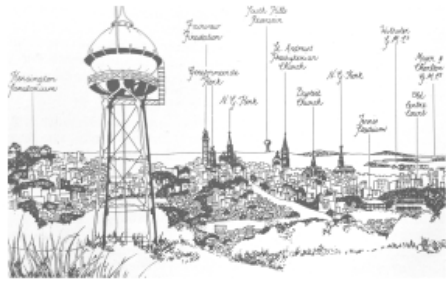
fig 5.8. Timeline of transformation on and around site depicting Ponte City as dotted rectangle for perspective and orientation. (by Author, 2015)

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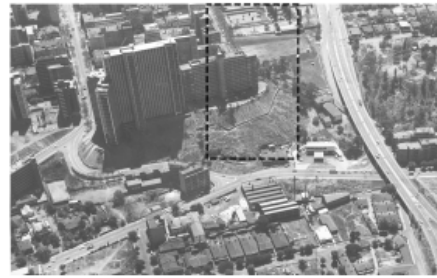




1900's



1914



1975



1975



2001

View of Eastington Castle (Manor) from lower Harrow rd (Joe Slovo dr)

Sketch from Yeoville Ridge overlooking Berea depicting important landmarks such as churches and water towers. The original water tower on the left was completed in 1914 and was imported as a assembly model from England.

Aerial photograph of the site where Ponte City was to be built, also depicting the widening of Harrow rd (now Joe Slovo dr). The site under investigation is on the right and is still heavily overgrown and uncepr.

Aerial photograph of Ponte City just after construction was completed in 1975. The Building was at the time the tallest residential building in africa, 175m high with 54 levels. Ponte City declined into slum status during the 1990's but has undergone a renewal process.

View of the Unfinished Pentacostal Church Plinth that started construction in 2001 but was never finished due to funding. the structure has been stading derelict for the past 14 years and can be seen as n modernday ruin. The terreaed construction consists of rock from the site as well as brick.

Cemeteries in Johannesburg - *A Short History told in Cemeteries*

While strolling through the cemeteries of Johannesburg one is reminded of its persevering character and rich history which is experienced first-hand. The gold hungry pioneer, local farmers, the Randlords, the heroes and those who have fallen in battle, striking African and Asian mine workers, Boer concentration camp victims, those of various religious beliefs, Christian, Hindu, Muslim, Jewish all form part of this deeply rich history. These cemeteries are the places where all of these important factors that helped build Johannesburg and South Africa are equal, all made equal in the earth.

For every new beginning there is a place of rest for those that have come before us. And that have paved the way towards greatness and success be it great or small. (Johannesburg City Parks, 2008, p. 4)

Johannesburg is a city of hope, a city that developed from fantasy, where new beginnings were made, a city that desired to grow from strength to strength, but instead endured dramatic turmoil and decline along with heroic rise and development. A city that constantly changes and adapts to the Zeitgeist. The city of Johannesburg is heaped with rich history, from the discovery of gold and the mines all the way to the fight for freedom and peaceful protests. Johannesburg's history can be extracted through its cemeteries, places that echo nostalgia, longing and sadness. These cemeteries, like walled gardens consumed the dead but kept the living at a distance.

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The first burial grounds in Johannesburg were farm graveyards. These were used for the farmer and his family along with the farm workers and their families. A few of these graveyards are still in existence.

The first cemetery in Johannesburg came into being as a result of rapid development of the large mining camp which made up most of the city itself. Located between Bree, Diagonal and Harrison Street. Due to the unforeseen rapid expansion of Johannesburg the cemetery had a short lifespan as it was quickly filled and outgrew its boundaries. The remains of those buried at the original cemetery were exhumed and later reinterred into Braamfontein in 1897. (Johannesburg City Parks, 2008, p. 4)

In the 1880's Johannesburg had grown from a large mining camp into a still developing city. As a result of this Braamfontein cemetery was established in 1888 near the city centre. Along with the establishment of Braamfontein cemetery, many other cemeteries, under the control of the church, hospitals and mines came into being. The Anglo-Boer war ravaged the country from 1899 until 1902. During this time many Boers died in the war, along with women and children who died in the concentration camps. One such concentration camp was located in the Turfontuin Racecourse. Today most of those who passed away during the war are buried in the Suideroord cemetery. (Johannesburg City Parks, 2008, p. 4)



fig 5.9. Image of Funeral in Johannesburg
(Johannesburg City Parks & Cemeteries brochure
2008, edited by author, 2015)



During a meeting in 1907 of the town council the issue of the city parks and cemeteries was brought to light. The following was reported:

'The Parks Department has, since its inception in 1904, been a sub-department of the Town Engineer's Department. We are of the opinion, that, owing to the increase in the volume of work in connection with the Parks (which included cemeteries), the time has now arrived for the formation of a separate Department of Parks. We have issued instructions accordingly.'
(Johannesburg City Parks, 2008, p. 4)

During this time the Park Department reported that the cost of the already established and newly established parks and cemeteries was £3,222.47. The recorded burial of one cemetery which was still under the control of the town engineers had an average of 50 burials per week which was racial divided between 22 white and 28 coloured. Even at this stage racial segregation was prevalent in cemeteries within Johannesburg. With the continuous rapid growth of Johannesburg as a mining camp into a fully-fledged city, came a drastic increase in the mortality rate. In 1905 it was estimated that Braamfontein cemetery would be fully occupied within 20 months. (Johannesburg City Parks, 2008, p. 4)

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Three years later a new cemetery was established on an 84 acre plot of land in the suburb of Brixton. During the year of 1908 there was a recorded 3410 burials. At this point in Johannesburg's development the number of parks had surpassed 20, these parks varied greatly in size from a modest 1 acre to 290 acres along with two cemeteries, Braamfontein and Brixton. On the 1st of October 1910 the first burial took place at the new Brixton cemetery. This extreme growth and constant development of Johannesburg posed as a challenge for the town planners of the time and can still be regarded as a major condition that is grappled with by planners today. (Johannesburg City Parks, 2008, p. 5)

During this time the public requested that the cemeteries be divided into sections for various religious and racial groups. These cemeteries were laid out in the European fashion, with long rows of graves divided by long narrow roads in even sections for the various groups. The graves of the soldiers of the Anglo-Boer war were laid out in the fashion of the war memorials in Europe. (Johannesburg City Parks, 2008, p. 5)

fig 5.10. Aerial photograph depicting the location and outline of centers within the city of Johannesburg.
(google earth image edited by Author, 2015)

1 *West Park*



2 *Brixton*



3 *Braamfontein*



4 *Primrose*





The First Crematorium in Johannesburg - est. 1918

During the early 1900s Mahatma Gandhi requested on behalf of the Hindu community that the city council construct a crematorium. The first crematorium in Johannesburg was constructed at the most north western side of the new Brixton cemetery and was completed by 1918. By 1956 a new crematorium was constructed next to the old crematorium in order to accommodate the increasing capacity of cremation in the city. The crematorium implemented by Gandhi was later awarded heritage status and is now a National Monument. (Johannesburg City Parks, 2008, p. 5)

In 1932 the crematorium at Braamfontein cemetery was opened as a result of the unpredictable increase in cremation. It was proposed that a secondary furnace be added to lighten the growing load on the single fire burning furnace already in place. During this time the number of cremations at the Braamfontein cemetery rose to 481 and the total number of burials to 6,196 which included whites and coloured. In 1941 the number of cremations at Braamfontein cemetery rose from 481 to 641. (Johannesburg City Parks, 2008, p. 13)

During an uprising in Soweto in 1976 the building which housed all the burial records for the first cemetery in Soweto was destroyed. This resulted in a large part of the history of Johannesburg being lost. Today, under the control of Johannesburg parks and cemeteries the city of Johannesburg has 35 cemeteries and two crematoria which are no longer divided along racial lines. But the ways of the past still remains in those first cemeteries that facilitated as resting places for the dead during a time of growth and development. (Johannesburg City Parks, 2008, p. 6)

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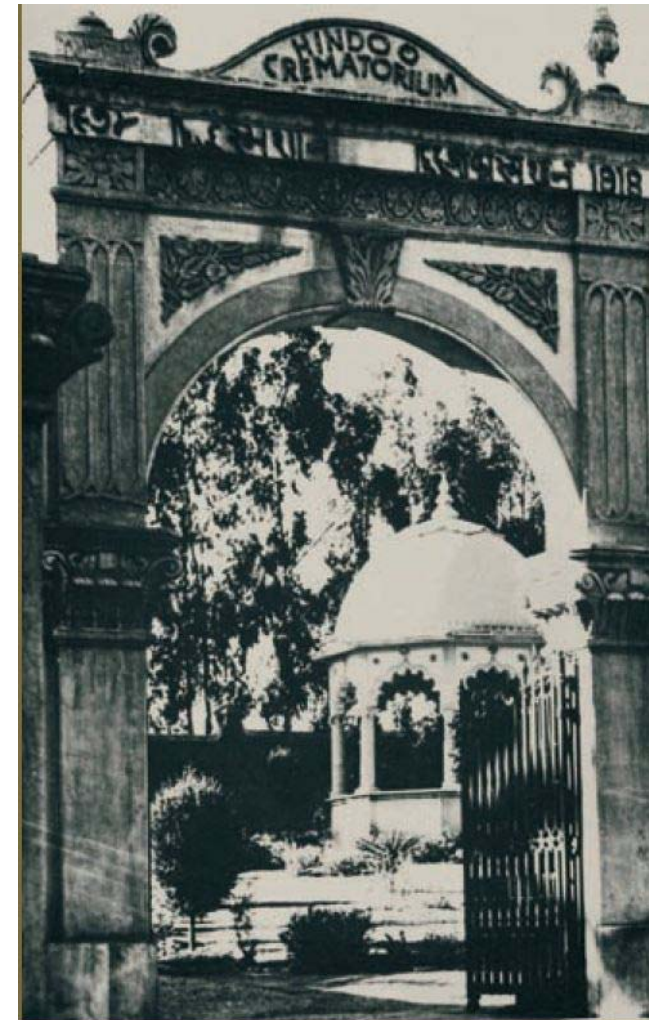


fig 5.11. Archive image of Hindu Crematorium circa 1939. (Johannesburg City Parks & Cemeteries brochure 2008, edited by author, 2015)

Braamfontein Cemetery - est. 1888



fig 5.12. Archive image of Cemetery Avenue lead up to Braamfontein Cemetery entrance. (A Johannesburg album : historical postcards, 1986)

Upon entering Braamfontein cemetery one is immediately faced with the morbid sense of isolation. The entrance gatehouse, partially hidden from site by tall old Tipuana and plane trees guards the realm of the dead, it enforces that threshold barrier between living and dead and makes one aware that you are entering through a gateway into the history of Johannesburg. The narrow road leading through the cemetery tells stories of those that have passed on, a story of a horse-drawn hearse followed by a long narrow string of mourners. Like a matriarch, the Braamfontein cemetery protects Johannesburg's rich history. It facilitates for a parallel world between the living and the dead. (Johannesburg City Parks, 2008, p. 13)

The cemetery was laid out in a formal manner with straight roads that sweep between the various religious and racial sections, allowing access through a main road which passes through the middle of the cemetery. On both side of Graf road, lie the graves of those who founded Johannesburg, their large carved granite angels, crosses and epitaphs faded and stained with the weathering of time. At the entrance to the cemetery one will be able to find the leather bound registry book that goes back through the history of the cemetery. (Johannesburg City Parks, 2008, p. 14)

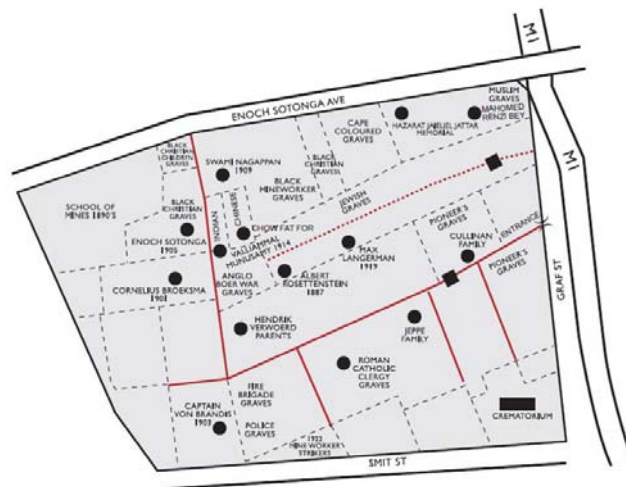


fig 5.13. Map of Braamfontein Cemetery (Johannesburg City Parks & Cemeteries brochure 2008, edited by author, 2015)

While meandering through the cemetery one is given perspective on the history of Johannesburg, a deeper understanding and connection between what has been and what is still to come. The narrow roads that wind between the lined trees, previously used by horse and carriage are now wide walkways for those seeking solitude and isolation within a spiritually calm place. After passing graves of various denominations and memorials for the heroes of the city the road makes a sharp turn and winds back to the entrance. But not before being greeted by the silent smoke haze of the crematorium (est.1932). This experience puts the idea and process of death into a whole new perspective. To walk the journey of Braamfontein Cemetery is to honour our past and acknowledge the opportunities of the future. (Johannesburg City Parks, 2008, p. 15)

Brixton Cemetery - est. 1912

Upon entering Brixton Cemetery one is greeted by the faded pink washed walls of the Hindu Crematorium surrounded by a forest of Bluegum trees. In the distance the sound to call for prayer can be heard from the Mayfair Mosque. Similar to Braamfontein, Brixton is one of the oldest cemeteries on Johannesburg, and as a result of this houses most of the cities Famous and infamous.

During the rapid expansion of Johannesburg, a six year period in which its pollution tripled. This allowed for the existing cemetery to rapidly fill up resulting in the construction of a new cemetery. This cemetery was known as the "New Cemetery" until 1912 when the first burial took place. (Johannesburg City Parks, 2008, p. 16) At the entrance of the cemetery one will find a war memorial that commemorates the lives of those South Africans who fought in the First World War. Moving along Main Drive one encounters the Second World War memorial that commemorated the South African Scottish Regiment. Brixton cemetery holds the most war memorials of any cemetery in South Africa, not just of the first and second world wars but also of the wars and battles that formed part of and shaped the history of the country. (Johannesburg City Parks, 2008, p. 16) Famous people buried in Brixton cemetery are the likes of Randlord Lionel Phillips and his wife Lady Florence. Known for their luxurious and extravagant lifestyle, they funded the Johannesburg art gallery along with numerous other items that hold dear to the cities history. (Johannesburg City Parks, 2008, p. 16)

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Mahatma Gandhi, played a very important role in the development of the Brixton cemetery, not just for Hindus, but for cremation as an alternative form of internment within the South African, and African context. In 1908 Gandhi was approached by the Hindu community to find a location suitable for the erecting of a crematorium. Gandhi negotiated with the city of Johannesburg for land. The city allocated land within Brixton cemetery resulting in the first crematorium in Africa completed in 1918. This crematorium was a traditional wood firing oven, later brick gas firing ovens where added. (Johannesburg City Parks, 2008, p. 16)

Even though the cemetery is full it still hold space for family members already buried there as well as space for cremated remains. Today Brixton cemetery plays an important role in protecting the history of Johannesburg. It forms a pivotal point for remembering those before us and looking towards the future. (Johannesburg City Parks, 2008, p. 16)

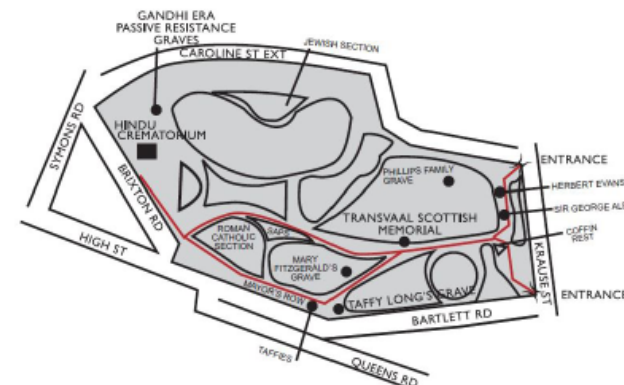


fig 5.14. Map of Brixton Cemetery (Johannesburg City Parks & Cemeteries brochure 2008, edited by author, 2015)



fig 5.15. Photograph of gravestone at Braamfontein Cemetery (by author, 2015)



fig 5.16. Photograph of Braamfontein Cemetery pergola system (by author, 2015)

Programme & Client

Architectural Response

-Proposed Programme

Programme Process

Movement Diagrams

Spatial requirements of Programme

-Crematorium

-Chapel

-Burial Space and Park

Practical Implications of Programme

Conceptual Implications of Programme

Client

Spatial Funerary Ritual Mapping

Architectural Response - *Proposed Programme*

The proposed programme not only forms part of the development of the site but also of the framework for the development of the Highlands North-Yeoville-Observatory ridge. It also includes the expansion and upgrading of burial grounds by Johannesburg Parks and Cemeteries in the future. By inserting a programme that allows the ridge to be accessed by the general public, on a route structure that provides isolation and spiritual meditation spaces, one allows for the ridge to become part of the cultural landscape of Johannesburg, similar to the Melville Koppies nature reserve.

The creation of a burial space that forms part of the intrinsic spirituality of the ridge landscape speaks towards the existing spiritual nature of the ridge. By proposing a crematorium and cemetery as a park, the ridge is allowed to become more accessible, again relating to its existing spiritual nature. The cemetery and park follow an all-encompassing view of being below religion, at a more humanist level, thus allowing all walks of life to experience the space at a human level.

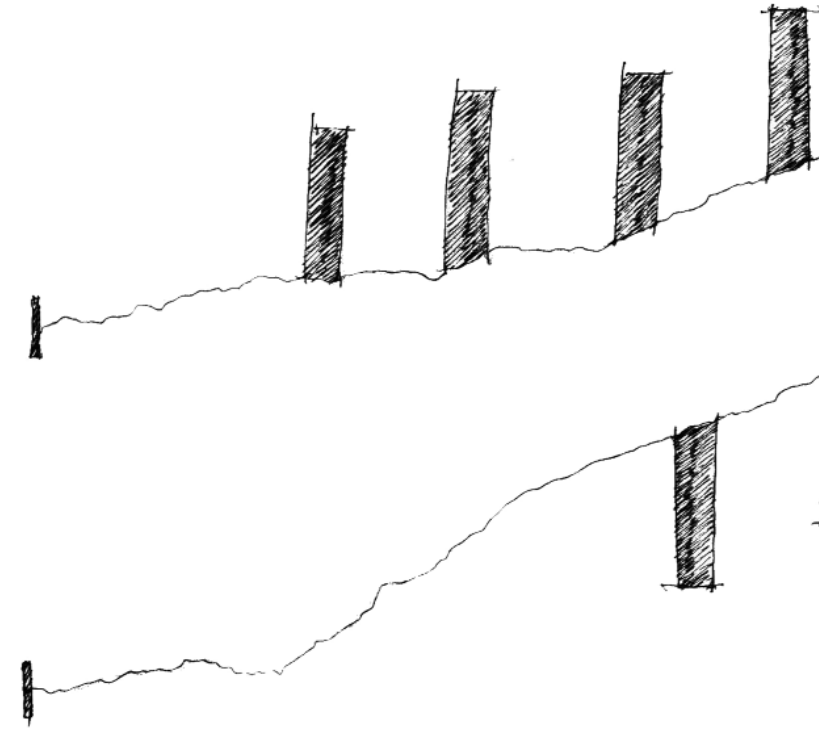
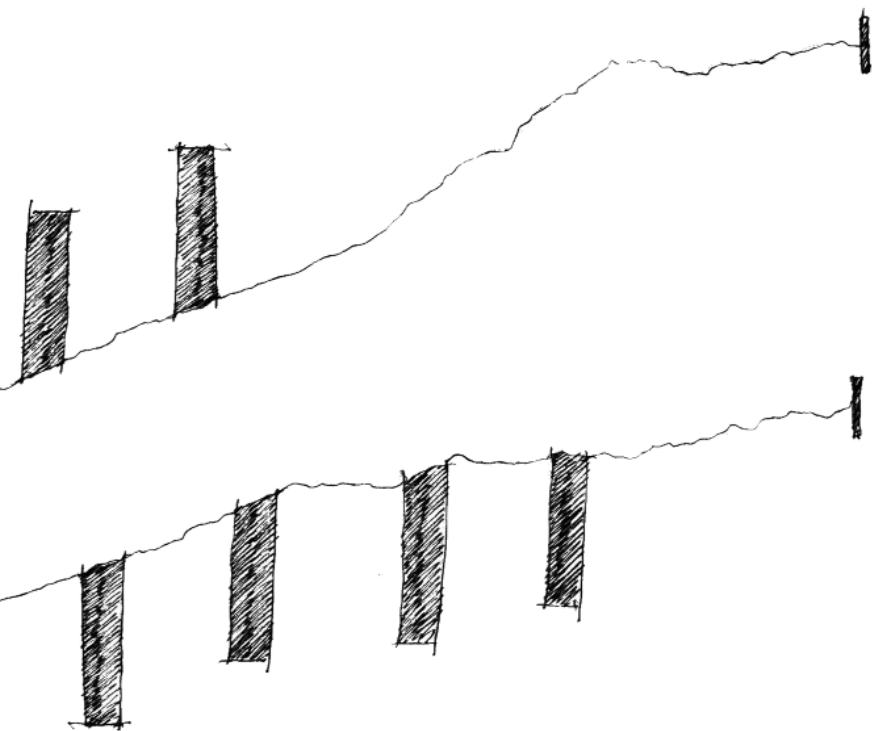


fig 6.1. Conceptual diagram illustrating Ponte City and its monumental presence relating to subterranean architecture with a similar monumentality. (by Author, 2015)



Programme Processes

The programmatic processes would have the opportunity to start at three different conditions. The first condition would be that of the mourner and the deceased; the second the condition experienced by the spiritual wanderer; and the third, that of the park-goer.

The site being well situated between various spiritual institutions, residential housing blocks and at a gateway to Johannesburg's CBD would ideally act as an amalgamation of these conditions into a single programmatic response that equally and sensitively enhances the character of the ridge as part of the greater Witwatersrand. The ritual process that the mourner goes through in parallel with that of the deceased would take place in the form of a route that descends into the landscape with the aim of granting a greater understanding of the character of isolation, by concealing the urbanised surroundings and exposing the natural conditions of the ridge. Throughout the procession the mourner is presented with opportunities where views and changes in natural condition – be it roof, floor or wall – can be used as methods of orientation in relation to the urban context. The mourner's journey also intersects with that of the deceased by means of the programmatic process relating to the ritual of interment. This is achieved by means of stimulating the senses of the mourner through view, touch, smell and orientation with relation to that of the deceased. The mourner has the opportunity to take part in the funerary processes through washing, viewing and encircling the deceased throughout the journey. The mourner also has the opportunity to meditate on, contemplate and internalise the situation by being provided with spaces of pause, isolation, meditation and gathering. This aids in the personal journey of each individual mourner when taking part in the funerary process.

The spiritual wanderer has the opportunity to access the structure from its main entrance, as a mourner would, but also as the park-goer would at smaller, more discreet entrance points throughout the ridge. Spaces for individual isolation as well as larger group gatherings are provided throughout the structure and park in the form of excavated, more isolated follies and pavilions within the park landscape itself to expose the conditions of the ridge.

The journey of the park-goer fits more loosely into the structure of the programme as journey, thus allowing for greater freedom when entering or exiting the ridge. Access to the park routes and spiritual spaces or to the crematorium and cemetery can be gained throughout the structure at various levels of interaction. The park-goer can access the ridge from any point and exit from any point, similar to the journey taken by the spiritual wanderer, but by bypassing the various follies and pavilions can use the site as a pure route to experience the natural conditions of the ridge as well as the views of the city.

Thus the programme involves a route that connects the various conditions experienced within the funerary procession, along with pavilions and follies that allow for an experiential understanding of site characteristics such as isolation, and provide exposure to the natural conditions on the ridge.

Movement Diagrams - *Park User*

The following diagrams illustrate the movement and circulation routes taken by the park user. These routes illustrate the diversity of the planning in order to accommodate both funerary process and park user.

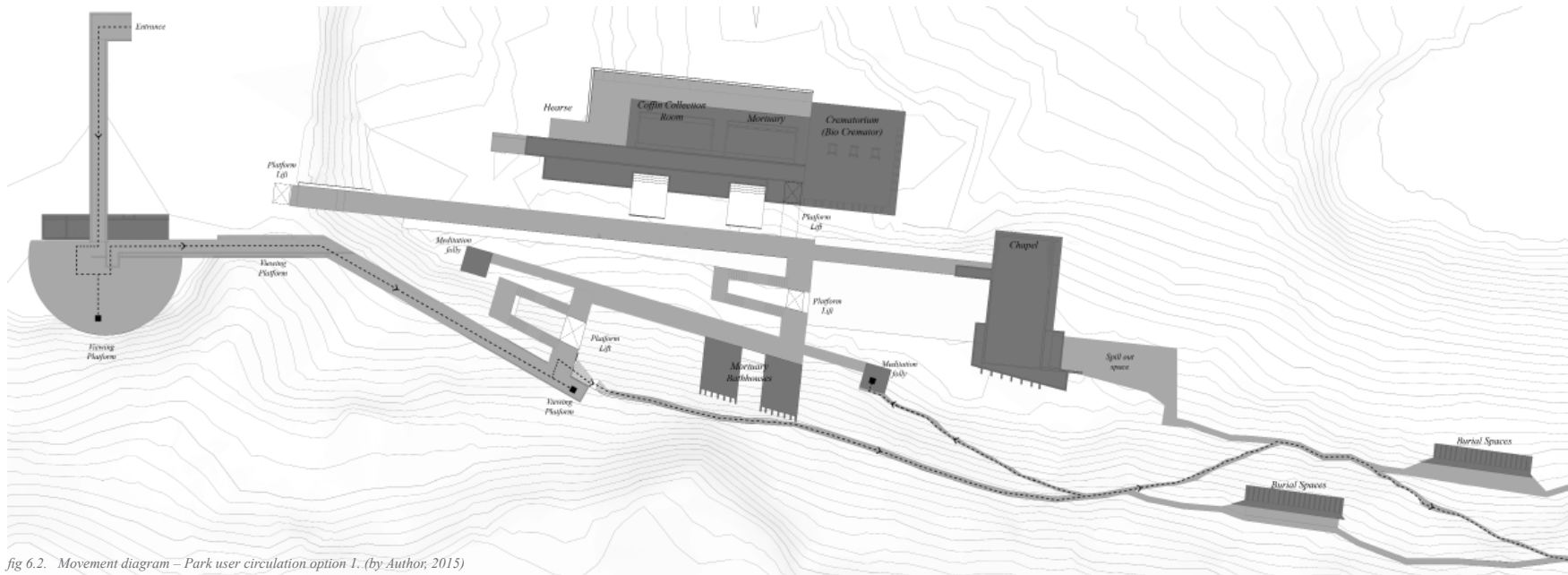


fig 6.2. Movement diagram – Park user circulation option 1. (by Author, 2015)

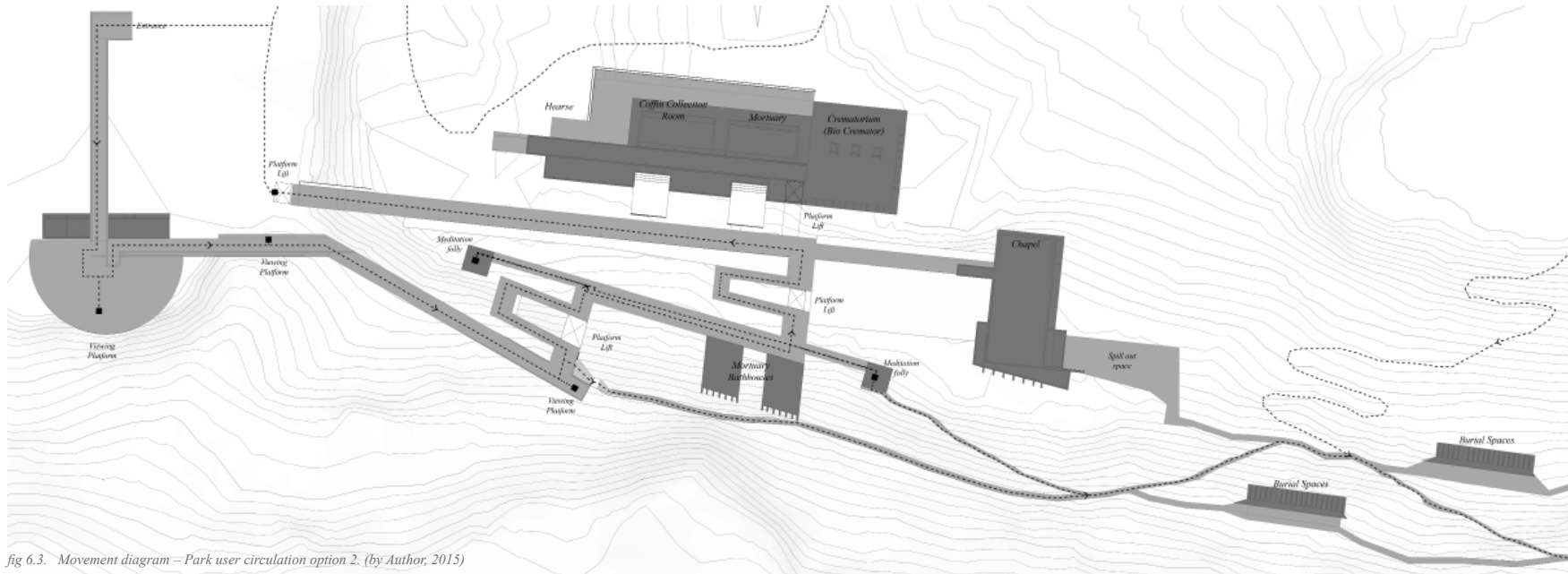


fig 6.3. Movement diagram – Park user circulation option 2. (by Author, 2015)

Movement Diagrams - Mourner

The following diagrams illustrate the movement and circulation routes taken by the mourner. These routes are dependent on the physical ability of the mourner. Mourners are able to move through the entire journey or have the option to use the platform lift to gain direct level access to the chapel and burial route. Family and close relatives are able to move through the mortuary and crematorium and then down onto the circulation routes by means of an elevator.

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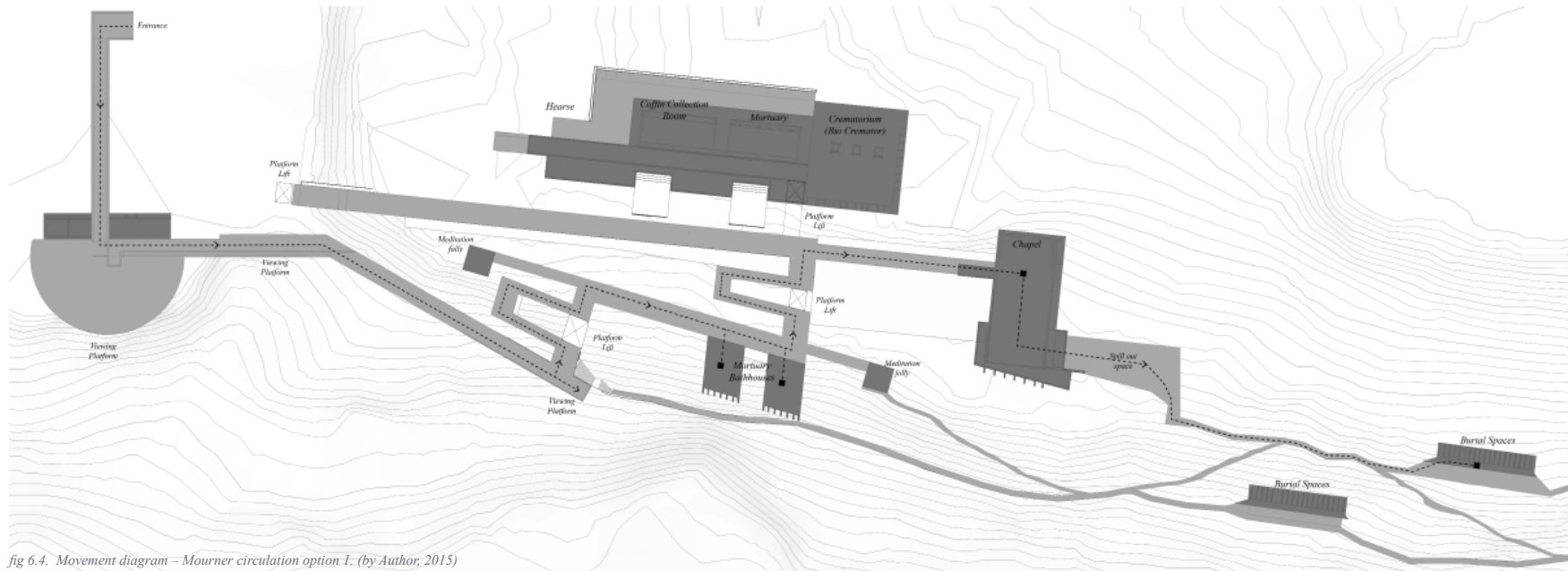


fig 6.4. Movement diagram – Mourner circulation option 1. (by Author, 2015)

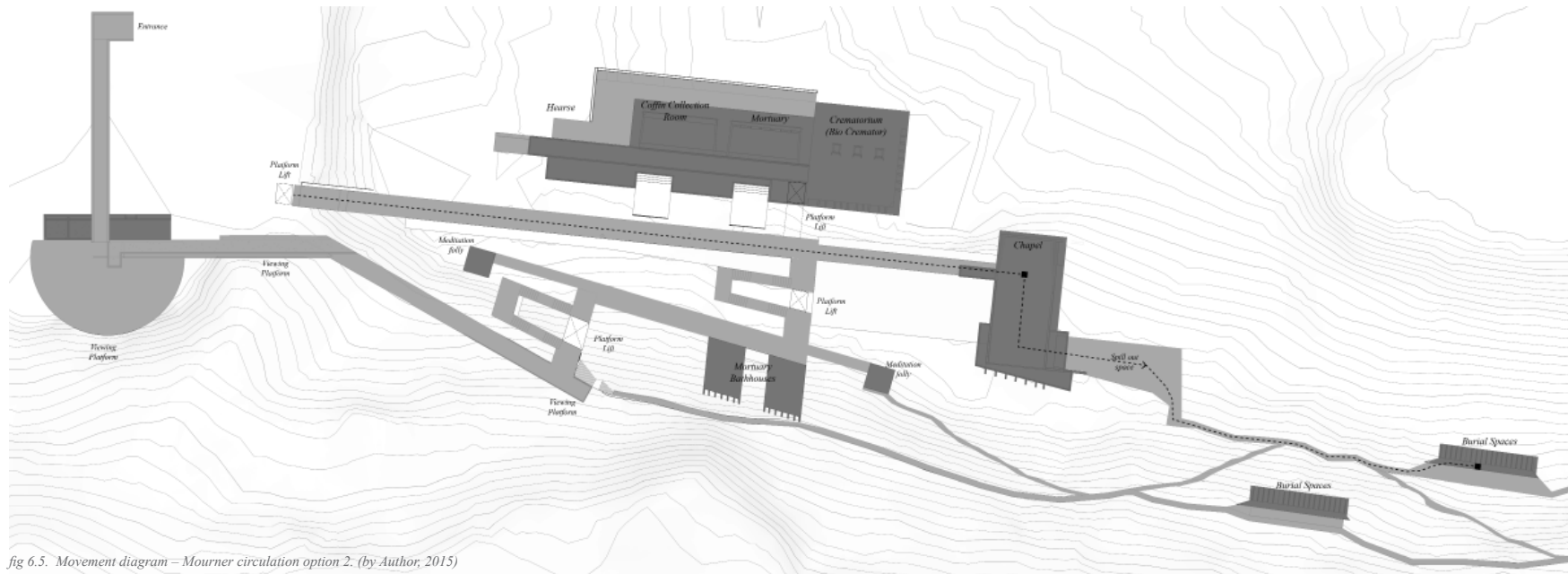


fig 6.5. Movement diagram – Mourners circulation option 2. (by Author, 2015)

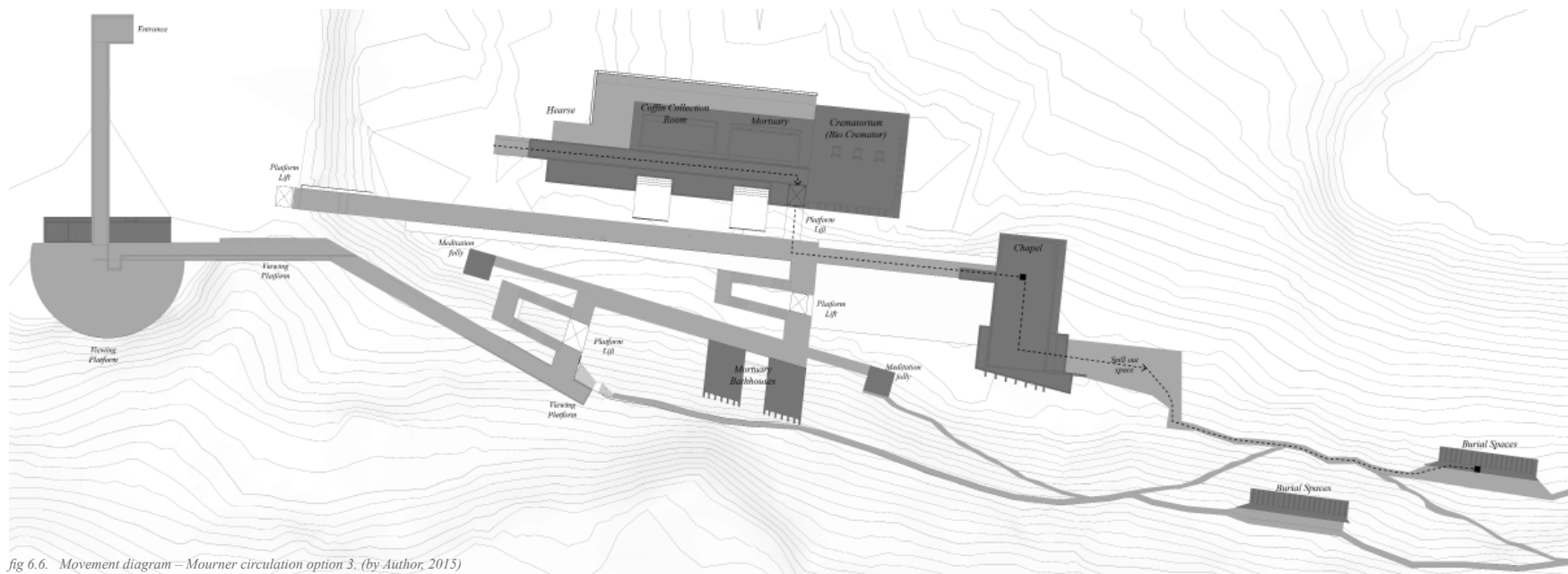


fig 6.6. Movement diagram – Mourners circulation option 3. (by Author, 2015)

Movement Diagrams - *Traditional Burial*

The following diagrams illustrate the movement and circulation routes taken during traditional burials. The family has the option to pay respects to the deceased by washing it. This movement makes use of the platform lifts on which the coffin is circulated vertically throughout the structure. Family members also have the option to have the body washed by a third part allowing for a quicker more streamline process.

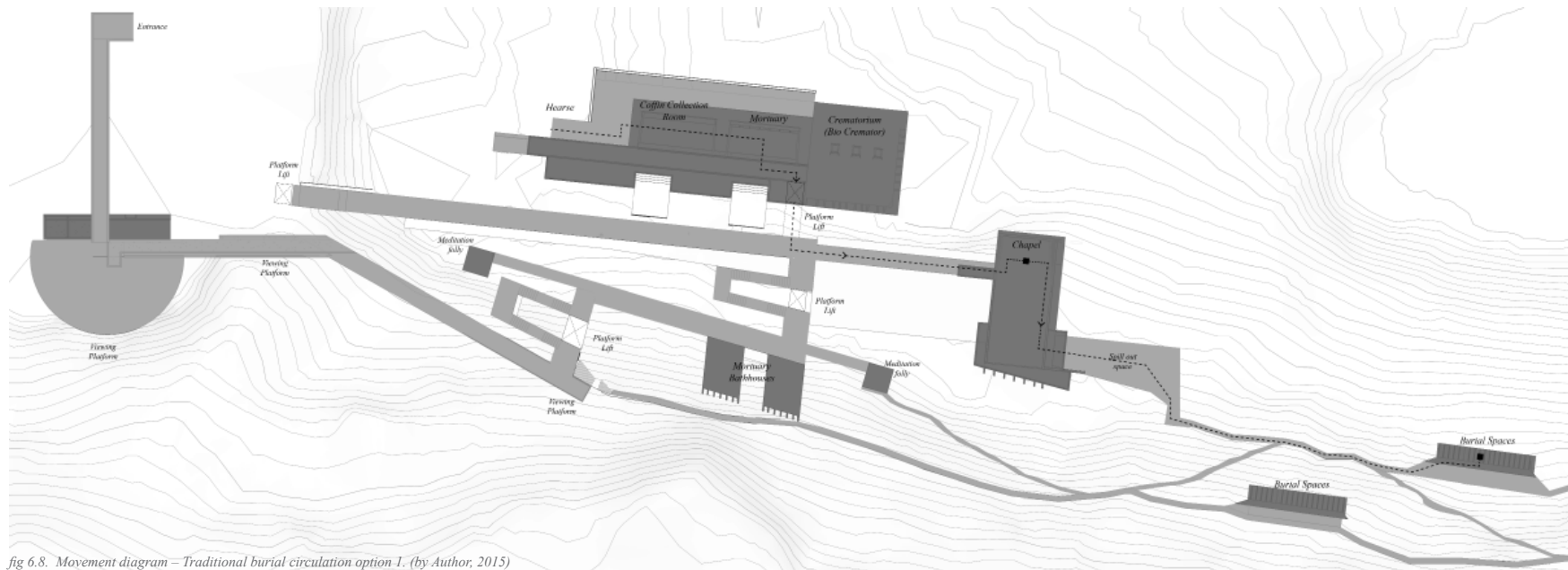


fig 6.8. Movement diagram – Traditional burial circulation option 1. (by Author, 2015)

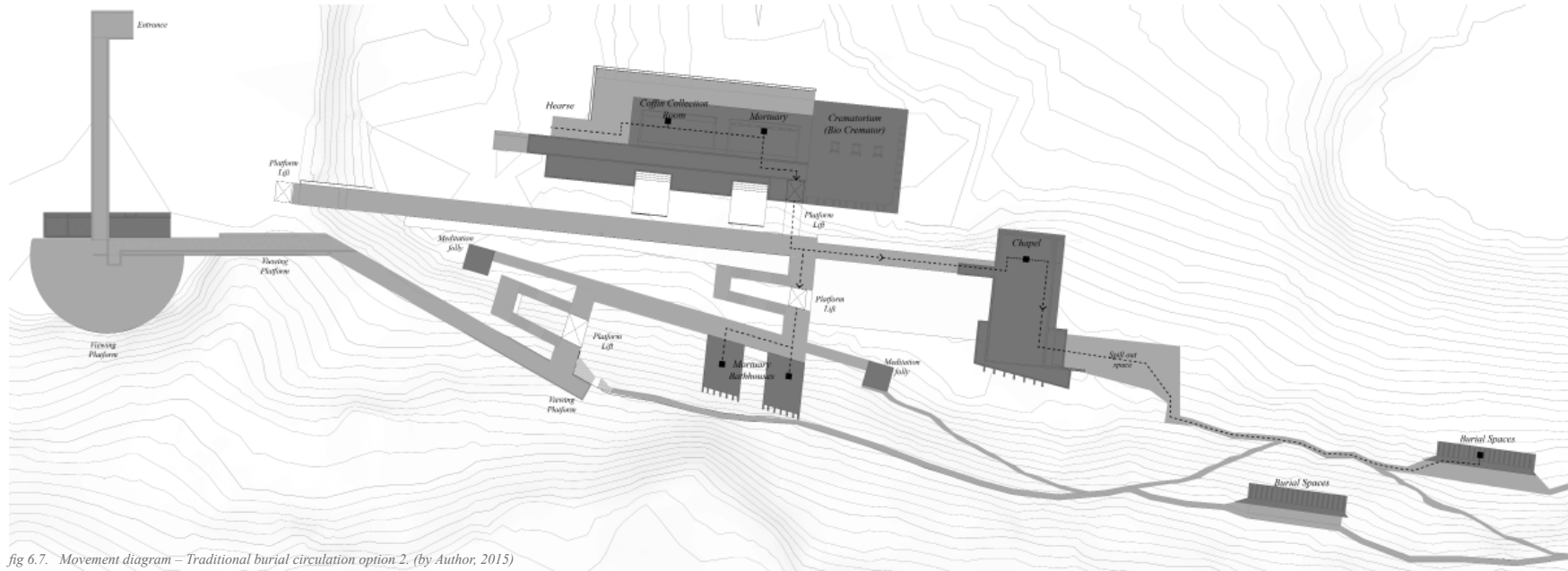


fig 6.7. Movement diagram – Traditional burial circulation option 2. (by Author, 2015)

Movement Diagrams - *Cremation*

The following diagrams illustrate the movement and circulation routes taken during Cremation. They illustrate the many options that can be taken to ensure a personal experience during a time of bereavement.

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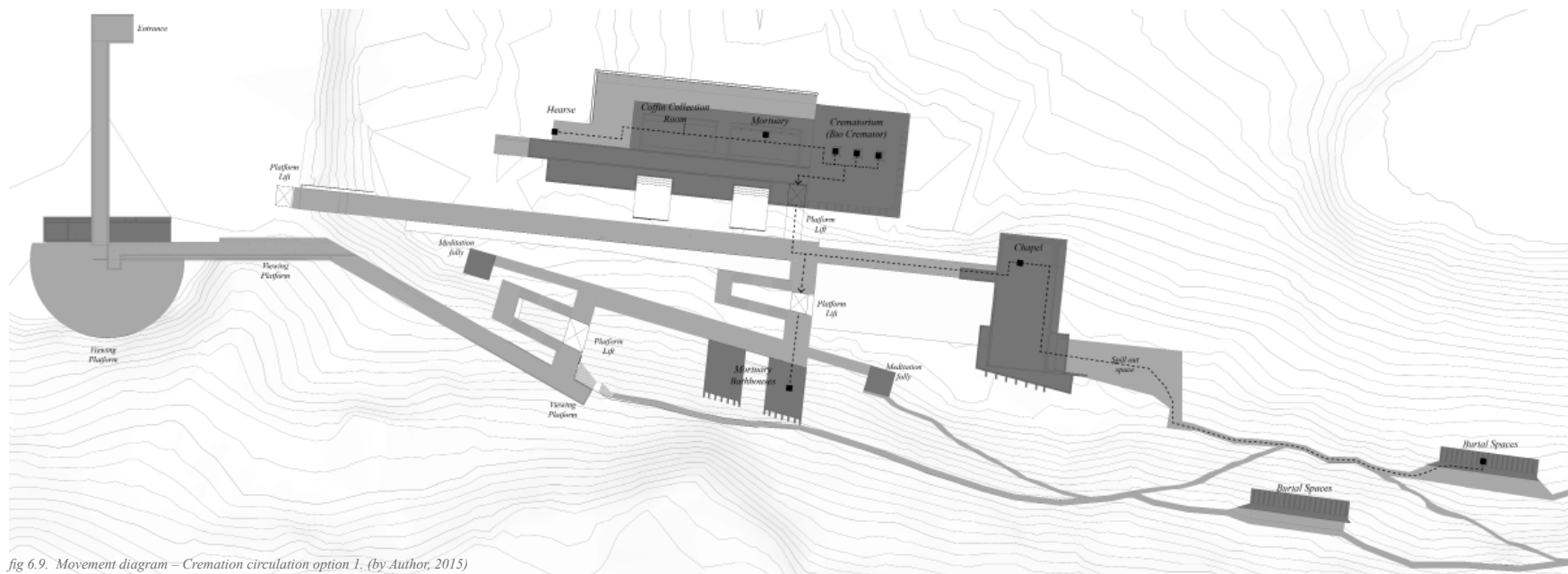
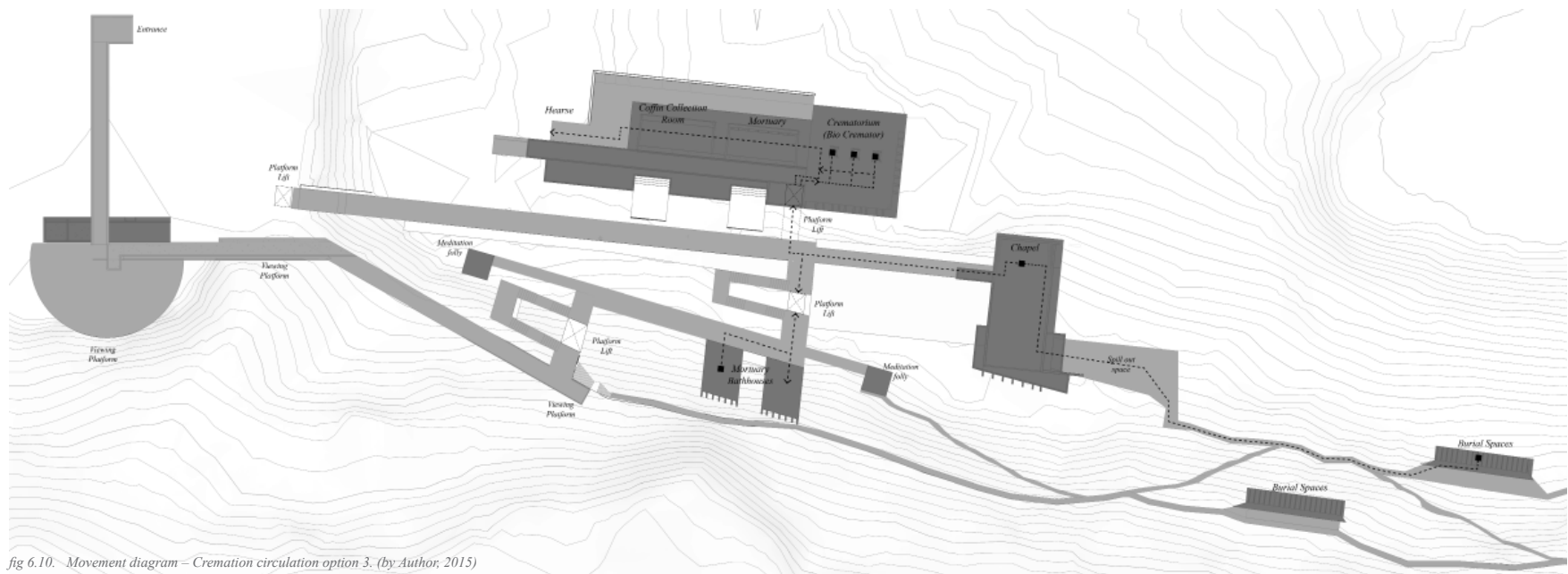
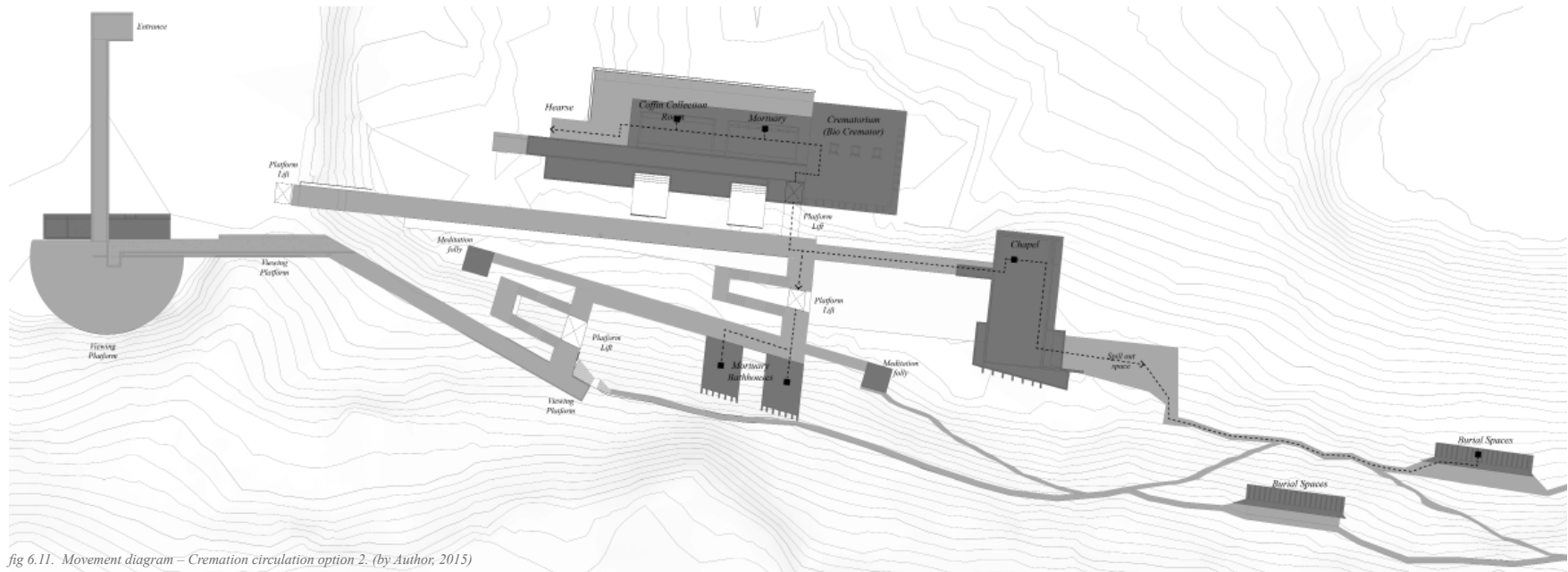


fig 6.9. Movement diagram – Cremation circulation option 1. (by Author, 2015)



Spatial Requirements of Programme

The scale and size of the required spaces were determined through precedent studies of similar buildings in the Johannesburg context and internationally. Spatially the structure will respond to context as well as the theoretical premise.

Precedent Studies:

- Woodlands Crematorium, Stockholm, Sweden

Crematorium

- Viewing and washing space required for the preparation of the deceased
- Pavilions and follies situated within the route structure in order to create isolation and privacy for individual meditation
- Crematorium space for 3 Bio Cremators and viewing slabs
 - Viewing space for cremation process
 - Service room and corridor for the delivery and storage of potassium hydroxide
 - Underground water reservoir for water storage
- Male and female change rooms for staff members
- Administrative offices
- Relaxation spaces for staff members
 - Courtyards and tearoom
- Lobby area
- Coffin collection space
- Hearse drop-off area
- Mortuary cooling room

Chapel

- Gathering space upon entering and exiting the chapel
- Pulpit
- Seating for the congregation
- Isolated prayer and meditation niches
- Spill-out space into the ridge landscape
- Change room for the speaker
- Male and female bathrooms
- Rock altar for viewing the body

Burial space and Park

- Burial follies dug into the ridge geology
- Isolated meditation follies and pavilions
- Public routes screened off from burial spaces

Practical Implications of Programme

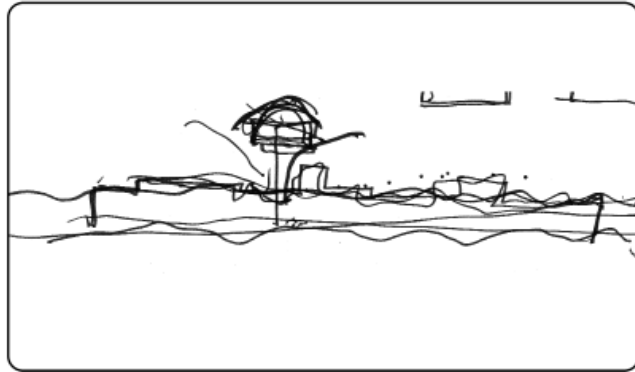


fig 6.12. Conceptual diagram showing ritual movement on plan. (by Author, 2015)

- The crematorium and cemetery falls under the control of Johannesburg Parks and Cemeteries.
- Observatory Ridge will be made accessible to the general public as a breathing space within the city.
- The idea of a ritualistic funerary procession will be re-established within South African burial practice in order to aid in the mourning process.
- The programme will make people more aware of the geological makeup of the ridge and its fauna and flora, thus acting as an educational landscape that allows users to learn through experiencing the abovementioned conditions.
- The ridge becomes a "memorial park" for the public and a landmark in Johannesburg's ongoing history.
- Green space would be given back to the city in the form of a rehabilitated ridge. City dwellers would have the opportunity to remove themselves from the chaos and noise of the city and immerse themselves in a natural, more thought inductive and contemplative environment.

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Conceptual Implications of Programme

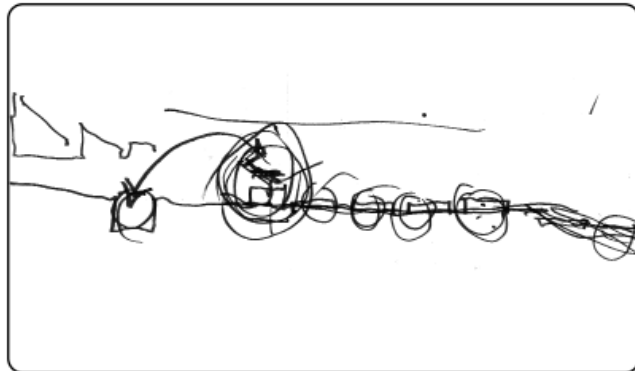


fig 6.13. Conceptual diagram showing ritual movement in section. (by Author, 2015)

- The cemetery park becomes a mediator between natural and built, between life and death.
- Mourners undergo a more physical process in taking leave of the deceased by washing, viewing and encircling the body throughout the constructed landscape.
- Alternative methods of interment within the South African context are addressed and related to processes currently taking place globally.
- The aim of the new programme is to enhance and support existing practices on the site and in the surrounding area, and to serve as an example of how cemeteries can be designed in parallel with parks in order to extend the programmatic relevance to context, as well as extend the lifespan of the constructed and natural landscapes.
- The natural condition of the ridge would be rehabilitated. Melville Koppies would be used as a precedent study in this regard.
- The metaphysical relationship between the living and the dead is established as the user descends into the structure, which resembles a necropolis or city of the dead. It becomes a place where the living and the dead interact; where mortal time unfolds spatially.

Client

Johannesburg Parks and Cemeteries state in their annual report that there is a huge shortage of land when it comes to burial within the city, mainly due to the fast-growing population and mortality rate of the city. Its current approach to burial space cannot be maintained in the future (Johannesburg City Parks 2008).

The proposed programme on Yeoville Ridge allows for the identification of two main clients. The first client, Johannesburg Parks and Cemeteries, will take charge of the entire ridge as part of the framework development and rehabilitation process of the ridge. They will work in close collaboration with surrounding spiritual groups in order to facilitate their weekly gatherings. The site as park and spiritual journey will allow for groups to gather in the follies and pavilions. Johannesburg Parks and Cemeteries would manage the landscape as a hybrid system of a burial ground and a nature reserve (Johannesburg City Parks 2008).

The second client would be the general public that could be divided further into various categories of public interaction and clientele. The site, being a burial ground, and the park will cater for both the mourner taking part in a funeral, the park-goer in search of isolation from the chaos of the city, and the spiritual being in search of a space to meditate or pray. These users will be able to use the park and burial grounds as well as the built structures leading to the park. The crematorium itself is situated in such a manner that it can be operated independently should the park not accommodate cremated burials anymore. This is highly unlikely as the City of Johannesburg's Parks and Cemeteries department recommends the future leasing of burial spaces at 10 year intervals (Moodley 2007:1-2).

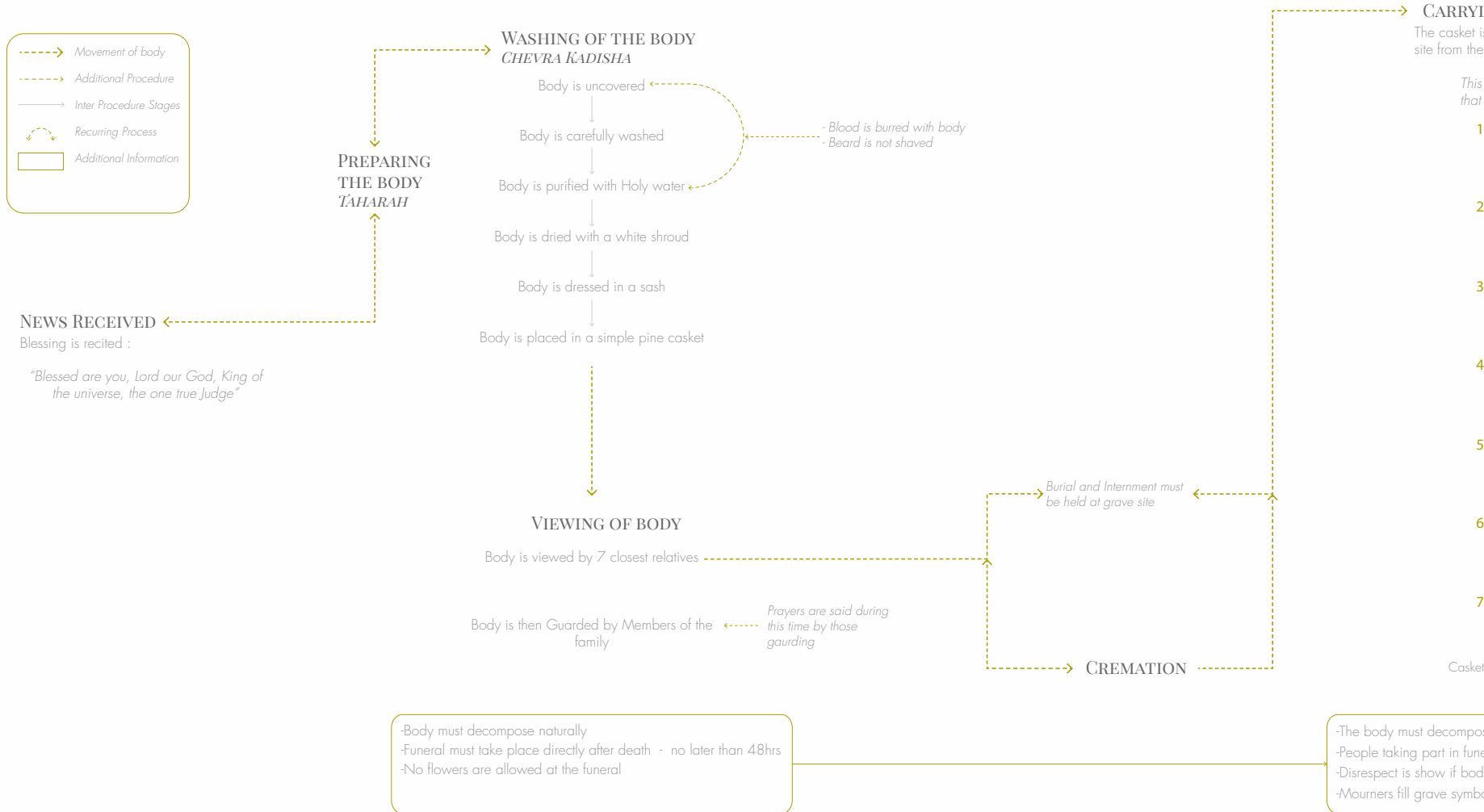


fig 6.14. Image of Pentecostals praying on site. (Mikhael Subotzky, edited by Author, 2015)

Mapping of Jewish Funerary procession and rituals

PREPARATION PROCESS

INTERMENT



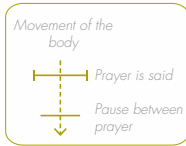
INTERMENT PROCESS

POST BURIAL PROCESS

CARRYING CASKET

The casket is carried to the grave site from the washing.

This process has 7 steps that need to be fulfilled



Psalm 91 is recited as a prayer during the 7 stages

KEVARA

Casket is lowered into the Ground

Mourners fill grave with soil

EXIT PROCESSION OF MOURNERS AND FAMILY

WASHING OF HANDS

Before exiting the graveyard, the mourners are allowed to wash hands with water in order to purify after the burial.

MOURNERS LEAVE CEMETERY

When leaving the cemetery the family is surrounded by two parallel rows of mourners to allow for closure.

VISITING GRAVEYARDS

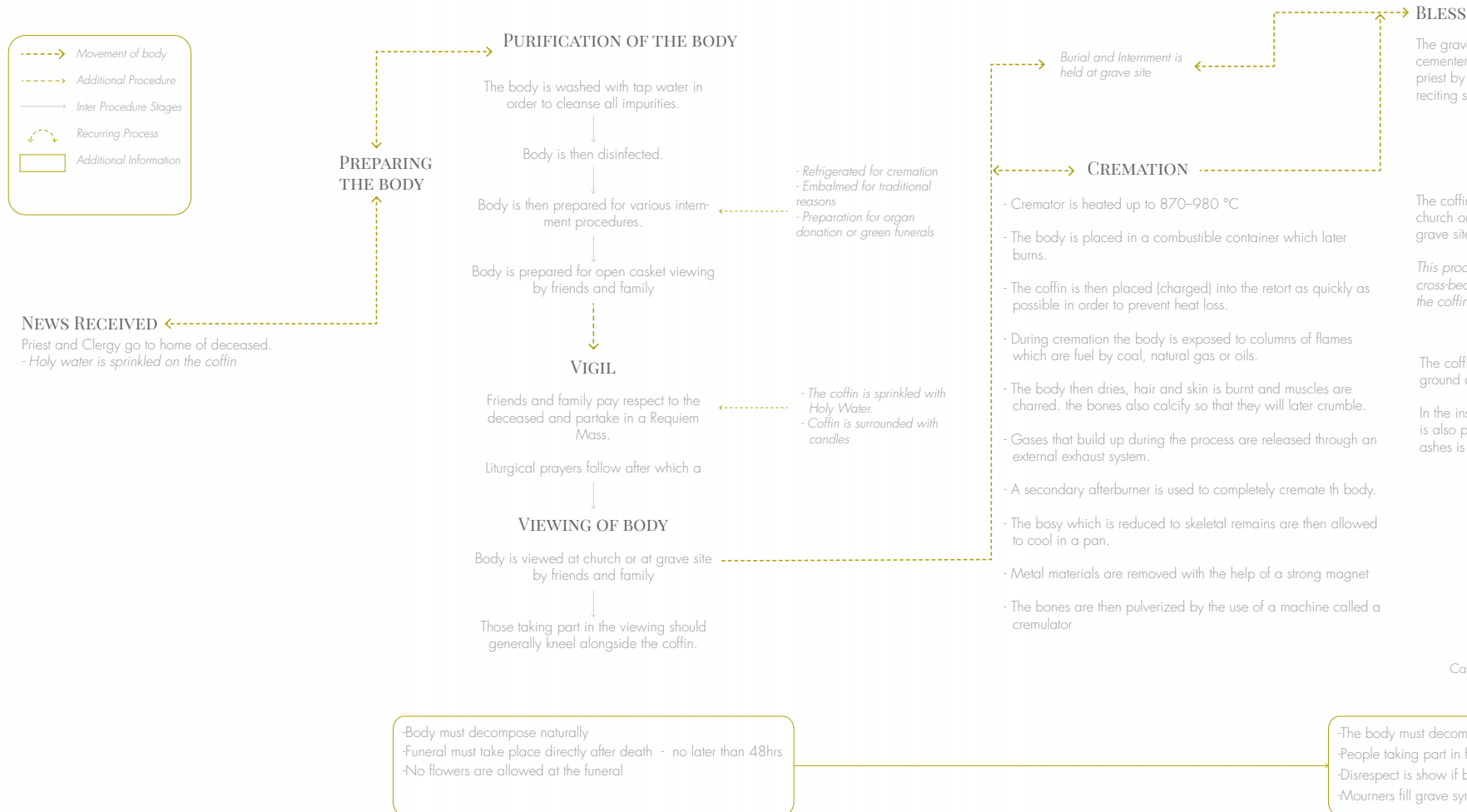
When visiting Jewish graves a semi precious stone is placed on the grave with the left hand. This shows that the grave is being tended to, it also allows those who did not partake in the mitzvahs of burial to show respects

- The body must decompose naturally
- People taking part in funeral must follow casket.
- Disrespect is show if body decomposes before funeral
- Mourners fill grave symbolic of closure

- Hands must be washed with holy water after funeral to cleanse Mourner of bad spirits.
- Family must pass through a row of mourners in order to exit cemetery.

Mapping of Christian Funerary procession and rituals

PREPARATION PROCESS



INTERMENT PROCESS

POST BURIAL PROCESS

BLESSING OF THE GRAVE

The grave, if not already a catholic cemetery should be blessed by the priest by sprinkling water and reciting a specific prayer.

"O God, by Your mercy rest is given to the souls of the faithful, be please to bless this grave. Appoint Your holy angels to guard it and set free from all the chains of sin and the soul of him (her) whose body is buried here, so that with all Thy saints he (she) may rejoice in Thee for ever. Through Christ our Lord. Amen."

BURIAL

The coffin is carried from the church or viewing area to the grave site.

This procession takes place with a cross-bearer and priest in front of the coffin with mourners following.

The coffin is then lowered into the ground and filled with soil.

In the instance of cremation burial is also preferred. The scattering of ashes is not allowed.

Mourners fill grave with soil

EXIT PROCESSION OF MOURNERS AND FAMILY

MOURNERS LEAVE CEMETERY

The burial ritual is quick and the procession does not linger in the graveyard

VISITING GRAVEYARDS

There is no prescribed post burial memorization or remembrance that takes place at the graveyard.

Casket is lowered into the Ground

- The body must decompose naturally
- People taking part in funeral must follow casket.
- Disrespect is show if body decomposes before funeral
- Mourners fill grave symbolic of closure

- Hands must be washed with holy water after funeral to cleanse Mourner of bad spirits.
- Family must pass through a row of mourners in order to exit cemetery.

Urban Framework

This framework is a collaboration between Erwin Struwig, Pieter Swart and Gillian van der Klashorst. Part II serves as a continuation of the concepts and notions discussed in Part I: Urban Vision, and aims to refine and apply the ideas explored therein on framework level.



PART II: Observatory Ridge Framework

The proposed focus area includes the neighbourhoods of Yeoville, Bellevue and Observatory, and specifically the Observatory Ridge. The following chapter investigates the history and contextual analysis of the illustrated focus area to inform the urban framework for Observatory Ridge at the end of the chapter.

The surrounding context has seen many changes over time since the inception of the city; the rapid growth and influx of residents in the mainly residential areas have contributed to the high density to the west of the site in areas such as Yeoville, Berea and Hillbrow. These neighbourhoods have played a significant role in the cultural and political history of Johannesburg and South Africa. Over time, fantasy and desire have characterised these areas, from the way the neighbourhoods originated according to the nostalgic ideal based on European cities, to Yeoville and Berea today becoming the gateway into and a new beginning in the city for countless immigrants from other African countries.

Contextual Analysis - Yeoville, Bellevue and Observatory

The Neighbourhoods of Yeoville, Bellevue and Observatory, as well as the Observatory Ridge, are investigated in historical periods in section format. Important events, developments and changes in the urban landscape are represented in a conceptual spatial and architectural manner. This section is contributed by Erwin Struwig, Gillian van der Klashorst and Marzanne Roux.

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Origin

The Witwatersrand region of hills was once crisscrossed by the migratory routes of game herds with perennial springs and grasslands rising up in a series of ridges – the Witwatersrand

Colonial capitalist city, entrepreneurial culture, cyclic economy, dustbin of discarded styles

Herman Charles Bosman: 'every citizen was imbued with one laudable desire of making all the money he could in the shortest amount of time'

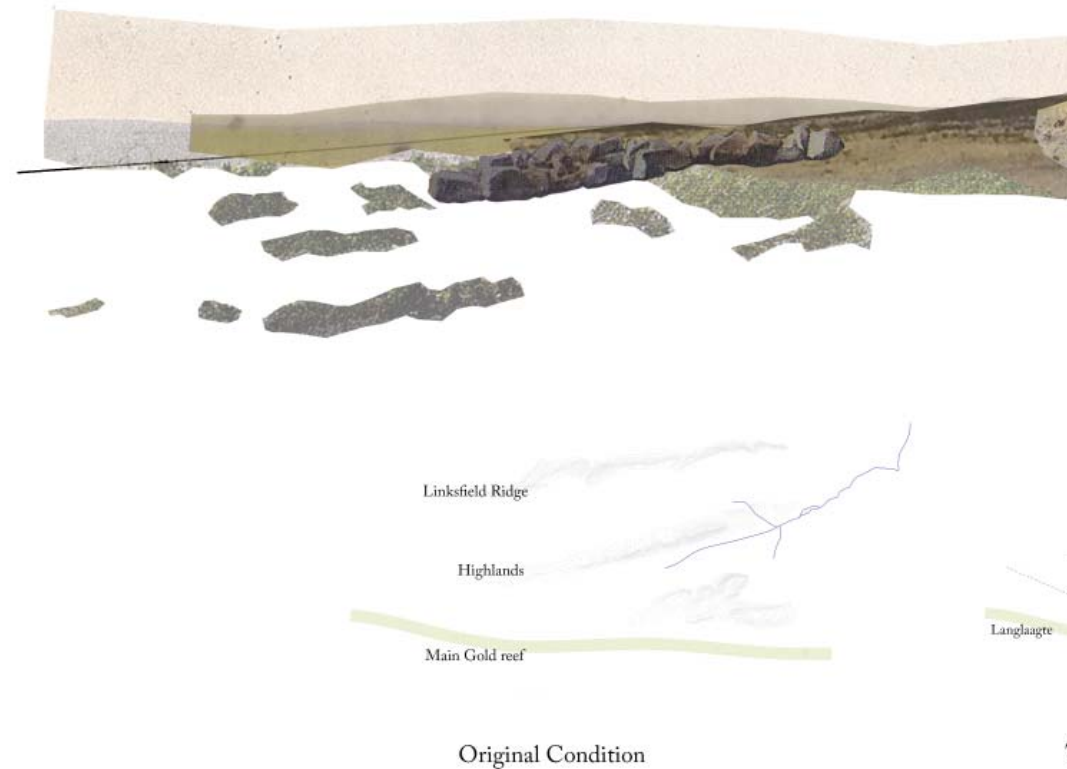
Johannesburg started to burst at its seams soon after its proclamation. Its insatiable growth was limited to the south by mining activities causing the establishment of its first northern suburbs; Yeoville, Berea and Bellevue

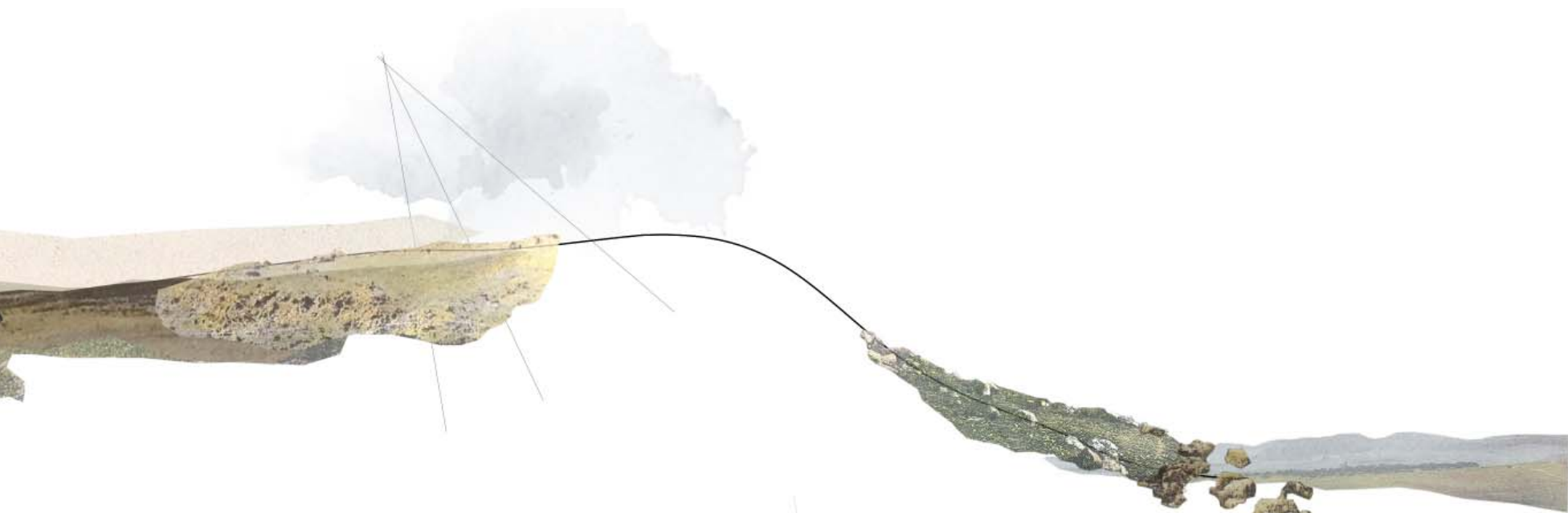
The northern suburbs became compounds of the rich, segregated residential reserves with heightened expectations, the new rich from the mining camps began to separate themselves distinctly from the vicinity of the mine workings: rooming-houses, lodging-houses, brothels, gambling joints, outlandish cafes, boisterous vaudeville theatres, illicit bars and disorderly houses

1851 – Doornfontein Farm (map of farms)

1887 – James Sivewright – JHB Water Works
Strong spring down hill (Harrow /Saratoga road)
Corner stone laid by Mrs. Von Brandis

Old Doornfontein: Thomas Yeo Sherwell laid out township 620 stands

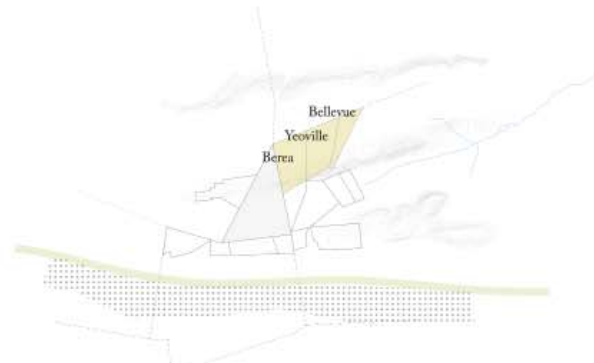




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The development of *Uitvalgrond*



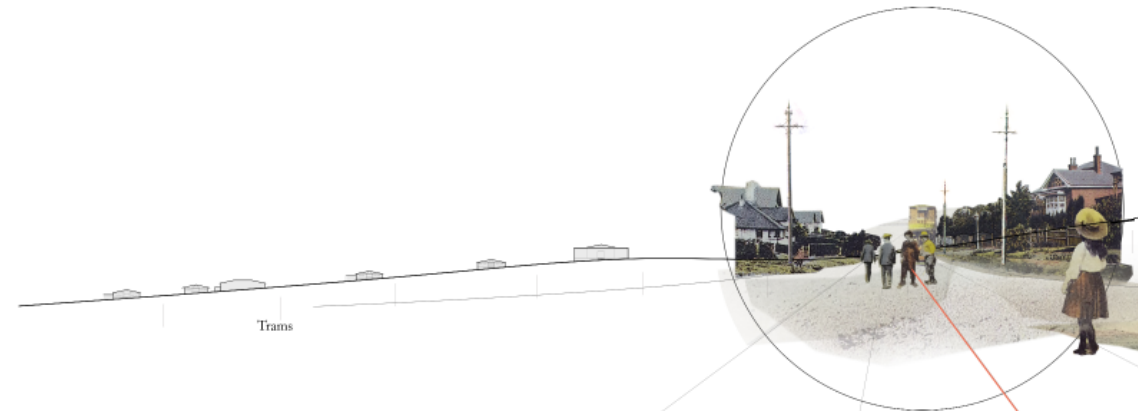
Development to the North

1880s-1900s

Timeline of suburbs

- 1890 - Yeoville : Thomas Yeo Sherwell from JHB estate syndicate set out the town. The area developed slowly, by 1896 only 484 stands of 1214 stands were developed.
- 1893 - Doornfontein north
- 1894 - Berea
- 1896 - Barney Barnato bought Yeoville in (JHB consolidated investments). Yeoville became known as a sanatorium for the rich: Those who could afford to live in country, far away from noise and dust. "Swagger suburb par excellence"
- 1900 - After the Anglo boer war landlords moved to sunny Parktown
- 1901- Bezuidenhout valley
- 1903 - Transvaal Meteorological site established on highest point of the ridge, donated by Bezuidenhout family, on their farm Doornfontein. The 8 acres was offered free of charge subject to the creation of a road from Yeoville to Bezuidenhout's home stead. (Observatory road)
- 1914 - Unique water tower beacon in SA

The Johannesburg rich and comfortable classes religiously followed English norms of respectability but important exceptions to this colonial dependence were found in Betrams and over the hill in Yeoville, where premonitions of a renaissance would first appear.



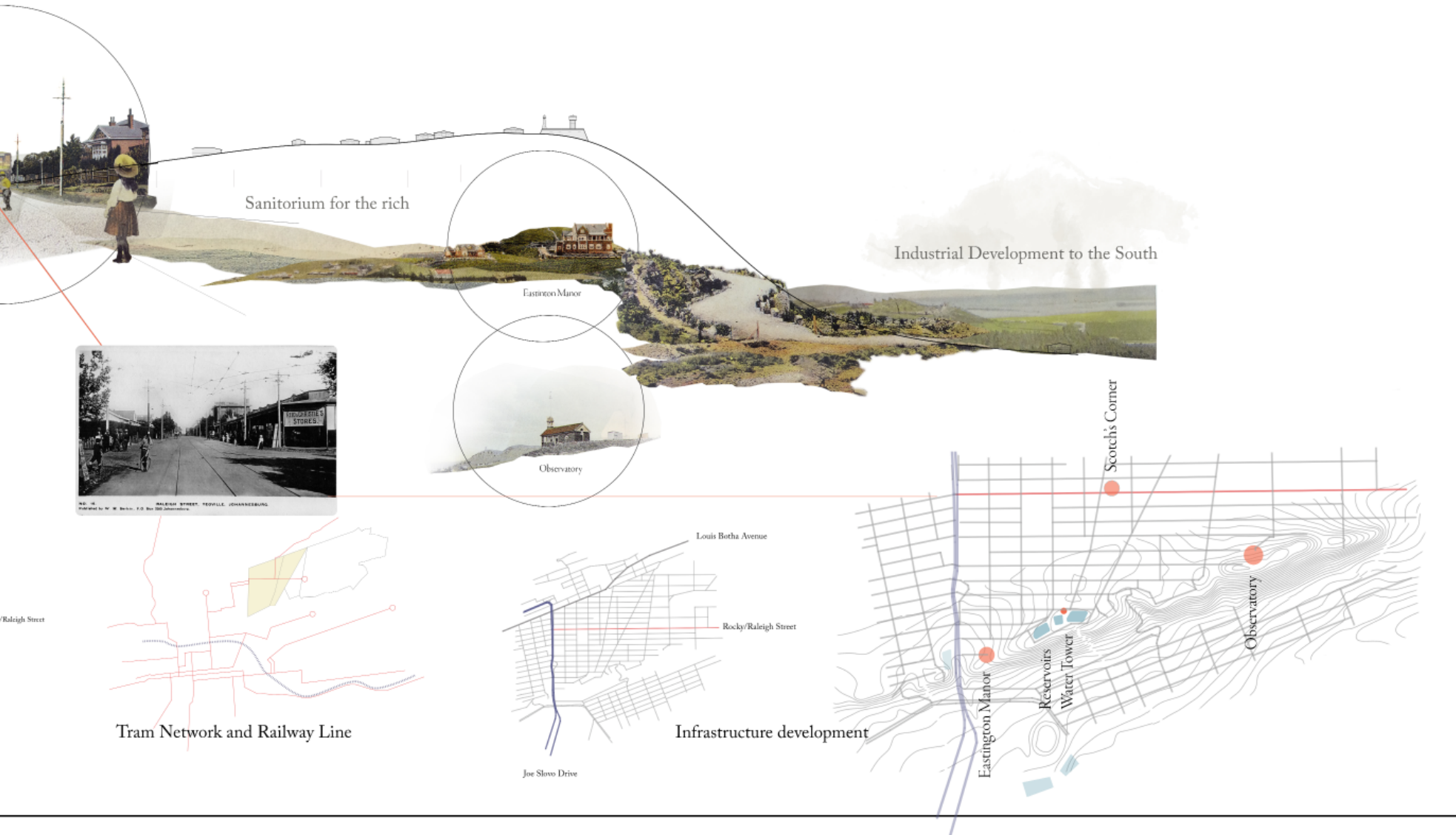
Barney Barnato

Belgravia was built on the image of Belgrave square in London. Many houses and mansions, including the famous one built for Barney Barnato, was built from inspiration of English architecture and styles. This created a sense of nostalgia to feeling 'home' and the ideological notion of colonialism to create a sense of order in the 'wild dark Africa'.



The development of suburbs surrounding Yeoville

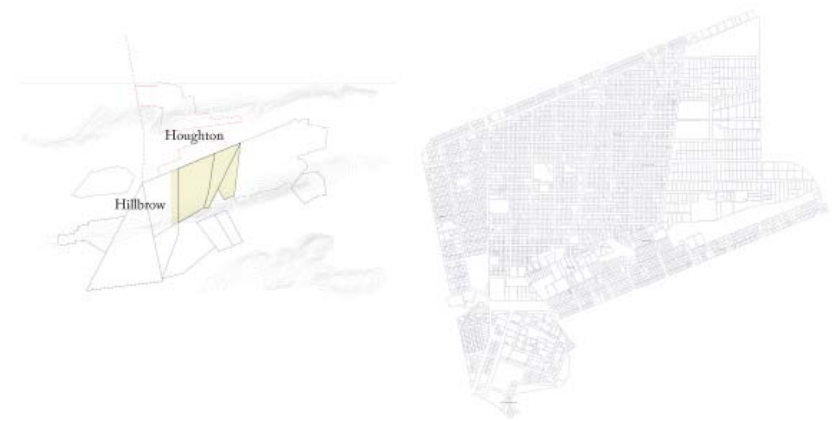
Tram N





1930s-1980s

- 1911: Mines and Works Act
- 1913: The Native Land Act
- 1930: Houghton
- 1930s: Development in Hillbrow spills over into Yeoville accounting for the flats in international style. Predominant architectural influences were the Americanism from Art Deco New York, pre disposed to the latest stylisms and hybrid forms of modernistic architecture. A debased classicism under constraints of tight budgets, lack lustre pseudo-classical work, coarsened classical details also prevailed.
- 1935: Hybrid architecture in Yeoville and Bellevue: Maisonnets double storey 4 unit blocks were pre dominantly white modernist villas with blank cubist forms, projected slabs, rounded balconies and corners and stepped central stair towers— small builders versions of Corbusier pavilions.
Yeoville gets its first metric swimming pool
- 1948: National Party wins election - Implementation of Apartheid
- 1950: Group areas act (aim of creating homogeneous residential areas inhabited by only one population group)
- 1970s: Moving of non-white, middle-class population groups into areas became possible (So-called grey areas, government offices have been less and less able to enforce the Group Areas Act. Initially well-to-do coloureds and Indians, it was not until later that blacks and non-whites of generally lower social status followed) from the adjoining areas of Hillbrow and Berea
Yeoville North of Raleigh Street, the local main street and shopping mall, the population of Yeoville is characterized by Orthodox Jewish communities. For this population group there are kosher shops, a Jewish kindergarten, a school and a number of synagogues and Torah centres.
The area south of Raleigh Street is characterized on the one hand by students and self-employed persons (musicians, actors, journalists), who create a "more liberal", cosmopolitan residential atmosphere because of the ethnic variety of the white residential population
Because there are a number of welfare organizations here and a choice of rent-protected one room apartments, we also find a concentration of retired persons
- 1988: The cultural centre for many persons belonging to intellectual and student circles is Rockey Street, the extension of Raleigh Street. Its restaurant and club atmosphere and the great variety of types of shops attract young people in particular. Despite the description of Yeoville as a "tolerant, happy community"
- 1991: Scrapping of the Group Areas Act (All over the country persons of all skin colours could now acquire property and settle anywhere, providing their personal income allowed them to do so)



1944 ANC Youth league was formed in 1944, Nelson Mandela, Walter Sisulu and Oliver Tambo were the founding members



1963-4 - Rivonia Trial that sent Nelson Mandela to prison.

President D.F. Amann of INP (later the National Party) after winning the 1948 election. This was officially the start of Apartheid.

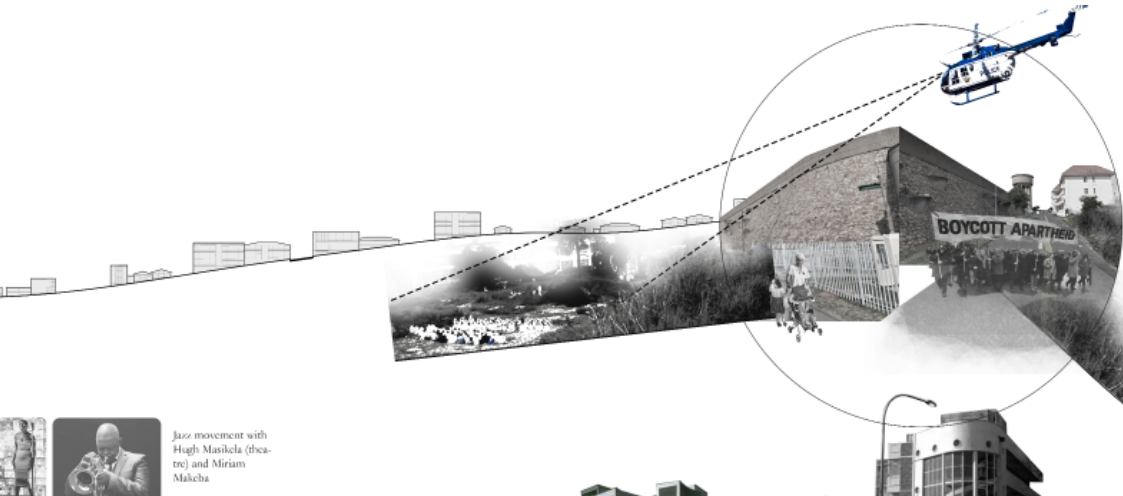


Women's Anti-Apartheid Movement voiced against apartheid. Berdinus Niemandt/ Koos Kombuis/ Johannes Kerkorred



Jazze movement (Hugh Masekela) and Miriam Makeba





Jazz movement with Hugh Masekela (trumpet) and Miriam Makeba

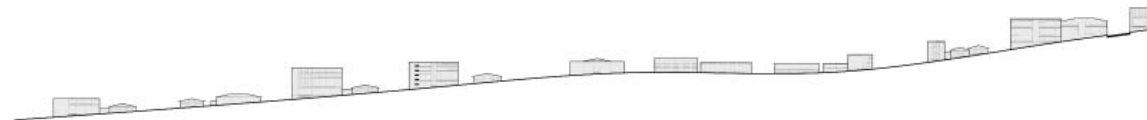
Vodvry Afrikaans Rock music movement voiced against apartheid. Bernoldus Niemand/ Koos Krenbois/ Johannes Kerfontein



Geometrie (1994) (Rogier and Tjepco Charbonnet Architects)
Roberta Court (1997) (J.J. van Rensburg)

- Political Activists in Yeoville**
-  **Ronnie Kasrils:** Founding members of Umkhonto we Sizwe.
 -  **Joe Slovo:** Political lawyer part of SACP and late ANC.
 -  **Barney Simon:** Co-founder of SA Market Theatre; first multi-cultural theatre and protest theatre.
 -  **Albie Sachs:** Anti-apartheid campaigner and judge in the Constitutional court.
 -  **Wulfie Kodesh:** Helped to hide Nelson Mandela in 1961 for 2 months.





1960-1980s

1970s Moving of non-white, middle-class population groups into areas became possible (So-called grey areas, government offices have been less and less able to enforce the Group Areas Act. Initially well-to-do coloureds and Indians, it was not until later that blacks and non-whites of generally lower social status followed) from the adjoining areas of Hillbrow and Berea

Yeoville North of Raleigh Street, the local main street and shopping mall, the population of Yeoville is characterized by Orthodox Jewish communities. For this population group there are kosher shops, a Jewish kindergarten, a school and a number of synagogues and Torah centres.

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-Wolfie Kodesh: Helped to hide Nelson Mandela in 1961 for 2 months

1963-4 - Rivonia Trail that sent Nelson Mandela to prison.



Political Activists:

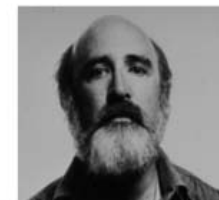
-Ronnie Kasrils: Founding members of Umkonto we Sizwe.

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Wolfgang Sachs: Anti-apartheid campaigner and judge is the Con

Wolfie Kodesh: Helped to hide Nelson Mandela in 1961 for 2 mo





3/
 La tortu bar – u shaped building typology with fountain – typology for entertain and gathering. 8 rocky
 1979 national wake – first mixed race band gig – wake up the nation and dance on the corpse of apartheid (8 rocky central square)
 Jazz club – 24 rocky – rumours
 Piccadilli – hugh masekela – jazz
 Voelvry – 1888 – roots in 1970s rock - 1981 rock into rocky street
 Bernoldus niemand (1950) lived in yeoville – political. Left-wing, rebellious, non-conformist
 Black sun club 0 1984 – protest theatre
 1987 – Johannes kerkorrel
 Kerkorrel en koos kombuis- Black September



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The Witwatersrand - Observatory Ridge

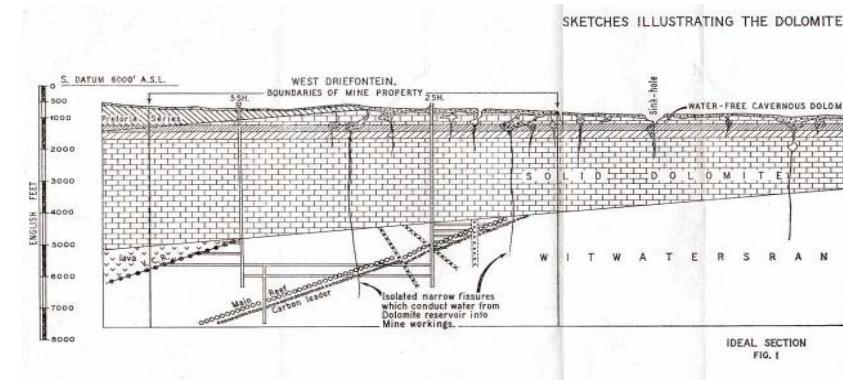
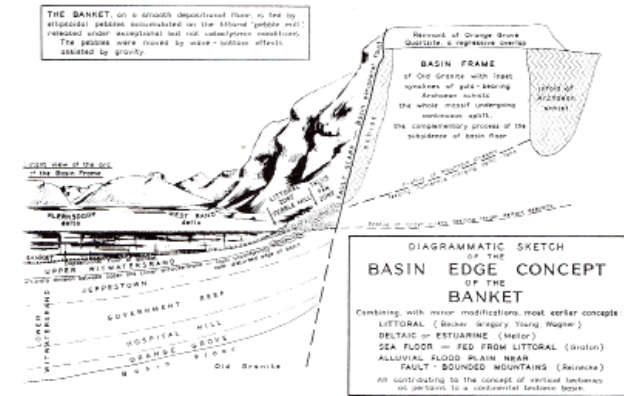
This segment focuses on the history and cultural significance of the Observatory Ridge. It concludes with a proposed framework as a contextual future development guideline for individual projects, as contributed by Erwin Struwig, Gillian van der Klashorst and Pieter Swart.

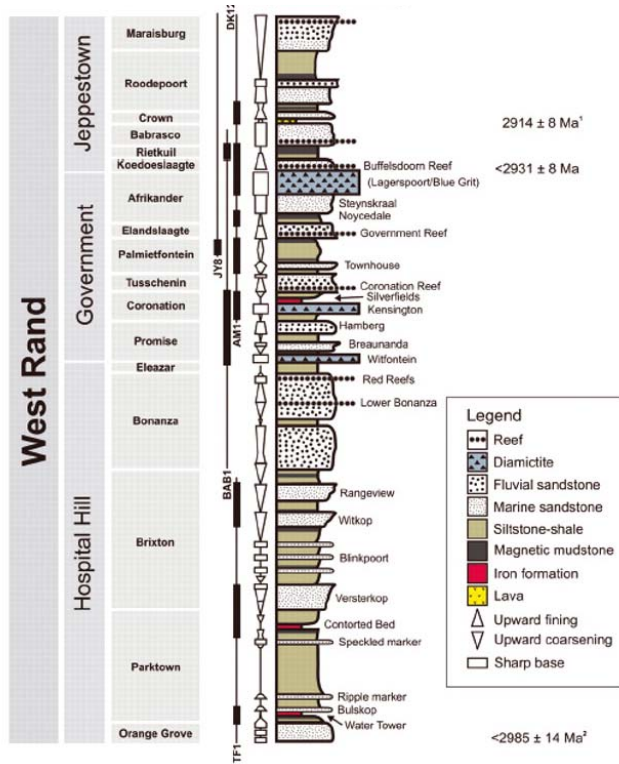
Origin and geological significance of the Witwatersrand and Observatory Ridge

Coined by the Boers to describe a series of rocky outcrops extending from Bedfordview in the east to Krugersdorp in the west, the Witwatersrand or 'ridge of white waters' is named for the abundance of rivers and waterfalls found in the rocky area. The Hillbrow-Berea-Yeoville ridge (also known as Observatory Ridge), being the highest ridge in Johannesburg, forms the watershed between rivers that flow south and west towards the Atlantic Ocean, and east and north towards the Indian Ocean (Norman & Whitfield 2006:38).

The Witwatersrand lies on the Kaapvaal craton (see Fig. x), one of the only remaining areas of pristine three billion year old crust on Earth. During the Archaean period, more than three billion years ago, the region where the city and its surrounds are located today was covered by a large inland sea called the Witwatersrand Basin. Networks of rivers flowed into the water basin, carrying materials like pebbles, sand and clay which were deposited in sedimentary layers of several kilometres thick. Lava eventually buried the sedimentary layers and created heat and pressure to transform the fragmented sediment into coherent sedimentary rock. The inland sea disappeared about 2,7 billion years ago due to numerous volcanic eruptions (Nachema 2008). The Vredefort asteroid hit the earth about two billion years ago, causing an impact crater extending 250 kms over the area of the Witwatersrand Basin. Being the largest and oldest meteorite impact recorded on earth, it is also suggested to be one of the major events that contributed to the rich gold reefs of the Witwatersrand. The combination of the Vredefort astrobleme and the weight of the water of the Witwatersrand Basin caused the sagging and tilting of the 'bowl' of the Witwatersrand. This caused the gold deposits at the bottom of the Witwatersrand Basin to be buried several kilometres deep, safeguarding the gold reefs against erosion. The layers of rock jutting out and sloping towards the south at an angle of 70° are what is known today as the series of ridges of the Witwatersrand (Nachema 2008).

The gold fields in the areas around Gauteng, North West and the Free State lie around the perimeter of the sedimentary Witwatersrand Basin. The Witwatersrand Supergroup is divided into two distinct classifications according to the different types and proportions of sedimentary strata. The Central Rand Group is located in the southern parts of Johannesburg; this 2 500 m deep quartzite group is responsible for the rich gold reefs, sloping at an angle of 30° at about one metre wide. **The gold reefs are composed of thin layers of gold conglomerate, sandwiched deep into the earth. The West Rand Group, located in the middle to northern areas of the city centre of Johannesburg, is composed of almost equal amounts of shale, sandstone and minor conglomerate layers amounting to about 43 mm thick (Norman & Whitfield 2006:39).**



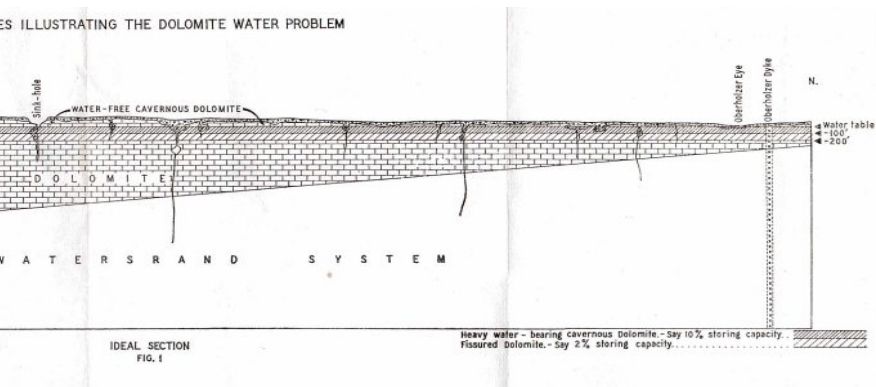


The 'Contorted Bed'

The Observatory Ridge, the highest ridge in Johannesburg, consists of 3 000 million years old sedimentary rock known as Hospital Quartzite, that lies about six to eighteen metres below a younger, more unstable shale layer and dips about 50° in a south-south-easterly direction (Bremner 2014). Along the crest of the Observatory Ridge, extending into Braamfontein and Brixton, lies one of South Africa's 'few geological national monuments,' namely the 'Contorted Bed.' Occurring consistently about 750 m above a granitic basement, this important marker bed of the West Rand Group consists mainly of banded ironstone. This rock is further composed of thin bands of black magnetite, red jaspilite, grey chert, hematite, pyrite and iron-rich shale layers formed by sedimentary processes. There is no evidence that residual stresses still operate within the rock, and the Contorted Bed should therefore provide adequate founding for heavy structures (Brink 1983:82-84). The phenomenal qualities of this bed include its remarkable intricate contortions or folding, visually expressed in a range of brown, red and black colours (see figure 5.x), as well as its unique basin-wide extent. Evidence of this can be seen in areas near Jan Smuts Avenue and the Wits University as well as the area around Joe Slovo Drive (Norman & Whitfield 2006:43).

The Contorted Bed is also significant due to its strong magnetic feature, which has been used extensively to explore and trace gold-bearing reefs hidden under thick younger rock formations in the West Rand Group. Since the 1930s new gold reefs could be detected due to the magnetism of the beds. The magnetic response from the distances between the various reefs and marker beds made it possible to trace the position of the Main Reef. This led to the discovery of the western gold mines below dolomite such as the Carletonville and Welkom goldfields. The Contorted Bed is also weather resistant and thus usually ridge-forming, seen in the exposed crest of the ridge (Norman & Whitfield 2006:43).

ES ILLUSTRATING THE DOLOMITE WATER PROBLEM



The interesting geological history of the Witwatersrand helped to shape and mould the City of Gold into what it is today. Evidence of man's interaction with the subterranean is seen in the man-made mountains and steel headgear of the mining landscape. The ridges can be seen as a natural landmark of the rich geological wealth obscured in the subterranean layers of the city.

Cultural narrative of the Ridge: A nostalgic landscape

Johannesburg started to burst at its seams soon after its proclamation. With the early town rapidly expanding along the east-west corridor between the ridges of the Witwatersrand in alignment with its subterranean wealth, and growth being limited to the south by mining activities, the first suburbs were established north of the ridge: Yeoville, Berea and Bellevue. In the early developing years of the city the ridge acted as a natural and cultural barrier (Bremner 2014). The ridge became a threshold within the city, a symbol of separation and power.

“Always exceeding the intentions of their creators, buildings mediate their meanings through use as much as symbolism and representation. It is through such a play between intention, use, and symbolism that the residential enclave that grew up in Johannesburg at the turn of the century contributed to the growth and elaboration of colonial national South Africanism(Foster 2008:145).”

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The northern suburbs became enclaves of the rich – segregated residential reserves with heightened expectations. The new upper classes began to separate themselves from the vicinity of the mine workings: rooming hotels, lodging houses, brothels, gambling joints, outlandish cafés, boisterous vaudeville theatres, illicit bars and disorderly houses. In this hinterland north of the ridge, nature was still preserved from the industrialisation and expansion taking place elsewhere, and thus presented an ideal place for the development of Johannesburg’s most desirable residences.

Nostalgia for Europe predominantly dictated the development of these enclaves which became manifestations of the pastoral idealism which captivated Europe; these homes on the fringe of the city were perched, almost symbolically, above the endless grasslands of virgin country. Many houses and mansions, including the famous one built for Barney Barnato, were inspired by English architecture and styles, and Bellegravia (one of the suburbs of Observatory Ridge) was built in the image of Belgrave Square in London. This created a sense of nostalgia for ‘home’ and the ideological notion of colonialism to create a sense of order in ‘wild, dark Africa’. This nostalgia was further manifested in the plantations of eu calyptus and fir trees (planted by the Braamfontein Company for construction timber) surrounding the ridge, which were reminiscent of the European forests and climate.

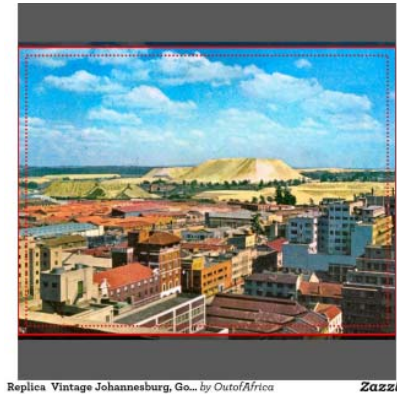


fig 7.1. Postcard of Johannesburg showing mine dumps



fig 7.2. Top Star drive-in located on a unused mine dump

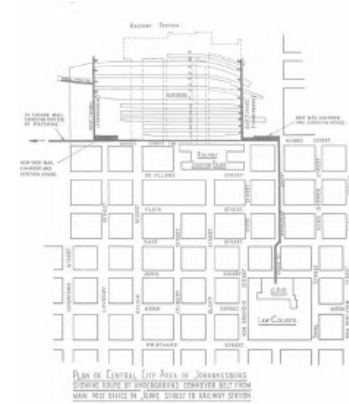


fig 7.4.
Plan of central JHB Subterranean tunnels



fig 7.3.
Inside Mining tunnels

The Ridge as vantage point

Throughout history there has been an important connection between topographic elevation and social power. Examples in the Highveld area can be seen in the evidence left by the ancient native Sotho–Tswana people’s encampments on or near the summits of ridges and koppies. Jeremy Foster is the author of the book, *Washed with sun*, a study concerning the role of landscape in South Africa, both natural and constructed, in the shaping of cultural identities and spatialities that formed the geographical imagination and emerging nationhood of white South Africa during the early 1900s. Foster argues that the ... [c]onnection between social status and elevation are reinforced in places that are not only raised, but also level ... the elevated, level platform also implies orientation, another phenomenological in-habitational truth that combines pragmatic and existential knowledge. Orientation is a product of our frontally directed sense; it sublimely reveals what we consider most important and automatically configures the enhorizoning world (Foster 2008:151). The ridge therefore becomes an important place within the cultural construct of the city; it reveals what is regarded as significant as well as the relationship that a particular group within society has to the city.

The created landscapes of Johannesburg

Although Observatory Ridge is still mostly preserved as natural landscape, it nevertheless exists as a result of the ceaseless fragmentation taking place due to fantasy – nostalgia – which materialises as *uitvalgrond* (discussed in Chapter 2: Urban Vision). These resultant landscapes, however, occur throughout Johannesburg as new or created artificial landscapes in the form of mountainous mining dumps, the subterranean tunnel networks (mining tunnels, railroads, postal tunnels and so forth) and, perhaps most significantly, Gold Reef City which becomes the most lucid demonstration of how nostalgia is transformed into artificial landscapes. It is a nostalgic fantasy existing in hyper-reality which has been cartographically charted and artificially reconstructed. There is, however, a general inaccessibility or exclusivity to these landscapes.

Historically playing a role in the development of the city, today the Observatory Ridge is a disregarded surplus ground, or *uitvalgrond*. Fenced off, with no access or ownership, this significant natural oasis within the dense surrounding neighbourhoods holds the potential to become a place which can give meaning and identity to the city and its dwellers. The urban framework proposes a site-specific approach, aiming to reinforce the hidden character and narrative of the site in a contemporary and relevant manifestation which would contribute to the surrounding context.



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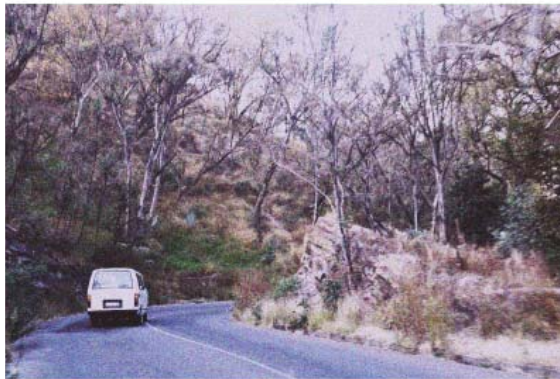
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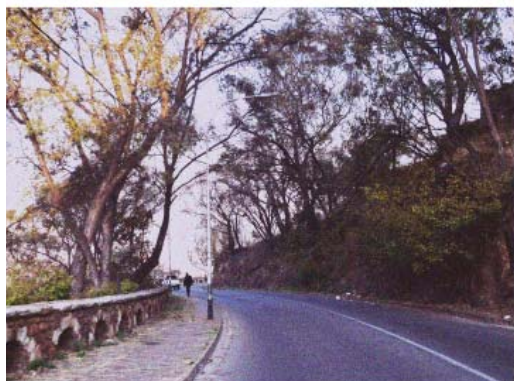


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The 'Contorted Bed'

Melville Koppies, situated on another set of rocky outcrops that make up the Witwatersrand, is one of the city's oldest nature reserves and geological heritage sites. This piece of natural heritage is the last conserved ridge within Johannesburg's Witwatersrand ridges that represents the state of Johannesburg's ridges from before the discovery of gold in 1886. Remnants of early Stone Age tribes with stone tools from 500 000 years ago as well as Iron Age tribes arriving within the last 1000 years can be seen in the reserve. The vegetation on the ridge itself is completely indigenous and is said to be the most pristine example of the richness and splendour of the Highfield flowers, grasses, and trees still in existence. (Baines, n.d., p. 1)

The similar topographical condition and close proximity of the Melville Koppies to Observatory ridge affords the appropriate precedent study for the rehabilitation of Observatory ridge.

Conservation

The rehabilitation and conservation of Melville Koppies Ridge took place from 1959 till 1993 when the park was opened to the public as a prayer space and nature reserve. In 1993 the city of Johannesburg parks and cemeteries joined forces with the Melville Koppies team to establish a joined venture which then established the Melville Koppies management committee.

The approach that the Melville Koppies conservation team took was to eliminate all exotic invasive trees and plants. The most important exotic tree that was removed was the Australian black wattle (*Acacia mearnsii*) and conifers. These invasive species leave the area desolated and thus rehabilitating the area around the removed tree or conifer. These invasive species tend to regrow in the area they have been removed from for years to come. The approach that the Melville Koppies conservation committee took was to replace these invasive species with pioneer species, which reduces the regrowth of alien species.

A brief investigation of the appropriate flowers, trees and grasses was done guideline to introducing similar pioneer and indigenous species to Observatory ridge.

Flora

The wild flowers of the Highlands or otherwise known as "pre rain flowers" are generally geophytes which allows for their vegetative bulk to collect and store summer rain water in order to get the required nutrients. These wild flowers are late bloomers and tend to flower irregularly between September and November. These flowers unlike those of the Namaqualand are stimulated by increase in soil temperature rather than rain in order to flower. These spring wild flowers only last about a week or two, but are replaced by summer wild orchids and wild gladiolus. These wild orchids are similar to those found in greenhouses, they are generally smaller when found in the wild and therefore need to be taken care of if to increase the number that survive. Another well-known plant that is able to withstand the killer frost of the Johannesburg ridges is the protea caffra or more commonly known as the "common sugar bush". These Proteas thrive on the acidic soils found on the ridges and share characteristics with those found in the Cape fynbos biome. (Baines, 2015, p. 1)

Trees

The trees found on the Melville Koppies ridge are mainly found on the northern slopes of the ridge to protect themselves from the frost, along the "spruit" which runs through the reserve as well as on soil with a rich granitic basement layer which rich in minerals. (Baines, 2015, p. 1)

Some of the more dominant trees found on Melville Koppies:

- *Acacia robusta*
- *Acacia caffra*
- *Euclea crispa*
- *Celtis Africana*
- *Brachylaena rotundata*

Also previously found on the Melville Koppies is the *Acacia mearnsii* or more commonly known as the Australian Black Wattle which is a South African conservationist's worst nightmare, and have all been removed from the ridge.

Similar to the staggered flowering of the bulb flowers on the ridge are the flowering patterns of the trees. The *Acacia robusta* is the first tree to flower in the early spring with yellow pastel coloured pom-poms. The *Acacia caffra* flowers quite a bit later with similar yellow flowers. The *Brachylaena rotundata* also flowers quite late in spring also with yellow blooms. The *Kiggelaria Africana* or more commonly known as the wild peach allows for both insect and bird to live within its branches.

Thus the trees of Melville Koppies are all indigenous to Southern Africa and more importantly are historically

Grasses

Melville Koppies is situated within the grassland biome, more specifically the “sourveld” area which means that the grasses are mostly perennial and die during winter. These grasses mainly store nutrients in the roots. The reason for the name “sourveld” is because they are non-nourishing to grazers and thus have been called “sourveld” by farmers. Melville Koppies is home to 56 recorded species of grass.

Some of the more recognisable grasses found on Melville Koppies:

- *Harpochloa falx*
- *Allotopsis semiolata*
- *Themeda triandra*
- *Panicum maximum*
- *Cymbopogon excavates*
- *Monocymbium ceresiforme*

The grasses of Melville Koppies also seed and disappear at various times during the seasons. *Harpochloa falx*, more commonly known as Caterpillar grass has seeded and faded by mid-summer while *Allotopsis semiolata* (black seed grass) can be found in early spring. *Themeda triandra* found spread over large areas in the Freestate is a grass indigenous to parts of Asia as well as Australia. This means that it originated in Southern Africa before the breakup of Gondwanaland 160 million years ago. Another grass that finds its roots in Southern Africa before the Gondwanaland breakup is the *Panicum maximum*, a grass that attracts birds of all kinds and grows easily from its seeds. At the end of summer the grasses reach a wonderful bronze colour glazing the entire ridge.

Proposed Framework: Observatory Ridge Park

Framework Vision

Observatory Ridge can be identified as part of the legacy of created landscapes in the city. Although it is currently one of the rare natural landscapes remaining in inner city Johannesburg, it still bears layers of fantasy and of its nostalgic legacy. Buildings on the Ridge (mostly Modernist and Art Deco houses and manors) bear witness to endless cultural flux – many with a low tolerance for change and now either in disrepair or abandoned. Ponte City serves as a poignant testament to this condition. Both the tower of Ponte City and the stone and concrete water reservoirs opposite can be regarded as part of the landscape of the Ridge, albeit artificial. The artificial landscape extends to the south of the Ridge which, although mostly natural, is covered by exotic flora left over from the Braamfontein Company plantations. It is scarred by mining activity.

Observatory Ridge is investigated and developed on a conceptual framework level as an exploration of the heterotopic potential of such created landscapes. The intention is to restore the site to its original, pre-colonised and -industrialised landscape, by exterminating any exotic and invasive plant species and reintroducing indigenous pioneer species to the site. Rehabilitation of the ridge is necessary to prevent the extinction of red dot species which are only found on the Ridge. A sensitive intervention strategy is thus crucial, and therefore the only architectural intervention on this scale is proposed as formalised walkways to follies (revealing certain spatial conditions) on selected parts of the site, allowing pedestrian access to the Ridge. Mapping of the hydrology and the condition of the existing flora is undertaken to mark and anticipate growth on the landscape and thus inform the placement of the follies. Terraces and water retention ponds are also introduced at hydrological channels on site to prevent erosion and provide water for use on site.

The nostalgic landscape is thus recreated (or fabricated)², giving access to the fantasy inherent in the transitory nature of the created landscapes. In imitation of the original it becomes a portal to a new fantasy, just as the uitvalgrond has become the heterotopia. Each of the projects introduced to the ridge forms part of this framework and can be regarded as individual interpretations of the idea of ‘portals’.

Theoretical discourse

Cemetery as Garden, Cemetery as urban Space

Architecture at the Funeral: Between Nature and Artefact

Architecture Nature and the Constructed Site

Materiality and Time

The Place of Memory

The Journey: Referential and Experiential Time

Buildings are Geological Agents

Cemetery as Garden, Cemetery as Urban Space

When one looks at the etymology of the term used to describe burial spaces it clearly relates back to place of rest and peace. The word “cemetery” is derived from the Greek word Koimitirion, meaning “place of sleep”. The German word *friedhof* can be translated into “court of peace”. It is only the English word “graveyard” that has a purely functional implication.

Due to the overcrowding of the churchyard, cemeteries started to develop on the outskirts of towns, initiating the development of a new burial typology. This resulted in the development of a landscape adorned with architectural cemeteries, places on the peripheries of developed cities which later developed into the modern cemetery typology of today (Curl 2002).

A cemetery is not only a place for the dead, but also a place for the living.
(Curl 2002)

According to Kienast, as quoted by Zavraka (2007:2), modern cemeteries can be seen as dual landscapes. They are spaces where we lay the dead to rest, therefore they become places for the dead. They also act as spaces where those who are dealing with the loss of a loved one can grieve, therefore they become places for the living. Thus we can go even further to state that cemeteries can be viewed in two different lights, firstly as places of remembrance, and secondly as places of emotional expression. These dual approaches towards cemeteries can be seen as part of the evolution of human existence. Thus cemeteries can be seen as much more than pure burial spaces, but rather as a series of meaningful layers (Zavraka 2007). Anne Whiston Spirn states that open landscapes can be described as “human being and activity in the world”; thus landscape can be seen as a metaphor for being. If this statement holds true then one can view cemeteries as “metaphors of non-being”. Therefore the relationship between the cemetery and the landscape should find a balance between the physical and the metaphysical, the man-made and the natural.

As the first and last garden, the cemetery occupies a special position within the typologies, whereby the different cemetery cultures express a great deal about the specific understanding of nature and the social conditions ... Northern cemeteries are traditionally woodland resting places, whereas Mediterranean graveyards are reminiscent of built cities. They are a different city, the city of the dead.
Vogt quoted by Zavraka (2007:3-4)

Gunther Vogt’s statement (Zavraka 2007:3-4) raises an important observation that separates two different cemetery typologies relating to culture, topography, and views of death. The first cemetery can be viewed as a garden, a landscape that relates to the natural and the ideal, while the second cemetery can be viewed as an urban place of gathering and grieving.

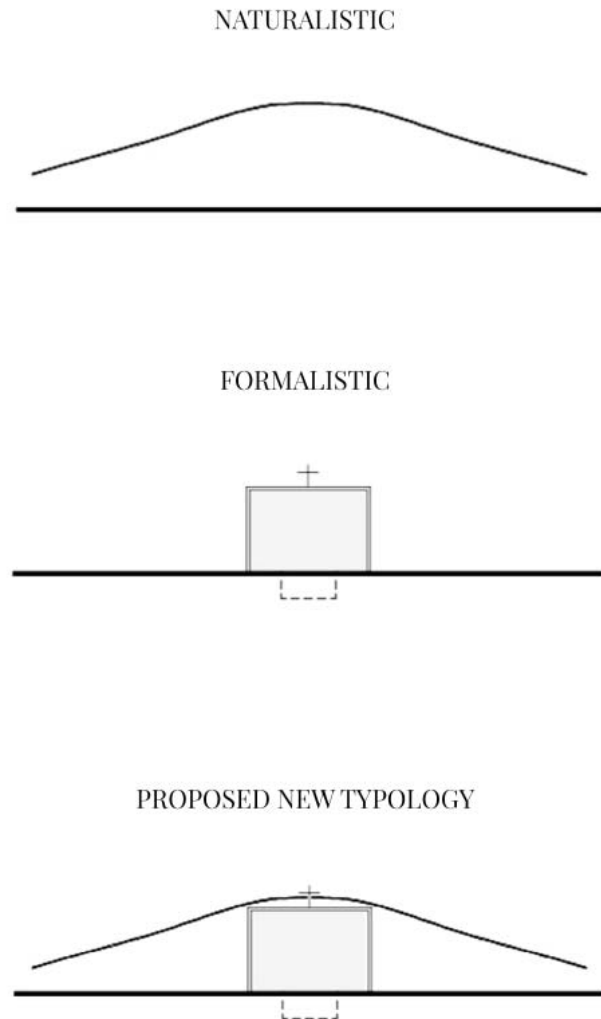


fig 8.1. Diagrams illustrating two different types of burials grounds and how the proposed programme can be seen as a combination of the two. (edited by Author, 2015)

Burial ground as garden landscape:

It can be said that the garden is the outermost expression of place. Thus the cemetery as ultimate garden can be seen as the outermost expression of pure nature. The term “garden cemetery” can be related back to lawn or rural cemeteries (Zavraka 2007:4).

The garden as burial ground becomes a place where those who have passed on can find a final resting place that shelters and protects them; thus forming a peaceful and protected landscape reminiscent of the Garden of Eden. It is an artificial landscape composed of natural materials, a resting place for the dead, and a spiritual space for the living (Zavraka 2007:4).

Burial ground as urban space:

Burial grounds as urban places can be seen as the opposite of the typology of burial grounds as landscape gardens. These built burial spaces relate to the gathering and grieving of mourners within a city of the dead, situated on the periphery of Mediterranean cities – a typology of burial which can be seen as opposing the healing condition of the garden typology, resulting in a more formal and monumental condition. These urban spaces in the Mediterranean landscape become ultimate monuments of the built environment, acting as reminders of the past and death. They ultimately become representations of the built environment for the dead within the urbanised landscape of the living (Zavraka 2007:5).

In comparison to the garden cemeteries that foster healing and transcend the pain of loss, urban cemeteries are set as reminders of death and humanity’s limits as immortal beings.

Cemetery as Garden

- House of the soul
- Amorphism
- The healing journey from earth to heaven
- A sacred landscape
- A spiritual meditative landscape
- A non-material house for the soul

House of the body

- Formalism
- A place of worship
- The human condition
- Brutality
- A material house for the body

In conclusion, the two different typologies of death both relate to aspects that have to be addressed but do not fully come into play in either. The garden landscape of the dead can be seen as a non-material natural house for the soul that symbolises peace and healing, a transition between earth and heaven, whereas the urban cemetery can be seen as a material resting place for the body, a place of worship, and a space that speaks of the human condition.

Architecture at the Funeral: between Nature and Artefact

The search for balance between the architectural artefact and the natural landscape has been a recurring phenomenon throughout the history of architectural design. Architectural development has since the primordial hut challenged the natural landscape, forming a dialectic relationship between the built environment and natural phenomena (Mota 2014:1).

Funerary architecture is a condition where the designer is faced with a situation where he/she must mediate between different experiences in order to make sense of the natural phenomenon of death. When one looks at the metaphysical aspects of the funerary process and death, it can be said that there is a sense of liminality associated with the event. This liminality addresses a series of conflicting aspects that the architecture should mediate in order to bring calmness and peace to the memory of event and space (Mota 2014). In making sense of the situation the architecture should be able to transcend the physical and incorporate the eternal and sublime. Mota further states that funerary architecture should go beyond the programmatic function of public or private, and also incorporate strong symbolism and memorable experiences (Mota 2014:1).

Ancient funerary monuments are found at the basis of archaeological finds, which indicate the relationship between the built and the natural throughout history. These act as beacons which relate to the relationship between man and nature, and nature and architecture, as inseparable aspects in relation to the journey of death. Thus an understanding can be reached on how architecture with relation to the processes of death relates back to time, place and memory (Mota 2014:1).

Thus funerary architecture should mediate between the boundaries which divide funerary design by finding a balance between the tectonics of construction and nature, the private and public realm, the individual and the community, and as a place for the living and for the dead (Mota 2014:1).

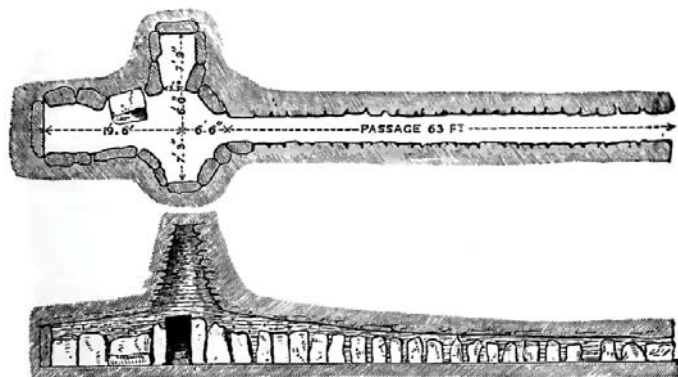


fig 8.5. Plan and section of chamber in Newgrange Tumulus. (edited by Author, 2015)

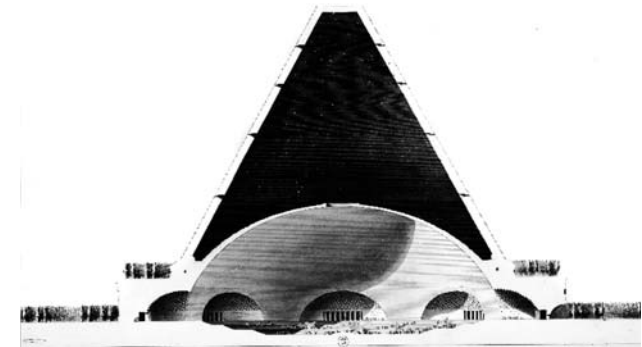


fig 8.3. Etienne Boullée Temple of Death. (edited by Author, 2015)

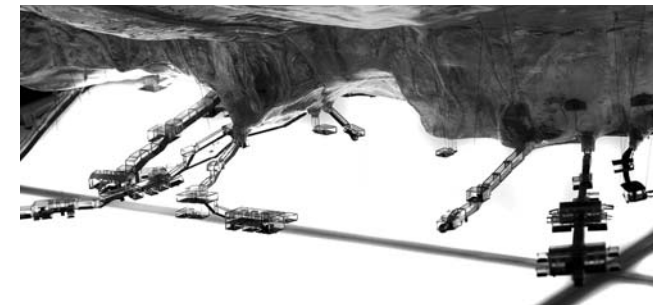


fig 8.2. Model illustrating tunneling at the Valley Of The Kings. (edited by Author, 2015)

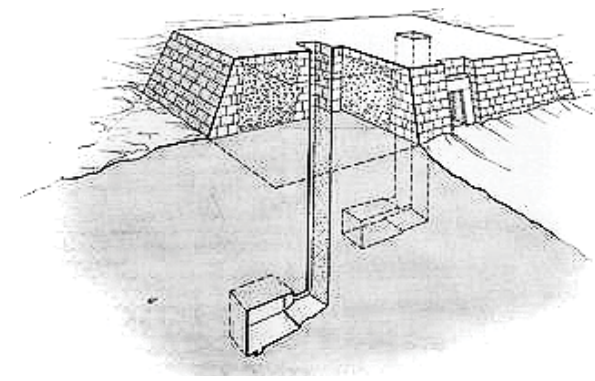


fig 8.4. Ancient Egyptian Mastaba (edited by Author, 2015)



fig 8.6. Image along Joe Slovo Drive of interaction between nature, ridge and Man-man intervention (by Author, 2015)

Architecture, Nature and the Constructed Site

In his essay "Towards a new horizon in architecture," Tadao Ando suggests that, in order for architecture to progress into and through the twenty-first century, development is needed that reaches through and beyond modernism. He believes that this can only be done through critical action (Ando 1996:456-461).

Architecture in its development ultimately creates a new landscape, and thus needs to extract the particular characteristics of the place and site. He states that:

The purpose of architecture is basically the construction of place.
(Ando 1996:459)

This allows for a tension to be unlocked and for spiritual awareness, similar to Martin Heidegger's thoughts in "Building, Dwelling, Thinking," to be achieved through incorporating both Western and Eastern traditions in designing with the natural landscape (Nesbitt 1996).

Transparent Logic and Abstraction:

Architectural thought is supported by abstract logic. With abstract logic Ando refers to the ability to gain a deeper and clearer understanding of the complexities of the world without reducing it to such an extent that the concreteness and vision is lost, as is the case with modernist ideology (Ando 1996:458).

Postmodernism emerged as a result of modernism, as a type of saviour to re-establish a role as cultural force. By this time modernism had become a mechanical machine denuded of all its formal richness. Postmodernism aimed to re-establish this lost formal richness through history, taste and ideological ornament breathing life back into architecture, but soon lapsed into a movement of banal expressions that became overly formalistic.

Thus Ando states (Ando 1996:458) that the only way in which the decline of modernism and postmodernism can be overcome is through invigorating the initial vitality and abstract logic from which it developed.

In order to understand Ando's approach towards the new horizon one must first become familiar with his concept of abstract logic: by allowing architecture to become a created landscape that does not spoil that which surrounds it, one is able to establish a vital connection between the existing natural landscape and the built form. Thus architecture should not merely become the solving of problems reduced to technical solutions, but must instead form abstract logical thought surrounding the essence of the requirements and issue at hand.

Through a deeper understanding of the site and the issues surrounding the greater context, one should question the role of the designer, and through this exploration an intrinsic logic will start to develop. This deeply focused process results in a clear understanding of site, structure and program. Thus the logic at hand encapsulates the entire landscape rather than only an isolated pocket, resulting in logic that surpasses surface beauty, geometric composition, and form and function (Ando 1996:458).

Through the means of transparent logic it is essential to instil nature into the built landscape. By allowing natural elements such as water, light, wind and sky to prevail in architecture which is derived from ideological thought, one is able to ground thought in a level of reality and reawaken man-made life from within (Ando 1996:458).

Ando states that, when comparing Western and Eastern traditions relating to architectural design, it is clear that West and East embrace different sensibilities. Human life should not intend to control and oppose nature, but should rather draw it in, in order to find union within it. Thus Eastern architecture aims to find the interrelationship between human and nature, allowing for a blurred distinction between the physical built boundary and the natural environment to create a spiritual threshold. It also allows for an indistinguishable boundary between outside and inside for a merging of the two conditions. Relating back to abstract logic, this approach creates an awareness between the natural and the built, resulting in a physical awareness and real understanding of nature. Architecture through abstraction changes the meaning of nature, allowing for a more accessible landscape. When architecture meets the natural landscape through abstraction, it allows for the possibility of a new constructed landscape to be discovered within nature (Ando 1996:459).

Ando states that when architecture is constructed regardless of this characteristic approach to the landscape, it inevitably creates a new landscape, thus implying the need for discovering the architecture which the site itself is seeking to become. Through a deeper investigation and understanding of the site at hand, the designer should seek to bring the character of the place fully into play (Ando 1996:459).

When looking at the context of Johannesburg and more specifically Yeoville Ridge, it is important to identify the character of the specific site. Relating to the proposed framework of Johannesburg as *uitvalgrond*, the characteristics of isolation and spirituality were identified. These characteristics positioned within a natural landform in an urbanised area necessitate a sensitive approach to be established when designing a crematorium and cemetery on the ridge itself.

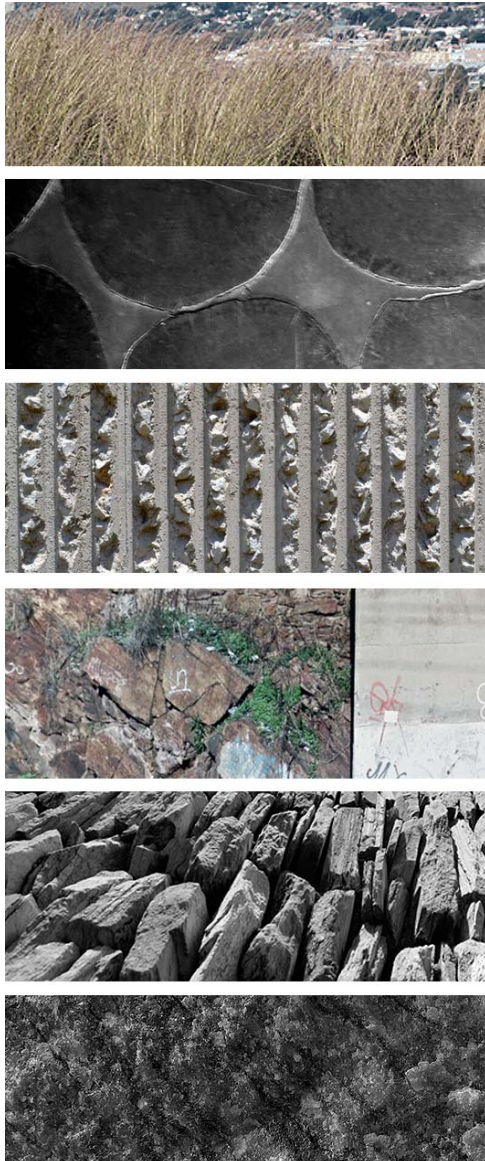


fig 8.7. Series of photographs illustrating natural and man-made materials and how they have started to weather as a result of time. (by Author, 2015)

Materiality and time

In his essay "Matter and Time," Juhani Pallasmaa (2005:34-35) suggests that natural materials such as stone, brick and wood have a strong connection with time, and that they enable the user to experience a physical manifestation of time. These materials allow for a deeper penetration of the surface for an enriched experience of the continuum of time (Pallasmaa 2005:34-35).

Contemporary prefabricated materials such as plastics, sheets of glass and enamelled metals, on the other hand, superficialise understanding and rather create a vague surface that detracts from the human experience. This disregard for deterioration and striving for ageless perfection could be linked to our more human fear of death, how we ourselves, just as in our buildings, fear traces of wear and aging.

Both forms of materials render an understanding of time and age at different scales, allowing the user to engage with each respectively. With natural materials, an honest interpretation of time and decay can be shown, whereas with machined materials the aim is to articulate perfection and longevity. Thus the process and result of time become important factors in the standardised model for construction in contemporary architecture (Pallasmaa 2005:34-35).

As experiential beings trapped within the time continuum we often strive for the ability to be made aware of the real. Thus architecture should make the limitless continuum of time accessible through experience (Pallasmaa 2005:34-35).

When referring to the above it can be said that the site itself becomes an important design driver, not only as a basis for the proposed project, but also for the choice of materials and their impact on the journey of death, for the mourner, park-goer and the deceased. These materials, as Ando suggests, should become deeply enshrined within the being of the project itself so that a unique site-specific balance can be reached between natural and man-made. As mentioned by Pallasmaa (2005:34-35), materials also aid not only in making the user aware of time and of the condition of the experienced space, but also of the immortality of human beings. Specifically, with the design of an urban garden burial space as constructed landscape, the role that materials play in order to make users more aware of the abstract logic relating to the site and its characteristics becomes an approach towards design and construction that the designer must instil in every decision to be made.

The Place of Memory

As Donlyn Lyndon states, place refers to a space that can be remembered, that one can imagine and that can be kept in the mind. These are spaces and territories that evoke thoughts of nostalgia and engage with our interests (Lyndon 2009:63-64).

As designers and makers of space and form, we should constantly ask ourselves what needs to be served and felt in order to make a place memorable.

The experience of place is infused with memory; echoes of previous visits, expectations, and recollections invoked by similar places, as well as images and descriptions.
(Lyndon 2009)

The memories we associate with place are formed by personal incidents and cultural lore, and are vested in the forms and interpretations of ornament which the place consists of. Thus the experience of place within architecture, landscape and the urban is constructed from nostalgic memories and how these memories define the architecture they are so intrinsically part of for those who use and experience it. What characteristics of place encourage the attachment of memories? (Lyndon 2009).

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Memory finds itself at work not only in a place for recall, but in the ways that we encounter and experience buildings and spaces of everyday life. Places are spaces that can be remembered, that can be considered and referred to. It is this ability that allows for both intimate and public significance to be gathered; they linger in the thoughts of the individual but through the incorporation of common experience they aid in the development of a shared conception that binds common thoughts together (Lyndon 2009).

Thus spaces become memorable in two ways: through the formal structure with structural coherence or power, and through events that take place on a specific site. Events that take place on a more frequent basis start to lend themselves to a more vivid nostalgic recollection and invokes memories of that place. This understanding of the place of memory can help in reconstructing histories, and in constructing new histories of architecture, society and culture.

Norberg-Schulz (1980:10) further states that memory and nostalgic recollections can be created by understanding the following conditions that create our perception of place identity: what we walk on (what is below us), what shelters us or what is above us, what surrounds us, and what we are aware of in our direct surroundings. These aspects contribute to how we experience place in the present but also how we create a nostalgic link to places of the past for future recollection.

Norberg-Schulz (1980:18) also speaks of the identification of the character of a site or genius loci by relating directly to the human identity and the identity of place. To be able to achieve a greater understanding of this, he states that there are concrete features of place that draw us closer to the place and its memory. This relates to the concept of Jord, Himmel, and Synstrand, the earth, sky and the optical array, and means that we are first made aware of the identity of place when we walk in it, experiencing what is above us, and are made aware of what is around us (Norberg-Schulz 1980:32).

The earth reaches towards the heavens; this expresses a more qualitative relationship between the vertical axes rather than just up and down. To be able to describe the character of the place one must be able to understand and consider how earth, sky and the optical array interact with one another and meet to form a union. The optical array of a place defines its boundaries – how it relates to the horizon and to the outermost limits of a place. It becomes the window of the landscape that relates to the sky and connects heaven with earth in different ways (Norberg-Schulz 1980:39).

Thus in order to dwell in a place, as Heidegger suggests (Sharr 2007:43-45), one must be able to respect it for all its conditions and elements, and take into account qualitative and unmeasurable aspects of the place.

In looking at the model of the garden cemetery as a healing place and the urban cemetery as a spiritual place, a clear metaphorical condition could be determined through the design of an urban garden burial space as constructed landscape. In creating memory through sky touching earth one is able to relate it to the body being housed in a place of rest, while the soul is released through the structure from the earth upwards towards the sky. Thus it is important to understand the geological condition of the site, as it plays a significant role in allowing the building to sink itself into the topography, creating a city for the dead which is accessible to the living.

The Journey: Referential and Experiential Time

Enric Miralles (MaKenzie et al. 2004:1) speaks of two forms, or layers, of time that he uses to evoke thought and meaningful memory when designing commemorative architecture. These layers, experiential time and referential time, together fit into the continuum of time that allows for successful Time Architecture. Thus time is presented in both experiential and referential ways. They work together.

Experiential time, Miralles states (MaKenzie et al. 2004:1), is related to the journey the user experiences while moving through a space. This experience, concerned with the present and the actual event taking place, allows for bodily and mental processes to occur that relate to the immediate instant lived. This instinctive reaction is thus evoked through the architectural promenade, the moments the user experiences through movement, and allows the user to experience the space through a sense of nostalgia and, at the same time, discover a new landscape.

Referential time, Miralles states (MaKenzie et al. 2004:1), is opposed to experiential time and relates to how past and future are made present. It entails the ability to bring forward a continuum of time. He achieves this by making reference to past experiences – instants that allow the user to relive nostalgic memories – through material use and approach to site. According to Miralles it is referential time that allows the user to escape reality and slip into memory.

The characteristics of the site on Yeoville Ridge can only be fully understood through exploration and time. The geological conditions, the intensity of the topography, and the various natural phenomena play a vital role in determining the character of the site. Accessing the ridge itself can be viewed in both experiential and referential time. Experiential time on the ridge comprises a series of conditions that incorporate different modes of movement through spaces in order to reach the highest point of the ridge. This experiential promenade, as Miralles calls it, allows the user to experience the space as a series of nostalgic memories while discovering a new landscape through movement.

According to Miralles, referential time brings together both the past and the future into the present through allowing the user to relive nostalgic memories through views, materials, past experiences and so forth. While moving along the journey it becomes evident that the site holds a strong connection with the past. It relates to the past in two main ways: through human memory of historic events, and through geological events that occurred throughout the development of the Witwatersrand. Fragments of past events can be experienced on site, along with the exposed granite rock face that speaks of geological developments. These conditions allow for a nostalgic slip into memory, and a disconnection from the reality of the present.



fig 8.8. Diagram illustrating route to get to site along with images show change in conditions and materials. (by Author, 2015)

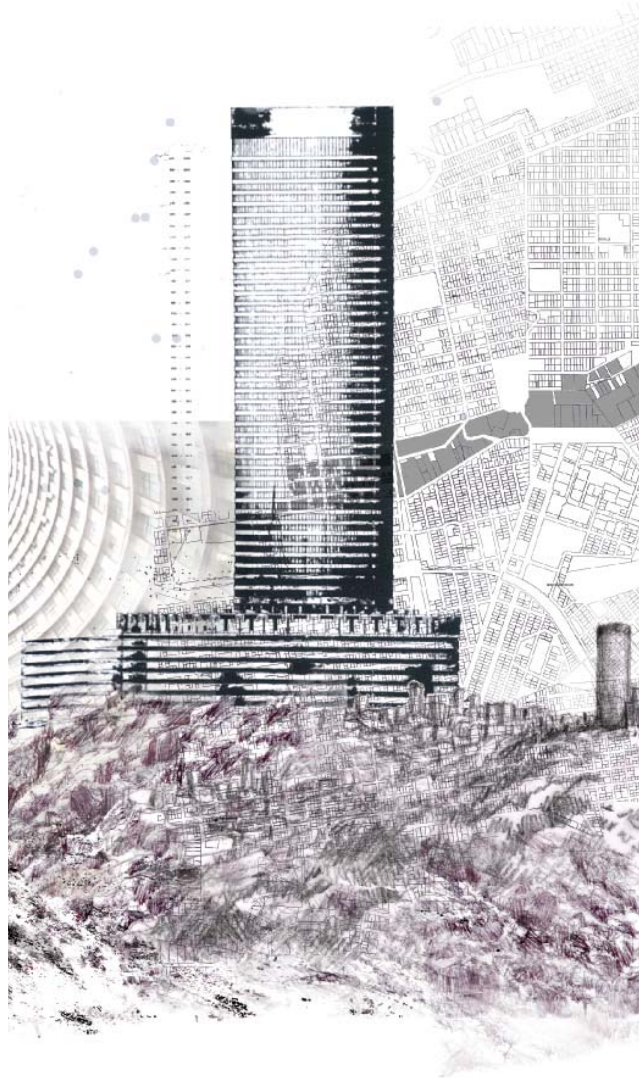


fig 8.9. Diagram showing character of site and Ponte as Geological Agent on the Witwatersrand.
(by Author, 2015)

Buildings are Geological Agents

In her article “Buildings are geological agents,” Lindsay Bremner (2014:1) discusses the relationship between architecture, urbanism and geology. She sets out by stating that architecture, urbanism and geology, three prevalent urban conditions, are deeply interconnected, more than we perceive them to be (Bremner 2014:1).

Having said this, it is clear to some more than to others that, in our human need to develop and evolve, we have interfered with earthly materials to such an extent that we have started to create new geological and topographical conditions, conditions that have been shifted in order to create a more habitable landscape for our species. These direct and indirect changes that we have set in motion have great cosmological consequences that alter the geomorphology, climate, surface conditions and atmosphere we inhabit to such an extent that some call it a new geological era – the Anthropocene. These changes can be envisioned when looking at tales of war or dystopian futures, where buildings crumble into the landscape from which they grew.

Buildings can be seen as massive geological landforms that shift geology, past and future (Bremner 2014). These buildings rearrange the landscape in such a manner that they create a new geomorphological condition that alters the future of the site. They re-channel various geological and topographical conditions to form around these shifts, resulting in a different set of conditions. These buildings act as structures of change that displace geological site material in such a manner that the geomorphological pattern is disrupted, altering the initial geological forces.

The city of Johannesburg lies spread over the ridges – the Witwatersrand – to which it owes its existence. Due to the area’s geological history, the city developed in the manner it did, resulting in a split occurring between urban conditions on either side of the Witwatersrand. The Witwatersrand itself acts as a watershed (the Yeoville-Hillbrow-Berea ridge which forms the highest part of the Witwatersrand range) between north- and east-flowing rivers that end up in the Indian Ocean, and south- and west-flowing rivers which end up in the Atlantic Ocean (Bremner 2014:1).

To conclude, it can be stated that buildings are agents of geology, and should therefore become agents for positive geological change rather than for conditions that distort the geomorphological future of the site. The structures should be approached in such a manner that they become coded with the geological history of the site itself, resulting in structures that act as displacements of site specific materials which are able to dissolve into and form part of the newly established geomorphology of the site (Bremner 2014:1). This approach not only allows us to reflect on the past conditions of the site, but also on its future development, strengthening the inevitable connection between architecture, urbanism and geology, and resulting in a structure that becomes an extension of the geomorphology and geological time of the environment.

Conclusion

The theoretical texts discussed above together provide a holistic approach towards creating architecture that cuts into the landscape. The various essays comment on aspects of how to go about designing on the ridge as site; the use of material in order to strengthen cultural significance as well as programmatic relevance; and the future development of the site as a constructed landscape that incorporates both urban space and landscape garden.

The theory discussed covers the entire scale of the design process, from the initial approach to the site, to how the site should be viewed as a living geological organism, and how the “imposing” structure could form part of the geomorphology that inevitably becomes the site geology, relationship to society and culture as a collective memory, the journey within the landscape

Precedent Studies

Igualada Cemetery	- <i>Enric Miralles</i>
Water Temple	- <i>Tadao Ando</i>
Double Negative	- <i>Michael Heizer</i>
Leça Swimming Pools	- <i>Álvaro Siza</i>
Woodlands Crematorium	- <i>Johan Celsing</i>

Igualada Cemetery - *Enric Miralles*

In "Enric Miralles: Architecture of Time", Quiros, MaKenzie and McMurray (2004:1) state that Miralles sought to establish an architecture of time and space – architecture that relates to past, present and future and is both experiential and referential at the same time. His aim was to create an architecture that is able to bring together all the different moments in time. He believed that architecture of time is composed of various different manners of experiencing layers of time. He also believed that a person collects and stores layers of time through the journey as he/she moves through time and space. Miralles (MaKenzie et al. 2004:1) believed that the journey which is architecture forms the most important part of this experience. He essentially created an architecture that was able to harness and collect the physical occurrence of time, leading to the creation of architecture as a machine of time (MaKenzie et al. 2004:1).

The Igualada Cemetery is formulated as a journey which allows the user to take part in its process, just as much as it incorporates the natural geology and topography. This is achieved by allowing the user to move inside the structure along the journey, collecting layers of time and space, as the journey becomes the architecture (MaKenzie et al. 2004:1). The long journey through the Igualada Cemetery that cuts into the Catalan landscape, exposes memories of the environment, similar to the conditions found on Yeoville Ridge. The journey exposes views and spaces that allow the user to experience the referential qualities of time and space of both past and present, and within their consciousness create a future. Thus each fragment of the journey is beautiful and meaningful.

Time becomes a precise place where to think about a form.
(MaKenzie et al. 2004:1)

Just as in exploring Yeoville Ridge, the Igualada Cemetery allows the user to explore and discover new spaces along the journey, revealing time both past and present. The experiential qualities of the cemetery vary greatly with the different uses of materials, especially regarding floor finishes, wall textures, and light quality. All of these time-related elements allow the user to relate to the structure and the journey, creating calmness, seclusion and isolation. Through challenging the construct of architecture as a machine that collects time, Miralles (MaKenzie et al. 2004:1) also looked at the use of materials that are able to acknowledge the passage of time and the ruining effect of time on materials. This he achieved through the degrading of natural rock and concrete, as well as the staining of these elements due to various weather conditions, be it rain, snow or sunlight. By allowing these natural phenomena to take charge of the man-made condition on the site, he was able to re-establish the connection between architecture and time.



fig 9.1. Igualada Cemetery circulation cutting into terrace between graves.



fig 9.2. Circulation route through structure making use of interior light and shadow



fig 9.4. Entrance into Iqualada Cemetery between Gabion walls that house the Graves and Circulation



fig 9.5. Circulation route making use of light and shadows.

“Integrating the living, the procession adopts a social landscape involving street like form and communal spaces; relationships such as man-architecture, architecture-site, site-landscape and thus, man-landscape are forced to refine themselves within this valley of the dead, in which the cemetery emulates the path of life and landscape of time” (MaKenzie et al. 2004:1).

The author chose this specific precedent as a theoretical model regarding the natural landscape, man-made structures and the way in which the living are brought into contact with the dead, and for the interplay of program forming route, route facilitating ritual, and ritual becoming part of the everyday. The similarities between the author’s programmatic intentions and the natural conditions of the topographic landscape in relation to that of Iqualada Cemetery form a strong basis on which exploration and understanding can be based.

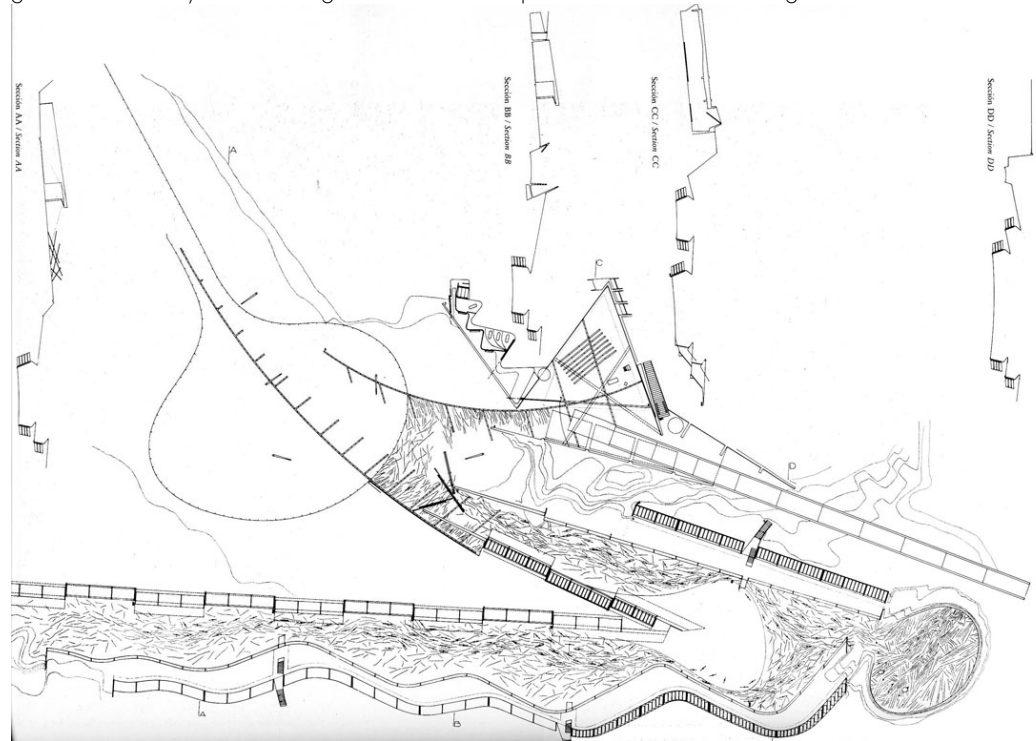


fig 9.3. Plan and sections of Iqualada Cemetery showing relation between built and natural landscape. Also showing development of journey through structure

Water Temple - Tadao Ando

The Water Temple, situated in the former city of Himpukuii and designed by architect Tadao Ando between 1990 and 1991, forms part of the home of the Ninnaji Shingon, a division of the Tantric Buddhist sect in Japan. The structure, as a complete piece of architecture, contributes to the cultural and religious history of Japan and of its people. The modern temple receives criticism but also praise for representing change in the traditional architecture of temple structures in Japan (Zanchi 2002:1).

The structure itself is located in the hilly, rocky area of the northernmost part of the island of Awaji, which has been given character by Ando's Water Temple.

Located within a densely vegetated bamboo forest and surrounded by fields of rice and mountain ranges, one finds a lotus pond bordered by a thin oval concrete structure. The construction techniques and materials are contrary to the traditional wooden Buddhist Temples found in Japan. Instead Ando uses Western techniques and materials to create spaces that are strongly eastern in essence, such as the lotus pond which incorporates the surrounding natural elements (Anon. 2010:1). Nature plays a large role in Ando's work, even more so in his Water Temple, as wind, water and light are not merely elements to respond to within the Western framework of materials and construction, but rather form part of the experiential manifestation of the structure within the landscape and as a structure from within. The structure consists of a series of sensual geometries that create a form that challenges the traditional approach towards temples. The structure could be seen as a journey rather than a pure temple. Even after entering the chapel, the idea of an experiential journey continues until the innermost spiritual sanctum is reached. The journey to the temple is one of gradual disclosure and sudden surprise as the routes take away from and give back to the user as necessary through the use of large curved concrete walls flowing out of the landscape (Zanchi 2002:1).

As users approach the temple they are faced with a blank wall paralleled by the immense emptiness of the natural surroundings. The wall leads the user to the entrance which is placed deep within the linear wall alongside curved walls which shield the lotus pond. The user is cleansed through the process of walking on the gravel path towards immense sacredness while being exposed to distant views of the ocean and the surrounding dense landscape. This process of purification is traditionally thought of as a necessary state of mind before entering a place of sanctity. Once users are in full view of the lotus pool they are then able to distinguish between the overgrown landscape in relation to the clean, conserved lotus pool into which stairs descend to a more intimate space (Zanchi 2002:1).

Ando states (Ando 1996) that he wants his buildings to be invested with emotion in order to allow nature to enter them.



fig 9.6. Concrete wall that exposed views of Pond and site that on plan related to the geometry of the entire project



fig 9.7. Circulation from concrete wall down into pond. This shows geometric relation between oval pond shape and the straight cut of the staircase.



fig 9.8. Image showing relationship between concrete wall oval pond and staircase descending into it. It also shows the structures geometric relationship with the natural environment.

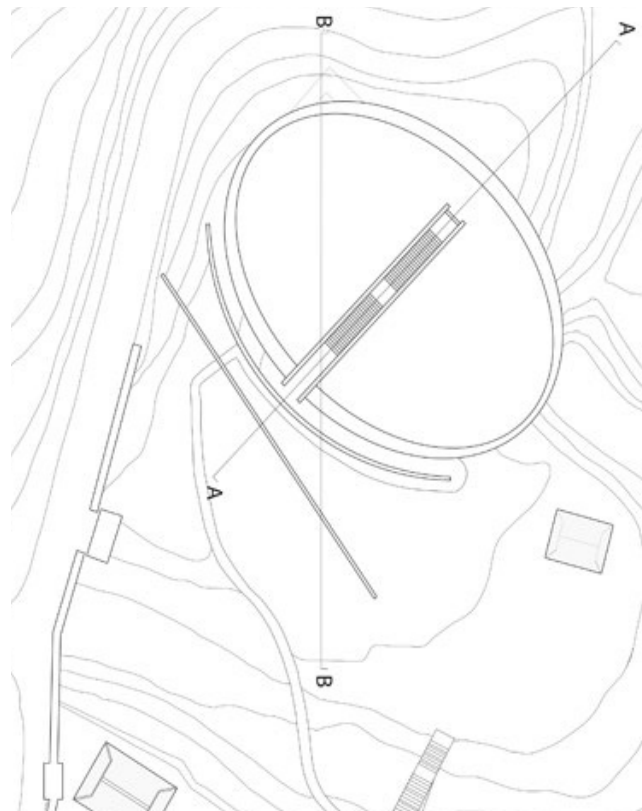


fig 9.9. Plan of Water Temple showing complete geometric composition.

Thus the sanctuary of the Temple is fully embedded within the hillside, allowing for seclusion, isolation, calmness and relaxation. The process of traversing the lotus pool and walking among the flowers over and within water allows the user to make a connection between architecture and nature. The act of walking among water and the symbolism of the lotus flowers lead to spaces of meditation and asceticism (Zanchi 2002:1).

The form of the temple is derived from geometries which seamlessly nest within one another in order to allow for a sense of harmony and balance. Even though it is far removed from the more traditional temples of Japan it still conveys a mystical power, which is the essence of Buddhist temples in Japan. Once below the lotus pond, access to the sanctuary is once again based on the principle of a route by using geometric shapes that oblige the user to gradually progress to the sanctuary, allowing for sudden glimpses along the way and finally concluding with complete access (Zanchi 2002:1).

The author chose the Water Temple as a precedent study mainly for its geometric composition, how the architect's approach to form allows for various experiential moments to manifest within the larger journey, and how, with the careful positioning of boundary walls and a distinct approach to route, the user is made more aware of the natural surroundings. This relates back to Ando's theory on the creation of a new landscape.

Architecture should not mar the conditions of the natural landscape but should introduce a new landscape that holds the responsibility to extract and heighten the existing characteristics of the place.
(Ando 1996)

Furthermore, as a place of spiritual seclusion, the precedent allows the author to understand various ways in which a journey to purify the mind can aid in the creation of spiritual architecture that manifests in the creation of seclusion, isolation and calmness. Tadao Ando's Water Temple is an immensely successful building that inspires and motivates.

Double Negative - Michael Heizer

Double Negative is one of Michael Heizer's most prominent earth art pieces and was constructed between 1969 and 1970. It was also created as one of the first pieces that formed part of a movement known as "Land Art", or "Earth Art" (Tarasen, n.d.:1).

Double Negative consists of two excavated man-made tears cut into the landscape of the eastern edge of the Mormon Mesa ridge overlooking the Nevada Desert. The two trenches are divided by a large gap formed by the natural ridge. The rock, mostly rhyolite and sandstone excavated from the trenches, was displaced into the large natural gap between them (Tarasen, n.d.:1). Conditions found on the Yeoville Ridge are similar, where the banded iron formations can be excavated to create natural passages within the landscape to make the user aware of textures created by the natural conditions of the Witwatersrand.

Double Negative blurs the lines between sculpture (art) and ordinary objects such as rocks (not art), and informs users of how earth and its natural conditions may be related back to art. The immense scale of the work also invites people to contemplate the relationship art has to the surrounding landscape in relation to its size (Tarasen, n.d.:1). In the same way, in the context of Yeoville ridge, the boundary between architecture and natural landscape can be blurred in order to use natural conditions exposed through man-made insertions to create architecture.

In essence Double Negative consists of two large trenches cut into the landscape. These trenches cannot be seen as one as they do not connect, but are instead separated by a large open space. Thus Double Negative is more about what was taken away and is not visible anymore, with the act of removal becoming an act of creativity and creation.

Thus the act of creation was executed through extraction rather than addition – the creation of a negative within the landscape and then doubling it through a similarly open space between the two trenches (Tarasen, n.d.:1).

The author chose this specific land art piece not only because of its revolutionary status as a founding piece of land art, but also because of its geomorphological similarities to the site under investigation. It was also chosen for the manner in which it uses natural geomorphology as structure and passage for viewing the surroundings. Double Negative uses techniques such as creating the presence of space through the method of extraction, through which marks and indentations were left behind because of the excavation and blasting used to create a dialogue between nature and architecture.



fig 9.10. View showing exposed rock. Through the extraction of natural materials space was made.



fig 9.11. Aerial photograph of two trenches separated by excavated earth and natural expanse.



fig 9.12. Double Negative Laser Scan.

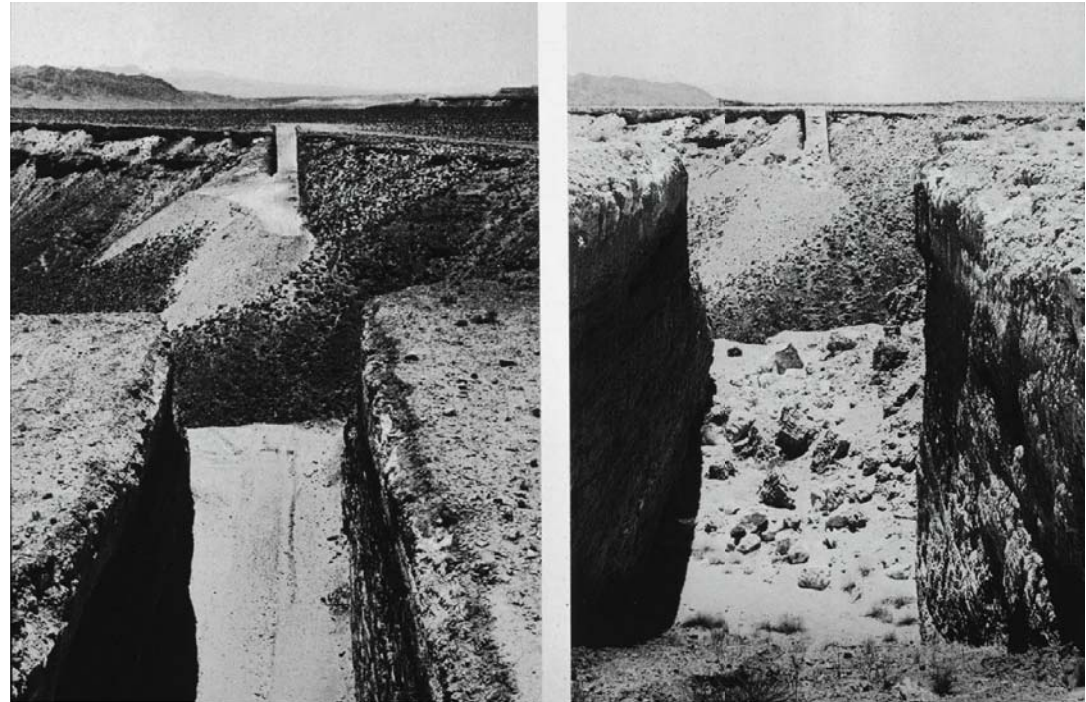


fig 9.13. Film photograph of stages of construction



fig 9.14. Image depicting weathering of natural rock.

Leça Swimming Pools - Álvaro Siza

The Leça Swimming Pools by architect Alvaro Siza form part of one his most important works, situated on the northern coastline of Matosinhos in Portugal. The design of the pools can be seen as an example of a careful reconciliation between nature and design (McAviney 2011).

The pools consist of changing rooms, a café, and two swimming pools for adults and children respectively. The structure is positioned along the coastline parallel to the access road, sunk beneath road level to conceal it from sight. This was envisioned as a disconnect between the pools and the infrastructure of the city, allowing consideration of views for both the pool users and those on the roadway (Balters 2011:1).

Siza was careful to place the structure in such a manner that it relates sensitively to the rocks along roadway as well as for it to reach out into the ocean. This allowed for natural pool formations to develop along the coastline.

The user enters the structure down a smooth concrete ramp, which runs parallel to the existing roadway. As users move along the route between rough concrete walls, they are denied visual connection to both the roadway and the ocean towards which they are moving. Instead they are made aware of the flanking conditions through various sensory stimuli such as sound and smell. Thus the movement throughout the building becomes an experiential one (Balters 2011:1).

Users exit the changing rooms onto a series of platforms which allows for views back towards previously traversed but unseen spaces of the building. The straight walls hold out against the angst of chaos of the roadway above, while acting as barriers with a sensitive connection to the rocks along the coastline. The concrete walls are a lighter shade than the coastal rocks in order to create a visible juxtaposition between man-made and natural. This allows one, instead of misunderstanding Siza, to rather be made aware of his appreciation of the natural surroundings rather than creating imitation (Balters 2011:1).

Once users are turned back towards the ocean they are exposed and relieved to gain a view of the Atlantic Ocean, which seeps into both the adult and children's swimming pools. By intentionally blurring the ocean's edge through low concrete walls that change from meeting with coastal rock to sensitively touching the water's edge, Siza was able to allow the user to experience a sense of the vast expanse that is the ocean, and also to blur the human understanding of their man-made limits (Balters 2011:1).



fig 9.15. Images depicting various thresholds throughout journey towards the ocean. As well as relationship between natural rock and concrete cast into one another.

With the Leça Swimming Pools Siza is able to demonstrate a connection between man's understanding of nature while still maintaining the structure's integrity as a modern construction.

The author chose the Leça Swimming Pools as a precedent study because of its relationship to the man-made infrastructure of the roadway and the natural coastal edge of the Atlantic Ocean, its ability to act as a seamless mediator between infrastructure and nature, and for showing how both can coincide through sensitive architectural intervention. They were also chosen for the manner in which the architecture sensitises the user through the use of an enclosed route in order to create appreciation and a sense of anticipation by sudden glimpses of and finally exposure to the sea, for the deep understanding that the architect has of the processes that unfold while going to the beach, and for how he has managed to exemplify these processes through well-designed thresholds.

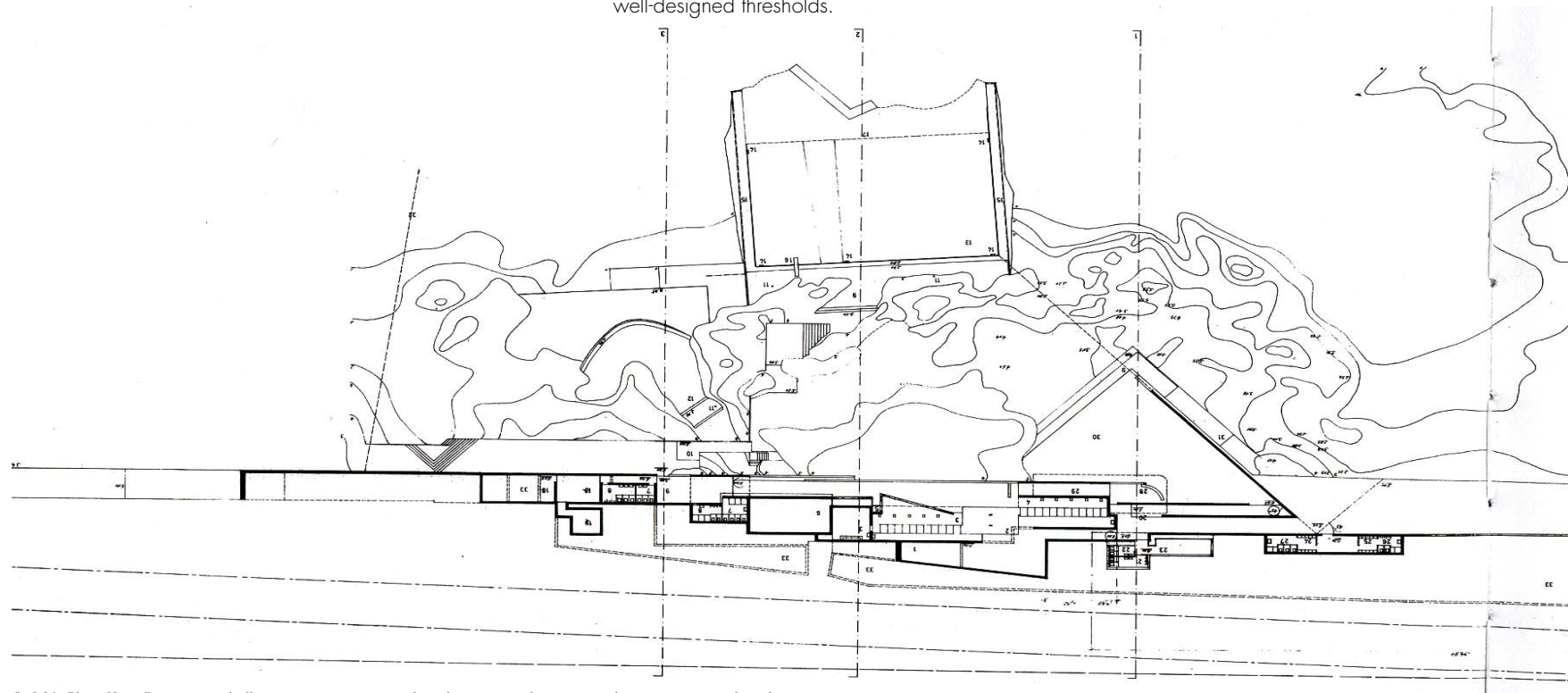


fig 9.16. Plan of Leça Swimming pools illustrating movement routes through structure and views exposed as user progresses through it.

Woodlands Cemetery Crematorium Extension - *Johan Celsing*

The crematorium addition at the Woodlands Cemetery formed part of a competition with the title "A stone in the Forest". The competition was won by architect Johan Celsing and the project was completed in 2009. The competition was based on the merits of the design which responded most sensitively towards the heritage of the pine forest as well as showed empathy towards the site as a whole (Celsin 2014:1).

The crematorium is situated within a densely vegetated historic pine forest near Stockholm in Sweden.

The design itself forms part of a larger collection of buildings pre-existing on site, each with its own style, purpose and response to both nature and the process of mourning. The architect states that the initial approach for the design was ... characterised by a refined simplicity, a down-to earth feeling of form, colour and weight, with an architecture verging on the ascetic. It is quite evident that this structure also adopts a journey- or route-based approach to design. The mourner encounters various conditions while walking through the cemetery, leading into the forest of pines and ending up at a generous brick canopy which provides mourners with a space to gather and rest in close proximity to the age-old pine forest. The approach towards the crematorium is an experiential one which allows grief and consolation to converge. Thus the idea of time was explored as a long journey which unfolds and evolves as the mourner nears the structure. The structure is isolated by the natural conditions in order to create privacy and intimacy. The pathways are subdued, hesitant routes which filter through the forest in order to incorporate nature as part of the calming experience (Celsin 2014:1).

The crematorium itself has been placed within a compact formalistic shell which allows staff to take control of the processes without interfering with mourners.

An aspect of this project which is of specific importance is the manner in which the design uses materials to create robust finishes that allow for a sense of clemency to be felt by the mourner.

The author chose this precedent because of its programmatic similarities to the thesis project and to form an understanding of design surrounding the ritual of cremation.



fig 9.17. Waiting area for mourners



fig 9.18. Entrance canopy



fig 9.19. Site plan showing journey to Crematorium



fig 9.21. Aerial Photograph of Crematorium

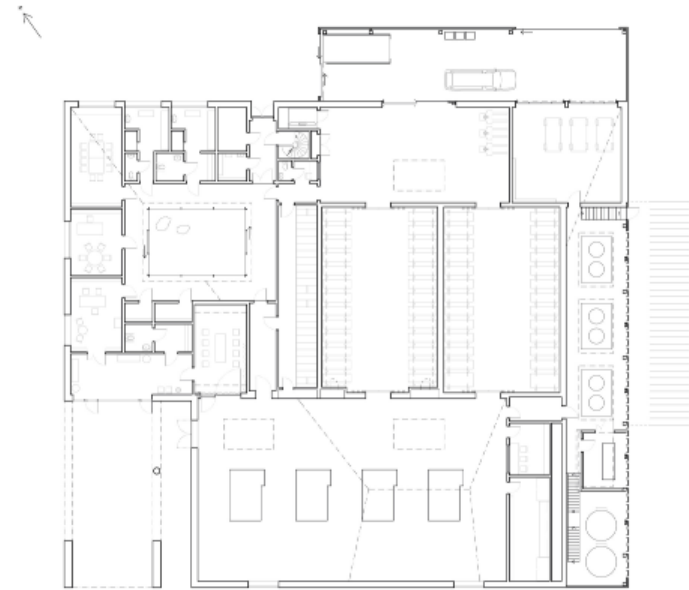


fig 9.22. Plan of Crematorium



fig 9.20. Interior use of light in Cremation room

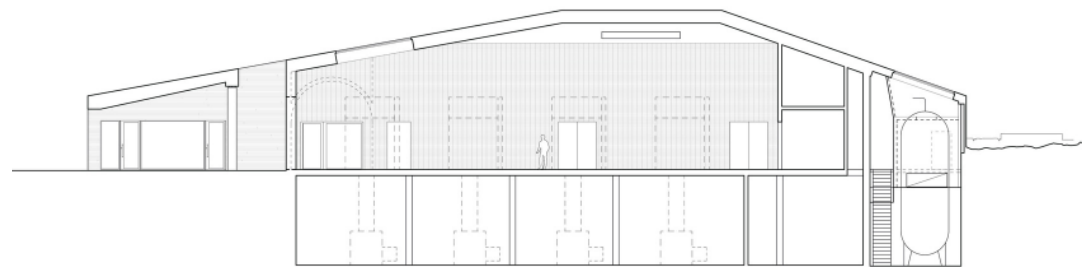


fig 9.23. Section through Cremators

Freedom Park - *GAPP Architects and Urban Designers, Mashabane Rose Architects, MMA Architects, Newtown Landscape Architects, Bagale Environmental Services, GreenInc, Gallery Momo (NBGM) Joint Venture*

Situated on Salvokop, opposite the Voortrekker Monument and bordering the city of Tshwane, is Freedom Park. The park was constructed as an integration between the landscape and the architecture. This historic landscape acts as a piece of commemorative architecture that speaks of the struggle events and icons that contributed to freedom in South Africa.

The landscape/architecture should be seen and experienced as a journey narrative. Submerged routes that lift out of the landscape tell stories of the past and make a connection between stagnant structures visible in the distance within Pretoria’s urban landscape. The incisions created by Freedom Park open up historic values of the landscape by connecting the Isivivane (stone monuments), S’khumbuto (stone walls), Mveledzo (pathways), Uitspanplek (viewing platform), and Hapo (exhibition space) with one another but, more importantly, with the cultural landscape itself as a built landscape commemorating struggle and freedom.

Because of its location within the Pretoria environs the park shares a characteristic with Observatory Ridge as an isolated entity. The remote character of the park aids in its isolation and lack of everyday use. Thus the park only caters for tourists and, as commemorative architecture, fails in this regard. Its relation to the historic landscape and distance from the city forces it into a certain niche; thus over time the park could become stagnant and vulnerable to losing its relevance in contemporary society.

The quartzite ridge forms a geological foundation for the park with rich biodiversity and plant species, and becomes a beacon of freedom for the people of Pretoria. Because of the high sensitivity of the biodiversity of the site it was of great importance to take care of the site with rehabilitation and conservation. One of the concepts of the overall design was to create a landscape that takes into consideration most of the site’s indigenous vegetation as well as vegetation used by traditional healers for well-being.



fig 9.24. Detail of rock connection with gutter at lowest level of roof.



fig 9.25. View of Freedom Park

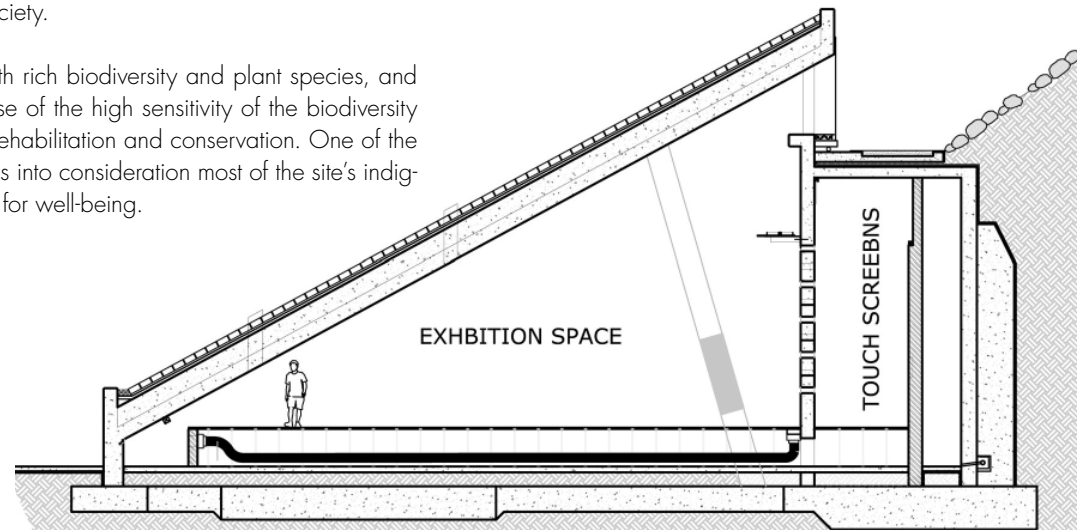


fig 9.26. Section illustrating packed rock on sloped roof.



fig 9.28. Materials found on site at Freedom park.

The author chose Freedom Park as a technical precedent for its similarities to the proposed design: the use of paths that cut into the landscape, and how the materiality is used to construct these paths to allow the user to have a more fulfilling experience of the journey through the site. It was also chosen for the continuous use of man-made and natural materials that seamlessly interact with one another throughout the site, and how they relate to various conditions such a cutting into the site as well as rising above the site in order to open up views.

The author investigated the main Gallery by visiting the site. Some design similarities of this gallery, for example various roofing conditions such as roof gardens, roof cover and approaches to waterproofing, and the use of concrete as a structural material that becomes a new landscape for natural materials and biodiversity on the site, were taken in order to create a hard-wearing building that accommodates large numbers of visitors. The author also found the continuous use of specific materials such as rock from the site, concrete, glass and timber inspirational as, throughout the journey at Freedom Park, these materials are made visible under different conditions but still remain true to their specific condition and character. In conclusion, the author found Freedom Park an extremely fitting precedent, not only on a technical level but also where design, environmental and social aspects are concerned. It is a successful project that should be more fully integrated into the everyday and not only made accessible to tourists. It should be a place where the people of the city can go.

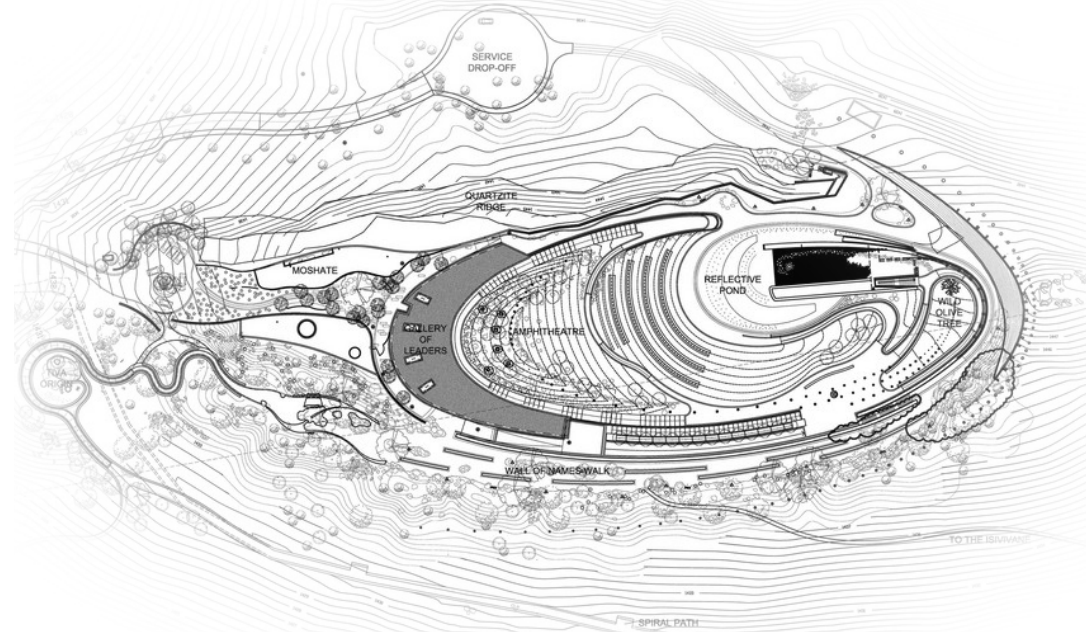


fig 9.27. Plan of Freedom Park in relation to Ridge.

Design Development

Design Development Structure

Funerary & Cremation Process
Funerary Process

Design Development

Conceptual Route Diagram

Landscape

Concept
Site Analysis
Landscape / Design

Design Finding

Plan Development
Route development
Entrance Development
Mortuary Bathhouse and Viewing Development
Chapel Development
Mortuary Development

Design Resolution

Design Development - *Structure*

The design was developed throughout the year, using various techniques such as sketching, model building and computer-aided 3D modelling. This process has allowed for various iterations to develop, enabling a more complete and relevant design response.

The following chapter consists of a condensed version of integral sketches, photographs and other media that best display the design iterations and processes as developed by the author. Throughout the chapter the author will discuss design generators, influences and the iteration processes.

Design Development Structure

- Funerary & Cremation Process
- Entrance Courtyard
- Bathhouse and Viewing
- Mortuary and Crematorium
- Chapel

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Funerary & Cremation Process

The design of the cemetery integrates the funerary procession and cremation processes with the experiential park route within the landscape. This route slowly reveals elements of the Witwatersrand as a geological formation in an urban context, as well as Johannesburg as a developing African city.

The experiences on the park route are determined by the overlapping funerary processes that take place at separate locations along the route, as the mourner and park-goer progress through the site. It is through this overlapping of the park and cemetery typologies that life and death, man and nature, spirituality and calmness are made sensory.

fig 10.1. Painting illustrating a gloomy scene. The central figures, black clad grim reaper like figures (symbol of death) tending to gardens (symbol of birth and renewal). Simberg described the garden in the painting as the place where death goes before going to heaven. This dark portrayal of death with the tenderness of a garden allow the user to view mortality in a new light. Hugo Simberg 1896.

Funerary Ritual

The funerary ritual functions as 3 different rituals centred around the deceased, the mourners and the interaction between them, with each process having diverse spatial, lighting, volume, services and material needs.

The first process which traditionally focuses on the deceased is that of coffin collection, mortuary storage, washing and finally cremation or traditional burial. This process is accommodated in the crematorium structure which emerges from the geology of the ridge, slowly progressing from coffin collection to mortuary and then crematorium, similar to how the ridge starts to rise to its highest point. This allows for the body to slowly move into and within the geology of the ridge as it progresses through the funerary process as well as through the structure itself. Starting at coffin collection on the structural route and being completely exposed and free from the landscape, one moves to the mortuary where the structure is sunken into the ridge, partly covered by vegetation and surrounded by an exposed granite rock face on its northern and eastern facades.

One finally moves to the cremator room where the structure is completely surrounded by the landscape on all sides, and covered by the soil of the ridge flowing seamlessly over it. Thus the structure responds to the condition of the ridge geology, the programmatic processes, and the experiential movement of the body and user through the preparation and cremation process – from structural exposure to a sense of complete isolation and spiritual heightening.

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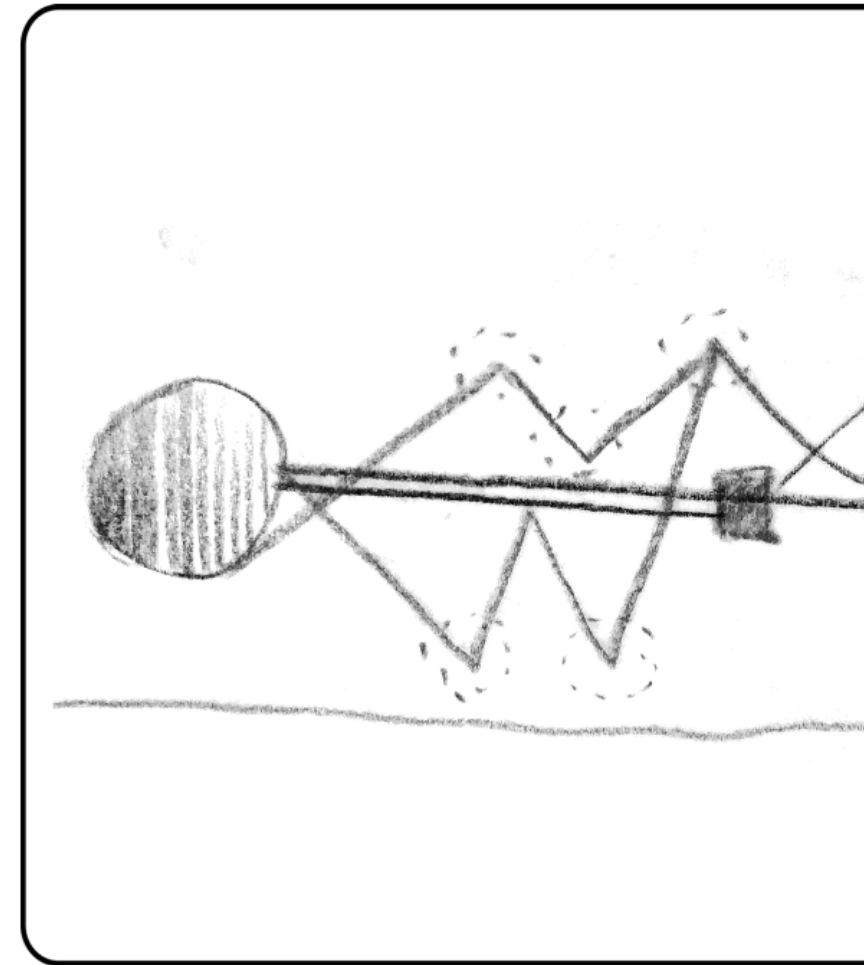
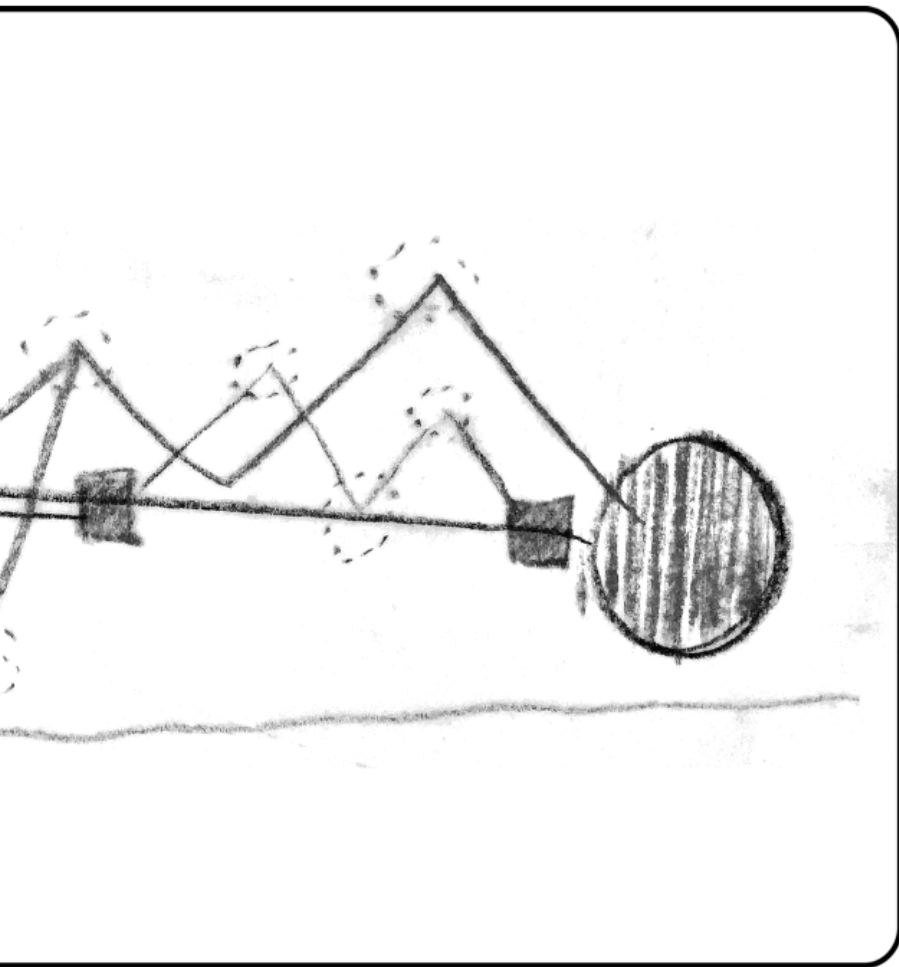


fig 10.2. Conceptual Diagram illustrating movement intersections between mourner and deceased. (by Author, 2015)



deceased. (by Author, 2015)

The 2nd optional process that can be fulfilled by the family and mourners encompasses the viewing and ritual bathing or cleansing of the deceased. The two ritual bathhouses are identical in form and function and are situated on separate levels of the route. The location of these structures is more public, as the viewing and washing might incorporate not just family members but other loved ones in the process of viewing and cleansing. These two structures are partially submerged within the edge of the ridge so as to allow for intimate isolation and privacy from those moving through the park. The northern façade is cut into the ridge, while the southern façade is completely open to the skyline of the Johannesburg CBD. The planning allows for complete privacy and isolation, as the northern façade is sunken into the ridge and the extended overhang on the southern side prevents passers-by from viewing the process.

The 3rd process brings the deceased and the mourners into contact with one another. In the chapel structure mourners pay their final respects to the departed. The chapel structure, similar to the crematorium and mortuary bathhouses, cuts into the granite ridge, exposing a sheer rock face that acts as a northern façade wall bracing the large rib-like fins cutting into the rock, which in turn support the sloping roof structure. The chapel can be divided into three main spatial realms. Cutting deep into the ridge, the first realm houses the pulpit, catafalque and silent prayer area. These spaces, underneath a tower-like roof structure that allows natural light to shine down onto the sheer rock face and coffin, resemble the planning hierarchy of an apse and ambulatory. The second space is defined by deepening the structural beams which span from the northern rock face to the southern façade, allowing for a more defined spatial hierarchy between the nave and the aisles. The third space within the chapel acts as a post-service gathering space for the congregation before they exit the chapel into the landscape towards the burial tombs and park routes.

Conceptual Route Diagram

Figure 2.x illustrates the route travelled by the author during a site visit to Observatory Ridge. Down Joe Slovo Drive the route travels below natural ground level, cutting through the ridge and exposing natural rock in combination with man-made retaining walls. This is the first interaction between nature and man on the journey. Before descending through the ridge, a view of a ruined church on top of a flattened clearing on a lower part of the ridge is revealed. Travelling down alongside the Joe Slovo Bridge, the base of the bridge is encountered which is supported by natural rock formations of the ridge. Continuing on, one travels parallel to the base of the ridge before starting an ascent towards the highest point of the ridge and the proposed site. While ascending the ridge, exposed cut granite rock faces are on the left and man-made stone barriers on the right. This is the second interaction between man and nature on the journey towards the site. Before reaching the proposed site one passes between the largest water reservoirs in Johannesburg. The reservoirs are clad with rock excavated from the site in order to naturalise these large structures rising from the highest point on the ridge. This is the third encounter between man and nature. Reaching the site the condition shows various different examples of dry-packed rock walls and large boulders used as seats, altars or barriers. This is the fourth and final encounter with rock being used by man as a form of structure.

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The diagram ultimately shows the relationship of the travelled route with being above and below ground while surrounded by natural and man-made walls at various instances, allowing the author to formulate an abstract logic in relation to the site (Ando 1996). The author develops a deeper understanding of the site as geological agent within the context of Johannesburg (Bremner 2014).

Though drawing its natural landscape the site can be read and understood, enabling one to understand its abstract logic and to start to prepare the ridge for an acceptance of the modernist line.

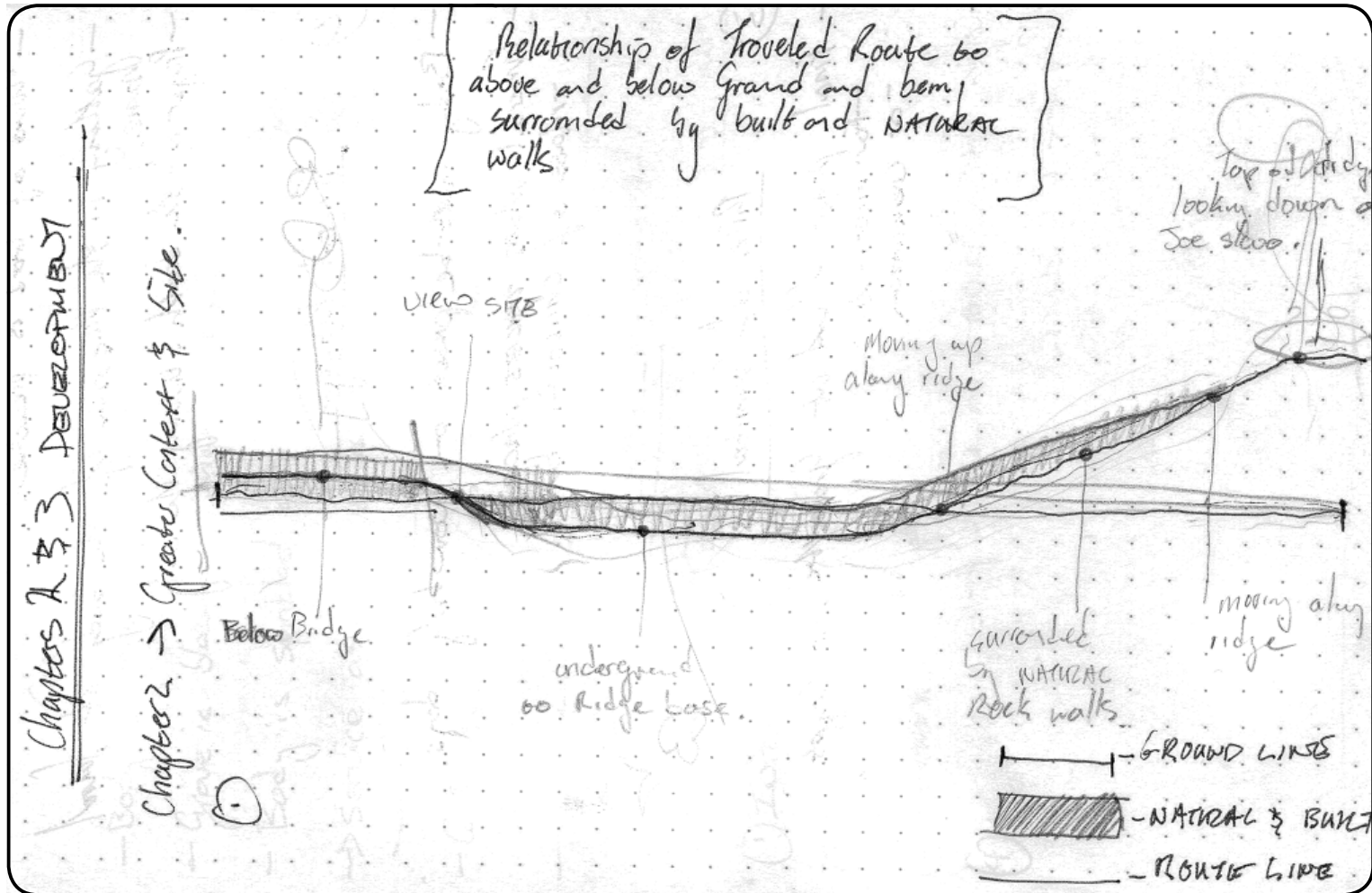


fig 10.3. Conceptual diagram illustrating the route taken by the author to reach the top of the site. In the images the author illustrates the relationship between being above and below ground while moving towards the peak of the ridge. The diagram also illustrates the relationship between being above and below ground with being surrounded by man-made walls and natural excavated granite walls. (by Author, 2015)

Landscape - Concept

The conceptual approach of the design was based on an understanding of the site and its isolated nature within the city. Being elevated well above the city, the site allows for breath-taking views towards Johannesburg – its past as well as its future. It was established that the slope on the site as well as the dense vegetation added to its sense of isolation, thus allowing those taking part in prayer to find solace at the top of the ridge. Together with the intense contours of the site, the design progressed towards using these natural elements to further heighten the isolated nature of the site, while at the same time allowing access onto a piece of uitvalgrond.

Throughout the various structures and the routes connecting them, along with the final route towards the burial tombs, the concept of exposing and using the granite rock of the ridge as a device for uniting man with nature is employed to enrich the spaces and allow for constant change in the interior and exterior spatial experiences. The combination of natural and man-made allows for a more integrated structure within the Witwatersrand landscape, that would through weathering and time become part of the ridge and its structure as geological agent.

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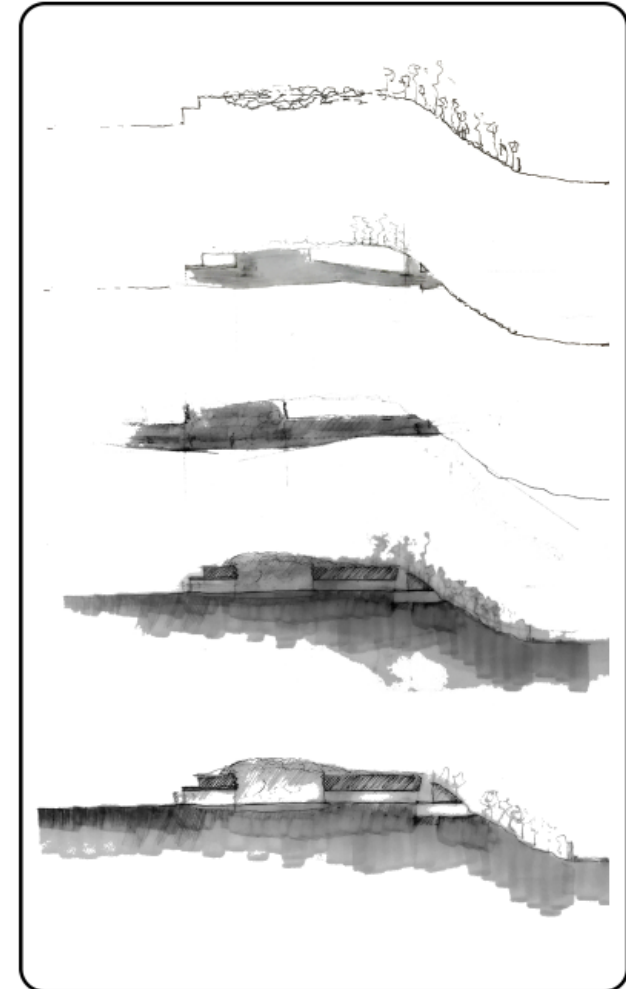


fig 10.4. Sectional diagram illustrating natural ridge condition with conceptual excavations below ground line as an exploration of a submerged architecture. (by Author, 2015)

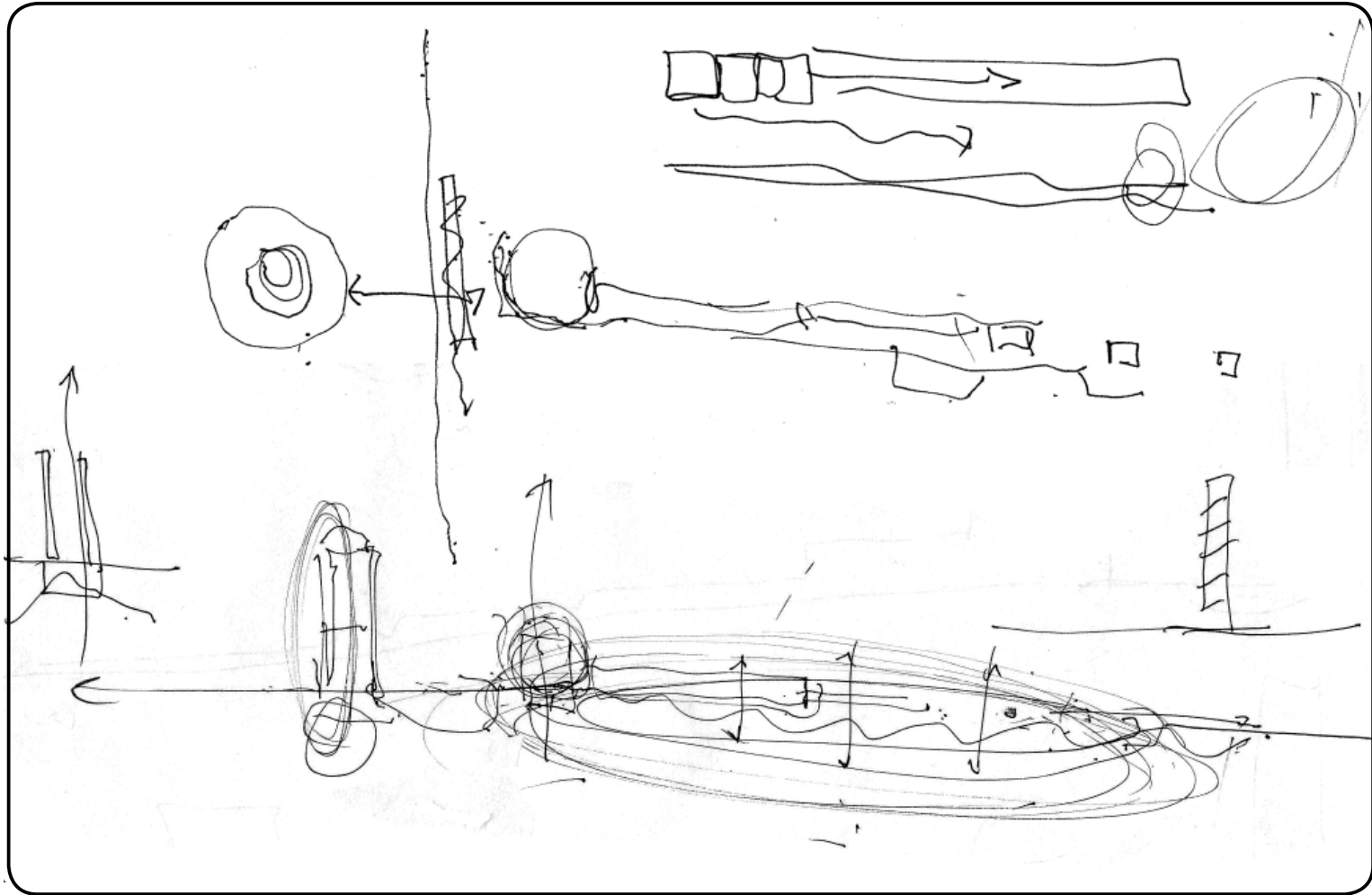


fig 10.5. Plan and section illustrating the author's exploration of the ridge, Joe Slovo drive and Ponte City. Smaller sketch shows a diagrammatic section through Ponte exploring its core as a spiritual opening to the heavens.
(by Author, 2015)

Landscape - Site Analysis

This section deals with initial sketches made by the author on site in order to further develop an abstract logic of the site, not only as a piece of uitvalgrond but as a geological agent and spiritual space in Johannesburg. It further shows the development of the landscape in relation to the South African context, as the watershed between East and West, the barrier condition created by the ridge within the city and its relation to the natural environment as koppie. The ridge as gateway into the city, similar to the Voortrekker Monument and Freedom Park, is also explored. The site is also explored in relation to other built and natural elements found on the ridge as it extends through the city, elements such as the Johannesburg Observatory, Yeoville water tower, Ponte City, Hillbrow Tower, and the Braamfontein and Brixton Cemeteries. These elements were considered as geological agents that have become part of the make-up of the ridge as a natural formation.

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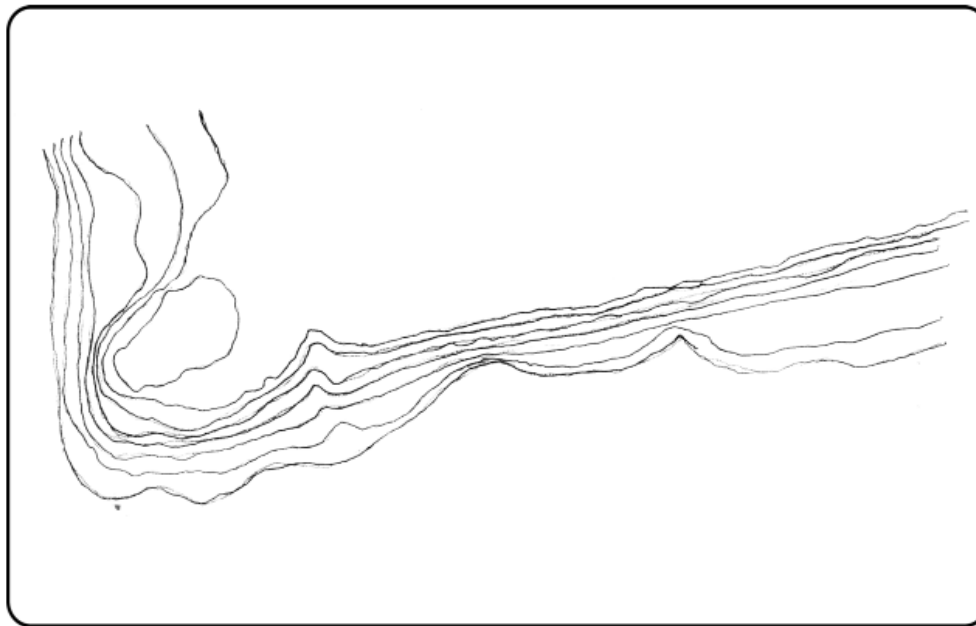


fig 10.6. Sketch of site topography illustrating geometric lines that start to immerge. (by Author, 2015)

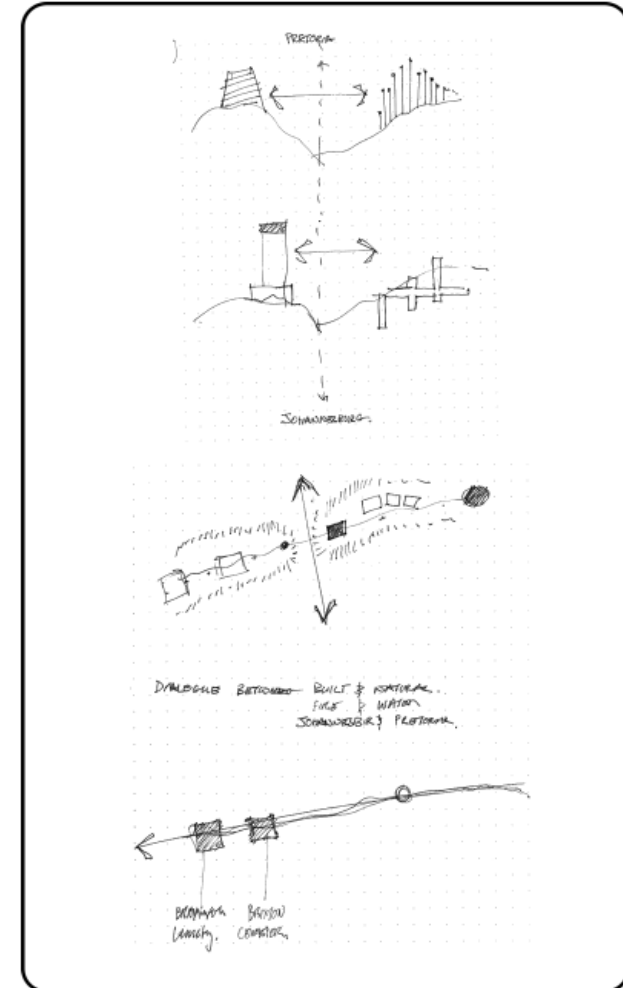


fig 10.7. Sketches illustrating the site as a form of gateway into Johannesburg CBD. It is also compared to the author's reference of the Voortrekker Monument and Freedom Park as gateway into Pretoria. Final sketch show the proposed site in relation to the first cemeteries in Johannesburg. (by Author, 2015)

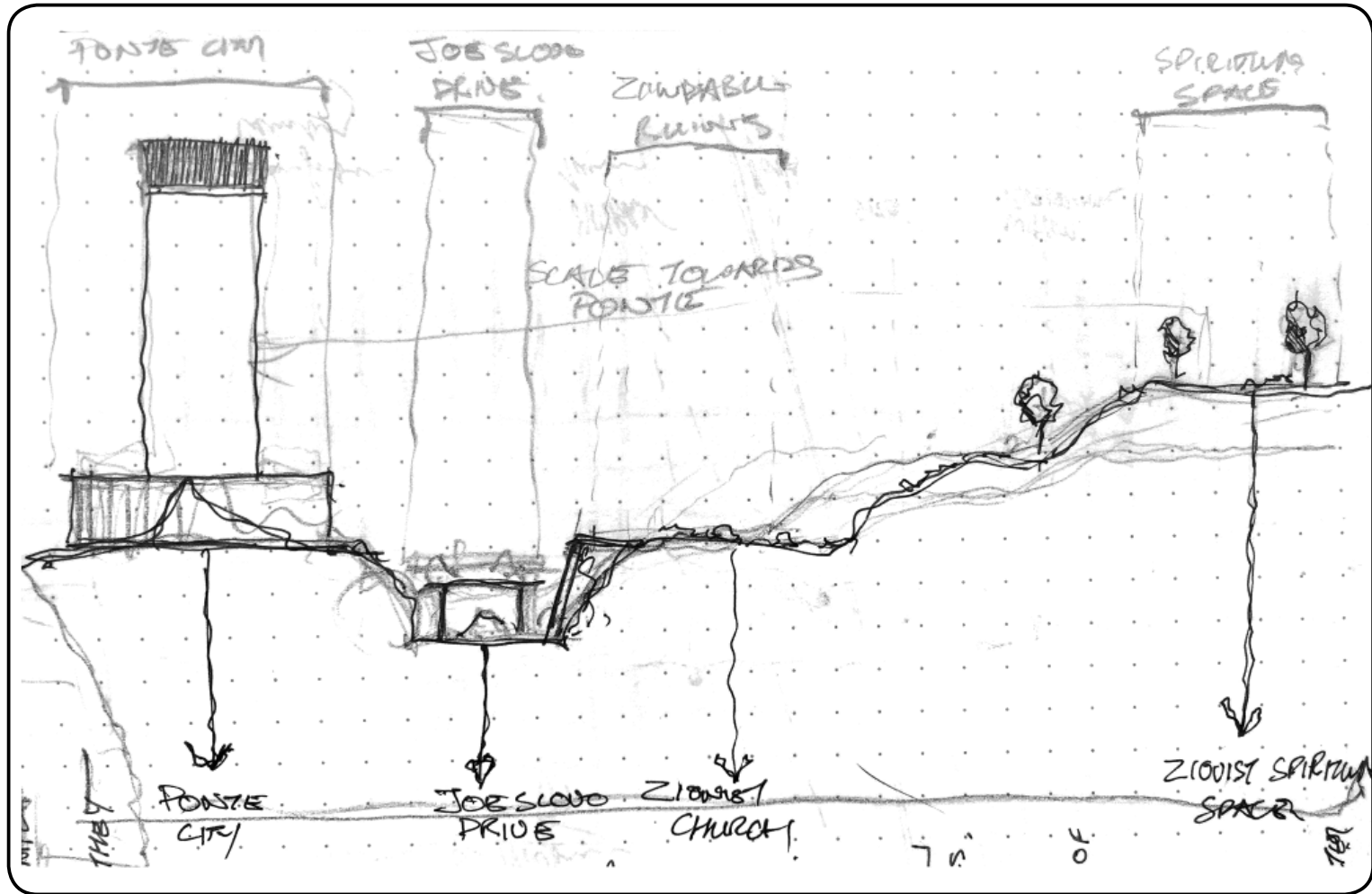


fig 10.8. Sectional exploration of ridge. Illustrating relationship between Ponte City, Joe Slovo drive, site and Pentecostal prayer space. (by Author, 2015)

Landscape - Landscape / Design

The following section deals with the diagrammatic integration between landscape and structure, developed from the conceptual stance taken by the author.

In the initial development stages of Yeoville Ridge, the proposed intervention was established as an isolated route structure within the landscape that retains its isolated and spiritual character. This character, which relates back to the initial approach of the framework and the overall concept of integration between nature and man, was constantly kept in mind by the author in order to inform the overall approach and iterative decisions. The sketches to follow show a more synthesised understanding of site, programme and concept. The diagrams aim to develop from a conceptual approach to the programme and an abstract understanding of the site into a more structural plan from which more in-depth planning on a detailed level can be done.

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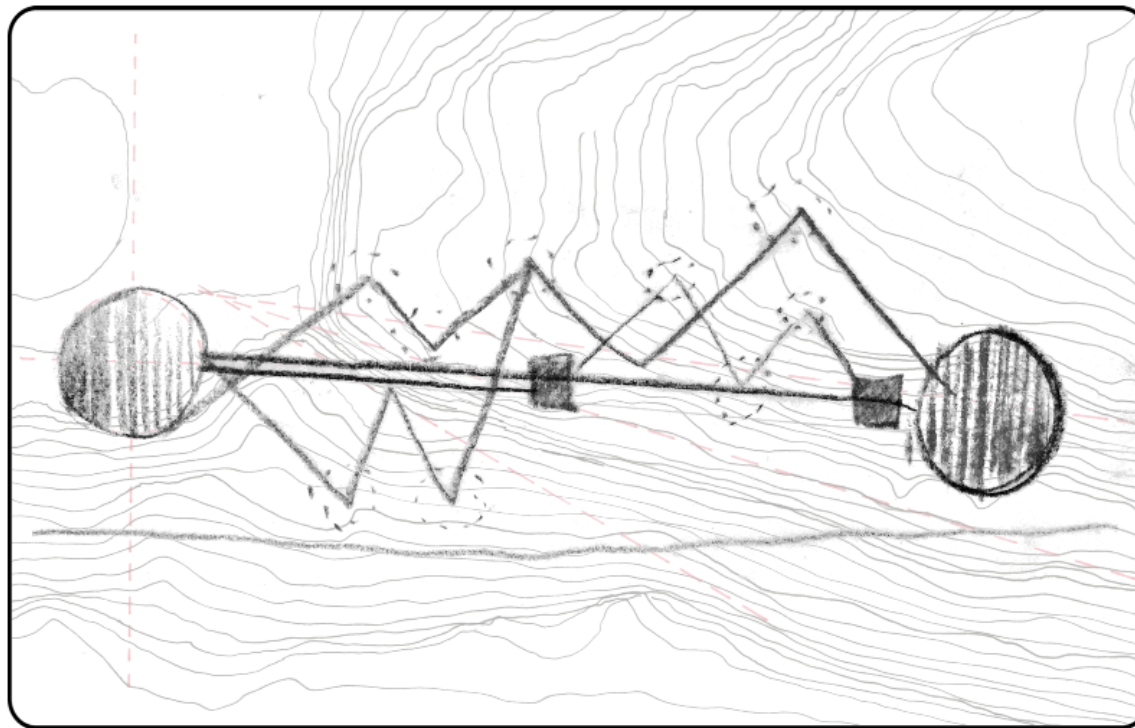


fig 10.9. Sketch illustrating conceptual points of gathering on the site along with lines intersecting at various point to show stages of interaction between mourner and deceased. (by Author, 2015)

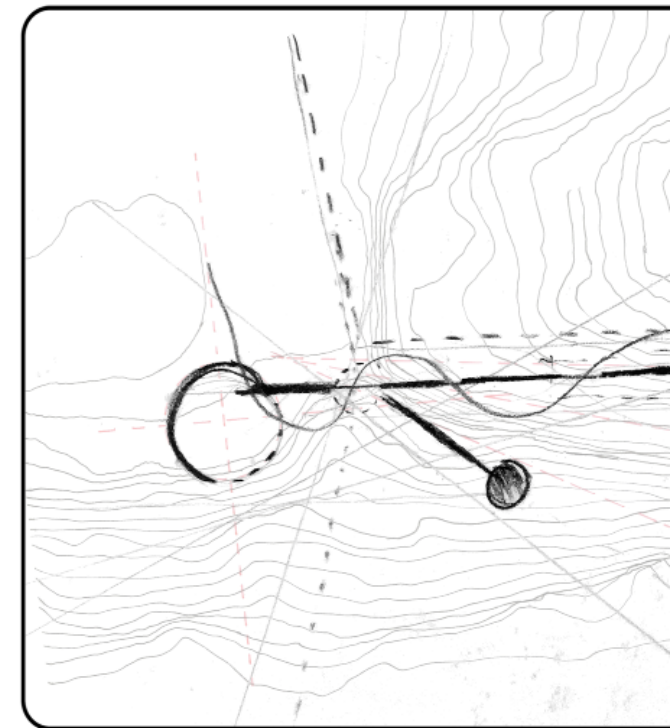
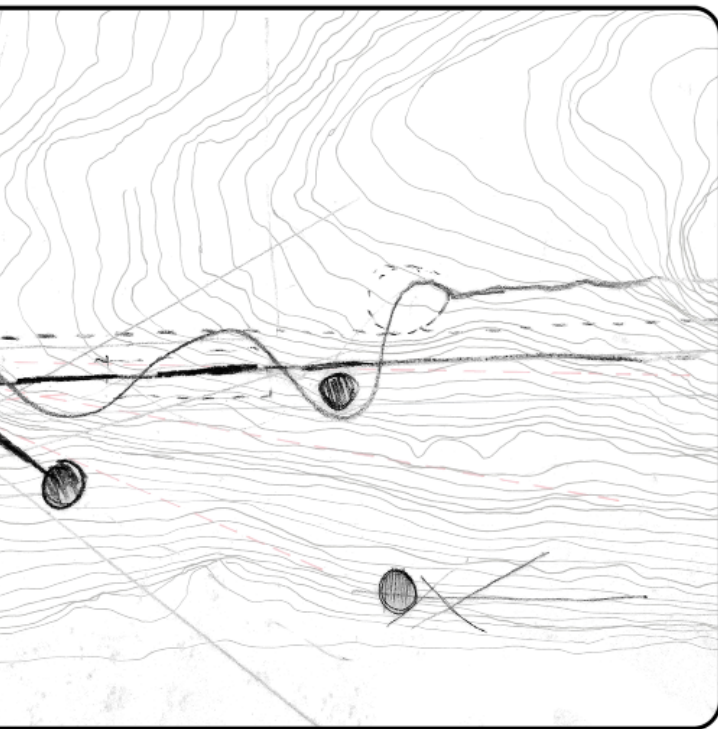


fig 10.10. Sketch illustrating conceptual relationship between lines of programmatic interaction,



lines of programmatic interaction, site topography and potential structures. (by Author, 2015)

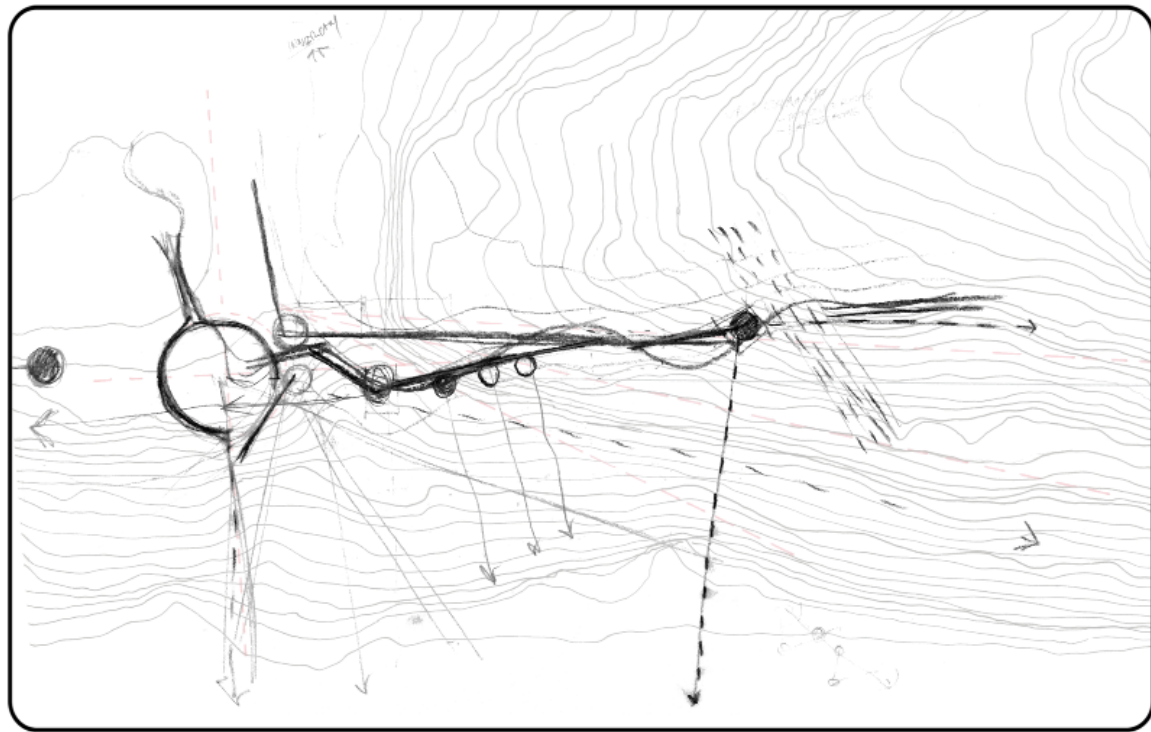


fig 10.11. Iterated sketch illustrating conceptual relationship between lines of programmatic interaction, site topography and potential structures. (by Author, 2015)

Design Finding

The design findings deal with the design processes, after the landscape has been understood and a thorough concept from which to depart has been developed. This section deals more specifically with the following:

- Plan development from landscape site analysis and concept through to various iterations as a landscape route building.
- Development and iteration of the route within the landscape.
- Development and iteration of the entrance into the landscape and the routes connecting programme-related buildings.
- Development and iteration of the mortuary bathhouses and viewing structure.
- Development and iteration of the chapel structure.
- Development and iteration of the mortuary and crematorium structures.

These pre-mentioned sections will be discussed in stages of iteration including plan development, sectional development, 3D model and elevation iterations, in order to gain more clarity from initial conception to final resolution of the various iteration stages.

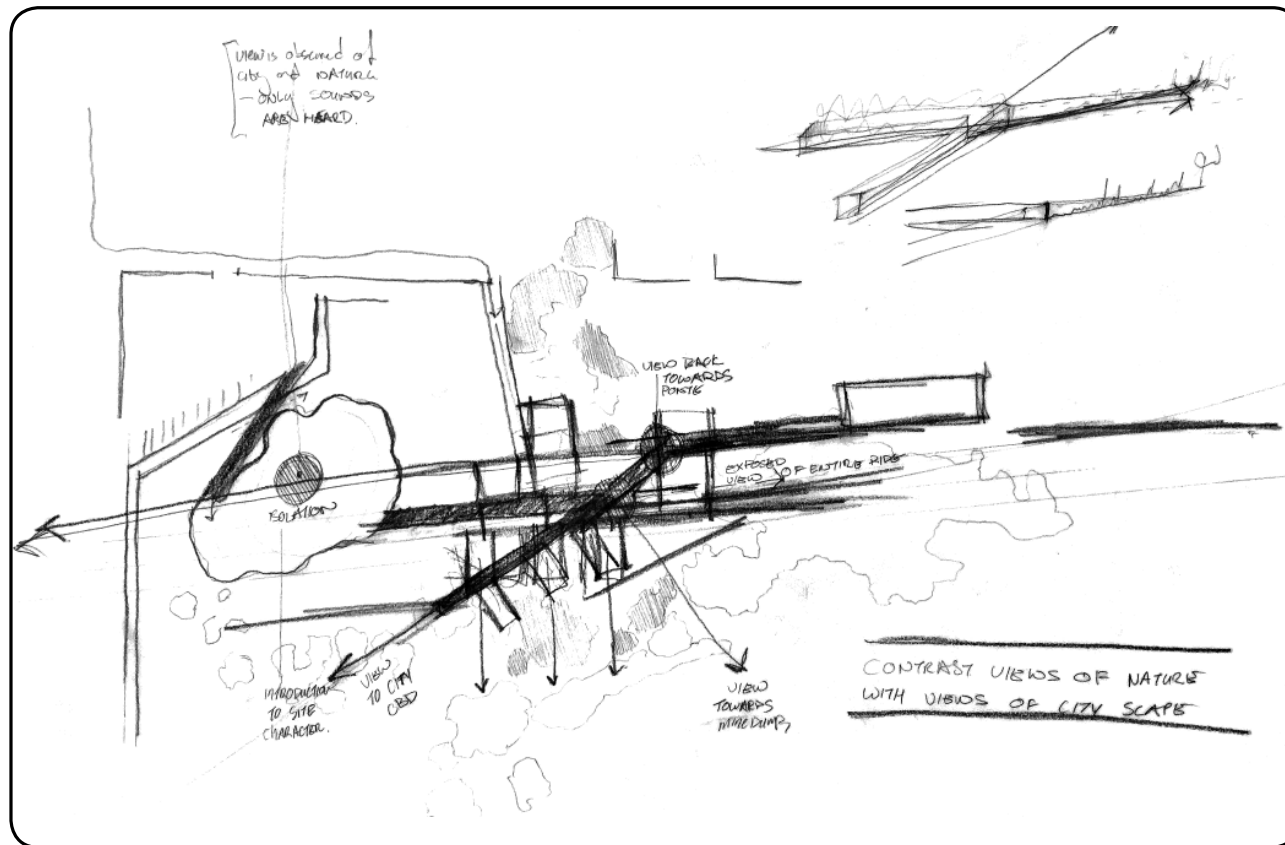


fig 10.12. Sketch illustrating an understanding of the conceptual approach in order to allow views, vegetation, programme and site to relate to one another. Allowing for a contrast to be made between views of nature and views of man-made elements. (by Author, 2015)

Design Finding - Plan

The plan developed from various iterations which emerged from a combined understanding of conceptual aspects and an analysis of the site, in combination with a programmatic understanding of funerary processes. The diagrams to follow illustrate changes made by the author and will be discussed briefly with each image. The overall plan development then shifted to individual iterations of each structure on site, keeping in mind the conceptual premise in order to create a seamless transition between structure and route, route and structure.

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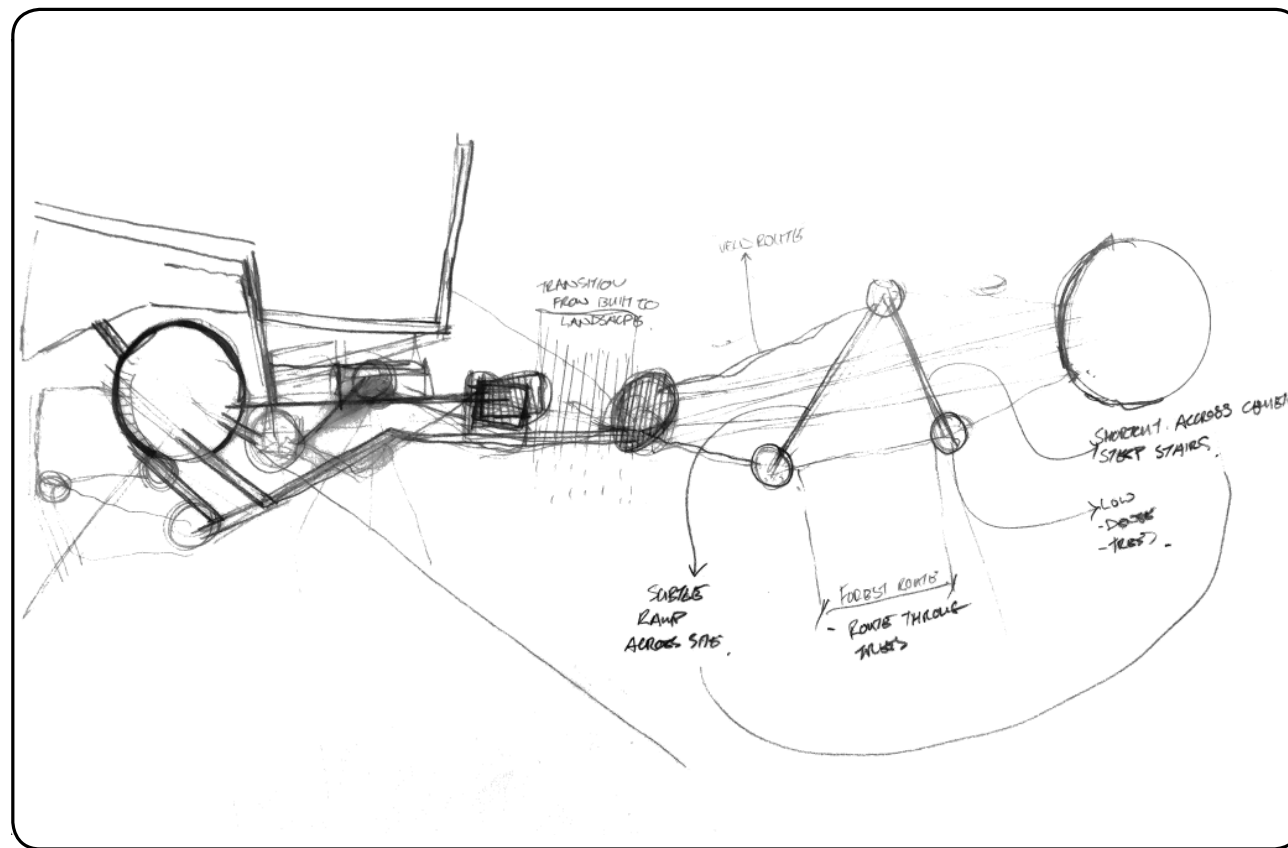


fig 10.13. Iteration sketch of the previous conceptual site diagrams in combination with conceptual understanding diagram of site, view, nature and man-made. Structure becomes more route orientated and combined with the landscape. (by Author, 2015)

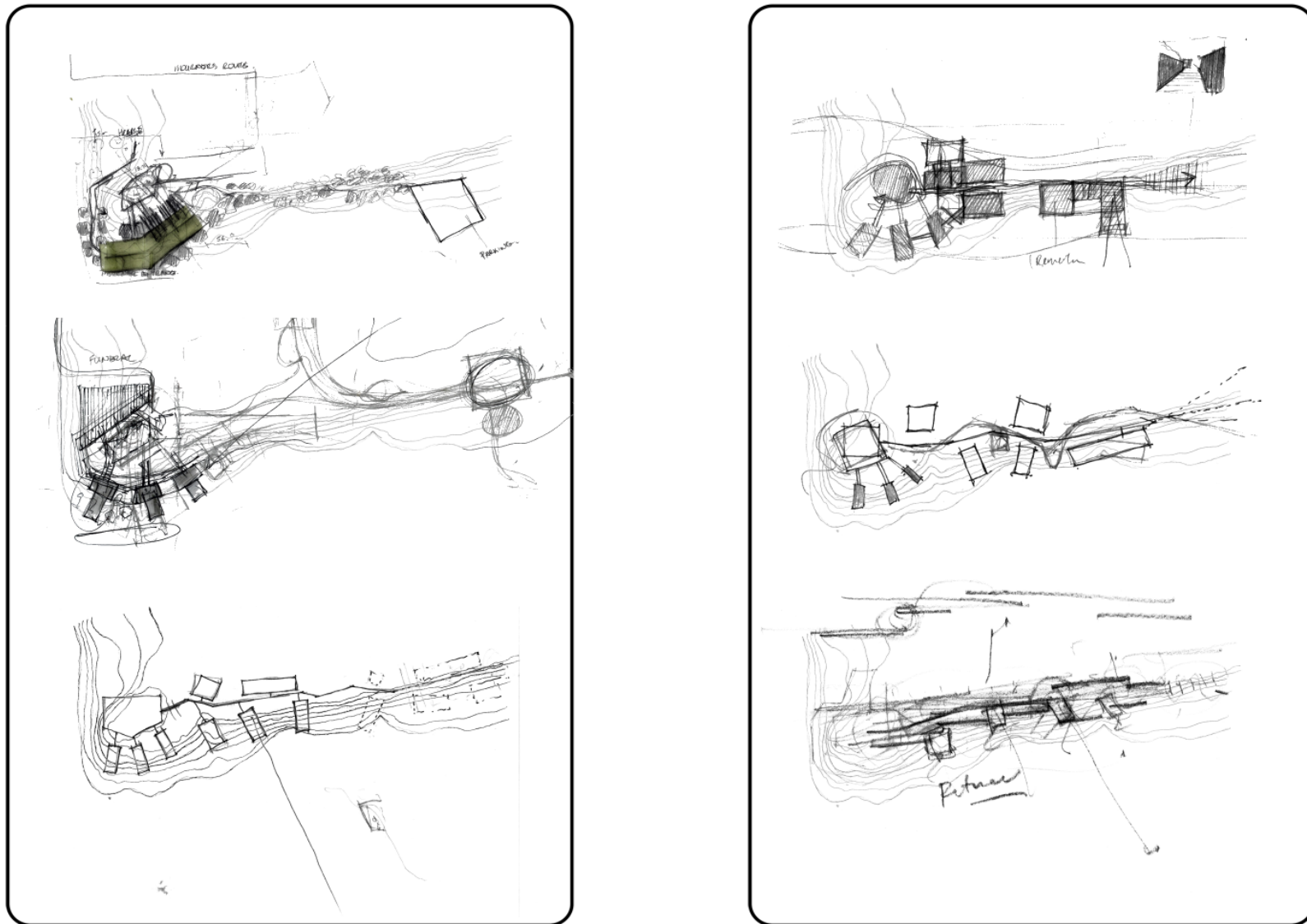


fig 10.14. This series of sketches illustrate planning iterations of the entire structure in response to site analysis mapping discussed in the previous chapter. The plan develops from a series of smaller interventions to a more centralised iteration which still maintains the idea of structure as route. (by Author, 2015)

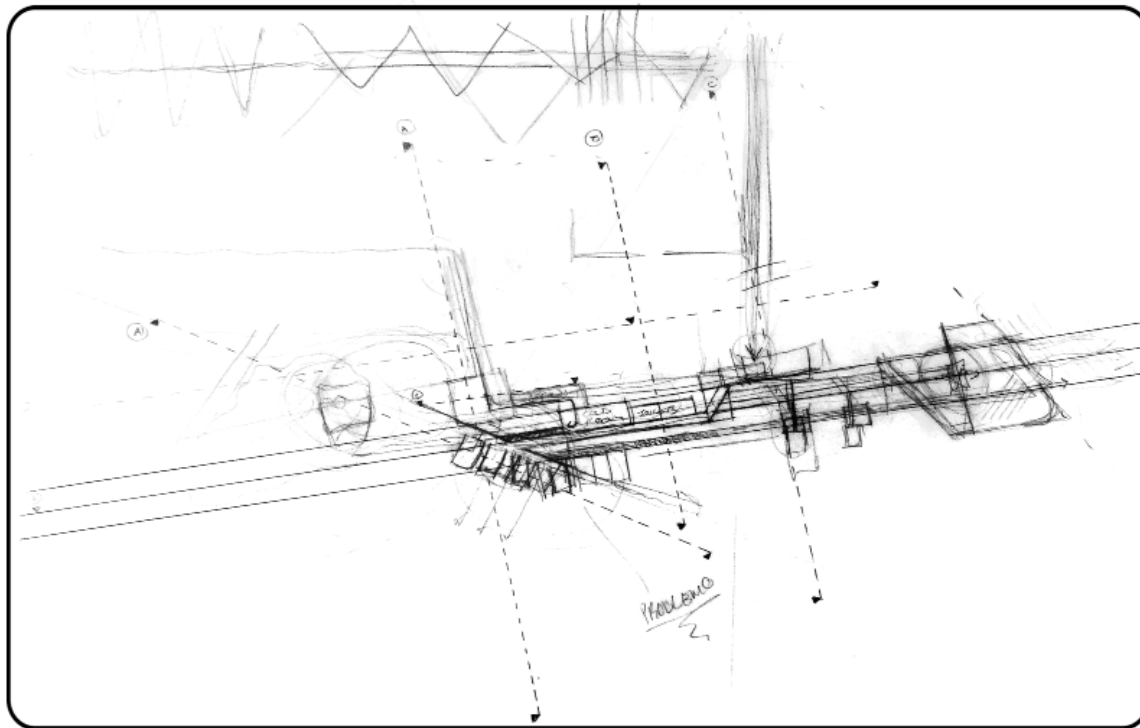


fig 10.15. Sketch 1 - Illustrates a linear approach to structure and the site as a result of the linear funerary processes explored. (by Author, 2015)

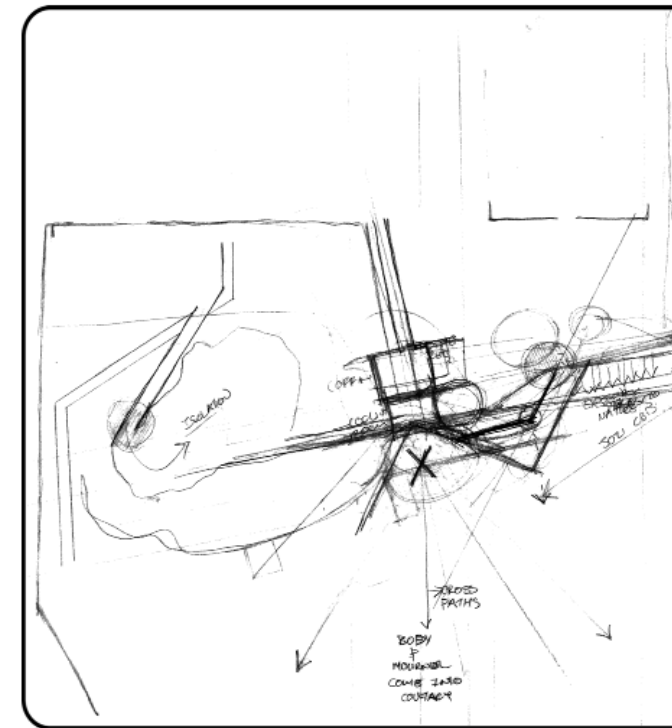
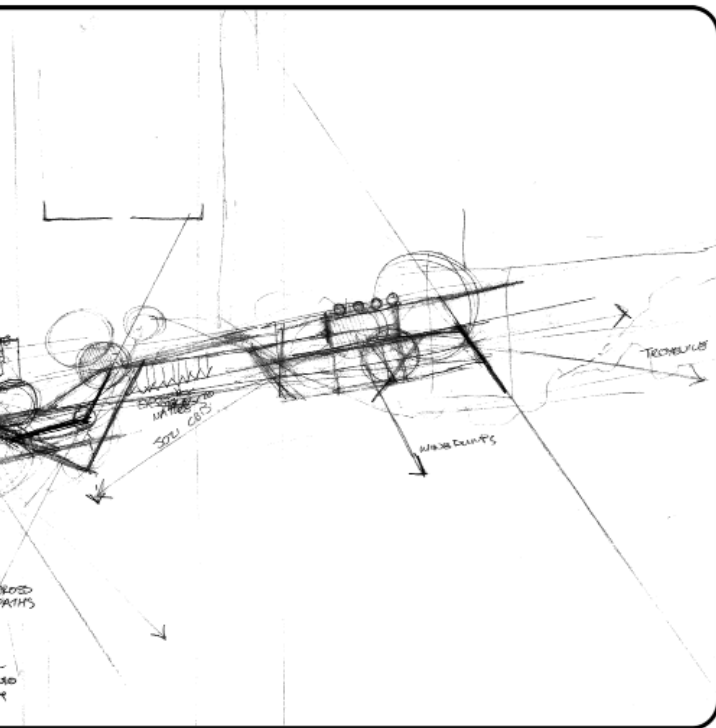


fig 10.16. Sketch 2 - Illustrates a linear approach to structure but with greater response to the site as natural water runoff from ridge. (by Author, 2015)



...e but with greater response to the natural topography of site. This allows for views to be harnessed as well

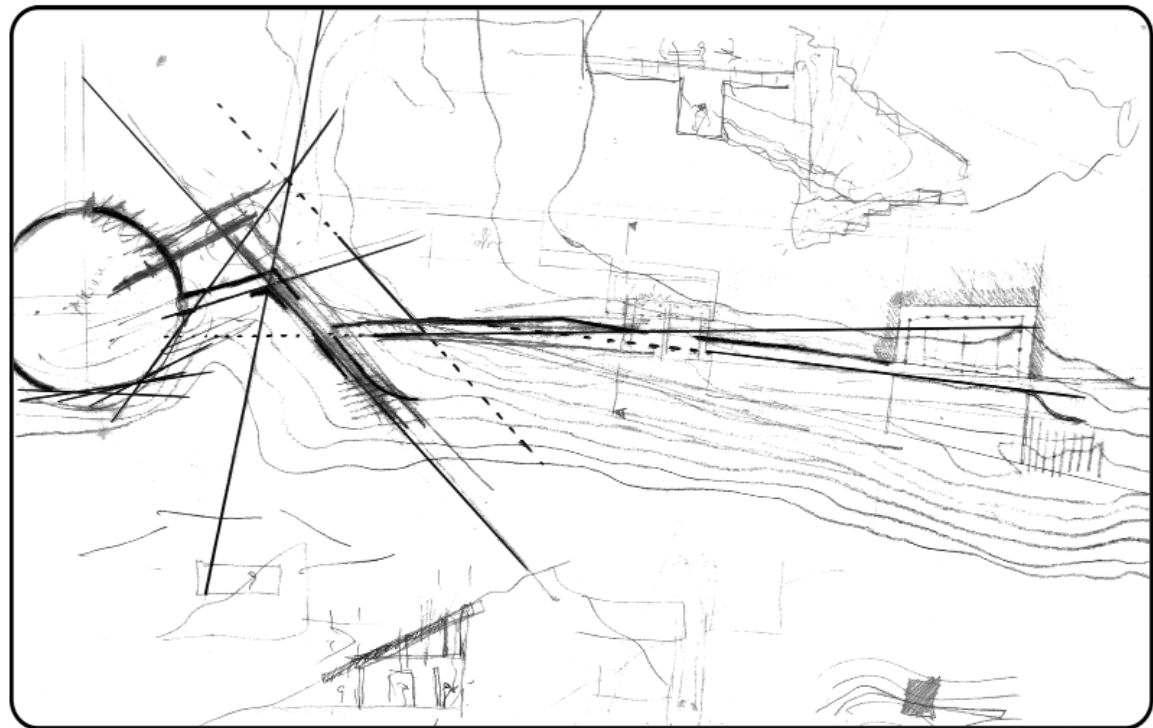


fig 10.17. Sketch 3 - Illustrates a more finalised plan with response to landscape and views, with the addition of spatial layout of internal spaces. (by Author, 2015)

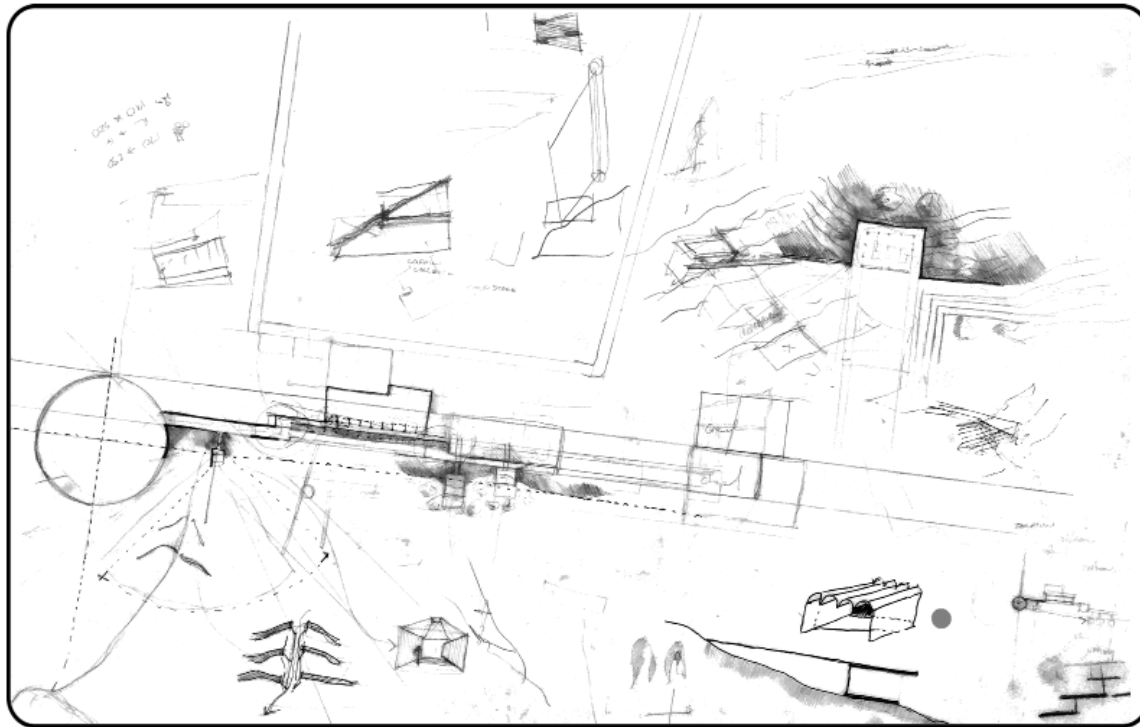


fig 10.18. Sketch 4 - Illustrates a more detailed spatial planning layout referring back to a completely linear plan. (by Author, 2015)

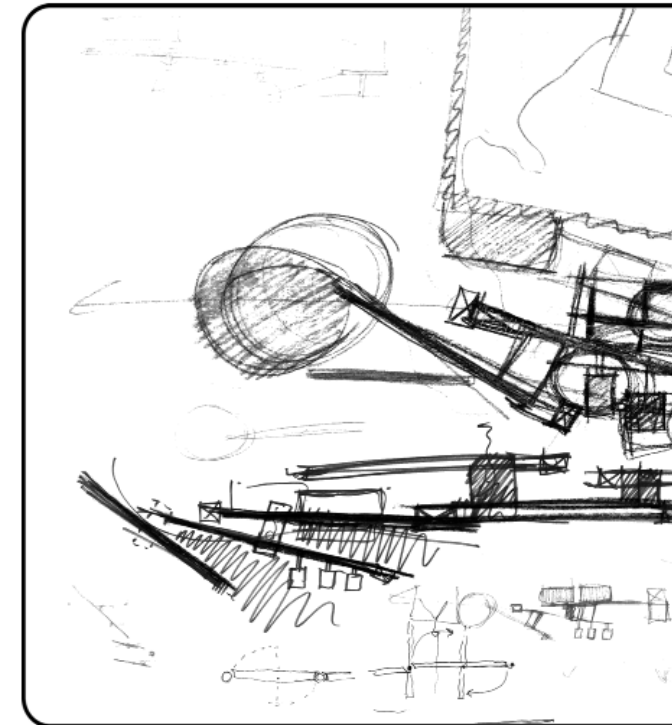
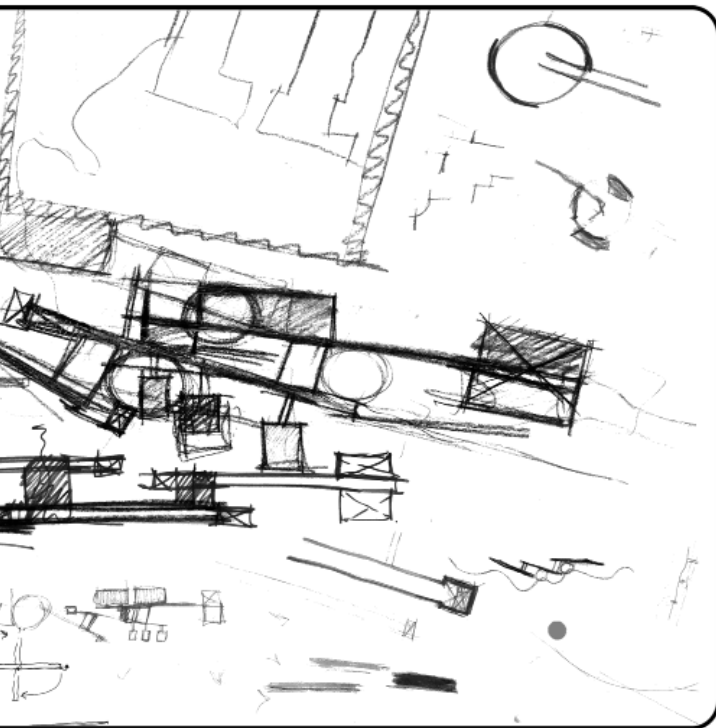


fig 10.19. Sketch 5 - Illustrates the route being broken into three main levels which correspond to



three main levels which correspond to site topography as well as programmatic categories. (by Author, 2015)

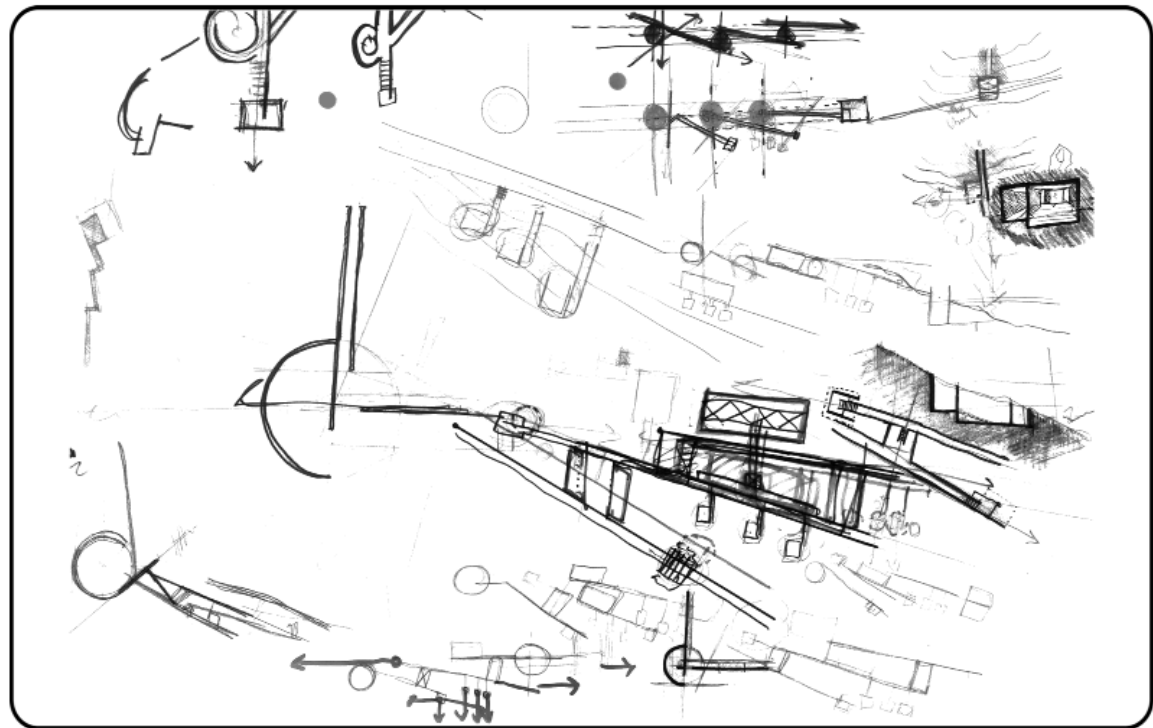


fig 10.20. Sketch 6 – Illustrates similar to sketch 5 but the planning design starts to refine around ease of movement and accessibility. (by Author, 2015)

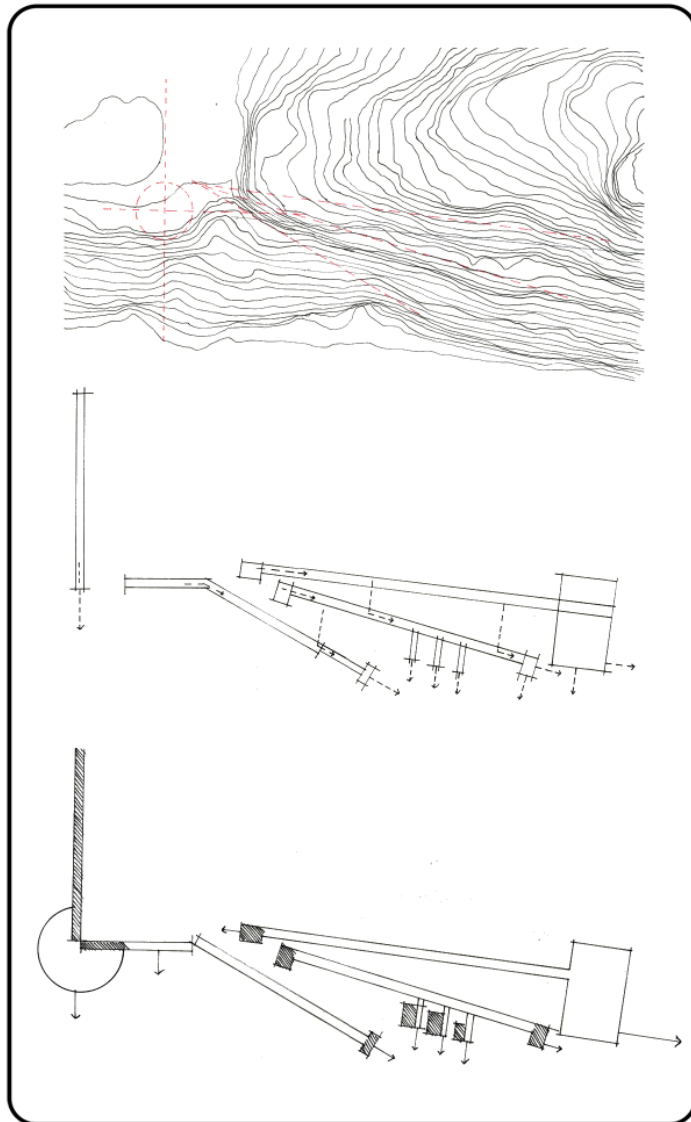


fig 10.21. Diagram 1 – illustrates the geometric composition between site topography and route.
Diagram 2 – Illustrates potential water discharge points throughout route structure.
Diagram 3 – Illustrates points of isolation and relief throughout journey. (by Author, 2015)

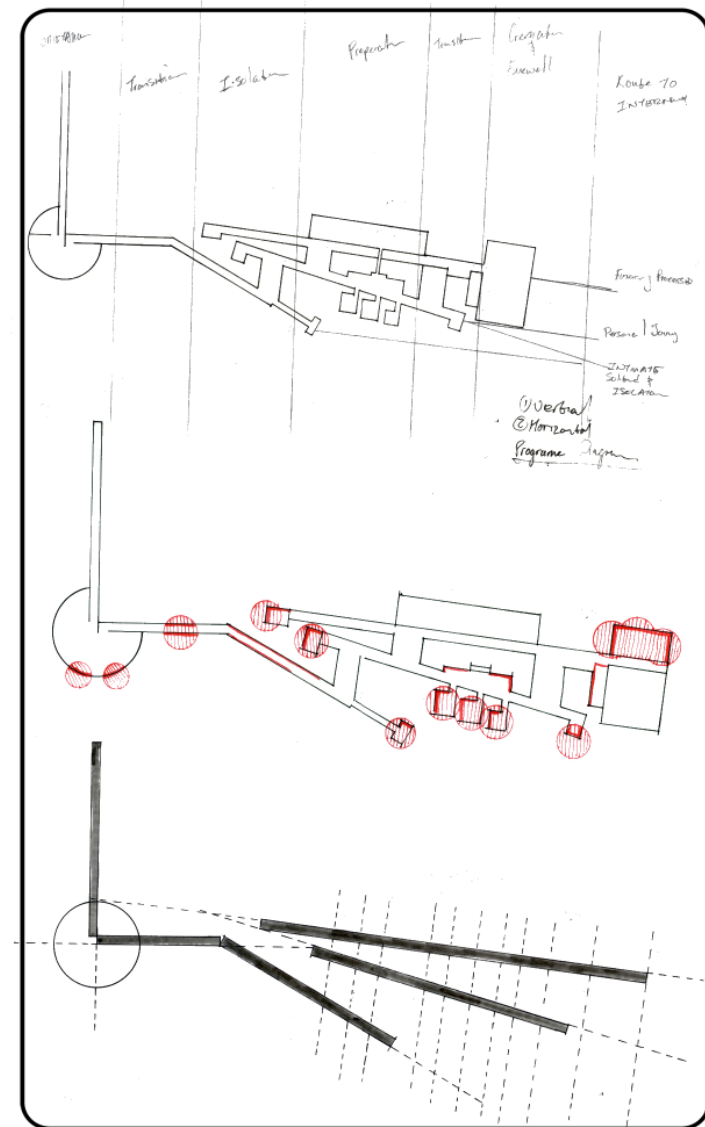


fig 10.22. Diagram 1 – Illustrates programmatic ordering of the route both horizontally and vertically.
Diagram 2 – Illustrates areas of tension between nature and man-made elements.
Diagram 3 – Illustrates geometries of proposed route structure. (by Author, 2015)

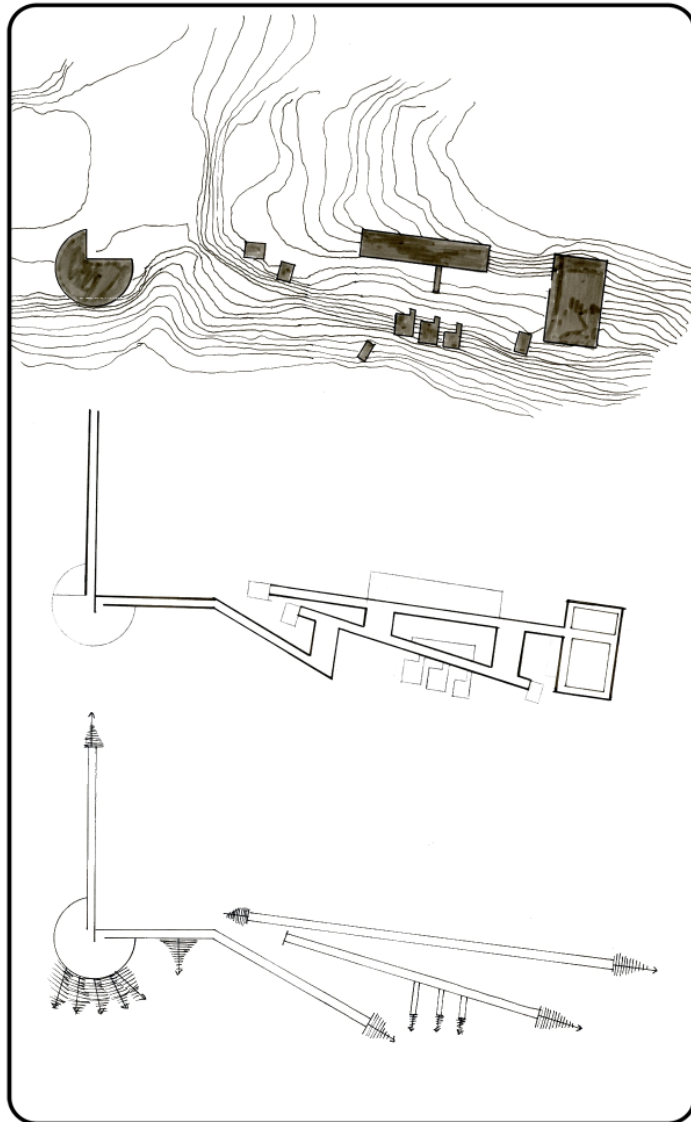


fig 10.23. Diagram 1 – illustrates the building footprints that cut into the ridge.
Diagram 2 – Illustrates circulation routes cut into ridge.
Diagram 3 – Illustrates point of access directly into landscape, where mourners and park users can walk into densely vegetated forests of open veld areas. (by Author, 2015)

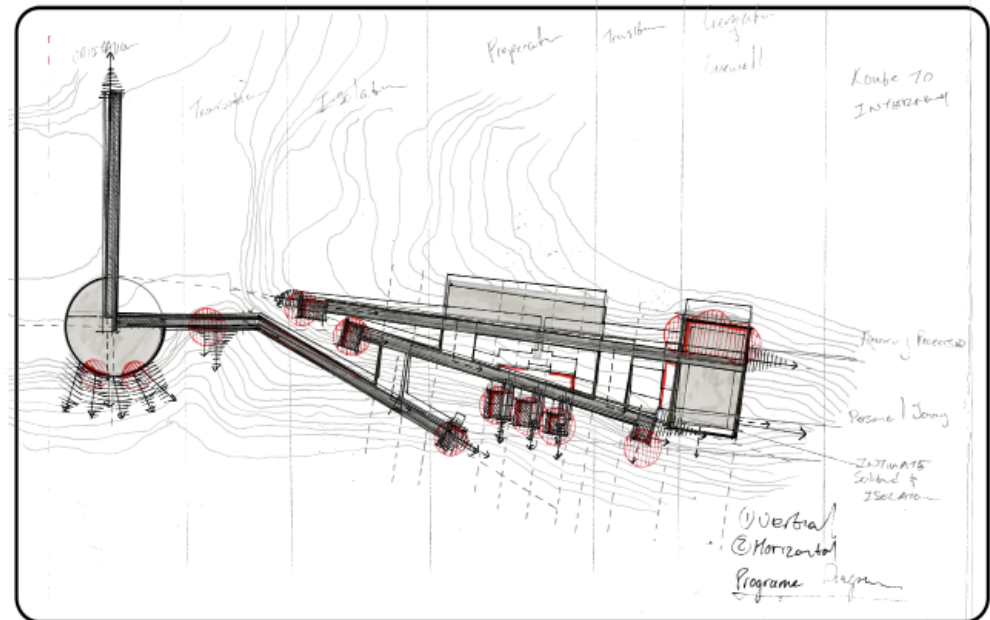


fig 10.24. This sketch illustrates the combination of all the previous diagrams overlaid in one diagram to show a coherent whole. (by Author, 2015)

Design Finding - Route

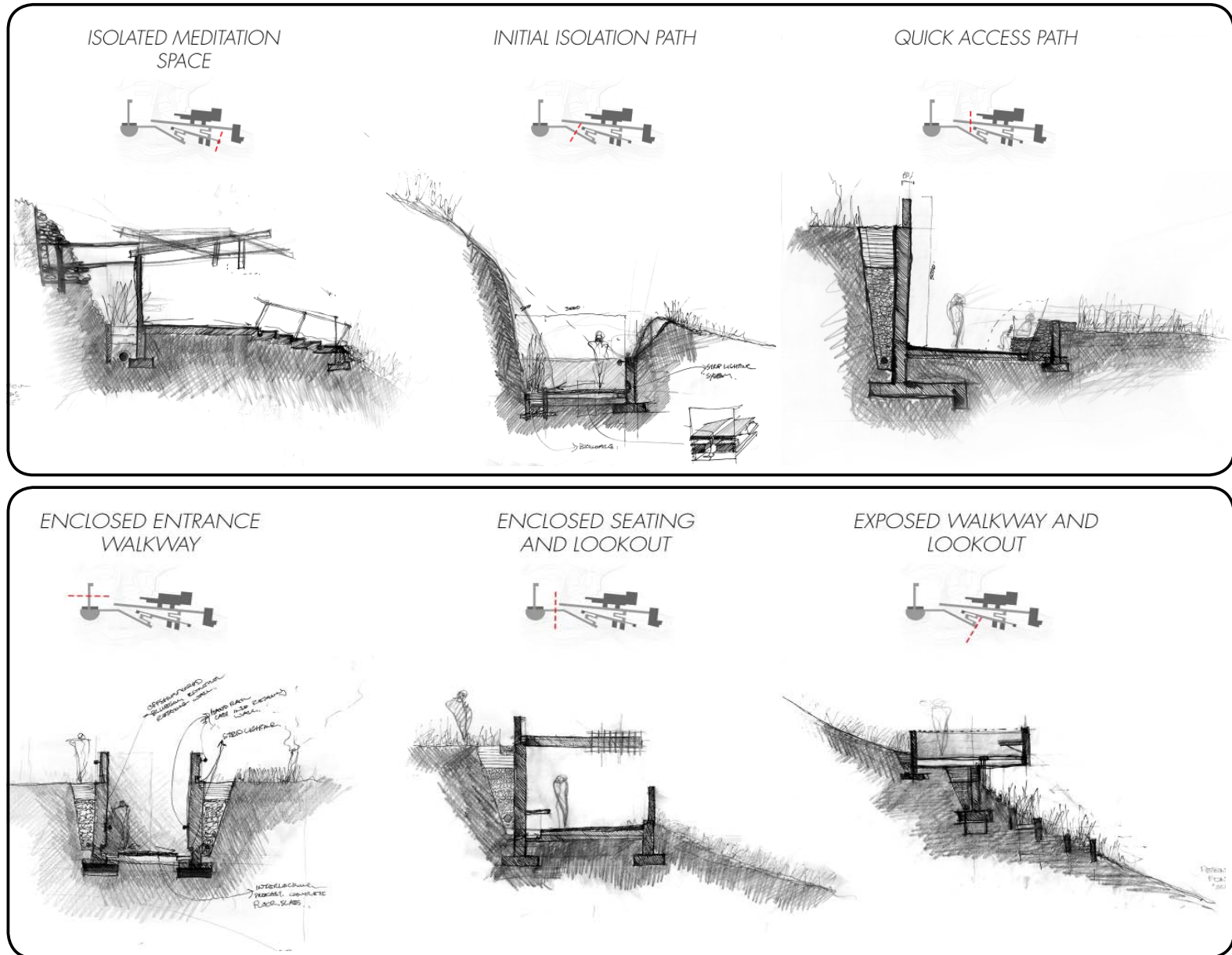
Each one of the three routes was developed in order to establish a specific experiential connection between journey, site and user. The three main routes can be categorized more specifically by the structure they support. The 1st route is that between the entrance courtyard and the viewing platform. The essence of this route is to inform the user of the geology of the ridge. It takes the user through a deep incision in the ridge which reveals and conceals views outwards at specific points, thus allowing the user to become orientated in relation to the ridge itself, the layering of the granite rock visible in the incisions, and the views made visible at specific points.

The 2nd route takes the user to the mortuary bathhouses and viewing structure. It introduces a softening of the harsh edges created by exposed rock through the use of linear bioswales which run along the length of the rock wall. This route leads to a secluded meditation space surrounded by rock, as well as a small pavilion at the edge where the user is once again able to meander into the landscape. This route becomes more constant in its edge conditions.

The 3rd route directs the user towards the chapel. Along all three routes the "spire" or roof tower is visible from various angles. This implies its importance as a monumental structure within the landscape. This 3rd and final route opens up to the landscape by allowing the user to have panoramic views of the city while moving towards the chapel. The route becomes narrow as it reaches points of interest in order to slow movement and create moments of pause. The path leading into the chapel moves across a large body of water which is bordered by a rock face to the north and veld grass to the south.

All three routes expose different types of intimacy and isolation within the landscape. They respond to each structure in a manner which prepares the user for the programmatic implications of these structures.

fig 10.25. Sections illustrating change in spatial experience as the park user or mourner pass through the routes to get to structures or to access th park. (by Author, 2015)



Design Finding - Entrance

The entrance passage leads from the parking space and slowly descends into the landscape, revealing the geology of the site and at the same time concealing the surrounding urban context. The ramped path guides the user's perspective to view the mine dumps and koppies in the distance, which can be argued to be constructed nature or alternate geological agents as a result of urbanisation. Reaching the base of the ramp the user is completely surrounded by excavated granite rock which forms a circular gathering space from which the journey to the landscape building starts. By concealing and revealing certain elements, the user is enabled to experience the character of isolation intrinsic to the ridge. In the circular entrance courtyard administrative offices and restrooms are submerged beneath the natural ground line, concealed from above. The geometries evident in the design approach of the semi-circular entrance courtyard were informed by various rituals and built structures on site, as well as the geological formation of the ridge itself at the specific point. The higher parts of the ridge, also known as God's Land, play host to ritual Pentecostal gatherings which find the congregation seated or dancing in a circle. Another geometric informant is derived from the base of Ponte City and the shape of the ridge topography. The boundary of the circular space cuts into the landscape on the one side and reveals the views of distant koppies and mine dumps.

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The iteration process developed from the excavation of the footprint of the existing ruined church into a semi-circular courtyard which is situated on the edge of the ridge in order to preserve important views of the city and its historical development. The courtyard is also partitioned in such a way so that members of the Pentecostal community can take part in outdoor ritual activities while mourners taking part in a funeral can bypass them by using a pivot wall which acts as screening device. From the submerged courtyard users are also able to directly access the grassy landscape.

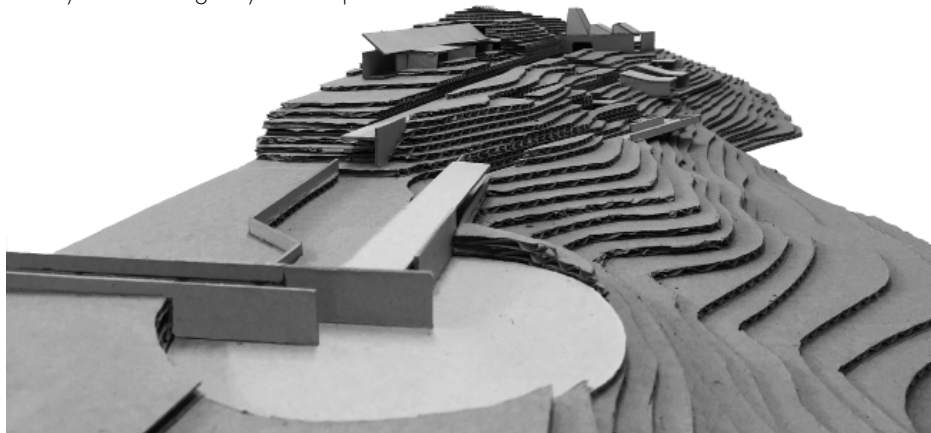


fig 10.26. Image of model showing the Entrance courtyard that opens up onto the landscape and overlooks the city. (by Author, 2015)

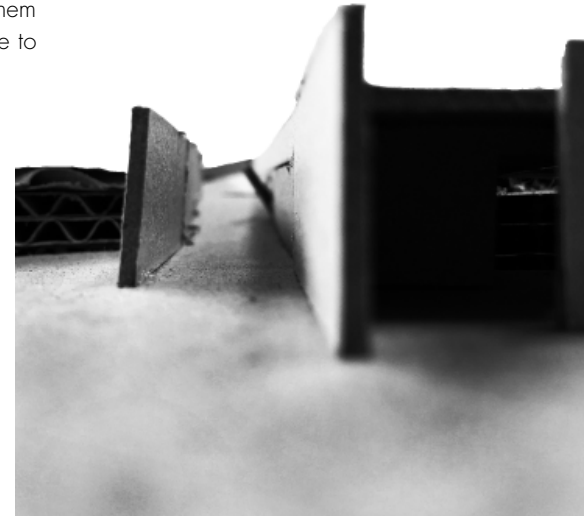


fig 10.27. Image of model showing the ramped walkway leading to the Entrance courtyard. (by Author, 2015)



fig 10.28. Sketches illustrating geom...

Iteration – Plan and Model

- Key ideas

Sketches illustrating how the entrance from the parking area was developed in order to respond to the topography, surrounding structures and spiritual needs of those in the surrounding areas. An exploration was undertaken to develop a geometrically sound entrance courtyard which seamlessly connects with the routes leading to the structures. The courtyard opens up onto the ridge, allowing for users to wander down into the natural veld grass below.

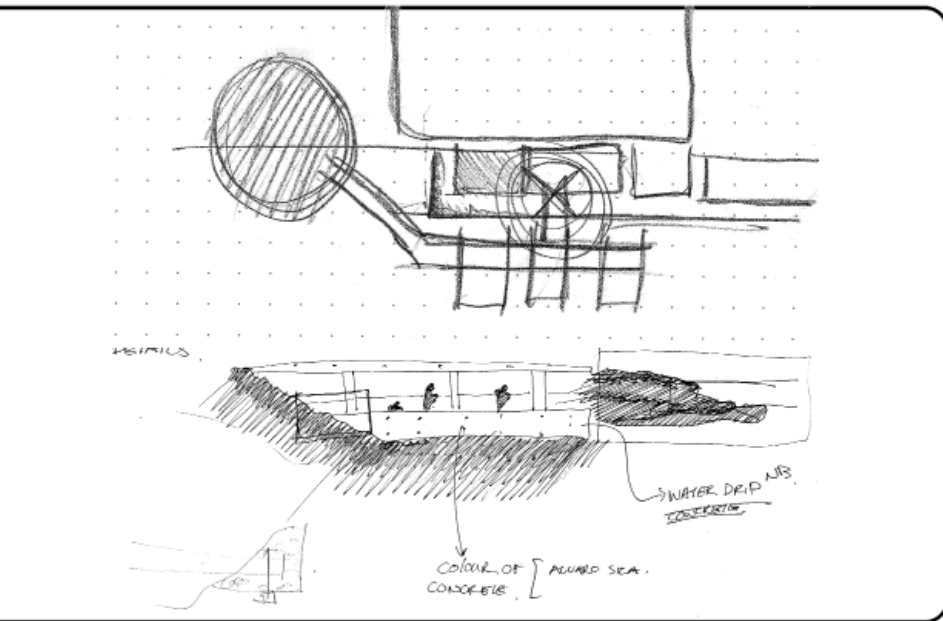


fig 10.28. Sketches illustrating geometric exploration of entrance courtyard and elevation view of route from courtyard. (by Author, 2015)

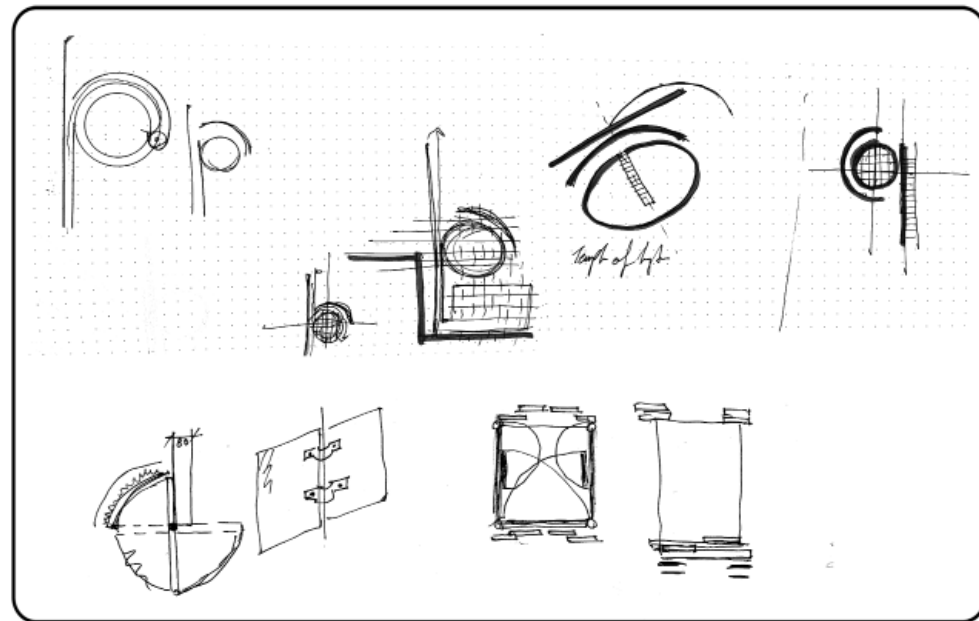


fig 10.29. Sketches illustrating geometric exploration of entrance courtyard and pivot wall that allows the courtyard to be used as group prayer platform. (by Author, 2015)

Design Finding - Mortuary Bathhouse and Viewing

While moving along the path, the user becomes surrounded by exposed granite rock walls that form a path towards a lookout point and place of rest. The place of rest slightly extends out of the landscape in order to reveal a view towards Troyeville Koppie which is opposite Observatory Hill. A seat constructed out of granite stone has been excavated from the site. At this transition point in the route the user is able to move up stairs cut out of rock in order to ascend towards the mortuary bathhouse and viewing structure on a higher level, or has the option of descending down into the natural landscape where paths intersect one another in the ridge landscape. These landscape paths are of a more subtle nature as they become overgrown with veld grass and covered by large indigenous trees. Upon arriving at the second level of the funerary route, the user can move left onto a narrower path which leads to an isolated reflection space completely surrounded by exposed granite rock, with a small pond in the centre in which rainwater which runs down the rock gathers and then drains out into the landscape. To the right of the landing the user can move towards the viewing structure and mortuary bathhouses. Along the path towards these two structures are bio-swales which gather surface runoff and through a filtration process allow water to be stored for the ritual cleansing of the body of the deceased.

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The viewing structure and mortuary bathhouses are nestled slightly lower into the rock along the edge of the path, allowing for privacy for those passing through. These basic structures facilitate the ritual cleansing of the body of the deceased by the family or close relatives, should they choose to take part in this intimate yet essential ritual. The entrances of these structures allow the users to once again have a glimpse of the horizon. The catafalque is set back against the cut granite rock and seems to extrude out of the rock. While the body is placed on the catafalque it is illuminated by natural light which shines down a narrow slit in the northern façade in order to create an alternate lighting condition that enhances the intimate experience of the process. The southern façade of the structure opens up onto the landscape with a concrete fin structure with an infill of fixed glazing. Due to the height of the structure and the dense vegetation of indigenous trees isolation is sustained, allowing for privacy from park-users using the landscape route below.

From the bathhouse structure the body is moved back to the mortuary or chapel by means of a platform lift which is accessed before ascending up another staircase to the final circulation level.

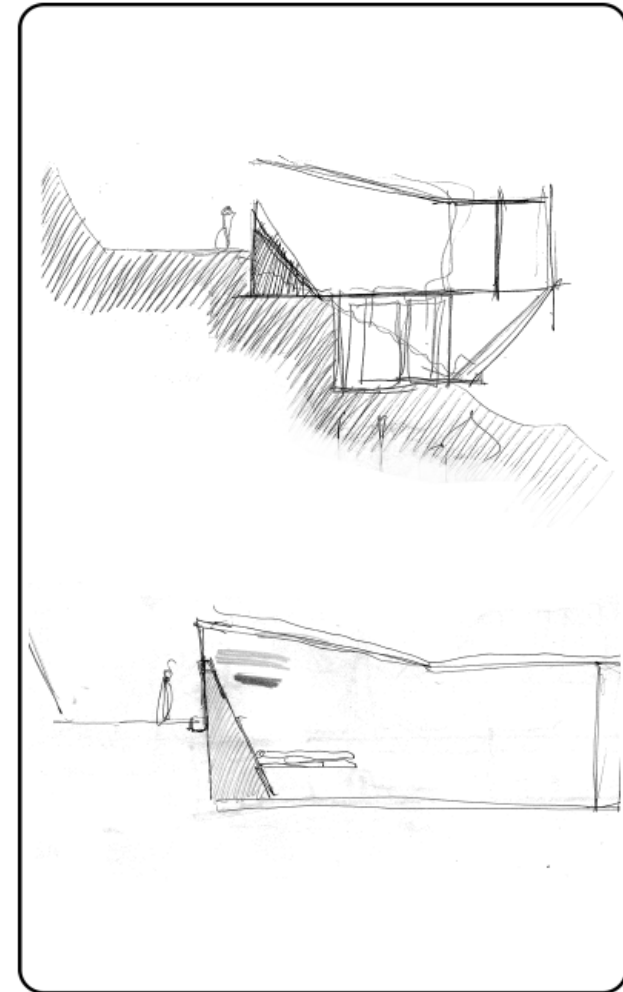


fig 10.30. Sketch sections through mortuary bathhouse illustrating separation from walkway and use of granite rock as internal wall. (by Author, 2015)

Iteration – Plan and Model

- Key ideas

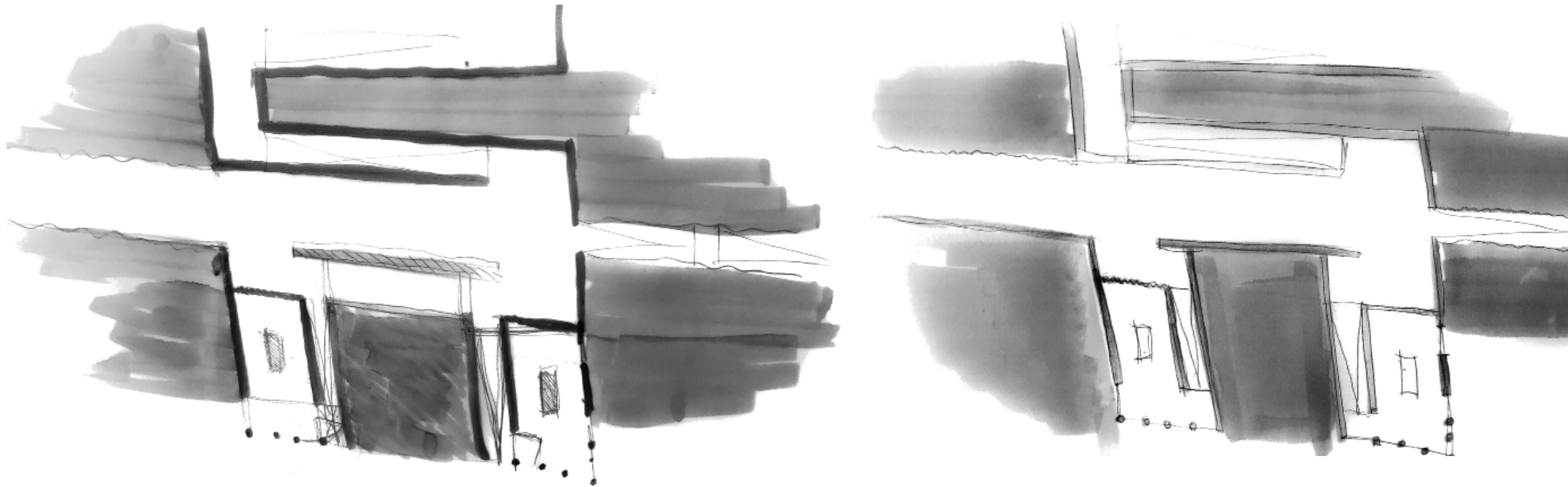
Sketches illustrating how the entrance to the mortuary bathhouses was developed in order to use the ridge as structure, but more importantly, create intimacy and privacy for the viewing and cleansing processes. These sketches explore points of access and level differences in order to use exposed rock as structure.

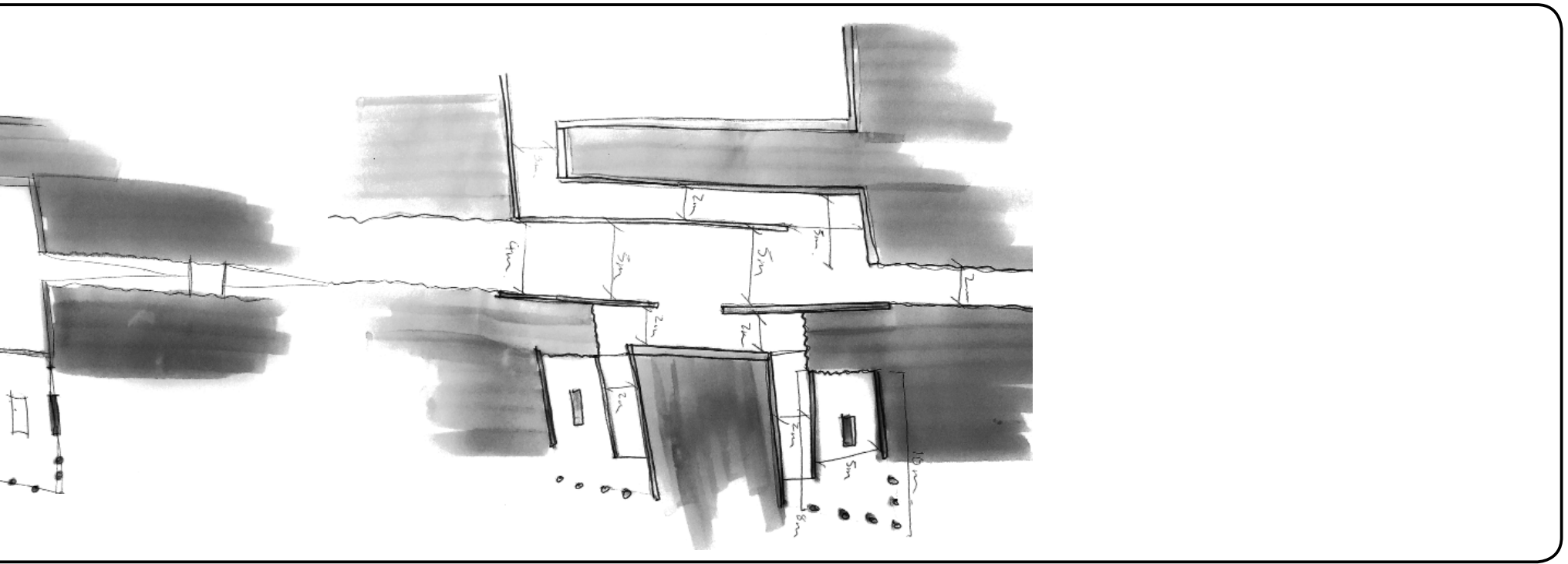
- Main Iterations

Structures were lowered deeper into ground in order to create more privacy from users passing by. This also allows for more rock to be exposed. The entrance was also moved to the front of the structure in order to isolate it from the main path. These iterations aided in the creation of privacy and isolation.

fig 10.31. Plan development of Mortuary bathhouse. (by Author, 2015)

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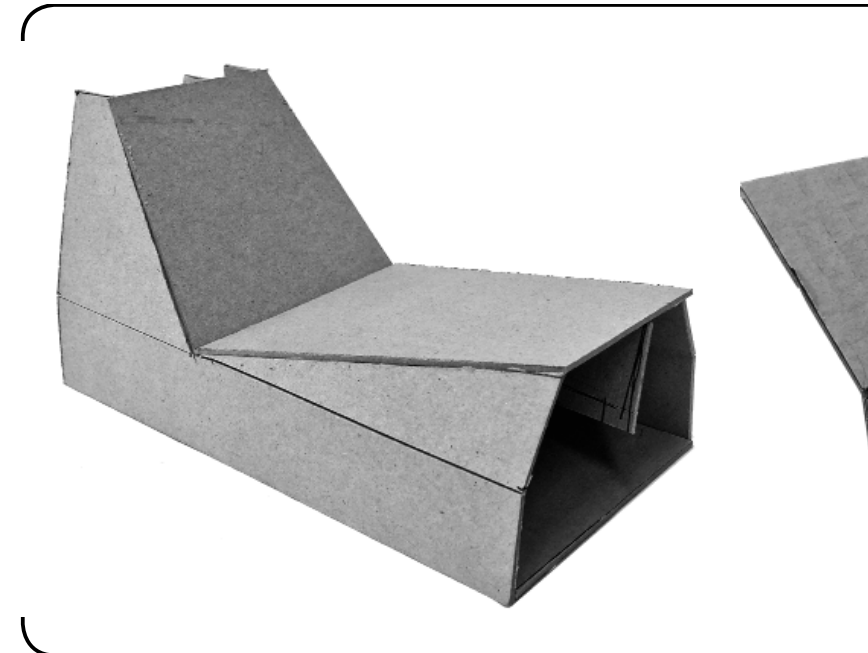
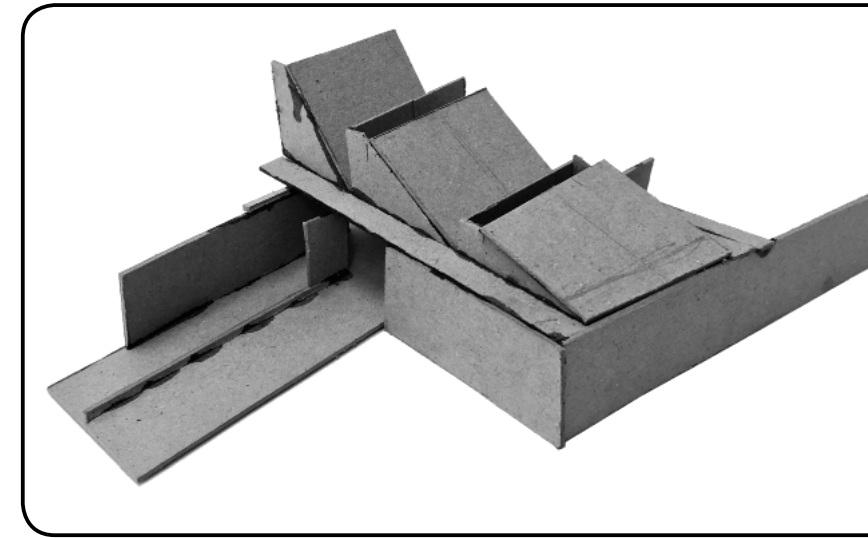


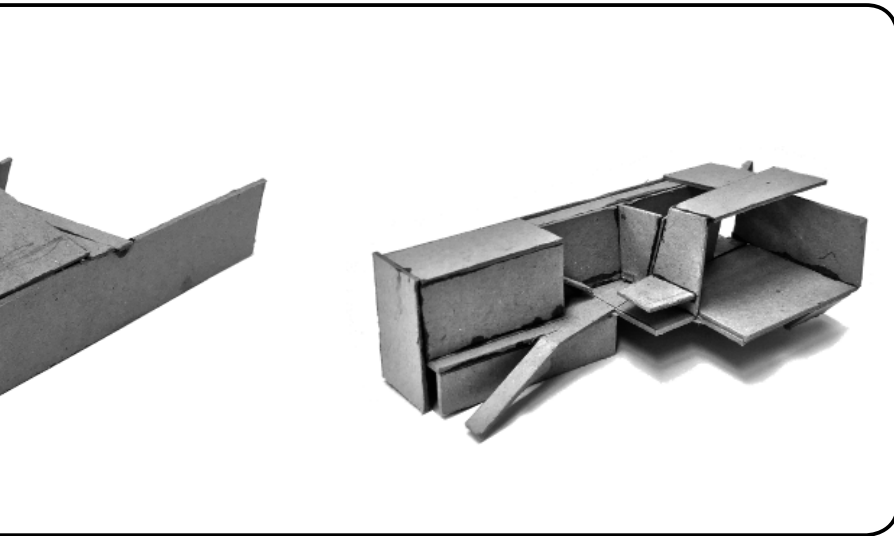
Design Finding - Chapel

The chapel is approached from the final circulation route which extends from a lift structure for use of the disabled and elderly on the most western point. Upon approaching the chapel, the user moves across a narrow walkway surrounded by exposed granite rock on the left and a large water body on the right. The water body extends out into the landscape into the veld grass, exposing a view of the city in the distance. The highest point of the chapel roof structure is visible from different glimpses and angles which place emphasis on the importance of the structure. The exterior of the chapel is constructed from off-shutter concrete which blends into the exposed granite incisions. The entrance to the chapel space is emphasised by a narrow flat-roofed structure which extends from the main structural beam supporting both the northern and southern roofs. The view into the chapel from the entrance places emphasis on the body which can be seen on the catafalque from a distance. Mourners do not enter directly in line with the coffin but at an offset so as to allow them to pass between the catafalque and the pews.

Once inside the chapel, mourners pass a dry-packed granite catafalque on which the coffin rests. It is positioned in such a manner that exposed rock is visible in the background to the north and east of the chapel, while the south is open to the view and the west wall is of cast off-shutter concrete. The roof structure allows for a hierarchy and intense definition of realms within the chapel. Above the catafalque, pulpit and prayer space is a large concrete roof which slopes along the lines of the ridge in order to maintain the integrity of the ridge. This allows for bright northern light to filter through veld grass onto the catafalque and coffin and, as the angle of light changes, it illuminates the exposed northern rock wall which supports the structural roof fins. This grand space contains a volume that connects the body with the heavens – a space which allows for a cave-like experience of echoes and isolation, a spiritual space in which the deceased can be respected and bid a final farewell.

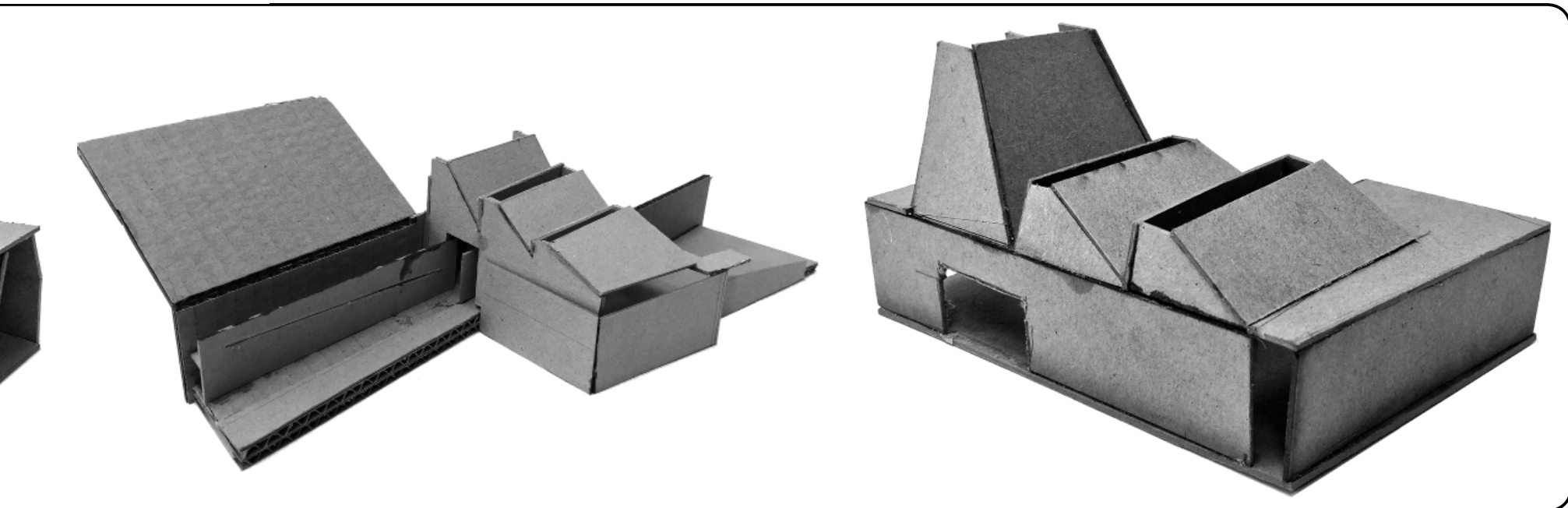
fig 10.32. Iterative process illustrating development of models. (by Author, 2015)





As time passes, water will seep through the rock, staining the granite. This form of weathering of a natural element reminds us of the living and the dead and informs our mortality. Carved into the rock face are shelves which house candles that can be lit at any time in commemoration of those passed. To the southern side of the chapel are the pews, which face the catafalque, pulpit and exposed rock in the background. The seating space is defined by structural beams which extend from within the rock face to concrete fins at the southern end.

The depth of the beams extend lower so as to emphasise the realm in which the mourners are seated, which is clearly distinguishable from the circulation around the seating. The roof structure above the circulation and seating areas opens up towards the south. This allows a constant penetration of light between the fins. Apart from the prayer space at the base of the rock wall, there is a more intimate space concealed by two walls extending into the landscape. This space frames a view along the length of the ridge towards the routes leading to the burial tombs. As at the entrance of the chapel, the mourner is led out by a flat roof which extends into the landscape. Once again a smaller water body is presented as an edge between building and natural vegetation. The courtyard space upon exiting the chapel houses bathrooms for use before entering the landscape. This space allows the user to seamlessly transcend into the natural landscape.



Iteration – Plan and Model

- Key ideas

Sketches illustrating how the plan development of the chapel from a linear structure placed along the length of the ridge, to spatial planning used to define spaces between mourner, body, priest and prayer space. Initially the crematorium was part of the chapel for ease of programmatic functionality.

- Main Iterations

These main iterations show the development of the plan which ended up not incorporating the crematorium as part of the chapel, the reason being that the exposed rock would not be visible during the service but only to those who choose to view the cremation process. Thus the crematorium was moved closer to the coffin collection room and mortuary, allowing for both chapel and crematorium to use the exposed rock as structure. Circulation was also explored within the chapel, and various realms were created to emphasise a hierarchy of spaces.

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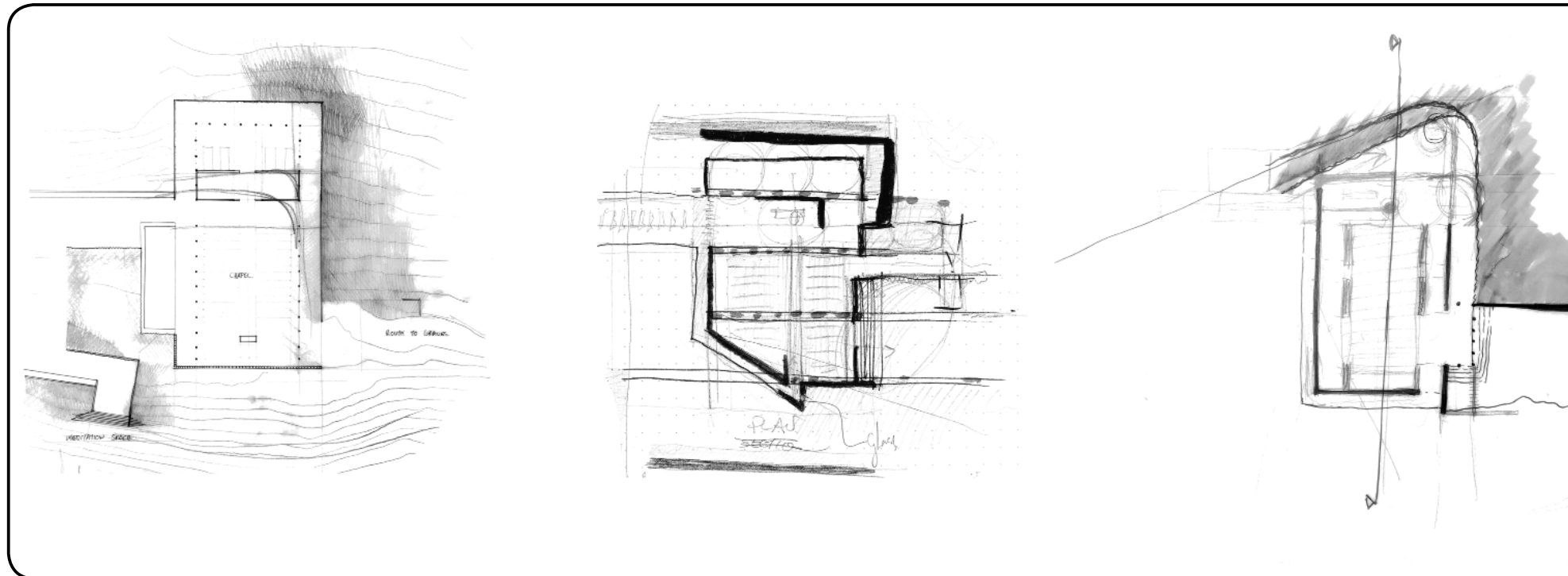
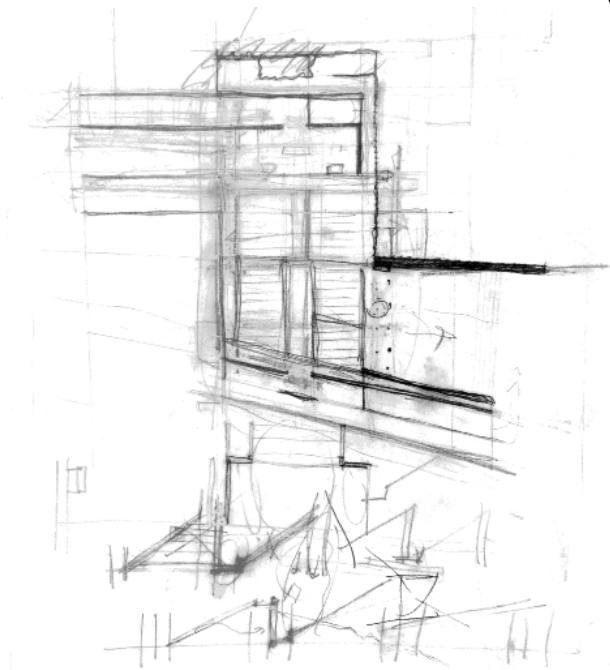
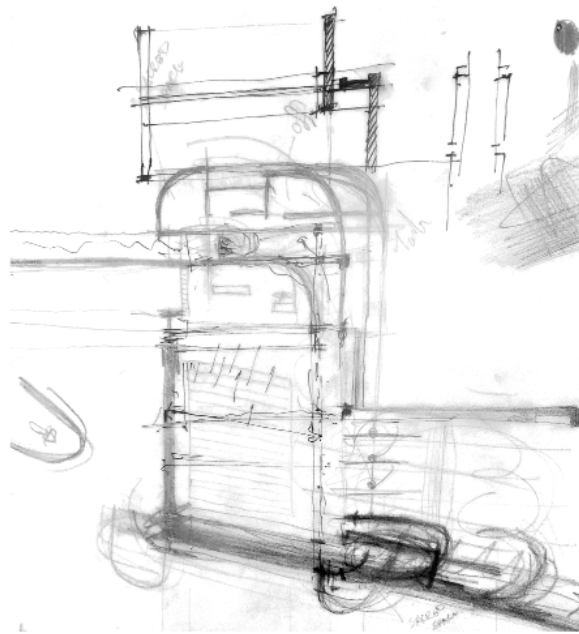
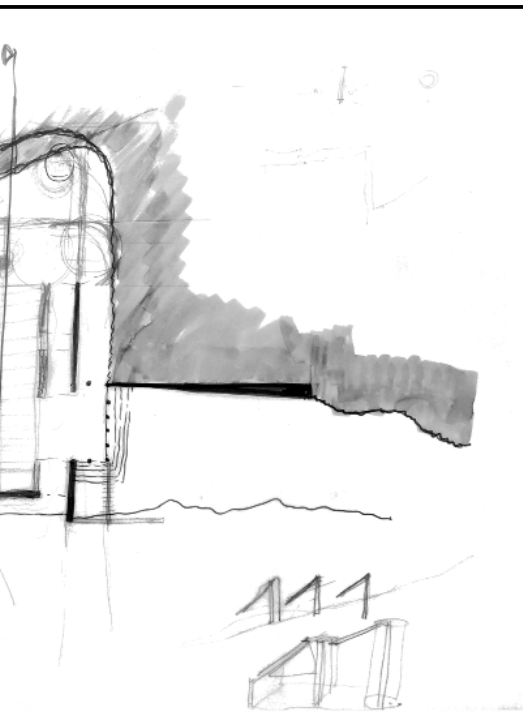


fig 10.33. Sketches illustrating the iterative process of chapel plan development. (by Author, 2015)



Iteration – Roof Structure and Section

- Key ideas

Sketches illustrating how the development of the chapel roof structure. The roof of the chapel was designed to fit into the natural slope of the ridge at a specific point. The roofs of the bathhouses and crematorium are also designed to fit into the shape of the ridge but have different pitches. This places emphasis on the chapel as the main structure, with the crematorium second and the bathhouses third.

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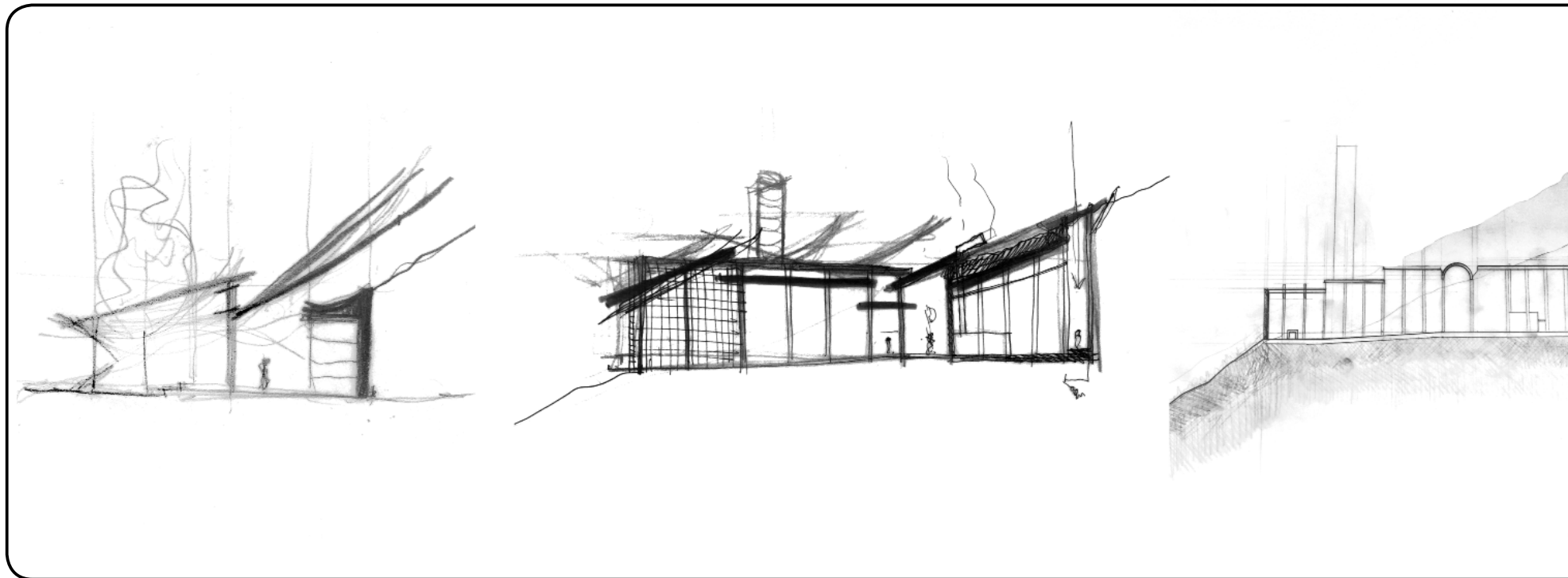
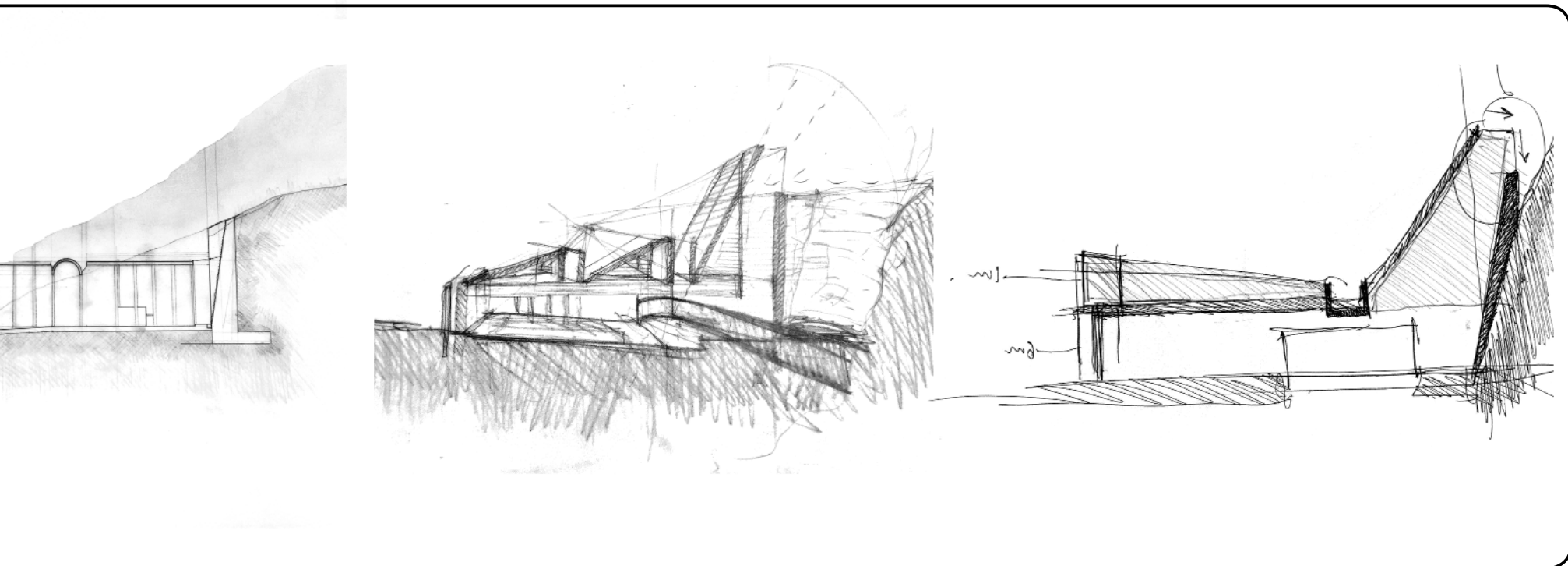


fig 10.34. Sketches illustrating the iterative process of chapel section development. (by Author, 2015)

- Main Iterations

The iterations evolved from a flat-roofed structure that extended out of the landscape to pitched roofs which slope with the landscape. The number of pitched roofs were reduced in order to place emphasis on the main tower. The slope of the roof above the congregation was inverted to face south in order to allow light to penetrate. Due to the sheer pitch of the main chapel roof tower, smaller northern roofs above the congregation would not have allowed sufficient light to enter.

Precast concrete panels covering the waterproofing of the chapel roofs were replaced with packed granite rocks and a roof garden in order to hide exposed waterproofing from views from above. The chapel tower which cuts into the ridge is packed with rock, while the roof above the congregation is a green roof of indigenous veld grass.



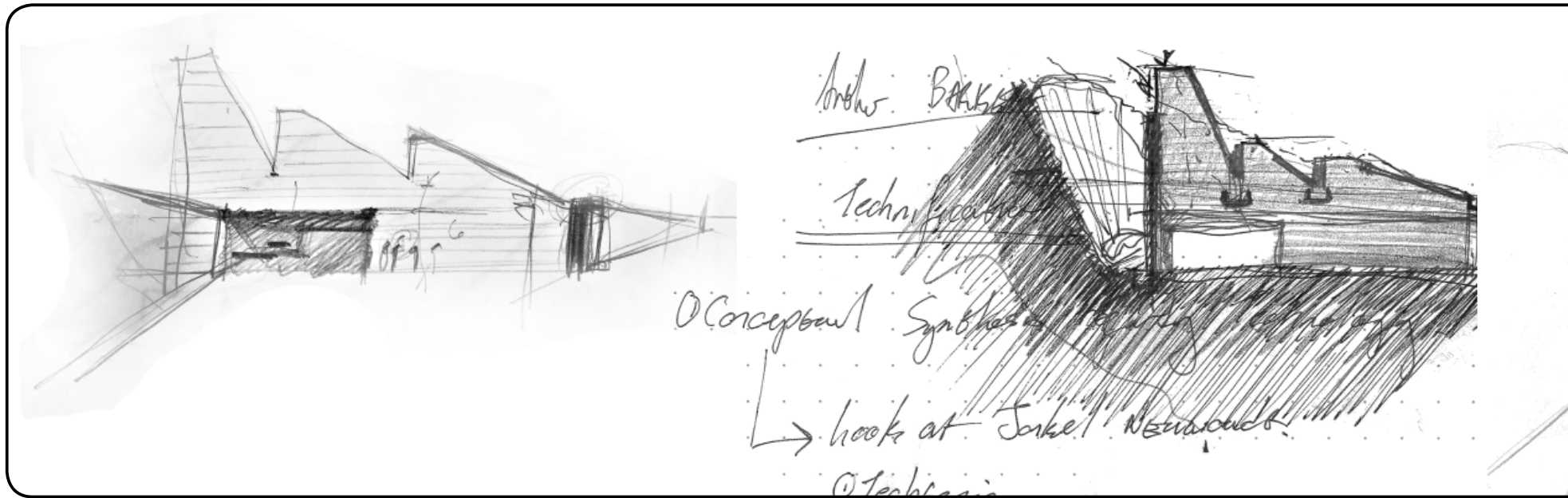
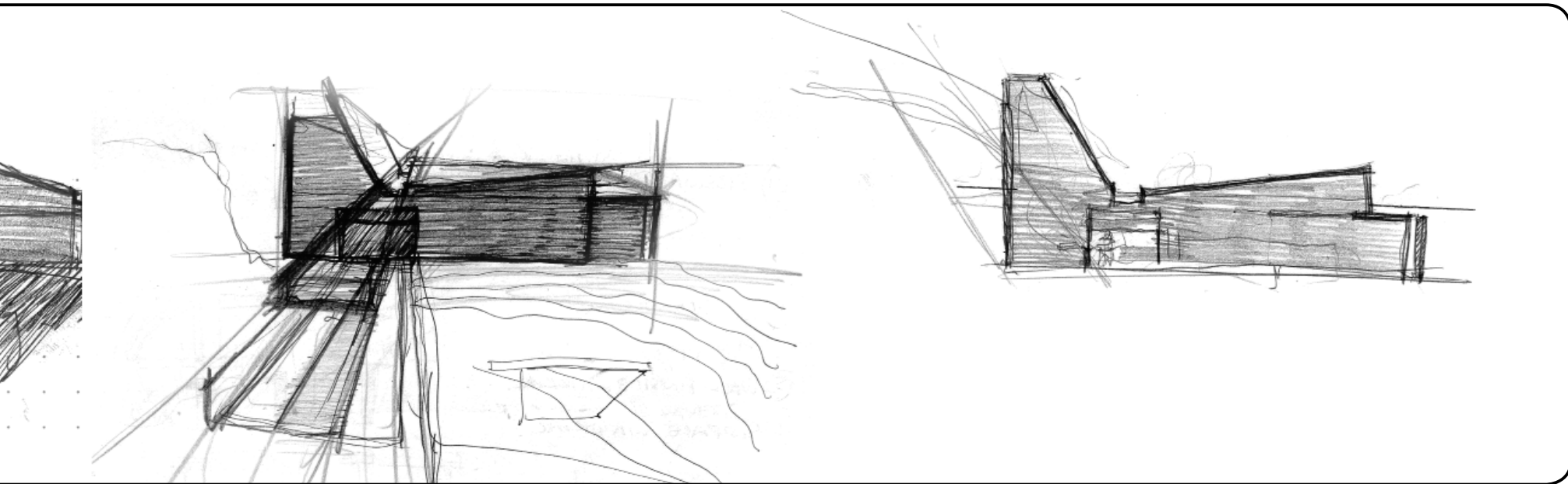


fig 10.35. Sketches illustrating the iterative process of chapel elevation development. (by Author, 2015)



Design Finding - Mortuary

The mortuary and crematorium structure forms an integral part of the design. The mortuary structure transitions from being an exposed structure into a completely submerged cave-like structure within the ridge geology. The mortuary and crematorium building was conceived as an experiential structure through which the body of the deceased is moved. The family of the departed is also given the opportunity to accompany the deceased as it is moved through various waiting and preparation stages within the structure. The body enters the structure through a large doorway into the coffin collection store room. Here the body is paired with a coffin or urn of choice. The body then moves through to the mortuary where it is cold stored and awaits burial or cremation. The entrance to the coffin collection room is exposed to the landscape on both sides, but while moving through it, it becomes evident that the structure is cutting into the ridge. The coffin collection and mortuary rooms become more submerged within the ridge as the body and family progress through the structure and the preparation process.

The roof structure of the coffin collection room and mortuary consists of planed roof gardens which cover the top of the structure, as it is visible from Ponte City, Joe Slovo Drive and the top of the ridge. These roof structures rise out of the ridge landscape at small intervals to allow northern light to enter the coffin collection and mortuary areas. The body moves from the mortuary to the crematorium, which is completely submerged in the ridge as a cave-like structure ventilated by light shafts which extend out of the coffered roof structure. The light shafts are situated above 3 catafalques and allow light to shine down onto the body before it enters the bio cremators. Above ground the light shafts rise to a height of 3 metres. Each light shaft is constructed from concrete and then packed with stone excavated from the ridge, to allow for a natural integration with the planted roof garden which is filled with top soil removed from the excavation. Inside the crematorium space, mourners are allowed to view the cremation process from behind a glass box which is fitted in-between structural columns.

Mortuary and administrative staff enter the structure along a stone wall which extends out of the ridge. A circulation passage passes between the mortuary, coffin collection room, staff bathrooms and administrative offices. The passage allows staff to circulate between the mortuary, coffin collection room and offices. The offices are separated by smaller courtyards which look out onto the city and the circulation routes travelled by mourners as they progress from the entrance all the way through to the chapel structure. The offices are sunken into the ridge to allow for the natural ground line to extend from sill height so that the offices become concealed elements.

A small platform lift connects the lower route with the crematorium. This lift allows for the body and mourners to move between the route and the structure. Because of the slope of the site, lifts are implemented to lessen the distance travelled by the body as well as aid in the circulation of the disabled and the elderly.

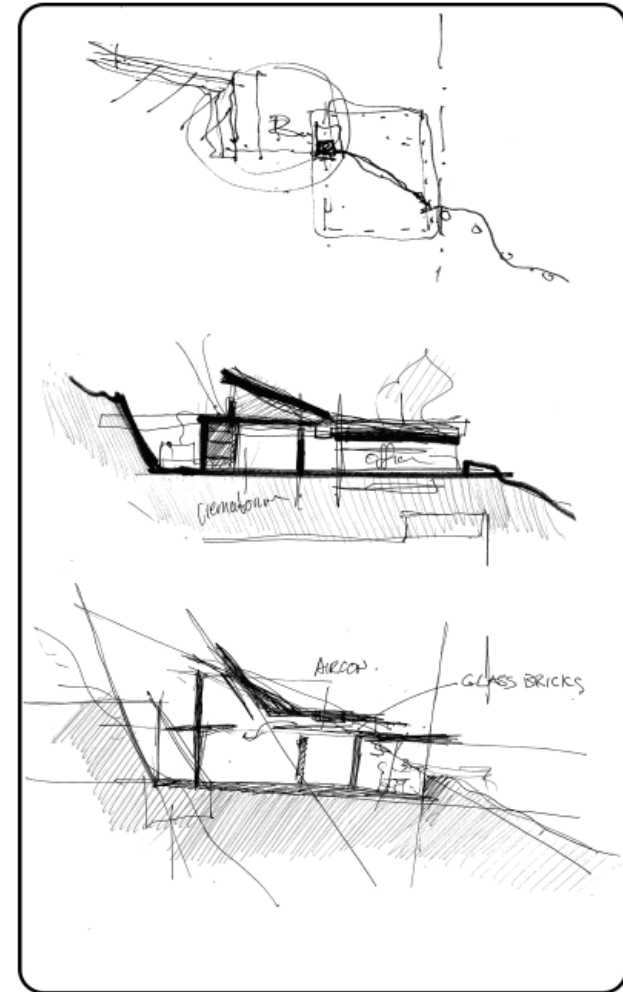


fig 10.36. Sketches illustrating the iterative process of mortuary from conceptual diagram showing submerged route to structure partially submerged allowing for views of the city. (by Author, 2015)

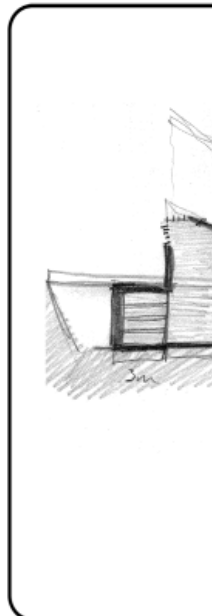


fig 10.38. Sketches illustrating

Iteration – Roof structure and Section

- Key ideas

Sketches illustrating how the iterations of the roof and section of the crematorium. Changes were made to allow for a service corridor behind the mortuary all the way to the crematorium where stairs lead down to a basement level. Potassium hydroxide for the bio cremation process is stored in the basement. It is not flammable but may become gaseous when temperatures rise, thus the chemical solution must be stored at a constant temperature which in this design iteration is found below ground.

- Main Iterations

The roof structure changed from a flat roof to pitched openings allowing light into the mortuary. By allowing the roof to be planted, waterproofing can be hidden. The planted roof also allows the structure to merge with the landscape in a manner similar to how it delves into the ridge on plan and section.

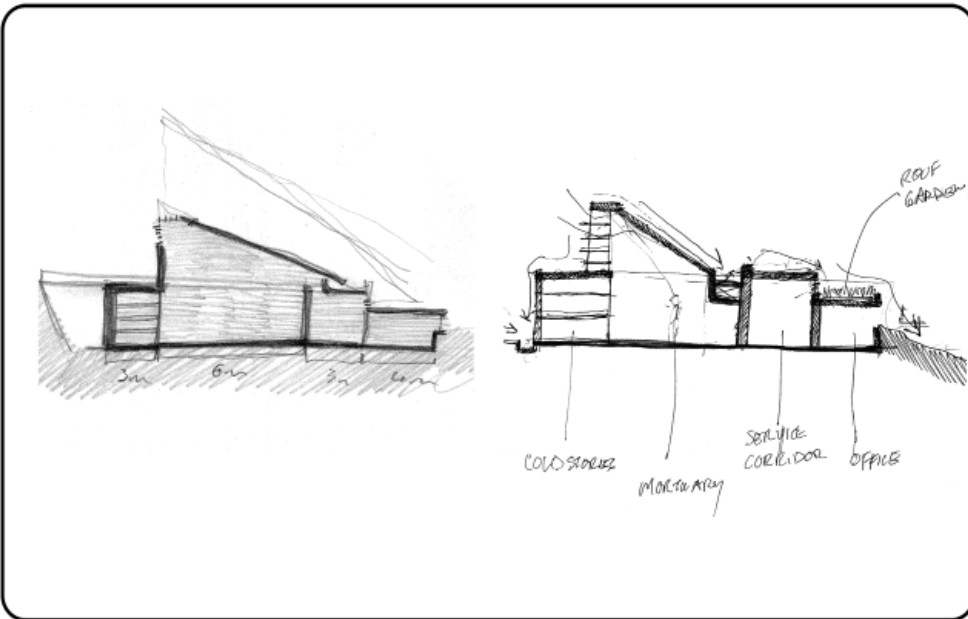


fig 10.38. Sketches illustrating the iterative process of mortuary roof gutter and northern roof exposure. (by Author, 2015)

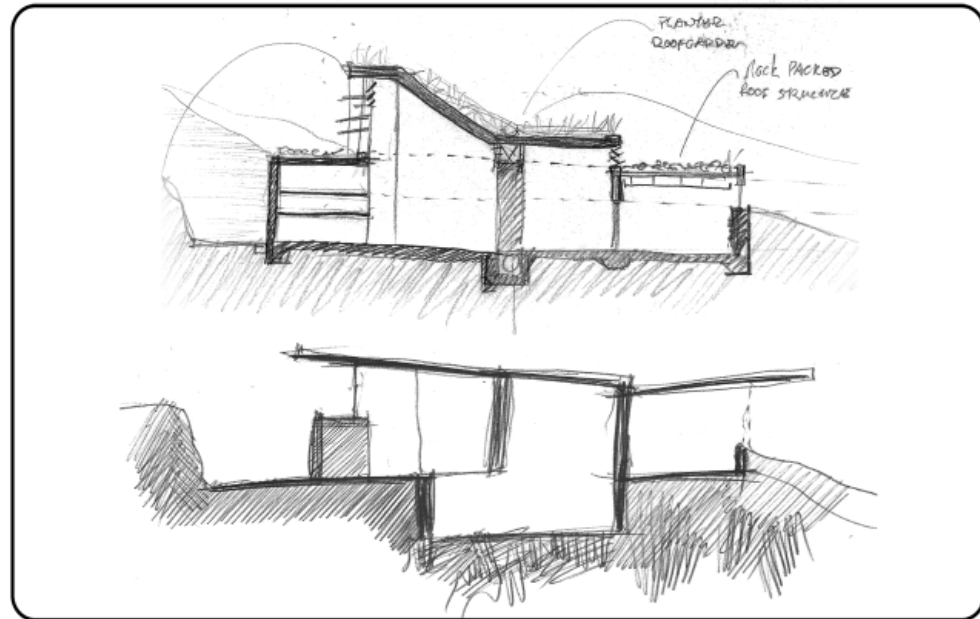


fig 10.37. Sketches illustrating the iterative process of mortuary and crematorium. (by Author, 2015)

Iteration – Plan and Model

- Key ideas

Sketches illustrating how the development of the crematorium plan, from having the mortuary separate from the crematorium, to reorganising the planning to address programmatic implications, which led to moving the crematorium into the ridge on the same level as the mortuary. This allows for an easier transition of the body from preparation to cremation. The submerged crematorium informs the isolation of the site within the geology of the ridge. The light shafts rising out of the ground create a spiritual connection with the heavens, similar to that of the chapel roof tower shining light onto the catafalque.

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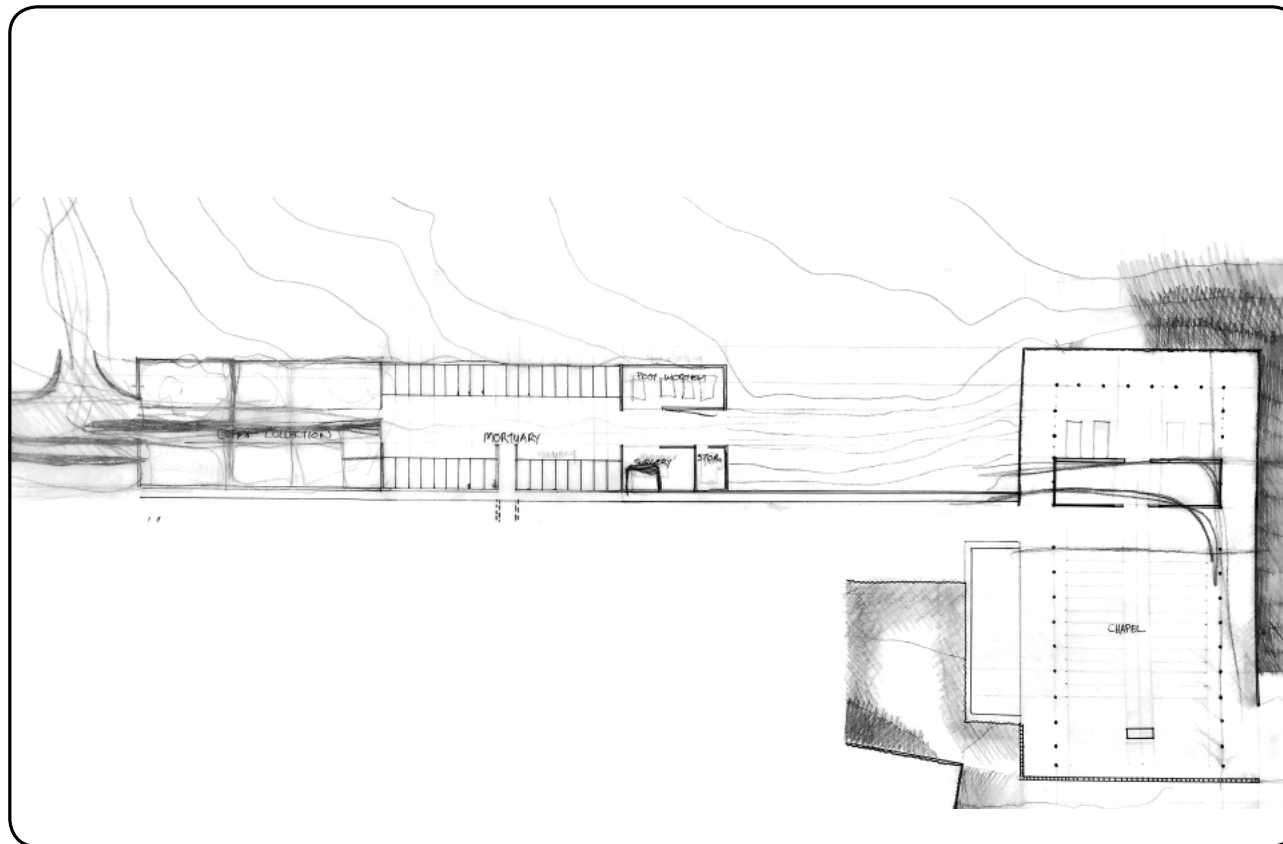


fig 10.39. The natural terraces formed by the Yeoville and Highlands Koppie form an integral punctum point for the gateway created between Ponte City and Gordon Terrace. This area, like Ponte City, is submerged in mysterious tales of ruination and decay, prosperity.

- Main Iterations

The crematorium is submerged into the landscape, and light shafts which allow natural light to illuminate the body of the deceased are created. The beams of the waffle slabs extend into the exposed rock face, using the structural integrity of the granite rock as support.

Additions include a submerged water reservoir as well as a double-volume service space which houses effluence tanks and chemical storage.

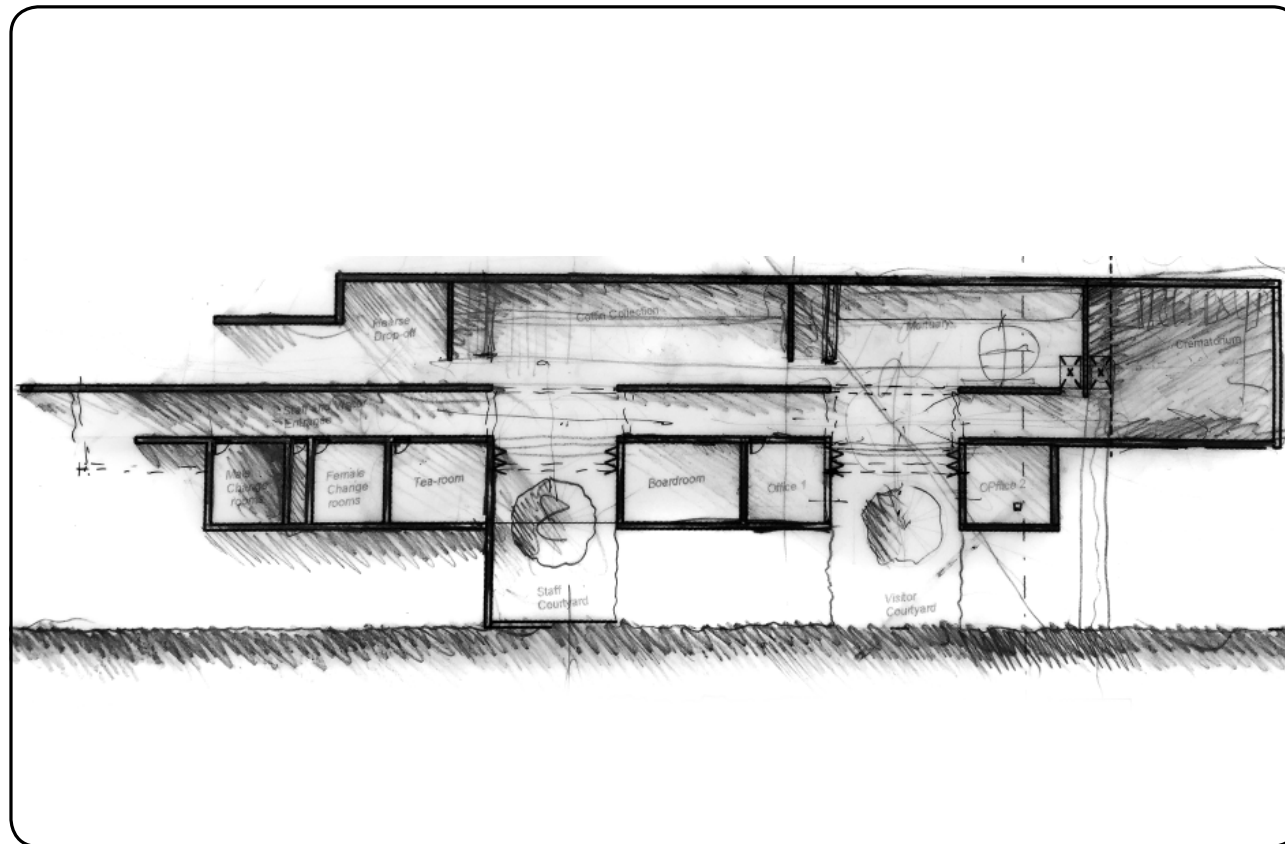


fig 10.40. The natural terraces formed by the Yeoville and Highlands Koppie form an integral punctum point for the gateway created between Ponte City and Gordon Terrace. This area, like Ponte City, is submerged in mysterious tales of ruination and decay, prosperity.

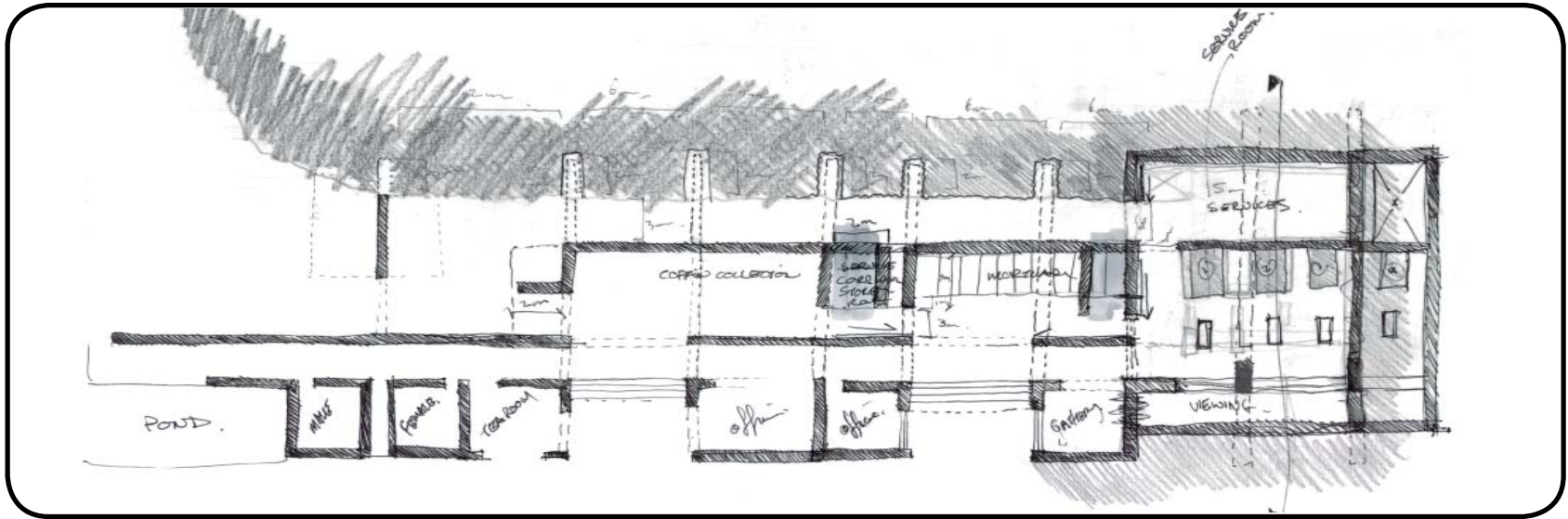


fig 10.42. Sketch illustrating coffin collection, mortuary and crematorium plan layout. Illustrating how the structure becomes submerged in the ridge the programmatic processes proceed. (by Author, 2015)

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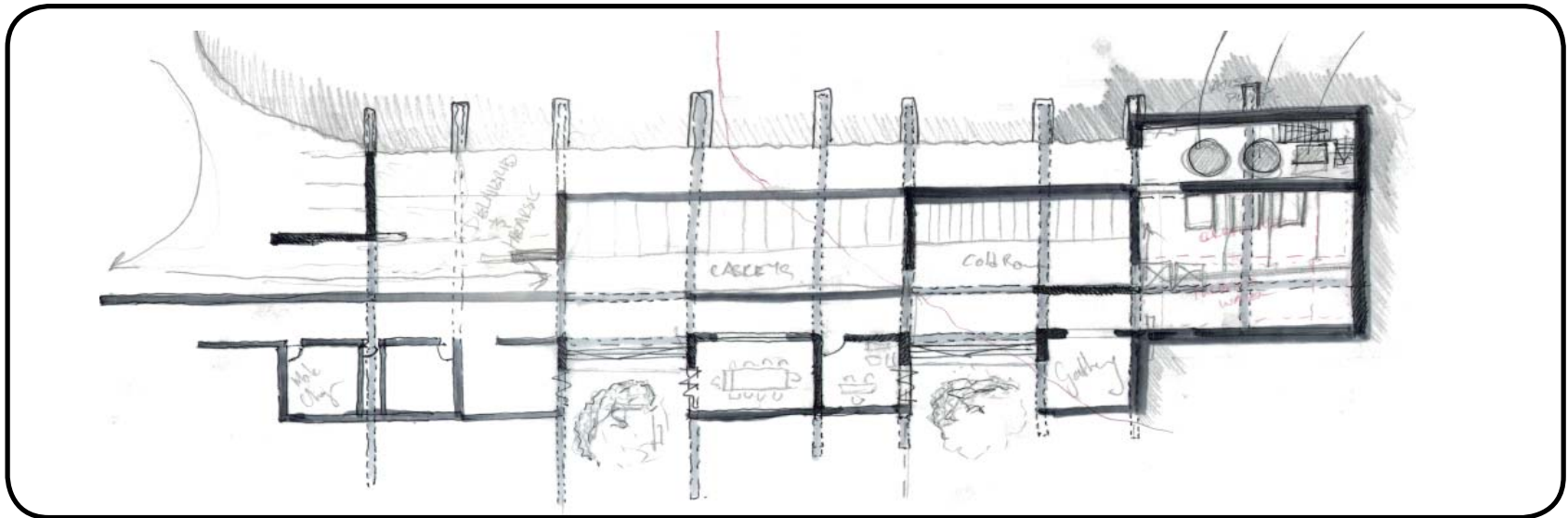


fig 10.41. Sketch illustrating structural beam layout and basement level. (by Author, 2015)

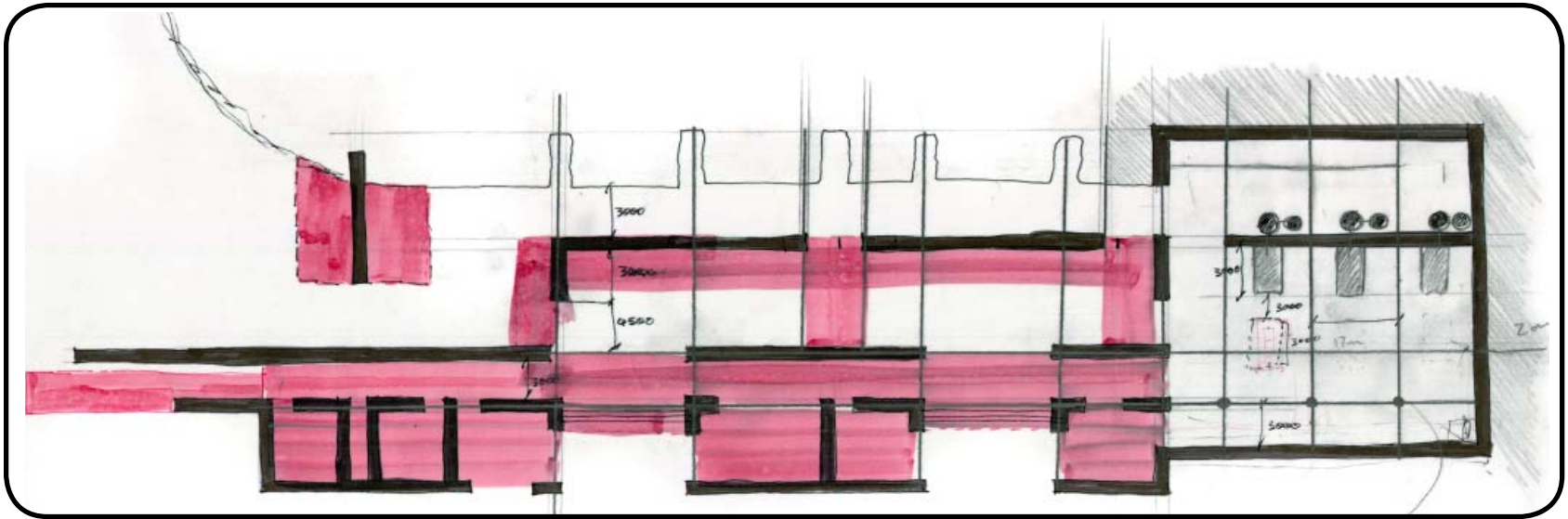


fig 10.44. Sketch illustrating roof structure and overhangs. (by Author, 2015)

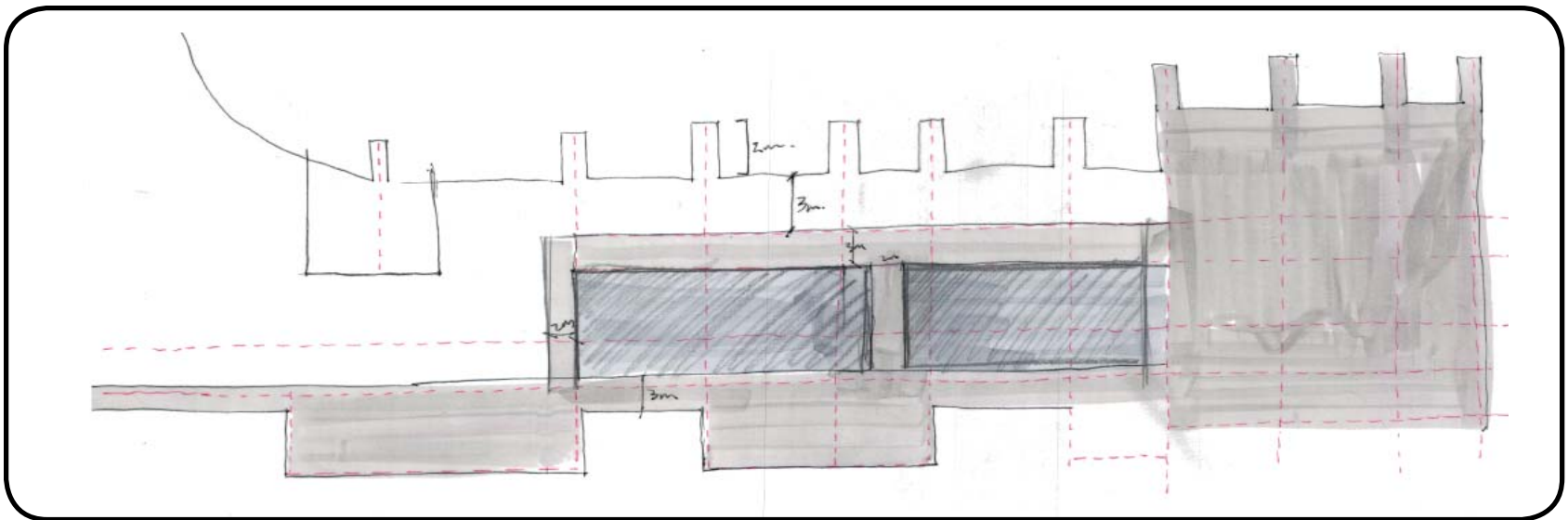
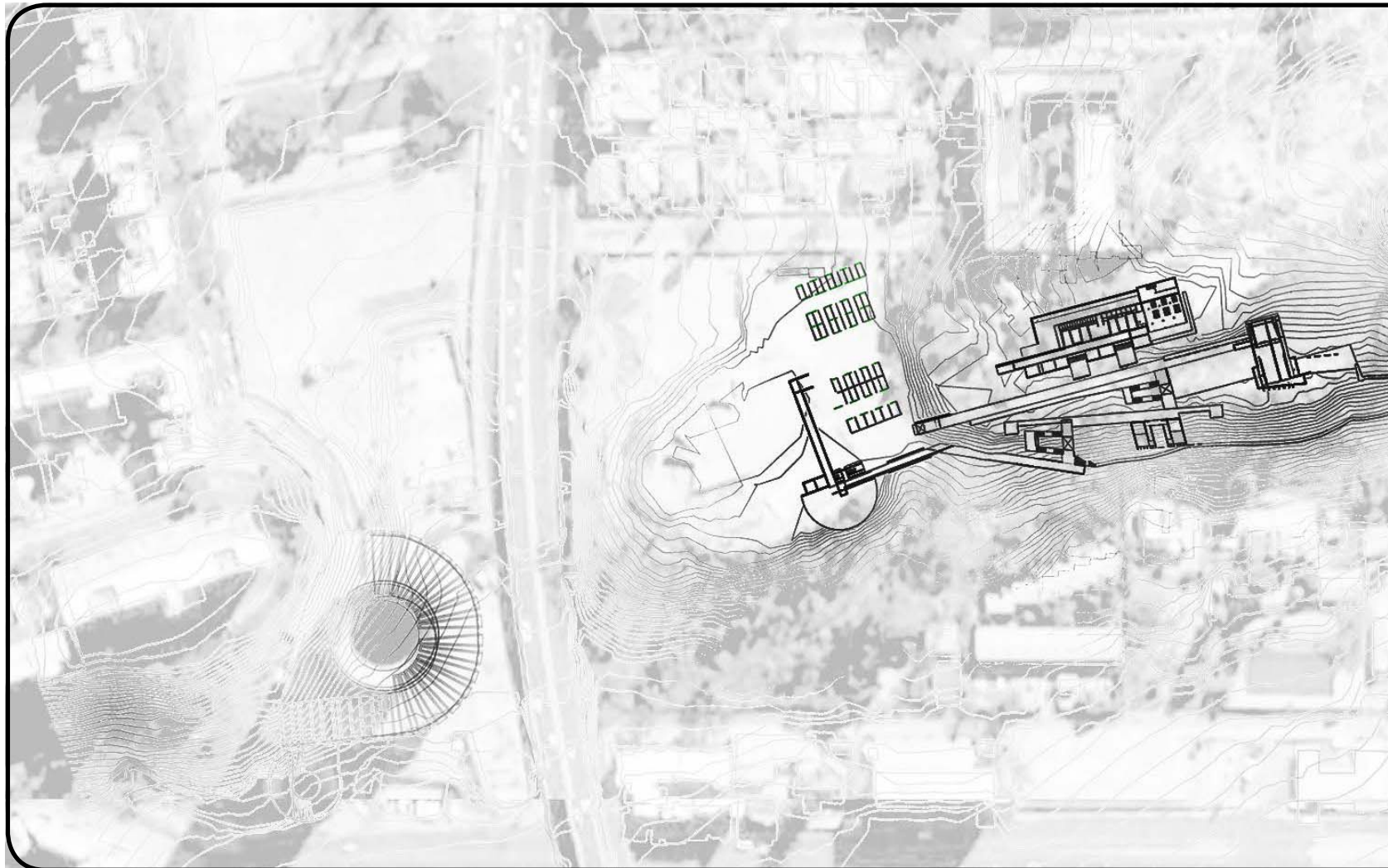


fig 10.43. Sketch illustrating roof structure and overhangs. (by Author, 2015)

Design Resolution - Site Plan

The diagrams to follow show a more finalised iteration of plan and section as well as 3D build model.

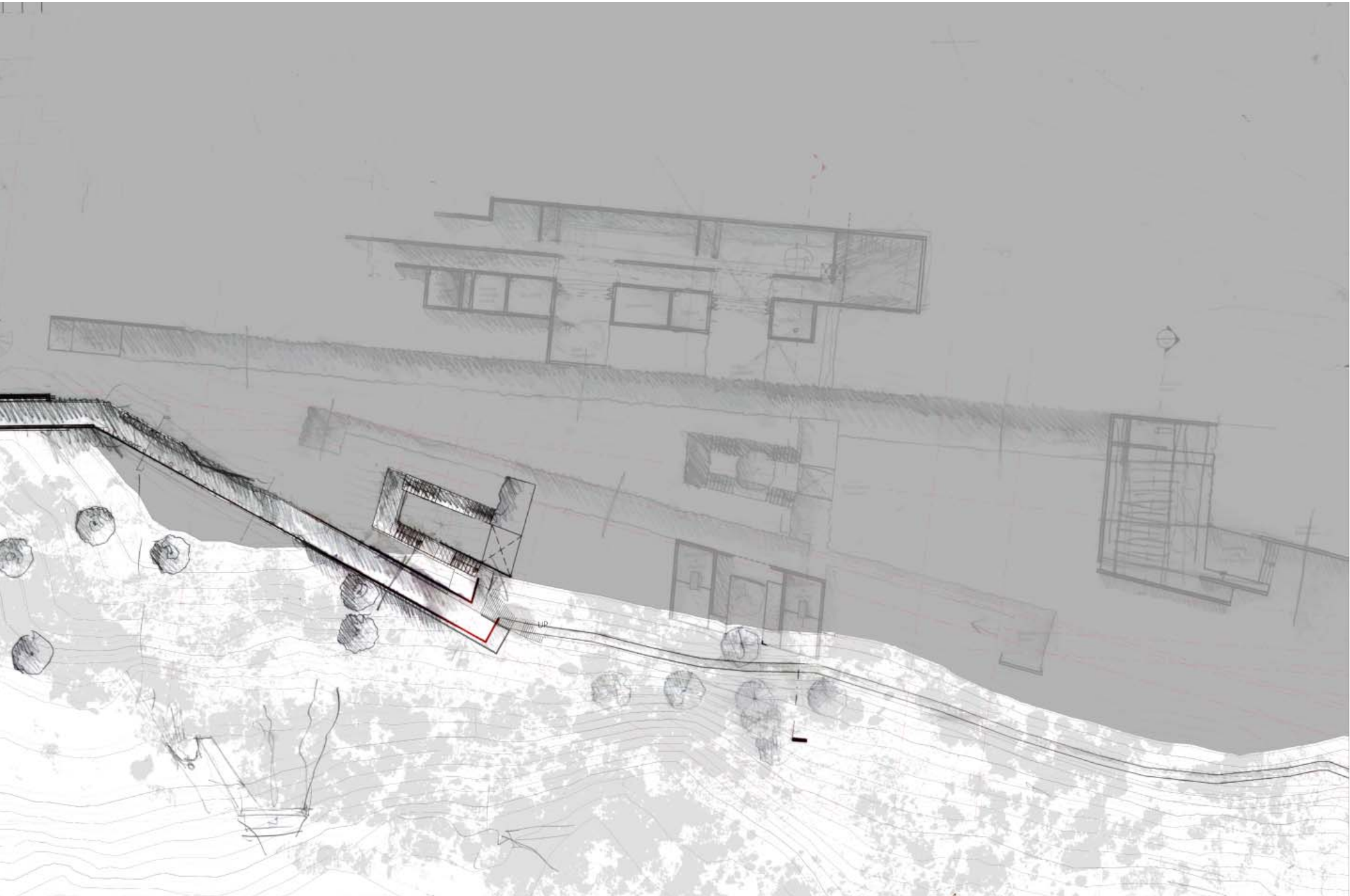




Entrance and Viewing Platform- 1st Floor

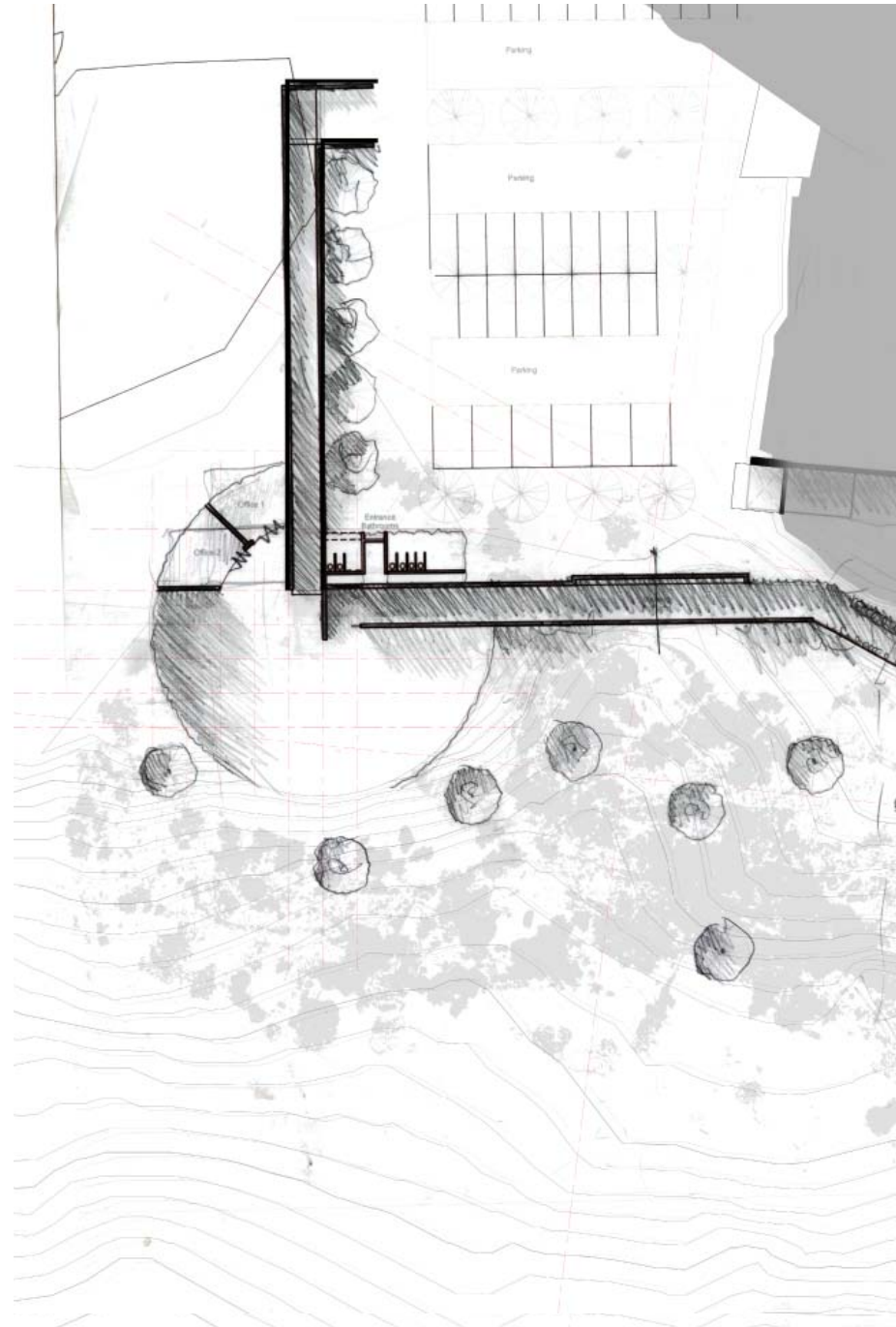
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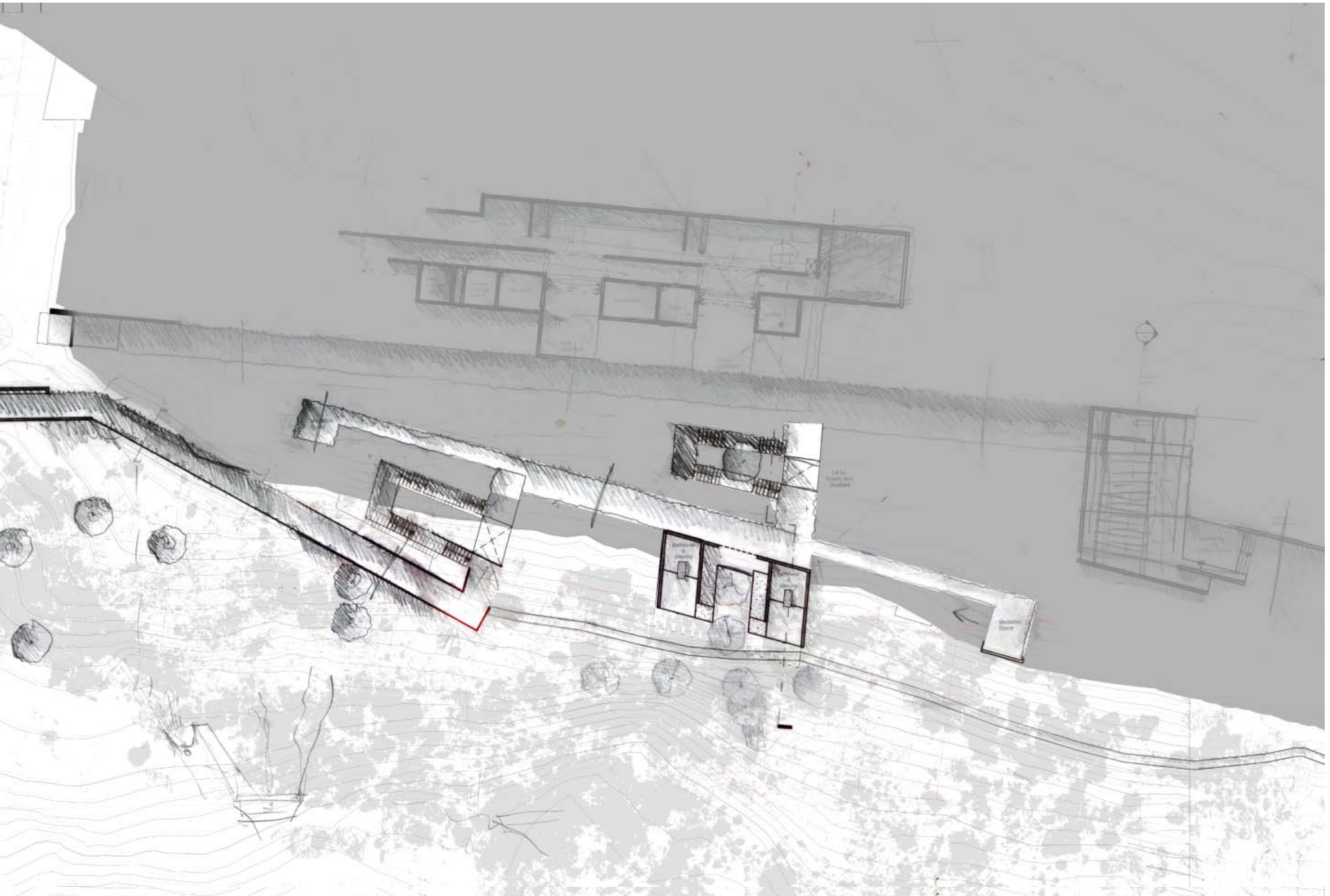




Mortuary Bathhouse - 2nd Floor

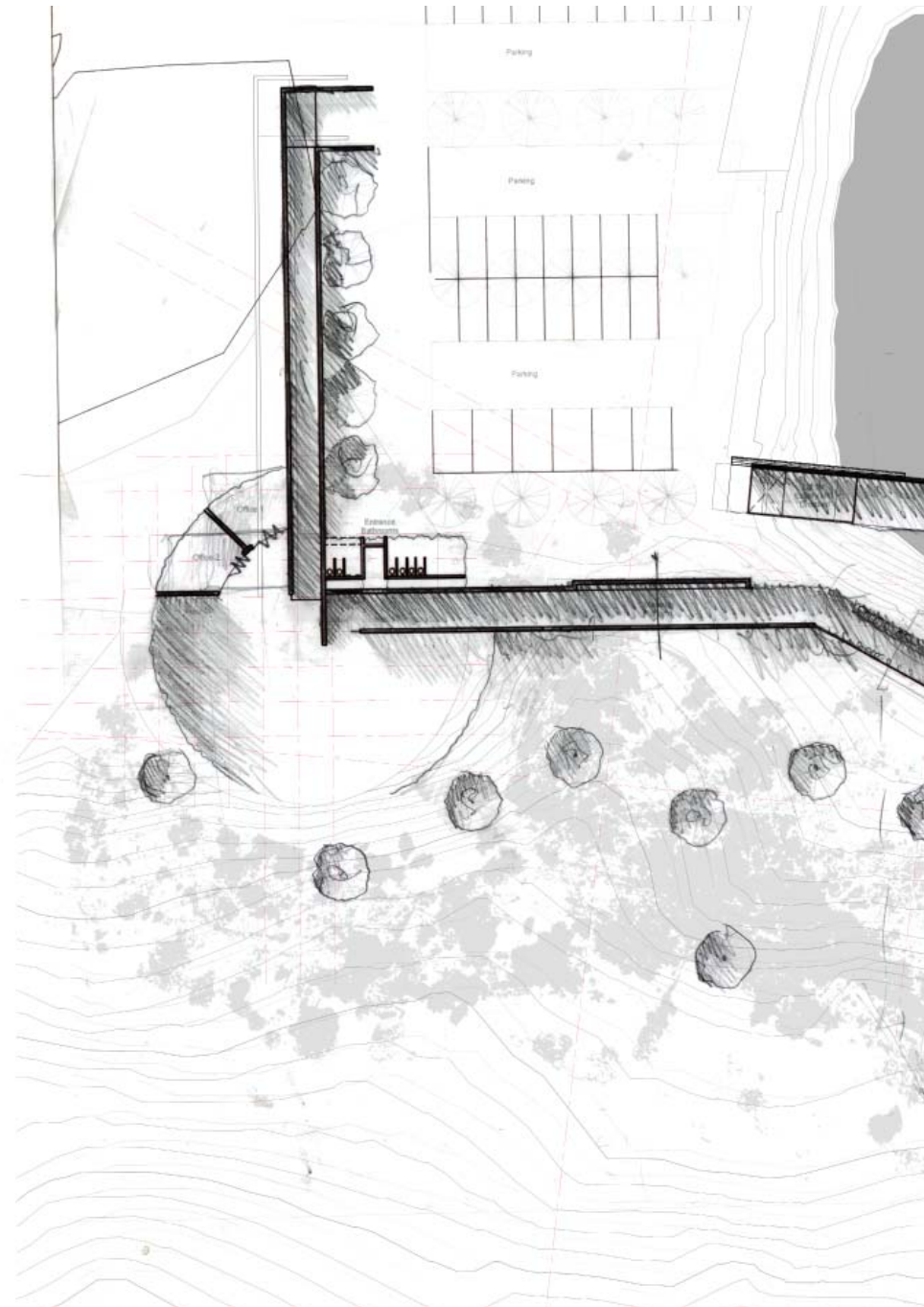
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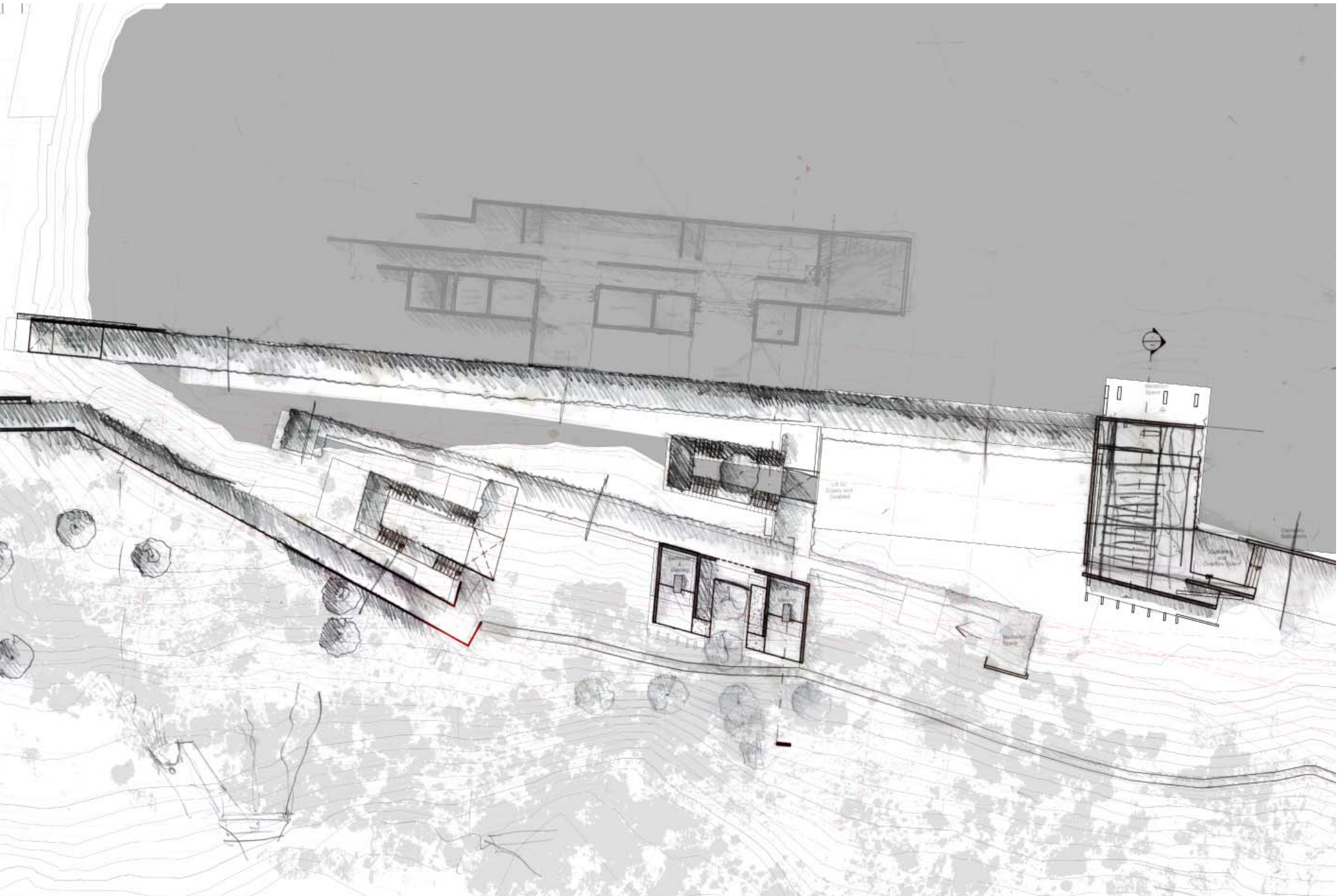




Chapel - 3rd Floor

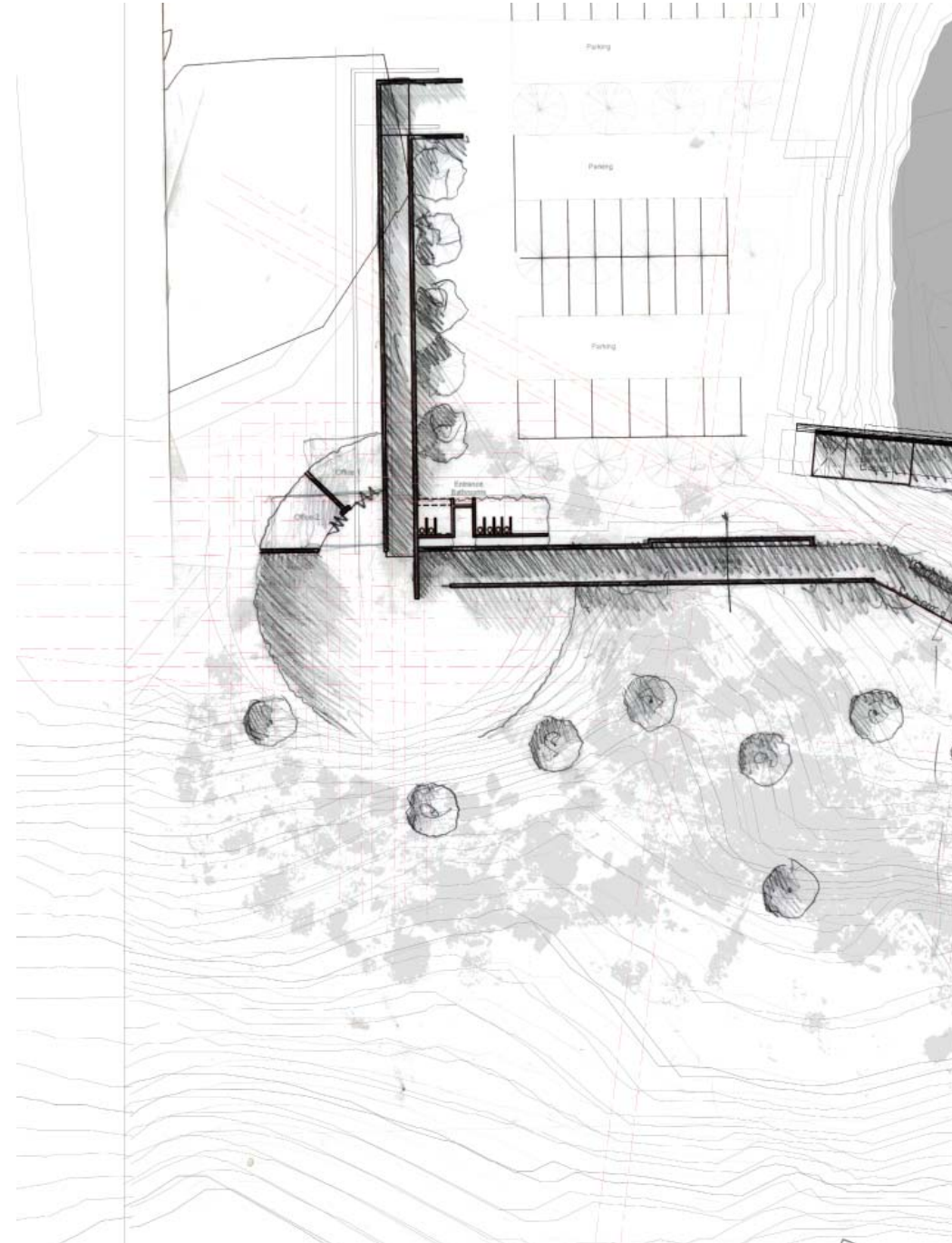
- 246

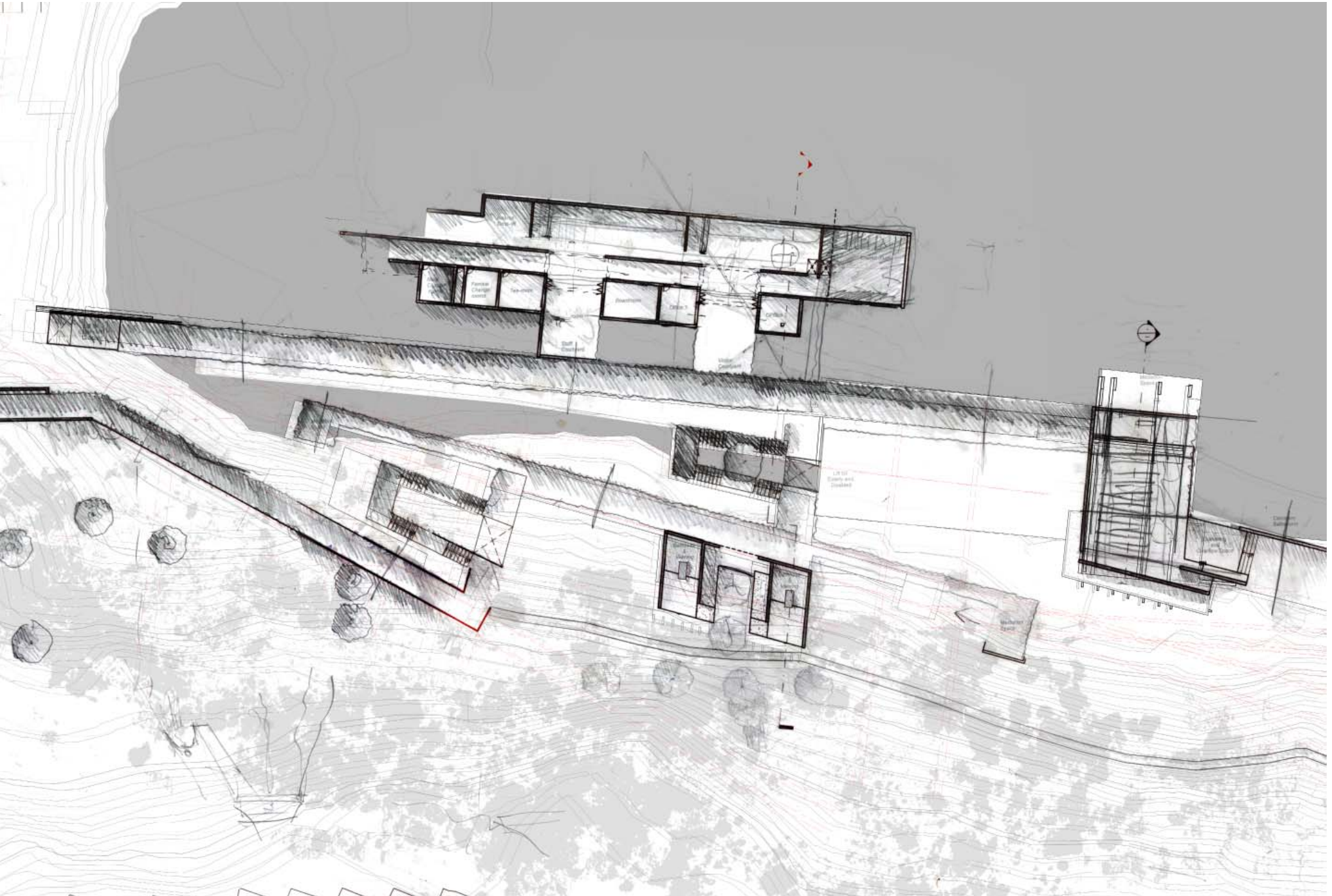




Crematorium - 4th Floor

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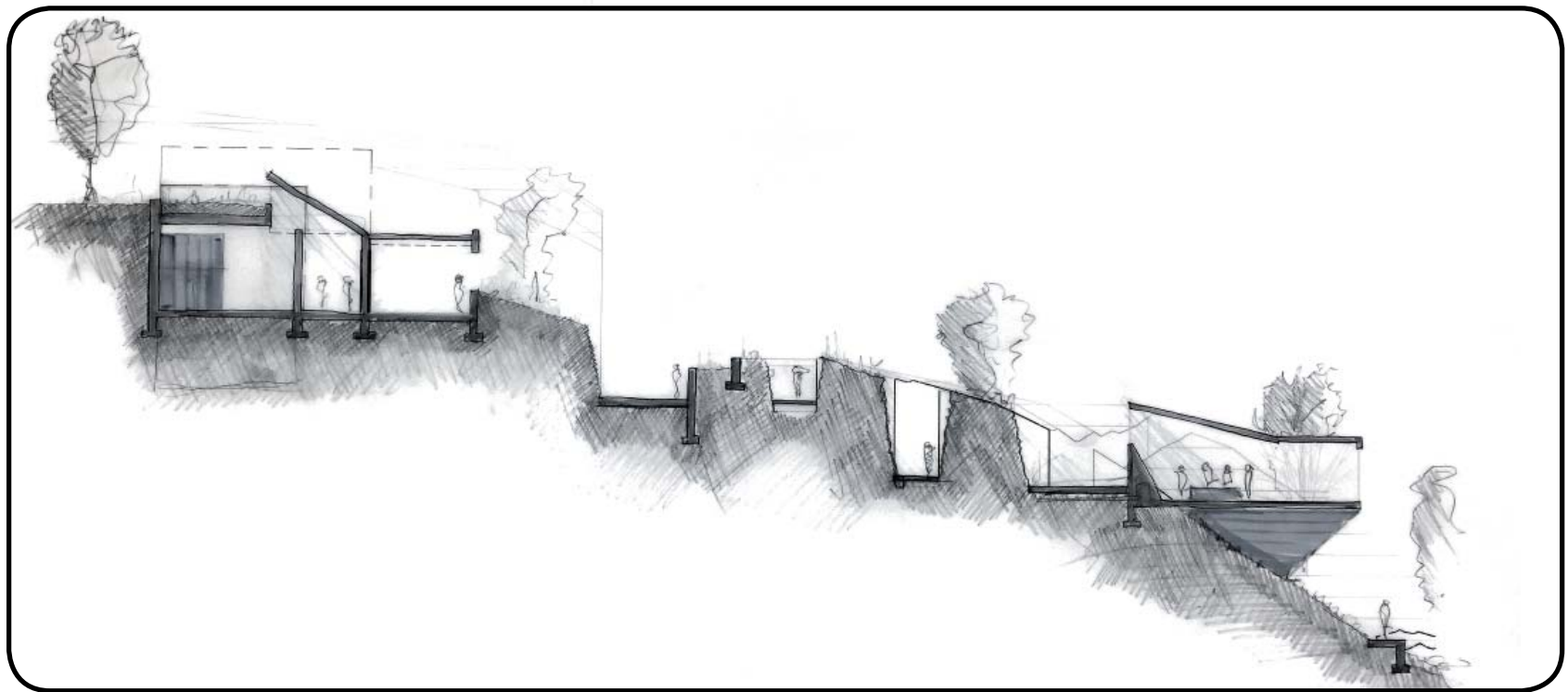


fig 10.46. Iterative section through mortuary, paths and mortuary bathhouse. (by Author, 2015)

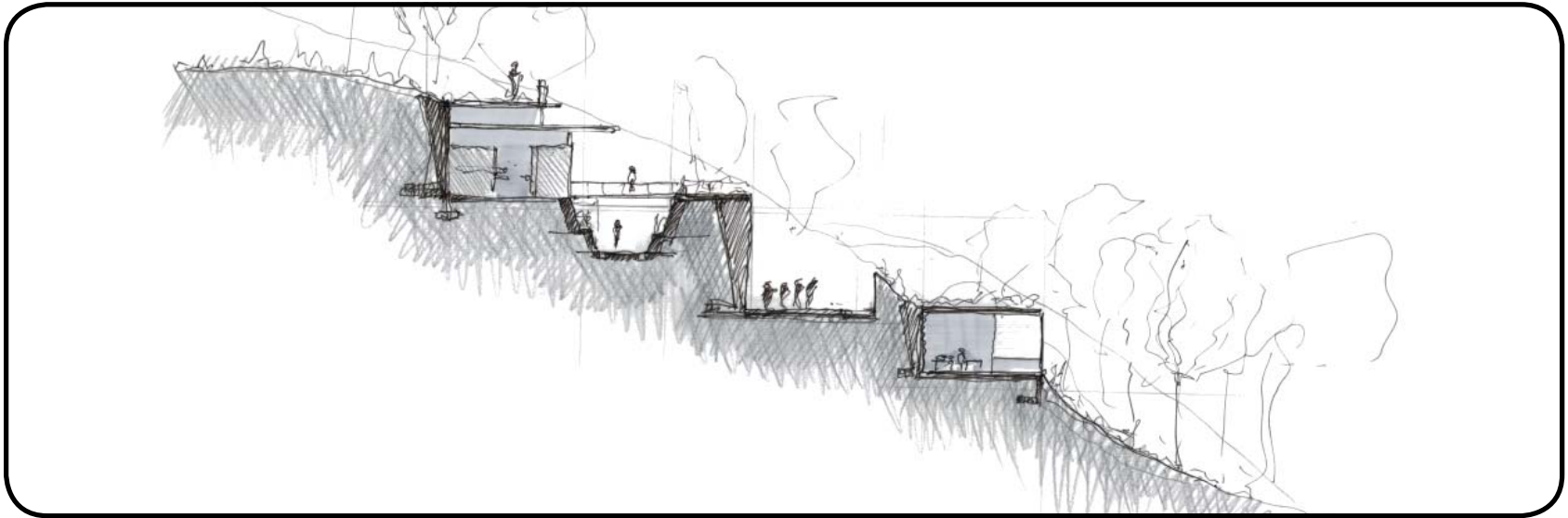


fig 10.48. Iterative section through mortuary and paths leading up the ridge. (by Author, 2015)

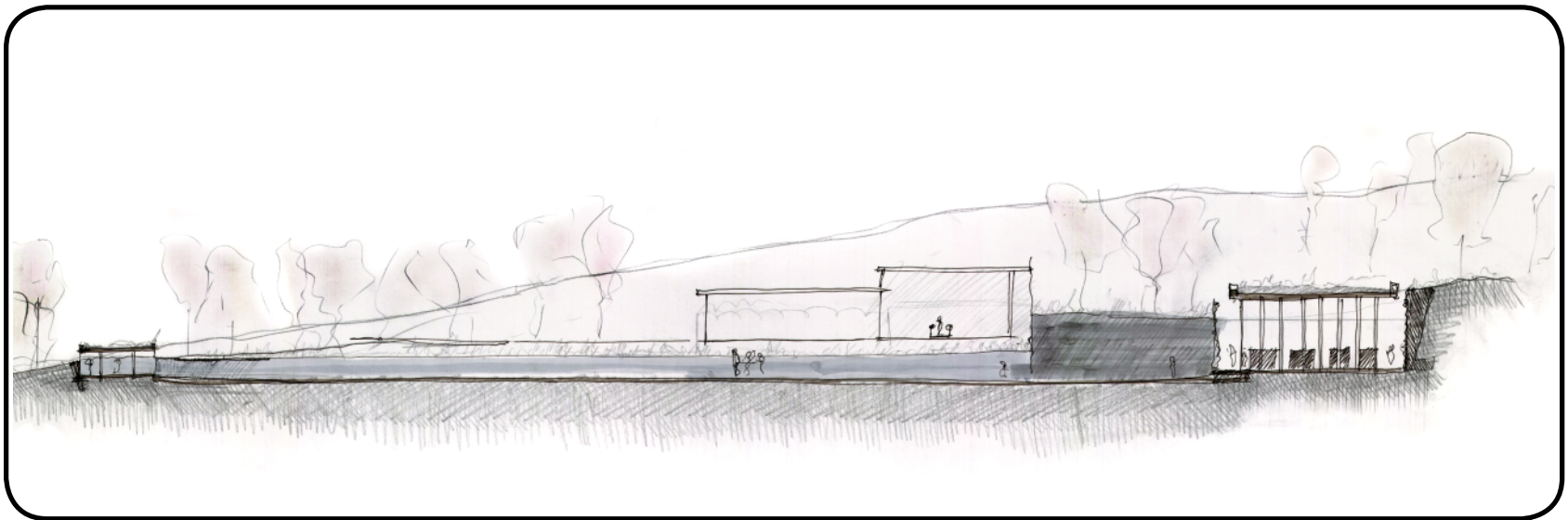


fig 10.47. Iterative section through mortuary when it was still situated behind the chapel. (by Author, 2015)

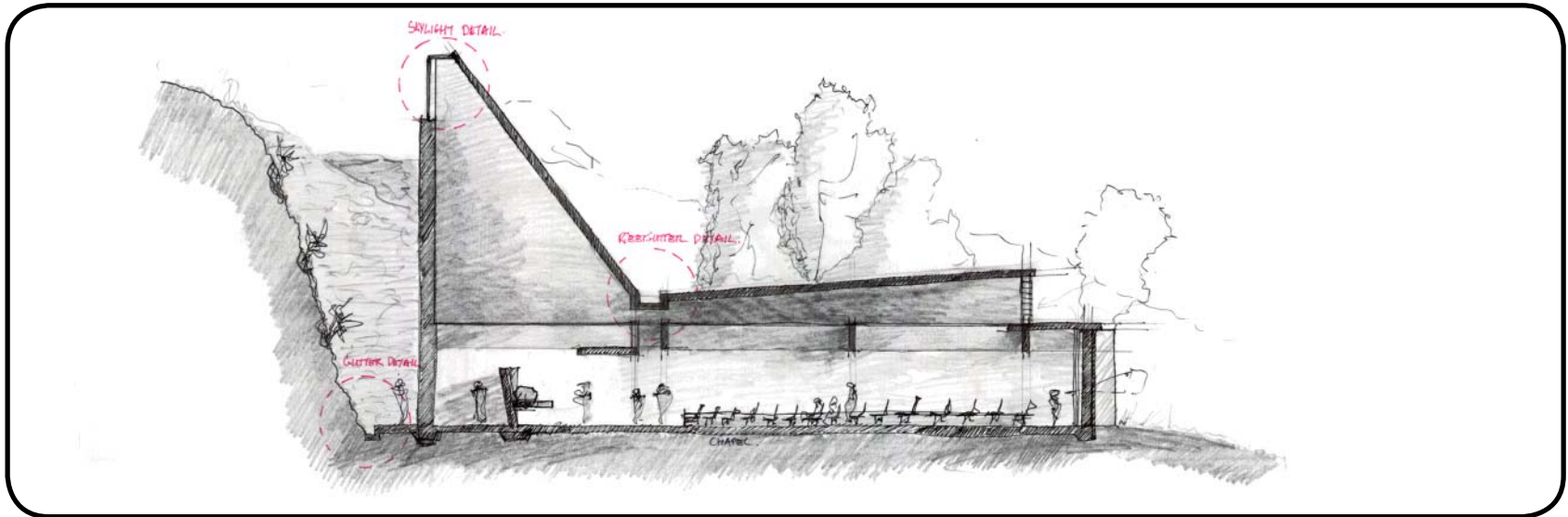


fig 10.50. Iterative section through Chapel. (by Author, 2015)

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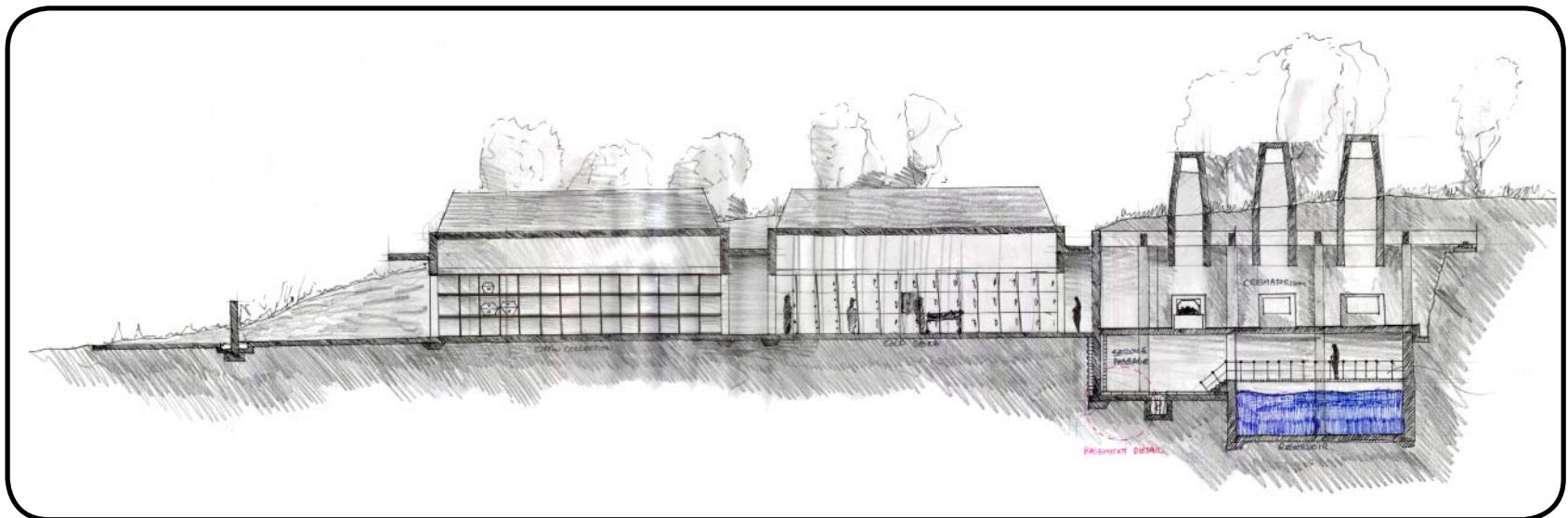


fig 10.49. Longitudinal Iterative section through Crematorium. (2015, by Author)

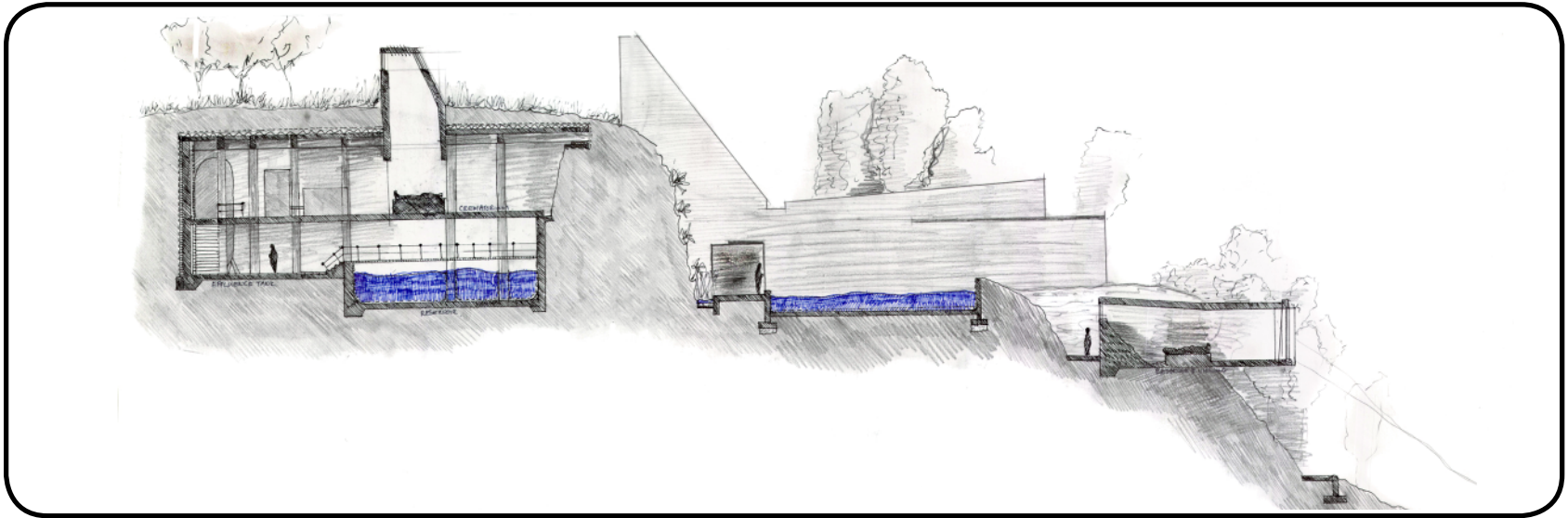


fig 10.52. Iterative section through Mortuary. (by Author, 2015)

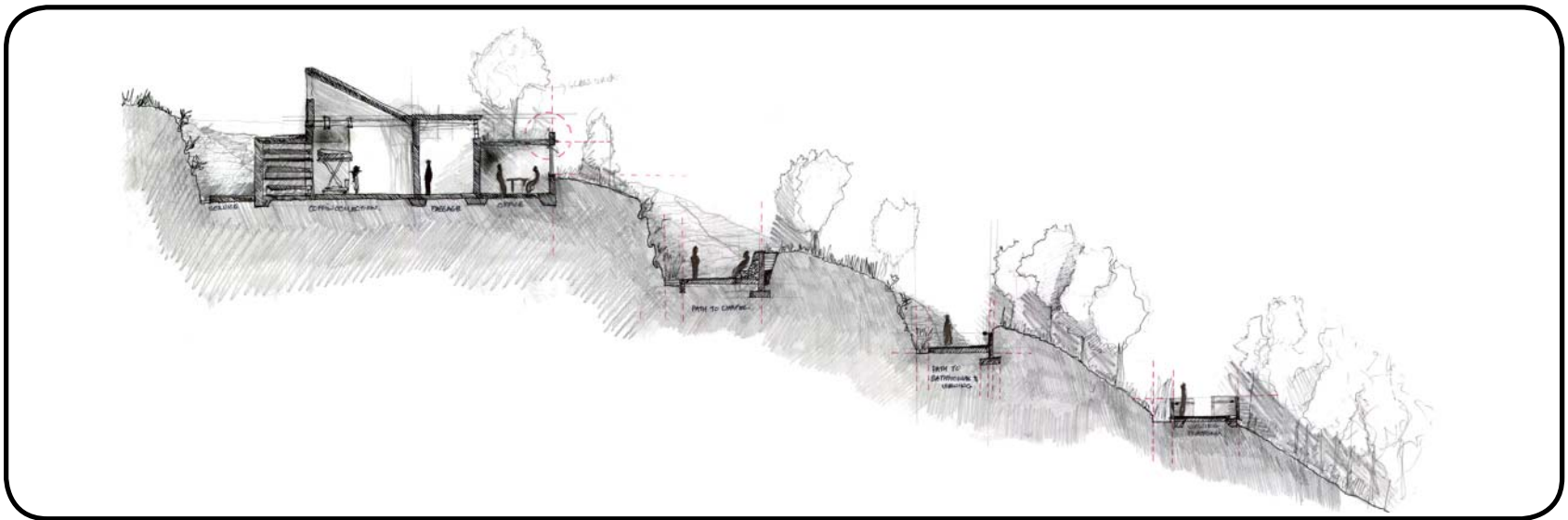


fig 10.51. Iterative section through Mortuary. (by Author, 2015)

Model

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fig 10.53. View down route towards viewing platform and Troyville ridge. (by Author, 2015)



fig 10.54. View down route to mortuary bathhouses and meditation folly. (by Author, 2015)

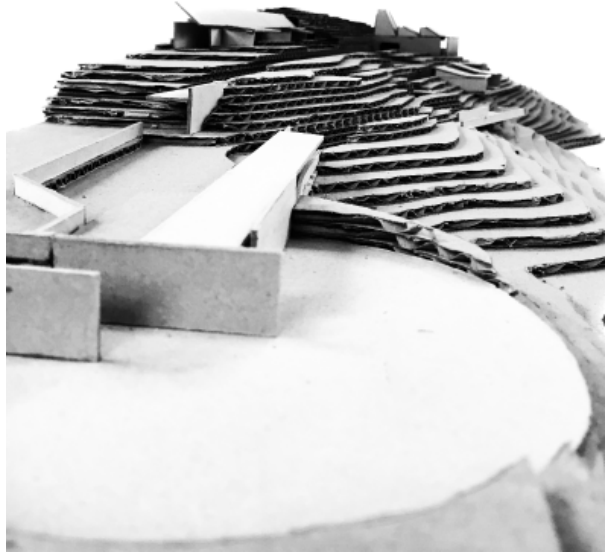


fig 10.56. Model picture overlooking entrance courtyard with chapel in the background. (by author, 2015)



fig 10.55. Model picture overlooking mortuary bathhouse with chapel in the background. (by author, 2015)

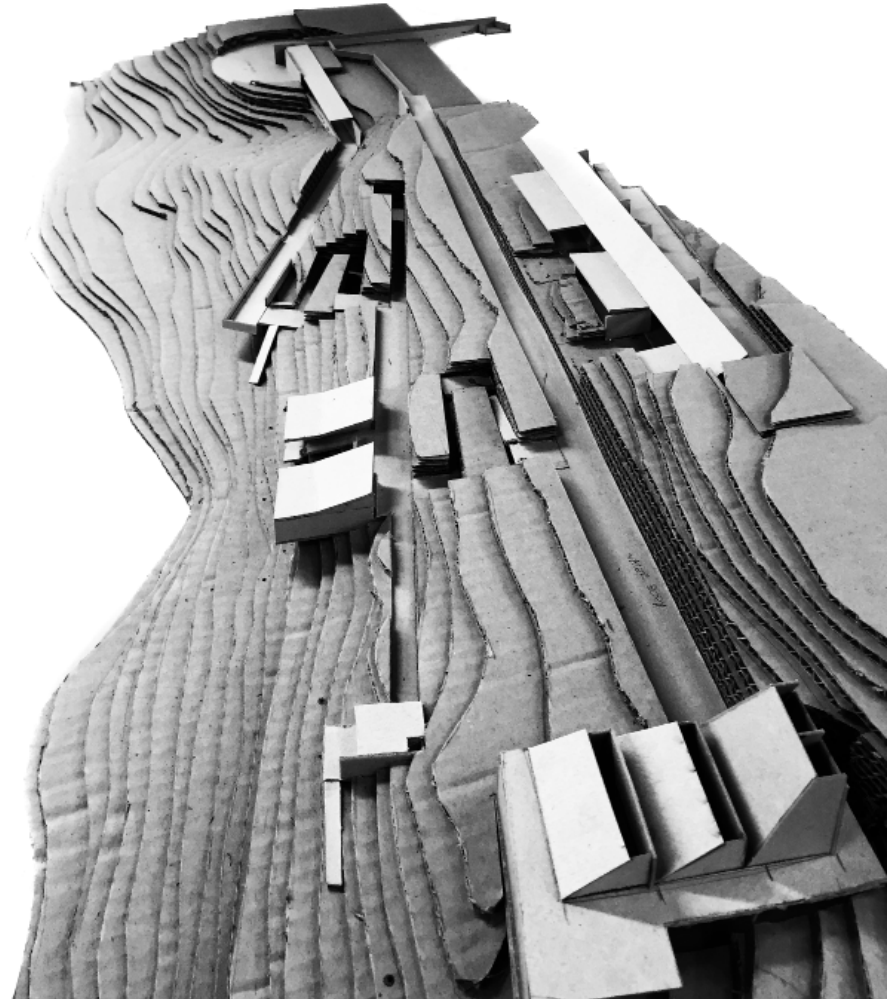


fig 10.57. View over entire site from apartment block on Yeoville Ridge. (by author, 2015)

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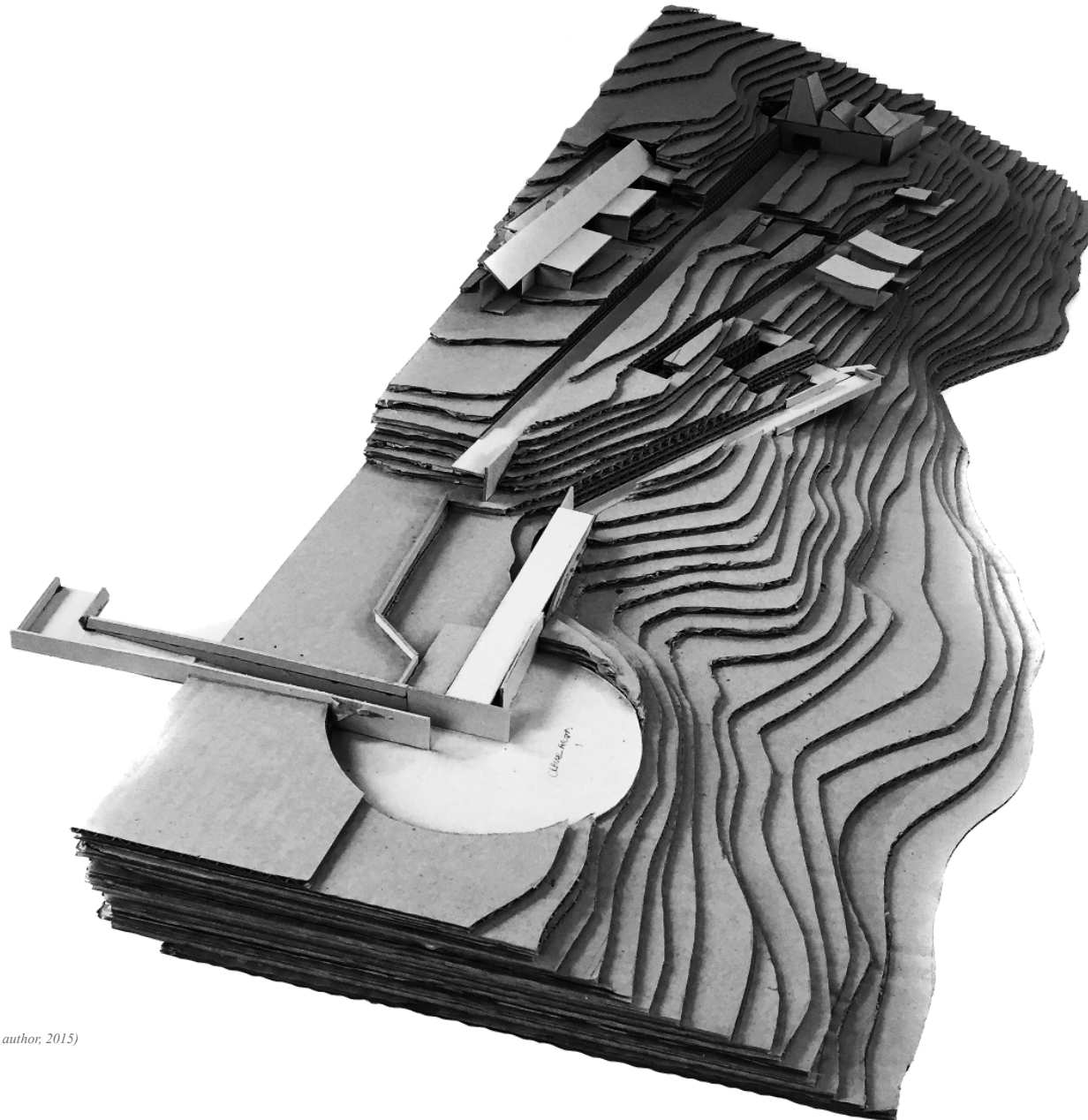


fig 10.58. Overview of Model. (by author, 2015)

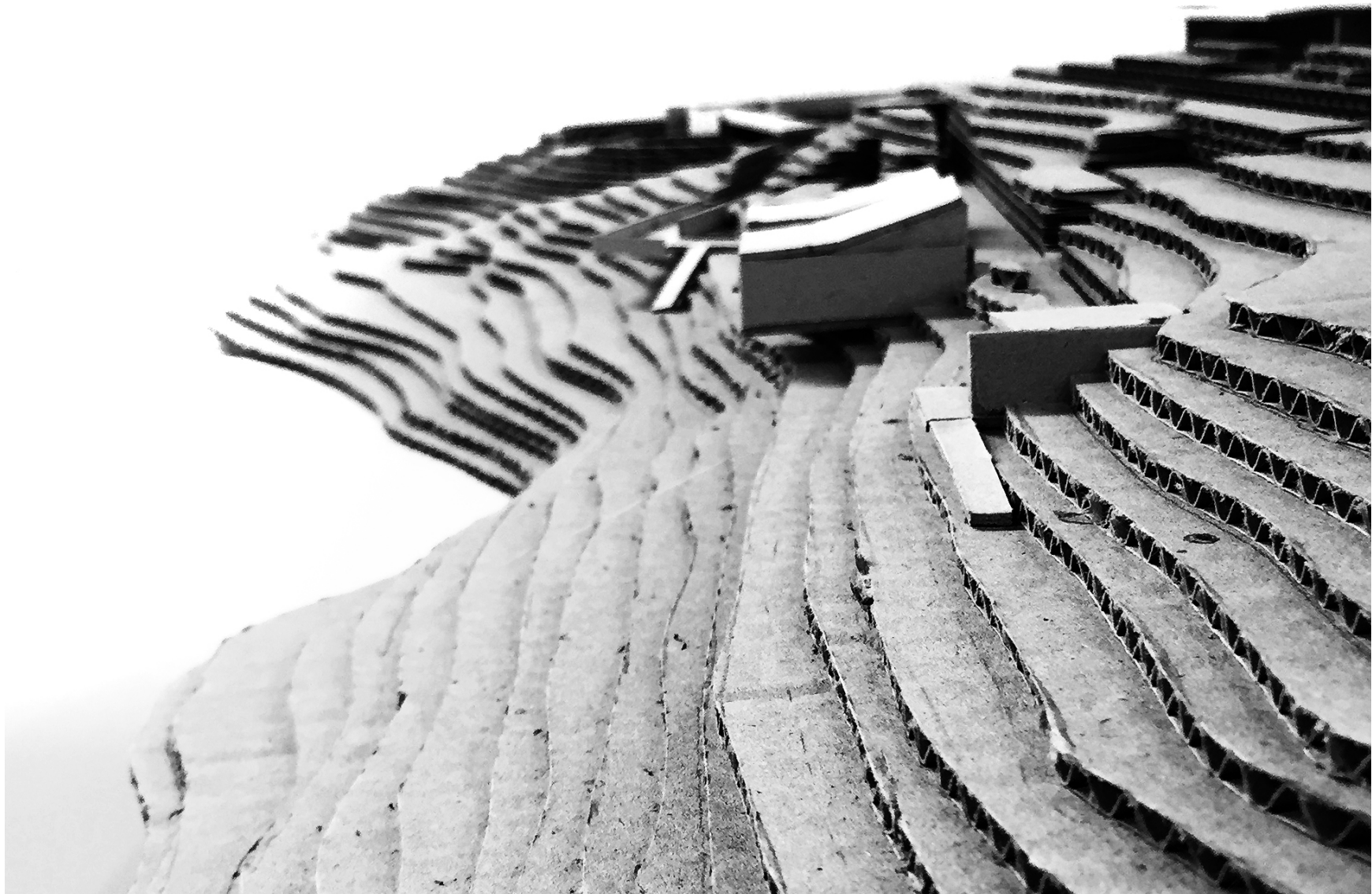


fig 10.59. View from route back towards mortuary bathhouses. (by author, 2015)

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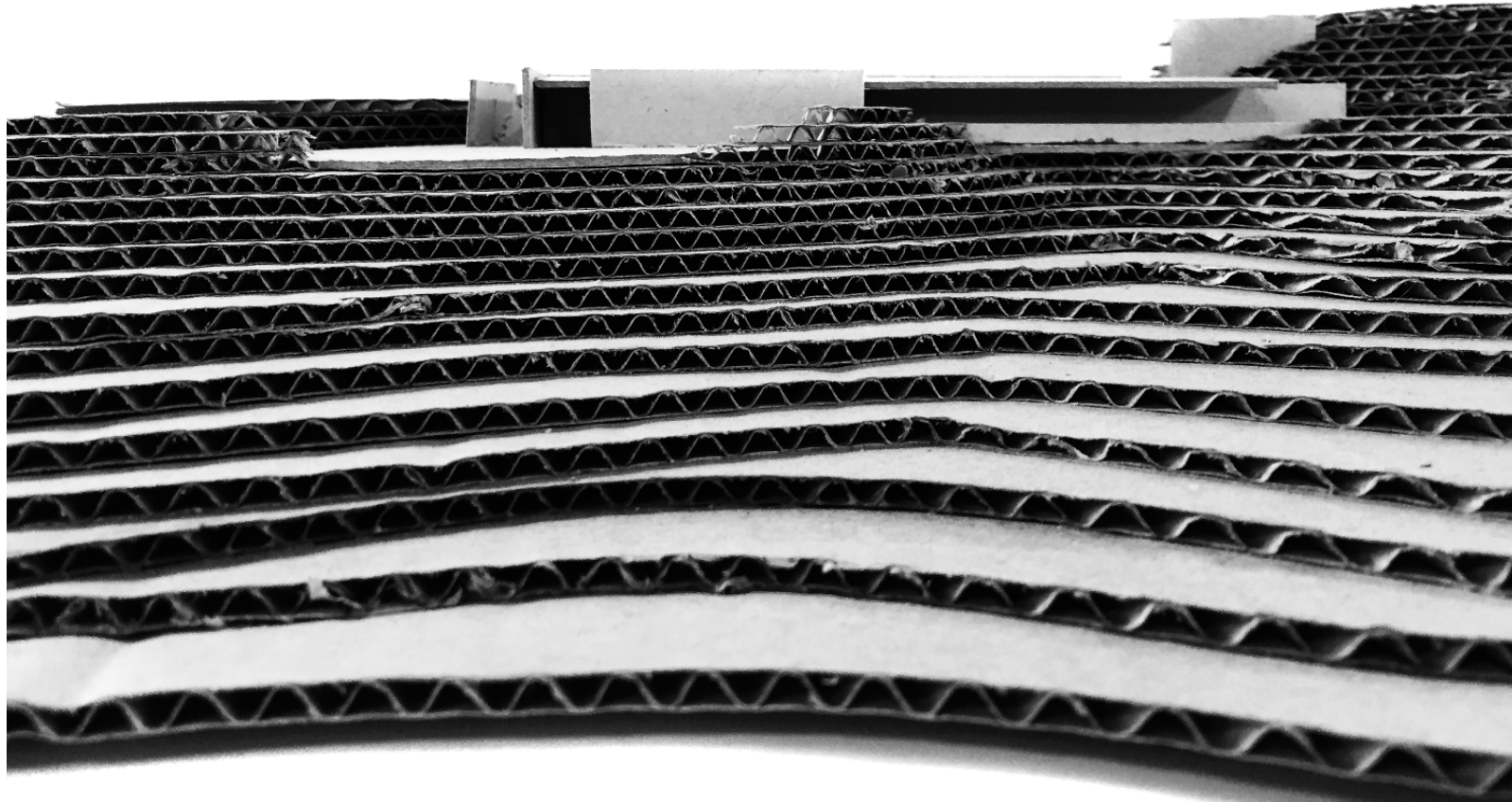


fig 10.60. View up towards entrance courtyard and enclosed walkway from overflow water reservoir at base of site. (by author, 2015)



fig 10.61. View of entire building from chapel roof. (by author, 2015)

Technical Development

Development strategy

Exploded Axonometric

Entire site

Chapel

Crematorium

Mortuary Bathhouse

Technical Concept

Theory - Weathering

Material Palette and Application

SANS 10400 Requirements

Bio Cremation Process

System design focus

Domestic water budget

Irrigation strategy

Water catchment tank sizing

Technical Development

This chapter deals with the materiality, structure and technical development of the proposed building. The chapter also looks at the SANS 10400 requirements for an alternative typology such as this design, as well as at theoretical discourse regarding weathering and returning to nature.

The exploded axonometric that follows depicts both the programmatic and technical development of the architecture, as well as the conceptual understanding and implementation of parameters established by the author. The diagram shows tectonic and stereotomic elements of the structure and how they interact with one another. The structures are defined by solid monolithic walls which extend out of the natural geology of the ridge, while the roof structures become extensions of the surface condition of the ridge, while also covering the exposed structures.

By using the structural integrity of the natural granite ridge and allowing planted roofs to extend out of the natural slope, one is able to develop an architecture that, when viewed from above and on elevation, responds sensitively to the ridge. By glazing most of the southern facades, natural light is allowed to illuminate spaces, which also helps the structure to blend into the ridge and make use of the trees surrounding the building to form a façade on the southern edges.

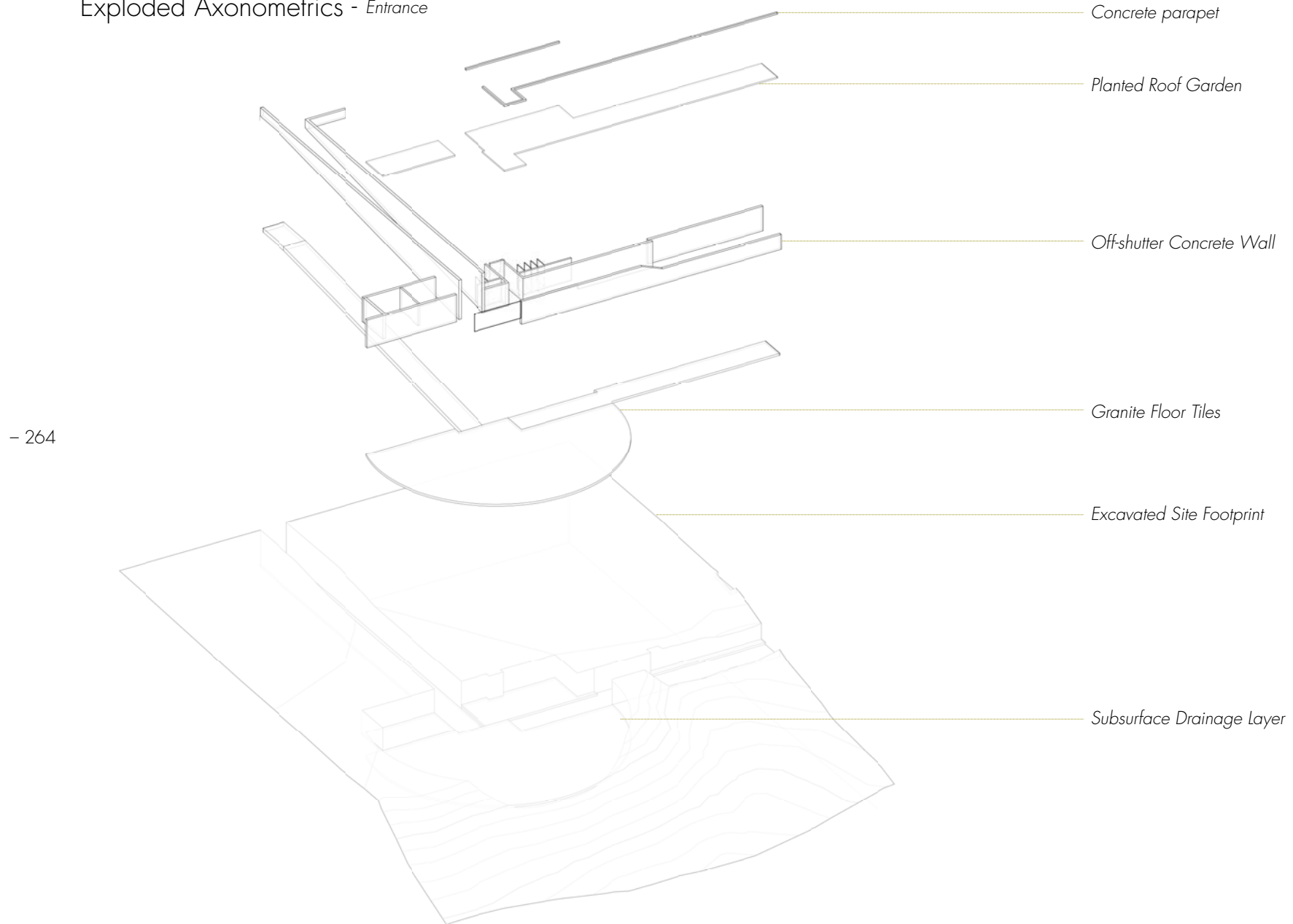
The building becomes a route in itself which fosters ritual practice within the city. The routes between the structures are more part of the natural ridge and park than of the building. They serve as a connection between the urban environment and the natural ridge.

Finally, the chapter will discuss the detailed resolution of the structural system, plan, section and details. Choice of material and material application will also be discussed.

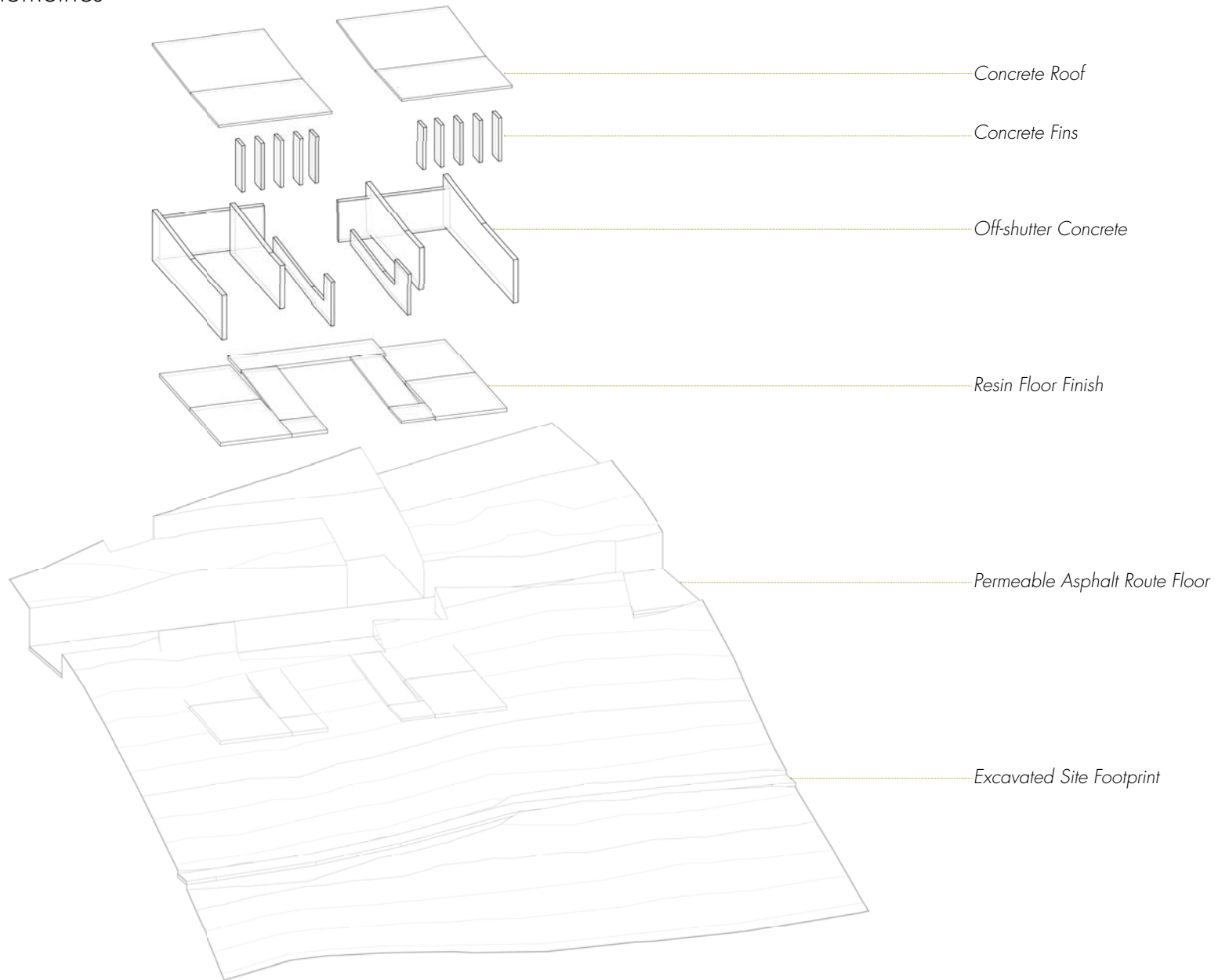
Exploded Axonometrics

The following series of exploded axonometric drawings aid in the explanation of the structure as a whole, as well as isolated structures submerged in the ridge landscape. In these axonometric diagrams the materiality of various elements, the reasons for material choices as well as the implications of these choices are depicted. The diagrams also aid in the understanding of the nature of the design as a series of isolated, submerged structures within the ridge. More detailed exploded axonometrics of individual buildings follow the site axonometric to explain each building and its structural implications in more detail.

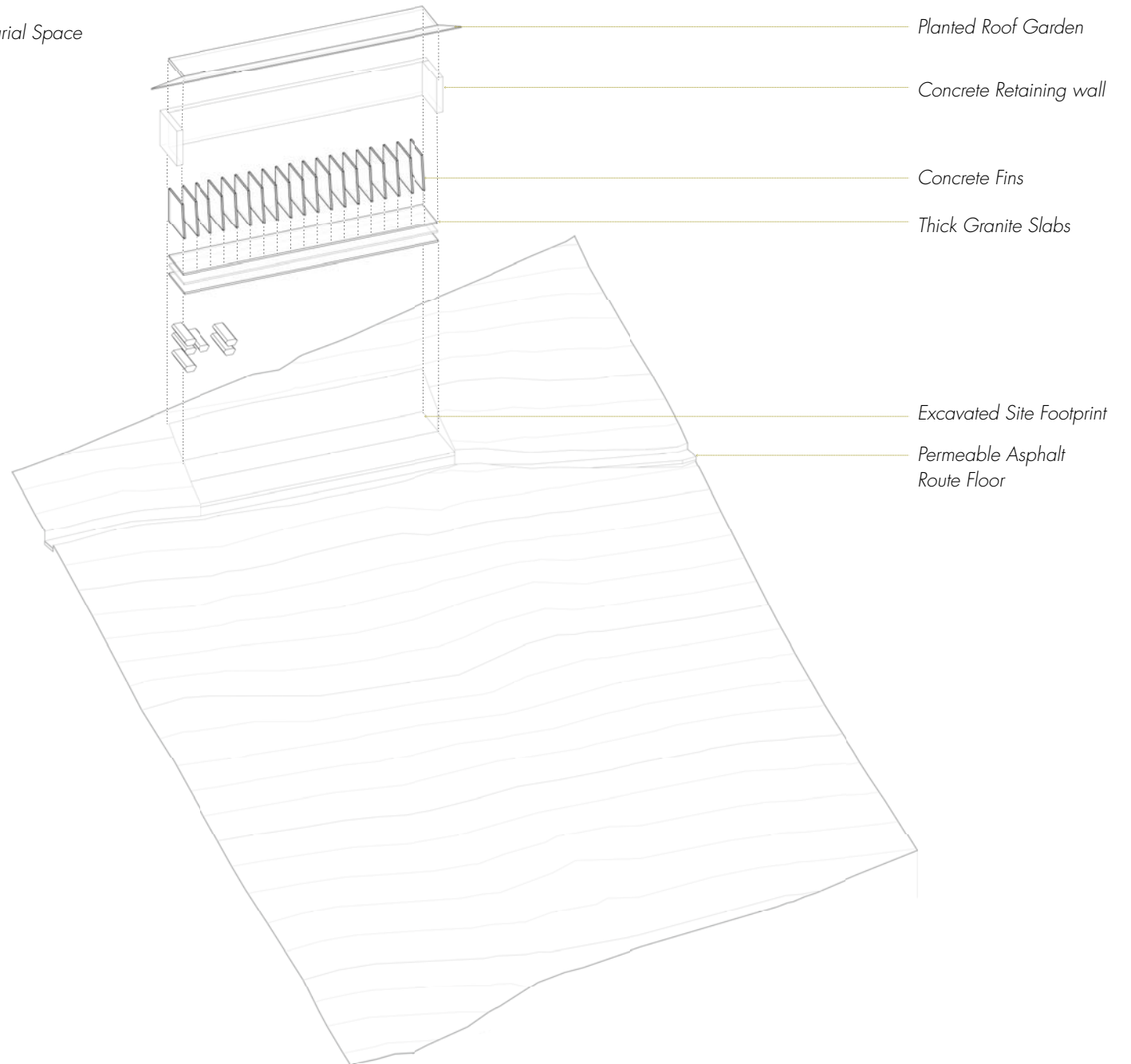
Exploded Axonometrics - Entrance



Exploded Axonometrics - Bathhouse



Exploded Axonometrics - Burial Space



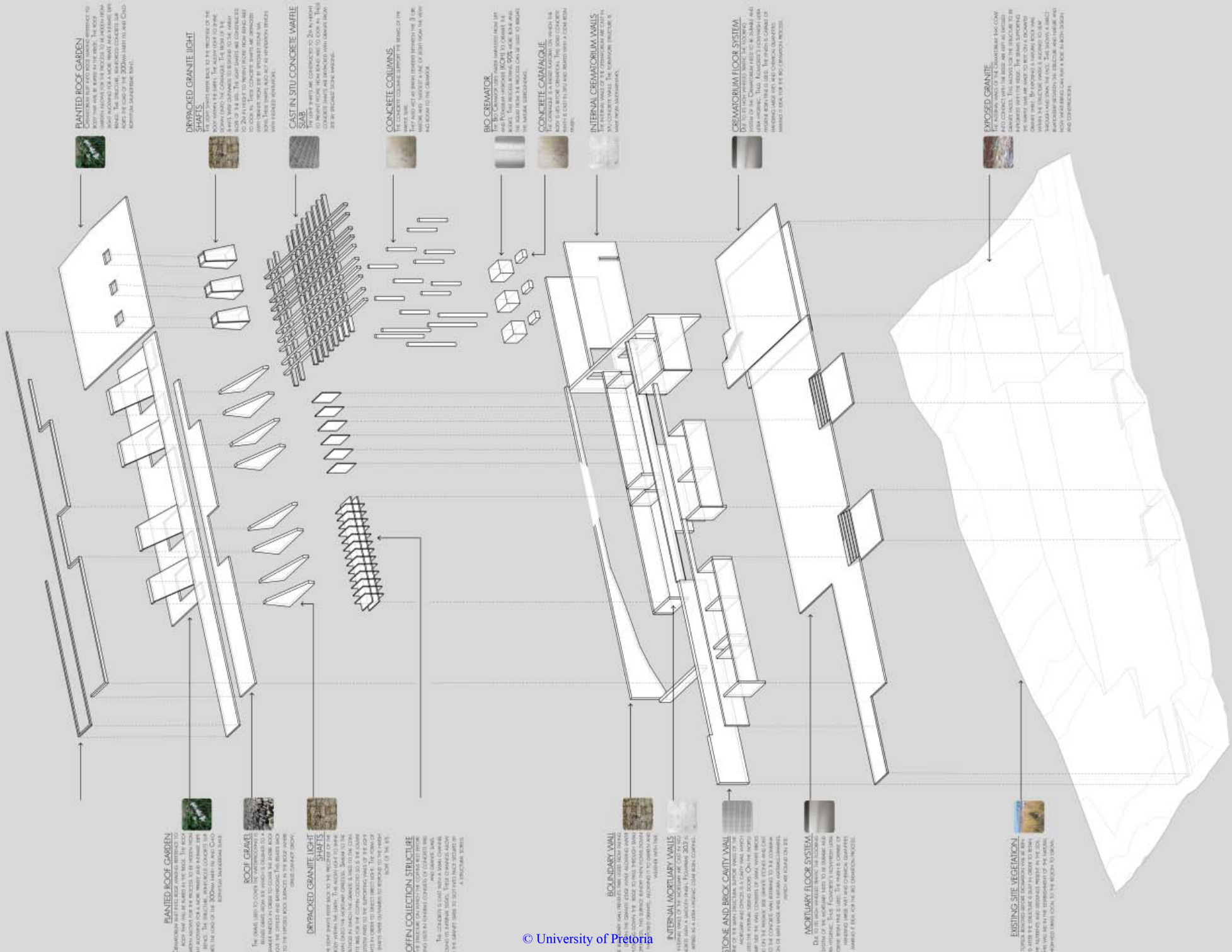
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PLANTED ROOF GARDEN
CONCRETE WAS CAST INTO AN INVERTED TROUGH PROFILE TO BE BUILT UP TO THE ROOF. THE ROOF WAS FINISHED WITH A 100MM THICK LAYER OF POLYURETHANE INSULATION. THE ROOF WAS FINISHED WITH A 100MM THICK LAYER OF POLYURETHANE INSULATION. THE ROOF WAS FINISHED WITH A 100MM THICK LAYER OF POLYURETHANE INSULATION.



DRYPACKED GRANITE LIGHT SHEETS
THE LIGHT SHEETS WERE BACK TO THE INVERTED TROUGH PROFILE TO BE BUILT UP TO THE ROOF. THE ROOF WAS FINISHED WITH A 100MM THICK LAYER OF POLYURETHANE INSULATION. THE ROOF WAS FINISHED WITH A 100MM THICK LAYER OF POLYURETHANE INSULATION.



CAST IN SITU CONCRETE WATERSLAB
THE WATER SLAB WAS CONSTRUCTED TO 200MM HEIGHT TO PREVENT ROOM FLOODING AND TO COMPLY WITH THE REQUIREMENTS OF THE NATIONAL BUILDING REGULATIONS. THE WATER SLAB WAS CONSTRUCTED TO 200MM HEIGHT TO PREVENT ROOM FLOODING AND TO COMPLY WITH THE REQUIREMENTS OF THE NATIONAL BUILDING REGULATIONS.



CONCRETE COLUMNS
THE CONCRETE COLUMNS SUPPORT THE BEAMS OF THE ROOF AND ARE CAST IN SITU. THE COLUMNS ARE CAST IN SITU AND SUPPORT A LOAD OF 80KN FROM THE ROOF AND FROM THE GROUND.



BIO-CREMATORIUM
THE BIO-CREMATORIUM WAS CONSTRUCTED TO 200MM HEIGHT TO PREVENT ROOM FLOODING AND TO COMPLY WITH THE REQUIREMENTS OF THE NATIONAL BUILDING REGULATIONS. THE BIO-CREMATORIUM WAS CONSTRUCTED TO 200MM HEIGHT TO PREVENT ROOM FLOODING AND TO COMPLY WITH THE REQUIREMENTS OF THE NATIONAL BUILDING REGULATIONS.



CONCRETE CANALIQUE
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INTERNAL CREMATORIUM WALLS
THE INTERNAL WALLS OF THE CREMATORIUM ARE CAST IN SITU AND SUPPORT A LOAD OF 80KN FROM THE ROOF AND FROM THE GROUND.



CREMATORIUM FLOOR SYSTEM
DUE TO THE HIGH WEIGHT OF THE CREMATORIUM FLOOR SYSTEM, THE FLOOR WAS CONSTRUCTED TO 200MM HEIGHT TO PREVENT ROOM FLOODING AND TO COMPLY WITH THE REQUIREMENTS OF THE NATIONAL BUILDING REGULATIONS.



EXPOSED GRANITE
THE EXPOSED GRANITE WAS CONSTRUCTED TO 200MM HEIGHT TO PREVENT ROOM FLOODING AND TO COMPLY WITH THE REQUIREMENTS OF THE NATIONAL BUILDING REGULATIONS. THE EXPOSED GRANITE WAS CONSTRUCTED TO 200MM HEIGHT TO PREVENT ROOM FLOODING AND TO COMPLY WITH THE REQUIREMENTS OF THE NATIONAL BUILDING REGULATIONS.



PLANTED ROOF GARDEN
CONCRETE WAS CAST INTO AN INVERTED TROUGH PROFILE TO BE BUILT UP TO THE ROOF. THE ROOF WAS FINISHED WITH A 100MM THICK LAYER OF POLYURETHANE INSULATION. THE ROOF WAS FINISHED WITH A 100MM THICK LAYER OF POLYURETHANE INSULATION.



ROOF GRANITE
THE ROOF GRANITE WAS CONSTRUCTED TO 200MM HEIGHT TO PREVENT ROOM FLOODING AND TO COMPLY WITH THE REQUIREMENTS OF THE NATIONAL BUILDING REGULATIONS. THE ROOF GRANITE WAS CONSTRUCTED TO 200MM HEIGHT TO PREVENT ROOM FLOODING AND TO COMPLY WITH THE REQUIREMENTS OF THE NATIONAL BUILDING REGULATIONS.



DRYPACKED GRANITE LIGHT SHEETS
THE LIGHT SHEETS WERE BACK TO THE INVERTED TROUGH PROFILE TO BE BUILT UP TO THE ROOF. THE ROOF WAS FINISHED WITH A 100MM THICK LAYER OF POLYURETHANE INSULATION. THE ROOF WAS FINISHED WITH A 100MM THICK LAYER OF POLYURETHANE INSULATION.



COFFIN COLLECTION STRUCTURE
THE COFFIN COLLECTION STRUCTURE WAS CONSTRUCTED TO 200MM HEIGHT TO PREVENT ROOM FLOODING AND TO COMPLY WITH THE REQUIREMENTS OF THE NATIONAL BUILDING REGULATIONS. THE COFFIN COLLECTION STRUCTURE WAS CONSTRUCTED TO 200MM HEIGHT TO PREVENT ROOM FLOODING AND TO COMPLY WITH THE REQUIREMENTS OF THE NATIONAL BUILDING REGULATIONS.

BOUNDARY WALL
THE BOUNDARY WALL WAS CONSTRUCTED TO 200MM HEIGHT TO PREVENT ROOM FLOODING AND TO COMPLY WITH THE REQUIREMENTS OF THE NATIONAL BUILDING REGULATIONS. THE BOUNDARY WALL WAS CONSTRUCTED TO 200MM HEIGHT TO PREVENT ROOM FLOODING AND TO COMPLY WITH THE REQUIREMENTS OF THE NATIONAL BUILDING REGULATIONS.



INTERNAL MORTUARY WALLS
THE INTERNAL MORTUARY WALLS ARE CAST IN SITU AND SUPPORT A LOAD OF 80KN FROM THE ROOF AND FROM THE GROUND.



STONE AND BRICK CAVITY WALL
THE STONE AND BRICK CAVITY WALL WAS CONSTRUCTED TO 200MM HEIGHT TO PREVENT ROOM FLOODING AND TO COMPLY WITH THE REQUIREMENTS OF THE NATIONAL BUILDING REGULATIONS. THE STONE AND BRICK CAVITY WALL WAS CONSTRUCTED TO 200MM HEIGHT TO PREVENT ROOM FLOODING AND TO COMPLY WITH THE REQUIREMENTS OF THE NATIONAL BUILDING REGULATIONS.

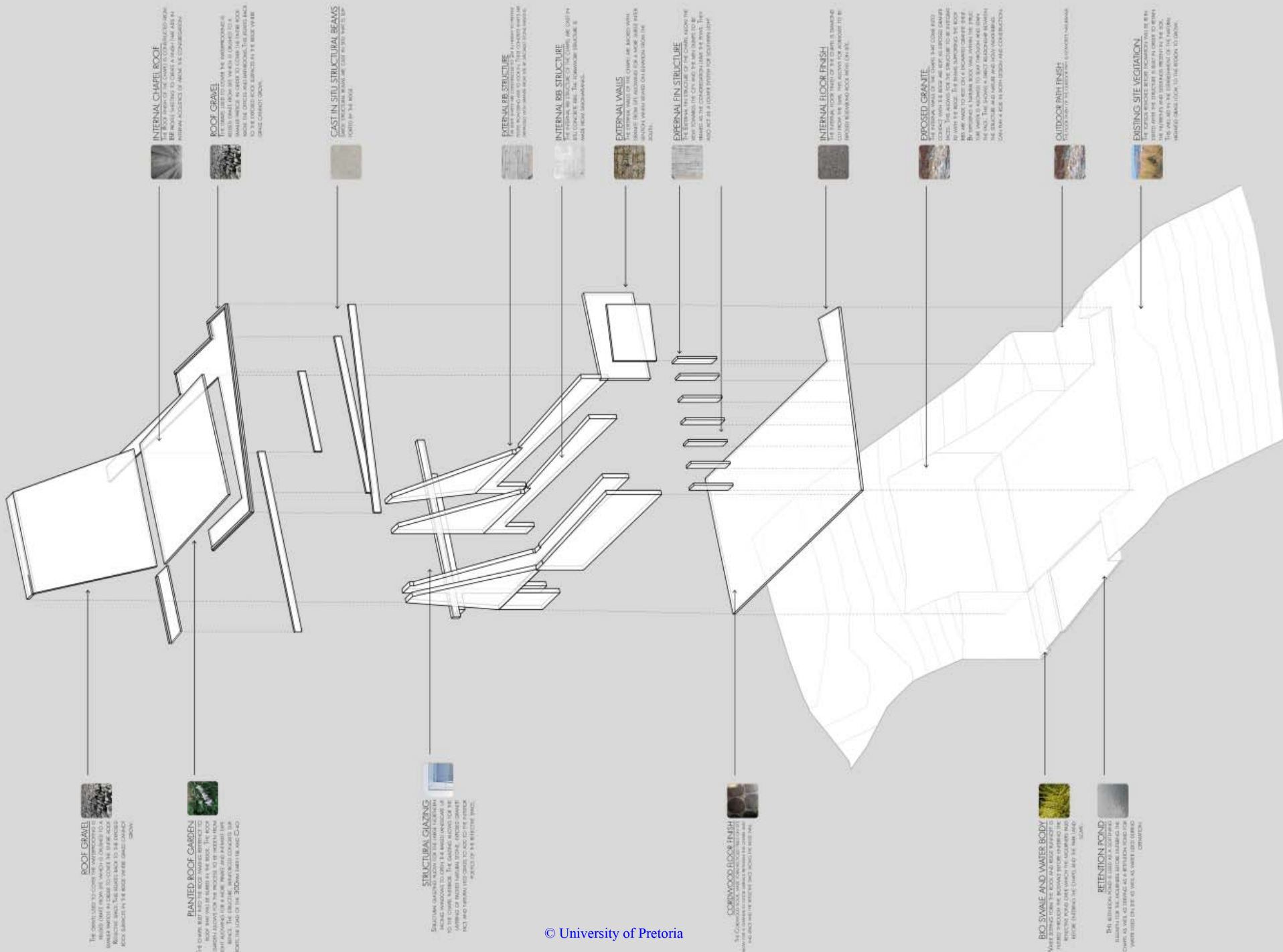


MORTUARY FLOOR SYSTEM
DUE TO THE HIGH WEIGHT OF THE MORTUARY FLOOR SYSTEM, THE FLOOR WAS CONSTRUCTED TO 200MM HEIGHT TO PREVENT ROOM FLOODING AND TO COMPLY WITH THE REQUIREMENTS OF THE NATIONAL BUILDING REGULATIONS.



EXISTING SITE VEGETATION
THE EXISTING SITE VEGETATION WAS PRESERVED AND INTEGRATED INTO THE DESIGN OF THE BUILDING. THE EXISTING SITE VEGETATION WAS PRESERVED AND INTEGRATED INTO THE DESIGN OF THE BUILDING.





ROOF GRAVEL
THE GRAVEL USED TO COVER THE INTERMEDIATE ROOFING IS MADE FROM THE WASTE OF A LOCAL QUARRY. THE GRAVEL IS CHANGED TO A LIGHTER COLOR TO MATCH THE SURROUNDING ENVIRONMENT. THE GRAVEL IS ALSO USED TO COVER THE ROOF OF THE EXISTING CARPARK.

PLANTED ROOF GARDEN
THE GARDEN IS PLANTED WITH A MIXTURE OF LOCAL AND EXOTIC PLANTS. THE GARDEN IS PLANTED WITH A MIXTURE OF LOCAL AND EXOTIC PLANTS. THE GARDEN IS PLANTED WITH A MIXTURE OF LOCAL AND EXOTIC PLANTS.

STRUCTURAL GRAZING
STRUCTURAL GRAZING IS THE USE OF GRAZING ANIMALS TO MAINTAIN THE ROOF GARDEN. THE GRAZING ANIMALS ARE USED TO MAINTAIN THE ROOF GARDEN. THE GRAZING ANIMALS ARE USED TO MAINTAIN THE ROOF GARDEN.

CORNWOOD BOOK FINISH
THE CORNWOOD BOOK FINISH IS A NATURAL FINISH THAT IS USED ON THE ROOF. THE CORNWOOD BOOK FINISH IS A NATURAL FINISH THAT IS USED ON THE ROOF.

BIO SWALE AND WATER BODY
THE BIO SWALE AND WATER BODY IS A NATURAL FEATURE THAT IS USED ON THE ROOF. THE BIO SWALE AND WATER BODY IS A NATURAL FEATURE THAT IS USED ON THE ROOF.

RETENTION POND
THE RETENTION POND IS A NATURAL FEATURE THAT IS USED ON THE ROOF. THE RETENTION POND IS A NATURAL FEATURE THAT IS USED ON THE ROOF.

INTERNAL CHAIROL ROOF
THE INTERNAL CHAIROL ROOF IS A NATURAL FEATURE THAT IS USED ON THE ROOF. THE INTERNAL CHAIROL ROOF IS A NATURAL FEATURE THAT IS USED ON THE ROOF.

ROOF GRAVEL
THE GRAVEL USED TO COVER THE INTERMEDIATE ROOFING IS MADE FROM THE WASTE OF A LOCAL QUARRY. THE GRAVEL IS CHANGED TO A LIGHTER COLOR TO MATCH THE SURROUNDING ENVIRONMENT. THE GRAVEL IS ALSO USED TO COVER THE ROOF OF THE EXISTING CARPARK.

CAST IN SITU STRUCTURAL BEAMS
THE CAST IN SITU STRUCTURAL BEAMS ARE MADE FROM LOCAL CEMENT AND SAND. THE CAST IN SITU STRUCTURAL BEAMS ARE MADE FROM LOCAL CEMENT AND SAND.

EXTERNAL PBR STRUCTURE
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INTERNAL FLOOR FINISH
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EXPOSED GRANITE
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OUTDOOR PATH FINISH
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Technical Concept

The natural granite which makes up most of the Yeoville Ridge is a major influence, both on design and construction. By combining the typologies of the naturalistic rural cemetery and the formalistic urban cemetery one is able to establish a new, more contextual typology for burial in the city of Johannesburg and, more importantly, the Witwatersrand. By making incisions into the natural granite rock of the ridge, the ridge can be used not only as a structural support system, but also to become a subterranean burial park that becomes a city of the dead that is accessible to the living – a calm and isolated space within the chaos of Johannesburg.

Of the ridge the structure is able to use the ridge not only as a structural support system but become a subterranean

Burial park that becomes a city of the dead that is accessible for the living. A calm and isolated space within the chaos of Johannesburg.

The use of materials that show weathering allow the structure to age. This refers to the notion of time and decay and how life in itself is not infinite. The weathering of the structure relates back to nature and how it is not static, this notion awakens reality within the user and arouses intrigue as does most buildings in decay. They ultimately awaken nostalgia within those experiencing it.

By creating a building that decays as a result of the landscape the architecture is able to successfully become a mediator between the living and the dead. A sensitive intervention that decays back to the earth. It merges with the landscape.

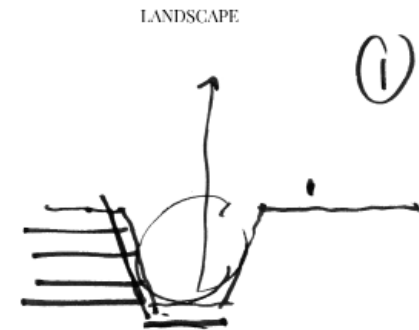
The construction of the structure allows for exposure of man made and natural elements throughout the route.

Theory - Weathering

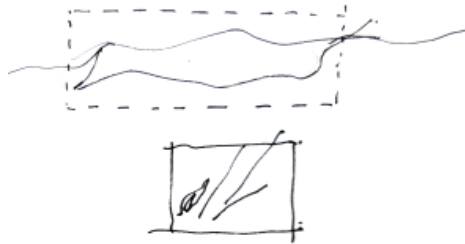
Erosion of a surface through weathering exposes newer surfaces of the same material in its depth, at once erasure of one surface and the revelation of another. Exposure also involves sedimentation and the gathering of residual deposits, the combination of which – subtraction and addition – is a testimony to the time of a building, “creating the present form of the past life but according to its past as such.” In this sense architectural duration implies a past that is caught up in the present and anticipates the future.

(Mostafavi & Leatherbarrow 1993:64)

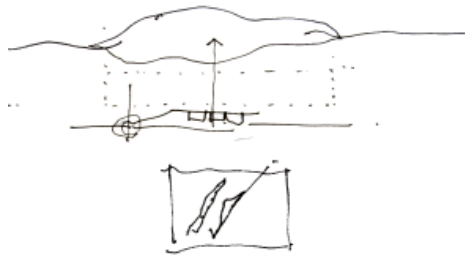
Weathering as we know it is seen quite differently from what Mostafavi and Leatherbarrow suggest. When this process is allowed to continue uninterrupted, it enables the building to develop a second skin which ultimately becomes natural or Nature. This tension created between the natural (site and location) and the man-made (art) is ultimately what Tadao Ando speaks of when he explains his understanding of nature and the constructed site (Ando 1996).



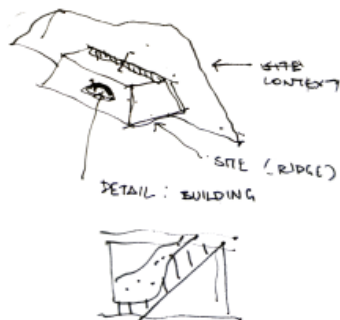
CONTEXT



SITE



BUILDING / DETAIL



Thus, considering the text by Mostafavi and Leatherbarrow (1993), weathering ultimately produces something which is already there through the process of extraction. This process ultimately transforms the roles of art and nature. In the design process, art is assumed to be the dominant force which shapes nature, over the lifetime of the construction. However, nature reforms the finished artwork (Mostafavi & Leatherbarrow 1993:64).

What is the value of this accumulation of dirt, or this erosion of a finished edge? Is it not tragic? Alternatively, does it not show the rightful claim nature has on all works of art? Is not this return of matter to its source, as a coherent body, already implied in its constitution, insofar as every physical thing carries within its deepest layers a tendency towards its own destruction – death as birth right? If tragic, this metamorphosis is just. The value, then, of works that suffer strains and abrasions is the revelation of the eventuality of this final justice.

(Mostafavi & Leatherbarrow 1993:69)

This relates directly to the process of death and how a piece of art – as a result of weathering – is taken back to its location, the place where it was first taken from. Thus, during and after the construction of a building, it naturally takes on the characteristics of the site, the textures, colours, surface patterns and smells on which it is constructed. These adopted characteristics which the piece of art or building gathers from the site are in turn given back to the landscape. The building as a geological element allows the site to form around it and become one with the structure. In this way both nature and man-made art become aware of one another, and respond accordingly in a sensitive manner (Mostafavi & Leatherbarrow, 1993:72).

In conclusion it is clear that whatever the design develops into, the process of weathering is an inevitable one that adds to the experiential qualities of the spaces.

This idea relates back directly to the proposal of a crematorium and funerary route nestled within the landscape, creating a connection between nature and the man-made structure. By designing for the inevitable effect of weathering on elements such a granite, concrete and stone walls, one is able to enhance the experience of the space and, most importantly, relate it back to the process taking place in the programme. Just as the process of death is one of weathering in itself, so should the structure that facilitates the burial process also become weathered due to time. The structure then ultimately becomes a monument of the past funerary processes in the landscape, returning to the landscape like those whom it has catered for, and so becoming a ruined folly within the ridge as a geological agent on the Witwatersrand.

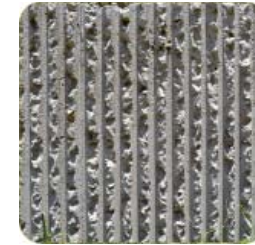
Material - *Material palette and Application*

Roof

Concrete

As an element in all the structures, concrete forms an integral part of the various roof structures, finished in accordance to variations in programmatic use.

The finish of the chapel roof varies. The northern pitched roof of the chapel tower is finished with bluegum plank formwork for a smooth, reflective finish, while the roof structure above the seating is cast in situ with thin timber purlins spaced at???. Centres in order to allow for acoustic displacement. With the concrete finish of the internal roof structure exposed, the space can respond directly to its surrounding urban context as well as to the geology of the ridge. Wood is a material that is able to merge seamlessly with stone in order to create harmony between man and nature.



Green roof

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The roofs of the chapel (above the seating) and of the mortuary are planted with various indigenous grasses listed in the planting palette. Conceptually the planted roof allows the structure to merge with the landscape. Viewed from above these roofs soften the impact the structures have on the ridge, but replace the footprint removed from the submersion of the various structures. The earth layers of these green roofs improve insulation of the structures below and also protect the roof structure from water leakage.



Granite Rock

The granite which is excavated from the site in order to submerge the structures is crushed and used as a gravel alternative to cover the waterproofing on exposed flat roof structures. The pitched tower roof of the chapel is packed with roughly cut granite slabs to cover the waterproofing, but also to conceptually fit into the exposed rock of the ridge, becoming an exterior extension of the exposed rock face in the chapel. The packed granite slabs above the mortuary coffin collection area and fridges are seen as extensions of the internal geology of the ridge itself.



Structure

Concrete



One of the main materials used as structural element in all the structures is 25MPa cast in situ concrete. The fin structures span the length of the chapel while supporting its entire roof structure. A similar fin system supports the roof of the mortuary while defining smaller slots in the coffin collection area and mortuary cooling space. A concrete waffle slab system is implemented as roof structure for the crematorium to support the large green roof. The robustness and finish of the concrete elements enhance the spatial experience of the spaces and the changes in volume, and support the conceptual approach and the representation of monumentality.

Granite Rock



Exposed granite rock is used in the chapel, crematorium and bathhouse as an internal wall finish, but more importantly as a structural support for the roof structures and walls to slot into. The concrete fins supporting the chapel roof slot into deeply excavated grooves in the exposed rock, whereas the waffle slab beams of the crematorium are supported by the rock. These beams are laid 1.5 m into the cut rock, allowing for weathering to occur without weakening the structural integrity of the granite and concrete beams.

Structural Glazing



Structural fin glazing is used at the top of the pitched-roof chapel tower to allow natural light to penetrate the space, enabling light to shine directly onto the catafalque and down the granite rock face. The pitch of the chapel roof is at such an angle that light will never directly shine into the eyes of the seated congregation. A structural fin glazing system is also used in the coffin collection and mortuary spaces to admit natural light.

Wall

Concrete

Most of the building's walls consist of thick bluegum-shuttered cast in situ concrete. These walls add to the robustness of the structure and relate directly to the structures in the immediate surroundings – structures such as Ponte City, the old Jewish Synagogue, the concrete Yeoville water tower and the overpass system along Joe Slovo Drive.

Granite

The exposed natural granite of the ridge is used as internal walls for the crematorium, chapel and mortuary bathhouse. These walls are conceptually used to indicate spaces where interaction between the mourners and the body of the deceased takes place. These exposed walls also allow the man-made structure to become dependent on the natural ridge, so that the space resembles a cave or tunnel like space submerged within the ridge, making reference to the mining history of Johannesburg.

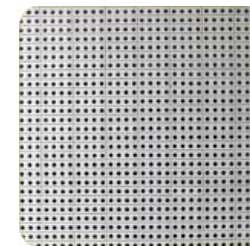
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Glazing

Structural fin glazing is used on the southern facades of the chapel and mortuary bathhouse. These glazed panels fit in between concrete fins which prevent direct sunlight from entering the spaces. The reasoning for opening the southern façade of these structures is to allow the user to view the urban landscape as well as the mining landscape in the distance. After having followed the route from structure to structure, the user is finally rewarded with an unobstructed view towards the city.

Brick

Structural fin glazing is used on the southern facades of the chapel and mortuary bathhouse. These glazed panels fit in between concrete fins which prevent direct sunlight from entering the spaces. The reasoning for opening the southern façade of these structures is to allow the user to view the urban landscape as well as the mining landscape in the distance. After having followed the route from structure to structure, the user is finally rewarded with an unobstructed view towards the city.





Floor

Timber

Cordwood floors are installed in the office spaces of the mortuary and the park, as well as in the prayer area of the chapel and viewing room within the crematorium. The wood used for the floors is recycled from bluegum trees on site, which have been removed as part of the rehabilitation process of the ridge. The use of cordwood was investigated by the author while visiting the Coromandel Manor Estate by architect Marco Zanuso. In the Coromandel house cordwood was used between the internal fireplace and the “stoep” area overlooking the valley. This use of a natural material in an alternative manner was extremely interesting and allowed for the space to be experienced differently from the rest of the wood-floored spaces in the house.

Resin finish

Due to hygiene requirements, the coffin collection area, mortuary and crematorium require a floor finish that is easily washed and sterilised. By finishing the floor surface and skirting with white polished resin, these requirements are met. The choice of colour aids in making areas that are dirty visible, thus making the cleaning process easier. The floor structure slopes to an enclosed drainage system which drains into the effluence tanks in the service space, allowing for UV treatment to take place later before the water is stored in the irrigation reservoir.

Power floated Concrete screed

Polished power-floated concrete screed floors are used in the passageway between the mortuary and the offices, as well as in the mortuary bathhouse. This material is used as a transition material between the hygiene-specific mortuary and the offices. Due to its relatively low maintenance it is also used for spaces with heavy traffic.

Granite tiles

Granite tiles are used in conjunction with porous coloured asphalt as floor material for the routes throughout the site. This material allows for water to drain freely into gutters, from where it is then pumped into the subterranean water reservoir. The floor surface of the chapel is covered in granite tiles which respond to the geology that has been removed in the construction of the chapel. Granite rock tiles are also used as surface material for the courtyard space at the entrance to the park.



fig 11.1. Photograph of Granite sample excavated from site. (by Author, 2015)



fig 11.2. Photograph of Granite sample excavated from site. (by Author, 2015)



fig 11.3. Photograph of Granite sample excavated from site. (by Author, 2015)

SANS 10400 Requirements

SANS 10400 was consulted at the beginning stages of design in order to create a more functional and technical guideline for design. Research undertaken of various sections within the SANS document are discussed below. This research has become a foundation for the technification process of the project.

PART A

Table 1: Building classification

A4 – Worship:

Occupancy where persons assemble for the purpose of worshipping

Table 2: Occupancy Planning

Number of fixed seats or 1 person per m² if there are no fixed seats

Estimated number of users: +100

Part O

Table 2 – Air requirements for different types of occupancies

Public Halls:

Churches

Air changes per hour : 10

L/s per Person : 7.5Ls

7.5Ls x 100 = 750Ls for Chapel

Part P

Table 4 and 6: Provision of sanitary fixtures for personnel

Required		Provided
Male:		
3WC Pans	-	4 WC Pans
5 Urinals	-	4 WC Urinals
4 Wash hand basins	-	8 Wash hand basins
Female:		
7 WC Pans	-	8 WC Pans
4 Wash hand basins	-	10 Wash hand basins
Disabled:		
2 WC Pans	-	2 WC Pans
2 Wash hand basins	-	2 Wash hand basins



Bio Cremation Process

Bio cremation was developed as an alternative method of cremation that, instead of destroying or capturing harmful emissions, seeks to prevent the creation of emissions altogether. It was first developed in 1998 at the University of Florida and was known as the first “institutional” human system. The world’s first bio cremation centre was established in 2009 in St Pete, Florida, in the United States.

The process, otherwise known as Alkaline Hydrolysis, uses a mixture of water (H₂O) and Potassium Hydroxide (KOH) to break down (hydrolyse) organic human tissue. 400 Litres of water is mixed into a concentrated solution of KOH which is determined by the weight of the body. The bio cremator itself is used to weigh the body as well as mix the correct amounts of H₂O and KOH. After the body has been weighed and the H₂O and KOH have been mixed, the remains are heated to 140°C. This process of heating is achieved through a strong exothermic reaction between H₂O and KOH. Similar to traditional flame cremation, bio cremation reduces the body to its basic elements of bone fragments and ash. After the process, which takes between 2-3 hours (similar to flame cremation) has been completed, a sterile liquid is released which can be discarded in a normal drainage system or put through a UV filtration process which kills off any excess bacteria not destroyed by KOH. This process, which is closer to the natural decomposition of the body, is used to accelerate natural decomposition.

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In traditional earth burial (B2B), the body on average takes between 5 to 20 years to decompose. The speed of this natural process is determined by the manner in which the body was prepared, the material type of the casket, the type of vault in which the body is buried, and the soil type. Just as KOH is the main catalyst for the decomposition of the body in bio cremation, soil and microorganisms or O₂ are the catalysts for earth decomposition.

The process of bio cremation retains 20-30% more bone fragments, uses less energy, is recyclable, creates neither air nor mercury emissions, and the need for surgery to remove medical implants that may be recycled, is diminished.

System Design Focus – Water

Due to the nature of the programme, the geological location of the site and its topographic layout, it naturally led the focus to the systematic design of water as a theme. The intention of this system has two main components:

- 1 - Site rehabilitation and irrigation
- 2 - Minimised water requirements from Rand Water

By being able to collect surface runoff from large areas of the natural ridge as well as paved surfaces and roofs, it is possible to treat and recycle water, which can then be fed back into the system as required in the proposed structure.

The sterile liquid released by the cremation process would strictly only be used for irrigation of the natural ridge landscape, and would undergo an additional UV filtration process as a precautionary measure against harmful bacteria.

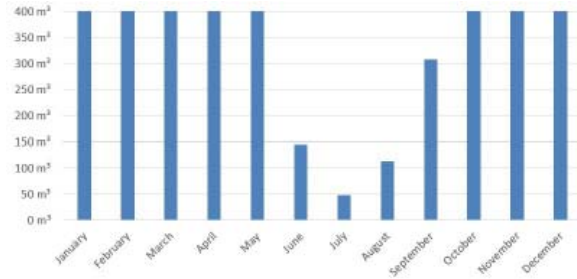
Thus, according to the proposed strategy, the structure should be able to cremate a certain number of bodies. By using harvested rainwater, it would also be able to provide ample water for sanitation as well as drinking fountains along the route.

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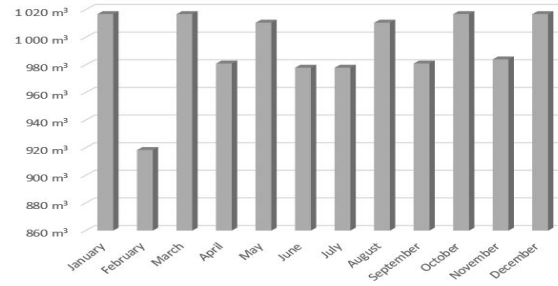
By calculating the building's water budget according to the principles and guidelines set out by the Council for Scientific and Industrial Research South Africa (CSIR), it is made clear how the water strategy of the structure and the entire site as park could be optimised.

By combining the domestic demand of the structure with that of the requirements of the site along with climate data, one is able to calculate and explore water storage and recycling options.

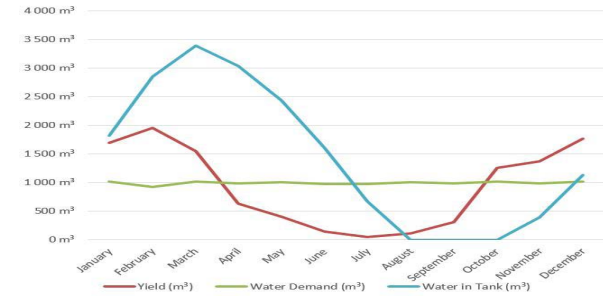
Average Monthly Precipitation (mm)



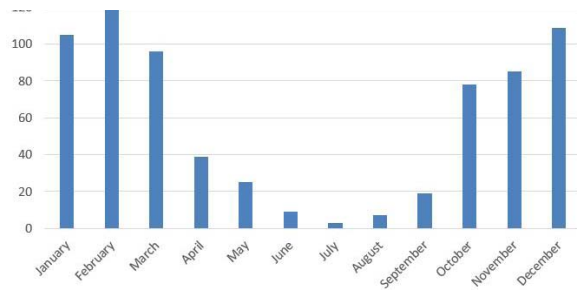
Cremation Total Demand (m³)



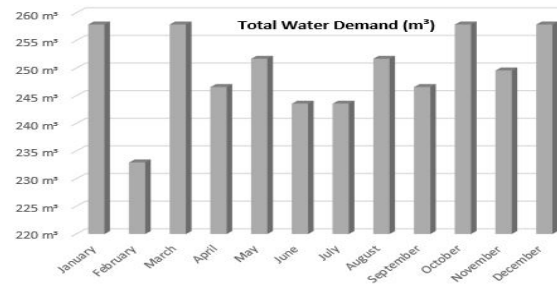
Cremation Water Tank Size Calculator (m³)



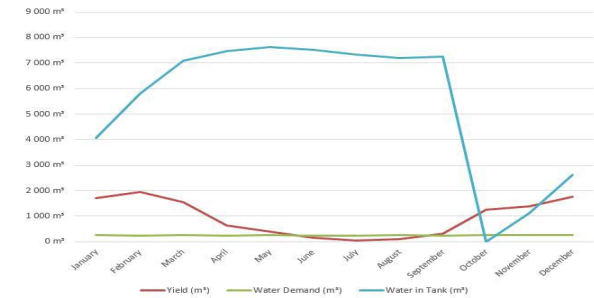
Average Monthly Yield (m³)



User Total Demand (m³)



User Water Tank Size Calculator (m³)



Cremation - Domestic Demand (m³)

	Planting Area (m ²)	Depth per week (m)	Depth per month (m)	IRRIGATION DEMAND (m ³)
January	70 m ²	0.040 m	0.177 m	12 m ³
February	70 m ²	0.040 m	0.160 m	11 m ³
March	70 m ²	0.040 m	0.177 m	12 m ³
April	70 m ²	0.030 m	0.129 m	9 m ³
May	70 m ²	0.020 m	0.089 m	6 m ³
June	70 m ²	0.020 m	0.086 m	6 m ³
July	70 m ²	0.020 m	0.086 m	6 m ³
August	70 m ²	0.020 m	0.089 m	6 m ³
September	70 m ²	0.030 m	0.129 m	9 m ³
October	70 m ²	0.040 m	0.177 m	12 m ³
November	70 m ²	0.040 m	0.171 m	12 m ³
December	70 m ²	0.040 m	0.177 m	12 m ³
YEAR	70 m²	0.032 m	1.646 m	115 m³
	<i>(Average)</i>	<i>(Average)</i>	<i>(Total)</i>	<i>(Total)</i>

Cremation - Total Demand (m³)

	IRRIGATION DEMAND (m ³)	DOMESTIC DEMAND (m ³)	TOTAL WATER DEMAND (m ³)
January	12 m ³	1 004 m ³	1 017 m ³
February	11 m ³	907 m ³	918 m ³
March	12 m ³	1 004 m ³	1 017 m ³
April	9 m ³	972 m ³	981 m ³
May	6 m ³	1 004 m ³	1 011 m ³
June	6 m ³	972 m ³	978 m ³
July	6 m ³	972 m ³	978 m ³
August	6 m ³	1 004 m ³	1 011 m ³
September	9 m ³	972 m ³	981 m ³
October	12 m ³	1 004 m ³	1 017 m ³
November	12 m ³	972 m ³	984 m ³
December	12 m ³	1 004 m ³	1 017 m ³
YEAR	115 m³	11 794 m³	11 909 m³
	<i>(Total)</i>	<i>(Total)</i>	<i>(TOTAL)</i>

Cremation - Yield (m³)

$$\text{Yield (m}^3\text{)} = P \times A \times C \quad (\text{Where } P = \text{precipitation (m), } A = \text{area (m}^2\text{), and } C = \text{run-off coefficient})$$

Area of Catchment: (Per surface)	Area (m ²)	Run-off Coefficient
Roofing	690.00 m ²	0.9
Paving	2 403.00 m ²	0.8
Veldgrass	28 234.00 m ²	0.4
Lawn	0.00 m ²	0.4
Planting	70.00 m ²	0.3
Gravel	1 671.00 m ²	0.7
Grey water	1 141.50 m ²	1
TOTAL:	34 209.50 m²	0.47

MONTH	Precipitation (mm)	Area	Run-off Coefficient	Yield P(m) x A(m ²) x C
January	105 mm	34 210 m ²	0.47	1 698 m ³
February	121 mm	34 210 m ²	0.47	1 956 m ³
March	96 mm	34 210 m ²	0.47	1 552 m ³
April	39 mm	34 210 m ²	0.47	631 m ³
May	25 mm	34 210 m ²	0.47	404 m ³
June	9 mm	34 210 m ²	0.47	146 m ³
July	3 mm	34 210 m ²	0.47	49 m ³
August	7 mm	34 210 m ²	0.47	113 m ³
September	19 mm	34 210 m ²	0.47	307 m ³
October	78 mm	34 210 m ²	0.47	1 261 m ³
November	85 mm	34 210 m ²	0.47	1 374 m ³
December	109 mm	34 210 m ²	0.47	1 762 m ³
YEAR	696 mm	34 210 m²	0.47	11 254 m³

User - Domestic Demand (m³)

	Number of Individuals	Water / capita / day (Litres)	Total Water / month (Litres)	DOMESTIC DEMAND (m ³)
January	110	72 l	245 520 l	246 m ³
February	110	72 l	221 760 l	222 m ³
March	110	72 l	245 520 l	246 m ³
April	110	72 l	237 600 l	238 m ³
May	110	72 l	245 520 l	246 m ³
June	110	72 l	237 600 l	238 m ³
July	110	72 l	237 600 l	238 m ³
August	110	72 l	245 520 l	246 m ³
September	110	72 l	237 600 l	238 m ³
October	110	72 l	245 520 l	246 m ³
November	110	72 l	237 600 l	238 m ³
December	110	72 l	245 520 l	246 m ³
YEAR	110	72 l	240 240 l	2 883 m³
	<i>(Average)</i>	<i>(Average)</i>	<i>(Total)</i>	<i>(Total)</i>

User - Total Demand (m³)

	IRRIGATION DEMAND (m ³)	DOMESTIC DEMAND (m ³)	TOTAL WATER DEMAND (m ³)
January	12 m ³	246 m ³	258 m ³
February	11 m ³	222 m ³	233 m ³
March	12 m ³	246 m ³	258 m ³
April	9 m ³	238 m ³	247 m ³
May	6 m ³	246 m ³	252 m ³
June	6 m ³	238 m ³	244 m ³
July	6 m ³	238 m ³	244 m ³
August	6 m ³	246 m ³	252 m ³
September	9 m ³	238 m ³	247 m ³
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December	12 m ³	246 m ³	258 m ³
YEAR	115 m³	2 883 m³	2 998 m³
	<i>(Total)</i>	<i>(Total)</i>	<i>(TOTAL)</i>

User - Yield (m³)

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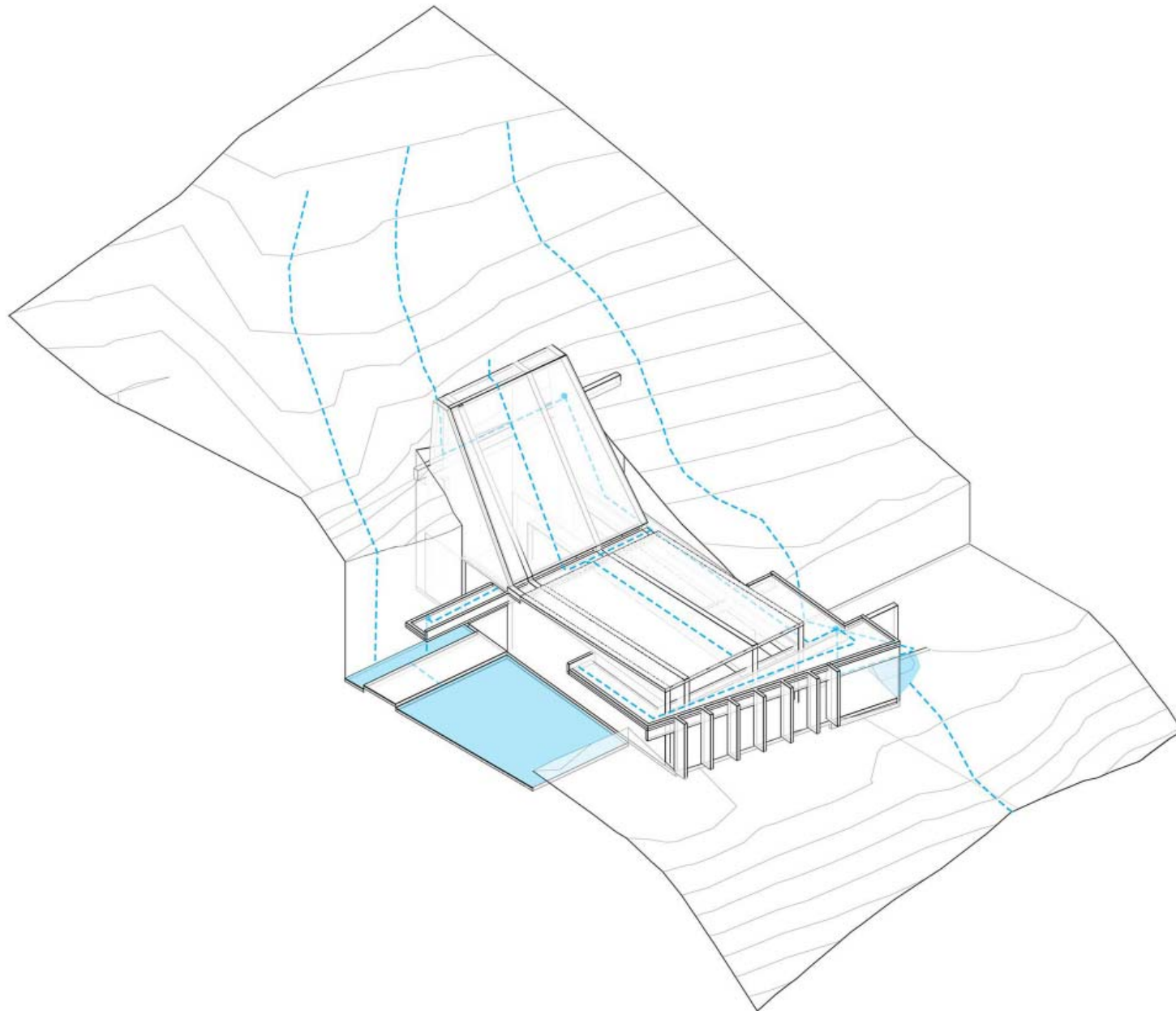
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December	109 mm	34 210 m ²	0.47	1 762 m ³
YEAR	696 mm	34 210 m²	0.47	11 254 m³

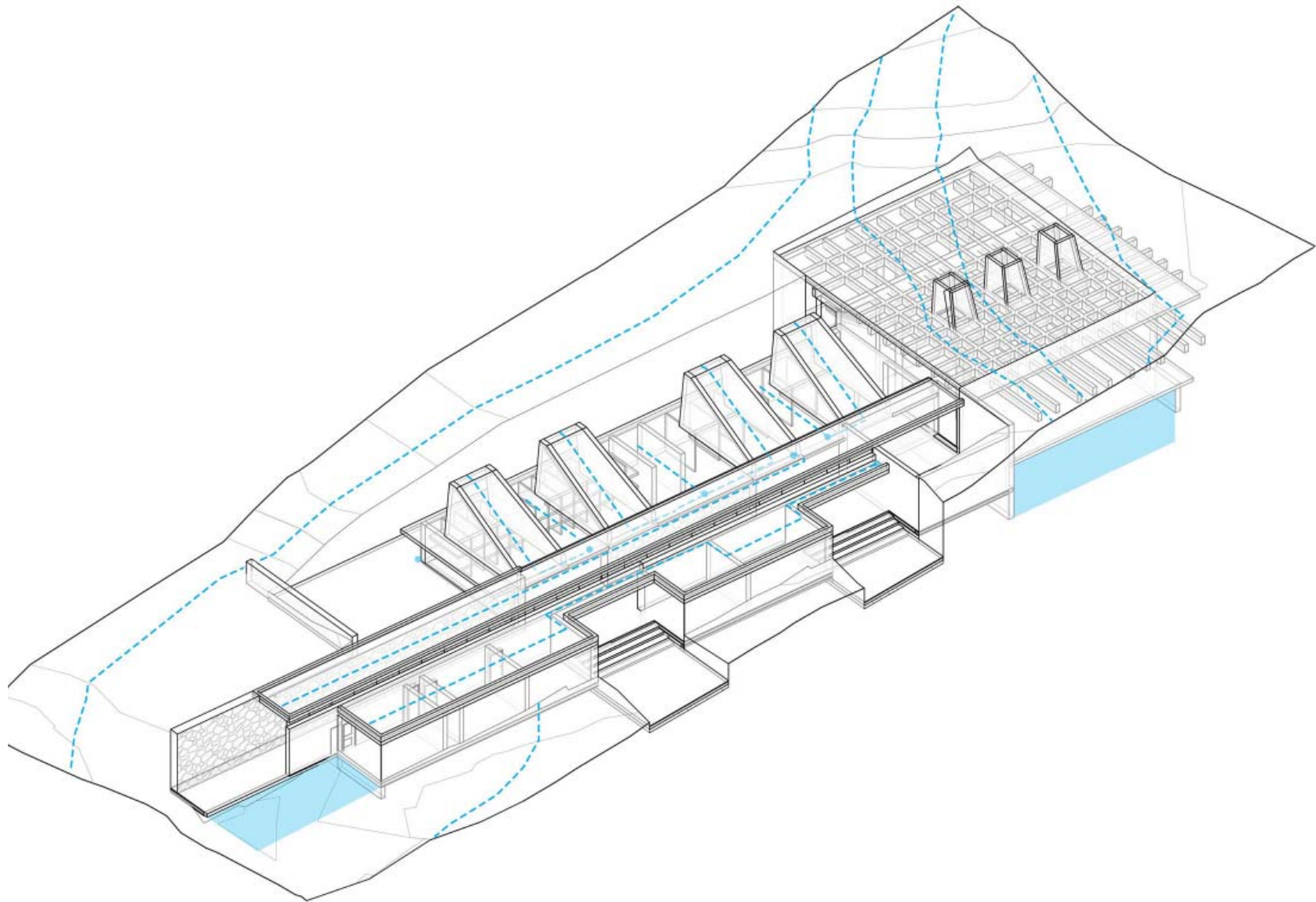
Cremation - Water Budget (m³)

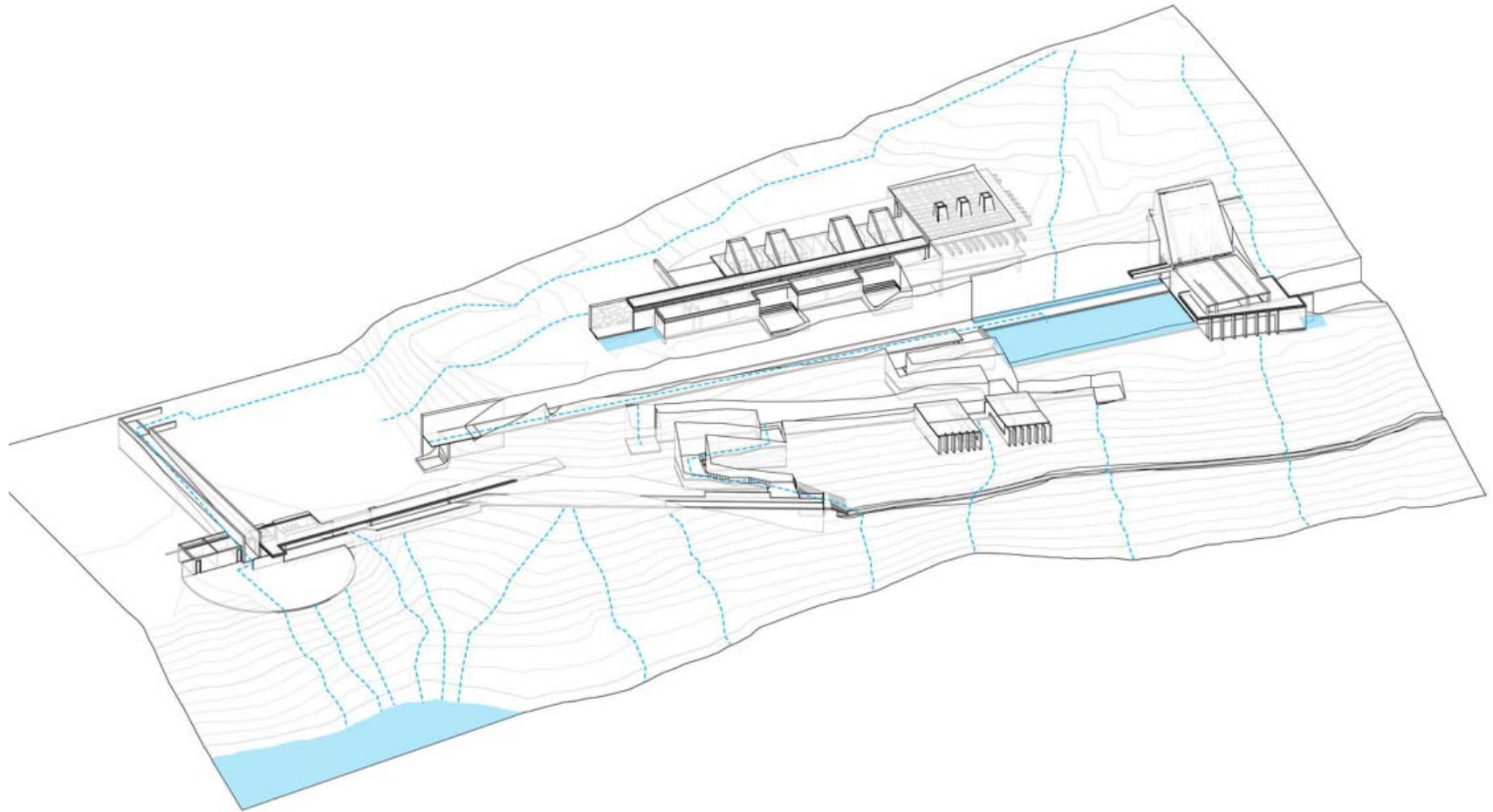
	YIELD from onsite runoff (m ³)	DEMAND total onsite water demand (m ³)	Monthly Balance	Water in Tank/Reservoir (m ³)
January	1 698 m ³	1 017 m ³	681 m ³	1 817 m³
February	1 956 m ³	918 m ³	1 038 m ³	2 855 m³
March	1 552 m ³	1 017 m ³	535 m ³	3 391 m³
April	631 m ³	981 m ³	-350 m ³	3 040 m³
May	404 m ³	1 011 m ³	-606 m ³	2 434 m³
June	146 m ³	978 m ³	-832 m ³	1 601 m³
July	49 m ³	978 m ³	-929 m ³	672 m³
August	113 m ³	1 011 m ³	-897 m ³	0 m³
September	307 m ³	981 m ³	-674 m ³	0 m³
October	1 261 m ³	1 017 m ³	244 m ³	0 m³
November	1 374 m ³	984 m ³	390 m ³	390 m³
December	1 762 m ³	1 017 m ³	746 m ³	1 136 m³
YEAR	23 163 m³	11 909 m³		
	(Total)	(TOTAL)		
Greatest volume of water in tank/reservoir at any time is the minimum capacity of the tank				3 391 m³
Safety Factor:	1	Final Tank/Reservoir Size:	3 391 m³	

User - Water Budget (m³)

	YIELD from onsite runoff (m ³)	DEMAND total onsite water demand (m ³)	Monthly Balance	Water in Tank/Reservoir (m ³)
January	1 698 m ³	258 m ³	1 440 m ³	4 069 m³
February	1 956 m ³	233 m ³	1 724 m ³	5 793 m³
March	1 552 m ³	258 m ³	1 294 m ³	7 087 m³
April	631 m ³	247 m ³	384 m ³	7 471 m³
May	404 m ³	252 m ³	153 m ³	7 623 m³
June	146 m ³	244 m ³	-98 m ³	7 525 m³
July	49 m ³	244 m ³	-195 m ³	7 330 m³
August	113 m ³	252 m ³	-139 m ³	7 192 m³
September	307 m ³	247 m ³	61 m ³	7 252 m³
October	1 261 m ³	258 m ³	1 003 m ³	0 m³
November	1 374 m ³	250 m ³	1 125 m ³	1 125 m³
December	1 762 m ³	258 m ³	1 505 m ³	2 629 m³
YEAR	14 252 m³	2 998 m³		
	(Total)	(TOTAL)		
Greatest volume of water in tank/reservoir at any time is the minimum capacity of the tank				7 623 m³
Safety Factor:	1	Final Tank/Reservoir Size:	7 623 m³	

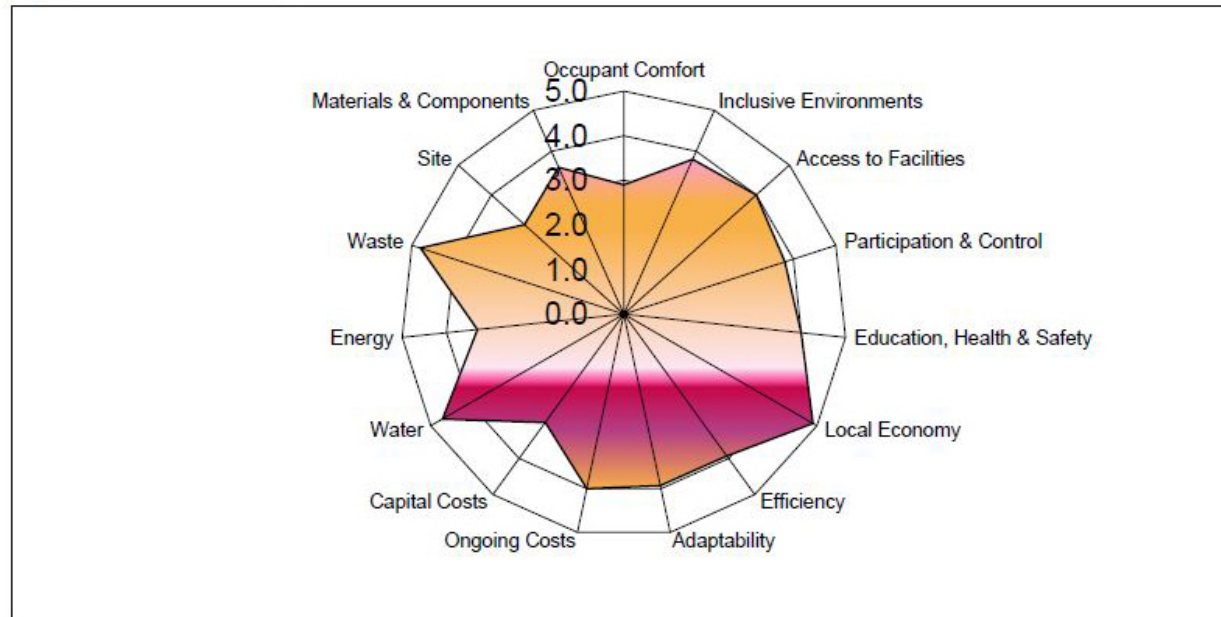






Sustainable Building Assessment Tool (SBAT- P)

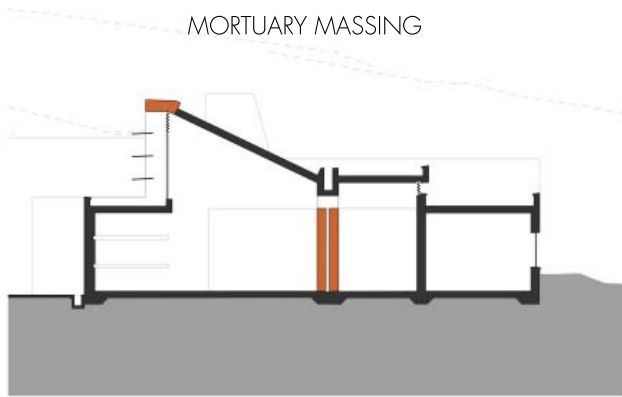
PROJECT		ASSESSMENT	
Project title:	Death of the Cemetery	Date:	10/8/2013
Location:	Johannesburg, Obersevaty Ridge	Undertaken by:	Erwin Struwig
Building type:	Crematorium, Cemetery, Park	Company / organisation:	UP Boukundie
Internal area (m2):	2672	Telephone:	Fax:
Number of users:	110	Email:	



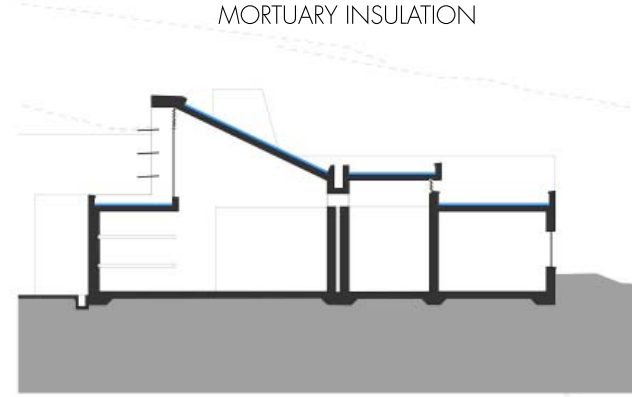
Social	3.7	Economic	4.0	Environmental	3.9
Overall	3.8	Classification			

MORTUARY ENVIRONMENTAL DIAGRAM

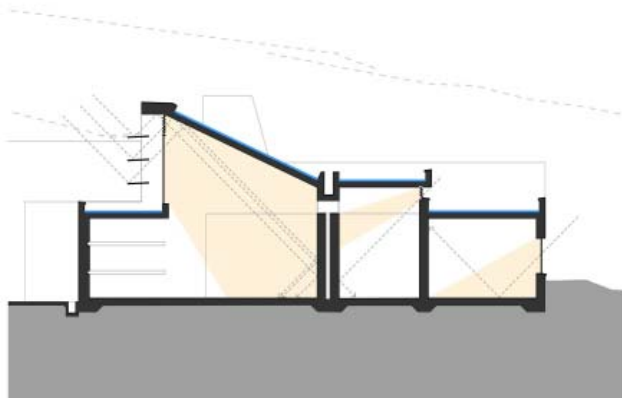
MORTUARY MASSING



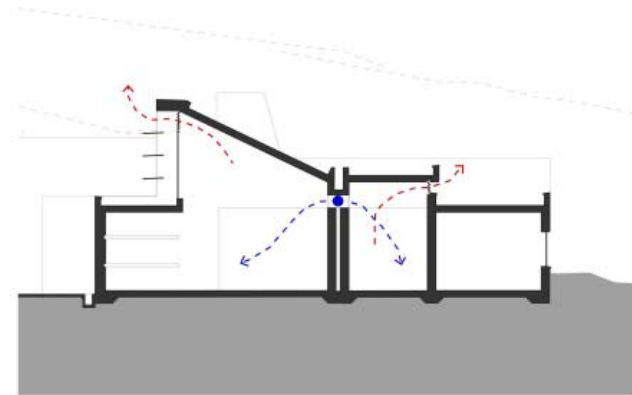
MORTUARY INSULATION



MORTUARY LIGHT

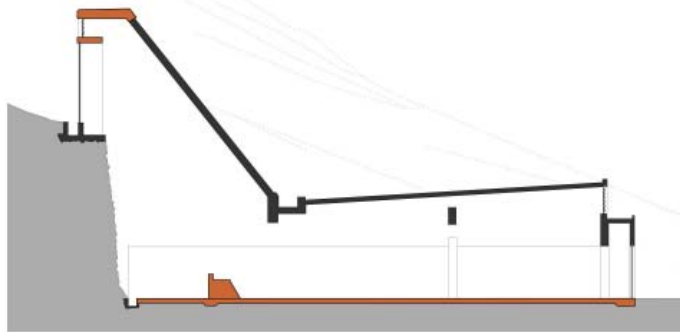


MORTUARY VENTILATION



CHAPEL ENVIRONMENTAL DIAGRAM

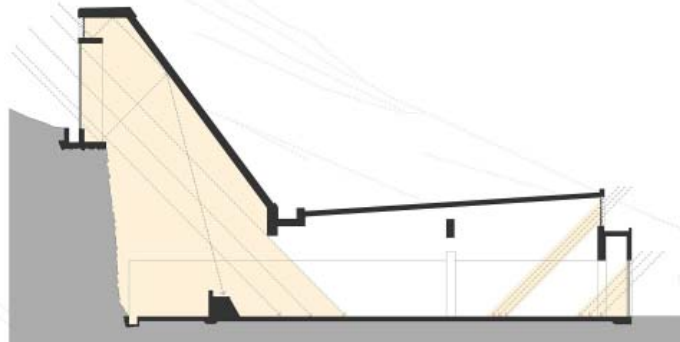
CHAPEL MASSING



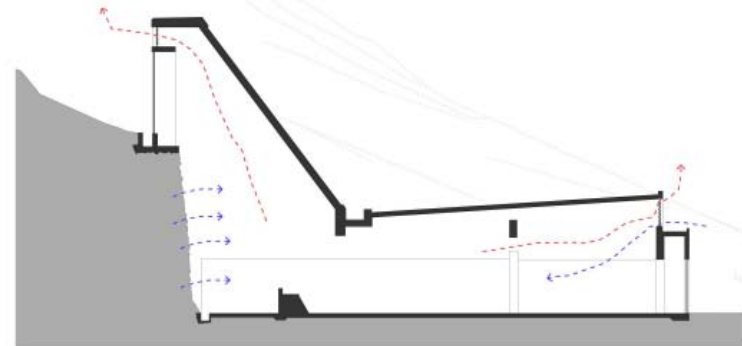
MORTUARY INSULATION



CHAPEL LIGHT



CHAPEL VENTILATION



System Design Focus – Water

The following section deals with the technical process of the design. It illustrates a series of development sketches. The process is an ongoing one, therefore none of the following diagrams or drawings are final and should be seen as iterations working toward a final set of drawings that will be presented in the examination.

These drawings also aid in creating a clearer understanding of the route towards the final drawings.

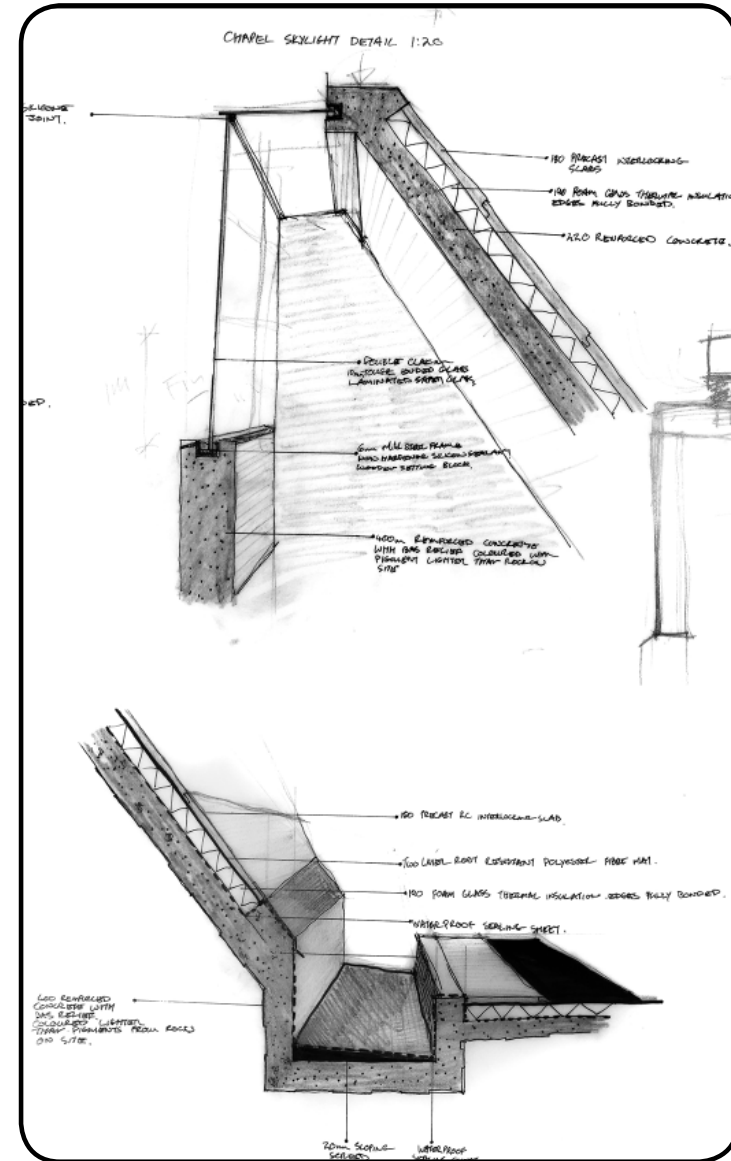


fig 11.4. Sketches illustrating detail iteration of chapel skylight and gutter system NTS. [by Author, 2015]

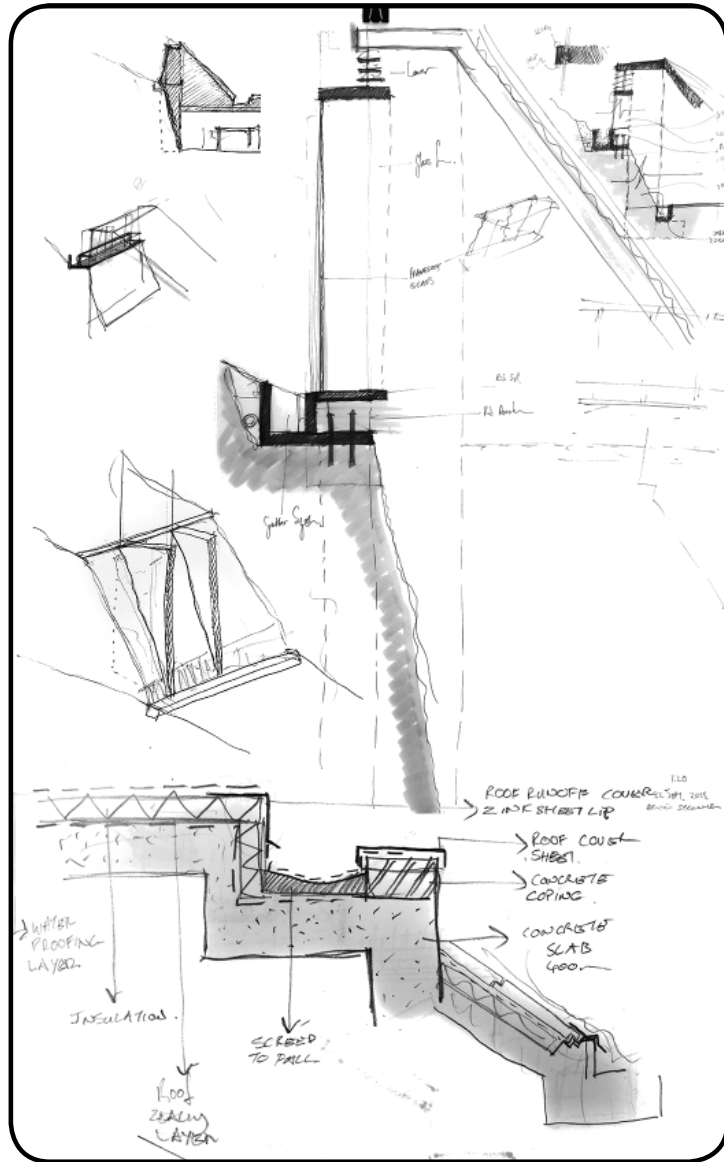


fig 11.5. Sketches illustrating detail iteration of chapel skylight and gutter system NTS. (by Author, 2015)

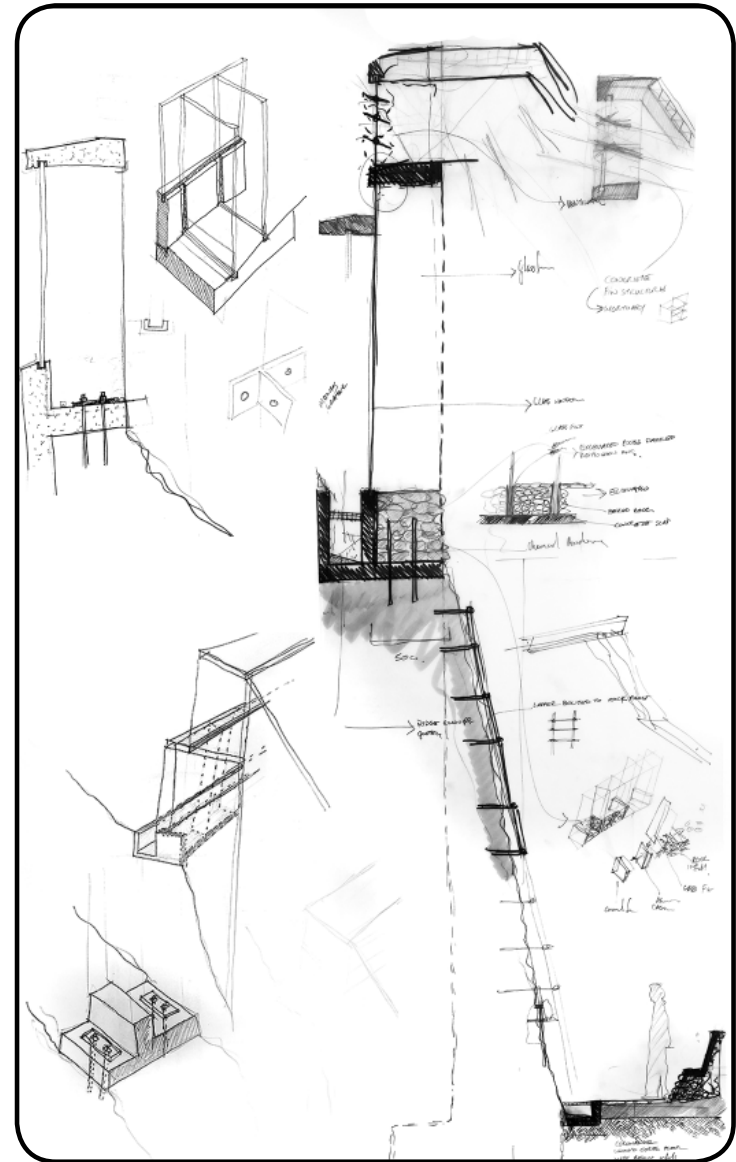
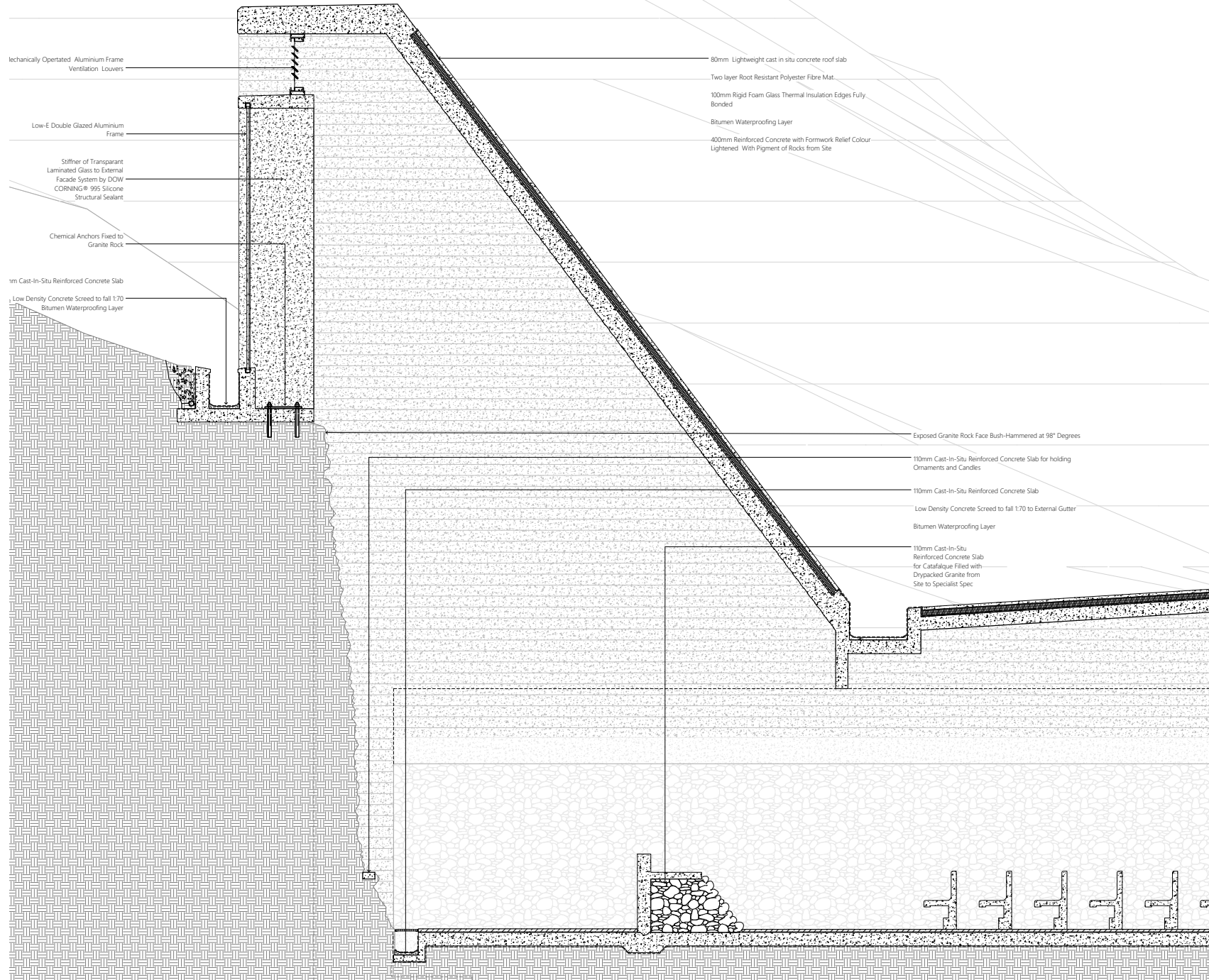
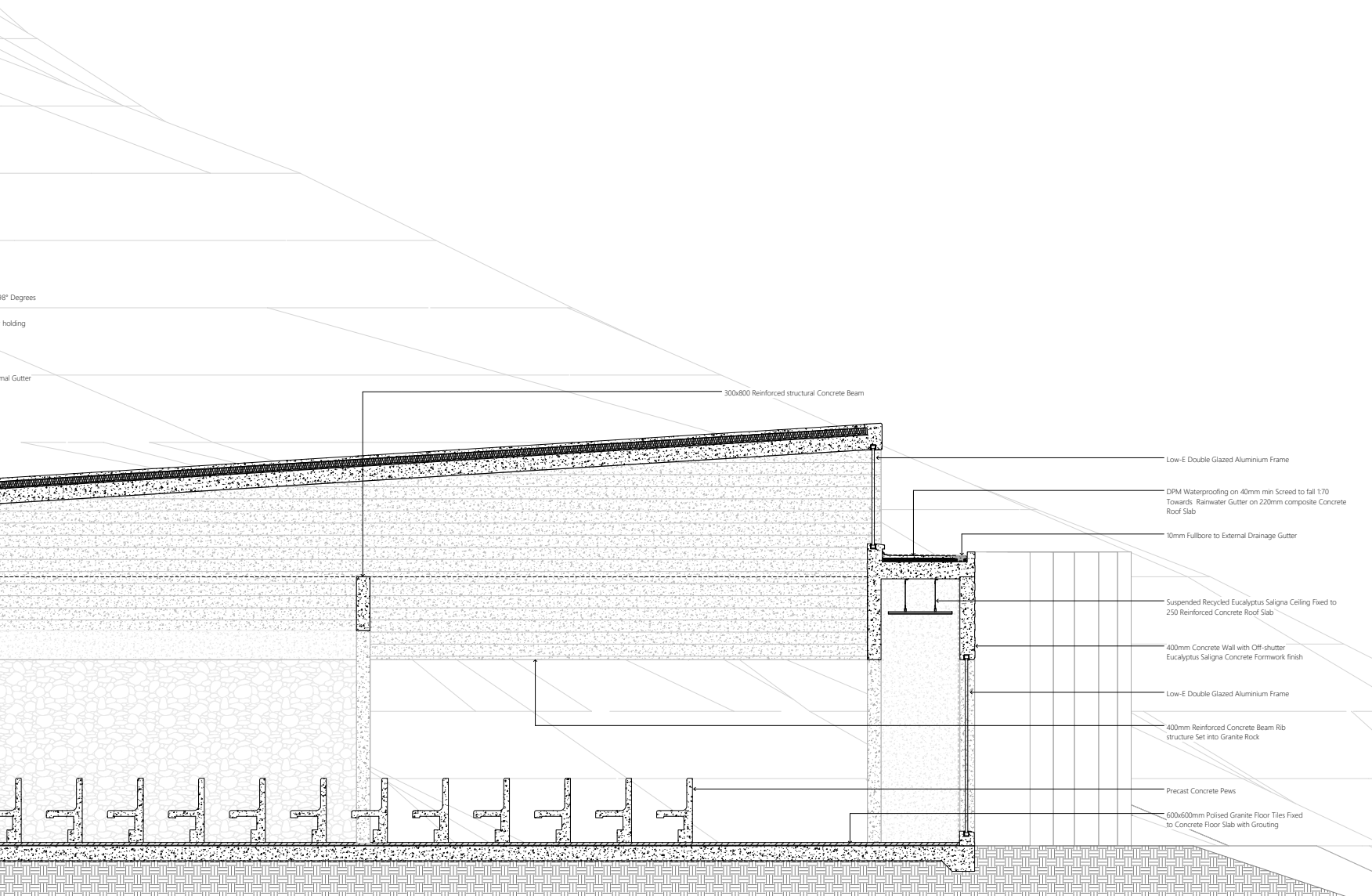


fig 11.6. Sketches illustrating detail iteration of chapel skylight, fixing to rock, and structural glazing method NTS. (by Author, 2015)

Chapel Section - Development





18° Degrees
holding
External Gutter

300x800 Reinforced structural Concrete Beam

- Low-E Double Glazed Aluminium Frame
- DPM Waterproofing on 40mm min Screed to fall 1:70 Towards Rainwater Gutter on 220mm composite Concrete Roof Slab
- 10mm Fullbore to External Drainage Gutter
- Suspended Recycled Eucalyptus Saligna Ceiling Fixed to 250 Reinforced Concrete Roof Slab
- 400mm Concrete Wall with Off-shutter Eucalyptus Saligna Concrete Formwork finish
- Low-E Double Glazed Aluminium Frame
- 400mm Reinforced Concrete Beam Rib structure Set into Granite Rock
- Precast Concrete Pews
- 600x600mm Polished Granite Floor Tiles Fixed to Concrete Floor Slab with Grouting

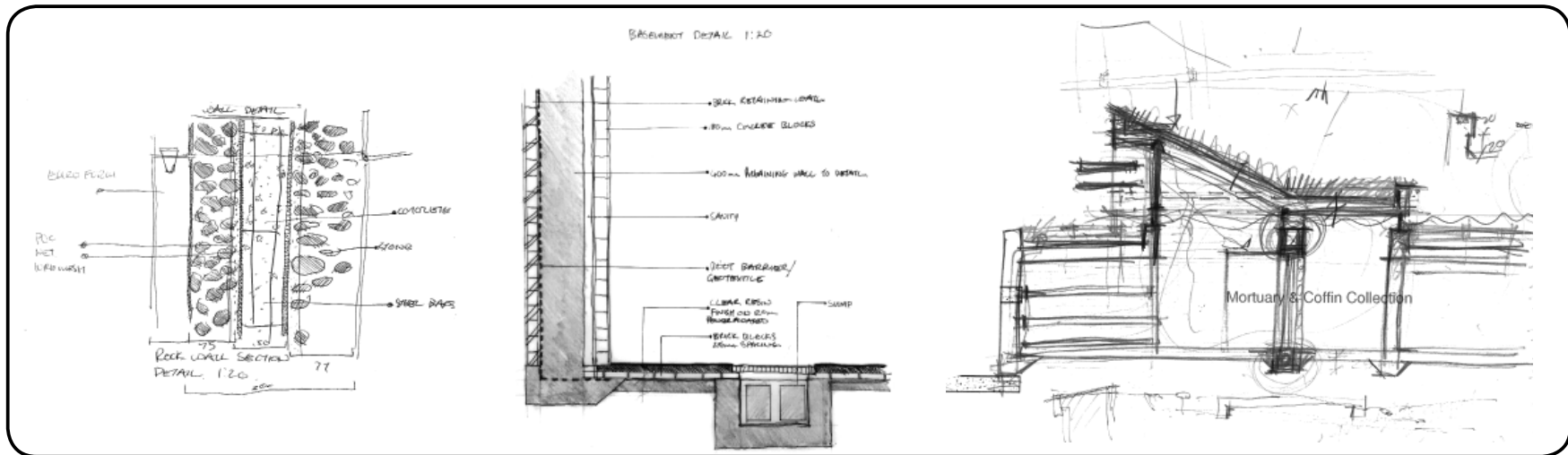
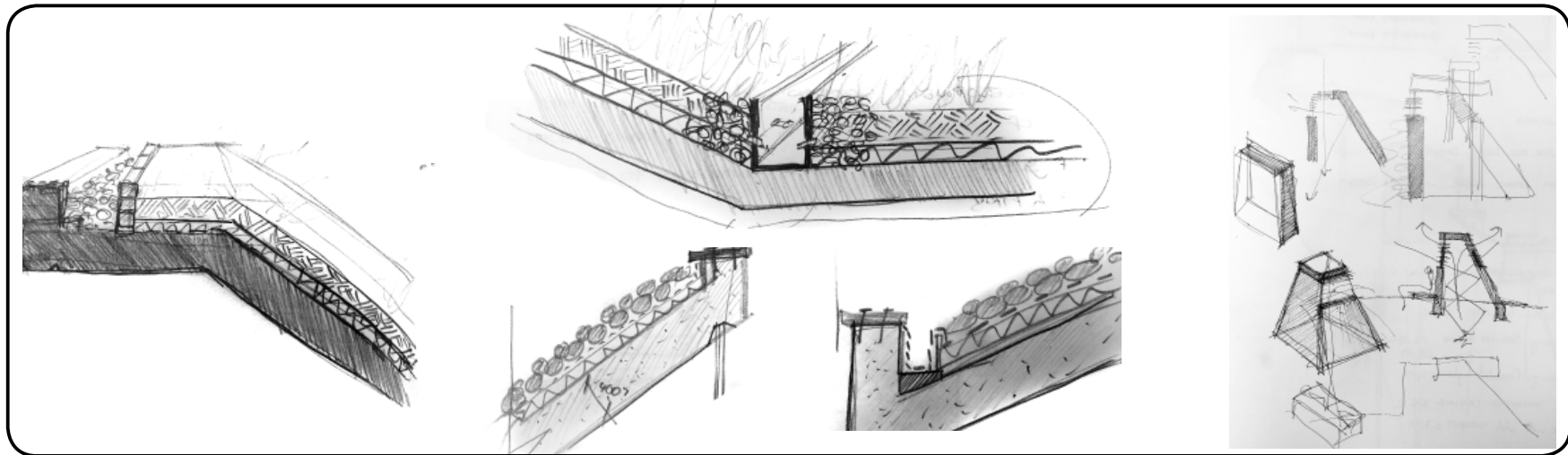
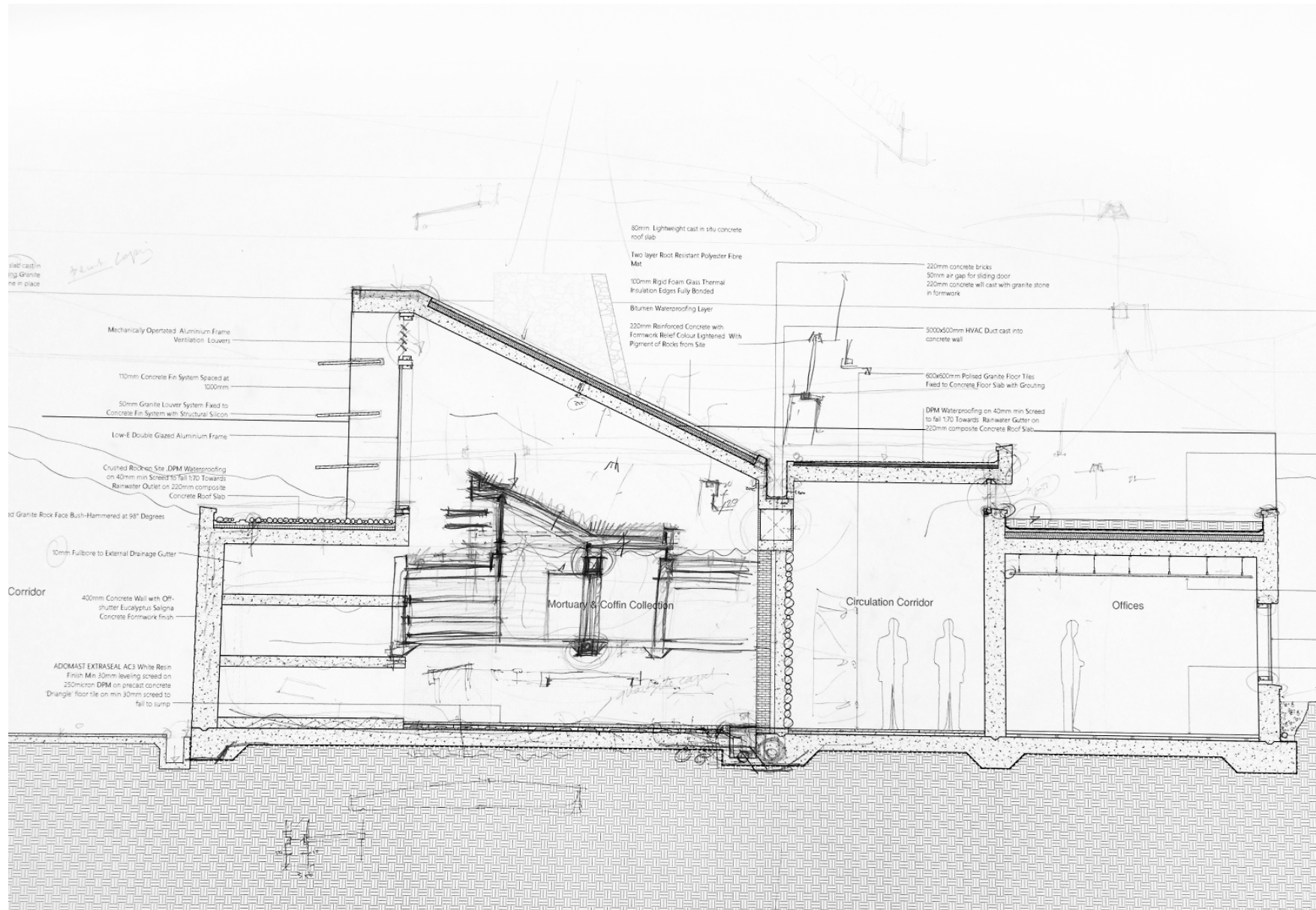
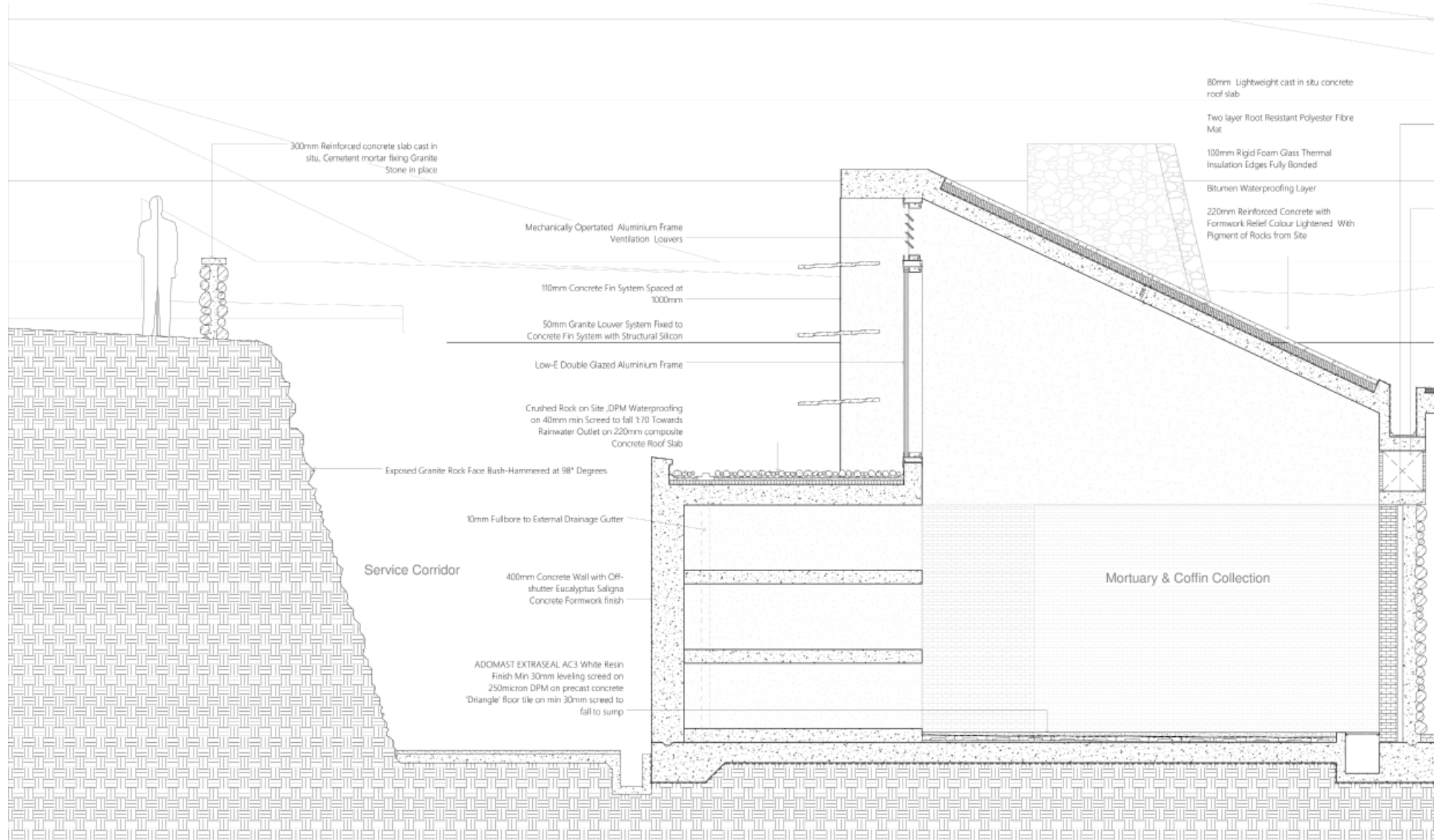
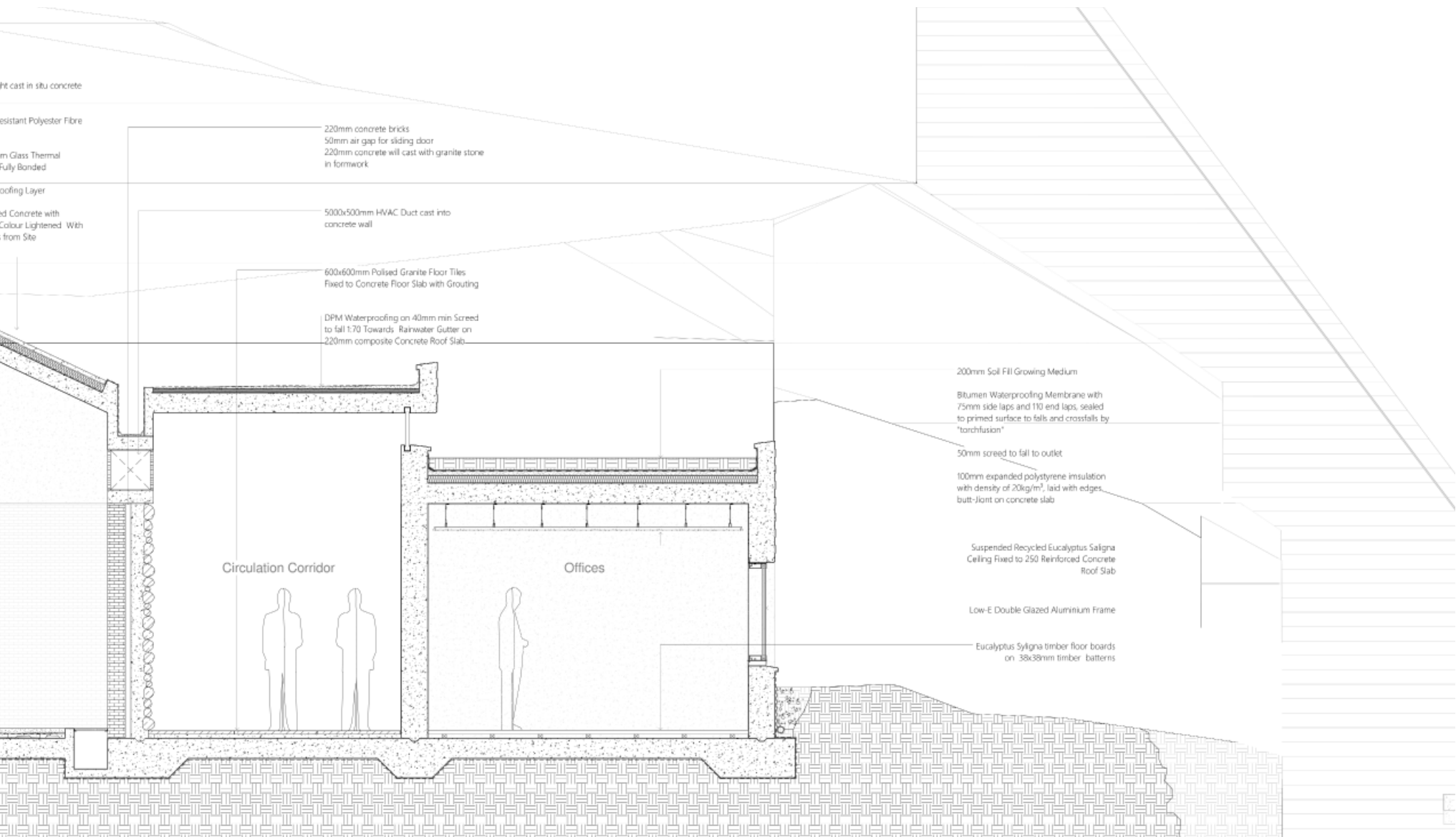


fig 11.7. Sketches illustrating the iterative process of Mortuary section development. (by Author, 2015)



Mortuary Section - Development





Pt cast in situ concrete

Resistant Polyester Fibre

mm Glass Thermal Fully Bonded

Roofing Layer

Concrete with Colour Lightened With from Site

220mm concrete bricks
50mm air gap for sliding door
220mm concrete will cast with granite stone in formwork

5000x500mm HVAC Duct cast into concrete wall

600x600mm Polished Granite Floor Tiles Fixed to Concrete Floor Slab with Grouting

DPM Waterproofing on 40mm min Screed to fall 1:70 Towards Rainwater Gutter on 220mm composite Concrete Roof Slab

Circulation Corridor

Offices

200mm Soil Fill Growing Medium

Bitumen Waterproofing Membrane with 75mm side laps and 110 end laps, sealed to primed surface to falls and crossfalls by "torchfusion"

50mm screed to fall to outlet

100mm expanded polystyrene insulation with density of 20kg/m³, laid with edges butt-joint on concrete slab

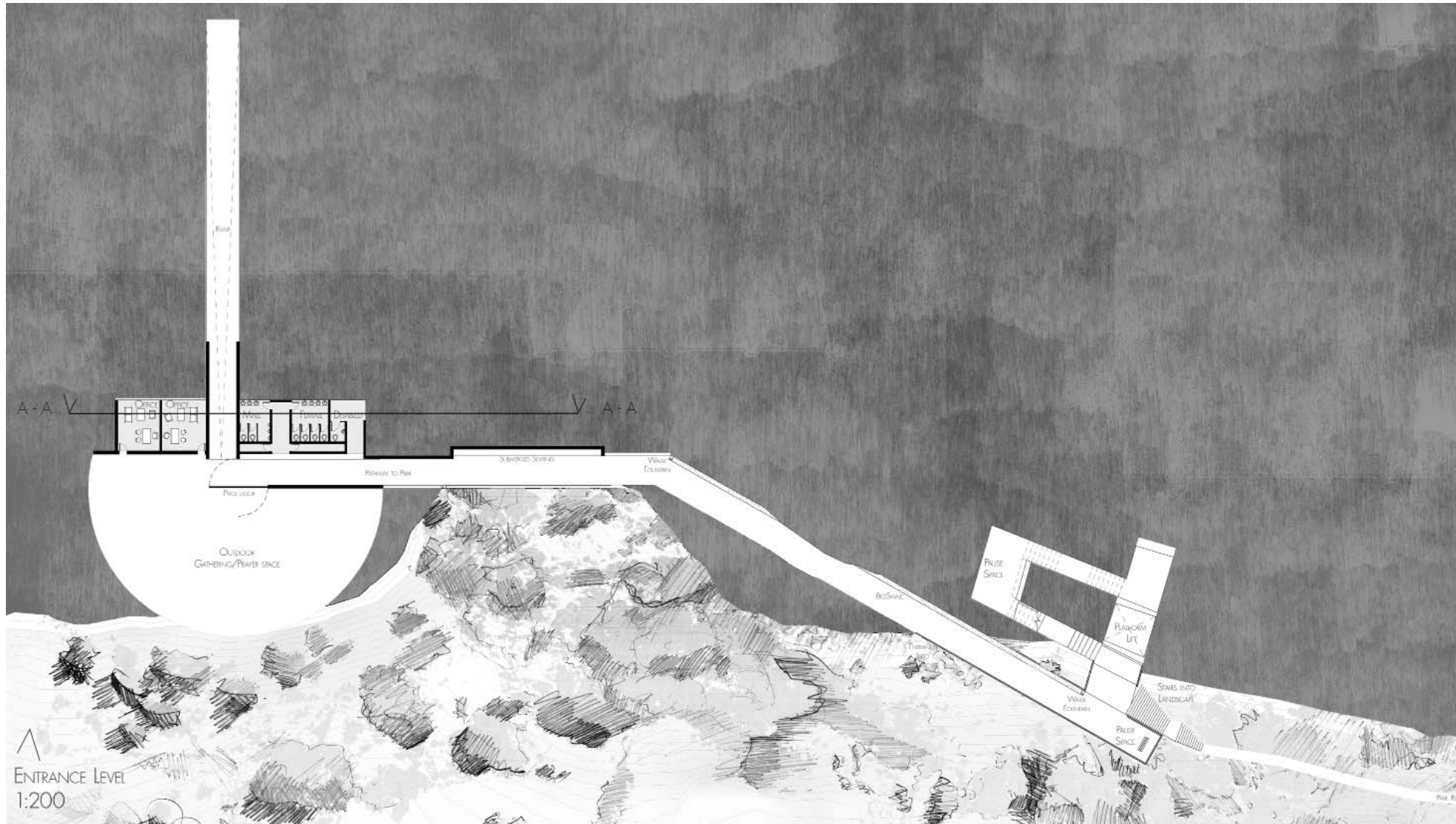
Suspended Recycled Eucalyptus Saligna Ceiling Fixed to 250 Reinforced Concrete Roof Slab

Low-E Double Glazed Aluminium Frame

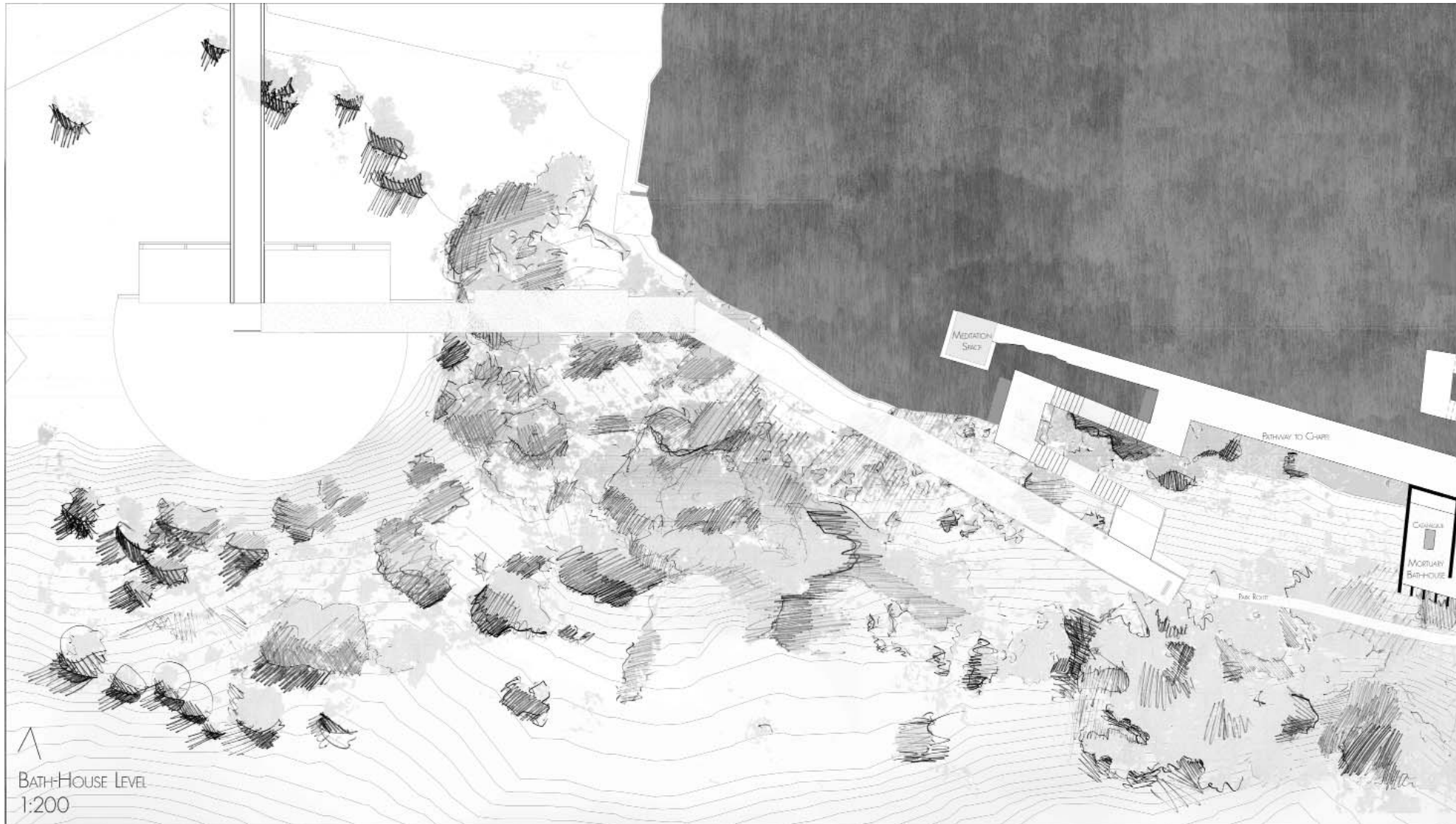
Eucalyptus Syligna timber floor boards on 38x38mm timber battens

Final Technical Drawings

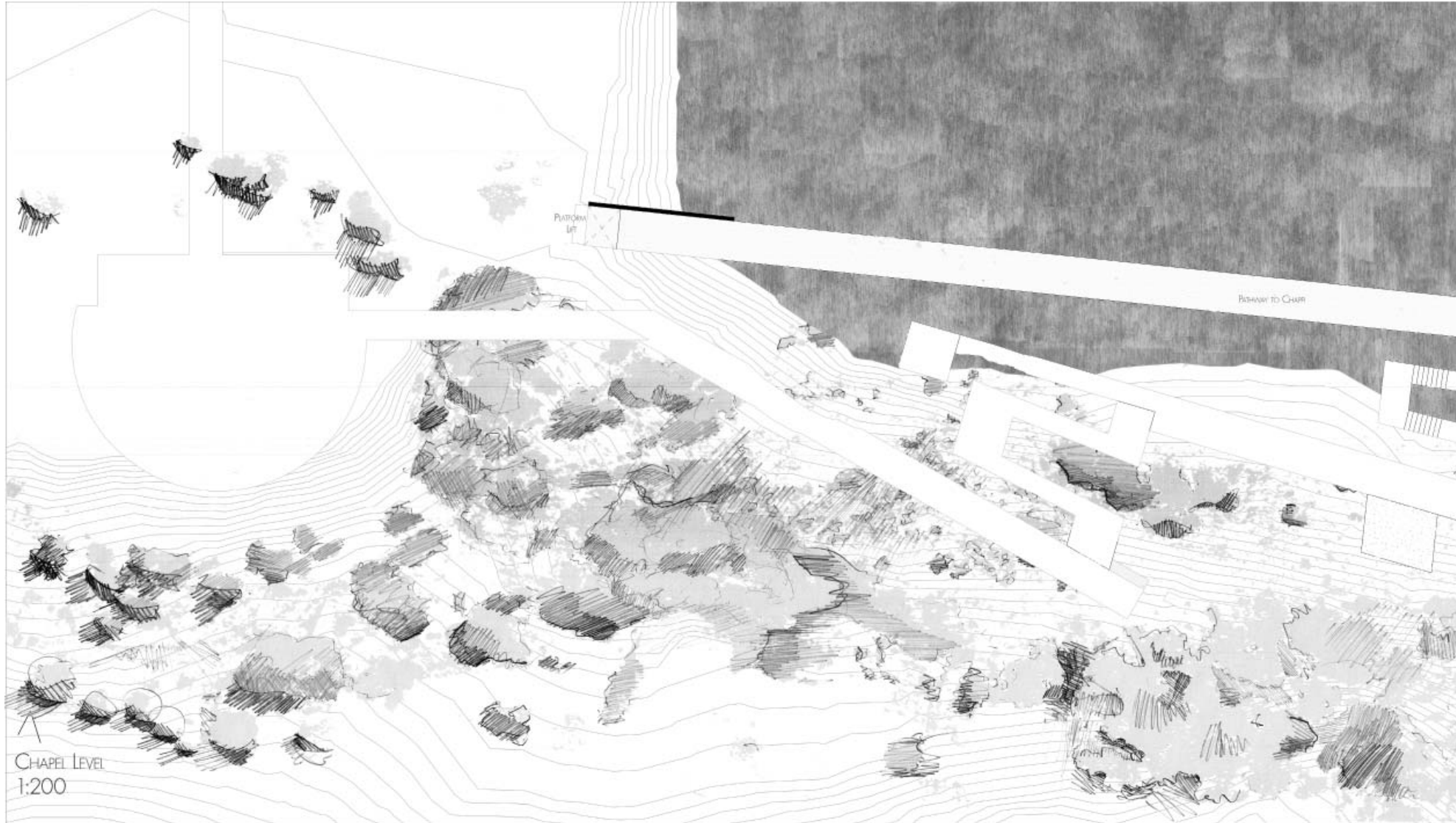
- 298



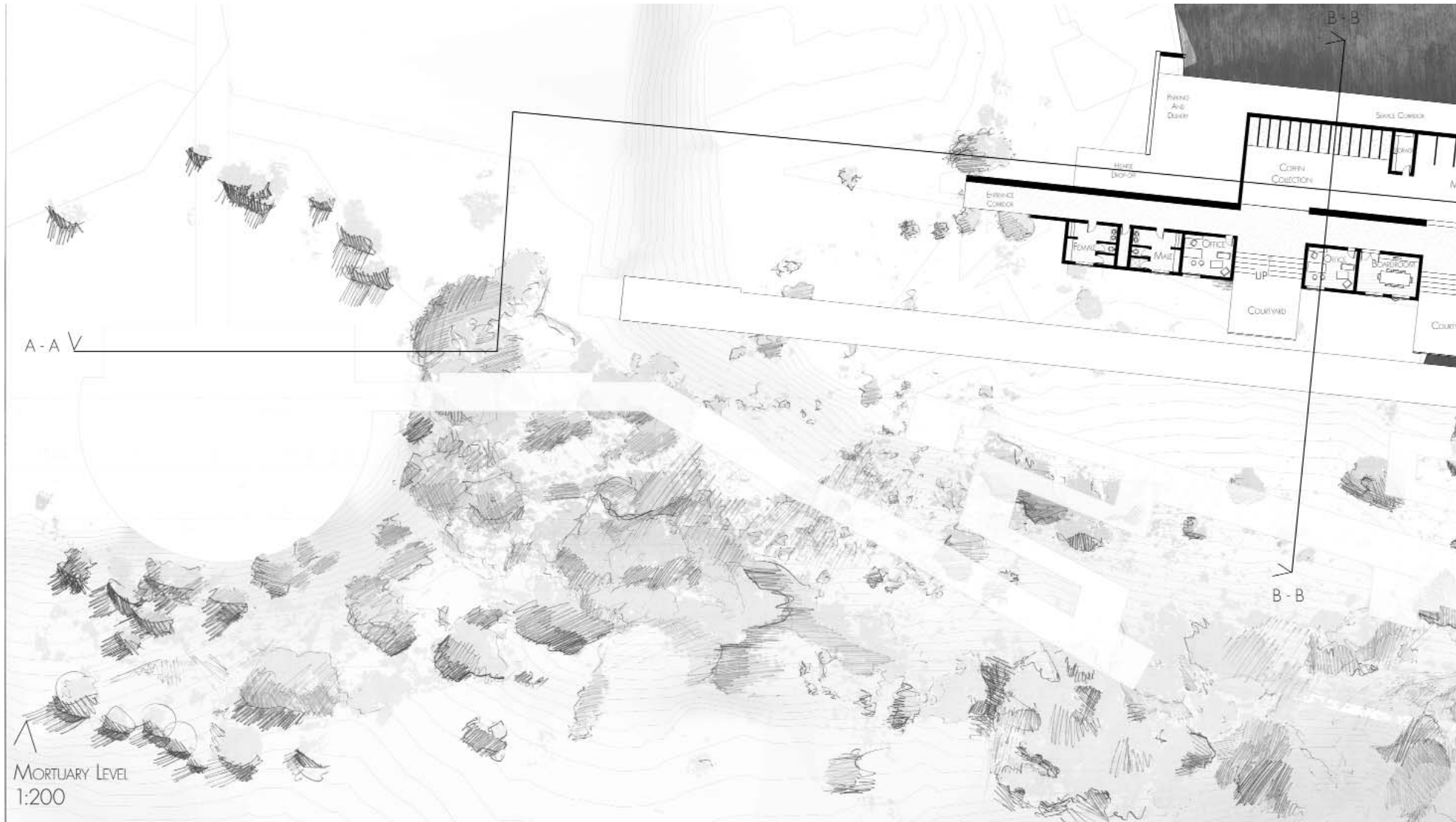


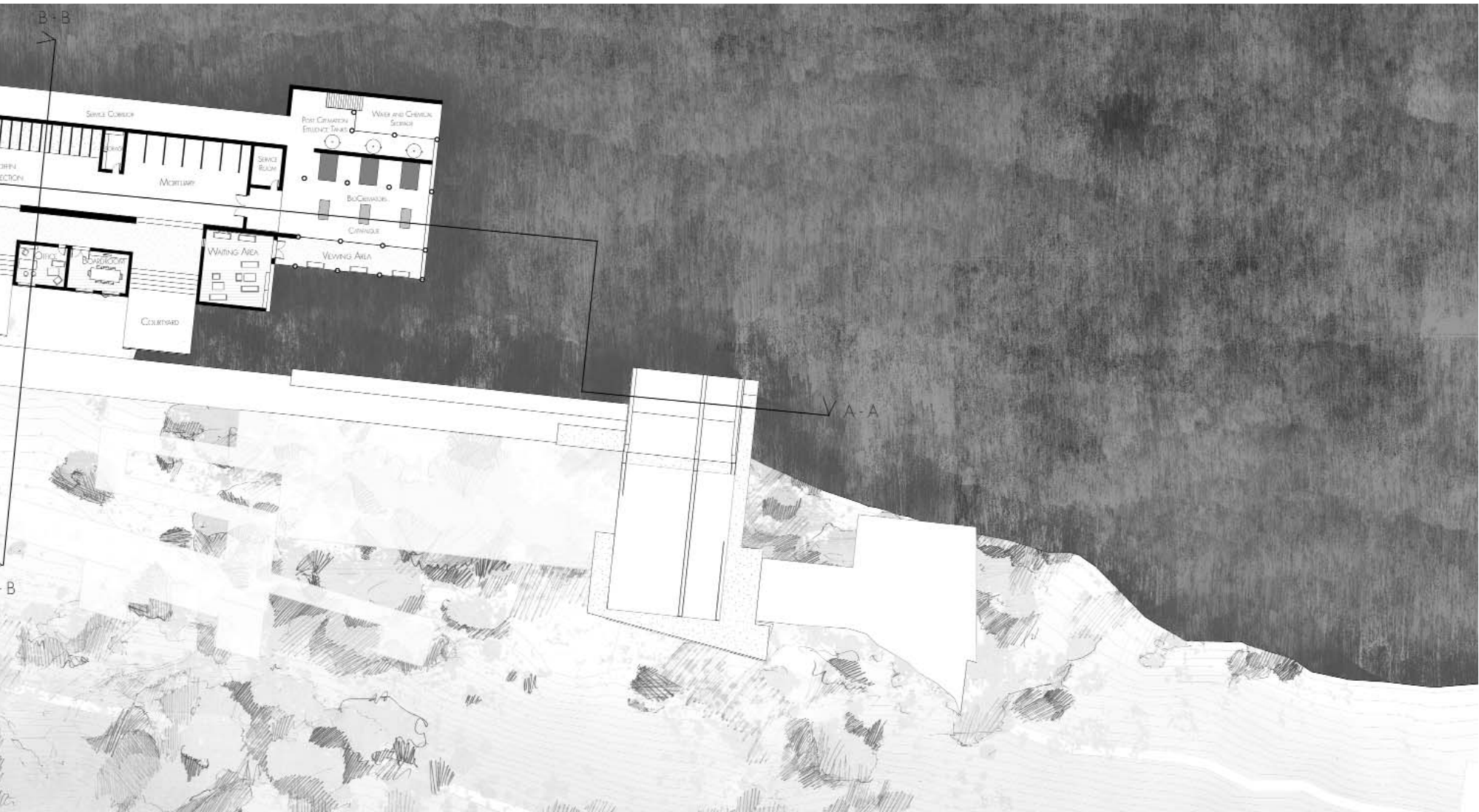


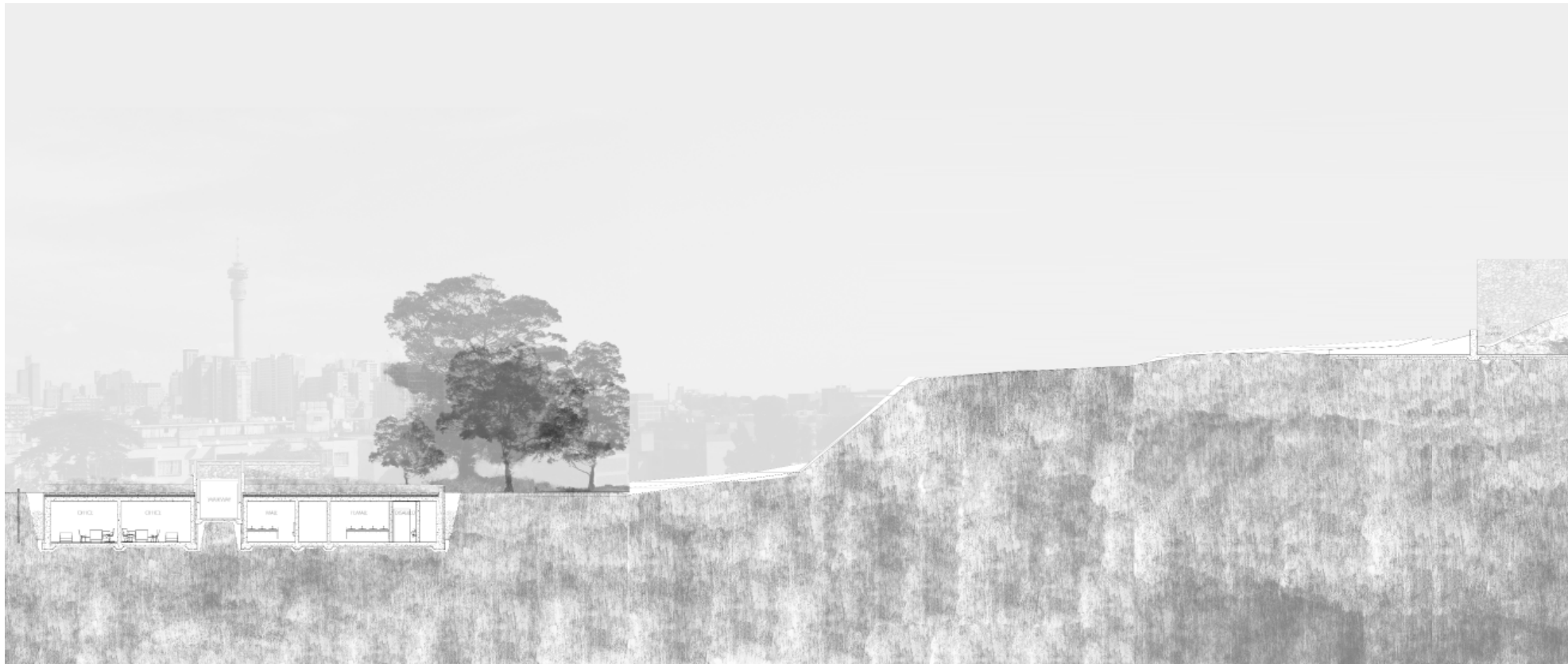




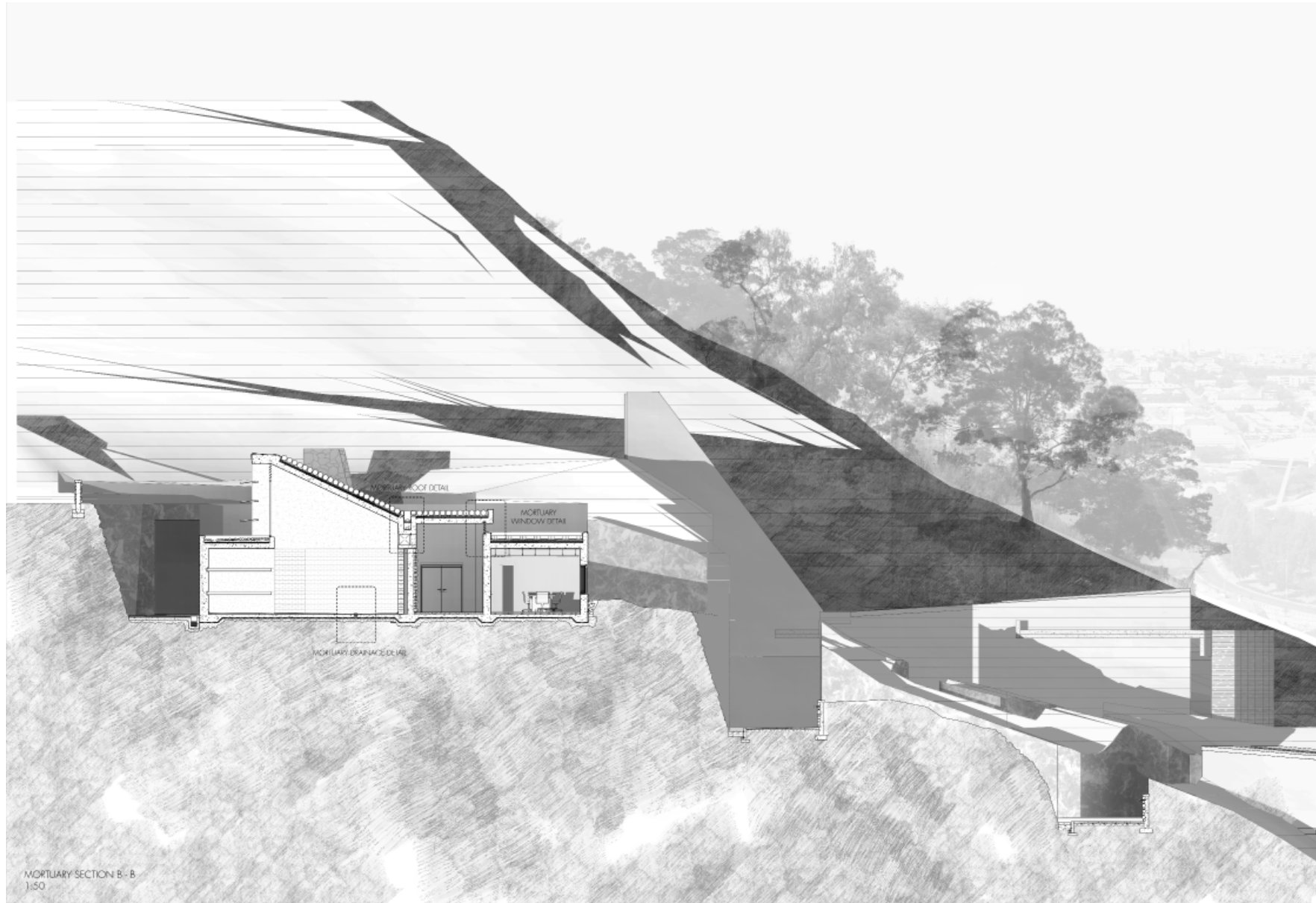


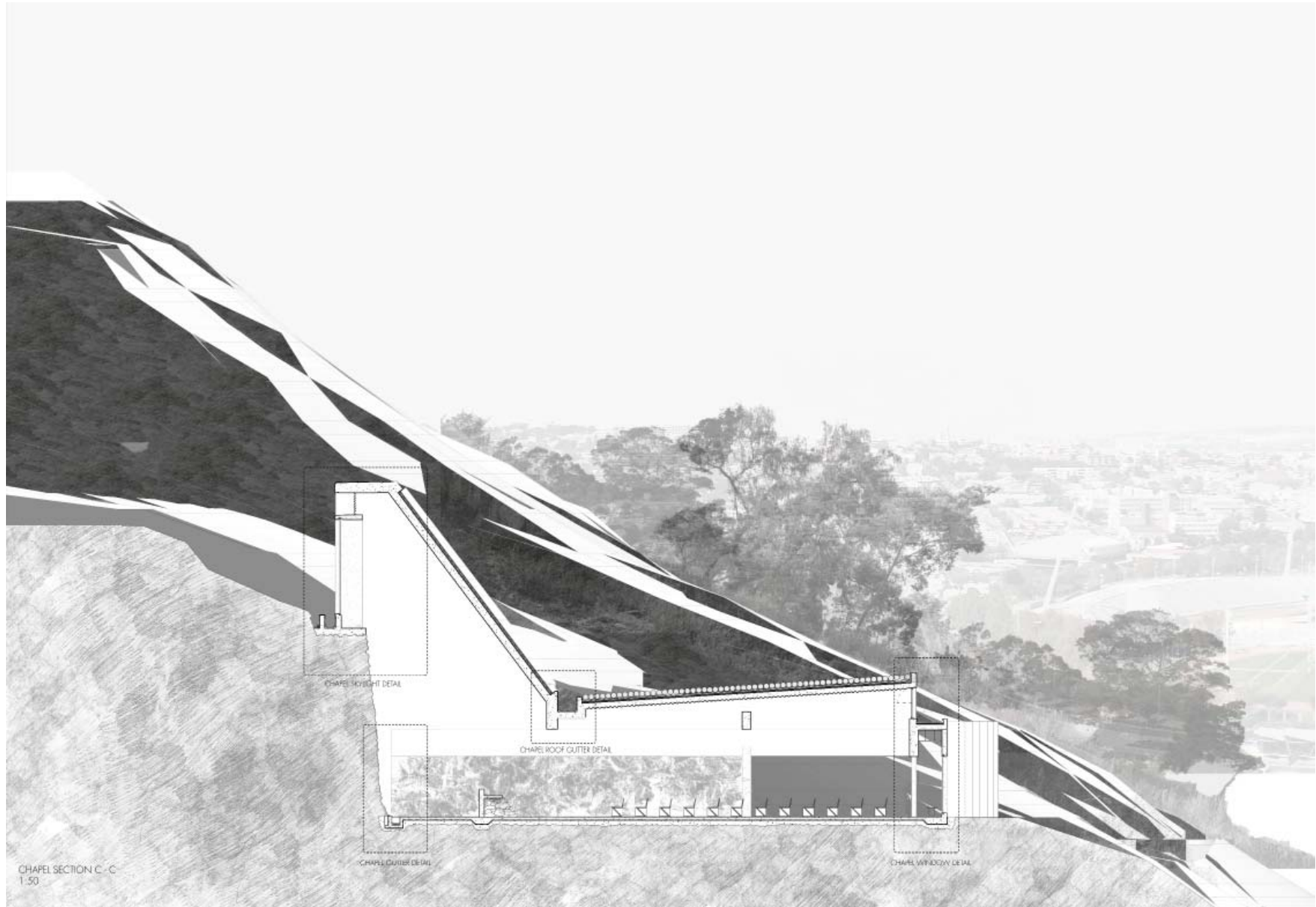




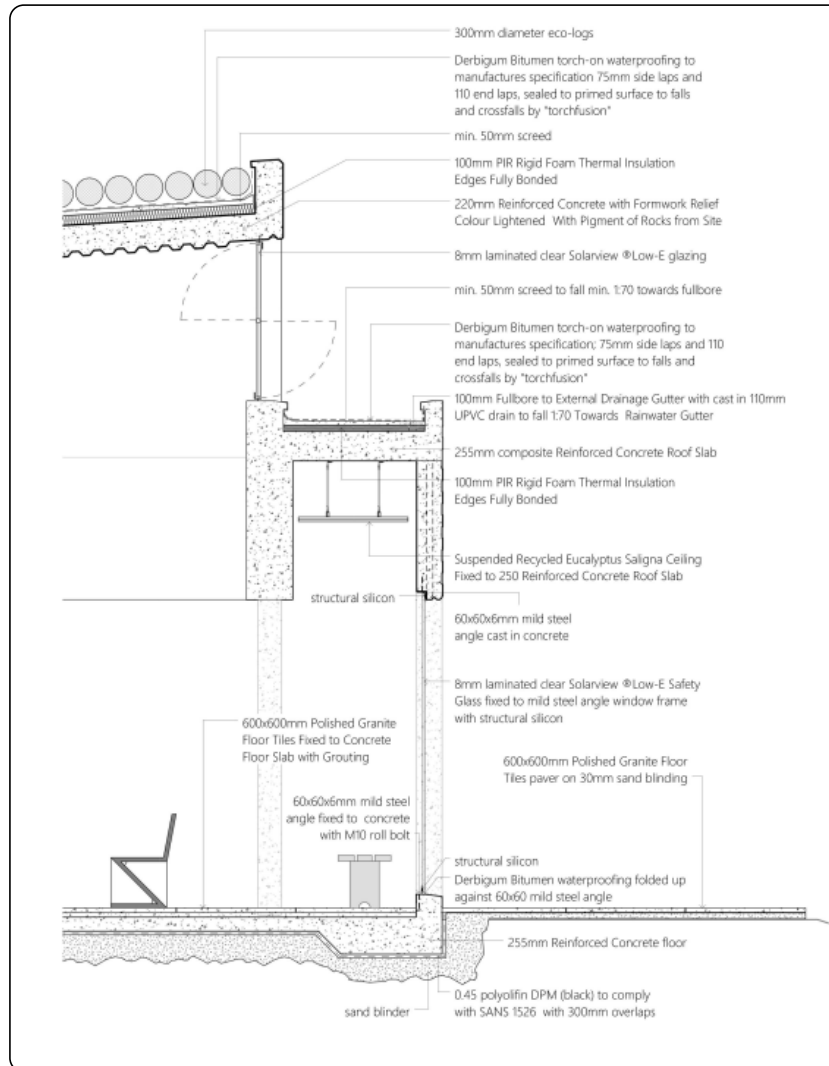




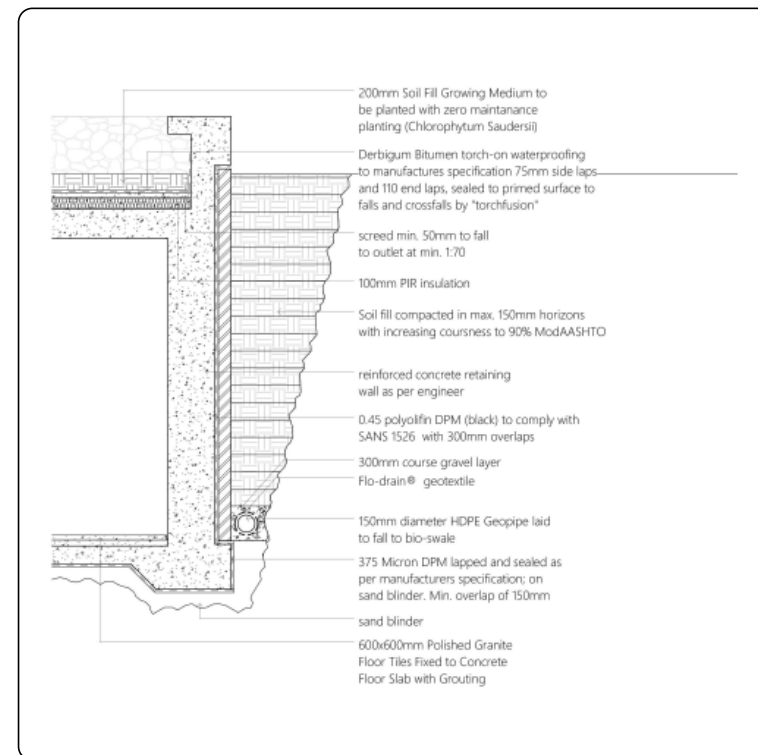




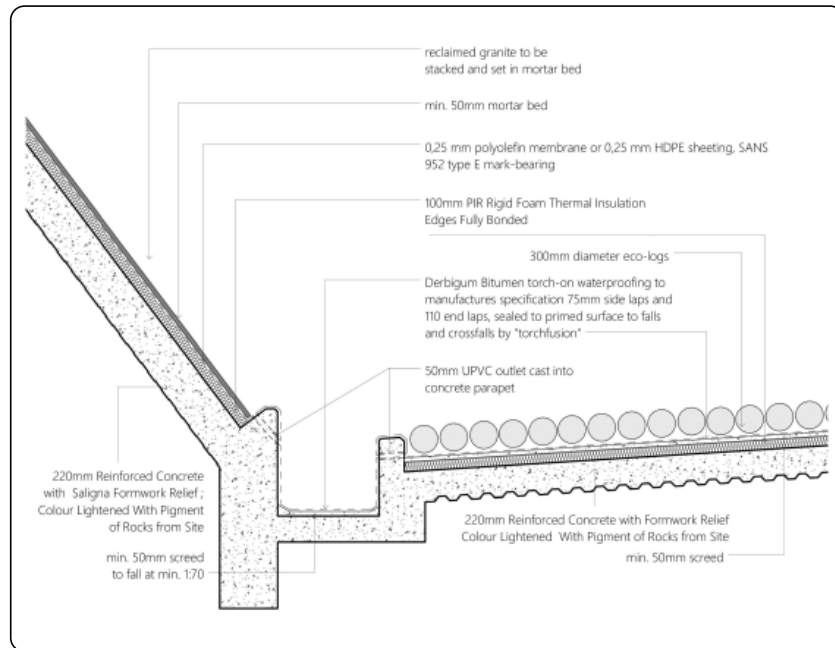
CHAPEL FACADE DETAIL
1:20



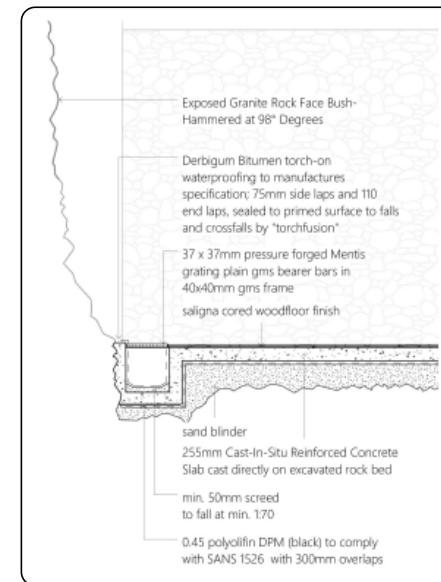
ENTRANCE BASEMENT DETAIL
1:20



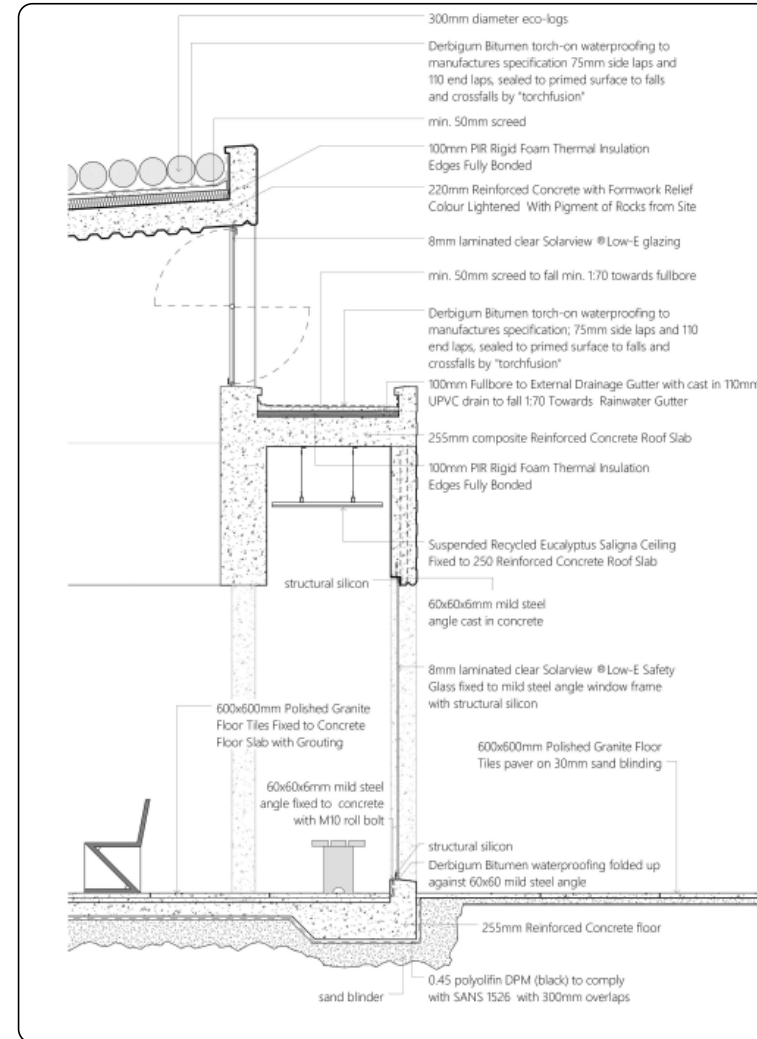
CHAPEL ROOF GUTTER DETAIL
1:20



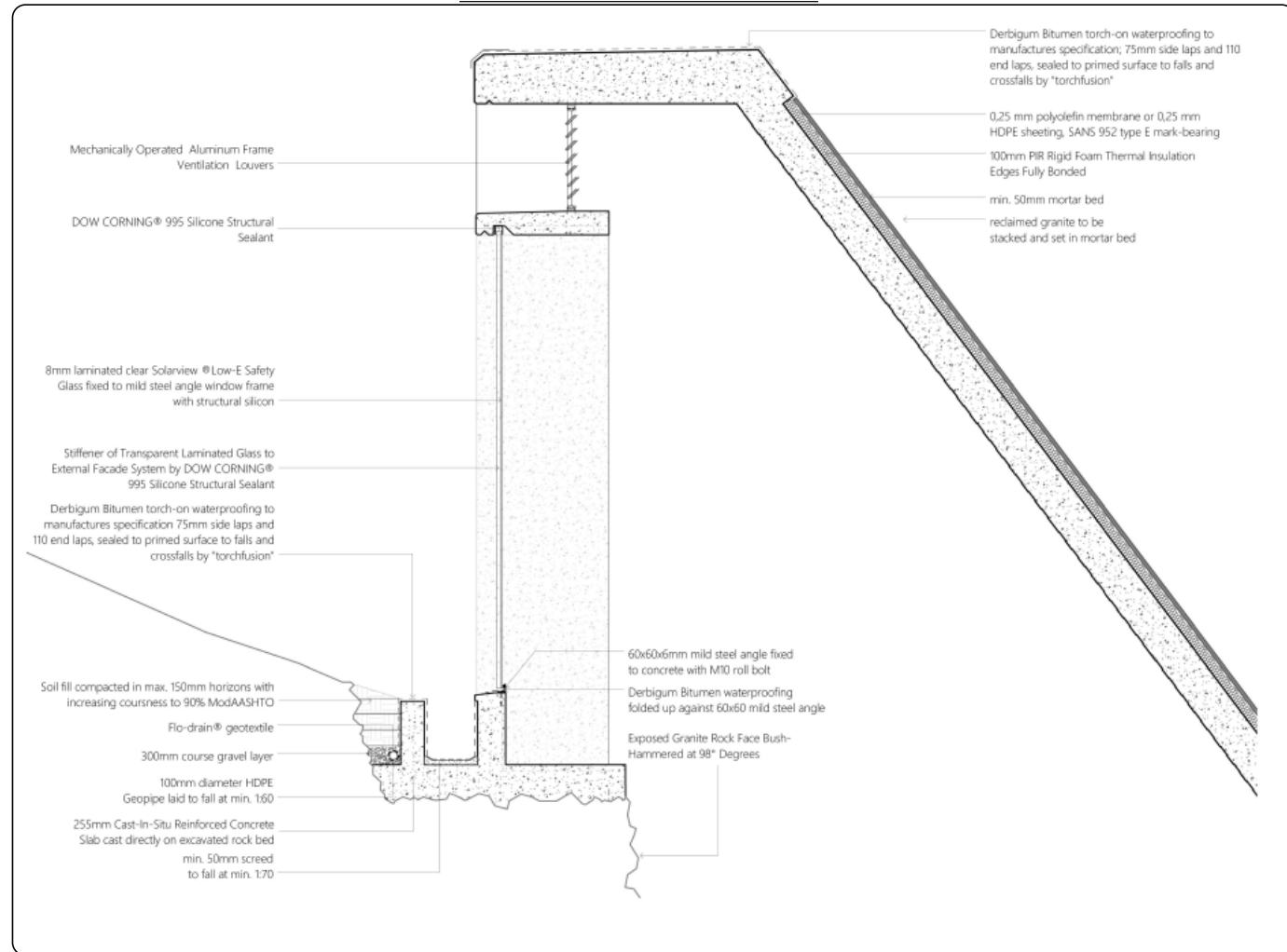
CHAPEL INTERNAL GUTTER DETAIL
1:20



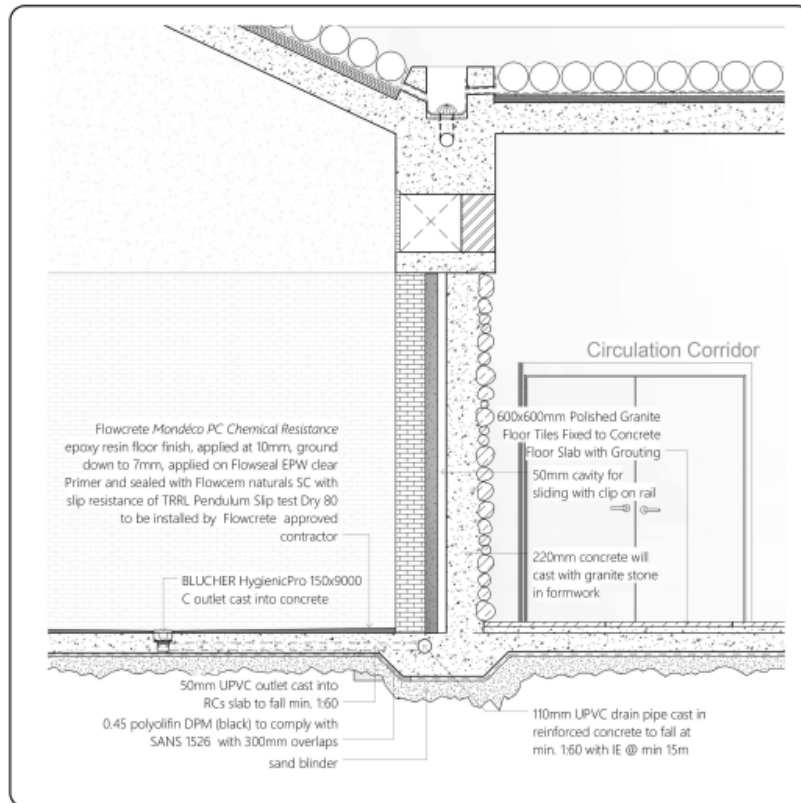
CHAPEL WINDOW DETAIL 1:20



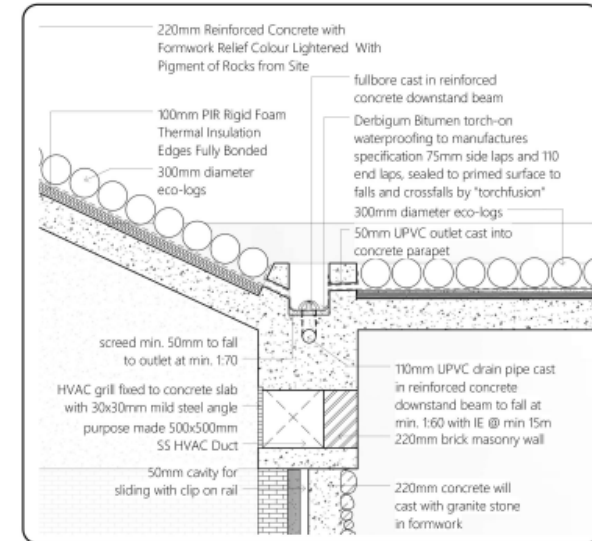
CHAPEL SKYLIGHT DETAIL 1:20



MORTUARY DETAIL
1:20

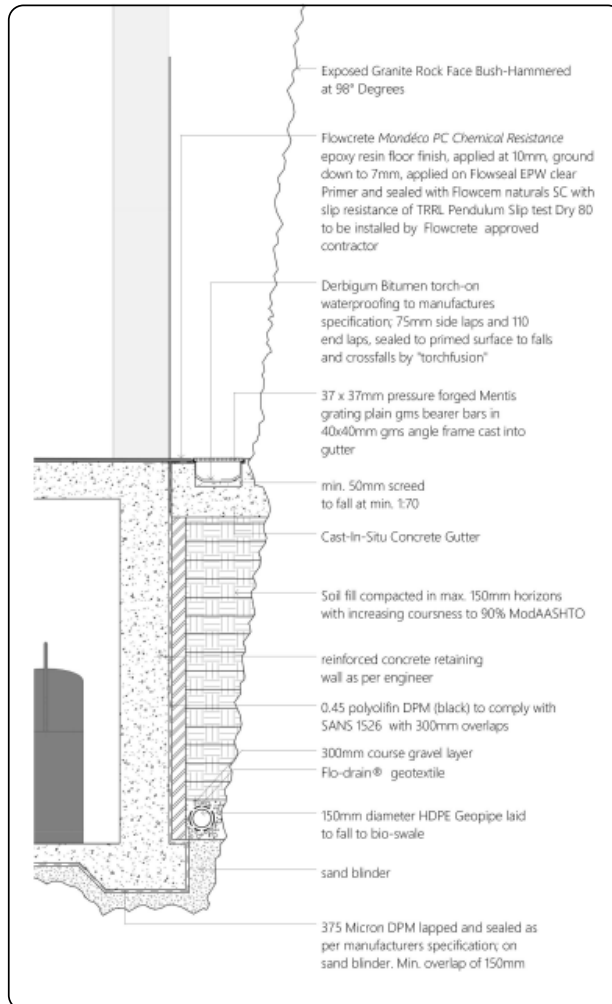


MORTUARY GUTTER DETAIL
1:20



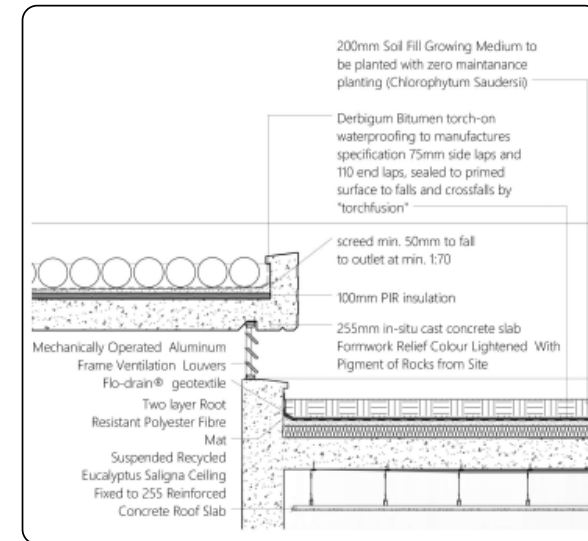
MORTUARY INTERNAL GUTTER DETAIL

1:20



MORTUARY LOUVER DETAIL

1:20



Conclusion



As a young boy I have always had a fascination with cemeteries and burial grounds, I found these eerie and gloomy places often void of any human disturbance and distractions. A place I would clear my head and wonder aimlessly among gravestones. These cemeteries became an anchor point of exploration when discovering new places. It is said that one can delve into a city's history by taking a walk through its oldest cemetery. So I set off discovering Johannesburg through its cemeteries.

The year started off as an exploration of an unknown city. The discovery of an invisible city that has become a form of nostalgia for so many, including myself. While exploring Johannesburg I started exploring myself, I became more aware of who I am as a designer. I saw the beauty in life and how architecture could play a vital role in creating a nostalgic memory. By exploring various funerary rituals I realised the beauty in the smaller more detailed aspects of life as well as design, how our daily rituals might make us unaware of smaller beauty.

Although a difficult and daunting task, the exploration of an unknown city along with trying to understand death and the rituals connected to it, the task of learning, understanding and opening up my mind in order to create architecture was a joyous and life changing exploration. The themes explored allowed my research to branch out into aspects of public space, landscape design, social issues and urban design. By understanding and utilizing certain parameters relevant architecture was created.

Throughout the process of design I constantly attempted to create beautiful, timeless architecture that responds to its context and time. Architecture that has contributed to the built environment of Johannesburg and South Africa.

This year has been one of learning and overcoming challenges, perseverance and determination. I would once again like to thank everyone who contributed to this project, your support and motivation is truly appreciated.

Erwin Derek Struwig

Final Presentation

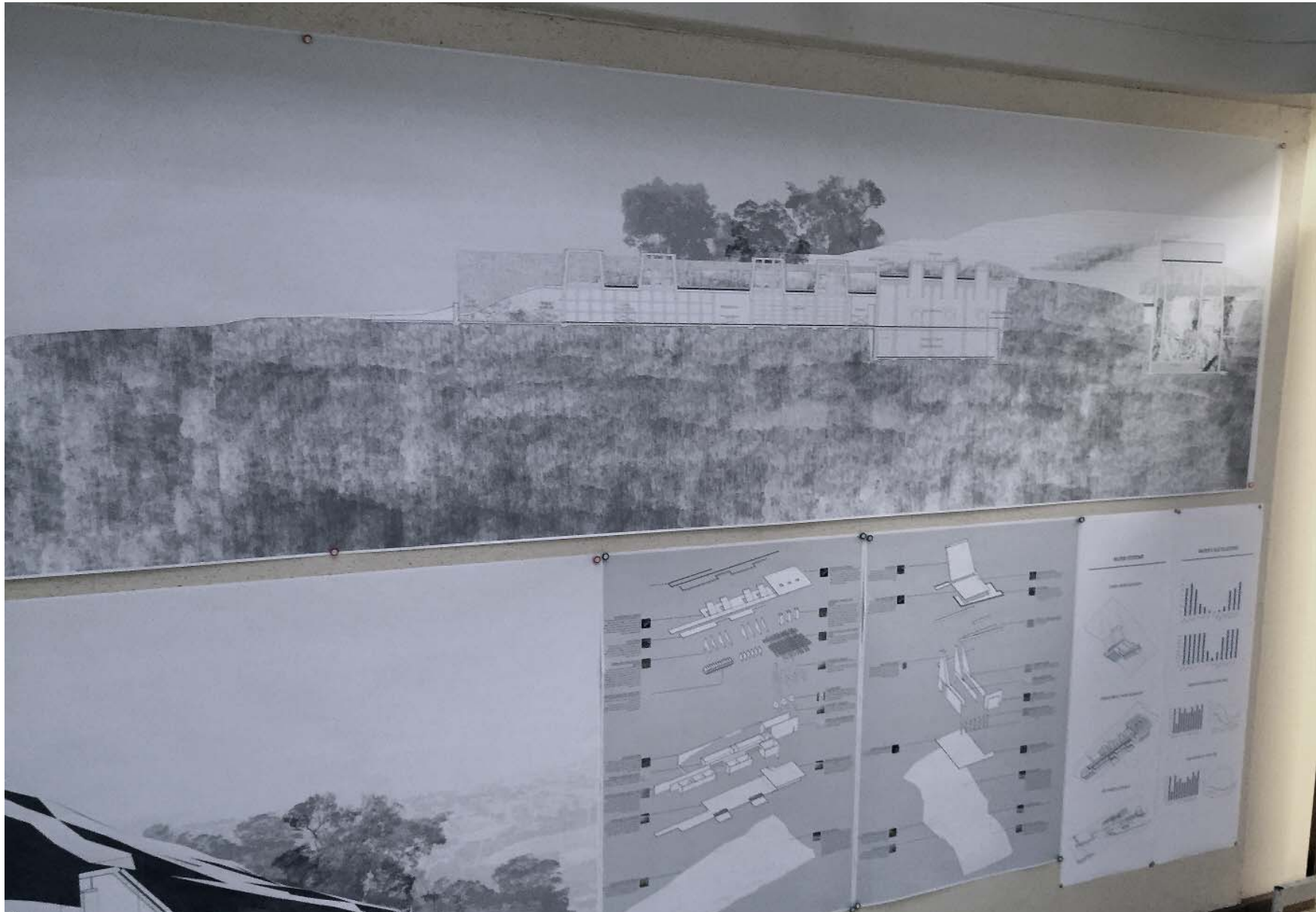


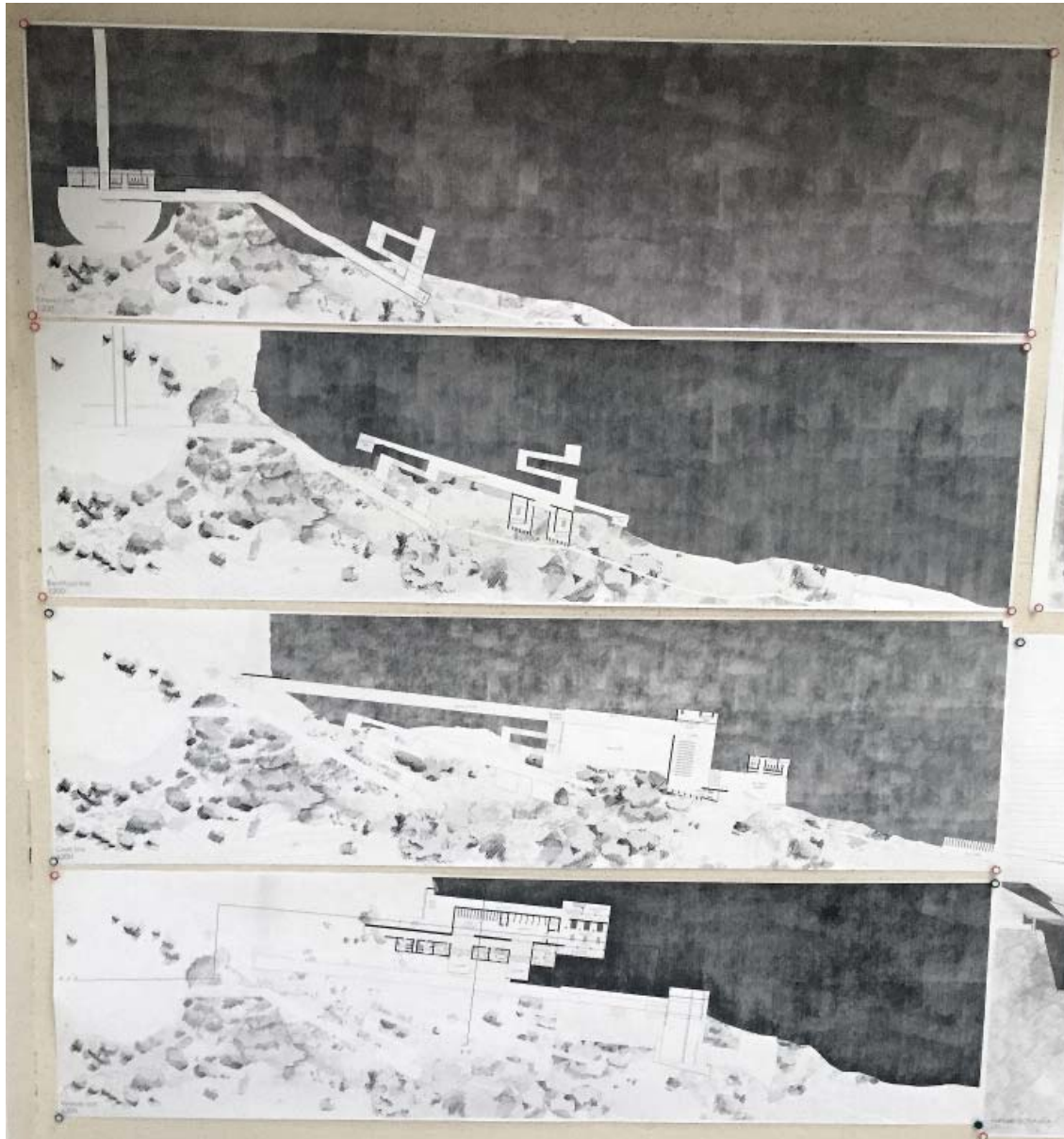










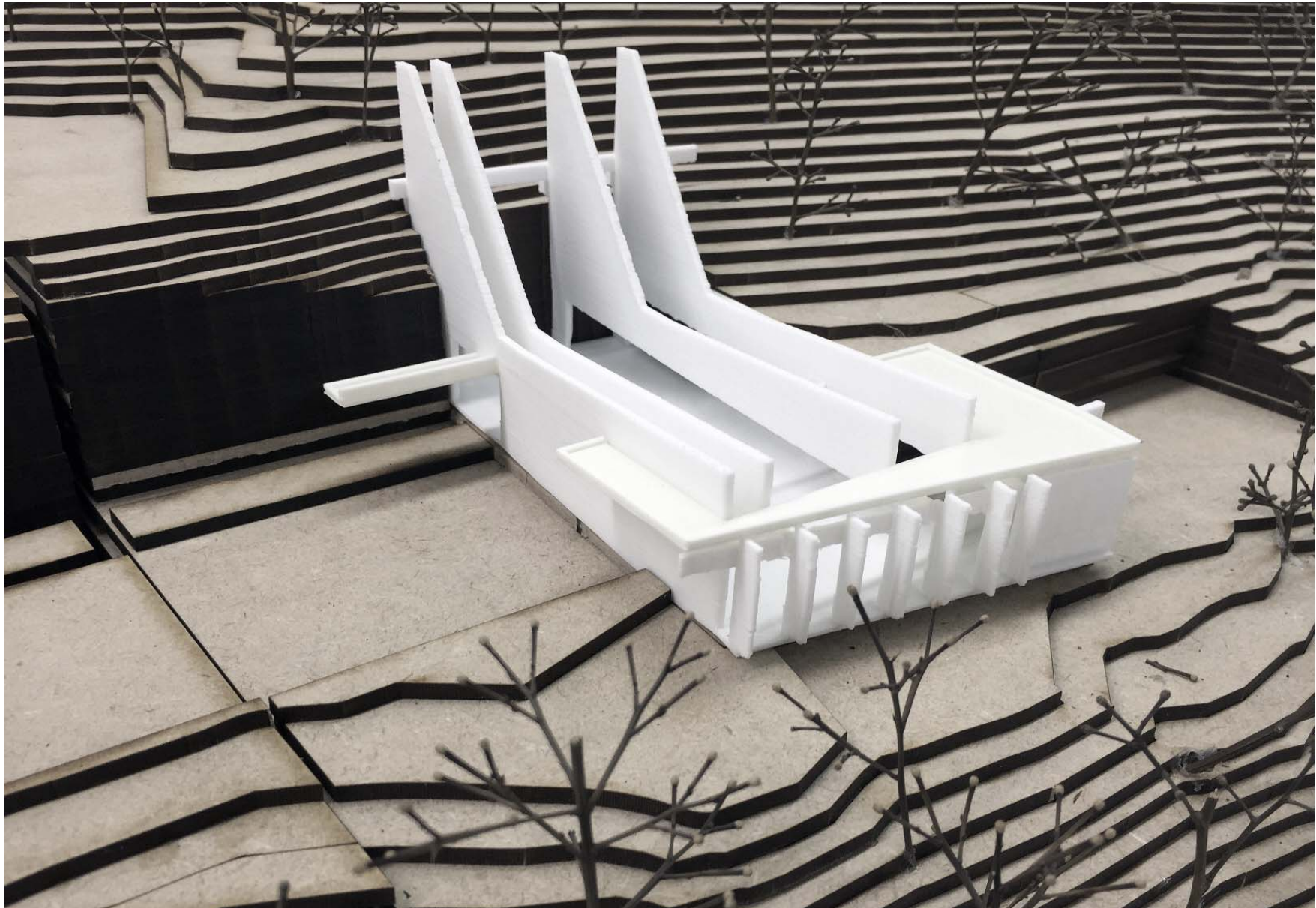


Final Model



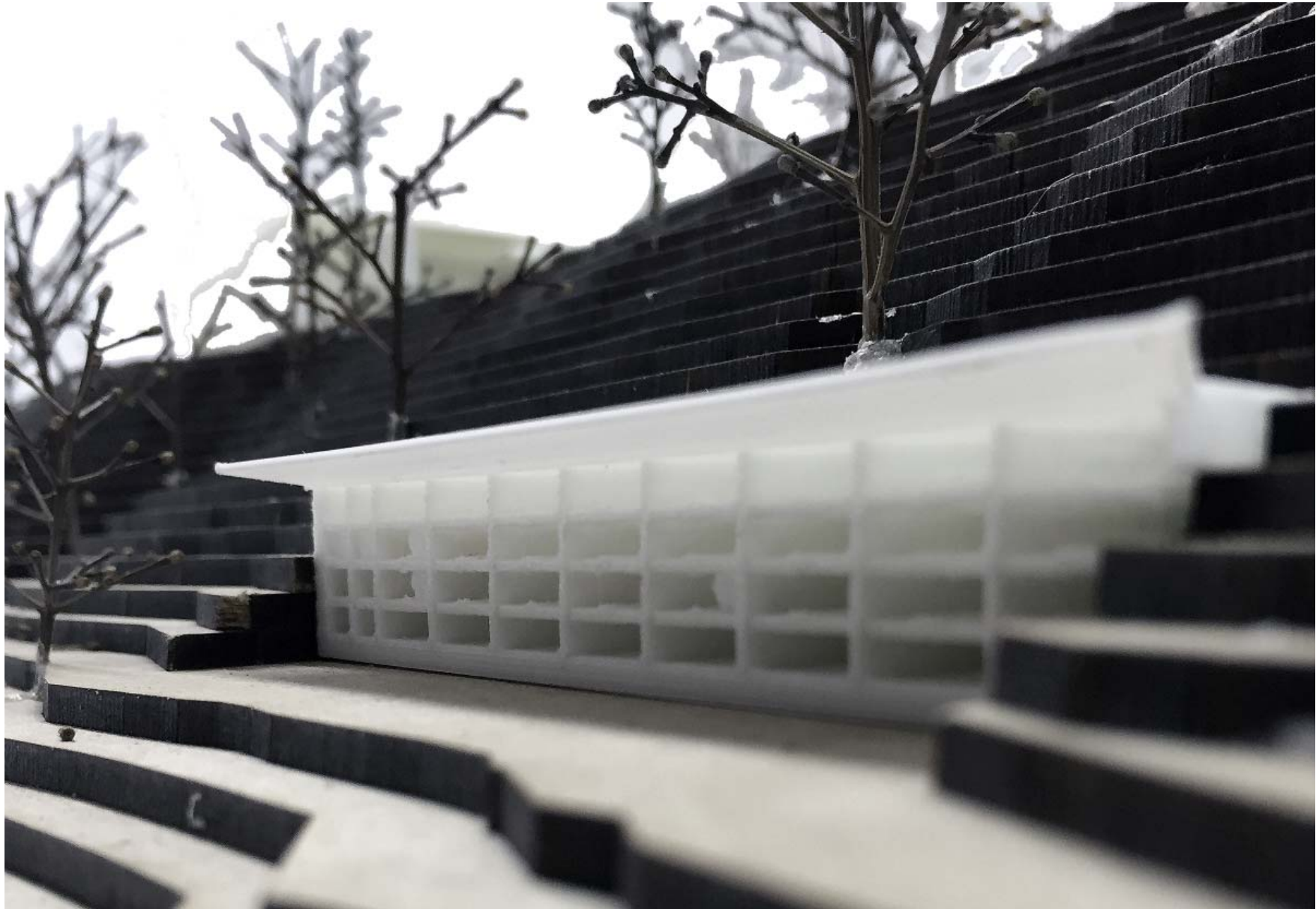


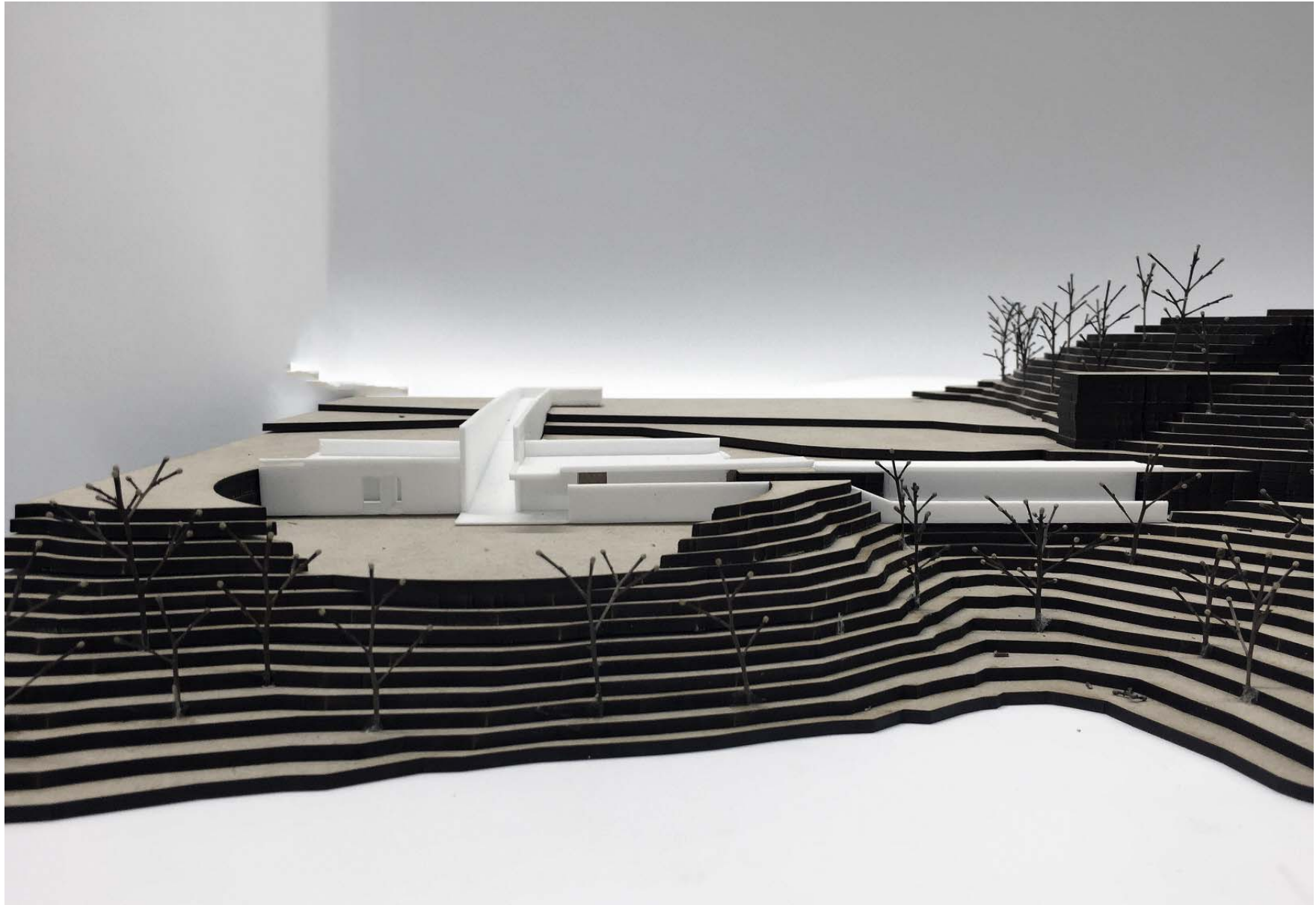


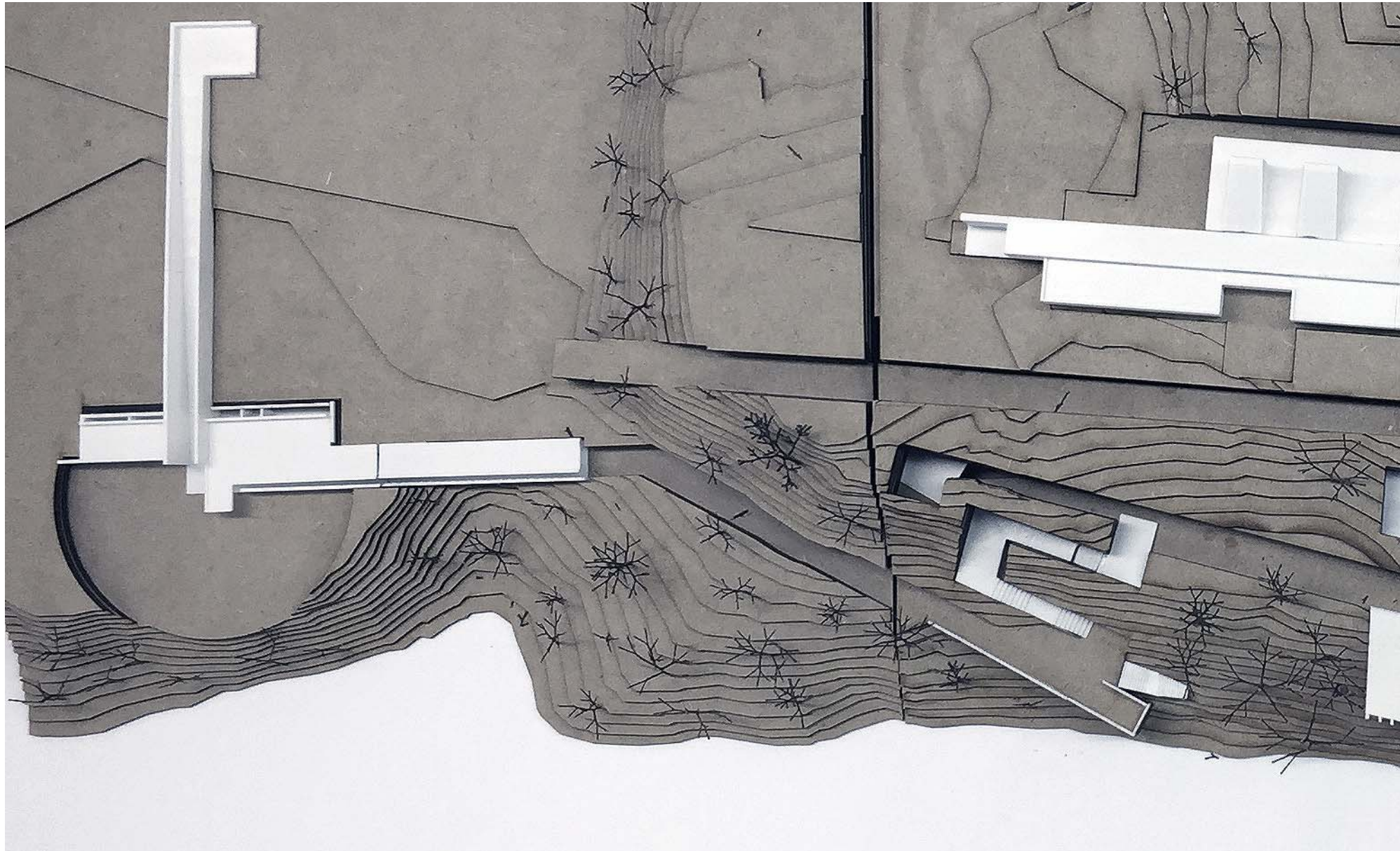
















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